Product Category Rules

NON-STRUCTURAL CERAMIC WARE

UN CPC code: 372

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PRODUCT CATEGORY

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1. Product category definition

This document provides Product Category Rules (PCR) for the assessment of the impact on climate change of non-structural ceramic ware and the declaration of this performance through a CFP.

The product category corresponds to the UN CPC code, defined under the UNSD-CPC Ver 2.1 classification:

	CODE	DESCRIPTION
Group	372	Non-structural ceramic ware
Class	3721	Ceramic sinks, baths, water closet pans, flushing cisterns and similar sanitary fixtures
Class	3722	Ceramic household and ornamental articles
Subclass	**37221**	**ceramic tableware, kitchenware, other household articles and toilet articles**
	37222	**Statuettes and other ornamental ceramic articles**
Class	3729	Other non-structural ceramic wares
Subclass	**37291**	**Ceramic wares for laboratory, chemical or other technical uses; ceramic troughs, tubs and similae receptacles of a kind used in agriculture; ceramic pots, jars and similar articles of a kind used for the conveyance or packaging of goods**
	37292	**Electrical insulators of ceramics; insulating fittings, for electrical machines, appliances or equipment, of ceramics**
	37299	**Other non-structural ceramic articles n.e.c.**

Within the present PCR, the following terminology is adopted:

- The term “shall” is used to indicate what is obligatory.
- The term “should” is used to indicate a recommendation, rather than a requirement.
- The term “may” or “can” is used to indicate an option that is permissible.

For the definition of terms used in the document, see the normative standards.

2. Product category description

The products covered by this PCR are non-structural ceramic ware, with the main function of household and decorative products composed of ceramics. The products included in this PCR do not include construction products, such as tiles.

These products are classified as “non-structural ceramic ware”, in order to include in a common terminology the descriptions of the UN CPC codes involved.

3. Declared Unit

To ensure full comparability between the environmental results, in this PCR the declared unit is defined as **1 kg of finished product**.

SYSTEM BOUNDARIES

1. Diagram
2. Upstream
3. Core
4. Downstream

Carbon Footprint Italy follows an approach that include all attributional processes from "cradle to grave", using the "limited loss of information at the final product" principle. This is especially important in the case of business-to-consumer communication.

The scope of this PCR and of CFPs based on this document is **cradle to grave**.

For the purpose of different data quality rules and for the presentation of results, the life cycle of products is split into three different life cycle stages:

- Upstream processes (from cradle-to-gate);
- Core processes (from gate-to-gate);
- Downstream (from gate-to-grave).

In the CFP, the impact on climate change associated to each of the three life-cycle stages mentioned above shall be reported separately.

