

# ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/



Owner of the Declaration	
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Vitreous China Ceramic Sanitaryware  
Eczacıbaşı Building Products Co.

[www.ibu-epd.com](http://www.ibu-epd.com) / <https://epd-online.com>



## General Information

<p><b>Eczacıbaşı Building Products Co.</b></p> <hr/> <p><b>Programme holder</b>          IBU - Institut Bauen und Umwelt e.V.          Panoramastr. 1          10178 Berlin          Germany</p> <hr/> <p><b>Declaration number</b>          EPD-ECZ-20180068-CAC1-EN</p> <hr/> <p><b>This declaration is based on the product category rules:</b>          Sanitary ceramics, 07.2014          (PCR checked and approved by the SVR)</p> <hr/> <p><b>Issue date</b>          25.07.2018</p> <hr/> <p><b>Valid to</b>          24.07.2023</p>	<p><b>Vitreous China Ceramic Sanitaryware</b></p> <hr/> <p><b>Owner of the declaration</b>          Eczacıbaşı Building Products Co.          Büyükdere Cad. Ali Kaya sk.,No.7          Levent,İstanbul, Turkey</p> <hr/> <p><b>Declared product / declared unit</b>          Vitreous China Ceramic Sanitaryware / 1 t</p> <hr/> <p><b>Scope:</b>          Within this study a life cycle analysis according to ISO 14040/44 is performed for vitreous china ceramic sanitary ware products manufactured by Eczacıbaşı Building Products Co. at the production plant located in Bozüyük/Bilecik/TURKEY. The life cycle analysis is based on the data declared by Eczacıbaşı Building Products Co. The EPD for vitreous china ceramic sanitaryware products is an average EPD which represents the life cycle analysis of the vitreous china product group. This analysis relies on transparent, plausible and documented basis data. All the model assumptions which influence the results are declared. The life cycle analysis is representative for the products introduced in the declaration for the given system boundaries. The life cycle analysis covers the manufacturing of the products from cradle to gate.</p> <p>The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.</p>
<p></p> <hr/> <p>Prof. Dr.-Ing. Horst J. Bossenmayer          (President of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dipl. Ing. Hans Peters          (Managing Director IBU)</p>	<p><b>Verification</b></p> <p>The standard /EN 15804/ serves as the core PCR</p> <p>Independent verification of the declaration and data according to /ISO 14025:2010/</p> <p><input type="checkbox"/> internally      <input checked="" type="checkbox"/> externally</p> <hr/> <p></p> <hr/> <p>Mr Olivier Muller          (Independent verifier appointed by SVR)</p>

## Product

### Product description / Product definition

Ceramic sanitaryware products are composed of inorganic materials as clay, kaolinite, quartz and feldspar in definite ratios. A fluid slip is generated from this mixture then casted into plaster moulds to form pre-product. In casting house, pre-products are taken out of the moulds and hole forming, cutting and finishing operations are carried out on each piece. After the shaping processes are completed, the pre-products are dried by warm air blowing (75-90 C°). After glazing, pre-products, are fired at 1200°-1220°C to obtain a glazed and hard surface. Ceramic sanitaryware is a common term for washbasins, cisterns, bidets, shower trays, squatting pans, urinals utilized in bathrooms, kitchens and toilets in glazed formation with a white or colored outer surface. The main raw materials included in vitreous china ceramic sanitaryware are clay, kaolinite, quartz and feldspar.

For the placing on the market in the EU/EFTA (with the Exception of Switzerland) washbasins need a Declaration of Performance, taking into consideration /EN 14688: 22/12/2017/, and the CE-marking according to (EU) No. 305/2011 (CPR).  
 For the placing on the market in the EU/EFTA (with exception of Switzerland) bidets, urinals need Declaration of Performance taking into consideration /EN 14528: 22/12/2017/ and the CE-marking according to (EU) No. 305/2011 (CPR).  
 For the placing on the market in the EU/EFTA (with the exception of Switzerland) WC pans and WC suites, are need a declaration of performance taking into consideration EN 997:2012+A1:2015 and the CE-marking according to (EU) No. 305/2011 (CPR).

## Application

**Washbasins:** A washbasin is a plumbing fixture used to wash hands in lavatories or bathrooms and it sends used water to drain-pipes through a trap.

**WC pans:** A WC pan is a plumbing fixture used to relieve oneself in lavatories and bathrooms by sitting.

**Cisterns:** A cistern is a fixture that reserves and holds a desired amount of water with a filling mechanism and flushes it in order to clean toilet bowls or pans with a flushing mechanism.

