

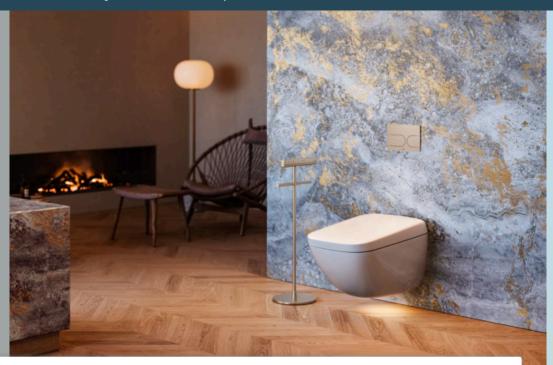
**TOTO**<sub>®</sub>

SM Transparency Catalog > TOTO Showroom > NEOREST® WX Wall-Hung Toilet with In-Wall Tank System

# **TOTO**®

# **NEOREST**<sup>®</sup> WX1 & WX2





# Performance dashboard

#### Features & functionality

Auto-Flush: Touchless TORNADO flushing technology

PREMIST®: The bowl's interior is sprayed with a fine water mist to reduce waste's ability to stick to its surface, resulting in a better clean.

CEFIONTECT®: a nano-tech glaze that creates a super-slippery, non-porous surface on porcelain, preventing waste from clinging.

TORNADO FLUSH®: Quiet, powerful dual flush (1.28 or 1.0 gpf) with rimless bowl and 2.5"" trapway effectively removes waste and cleans bowl.

#### Visit TOTO for more product information:

NEOREST® WX1, WX2

#### MasterFormat® 22 41 13.13 Product specifications:

NEOREST® WX1 NEOREST® WX2

For spec help, contact us or call 888-295-8134

#### **Environment & materials**

#### Improved by:

EWATER+®: Electrolyzed water sprays bowl and wand, ensuring cleanliness without harsh chemicals; reverts to tap water over time.

Certification & rating systems:

ΙΔΡΜΟ ADA Compliant

CALGreen

WaterSense®

#### See LCA, interpretation & rating systems

See materials, interpretation & rating systems





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

EPD	LCA			
<b>3rd-party reviewed</b>	SI 🛇			
Transparency I	Report (EPD)			
3rd-party verified	<b>S</b>			
Validity: 08/31/2024 – 08/30/2029 TOTO – 20240831 – 003				
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.

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

Certified Environmental Product Declaration

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734 769 8010



#### SUMMARY Reference PCR

Regions; system boundaries

North America; Cradle-to-grave Functional unit One dual flush toilet in an average residential environment, with an electronic bidet seat, over the

# LCIA methodology; LCA software; LCI database

ecoinvent and Industry data 2.0 databases

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

TOTO USA 1155 Southern Road

Morrow, GA 30260

#### Contact us

estimated service life of the building TRACI 2.1; SimaPro Analyst 9.6;

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

behalf of NSF. Public LCA

# Sustainable Minds<sup>®</sup>

**TOTO**<sub>®</sub> nsparency Report (EPD)

SM Transparency Catalog > TOTO Showroom > NEOREST® WX Wall-Hung Toilet with In-Wall Tank System

# LCA results & interpretation

**NEOREST® WX Wall-Hung Toilet with In-Wall Tank System** 

LCA results & interpretation

# Scope and summary

🔘 Cradle to gate 🔘 Cradle to gate with options 🔮 Cradle to grave

# **Functional unit**

One dual flush toilet used in an average residential 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 a residential toilet is 20 years.

# Maintenance

The toilet requires periodic cleaning, and each cleaning event uses 1.69 fl oz (50mL) of a 1% sodium lauryl sulfate (SLS) solution. The toilet basin, bowl, seat, and lid are assumed to be cleaned twice a month, the electric plug/cord and gap between the toilet tank and seat monthly, the deodorizing filter monthly, the wand weekly, and the water filter parts every six months. Each cleaning event uses 0.338 fl oz (10mL) of a 1% sodium lauryl sulfate (SLS) solution.

The deodorizing filter and water filter are assumed to be fully replaced once every ten years, and the battery is assumed to be replaced every six years.

The waste activities associated with the disposal of old filters are included.

# **Repair and replacement**

The flapper seal, fill valve seal, lid assembly, lid bumpers, seat bumpers, deodorizer assembly, air filter, and flexible hose assembly are assumed to be fully replaced once during the 20-year RSL period as part of regular repairs. At the end of its RSL, the product 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.

