ENVIRONMENTAL-PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Ideal Standard International
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-IDE-20220323-IBB1-EN
Issue date	03.04.2023
Valid to	02.04.2028

Ceramic Toilet set

Ideal Standard International

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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1. General Information

Ideal Standard International

Programme holder

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

Declaration number

EPD-IDE-20220323-IBB1-EN

This declaration is based on the product category rules:

Toilet set, 08.03.2023
(PCR checked and approved by the SVR)

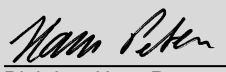
Issue date

03.04.2023

Valid to

02.04.2028

Dipl.-Ing Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)



Dipl.-Ing. Hans Peters
(Managing Director Institut Bauen und Umwelt e.V.)

Ceramic Toilet set

Owner of the declaration

Ideal Standard International NV
Da Vincilaan 2
1935 Zaventem
Belgium

Declared product / declared unit

1 Toilet set including ceramic bowl, ceramic cistern and tank trim

Scope:

The EPD contains the result for 1 specific Toilet pack produced by Ideal Standard. The EPD is representative for the production of ceramic bowls and cisterns in Sevievo (Bulgaria), Armitage (United Kingdom) and Teplice (Czech Republique), and production of the tank trim in Angouleme (France). Note that the results have been separated for the ceramic part and the tank trim, so the user can easily calculate the results for the Toilet pack in which the bowl and the cistern have another 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 bezeichnet*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Vito D'Incognito,
(Independent verifier)

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2. Product

2.1 Product description/Product definition

The product under study is a standard white porcelain toilet pack, including the bowl, the cistern and the tank trim (i.e. inlet and outlet valve of the flushing mechanism). The EPD is representative for all toilet packs produced by Ideal Standard in Sevlievo (Bulgaria), Armitage (UK) and Teplice (Czech Republique), in which the ceramic parts are made from vitreous China clay ceramic. 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.

2.2 Application

The solution 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 5 bar 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

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.

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 toilet packs can be found on Ideal Standard's website and filter on 'Toilet packs': https://www.idealstandard.co.uk/products/catalog/toilets/toilet-packs

2.5 Base materials/Ancillary materials

The main components of the product are: ceramic bowl, ceramic cistern and tank trim.

The composition of the ceramic:

- 100 % ceramic

The composition of the tank trim :

- +/- 90 % plastics (mainly Acrylonitrile butadiene styrene (ABS), but also Polyoxymethylene (POM), polyethene (PE) and polypropylene (PP))
- +/- 10 % steel/brass

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

This product does not contain other carcinogenic, mutagenic, reprotoxic (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 colour.

3. Casting shop
Casting of ceramic products in different moulds.

4. Dryers
Drying is the process of taking off the humidity and the final results 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 grouped in three different directions: A grade products, 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 visible defects. Separating the products again in three groups: for packaging, for repairing by hand or for grinding machines and scrap (pitcher).

9. Packaging
Different kinds of activities for the packaging of the products.

***Moulds making**
Development of a new matrix for production of gypsum moulds for casting and repairing of the damaged matrix.

***Mould shop**
Production of gypsum moulds for casting 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 and guarantee sheet.

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
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 Annexe 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 toilet packs produced by Ideal Standard can be found at:
https://www.idealstandard.co.uk/products/catalog/toilets/toilet-packs

3. LCA: Calculation rules

3.1 Declared Unit

Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass per piece set	26.93	kg
Mass of the bowl	15.76	kg
Mass of the cistern	10.5	kg
Mass of the tank trim	0.67	kg

The weight of the bowl and the cistern are based on a specific toilet pack that has been sold most by Ideal Standard in 2021. The results for toilet packs with other weights can be calculated using the Annexe, in which the results for 1 kg ceramic and 1 piece Tank trim have been described separately.

This EPD is calculated using the production data of the factory in Bulgaria. However, a variability study has been performed to show that the production in Bulgaria is representative for the production by Ideal Standard in the United Kingdom and the Czech Republique. This is further described in paragraph 3.6.

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.
- For production waste only most relevant production waste streams have been considered (waste of ancillary materials and smaller waste flows have been excluded).
- 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

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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 a variability study between the different factory plants, respectively Sevlievo (Bulgaria), Armitage (United Kingdom) and Teplice (Czech Republique). The results show that the over the total life cycle (A1-C4) the variance is <40 %.

