CARES

Product Category Rules (PCR) for Type III Environmental Product Declaration (EPD) of Semi-Finished and Finished Steel Products

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Issue, Validity and Amendment Control Sheet

Date of Issue	Date of Validity	Issue/Revision
06 February 2025	05 February 2030	First issue

Terminology

Within this CARES PCR, the following terminology is adopted:

The term “shall” be used to indicate what is obligatory.

The term “should” be used to indicate a recommendation, rather than a requirement.

The term “may” be used to indicate an option that is permissible.

Statement

The following mandatory statement from ISO 14025: “EPDs within the same product category but from different programmes may not be comparable.”

The following mandatory statement from EN 15804+A2. “EPD of construction products may not be comparable if they do not comply with this standard.”

1. DEFINITIONS and ABBREVIATIONS

The definitions and concepts employed in life cycle assessment are defined in accordance with ISO 14025, EN 15804+A2 and other normative standards in Section 8 of this PCR.

1.1 **Asset:** Physical assets such as buildings, equipment, or infrastructure.

1.2 **Average data:** Data representative of a product, product group or construction service, provided by one or more suppliers.

1.3 **Co-product:** Any of two or more products coming from the same unit process or product system. Also referred to as a By-product.

1.4 **Cut-off criteria:** Specification of the amount of material or energy flow or the level of environmental significance associated with unit processes or product system to be excluded from a study

1.5 **Declared unit (DU):** Quantity of a product for use as a reference unit in an EPD, based on LCA, for the expression of environmental information needed in information modules, for example kg, m, m^2, m^3. The declared unit shall only be used where the function and the reference scenario for the whole life cycle, at the asset level, may not be stated.

1.6 **Environmental Product Declaration (EPD):** Type III environmental label which quantifiably demonstrates the environmental impacts for a product on a harmonized and scientific basis.

1.7 **Functional equivalence (FE):** Quantified functional requirements and/or technical requirements for a building or an assembled system (part of works) for use as a basis for comparison.

1.8 **Functional unit (FU):** Quantified performance of a product system for a construction product for use as a reference unit in an EPD based on LCA.

1.9 **Gate:** Point at which the construction product or material leaves the factory before it becomes an input into another manufacturing process or before it goes to the distributor, a factory or building site.

1.10 **Generic data:** Data that is not site or enterprise specific. This refers to data that is not directly collected, measured, or estimated by a company, but sourced from a third party LCI database or other sources. Generic data includes industry average data (e.g. from published production data, government statistics, and industry associations), literature studies, engineering studies and patents, and may also be based on financial data, and contain proxy data, and other generic data.

1.11 **Identity preserved model:** chain of custody model in which the materials or products originate from a single source and their specified characteristics are maintained throughout the supply chain.

1.12 **Information module:** Compilation of data to be used as a basis for a Type III environmental declaration, covering a unit process or a combination of unit processes that are part of the life cycle of a product.

1.13 **Life Cycle Assessment (LCA):** Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle.

1.14 **Life Cycle Inventory Analysis (LCI):** Phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product throughout its life cycle

1.15 **Life Cycle Impact Assessment (LCIA):** Method for converting inventory data from a life cycle assessment into a set of potential impacts

1.16 **Mini report:** Report is based on the methodology and general principles of the CARES EPD Tool and summarises the product specific information, material and energy inputs and outputs and other variable parameters over the product's life cycle. Mini report is used with a pre-verified EPD tool to provide the information needed to verify an EPD produced from such a pre-verified EPD tool.

1.17 **Non-renewable energy:** Energy from sources which may not be replenished on a human time scale (fossil sources) for example coal, oil, natural gas and uranium.

1.18 **Non-renewable resource:** Resource that exists in a fixed amount that may not be replenished on a human time scale.

1.19 **Product:** This CARES PCR applies to 'Semi-Finished and Finished Steel Products'. In this PCR, the term 'Product or Products' used alone relates not only to product systems but may also include service systems. In either case, the declaration is presented in a manner that clearly indicates whether the declaration applies to goods, or only to a part of the goods or packaging, or to an element of a service. See ISO 14025, clause 7.2.2. The manufacturing or processing of goods used as a product may take place at the factory or on the construction or further manufacturing site. The use of services may occur at any stage of the life cycle of the asset or other works.

1.20 **Product category:** Group of products that may fulfil equivalent functions.

1.21 **Product category rules (PCR):** Set of specific rules, requirements and guidelines for developing Type III environmental declarations for one or more product categories.

1.22 **Programme operator:** Body or bodies that conduct a PCR and EPD (Type III environmental declaration) programme. The UK Certification Authority for Reinforcing Steels (CARES), a company limited by guarantee and registered under the Companies Act 1948-81 under No 1762448, is the Programme Operator for the programme using this PCR.

1.23 **Project report:** Report summarises the project documentation in a systematic and comprehensive way in order to support effective verification of the EPD. The project report may be called as 'background report'.

1.24 **Reference service life (RSL):** Service life of a product that is known or to be expected under a reference set of in-use conditions and which may form the basis of estimating the service life under other in-use conditions. The reference service life is applied to the functional unit or declared unit. See EN 15804+A2, Annex A.

1.25 **Renewable energy:** Energy from renewable sources (typically non-fossil sources) for example solar, wind, hydro (excluding pumped-through hydro) and biomass.

1.26 **Renewable resource:** Resource that is grown, naturally replenished or cleansed on a human time scale, for example, trees in forests, grasses in grasslands and fertile soil. A renewable resource is capable of being exhausted but may last indefinitely with proper stewardship. Water which may be replenished within a human timescale would be considered a renewable resource. EPD only report renewable energy, but this does not mean that water may not be renewable or non-renewable resource. In this PCR water has been excluded from the definition of renewable resource and is reported in the 'net fresh water' and 'water scarcity' indicators described in EN 15804+A2.

1.27 **Secondary fuel:** Fuel recovered from previous use or from waste which substitutes primary fuels. See EN 15804+A2, clause 3.28, Notes 1, 2, 3 and 4.

1.28 **Secondary material:** Material recovered from previous use or from waste which substitutes primary materials. See EN 15804+A2, clause 3.29, Notes 1, 2 and 3.

1.29 **Segregated model:** chain of custody model in which specified characteristics of a material or product are maintained from the initial input to the final output.

1.30 **Service life:** The period of time from construction/installation/further-processing or during which an asset or its components meets or exceeds its performance requirements.

1.31 **Specific data:** Data representative of a product, product group or construction service, provided by one supplier.

1.32 **Standards:** The LCA, EPD and sustainability standards as laid down in the relevant part of this manual.

1.33 **Study period (SP):** The period of time over which the environmental impacts of an asset or its components shall be measured.

1.34 **Substances of Very High Concern (SVHC):** Chemicals that have serious effects on human health or the environment.

1.35 **Third party:** Person or body that is recognised as being independent and impartial of the parties involved, as concerns the issues in question.

1.36 **Type III environmental declaration:** Environmental declaration providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information.

1.37 **United Nations Central Product Classification (UN CPC):** a coherent and consistent classification structure for products (goods and services) based on a set of internationally agreed concepts, definitions, principles and classification rules.

1.38 **Waste:** Substance or object which the holder discards or intends or is required to discard.

2. INTRODUCTION

Manufacturers of steel products (steel mills and rolling mills), designers, users and owners of assets such as buildings and others are demanding information that will enable them to make decisions which address environmental impacts of finished products, assets, buildings and other construction works. An increasingly common solution is to create EPD. These are ISO Type III environmental declarations providing quantified environmental data for predetermined indicators using independently verified LCA. The PCR is intended for use by manufacturers of steel products (steel mills and rolling mills) and not for users of these products, such as fabricators and processors.

EPD present quantified environmental information on the life cycle of a product. In Europe, EPD for construction products are derived according to the requirements of EN 15804, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. EN 15804 is part of a suite of standards for the assessment of the sustainability of construction works at both product level and building level.

