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**Ocenjevanje trajnostnosti - Keramična sanitarna oprema**

Sustainability assessment - Ceramics sanitary appliances

Beurteilung der Nachhaltigkeit - Keramische Sanitärausstattungsgegenstände

Evaluation de durabilité - Appareils sanitaires en céramique

**Ta slovenski standard je istoveten z: prEN 16578**

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**ICS:**

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## Sustainability assessment - Ceramics sanitary appliances

Evaluation de durabilité - Appareils sanitaires en céramique

Beurteilung der Nachhaltigkeit - Keramische  
Sanitärausstattungsgegenstände

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (prEN 16578:2014) has been prepared by Technical Committee CEN/TC 163 “Sanitary appliances”, the secretariat of which is held by UNI.

This document is currently submitted to the second CEN Enquiry.

This document supports the unified approach for CE marking of ceramic sanitary appliances covered by harmonized European Standards elaborated by CEN/TC 163 under the Mandate M/110 “Sanitary Appliances” and specifies the assessment of sustainability being the Basic Works Requirement 7 for construction products in accordance with the Construction Products Regulation (305/2011/EU) and document CPR 06/10/1 of European Commission - Enterprise and Industry - Sustainable Industrial Policy and Construction.

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## Introduction

This European Standard supports the (harmonised) European Standards on ceramic sanitary appliances elaborated by CEN/TC 163 on assessing the sustainability for these products.

This European Standard provides a system for sustainability assessment of ceramic sanitary appliances using a life cycle approach, featuring qualitative and quantitative indicators for ecologic, economic and social performance of sanitary ceramic appliances. The purpose of this European Standard is to provide requirements and classification values for the assessment of the sustainability of ceramic sanitary appliances.

Selected parameters assessed in accordance with this standard represent the main parameters defined in EN 15804. This European Standard may be used to support environmental building assessment and environmental product declarations (EPDs).

The structure and the parameters of EN 15804 – mandatory requirements from information modules A1 to A3 - are used as a basis for the ecological criteria of this European Standard.

A system with sustainability classes has been introduced to express the performance of ceramic sanitary appliances. The link between these classes and the assessment of the products form a framework of evaluation schemes.

Evaluation schemes enable the comparison of different ceramic sanitary appliances.

NOTE EPDs based on EN 15804 are not comparative assertions (see EN 15804, 5.1). These EPDs are necessary for environmental assessment of building only.

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## 1 Scope

This European Standard specifies sustainability requirements together with assessment methods and evaluation schemes for ceramic sanitary appliances, i.e. WC pans and WC suites in accordance with EN 997, urinals in accordance with EN 13407, wash basins in accordance with EN 14688, communal washing troughs in accordance with EN 14296 and bidets in accordance with EN 14528.

NOTE This standard may be applicable to other ceramic sanitary appliances.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 997, *WC pans and WC suites with integral trap*

EN 12056 (all parts), *Gravity drainage systems inside buildings*

EN 13407, *Wall-hung urinals — Functional requirements and test methods*

EN 14296, *Sanitary appliances — Communal washing troughs*

EN 14528, *Bidets — Functional requirements and test methods*

EN 14688, *Sanitary appliances — Wash basins — Functional requirements and test methods*

EN 15804, *Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products*

## 3 Terms and definitions

<https://standards.itec.ai/catalog/standards/sist/df7c0e22-df32-4914-9dbc-1dacc66612f7/sist-en-16578-2014>

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **abiotic depletion potential for fossil resources**

measures the gradual depletion of non-renewable fossil resources

Note 1 to entry: An example is raw oil.

### 3.2

#### **abiotic depletion potential for non-fossil resources**

measures the gradual depletion of non-renewable non-fossil resources

Note 1 to entry: An example is clay.

### 3.3

#### **acidification potential of land and water**

sums contributions of sulphuric acid and nitric acid to acid rain, acid snow and acid deposition

Note 1 to entry: It includes sulphur oxides (SO<sub>2</sub>, SO<sub>3</sub>) and nitrogen oxides (N<sub>2</sub>O, NO and NO<sub>2</sub>).

### 3.4

#### **auxiliary**

production tool, e.g. casting moulds, sponges and supports

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**3.5  
ceramics**  
inorganic non-metallic material which is typically moulded from raw materials at room temperature and gains its characteristic physical properties during a firing process (after the moulding)

Note 1 to entry: The term "ceramic materials for sanitary appliances" covers both vitreous china and fine fire clay materials.

