

TABLEWARE AND KITCHENWARE

PRODUCT CATEGORY CLASSIFICATION: MULTIPLE UN CPC

PCR 2022:01
VERSION 1.0

VALID UNTIL 2026-03-17



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1 INTRODUCTION

This document constitutes Product Category Rules (PCR) developed in the framework of the International EPD® System: a programme for type III environmental declarations¹ according to ISO 14025:2006, ISO 14040:2006, ISO 14044:2006, and product-specific standards such as EN 15804 and ISO 21930 for construction products. Environmental Product Declarations (EPD) are voluntary documents for a company or organisation to present transparent, consistent and verifiable information about the environmental performance of their products (goods or services).

The rules for the overall administration and operation of the programme are the General Programme Instructions (GPI), publicly available at www.environdec.com. A PCR complements the GPI and the normative standards by providing specific rules, requirements and guidelines for developing an EPD for one or more specific product categories (see Figure 1). A PCR should enable different practitioners using the PCR to generate consistent results when assessing products of the same product category.

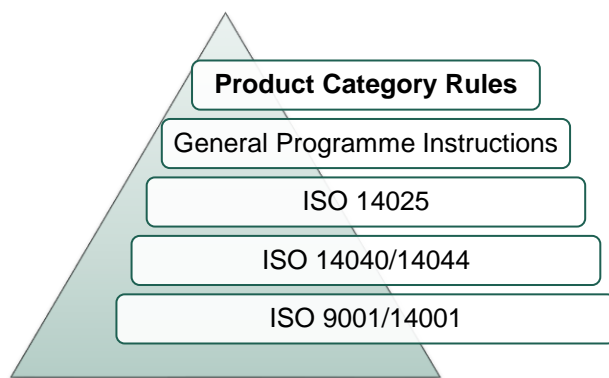


Figure 1 The hierarchy between PCRs, standards and other documents.

Within the present PCR, the following terminology is adopted:

- The term “shall” is used to indicate what is obligatory, i.e. a requirement.
- The term “should” is used to indicate a recommendation, rather than a requirement. Any deviation from a “should” requirement shall be justified in the PCR development process.
- The terms “may” or “can” is used to indicate an option that is permissible.

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

A PCR is valid for a pre-determined period of time to ensure that it is updated at regular intervals. The latest version of the PCR is available at www.environdec.com. Stakeholder feedback on PCRs is very much encouraged. Any comments on this PCR may be sent directly to the PCR Moderator and/or the Secretariat during its development or during its period of validity.

Any references to this document shall include the PCR registration number, name and version.


The programme operator maintains the copyright of the document to ensure that it is possible to publish, update, and make it available to all organisations to develop and register EPDs. Stakeholders participating in PCR development should be acknowledged in the final document and on the website.

¹ Type III environmental declarations in the International EPD® System are referred to as EPDs, Environmental Product Declarations.

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2 GENERAL INFORMATION

2.1 ADMINISTRATIVE INFORMATION

Name:	Tableware and kitchenware
Registration number and version:	2022:01
Programme:	 The International EPD® System
Programme operator:	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden. Website: www.environdec.com E-mail: info@environdec.com
PCR Moderator:	Anna Bortoluzzi, MAPPING LCA working group coordinator, anna.bortoluzzi@quotasette.it & Andrea Casson, University of Milano, andrea.casson@unimi.it
PCR Committee:	MAPPING LCA working group, Agrifood LCA Laboratory - University of Milan, Isap Packaging SpA, FLO SpA, F Bender Ltd, FTT Srl, Quota Sette Srl, Dopla Spa, Dopla Pap SA, Nupik Internacional SL, Sky Paper SLU, FCP Lab, Food Contact Center
Date of publication and last revision:	2022-03-17
Valid until:	2026-03-17
Schedule for renewal:	<p>A PCR is valid for a pre-determined time period to ensure that it is updated at regular intervals. When the PCR is about to expire, the PCR Moderator shall initiate a discussion with the Secretariat how to proceed with updating the PCR and renewing its validity.</p> <p>A PCR may be also be updated without prolonging its period of validity, provided significant and well-justified proposals for changes or amendments are presented.</p> <p>See www.environdec.com for the latest version of the PCR.</p> <p>When there has been an update of the PCR, the new version should be used to develop EPDs. The old version may however be used for 90 days after the publication date of the new version, as long as the old version has not expired.</p>
Standards conformance:	▪ General Programme Instructions of the International EPD® System, version 4.0, based on ISO 14025 and ISO 14040/14044
PCR language(s):	At the time of publication, this PCR was available in English. If the PCR is available in several languages, these are available at www.environdec.com . In case of translated versions, the English version takes precedence in case of any discrepancies.

2.2 SCOPE OF PCR

2.2.1 INTRODUCTION TO THE TABLEWARE AND KITCHENWARE SECTOR

The Tableware and Kitchenware sector includes all products to be used for preparing, serving and consuming food and therefore designed to come into contact with food.

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The Tableware and Kitchenware Sector is marked by extreme complexity and continuous product and process innovation. Production of tableware and kitchenware involves all industrial sector stakeholders: designers, manufacturers, professional users and consumers. In particular, tableware and kitchenware manufacturers come up with new products and new solutions through intense design and co-design work in collaboration with their customers. In the tableware and kitchenware sector, it is therefore crucial to establish shared rules that are capable of addressing the diverse needs of users and, concurrently, to recognize the innovative proposals coming from the designers and manufacturers.

That is why this document has been developed through a multi-code (UN CPC codes) and multi-material approach. The framework of the document is based on the main functions and applications of tableware and kitchenware articles.

This PCR has been developed with a modular approach regarding the life cycle stages and the system boundaries definition. The functional unit is based on technical characteristics relevant for any tableware and kitchenware purpose.

Below are reported the terms and definitions relevant to this PCR:

- *tableware*: utensils used at the table for holding, serving, and handling food and drink. Tableware includes various types of containers (known as hollowware, q.v.), spoons and forks (flatware, q.v.), knives (cutlery, q.v.), and a variety of dishes and accessories.
- *kitchenware*: tools, utensils, appliances, dishes, and cookware used in food preparation, or the serving of food. Kitchenware can also be used in order to hold or store food before or after preparation.
- *single-use (disposable) product*: a product that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations to be re-used for the same purpose for which it was conceived.
- *reusable product*: product which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse.

2.2.2 PRODUCT CATEGORY DEFINITION AND DESCRIPTION

This document provides Product Category Rules (PCR) for the assessment of the environmental performance of tableware and kitchenware and the declaration of this performance by an EPD. The product category corresponds to multiple UN CPC as reported below.

The scope of this PCR includes all items that belong to the tableware and kitchenware category and comply with the following set of requirements:

- products that are put on the market with the intended use of food contact,
- products that are defined from the design phase whether the use of the product will be disposable or reusable, and
- products that comply with the food contact requirements described in 5.4.4 (Content declaration).

However, the following articles are outside of the scope of this PCR:

- kitchen electrical appliances
- handicrafts
- antique
- toilet articles
- packaging
- holloware and living (e.g. centertable, candle holders, flower pots, etc.), and
- table fabrics (e.g. tablecloths, napkins, synthetic or natural materials).

Handicraft and ethnic articles used as tableware and kitchenware are included if they comply with the requirements for food contact as described in section 5.4.4 (Content declaration).

This PCR covers both tableware and kitchenware articles intended for single use (disposable) and articles destined for reuse, provided they have been explicitly designed for multiple use cycles.

The use stage scenario of reusable tableware and kitchenware articles, shall refer to professional use (e.g. Ho.Re.Ca sector) to have an intensive use reference, as domestic use cannot be represented through a standardized approach.

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The recycling of a product for the same original purpose, after transformation into secondary raw material, is not considered reuse, and, as such, does not fall within the scope of this PCR. Reuse by the consumer that changes the purpose of the original tableware and kitchenware articles is outside of the scope of this PCR. In these cases, it is not possible to guarantee the same levels of safety envisaged in the tableware and kitchenware articles design.

Note 1: According to the General Programme Instructions, the EPD may contain information on the potential benefits gained from the end-of-life recycling (see Section. 5.4.6)

As this PCR covers a very generic product category, with a wide range of tableware and kitchenware articles, it is difficult to classify according to UN CPC classification. The UN CPC codes on tableware and kitchenware have the following drawbacks:

- not all codes are available (e.g., incomplete classification of materials),
- descriptions are often non-existent or incomplete, and
- innovative solutions are not covered.

