SM Transparency Catalog ► TOTO Showroom ► EcoPower® HE Urinal Flush Valve TEU1LAR

# TOTO<sub>®</sub>

### EcoPower® HE Urinal Flush Valve

### TEU1LAR - 0.5qpf

Planet-friendly, superior flushing performance is easy to achieve with the EcoPower High Efficiency Urinal Flushometer Valve. Engineered to require no electricity or routine battery replacement, the EcoPower Flushometer Valve saves energy and water while providing maximum performance in even the most demanding commercial spaces.



### Performance dashboard

### Features & functionality

Hydropower self generating flush valve system

Durable chrome plated body with tamper-proof screws and solid bronze valve body

Self-cleaning piston valve with 360° filter

Neutral rough-in and adjustable tail piece connection

True mechanical flush override

Smart sensor with self-adjusting detection range

6-second detection time to prevent ghost flushing

## Visit TOTO for more product specifications:

### TEU1LA

### MasterFormat® #22 42 43



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

#### **Environment & materials**

### Improved by:

Powered by the sheer force of running water

See How we make it greener for water savings

Metal parts and electric components are able to be recycled at the end of service

### Certifications, rating systems & disclosures:

WaterSense® certified

CALGreen® compliant

Declare™ Label, LBC Compliant

Contributes to earning credits in LEED®

See LCA, interpretation & rating systems

See materials, interpretation & rating systems









**EPD** 

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

**✓** NSF 3rd-party reviewed

Transparency Report (EPD)

LCA

**✓** NSF

Validity: 90/01/2024 - 08/31/2029 TOTO - 20240901 - 007

3rd-party verified

Material MATERIAL HEALTH 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** International

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

734 769 8010



One flushometer valve for urinals in an average commercial environment over the estimated service life of the building of the building

SM Part B: Commercial flushometer valves, v3.0

Regions; system boundaries

North America; Cradle-to-grave

#### LCIA methodology; LCA software; LCI database

TRACL 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**

**SUMMARY** 

Reference PCR

**Functional unit** 

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

TOTO USA 1155 Southern Road Morrow, GA 30260



SM Transparency Catalog ► TOTO Showroom ► EcoPower® HE Urinal Flush Valve TEU1LAR

**EcoPower® HE Urinal Flush Valve** 

## LCA results & interpretation

LCA results & interpretation

# Scope and summary

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

#### **Functional unit** One flushometer valve for urinals 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% SLS solution, 195kg of solution will be needed over the course of 75 years. Therefore, 2kg of SLS plus 195kg of water were included in the model.

#### 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. Manufacturing data

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

**Material composition by wt%** AVG. % WT **PART** MATERIAL

Valve body, cap & tailpiece Bronze (C836000)

Bottom and top of	covers Zinc die cast	34.3%			
Pack	aging Carboard	5.55%			
Ma	nuals Paper	1.32%			
Tailpie	ce nut Brass	1.03%			
Generat	or coil Copper	0.650%			
	Other	5.15%			
Total impacts by life cycle stage [mPts/func unit]					
1.60E+03	FE CYCLE STAGE	MPTS/FUNC. UNI			



PRODUCTION

(X) A1 Raw materials

wiring board in addition to

manufacturing processes

1.02E+02

2.77E-06

3.24E-04

5.25E+02

5.85E+01

# 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]

Bronze and zinc parts, together with the printed wiring board, have

significant material contributions to the production stage. Stainless steel

materials are relevant to the carcinogenics category. The electroplating process is a major contributor to the ozone depletion category while the die casting process is relevant to the ecotoxicity and non-carcinogenics 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. The other parts and processes contribute between 3% and 15% of the overall impacts in the remaining categories. Construction stage [A4-A5] Installation of the product dominates impacts in the construction stage.

