EPD
INTERNATIONAL EPD SYSTEM

PACKAGING

PRODUCT CATEGORY CLASSIFICATION: MULTIPLE CPC

PCR 2019:13

VERSION 2.0.0 FOR OPENCONSULTATION. DO NOT USE OR CITE.

VALID UNTIL 20XX-YY-ZZ *(TO BE ADDED BY THE SECRETARIAT)*

NOTE: THIS DOCUMENT IS A PCR TEMPLATE TO BE USED IN PCR DEVELOPMENT. IT IS NOT A PCR.

DRAFT FOR OPEN CONSULTATION

INTRODUCTION TO OPEN CONSULTATION

This draft PCR document is available for open consultation from 2025-08-20 until 2025-10-20. Feel free to forward the draft to any other stakeholder you might think is relevant, including colleagues and other organisations.

We are interested in comments from stakeholders on:

- General
  - Alignment with PCRs available in other programmes for type III environmental declarations, industry-specific LCA guidelines or similar.
- Scope of PCR
  - Product category definition and description
  - Classification of product category using CPC codes
- Goal and scope, life cycle inventory and life cycle impact assessment
  - Functional unit/declared unit
  - System boundary
  - Allocation rules
  - Data quality requirements
  - Recommended databases for generic data
  - Impact categories and impact assessment methodology
- Additional information

Comments shall be sent directly to the PCR Moderator (contact details available in Section 1). There is a template for comments on www.environdec.com that may be used.

For questions about the PCR, please contact the PCR moderator. For general questions about the International EPD System, EPD or PCR development, please contact the Secretariat via https://www.environdec.com/support.

PACKAGING

PRODUCT CATEGORY CLASSIFICATION: MULTIPLE CPC

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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 Environmental Product Declarations (EPD)[1] 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. EPDs are voluntary documents for a company or an industry association to present transparent, consistent, and verifiable information about the environmental performance of their products (goods or services).

The General Programme Instructions (GPI), publicly available on www.environdec.com, includes the rules for the overall administration and operation of the programme and the basic rules for developing EPDs registered in the programme. A PCR complements the GPI and the normative standards by providing specific rules, and guidelines for developing an EPD for one or more specific product categories (see Figure 1), thereby enabling the generation of consistent EPDs within a product category. A PCR should not repeat the rules and guidelines of the GPI, but include additions, specifications and deviations to the rules set in the GPI. As such, a PCR shall be used together with the GPI.

This PCR is a single framework that fulfils the requirements of all packaging sector (not a "main PCR") as it's applicable to all kind of packaging product, not needing c-PCR to be complemented.

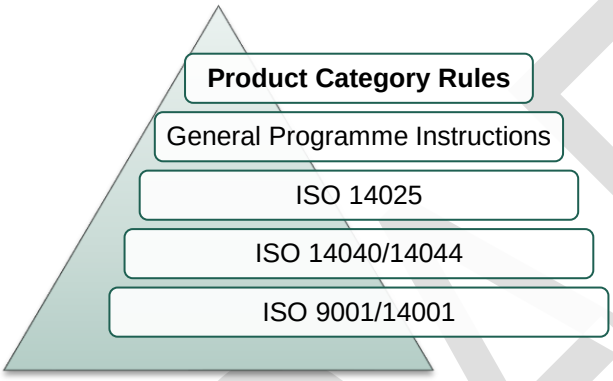

Figure 1. The hierarchy between PCRs, standards, and other documents. EN 15804 and ISO 21930 are normative standards for construction products only.

The present PCR uses the following terminology:

The term "shall" is used to indicate what is obligatory, i.e., a requirement.

The term "should" is used to indicate a recommendation. Any deviation from a recommendation shall be justified in the EPD development process.

The terms "may" or "can" are used to indicate an option that is permissible.

For definitions of other terms used in the document, see the GPI and normative standards.

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

The programme operator maintains the copyright of the PCR 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] Termed type III environmental declarations in ISO 14025.

2 GENERAL INFORMATION

2.1 ADMINISTRATIVE INFORMATION

Name:	PACKAGING
Registration number and version:	*To be added by the Secretariat*
Programme:	EPD INTERNATIONAL EPD SYSTEM
Programme operator:	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden. Website: www.environdec.com E-mail: support@environdec.com
PCR Moderator:	Anna Bortoluzzi Quota Sette srl anna.bortoluzzi@quotasette.it
PCR Committee:	Ma.P.P.In.G LCA (Quota Sette srl, University of Milan, University of Trieste)
Publication date:	*To be added by the Secretariat* See Section 9 for a version history of the PCR.
Valid until:	*To be added by the Secretariat* The validity may change. See www.environdec.com for the latest version of the PCR and the latest information on its validity and transition periods between versions.
Development and updates:	The PCR has been developed following ISO 14027, including public consultation and review. The rules for the development and updating processes are described in Section 9 of the GPI. The 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 on if and how to proceed with updating the PCR and renewing its validity. A PCR may be updated before it expires, based on changes in normative standards or provided significant and well-justified proposals for changes or amendments are presented. When there has been an update of the PCR, the new version should be used to develop EPDs. For small updates (change of third-digit version number), the previous version is normally immediately removed from the PCR library on www.environdec.com and there is no transition period. For medium updates (change of second-digit version number), the previous version of the PCR is valid in parallel during a transition period of at least 90 days, but not exceeding its previously set validity period. For large updates (change of first-digit version number), the previous version is valid in parallel during a transition period of at least 180 days, but not exceeding its previously set validity period.

	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.
Standards and documents conformance:	General Programme Instructions of the International EPD System, version 5.0.0, based on ISO 14025 and ISO 14040/14044.[2] The PCR has also been developed in accordance with the ISO 14046, ISO 14067 and/or ISO/TS 14027.
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 on www.environdec.com. In case of translated versions, the English version takes precedence in case of any discrepancies.

2.2 SCOPE OF PCR

This document provides Product Category Rules (PCR) for the assessment of the environmental performance of packaging and the declaration of this performance by an EPD.
This PCR has been developed in accordance with the GPI, and ISO 14025, 14040, 14044, 14046, 14067 and/or ISO/TS 14027.
Therefore the compliance of this PCR with others ISO standards is ensured by the requirements in the GPI that provide for:

- indicators that are specific for ISO 14067 and ISO 14046 standards (see par. 4.10),
- ISO 14067 specific LCA rules for electricity modelling.

2.2.1 PRODUCT CATEGORY DEFINITION AND DESCRIPTION

The framework of this document is based on the main functions of packaging as stated in the ISO definition. The product group definition is therefore: "Packaging" product to be used for the containment, protection, handling, delivery, storage, transport and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer, including processor, assembler or other intermediary. For general considerations of the packaging sector, refer to section 3.4.

All packaging products (note 1), which fall under the above reported ISO definitions, are included in the scope of the PCR independently of their material composition, dimensions or service life. In general, all products that are covered by a harmonized standard according to the packaging products regulation (or the earlier packaging products directive) could, however, be considered as packaging. Some examples of packaging products are provided in Annex 3.

Semi-finished products manufactured in the packaging production chain are outside the scope of this PCR unless a specific packaging function can be identified so that the full life cycle of the product can be described. EPDs based on this PCR shall be developed only for products for which packaging functions can be clearly identified. The EPD shall describe the full life cycle of the product, even if the EPD owner has limited responsibility in the packaging production processes. The division of packaging manufacturing processes into core and downstream activities is described in the relevant table and chapter

Note 1: A product is considered packaging if it performs all or part of the functions included in the definition of packaging given above.

This PCR covers both packaging products intended for single use and products destined for reuse, provided they have been explicitly designed for multiple use cycles.

The recycling (note 2) 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 packaging (for example the domestic use of containers designed to be managed exclusively on industrial lines) 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 packaging design.

Also outside the scope of this PCR are all products that are not usable for the handling of goods and are thus not covered by the definition of packaging as stated above. Moreover, environmental impacts related to the product contained in the packaging (goods, food, etc.) are outside the purpose of this PCR.

Note 2 According to the General Programme Instructions, this PCR may contain information on the potential benefits gained from the end-of-life recycling of a product covered by an EPD (see par. 5.4.6)

As this PCR covers a very generic product category, with a wide range of packaging products, it is difficult to classify according to CPC classification. The UN CPC codes on packaging have the following drawbacks:
- Not all codes are available (e.g. incomplete classification of materials)
- Descriptions are often non-existent or incomplete.
- Innovative solutions (such as smart active packaging) are not covered.