CEN/TR 16970 - Guidance for the implementation of EN 15804. This document forms the PCR for CARES's Type III EPD programme.

Throughout this CARES PCR document, the abbreviation 'EPD' is both the singular and plural form for ISO Type III environmental product declarations.

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

The latest version of this PCR is available on www.carescertification.com.

The Programme Operator maintains the copyright of this CARES PCR to ensure that it is possible to publish, update when necessary, and available to all organisations to develop and register EPDs.

Compliance with this CARES PCR does not confer immunity from legal obligations. Users of this PCR should ensure that they possess the latest issue and all amendments.

3. SCOPE

This PCR has been prepared to be in line with the requirements of ISO 14025 Environmental labels and declarations – Type III environmental declarations – Principles and procedures and EN 15804+A2, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

This is a PCR document for the assessment of the environmental performance of the product category consisting of the products listed in Table 1. It describes CARES's methodology for creating an EPD for semi-finished and finished steel products listed in Table 1.

Table 1. Product Category: Semi-Finished and Finished Steel Products in this CARES PCR

United Nations Central Product Classification		**UN CPC 41 (https://unstats.un.org/unsd/classifications/Econ/Structure/Detail/EN/1074/41)**	**Products in this CARES PCR Scope**	**Manufacturing Process**
Group	411	Basic iron and steel	Semi-Finished products - Pig iron - Direct Reduced Iron (DRI) - Hot Briquetted Iron (HBI)	Integrated Iron and Steelmaking (Blast Furnace 'BF') Direct Reduction 'DR'
Class	4111	Primary materials of the iron and steel industry		
Sub-Class	41111	Pig iron and spiegeleisen in pigs, blocks or other primary forms		
	41116	Ferrous products obtained by direct reduction of iron ore and other spongy ferrous products, in lumps, pellets or similar forms; iron having a minimum purity by weight of 99.94%, in lumps, pellets or similar forms		
	41117	Granules and powders, of pig iron and spiegeleisen, or steel		
Group	411	Basic iron and steel	Semi-finished products - Steel billets, blooms, slabs and ingots - Steel bars, rods and shapes for further processing	Integrated Iron and Steelmaking (BF - Basic Oxygen Furnace 'BOF') / Casting / Rolling (if applicable) DR – DRI+HBI / Electric Arc Furnace 'EAF' / Casting / Rolling (if applicable) Steel Scrap / EAF or Induction Furnace (IF) / Casting / Rolling (if applicable)
Class	4112	Crude steel		
Sub-Class	41121	Non-alloy steel in ingots or other primary forms, and semi-finished		
	41122	Alloy steel in ingots or other primary forms and semi-finished products of alloy steel		
Group	412	Products of iron or steel	Finished products - Hot Rolled or Cold Rolled Steel bars or rods for the reinforcement of concrete - Hot Rolled Structural Steels (angles, shapes, sections), Sheet Piles, Rails - Hot Rolled Steel Flats - Cold Rolled Steel Flats - Pre-stressed Concrete Steel Wire and Strand - Other processed and further worked steels (e.g. Steel fabric)	Integrated Iron and Steelmaking (BF+BOF) / Casting / Rolling DR - DRI/HBI) / EAF / Casting / Rolling Steel Scrap / EAF or IF / Casting / Rolling
Class	4121	Flat-rolled products of steel, not further worked than hot-rolled		
	4124	Bars and rods, hot-rolled, of iron or steel		
	4125	Angles, shapes and sections, not further worked than hot-rolled, hot-drawn or extruded, of iron or non-alloy steel; sheet piling of steel; welded angles, shapes and sections, of steel; railway or tramway track		
	4126	Bars, rods, angles, shapes and sections, cold-processed or further worked, of iron or steel; angles, shapes and sections, hot-rolled, hot-drawn or extruded, of alloy steel; steel wire		

Finished Steel Products produced from Semi-Finished Steels may be used in many areas such as buildings and infrastructure, mechanical equipment, automotive, metal products, transportation, shipping, electrical equipment and household appliances; and the environmental impact of those Further Manufacturing (Downstream) stages should be defined, calculated and allocated by the manufacturers of those Finished Steel Products (using these Semi-Finished Steels LCA and EPD data as part of his own Upstream processes).

This PCR is applicable to manufacturers of the stated products for use globally and regionally (e.g. EN 15804). In the related EPD any geographical restrictions or limitations should be indicated, and it should correspond to the geographical scenarios used in the LCA model. The data for the core module shall be representative for the actual manufacturing process and representative for the site/region where the respective manufacturing is taking place.

4. GENERAL PROGRAMME INFORMATION

4.1 Objectives

For the PCR to be used to produce EPD for Product Category (Construction Steel Products to EN 15804+A2 and Other Steel Products) to produce EPD that:

a. Provide a measurable and verifiable data source for the assessment of the environmental performance of assets.
b. Provide a link between the rules in the General Programme Instructions of the CARES EPD Programme and this PCR.
c. Enable interested parties to compare the environmental impacts of different products as they are used within an asset, based on units of equivalent functionality except when a declared unit is reported and not a functional unit. EN 15804+A2, clause 5.3, on comparability of EPD for construction products sets out the strict requirements for comparison.
d. Provide a means of collecting relevant data for the preparation of product level and asset level tools for comparing the environmental impacts of construction products and compliant software tools. The tools shall be approved against this PCR by independent, competent, impartial and approved verifiers.

4.2 Types of EPD

4.2.1 Life Cycle Stages

This PCR adopts the information module approach required by EN 15804+A2 (as illustrated in Figure 1). There are three types of EPD based on this PCR.

Cradle to gate with modules C1–C4 and module D (A1–A3, C and D): Stages that shall be declared in an EPD as a minimum. This type of EPDs shall be based on a declared unit.

Cradle to gate with options, modules C1–C4, and module D (A1–A3, C, D and optional modules to add: Optional modules may be A4 or A5 or both and modules B1 to B7 inclusive). This type of EPDs shall be based on a functional unit or declared unit if B

modules and related use scenarios are declared; otherwise, they shall be based on the declared unit.

Cradle to gate with options (A1–A3 and optional modules to add: Optional modules may be A4 or A5 or both). This type of EPD is only possible for products that are exempt from declaring modules C and D with explicit declaration of exemption justifications described in EN 15804+A2 Clause 5.2.

These are also shown in Table 2.

Figure 1. Mandatory (M) and optional (O) elements and information modules for products

	CARES PCR - LCA ASSESSMENT INFORMATION																
	ASSET LCA INFORMATION (Building Assessment Information (M = Mandatory / O = Optional in LCA)																
	Product Stage			Construction or Further Manufacturing Process Stage		Use Stage							End-of-Life Stage				Benefits and loads beyond the system boundary
	Raw material supply	Transport	Manufacturing	Transport to building site	Installation into building	Use / application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction / demolition	Transport	Waste processing	Disposal	Reuse, recovery or recycling potential
	Actual	Actual	Actual	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario	Senario
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Cradle-to-Gate + Modules C & D	M	M	M										M	M	M	M	M
Cradle-to-Gate with options + Modules C & D	M	M	M	M	O	O	O	O	O	O	O	O	M	M	M	M	M
Cradle-to-Gate with options + Modules A4 & A5	M	M	M	O	O												

Semi-Finished and Finished-Products
Finished Steel Products
Semi-Finished and Finished-Products

Table 2. Types of EPDs

Type	Life cycle stages included	Semi-Finished and Finished- Products
Cradle-to-Gate + Modules C & D	A1 to A3 (raw material supply, transport, manufacturing of products, and all upstream processes from cradle-to-gate), C1- C4 (Demolition, Waste transport, waste processing and disposal) and D (benefits and loads beyond the system boundary).	Steel billets, blooms, slabs and ingots Steel bars, rods and shapes

