TOTO®

Drake® II

CST454CUFG – 1G®
CST454CEFG – 1.28gpf

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

Performance Dashboard

Features & functionality

Tornado Flush™ flushing system

Powerful siphon jet, quiet flush every time

Sleek, high profile two-piece design

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

Universal Height

12” Rough-in

Visit TOTO for more product specifications for:

CST454CUFG, CST454CUFRG, CST454CUF

CST454CEFG, CST454CEFRG, CST454CEF

CSI MasterFormat™ #22 41 13.13

Environmental performance

Improved by:

Lower water use

50% of all electricity from renewable resources

Kiln exhaust heat reused to power product dryers

Upcycling of post industrial porcelain waste into ceramic floor tile

Certifications & rating systems:

WaterSense® certified

Declare™ label

CALGreen® compliant

See LCA results & interpretation

WATER·PEOPLE·PLANET SMART FACT

TORNADO® FLUSH

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

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

SM Transparency Report™ + Material Health Overview

VERIFICATION	LCA
3rd party verified	✓ NSF
Self-declared	
	Transparency Report
Certified	✓ NSF
Self-declared	
	Material evaluation
3rd party verified	
Self-declared	✓

Validity: 10/18/14 – 10/18/17
TOT – 10/18/14 – 009

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LCA results & interpretation

Drake® II CST454CUFG & CST454CEFG

Life cycle assessment | Material health

Scope and summary

(•) Cradle to grave ( ) Cradle to gate with options ( ) Cradle to gate

Functional unit

One toilet in a U.S. household that functions for 10 years. The period of 10 years is modeled as the period of application based on the average economical lifespan for residential applications. The technical lifespan is longer. The economical lifespan of commercial applications can be longer or lower due to aesthetic replacements or more intense use. The implication is that the LCA model assumes that the application ends at year 10 and that the materials will be treated in an end-of-life scenario.

Default use phase scenario

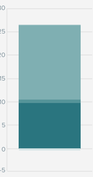
Drake II 1G CST454CUFG: 10 years of service in a U.S. household with an average of 1.0 gallon/use and 5.1 flushes/day and 2.6 people resulting in approximately 48,399 gallons

Drake II 1.28gpf CST454CEFG: 10 years of service in a U.S. household with an average of 1.28 gallon/use and 5.1 flushes/day and 2.6 people resulting in approximately 61,951 gallons

Material composition greater than 1% by weight

PART	MATERIAL	AVG. % WT.
Ceramic	Ceramic	79%
Packaging	Corrugated board	14%
Seat	Polypropylene	5%
	Other	2%

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



LIFECYCLE STAGE	AVG. MPTS/FUNC UNIT
Production	9.77
Construction	0.70
Use	15.89
End of life	0.16
Recovery	-0.51

Total impacts = 26.01 mPts per 10 years of service

A variation of 10 to 20% | A variation greater than 20%

What's causing the greatest impacts

All lifecycle stages

The use stage and the production stage are equally important and dominate the results for all impact categories.

The impact of the use stage is mostly due to the embedded energy arising from acquisition, treatment and distribution of the water used during the operation of the product (40-60%). The production stage itself is relevant as it shows major contributions throughout. It has the most significant contributions to fossil fuel depletion (mostly defined by crude oil, hard coal, and natural gas extraction activities as well as polypropylene production and processing), non-carcinogenics (mostly defined by zinc production and processing as well as the natural gas used at the kiln and the disposal of hard coal ash) and ecotoxicity (mainly caused by electricity production and the disposal of slags and hard coal ash). The contributions covered under the construction/installation stage are mostly associated with the product delivery to the market and the disposal of packaging materials, mainly corrugated cardboard. The recovery stage includes recycling benefits by preventing the need to produce primary materials. Recycling is a relevant factor for some of the impact categories, offsetting a portion of the impacts caused by production. Additionally, the delivery of the product to the construction/installation site as well as the processes for dismantling the product and final waste treatment during the end of life stage are slightly relevant in the majority of the impact categories.

Production stage

The ceramic parts dominate the material contribution except for non-carcinogenics and eutrophication.

Zinc and stainless steel parts together with corrugated board and turning brass process have major contributions to the non-carcinogenics and eutrophication impact categories. In addition, the injection molding process has a significant contribution to the ozone depletion impact category. The remaining parts and processes contribute between 2% and 11% of the overall impacts in the rest of the categories.