To overcome these structural problems in the UN CPC classification, a three-step model has been developed (Figure 3), which allows to easily identify the most appropriate CPC code for each packaging product. A few examples are provided in Table 1, and the typical cases occurring most often are considered in Annex 3.

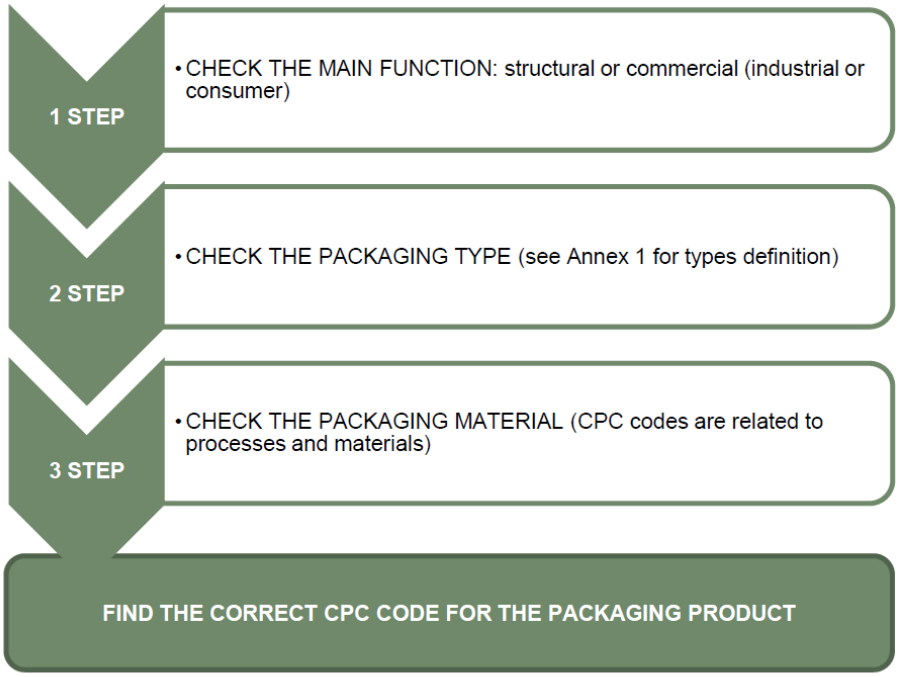

Figure 3 "3-step diagram" of the procedure for finding the correct CPC code.

The UN CPC codes given below have been obtained using the 3-step approach (Figure 3). They are a non-exhaustive list; other CPC codes may also be relevant for this PCR.

STRUCTURAL PACKAGING It can also be defined as **distribution packaging** or transport packaging (tertiary packaging as informal definition)		
MAIN FUNCTION **STRUCTURAL**	**TYPE**	**APPLICABLE CPC CODES (listed for different materials)**
	TANKS, RESERVOIRS AND CONTAINERS	42210 - 364
	PALLETS, BOX PALLETS AND OTHER LOAD BOARDS	317 -364
	CASKS, BARRELS, VATS, TUBS	317- 364
	SACKS AND BAGS	36410 - 32152
	PACKING CASES, BOXES, CRATES, DRUMS AND SIMILAR PACKINGS	317 – 32153– 364 - 422
	PAPER AND PAPERBOARD (used as tertiary packaging)	3219
	PLATES, FOILS, SHEETS, FILMS OF METALS AND/OR PLASTICS (used as tertiary packaging)	36390 – 41535 - 36390
COMMERCIAL PACKAGING It includes 2 categories: industrial packaging and **consumer packaging** (primary and secondary packaging as informal definition)		
MAIN FUNCTION **COMMERCIAL**	**TYPE**	**APPLICABLE CPC CODES (listed for different materials)**
	CARTONS, BOXES, CASES AND OTHER PACKING CONTAINERS	32153 - 364
	BOTTLES, JARS, PHIALS, BARRELS, TINS, CANS, TUBES AND OTHER CONTAINERS OF A KIND USED FOR THE CONVEYANCE OR PACKING OF GOODS	37191 – 364 – 422
	SACKS AND BAGS OF PAPER AND PLASTIC	36410 - 32152
	LABORATORY, HYGIENIC OR PHARMACEUTICAL GLASSWARE; AMPOULES OF GLASS AND PLASTIC	37195 - 364
	PAPER AND PAPERBOARD (both printed and un-printed)	3219
	PLATES, FOILS, SHEETS, FILMS OF METALS AND/OR PLASTICS (both printed and un-printed)	36390 – 41535 - 36390

Table 1 Examples of CPC codes identified using the 3-step diagram (non-exhaustive list)

In case of special types of packaging, for which it turns out impossible to assign a CPC code with an adequate description using the above 3-step logic flow, in the EPD a generic CPC code (e.g. 364 – Packaging products of plastics), or any other definition according with international standards, will be assigned to the packaging in question.

In case of multi-material packaging, the CPC code is chosen based on the most prevalent material.

Furthermore, during the preparation of an EPD for a packaging product, the following rules shall be taken into account:

- In case of complex sales units, it will be possible to prepare a single EPD only in those cases where the packaging constituent (that is, the main part of the packaging product) can be singled out. The packaging constituent performs the packaging function and can be assembled with packaging components (other parts of the packaging product) which perform specific functions, such as stoppers and lids. Indeed, the role of packaging components is to complete the sales unit and they are considered auxiliary materials subject to supply. (See definitions in section 2.2.1).

- In case of complex sales units (requiring, for instance, both primary and secondary packaging), several EPDs may be needed if a number of processes are involved in the production of the various types of packaging that make up the sales unit.

- In the special case of consumer packaging, where the user takes on the responsibility for packaging co-design and packaging making in the final packaging forming and/or assembly phases, the packaging user can be equated to the packaging manufacturer, and thus, in this case, may be an EPD Owner.

- In the special case of consumer packaging, two approaches to the publication of EPDs can be envisioned: EPDs prepared by single packaging manufacturers restricted to the packaging constituents/components under their responsibility, and EPDs prepared by the packaging user, who can demonstrate its role in the core processes and prepares the EPD on the consumer packaging sales unit.

Some examples for the application of the above rules are given in Annex 4.

Regardless of the intended use and classification of distribution, industrial or consumer packaging, an EPD can be also prepared for a packaging component such as a cap or a closure film for a container.

The chart below shows the main functions of packaging and allows for a first general classification of packaging products (source of
definitions: ISO 21067-1).

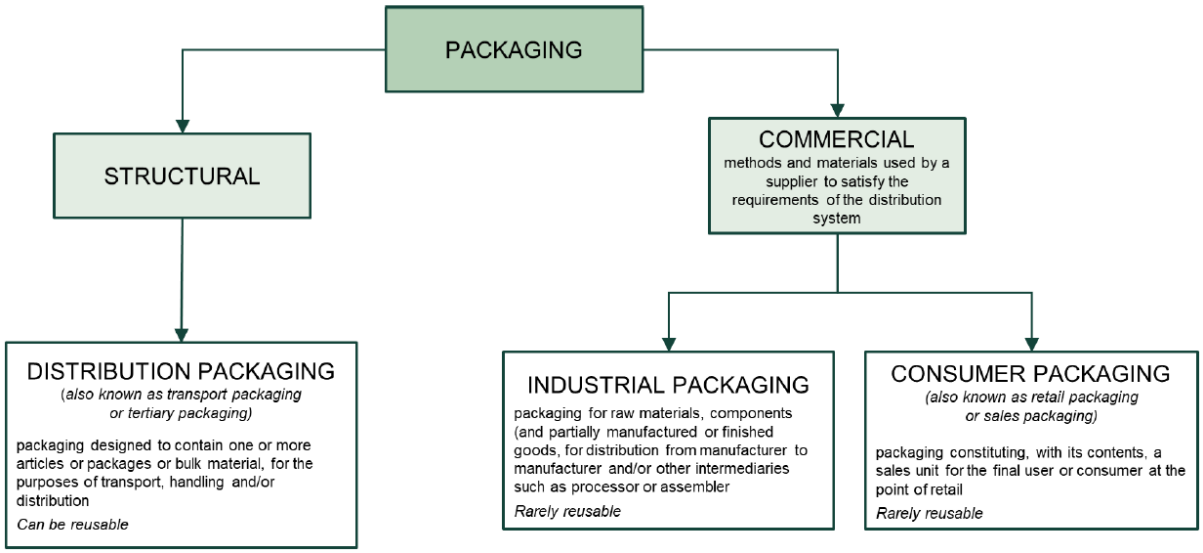

Figure 2 Main functions of packaging.