**Squat pans:** A squat pan is a plumbing fixture used to relieve oneself by squatting.

**Shower trays:** A shower tray is a ceramic fixture used in bathrooms to take a shower standing up.

**Bidets:** A bidet is a plumbing fixture used in lavatories and bathrooms to clean certain parts of the body by sitting on it.

**Urinals:** A urinal is a ceramic fixture used generally in men's rooms and occasionally in bathrooms to urinate standing up.

**Accessories:** Accessories are supplementary components used in bathrooms and kitchens, which are made of ceramics or various other materials and are generally built-in or screwed into walls.

## Technical Data

Harkord cracking, crazing, resistance to strike, resistance to chemicals and staining agents, surface hardness, resistance to temperature changes tests are performed on vitreous china ceramic sanitary ware products, before these products are delivered. The procedure regarding these analyses is defined in relevant standards and all these analyses are performed in compliance with these procedures described in the standards.

The dimensions of the vitreous china ceramic sanitaryware products in the delivery status are given with the range for all product groups.

## Constructional data

Name	Value	Unit
Width	100 - 720	mm
Length	100 - 750	mm
Height	70 - 710	mm
Maximum water absorption	0.2 - 0.4	Vol.-%
Harkord-Cracking Test	PASS	-
Crazing test	PASS	-
Water absorption test	PASS	-
Resistance to chemicals and staining	PASS	-
Surface hardness test	PASS	-
Resistance to temperature change	PASS	-

## Product according to the CPR, based on a

**hENJ:** Performance data of the products in accordance

with the declaration of performance with respect to its essential characteristics according to:

- /EN 997/ WC pans and WC suites with integral trap
- /EN 14528/ Bidets
- /EN 14527/ Shower trays for domestic purposes
- /EN 14688/ Sanitary appliances - Wash basins
- /EN 13407/ Wall-hung urinals
- /AS 1172.2/ Water closet (WC) pans of 6/3 L
- /TS EN 31/ Wash basins
- /TS EN 33/ WC pans and WC suites
- /TS EN 35/ Pedestal and wall-hung bidets with over-rim supply
- /TS EN 36/ Wall hung bidets over rim supply only
- /TS EN 80/ Wall hung urinals
- /TS EN 13310/ Kitchen sinks
- /TS 799/ Squatting pans
- /TS EN 14055/ WC and urinal flushing cisterns
- /TS EN 251/ Shower trays

## Base materials / Ancillary materials

Vitreous China (VC) Main raw materials:

- Clay 25-35 M %
- Kaolin 15-25 M %
- Feldspar 30-35 M %
- Quartz 15-20 M %

Auxiliary substances/additives:

- Rheological additives for glazes and slips.
- Plaster for moulds
- Araldite and resin materials for moulds
- Pigments for coloured glazes.

## Reference service life

In the scope of this study the reference service life is not declared, since this EPD covers a variety of different products belonging to the vitreous china ceramic sanitaryware product group. Unless there is a fracture or a glaze crack, product can be used for more than 50 years without losing its hygienic and functional properties.

## LCA: Calculation rules

### Declared Unit

The declared unit is 1 t of vitreous china ceramic sanitaryware product. The average mass of one piece of the declared product is indicated below:

- Separator 8.4 (kg/piece)
- Pedestal 10.6 (kg/piece)
- Wall-hung bidet 19.0 (kg/piece)
- Wall-hung WC pan 19.0 (kg/piece)
- Shelf 4.1 (kg/piece)
- Sink 16.0 (kg/piece)
- Squatting pan 20.0 (kg/piece)
- Washbasin 14.0 (kg/piece)
- Urinal 14.3 (kg/piece)
- Cistern 16.7 (kg/piece)
- WC pan 21.3 (kg/piece)

## Declared unit

Name	Value	Unit
Declared unit	1	t
Mass per peace	4 - 22	kg
Conversion factor to 1 kg	0.001	-

For IBU core EPDs (where clause 3.6 is part of the EPD): for average EPDs, an estimate of the robustness of the LCA values must be made, e.g. concerning variability of the production process, geographical representativity and the influence of background data and preliminary products compared to the environmental impacts caused by actual production.

