Declaration Owner
Zurn
511 W Freshwater Way
Milwaukee, WI 53204
United States
www.zurn.com

Product
Zurn Vitreous China Wall Hung Lavatories

Functional Unit
One commercial Lavatories in an average commercial environment, with a Reference Service Life of 20 years in a building with an Estimated Service Life of 75 years

EPD Number and Period of Validity
SCS-EPD-10673
EPD Valid August 21, 2026 through August 20, 2031

Product Category Rule
SM Part A: LCA calculation rules and report requirements, Version 4.0 | Feb 2026.

SM Part B: Product Group Definition | Commercial Lavatories | Part B #24-001, October 7, 2024.

Program Operator
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Address:	511 W Freshwater Way Milwaukee, WI 53204
Declaration Number:	SCS-EPD-10673
Declaration Validity Period:	EPD Valid August 21, 2026 through August 20, 2031
Program Operator:	SCS Global Services
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide
LCA Practitioner:	Millicent Gabriel, SCS Consulting Services
LCA Software and LCI database:	OpenLCA 2.5.0 software and the Ecoinvent v3.12 database
Product's Intended Application:	For use with plumbing systems to deliver and drain water.
Product RSL:	20 Years (ESL 75 Years)
Markets of Applicability:	North America
EPD Type:	Product-Specific
EPD Scope:	Cradle-to-Grave
LCIA Method and Version:	TRACI 2.2 and IPCC AR6
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	☐ internal ☒external
LCA Reviewer:	Lindita Bushi Lindita Bushi, PhD. Athena Sustainable Materials Institute.
Product Category Rule:	ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services SM Part B: Product Group Definition | Commercial Lavatories | Part B #24-001, October 7, 2024. SM Part A: LCA calculation rules and report requirements, Version 4.0 | Feb 2026.
PCR Review conducted by:	Part A PCR Review conducted by: Thomas P. Gloria, PhD., Chair; Jack Geibig; Beth Cassese Part B PCR Review conducted by: Jim Mellentine, Chair; Fernando Fernandez; Gary Soe; Kyle Thompson
Independent verification of the declaration and data, according to ISO 14025, ISO 21930 and the PCR	☐ internal ☒external
EPD Verifier:	Lindita Bushi Lindita Bushi, PhD. Athena Sustainable Materials Institute.
Declaration Contents:	

Disclaimers: *This EPD conforms to ISO 14025, 14040, 14044, and ISO 21930.*

Scope of Results Reported: *The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.*

Accuracy of Results: *Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.*

Comparability: *The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.*

In accordance with ISO 21930:2017, EPDs are comparable only if they comply with the core PCR, use the same sub-category PCR where applicable, include all relevant information modules and are based on equivalent scenarios with respect to the context of construction works. The owner of the declaration shall be liable for the underlying information and evidence; SCS shall not be liable with respect to manufacturer information, life cycle assessment data, and evidence supplied or made available to SCS.

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1. ABOUT Zurn

Zurn Elkay Water Solutions supplies the industry's widest range of clean water solutions for drinking water, hygiene, and sustainable water management. Headquartered in Milwaukee, Wisconsin, Zurn Elkay Water Solutions works with customers around the globe to deliver products and systems that enhance and ensure water quality, safety, hygiene, flow control, and conservation.

2. PRODUCT

2.1 Product Description

This EPD covers two lines of Zurn's vitreous china wall hung lavatories, ADA compliant sinks for commercial new construction and retrofit applications. These fixtures belong to the CSI MasterFormat® # 22 42 16.13 / 22 42 33 and UNSPSC code 30180000. Each of the two lines are available as variants with a single faucet hole (4" or 8" center faucet hole). Product specifications are presented in Table 1 below and the functional unit and reference flows for the products included in this study are summarized in Table 2 below.

Table 1. *Specification of Zurn vitreous china lavatories included in this EPD.*

Specification	Z5341 / Z5344 / Z5348	Z5361 / Z5364 / Z5368
Material	Vitreous China	Vitreous China
Mounting Type	Wall Hung	Wall Hung
ADA Compliant	Yes	Yes
Compliance	ASME A112.19.2 / CSA B45.1	ASME A112.19.2 / CSA B45.1
Faucet holes	single, 4", or 8" centers, respectfully	single, 4", or 8" centers, respectfully
Width	457 mm (18 in)	457 mm (18 in)
Length	508 mm (20 in)	508 mm (20 in)

Table 2. *Zurn vitreous china lavatories represented in this EPD.*

Name	Unit	Z5341 / Z5344 / Z5348	Z5361 / Z5364 / Z5368
Functional Unit	One (1) commercial Lavatory used in an average commercial environment over the estimated service life of the building		
Mass	kg	18.4	20.4

Figure 1. *Z5341, Z5344, and Z5348 Wall hung lavatory*

Figure 2. *Z5361, Z5364, and Z5368 Wall hung lavatory*

2.2 Flow Diagram

Figure 3. *Flow diagram for the Zurn vitreous china lavatories.*

2.3 Application

Zurn vitreous china lavatories are designed for use with plumbing systems to deliver and drain water. The vitreous china lavatories are installed in commercial, industrial, and institutional markets worldwide.