Sensitivity analysis

Deviations are throughout, mainly due to the variation in the use stage. Drake CST454CUFG consumes approximately 22% less water than Drake CST454CEFG during the use stage. Other variations in the recovery stage are due to the variation in the materials content of these two products.

Multi-product weighted average

Results represent the weighted average using production volumes for the products covered. Variations of specific products for differences of 10-20% against the average are indicated in purple ; differences greater than 20% are indicated in red. A difference greater than 10% is considered significant.

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
- 50% electricity from renewable energy
- 100% of post-industrial ceramic waste is recycled

See how we make it greener

LCA results

LIFECYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE	RECOVERY
Information modules: Included | Excluded*	**A1 Raw materials**	**A4 Transportation/ Delivery**	**B1 Use**	**C1 Deconstruction/ Demolition**	**D1 Recycling**
*Installation and deconstruction/demolition are mostly manual. The toilets and/or urinals should not need repair, maintenance or replacement during the modeled life time.	**A2 Transportation**	**A5 Construction/ Installation**	**B2 Maintenance**	**C2 Transportation**	D2 Recovery
Operational energy use is irrelevant to the life cycle of the modeled product.	**A3 Manufacturing**		**B3 Repair**	**C3 Waste processing**	D3 Reuse
Reuse and energy recovery are not modeled for toilets and/or urinals.			**B4 Replacement**	**C4 Disposal**	
			B5 Refurbishment		
			B6 Operational energy use		
			B7 Operational water use		
					

SM 2013 Learn about SM Single Score results

Impacts per 10 years of service	9.77 mPts	0.70 mPts	15.89 mPts	0.16 mPts	-0.51 mPts
Materials or processes contributing >20% to total impacts in each lifecycle stage	Ceramic parts production as well as well zinc and brass parts together with zinc turning process.	Transportation of the product to installation site or consumer and disposal of packaging.	Volume of water use during the operation of the product and the embedded energy use (such as electricity) in the water used.	Transport to waste processing, waste processing and disposal of material flows transported to a landfill.	Plastic and metal components' recycling processes.

TRACI

A variation of 10 to 20% | A variation greater than 20%

LIFECYCLE STAGE	PRODUCTION	CONSTRUCTION	USE	END OF LIFE	RECOVERY
Ecological damage					
Impact Category / Unit					
Acidification kg SO_2 eq	9.85E-011	5.37E-02	1.38E+000	7.41E-033	-4.36E-022
Ecotoxicity CTU_e	1.60E+02	1.70E+01	1.27E+02	2.13E+00	-4.29E+00
Eutrophication kg N eq	7.23E-02	7.77E-03	1.16E-01	6.58E-04	-1.05E-02
Global warming kg CO_2 eq	1.13E+02	1.07E+01	2.05E+02	4.74E+00	5.14E+00
Ozone depletion kg CFC-11 eq	6.41E-06	1.26E-08	8.66E-066	1.38E-07	-4.10E-07
Human health damage					
Impact Category / Unit					
Carcinogenics CTU_h	1.58E-06	9.27E-08	4.34E-06	2.19E-08	-1.82E-07
Non-carcinogenics CTU_h	2.22E-05	8.91E-07	1.93E-05	1.42E-07	-1.21E-06
Respiratory effects kg $PM_{2.5}$ eq	6.72E-02	1.02E-03	9.16E-02	5.64E-04	-5.03E-03
Smog kg O_3 eq	6.53E+00	1.55E+00	9.56E+00	2.00E-01	-5.94E-01
Resources depletion					
Impact Category / Unit					
Fossil fuel depletion MJ surplus	2.21E+02	1.21E+01	1.39E+02	2.30E+00	-6.81E+00

References

LCA Background Report
TOTO Sanitary Ceramic Products LCA Background Report (public version), TOTO 2014

SM Transparency Report Framework
Part A: Part A: LCA Calculation Rules and Background Report Requirements (Draft V2) (based on ISO14040-44, ISO14025 and EN15804)
Part B: Product Group Definition – Residential Toilets

SM Transparency Reports enable purchasers and users to compare the environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. SM Transparency Reports of products that comply with the same Product Group Definition (PGD) 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 defined in ISO 14025 Section 6.7.2, 'Requirements for Comparability' are satisfied.