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: Europe

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
Information on biogenic carbon

The product does not contain biogenic carbon, but its accompanying packaging contains 2.30 kg 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	0	kg C
Biogenic Carbon Content in accompanying packaging	2.30	kg C

The following technical scenario information is required for the declared modules and optional for non-declared modules. Modules for which no information is declared can be deleted; additional information can also be listed if necessary.

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

A5 is not declared including the disposal of the packaging material on the construction site, the amounts of packaging materials included in the LCA calculations must be declared as technical scenario information for Module A5.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	254	l/100km
Transport distance	2000	km
Capacity utilisation (including empty runs)	Default value Ecoinvent	%
Gross density of products transported	Not calculated	kg/m3
Capacity utilisation volume factor	Default value Ecoinvent	-

Installation into the building (A5)

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

Only the impact of packaging waste has been considered.

Name	Value	Unit
Packaging waste (paper and cardboard) PEF EOL scenario Europe for coverage carton packaging: 11 % incineration; 75 % recycling; 14 % landfill	1.08	kg
Packaging waste (PE) PEF EOL scenario Europe for PE packaging: 32 % incineration; 29 % recycling; 39 % landfill	0.05	kg
Packaging waste (wooden pallet) PEF EOL scenario Europe for wooden pallets: 32 % incineration; 30 % recycling; 38 % landfill	2.91	kg

End of life (C1-C4)

According to the average European end-of-life scenario described in Annexe 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	26.93	kg
Reuse	0	kg
Landfill of ceramics (from bowl and cistern)	26.26	kg
Landfill of plastics (from tank trim)	0.337	kg
Landfill of metals (from tank trim)	0.003	kg
Incineration of plastics (from tank trim)	0.275	kg
Recycling of metals (from tank trim)	0.05	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	0.05	kg
Benefits recycling of brass: Avoided production of brass using 100 % primary materials	0.05	kg
Benefits energy recovery during incineration of plastics from tank trim: 20 % avoided production of Heat from natural gas	1.70	MJ
Benefits energy recovery during incineration of plastics from tank trim: 10 % avoided production of European average grid mix	0.85	MJ

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5. LCA: Results

An annexe 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 toilet packs that include a bowl and/or a cistern with another weight.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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 installed toilet set

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	3.75E+00	3.88E+00	3.28E+01	1.08E+01	9.3E+00	4.03E-03	2.3E-01	7.8E-05	8.72E-01	-5.48E+00
GWP-fossil	kg CO_2 eq	3.73E+00	3.88E+00	4.05E+01	1.08E+01	1.29E+00	4E-03	2.3E-01	7.73E-05	8.71E-01	-1.52E+00
GWP-biogenic	kg CO_2 eq	1.13E-02	1.35E-03	-7.79E+00	3.87E-03	8E+00	2.22E-05	8.23E-05	4.19E-07	3.35E-04	-3.95E+00
GWP-luluc	kg CO_2 eq	3.27E-03	1.66E-03	2.38E-02	4.33E-03	8.76E-05	9.45E-06	9.2E-05	1.79E-07	1.34E-04	-4.11E-03
ODP	kg CFC11 eq	4.07E-07	8.88E-07	4.1E-06	2.51E-06	4.45E-08	2.01E-10	5.33E-08	4.01E-12	6.47E-08	-1.77E-07
AP	mol H^+ eq	1.95E-02	2.06E-02	1.35E-01	3.07E-02	1.14E-03	2.27E-05	6.53E-04	4.43E-07	1.61E-03	-7.87E-03
EP-freshwater	kg P eq	1.98E-04	2.65E-05	3.22E-03	7.72E-05	2.28E-06	4.27E-07	1.64E-06	8.11E-09	5.42E-06	-9.28E-05
EP-marine	kg N eq	3.05E-03	4.6E-03	2.27E-02	6.11E-03	4.35E-04	2.9E-06	1.3E-04	5.9E-08	6.05E-04	-1.77E-03
EP-terrestrial	mol N eq	3.46E-02	5.12E-02	2.28E-01	6.81E-02	4.42E-03	3.34E-05	1.45E-03	6.78E-07	6.21E-03	-1.95E-02
POCP	kg NMVOC eq	1.06E-02	1.61E-02	6.71E-02	2.62E-02	1.33E-03	9.18E-06	5.56E-04	1.9E-07	1.75E-03	-6.05E-03
ADPE	kg Sb eq	4.36E-05	9.97E-06	3.51E-05	2.93E-05	5.34E-07	2.16E-08	6.23E-07	4.38E-10	4.61E-07	-2.02E-05
ADPF	MJ	7.35E+01	5.8E+01	7.67E+02	1.64E+02	3.01E+00	8.47E-02	3.49E+00	1.62E-03	4.78E+00	-2.82E+01
WDP	m^3 world eq deprived	3.34E+00	1.71E-01	1.32E+01	5E-01	1.79E-02	9.92E-04	1.06E-02	1.9E-05	2.98E-02	-1.57E+00