2.4 Declaration of Methodological Framework

This EPD is based on an LCA following the attributional approach. The scope of the EPD is cradle-to-grave, including raw material extraction and processing; raw material transportation; product manufacture, including packaging; product distribution; installation; use; and end-of-life.

Manufacturing resource use was allocated on a unit basis. Impacts from transportation were allocated based on the mass of material and distance transported.

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No known flows were deliberately excluded from this EPD.

2.5 Properties of Declared Product as Delivered

Zurn vitreous china lavatories are delivered by truck to the installation site. The total nominal weight of product with packaging delivered is 18.4 kg (19.5 kg with packaging and hardware) for the Z5341 / Z5344 / Z5348 variants and 20.4 kg (21.6 kg with packaging and hardware) for the Z5361 / Z5364 / Z5368 variants.

2.6 Material Composition

The main product materials for the average product are presented in Table 3. Product materials were reviewed for the presence of any toxic or hazardous chemicals. Based on a review of the product components provided by the manufacturer, no regulated chemicals were identified in the product or product components.

Table 3. *Zurn vitreous china lavatories material components.*

Product	Z5341 / Z5344 / Z5348		Z5361 / Z5364 / Z5368	
Component Group	**Mass (kg)**	**% Mass**	**Mass (kg)**	**% Mass**
Kaolin	3.60	19.6%	4.00	19.7%
Feldspar powder	4.50	24.5%	5.00	24.6%
Washed Clay	1.98	10.8%	2.20	10.8%
White Clay	1.80	9.8%	2.00	9.8%
Quartz	3.96	21.6%	4.40	21.6%
Calcite	0.540	2.9%	0.600	2.9%
Zirconium silicate	0.720	3.9%	0.800	3.9%
Wollastonite	0.900	4.9%	1.00	4.9%
Iron bracket	0.350	1.9%	0.350	1.7%
Product Total	**18.4**	**100%**	**20.4**	**100%**
Packaging	**Mass (kg)**	**% Mass**	**Mass (kg)**	**% Mass**
Cardboard	1.10	100%	1.20	100%
Packaging Total	**1.10**	**100%**	**1.20**	**100%**

2.7 Manufacturing

The Zurn vitreous china lavatories are manufactured in Tangshan City, China. Raw materials, including feldspar, kaolin, clay, quartz, and other minerals are mixed with water and ground thoroughly. The blend is cast in plaster molds and then dried before a glazing process. After glazing, the fixture is sent for drying and firing. The final products are then inspected, sorted, and packaged for distribution. The manufacturer provided primary data for twelve months of data including production, resource use and electricity consumption, and waste generation at the facility.

2.8 Transportation

Transportation for the LCA model is estimated based on the supplier location and transport data provided by the manufacturer for transport from the component manufacturer (1st tier supplier) to the production facility. Transportation data for 2nd tier suppliers (material supplier to component manufacturer) are based on data embedded in the representative LCI datasets. Road transport is assumed to be by diesel truck and ocean transport is assumed to by container ship.

2.9 Installation

Installation of the product is included in the life cycle of the vitreous china lavatory products. Installation is completed using manual labor and does not require additional ancillary materials. Waste is generated from the disposal of the packaging material.

2.10 Packaging

Table 4. *Zurn vitreous china lavatories packaging components.*

Product	Z5341 / Z5344 / Z5348		Z5361 / Z5364 / Z5368	
Packaging	**Mass (kg)**	**% Mass**	**Mass (kg)**	**% Mass**
Cardboard	1.10	100%	1.20	100%
Packaging Total	**1.10**	**100%**	**1.20**	**100%**

2.11 Use Conditions

It is important to note that water use impacts are assigned to the device that controls water flow to avoid double counting (e.g., faucet), which is outside the scope of the Environmental Product Declaration. Modules B3 (Repair), B5 (Refurbishment), B6 (Operational Energy Use) and B7 (Operational Water Use) are also assumed to have no impacts as there are no resource use or waste outputs required in these modules.

Module B2 includes the impacts of maintenance. Typical maintenance includes daily cleaning with 10 mL of a 1% sodium lauryl sulfate solution for 260 days per year. The assumption is aligned with the Part B PCR. Relevant information for the maintenance (Module B2) over the RSL can be found in Section 4.3.

2.12 Product Reference Service Life and Building Estimated Service Life

A Reference Service Life of 20 years is used. The Part B PCR establishes an Estimated Service Life of the building to be 75 years, for use in the use phase modelling to fulfill the required performance and functionality over the construction works. The replacement summary for the vitreous china Lavatories is listed in Section 4.3.

2.13 Re-Use Phase

Re-use at end-of-life via collection and processing of vitreous china lavatories is possible but not widely available. It is assumed that no materials are recovered and processed for these purposes.

2.14 Disposal

It is assumed that the lavatory products covered in this EPD are disposed of in a landfill at end-of-life. Transportation assumes a 100-kilometer distance to disposal via diesel-powered truck.

3. LCA Calculation Rules

3.1 Functional Unit

The functional unit used in the study is one (1) commercial lavatory in an average commercial environment with a reference service life (RSL) of 20 years in a building with an estimated service life (ESL) of 75-years.