1. Diagram

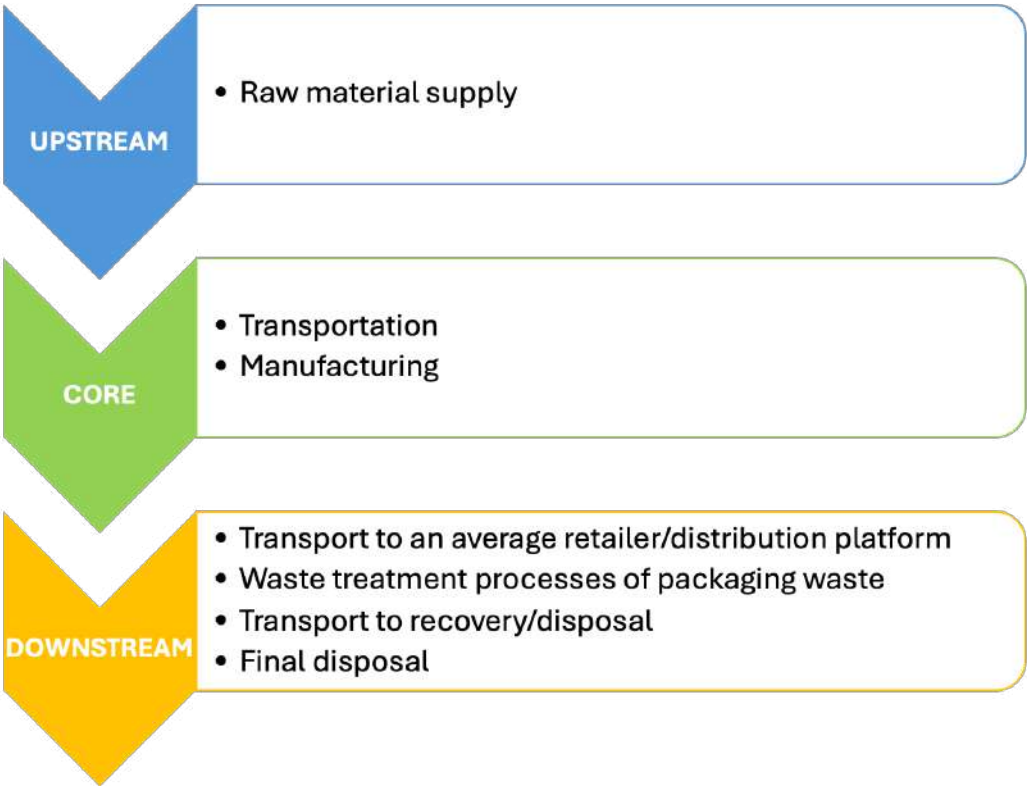

Figure 1 - System diagram illustrating the processes that are included in the product system, divided into upstream, core and downstream processes.

2. Upstream

The following unit processes are part of the product system and shall be classified as upstream processes:

- Extraction and processing of raw materials;
- Refinement of resources;
- Production of input components;
- Production of auxiliary products used such as detergent for cleaning, etc.;
- Relevant services, such as transport of raw materials and components along the upstream supply chain to a distribution point (e.g. a stockroom or warehouse);
- Production of distribution and consumer packaging;
- Generation of electricity and production of fuels, steam and other energy carriers used in upstream processed;
- End-of-life treatment of upstream waste.

Upstream processes not listed may also be included.

3. Core

The following unit processes are part of the product system and shall be classified as core processes:

- Transportation of materials and components to the manufacturing of the product under study;
- Generation of fuels used in the transportation;
- Product and process design and development activities (if relevant);
- Manufacturing of the product under study;
- Storage and handling of materials, storage and packaging of final product;
- Production of additives used in auxiliary core processes (e.g., chemicals for internal plant water treatment;
- Building (or dismantling) of a production site, infrastructure, production and maintenance of manufacturing equipment, and personnel activities if they make up a significant share of the overall attributable environmental impact;
- End-of-life treatment of manufacturing waste, even if carried out by third parties, including transportation;
- Generation of electricity and production of fuels, steam and other energy carriers used in manufacturing.

Core processes not listed may also be included. manufacturing of a minimum of 99% of the total weight of the declared product including packaging shall be included.

The following processes shall not be included:

- Manufacturing of production equipment, buildings and other capital goods;
- Business travel of personnel;
- Travel to and from work by personnel;
- Research and development activities.

4. Downstream

When a cradle to grave scope is used, the downstream stage shall be included. The following processes are part of the product system and shall be classified as downstream processes:

- transportation from the production site gate to an average retailer/distribution platform (the transport of the product by the consumer is excluded);
- Waste treatment of all components of the product packaging;
- Operation for the separation of product components and subsequent sorting;
- Transportation of the discarded product accounts for part of waste processing e.g. to a recycling site or to final sorting yard or disposal;
- Waste disposal including physical pre-treatment and management of the disposal site. Emissions form waste disposal are considered part of the product system under study and therefore are part of this module, according to the “polluter pays principle”.

Any exclusion of life cycle stages and unit processes shall be justified.

5. Additional information

If there is the requirement to compare the functionality of several products, then you shall refer to the PCR 2022:01, v1.0, “Tableware and kitchenware” of the programme operator EPD International®.

The cited PCR also considers the use cycles of the finished product and the use phase of the product.

DATA AND RULES FOR THE CFP STUDIES

1. Specific data or calculation rules
2. Cut-off rules
3. Allocation rules

1. Specific data or calculation rules

1.1 Specific data

A CFP calculation requires two different kinds of information:

- data related to the environmental aspects of the considered system (such materials or energy flows that enter the production system). These data shall come from the company that is performing the CFP calculation.
- data related to the life cycle impacts of the material or energy flows that enter the production system. Generic data can be used if specific data are not available.