## System boundary

Type of EPD: cradle to gate.  
The system boundary includes the production of vitreous china ceramic sanitaryware products from

extraction of raw material to the production of finished packaged product at the factory gate (cradle to gate). In this study, the product stage information modules A1, A2, and A3 are considered. These modules include production of raw material extraction and processing (A1), processing of secondary material input (A1), transport of the raw materials to the manufacturer (A2), manufacturing of the product (A3) and the packaging materials (A3).

## Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

## Background Data

For local data specific for Turkey, TLCID (V1.01) developed by SÜRATAM was used.  
For any other background data the Ecoinvent database (V3.2) was used compiled in March 2016.

## LCA: Scenarios and additional technical information

The modules A4, A5, B1, B2, B3, B4, B5, reference service life, B6, B7 and C1 – C4 are not considered and declared in this study.

## LCA: Results

In Table 1 "Description of the system boundary", all declared modules are indicated with an "X"; all modules that are not declared shall be indicated with "MND".

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	MND	MND	MND

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 tonne Vitreous China Ceramic Sanitaryware

Parameter	Unit	A1-A3
Global warming potential	[kg CO <sub>2</sub> -Eq.]	1.50E+3
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.06E-4
Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	5.16E+0
Eutrophication potential	[kg (PO <sub>4</sub> )-Eq.]	1.95E+0
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	2.61E-1
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	4.66E-4
Abiotic depletion potential for fossil resources	[MJ]	2.31E+4

### RESULTS OF THE LCA - RESOURCE USE: 1 tonne Vitreous China Ceramic Sanitaryware

Parameter	Unit	A1-A3
Renewable primary energy as energy carrier	[MJ]	9.09E+2
Renewable primary energy resources as material utilization	[MJ]	1.62E+3
Total use of renewable primary energy resources	[MJ]	2.53E+3
Non-renewable primary energy as energy carrier	[MJ]	2.05E+4
Non-renewable primary energy as material utilization	[MJ]	3.03E+3
Total use of non-renewable primary energy resources	[MJ]	2.36E+4
Use of secondary material	[kg]	0.00E+0
Use of renewable secondary fuels	[MJ]	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0
Use of net fresh water	[m <sup>3</sup> ]	7.08E+0

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

#### 1 tonne Vitreous China Ceramic Sanitaryware

Parameter	Unit	A1-A3
Hazardous waste disposed	[kg]	4.00E-2
Non-hazardous waste disposed	[kg]	7.55E+1
Radioactive waste disposed	[kg]	0.00E+0
Components for re-use	[kg]	0.00E+0
Materials for recycling	[kg]	2.27E+2
Materials for energy recovery	[kg]	0.00E+0
Exported electrical energy	[MJ]	0.00E+0
Exported thermal energy	[MJ]	0.00E+0

## References

**/TSE ISO EN 9000/** Quality management system- Fundamentals and vocabulary

Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006)

**/TS EN 9001:2015/** Quality management systems - Requirements

**/DIN EN ISO 15686: (WF1) 2011-05**  
Buildings and constructed assets- Service life planning

**/OHSAS 18001/** Occupational health and safety management systems - Specification

**/BNB 2011**  
BBSR Table "Useful life of components for life cycle assessments in accordance with the Sustainable Building assessment system (BNB)", Federal Ministry of Transport, Building and Urban Development, Presentation II on Sustainable Building; available online at <http://www.nachhaltigesbauen.de/baustoff-undgebaeu-dedaten/nutzungsdauern-von-bauteilen.html>.

**ISO 14001:2015/** Environmental Management Systems – Requirements with Guidance for Use

**/ISO 14040-44/** DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment -

**/PCR for Building-Related Products and Services- Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report/** Prepared by Institute Construction and Environment e.V. (IBU), *Institut Bauen und Umwelt* e.V. (IBU), Rheinufer 108, 53639 Königswinter, 2012:09 Version 1.1, DATE 04-2013

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**/Ecoinvent /** Ecoinvent Centre, [www.Eco-invent.org](http://www.Eco-invent.org)

**/SimaPro/** SimaPro LCA Package, Pré Consultants, the Netherlands, [www.pre-sustainability.com](http://www.pre-sustainability.com)

**/TLCID/** Turkish Life Cycle Inventory Database, 2014,

Turkish Centre for Sustainable Production Research and Design - SÜRATAM , <https://suratam.org/>

**/IBU 2016/**

IBU (2016): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V., Version 1.1 Institut Bauen und Umwelt e.V., Berlin.  
[www.ibu-epd.de](http://www.ibu-epd.de)

**/ISO 14025/**

DIN EN /ISO 14025:2011-10/, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

**/EN 15804/**

/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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