Below are reported the terms and definitions relevant to this PCR, taken from the ISO standards that apply to packaging (e.g. ISO 21067-1, ISO 21067-2, ISO 18601):

- packaging (product): product to be used for the containment, protection, handling, delivery, storage, transport and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer, including processor, assembler or other intermediary
- packaging (operation): operations involved in the preparation of goods for containment, protection, handling, delivery, storage, transport and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer
- primary packaging: packaging designed to come into direct contact with the product
- secondary packaging: packaging designed to contain one or more primary packaging together with any protective materials where required
- packaging component: part of packaging that can be separated by hand or by using simple physical means
- component: part, assembly or raw material that is a constituent of a higher-level assembly
- packaging constituent: part from which packaging or its components are made and which cannot be separated by hand or by using simple physical means [SOURCE: ISO 18601]
- reuse: operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled.
- reusable packaging : packaging or packaging component which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse. (note 3)

Note 3: In order to be considered reusable, a packaging product must possess specific characteristics, documented in the product technical specifications. In any case, reusability must be identified as a designed-in property of the product. Further definitions related to reuse are given in Annex 2.

- recyclable*:* characteristic of a product, packaging or associated component that can be diverted from the waste stream through available
- processes and programmes and can be collected, processed and returned to use in the form of raw materials or products

2.2.1.1 OPTIONS WHEN USING THIS DOCUMENT

An EPD based on this PCR may be produced using a declared unit and having the system boundaries "cradle-to-gate" or "cradle-togate with options". This document may also produce an EPD based on a functional unit and have a cradle-to-grave system boundary.
The LCA-based information in an EPD may cover:

- The product stage only. Such an EPD covers raw material supply, transport, manufacturing and associated processes; this EPD is said to be "cradle-to-gate" and becomes an EPD based on information modules A1 to A3 (see par. 4.3.1).

- The product stage and selected further life cycle stages. Such an EPD is said to be "cradle-to-gate with options" and becomes an EPD based on information modules A1 to A3 plus other selected optional or mandatory modules, e.g. end-of-life information modules C1 to C3. (see par. 4.3.1). *note 4*

- The life cycle of a product according to the system boundary. In this case, the EPD covers the product stage, use and maintenance, waste processing for reuse, recovery, recycling and disposal and is said to be "cradle-to-grave". It becomes a packaging product EPD based on an LCA, i.e., covering all information modules A1 to C3. (see par. 4.3.1).

Note 4: the "cradle to gate with options" approach was introduced to allow the EPD owner to enter information relating to the environmental impacts of certain phases of the downstream module necessary on which the company assumes strategic to insert information.
This without having the obligation to quantify the impacts for the entire downstream stage.

In the case of consumer packaging or reusable packaging, a "cradle-to-grave" LCA with a functional unit shall be performed. This requirement does not apply for the preparation of an EPD relating to a consumer packaging component such as a cap or a closure film for a container.

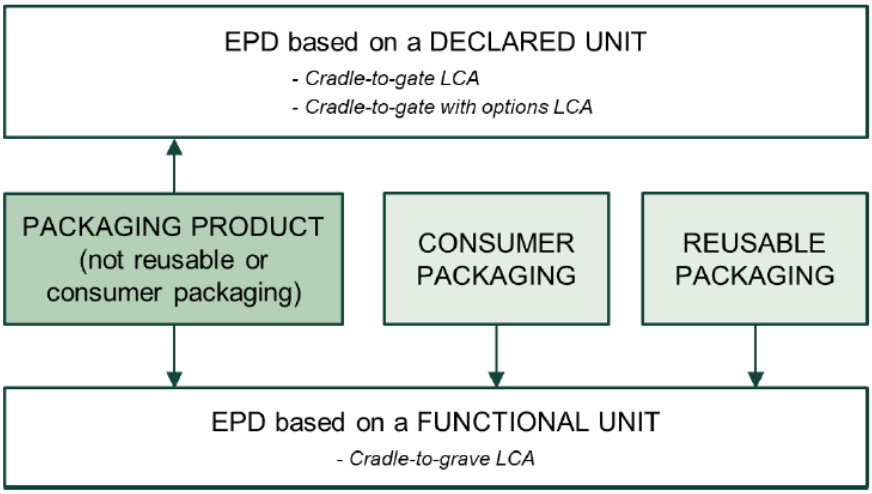

Figure 4 Choice of functional/declared unit and system boundaries based on the packaging product covered by an EPD.

2.2.2 GEOGRAPHICAL SCOPE

This PCR may be used globally.

Packaging is regulated in every country, and legislation is often harmonised between countries, as packaging is the indispensable medium for the global exchange of goods. The Verifier will check that the packaging covered by the EPD is in compliance with the legislation applicable in the markets and for the uses for which it is intended. In particular, if the packaging product is for food contact, the Verifier shall check that the declaration of conformity 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 packaging.

2.2.3 EPD VALIDITY

An EPD based on this PCR shall be valid from its registration and publication at www.environdec.com and for a five years period starting from the version 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 in the aggregated results over included life-cycle stages for any of the declared environmental performance indicators, or
- substantial changes to the declared product information (e.g., change of manufacturing site, change of lifespan, products added in EPD of multiple products), content declaration (e.g., new material/substance, changed composition), 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.

If the change concerns the LCA model, the EPD owner can wait in updating the EPD until there is one year data available from after the change occurred, as this aligns with the default time period for data collection *(according to GPI 5.0 Section A.5.2.).*
An EPD owner may choose to make amendments or other changes to an EPD during its period of validity, for example as an output of the annual follow-up *(see GPI 5.0 Section 8.4.8).*
An updated EPD shall undergo re-verification, except when only editorial changes are made *(see GPI 5.0 Section 8.4.9).*

3 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 1.0.0

This PCR was available for open consultation from 2018-10-30 until 2019-01-15, 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 on www.environdec.com:

Fabrice Rivet & Romeo Pavanello, FEVE – The European Container Glass Federation

Lena Nover & Romeo Pavanello, MPE – Metal Packaging Europe

3.2 PCR REVIEW

3.2.1 VERSION 1.0.0

PCR review panel:	The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@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:	Maurizio Fieschi
Review dates:	2019-08-05 until 20199-09-20

3.3 EXISTING PCRS FOR THE PRODUCT CATEGORY

As part of the development of this PCR, existing PCRs and other internationally standardised 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
- JEMAI CFP Program
- UL Environment

- ASTM International EPD Program
- NSF International National Center for Sustainability Standards EPD
- SM Transparency Report Program
- FPInnovations 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

Table 1 lists the identified PCRs and other standardised methods.

Table 1. Existing PCRs and other internationally standardised methods that were considered to avoid overlap in scope and to ensure harmonisation with established methods.

Name of PCR/standard, incl. registration number	Programme/standardisation body	Version number/date of publication	Scope
"Packaging products and services" nr. NPCR023	EPD Norway	Ver.1.1 date 2021/12/20 (expired)	Packaging in general
PEFCR "Flexible Packaging"	PEF	Not defined	Only Flexible Packaging

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

3.4 REASONING FOR DEVELOPMENT OF PCR

This PCR was developed to enable publication of EPDs for the product category defined in Section 0 based on ISO 14025, 14040, 14044, 14046, 14067 and/or ISO/TS 14027. 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.

The packaging sector is marked by extreme complexity and continuous product and process innovation. Packaging and packaging activities involve all industrial sector stakeholders: packaging manufacturers, users and end consumers. In particular, packaging manufacturers come up with new packaging products and new solutions through intense design and co-design work in collaboration with their customers. In the packaging 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 packaging 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 of packaging as stated in the ISO definition. "Packaging": product to be used for the containment, protection, handling, delivery, storage, transport and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer, including processor, assembler or other intermediary.

