



ENVIRONMENTAL PRODUCT DECLARATION

Product Name “SANITARY CERAMICS”

Plant Site:

CERAMICA CATALANO SpA
Strada Provinciale Falerina km 7,200, 01034 Fabrica di Roma VT
in compliance with ISO 14025, EN 15804


Program Operator:	EPDIItaly
Publisher:	Ceramica Catalano S.p.A.

Declaration Number:	2019EPD-CAT-001
Registration Number:	EPDIItaly0075
ECO-EPD Registration Nr	00000955

Issue Date:	15-05-2019
Valid to:	15-05-2024



1. GENERAL INFORMATION

EPD OWNER:	CERAMICA CATALANO SpA Strada Provinciale Falerina km 7,200, 01034 Fabrica di Roma VT
PLANTS INVOLVED IN THE EPD:	Strada Provinciale Falerina km 7,200, 01034 Fabrica di Roma VT
FIELD OF APPLICATION:	The Environmental Product Declaration refers to the declared sanitary ceramic unit of 1 ton for an average product including washbasins, bidets, toilets, urinals, shower trays. The purpose of this study is to draw up an LCA study for Ceramica Catalano spa. including packaging, produced at the site in Strada Provinciale Falerina km 7,200, Fabrica di Roma.
PROGRAM OPERATOR:	EPDITALY, via Gaetano De Castillia 10, 20124 Milan, Italy.
INDEPENDENT VERIFICATION:	<p>This statement has been developed following the instructions of the EPDItaly program; further information and the document itself are available at: www.epditaly.it. EPD document valid within the following geographical area: Italy and other countries according to the conditions of the sales market.</p> <p>The CEN EN 15804 standard served as a reference for PCR (PCR ICMQ-001/15 rev2). The revision of the PCR was conducted by Daniele Pace. Contact: info@epditaly.it.</p> <p>Independent verification of the declaration and data carried out according to ISO 14025:2010.</p> <p>Performed by ICMQ, via Gaetano De Castillia 10, 20124 Milan, Italy.</p> <p><input type="checkbox"/> EPD process certification (Internal) <input type="checkbox"/> EPD verification (External)</p>
CPC CODE:	37210
COMPANY CONTACT:	Sergio Cortese - quality@catalano.it
TECHNICAL SUPPORT:	thinkstep Italia, via Bovini 41 Ravenna (IT) www.thinkstep.com  thinkstep
COMPARABILITY:	Environmental statements published within the same product category, but from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804.
RESPONSIBILITY:	Ceramica Catalano s.p.a. relieves EPDItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the information and supporting evidence; EPDItaly declines all responsibility for the manufacturer's information, data and results of the life cycle assessment.
REFERENCE DOCUMENTS:	This statement has been developed following the EPDItaly Program Regulations, available on the www.epditaly.it website.
PRODUCT CATEGORY RULES (PCR):	PCR ICMQ-001/15 rev2 It is useful to refer to the PCR IBU Part B: 2017-11-30 v. 1.6 "Requirements on the EPD for Sanitary ceramics" EN 15804 is the framework reference for PCRs.

2. THE COMPANY



2.0 COMPANY PRESENTATION

Ceramica Catalano, founded in 1967 and located in Fabrica di Roma, is today the leading Italian company in the ceramic sector for bathroom furniture. Its name is synonymous with the highest quality and unique design, solid and part of a highly innovative industrial culture, which combines a high degree of automation with irreplaceable artisan knowledge, cultivated in the territory for generations.

The forty years of history of the company have allowed us to develop a highly specialized technological know-how in constant evolution which is expressed in each of the more than 250 products in the catalog.

The company's production philosophy has always been aimed at achieving all-Italian quality, a true moral commitment: Ceramica Catalano SpA in fact invests and produces only in Italy, to guarantee a standard of inimitable excellence. The company has a single large factory, the institutional building and the site where each product is conceived, designed, manufactured.

Sensitivity and attention to the issue of energy savings is one of the focal points of company thinking and translates into constant investment in machinery technology.

All phases of industrialization and production are technologically advanced, guaranteed by the latest generation plants and oriented towards environmental sustainability, allowing a constant increase in production.