The waste activities associated with the disposal of replaced parts are included.

# Manufacturing data

Manufacturing data has been collected at the manufacturing facility in Kokura, Japan for the top unit and Shanghai, China for the tank support system. Data reporting period: 2023

### Material composition greater than 1% by weight

MATERIAL	<b>WT</b> %
Ceramics	54.2%
Stainless Steel	16.6%
Cardboard packaging	10.8%
Polypropylene (PP)	8.96%
Polyethylene (PE)	2.45%
Acrylonitrile butadiene styrene (ABS)	1.67%
Brass	1.62%
Others	3.75%

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

1.00E+03	LIFE CYCLE STAGE	MPTS/FUNC. UNIT
	Production	9.53E+01
8.00E+02	Construction	3.07E+00
	Use	8.13E+02
6.00E+02	End of life	7.13E-01

# What's causing the greatest impacts

# All life cycle stages

The use stage [B1-B7] dominates the results for all impact categories. The operational energy use [B6] leads the impacts in terms of global warming. The product replacement module [B4] contributes the most to impact results for five evaluated impact categories: ozone depletion, smog, acidification, respiratory effects, and fossil fuel depletion. Operational water use [B7] leads impacts for four impact categories in the overall life cycle: eutrophication, carcinogenics, non-carcinogenics, and ecotoxicity. The production stage [A1-A3] also demonstrates significant impacts across all impact categories. 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 electronics contained in the toilet's bidet seat and the in-wall tank support system dominate all impact categories in the production stage. The raw materials needed for ceramic production did not contribute significantly to raw material acquisition [A1]. Most of the impacts within manufacturing [A3] stem from energy used during the ceramic manufacturing operations, and there were insignificant impacts from raw material transportation [A2].

#### Construction stage [A4-A5]

Distribution of the product dominates impacts in the construction stage. Transportation by sea for delivery to distribution centers contributes the most, accounting for about 7% of potential smog impacts. Transportation contributed less than 4% to the remaining impact categories.

#### Use stage [B1-B7]

Electricity required for bidet operations contributes the most to the impacts for global warming ("38%) and fossil fuel depletion ("36.1%). Product replacement [B4] contributes the most to five impact categories: ozone depletion (~47.3%), smog (~41.6%), acidification (~32.4%), carcinogenics (~42.1%), and respiratory effects (51.1%). Operational water use [B7] leads impacts for three impact categories in the overall life cycle: eutrophication (~95.1%), non-carcinogenics (~79.1%), and ecotoxicity (~53.2%).

### 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 energy and water use

Operation of the bidet seat requires electricity and water. The peak wattage for the NEOREST® WX toilet is 1,452 W for 30 seconds for seat heating, nozzle spraying, and water heating. Then it uses 75.6 W for seat warming for the remaining 12 minutes of operation. This use stage electricity was modeled using a United States grid mix.

The incoming municipal tap water is used for bidet operations including rear cleansing, rear soft cleansing, front cleansing, and wide front cleansing at an average of 0.095 gpm. The duration of each use is assumed to be 0.58 minutes at four uses per day. The bidet seat functionality also features premisting and post-misting, plus automatic misting every eight hours. The NEOREST® WX toilet uses 0.8qpf for liquid and 1.2qpf for solids.

Over the building's ESL of 75 years, the  $\mathsf{NEOREST}^{\circledast}\,\mathsf{WX}$  toilet consumes 328,212 gallons of water, including from its 109,500 bidet seat uses, 273,750 liquid flushes, and 82,125 solid flushes. 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's Washlets are ecology-minded bidet seats that can save 50% of toilet paper consumption or more. Washlets deliver a concentrated stream of water for washing, which greatly facilitates cleaning. TOTO's wonder wave water stream delivery also enhances cleaning efficiency. As a result, not only is saving toilet paper an economic advantage, but less toilet paper use means less water, energy, and other toxic chemicals used upstream in the toilet paper production process. Additionally, only oneeighth of a gallon of water per minute is used in a maximum mode saving water over conventional bidet fixtures. Moreover, this fully eliminates the need for flushable wipes which create an added burden on toilet flushing, pipe clogs, and downstream water treatment at sanitation plants.

