GEBERIT

GEBERIT AQUACLEAN SELA

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804

KNOW HOW INSTALLED

Certified Management System SQS ISO 9001 / 14001 / OHSAS 18001

1 General information

1.1 Note on this document

The original document was written in German. All other language versions are translations of the original document.

1.2 Declaration holder

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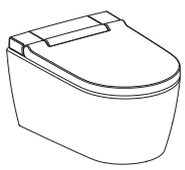
Geberit is one of the pioneers when it comes to sustainability in the sanitary industry. Sustainable development has formed a fixed part of the corporate strategy for more than 25 years. All production sites are certified in accordance with ISO 9001, ISO 14001 and ISO 45001. Life cycle assessments were produced for key products from an early stage and Ecodesign has been an integral part of the product development process since 2008. As a member of the United Nations Global Compact, Geberit has shown its commitment to the ten principles of sustainable development. Current and comprehensive information regarding sustainability strategy and performance with respect to Geberit and Geberit products can be found in the current Annual Report. Furthermore, additional information can be found at www.geberit.com/nachhaltigkeit.

1.3 Declared product

This declaration applies for the Geberit AquaClean Sela WC complete solution, wall-hung WC product in all of the versions listed in this report. The device with the article no. 146.220.21.1 has been applied as a reference article.



1.4 Verification and validity

Programme holder:	Geberit International AG
Declaration number:	GEB_EPD_6273531659
Validity:	01/07/2019 to 30/06/2024
Data calculated by:	Quantis www.quantis-intl.com

Environmental declarations for construction products may not be comparable if they do not comply with the EN 15804. It is only possible to make a limited comparison of life cycle assessment results which are based on different background databases.

The European standard EN 15804 is used as the core PCR.	
Independent verification of the declaration and information in accordance with EN ISO 14025:2010	
☐ Internal	☒ External
Dr. Frank Werner	

