

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Ideal Standard International NV
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-IDE-20230127-IBB1-EN
Issue date	20.12.2023
Valid to	19.12.2028

Ceramic cistern

Ideal Standard International

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ECO PLATFORM

EPD
VERIFIED



1. General Information

Ideal Standard International

Programme holder

IBU – Institut Bauen und Umwelt e.V.
 Hegelplatz 1
 10117 Berlin
 Germany

Declaration number

EPD-IDE-20230127-IBB1-EN

This declaration is based on the product category rules:

Sanitary ceramics, 01.08.2021
 (PCR checked and approved by the SVR)

Issue date

20.12.2023

Valid to

19.12.2028



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Ceramic cistern

Owner of the declaration

Ideal Standard International NV
 Da Vincilaan 2
 1935 Zaventem
 Belgium

Declared product / declared unit

One piece of cistern, including one tank trim.

Scope:

The EPD contains the result for 1 piece of cistern produced by IS. As the cistern can be produced in 3 different ceramic plants, respectively: Sevlievo (Bulgaria), Armitage (United Kingdom) and Teplice (Czech Republic), the LCA results are based on the weighted average data. In the LCA report, a variability study between the average and the three specific plants has been included.

Note that the results have been separated for the ceramic part and the tank trim, so the user can easily calculate the results for a cistern with a different weight. The formula is described further in this document. Foreground data has been provided directly by Ideal Standard and background LCA data is based on Ecoinvent 3.8 and Industry 2.0 data. 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.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally



Vito D'Incognito,
 (Independent verifier)

2. Product

2.1 Product description/Product definition

The product under study is a standard white porcelain cistern, including the tank trim (i.e. inlet and outlet valve of the flushing mechanism). The EPD contains the result for 1 piece of cistern produced by IS.

As the cistern can be produced in 3 different ceramic plants, respectively: Sevlievo (Bulgaria), Armitage (United Kingdom) and Teplice (Czech Republic), the LCA results are based on the weighted average data. In the LCA report, a variability study between the average and the 3 specific plants has been included.

The manufacturer can - within the framework of the European Regulation N° 305/2011 (CPR) - present the Declaration of Performance (DOP) of the product confirming that the product has a CE marking.

For the application and use the respective national provisions apply.

2.2 Application

The product is used in private and public bathrooms. The product can be used in new construction and renovation work for hygienic and household use.

2.3 Technical Data

Constructional data

Name	Value	Unit
Crazing test Internal test - 1hr in autoclave with 5bar steam	Minimum 1 cycle without crazing	-
Water absorption EN997 for WC pans (toilets) and so by extension to the Vitreous China products	<0.5	%
Impact resistance Internal test – Ball bearing dropped from fixed height	Minimum 1 drop without breaking	-
Resistance to temperature change EN 14688 for Wash Basins. 1000 hot (75 degC) / cold (15 degC) water cycles without visible damage	No visible damage	-
Resistance to chemicals and staining EN 14688 for Wash Basins therefore by extension to other Ceramic Products. Specific chemicals in contact then cleaned with specific apparatus without permanent marking	No remaining chemical evident	-
Resistance to abrasion EN 14688 for Wash Basins therefore by extension to other Ceramic Products. Loaded diamond tool (scratch) / Loaded abrasive paper wheel (abrasion) for repeated cycles.	No scratches through outer (glaze) layer	-
Load resistance	400	kg

2.4 Delivery status

The products are packed: wooden pallet, PE plastic foil and coverage carton, and are accompanied with an instruction and guarantee sheet.

The products can come in different shapes and dimensions. An overview of all different cisterns can be found on Ideal Standard's website and filter on 'Cisterns': <https://www.idealstandard.co.uk/products/catalog/toilets/cisterns>

2.5 Base materials/Ancillary materials

The main components of the cistern product is: ceramic and the tank trim.

This detailed composition of ceramic is as the relevant:

20-30% clay,
20-30% China clay
20-30% Feldspar
20-30% Silica
<5% Glaze

The composition of the tank trim :

· +/- 90% plastics (mainly ABS, but also POM, PE and PP)
· +/- 10% steel/brass

This product does not contain any substances listed in the candidate list (date: 26.10.2022) exceeding 0.1 percentage by mass.

This product does not contain other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass,

Biocide products were not added to this construction product and it has not been treated with biocide products as defined by the (EU) Ordinance on Biocide Products No. 528/2012.

2.6 Manufacture

1. Slip preparation

Production of the ceramic mixture (slip) and unloading/storage of raw materials in the area.