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 installed toilet set

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5.85E+00	7.85E-01	3.47E+01	2.31E+00	1.72E+01	1.68E-02	4.9E-02	3.18E-04	2.52E-01	0
PERM	MJ	3.04E-02	0	7.74E+01	0	-5.68E+01	0	0	0	0	3.97E+01
PERT	MJ	5.88E+00	7.85E-01	1.12E+02	2.31E+00	-3.96E+01	1.68E-02	4.9E-02	3.18E-04	2.52E-01	3.97E+01
PENRE	MJ	6.95E+01	5.83E+01	8.37E+02	1.65E+02	1.78E+01	1.01E-01	3.51E+00	1.92E-03	1.09E+01	0
PENRM	MJ	1.35E+01	0	4.6E+01	0	-2.81E+01	0	0	0	-6.04E+00	1.34E+01
PENRT	MJ	8.3E+01	5.83E+01	8.83E+02	1.65E+02	-1.03E+01	1.01E-01	3.51E+00	1.92E-03	4.89E+00	1.34E+01
SM	kg	2.79E-01	0	0	0	0	0	0	0	0	2.69E+00
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	1.87E-01	4.1E-03	1.91E-01	1.21E-02	1.47E-03	6.39E-05	2.56E-04	1.21E-06	4.91E-03	-4.1E-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 installed toilet set

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	9.39E-05	1.45E-04	7.05E-04	4.29E-04	7.32E-06	6.44E-08	9.1E-06	1.33E-09	6.07E-06	-4.1E-05
NHWD	kg	1.69E+00	2.83E+00	1.36E+01	8.6E+00	2E+00	3.1E-04	1.83E-01	6.3E-06	2.66E+01	-2.19E-01
RWD	kg	2.23E-04	3.93E-04	2.16E-03	1.11E-03	1.9E-05	6.19E-07	2.36E-05	1.18E-08	2.91E-05	-1.09E-04
CRU	kg	0	0	0	0	0	0	0	0	0	0

MFR	kg	0	0	4.23E-03	0	2.91E+00	0	0	5.13E-02	0	-2.97E+00
MER	kg	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	1.48E-03	0	3.14E+00	0	0	0	2.83E-01	-3.42E+00
EET	MJ	0	0	2.95E-03	0	6.28E+00	0	0	0	5.65E-01	-6.84E+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 installed toilet set

Parameter	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	1.5E-07	2.96E-07	9.56E-07	8.7E-07	2.01E-08	6.27E-11	1.85E-08	1.48E-12	2.91E-08	-1.39E-07
IR	kBq U235 eq	3.72E-01	2.52E-01	2.51E+00	7.13E-01	1.34E-02	7.51E-04	1.51E-02	1.42E-05	2.43E-02	-1.16E-01
ETP-fw	CTUe	8.36E+01	4.49E+01	1.71E+02	1.29E+02	3.29E+00	5.36E-02	2.74E+00	1.07E-03	4.61E+00	-2.48E+01
HTP-c	CTUh	4.24E-09	1.56E-09	1.39E-08	4.14E-09	5.65E-10	1.65E-12	8.8E-11	5.4E-14	2.13E-10	-7.79E-10
HTP-nc	CTUh	6.79E-08	4.44E-08	3.05E-07	1.3E-07	4.53E-09	5.26E-11	2.77E-09	1.06E-12	2.86E-09	-3.8E-08
SQP	SQP	3.69E+01	3.81E+01	5.54E+02	1.14E+02	2.72E+00	1.54E-02	2.43E+00	1.06E-03	8.83E+00	-4.16E+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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from 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 or as there is limited experienced with the indicator.

6. LCA: Interpretation

For the toilet pack, more than 90 % of the impact is related to the ceramic parts in the case of a total ceramic weight of 26,26 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 energy consumption) has the largest contribution on all impact categories. Besides the manufacturing, also 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 the incineration of the plastic components and to a lesser extent 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

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