To overcome these structural problems in the UN CPC classification, a three-step model has been developed (Figure 2), which allows the EPD Owner to easily identify the most appropriate CPC code for each product. The following model shall be applied to define the CPC code(s) of each EPD based on the PCR.

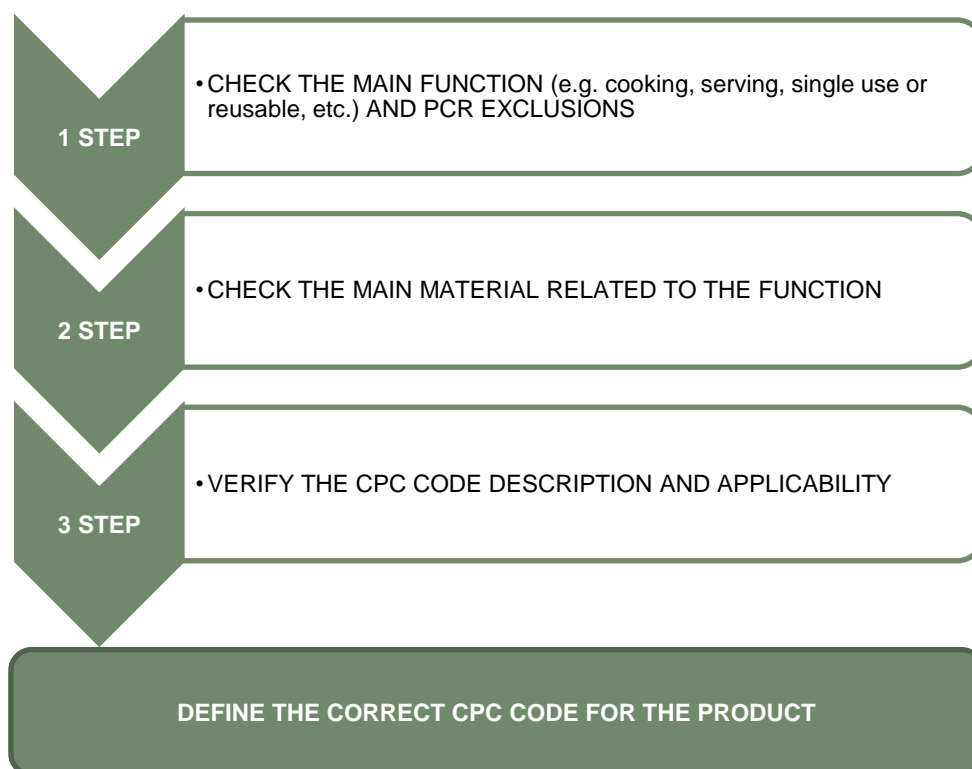


Figure 2 “3-step diagram” of the procedure for defining the correct CPC code.

The description of the CPC codes may not be fully applicable to the product of the EPD as they contain, for example, references to items that are excluded from the scope of this PCR (e.g., toilet articles in CPC 36940 are excluded). Despite this, the CPC code should still be used to define the product concerned.

In case of tableware and kitchenware articles for which it is impossible to assign a CPC code with an adequate description, a generic CPC code (e.g. 3219, Other paper and paperboard products) or a product classification following another international standards shall be assigned to the product.

In case of multi-material tableware and kitchenware article, the CPC code is chosen based on the material most relevant to the function (e.g., the material that promotes heat exchange in cooking).

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The table in Annex 1 shows some examples of CPC codes identified using the 3-step diagram. They are a non-exhaustive list; other CPC codes may also be relevant for this PCR. See, <https://unstats.un.org/unsd/classifications/Family/Detail/1074> for additional information.

2.2.3 GEOGRAPHICAL SCOPE

This PCR may be used globally.

2.2.4 EPD VALIDITY

An EPD based on this PCR shall be valid for a 5-year period starting from the date of the verification report ("approval date"), or until the EPD has been de-registered from the International EPD® System.

An EPD shall be updated and re-verified during its validity if changes in technology or other circumstances have led to:

- an increase of 10% or more of any of the declared indicators of environmental impact,
- errors in the declared information, or
- significant changes to the declared product information, content declaration, or additional environmental, social or economic information.

If such changes have occurred, but the EPD is not updated, the EPD owner shall contact the Secretariat to de-register the EPD.

3 PCR REVIEW AND BACKGROUND INFORMATION

This PCR was developed in accordance with the PCR development process described in the GPI of the International EPD® System, including open consultation and review.

3.1 OPEN CONSULTATION

3.1.1 VERSION 1.0

This PCR was available for open consultation from 2021-07-05 until 2021-09-05, during which any stakeholder was able to provide comments by contacting the PCR Moderator and/or the Secretariat.

Stakeholders were invited via e-mail or other means to take part in the open consultation and were encouraged to forward the invitation to other relevant stakeholders. The following stakeholders provided comments during the open consultation and agreed to be listed as contributors in the PCR and at www.environdec.com.

- Delphine Bastien, ARC Group
- M. van Valburg, Libbey EMEA
- Tomaso Vittori Venenti, Bormioli Rocco S.p.A.

3.2 PCR REVIEW

3.2.1 VERSION 1.0

PCR review panel:	The Technical Committee of the International EPD® System. A full list of members is available at www.environdec.com . The review panel may be contacted via info@environdec.com . Members of the Technical Committee were requested to state any potential conflict of interest with the PCR Committee, and if there were conflicts of interest they were excused from the review.
Chair of the PCR review:	Gorka Benito
Review dates:	2021-10-11 until 2021-11-25

3.3 EXISTING PCRS FOR THE PRODUCT CATEGORY

As part of the development of this PCR, existing PCRs and other internationally standardized methods that could potentially act as PCRs were considered to avoid unnecessary overlaps in scope and to ensure harmonisation with established methods of relevance for the product category. The existence of such documents was checked among the following EPD programmes and international standardisation bodies:

- International EPD® System. www.environdec.com.
- GlobalEPD
- EPD Norway
- IBU
- PEP ecopassport®
- EarthSure
- EDF
- KEITI Environmental Declaration of Products
- JEMAI EcoLeaf

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- JEMAI CFP Program
- UL Environment
- ASTM International EPD Program
- NSF International National Center for Sustainability Standards EPD
- SM Transparency Report Program
- FPIInnovations EPD Program on wood building products
- ICC Evaluation Service Environmental Product Declaration Program
- Carbon Leadership Forum PCRs
- BRE Global EN EPD Verification Scheme
- DAPcons®
- SCS Global Services

No existing PCRs or other relevant internationally standardized methods with overlapping scope were identified.

3.4 REASONING FOR DEVELOPMENT OF PCR

This PCR was developed to enable publication of EPDs for this product category based on ISO 14025, ISO 14040/14044. The PCR enables different practitioners to generate consistent results when assessing the environmental impact of products of the same product category, and thereby it supports comparability of products within a product category.

3.5 UNDERLYING STUDIES USED FOR PCR DEVELOPMENT

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

- UNEP Life Cycle Initiative, *Single-use plastic tableware and its alternatives: Recommendations from Life Cycle Assessments, 2021*
- UNEP Life Cycle Initiative, *Single-use beverage cups and their alternatives: Recommendations from Life Cycle Assessments, 2021*
- UNEP Life Cycle Initiative, *Addressing Single-Use Plastic Products Pollution using a Life Cycle Approach, 2021*
- Myszka K. & Czaczky K., *Bacterial Biofilms on Food Contact Surfaces – a Review*, Pol. J. Food Nutr. Sci., 2011, Vol. 61, No. 3, pp. 173-180 (<http://journal.pan.olsztyn.pl>)
- Lena V. Poulsen, *Microbial Biofilm in Food Processing*, Lebensm.-Wiss. u.-Technol., 32, 321-326 (1999)
- C. Ganesh Kumar & S.K. Anand, *Significance of microbial biofilms in food industry: a review*, International Journal of Food Microbiology 42 (1998) 9–27
- Serena Galié, Coral García-Gutiérrez, Elisa M. Miguélez, Claudio J. Villar and Felipe Lombó, *Biofilms in the Food Industry: Health Aspects and Control Methods*, Frontiers in Microbiology May 2018 | Volume 9 | Article 898
- Musa Hassan Muhammad, Aisha Lawan Idris, Xiao Fan, Yachong Guo, Yiyan Yu, Xu Jin, Junzhi Qiu, Xiong Guan and Tianpei Huang, *Beyond Risk: Bacterial Biofilms and Their Regulating Approaches*, Frontiers in Microbiology May 2020 | Volume 11 | Article 928

4 GOAL AND SCOPE, LIFE CYCLE INVENTORY AND LIFE CYCLE IMPACT ASSESSMENT

The goal of this section is to provide specific rules, requirements and guidelines for developing an EPD for the product category as defined in Section 2.2.