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 (>95%) due to the consideration of an

Transportation by truck for delivery to the installation site contributes the

most, and this stage contributes less than 1% of the total global warming

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

52.0%

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

The flush valve uses 0.5 gallons of water per flush and is assumed to be used

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

### 60 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 585,000 gallons of water over its lifetime. An electricity factor of 0.000961 kWh per liter of water

Operational energy and water use

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

# Energy efficiency programs optimize the firing process

consumption in the use phase

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

END OF LIFE

**Demolition** 

(X) C1 Deconstruction/

processing and disposal

of material flows

2.70E-01

3.22E-08 2.18E-03

2.29E-04

2.51E-09

1.78E-08

2.19E-01

4.53E-01

1/2 product

1 product

1 product

1.5 products

.5 points

.75 points

1 point

number of product

1.61E+04

7.63E-04

1.00E+02

2.30E+01

3.39E-04

5.16E-03

1.15E+04

9.77E+03

Building product disclosure and optimization

**Environmental product declarations** 

O Industry-wide (generic) EPD

☐ Industry-wide (generic) EPD

replacements needed

(X) A4 Transportation/ (X) B1 Use **Delivery** 

**LCA** results

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	35.8 mPts	0.07 mPts	1,507 mPts	0.02 mPts	
Materials or processes contributing	Bronze and zinc parts together with the printed	Transportation of the	Volume of water used during operation and the	Transport to waste	

(X) A5 Construction/

Ecological damage					
LIFE CYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE	
TRACI v2.1 results per functional	unit				
stage	such as die casting and electroplating.	of packaging.	over the building's service life.	transported to a landfill.	

9.82E-01

2.44E-09

4.10E-03

7.75E-04

product to installation site

or consumer and disposal

#### Ozone depletion kg CFC-11 eq 7.34E-06 Acidification kg SO<sub>2</sub> eq 1.89E+00 Eutrophication kg N eq 1.16E+00

Unit

Unit CTU<sub>h</sub>

**MJ** surplus

kg CO<sub>2</sub> eq

Impact category

Global warming

Materials or processes contributing

>20% to total impacts in each life cycle

Impact category	Unit					
Smog	kg O <sub>3</sub> eq	0	1.30E+01	1.19E-01	8.59E+02	5.82E-02
Respiratory effects	kg PM <sub>2.5</sub> eq	0	2.47E-01	7.08E-05	8.14E+00	2.33E-04

9.25E-09

8.65E-08

1.63E+00

1.17E+00

#### Non-carcinogenics CTU<sub>h</sub> **Ecotoxicity** CTU

Fossil fuel depletion

Impact category

Carcinogenics

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 performance.

# Sustainable Minds Part A.

services"

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

aration of Building Products

**Download PDF** SM Transparency Report/EPD

SM Part B: Commercial flushometer valves, v3.0 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

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 subcategory 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

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 and can have high levels of uncertainty. To promote uniform guidance on the data collection,

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

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

rules for environmental product declarations of construction products and

ISO 21930:2017, "Sustainability in Building Construction — Environmental

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

# ✓ Product-specific Type III EPD LEED BD+C: New Construction | v4.1 - LEED v4.1

Interiors

Materials and resources

Building product disclosure and optimization **Environmental product declarations** 

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

# Product-specific Type III EPD Collaborative for High Performance Schools National

▼ Third-party certified type III EPD	2 points
Green Globes for New Construction and Susta	ainable

NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell

Mat 02 - Environmental impacts from construction products

**MW C5.1 – Environmental Product Declarations** 

NC 3.5.2.2 and SI 4.1.2 Path B: Prescriptive Path for Interior Fit-outs **BREEAM New Construction 2018** 

## ☐ Industry-average EPD Multi-product specific EPD

**Environmental Product Declarations (EPD)** 

3rd-party verified

#### **EPD** LCA SUMMARY This environmental product Reference PCR **✓** NSI 3rd-party reviewed declaration (EPD) was externally verified by Jack Geibig (Ecoform) on Transparency Report (EPD)

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



**✓** NSF

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

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Certified Environmental

**Product Declaration** 

www.nsf.org

North America; Cradle-to-grave **Functional unit** One flushometer valve for urinals in an average commercial environment

Regions; system boundaries

Product-specific EPD

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

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

referenced PCR, the life cycle

behalf of NSF. **Public LCA** CA background report of TOTO
Faucets, Flush Valves, and Residential
Toilets, 2024

**TOTO USA** 

1155 Southern Road

Morrow, GA 30260

SM Transparency Catalog ► TOTO Showroom ► EcoPower® HE Urinal Flush Valve TEU1LAR

**EcoPower® HE Urinal Flush Valve** 

Fairburn, GA

Diesel truck

**Potential waste** 

29.5%

scenario - Landfill

**EPD** additional content

EPD additional content

# **Data**

the total mass.