Cradle-to-Gate with options + Modules C & D	Covering A1-A3, C and D as a minimum, plus any other information modules from both the construction (A4-A5) and use stages (B1-B7).	Hot Rolled or Cold Rolled Steel bars or rods for the reinforcement of concrete Hot Rolled Structural Steels (angles, shapes, sections), Sheet Piles, Rails Hot Rolled Steel Flats Cold Rolled Steel Flats Pre-stressed Concrete Steel Wire and Strand Other processed and further worked steels (e.g. Steel fabric)
Cradle-to-Gate(1) with options + Modules A4 & A5	Covering A1-A3, A4 (transport to site) and A5 (further processing / manufacturing)	Pig iron Direct Reduced Iron (DRI) Hot Briquetted Iron (HBI) Steel billets, blooms, slabs and ingots Steel bars, rods and shapes for further processing Hot Rolled Steel Flats Cold Rolled Steel Flats

(1): This type of Type III environmental declaration can only be made when products are considered no longer identifiable at the end of their life as a result of physical and chemical transformation processes that are undergone. Such exemption may be made for semi-products (steel billets, blooms, slabs, ingots etc.) when they are intended to be purchased for general use and the following life cycle stages cannot be estimated.
Pig iron, DRI and HBI are chemically transformed to produce a product by melting and further processing.
Furthermore, Type III environmental declaration for these and similar types of products shall also be allowed if these are physically integrated with other products during installation so they cannot be physically separated from them at end-of-life. These products do not contain biogenic carbon.

4.2.2 Manufacturer Specific and Collective EPD

See Table 3 for manufacturer specific and collective EPD types included in this PCR in accordance with EN 15941 Table 2. Other types of EPDs are excluded from this PCR.

Table 3. Manufacturer Specific and Collective EPD

Manufacturer	Type of product	Description	Examples	Aspect Precision
Manufacturer-Specific EPD (1 manufacturer)	Specific product(1)	Declaration of a specific product from a single manufacturer, a single site and a single manufacturing process.	EPD for a specific steel product produced at a single plant of one manufacturer.	
Collective EPD (from >1 manufacturer, associations, sector)	Specific product(1)	Declaration of a specific product as an average from several manufacturers' plants based on a single manufacturing process.	Declaration of a steel product as an average from plants of a certain number of manufacturers within an association. Calculated as a mean of manufacturing output.	For collective EPD, differences between max/min and mean for GWPtot indicator should be documented in interpretation section. This shall include min/max of each parameter for each life cycle stage.

(1): Different thicknesses are included in one assessment and classed as a single product.

4.3 Comparability of EPD of Products

Following best practice, comparison of the environmental performance of products using EPD information shall only be carried out at the asset (e.g. building) level using the same functional unit, as it should be based on their use in and impacts on the asset.

Comparison at sub-asset level may also be carried out subject to the conditions described in EN 15804+A2 Section 5.3 are fulfilled.

Type III environmental declarations that are not covering all life cycle stages have limited comparability.

4.4 Additional Information

The following two categories of information which are not derived from LCA may be addressed by this PCR and shall be verified by an approved, competent third-party in accordance with relevant standards:

- Additional technical information, consisting of physical data characterising the product's functional performance during the life cycle beyond the product stage of the life cycle, i.e. in construction, use, and end-of-life stages, shall be provided by the manufacturer where applicable. This information is used to support the consistent development of scenarios in respective modules for the evaluation of these life cycle stages at the asset level.
- Additional information on emissions to indoor air, emission to water and soil, according to the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonised testing methods according to the provisions of the respective Technical Committees for European product standards (CEN/TC 351 - Construction Products - Assessment of release of dangerous substances), when available.

4.5 Ownership, responsibility and liability for the EPD

The manufacturer is the sole owner and has liability and responsibility for an EPD.

4.6 Communication formats

CARES has developed a template for business-to-consumer communication and business-to-business communication in line with the requirements of ISO 14025, EN 15804+A2 and EN 15942 available to programme members from the CARES Programme Operator.

EPD produced using this PCR shall be for business-to-consumer communication and business-to-business communication format following the requirements of ISO 14025, EN 15804+A2 and EN 15942 when Type III environmental declarations are intended for, or likely to be used by consumers.

Verification of Type III environmental declarations is mandatory for business-to-consumer communication and business-to-business communication, for which specific requirements for verification by a third-party according to ISO 14025 Clause 9.4 shall apply.

For CARES EPD for products to be used for assets other than construction, CARES has developed a generic template in line with the requirements and guidelines in ISO 14020.

In addition, the interested parties involved in the development of a Type III environmental declaration, or programme for use in business-to-consumer communication, shall include representatives of both consumer interests and environmental interests.

5. PRODUCT CATEGORY RULES FOR LCA

5.1 Life Cycle Stages and their information modules to be included

As specified in Figure 1, the environmental information in a CARES EPD covering all life cycle stages with options shall be subdivided into the following information module groups. The life cycle stages of each product are specified in Table 2.

Modules A1, A2 and A3 may be declared as a single aggregated module A1–A3 or may be declared separately in addition to the aggregated module A1-A3 (see Table A.4 in EN 15942)

In order to evaluate the impacts of the product in the life cycle stages (cradle-to-gate with any other information modules from both the construction (A4-A5) and use stages (B1-B7) plus Modules C1 to C4 and Module D) that depend on the context, scenarios have to be defined to identify the specific conditions and assumptions of the evaluation. This is to ensure that the product data used in this product level assessment are applicable in an asset level assessment. See EN 15978:2011 for more information on building life cycle stages scenario definition for building level assessment.

5.2 Calculation Rules for LCA – General aspects

5.2.1 Functional Unit

In conducting an LCA, a functional unit is a quantified performance of a product system under study, for use as a reference unit for the inputs and outputs of the system. This reference unit enables different product systems capable of performing the same function to be compared. To generate an LCA-based EPD for a product, the functional unit of a product is based on:

- The quantified, relevant functional use or performance characteristic of the product when integrated into an asset, taking into account the functional equivalent of the asset.
- The product's reference service life (See section 5.3.3 of this PCR) or required service life of the asset, as this relates functional performance of a product over a relevant time period (SP).

The assessment of the performance in a functional unit shall follow the requirements in EN 15804+A2 section 6.3.2.2.

5.2.2 Declared Unit

The declared unit shall be applied if a functional unit may not be defined such as when a product may be used when the specific construction application is unknown or where it is known but there exist multiple different construction application scenarios. (see section 4.2.1 for EPD assessment types for which declared unit shall be used)

The declared unit shall be:

- Mass, e.g. 1 tonne (1000 kg) of semi-finished or finished steel product

Where a different unit is declared, information shall be provided on how to convert it to above declared unit.

5.2.3 Reference Service Life (RSL)

The RSL of a product is considered within the context of its use in an asset and is relevant to the use stage (Modules B1-B7) assessment. The RSL depends on the functional performance of the product and the reference conditions of the use stage. The RSL shall be verifiable.

Construction steels such as reinforcing steels and structural steels are embedded in the fabric of the building. Hence the RSL of construction steels are the same as the lifetime of the building itself.

For other steel products, modules Module C & D are not reported and as such, a RSL is not declared unless Module B is included, and a functional unit is used.

See EN 15804+A2 Annex A (normative) for requirements and guidance on determining RSL.

5.2.4 System Boundaries

System boundaries have been established in accordance with the provisions of ISO 14044+A2, clause 4.3.3.4 and EN 15804+A2, clause 6.3.4. This CARES PCR covers the standard types of EPD:

- Cradle-to-gate with Modules C1-C4 and Module D
- Cradle-to-gate with options, Modules C1-C4 and Module D
- Cradle-to-gate with options, Module A4 and A5

The EPD shall present data covering the relevant life cycle stages as illustrated in Figure 1.