2.1 PRODUCT DESCRIPTION

Sanitary ceramics include washbasins, bidets, toilets, urinals, ceramic boxes and shower trays. The products are mainly made of natural materials such as clay, kaolin and quartz. A representative average of the sanitary ceramic product based on the annual production volume was created for analysis of the life cycle and related calculation of environmental impact.

The main stages of production involve the preparation of the barbotina, subsequently poured or pressed, with the resulting product then dried, glazed and, finally, cooked.

2.2 APPLICATION

Sanitary ceramic products considered average include in particular:

- Washbasins
- Bidets
- Toilets
- Urinals
- Cassettes
- Shower trays

These products are all representative bathroom furniture and are used in particular for personal hygiene (PH).

2.3 TECHNICAL DATA

Ceramic sanitary ware is produced in a wide variety of sizes.

2.4 POSITIONING ON THE MARKET / APPLICATION STANDARDS

Ceramic sanitary ware produced by Ceramica Catalano is subject to the following international standards.

Europe (EU):

Directive (EU) No 305/2011 applies to the placing of products on the market in the EU/EFTA.

Products require a declaration of performance (PDO) and CE marking taking into account:

EN 997: Independent vases and pots combined with cassette, with Integrated siphon

EN 13407 Urinals

EN 14528 Bidet

EN 14688 Sanitary appliances - Washbasins

EN 14527 Shower trays for domestic use.

Australia (AS):

AS 1976:

AS 1172.:

AS 1172.2

AS 3982

AS / NZS 1730

AS 3494

AS/NZS 6400

USA (ASME):

ASME A112.19.2 / CSA

B45.1: ASME A112.19.

ASME A112.19.19

FRANCE (NF):

NF D14-601

NF D12-101

NF D12-203

NF D12-101

NF D11-101

NF D11-201

MALAYSIA (MS):

MS 147

MS 1522

MS 795-1

MS 795-2

MS 795-3

SINGAPORE (SS):

SS 574 Part I SS

574 Part II:

RPC / China (GB):

GB 6952

PHILIPPINES (PNS):

PNS 15

INDONESIA (SNI):

SNI-03-797

THAILAND (TIS):

TIS 792

SAUDI ARABIA (SASO)

3. PURPOSE AND TYPE OF EPD

The life cycle is considered from the procurement of raw materials (A1), related transport (A2), manufacturing (A3) and transport of the finished product to the gate before the installation phase of the product (A4). The type of EPD is therefore from the cradle to the gate. **The declared modules are A1-A3 and A4.** All applicable modules according to standard EN15804 are described below:

Modules **A1-A3** include the processes of production, energy consumption and materials of the system under consideration (A1), transport to the factory gate (A2), manufacturing processes, consumption of water and auxiliary materials, treatment of process waste, liquid and gaseous emissions (A3).

The **A4** module includes the transport from the production plant to the end customer or point of installation/implementation/installation of the product in question.

The following modules described are not the subject of the declaration:

Module **A5** considers all the phases of installation of the product (such as the consumption of adhesives, glues, etc.) and the treatment of waste generated by packaging (recycling, incineration, disposal) where present. Material and energy credits are declared in module D.

Module **B1** takes into account the use of the product. During the use of the ceramic sanitary product, however, the generation of dangerous emissions in indoor environments is not expected.

Module **B2** concerns the cleaning of ceramic sanitary ware.

Modules **B3-B4-B5** refer to the repair, replacement and renovation of sanitary ware. If they are

properly installed, repair, replacement and renovation processes are not necessary and are stages not considered in the submitted study.

Modules **B6-B7** consider the use of energy for the operation of technical systems integrated into the building (B6) and the use of operating water for technical systems related to the building.

Module **C1** concerns the process of demolition and deconstruction of sanitary ware from the building. It is not considered relevant from the point of view of environmental impact.

Module **C2** considers the transport of demolished sanitary ware to a recycling or disposal process.

Module **C3** considers each process (collection, crushing process, etc.) suitable for the recycling of sanitary ware.

Module **C4** includes all landfill disposal processes, including pre-treatment and disposal site management.

Module **D** includes claims arising from all flows in the end-of-life phases that leave the boundaries of the product concerned system from module A4 to C4 (A1-A3 therefore excluded).