2 Product

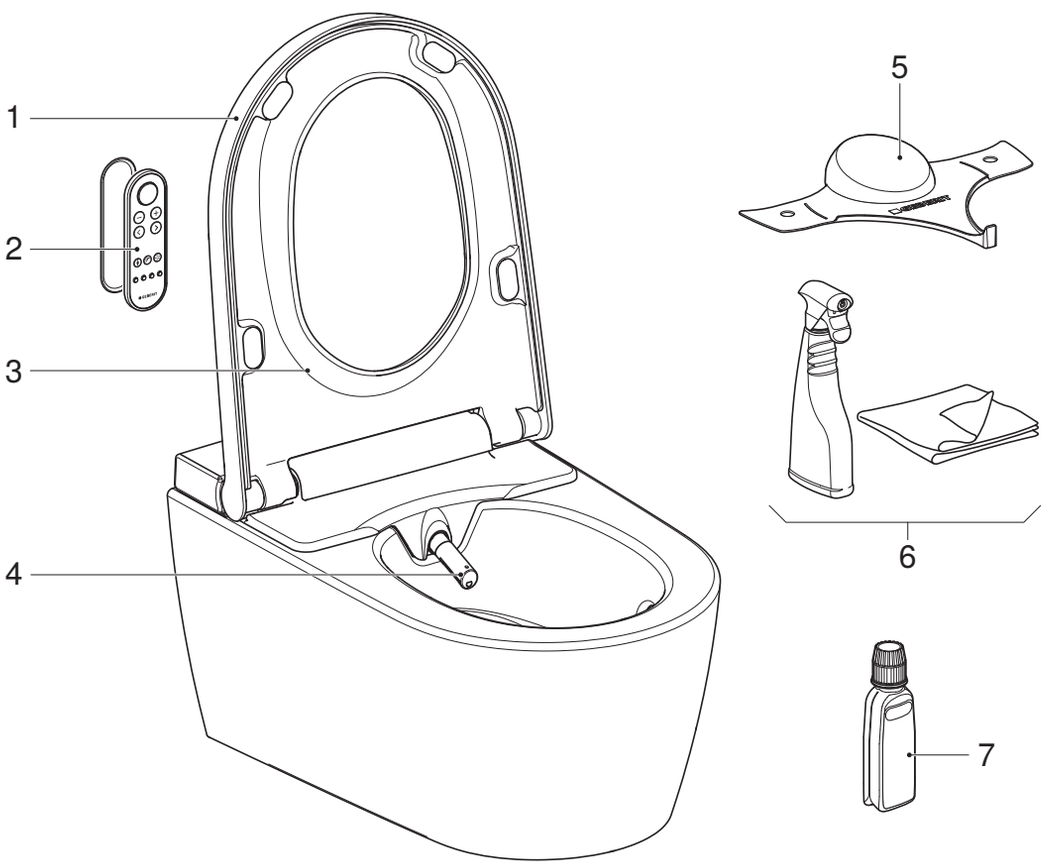
2.1 Description and application purpose

Geberit AquaClean shower toilets ensure thorough cleaning with water by combining the function of a toilet with the cleaning possibilities of a bidet. Additional functions are available, depending on the model. All AquaClean models fulfil the European Ecodesign requirements (ErP Directives) with a standby consumption for Geberit AquaClean Sela of < 0.5 W.

The Geberit AquaClean Sela is a WC with integrated shower function and additional comfort functions.

Application purpose:

- For convenient toilet use
- For gentle cleaning of the anal and vaginal areas with water



1	WC lid
2	Remote control with magnetic wall-mounted holder
3	WC seat ring
4	Spray arm with spray nozzle and Lady shower nozzle
5	Spray shield
6	Geberit AquaClean cleaning set (art. no. 242.547.00.1)
7	Geberit AquaClean descaling agent (art. no. 147.040.00.1)

Composition by raw materials, see "Inventory", page 5.

List of substances contained in the product, which are included in the "Candidate List of Substances of Very High Concern for Authorisation" if the content exceeds the limits for their registration by the European Chemicals Agency:

- None

2.2 Assortment

The reference product for this declaration is the Geberit AquaClean Sela WC complete solution, wall-hung WC with the article no. 146.220.21.1.

The sales products listed below differ only insignificantly from the reference article and are therefore part of the range of validity of this EPD.

The differences are:

- Colour of the design cover
- Language of the documentation material supplied

	Colour of the design cover	Language versions
146.220.11.1	White alpine	DE, EN, FR, IT, NL
146.220.21.1	Bright chrome-plated	
146.221.11.1	White alpine	DK, NO, SE, FI, EN
146.221.21.1	Bright chrome-plated	
146.222.11.1	White alpine	ES, PT, SK, CZ, PL
146.222.21.1	Bright chrome-plated	
146.223.11.1	White alpine	HU, SI, HR, SR, BG
146.223.21.1	Bright chrome-plated	
146.224.11.1	White alpine	EN, RO, RU, TR, CN
146.224.21.1	Bright chrome-plated	

2.3 Technical data and consumption information

Feature	Value
Power consumption	1850 W
Power consumption economy mode/with heating switched on	≤ 0.5 W

The annual consumption of water for the anal region cleansing in accordance with the reference scenario[1)] is 730 l.

The annual energy consumption of around 24 kWh in accordance with the reference scenario[1)] is shown in detail in the following table:

	Annual energy consumption [kWh]
Standby	4.4
Cleaning with hot water	19.1
Orientation light	0.1
Total	**23.6**

1) Four-person household, one major and four minor bathroom visits each day, factory setting, spray time 20 seconds at 37 °C

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3 Life cycle assessment – calculation criteria

3.1 System boundaries

This environmental product declaration is a Cradle-to-gate-with-options declaration including transport and waste processing during the disposal phase. The use and demolition are not considered.

Product			Construction process		Use	End-of-life			
Raw material	Transport to the manufacturer	Manufac-turing	Distribution	Installation within the building		Demolition	Transport to waste processing	Reuse, recovery, recycling	Disposal
A1	A2	A3	A4	A5	B1-B7	C1	C2	C3	C4
x	x	x	x	x	–	–	x	x	x

x Considered/relevant

– Not considered/not relevant

3.2 Inventory

The product consists of the following raw materials:

Raw material	Quantity [g]
Ceramic	24.833
Plastic (thermoplastic)	2225
Plastic (thermoset)	2178
Steel	424
Electronics	313
Copper	277
Brass	265
Elastomer	230
Total	**30.745**
Recycling portion of raw materials	2%

The packaging contains 4701 g of cardboard and 47 g of plastic.