4.1 FUNCTIONAL UNIT

The functional unit shall be stated in the EPD. The environmental impact shall be given per functional unit. A description of the function of the product should be included in the EPD, if relevant.

The functional unit is 1 (one) use of a product unit.

In the case of a reusable product, the use cycle includes both use and reconditioning and the intermediate transports, when applicable (see Table 2). The term reconditioning refers to the restoration of the original conditions of use of the reusable tableware or kitchenware product.

For two-dimensional² (flat) products, both reusable and disposable, such as films or sheet an alternative functional unit of 1 (one) use of 1 (one) m² of product with the related thickness and unit weight in g/m² may be used only if the EPD owner is not able to identify the final product as a single product unit.

An optional additional functional unit of 1 (one) use of 1 (one) kg of product may be used to report results in addition to those calculated using the mandatory functional unit of 1 use of a product unit. The environmental performance related to this functional unit shall be reported as additional environmental indicators and the EPD shall contain an explanation of the difference between the different sets of indicators, as they may appear to the reader to display duplicate information.

To fulfil the functional unit for the reusable products and ensure potential comparison with disposable products, the total impacts associated with the life cycle modules from A1 to C3 (except B1-B2) shall be divided by the total number of expected uses during the product life (technical lifespan) defined according to Section 4.2. The impacts associated with reuse such as washing and transport (B1-B2), arise from each use. The assumed technical lifespan of the reusable products is an important factor to the overall comparison with single-use products because impacts of the manufacturing and end-of-life stages are spread over the number of uses.

The following technical information supports the functional unit definition and shall be reported in the EPD, if applicable:

- intended use as reported in the instruction manual or in the label. The limitations on the intended use, relating to contact with specific foods, shall always be reported in the EPD,
- technical lifespan (see Section 4.2),
- main material related to the function of the product (e.g. metal, polymer, wood, etc.),
- thickness of materials significant for the function (mm) (for example thickness of the surfaces that manage the heat exchange),
- external dimensions (m),
- weight of the article and its components (kg),
- temperature resistance (°C) (minimum and maximum temperature of use),
- resistance to specific aggressive agents (e.g., food or washing agents), and
- end-of-life related properties such as compostability and biodegradability when applicable (e.g. bio-plastics, vegetable fibre products, etc.).

In the EPD, the tableware and kitchenware articles shall be described with relevant technical details to provide fair comparisons. For example, for two different EPDs of single-use and reusable products to be comparable, the single-use (disposable) and reusables products must perform the same function and, in case of product for cooking, they must be designed to ensure the same performance during the cooking phase, the same use and the same technological solution.

² A two-dimensional product develops mainly on a flat surface (e.g. films or sheets).

4.2 TECHNICAL SPECIFICATION AND TECHNICAL LIFESPAN

In an EPD based on this PCR, the technical lifespan for reusable articles should be defined based on the average number of uses that reusable tableware and kitchenware articles of different materials have been proven to last in the Ho.Re.Ca sector, see Table 1. These standard values are based on historical data of professional use³⁴. However, as the technical lifespan of a specific product may be both higher and lower than the standard values, an alternative technical lifespan may instead be chosen, if it is derived using appropriate methods and is verifiable (i.e., evidence of the number of use cycles must be presented to the verifier).

MATERIAL OF THE TABLEWARE AND KITCHENWARE ARTICLES	Technical lifespan
Metals and their alloys, uncoated (e.g., steel, aluminium and their alloys)	6 000 cycles of use
Metals and their alloys, coated	1 000 cycles of use
Glass and crystal ⁵	1 000 cycles of use
Ceramics ⁴	1 000 cycles of use
Wood of various kinds (including bamboo) ⁴	500 cycles of use
Polymers, including silicones, rubbers and melamine ⁴	1 000 cycles of use
Multi-material composites (referring to surface wear as a function of hygiene)	1 000 cycles of use

Table 1 Definition of the standard technical lifespan for reusable tableware and kitchenware articles made of various materials

If an alternative technical lifespan is used (i.e., another technical lifespan than those in Table 1), it shall be set following using the following rules.

The technical lifespan shall, in any case, be set considering that the use of the tableware and kitchenware articles must end if it involves risks to safety (e.g., mechanical damage) or to health (e.g., biological risk due to impossibility of obtaining an adequate guarantee of hygiene with washing). All the criteria applied to establish the technical lifespan on the basis of the safety/hygiene risk assessment shall be documented in the EPD (see bibliography on safety/hygiene risk and biofilms in Section 3.5). In case of reusable products, the number of uses during the technical lifespan, and the criteria applied for its definition, shall be included in the EPD.

4.3 SYSTEM BOUNDARY

The scope of this PCR and EPDs based on it is cradle-to-grave.

4.3.1 LIFE-CYCLE STAGES

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

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

³ Pro.Mo/Unionplast (2015) Study Report Comparative Life Cycle Assessment (LCA) Study of Tableware for Alimentary Use. Milan, Italy. Available at: https://pro-mo.it/wpcontent/uploads/2018/09/LCA-PRO.MO_english-final_r3.pdf.

⁴ Antony, F. and Gensch, C.-O. (2017) Life cycle comparison of reusable and non-reusable crockery for mass catering in the USA - Study commissioned by MEIKO Maschinenbau GmbH & Co. Freiburg, Germany. Available at: https://www.oeko.de/fileadmin/oekodoc/MEIKO_final_report.pdf.

⁵ For this kind of material, the technical lifespan shall consider the wear of the surface as a function of hygiene.

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In the EPD, the environmental performance associated with each of the three life-cycle stages above shall be reported separately and in aggregated form. The processes included in the scope of the PCR and belonging to each life cycle stage are described in Sections 4.3.1.1–4.3.1.3.

In addition to the division into upstream, core and downstream stages, an EPD based on this PCR may additionally present the environmental performance results divided into the life-cycle modules A1-C3, or module groups, see Table 2.

In the following table the "X" reported in the last column (modules included in the system boundary) indicates that the specific module is included in the system boundary (if present) respectively in the case of disposable or reusable product life cycles.

Life cycle stage	Life cycle module	Life cycle module group	Modules included in the system boundaries	
			Single-use (disposable)	Reusable
Upstream	A1) Raw material supply	A1-A3) Product stage	X	X
Core	A2) Transportation			
	A3) Manufacturing			
Downstream	A4) Transport to an average retailer/distribution platform	A4-A6) Transport, first treatment and packaging end-of-life	X	X
	A5) Waste treatment processes of packaging waste		X	X
	A6) Treatment of the product before the first use			X (if present)
	B1) Transport to use and back to washing and drying ⁶ (reconditioning)	B1-B3) Washing and maintenance		X (if present)
	B2) Washing and drying (after the use)			X
	B3) General maintenance			X (if present)
	C1) Disassembling/sorting	C1-C3) End of life stage	X (if present)	X (if present)
	C2) Transport to recovery/disposal		X	X
	C3) Final disposal		X	X

Table 2 The life cycle of the product divided into three life cycle stages according to the General Programme Instructions and four life cycle module groups

4.3.1.1. Upstream processes

All relevant unit processes along the upstream supply chain shall be included, for example:

A1) Raw material supply

- extraction and processing of raw materials,
- growing and harvesting of renewable resources (e.g., agricultural planting)
- recycling processes of secondary materials from other product life cycles,
- refinement of resources,

⁶ e.g. Ho.Re.Ca activities

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- production of input components,
- production of auxiliary products used such as detergents 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 processes, and
- end-of-life treatment of upstream waste.

Upstream processes not listed may also be included. All elementary flows at resource extraction shall be included, except for the flows that fall under the general cut-off rule in Section 4.5.

