

# ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

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



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## 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-20180067-CAC1-EN</p> <hr/> <p><b>This Declaration is based on the Product Category Rules:</b>          Sanitary ceramics, 07.2014          (PCR tested 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>Fine Fireclay Ceramic Sanitaryware</b></p> <hr/> <p><b>Owner of the Declaration</b>          Eczacıbaşı Building Products Co.          Büyükdere Cad. Ali Kaya sk.No:5          Levent 34394, İstanbul, Turkey</p> <hr/> <p><b>Declared product / Declared unit</b>          Fine Fireclay 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 fine fireclay 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 fine fireclay ceramic sanitaryware products is an average EPD which represents the life cycle analysis of the fine fireclay 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. 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 CEN Norm /EN 15804/ serves as the core PCR</p> <p>Independent verification of the declaration according to /ISO 14025/</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 fine fireclay ceramic sanitaryware are clay, kaolinite, quartz, feldspar and chamotte.

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.

**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.

- /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

## Technical Data

The dimensions of the fine fireclay ceramic sanitary ware products in the delivery status are given with the range for all product groups.

### Constructional data

Name	Value	Unit
Width	145 - 1205	mm
Length	85 - 890	mm
Height	75 - 905	mm
Maximum water absorption	8.5 - 9.5	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	-
Resistance to dry temperature	180	°C

The data of the Declarations of the performance for the respective Products apply:

- /EN 997/ WC pans and WC suites with integral trap
- /EN 14528/ Bidets
- /EN 14527/ Shower trays for domestic purposes

## Base materials / Ancillary materials

Fine Fireclay (FFC) Main raw materials:

- Clay 25-35 M %
- Kaolin 15-25 M %
- Feldspar 0-5 M %
- Quartz 10-20 M %
- Chamotte 20-35 M %
- FFC scraps 5-10 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 fine fireclay 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 fine fireclay ceramic sanitaryware product. The average mass of one piece of the declared product is indicated below:

- Separator: 11.3 (kg/piece)
- Pedestal: 8.0 (kg/piece)
- Wall-hung bidet: 14.3 (kg/piece)
- Shower tray: 36.2 (kg/piece)
- Shelf: 5.0 (kg/piece)
- Sink: 36.7 (kg/piece)
- Washbasin: 18.7 (kg/piece)
- Urinal: 20.4 (kg/piece)
- Cistern: 13.9 (kg/piece)

- Counter with hole: 20.8(kg/piece)

### The declared unit

Name	Value	Unit
Declared unit	1	t
Mass per peace	5 - 20.8	kg
Conversion factor to 1 kg	0.001	-

### System boundary

Type of EPD: cradle to gate.

The system boundary includes the production of fine fireclay 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 (Version 3.2) 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

Parameter	Unit	A1-A3
Global warming potential	[kg CO <sub>2</sub> -Eq.]	1.74E+3
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.26E-4
Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	5.86E+0
Eutrophication potential	[kg (PO <sub>4</sub> )-Eq.]	2.19E+0
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	2.96E-1
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	4.96E-4
Abiotic depletion potential for fossil resources	[MJ]	2.68E+4

### RESULTS OF THE LCA - RESOURCE USE: 1 tonne Fine fireclay ceramic sanitaryware product

Parameter	Unit	A1-A3
Renewable primary energy as energy carrier	[MJ]	1.08E+3
Renewable primary energy resources as material utilization	[MJ]	1.62E+3
Total use of renewable primary energy resources	[MJ]	2.69E+3
Non-renewable primary energy as energy carrier	[MJ]	2.45E+4
Non-renewable primary energy as material utilization	[MJ]	3.03E+3
Total use of non-renewable primary energy resources	[MJ]	2.76E+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> ]	9.48E+0

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

#### 1 tonne Fine fireclay ceramic sanitaryware product

Parameter	Unit	A1-A3
Hazardous waste disposed	[kg]	1.60E-1
Non-hazardous waste disposed	[kg]	5.64E+1
Radioactive waste disposed	[kg]	0.00
Components for re-use	[kg]	0.00
Materials for recycling	[kg]	1.69E+2
Materials for energy recovery	[kg]	0.00
Exported electrical energy	[MJ]	0.00
Exported thermal energy	[MJ]	0.00

## 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

**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 -

<http://www.nachhaltigesbauen.de/baustoff-undgebäude-daten/nutzungsdauern-von-bauteilen.html>.

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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/>

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#### **General Principles**

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[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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# VitrA

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