

**GEBERIT WASHBASIN TAPS
PIAVE AND BRENTA**

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804



1 General information

1.1 Declaration holder

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Geberit is one of the pioneers when it comes to sustainability in the sanitary industry. Sustainability has formed part of the corporate strategy for more than 25 years. Most production sites are certified in accordance with ISO 9001 and 14001. In addition, all factories will be certified in accordance with OSHAS 18001 by 2018. 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 under www.geberit.com/sustainability.


1.2 Declared product

This declaration applies to Geberit washbasin tap models Piave and Brenta and covers both the shell of a building and the final installation.

1.3 Verification and validity

Programme holder: Geberit International AG
Declaration number: GEB_EPD_2480232331
Validity: 01/01/2017 to 01/01/2022
Data calculated by: Quantis
www.quantis-intl.com

Environmental declarations of construction products may not be comparable if they do not comply with the EN 15804.

The European standard EN 15804 is used as the core product category rules (core PCR).	
Independent verification of the declaration and specifications in accordance with EN ISO 14025:2010	
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Dr. Frank Werner	

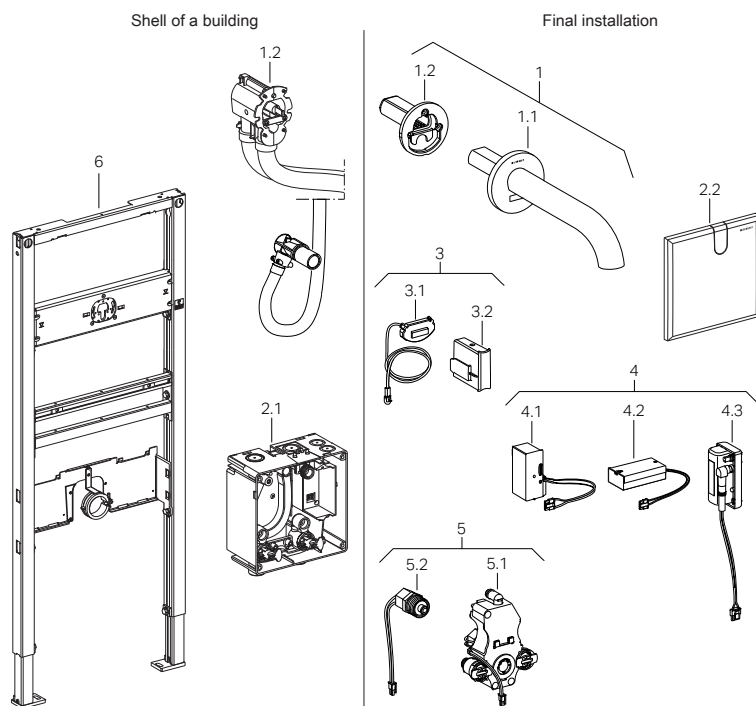
2 Product

2.1 Description and application

The modular Geberit tap system provides a system solution with electronic washbasin taps with maximum flexibility and safety in planning and installation. The system is subdivided into a shell of a building and a final installation. The articles for the shell of a building that are already preinstalled in the Duofix or GIS models are combined with the final installation for a wall-mounted or deck-mounted tap. The ready-to-fit set consists of a valve, control and power supply, with or without mixer. This is supplemented by a Piave or Brenta washbasin tap designed for the purpose, with a bright chrome-plated surface. Two outlet lengths are offered for the wall-mounted tap. The electronically controlled Piave and Brenta taps are easy to clean and service and have an attractive appearance. There are three models to choose from for the power supply: mains, battery or generator.

The product boasts the following key benefits:

- Attractive and streamlined designs
- Reliable planning
- Simple, secure installation
- Quick and easy maintenance



1	Wall-mounted tap, complete	4	Power supply
1.1	Wall-mounted tap	4.1	Power supply unit
1.2	Wall fixing	4.2	Battery compartment
2	Below-washbasin box	4.3	Generator control unit
2.1	Housing, complete	5	Functional unit
2.2	Cover, complete	5.1	Functional unit (with/without mixer, with/without generator)
3	Electronics	5.2	Solenoid valve
3.1	Sensor technology	6	Installation element Duofix, complete
3.2	Control		

Further product components:

- Packaging
- Instructions

2 Product

The reference article used for the Geberit tap system is the wall-mounted Piave tap model with an outlet length of 220 mm, with mains operation (article number 116.282.21.1), with a Duofix installation element (article number 111.558.00.1) and cover plate (article number 116.425.11.1). The sales products listed below differ only insignificantly from the reference article and are therefore part of the range of validity of this environmental product declaration.