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
Information modules: Included (X)   Excluded (MND)*			(X) B4 Replacement	(X) C4 Disposal
			(X) B5 Refurbishment	
			(X) B6 Operational energy use	
			(X) B7 Operational water use	

## SM Single Score

Impacts per bidet seat	9.53E+01 mPts	3.07E+00 mPts	8.13E+02 mPts	7.13E-01 mPts
Materials or processes contributing >20% to total impacts in each life cycle stage	Printed wiring board production as well as other raw material extraction and preprocessing.	Transportation of the product to distribution centers and disposal of packaging.	Amount of electricity 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.

# TRACI v2.1 results per functional unit

LIFE CYCLE STAGE			PRODUCTION	CONSTRUCTION	USE	END OF LIFE
Ecological dam	ade					
	-9-					
Impact category	Unit					
Global warming	kg CO <sub>2</sub> eq	0	3.45E+02	5.37E+01	3.80E+03	1.87E+01
Ozone depletion	kg CFC-11 eq	0	5.42E-05	5.24E-06	2.95E-04	1.70E-06
Acidification	kg $SO_2$ eq	0	1.86E+00	7.72E-01	2.01E+01	4.99E-02
Eutrophication	kg N eq	0	2.67E-01	4.29E-02	3.79E+01	3.08E-02
Human health o	lamage Unit					
Smog	kg O₃ eq	0	2.01E+01	1.71E+01	2.17E+02	1.43E+00
Respiratory effects	kg PM <sub>2.5</sub> eq	0	4.01E-01	4.73E-02	1.99E+00	5.78E-03
Additional environmental information						
Impact category	Unit					
Carcinogenics	CTU <sub>h</sub>	0	3.61E-05	2.75E-08	2.00E-04	3.83E-08
Non corcinogonico	CTU	0	1205.04	1065.06	2 275 02	4 695 07

Non-carcinogenics         CTU <sub>h</sub> Image: 200 Degree of the system	Carcinogenics	CIU <sub>h</sub>		3.61E-05	2.75E-08	2.00E-04	3.83E-08
	Non-carcinogenics	CTU <sub>h</sub>	0	1.20E-04	1.96E-06	2.37E-03	4.68E-07
Fossil fuel depletion         MJ surplus         Image: 6         5.11E+02         9.74E+01         5.04E+03         1.66E+01	Ecotoxicity	CTU <sub>e</sub>	0	9.76E+02	2.57E+01	7.68E+03	3.97E+00
	Fossil fuel depletion	MJ surplus	0	5.11E+02	9.74E+01	5.04E+03	1.66E+01

#### LCA Background Report

Life Cycle Assessment of TOTO NEOREST® NX & WX Toilets, 2024; SimaPro Analyst 9.6; ecoinvent and Industry data 2.0 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 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 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.

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

EPD	LCA
<b>3rd-party reviewed</b>	S 🔊
Transparency F	Report (EPD)
3rd-party verified	S 🔊
Validity: 08/31/2024 – 08 TOTO – 20240831 – 00	
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.

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

Certified Environmental

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# Rating systems

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

# SUMMARY

Reference PCR Part B: Re

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

**Functional unit** 

One dual flush toilet in an average residential environment, with an electronic bidet seat, over the estimated service life of the building

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

TRACI 2.1; SimaPro Analyst 9.6; ecoinvent and Industry data 2.0 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

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EPD additional content

# **EPD** additional content

Sustainable Minds<sup>®</sup>

ansparency Report (EPD)

**NEOREST® WX Wall-Hung Toilet with In-Wall Tank System** 

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LCA results & interpretation
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#### Data

**Background** This product-specific plant-specific declaration was created by collecting production data from TOTO's plants in Kokura, Japan and Shanghai, China. All unit processes were modeled using primary data. Secondary data sources include those available in ecoinvent, US-EI 2.2, and Industry data 2.0 databases. Literature data was used to fill any data gaps to complete the inventory.

Allocation Annual resources were reported for the dedicated washlet production line, and annual resources used for ceramic and in-wall tank support system production were allocated by mass. Since there are no other coproducts, no co-product allocation or allocation of multi-input processes were required. The model used in this report ensures that the sum of the allocated inputs and outputs of a unit process shall be equal to the inputs and outputs of the unit process before allocation. This means that no double counting or omissions of inputs or outputs through allocation is occurring.

**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. No known flows are deliberately excluded from this declaration, and no substances considered to be hazardous or toxic according to the TRI or local regulations are present in the products. Therefore, these criteria have been met. Biogenic carbon is included in reported results.