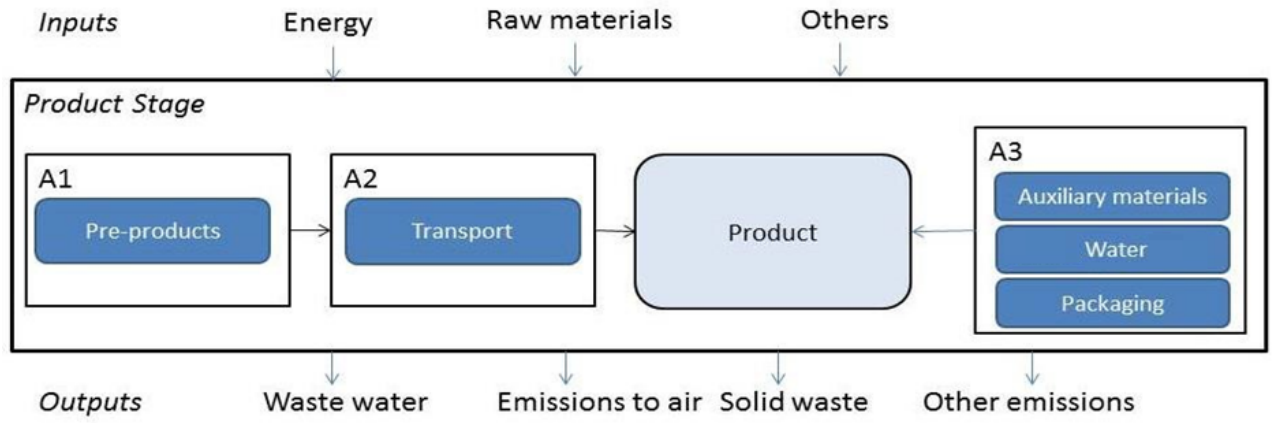
5.2.4.1 Product stage, information modules A1-A3

The product stage shall include the information modules as stated in EN 15804+A2, clause 6.3.5.2. See Table 4 and Figure 2.

Table 4. Product stage

Module	Modelling Requirements
A1	Raw material extraction and processing, biomass production and processing, processing of secondary materials to be used as input excluding relevant waste processing processes. Energy generation processes such as electricity, steam and heat generation from non-renewable sources, and their relevant extraction, refining, transport, energy and other recovery processes from secondary fuels excluding relevant waste processing processes.
A2	Transport of the raw material inputs and any other process inputs to the manufacturing plant and internal transport
A3	The manufacturing of the ancillary materials (e.g. lime), pe-products (e.g. iron ore sinter, pellet, DRI), products, co-products, and all processes and impacts up to the point where materials are no longer considered waste and can be reused, recycled, or disposed of. Any waste generated during manufacturing that does not leave the factory with the final product also included.

Figure 2. LCA system boundaries for Module A1-A3



This stage includes the provision of all materials, products and energy, as well as waste processing up to the end-of-waste state (i.e. no longer considered a waste material, as defined in EN 15804+A2, clause 6.3.5.2) or disposal of final residues during the product stage. In addition to the outputs of the product stage, the system boundary also includes any other output leaving the system that has a value associated with it. Such outputs shall be identified as co-products of the system.

Maintenance of equipment is not included in the LCA except for frequently consumed items which are included in the inventory if they meet the data 1% cut-off rule or may not be excluded according to the criteria in section 5.3.5 of this PCR.

All energy used in offices associated with the running of the manufacturing is included. Head offices, sales offices, R&D etc. are excluded. For renewable energy schemes, See section 5.3.11 of this PCR.

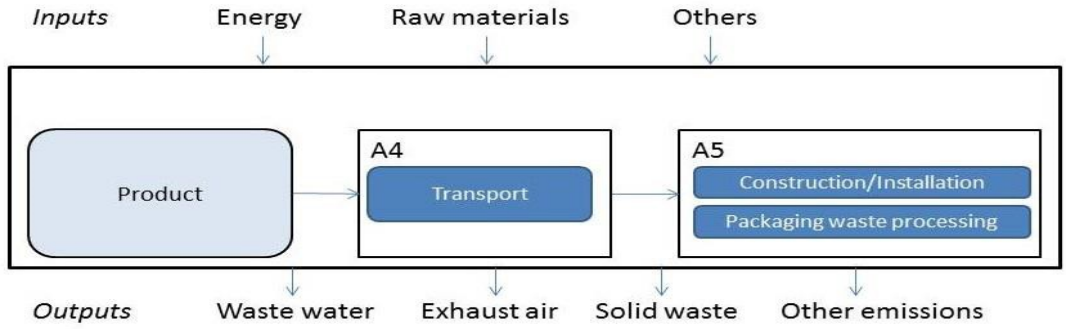
5.2.4.2 Construction process stage, information Modules A4–A5

The construction process stage shall include the information modules as stated in EN 15804+A2, clause 6.3.5.3. See table 5 and Figure 3.

Table 5. Construction stage

Module	Modelling Requirements
A4	Transport of the amount of the DU/FU of the product from manufacturing plant (gate) to the construction/installation site.
A5	Installation of DU/FU of the product, ancillary installation materials, plus disposal of any amount wasted plus A1-A3 for the quantity of product wasted during installation plus the delivery (A4) of this replacement quantity to site. Also includes any storage requirements for the product on site before installation, where applicable.

Figure 3. LCA system boundaries for Module A4-A5



This stage also includes waste processing up to the end-of-waste state or disposal of final residues. In addition, the energy from storage of products, i.e. provision of heating, cooling, humidity control, etc. where applicable may be included where data is available. The transport and installation of the product are dependent on the context of the asset where the Product is used.

For the EPD data to adequately support an asset level assessment, ancillary products and any energy or water required for installation as well as on-site operations for the Product shall be included.

When Module A4 is addressed in the EPD for transport from the manufacturing gate to the construction site, the following information shall be provided to specify the transport scenarios used or to support development of the scenarios at the construction works level:

- the capacity of the truck used in the calculation, which by default is defined by the volume that may be loaded;
- the average distance and capacity utilisation;
- the return transport scenario

Construction waste percentage should be taken from industry averages. References shall be provided such as the waste default scenarios often documented in PCRs, other industry research and/or benchmarks. If a bespoke product specific wastage rate has been determined it shall be appropriately justified.

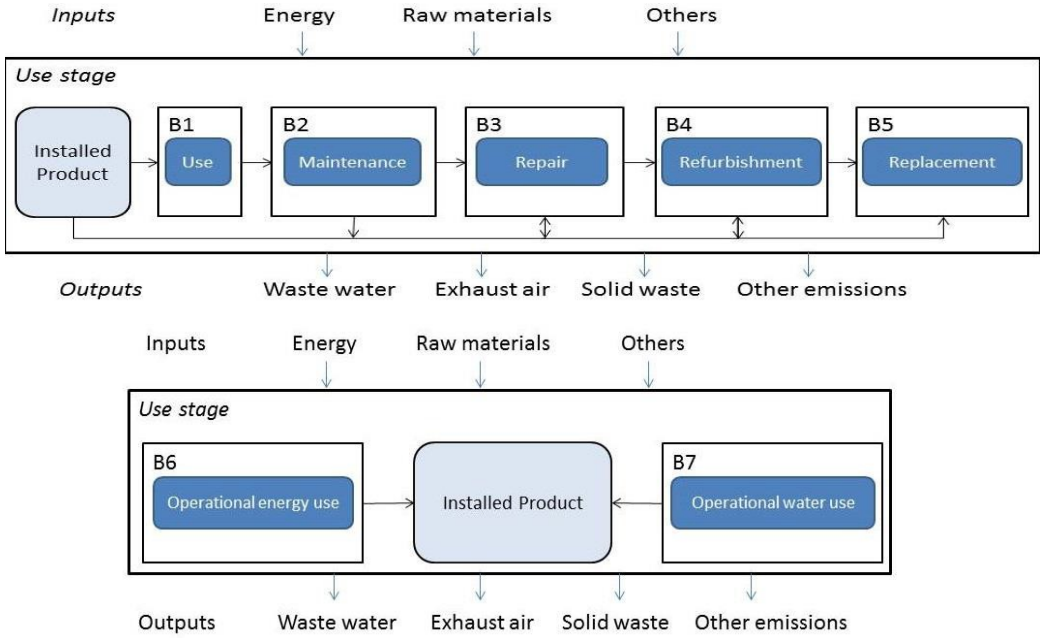
5.2.4.3 Use stage, information Modules B1–B7

The use stage relating to the fabric (Modules B1-B5) and the operation (Modules B6-B7) of the asset over the RSL shall include the information modules as stated in EN 15804+A2, clause 6.3.5.4. See Table 6 and Figure 4.