4.3.1.2. Core processes

All relevant unit processes along the core supply chain shall be included, for example:

A2) Transportation

- transportation of materials and components to the manufacturing of the product under study,
- generation of fuels used in the transportation.

A3) Manufacturing

- 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, and
- 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, and

4.3.1.3. Downstream processes

All relevant unit processes shall be included as follows, if applicable. Generation of electricity and production of fuels, steam and other energy carriers used in each of the modules shall be assigned to respective module.

A4) Transport to an average retailer/distribution platform

- Transportation from the production site gate to an average retailer/distribution platform

The transport of the product by the consumer is excluded.

A5) Waste treatment processes of packaging waste

- Waste treatment of all components of the product packaging

A6) Treatment of the product before the first use

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- Any treatment operation of the product before the first use such as washing, use of natural or chemical substances for the treatment of the cooking surface, etc.

B1) Transport to use and back to washing and drying

- Transportation from the product owner site gate to the use site and back to an average washing and drying site (e.g. Ho.Re.Ca activities). This module shall always be included for reusable products unless it can be proved that the product is not designed for catering activities.

B2) Washing and drying (after the use)

- Any washing and drying operation of the product after the use such as the use of washing machines, electricity, water, detergents and other chemical substances.

B3) General maintenance

- Any maintenance operation necessary to restore a reusable product to a functional state for further reuse during its lifetime such as treatment of surfaces with antioxidants and anti-limescale, sharpening of blades, replacement of parts⁷, etc.

C1) Disassembling/sorting

- Operations for the separation of product components and subsequent sorting.

C2) Transport to recovery/disposal

- Transportation of the discarded product accounts for part of waste processing, e.g. to a recycling site or to final sorting yard or disposal

C3) Final disposal

- Waste disposal including physical pre-treatment and management of the disposal site. Emissions from waste disposal are considered part of the product system under study and therefore are part of this module, according to the "polluter pays principle".

4.3.2 OTHER BOUNDARY SETTING

4.3.2.1. Boundary towards nature

Boundaries to nature are defined as where the flows of material and energy resources leaves nature and enters the technical system (i.e. the product system). Emissions cross the system boundary to nature when they are emitted to air, soil or water.

4.3.2.2. Boundary towards other technical systems

Boundaries towards other technical systems define the flow of materials and components to/from the product system under study and from/to other product systems. If there is an inflow of recycled material to the product system in the production/manufacturing stage, the transport from the scrapyard/collection site to the recycling plant, the recycling process, and the transportation from the recycling plant to the site where the material is being used shall be included. If there is an outflow of material or component to recycling, the transportation of the material to the scrapyard/collection site shall be included. The material or component going to recycling is then an outflow from the product system.

See Section 4.3.1 for further guidance.

4.3.2.3. Temporal boundary

The temporal boundary defines the time period for which the life cycle inventory data is recorded, e.g. for how long emissions from waste deposits are accounted. As default, the time period over which inputs to and outputs from the product system is accounted for shall be 100 years from the year that the LCA model best represents, considering the representativeness of the inventory data. This year shall, as far as possible, represent the year of the publication of the EPD.

⁷ The replaced parts shall follow the manufacturer's instructions or in the absence of specific information they shall, in any case comply, with the product design criteria (parts not foreseen by the designer are not replaced).

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4.3.2.4. Geographical boundary

The geographical boundary defines the geographical coverage of the LCA. This shall reflect the physical reality of the product under study, accounting for the representativeness of technology, input materials and input energy.

4.4 SYSTEM DIAGRAM

The system diagram changes depending on the tableware and kitchenware article covered by the EPD and, for that reason, has not been reported in this PCR. Table 4 in paragraph 4.3.1 shows the processes that are included in the product system.

A system diagram of the processes included in the LCA for the specific tableware and kitchenware article, divided into life cycle stages, shall be reported in the EPD.

4.5 CUT-OFF RULES

A cut-off rule of 1% shall be applied. In other words, the included inventory data (not including inventory data of processes that are explicitly outside the system boundary as described in Section 4.3) shall together give rise to at least 99% of the results of any of the environmental impact categories. Also, 99% of the mass of the product content and 99% of the energy use of the product life cycle shall be accounted for. The cut-off of inventory data should, however, be avoided, and all available inventory data shall be used.

The cut-off of inventory data, based on the above cut-off rule, should be an output of a sensitivity analysis, alone or in combination with expert judgment based on experience of similar product systems. Further, the cut-off shall be possible to verify in the verification process, hence the exclusion of inventory data based on the cut-off rule shall be documented in the LCA report, and the EPD developer shall provide the information the verifier considers necessary to verify the cut-off.

4.6 ALLOCATION RULES

Allocation can be divided into allocation of co-products, i.e. allocation of unit processes that generate several products, and allocation of waste, i.e. allocation of unit processes that generate materials that are, for example, landfilled recovered, recycled or reused, and which require further processing to cease being waste and become products (see criteria for end-of-waste state in Section 4.6.2).

The principles for allocation of co-products and allocation of waste are described separately in the following subsections

4.6.1 CO-PRODUCT ALLOCATION

The following hierarchy of allocation methods shall be followed for co-product allocation:

1. Allocation shall be avoided, if possible, by dividing the process to be allocated into sub-processes and collecting the inventory data for each sub-process.
2. If allocation cannot be avoided, the inventory data should be partitioned between the different co-products in a way that reflects the underlying physical relationships between them, i.e. allocation should reflect the way in which the inventory data changes if the quantities of delivered co-products change.
3. If a physical relationship between the inventory data and the delivery of co-products cannot be established, the inventory data should be allocated between the co-products in a way that reflects other relationships between them. For example, inventory data might be allocated between co-products in proportion to their economic values. If economic allocation is used, a sensitivity analysis exploring the influence of the choice of the economic value shall be included in the LCA report. The monitoring of the relationship between results and current economic value shall be documented and updated. The allocation method shall be justified and described in the LCA report. In case an allocation different from the physical relationship allocation is used, it shall be declared in the EPD.

4.6.2 ALLOCATION OF WASTE TREATMENT PROCESSES

Allocation of waste shall follow the polluter pays principle and its interpretation in EN 15804: "processes of waste processing shall be assigned to the product system that generates the waste until the end-of-waste state is reached." The end-of-waste state is reached when all the following criteria for the end-of-waste state are fulfilled (adapted from EN 15804):

- the recovered material, component or product is commonly used for specific purposes;
- a market or demand, identified e.g. by a positive economic value, exists for such a recovered material, component or product;

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- the recovered material, component or product fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products; and
- the use of the recovered material, product or construction element will not lead to overall adverse environmental or human health impacts.

The above outlined principle means that the generator of the waste shall carry the full environmental impact until the point in the product life cycle in which the end-of-waste criteria are fulfilled. Waste may have a negative economic market value, and then the end-of-waste stage is typically reached after (part of) the waste processing and further refinement, at the point at which the waste no longer has a negative market value. This allocation method is (in most cases) in line with a waste generator's juridical and financial responsibilities. See the GPI for further information and examples.

4.7 DATA QUALITY REQUIREMENTS AND SELECTION OF DATA

Life cycle inventory data are classified into specific data and generic data, where the latter can be selected generic data or proxy data. The data categories are defined as follows:

- specific data (also referred to as "primary data" or "site-specific data"):
 - data gathered from the actual manufacturing plant where product-specific processes are carried out;
 - actual data from other parts of the life cycle traced to the product under study, for example site-specific data on the production of materials or generation of electricity provided by contracted suppliers, and transportation data on distances, means of transportation, load factor, fuel consumption, etc., of contracted transportation providers; and
 - LCI data from databases on transportation and energyware that is combined with actual transportation and energy parameters as listed above.
- generic data (sometimes referred to as "secondary data"), divided into:
 - selected generic data: data (e.g. commercial databases and free databases) that fulfil prescribed data quality requirements for precision, completeness, and representativeness (see below Section 4.7.1),
 - proxy data: data (e.g. commercial databases and free databases) that do not fulfil all of the data quality requirements of "selected generic data".

Specific data shall be used for the core processes. Specific data shall be used for upstream and downstream processes, when available, otherwise generic data may be used. Generic data should be used in cases in which they are representative for the purpose of the EPD, e.g. for bulk and raw materials on a spot market, if there is a lack of specific data on the final product or if a product consists of many components.