	Type	Design	Country-specific designs			
Shell of a building	Duofix	Deck-mounted tap, concealed	111.552.00.1	111.551.00.1	111.553.00.1	111.554.00.1
			111.557.00.1	111.556.00.1	111.563.00.1	111.566.00.1
		Wall-mounted tap, concealed	111.559.00.1	111.558.00.1	111.560.00.1	111.567.00.1
			111.564.00.1	111.561.00.1	111.562.00.1	111.568.00.1
	GIS	Deck-mounted tap, concealed	461.145.00.1			
		Wall-mounted tap, concealed	461.146.00.1			
	Installation set	Deck-mounted tap, concealed	116.130.00.1			

	Type	Design	Mains	Battery	Generator
Final installation	Piave	Wall-mounted tap, concealed	116.262.21.1	116.264.21.1	116.266.21.1
			116.282.21.1	116.284.21.1	116.286.21.1
			116.261.21.1	116.263.21.1	116.265.21.1
			116.281.21.1	116.283.21.1	116.285.21.1
		Deck-mounted tap, concealed	116.182.21.1	116.184.21.1	116.186.21.1
			116.181.21.1	116.183.21.1	116.185.21.1
			116.162.21.1	116.164.21.1	116.166.21.1
	Brenta	Wall-mounted tap, concealed	116.161.21.1	116.163.21.1	116.165.21.1
			116.272.21.1	116.274.21.1	116.276.21.1
			116.292.21.1	116.294.21.1	116.296.21.1
			116.271.21.1	116.273.21.1	116.275.21.1
		Deck-mounted tap, concealed	116.291.21.1	116.293.21.1	116.295.21.1
			116.192.21.1	116.194.21.1	116.196.21.1
			116.191.21.1	116.193.21.1	116.195.21.1
	Deck-mounted tap, exposed	116.172.21.1	116.174.21.1	116.176.21.1	
		116.171.21.1	116.173.21.1	116.175.21.1	
		Cover plate for washbasin tap with concealed functional unit	116.425.11.1		
		Cover plate for washbasin tap with concealed functional unit and concealed trap	116.426.11.1		

2.2 Characteristics

- System solution consisting of:
 - Articles for the shell of a building: Geberit Duofix, Geberit GIS or pure installation set
 - Articles for final installation: Mixer (with/without), power supply (mains, battery, self-sustaining thanks to generator), washbasin tap Piave or Brenta
- Wall-mounted taps with two outlet lengths (170 mm or 220 mm)
- Automatic flush actuation with infrared detection
- Self-adjusting infrared sensor
- Adjustable water saving mode
- Adjustable energy saving mode
- Volume flow control via tap aerator
- High-quality, track-proven solenoid valve
- Functions can be set and queried with the Geberit Service Handy

2.3 Technical data

	Mains	Battery	Generator
Flow rate at 3 bar	5 l/min	5 l/min	5 l/min
Power consumption of power supply unit	0.1 W	–	–
Energy consumption	0.876 kWh/a	–	–
Battery / rechargeable battery service life when used 250 times per day	–	1 year	10 years

To further restrict the flow rate, it is also possible to use tap aerators with a flow rate of 3.8 l/min (article number 243.636.00.1) or 1.9 l/min (article number 243.637.00.1) or 1.3 litres per minute (article number 243.638.00.1).

2.4 Consumption data

Annual water consumption is between 3,833 and 38,325 litres, depending on intensity of use. The corresponding energy consumption (without hot water supply) is less than 1 kWh per year.

Consumption scenario	Intensity of use		Water consumption	Energy consumption
	per day	per year	litres per year	kWh per year
High use (airport/train station), 0.42 l per use	250	91,250	38,325	0.876
Medium use (office/restaurant), 0.42 l per use	100	36,500	15,330	0.876
Low use (office/restaurant), 0.42 l per use	25	9,125	3,833	0.876

2.5 Conformity and label

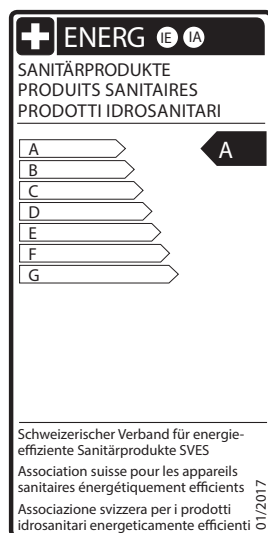
The product complies with the following standards and legal requirements, among others:

DIN EN 248	2003	Sanitary tapware – General specification for electrodeposited coatings of Ni-Cr
DIN 50930-6	2013	Corrosion of metals – Corrosion of metallic materials under corrosion load by water inside of pipes, tanks and apparatus – Part 6: Evaluation process and requirements regarding the hygienic suitability in contact with drinking water
DIN EN ISO 3822	2009	Acoustics – Laboratory tests on noise emission from appliances and equipment used in water supply installations
DIN EN 60730-1	2012	Automatic electrical controls for household and similar use – Part 1: General requirements
DIN EN 15091	2014	Sanitary tapware - Electronic opening and closing sanitary tapware
DIN EN 61000-6-3	2012	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards; Emission standard for residential, commercial and light-industrial environments
DIN EN 61000-6-1	2007	Electromagnetic compatibility (EMC) – Part 6-1: Generic standards; Immunity standard for residential, commercial and light-industrial environments
2011/65/EU	2011	Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)
2012/19/EU (WEEE-II)	2012	Directive on Waste Electrical and Electronic Equipment (WEEE)
1907/2006/EC	2006	Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Relevant declarations of conformity can be downloaded from the websites of the local sales companies.

The product has the following labels and awards:

- Energy label (Switzerland): awarded the highest efficiency rating – Class A
- iF Product Design Award 2017 (DE)



2.6 Raw material

The wall-mounted tap Piave with an outlet length of 220 mm with the Duofix installation element consists of the following materials:

Raw material	Unit	Mains	Battery	Generator
Brass	g	1,216	1,216	1,216
Electronics	g	198	165	168
Copper	g	1	1	1
Plastic	g	932	945	999
Steel	g	11,166	11,167	11,168
Zinc	g	168	168	168
Ferrite	g	2	2	5
Total	kg	13.7	13.7	13.7
Recycling content of raw materials	%	47.8	47.9	47.7

The product is delivered in a cardboard box (800 g) with the installation and operating instructions (664 g of paper). The total weight of the mains version is therefore 15.3 kg. The only difference between the Geberit wall-mounted taps Piave and Brenta is that the Brenta wall-mounted tap is slightly heavier (+20 g).

2.7 Manufacturing

Installation takes place at the Geberit sites in Jona (CH), Lichtenstein (DE) and Pfullendorf (DE). Several plastic and metal components are produced in Jona and Pfullendorf. The other components are purchased parts. All suppliers sign the Geberit code of conduct for suppliers and undergo a detailed selection and inspection procedure.

2.8 Distribution

The products are transported from Geberit to the end user within Europe by lorry via the modern and efficient central warehouse in Pfullendorf (DE). They are distributed via logistics partners with a modern lorry fleet.

2.9 Installation

Installation is simple and does not entail any relevant energy consumption or use of materials. The packaging waste produced (cardboard, paper) can be fully reused while the PE foil is converted into energy.

2.10 Use

Although use is not part of system scope of this environmental product declaration, some useful information is provided on this subject.

Touchless washbasin taps ensure low water consumption thanks to efficient control electronics. The actual amount of water and energy that is consumed during use partly depends on user behaviour. Consumption of this nature has therefore not been included in this environmental product declaration. Relevant technical operating data is nevertheless available in the "Technical data" chapter. For a useful life of ten years, maintenance work is only required for the battery-operated Geberit washbasin tap, resulting in charges to replace the battery.

2.11 End-of-life

Electronic and metal parts are fully recyclable when disposed of appropriately. It is assumed that plastic parts are converted into energy.

The tap can be uninstalled easily without requiring modifications to the domestic installation.

3 Life cycle assessment – calculation basis

3.1 System boundaries

This environmental product declaration is a cradle to gate with options declaration and includes the construction process and end-of-life. The use and demolition stages are not included, as the former depends on the user and the latter is not relevant. The study covers the European market situation.

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

– not considered / not relevant

3.2 Technical scenario information and assumptions

(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 raw materials comprise those environmental influences that arise from the collection of waste and from recycling. The following recycled content was recorded: 25 % for aluminium, 55 % for copper and steel, 33 % for brass and 100 % for cardboard.

(A2) For transportation from the suppliers in Europe and Asia to Geberit, standard transport distances were assumed for each country and the capacity contained in the background data was 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 manufacturing of plastic and metal parts in Switzerland and Germany was approximated with European data records. The electricity consumption during mounting was mapped out with the Swiss electricity mix. The consumption of additional substances and water is negligible. Reliable background data was used for purchased components.

(A4) The distribution to the end users is based on the planned sales figures, three years after the market launch date. Transport primarily takes place with diesel lorries and is modelled using the average vehicle load from ecoinvent and the current Geberit fleet mix with predominantly Euro-5 vehicles.