The documentation material supplied consists of 1107 g of paper.

The consumables supplied (cleaning set and descaling agent) apply to the utilisation phase and are therefore not taken into account.

3.3 Assumptions and background information

(A1) For the raw material supply, the entire raw and recycled material input was modelled using corresponding data, including the losses of 1–6 % relating to material and production. Secondary materials comprise those environmental influences that arise from the collection of waste and from recycling. The following recycled content was recorded: 55 % for copper and steel and 33% for brass.

(A2) For transportation from suppliers in Europe and Asia to Geberit, standard transport distances were assumed for each country and load factors contained in the background data were used. Class Euro 4 diesel lorries are used as the means of transport within Europe. Intercontinental transportation consists of freighters and subsequent local distribution by lorry.

(A3) Products are manufactured in one or more Geberit factories within Europe, which are all certified in accordance with ISO 9001, 14001 and 45001. A current ISO certificate can be downloaded online. All suppliers sign the Geberit suppliers' code of conduct and undergo a detailed selection and inspection procedure.

The electricity consumption plays an important role in in-house production. Average values from the respective factories and a country-specific combination of power sources are assumed.

The production and provision of packaging materials and means of production (technical lubricants) were also modelled in phase A3. The consumption of additional auxiliary materials and water is negligible. Production waste is taken into account. However, the waste flows associated with the production flows are not listed in A3 as they are handled with a conservative allocation factor of 0. Background data was used for outsourced components.

(A4) Transportation from Geberit to customers within Europe is done by logistics partners through the modern, efficient central warehouse in Pfullendorf (DE), which is certified in accordance with ISO 9001, 14001 and 45001. Class Euro 5 and 6 lorries are mainly used for the transport. Distribution in countries outside Europe is mainly done by means of freighters together with lorries to distribute the products locally. In the main market in Europe, the average transport distance is 650 km and the loading weight is 8 t/lorry.

(A5) The installation is easy and needs practically no energy or additional auxiliary materials. The packaging waste generated can be completely reused or converted into energy in the respective country depending on the disposal infrastructure.

100 % of cardboard and paper is recycled. Energy is recovered from plastic in an incineration plant. The assumed energy content per kg is 43.9 MJ for plastics, 30.2 MJ for elastomers and 16.9 MJ for cardboard. The energy efficiency is 42% for heat and 14% for electricity.

(B1-B7) No further statements are made concerning the use phase.

(C1-C4) Waste that is reused is removed from the product system without causing any environmental impact from the first life cycle. No credits are accounted for cases where production of such waste was avoided. With respect to disposal, it has been assumed that all waste is collected once it has been taken from the building site and is sorted appropriately. 100 % of all metal and electronics parts are recycled accordingly. The plastic parts are incinerated (with the assumptions already described). The thermosets are generally suitable for recycling on account of their material properties, but are also modelled conservatively with energy recovery in the model. A transport distance of 20 km is assumed for both disposal options.

3.4 Data basis and data quality

This environmental product declaration is based on a comprehensive life cycle assessment according to ISO 14044:2006. A detailed background report (Background Report EPD Generator, Version 27/06/2019), which meets the requirements of EN 15804 is used for verification. Inventory data is based predominantly on data that was provided by Geberit International AG in 2019. ecoinvent data (version 3.4, 2017, www.ecoinvent.org) and the system model "cut-off by classification" were used for all further data. The quality of the data can therefore be considered to be good.

4 Life cycle assessment – results

The following tables contain the results based on the declared product.