PRODUCTION PHASE			INSTALLATION PHASE		PHASE OF USE							END-OF-LIFE PHASE				CREDITS EXCLUDED FROM THE BOUNDARIES OF THE SYSTEM
Supply of raw materials	Transport	Fabrication	Transport from the gate to the site	Installation	Use	Maintenance	Repair	Substitution	Restructuring	Use of operating energy	Use of operating water	Dismantling Demolition	Transport	Waste treatment	Disposal	Potential for reuse-recovery- recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH	MON TH

TYPE OF EPD:

Declaration relating to the product of ceramic sanitary ware average among the different products of the Fabrica plant in Rome of Ceramiche Catalano. The declared unit refers to 1 ton of ceramic sanitary products. The primary data collected for elaboration of the environmental profile of the declared product refers to calendar year 2017.

GEOGRAPHICAL VALIDITY:

The performance was calculated with reference to the Fabrica plant in Rome. The target market is global.

DATABASES USED:

The secondary data used within the LCA model, upstream and downstream data, are part of the GaBi database and specific extensions, in the most important version of 2019 (SP37).

SOFTWARE:

For the drafting of the LCA study, creation of the specific model and connected production and interpretation of the results, version 8.7 of the LCA GaBi professional modeling software was used.

4. DETAILED PRODUCT DESCRIPTION

PRODUCTION PROCESS:

Raw materials supplied at the entrance to the plant are collected at the plant and dried if necessary. Subsequently, they are stored in dedicated silos. Small volumes of components are also supplied directly in bags (big-bags).

Slip

Some raw materials require a mechanical processing of preliminary grinding. This process is followed by the preparation of the barbotina, mixing the raw materials with water and passing it through a specific sieve.

Enamel

A mixture of raw materials (oxides, special sands, fried etc.), created ad hoc within the plant is stirred by adding water before being sifted and then

ground. Glue is added just before processing.

Mould construction

The moulds used for casting processes and necessary for the production of sanitary products are made of gypsum or using a specific porous plastic.

The series are produced exclusively with plaster moulds in a hand molding process. The other production method, always with plaster moulds, involves the method of low-pressure pouring of the battery. Porous plastic moulds are used only for high-pressure casting.

Drying

After casting, ceramic products are directed to the various drying processes depending on their respective complexity.

Enamel

The enamel is applied to the dried raw product manually or fully automatically, using robots. The generated over-spray is collected, redirected and reused in both methods (manual or automatic).

Cooking

To achieve a maximum storage density, the glazed panels are manually placed on the cooking trolley. The blanks are cooked at over 1250 °C in a tunnel oven for about 22 hours.

Choice

After cooking, each product is subject to a thorough individual examination and, finally, selected.

Packaging, storage and shipping

Products that do not meet quality requirements can often be retouched and reprocessed in an intermittent furnace or directed to recycle materials as waste. The rest is packed according to the type of product.

In order to ensure high and constant quality, extensive inspections are carried out, starting from the delivery of raw materials and during all stages of the process.

One of the main objectives is to achieve a high rate of recycling among waste and to continuously increase this percentage.

The unique production facility is ISO 9001 and ISO 14001 certified.

With a view to environmentally friendly energy management, the company has made use of a photovoltaic system since 2012. About 25% of Ceramica Catalano's energy consumption is produced from renewable energies.

ENVIRONMENT AND HEALTH DURING PRODUCTION

Legal compliance regarding occupational safety, health and environmental protection is maintained throughout the entire manufacturing process of sanitary ceramics.

PRODUCT PROCESSING / INSTALLATION

There are no special requirements on the machines to be used or on the extraction of dust. The necessary tools or the use of additional auxiliary materials are listed in the assembly instructions that come with the product.

PACKAGING

Sanitary ceramic products are packaged in cardboard boxes and shrink plastic. Heat-shrinkable plastic films are then stacked on wooden pallets.

TERMS OF USE

There are no particular features in the composition of the products to be taken into account during their use.

No particular feature arises.

ENVIRONMENTAL REQUIREMENTS AND RISKS DURING USE

Sanitary ceramic products are cooked at very high temperatures, so their solid structure is chemically stable. The product has no negative impact on the environment and health during the use phase, is inert and does not emit gaseous substances.

LIFETIME (RSL)

By following the manufacturer's instructions for the use and maintenance of each product, a life cycle of about 40 years can be achieved for sanitary ceramic products.