Rating systems

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

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

SM Transparency Report product credit values:

( ) LCA self-declared, Report self-declared	0 product
( ) LCA verified, Report self-declared	1/4 product
(•) LCA verified, Report certified	1 product

Green Globes for New Construction and Sustainable Interiors
NC 3.5.1.2 Path B: Prescriptive Path from Building Core | **NC** 3.5.2.2 and **SI** 4.1.1 Path B: Prescriptive Path for Interior Fit-outs

SM Transparency Report™ + Material Health Overview

VERIFICATION	LCA
3rd party verified	(•) NR
Self-declared	
Transparency Report	
Certified	(•) NR
Self-declared	
Material evaluation	
3rd party verified	
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LCA & material health results & interpretation

Drake® II CST454CUFG & CST454CEFG

Life cycle assessment | Material health

Evaluation program: 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

Content inventory: All ingredients identified by name and CAS #
Inventory threshold: 100 ppm

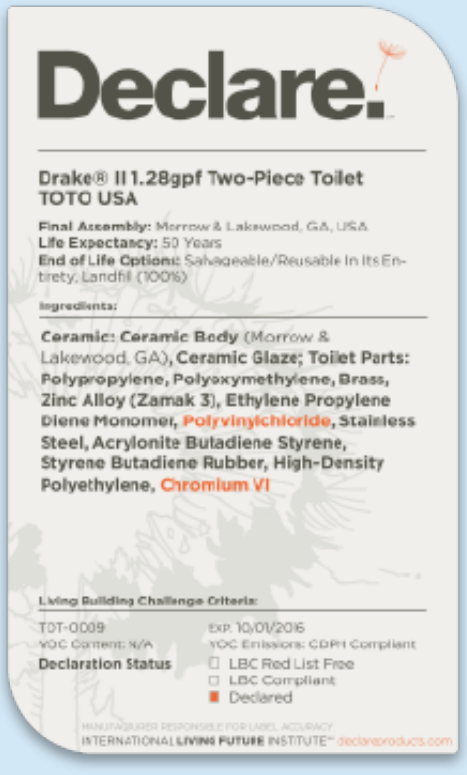
Declaration status:

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 Compliant
- Declared

Drake II 1G

Drake II 1.28gpf



Click on each label to see the full declaration

How this rating was achieved

Declare level

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

What's in the product and why

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

Red List materials

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

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

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

Where it goes at the end of its life

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

How we're making it healthier

Goals and plans for improvement:

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

See how we make it greener

References

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

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

Rating systems

LEED v4, Building product disclosure and optimization
Material Ingredients

Credit values:

☑ Option 1. Material ingredient reporting	1 product
○ Option 2. Material ingredient optimization	1 product

Living Building Challenge
Living Building Challenge 3.0

Materials petal:

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

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How we make it greener

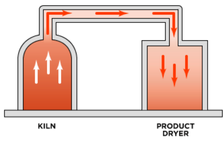
Drake® II CST454CUFG & CST454CEFG

Collapse all

See LCA results by lifecycle stage

PRODUCTION

15% Less Natural Gas



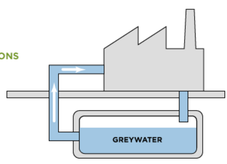
Waste heat from the kilns is routed to the product dryer. This reduces 15% natural gas consumption.

= **6M** KWH Total Green Energy = **9M** LBS/YEAR Reduced Carbon

50% of the electricity that TOTO uses is based on renewable energy generation. It's 6 million kilowatt hours of green energy, which means over 9 million pounds of carbon reduced each year.

0.45M GALLONS
Total Greywater used each month

1,620 KWH
Reduced energy each month



0.45 million gallons per month of greywater is used in TOTO's operations. 1,620 of kwh in energy is reduced due to less potable water.

65% of all cardboard used is 100% recycled content.

CONSTRUCTION

= **INCREASES** Fill rate of a trailer = **50%** Reduced transportation cost

One-piece toilets are shipped with every other toilet upside down, increasing the fill rate of a truck trailer and cutting transportation cost in half.

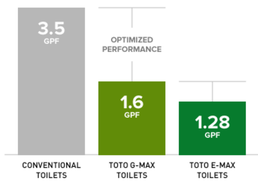
CARBON NEUTRAL SHIPMENT* UPS

SmartWay™ Transport Partner
Getting There With Cleaner Air

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

USE

The dual flush system reduces water in the use phase.



20% Additional Water Saving

Utilizing the same proven engineering as our legendary 1.6 GPF G-Max flushing system, the 1.28 GPF E-Max reinforces TOTO's performance reputation while offering an additional water savings of 20%.

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