2. Glaze preparation

Production of glaze with needed color.

3. Casting shop

Casting of ceramic products in different moulds.

4. Dryers

The drying is process of taking off the humidity and the final result are dried products.

5. White inspection

The first inspection of dried ceramic products. The main focus is checking the quality and cleaning the surface of the products. At the end of the process the products are grouping in three different directions: A grade products, for repairing and scrap.

6. Spraying

Covering the ceramic product with glaze

7. Kilns

Firing of ceramic products

8. Gloss inspection

Final inspection for visual control of all products for defects presence. Separating the products again in three groups: for packaging, for repairing by hand or grinding machines and scrap (pitcher).

9. Packaging

Different kind of activities for packaging of the products.

*Moulds making

Development of new matrix for production of gypsum moulds

for casting and repairing of damaged matrix.

*Mould shop

Production of gypsum moulds for casting the ceramic products and polyurethane setters for supporting the casting process.

2.7 Environment and health during manufacturing

Environmental, occupational health, safety and quality management at the Ideal Standard plants are in accordance with the following standards:

- ISO 14001
- ISO 9001
- ISO 45001

2.8 Product processing/Installation

It is considered that there is no assembly waste, based on the fact that the product is prefabricated and installed by hand.

2.9 Packaging

A wooden pallet, PE plastic bag and coverage carton are used to pack and transport the product to the supplier/customer. The product is also accompanied with an instruction sheet.

Packaging of the cistern	Amount (Kg)
Plastic	1.09E-02
Shrink wrap	3.39E-01
Wooden pallet	1.31E+00
Cardboard	7.74E-01
Paper	2.27E-04
Paper instructions	3.15E-04
Plastic tape	1.13E-03
Packaging of the tank trim	Amount (Kg)
Carton inlet valve	1.60E-02
Carton outlet valve	1.60E-02
Instruction sheet inlet valve	4.00E-03
Instruction sheet outlet valve	8.00E-03
Plastic bag inlet valve	2.40E-02
Plastic outlet valve	2.40E-02

2.10 Condition of use

The product will not change in material composition during use.

2.11 Environment and health during use

Under normal conditions of use, the product do not cause any adverse health effects or release of volatile organic compounds (VOCs) into indoor air. No environmental impact on water, air or soil is expected.

2.12 Reference service life

The reference service life is not included, as module B is not considered.

Description of the influences on the ageing of the product when applied in accordance with the rules of technology.

2.13 Extraordinary effects

Fire

Fire

Not subjected to fire classification

Water

No risks are expected to occur in terms of environmental and human health.

Mechanical destruction

In case of mechanical destruction, no risks are expected to occur in terms of environment and human health.

2.14 Re-use phase

It is possible to partially recycle ceramic products in the production process. This is already applied for production waste. The recycling of post-consumer waste depends on the sorting and take-back of these waste streams at the demolition site.

2.15 Disposal

According to the average European end-of-life scenario described in Annex C of the Product Environmental Footprint Pilots (PEFCR) 6.3 guidance (version March 2018), the following disposal scenarios have been considered: 100% of the ceramic is landfilled, 45% of the plastic parts are incinerated and 55% of the plastic parts are landfilled.

2.16 Further information

Additional information on cisterns produced by Ideal Standard can be found at:

<https://www.idealstandard.co.uk/products/catalog/toilets/cisterns>

3. LCA: Calculation rules

3.1 Declared Unit

Declared unit

Name	Value	Unit
Mass per piece	11.69	kg
Declared unit	1	Piece
Mass of the ceramic cistern	11	Kg
Mass of the tank trim	0.69	Kg
Mass reference	11.69	kg/pce

The weight of the cistern is based on a specific one, the most sold by Ideal Standard in 2021 in BG52. The results for cisterns with another weight can be calculated using the Annex, in which the results for 1 kg ceramic and 1 piece Tank trim have been described separately.

Then, other cisterns can be calculated by weight interpolation of the ceramic parts. The environmental impact of the cistern will be presented separately for the ceramic parts and the tank cisterns that include a cistern with another weight. Therefore, the following formula should be used:

$$E_B = \frac{E_R}{W_R} \times W_B$$

EB = Environmental impact of the ceramic parts of a specific cistern,

ER = Environmental impact of the ceramic parts of the reference cistern,

WR = Weight of the ceramic parts of the reference product,

WB = Weight of the ceramic parts of a specific cistern,

3.2 System boundary

Cradle-to-gate with options, including module D.