4.7.1 RULES FOR USING GENERIC DATA

For generic data to be classified as "selected generic data", the following requirements apply:

- datasets shall be based on attributional LCA modelling (e.g., not be based on marginal data and not include credits from system expansion),
- the reference year shall be as current as possible and should be representative for the validity period of the EPD,
- the 1% cut-off rule (as described in Section A.3.3) shall be met on the level of the product system,
- datasets shall represent average values for a specific reference year; however, how data are generated could vary, e.g. over time, and then they should have the form of a representative annual average value for a specified reference period (such deviations shall be justified and declared in the EPD), and
- the representativeness of the data shall be assessed to be better than $\pm 5\%$, in terms of the environmental impact calculated on the basis of the data, of data that is fully representative for the given temporal, technological and geographical context.

If selected generic data that meets the above data quality requirements are not available, proxy data may be used. The environmental impacts associated with proxy data shall not exceed 10% of the overall environmental impact of the product system.

The EPD may include a data quality declaration to demonstrate the share of specific data, selected generic data and proxy data contributing to the results of the environmental impact indicators.

4.7.2 EXAMPLES OF DATABASES FOR GENERIC DATA

No recommended databases for generic data have been identified for the product category, since the PCR includes many different tableware and kitchenware products and consequently a wide range of databases could be relevant.

4.7.3 DATA QUALITY REQUIREMENTS AND OTHER MODELLING GUIDANCE PER LIFE-CYCLE STAGE.

Below are further data quality requirement per life-cycle stage. Exceptions to the requirements may be accepted, if justified in the EPD; such exceptions are subject to the approval by the verifier on a case-to-case basis.

4.7.3.1 Upstream processes

- 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.
- Data on transport of main parts and components along the supply chain to a distribution point (e.g. a stockroom or warehouse) where the final delivery to the manufacturer can take place, should be specific and based on the actual transportation mode, distance from the supplier, and vehicle load.
- In case specific data is lacking, selected generic data may be used. If this is also lacking, proxy data may be used (see Section 4.7).
- For upstream processes modelled with specific data, generation of electricity used shall be accounted for in this priority:
 1. Specific electricity mix as generated, or purchased from an electricity supplier, demonstrated by a Guarantee of Origin or similar as provided by the electricity supplier.
 2. Residual electricity mix of the electricity supplier on the market.
 3. Residual electricity mix on the market.
 4. Electricity consumption mix on the market.

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 consumption mix.

"The market" in the above hierarchy may correspond a national electricity market, if this can be justified.

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

- Packaging: specific data shall be used for the consumer packaging production if it is under the direct control of the organization or if the environmental impact related to the consumer packaging production is more than 10% of the total product environmental indicators. In other cases, generic data may be used. When consumer packaging shows the organization's logo, the LCA report should report the exerted/non-exerted direct control on the production of consumer packaging by the organization.

4.7.3.2 Core processes

- 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.
- Goods: Specific data shall be used for the assembly of the product and for the manufacture of main parts as well as for on-site generation of steam, heat, electricity, etc., where relevant.
- Services: Specific data shall be used for the consumption of materials, chemicals, steam, heat, electricity, etc., necessary for execution of the service
- For electricity used in the core processes, generation of electricity used shall be accounted for in this priority:
 1. Specific electricity mix as generated, or purchased from an electricity supplier, demonstrated by a Guarantee of Origin or similar as provided by the electricity supplier.

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2. Residual electricity mix of the electricity supplier on the market.
3. Residual electricity mix on the market.
4. Electricity consumption mix on the market. This option shall not be used for electricity used in processes over which the manufacturer (EPD owner) has direct control⁸.

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 consumption mix.

"The market" in the above hierarchy may correspond a national electricity market, if this can be justified.

The mix of electricity used in the core processes shall be documented in the EPD, where relevant.

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

4.7.3.3. Downstream processes

- To fulfil the functional unit for the reusable products and ensure potential comparison with disposable products, the total impacts associated with the life cycle modules from A1 to C3 (except B1-B2) shall be divided by the total number of expected uses during the reference service life (RSL) defined according to par 4.2. The impacts associated with reuse such as washing and transport (B1-B2) are carried out for each use so they do not require specific allocation procedures. The assumed lifetime uses of the reusable products is an important factor to the overall comparison with single-use products because impacts of manufacturing stage are spread over the number of uses.
- Data for the use stage are usually based on scenarios, but specific data should be used when available and relevant.
- Data on the emissions from the use stage should be based on documented tests, verified studies in conjunction with average or typical product use, or recommendations concerning suitable product use. Whenever applicable, test methods shall be internationally recognised.
- The use of electricity in the region/country where the product is used (as specified in the geographical scope of the EPD) shall be accounted for in the following priority:
 1. Residual electricity mix on the market.
 2. Electricity consumption mix on the market.

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.

"The market" in the above hierarchy may correspond a national electricity market, if this can be justified.

The mix of electricity used in the downstream processes shall be documented in the EPD, where relevant.

- The transport of the product to the customer shall be described in the EPD, where relevant, and be accounted for in this priority:
 1. Actual transportation modes and distances to specific a customer or market, representing the geographical scope of the EPD.
 2. A weighted average of transportation modes and distances, based on transportation to several customers or markets, representing the geographical scope of the EPD.
- Scenarios for the end-of-life stage shall be technically and economically practicable and compliant with current regulations in the relevant geographical region based on the geographical scope of the EPD. Key assumptions regarding the end-of-life stage scenario shall be documented in the LCA report.

4.7.4 DATA QUALITY DECLARATION

EPDs may include a declaration of the quality of data used in the LCA calculations.

⁸ For electricity markets without trade of Guarantees of Origin (or similar), the residual mix will, however, be identical to the consumption mix.

4.8 ENVIRONMENTAL PERFORMANCE INDICATORS

The EPD shall declare the default environmental performance indicators and their methods as described at the website (www.environdec.com/indicators), which includes both inventory indicators and indicators of potential environmental impact. The source and version of the impact assessment methods and characterisations factors used shall be reported in the EPD. Alternative regional impact assessment methods and characterisation factors may be calculated and displayed in addition to the default list. If so, the EPD shall contain an explanation of the difference between the different sets of indicators, as they may appear to the reader to display duplicate information.

If the default list of environmental performance indicators and methods at the website is updated, the previous version of the list is valid in parallel to the new version during a transition period of 90 days, as described at the website.

The environmental results based on an optional additional functional unit of 1 kg of product (for single-use products) or 1 cycle of use and reconditioning of a 1 kg of product (for reusable products) may be reported. The environmental performance related to this functional unit shall be reported as additional environmental indicators and the EPD shall contain an explanation of the difference between the different sets of indicators, as they may appear to the reader to display duplicate information.

Apart from the required inventory indicators, other inventory data may also be declared in the EPD, if relevant and useful for EPD users. Such data shall not be declared in the main body of the EPD, but in an annex.

4.9 INCLUDING MULTIPLE PRODUCTS IN THE SAME EPD

4.9.1 PRODUCTS FROM THE SAME COMPANY

Similar products from a single or several manufacturing sites covered by the same PCR and manufactured by the same company with the same major steps in the core processes may be included in the same EPD if none of the declared environmental performance indicators differ by more than 10% between any of the included products. The results for the environmental performance indicators of one representative product shall be declared according to Section 5.4.5. The choice of representative product shall be justified in the EPD, using, where applicable, statistical parameters.

4.9.2 SECTOR EPDS

The International EPD[®] System allows for an industry association to develop an EPD in the form of a Sector EPD. A Sector EPD declares the average product of multiple companies in a clearly defined sector in a clearly defined geographical area. Products covered in a sector EPD shall follow the same PCR and the same declared/functional unit shall be applied.

Any communication of the results from a Sector EPD should contain the information that the results are based on averages obtained from the sector as defined in the EPD. The communication shall not claim that the sector EPD results are representative for a certain manufacturer or its product.

The following information shall also be included a Sector EPD:

- a list of the contributing manufacturers that the Sector EPD covers,
- a description of how the selection of the sites/products has been done and how the average has been determined, and
- a statement that the document covers average values for an entire or partial product category (specifying the percentage of representativeness) and, hence, the declared product is an average that is not available for purchase on the market.