**3.6  
construction product**  
item manufactured or processed in construction works

[SOURCE: EN 15804:2012]

**3.7  
consumption**  
use of materials or energy within a defined time frame

**3.8  
cost in use**  
expenses incurred while using the product

**3.9  
declared unit**  
quantity of a construction product for use as a reference unit

Note 1 to entry: Usual units for mass is t, for quantity is piece.

**3.10  
depletion potential of the stratospheric ozone layer**  
measures depletion of stratospheric ozone needed for protection against UV radiation

Note 1 to entry: This includes chlorofluorocarbons (CFCs).

**3.11  
energy management**  
system to monitor, control and evaluate the type of power supply as well as the energy consumption of a product

**3.12  
eutrophication potential**  
measures dissolved oxygen depletion by undesirable forms of biomass, such as algae

Note 1 to entry: This includes various forms of nitrogen and phosphorus.

**3.13  
formation potential of tropospheric ozone photochemical oxidants**  
puts all smog-producing chemicals on the same equivalent

**3.14  
glazed ceramic**  
ceramic body with a surface layer of silicon oxide compound applied before the firing process and chemically bonded during firing

Note 1 to entry: The glaze deemed to be a part of the ceramics and not a separate coating.



**3.15****global warming potential**

puts all greenhouse gases on the same denominator

Note 1 to entry: Greenhouse gases include CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and CFCs.

**3.16****gypsum**

dehydrate natural gypsum as used for plaster moulds

**3.17****hazardous substance**

solid, liquid or gas that can harm people, other living organisms, property or the environment

**3.18****life cycle**

consecutive and interlinked stages of a construction products life, from raw material acquisition or generation from natural resources to final disposal

**3.19****maintenance**

all actions to maintain or repair in order a product to continue its declared function

**3.20****production**

industrial process consisting of different steps in the manufacture of goods

**3.21****production system**

collection of unit processes with elementary and product flows, performing one or more defined functions, and which determines the life cycle of a product

**3.22****raw material**

single material or a mixture of different materials (e.g. feedstock, ceramic body) as being the basic material of which a product is manufactured

**3.23****recycling**

use of material as secondary material outside the boundary of the production system

Note 1 to entry: Examples are recycled gypsum of plaster moulds.

**3.24****renewable energy**

energy from renewable non-fossil sources

Note 1 to entry: Non-fossil sources are, for example, wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, electricity generation through exhaust gas heat etc.

**3.25****safety in use**

characteristic of the level of risks associated with the installation and use of the product

**3.26****secondary fuel**

fuel recovered from previous use or from waste which substitutes primary fuels

**prEN 16578:2014 (E)****3.27****secondary material**

material recovered from previous use or from waste which substitutes primary materials

Note 1 to entry: Secondary material is measured at the point where the secondary material enters the production system from another production system.

Note 2 to entry: Materials recovered from previous use or from waste from one production system and used as an input in another production system are secondary materials e.g. use of milled scrap technical ceramics as raw material for ceramics sanitary appliances.

Note 3 to entry: Examples for secondary materials (to be measured at the boundary of the production system) are recycled sanitary appliances, tiles or technical ceramics.

**3.28****transport**

movement of goods (e.g. products, raw materials) from one location to another

**3.29****total production**

means the production of saleable ceramic sanitary appliances

Note 1 to entry: Usual unit is t/a.

**3.30****user friendly**

characteristic of the level of product ease of use

**3.31****waste management**

collection, transport, processing, recycling or disposal of waste materials and their monitoring and recycling

**3.32****water saving**

reduction in water use accomplished by implementation of water conservation, water reduction or water efficiency measures

**4 Assessment****4.1 General**

The criteria are based on the “three pillar model” of sustainability as stipulated in the World Summit Conference 2005 [1]. These “three pillars” (ecological, economic and social requirements) are generally used in terms of sustainability.

Pillar 1 “Ecological requirements” covers the applicable requirements from information moduls A1 to A5 of EN 15804.

Pillar 2 “Economical requirements” covers the applicable requirements from information moduls B1, B6 and B7 of EN 15804.

Pillar 3 “Social requirements” covers further applicable requirements from information moduls B2 to B5 of EN 15804.

This clause describes the detailed criteria and defines the requirements for the evaluation of the sustainability of ceramic sanitary appliances. The assessment of ceramic sanitary appliances is based on applicable product category rules in accordance with EN 15804.

