

**GEBERIT AQUACLEAN MERA
COMFORT**

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804 + A1



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.

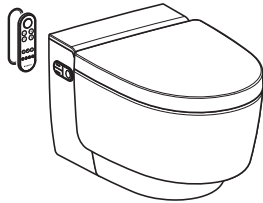
1.2 Declaration holder

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Geberit is one of the pioneers when it comes to sustainability in the sanitary industry. Sustainable has formed an integral component of the corporate strategy for around 30 years. The Geberit Group has a group certificate in accordance with ISO 9001 (quality), ISO 14001 (environment) und ISO 45001 (occupational health and safety). Life cycle assessments were produced for key products from an early stage and Ecodesign has been an integral component of the product development process since 2008. You can find current and comprehensive information on sustainability in the current annual report or at www.geberit.com/nachhaltigkeit.

1.3 Declared product


This declaration applies for the Geberit AquaClean Mera Comfort product in all of the versions listed in this report. The Geberit AquaClean Mera Comfort WC complete solution, wall-hung WC (art. no. 146.215.21.1) has been applied as a reference article.



1.4 Verification and validity

Programme holder: Geberit International AG
 Declaration number: GEB_EPD_7743284875
 Validity: 01/11/2020 to 30/10/2025
 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 + A1 is used as the core PCR.	
Independent verification of the declaration and information in accordance with EN ISO 14025:2010	
<input type="checkbox"/> Internal	<input checked="" type="checkbox"/> External
 Dr. Frank Werner	

2 Product

2.1 Description and application purpose

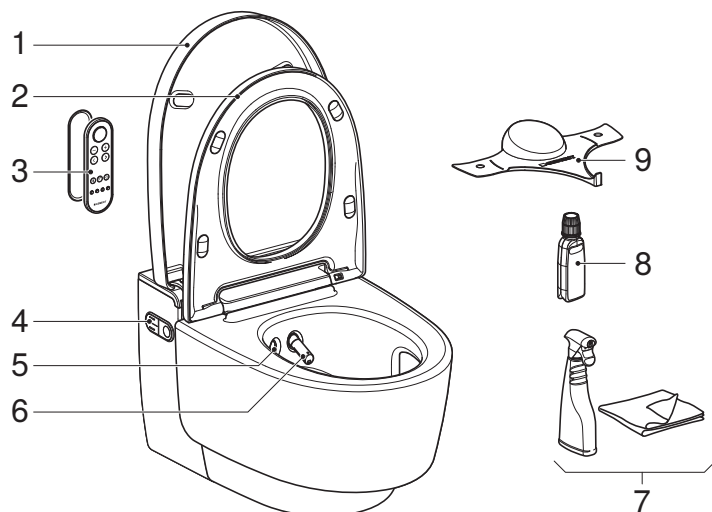
Geberit AquaClean shower toilets ensure thorough cleaning with water by combining the function of a toilet with the cleaning possibilities of a bidet. Additional functions are available, depending on the model. All AquaClean models fulfil the European Ecodesign requirements (ErP Directives) with a standby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

Characteristics:

- anal shower with double-nozzle WhirlSpray shower technology and dynamic aeration for water-saving cleaning
- automatic cleaning of the spray arm and the spray nozzle with fresh water before and after each use
- hybrid hot water system with continuous flow heater and storage water heater
- automatically starting odour extraction with ceramic honeycomb filter
- dryer functionality with separately extendible dryer arm
- WC seat heating that is activated when approached
- WC lid automatic function that is activated when approached
- orientation light that is activated when approached
- remote control and haptic control panel for setting the functions
- rimless WC ceramic appliance with TurboFlush flush technology for a water-saving flushing out with 4.5 litres to 6 litres for the large flush volume

Application purpose:

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



- | | |
|---|---|
| 1 | WC lid with lifting function |
| 2 | WC seat ring |
| 3 | Remote control with magnetic wall-mounted holder |
| 4 | Lateral control panel with status LED |
| 5 | Dryer arm with dryer nozzle |
| 6 | Spray arm with spray nozzle and Lady shower nozzle |
| 7 | Geberit AquaClean cleaning set (art. no. 242.547.00.1) |
| 8 | Geberit AquaClean descaling agent (art. no. 147.040.00.1) |
| 9 | Spray shield |

For the composition by raw materials, see "Product composition", page 5.

2.2 Assortment

The reference product for this declaration is the Geberit AquaClean Mera Comfort WC complete solution, wall-hung WC (art. no. 146.215.21.1).