3.3 Estimates and assumptions

The following processes are excluded because data was not available:

- Packaging of the following raw materials used to produce the glaze of the ceramic products: barium carbonate, sodium carbonate, sodium silicate, aluminium hydroxide, aluminium oxide, zinc oxide and stains
- Transport packaging final product
- Packaging and transport of ancillary materials used during the production process
- Packaging and transport of ancillary materials used during installation

No further approximations have been made to replace the missing data, as they were considered to be not relevant based on the first iterations of the results.

3.4 Cut-off criteria

- Big bags used as packaging of some raw materials for the ceramic production, as they are reused.
- Only most relevant ancillary materials have been selected based on consumption rate and importance in the production process.
- Environmental impacts caused by the personnel of the production plants are not included in the LCA, e.g. waste from the cafeteria and sanitary installations, accidental pollution caused by human mistakes, or environmental effects caused by commuter traffic. Heating or cooling of the plants in order to

ensure a comfortable indoor climate for the personnel for example is also neglected.

3.5 Background data

Ecoinvent 3.8 and Industry 2.0

3.6 Data quality

Foreground data is specific to Ideal Standard and is collected for the reference year 2021. Background data is based on Ecoinvent 3.8 which is released in September 2021, and Industry 2.0. The LCA background report includes details on the weighted average data of the different factory plants, respectively Sevlievo (Bulgaria), Armitage (United Kingdom) and Teplice (Czech Republic).

3.7 Period under review

The data collected by Ideal Standard is based on data from the production year 2021 for both the ceramics and the tank trim.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Global

3.9 Allocation

EN15804+A2 also describes the rules for joint co-production, where the processes cannot be divided. This is, however, not the case in this study. Allocation of secondary materials or secondary fuels is also not applicable for this study.

3.10 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. Ecoinvent 3.8 and Industry 2.0.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The product does not contain biogenic carbon, but its accompanying packaging (of ceramic parts and tank trim) contains 9.49E-01kg C per product in the form of paper, cardboard and wooden pallets.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.949	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	25.4	l/100km
Transport distance	2000	Km
Capacity utilisation (including empty runs)	Default value Ecoinvent	%
Gross density of products transported	Not calculated	kg/m ³

Installation into the building (A5)

Name	Value	Unit
Packaging waste (paper and cardboard) PEF EOL scenario Europe for coverage carton packaging: 11% incineration; 75% recycling; 14% landfill	8.19E-01	Kg
Packaging waste (PE) PEF EOL scenario Europe for PE packaging: 32% incineration; 29% recycling; 39% landfill	3.99E-01	Kg
Packaging waste (wooden pallet) PEF EOL scenario Europe for wooden pallets: 32% incineration; 30% recycling; 38% landfill	1.31E+00	Kg

End of life (C1-C4)

According to the average European end-of-life scenario described in Annex C of the Product Environmental Footprint

Pilots (PEFCR) 6.3 guidance (version March 2018), the following disposal scenarios have been considered: 100% of the ceramic parts are landfilled, 45% of the plastic parts are incinerated, 55% of the plastic parts are landfilled, 95% of the smaller metal parts are recycled and 5% of the smaller metal parts are landfilled.

Name	Value	Unit
Collected as mixed construction waste	11,69	Kg
Reuse	0	Kg
Landfill of ceramics (from cistern)	11	Kg
Landfill of plastics (from tank trim)	0.347	Kg
Landfill of metals (from tank trim)	0.003	Kg
Incineration of plastics (from tank trim)	0.284	Kg
Recycling of metals (from tank trim)	0.051	Kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Module D contains the benefits and loads of recycling the smaller metal parts and the benefits of energy recovery during the incineration of the plastics.

Name	Value	Unit
Loads recycling of brass: Impact of the production process of brass excluding the production of raw materials	0.051	Kg
Benefits recycling of brass: Avoided production of brass using 100% primary materials	0.051	Kg
Benefits energy recovery during incineration of plastics from tank trim: 20% avoided production of Heat from natural gas	1.75	MJ
Benefits energy recovery during incineration of plastics from tank trim: 10% avoided production of European average grid mix	0.88	MJ

5. LCA: Results

An annex is added to this EPD in which the environmental impact is presented separately for 1 kg ceramics and 1 piece of tank trim, allowing the user to calculate the environmental impact of a cistern with another different weight.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

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	X	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 Piece Cistern including a tank trim