SAFETY DURING USE

Fire: Ceramic sanitary ware, according to DIN 4102- 1, is classified as non-flammable construction products.

Water: In the event of unforeseen events on glass-ceramic sanitary ware (e.g. floods), no negative impacts on the product itself or on the environment are expected.

Mechanical damage: In case of small and unexpected mechanical damage, a significant impact on the function of glass-ceramic sanitary ware is not considered relevant.

REUSE OF MATERIALS

The recycling of all the materials that make up sanitary ceramic articles is technically possible with appropriate management processes.

DISPOSAL

In Europe, ceramic articles are currently reused together with construction waste (refractory material, debris, etc.). The codes of the European Waste List (EWL) for the classification and management of waste produced after the use of the different materials that make up ceramic sanitary articles are listed below:

- 101213 :Waste from the manufacture of ceramic products, bricks, tiles and building materials
- 150101: Paper and cardboard packaging
- 150102: Plastic packaging
- 170107: Building waste and demolition: ceramic materials.

ADDITIONAL INFORMATION

REPRESENTATION OF THE PRODUCTION CYCLE



BASIC/AUXILIARY MATERIALS:

The main raw materials for ceramic sanitary ware are divided between those used for the production of the body and those for the production of enamels. The former represents the bulk part most used and present within the product. The average composition of the body and the enamels produced is reported.

Main raw materials for the product (body):

- Clay: 31 %
- Kaolin: 28%
- Feldspar: 21%
- Chamotte: 11%
- Quartz: 9%

Main components of enamel:

- Fried: 29%
- Pegmatite: 19%
- Quartz: 11%
- Wollastonite: 9%
- Zirconium: 7%
- Nefelina: 6%
- Calcium carbonate : 5%
- Kaolin: 3%
- Other: 11%

5. LCA RESULTS

The following tables illustrate the results of the LCA (Life Cycle Assessment) study. Basic information on all declared forms can be found in Chapter 3.

The LCA evaluation was conducted using the "CML 2001 apr.2013" method in accordance with the requirements of EN15804:2012+A1:2013. The data refers to the declared unit of 1 ton of sanitary ceramic products.

You can convert the results referred to kg using the following conversion factor: 0.001

LCA RESULTS – ENVIRONMENTAL IMPACT: 1 t of sanitary ceramics																
Parameter	Units of measurement	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -eq.]	2.21E+03	4.14E+01	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ODP	[kg CFC11-eq.]	2.86E-10	9.40E-15	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
AP	[kg SO ₂ -eq.]	6.61E+00	2.40E-01	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EP	[kg (PO ₄) ³ -eq.]	4.89E-01	3.03E-02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
POCP	[kg ethylene-eq.]	6.20E-01	1.13E-02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ADPE	[kg Sb-eq.]	1.70E-01	3.18E-06	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
ADPF	[MJ]	3.49E+04	5.52E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

GWP= global warming; ODP= ozone layer depletion; AP= acidification; EP= eutrophication; POCP= formation of photochemical ozone; ADPE= depletion of non-fossil abiotic resources; ADPF= depletion of fossil abiotic resources

LCA RESULTS – USE OF RESOURCES: 1 t of sanitary ceramics

Parameter	Units of measurement	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	8.33E+03	2.81E+01	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PERM	[MJ]	4.02E+02	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
LAWSUIT	[MJ]	8.74E+03	2.81E+01	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRE	[MJ]	3.60E+04	5.55E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRM	[MJ]	5.13E+01	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
PENRT	[MJ]	3.60E+04	5.55E+02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
SM	[kg]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RSF	[MJ]	1.32E-17	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NRSF	[MJ]	1.55E-16	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
FW	[m³]	6.86E+00	4.73E-02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