This PCR has been developed with a modular approach regarding the life cycle stages and the system boundaries definition. A declared unit is based on technical characteristics relevant for any packaging purpose and is extendable to a functional unit to include intended use, use phase and end-of-life.

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:

- PEF Working Group, *Packaging Working Group guidance document,* Ver. 1.0, May 2016
- Sustainable Packaging Coalition, *Definition of Sustainable Packaging,* Ver. 2.0, August 2011
- UNEP Life Cycle Initiative, An Analysis of Life Cycle Assessment in Packaging for Food & Beverage Applications, 2013

4 LCA METHOD

This section provides rules for the LCA method used to develop an EPD for the product category as defined in Section 2.2.1. The basic rules of the LCA method are set in Annex A of the GPI, and this section only includes additions, specifications and deviations to the rules set in the GPI. Guidance and examples of applying the LCA method are also available on www.environdec.com/methodology.

4.1 MODELLING APPROACH

See Section A.1 of the GPI.

4.2 DECLARED AND FUNCTIONAL UNIT

4.2.1 DECLARED UNIT

The declared unit is defined as a quantity of product for which an elective function cannot be determined with certainty. The declared unit is therefore applicable for an EPD that covers a “cradle-to-gate” and “cradle-to-gate with options” LCA. If a declared unit is used, this is because the relevant functional aspects are not known or are not possible to capture in one or a few predefined functional units. All relevant functional aspects shall, however, be considered when comparing EPDs based on this PCR.

The declared unit is 1 (one) packaging product unit.

The declared unit shall be stated in the EPD. The environmental impact shall be given per declared unit.

For the technical specification that support the declared unit see par 4.2.2.1

4.2.2 FUNCTIONAL UNIT

Functional unit is defined as a quantified performance of a product system: the functional unit is therefore applicable for an EPD that covers a “cradle-to-grave” LCA In the case of consumer packaging or reusable packaging, a cradle-to-grave LCA with a functional unit shall be performed. ([4] See the definition of reusable packaging at 2.2.1.1)

The functional unit is 1 (one) packaging product unit.

For the technical specification that support the declared unit see par 4.2.1.2.

In the EPD shall be clearly declared :

- the packaging application that is the sector(s) in which the packaging can be used and the types of content it is suitable for,
- the packaging use that is the types of technology that are suitable.

4.2.1. TECHNICAL SPECIFICATION, LIFESPAN AND REFERENCE SERVICE LIFE (RSL)

A description of the function of the product should be included in the EPD, if relevant.

4.2.2.1 Technical specification for declared unit

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

- Base material of packaging product (e.g. polymer, wood, etc.)
- External dimensions of the packaging product (m)
- Internal volume of the packaging product (l)
- Weight of packaging product (kg)
- Maximum load (kg)
- Compression values (e.g. results of the compression test based on ISO 12048 or equivalent)
- Stacking values (e.g. results of the stacking test based on ISO 12048 or equivalent).

4.2.2.2 Technical specification for functional unit

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

- Base material of packaging product (e.g. polymer, wood, etc.)
- External dimensions of the packaging product (m)
- Internal volume of the packaging product (l)
- Weight of packaging product kg)
- Maximum load (kg)
- Compression values (e.g. results of the compression test based on ISO 12048 or equivalent)
- Stacking values (e.g. results of the stacking test based on ISO 12048 or equivalent).

In case a functional unit (cradle-to-grave LCA) is used, the following information shall also be included in order to increase comparability:

- Number of uses of the reusable packaging during its lifespan (see par 4.2.1.3)
- Maximum transportable load during the lifespan (see par 4.2.1.3)

An optional additional functional unit may be used, taking into consideration the quantity of volume transported in the life cycle of the packaging and should be declared as total volume or its units; *the additional sets of results are separately declared in a subsection of the environmental performance section.*

For two-dimensional (flat) products such as films or sheet an alternative declared/functional unit 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 packaging product unit such as in the case of industrial packaging sold without branded printing (note 5)

Note 5 flat packaging products can be sold preformed or in the form of reels or flat sheets but, in any case, they are all designed for containment, protection, handling, delivery, storage, transport and presentation of goods even if the final function is not necessarily performed in the same phase of the life cycle. For consumer packaging, in most cases, the package (product unit) is clearly identifiable since it coincides with the printed image and therefore the declared/functional unit shall be 1 packaging product unit so as to maximize comparability with similar products, having the same application. In the case of industrial packaging, where there is no print that identifies the package and the packaging product can be used for various applications, the alternative declared/functional unit of 1 m2 may be used.

4.2.3 TECHNICAL SPECIFICATION FOR RLS AND LIFESPAN OF REUSABLE PACKAGING

RSL and Lifespan can only be applied to reusable packaging that falls under the definition at chapter 1.2.1.

RLS is the time period that identifies the useful life of the product based on design criteria (note 6). In the case of packaging products it can be difficult to determine the RSL because it strongly depends on how the user handles its use.

In an EPD based on this PCR, the technical lifespan for reusable articles and the total volume considered (if any) should be defined based on the average number of uses that reusable and refillable packaging articles of different materials have been proven to last (see Table 1). These standard values are based on historical data of professional use. However, as the technical lifespan of a specific product may be both higher and lower than the standard values, an alternative technical lifespan may 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).

Technical lifespan shall be set for each product by the EPD owner following the rules reported in this paragraph.

MATERIAL OF THE PACKAGING PRODUCTS	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[3]	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 2 Definition of the standard technical lifespan for reusable packaging product made of various materials

In order to define reusable packaging, the EPD Owner must demonstrate that he has considered the overall performance of the packaging, including the parts that form the containment and closure systems. The technical lifespan shall, in any case, be evaluated considering that the use of the packaging product must end when its use involves risks to safety (e.g. mechanical damage) or to health (e.g. chemical or biological hazards due to structural wear and tear).

All the criteria applied to establish the technical lifespan based on the safety/hygiene risk assessment shall be documented in EPD. In case of reusable products, the number of uses and the total volume considered during the technical lifespan, and the criteria applied for its definition, shall be included in the EPD.

The numbers of reuses and the total volume considered shall be declared in the EPD when used to define reuse criteria.

Note 6: In the case of reusable packaging, the number of uses declared in the EPD must coincide with the legal approval of the product and/or the supply specifications. If this information is not available from the abovementioned sources, the indicator for the reconditioning of all the packaging parts in the rotation cycles (restoration) shall be used. (see ISO 21067-2:2016 , Packaging – Vocabulary- Part 2: Packaging and the environment terms).

Rotation is defined (note 7) as the cycle undergone by reusable packaging from filling/loading to filling/loading.

Note 7: The number of reuses depends on safety aspects and the use of filling/reuse technologies.

4.3 SYSTEM BOUNDARY

The scope of this PCR and EPDs based on it is cradle to gate, cradle to gate with options or cradle to grave.

The International EPD® System uses an approach where all attributional processes from "cradle to grave" should be included using the principle of "limited loss of information at the final product". This is especially important in the case of business-to-consumer communication.

4.3.1 LIFE-CYCLE STAGES AND INFORMATION MODULES

This PCR allows for optional LCA scope to be reported in the EPD:

- a "cradle-to-gate" EPD: Modules A1 to A3
- a "cradle-to-gate with options" EPD: Modules A1 to A3 plus other selected optional modules, e.g. end-of-life modules C1 to C3
- a "cradle-to-grave" EPD: All Modules, A to C

See following Table 2 for further details.

Life cycle stage	life cycle modules	Life Cycle module group	EPD Type	
			Declared Unit: Cradle to gate Cradle to gate with option	Functional Unit: Cradle to grave
Upstream	A1) Raw material extraction and processing	A1-A3 : Product stage	Mandatory	Mandatory
Core	A2) Transports to the manufacturer of the product			
	A3) Manufacturing of the product			
Downstream	A4) Transport of the product to forming*/filling	A4-A5: Forming stage	Mandatory	Mandatory
	A5) Forming(*) if present.			
	B1) Filling operation	B1-B5: Use stage	Optional	Mandatory
	B2) Distribution of filled packaging			
	B3) Transport to reconditioning			
	B4) Reconditioning**			
	B5) Transport to refilling point			
	C1) Disassembling/sorting	C1-C4: End-of-life stage	Optional	Mandatory
	C2) Transport to waste processing and/or disposal			
	C3) Waste processing for recovery and/or recycling			
	C4) Disposal			
	In addition, consequences of recovered material/energy beyond the product cycle may be reported in **module D**			

(*) Both pase A3 and phase A5 are to be considered packaging production phases (if present in the packaging life cycle) if the formig phase is necessary for the packaging product to fulfill its function.In fact, packaging production is considered completed only upon conclusion of all the phases that will allow the product to accomplish its final function for the intended use. The final forming made by the packaging user is outside of the company boundaries (ie the assembly of pre-cut gift boxes)

(**) Reconditioning: operations necessary to restore a reusable packaging to a functional state for further reuse.