(A5) Apart from packaging waste (paper, cardboard and PE foil), no additional material flows are generated during installation. 100 % of cardboard and paper is recycled. The PE foil is transported via 40 t lorry to the refuse incineration plant 10 km away and incinerated. The assumed energy content is 16 MJ, while the assumed energy efficiency is 42 % for heat and 14 % for electricity.

(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 (apart from the exceptions already described) are converted into energy. A transport distance of 10 km was assumed.

3.3 Data basis

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 stock data is based predominantly on the data that was provided by Geberit AG in 2016. For all further data, ecoinvent data (version 3.1, year 2014; www.ecoinvent.org) and the system model “cut-off by classification” were used. The quality of the data can therefore be considered to be good. Modelling and all calculations were carried out with the aid of an Excel spreadsheet.

The following results in the “Life cycle assessment – results” chapter relate to the reference article 116.282.21.1, Geberit tap system wall-mounted tap Piave with an outlet length of 220 mm, with mains operation, with a Duofix installation element (article no. 111.558.00.1) and cover plate (article no. 116.425.11.1). The wall-mounted tap with the Brenta design has a slightly higher weight, but is otherwise identical in construction. The weight difference does not lead to any significant changes to the results compared with the reference article. This means that the results are a maximum of 0.5 % higher for the wall-mounted tap with the Brenta design.

4 Life cycle assessment – results

4.1 Environmental impacts

	Unit	Type	A1	A2	A3	A4	A5	C2	C3	C4
Global warming (GWP)	kg CO ₂ -eq	S	2.20E+01	8.72E-01	8.45E+00	5.06E-01	4.30E-01	2.28E-02	2.20E+00	0
		F	2.53E+01							
Ozone depletion (ODP)	kg CFC-11-eq	S	1.37E-06	1.61E-07	7.87E-07	9.59E-08	2.73E-09	4.18E-09	1.54E-08	0
		F	2.03E-06							
Photochemical ozone creation (POCP)	kg C ₂ H ₄	S	1.46E-02	2.35E-04	2.92E-03	8.81E-05	3.26E-06	3.92E-06	2.03E-05	0
		F	2.05E-02							
Acidification (AP)	kg SO ₂ -eq	S	1.87E-01	5.96E-03	3.92E-02	1.82E-03	9.13E-05	9.26E-05	5.62E-04	0
		F	4.22E-01							
Eutrophication (EP)	kg PO ₄ ³⁻ -eq	S	1.20E-01	8.70E-04	1.65E-02	3.79E-04	9.23E-05	2.01E-05	4.94E-04	0
		F	4.09E-01							
Abiotic resource depletion (ADP), fossil	MJ	S	2.73E+02	1.41E+01	1.22E+02	8.39E+00	8.74E-02	3.65E-01	6.09E-01	0
		F	3.04E+02							
Abiotic resource depletion (ADP), materials	kg Sb-eq	S	1.48E-03	1.62E-06	1.17E-05	1.13E-06	2.55E-08	7.42E-08	1.48E-07	0
		F	1.19E-02							

S Shell of a building

F Final installation

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	Type	A1	A2	A3	A4	A5	C2	C3	C4
Use of primary energy, renewable, w/o raw material use	MJ	S	2.23E+01	2.15E-01	7.07E+00	1.19E-01	2.34E+01	4.34E-03	4.95E-02	0
		F	3.21E+01							
Use of primary energy, renewable, raw material use	MJ	S	0	0	2.34E+1	0	-2.34E+01	0	0	0
		F	0							
Use of primary energy, renewable, total	MJ	S	2.23E+01	2.15E-01	3.05E+01	1.19E-01	6.54E-3	4.34E-03	4.95E-2	0
		F	3.21E+01							
Use of primary energy, non-renewable, w/o raw material use	MJ	S	2.80E+02	1.45E+01	1.44E+02	8.54E+00	2.81E+00	3.71E-01	1.52E+01	0
		F	3.42E+02							
Use of primary energy, non-renewable, raw material use	MJ	S	1.05E+01	0	2.90E+00	0	-2.90E+00	0	-1.59E+1	0
		F	5.38E+00							
Use of primary energy, non-renewable, total	MJ	S	2.90E+02	1.45E+01	1.47E+02	8.54E+00	9.86E-02	3.71E-01	6.98E-01	0
		F	3.48E+02							
Use of secondary materials	kg	S	6.16E+00	0	1.46E+00	0	0	0	0	0
		F	3.83E-01							
Use of renewable secondary fuels	MJ	S	0	0	0	0	0	0	0	0
		F	0							
Use of non-renewable secondary fuels	MJ	S	0	0	0	0	0	0	0	0
		F	0							
Use of net fresh water	m ³	S	IND	IND	IND	IND	IND	IND	IND	IND
		F	IND							