Table 6. Use stage

Module	Modelling Requirements
B1	Any emissions to the environment during the use of the product's RSL.
B2	Preventative and regular maintenance over the RSL.
B3	Corrective, responsive or reactive repair of the product during the product's RSL.
B4	The replacement of the entire product due to damage over the RSL.
B5	The refurbishment of the entire product as part of a planned or scheduled programme of maintenance, repair and or replacement of a significant part of, or the entire asset in which the product is installed.
B6 and B7	Energy and water use for the operation of the product in the asset over the RSL.

Figure 4. LCA system boundaries for Module B1-B5 and B6-B7.



5.2.4.4 End-of-life stage, information modules C1–C4

As stated in EN 15804+A2, clause 6.3.5.5, the end-of-life stage of a product starts when it is replaced, dismantled or deconstructed from the asset or at the asset's end-of-life and does not provide any further functionality. Dismantling or deconstruction may also include on-site sorting for recovering the product for one or more of reuse, preparing for waste processing and recycling processes.

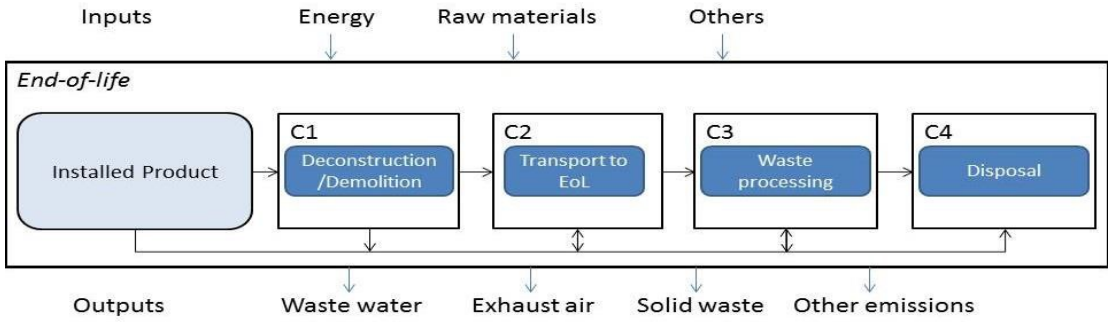
Products which reach the end-of-life during the construction stage (A4-A5) and the use stage (B1–B7) have their end-of-life considered within the life cycle stage in which it arises. See Figure 5.

Table 7: End-of-life stage

Module	Modelling Requirements
C1	Deconstruction / Dismantling / Demolition of the DU/FU of the product from an asset.
C2	Transporting the waste product to sorting/recycling or to end-of-life disposal site.
C3	Sorting, collection, processing of waste product for the different routes (reuse, recycling, energy recovery, final disposal) at a waste processing facility.

C4	Final disposal at disposal site, including any required pre-treatment and the management of the disposal facility.

Figure 5. LCA system boundaries for Module C1-C4



'Steel scrap' is a metal scrap and shall cease to be waste when it is used as input for the recovery operation at the secondary manufacturing processes such as Electric Arc Furnace (EAF) steelmaking. Once steel scrap is collected for reuse or recycling it is considered to have reached the end-of-waste state. See also Council Regulation (EU) No 333/2011.

During the end-of-life stage, all outputs from the system are considered to be waste until they reach the end-of-waste state. The end-of-waste state is reached when any such material or output complies with all the following criteria (See EN 15804+A2, clause 6.3.5.5):

- It is (commonly) used for specific purposes.
- There is an existing market or demand for it.
- Meets the existing legislation for end-of-waste.
- Its use will not lead to overall adverse effects.

The benefits and loads from the use of end-of-waste state materials in another product system (i.e. beyond the system boundary) are reported in Module D. The materials for energy recovery are materials that have reached the end-of-waste state and are used in an energy recovery process with an energy efficiency rate higher than 60%.

The potential benefits from utilising energy arising from a waste disposal process in information Module C4, e.g. incineration of waste may also be presented in Module D, using current average substitution processes. See EN 15804+A2, clause 6.3.5.5.

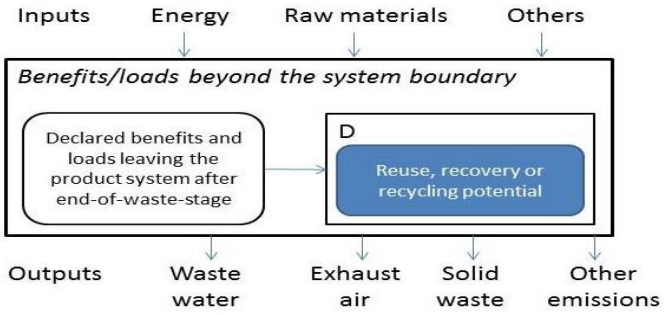
The recovered steel is transported for recycling while a small portion is assumed to be unrecoverable and remains in the rubble which is sent to landfill. See prEN 17662 for default factor sources for recovery rates.

5.2.4.5 Benefits and loads beyond the product system boundary, information Module D

The stage shall include the information module as stated in EN 15804+A2, clause 6.3.5.6.

Module D covers the net benefits and loads arising from the reuse and recycling of products or the recovery of energy from end-of-waste state materials resulting from the construction stage (A4–A5), the use stage (B1–B7) and the end-of-life stage (C1–C4). See Figure 6.

Figure 6. LCA system boundaries for Module D



Examples of secondary materials include recycled steel scrap. Steel may be recycled indefinitely with a process efficiency greater than 90%, without any degradation in quality. In the life cycle of steel from the secondary manufacturing processes (EAF and IF) using steel scrap only, more scrap is required as input to the system than is currently recovered at end of life. In BF-BOF and DRI manufacturing processes, a large amount of steel scrap is generated over the life cycle as the iron ore is a virgin source and there is a high end of life recycling rate for all steel products.

Module D is applied only to products/materials which substitute other materials or fuels in another product system (e.g. as secondary materials) and have reached their end-of-waste state. Module D is calculated based on the net output flow of products/materials crossing the system boundary. This net output flow is calculated by adding all product/material flow crossing the system boundary as an input (Module A - purchased secondary material and fuel).

Module D shall only be calculated based on a specified scenario which is consistent with any other scenario for waste processing and is based on current average technology or practice. See EN 15804+A2, clause 6.4.3.3. The reuse, recovery or recycling scenario shall be clearly stated in the EPD.

Additionally, 100% scenarios (100% recycling, 100% landfill and 100% re-use) should be given where applicable. This supports users of the EPD to adjust the data based on their own market-based scenarios.

Double counting shall be avoided by excluding flows of co-products, and by calculating the net output flows of the secondary material or fuel from the product system.

In manufacturing of steel via using recyclable steel scrap as raw material melted in Electric Arc Furnace (EAF), the balance between total scrap arisings recycled from fabrication, installation and end of life and scrap consumed by the manufacturing

process (internally sourced scrap is not included in this calculation). These benefits and loads are calculated by including the burdens of recycling and the benefit of avoided primary production. Thus, more scrap is required as input to the system than is recovered at end of life. The net effect of this is that module D mainly models the burdens associated with the scrap input (secondary material) to the steelmaking process.