Table 2 The life cycle of a packaging product divided into three life cycle stages according to the GPI and four life cycle module groups

When the Forming processes (A5), or one of their phases, are performed concurrently (e.g. on the same production line or in the same plant) with the Filling processes (B1), the environmental impacts from both processes shall be included in the system boundaries.

As reported at section 2.2.2, the EPD can be issued both by the single packaging manufacturer and by the packaging user. These two cases evidently present a different system boundary setting, mainly for the life cycle modules A3 and A5, depending on the real situation taken into consideration for the preparation of the LCA model. Furthermore, there may also be other cases that require adapting the system boundaries in accordance with the production processes of the specific supply chain, always in compliance with the rules of this PCR.

In the case of reusable packaging, only one reuse cycle shall be considered in the LCA calculation (from A1 to B5), and not all the uses of the reusable packaging during its lifetime, because it mainly depends on the customer's choices. In order to enable comparability for reusable packaging, it is mandatory to declare in the EPD all the technical information listed and the number of uses of the reusable packaging during its lifetime, as reported in paragraph 4.2.1.3.

Sections Fel! Hittar inte referenskälla.–Fel! Hittar inte referenskälla. further describe the processes to include or exclude for each life-cycle stage.

A few examples of system boundary definitions for specific packaging products are given in Annex 3.

4.3.1.1 Modules A1-A3: Product stage

- A1: Raw material supply
  - Extraction of resources
  - Growing and harvesting of renewable resources (e.g. agricultural planting)
  - Recycling processes of secondary materials from a previous product system (e.g. plastics recycling) note 8
  - Transport of resources to refinement
  - Refinement of resources
  - Impacts due to the production of electricity and fuels used in the upstream module
  - Production of auxiliary products used such as detergents for cleaning, etc.
  - Production of semiproducts used in the core process, if applicable
  - Manufacturing of primary and secondary packaging
  - Waste treatment of waste generated during upstream processes

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

Note 8 Not including those processes that are part of waste processing in the previous product system, referring to the "polluter pays principle".

- Module A2: Transportation
  - External transportation to the core processes and internal transport
- Module A3: Manufacturing
  - Product and process design and development activities (if relevant)
  - Manufacturing of the product - This includes the processes (e.g. forming), carried out by the EPD owner or on behalf of /in coordination with the EPD owner, if this processes determine the use function of the product (e.g. bottle preform blow molding, plastic tray molding, multilayer film lamination). If the processes necessary to enable the packaging to perform its function are delegated to others, they shall be included in Module A5. Only in cases where the EPD Owner is unable to quantify all the downstream processes (e.g., because there are multiple available forming technologies) they should be included and highlighted clearly in the process flow diagram, clarifying the missing steps. In these cases the EPD owner does not have the obligation to quantify the impacts for the entire downstream stage.
  - 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)
  - Maintenance (e.g. of the machines)
  - Waste treatment of waste generated during manufacturing
  - Impacts due to the production of electricity and fuels used in the core module

A minimum of 99% of the total weight of the declared product including packaging (note 9) shall be included.
Processes not listed here 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.

Note 9 This refers to the packaging of the packaging product under study.

4.3.1.2 Modules A4-A5: Forming operation

- Module A4: Transport
  - Transportation from the production site gate to forming or filling site.
- Module A5: Packaging forming (note10)
  - Final forming of the packaging product: this step allow the packaging to fulfil it's function

Processes not listed here 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.

Note 10 See Table 2.

4.3.1.3 Modules B1-B7: Use stage

- Module B1: Filling operation
  - Filling of the packaging unit with any kind of matter in any physical state (liquid, solid, or gas), including any packaging closing/welding operations.
  - The energy consumption, the production of the packaging components (e.g. lid, closing film) and the packaging materialwasted in the filling process shall be included.
- Module B2: Distribution of filled packaging
  - Transportation from filling to an average retailer/distribution platform.

Note 11 : The environmental impacts related to the distribution of the filled packaging shall be allocated to the packaging and to the
transported product (without packaging) according to their masses. The burden related to the distribution of the content of the
packaging is then excluded from the environmental impacts of the distribution of the filled packaging.
The transport of the packaging product by the consumer is excluded.

- Module B3: Transport to reconditioning
  - Transportation from the collecting site gate to the reconditioning site.
- Module B4: Reconditioning
  - Operations necessary to restore a reusable packaging note 12 to a functional state for further reuse. Reconditioning covers thecombination of all typically planned technical and associated administrative activities and actions during the service life.

Note 12: In the case of reusable packaging, only one reuse cycle shall be considered in the LCA calculation.

- Module B5: Transport to re-filling point
  - Transportation from the reconditioning site gate to the refilling site.

Processes not listed here 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.

4.3.1.4 Modules C1-C4: End-of-life stage

- Module C1: Disassembling/sorting
  - Operations for the separation of packaging product components and subsequent sorting.
- Module C2: Transport to recovery/disposal
  - Transportation of the discarded product accounts for part of waste nota 13 processing, e.g. to a recycling site or to final sorting yard or disposal

Note 13: A packaging product becomes waste when all the functions that it can perform and that are clearly stated in the definition of packaging have been exhausted.

- Module C3: Waste processing for reuse, recovery and/or recycling (see also par. 4.3.1.5)
  - Waste disposal including physical pre-treatment
- Module C4: Final disposal

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".

4.3.1.5 Module D : Consequences of recovered material/energy beyond the product cycle

It is allowed to quantify any benefits deriving from the recovery and recycling of the packaging at the end of life referring to the environmental assessment of the secondary material obtained from the recovery/recycling processes. The EPD verifier will check the correctness of the assumptions made and the consistency of the related documentation.

Processes not listed here 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.

In the EPD, the environmental performance of each of the life-cycle shall be reported in aggregated form for the life-cycle stages (Upstream-Core-Downstream). Module D may be reported separately.

4.3.1.6 Excluded processes

See Section A.3.1.1 of the GPI.

4.3.2 OTHER BOUNDARY SETTING RULES

See Section A.3.2 of the GPI for rules on setting boundaries to nature as well as geographical and temporal boundaries. See Section A.4 of the GPI and Section 4.6 below for rules on setting boundaries to other product systems.

4.4 PROCESS FLOW DIAGRAM

The system diagram changes depending on the packaging product covered by the EPD and, for that reason, has not been reported in this PCR. Table 2 in paragraph 4.3.1 shows the processes that are included in the product system. Furthermore, a few examples of system boundary definitions for specific packaging products are presented in Annex 3.
A system diagram of the processes included in the LCA for the specific packaging product, divided into life cycle stages, shall be reported in the EPD. The system diagram shall also include and clearly highlight the excluded processes necessary to allow the packaging product to fulfil its final function.

4.5 CUT-OFF RULES

See Section A.3.3 of the GPI.

Since packaging has a very specific use of materials in its formulations, it is decided to keep the cut-off at 1 % by mass and energy.

With the 1% cut-off, it is therefore not necessary to apply the requirements of sensitivity and plausibility analysis in cases where the cut-off is 5%.

4.6 ALLOCATION RULES

See Section A.4 of the GPI and par. 4.6.1 and par. 4.6.2 of this PCR.

4.6.1 ALLOCATION OF CO-PRODUCTS

See Section A.4.1 of the GPI.

