

Environmental Product Declaration



Of multiple products based on average results

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Villeroy & Boch / Gustavsberg Duroplast Toilet Seats

from

Villeroy & Boch AG



Programme:

Programme operator:

EPD registration number:

Publication date:

Valid until:

The International EPD® System, www.environdec.com

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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR) Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) (version 1.3.4)
Product Category Rules (PCR): Construction Products 2019:14, Version 1.3.4 and EN 15804:2012+A2:2019 Sustainability of Construction Works
PCR review was conducted by: The Technical Committee on the International EPD® System. Contact via www.environdec.com info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Alexander Kyriakidis, AFRY, www.afry.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Katrin Molina-Besch, Miljögiraff Approved by: The International EPD® System Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:

Villeroy & Boch AG
Saaruferstraße
66693 Mettlach (Germany)
<https://www.villeroyboch-group.com/> [[villeroyboch-group.com](https://www.villeroyboch-group.com/)]

Contact:

Mattias Virsgård

Description of the organisation:

Since its foundation in 1748, the ceramic producer has developed into an international lifestyle brand. Like very few other premium brands, Villeroy & Boch is deeply rooted in European culture. And, in the way that only a great brand can do, it has understood how to preserve its identity while still moving with the times.

Villeroy & Boch produces innovative and stylish products to enhance people's lives, provide continuous inspiration and open up new horizons for truly personalised interior design.

Product-related or management system-related certifications:

Production facilities:

DIN EN ISO 9001

Villeroy & Boch Gustavsberg organization:

SS-EN ISO 9001:2015 – Quality Management System

SS-EN ISO 14001:2015 – Environmental Management System

SS-EN ISO 45001:2018 – Occupational Health and Safety Management Systems

SS-EN ISO 50001:2018 – Energy Management System

Location of production site(s):

Rohrdorf, Germany

Sevlievo, Bulgaria

Kunshan, China

Product information

Product name:

Duroplast Toilet Seats

Product list

Villeroy & Boch brand

8M67S1R1 Antao

8M67S1RW Antao

8M67S1R7 Antao

8M67S1AM Antao

8M67S1R8 Antao

98M9C101 Architectura

98M9C109 Architectura

98M9C201 Architectura

98M9D101 Architectura

98M9D109 Architectura
98M96101 Architectura
98M96109 Architectura
9M58S101 Architectura
9M606101 Architectura
9M83S101 Architectura
9M836101 Architectura
8M79S1T1 Architectura K
8M79S101 Architectura K
8M70S101 Architectura Slim
8M706101 Architectura Slim
9M77C101 Avento
9M77C1RW Avento
9M61D101 Avento
8M78S1T1 Avento K
8M78S101 Avento K
8M78S138 Avento K
991CS101 Castorama
990CS101 Collection V&B
8M57S101 Embrace
8M57S1RW Embrace
8M57S1R7 Embrace
9E396101 Metro
9EM9C101 Metro
9E38S101 Metro V&B
9EM9D101 Metro V&B
8M59S101 NeWo
8M596101 NeWo
8M58S101 NeWo
8M586101 NeWo
9M38S101 O.novo
8M16S101 O.novo
9M716101 O.novo
8M43S101 O.novo
8M436101 O.novo
9M406101 O.novo
9M396101 O.novo
8M36S101 O.novo compact
8M80S1T1 O.novo K
8M80S101 O.novo K
9955C101 Subway
9955C1R3 Subway
9M556101 Subway
9955C201 Subway 2.0
9955C301 Subway 2.0
9955C3RW Subway 2.0
9M686101 Subway 2.0
8M34S101 Subway 2.0 Komfort
8M77S1T1 Subway K
8M77S101 Subway K

8M77S138 Subway K
8M31S101 V&B Exclusive
8M88S1R7 V&B Exclusive
8M37S101 V&B Exclusive
8M83S101 Verity
9M559101 Verity Design
8M54S101 Verity Design 2.0
9M67S1T1 ViCare
9M67S1P1 ViCare
9M7261T1 ViCare
9M7261P1 ViCare
9M9761T1 ViCare
9M676101 ViCare
9M86S101 Vivia

Gustavsberg brand

8780S801 Saval
8780G801 Saval
8780S101 Saval
8780G101 Saval
8780G109 Saval
9M169901 Artic
9M16S101 Artic
9M16S136 Artic
98895101 Artic
98895136 Artic
9M09S101 Estetic
9M09S138 Estetic
9M09S1RW Estetic
9M10S101 Estetic
9M10S138 Estetic
9M10S1RW Estetic
9M10S901 Estetic
9M256101 Nautic
9M26S101 Nautic
9M26S136 Nautic
9M26S901 Nautic
8M45S101 Nautic Slim
8M45S901 Nautic Slim
8M56S101 Nordic

And others for Villeroy & Boch group, produced in the same material in the same production site.