#### 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
Electricity mix 2021/US US-El U	US-EI 2.2	SimaPro Analyst 9.6	United States	By mass
Treatment, sewage, from residence, to wastewater treatment, class 2	US-EI 2.2	SimaPro Analyst 9.6	United States	By mass
Steel, chromium steel 18/8 (GLO)I market for steel, chromium steel 18/8	ecoinvent v3.10	SimaPro Analyst 9.6	Global	By mass

#### 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 w/ final product
- Energy consumption in warehouses, distribution centers, and retail facilities during the course of transport to the final customer

#### **Flow diagram**



# Scenarios and additional technical information

#### Distribution [A4]

Transportation leg	Mode	Value	Unit
	Road transport in Japan	689	km
Manufacturing facility (Japan)	Sea transport	36,608	km
to GA, USA	Rail transport from port to GA, USA	2,191	km
	Road transport in China	34.6	km
Manufacturing facility (China) to GA, USA	Sea transport	11,234	km
	Rail transport from port to GA, USA	2,191	km
Transport to final users	Road transport (83%)	1,421	km
	Rail transport (17%)	2,042	km

#### Installation [A5]

Packaging waste from installation is assumed to be transported 100km to recycling (80.9%), landfill (15.4%), or incineration (3.7%).

#### End of life [C1-C4]

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

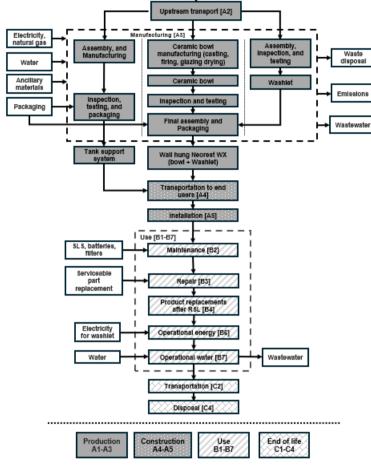
However, it should be noted that many of the associated metal and plastic components follow the waste scenarios as listed in the table below. TOTO ceramic materials can be recycled as aggregate in several applications, although this is not currently common practice. Secondary materials, including shredded 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
Stainless steel, brass	70.50%	29.50%
Corrugated board	66.50%	33.50%
PP, PE, ABS	15.00%	85.00%

#### **Product information**

Product code	ASTM or ANSI product specification
	Meets and exceeds: ASME A112.19.2/CSA B45.1, ASME A112.4.2, UL 1431, CSA C22.2 #68
CWT9538CEMFG with WT175MA CWT9548CEMFX with WT175MA	Code compliance with UPC, IPC, NSPC, NPC Canada, and others
	Certified with IAPMO, EPA

WaterSense



#### Major assumptions and limitations

- Assumptions for upstream processing operations regarding each purchased component were developed via suggestions from TOTO personnel and suppliers.
- It was assumed that the same manufacturing resources were consumed for the assembly of washlets (for all models) in all TOTO facilities.
- Generic data sets used for material inputs, transportation, and waste processing are considered good quality, but actual impacts from material suppliers, transport carriers, and local waste processing may vary.