The sales products listed below differ only insignificantly from the reference article (colour of the design cover and language of the documentation material supplied) and are therefore part of the range of validity of this environmental product declaration.

Art. no.	Colour of the design cover	Language versions
146.210.11.1	white alpine	DE, EN, FR, IT, NL
146.210.21.1	bright chrome-plated	
146.211.11.1	white alpine	DK, NO, SE, FI, EN
146.211.21.1	bright chrome-plated	
146.212.11.1	white alpine	ES, PT, SK, CZ, PL
146.212.21.1	bright chrome-plated	
146.213.11.1	white alpine	HU, SI, HR, SR, BG
146.213.21.1	bright chrome-plated	
146.214.11.1	white alpine	EN, RO, RU, TR, CN
146.214.21.1	bright chrome-plated	
146.215.11.1	white alpine	CH
146.215.21.1	bright chrome-plated	CH
146.218.11.1	white alpine	FR
146.218.21.1	bright chrome-plated	FR

2.3 Technical data and consumption information

Feature	Value
Power consumption	2000 W
Power consumption standby	≤ 0.5 W

The annual water consumption is 780 l and the annual electricity consumption is 103 kWh in accordance with reference scenario¹⁾.

	Annual electricity consumption [kWh]
Standby	4.4
Cleaning with hot water	59.5
Drying with the dryer	12.4
Odour extraction unit	5.3
WC seat heating	21.5
WC lid automatic function	0.15
Orientation light	0.06
Total	103

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

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	Manufacturing	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 Product composition

The product consists of the following raw materials:

Raw material	Quantity [g]
Aluminium	311
Battery	23
Brass	182
Ceramic	16,609
Copper	423
Plastic (Duroplast)	2,528
Elastomer (EPDM)	664
Electronics	1,293
Steel	6,448
Plastic (thermoplastic)	5,025
Other raw materials	218
Total	33,723
Recycled content (post-consumer)	5 %

The packaging contains 8,513 g of cardboard and 98 g of plastic.

The documentation material supplied consists of 610 g of paper.

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

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

3.3 Assumptions and background information

(A1) For the raw material supply, the entire raw and recycled material input was modelled using the corresponding European 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: 40 % for aluminium, 25 % for copper, 22 % for steel and brass, 10 % for cardboard and 0 % for paper.

(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) The mounting of the Geberit AquaClean Mera Comfort shower toilets takes place at the Geberit site in Rapperswil-Jona (CH). Some plastic and metal components are manufactured at the Geberit production sites within Europe (which are all certified in accordance with ISO 9001, 14001 and 45001). The other components are purchased parts. All suppliers sign the Geberit suppliers' code of conduct and undergo a detailed selection and inspection procedure. With respect to manufacturing at Geberit, electricity consumption from injection moulding and installation plays the most important role; this consumption is modelled by the European or Swiss energy mix, respectively. The consumption of additional substances and water is negligible. Reliable background data was used for purchased parts.

(A4) The distribution to customers is based on the planned sales figures, of which approximately half are assigned to Switzerland and a third to Germany. The remainder is supplied to the other countries within and outside Europe. For transport, in addition to the current fleet mix consisting predominantly of Euro 5 lorries, this also takes into account a vehicle load from Ecoinvent. Distribution is carried out exclusively with diesel lorries that cover an average transport distance of 360 km.

(A5) Apart from packaging waste from paper, cardboard and PE foil, no additional material flows are generated during installation. Paper and cardboard are recycled and PE foil is incinerated.

(B1-B7) The anal shower is the main function of the Geberit AquaClean Mera Comfort shower toilet. The heating of the water used to 37 °C is the source of the greatest energy consumption during this process. The additional consumption of water is negligible from the point of view of ecology. Prolonging the shower sequence results in a corresponding increase in energy consumption.

When the additional comfort functions are used, the WC seat heating and the drying with the dryer play a central role. Energy consumption can be reduced by switching these functions off. The other functions, e.g. odour extraction, WC lid automatic function and orientation light are of subordinate importance.

In connection with a suitable Geberit cistern (e.g. Geberit Sigma concealed cistern 12 cm), the full flush volume can be reduced down to as little as 4.5 l thanks to the TurboFlush technology. Furthermore, the use of grey water or rainwater is also possible for the toilet flush. The cleaning of a shower toilet does not differ from that of a conventional toilet.

The majority of the main components can be replaced, thus extending the service life of the product. Regular maintenance includes the annual descaling and replacement of the honeycomb filter for the odour extraction and the replacement of the batteries for the remote control every 2 years.