Data on environmental aspects shall be as specific as possible and shall be representative of the studied process.

Data on the life cycle of materials or energy inputs are classified into three categories – specific data, selected generic data, and proxy data, defined as follows:

- **primary data** (also referred to as "site-specific data") – data gathered from the actual manufacturing plant where product-specific processes are carried out, and data from other parts of the life cycle traced to the specific product system under study, e.g. materials or electricity provided by a contracted supplier that is able to provide data for the actual delivered services, transportation that takes place based on actual fuel consumption, and related emissions, etc.
- **secondary data** - data from commonly available data sources (e.g. commercial databases and free databases) that fulfill prescribed data quality characteristics for precision, completeness, and, proxy data from commonly available data sources (e.g. commercial databases and free databases) that do not fulfill all of the data quality characteristics of "selected generic data".

As a general rule, specific data shall always be used, if available, after performing a data quality assessment.

The attributional LCA approach in Carbon Footprint Italy forms the basic prerequisites for selecting generic data. To allow the classification of generic data as "selected generic data", they shall fulfill selected prescribed characteristics for precision, completeness, and representativeness (temporal, geographical, and technological), such as:

- the reference year must be as current as possible and preferably assessed to be representative for at least the validity period of the CFP,
- the cut-off criteria to be met on the level of the modelled product system are the qualitative coverage of at least 99% of energy, mass, and overall environmental relevance of the flows,
- completeness in which the inventory data set should, in principle, cover all elementary flows that contribute to a relevant degree of GHG emissions.

1.2 Calculation rules

The following requirements apply to the study:

- Data referring to processes and activities upstream in a supply chain over which an organisation has direct management control shall be specific and collected on site.

- Data referring to contractors that supply main parts, packaging, or main auxiliaries should be requested from the contractor as specific data, as well as infrastructure, where relevant.

- In case specific data is lacking, selected generic data may be used. If this is also lacking, proxy data may be used.

- For the electricity used in the processes, electricity production impacts shall be accounted for in this priority when specific data are used in the processes:

1. Specific electricity mix as generated, or purchased, from an electricity supplier, demonstrated by a Guarantee of Origin (or similar, where reliability, traceability, and the avoidance of double-counting are ensured) as provided by the electricity supplier. If no specific mix is purchased, the residual electricity mix from the electricity supplier shall be used[1].
2. National residual electricity mix or residual electricity mix on the market
3. National electricity production mix or electricity mix on the market.

   The mix of electricity used in upstream processes shall be documented in the CFP study report, where relevant.

- Transport from the final delivery point of raw materials, chemicals, main parts, and components (see above regarding upstream processes) to the manufacturing plant/place of service provision should be based on the actual transportation mode, distance from the supplier, and vehicle load, if available.

- Waste treatment processes of manufacturing waste should be based on specific data, if available.

2. Cut-off rules

Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts shall be included (not including processes that are explicitly outside the system boundary as described in the relevant Section).

The check for cut-off rules in a satisfactory way is through the combination of expert judgment based on experience of similar product systems and a sensitivity analysis in which it is possible to understand how the un-investigated input or output could affect the final results.

3. Allocation rules

[1] The residual electricity mix is the mix when all contract-specific electricity that has been sold to other customers has been subtracted from the total production mix of the electricity supplier.

The following stepwise procedure shall be applied for multifunctional products and multiproduct processes:

1. Allocation shall be avoided, if possible, by dividing the unit process into two or more sub-processes and collecting the environmental data related to these sub-processes.
2. If allocation cannot be avoided, the inputs and outputs of the system shall be partitioned between its different products or functions in a way that reflects the underlying physical relationships between them; i.e. they should reflect the way in which the inputs and outputs are changed by quantitative changes in the products or functions delivered by the system.
3. Where physical relationships alone cannot be established or used as the basis for allocation (or they are too time consuming), the most suitable allocation procedure shall be used and documented.