#### 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.

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

LCIA results, r													
Parameter	A1-A3	A4	A5	B1, B5	B2	В3	B4	В6	B7	C1, C3	C2	C4	Total
LCIA results Smog (kg O <sub>3</sub>	2.01E+01	1.69E+01	1.87E-01	0	9.58E-01	3.04E+00	1.06E+02	5.30E+01	5.36E+01	0	1.33E+00	1.03E-01	2.56E+02
eq) Ozone depletion (kg	5.42E-05	5.15E-06	3.31E-08	0	2.67E-07	2.00E-06	8.34E-05	6.44E-05	1.87E-06	0	1.33E-07	7.65E-09	1.73E-04
CFC-11 eq)	5.42E-05	5.15E-06	3.31E-08	0	2.67E-07	2.00E-06	8.34E-05	6.44E-05	1.87E-06	0	1.33E-07	7.65E-09	1.73E-04
Eutrophication (kg N eq)	2.67E-01	4.41E-02	5.20E-04	0	2.72E-02	2.01E-02	1.32E+00	4.97E-01	1.18E+00	0	3.76E-04	3.49E-03	3.38E+00
Acidification (kg SO <sub>2</sub> eq)	1.86E+00	8.95E-01	9.83E-04	0	2.81E-02	1.35E-01	7.80E+00	6.10E+00	1.99E-01	0	3.67E-03	5.74E-04	1.62E+01
Respiratory effects (kg PM2.5 eq)	4.01E-01	5.42E-02	1.11E-04	0	4.81E-03	2.44E-02	1.02E+00	3.58E-01	1.03E-02	0	4.28E-04	5.88E-05	1.68E+00
Global warming (kg CO2 eq)	3.45E+02	5.73E+01	5.05E-01	0	3.48E+00	3.27E+01	8.75E+02	1.55E+03	3.19E+01	0	6.64E-01	1.65E+00	2.71E+03
Additional envir Fossil fuel depletion (MJ	5.11E+02	1.06E+02	3.21E-01	0	2.91E+00	7.51E+01	1.09E+03	1.98E+03	3.67E+01	0	1.28E+00	1.07E-01	3.47E+03
surplus) Ecotoxicity											8.55E-		
(CTUe) Carcinogenics	9.76E+02	3.10E+01	5.87E-02	0	7.49E+01	2.78E+01	1.89E+03	1.16E+02	1.50E+02		02	5.37E-01	2.73E+03
(CTUh)	3.61E-05	2.85E-08	4.19E-10	0	2.64E-07	1.67E-07	1.14E-05	2.95E-06	3.14E-06	0	1.90E-10	3.24E-09	2.08E-05
carcinogenics (CTUh)	1.20E-04	2.21E-06	1.05E-08	0	3.33E-06	2.94E-06	2.46E-04	4.81E-05	6.39E-05	0	3.17E-08	1.97E-08	4.26E-04
Resource use in Renewable primary energy used as energy carrier (fuel)	dicators 4.86E+02	1.14E+00	3.99E-01	0	1.33E+02	4.47E+01	1.34E+03	2.40E+03	1.59E+03	0	1.77E-01	2.52E-01	6.00E+03
(MJ, LHV) Renewable primary resources with energy content used as material (MJ, LHV)	1.82E+00	0	0	0	0	0	5.00E+00	0	0	0	0	0	6.82E+00
Total use of renewable primary resources with energy content (MJ, LHV)	4.88E+02	1.14E+00	3.99E-01	0	1.33E+02	4.47E+01	1.35E+03	2.40E+03	1.59E+03	0	1.77E-01	2.52E-01	6.01E+03
Non- renewable primary resources used as an energy carrier (fuel) (MJ, LHV)	4.54E+03	6.58E+02	2.58E+01	0	4.40E+01	8.84E+02	1.47E+04	2.87E+04	1.57E+04	0	1.10E+02	7.28E+00	6.54E+04
Non- renewable primary resources with energy content used as material (MJ, LHV)	4.54E+02	0	0	0	4.95E-01	3.74E+02	1.25E+03	0	0	0	0	0	2.08E+03
Total use of non- renewable primary resources with energy content (MJ,	5.00E+03	6.58E+02	2.58E+01	0	4.45E+01	1.26E+03	1.59E+04	2.87E+04	1.57E+04	0	1.10E+02	7.28E+00	6.74E+04
LHV) Secondary materials (kg)	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewable secondary fuels (MJ,	0	0	0	0	0	0	0	0	0	0	0	0	0
LHV) Non- renewable secondary	0	0	0	0	0	0	0	0	0	0	0	0	0
fuels (MJ, LHV) Recovered													
energy (MJ, LHV) Use of net fresh water	0 1.18E+03	0 2.28E+00	0 1.06E+00	0	0 1.24E+01	0 1.57E+02	0 3.24E+03	0 3.43E+01	0 1.42E+03	0	0 1.85E-02	0 4.39E-03	0 6.05E+03
resources (m <sup>3</sup> ) Abiotic depletion potential, fossil (MJ,	4.68E+03	6.55E+02	2.53E+01	0	4.10E+01	1.21E+03	1.51E+04	1.98E+04		0	1.10E+02	6.36E+00	5.25E+04
LHV) Output flows an Hazardous													
waste disposed (kg) Non-	1.38E-03	0	0	0	0	0	3.78E-03	0	0	0	0	0	5.16E-03
hazardous waste disposed (kg) High-level	8.78E-05	0	1.23E+00	0	2.81E-01	1.04E+01	1.36E+02	0	0	0	0	4.82E+01	1.96E+02
radioactive waste, conditioned, to final repository (kg)	1.34E-03	1.01E-05	1.94E-06	0	1.56E-05	2.09E-04	3.74E-03	2.60E-02	1.41E-02	0	1.91E-06	2.70E-06	4.54E-02
Intermediate- and low-level radioactive waste, conditioned, to final repository (kg)	4.40E-03	2.24E-05	4.19E-06	0	3.41E-05	5.82E-04	1.22E-02	5.79E-02	3.14E-02	0	4.27E-06	6.03E-06	1.07E-01
Components for re-use (kg)	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling (kg)	2.15E+01	0	6.36E+00	0	0	0	7.66E+01	0	0	0	0	0	1.04E+02
Materials for energy	0	0	3.01E-01	0	0	0	8.28E-01	0	0	0	0	0	1.13E+00
recovery (kg) Exported	0	0	0	0	0	0	0	0	0	0	0	0	0
energy (MJ, LHV) Carbon emission			0	J	U	U	U	U	0	J	5	J	U
Biogenic Carbon Removal from Product (kg	ns and remo	vals 0	0	0	0	0	0	0	0	0	0	0	0
CO <sub>2</sub> ) Biogenic Carbon Emission from Product (kg CO <sub>2</sub> )	0	0	0	0	0	0	0	0	0	0	0	0	0
Biogenic Carbon Removal from Packaging (kg CO <sub>2</sub> )	1.46E+01	0	0	0	0	0	4.03E+01	0	0	0	0	0	5.49E+01
Biogenic Carbon Emission from Packaging (kg CO <sub>2</sub> )	0	0	1.22E+01	0	0	0	3.37E+01	0	0	0	0	5.91E-02	4.60E+01
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes (kg CO <sub>2</sub> )	0	0	5.40E-01	0	0	0	1.49E+00	0	0	0	0	0	2.03E+00
Co2) Calcination Carbon Emissions (kg CO2)	0	0	0	0	0	0	0	0	0	0	0	0	0
Carbonation Carbon Removals (kg	0	0	0	0	0	0	0	0	0	0	0	0	0
CO <sub>2</sub> ) Carbon Emissions from Combustion of Waste from Renewable and Non- Renewable Sources used in Production	0	0	0	0	0	0	0	0	0	0	0	0	0
Sources used													