(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. Plastic parts are converted into energy and the ceramic is disposed of in the landfill for inert matter.

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, which meets the requirements of EN 15804, is used for verification.

The inventory data is based predominantly on average annual production data, which was provided by Geberit International AG in 2014. At the time of the renewal of this environmental product declaration, the data was updated in 2020 in accordance with the improvements to the dryer module. ecoinvent data (version 3.6, 2019, 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 a piece of the declared product.

4.1 Environmental impacts

	Unit	A1	A2	A3	A4	A5	C2	C3	C4
Global warming (GWP)	kg CO ₂ -eq	1.39E+02	3.25E+00	4.30E+01	1.12E+00	3.71E-01	2.22E-02	1.93E+01	7.01E-02
Ozone depletion (ODP)	kg CFC-11-eq	1.03E-05	6.09E-07	4.43E-06	2.12E-07	3.08E-10	4.23E-09	1.34E-07	2.75E-08
Photochemical ozone creation (POCP)	kg C ₂ H ₄ -eq	6.88E-02	5.88E-04	7.94E-03	1.48E-04	5.50E-07	2.94E-06	1.28E-04	1.76E-05
Acidification (AP)	kg SO ₂ -eq	1.19E+00	2.11E-02	1.32E-01	4.32E-03	4.53E-05	1.01E-04	4.64E-03	6.21E-04
Eutrophication (EP)	kg PO ₄ ³ -eq	5.11E-01	3.42E-03	3.83E-02	8.59E-04	1.30E-05	1.98E-05	1.46E-03	1.14E-04
Depletion of abiotic resources (ADP), fossil fuels	MJ	1.89E+03	5.26E+01	6.72E+02	1.83E+01	3.77E-02	3.66E-01	4.01E+00	2.40E+00
Depletion of abiotic resources (ADP), elements	kg Sb-eq	1.14E-03	3.57E-06	2.09E-05	1.30E-06	3.78E-09	2.57E-08	3.75E-07	4.19E-08

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

4.2 Resource use

	Unit	A1	A2	A3	A4	A5	C2	C3	C4
Use of primary energy, renewable, w/o raw material use	MJ	1.53E+02	6.13E-01	5.21E+01	2.21E-01	7.16E-04	4.42E-03	3.92E-01	3.53E-02
Use of primary energy, renewable, raw material use	MJ	1.46E+02	0	0	0	0	0	0	0
Use of primary energy, renewable, total	MJ	2.99E+02	6.13E-01	5.21E+01	2.21E-01	7.16E-04	4.42E-03	3.92E-01	3.53E-02
Use of primary energy, non-renewable, w/o raw material use	MJ	1.88E+03	5.35E+01	7.58E+02	1.87E+01	3.84E-02	3.72E-01	4.55E+00	2.44E+00
Use of primary energy, non-renewable, raw material use	MJ	2.81E+02	0	0	0	0	0	0	0
Use of primary energy, non-renewable, total	MJ	2.16E+03	5.35E+01	7.58E+02	1.87E+01	3.84E-02	3.72E-01	4.55E+00	2.44E+00
Use of secondary materials	kg	1.10E+01	0	0	0	0	0	0	0
Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0	0
Use of non-renewable secondary fuels	MJ	0	0	0	0	0	0	0	0
Use of net fresh water	m ³	1.60E+00	2.49E-03	7.75E-02	9.04E-04	8.08E-05	1.81E-05	9.55E-03	8.07E-05

4.3 Output flows and waste

	Unit	A1	A2	A3	A4	A5	C2	C3	C4
Hazardous waste	kg	2.82E-02	1.17E-04	9.90E-04	4.26E-05	3.75E-07	8.50E-07	1.42E-05	2.56E-06
Radioactive waste	kg	5.79E-03	3.45E-04	1.58E-03	1.20E-04	7.87E-08	2.40E-06	1.43E-05	1.56E-05
Non-hazardous waste	kg	3.90E+01	4.08E+00	2.63E+00	1.53E+00	6.32E-03	3.06E-02	3.14E-01	1.66E+01
Components for re-use	kg	0	0	0	0	0	0	0	0
Materials for recycling	kg	0	0	1.03E+00	0	8.46E+00	0	8.79E+00	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy – electricity	MJ	0	0	7.63E-01	0	5.64E-01	0	3.80E+01	0
Exported energy – heat	MJ	0	0	2.26E+00	0	1.67E+00	0	1.14E+02	0



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