IND Indicator not declarable, as the background data from ecoinvent does not allow the calculation

4.3 Output flows and waste

	Unit	Type	A1	A2	A3	A4	A5	C2	C3	C4
Hazardous waste	kg	S	1.17E-03	7.63E-06	4.93E-04	4.58E-06	4.01E-07	2.07E-07	2.28E-06	0
		F	1.27E-03							
Radioactive waste	kg	S	5.73E-04	9.19E-05	5.36E-04	5.46E-05	3.41E-07	2.37E-06	2.49E-06	0
		F	1.07E-03							
Non-hazardous waste	kg	S	8.73E+00	1.04E+00	1.61E+00	7.37E-01	7.38E-03	1.62E-02	3.94E-02	0
		F	3.34E+00							
Components for reuse	kg	S	0	0	0	0	0	0	0	0
		F	0							
Materials for recycling	kg	S	0	0	5.45E-01	0	1.46E+00	0	1.28E+01	0
		F	0							
Materials for energy recovery	kg	S	0	0	0	0	0	0	0	0
		F	0							
Exported energy – electricity	MJ	S	0	0	3.31E-01	0	4.05E-01	0	2.08E+00	0
		F	0							
Exported energy – heat	MJ	S	0	0	9.93E-01	0	1.22E+00	0	6.25E+00	0
		F	0							

5 Green building information

5.1 Green building

Geberit provides system solutions in the area of sustainable building and is an active member of the following associations:

- MINERGIE (CH)
- German Sustainable Building Council – DGNB (DE)
- Greenbuild, sustainable building (AU)
- US Green Building Council - USGBC (USA)

Certain information in this environmental product declaration can be used the assessment and verification of the various certification systems for sustainable building. The reference to the chapters of this environmental product declaration is contained in the following chapter.

5.2 DGNB

Relevant criteria for the German Sustainable Building Council (DGNB), scheme for new residential buildings, version 2015 on designing and assessing sustainable buildings:

Topic	Criterion	Indicator	Chapter
Ecological quality	Life cycle assessment – emissions-related environmental effects	ENV 1.1	4.1
	Risks for the local environment	ENV 1.2	2.5, 2.6
	Life cycle assessment – resource consumption	ENV 2.1	4.2
	Potable water demand and waste water production	ENV 2.2	2.5, 2.10
Economic quality	Building-related costs in the life cycle	ECO 1.1	2.10
Technical quality	Cleaning and maintenance compatibility of the building structure	TEC 1.5	2.10
	Ease of demolition / dismantling	TEC 1.6	2.11

The topics and criteria that have not been listed for this product are not directly relevant. With respect to process quality requirements, Geberit makes detailed information available in planning manuals and competence brochures as well as in technical data sheets on the homepage of the respective sales companies.

5.3 MINERGIE-ECO

The quality label MINERGIE-ECO of the Minergie organisation assesses new constructions and modernisation projects according to a requirements specification in the current valid version 1.3.

The product does not contain any constituents which violate the exclusion criteria of a MINERGIE-ECO certification (NA1.010, NA9.020 and MA1.010, MA9.030). The specification for the water saving concept for outlet taps (NG5.010, MG5.010) is met.

The additional requirements concerning the building concept, sound insulation and indoor climate areas are either not relevant or the product completely complies with them.

5.4 LEED v4

Relevant topics and criteria of the US Green Building Council for the design, construction, operation and maintenance of sustainable buildings in accordance with the Rating System for New Construction and Major Renovations, 2013:

Topic	Criterion	Chapter
Water Efficiency (WE)	Reduction of internal water consumption	2.4
		2.5
		2.10
Energy and Atmosphere (EA)	Optimized energy performance	2.3
		2.4
Materials and Resources (MR)	Environmental product declaration	1.3
	Procurement of raw material	1.1
	Material ingredients	2.6
		4
Innovation / Design (ID)	Innovation in design	2.5

(WE) If the tap system has tap aerators with flow rates of 1.9 l/min or 1.3 l/min, the LEED requirement regarding water efficiency for public washbasin taps (0.5 gallons per minute at 60 psi or 1.9 l/min at 415 kPa in accordance with the Water efficiency Prerequisite) is undercut. The achievement of the credit being strived for is always dependent on all other installed sanitary appliances.

(EA) The product can be operated by a self-sustaining generator unit.

The topics and criteria that have not been listed for this product are not directly relevant.

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