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	2.63E+00	1.36E+00	1.41E+01	4.63E+00	3.75E+00	1.69E-03	1.06E-01	7.8E-05	7.79E-01	-2.02E+00
GWP-fossil	kg CO ₂ eq	2.61E+00	1.36E+00	1.72E+01	4.63E+00	4.8E-01	1.67E-03	1.06E-01	7.73E-05	7.79E-01	-4.89E-01
GWP-biogenic	kg CO ₂ eq	8.47E-03	4.41E-04	-3.18E+00	1.66E-03	3.27E+00	9.29E-06	3.78E-05	4.19E-07	1.6E-04	-1.53E+00
GWP-luluc	kg CO ₂ eq	2.08E-03	6.59E-04	1.05E-02	1.85E-03	3.47E-05	3.96E-06	4.23E-05	1.79E-07	6.54E-05	-1.8E-03
ODP	kg CFC11 eq	2.42E-07	3.03E-07	1.81E-06	1.07E-06	1.77E-08	8.43E-11	2.45E-08	4.01E-12	3.04E-08	-8.04E-08
AP	mol H ⁺ eq	1.3E-02	1.42E-02	5.28E-02	1.31E-02	4.64E-04	9.52E-06	3E-04	4.43E-07	7.96E-04	-3.24E-03
EP-freshwater	kg P eq	1.45E-04	8.45E-06	1.12E-03	3.3E-05	9.07E-07	1.79E-07	7.54E-07	8.11E-09	2.59E-06	-4.43E-05
EP-marine	kg N eq	1.97E-03	3.36E-03	9.36E-03	2.61E-03	1.79E-04	1.21E-06	5.97E-05	5.9E-08	3.26E-04	-6.17E-04
EP-terrestrial	mol N eq	2.22E-02	3.73E-02	9.77E-02	2.91E-02	1.81E-03	1.4E-05	6.65E-04	6.78E-07	3.13E-03	-6.88E-03
POCP	kg NMVOC eq	7.13E-03	1.05E-02	2.83E-02	1.12E-02	5.43E-04	3.84E-06	2.56E-04	1.9E-07	8.76E-04	-1.8E-03
ADPE	kg Sb eq	3.78E-05	3.11E-06	1.58E-05	1.25E-05	2.12E-07	9.05E-09	2.86E-07	4.38E-10	2.42E-07	-1.66E-05
ADPF	MJ	5.53E+01	1.98E+01	3.27E+02	7.02E+01	1.2E+00	3.55E-02	1.6E+00	1.62E-03	2.14E+00	-3.79E+00
WDP	m ³ world eq deprived	1.88E+00	5.43E-02	5.15E+00	2.14E-01	7.1E-03	4.15E-04	4.88E-03	1.9E-05	1.74E-02	-3.57E-01

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 Piece Cistern including a tank trim

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3.97E+00	2.45E-01	1.75E+01	9.87E-01	7.34E+00	7.06E-03	2.25E-02	3.18E-04	1.18E-01	0
PERM	MJ	3.04E-02	0	3.13E+01	0	-2.26E+01	0	0	0	0	1.53E+01
PERT	MJ	4E+00	2.45E-01	4.88E+01	9.87E-01	-1.52E+01	7.06E-03	2.25E-02	3.18E-04	1.18E-01	1.53E+01
PENRE	MJ	4.82E+01	1.98E+01	3.57E+02	7.06E+01	6.65E+00	4.22E-02	1.61E+00	1.92E-03	8.26E+00	0
PENRM	MJ	1.35E+01	0	1.69E+01	0	-1.03E+01	0	0	0	-6.04E+00	4.93E+00
PENRT	MJ	6.17E+01	1.98E+01	3.73E+02	7.06E+01	-3.68E+00	4.22E-02	1.61E+00	1.92E-03	2.22E+00	4.93E+00
SM	kg	2.79E-01	0	0	0	0	0	0	0	0	8.99E-01
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m ³	1.63E-01	1.27E-03	1.03E-01	5.16E-03	6.26E-04	2.68E-05	1.18E-04	1.21E-06	2.46E-03	-1.31E-02

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 Piece Cistern including a tank trim

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	7.16E-05	4.42E-05	3.11E-04	1.83E-04	2.89E-06	2.7E-08	4.18E-06	1.33E-09	2.7E-06	-2.33E-05
NHWD	kg	7.5E-01	8.14E-01	1.76E+00	3.68E+00	8.29E-01	1.3E-04	8.4E-02	6.3E-06	1.14E+01	-8.68E-02
RWD	kg	1.43E-04	1.34E-04	9.91E-04	4.74E-04	7.79E-06	2.59E-07	1.08E-05	1.18E-08	1.42E-05	-5.16E-05
CRU	kg	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	4.23E-03	0	1.12E+00	0	0	5.13E-02	0	-1.18E+00