3.2 System Boundary

The scope of the EPD is cradle-to-grave, including raw material extraction and processing; raw material transportation; product manufacture, including packaging; product distribution; installation; use; and end-of-life.

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Table 5. *Zurn Vitreous china Lavatories system boundaries.*

Product			Construction Process		Use							End-of-life				Benefits and loads beyond the system boundary
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material extraction and processing	Transport to manufacturer	Manufacturing	Transport	Construction - installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery and/or recycling potential
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

X = Included in system boundary
MND = Module not declared

3.3 Product Specific Calculations for Use Phase (Modules B1-B7)

Zurn vitreous china lavatories are assumed to require daily cleaning with 10 mL of a 1% sodium lauryl sulfate solution for 260 days per year.

3.4 Estimates and Assumptions

- Specific data were not available on quartz in the product recipe. A secondary dataset for silica sand was used from the Ecoinvent database.
- Specific data were not available on calcite and wollastonite in the product recipe. Secondary datasets for calcium carbonate and limestone were used from the Ecoinvent database for these components, respectively.
- Transport of the manufacturing and installation waste was assumed to be 100 km.
- Product transport distribution was assumed to be 800 km by truck, consistent with the Part B PCR.
- Installation of the products was assumed to be manual, requiring no additional materials or energy use.
- Transport of the product at end-of-life to waste processing and disposal was assumed to be 100 km by truck.
- The Reference Service Life (RSL) of the products was modeled as 20 years.
- The Estimated Service Life (ESL) of the building construction works was assumed to be 75 years.
- The maintenance of the products was assumed to include daily cleaning with a cleaning solution of 10 ml of 1% sodium lauryl sulfate solution for vitreous china lavatories, performed 260 days per year.
- The use phase modules B1 (use), B3 (Repair), B5 (Refurbishment), B6 (Operational Energy Use) and B7 (Operational Water Use) were assumed to have no impacts, as there was no resource or energy use associated with these modules.
- The use phase modules B2 (Maintenance) and B4 (Replacement) were modeled for the building construction works ESL of 75 years.
- For the product end-of-life, disposal of product was assumed to 100% disposal in landfill, consistent with the Part B PCR.
- All transport included an empty return trip.

3.5 Cut-off Rules

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results.

3.6 Data Sources

Primary data were provided by Zurn for the manufacturing process in Tangshan City, China. The principal source of secondary LCI data is the Ecoinvent 3.12 database.

Table 6. *LCI datasets and associated databases used to model the Zurn vitreous china lavatories products.*

Component	Dataset	Data Source	Publication Date
Kaolin	kaolin production | kaolin | Cutoff, U - RoW	Ecoinvent v3.12	2025
Clay	market for clay | clay | Cutoff, U - RoW	Ecoinvent v3.12	2025
Feldspar	feldspar production | feldspar | Cutoff, S - RoW	Ecoinvent v3.12	2025
Quartz	silica sand production | silica sand | Cutoff, U - RoW	Ecoinvent v3.12	2025
Calcite	market for calcium carbonate, precipitated | calcium carbonate, precipitated | Cutoff, U - RoW	Ecoinvent v3.12	2025
Zirconium silicate	zirconium oxide production | zirconium oxide | Cutoff, U - RoW	Ecoinvent v3.12	2025
Wollastonite and Dolomite	limestone production, crushed, washed | limestone, crushed, washed | Cutoff, U - RoW	Ecoinvent v3.12	2025
Copper	bronze scrap, post-consumer, Recycled Content cut-off | bronze scrap, post-consumer | Cutoff, U - GLO	Ecoinvent v3.12	2025
	smelting of copper concentrate, sulfide ore | copper, anode | Cutoff, U - RoW	Ecoinvent v3.12	2025
	metal working, average for copper product manufacturing | metal working, average for copper product manufacturing | Cutoff, U - RoW	Ecoinvent v3.12	2025
Stainless Steel	steel production, chromium steel 18/8, hot rolled | steel, chromium steel 18/8, hot rolled | Cutoff, U - RoW	Ecoinvent v3.12	2025
	steel production, converter, low-alloyed | steel, low-alloyed | Cutoff, U - RoW	Ecoinvent v3.12	2025
	metal working, average for steel product manufacturing | metal working, average for steel product manufacturing | Cutoff, U - RoW	Ecoinvent v3.12	2025
Rubber	synthetic rubber production | synthetic rubber | Cutoff, U - RoW	Ecoinvent v3.12	2025
Packaging			
Corrugated	market for corrugated board box | corrugated board box | Cutoff, U - RoW	Ecoinvent v3.12	2025
Transport			
Truck	market for transport, freight, lorry 16-32 metric ton, EURO4 | transport, freight, lorry 16-32 metric ton, EURO4 | Cutoff, U - RoW	Ecoinvent v3.12	2025
Ship	market for transport, freight, sea, container ship | transport, freight, sea, container ship | Cutoff, U - GLO	Ecoinvent v3.12	2025
Manufacturing			
Plaster	stucco production | stucco | Cutoff, U - RoW	Ecoinvent v3.12	2025
Electricity	market for electricity, medium voltage | electricity, medium voltage | Cutoff, U - CN-NCGC	Ecoinvent v3.12	2025
Natural Gas	market for heat, district or industrial, natural gas | heat, district or industrial, natural gas | Cutoff, U - RoW	Ecoinvent v3.12	2025
Water	market for tap water | tap water | Cutoff, U - RoW	Ecoinvent v3.12	2025
Use			
Fatty alcohol sulfate	market for fatty alcohol sulfate | fatty alcohol sulfate | Cutoff, U – GLO	Ecoinvent v3.12	2025
water	market for tap water | tap water | Cutoff, U - RoW	Ecoinvent v3.12	2025
Waste			
Non-Hazardous Waste	market for inert waste | inert waste | Cutoff, U - RoW	Ecoinvent v3.12	2025
Hazardous Waste	process-specific burdens, residual material landfill | process-specific burdens, residual material landfill | Cutoff, U - RoW	Ecoinvent v3.12	2025
Wastewater	treatment of wastewater from ceramic production, wastewater treatment | wastewater from ceramic production | Cutoff, U - RoW	Ecoinvent v3.12	2025