In accordance with other existing programme operators, the methodological choices for allocation for reuse, recycling and recovery have been set according to the polluter pays principle (PPP). This means that the generator of the waste shall carry the full climate impact until the point in the product's life cycle at which the waste is transported to a scrapyard or gate of a waste processing plant (collection site). The subsequent user of the waste shall carry the climate impact from the processing and refinement of the waste but not the impact caused in the "earlier" life cycles.

PCR APPLICABILITY

1. Impact category indicator results
2. PCR use for EPD purpose

This document constitutes the Product Category Rules (PCR[2]) developed by Carbon Footprint Italy.

The requirements described in this Product Category Rules (PCR) are specified in addition to the ones indicated in the ISO standard 14067. Therefore, both the PCR and the ISO 14067 requirements shall be fulfilled in order to register to Carbon Footprint Italy.

In fact, this PCR was conceived and developed for CFP studies. Anyway, it can also be used for EPD (Environmental Product Declaration); to do this, the additional specific regulations required by the programme operator selected for the EPD registration should be followed as well (see Section 2).

So, in this PCR only the parameter reported in Section "Impact category indicator results" shall be included.

1. Impact category indicator results

The present PCR is aimed at the development of CFP. Therefore, a special focus is on the "Global Warming Potential" indicator.

The specific GHG emissions and removals treatment in the CFP or partial CFP that shall be quantified and documented separately in the CFP study report are reported in the ISO 14067:2018, Table 1 of chapter 6.4.9.8.

Three GWP indicators shall be declared, which differentiates greenhouse gases depending on their origin: GWP-fossil, GWP-biogenic emissions and removals and GWP-land use and land use change (dLUC), in accordance with the mentioned ISO 14067:2018 standard.

It should be noted that other impact categories can be relevant for the product category under assessment, other than the "Global Warming Potential" category. Therefore, in order to integrate the CFP results and to provide a broader view of the product environmental impacts, more impact categories shall be evaluated. The detail of this option is outlined in the following sections.

[2] Product Category Rules (PCRs) are documents that provide the rules, requirements and guidelines for developing a CFP study for a specific product category. PCRs are necessary to ensure uniformity of methodological approach to studies and to allow comparability between CFP studies related to products of the same category. The PCR development process is described in the "PQ04 PCR development" procedure, which can be downloaded in the dedicated section of the website.
This PCR follows the requirements of ISO/TS 14027, ISO 14067 and ISO 14025.

2. PCR use for EPD purpose

This PCR was conceived and developed for CFP studies. Anyway, it can also be used for EPD (Environmental Product Declaration); to do this, other predetermined parameters required by the programme operator selected for the EPD registration shall be followed. These parameters are:

- other impact category indicator results (see table 1 and following);
- inventory results that are elementary flows;
- data that do not represent elementary flows;
- additional environmental information.

Impact category	Impact indicator	Unit of measurement
Climate change - total	Global Warming Potential total (GWP-total)	kg of CO_2 equivalent
Ozone Depletion	Depletion potential of the stratospheric ozone layer (ODP)	kg of CFC-11 equivalents
Acidification	Acidification potential, Accumulated Exceedance (AP)	moles of H+ equivalents
Eutrophication of water	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	kg of P equivalent
Eutrophication aquatic marine	Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine)	kg of N equivalent
Eutrophication terrestrial	Eutrophication potential, accumulated exceedance (EP-terrestrial)	mol of N equivalent
Photochemical ozone formation	Formation potential of tropospheric ozone (POCP)	kg of NMVOC equivalents
Depletion of abiotic resources - minerals and materials	Abiotic Depletion for non-fossil resources potential (ADP-minerals&metals)	kg of Sb equivalents
Depletion of abiotic resources - fossil resources	Abiotic Depletion for fossil resources potential (ADP-fossil)	MJ, calculated using net calorific values
Water use	Water deprivation potential, deprivation-weighted water consumption (WDP)	m^3 equivalents

TABLE 1: OTHER IMPACT CATEGORY

The environmental impact indicators must be determined using the characterisation factors and impact assessment methods specified in EN 15804:2012+A2:2019.