5 CONTENT AND FORMAT OF EPD

EPDs based on this PCR shall contain the information described in this section. Flexibility is allowed in the formatting and layout provided that the EPD still includes the prescribed information. A generic template for EPDs is available at www.environdec.com.

The EPD content shall:

- be in line with the requirements and guidelines in ISO 14020 (Environmental labels and declarations – General principles),
- be verifiable, accurate, relevant and not misleading, and
- not include rating, judgements or direct comparison with other products⁹.

An EPD should be made with a reasonable number of pages for the intended audience and use.

The content of EPDs published in machine-readable format shall correspond with the content of the underlying EPD.

5.1 EPD LANGUAGES

EPDs should be published in English but may also be published in additional languages. If the EPD is not available in English, it shall contain an executive summary in English including the main content of the EPD. This summary is part of the EPD and, thus, also subject to the verification process.

5.2 UNITS AND QUANTITIES

The following requirements apply for units and quantities:

- The International System of Units (SI units) shall be used where available, e.g., kilograms (kg), Joules (J) and metres (m). Reasonable multiples of SI units may be decided in the PCR to improve readability, e.g., grams (g) or megajoules (MJ). The following exceptions apply:
 - Resources used for energy input (primary energy) should be expressed as kilowatt-hours (kWh) or megajoules (MJ), including renewable energy sources, e.g., hydropower, wind power and geothermal power.
 - Water use should be expressed in cubic metres (m³)
 - Temperature should be expressed in degrees Celsius (°C),
 - Time should be expressed in the units most practical, e.g., seconds, minutes, hours, days or years.
 - Results of the environmental performance indicators shall be expressed in the units prescribed by the impact assessment methods, e.g. kg CO₂ equivalents.
- Three significant figures¹⁰ should be adopted for all results. The number of significant digits shall be appropriate and consistent.
- Scientific notation may be used, e.g. 1.2E+2 for 120, or 1.2E-2 for 0.012.
- The thousand separator and decimal mark in the EPD shall follow one of the following styles (a number with six significant figures shown for illustration):
 - SI style (French version): 1 234,56
 - SI style (English version): 1 234.56

In case of potential confusion or intended use of the EPD in markets where different symbols are used, the EPD shall state what symbols are used for thousand separator and decimal mark.

- Dates and times presented in the EPD should follow the format in ISO 8601. For years, the prescribed format is YYYY-MM-DD, e.g., 2017-03-26 for March 26th, 2017.
- The result tables shall:

⁹ Therefore, results of normalization are not allowed to be reported in the EPD.

¹⁰ Significant figures are those digits that carry meaning contributing to its precision. For example with two significant digits, the result of 123.45 shall be displayed as 120, and 0.12345 shall be displayed as 0.12. In scientific notation, these two examples would be displayed as 1.2*10² and 1.2*10⁻².

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- Only contain values or the letters "ND" (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.¹¹
- Contain no blank cells, hyphens, less than or greater than signs or letters (except "ND").
- Use the value "0" only for parameters that have been calculated to be zero.
- Footnotes shall be used to explain any limitation to the result value.

5.3 USE OF IMAGES IN EPD

Images used in the EPD, especially pictures featured on the cover page, may in themselves be interpreted as an environmental claim. Images such as trees, mountains, wildlife that are not related to the declared product shall therefore be used with caution and in compliance with national legislation and best available practices in the markets in which the EPD is intended to be used.

5.4 EPD REPORTING FORMAT

The reporting format of the EPD shall include the following sections:

- Cover page (see Section 5.4.1)
- Programme information (see Section 5.4.2)
- Product information (see Section 5.4.3)
- Content declaration (see Section □)
- Environmental performance (see Section 5.4.5)
- Additional environmental information (see Section 5.4.6)
- Additional social and economic information (see Section 5.4.7)
- References (see Section 5.4.9)

The following sections shall be included, if relevant:

- Differences versus previous versions (see Section 5.4.8)
- Executive summary in English (see Section 5.4.10)

5.4.1 COVER PAGE

The cover page shall include:

- Product name and image
- Name and logotype of EPD owner
- The text "Environmental Product Declaration" and/or "EPD"
- Programme: The International EPD® System, www.environdec.com
- Programme operator: EPD International AB
- Logotype of the International EPD® System
- EPD registration number as issued by the programme operator¹²
- Date of publication (issue): 20XX-YY-ZZ
- Date of revision: 20XX-YY-ZZ, when applicable
- Date of validity: 20XX-YY-ZZ

¹¹ This requirement does not intend to give guidance on what indicators are mandated ("shall") or voluntary.

¹² The EPD shall not include a "registration number" if such is provided by the certification body, as this may be confused with the registration number issued by the programme operator.

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- A note that “An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.”
- A statement of conformity with ISO 14025.
- For EPDs covering multiple products: a statement that the EPD covers multiple products and a list of all products covered by the EPD.
- For Sector EPDs: a statement that the EPD is a Sector EPD.

Where applicable, the cover page shall also include the following information:

- Information about dual registration of EPD in another programme, such as registration number and logotype.
- A statement of conformity with other standards and methodological guides.

5.4.2 PROGRAMME INFORMATION

The programme information section of the EPD shall include:

- Address of programme operator: *EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com*
- The following statement on the requirements for comparability of EPDs, adapted from ISO 14025: “EPDs within the same product category but from different programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.”
- A statement that the EPD owner has the sole ownership, liability and responsibility of the EPD
- The following statement: “The environmental impacts of different EPDs can be compared only taking into account all the technical information supporting the functional unit definition as requested by the PCR.”
- Information about verification¹³ and the PCR in a table with the following format and contents:

Product category rules (PCR): <name, registration number, version and UN CPC code(s)>
PCR review was conducted by: <name and organisation of the review chair, and information on how to contact the chair through the programme operator>
Independent third-party EPD verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> Process certification <input type="checkbox"/> Individual verification
<i>In case of certification bodies:</i> Accredited by: <name of the accreditation body and accreditation number, if applicable>.
<i>In case of individual verifiers:</i> <Name, and organisation of the individual verifier. The signature may also be included> Approved by: The International EPD® System
The procedure for follow-up during EPD validity, as defined in the GPI, involves third-party verifier: <input type="checkbox"/> Yes <input type="checkbox"/> No

¹³ If the EPD has been verified by an approved individual verifier who has received contractual assistance from a certification body that is not accredited, this certification body shall not be included in this table.

5.4.3 PRODUCT INFORMATION

The product information section of the EPD shall include:

- address and contact information to EPD owner,
- description of the organisation. This may include information on products- or management system-related certifications (e.g. ISO 14024 Type I environmental labels, ISO 9001- and 14001-certificates and EMAS-registrations) and other relevant work the organisation wants to communicate (e.g. SA 8000, supply-chain management and social responsibility),
- name and location of production site,
- product identification by name, and an unambiguous identification of the product by standards, concessions or other means,
- identification of the product according to the UN CPC scheme system. Other relevant codes for product classification may also be included, e.g.
 - Common Procurement Vocabulary (CPV),
 - United Nations Standard Products and Services Code® (UNSPSC),
 - Classification of Products by Activity (NACE/CPA),
 - Australian and New Zealand Standard Industrial Classification (ANZSIC), or
 - Global Trade Item Number (GTIN).
- a description of the product,
- a description of the technical purpose of the product, including its application/intended use,
- a description of the background system, including the main technological aspects,
- declaration of recyclability¹⁴ as reported in the label or in the instruction manual in accordance with the applicable standards,
- for EPDs covering multiple products: a description of the selection of products/sites, a list of contributing manufacturers (if Sector EPD), etc. (see Section 4.9),
- geographical scope of the EPD, i.e., for which geographical location(s) of use and end-of-life the product's performance has been calculated,
- functional unit and all the applicable technical information (see 4.1),
- reference service life (RSL) and/or technical/actual lifespan, if applicable,
- declaration of the year(s) covered by the data used for the LCA calculation and other relevant reference years,
- reference to the main database(s) for generic data and LCA software used, if relevant,
- system diagram of the processes included in the LCA, divided into the life cycle stages,
- description if the EPD system boundary is "cradle-to-gate", "cradle-to-gate with options" or "cradle-to-grave",
- information on which life-cycle stages are not considered (if any), with a justification of the omission, and
- references to any relevant websites for more information or explanatory materials.