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3.7 Data Quality

Table 7. *Data Quality Assessment.*

Data Quality Parameter	Data Quality Discussion
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The manufacturer provided primary data on product manufacturing for the two Tangshan City manufacturing facilities on annual production basis for January 2025-December 2025. The manufacturer provided primary data on product manufacturing for the vitreous china bowls, spud components, and other resources. Representative datasets (secondary data) for upstream and background processes are generally less than 5 years old.
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Electricity use for product manufacture is modeled using representative Ecoinvent grid-mix dataset for the State Grid Corporation electricity grid in China. Surrogate data used in the assessment are representative of global or US operations and are considered sufficiently similar to actual processes.
Technology Coverage: Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative component datasets, specific to the type of material, are used to represent the actual processes, as appropriate.
Precision: Measure of the variability of the data values for each data expressed	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the products. In some instances, surrogate data used to represent upstream and downstream operations may be missing some data which is propagated in the model. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Data sources of similar quality and age are used; with a bias towards Ecoinvent v3.12 data where available. Different portions of the product life cycle are equally considered.
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of the data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.
Sources of the Data: Description of all primary and secondary data sources	Data representing energy use at the Tangshan City manufacturing facilities represent a 12-month average and are considered of high quality due to the length of time over which these data are collected, as compared to a snapshot that may not accurately reflect fluctuations in production. For secondary LCI data, Ecoinvent v3.12 data are used.
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the products and packaging is low. Actual supplier data for upstream operations was not available for all suppliers and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<5 years) but lacked geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact assessment methodology includes impact potentials, which lack characterization of providing and receiving environments or tipping points.

3.8 Period under review

The period of review is based on a 12-month period from January 2025 through December 2025.

3.9 Allocation

Manufacturing resource use was allocated on a unit basis. Impacts from transportation were allocated based on the mass of material and distance transported.

No burdens are allocated across the system boundary with secondary material, secondary fuel or recovered energy flows arising from waste.

3.10 Comparability

The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

4. LCA: TECHNICAL INFORMATION AND SCENARIOS

4.1 Transport to the Building Site (A4)

Table 8. *Distribution transportation summary for Zurn vitreous china lavatory products.*

Name	Unit	Value
Fuel type	-	Diesel
Liters of fuel	l/100 km	18.7
Vehicle Type	-	Freight Truck
Transport Distance	km	1,270
Capacity utilization	%	37
Vehicle Type	-	Ocean Freight
Transport Distance	km	19,975
Capacity utilization	%	70
Gross Mass Transported: Lavatory Z5340 Series	kg	19.5
Gross Mass Transported: Lavatory Z5360 Series	kg	21.6

4.2 Installation into the Building (A5)

Table 9. *Zurn vitreous china lavatories installation summary.*

Name	Unit	Z5341 / Z5344 / Z5348	Z5361 / Z5364 / Z5368
Ancillary materials	kg	0	0
Net freshwater consumption specified by water source and fate	m^3	0	0
Other resources	kg	0	0
Electricity consumption	kwh	0	0
Other energy carriers	MJ	0	0
Product loss per functional unit	kg	0	0
Waste materials at the construction site before waste processing, generated by product installation	kg	0	0
Output materials resulting from on-site waste processing	kg	0	0
Mass of packaging waste specified by type	kg	1.10	1.20
Recycle	kg	0.750	0.818
Landfill	kg	0.282	0.307
Incineration	kg	0.068	0.074
Biogenic carbon contained in packaging	kg CO_2	2.02	2.20
Direct emissions to ambient air, soil, and water	kg	0	0
VOC emissions	µg/m^3	0	0

4.3 Use

Maintenance (B2)

Table 10. *Zurn vitreous china Lavatories maintenance summary.*

Maintenance	Unit	Value
Description of process	-	10 ml of 1% sodium lauryl sulfate solution, 260 days/year
Maintenance cycle	Cycles/RSL	5,200
Maintenance cycle	Cycles/ESL	19,500
Net freshwater consumption		
City water disposed to sewer	m^3/RSL	$5.20x10^{-2}$
Ancillary materials		
Sodium lauryl sulfate	kg/RSL	0.520
Other resources	kg	0
Electricity consumption	kWh	0
Other energy carriers	kWh	0
Power output of equipment	kW	0
Material loss	kg	0
Direct emissions to ambient air, soil, and water	kg	0
Further assumptions for scenario development	-	-

Repair (B3)

No repair is required with the use of the product over the reference service lifetime.