Whereas in EAF process using Direct Reduced Iron (DRI) or in Blast Furnace (BF) - Basic Oxygen Furnace (BOF) process using DRI and iron ore respectively from primarily virgin sources, a large amount of net scrap is generated over the life cycle and there is a very high end of life recycling rate for steel products. The net effect of this is that module D mainly models the credits associated with the scrap output. (see worldsteel Association - Life cycle inventory methodology report for steel products)

5.2.5 Criteria for the exclusion of inputs and outputs

The criteria for the exclusion of inputs and outputs are to be applied as stated in clause 6.3.6 of EN 15804+A2.

The inventory process gathers all the inputs to the plant that are associated with a product, including product ingredients, packaging materials and consumable items. For many processes, a large number of substances and materials are used in very small quantities, and it is unrealistic to gather data on all of these.

However, it is important that significant environmental effects are not omitted by ignoring low mass flows of substances. Analysis may later reveal that these substances do not significantly affect the overall result, but it is important that data is provided to enable this conclusion to be drawn. To achieve this, the following conventions are applied:

- In case of insufficient data or data gaps for a unit process, the cut-off criteria shall be 1% of the total mass input of that process and 1% of energy usage. Cut-off shall not be used to hide data. Proxy data may be used in the case of missing data.
- Mass balance checks ensure the inputs stated are sufficient to produce all the outputs, including waste arising. Whereas EN 15804+A2 allows for a maximum of 5% deficit, this CARES PCR recommends that where there are insufficient inputs to account for all outputs, the input inventories should be adjusted proportionally to 100% to balance this deficit.

5.2.6 Selection of data

As a preferred choice for specific product EPDs covered by this PCR, generic data or specific data derived from specific production processes should be used in calculating the EPD. The following rules shall also apply:

- EPD shall be calculated using specific data derived from specific processes that the producer has influence over, which may also include upstream processes where available.

- Generic data shall be used for the processes that the producer cannot influence in upstream processes (e.g. raw material production) and downstream processes (e.g. installation, use, end-of-life processes).
- For the calculation of EPDs covering use stage and/or end-of-life stage, generic data used for downstream processes shall be based on the additional technical information as described in 4.4. This data should be based on same additional technical information when both use, and end-of-life stages are covered by the EPD.
- The representativeness of the generic data for the technologies, geographical coverage and time period shall be reported in the project report. (see also EN 15804+A2 Section 6.3.7 and Table 1 and EN 15941 for the selection and use of generic data).

5.2.7 Data quality requirements

In accordance with ISO 14044+A2, clause 4.2.3.6, the quality of the data used to calculate the EPD shall be addressed in the project report. In addition, the specific requirements listed in EN 15804+A2, clause 6.3.8 and in EN 15941, clauses 5.2 and 5.3 shall apply for products. The most current, representative and available primary data shall be used to calculate an EPD. Specify generic data covering at least 80% of each core impact over A1-C4 or else all generic data to be assessed in terms of data quality using either Table E.1 or E.2 of EN 15804+A2.

The manufacturer-specific data shall cover a manufacturing period of 1 year and this data period shall be documented, and deviations from this data range shall be justified. The manufacturer-specific data to represent processes shall reflect the physical reality for the declared product or product group by as far as possible. Generic or specific data used for the calculations shall have been updated within the last 5 years for manufacturer-specific data and within the last 10 years for generic data. Generic data older than 10 years shall not be used.

Data quality assessment of EPD tools shall cover all relevant datasets likely to have an impact for the potential products/sites being assessed with the EPD tool.

5.2.8 Developing product level scenarios

Realistic and representative scenarios shall be based on relevant technical information and shall support the calculation of the information modules as shown in Figure 1 and the assessment of the environmental performance of an asset (e.g. building level assessment in construction), use and end-of-life stages. See EN 15804+A2, clause 6.3.8: a scenario shall be realistic and representative of one of the most probable alternatives. If there are different applications, the most representative one shall be declared.

In the absence of technical data or references that support a manufacturer-specific scenario, industry average values shall be taken from industry recognised resources.

5.2.9 Units

International System of Units (SI) units shall be used. Exceptions are:

- Resources used for energy input (kWh or MJ)
- Temperature (degrees Celsius)
- Time (minutes, hours, days, years)
- Transport (tonnes, kilometres)

5.2.10 Imports

The inputs and outputs attributed to imports of raw materials, semi-finished, finished materials and products are, wherever possible, based upon supply chain specific information. Where this is not available generic data used shall be global and include the energy of transportation. (see EN 15941 for the selection and use of generic data)

Where data for the material/product are not available, the input and output data are based upon the most comparable product (internationally or domestically produced) with an addition made for the transportation from the country of origin.

5.2.11 Treatment of energy supply

When calculating impacts associated with energy supply, the following shall be chosen in this priority with reference to EN 15941 Annex E:

- Specific electricity mix as generated, or purchased from an electricity supplier, demonstrated by a contractual instrument such as Guarantee of Origin (GO), Power Purchase Agreement (PPA) or similar.
- Residual electricity mix on the market (market boundary may be considered as country) if no contractual instrument such as GO can be demonstrated
- Electricity consumption mix on the market. This option shall not be used for electricity used in processes over which the manufacturer has direct control.

When calculating impacts associated with renewable energy supply, there shall be a system with full transparency and comply with the following:

- When the supplier is able to guarantee through a contractual instrument, such as a GO or PPA, that the supplied energy in the place where data applies to, is covered by such an instrument, the requirements in ISO 14067 Clause 6.4.4.9.4 and EN 15941 Annex E.2.1.2 shall be followed in the quantification LCA in which the requirement for a recognized registry for the tracked flow (supplied energy provided with a contractual instrument) is also included. As per EN 15941 Annex E.2.1.2 the EPD owner shall therefore either:
    - provide a written guarantee to the EPD Programme Operator to continue to cancel contractual instruments to cover their relevant energy consumption for the validity of the EPD and to notify the EPD Programme Operator if they change use of any contractual instruments during the validity of the EPD, or

- provide evidence to the EPD Programme Operator of ongoing cancellation of contractual instruments for the period of validity of the EPD.

Evidence of renewable energy purchase shall be externally validated.

If these requirements are not fulfilled, then the residual mix shall be used for modelling.

In failure of the EPD owner of the above information, the terms in Clause 7.2 of this PCR applies.

- Double counting shall be avoided. This means that all electricity generation in all EPD without GO shall be calculated with residual mix.
- For any modules beyond the manufacturing gate for which GOs are not applied, the consumption mix shall be used.
- The use of consumption mixes for all electricity generation may be communicated as additional information with clear descriptions.

5.2.12 Treatment of Carbon Offset Schemes

Benefits associated with carbon offset schemes shall not be included in EPD conducted to this PCR.

5.2.13 Treatment of Chain of Custody

The CARES Product Certification schemes shall have a methodology, physical and digital traceability system (e.g. CARES Cloud - https://cares.cloud/) accounting unit and levels (company, site-specific and cast/batch).

This PCR uses Identity Preserved and Segregated chain of custody models in accordance with ISO 22095.

5.3 Inventory Analysis

5.3.1 Collecting data

Data collection shall follow the guidance provided in ISO 14044+A2, clause 4.3.2.

In addition to manufacturing process data (covering 1 year of manufacturing, deviations from this period shall be justified), manufacturers shall provide a process flow diagram, including any major transportation stages with a clearly marked system boundary to indicate included and excluded processes.

The total mass flowing into the system boundary shall be accounted for with an equivalent mass flow out of the system boundary. The material input and output, the water use, and the energy consumption data should be checked for appropriateness compared to known systems. Data quality assessment should be as per the requirements of EN 15804 and EN 15941.