Zinc, primary, at

Tap water, at user

voltage, at grid,

SLS

Electricity, natural gas

Water

**LCIA** results Smog (kg O3

depletion (kg

CFC-11 eq) Eutrophication

(kg N eq) Acidification

(kg SO2 eq) Respiratory effects (kg

PM2.5 eq) Global warming (kg

CO2 eq)

Fossil fuel

surplus) **Ecotoxicity** 

(CTUe)

(CTUh) Non

LHV) Nonrenewable

depletion (MJ

Carcinogenics

carcinogenics

eq) Ozone 1.30E+01

7.34E-06

1.16E+00

1.89E+00

2.47E-01

1.02E+02

5.85E+01

5.25E+02

2.77E-06

3.24E-04

Additional environmental information

Vietnam

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

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

SimaPro

Analyst

Analyst

9.5

States

Vietnam

Wastewater

End of life C1-C4

LCIA results, resource use, output and waste flows, and carbon emissions & removals per functional unit

3.95E-01

5.06E-07

5.07E-03

4.57E-02

3.85E-03

8.08E+00

2.23E+01

3.85E+00

1.60E-07

1.58E-06

7.64E+02

6.73E-04

2.19E+01

8.98E+01

7.44E+00

1.41E+04

8.56E+03

1.08E+04

2.98E-04

4.99E-03

7.63E+01

7.32E-05

1.69E+03

1.00E+03

4.60E+02

2.41E-05

9.88E-05

name and version

US-EI 2.2

US-EI 2.2

#### 9.5 SimaPro Electricity, low

Heat, natural gas, at boiler modulating <100kW	ecoinvent v3.10	SimaPro Analyst 9.5	Vietnam	By mass
Flow diagram				
Electricity, natural gas  Water  Ancillary materials	Transportation  Ufacture [A3]  Core injection molding die-casting  Metal part machisanding, polishin chroming	[A2]	Waste disposal Emissions Wastewater	
Packaging	Assembling, labeling packaging  Final product  Transportation  Installation [A	J	Replacement p	

Maintenance (cleaning) B2

Transportation [C2]

Disposal [C4]

1.18E-01

1.16E-09

2.60E-04

4.01E-03

6.40E-05

6.58E-01

1.16E+00

1.62E+00

9.09E-09

8.49E-08

The reported values for all indicators in the below tables for B1, B3, B5, and C1 are zero.

9.83E-04

1.28E-09

5.15E-04

8.55E-05

6.83E-06

3.24E-01

1.28E-02

1.01E-02

1.61E-10

1.62E-09

Product replacement after RSL [B4]

#### Distance (port of Savannah to plant) 406 km

Scenarios and additional technical information

## Vehicle type

Distribution [A4]

**Plant location** 

End of life [C1-C4]

In 2023, outbound shipments of flush valves from Fairburn were transported $$
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 rail
17%.

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,

# 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.

70.5%

**Potential waste** 

scenario - Recycling

although this is not currently common practice. Secondary materials, including

66.5% 33.5% Corrugated board, paper **Plastics** 15.0% 85.0% **Product information** 

Product code	ASTM or ANSI product specification	Physical properties and technical information					
TEU1LAR	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

N

Human labor and employee transport

Building operational energy and water use

and reported pallet quantity of specific models.

addresses, extracted from the relevant SDSs.

towards SimaPro data, where available.

1.56E+01

1.49E-05

2.62E+02

2.37E+02

2.17E+02

1.64E-05

6.64E-05

on rail lines and port information.