Parameters	Unit of measurement
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw material (PENRE)	MJ, net calorific value
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ, net calorific value
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ, net calorific value
Use of renewable primary energy resources used as raw material (PERM)	MJ, net calorific value
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ, net calorific value
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ, net calorific value
Net use of fresh water (FW)	m^3
Use of secondary raw materials (MS)	kg
Use of renewable secondary fuels (RSF)	MJ
Use of non-renewable secondary fuels (NRSF)	MJ

TABLE 2: PARAMETERS DESCRIBING RESOURCE USE

Impact category	Unit of measurement
Hazardous waste disposed (HWD)	kg
Non-hazardous waste disposed (NHWD)	kg
Radioactive waste disposed (RWD)	kg
Materials for energy recovery (MER)	kg
Material for recycling (MFR)	kg
Components for reuse (CRU)	kg
Exported thermal energy (ETE)	MJ, net calorific value
Exported electricity energy (EEE)	MJ, net calorific value

TABLE 3: WASTE PRODUCTION DESCRIPTIVE PARAMETERS

COMPLEMENTARY INFORMATION

1. PCR use within other programme operators
2. Glossary
3. BIbliography
4. Underlying studies
5. Other existing PCR

1. PCR use within other programme operators

Carbon Footprint Italy believes in the importance of sharing different existing experiences, and considers the different Programme Operators as organizations that cooperate for a global climate transition.

CFI maintains the copyright of the document to ensure that it is possible to publish, update when necessary, and available to all organisations to develop and register CFPs. Stakeholders participating in PCR development should be acknowledged in the final document and on the website.

This PCR can be openly used by each CFP or EPD Programme Operator, if the original source of the know-how is mentioned (namely, the "PCR 2025-0001", developed by Carbon Footprint Italy).

2. Glossary

CO_2	Carbon dioxide
CPC	Central product classification
CFI	Carbon Footprint Italy
CFP	Carbon Footprint of Products
GHG	Greenhouse gases
ISO	International Organization for Standardization
kg	kilogram
LCA	Life cycle assessment
PCR	Product Category Rules
UN	United Nations

3. Bibliography

ISO (2000), ISO 14020:2000, Environmental labels and declarations – General principles

ISO (2017), ISO 14026:2017, Environmental labels and declarations – Principles, requirements and guidelines for communication of footprint information

ISO (2021), ISO 14040:2021, Environmental management – Life cycle assessment – Principles and framework

ISO (2021), ISO 14044: 2021, Environmental management – Life cycle assessment – Requirements and guidelines

ISO (2018), ISO 14067:2018, Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification

PQ 04 PCR Development, Carbon Footprint Italy

4. Underlying studies

The methodological choices made during the development of this PCR (functional unit/declared unit, system boundary, allocation methods, impact categories, data quality rules, etc.) in this PCR were primarily based on the following underlying studies:

- *CFP Systematic Approach of Tognana,* Aequilibria Srl – SB, 2024.

5. Other existing PCR

As part of the development of this PCR, existing PCRs were considered in order to avoid overlaps in scope. The existence of such documents was checked in the public PCR listings of the following programmes based on ISO 14025 or similar:

- International EPD® System
- EPDItaly

The following existing PCRs were identified:

PCR name	Programme	Registration number	Scope	Motivation for exclusion
TABLEWARE AND KITCHENWARE	EPD International®	2022:01	All products to be used for preparing, serving and consuming food and therefore designed to come into contact with food	The scope include only food grade products

Programme operator:	**Carbon Footprint Italy** Via Niccolò Tommaseo 17, 35131 Padova, Italy Website: www.carbonfootprintitaly.it/en/ E-mail: info@carbonfootprintitaly.it
Product category:	Non-structural ceramic ware
Registration number and version:	2025-0001, version 1.0
CPC classification code:	372
Geographical scope:	Global
PCR moderator:	Marta Mancin, Aequilibria Srl – SB, mmancin@aequilibria.com
PCR Committee:	Aequilibria Srl-SB, Tognana Porcellane S.p.A.
Review panel (member of CFI Technical-Scientific Committee)	The Technical-Scientific Committee of Carbon Footprint Italy. The review panel may be contacted via info@carbonfootprintitaly.it
PCR initiation phase:	2025-03-25
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Publication:	2025-05-26
Valid until:	2030-05-25