5.3.2 Calculation procedures

The calculation procedures described in ISO 14044+A2 and EN 15804+A2 shall apply. The same calculation procedure shall be applied consistently throughout the study.

See Section 4.2.4 for EPD assessment types.

5.3.3 Allocation of input flows and output emissions

5.3.3.1 Allocation of material and energy flows

Allocation procedures shall be according to ISO 14044+A2, clause 4.3.4, and the rules stated in EN 15804+A2 are based on the ISO 14044 guidance. However, the basic procedures and assumptions used in ISO 14044+A2 have been refined in order to reflect the goal and scope of EN 15804+A2 and EN 15643-2:2011.

For co-products, the materials, energy flows and associated emissions are allocated to the different products by process subdivision, appropriate physical property, or on the basis of revenue contribution.

Revenue is defined as the total income generated from the sale of all the outputs. ΔR is the difference in revenue generated by the co-products and %R is percentage of revenue generated by individual co-products.

Market price information may be based on the annual average price obtained by the EPD holder based on sales of any co-products during the data collection period, where available, or otherwise may be based on estimated price information obtained by the EPD holder through market research conducted using verifiable sources.

Where ΔR is low (<25%) physical allocation (e.g. mass, volume) shall be applied. Where ΔR is greater than 25% economic allocation shall be applied.

This allocation hierarchy also applies to process wastes from the product stage (A1–A3), which are sold on for subsequent reuse or value recovery, as process wastes are considered as co-products if they have reached the end-of-waste state. Any waste processing that occurs in any module of the product system under study is included in the system boundary of the respective module. Therefore, this allocation procedure is not applicable to wastes from the other stages (A4–C4). The net load and benefits of reuseable products, recyclable materials and/or useful energy carriers leaving a product system may be reported in Module D.

5.3.3.2 Allocation procedure for future material and energy recovery

The end-of-life system boundary of the product system is set where the system outputs (e.g. materials, products or construction elements) have reached the end of waste state. When a material leaves the system boundary at the end-of-waste state in Modules A4–C4, the potential loads and benefits of net output flows (See Section in 5.2.4 of this PCR, and EN 15804+A2, clause 6.4.3.3) of reusable products, recyclable materials and/or useful energy carriers leaving the product system shall be declared in Module D based on a specified scenario (See EN 15804+A2, clause 6.4.3.3). This

scenario shall be consistent with any other scenario for waste processing and be based on current average technology or practice.

The balance between total recyclable scrap arisings recycled from downstream processes (A4 to B7) and end of life and scrap consumed by the manufacturing process (internally sourced scrap is not included in this calculation). These benefits and loads are calculated by including the burdens of recycling and the benefit of avoided primary production.

The method for calculating the net load and benefits is detailed in clause 6.4.3.3 of EN 15804+A2.

5.3.3.3 Information on biogenic carbon content

The biogenic carbon content quantifies the amount of biogenic carbon in a construction product leaving the factory gate, and it shall be separately declared for the product and for any accompanying packaging.

If the mass of biogenic carbon containing materials in the product is less than 5 % of the mass of the product, the declaration of biogenic carbon content may be omitted. If the mass of biogenic carbon containing materials in the packaging is less than 5 % of the total mass of the packaging, the declaration of the biogenic carbon content of the packaging may be omitted.

5.4 Impact Assessment

As specified in EN 15804+A2 clause 6.5, the impact assessment shall be carried out for the following core impact categories using baseline characterisation factors listed in Annex C of EN 15804+A2 and optional additional impact categories listed in Table 9:

- Climate change - total
- Climate change - fossil
- Climate change - biogenic
- Climate change - land use
- Ozone Depletion
- Acidification
- Eutrophication aquatic freshwater
- Eutrophication aquatic marine
- Eutrophication terrestrial
- Photochemical ozone formation
- Depletion of abiotic resources - minerals and metals
- Depletion of abiotic resources - fossil fuels
- Water use

The project report and EPD shall include the relevant disclaimers for core and optional additional impact categories.

Life Cycle Assessment study as per this PCR shall be performed in accordance with the requirements of EN 15804 and JRC characterization factors Environmental Footprint (EF) version 3.1 which is available at the following web-link:

https://eplca.jrc.ec.europa.eu/LCDN/developerEF.html

6. CONTENT OF EPD

6.1 Declaration of general information

The EPD content shall be in line with the requirements and guidelines in ISO 14025; shall be verifiable, accurate, relevant and not misleading; and shall not include rating, judgements or direct comparison with other products. The EPD content shall be verified by an independent, competent and impartial person or body.

EPD issued using this PCR shall fulfil the formatting requirements in Section 6.6 of this PCR and shall include the parameters identified in EN 15804+A2, clause 7.1 on declaration of general information. EPDs should be published in English but may also be published in additional languages.

6.2 Declaration of parameters derived from LCA

To illustrate the product system studied, the EPD shall contain a simple flow diagram of the processes included in the LCA. They shall be sub-divided at least into the life cycle stages of the product: manufacturing, and if applicable construction, use and end-of-life (See Figure 1). See EN 15804+A2, clause 7.2.1. The environmental impacts shall be declared and reported using the parameters and units shown in Table 8 below.

Table 8: Parameters describing environmental impacts

Impact Category	Parameter	Unit
Climate change - total	Global warming potential total, (GWP-total)	kg CO_2 eq.
Climate change - fossil	Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq.
Climate change - biogenic	Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq.
Climate change - land use	Global Warming Potential land use and land use change (GWP-luluc)	kg CO_2 eq.
Ozone Depletion	Depletion potential of the stratospheric ozone layer, ODP	kg CFC 11 eq.
Acidification	Acidification potential, Accumulated Exceedance (AP)	mol H^+ eq.

Eutrophication aquatic freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	kg P eq.
Eutrophication aquatic marine	Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine)	kg N eq.
Eutrophication terrestrial	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	mol N eq.
Photochemical Ozone Creation	Formation potential of tropospheric ozone, (POCP)	kg NMVOC eq.
Depletion of Abiotic Resources - minerals and metals	Abiotic depletion potential for nonfossil resources (ADP-minerals&metals)	kg Sb eq.
Depletion of Abiotic Resources - fossil fuels	Abiotic depletion potential for fossil resources, (ADP-fossil)	MJ, net calorific value
Water use	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	m^3 world eq. deprived
Particulate Matter emissions	Potential incidence of disease due to PM emissions (PM)	Disease incidence
Ionizing radiation, human health	Potential Human exposure efficiency relative to U235 (IRP)	kBq U235 eq.
Eco-toxicity (freshwater)	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe
Human toxicity, cancer effects	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh
Human toxicity, non-cancer effects	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh
Land use related impacts/ Soil quality	Potential soil quality index (SQP)	dimensionless

6.2.1 Other parameters

The following environmental information, describing resource use, waste and other output flows, which is derived from LCI, but not assigned to the impact categories listed in Table 8, shall be included in the EPD as shown in Table 9 below.

Table 9: Other parameters (combined for ease of presentation)

Parameter	Parameter	Unit
Parameters describing resource use	Use of renewable primary energy excluding renewable primary energy resources used as raw materials, PERE	MJ, net calorific value
	Use of renewable primary energy resources used as raw materials, PERM	MJ, net calorific value
	Total use of renewable primary energy resources, PERT	MJ, net calorific value

	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials, PENRE	MJ, net calorific value
	Use of non-renewable primary energy resources used as raw materials, PENRM	MJ, net calorific value
	Total use of non-renewable primary energy resources, PENRT	MJ, net calorific value
	Use of secondary material, SM	kg
	Use of renewable secondary fuels, RSF	MJ, net calorific value
	Use of non-renewable secondary fuels, NRSF	MJ, net calorific value
	Net use of fresh water, FW	m^3
Parameters describing waste to disposal	Hazardous waste, HWD	kg
	Non-hazardous waste, NHWD	kg
	Radioactive waste disposed (total low, intermediate and high-level waste), RWD	kg
Parameters describing other output flows	Components for reuse, CRU	kg
	Materials for recycling, MFR	kg
	Materials for energy recovery, MER	kg
	Export energy, EE	MJ per energy carrier
Biogenic Parameters	Biogenic Carbon Content, product	kg Carbon
	Biogenic Carbon Content, packaging	kg Carbon

For additional guidance, See NOTES in clauses 7.2.3, 7.2.4 and 7.2.5 in EN 15804+A2.