Data quality assessment

By mass

By mass

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 estimated based

Pallet use is assumed based on the average numbers per unit of product

### **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'

### available, as shown in Appendix A in the published LCA background report. Completeness: The data included is considered complete. The LCA model

totals less than 5% whether evaluated by mass, energy, or potential

Proxy datasets were utilized in the LCA model when secondary data were not

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

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

# Material

Brass, zinc, brass, copper

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 resistained regularly.

9.95E-01 1.68E-05 1.58E-04 1.11E-01 5.37E-05 2.42E+01 9.01E+00 9.89E-01 2.58E-04 1.61E-03 3.08E-04 1.02E+02 5.35E-01 1.44E-01 4.02E-06 2.04E-04 2.45E-05 8.38E+00

4.67E-02

2.71E-08

1.72E-01

3.19E-01

3.58E-02

1.41E-09

6.27E-09

0.00E+00

0.00E+00

102F-02

0.00E+00

0.00E+00

1.11E-03

0.00E+00

0.00E+00

114F-02

4.07E-03

5.00E-09

5.15E-02

5.12E-02

6.80E-02

4.60E-10

5.52E-09

8.72E+02

7.70E-04

1.62E+04

9.84E+03

1.21E+04

3.42E-04

5.48E-03

7.43E-03

8.22E-11

4.66E-02

8.23E-02

1.15E-01

6.44E-10

6.01E-09

(CTUh)	3.24E-04	6.49E-06	1.626-09	1.58E-06	4.99E-03	9.885-05	6.64E-05	6.01E-09	6.27E-09	5.52E-09	5.46E-03
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	1.34E+04	1.27E+03	7.87E+02	-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	1.38E+04	1.27E+03	7.87E+02	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	2.13E+05	2.75E+04	3.10E+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	2.13E+05	2.75E+04	3.10E+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 secondary fuels (MJ,	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

	secondary fuels (MJ, LHV)	0	0	0	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		
	Use of net fresh water resources (m3)	1.95E-04	7.78E-04	1.05E-02	1.70E-04	1.09E-02	1.10E-02	1.09E-02	5.51E-05		
	Abiotic depletion potential, fossil (MJ)	1.01E+03	8.74E+00	1.21E-01	1.89E+02	1.58E+05	1.95E+04	2.58E+03	6.19E-01		
	Output flows and waste category indicators										
	Hazardous										

depletion potential, fossil (MJ)	1.01E+03	8.74E+00	1.21E-01	1.89E+02	1.58E+05	1.95E+04	2.58E+03	6.19E-01	2.50E+00	4.99E-01	1.02E+03
Output flows and waste category indicators											
Hazardous waste disposed (kg)	3.38E-03	0	0	0	0	0	0	0	0.034	0.034	3.38E-03
Non- hazardous waste disposed (kg)	2.99E+01	1.20E+00	1.43E+00	2.93E+01	9.35E+01	0.00E+00	0.00E+00	5.40E-01	0.00E+00	0.00E+00	3.26E+01
High-level radioactive waste, conditioned, to final repository (kg)	2.42E-03	1.72E-06	2.56E-07	7.76E-04	3.51E-01	5.16E-01	5.16E-01	1.22E-07	1.38E-06	1.59E-06	2.42E-03
Intermediate- and low-level radioactive waste, conditioned, to final repository (kg)	2.70E-06	1.65E-08	2.22E-09	1.80E-06	7.60E-03	4.53E-03	4.53E-03	1.17E-09	1.09E-08	1.04E-08	2.72E-06
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0	0
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,	0	0	0	0	0	0	0	0	0	0	0