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

LCA RESULTS - OUTPUT FLOWS AND WASTE CATEGORIES: 1 t of sanitary ceramics

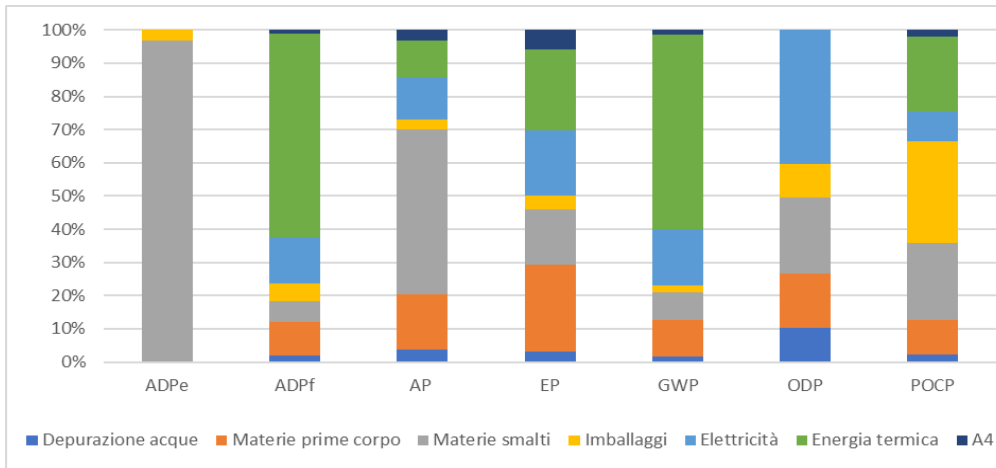
Parameter	Units of measurement	A1-3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	4.75E-05	2.60E-05	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
NHWD	[kg]	3.61E+02	4.00E-02	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
RWD	[kg]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
CRU*	[kg]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MFR*	[kg]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
MORE*	[kg]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EEE	[MJ]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA
EAT	[MJ]	0	0	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA	INA

HWD= Hazardous waste disposed of; NHWD= Non-hazardous waste disposed of; RWD= Radioactive waste disposed of; CRU= Components for reuse; MFR= Materials to be recycled; MER= Materials for energy recovery; EEE= Electricity exported; EET = Exported thermal energy.

Interpretation of results

A1-A3 is the module with most of the impact and the following percentages refer in particular to these modules.

- Overall, most of the impact categories and fluxes of the LCI are dominated by energy production processes, especially those related to thermal energy. Another determining factor is the consumption of raw materials for ceramic dough.
- GWP: for this indicator, about 75% of A1-A3 comes from energy production processes (58% from thermal energy and 17% from electricity), 11% of GWP is generated from the production of raw materials and 8% of enamels. The potential for increased greenhouse effect is particularly influenced, in terms of elementary flows, by carbon dioxide emissions (87%), of which about 49% comes from the production of thermal energy, 14% from electricity, 10% from the production of raw materials and 7% from the production of mala you. The most impactful raw materials are feldspar and kaolin.
- ODP: what affects this impact category the most is the production process of "Kraft-paper" (about 48%), 13% comes from the consumption of electricity from photovoltaics, 11% from the production of enamels and 8% from the consumption of raw materials. The main elementary flows that contribute to determining the impact are: chlorine-methane, about 69% (49% from "Kraft-paper", 13% from electricity from photovoltaics and 7% from the national electricity mix) and 31% from chloro-difluoro-methane (8% from raw materials, 11% from the production of enamels and 8% from raw materials).
- POCP: it is mainly generated by atmospheric emissions deriving from energy production processes, about 32% (23% from thermal energy and 9% from electricity), 30% from packaging (15% polystyrene plates and 11% polystyrene different formati, ie "EPS-Foam"), 23% from the production of enamels and 10% from raw materials. The impacts are generated by the elemental flow of sulfur dioxide, for about 31%, 20% from the production of enamels (10% from "Cobalt alumina" and 9% from "fried"), pentane from packaging, about 28% ("polystyrene plates" 15% and 11% "polystyrene different formats", ie EPS-Foam) and nitrogen oxides for about 14% (4% from thermal energy and 4% from raw materials).
- ADPf: energy production contributes 74% (60% from thermal energy and 14% from electricity) and 10% from raw materials. The use of non-renewable resources, in particular among the elementary flows natural gas, in the processes of production of thermal and electrical energy represents respectively 59% and 8% of the total.
- EP: energy production contributes about 44% (24% from thermal energy and 20% from electricity), 26% from the consumption of raw materials and 17% from the production of enamels. In terms of elementary flows, the impacts are generated by the flow of nitrogen oxides from the production of raw materials (23%), the combustion of natural gas for the production of thermal energy (24%), the production of enamels (14%) and electricity (12%).
- ADPe: this impact is particularly influenced by the production of enamels for about 96% (due to the presence of cobalt in the "gray frits" 79% and 10% in the "glossy black enamel"). The most influential elemental flow is copper (98%) from the cobalt production process in "gray frits" (80%) and "glossy black enamel" (10%).
- AP: the impact for this category derive from the production of enamels for about 50% (21% from "fried"), 17% from raw materials, 13% from electricity and 11% from thermal energy. The elementary fluxes that contribute the most are sulfur dioxide (73%) and nitrogen oxides (23%). Nitrogen oxides from raw materials for about 7%, 7% from thermal energy and 4% from the production of enamels. 46% of sulphur dioxide comes from the production of enamels and 10% from raw materials.