The values presented in the results section of an EPD (covering both the environmental parameters in Table 8 and the other parameters in Table 9) generated using this PCR shall be using 3 significant figures, and shall be consistent throughout the results section. These values shall be per declared or functional unit. In the absence of values, the following information shall be entered as appropriate:

- MND: 'Module not declared', for modules that have simply not been declared in the EPD and shall not be used for a mandatory module.
- AGG: 'Aggregated', refers to an aggregated value, applicable only to results for A1 to A3.

Where a zero (0) value is entered this shall be for a parameter that has been assessed and evaluated to give a zero result.

6.3 Scenarios and additional technical information

The selection of scenarios in the life cycle stages should reflect the specific conditions and assumptions that support the use of the product data in both the product level and in an asset level assessment (See Figure 1 in this CARES PCR).

These scenarios are for optional life cycle stages in a cradle-to-gate with options EPD,

and if these optional stages are declared then the scenarios shall be specified and included in the EPD.

Additional technical information supporting scenario development that is declared shall comply with EN 15804+A2 clause 7.3 and shall be declared separately from the LCA derived parameters. Tables 10-15 in EN 15804+A2 provide the information on scenarios that shall be provided if the module is reported. If the module is not reported, the scenario information may still be provided.

6.4 Additional information on emissions to indoor air, soil and water during the use stage

Additional information on emissions to indoor air, soil and water during the use stage (e.g. runoff water for products outside such as roofs and cladding) for products exposed to interior spaces of the asset shall be required when horizontal measurement standards are published by CEN/TC 351, as stated in EN 15804+A2 clause 7.4.

6.5 Aggregation of information modules

The indicators declared in the individual information modules of a product life cycle A1-A5, B1-B7, C1-C4 and Module D as described in Figure 1 shall not be added up to give sub-total results for the Modules A, B, C or D respectively. As an exception, information Modules A1-A3 may be aggregated to give results for the product stage – the underlying data for these modules are not based on scenarios.

6.6 Format of CARES EN 15804 EPD

The CARES EPD template is available from the Programme Operator for members and applicants of the CARES EPD Programme.

In addition to the requirements for general information to be declared in the EPD described in EN 15804+A2 clause 7.1, a CARES EPD shall include the Information Transfer Matrix (ITM) described in Annex A (normative) of EN 15942, which is a standardised part of EPD communication. The requirements in EN 15942 clause 6 on formatting apply to both electronic and paper versions of a CARES EPD, including the following:

- The information in the EPD shall not be misleading.
- The EPD information shall be accurately placed in the unique position as identified in the ITM.

The EPD shall be provided in both an electronic document format such as pdf and in a machine-readable format such as EPD + International Reference Life Cycle Data System (ILCD) format in xml.

7. PROJECT REPORT

The project report summarises the project documentation in a systematic and comprehensive way in order to support effective verification of the EPD.

The project report shall record how the LCA based on ISO 14044+A2, clause 5.2 and EN 15804+A2, clauses 8.2 and 8.3.

The project report supports the data published in the EPD and sets out how the EPD was prepared in accordance with this PCR, including a list of all assumptions made. The project report shall record that the LCA based information and the additional information as declared in the EPD meet the requirements of EN 15804+A2. It shall be made available to the verifier with the requirements on confidentiality stated in ISO 14025. The project report is not part of the public communication.

7.1 Data availability for verification

To facilitate verification, it is considered good practice to make the following information available to the verifier, taking into account data confidentiality according to EN 15804+A2, clause 8.4:

a) Analysis of material and energy flows to justify their inclusion or exclusion, including mass and water balance.

b) Quantitative description of unit processes that are defined to model processes and life cycle stages of the declared unit.

c) Attribution of process and life cycle data to datasets of an LCA software (if used).

d) LCIA results per modules of unit processes.

e) LCIA results per manufacturing plant/product if generic data is declared from several plants or for a range of similar products.

f) Documentation that substantiates the percentages and figures used for the calculations in the end-of-life scenario and the RSL values.

g) Documentation that substantiates the percentages and figures (number of cycles, prices, etc.) used for the calculations in the allocation procedure, if it differs from the PCR.

7.2 Validity of EPD

EPD are valid for a maximum of 3 years from the date of issue, after which the EPD shall be reviewed and verified.

A significant change is deemed to be a change in the product composition or manufacturing process or energy/electricity (use of GO or residual mix) which results in a change of greater than +/- 10% of any one of the declared parameters of the EPD. The Programme Operator shall be notified of any significant change and EPD to be re-calculated and re-issued.

8. NORMATIVE REFERENCES

The following standards are relevant to the application of this programme. Unless agreed otherwise during the application process, the latest version (inclusive of its updated amendments) of the standards will apply.

- EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- EN 15643:2021 Sustainability of construction works — Framework for assessment of buildings and civil engineering works
- EN 15978:2011, Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method
- EN 15941:2024, Sustainability of construction works. Data quality for environmental assessment of products and construction work. Selection and use of data
- EN 15942:2021, Sustainability of construction works – Environmental product declarations – Communication formats: business to business
- ISO 14020:2023 - Environmental statements and programmes for products. Principles and general requirements
- ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework
- ISO 14044+A2:2020, Environmental management – Life cycle assessment – Requirements and guidelines
- PD CEN/TR 16970:2016, Sustainability of construction works. Guidance for the implementation of EN 15804
- ISO 14067:2018, Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- ISO 22095:2020, Chain of custody - General terminology and models
- EN 16757:2022, Sustainability of construction works – Environmental product declarations – Product Category Rules for concrete and concrete elements.
- Council Regulation (EU) No 333/2011 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council
- EN 17610:2022, Building hardware — Environmental product declarations — Product category rules complementary to EN 15804 for building hardware.

Annex A – CARES PCR Review

CARES EPD Programme Product Category Rules Peer Review

This peer review was on the first issue of the PCR for CARES EPD Programme published in February 2025.

Peer Review Statement

The following experts in LCA, buildings, infrastructure and construction supply chains have undertaken a critical review of the CARES EPD Programme Product Category Rules (PCR) and issued the following statement:

- Jane Anderson, Director, ConstructionLCA Limited
- Peter Shonfield, Global Product Sustainability Director, ERM
- Dave Knight, Director, One Planet Limited

The review was performed according to Clause 8.1.2 of ISO 14025:2006(E), taking into consideration the EN 15804:2012+A2:2019 standard. The review considered the Product Category Rules, the General Programme Instructions and the EPD template, to ensure that:

- the PCR has been developed in accordance with the ISO 14040 series of standards and, specifically, in accordance with 6.7.1 of ISO 14025;
- PCR complies with EN 15804:2012+A2:2019;
- the PCR fulfils the General Programme Instructions (GPI); and
- the LCA-based data, together with the additional environmental information prescribed by the PCR, give a description of the significant environmental aspects of the product category.

The panel made comments on the documents and CARES responded with amended documents, resulting in the PCR, GPI and EPD Template published in February 2025. The panel confirms that the PCR and associated documents are in compliance with the referenced standards and comply with the GPI, and agree that the EPD give a description of the significant environmental aspects of the product category. The panel commends CARES for its work and its willingness to take account of and incorporate the panel's comments throughout the process.

Jane Anderson

Dr Jane Anderson
PCR Review Panel Chair
Date: 6 February 2025

The comments from the PCR Review Panel and statements of independence and competence for the members are available from CARES on request.