Product identification:

Toilet seat set made of thermoset material (urea)

Product description:

Villeroy & Boch & Gustavsberg toilet seats are the perfect, custom-fit solution for each toilet. Their clever features, quick assembly and easy-clean benefits speak for themselves, and their beautiful designs create a harmonic unit with the ceramic bowl.

Available in different categories as Slim Seat and Slim Seat Line, or the wider Comfort Seat.

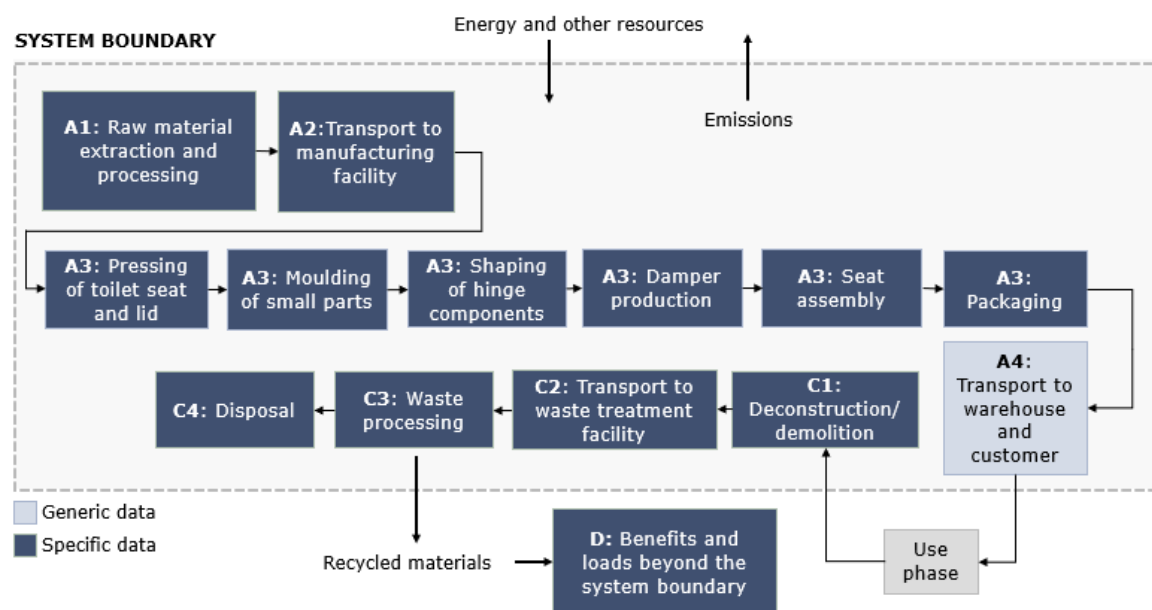
- Custom fit to match the shape, color and measurements of each toilet.
- Designed with visual appeal and comfort in mind
- Easy cleaning thanks to hidden hinges and Quick Release technology
- High-quality Duroplast and stainless steel hinges for increased hygiene
- Polished surfaces for exceptional shine

All seats comply with DIN standard 19516 (175 kg) as well as our corporate quality standard and are stable to at least 240 kg.

UN CPC code:

3693 - Baths, wash-basins, lavatory pans and covers, flushing cisterns and similar sanitary ware, of plastics.

Production diagram:



LCA information

Declared unit:

1 piece average Duroplast Toilet Seat (2.03 kg)

Reference service life:

Urea WC seats have an average lifespan of 7-10 years.

Time representativeness:

Production data was collected for the year 2022.

Database(s) and LCA software used:

LCA for Experts (Version 10.7) and Sphera LCA content (Content Version 2023.1).

For module A4 only: SimaPro 9.6.1 and Ecoinvent 3.10.

Environmental impact was assessed according to EN 15804:2012+A2:2019 using EF 3.1 characterization factors

LCA scenarios:

In module A5, the waste treatment of the packaging materials is modelled. Cardboard is recycled and polyethylene foil is incinerated. For waste treatment in module C3, incineration is modelled for plastic components and recycling for metal components. Loads and benefits resulting from recycling and incineration in modules A5 and C3 are assigned to module D. For transports to waste treatment, a distance of 100 km is assumed.

Description of system boundaries:

Cradle to gate with options, modules A1–A5, C1–C4 and module D.