MER	kg	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.48E-03	0	1.22E+00	0	0	0	2.83E-01	-1.51E+00
EET	MJ	0	0	2.95E-03	0	2.45E+00	0	0	0	5.65E-01	-3.02E+00

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:

1 Piece Cistern including a tank trim

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	9.36E-08	9.2E-08	3.73E-07	3.72E-07	8.13E-09	2.62E-11	8.49E-09	1.48E-12	1.33E-08	-4.76E-08
IR	kBq U235 eq	2.85E-01	8.56E-02	1.21E+00	3.05E-01	5.34E-03	3.15E-04	6.96E-03	1.42E-05	1.08E-02	-5.66E-02
ETP-fw	CTUe	6.4E+01	1.48E+01	7.67E+01	5.51E+01	1.29E+00	2.25E-02	1.26E+00	1.07E-03	3.09E+00	-1.44E+01
HTP-c	CTUh	3.68E-09	5.97E-10	6.22E-09	1.77E-09	2.32E-10	6.9E-13	4.05E-11	5.4E-14	1.69E-10	-3.59E-10
HTP-nc	CTUh	5.27E-08	1.39E-08	1.09E-07	5.57E-08	1.8E-09	2.2E-11	1.27E-09	1.06E-12	1.97E-09	-2.86E-08
SQP	SQP	1.95E+01	1.13E+01	2.49E+02	4.89E+01	1.1E+00	6.43E-03	1.12E+00	1.06E-03	3.85E+00	-1.63E+02

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

An annex is added to this EPD in which the environmental impact is presented separately for 1 kg ceramics and 1 piece of tank trim, allowing the user to calculate the environmental impact of a cistern with another different weight.

6. LCA: Interpretation

For the cistern, more than 90% of the impact is related to the ceramic parts in the case of a total ceramic weight of 11 kg. However, note that the contribution of the tank trim will increase with decreasing weights of the ceramic parts.

For the ceramic parts, the manufacturing or module A3 (and in particular the energy consumption) has the largest contribution on all impact categories. Besides the manufacturing, also the transport to the installation site has a significant contribution, due to the weight of the product. The impact of the raw materials is less significant.

For the tank trim, the raw materials or module A1 has the largest contribution on all impact categories. The second most important module, is module A3 or the manufacturing process. Outside the system's boundaries, module D shows the benefits from the energy recovery from incineration of the plastic components and to a lesser extend the recycling of the small steel components in the tank trim. In module D the use of recycled content at the beginning of life has been taken into account in the calculations, as required by EN15804+A2.

7. Requisite evidence

8. References

Standards

EN15804

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

PCR Part A

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PCR Part B

Institut Bauen und Umwelt e.V, Berlin (pub.): PCR Guidance-Texts for Building-Related Products and Services From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU) : Requirements on the EPD for Sanitary ceramics, version 4 (19/10/2023)

ISO 9001

ISO 9001:2015: Quality management systems — Requirements

ISO 14001

ISO 14001:2015: Environmental management systems — Requirements with guidance for use

ISO 14025

EN ISO 14025:2011, Environmental labels and declarations —

Type III environmental declarations — Principles and procedures.

ISO 14040

ISO 14040:2006: Environmental management – Life cycle assessment – Principles and framework.

ISO 14044

ISO 14044:2006: Environmental management – Life cycle assessment – Requirements and guidelines.

ISO 45001

ISO 45001:2018: Occupational health and safety management systems Requirements with guidance for use

Further references

Pré Consultants

(2021) SimaPro 9.3.0.3 [Computer Software]. Amersfoort, The Netherlands.

CPR

European Regulation N° 305/2011 (CPR)

Ecoinvent

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21(9), pp.1218–1230.

Industry 2.0

Industry 2.0 (from PlasticsEurope, worldsteel and ERASM) LCA database as integrated in SimaPro 9.3.0.3.

PEFCR

European commission (2018). Product Environmental Footprint Category Rules PEFCR Guidance, version 6.3.

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IBU 2021. Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 www.ibu-epd.com

REACH candidate list

ECHA, REACH Candidate List of substances of very high concern for Au

Biocide Products No. 528/2012EU, REGULATION (EU) No 528/2012 OF THE EUROPEAN PARLIAMENT

The literature referred to in the Environmental Product Declaration must be listed in full. Standards already fully quoted in the EPD do not need to be listed here again. The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced.



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