Packaging supply chain general considerations:

1. The supply chain does not lose control of the flows of the product system, because it is a chain of manufacturing companies interlinked in sequence for the production of each final product (each makes a passage in the manufacture of the finished packaging. The control of flows includes all qualitative aspects (e.g. technical specifications, etc.) and

quantitative aspects (e.g. mass, etc.), from the raw materials (e.g. % of traceable and/or certified recycled content) to each stage of the packaging process (required by law in most countries for the food packaging production chain where traceability and supply chain communication are mandatory to produce the food contact declaration).
2. In the various steps/processes there is always waste and only in very rare cases by-products. These cases of by-products are only those in which the material that comes out of the production process is used in a system that uses it directly, without additional transformation, to replace a raw material. note 12
3. In the final stage of packaging production, the presence of by-products can only occur in the production of unprinted packaging, which is downgraded to its intended use and diverted for secondary use (mainly for industrial packaging). As a standard practice, non-compliant consumer packaging is always destroyed to protect the reputation of the packaging buyer.

In the case of packaging supply chains, the allocation hierarchy provided for in section A.4.1 of the GPI applies only to rare individual cases that constitute the exceptions mentioned in the previous paragraphs. The nature of the by-products of the packaging supply chain concerns materials for which the economic allocation is most appropriate and should be based on international packaging material price lists.

Note 12: conditions to be met for a residue to be classified as "by-product" are listed in Article 51 – Waste Framework Directive for European Countries

4.6.2 ALLOCATION OF WASTE

See Section A.4.2 of the GPI.

When applying the requirements of the GPI in section A.4.2, packaging production chains shall take into account their specificities in the following aspects:

1. EoW criteria of GPIs shall be applied consistently with official/legal documents where available,
2. when assessing the waste management phases, the fractions of the waste streams going to the different treatments shall be determined according to the mandatory regulation on waste and the latest updates of the official documents prepared by the competent authority for the definition of EPR criteria (EPR = Extended Producer Responsibility)
3. Cradle-to-gate EPDs willing to declare the properties of the material/packaging for the end of life in the EPD (e.g. declarations of recyclability) must however comply with what was is stated in the EPRs for the specific packaging, unless certifications of industrial processes actually used in the countries where the packaging is put on the market allow a different approach that the verifier will check.

The product stream that generates the waste always takes over the transport and pre-treatment activities up to the point where it ceases to be waste (EoW). The subsequent system, that uses the material, will carry the burden of the recycling processes since recycling processes take place after the EoW.

For waste that cannot be sent for recovery, all treatment processes (incineration, landfill, etc.) must be allocated to the product that generated them.

Residues (scraps) generated and reused in the production process (even if at different stages of the process) shall non be considered as secondary materials and cannot be declared recycled content. (GPI A.4.2 and ISO 14021)

4.7 DATA AND DATA QUALITY RULES

See Section A.5 of the GPI.

See Section 4.8 for further rules related to data and data quality per life-cycle stage and module D.

4.7.1 DATA CATEGORIES

See Section A.5.1 of the GPI.

4.7.2 DATA QUALITY REQUIREMENTS FOR PRIMARY DATA

See Section A.5.2 of the GPI.

4.7.3 DATA QUALITY REQUIREMENTS FOR REPRESENTATIVE SECONDARY DATA

See Section A.5.3 of the GPI.

4.7.4 DATA QUALITY ASSESSMENT AND DECLARATION

See Section A.5.4 of the GPI.

4.7.5 EXAMPLES OF DATABASES FOR SECONDARY DATA

No specific examples of databases and datasets are suggested to be used for secondary data for packaging.

4.8 OTHER LCA RULES

See Section A.6 of the GPI.

For specific LCA rules per life-cycle stage, see Section 4.9.

4.8.1 MASS BALANCE

See Section A.6.1 of the GPI.

4.8.2 ELECTRICITY MODELLING

See Section A.6.2 of the GPI.

4.8.3 BIOGAS MODELLING

See Section A.6.3 of the GPI.

4.9 SPECIFIC RULES PER LIFE-CYCLE STAGE AND MODULE D

See Section A.7 of the GPI.

4.9.1 PRODUCT STAGE, A1-A3

This PCR does not provide any additions to the rules and guidance in the GPI on the modelling of the product stage.

4.9.2 DISTRIBUTION AND INSTALLATION STAGE, MODULES A4-A5

This PCR does not provide any additions to the rules and guidance in the GPI on the modelling of the construction/installation stage.

4.9.3 USE STAGE, MODULES B1-B7

This PCR does not provide any additions to the rules and guidance in the GPI on the modelling of the use stage.

4.9.4 END-OF-LIFE STAGE, MODULES C1-C4

“This PCR does not provide any additions to the rules and guidance in the GPI on the modelling of the end-of-life stage.

4.9.5 CONSEQUENCES FOR RECOVERED MATERIAL/ENERGY BEYOND THE PRODUCT LIFE CYCLE (MODULE D)

This PCR does not provide any additions to the rules and guidance in the GPI on the modelling of module D.

4.10 ENVIRONMENTAL PERFORMANCE INDICATORS

See Section A.8 of the GPI.

In case of EPDs claiming compliance with ISO 14067 and/or ISO 14046, specific additional indicators shall be reported. The updated list of indicators "List of Additional Requirements" required to demonstrate compliance with GPI and ISO 14067/ISO 14046 is available at the link https://www.environdec.com/indicators.

4.11 SPECIFIC RULES PER EPD TYPE

4.11.1 MULTIPLE PRODUCTS FROM THE SAME COMPANY

See Section A.9.1 of the GPI.

4.11.2 SECTOR EPD

See Section A.9.2 of the GPI.

4.11.3 EPD OWNED BY A TRADER

See Section A.9.3 of the GPI.

4.11.4 EPD OF PRODUCT NOT YET ON THE MARKET

See Section A.9.4 of the GPI.

4.11.5 EPD OF PRODUCT RECENTLY ON THE MARKET

See Section A.9.5 of the GPI.

5 CONTENT OF LCA REPORT

Data for verification shall be presented in the form of an LCA report – a systematic and comprehensive summary of the project documentation that supports the verification of an EPD. The LCA report is not part of the public communication.

See Section 8.3.1 of the GPI for rules on the content of the LCA report.

Note that there may be rules on the content of the LCA report elsewhere in the GPI or in this PCR.

6 CONTENT AND FORMAT OF EPD

See Section 7 of the GPI.

6.1 EPD LANGUAGES

See Section 7.1 of the GPI.

6.2 UNITS AND QUANTITIES

See Section 7.2 of the GPI.

6.3 USE OF IMAGES IN EPD

See Section 7.3 of the GPI.

6.4 SECTIONS OF THE EPD

See Section 7.4 of the GPI.

6.4.1 COVER PAGE

See Section 7.4.1 of the GPI.

6.4.2 GENERAL INFORMATION

See Section 7.4.2 of the GPI.

6.4.3 INFORMATION ABOUT EPD OWNER

See Section 7.4.3 of the GPI.

6.4.4 PRODUCT INFORMATION

See Section 7.4.4 of the GPI.

6.4.5 CONTENT DECLARATION

See Section 7.4.5 of the GPI.

In the case of packaging, the content declaration is often subject to the laws of the various countries in which the packaging is produced and the various countries in which the packaging is marketed. Information regulated by law also includes the % recycled material and the % biogenic material. For legally regulated information, the EPD verifier shall check the correctness and legality of the information in the EPD. For example in the case of food contact packaging, the correctness of the legally required declaration of conformity shall be checked.

6.4.6 LCA INFORMATION

See Section 7.4.6 of the GPI.

6.4.7 ENVIRONMENTAL PERFORMANCE

See Section 7.4.7 of the GPI.

The EPD shall declare the environmental performance indicators listed or referred to in Section 4.10, per declared/functional unit, per life-cycle stage and module D.

6.4.8 ADDITIONAL ENVIRONMENTAL INFORMATION

See Section 7.4.8 of the GPI.

6.4.9 ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

See Section 7.4.9 of the GPI.

6.4.10 INFORMATION RELATED TO SECTOR EPDS

See Section 7.4.10 of the GPI.

6.4.11 VERSION HISTORY

See Section 7.4.11 of the GPI.

6.4.12 ABBREVIATIONS

See Section 7.4.12 of the GPI.

6.4.13 REFERENCES

See Section 7.4.13 of the GPI.