4.1 Environmental impacts

	Unit	A1	A2	A3	A4	A5	C2	C3	C4	**Total**
Global warming (GWP)	kg CO_2-eq	3.28E+01	3.21E+00	4.92E+01	2.06E+00	1.42E-01	5.33E-02	1.14E+01	3.45E-01	9.92E+01
Ozone depletion (ODP)	kg CFC-11-eq	2.89E-06	5.91E-07	5.10E-06	4.06E-07	1.45E-10	1.05E-08	2.61E-08	6.76E-08	9.09E-06
Photochemical ozone creation (POCP)	kg C_2H_4-eq	3.43E-02	1.03E-03	1.21E-02	3.28E-04	2.10E-07	8.48E-06	3.82E-05	8.78E-05	4.79E-02
Acidification (AP)	kg SO_2-eq	3.91E-01	2.81E-02	2.19E-01	6.64E-03	1.31E-05	1.72E-04	1.75E-03	1.89E-03	6.48E-01
Eutrophication (EP)	kg PO_4^3-eq	2.42E-01	3.74E-03	8.80E-02	1.47E-03	1.14E-05	3.79E-05	1.25E-03	6.08E-04	3.37E-01
Depletion of abiotic resources (ADP), fossil fuels	MJ	5.43E+02	5.12E+01	7.74E+02	3.43E+01	1.70E-02	8.88E-01	2.40E+00	6.84E+00	1.41E+03
Depletion of abiotic resources (ADP), elements	kg Sb-eq	2.91E-03	4.50E-06	1.43E-04	4.02E-06	1.67E-09	1.04E-07	2.70E-07	4.62E-07	3.06E-03

A1 Raw material
A2 Transport to the manufacturer
A3 Manufacturing
A4 Distribution
A5 Installation
C2 Transport to waste processing
C3 Reuse, recovery, recycling
C4 Disposal

4.2 Resource use

	Unit	A1	A2	A3	A4	A5	C2	C3	C4	**Total**
Use of primary energy, renewable, w/o raw material use	MJ	2.89E+01	9.58E-01	1.35E+02	5.84E-01	3.07E-04	1.51E-02	7.42E-02	2.25E-01	1.66E+02
Use of primary energy, renewable, raw material use	MJ	0	0	7.94E+01	0	0	0	0	0	7.94E+01
Use of primary energy, renewable, total	MJ	2.89E+01	9.58E-01	2.15E+02	5.84E-01	3.07E-04	1.51E-02	7.42E-02	2.25E-01	2.45E+02
Use of primary energy, non-renewable, w/o raw material use	MJ	4.87E+02	5.29E+01	8.80E+02	3.53E+01	1.74E-02	9.14E-01	2.48E+00	7.07E+00	1.47E+03
Use of primary energy, non-renewable, raw material use	MJ	9.57E+01	0	2.18E+00	0	0	0	0	0	9.79E+01
Use of primary energy, non-renewable, total	MJ	5.83E+02	5.29E+01	8.82E+02	3.53E+01	1.74E-02	9.14E-01	2.48E+00	7.07E+00	1.56E+03
Use of secondary materials	kg	5.20E-01	0	0	0	0	0	0	0	5.20E-01
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0	0	0	0	0
Use of net fresh water	m^3	1.78E+01	1.07E-01	9.26E+00	6.18E-02	1.76E-04	1.60E-03	9.03E-02	1.50E-01	2.75E+01

4.3 Output flows and waste

	Unit	A1	A2	A3	A4	A5	C2	C3	C4	**Total**
Hazardous waste	kg	1.09E-03	2.65E-05	1.74E-02	1.69E-05	1.46E-07	4.37E-07	8.09E-06	5.65E-06	1.86E-02
Radioactive waste	kg	1.23E-03	3.43E-04	2.53E-03	2.34E-04	3.26E-08	6.05E-06	5.95E-06	3.88E-05	4.39E-03
Non-hazardous waste	kg	5.89E+00	3.11E+00	2.49E+00	2.90E+00	2.34E-03	7.50E-02	2.83E-01	2.49E+01	3.96E+01
Components for re-use	kg	0	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	0	0	5.81E+00	0	8.69E-01	0	6.68E+00
Materials for energy recovery	kg	0	0	0	0	0	0	0	0	0
Exported energy – electricity	MJ	0	0	0	0	3.05E-01	0	2.79E+01	0	2.82E+01
Exported energy – heat	MJ	0	0	0	0	9.14E-01	0	8.38E+01	0	8.47E+01

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