Cut-off criteria:

Infrastructure, capital goods and personnel-related processes were excluded. Silicone oil was cut-off (0.2% of mass of product). It is assumed that the cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%) are met.

Allocation:

Energy was allocated between Duroplast and Thermoplast toilet seats based on the number of seats produced at each site.

Assumptions:

Shares of secondary material input for steel components was used from the LCA datasets. A steel hinge was modelled as a worst-case approach.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational	Operational	De-	Transport	Waste	Disposal	Reuse-Recovery-Disposal
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	N D	N D	N D	N D	N D	N D	N D	X	X	X	X	X
Geography	DE, BG, CN	DE, BG, CN	DE, BG, CN	EU R	EU R								EU R	EU R	EU R	EU R	EUR
Specific data used	> 90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	- 17% to +38% for GWP-GHG indicator			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	19% to +38% for GWP-GHG indicator compared to declared average			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Variability in the LCIA results is mainly due to the different weights of the products. In general, the lighter the product, the lower the LCIA results. The weight of the unpackaged product varies between 1.4 and 3.5 kg.

A1: Raw Material

This stage includes raw material extraction and production of bought components.

A2: Transport

This stage includes transportation of raw materials to production sites and of components to final site of assembly.

A3: Manufacturing

This stage includes resource use in the manufacturing facility, such as use of energy. It also includes treatment of waste generated from the manufacturing processes. The manufacturing includes casting, chrome plating, assembling, and packing. Data from the full year of 2022 have been used in the calculations.

Site electricity mixes were the following (GWP-GHG/kWh):

- Germany: Green electricity (3 g)
- Bulgaria: Residual electricity mix (441 g)
- China: Electricity mix (811 g)

A4

This stage includes the transportation of the finished product to its installation location. 1000 km transportation is assumed.

A5

This stage includes the installation of the product, materials needed and waste generated as a result of installation.

C1: Deconstruction

No impacts are assumed to be associated with the deconstruction phase.

C2: Waste Transport

Includes the transportation of the discarded product to a waste treatment facility. 100 km transportation is assumed.

C3: Waste Processing

This stage includes sorting of waste.

C4: Waste disposal

This stage includes waste disposal processes, such as landfill or incineration. Incineration is assumed for plastics, with metals assumed to have a recycling rate of 90%

D: Benefits and loads outside the system boundary

This stage includes benefits and burdens associated with recovery/recycling that affects future life cycles. For this product it includes benefits from the recycling of brass and metals, as well as energy recovery from waste incineration

Content information

Product components	Weight, kg / piece	Post-consumer material, weight-%	Biogenic carbon, kg / declared unit
Duroplast (Urea resin, 30% cellulose)	1.828	0%	0.228
Injection Molding (polyethylene, ethylene vinyl acetate, polypropylene, polyamide, polyethylene, pigment)	0.057	0%	0
Metal (stainless steel, steel)	0.106	58%	0
Other (polyamide)	0.038	0%	0
TOTAL	2.03	3%	0.228
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Polyethylene foil	0.017	0.8%	-
Cardboard box	0.272	13.4%	0.112
TOTAL	0.29	14.2%	0.112

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
Molding compound			None
Stainless steel			None
Other plastics (dampers, buffers)			None
Silicone oil			None

No substances that appear in the REACH Candidate List of Substances of Very High Concern (SVHC) are present or used in the product.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	4.72E+00	2.10E+00	5.61E-02	0.00E+00	1.87E-02	4.38E+00	0.00E+00	-1.48E+00
GWP-biogenic	kg CO ₂ eq.	-1.25E+0	1.56E-03	4.11E-01	0.00E+00	0.00E+00	8.37E-01	0.00E+00	0.00E+00
GWP-luluc	kg CO ₂ eq.	3.65E-03	6.85E-04	2.63E-05	0.00E+00	1.70E-04	7.28E-06	0.00E+00	-9.14E-05
GWP-total	kg CO ₂ eq.	3.48E+00	2.10E+00	4.67E-01	0.00E+00	1.89E-02	5.22E+00	0.00E+00	-1.48E+0
ODP	kg CFC 11 eq.	4.06E-11	4.07E-08	2.89E-15	0.00E+00	2.40E-15	3.00E-13	0.00E+00	-1.08E-11
AP	mol H ⁺ eq.	1.91E-02	4.26E-03	1.74E-05	0.00E+00	7.29E-05	4.70E-04	0.00E+00	-1.92E-03
EP-freshwater	kg P eq.	3.25E-05	1.38E-04	1.10E-08	0.00E+00	6.73E-08	7.63E-08	0.00E+00	-2.24E-06
EP-marine	kg N eq.	5.14E-03	1.02E-03	6.81E-06	0.00E+00	3.39E-05	1.42E-04	0.00E+00	-5.38E-04
EP-terrestrial	mol N eq.	5.55E-02	1.10E-02	8.86E-05	0.00E+00	3.80E-04	2.29E-03	0.00E+00	-5.69E-03
POCP	kg NMVOC eq.	7.06E-03	7.08E-03	1.43E-05	0.00E+00	3.79E-05	3.74E-04	0.00E+00	-1.55E-03
ADP-minerals&metals*	kg Sb eq.	1.43E-05	6.65E-06	0.00E+00	6.61E-05	3.91E-04	0.00E+00	-1.55E-03	-1.09E-07
ADP-fossil*	MJ	1.06E+02	2.39E+00	4.49E-02	0.00E+00	2.51E-01	7.50E-01	0.00E+00	-2.62E+01
WDP*	m ³	1.60E+00	1.21E-01	4.94E-03	0.00E+00	2.22E-04	3.94E-01	0.00E+00	-1.49E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	4.73E+00	2.10E+00	5.61E-02	0.00E+00	1.87E-02	3.34E+00	0.00E+00	1.49E+00