6. CALCULATION RULES

DECLARED UNIT:

The declaration does not include the phase of use, so the functional unit is not detectable. The declared unit is therefore 1 ton of sanitary ceramics (average factory product).

Name	Value	Units of measurement
Declared unit of measurement	1	t
Conversion factor to 1 kg	0.001	Kg

Product groups	Average weight [kg/fish]
Washbasin	19.1
Bidet	17.5
TOILET	21.4
Urinal	10.3
Ceramic components	10.6

The production of Ceramica Catalano s.p.a is to be understood without accessories, that is, without taps and hole caps.

EXCLUSION CRITERIA:

The cut-offs used comply with the requirements of the reference standards (EN15804) and influence the results by percentages below 1%. The cut-offs carried out are listed in the following table.

Cut-off	Comment
SKY 080318	Such waste refers to building materials for extraordinary maintenance work
SKY 150203	
SKY 160214	
SKY 160305	
CER "17xxxx"	
CER "20xxxx"	
Engobbio*	Composition not

ISlip Fire Clay	available
ISlip Vitreous China	
COT	Specific chemical compounds and environmental impacts not available

*mixture of water and dough

DATA QUALITY :

The validity period of background data from the thinkstep database is between 2016 and 2021. Most of the information (energy and water consumption, pollutant emissions, dust and ceramic production) is measured or calculated directly at the level of plants and factories declared in the official company documentation.

Cut data was obtained not only for mixtures of raw materials used in the body of the product (collected with company-specific primary data) but also for dyes, frits and other raw materials used in the manufacture of enamels.

The overall quality of the data is considered satisfactory.

PERIOD CONSIDERED:

The primary data collected as part of the present study refers to 2017.

ALLOCATION:

The study and the declared results refer to the total production of the plant, for this reason no procedures for the allocation of consumption and / or emissions were necessary.

7. SCENARIOS

All the necessary processes have been included in modules A1-A3 and described in chapter 4.

Transport (A4):

This scenario is based on the average distances found by PCR IBU (IBU Part B, 2017) for ceramic tiles. There are 3 types of routes: national, European and extra-European. The distances and types of vectors used for this scenario are listed in the table below.

Destination	Type of transport	Average distance (km)
National	Truck with capacity of 27 t	300
Europe	Truck with capacity of 27 t	1390
International (outside Europe)	Transoceanic transport ship	6520

8. ENVIRONMENT AND HEALTH DURING USE

Ceramics are inherently inert, chemically stable and therefore, during the use phase, do not emit pollutants or substances dangerous to the environment and health, such as: VOC and radon.

REFERENCES

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

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

ISO 14020:2000 Environmental labels and declarations - General principles

EN 15804:2012+A1:2014 Sustainability of construction works - Environmental product declarations
Core rules for the product category of construction works

GaBi LCA Database Documentation. Retrieved from thinkstep AG: <http://www.gabi-software.com/international/databases/gabi-databases/>

PCR ICMQ – 001/15 rev. 2 Construction products and construction services (EPD Italy, 2017)

IBU Part B. (2017). IBU PCR Part B:2017-30-11 V1.6 - Requirements on the EPD for Ceramic tiles and panels

IBU Part B. (2017). IBU PCR Part B:2017-30-11 V1.6 - Requirements on the EPD for Sanitary Ceramics

PD CEN/TR 16970:2016 Sustainability of construction works - Guidance for the implementation of EN 15804

PD CEN/TR 15941:2010 Sustainability of construction works - Environmental Product Declarations – Methodology for selection and use of generic data

Ceramica Catalano S.p.A. Background Report for Environmental Product Declaration (EPD) - EPD for Sanitary Ceramics -