Replacement (B4)

Table 11. *Zurn vitreous china lavatories Replacement Summary.*

Replacement	Unit	Value
Replacement cycle (RSL)	years	30
Replacement cycle (ESL/RSL)-1	-	1.5
Electricity consumption	kWh	0
Net freshwater consumption	m^3	0
Ancillary materials	kg	0
Replacement of worn parts	kg	0
Direct emissions to ambient air, soil, and water	kg	0
Further assumptions for scenario development	-	-

Refurbishment (B5)

No refurbishment is required with the use of the product over the reference service lifetime.

Operational Energy and Water Use (B6 – B7)

There is no operational energy or water use associated with the use of the product over the reference service lifetime.

4.4 End-of-Life

Table 12. *Zurn vitreous china lavatories end-of-life summary.*

End-of-life		Unit	Z5341 / Z5344 / Z5348	Z5361 / Z5364 / Z5368
Assumptions for scenario development			Manual deconstruction, followed by 100 km truck transport to final disposal in landfill	
Collection process	Collected separately	kg	0	0
	Collected with mixed construction waste	kg	18.4	20.4
Recovery	Reuse	kg	0	0
	Recycling	kg	0	0
	Landfill	kg	18.4	20.4
	Incineration	kg	0	0
	Incineration with energy recovery	kg	0	0
	Energy conversion	-	-	-
Disposal	Product of material for final deposition	kg	18.4	20.4
Removals of biogenic carbon (excluding packaging)		kg CO_2	0	0

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5. LCA: Results

Results of the Life Cycle Assessment are presented below. It is noted that LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The following environmental impact category indicators are reported using characterization factors using the TRACI 2.2 impact assessment method along with additional indicators based on IPCC AR6 (2021) and EF 3.1.

Table 13. *Mandatory Environmental Impact Assessment Categories.*

TRACI 2.2 Impact Category	Unit	IPCC 2021/EF 3.1	Unit
AP: Acidification Potential of soil and water	kg SO_2 eq.	**GWP Total:** Global Warming Potential, total	kg CO_2 eq.
EP Fresh: Eutrophication Potential of Freshwater	kg P eq.	**GWP Biogenic:** Global Warming Potential, biogenic	kg CO_2 eq.
EP Marine: Eutrophication Potential of Marine water	kg N eq.	**GWP Fossil:** Global Warming Potential, fossil fuels	kg CO_2 eq.
ODP: Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	**GWP Luluc:** Global Warming Potential, land use and land use change	kg CO_2 eq.
SFP: Smog Formation Potential	kg O_3 eq.	**ADP_f:** Abiotic Depletion Potential for Fossil Resources	MJ, LHV

These impact categories are globally deemed mature enough to be included in Type III environmental declarations. Other categories are being developed and defined and LCA should continue making advances in their development. However, the EPD users shall not use additional measures for comparative purposes. The following inventory parameters, specified by the PCR, are also reported.

Table 14. *Additional Transparency Categories.*

Resources	Unit	Waste and Outflows	Unit
RPR_E: Renewable primary resources used as energy carrier (fuel)	MJ, LHV	**HWD:** Hazardous waste disposed	kg
RPR_M: Renewable primary resources with energy content used as material	MJ, LHV	**NHWD:** Non-hazardous waste disposed	kg
$NRPR_E$: Non-renewable primary resources used as an energy carrier (fuel)	MJ, LHV	**RWD:** Radioactive waste, conditioned, to final repository	kg
$NRPR_M$: Non-renewable primary resources with energy content used as material	MJ, LHV	**CRU:** Components for re-use	kg
SM: Secondary materials	kg	**MR:** Materials for recycling	kg
RSF: Renewable secondary fuels	MJ, LHV	**MER:** Materials for energy recovery	kg
NRSF: Non-renewable secondary fuels	MJ, LHV	**EE:** Recovered energy exported from the product system	kg
RE: Recovered energy	MJ, LHV	**EE:** Recovered energy exported from the product system	MJ, LHV
FW: Use of new freshwater resources	m^3	-	-

All LCA results are stated to three significant figures in agreement with the PCR and therefore the sum of the total values may not exactly equal 100%.