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

EPD	LCA
<b>3rd-party reviewed</b>	SE NSF
Transparency	Report (EPD)
3rd-party verified	<b>S</b>
Validity: 08/31/2024 – 0 TOTO – 20240831 – 00	
MATERIAL HEALTH	Material evaluation
Self-declared	0

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

#### NSE International

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



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 dual flush toilet in an average residential environment, with an electronic bidet seat. over the estimated service life of the building

#### LCIA methodology: LCA software: LCI database

TRACI 2.1: SimaPro Analyst 9.6: ecoinvent and Industry data 2.0 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

#### Contact us

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SM Transparency Catalog 🕨 TOTO Showroom 🕨 NEOREST® WX Wall-Hung Toilet with In-Wall Tank System

# LCA & material health results & interpretation

**NEOREST® WX Wall-Hung Toilet with In-Wall Tank System** 

LCA results & interpretation EPD addition

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.



Click the label to see the full declaration.





#### 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.

#### 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

TOTO's NEOREST Collection offers the most innovative, design-forward array of products available with elegant designs drawn from nature, cutting-edge technology, flawless performance, and extraordinary comfort. Using a gentle stream of warm-aerated water, its WASHLET® cleans the user better and more thoroughly than the paper alternative, thereby reducing harmful environmental waste products. Its cleaning functions like PREMIST® and EWATER+® reduce the frequency of cleaning and the need for harsh chemicals that can be harmful to our ecosystem.

PREMIST<sup>®</sup> sprays the bowl before use, and EWATER+<sup>®</sup> sprays the bowl after each use, preventing waste buildup to keep the bowl clean. It offers a refreshing, comfortable way to cleanse. The integrated technology helps keep the toilet bowl clean without harsh chemicals, which benefits the environment.