The assessment shall be carried out per plant or per defined group (network of plants) (see Annex A).

The assessment shall take into account at least 90 % of each input or output of material(s) or energy and a correction to 100 % shall be made for each value. For example for 4.2.2.1: In case of 95 % assessed renewable energy consumption, then also 95 % of the production weight shall be taken into account.

The assessment shall cover a period of 12 subsequent months. The assessment is valid for the following 5 years maximum.

For the purposes of assessment, the manufacturer's products may be grouped into families, where it is considered that the results for the assessed characteristics from any one product within the family are representative for the same characteristics for all products within that same family, e.g. WC of type 5, WC of type 6, WCs suites of type 6 or wash basins.

The evaluated result for each requirement shall be reported in the evaluation scheme in Annex B.

In the case when a requirement is not applicable for one product or product group, e.g. flush volume for wash basins, it has to be given "not applicable" for non-applicability into the respective line of the fields "value" and "rating".

This assessment may be used to support environmental building assessment.

## 4.2 Ecological criteria

### 4.2.1 General

The ecological pillar covers the preservation of resources. For ceramic sanitary appliances, sustainability means optimised use of resources, optimised exploitation of raw materials, (energy-) optimised production and optimised transport (delivery chain).

Statements in 4.2.2 to 4.2.4 cover the relevant ecological criteria for the cradle to gate stage. They take into account raw material extraction and processing, processing of secondary material input (e.g. recycling processes), transport to the manufacturer, manufacturing, including provision of all materials, products and energy, as well as waste processing up to the end-of waste state or disposal of final residues during the product stage.

The ecological criteria described in 4.2.5 concerns the construction process consisting of transport and installation.

Characterisation factors are taken from database CML-IA, version 4.1 of October 2012 from Institute of Environmental Sciences, Leiden University (NL) or equivalent or the attachment A1 of EN 15804.

Further not mentioned characterisation factors are available in amendments of EN 15804, e.g. EN 15804/A1.

When assessing the ecological criteria, parameters are declared per ton (1 000 kg) of ceramic sanitary ware.

### 4.2.2 Parameters describing the resource use

#### 4.2.2.1 Use of renewable primary energy (excluding renewable primary energy resources used as raw materials)

This is the proportion of the total renewable primary energy consumption per total production weight.

The renewable primary energy shall be calculated using equation (1).

$$E_{rp} = E_{rpt} / W_t \quad (1)$$

where

$E_{rp}$  is the renewable primary energy rate, in MJ/t;

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$E_{npt}$  is the total renewable primary energy consumption, in MJ;

$W_t$  is the total production weight, in t.

**4.2.2.2 Use of renewable primary energy resources used as raw materials**

Not applicable for the sustainability assessment of ceramic sanitary appliances.

**4.2.2.3 Total use of renewable primary energy resources  
(primary energy and primary energy resources used as raw materials)**

The sum of used renewable primary energy resources is the sum of 4.2.2.1 and 4.2.2.2.

**4.2.2.4 Use of non-renewable primary energy  
(excluding non-renewable primary energy resources used as raw materials)**

This is the proportion of the total non-renewable primary energy consumption per total production weight.

The non-renewable primary energy shall be calculated using equation (2).

$$E_{np} = E_{npt} / W_t \quad (2)$$

where

$E_{np}$  is the non-renewable primary energy rate, in MJ/t;

$E_{npt}$  is the total non-renewable primary energy consumption, in MJ;

$W_t$  is the total production weight, in t.

**4.2.2.5 Use of non-renewable primary energy resources used as raw materials**

Not applicable for the sustainability assessment of ceramic sanitary appliances.

**4.2.2.6 Total use of non-renewable primary energy resources  
(primary energy and primary energy resources used as raw materials)**

The sum of non-renewable primary energy resources is the sum of 4.2.2.4 and 4.2.2.5.

**4.2.2.7 Use of secondary material**

Not applicable for the sustainability assessment of ceramic sanitary appliances.

**4.2.2.8 Use of renewable secondary fuels**

Not applicable for the sustainability assessment of ceramic sanitary appliances.

**4.2.2.9 Use of non-renewable secondary fuels**

Not applicable for the sustainability assessment of ceramic sanitary appliances.

**4.2.2.10 Use of net fresh water**

This is the proportion of the net fresh communal water consumption per total production weight.

The net fresh water rate shall be calculated using equation (3).