5.1 Zurn Vitreous Lavatory Line Z5340 Results

Table 15. *TRACI 2.2 and IPCC 2021 life cycle impact assessment results for the Zurn vitreous china lavatory line Z5340.*

Module	GWP total	GWP biogenic	GWP fossil	GWP luluc	AP	EP fresh	EP marine	ODP	Smog	ADP_f
	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg SO_2 eq	kg P eq	kg N eq	kg CFC-11 eq	kg O_3 eq	MJ, LHV
A1	5.60	4.35×10^{-2}	5.55	7.26×10^{-3}	3.40×10^{-2}	2.73×10^{-3}	1.80×10^{-2}	1.92×10^{-7}	0.427	69.0
A2	3.07	6.90×10^{-4}	3.07	1.40×10^{-3}	1.49×10^{-2}	3.10×10^{-4}	1.41×10^{-2}	4.41×10^{-8}	0.345	42.5
A3	72.9	0.107	72.8	7.46×10^{-3}	4.38×10^{-2}	1.70×10^{-3}	4.25×10^{-2}	1.96×10^{-7}	0.760	144
A1-A3 Total:	81.6	0.151	81.4	1.61×10^{-2}	9.27×10^{-2}	4.74×10^{-3}	7.46×10^{-2}	4.32×10^{-7}	1.53	255
A4	4.96	1.13×10^{-3}	4.96	2.25×10^{-3}	1.90×10^{-2}	5.10×10^{-4}	1.92×10^{-2}	7.11×10^{-8}	0.469	69.1
A5	2.81×10^{-2}	6.87×10^{-6}	2.81×10^{-2}	1.11×10^{-5}	1.20×10^{-4}	2.56×10^{-6}	1.30×10^{-4}	5.44×10^{-10}	3.18×10^{-3}	0.467
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	1.48	5.86×10^{-3}	1.17	0.313	8.62×10^{-3}	3.40×10^{-4}	5.54×10^{-3}	3.00×10^{-8}	8.16×10^{-2}	22.1
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	239	0.418	239	5.11×10^{-2}	0.313	1.46×10^{-2}	0.265	1.41×10^{-6}	5.66	915
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	0.369	8.43×10^{-5}	0.368	1.70×10^{-4}	1.41×10^{-3}	3.79×10^{-5}	1.43×10^{-3}	5.29×10^{-9}	3.49×10^{-2}	5.13
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	0.102	3.06×10^{-5}	0.102	1.89×10^{-5}	6.20×10^{-4}	4.98×10^{-6}	7.50×10^{-4}	3.81×10^{-9}	1.83×10^{-2}	2.68

Table 16. *Resource use indicator results for the Zurn vitreous china lavatory line Z5340.*

Module	RPR_E	RPR_M	RPR_T	$NRPR_E$	$NRPR_M$	$NRPR_T$	SM	RSF	NRSF	RE	FW
	MJ	MJ	MJ	MJ	MJ	MJ	kg	MJ	MJ	MJ	m^3
A1	1.51	0.00	1.51	62.7	0.00	62.7	0.00	0.00	0.00	0.00	3.34
A2	0.149	0.00	0.149	41.7	0.00	41.7	0.00	0.00	0.00	0.00	0.221
A3	20.5	18.2	38.7	136	0.00	136	0.00	0.00	0.00	0.00	1.41
A1-A3 Total:	22.1	18.2	40.3	240	0.00	240	0.00	0.00	0.00	0.00	4.98
A4	0.248	0.00	0.248	67.7	0.00	67.7	0.00	0.00	0.00	0.00	0.367
A5	2.37×10^{-3}	0.00	2.37×10^{-3}	0.457	0.00	0.457	0.00	0.00	0.00	0.00	9.07×10^{-3}
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	16.7	0.00	16.7	20.8	0.00	20.8	0.00	0.00	0.00	0.00	3.05
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	61.6	0.00	61.6	869	0.00	869	0.00	0.00	0.00	0.00	15.1
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	1.84×10^{-2}	0.00	1.84×10^{-2}	5.03	0.00	5.03	0.00	0.00	0.00	0.00	2.73×10^{-2}
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	2.12×10^{-2}	0.00	2.12×10^{-2}	2.62	0.00	2.62	0.00	0.00	0.00	0.00	0.124

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Table 17. *Waste and Output indicators for the Zurn vitreous china lavatory line Z5340.*

Module	HWD	NHWD	HLRW	ILLRW	CRU	MR	MER	EE
	kg	kg	kg	kg	kg	kg	kg	MJ, LHV
A1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A3	4.42×10^{-3}	5.49	0.00	0.00	0.00	0.00	0.00	0.00
A1-A3 Total:	4.42×10^{-3}	5.49	0.00	0.00	0.00	0.00	0.00	0.00
A4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A5	0.00	0.350	0.00	0.00	0.00	0.750	0.00	0.00
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	1.22×10^{-2}	66.7	0.00	0.00	0.00	2.06	0.00	0.00
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	0.00	18.4	0.00	0.00	0.00	0.00	0.00	0.00

Table 18. *Carbon Emissions and Removals for the Zurn vitreous china lavatory line Z5340.*

Carbon LCI Indicator	Acronym	Unit	Value
Biogenic carbon removals from product	BCRP	kg CO_2	0.00
Biogenic carbon emissions from product	BCEP	kg CO_2	0.00
Biogenic carbon removals from packaging	BCRK	kg CO_2	-2.02
Biogenic carbon emissions from packaging	BCEK	kg CO_2	2.02
Carbon emissions from calcination	CCE	kg CO_2	0.659
Carbon removals from carbonation	CCR	kg CO_2	0.00
Carbon emissions from combustion of waste (renewable)	CBCEW	kg CO_2	0.00
Carbon emissions from combustion of waste (non-renewable)	CWNR	kg CO_2	0.00