See how we make it greener

#### References

#### Declare

TOTO USA, Declare label for NEOREST® WX Wall-Hung Toilets, 1.2 GPF / 0.8 GPF

#### 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**

Credit value option	S	1 product each
🔮 1. Reporting	O 2. Optimization	3. Supply Chain Optimization
		n   v4.1 - LEED v4.1
Materials and Material Ing		
Credit value option	S	1 product each
🔮 1. Reporting	2. Optimization	3. Supply Chain Optimization
	ng Standard® I Features	
	Features	
Air and Mind	<b>Features</b>	
Air and Minc X07 Materials T X08 Materials C Collaborative Criteria	Transparency Dptimization	
Air and Mind X07 Materials T X08 Materials C Collaborative Criteria	I Features Transparency Optimization e for High Perform erial Health Discle	nance Schools National



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EPD	LCA				
3rd-party reviewed	🛇 🕓				
Transparency Report (EPD)					
3rd-party verified	S 🔊				
Validity: 08/31/2024 – 08. TOTO – 20240831 – 003	/30/2029				

MATERIAL HEALTH	Materia evaluatio
Self-declared	<

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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 dual flush toilet in an average residential environment, with an electronic bidet seat, over the estimated service life of the building

LCIA methodology; LCA software; LCI database TRACI 2.1; SimaPro Analyst 9.6; ecoinvent and Industry data 2.0 databases

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#### Public LCA

LCA background report of TOTO NEOREST® NX & WX Toilets, 2024 **TOTO USA** 1155 Southern Road Morrow, GA 30260

Contact us

SM Transparency Catalog 
TOTO Showroom 
NEOREST® WX Wall-Hung Toilet with In-Wall Tank System

# How we make it greener

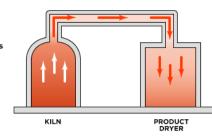
**NEOREST® WX Wall-Hung Toilet with In-Wall Tank System** 

#### Expand all

### **PRODUCTION**



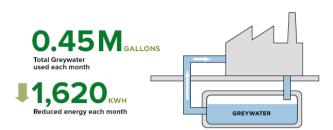




Waste heat from the kilns is routed to the product dryer. This reduces 15% natural gas consumption.



TOTO is taking additional steps at its other facilities outside of Japan to reduce potential environmental impacts. For example, TOTO's Morrow plant matches 100% of its electricity usage through Georgia Power Simple Solar and helps grow solar energy. 14 million kilowatt hours of green energy helps reduce 18.5 million pounds of carbon dioxide equivalents each year.



In another example of TOTO's energy savings outside of Japan, 0.45 million gallons per month of greywater is used in TOTO Morrow's operations. 1,620 of kWh in energy per month is reduced due to less potable water.









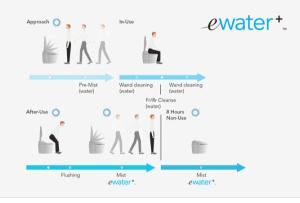
UPS parcel shipments are carbon neutral. TOTO is a registered SmartWay® Transport Partner.

# 🖯 USE



#### EWATER+

After each flush, EWATER+ mists on the wand and toilet bowl, reducing the need for harsh cleaning chemicals.



#### Cut down on toilet paper

Introducing an electronic bidet seat can reduce the need for toilet paper or eliminate it entirely, thereby avoiding the emissions associated with toilet paper production.

# GLOBAL INITIATIVES





# **CLIMATE**

TOTO's recognition on the **CDP A List** underscores its leadership in environmental transparency and effectiveness. As a top performer among over 23,000 companies in the CDP's premier environmental disclosure system in 2023, TOTO stands out by ranking in the elite 1.74% with an A rating. This highlights TOTO's dedication to reducing carbon emissions and advancing water conservation, affirming its substantial role in global environmental stewardship and commitment to high ecological standards.

As part of TOTO's initiative to alleviate water stress through the widespread adoption of water-saving products, they avoided **1.00** billion  $m^3$  of water emissions during product use when compared with the case where products from 2005 continued to be used.



#### DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

TOTO's strict environmental objectives, aligned with the SBTi's "1.5°C target", highlight its proactive strategy to limit global warming

in accordance with the Paris Agreement's most ambitious standards. These objectives are integral to TOTO's broader plan to reach carbon neutrality by 2050.

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



Transparency Report (EPD)

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**3rd-party verified** 

Validity: 08/31/2024 – 08/30/2029 TOTO – 20240831 – 003

MATERIAL HEALTH	Materia evaluatio
Self-declared	<

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Ecoform, LLC 11903 Black Road Knoxville, TN 37932 (865) 850-1883 www.ecoform.com

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

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