This section may also include:

- name and contact information of organisation carrying out the underlying LCA study,
- any additional information about the underlying LCA-based information, such as cut-off rules, data quality, allocation methods, and other methodological choices and assumptions,

▪ ¹⁴ The information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information. The Verifier shall check that the declaration is compliant with ISO 14021 and it is accompanied by the required supporting documentation.

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- a description of the material properties of the product with a declaration of relevant physical or chemical product properties, such as density, etc., and
- if end-of-life treatment is not included, the EPD shall contain a statement that it shall not be used for communicating environmental information to consumers/end users of the product.

5.4.4 CONTENT DECLARATION

The content declaration section shall declare the weight of one unit of product, as purchased, and contain information about the content of the product in the form of a list of materials and chemical substances including information on their environmental and hazardous properties. The gross weight of each material/substance shall be declared, including a minimum of 99% of the materials/substances in one unit of product.

The content declaration does not apply to proprietary materials and substances covered by exclusive legal rights including patent and trademarks. In general, an indication that a product is “free” of a specific hazardous material or substance should be done with caution and only when relevant, following the rules in ISO 14021 on self-declared environmental claims.

Information on the hazardous properties of materials and chemical substances should follow the requirements given in the latest revision of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS),¹⁵ issued by the United Nations or national or regional applications of the GHS. As an example, the following regulations should be used for EPDs intended to be used in the European Union:

- Regulation (EC) No 1907/2006 of the European parliament and of the council of 18 December 2006 concerning the Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH); and
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling, and packaging of substances and mixtures.

The Verifier shall check that the declaration of conformity of food contact is compliant with the intended use. The declaration of conformity shall comply with applicable legislation and shall contain references to the substances potentially released from the tableware and kitchenware products.

5.4.4.1. Information about recycled materials

When a product is made in whole or in part with recycled materials, the provenience of the materials (pre-consumer or post-consumer) shall be presented in the EPD as part of the content declaration.

The declaration of recycled content shall be reported in EPD in accordance with the applicable standards¹⁶.

To avoid any misunderstanding about which material that may be considered “recycled material”, the guidance given in ISO 14021 shall be considered. In brief, the standard states that:

- only pre-consumer or post-consumer materials (scraps) shall be considered in the accounting of the recycled materials, and
- materials coming from scrap reutilisation (such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it) shall not be considered as recycled content.

5.4.4.2. Information about bio-based carbon content

For products with bio-based content, it is recommended to declare the percentage of bio-based carbon content in relation to the total carbon content of the product. The global standard ASTM D 6866 shall be used when calculating the bio-based carbon content. The only exception is if the EPD is marketed in Europe, then EN 16640 may instead be used.

If the percentage of bio-based carbon content is declared, the auditor must verify that the 14C content of the batches of raw material used for the products in the EPD has been measured in accordance with the above-mentioned standards and that the test reports have been issued by an accredited laboratory for these specific test methods. The auditor shall verify that there is a precise correspondence between the batches of raw materials analysed and the products, for example through a traceability system. The declaration of the bio-based carbon content must therefore correspond to the value of the weighted average of the batches of raw

¹⁵ The GHS document is available at www.unece.org.

¹⁶ The information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information. The Verifier shall check that the declaration is compliant with ISO 14021 and it is accompanied by the required supporting documentation.

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material used. The application of the traceability criterion between raw materials and finished products makes it possible to avoid the mass balance approach.

5.4.4.3. Information about packaging

As packaging is strongly connected with the product, the producer shall provide information about packaging in the EPD, when applicable. Packaging may be classified as:

- Distribution Packaging: packaging designed to contain one or more articles or packages, or bulk materials, for the purposes of transport, handling and/or distribution (ISO 21067-1:2016, Section 2.2.6)
- Consumer Packaging: packaging constituting, with its content, a sales unit for the final user or consumer at the point of retail (ISO 21067-1:2016, Section 2.2.7).

Consumer packaging is generally the outcome of eco-design processes, or other activities, under direct control of the organisation. Many critical categories with strict legal requirements belong to consumer packaging category like food contact packaging and pharmaceutical packaging.

The weight of the packaging per product, and the type and function of the packaging, shall be reported in the EPD.

A statement of the source of the materials (pre-consumer or post-consumer) shall be presented in the EPD when the packaging is made in whole or in part by recycled materials.

5.4.5 ENVIRONMENTAL PERFORMANCE

5.4.5.1. Environmental impacts

The EPD shall declare the environmental impact indicators, per functional unit, per life-cycle stage and in aggregated form, using the default impact categories, impact assessments methods and characterisation factors available at www.environdec.com/indicators. The source and version of the impact assessment methods and characterisation factors used shall be reported in the EPD.

The environmental impact indicators, associated with each of the modules considered (from A1 to C3), may be reported separately if the EPD owner wants to provide more information on the contribution of each sub-phase of the life cycle to environmental impacts.

Alternative regional life cycle impact assessment methods and characterisation factors may be calculated and displayed in addition to the default list. If so, the EPD shall contain an explanation of the difference between the different sets of indicators, as they may appear to the reader to display duplicate information.

5.4.5.2. Use of resources

The EPD shall declare the indicators for resource use listed at www.environdec.com/indicators per functional unit, per life-cycle stage and in aggregated form.

The use of resources, associated with each of the modules considered (from A1 to C3), may be reported separately if the EPD owner wants to provide more information on the contribution of each sub-phase of the life cycle to environmental impacts.

5.4.5.3. Waste production and output flows

Waste generated along the whole life cycle production chains shall be treated following the technical specifications described in the GPI. The EPD shall declare the indicators for waste production and output flows as listed at www.environdec.com/indicators per functional unit, per life-cycle stage and in aggregated form.

The waste production and output flows, associated with each of the modules considered (from A1 to C3), may be reported separately if the EPD owner wants to provide more information on the contribution of each sub-phase of the life cycle to environmental impacts.

5.4.6 ADDITIONAL ENVIRONMENTAL INFORMATION

An EPD may declare additional environmentally relevant information not derived from the LCA-based calculations, such as:

- the release of dangerous substances into indoor air, soil, and water during the use stage,

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- instructions for proper use of the product, e.g. to minimise energy or water consumption or to improve the durability of the product,
- instructions for proper maintenance and service of the product, e.g. to minimise energy or water consumption or to improve the durability of the product,
- information on key parts of the product that determine its durability,
- information on recycling including, e.g. suitable procedures for recycling the entire product or selected parts and the potential environmental benefits gained,
- information on acceptability of the product in recycling processes (i.e., its recyclability). When a recyclability value is declared (e.g., 100% recyclable) this declaration must be supported by the specific statistical data of the country for which the end-of-life scenario has been developed (statistical data are available as they are the basis for Extended Producer Responsibility (EPR) in different countries),
- information on a suitable method of reuse of the product (or parts of the products) and procedures for disposal as waste at the end of its life cycle,
- information regarding disposal of the product, or inherent materials, and any other information considered necessary to minimise the product's end-of-life impacts,
- information on biological recyclability (compostability), for single-use compostable products. The evidence shall be provided with a third-party certificate of the product complying with ISO 18606 (alternatively, EN 13432 may be used when the products within the EPD are commercialised in the European market),
- a more detailed description of an organisation's overall environmental work, in addition to the information listed under Section 5.4.3, such as:
 - the existence of any type of organised environmental activity, and
 - information on where interested parties may find more details about the organisation's environmental work.

Any additional environmental information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information.

5.4.7 ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

The EPD may also include other relevant social and economic information as additional and voluntary information. This may be product information or a description of an organisation's overall work on social or economic sustainability, such as activities related to supply chain management or social responsibility.

Any additional social and economic information declared shall be substantiated and verifiable, and be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product. Quantitative information is preferred over qualitative information.

5.4.8 DIFFERENCES VERSUS PREVIOUS VERSIONS

For EPDs that have been updated, the following information shall be included:

- a description of the differences versus previously published versions, and
- a revision date on the cover page.

5.4.9 REFERENCES

A reference section shall be included, including a list of all sources referred to in the EPD, including the GPI (including version number), and PCR (registration number, name, and version) used to develop the EPD.

5.4.10 EXECUTIVE SUMMARY IN ENGLISH

The executive summary, if included (see Section 5.1), shall contain relevant summarised information related to the programme, product, environmental performance, information related to pre-certified EPDs, and information related to sector EPDs. Besides this,

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further information may be added such as additional environmental, social or economic information, references as well as differences versus previous EPD versions.