5.2 Zurn Vitreous Lavatory Line Z5360 Results

Table 19. *TRACI 2.2 and IPCC 2021 environmental impact results for the Zurn vitreous china lavatory line Z5360.*

Module	GWP total	GWP biogenic	GWP fossil	GWP luluc	AP	EP fresh	EP marine	ODP	Smog	ADP_f
	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg SO_2 eq	kg P eq	kg N eq	kg CFC-11 eq	kg O_3 eq	MJ, LHV
A1	6.12	4.41×10^{-2}	6.07	7.95×10^{-3}	3.70×10^{-2}	2.95×10^{-3}	1.97×10^{-2}	2.12×10^{-7}	0.468	75.6
A2	3.37	7.60×10^{-4}	3.37	1.54×10^{-3}	1.64×10^{-2}	3.30×10^{-4}	1.56×10^{-2}	4.84×10^{-8}	0.379	46.6
A3	73.0	0.116	72.9	7.97×10^{-3}	4.44×10^{-2}	1.75×10^{-3}	4.29×10^{-2}	2.01×10^{-7}	0.770	146
A1-A3 Total:	82.5	0.161	82.3	1.75×10^{-2}	9.78×10^{-2}	5.03×10^{-3}	7.82×10^{-2}	4.61×10^{-7}	1.62	268
A4	5.5	1.26×10^{-3}	5.49	2.49×10^{-3}	2.11×10^{-2}	5.60×10^{-4}	2.13×10^{-2}	7.88×10^{-8}	0.520	76.5
A5	3.07×10^{-2}	7.49×10^{-6}	3.06×10^{-2}	1.21×10^{-5}	1.30×10^{-4}	2.79×10^{-6}	1.40×10^{-4}	5.93×10^{-10}	3.47×10^{-3}	0.509
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	1.48	5.86×10^{-3}	1.17	0.313	8.62×10^{-3}	3.40×10^{-4}	5.54×10^{-3}	3.00×10^{-8}	8.16×10^{-2}	22.1
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	244	0.447	243	5.55×10^{-2}	0.333	1.55×10^{-2}	0.281	1.52×10^{-6}	6.05	973
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	0.409	9.35×10^{-5}	0.408	1.90×10^{-4}	1.57×10^{-3}	4.20×10^{-5}	1.59×10^{-3}	5.86×10^{-9}	3.87×10^{-2}	5.69
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	0.113	3.39×10^{-5}	0.113	2.10×10^{-5}	6.90×10^{-4}	5.53×10^{-6}	8.30×10^{-4}	4.22×10^{-9}	2.03×10^{-2}	2.97

Table 20. *Resource use indicator results for the Zurn vitreous china lavatory line Z5360.*

Module	RPR_E	RPR_M	RPR_T	$NRPR_E$	$NRPR_M$	$NRPR_T$	SM	RSF	NRSF	RE	FW
	MJ	MJ	MJ	MJ	MJ	MJ	kg	MJ	MJ	MJ	m^3
A1	1.66	0.00	1.66	68.7	0.00	68.7	0.00	0.00	0.00	0.00	3.68
A2	0.164	0.00	0.164	45.8	0.00	45.8	0.00	0.00	0.00	0.00	0.243
A3	22.2	19.9	42.1	137	0.00	137	0.00	0.00	0.00	0.00	1.45
A1-A3 Total:	24.1	19.9	44.0	252	0.00	252	0.00	0.00	0.00	0.00	5.38
A4	0.274	0.00	0.274	75	0.00	75	0.00	0.00	0.00	0.00	0.407
A5	2.58×10^{-3}	0.00	2.58×10^{-3}	0.499	0.00	0.499	0.00	0.00	0.00	0.00	9.90×10^{-3}
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	16.7	0.00	16.7	20.8	0.00	20.8	0.00	0.00	0.00	0.00	3.05
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	67.1	0.00	67.1	923	0.00	923	0.00	0.00	0.00	0.00	16.4
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	2.04×10^{-2}	0.00	2.04×10^{-2}	5.58	0.00	5.58	0.00	0.00	0.00	0.00	3.02×10^{-2}
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	2.35×10^{-2}	0.00	2.35×10^{-2}	2.9	0.00	2.9	0.00	0.00	0.00	0.00	0.138

Table 21. *Waste and Output indicators for the Zurn vitreous china lavatory line Z5360.*

Module	HWD	NHWD	HLRW	ILLRW	CRU	MR	MER	EE
	kg	kg	kg	kg	kg	kg	kg	MJ, LHV
A1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A3	4.42×10^{-3}	5.77	0.00	0.00	0.00	0.00	0.00	0.00
A1-A3 Total:	4.42×10^{-3}	5.77	0.00	0.00	0.00	0.00	0.00	0.00
A4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A5	0.00	0.381	0.00	0.00	0.00	0.818	0.00	0.00
B1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B4	1.22×10^{-2}	73	0.00	0.00	0.00	2.25	0.00	0.00
B5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4	0.00	20.4	0.00	0.00	0.00	0.00	0.00	0.00

Table 22 *Carbon Emissions and Removals for the Zurn vitreous china lavatory line Z5360.*