7 LIST OF ABBREVIATIONS

CPC	Central product classification
EPD	Environmental product declaration
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life cycle assessment
PCR	Product category rules
RSL	Reference service life
UN	United Nations

8 REFERENCES

CEN (2021) EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

EPD International (2024) General Programme Instructions for the International EPD System. Version 5.0.0, dated 2024-06-19. Available on www.environdec.com.

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

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

ISO (2017) ISO 21930:2017, Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.

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

ISO 21067-1:2016 Packaging — Vocabulary Part 1: General terms

ISO 21067-2:2015 Packaging – Vocabulary Part 2: Packaging and the environment terms

ISO 18601:2013 Packaging and the environment — General requirements for the use of ISO standards in the field of packaging and the environment

9 VERSION HISTORY OF PCR

VERSION 1.0.0 2019-11-08

Original version of the PCR.

VERSION 1.1, 2020-12-17

- Clarification added in Sections 2.2.2 and 2.2.3 about the preparation of an EPD also for a packaging component.
- Inclusion in Section 2.2.2, Table 1 of an example of CPC codes for flat packaging products.
- Inclusion in Section 4.1.2 of an alternative declared/functional unit for two-dimensional (flat) products such as films or sheet.
- Clarification added in Section 4.3.1 about the different system boundary setting when the EPD owner is an individual manufacturer or a packaging user.
- Clarification added in Section 4.3.1.3 about packaging closing/welding operations.
- Other minor editorial changes.

VERSION 1.1.1, 2023-07-06

- Change of E-mail address to PCR Moderator.
- Editorial changes, including changes in Sections 5.4.5.1 to 5.4.5.3, to clarify the indicator list at www.environdec.com applies also for the indicators of resource use, waste production and other output flows.

VERSION 1.1.2, 2023-11-10

- Prolonged validity with one year, until 2024-11-08, due to the initiation of an updating process.
- Minor editorial changes.

VERSION 1.1.3, 2024-08-08

- Prolonged validity with another six months, until 2025-05-08, due to a delay in the updating process.

ANNEX 1 – TYPES OF PACKAGING DEFINITIONS

This annex contains the definitions of the terms related to the types of packaging as given in the ISOs relevant to the packaging sector (for instance, ISO 21067-1, ISO 21067-2, ISO 18601). Only a few of these terms and definitions are used in the PCR. All the others are included for the sake of completeness.

- *bag (or sack):* flexible packaging of single or multiple layers or plies, generally enclosed on all sides except one, forming an opening that may or may not be sealed after filling
- *bale:* shaped unit of compressed articles or materials bound with cord, strapping or metal ties under tension
- *barrel (or cask or keg):* packaging of circular cross-section, with greater length than breadth, with convex sides and two ends of equal diameter
- *bottle:* rigid packaging, typically of glass or plastic, having a comparatively narrow neck or mouth, with a closure and usually no handle
- *jar:* rigid packaging of glass, plastic or earthenware with a wide mouth
- *ampoule:* small packaging usually made of glass or plastic capable of being hermetically sealed
- *box:* rigid packaging with rectangular or polygonal sides, usually completely enclosing the contents
- *carton:* folding collapsible packaging generally made from boxboard
- *case:* non-specific term for transport packaging, often used to refer to a box
- *crate:* transport packaging with incomplete surfaces
- *wirebound box:* box whose parts are reinforced and connected to each other by means of tempered wires
- *bundle:* number of articles bound with materials under tension, which also may be wrapped
- *can:* small primary packaging, usually cylindrical and usually made of metal
- *drum:* cylindrical packaging whose bottom end is permanently fixed to the body and top end (head) is either removable or non-removable
- *non-removable head drum (or tight head drum):* cylindrical packaging whose ends are permanently fixed to the body, with one or more openings for filling, emptying and venting in the top end (head) and which may also include body openings for the same purposes
- *removable head drum (or open head drum):* drum whose bottom end is permanently fixed to the body and whose top end can be removed as a lid (head)
- *pail (or nesting drum):* packaging of circular cross-section, tapered or cylindrical, and may be equipped with a lid and usually a handle
- *jerrycan:* metal or plastics primary packaging of rectangular or polygonal cross-section for products
- *tube:* cylindrical packaging whose ends may be a different material to the body
- *collapsible tube:* flexible packaging having a nozzle and cap at one end and closed at the other, serving as both container and dispenser
- *tray:* stiff layer material for dividing and holding multi packages

ANNEX 2 – TERMS RELATED TO REUSE OF PACKAGING

This annex contains the definitions of the terms related to the reuse of packaging as given in the ISOs relevant to the packaging sector (for instance, ISO 21067-1, ISO 21067-2, ISO 18601). Only a few of these terms and definitions are used in the PCR. All the others are included for the sake of completeness.

- *reuse*: operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled
- *reusable packaging:* packaging or packaging component which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse
- *rotation:* cycle undergone by reusable packaging from filling/loading to filling/loading
- *packaging used for the same purpose:* packaging which, having completed a rotation, is subsequently reused with the original conception, in a system for reuse
- *reconditioning:* operations necessary to restore a reusable packaging to a functional state for further reuse
- *returnable packaging item RPI:* any material used for the "protection" of goods during handling, delivery, storage and transport that is returned for further usage
- *returnable transport item RTI:* any product for the purposes of transport, handling and/or distribution of one or more products or product packages that are returned for further usage

ANNEX 3 – EXAMPLES OF PACKAGING PRODUCTS AND HOW TO USE THIS PCR

EXAMPLE 1 – WOOD PALLET

EXAMPLE OF PRODUCT	MAIN FUNCTION	ADDITIONAL CLASSIFICATION CRITERIA: type of packaging	ADDITIONAL CLASSIFICATION CRITERIA: material	APPLICABLE CPC CODE	SINGLE USE/ REUSABLE	FUNCTIONAL/DECLARED UNIT	SYSTEM BOUNDARIES	MAIN CORE PROCESSES (A3)
Wood pallet	STRUCTURAL, DISTRIBUTION PACKAGING	PALLET	WOOD	317(00)	SINGLE USE	DECLARED or FUNCTIONAL (§4.1.1, §4.1.2)	- cradle-to-gate - or cradle-to-gate with options - or cradle-to-grave (§ 4.3)	- Cutoff sawing - Debarking - cutting to size - Assembly and nailing - Printing (§ 4.3 - the above processes are typically A3)
					REUSABLE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	

NOTE

- A wood pallet is a typical example of structural packaging that can undergo several reuse cycles and for which reconditioning indicators are calculated as part of the logistics activities. For wood pallets, reference should be made to the legal approval confirmed by a stamp, which indicates whether a pallet is approved for reuse.

EXAMPLE 2 – FOLDING CARTON BOX (RECYCLED)

EXAMPLE OF PRODUCT	MAIN FUNCTION	ADDITIONAL CLASSIFICATION CRITERIA: type of packaging	ADDITIONAL CLASSIFICATION CRITERIA: material	APPLICABLE CPC CODE	SINGLE USE/ REUSABLE	FUNCTIONAL/DECLARED UNIT	SYSTEM BOUNDARIES	MAIN CORE PROCESSES (A3)
Folding carton box (recycled)	COMMERCIAL, INDUSTRIAL	BOX (typical of commercial packaging), CASE (typical of industrial packaging)	PAPER	32153	SINGLE USE	DECLARED or FUNCTIONAL (§4.1.1, §4.1.2)	- cradle-to-gate - or cradle-to-gate with options - or cradle-to-grave (§ 4.3)	- Deinking process - Mixture preparation - Patina cooking - Coating - Manufacturing (Paper Machine) - Surface sizing - Finish and setting up (§ 4.3 - the above processes are typically A3)
	COMMERCIAL, CONSUMER				SINGLE USE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	

NOTE

- A folding carton box is often combined with other packaging to form a pluripack (e.g. a carton box containing 3 pieces to make a single sales unit). This PCR recommends that the various components of a pluripack should be treated as independent packaging and, as such, each should have its own EPD (par. 2.2.2).