6 LIST OF ABBREVIATIONS

ANZSIC	Australian and New Zealand Standard Industrial Classification
CPC	Central product classification
CPV	Common procurement vocabulary
EPD	Environmental product declaration
GPI	General Programme Instructions
GTIN	Global trade item number
ISO	International Organization for Standardization
LCA	Life cycle assessment
LCI	Life cycle inventory
NACE/CPA	Classification of products by activity
ND	Not declared
PCR	Product category rules
REACH	Restriction of chemicals
RSL	Reference service life
SI	The International System of Units
UN	United Nations
UNSPSC	United Nations standard products and services code

7 REFERENCES

CEN (2013) EN 15804:2012+A1:2013, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

CEN (2019) EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

EPD International (2021) General Programme Instructions for the International EPD® System. Version 4.0, dated 2021-03-29.
www.environdec.com.

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

ISO (2004) ISO 8601:2004 Data elements and interchange formats – Information interchange – Representation of dates and times.

ISO (2006a) ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

ISO (2006b) ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework.

ISO (2006c) ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines.

ISO (2013) ISO/TS 14067:2013, Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification and communication.

ISO (2014) ISO 14046:2014, Environmental management – Water footprint – Principles, requirements and guidelines.

ISO (2015a) ISO 14001:2015, Environmental management systems – Requirements with guidance for use.

ISO (2015b) ISO 9001:2015, Quality management systems – Requirements.

ISO (2016b) ISO 14021:2016, Environmental labels and declarations - Self-declared environmental claim (Type II environmental labelling).

ISO (2018) ISO 14024:2018, Environmental labels and declaration – Type I environmental labelling – Principles and procedures.

EN 12875-1:2005, Mechanical dishwashing resistance of utensils - Part 1: Reference test method for domestic articles.

EN 12875-2:2001, Mechanical dishwashing resistance of utensils - Part 2: Inspection of non-metallic articles.

ISO 4521:2008, Metallic and other inorganic coatings — Electrodeposited silver and silver alloy coatings for engineering purposes — Specification and test methods.

EN 15284:2007, Materials and articles in contact with food stuffs - Test method for the resistance to microwave heating of ceramic, glass, glass-ceramic or plastics cookware,

EN 13834:2020, Cookware - Ovenware for use in traditional domestic ovens,

EN 1183:1997, Materials and articles in contact with foodstuffs - Test methods for thermal shock and thermal shock endurance,

EN 12980:2000, Materials and articles in contact with foodstuffs - Non-metallic articles for catering and industrial use - Method of test for the determination of impact resistance,

EN 13258:2003, Materials and articles in contact with foodstuffs - Test methods for crazing resistance of ceramic articles,

ISO 22196:2011, Measurement of antibacterial activity on plastics and other non-porous surfaces,

ISO 21702:2019, Measurement of antiviral activity on plastics and other non-porous surfaces

UNEP Life Cycle Initiative, Single-use plastic tableware and its alternatives: Recommendations from Life Cycle Assessments, 2021

UNEP Life Cycle Initiative, Single-use beverage cups and their alternatives: Recommendations from Life Cycle Assessments, 2021

UNEP Life Cycle Initiative, Addressing Single-Use Plastic Products Pollution using a Life Cycle Approach, 2021

CAST Project, Guidelines for the application of the Regulation (EC) 2023/2006 to the supply chain of materials and articles intended to come into contact with food, Rapporti ISTISAN 11/37

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8 VERSION HISTORY OF PCR

VERSION 1.0, 2022-03-17

Original version of the PCR.

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ANNEX 1 - EXAMPLES OF UN CPC CODES FOR TABLEWARE AND KITCHENWARE

The following table shows some examples of CPC codes identified using the 3-step diagram. They are a non-exhaustive list; other CPC codes may also be relevant for this PCR. See, <https://unstats.un.org/unsd/classifications/Family/Detail/1074> for additional information.

EXAMPLES OF UN CPC CODES FOR TABLEWARE AND KITCHENWARE		
Notes: <ul style="list-style-type: none"> ▪ <i>non-exhaustive list, other CPC codes may also be relevant for this PCR</i> ▪ <i>in the general description of the CPC codes, shown in the following table, any reference to toilet and household products shall be considered outside of the scope of this PCR.</i> 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Wood	31912	Tableware and kitchenware, of wood
This category includes items such as: <ul style="list-style-type: none"> ▪ spoons, forks, ladles and other types of cutlery ▪ cutting boards ▪ bowls and containers not intended for cooking 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Paper (including cellulose pulp products)	3219	Other paper and paperboard products
This category includes items such as: <ul style="list-style-type: none"> ▪ sheets for cooking in paper ▪ oven bags ▪ disposable dishes 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Plastic and rubber (including bio-plastics)	36940	Tableware, kitchenware, other household articles and toilet articles, of plastics
	36330	Plates, sheets, film, foil and strip, of plastics, not self-adhesive, non-cellular and not reinforced, laminated, supported or similarly combined with other materials
	36390	Other plates, sheets, film, foil and strip, of plastics
	362	Other rubber products
This category includes items such as: <ul style="list-style-type: none"> ▪ plates, glasses and various containers both disposable and reusable ▪ cutlery, utensils and dishes both disposable and reusable ▪ sheets and bags for cooking in coupled or mono-material materials (e.g. teflon sheets, multilayer bags for steaming, etc.) ▪ rubber products and adjuvants (e.g. gaskets and caps, etc.) ▪ articles in special rubbers for table and baking (e.g. silicone rubber, etc.) ▪ film in plastic materials (e.g. tablecloths, films single-use or reusable) 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Glass	37193	Glassware of a kind used for table, kitchen, toilet, office, indoor decoration or similar purposes (except bottles, jars and the like, of glass, and ornaments of lamp-worked glass)
This category includes items such as: <ul style="list-style-type: none"> ▪ plates, glasses and various reusable containers ▪ crockery 		

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<ul style="list-style-type: none"> saucepans for cooking high temperature-resistance containers (e.g. fridge – oven) 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Ceramic	37221	Ceramic tableware, kitchenware, other household articles and toilet articles (Note: Toilet articles are generally not used as tableware or kitchenware)
This category includes items such as: <ul style="list-style-type: none"> plates, glasses and various reusable containers dishes in general saucepans for cooking 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Textile articles	2799	Other textile articles
This category includes items such as: <ul style="list-style-type: none"> yarn and fabrics for particular uses in cooking wide knitted and crocheted fabrics for cooking meat 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Metals	42912	Table, kitchen or other household articles and parts thereof, of iron, steel, copper or aluminium; cooking or heating apparatus of a kind used for domestic purposes, non-electric, of copper; pot scourers and scouring or polishing pads, gloves and the like, of iron or steel, copper or aluminium; iron or steel wool; hand-operated mechanical appliances, weighing 10 kg or less, used in the preparation, conditioning or serving of food or drink
	42913	Knives (except for machines) and scissors, and blades therefor
	42916	Spoons, forks, blades, skimmers, cake-servers, fish-knives, butter-knives, sugar tongs and similar kitchen or table ware
	41535	Foil, of aluminium, of a thickness not exceeding 0.2 mm
	4299	Other metal goods
This category includes items such as: <ul style="list-style-type: none"> metal pots and articles for cooking (e.g. steel, copper, aluminum and their alloys) cutlery and metal tableware (e.g. steel, copper, aluminum, silver and their alloys) aluminum foil for cooking (if it is designed for the use as kitchenware, both cooking and food protection and is not use as packaging) 		
BASE MATERIAL	UN CPC	CPC DESCRIPTION:
Stones	37910	Millstones, grindstones, grinding wheels and the like, without frameworks, for working stones, and parts thereof, of natural stone, of agglomerated natural or artificial abrasives, or of ceramics; natural or artificial abrasive powder or grain, on a base of textile, paper or other material
	379	Other non-metallic mineral products n.e.c.
This category includes items such as: <ul style="list-style-type: none"> equipment and parts of equipment used in the kitchen such as stone pestles, mortars and grinders both in stone / marble and in high-strength ceramic materials stone slabs used for high temperature cooking sharpening systems for blades service dishes 		

Table 3 Examples of CPC codes identified using the 3-step diagram (non-exhaustive list)

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