Carbon LCI Indicator	Acronym	Unit	Value
Biogenic carbon removals from product	BCRP	kg CO_2	0.00
Biogenic carbon emissions from product	BCEP	kg CO_2	0.00
Biogenic carbon removals from packaging	BCRK	kg CO_2	-2.20
Biogenic carbon emissions from packaging	BCEK	kg CO_2	2.20
Carbon emissions from calcination	CCE	kg CO_2	0.733
Carbon removals from carbonation	CCR	kg CO_2	0.00
Carbon emissions from combustion of waste (renewable)	CBCEW	kg CO_2	0.00
Carbon emissions from combustion of waste (non-renewable)	CWNR	kg CO_2	0.00

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6. LCA: INTERPRETATION

The interpretation phase conforms to ISO 14044. The interpretation included the use of evaluation and sensitivity checks to steer the iterative process during the assessment, and a final evaluation including completeness, sensitivity, and consistency checks, at the end of the study.

Results were summarized by life cycle phase for a cradle-to-grave assessment of the Zurn vitreous china lavatories products over the specified reference service life and a 75-year building estimated service life. The figures below display these results, with the use phase replacement module (B4) removed so as to focus on the impacts during the product's 20 year RSL. With the exception of the Ozone Depletion indicator, the results are dominated by the manufacturing module (A3). Product transportation module (A4) and raw material module (A1) impacts also contribute strongly.

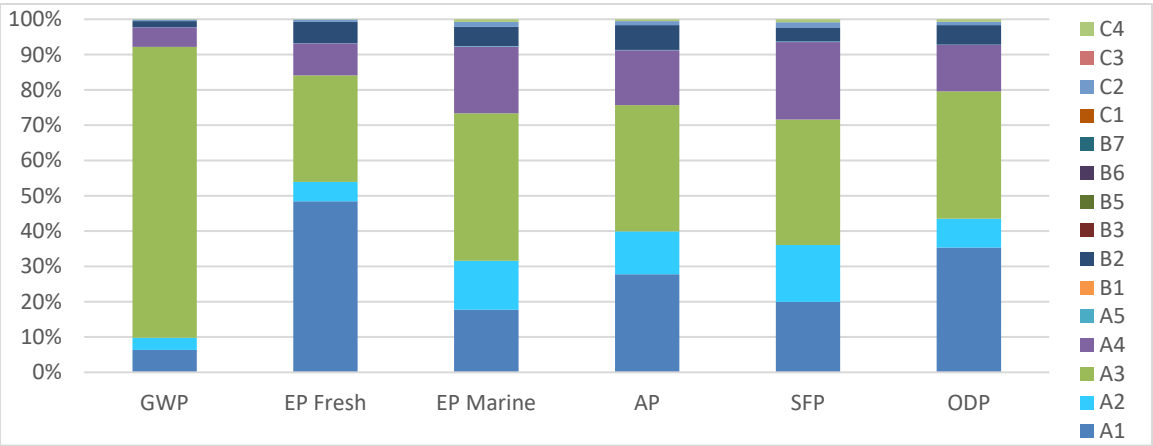

Figure 5. *Contribution analysis for the average Zurn vitreous china lavatory line Z5340.*

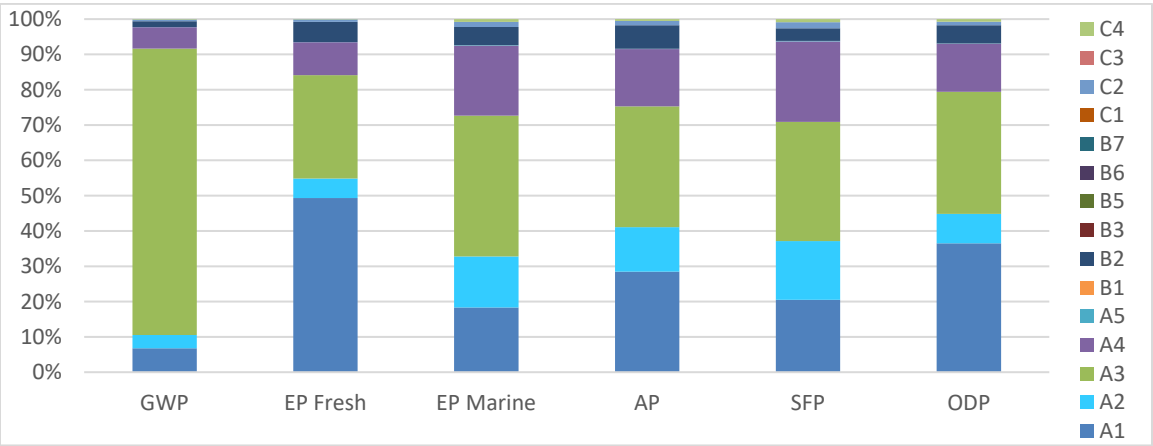

Figure 6. *Contribution analysis for the average Zurn vitreous china lavatory line Z5360.*

7. ADDITIONAL ENVIRONMENTAL INFORMATION

For more information on Zurn Elkay's sustainability programs, including products and operations, please visit Zurn Elkay Sustainability. zurnelkay.com/sustainability

8. REFERENCES

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