Output flows and waste category indicators											
Hazardous waste disposed (kg)	3.38E-03	0	0	0	0	0	0	0	0.034	0.034	3.38E-03
Non- hazardous waste disposed (kg)	2.99E+01	1.20E+00	1.43E+00	2.93E+01	9.35E+01	0.00E+00	0.00E+00	5.40E-01	0.00E+00	0.00E+00	3.26E+01
High-level radioactive waste, conditioned, to final repository (kg)	2.42E-03	1.72E-06	2.56E-07	7.76E-04	3.51E-01	5.16E-01	5.16E-01	1.22E-07	1.38E-06	1.59E-06	2.42E-03
Intermediate- and low-level radioactive waste, conditioned, to final repository (kg)	2.70E-06	1.65E-08	2.22E-09	1.80E-06	7.60E-03	4.53E-03	4.53E-03	1.17E-09	1.09E-08	1.04E-08	2.72E-06
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0	0
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 emission	ns and remo	vals									
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)	7.40E-01	0	0	0.00E+00	1.11E+00	0	0	1.11	1.11	1.11	7.40E-01
Biogenic Carbon Emission from Packaging (kg CO2)	0	0	7.40E-01	0.00E+00	1.11E+00	0	0	1.11	1.11	1.11	7.40E-01
Biogenic Carbon Emission from Combustion of Waste from Renewable	0	0	0	0	0	0	0	0	0	0	0

0

0

0

0

0.00E+00

0.00E+00

0

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0

Sources Used in Production Processes (kg CO2)

Calcination Carbon

Emissions (kg CO2) Carbonation Carbon

Removals (kg CO2) Carbon Emissions from Combustion of Waste from Renewable

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

**EPD** LCA

3rd-party reviewed

**✓** NSF

Transparency Report (EPD)

verified 🗸 🕦

3rd-party verified

Validity: 90/01/2024 – 08/31/2029 TOTO – 20240901 – 007

Material MATERIAL HEALTH 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.

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.org 734 769 8010



Certified Environmental Product Declaration www.nsf.org

#### 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 urinals 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

SM Transparency Catalog ► TOTO Showroom ► EcoPower® HE Urinal Flush Valve TEU1LAR

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.

EcoPower® HE Urinal 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.

**EcoPower® HE Urinal Flush Valve** 

### 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® Sensor Flushometer Valve for 1.28gpf Toilet or 0.5gpf Urinal

### 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

### 2. Optimization ✓ 1. Reporting

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

### Materials and resources **Material Ingredients**

Credit value options

1. Reporting

3. Supply Chain Optimization

1 product each

3. Supply Chain Optimization

# Living Building Challenge

**Materials petals imperatives** 

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

2. Optimization

### **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™

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

3rd-party verified Validity: 90/01/2024 - 08/31/2029

TOTO - 20240901 - 007 Material **MATERIAL HEALTH** 

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. Ecoform, LLC

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Ann Arbor, MI 48105, USA 734 769 8010



# **SUMMARY**

# Reference PCR

Regions; system boundaries

North America; Cradle-to-grave Functional unit

One flushometer valve for urinals 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

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## Public LCA

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

### TOTO USA 1155 Southern Road Morrow, GA 30260

Sustainable Minds

Transparency Report (EPD)

### **EcoPower® HE Urinal Flush Valve**

## How we make it greener

Expand all









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





TOTO's EcoPower® Urinal 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:**

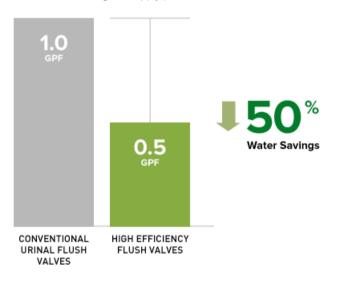
Ensuring that water flows only when needed, the self-adjusting EcoPower sensor eliminates "ghost" flushing that wastes water. A minimum of six seconds presence in front of the sensor is required to receive acknowledgment, preventing excessive flushing.

### **MICROTURBINE:**

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

### **SOLENOID AND PISTON:**

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



Using our proven engineering, the 0.5 gallon per flush reinforces TOTO's performance reputation while offering additional water



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

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

**EPD** LCA **✓** NSE 3rd-party reviewed

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

Validity: 90/01/2024 - 08/31/2029 TOTO - 20240901 - 007

Material MATERIAL HEALTH evaluation Self-declared

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Certified Environmental Product Declaration

### **SUMMARY** Reference PCR

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

# **Functional unit**

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