PACKAGING

PRODUCT CATEGORY CLASSIFICATION: MULTIPLE CPC

EXAMPLE 3 – GLASS BOTTLE

EXAMPLE OF PRODUCT	MAIN FUNCTION	ADDITIONAL CLASSIFICATION CRITERIA: type of packaging	ADDITIONAL CLASSIFICATION CRITERIA: material	APPLICABLE CPC CODE	SINGLE USE/ REUSABLE	FUNCTIONAL/DECLARED UNIT	SYSTEM BOUNDARIES	MAIN CORE PROCESSES (A3)
Glass bottle	COMMERCIAL, INDUSTRIAL	BOTTLE	GLASS	37191	SINGLE USE	DECLARED or FUNCTIONAL (§4.1.1, §4.1.2)	- cradle-to-gate - or cradle-to-gate with options - or cradle-to-grave (§ 4.3)	- Proportioning of glass batch - Melting of raw materials and refining - Thermal conditioning of the molten glass - Gob-cutting of melted glass and forming - Annealing - Quality control - Packaging/ palletting (§ 4.3 - the above processes are typically A3)
					REUSABLE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	
	COMMERCIAL, CONSUMER				SINGLE USE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	
					REUSABLE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	

NOTE

- A glass bottle is sometimes designed in collaboration with the company-user in such a way as to foster brand recognition through an exclusive shape. In such cases, the company-user of the packaging controls both the design phase and the final forming phase, and may therefore be an EPD Owner (par. 2.2.2)

EXAMPLE 4 – THREE-PIECE CAN

EXAMPLE OF PRODUCT	MAIN FUNCTION	ADDITIONAL CLASSIFICATION CRITERIA: type of packaging	ADDITIONAL CLASSIFICATION CRITERIA: material	APPLICABLE CPC CODE	SINGLE USE/ REUSABLE	FUNCTIONAL/DECLARED UNIT	SYSTEM BOUNDARIES	MAIN CORE PROCESSES (A3)
Three-piece can	COMMERCIAL, CONSUMER	CAN	METAL, STEEL	4293	SINGLE USE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	- Preparation of the metallic laminate - Lithopainting of the laminate foil (or utilization of raw tinplate) - Electro welding of the metal cylinder - Junctions' protection with coatings and drying - Moulding of the electrowelded cylinder - Seam lidding - Packing, labelling (§ 4.3 - the above processes are typically A3)

NOTE

- A three-piece can is often combined with other types of packaging to form a pluripack (example, a folding carton box used to assemble 3 pieces into a single sales unit). This PCR recommends that the various components of a pluripack should be treated as independent packaging and, as such, each should have its own EPD (par. 2.2.2).

PACKAGING

PRODUCT CATEGORY CLASSIFICATION: MULTIPLE CPC

EXAMPLE 5 – PET BOTTLE

EXAMPLE OF PRODUCT	MAIN FUNCTION	ADDITIONAL CLASSIFICATION CRITERIA: type of packaging	ADDITIONAL CLASSIFICATION CRITERIA: material	APPLICABLE CPC CODE	SINGLE USE/ REUSABLE	FUNCTIONAL/DECLARED UNIT	SYSTEM BOUNDARIES	MAIN CORE PROCESSES (A3)
PET Bottle	COMMERCIAL, CONSUMER	BOTTLE	PLASTIC	36490	SINGLE USE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	- Polymer dehumidifying - Injection moulding (§ 4.2- the above processes are typically A3) - Blow moulding (§ 4.3 - the above processes are typically A5)

NOTE

- A PET bottle is sometimes co-designed in collaboration with the company-user, in such a way as to foster brand recognition through an exclusive shape and/or special labelling and can be classified as consumer packaging. In such cases, the company-user of the packaging controls both the design phase and the final forming phase and may therefore be an EPD Owner (par.2.2.2).

EXAMPLE 6 – ALUMINIUM COLLAPSIBLE TUBE or MULTI-LAYER COLLAPSIBLE TUBE

EXAMPLE OF PRODUCT	MAIN FUNCTION	ADDITIONAL CLASSIFICATION CRITERIA: type of packaging	ADDITIONAL CLASSIFICATION CRITERIA: material	APPLICABLE CPC CODE	SINGLE USE/ REUSABLE	FUNCTIONAL/DECLARED UNIT	SYSTEM BOUNDARIES	MAIN CORE PROCESSES (A3)
Collapsible tube or multi-layer collapsible tube	COMMERCIAL, CONSUMER	TUBE	METAL, ALUMINIUM	4299	SINGLE USE	FUNCTIONAL (§4.1.2)	cradle-to-grave (§ 4.3)	- Impact extrusion - Trimmer and threading - Annealing of aluminium and lubricant sublimation - Internal lacquering - Coating enamel application - Offset printing - Cap application - Latex-ring application - Waxing and conical shape process - Packing - Labelling (§ 4.3- the above processes are typically A3)

NOTE

- A collapsible tube is sometimes co-designed in collaboration with the company-user, in such a way as to foster brand recognition through an exclusive shape and/or special labelling and can be classified as consumer packaging. In such cases, the company-user of the packaging controls both the design phase and the final forming phase and may therefore be an EPD Owner (par. 2.2.2).

ANNEX 4 – EXAMPLES OF MULTI-MATERIAL PACKAGING PRODUCTS AND HOW TO USE THIS PCR

To better understand the rules in chapter 2.2.2 some examples are given below. The following definitions, taken from paragraph 2.2.1, are useful for understanding the examples:

- *primary packaging: packaging designed to come into direct contact with the product*
- *secondary packaging:* packaging designed to contain one or more primary packagings together with any protective materials where required
- *packaging component:* part of packaging that can be separated by hand or by using simple physical means
- *component:* part, assembly or raw material that is a constituent of a higher-level assembly
- *packaging constituent:* part from which packaging or its components are made and which cannot be separated by hand or by using simple physical means [SOURCE: ISO 18601]

NOTE: The definition of primary packaging and secondary packaging is an aid to identify in detail the packaging solution used. However this approach to packaging classification is not very useful for LCA studies since the product function is never identified through these definitions. It is therefore preferable to describe the packaging through the packaging function using the definitions of “packaging constituent” and “component” which imply the identification of the specific function performed by the packaging solution.

Here below is reported in italics the text of the PCR in chapter 2.2.2 with some application examples (in bold):

Furthermore, during the preparation of an EPD for a packaging product, the following rules shall be taken into account:

- *In case of complex sales units, it will be possible to prepare a single EPD only in those cases where the packaging constituent (that is, the main part of the packaging product) can be singled out. The packaging constituent performs the packaging function and can be assembled with packaging components (other parts of the packaging product) which perform specific functions, such as stoppers and lids. Indeed, the role of packaging components is to complete the sales unit and they are considered auxiliary materials subject to supply. (See definitions par. 2.2.1)*

EXAMPLE: A single sales unit consisting of: 500g yoghurt pot with aluminium lid (for shelf life) and polymer lid (for refrigerated storage after opening). For this single sales unit only one EPD will be prepared in which the yogurt pot is identified as a constituent and the two lids are auxiliaries and therefore are identified as components.

- *In case of complex sales units (requiring, for instance, both primary and secondary packaging), several EPDs may be needed if a number of processes are involved in the production of the various types of packaging that make up the sales unit.*

EXAMPLE: A single sales unit consisting of: two yoghurt polymer pots (constituent, primary packaging) with aluminium lids (component packaging) and printed paperboard (constituent, secondary packaging with specific closure role and packaging protection role of the sales unit). In this case two EPDs are needed (one for each packaging constituent): one for the primary packaging in polymer and one for the secondary packaging in printed paperboard. The aluminium lids are inserted in the EPD of the polymer packaging as components.

▪ *.In the special case of consumer packaging, where the user takes on the responsibility for packaging co-design and packaging making in the final packaging forming and/or assembly phases, the packaging user can be equated to the packaging manufacturer, and thus, in this case, may be an EPD Owner.*

In the special case of consumer packaging, two approaches to the publication of EPDs can be envisioned: EPDs prepared by individual manufacturers restricted to the packaging components under their responsibility, and EPDs prepared by the packaging user, who can demonstrate its role in the core processes and prepares the EPD on the consumer packaging sales unit.

EXAMPLE: glass bottle identifying the "brand" that binds the packaging manufacturer to the design patented by the user company that markets the sales unit under its own responsibility (for example, by affixing its own brand). In this case, the user's design choices affect the creation of the packaging and the related environmental performances. The design of the product and of the production process is therefore an activity that involves the co-design collaboration between the user and the packaging manufacturer. Both therefore can promote the publication of an EPD.