In order to calculate the results for module A1-A3 for a toilet seat with another weight, the following formula can be applied:
Average Duroplast toilet seat GWP-GHG emissions in kg CO₂e = 2.20 + Product weight (without packaging) in kg * 1.25

Resource use indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3.79E+01	1.96E+00	4.57E+00	0.00E+00	1.82E-02	9.42E+00	0.00E+00	-7.31E+00
PERM	MJ	1.38E+01	0.00E+00	-4.57E+00	0.00E+00	0.00E+00	-9.23E+00	0.00E+00	0.00E+00
PERT	MJ	5.17E+01	1.96E+00	4.42E-03	0.00E+00	1.82E-02	1.92E-01	0.00E+00	-7.31E+00
PENRE	MJ	8.12E+01	2.71E+01	7.91E-01	0.00E+00	2.52E-01	2.49E+01	0.00E+00	-2.62E+01
PENRM	MJ	2.49E+01	0.00E+00	-7.46E-01	0.00E+00	0.00E+00	-2.41E+01	0.00E+00	0.00E+00
PENRT	MJ	1.06E+02	2.71E+01	4.51E-02	0.00E+00	2.52E-01	7.50E-01	0.00E+00	-2.62E+01
SM	kg	3.22E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	3.32E-02	2.15E-03	1.18E-04	0.00E+00	2.00E-05	9.26E-03	0.00E+00	-6.37E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	8.86E-08	0.00E+00	2.62E-13	0.00E+00	7.79E-13	1.83E-11	0.00E+00	-1.35E-09
Non-hazardous waste disposed	kg	1.37E-01	0.00E+00	2.17E-04	0.00E+00	3.84E-05	3.06E-02	0.00E+00	1.01E-03
Radioactive waste disposed	kg	4.84E-03	0.00E+00	4.53E-07	0.00E+00	4.71E-07	4.48E-05	0.00E+00	-1.95E-03

Output flow indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	2.72E-01	0.00E+00	0.00E+00	1.06E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.70E-02	0.00E+00	0.00E+00	1.92E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	1.14E-01	0.00E+00	0.00E+00	6.39E+00	0.00E+00	6.50E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	2.02E-01	0.00E+00	0.00E+00	1.15E+01	0.00E+00	1.17E+01

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (module C) should be considered when using the results of the production stage (modules A1-A4).

Other environmental performance indicators

Additional environmental information

- the existence of a quality or environmental management system or any type of organised environmental activity, and
- information on where interested parties may find more details about the organisation's environmental work.

Additional environmental information can also include information on carbon offset, carbon storage and delayed emissions, or on release of dangerous substances to indoor air, soil and water during the use stage.

References

EPD International (2021): General Programme Instructions of the International EPD® System. Version 4.0.

EPD International (2023): PCR 2019:14. Construction products 2019:14. Version 1.3.4.

EPD International (2025): General Programme Instructions of the International EPD® System. Version 5.0.1

Ecoinvent v.3. Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B. (2016): The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: <<http://link.springer.com/10.1007/s11367-016-1087-8>>

Hamberger Sanitary GmbH (2023). *Environmental Product Declaration for Duroplast Toilet Seats (Urea)*. EPD No. S-P-09400. EPD International. Available at: [EPD-IES-0009400:001 \(S-P-09400\) - Duroplast Toilet Seats \(Urea\)](#)

Kyriakidis, A. (2025): Life Cycle Assessment of Villeroy-Boch toilet seats

SimaPro. SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

