



Product Category Rules – Construction Products

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Table of Contents

1.0 INTRODUCTION	5
2.0 SCOPE	5
2.1 Geographical Detail	6
2.2 EPD Validity	6
2.3 Intended Audience	7
3.0 PCR REVIEW	7
3.1 PCR Review Panel	8
3.2 Public Availability and Transparency	8
4.0 NORMATIVE REFERENCES.....	9
5.0 TERMS AND DEFINITIONS	9
6.0 GENERAL CONDITIONS	13
6.1 PCR Structure	13
6.2 EPD Types.....	14
6.2.1 Multiple Products EPD	16
6.2.2 Sector EPD.....	18
6.3 Comparability of EPD of Construction Products	19
6.4 Additional Environmental Information	19
6.4.1 General Aspects.....	19
6.4.2 Additional Impact Indicators.....	19
6.5 Additional Information.....	20
6.6 Communication Template	20
7.0 LCA DEVELOPMENT.....	20
7.1 Product Category	21
7.2 LCA Modelling Framework.....	21
7.2.1 Modelling Approach.....	21
7.2.2 Electricity Modelling.....	22
7.2.3 Specific Rules per EPD Type.....	23
7.3 LCA Stages and Information Modules.....	23
7.3.1 General.....	23
7.3.2 Product Stage (A1–A3)	24
7.3.3 Construction Process Stage (A4–A5)	26
7.3.4 Use Stage (B1–B5).....	27
7.3.5 Use Stage (B6–B7).....	28
7.3.6 End-of-Life Stage (C1–C4)	29
7.3.7 Benefits and Loads Beyond the System Boundary (D).....	29
7.4 Calculation Rules for the LCA.....	30
7.4.1 Functional or Declared Unit.....	30

7.4.2 Reference Service Life (RSL).....	31
7.4.3 System Boundaries.....	32
7.4.4 End of Life Stage.....	33
7.4.5 Cut-Off Criteria (Criteria for Inclusion and Exclusion)	34
7.4.6 Information on Biogenic Carbon Content.....	36
7.4.7 Selection of Data	36
7.4.7.1 Selection of Electricity Data	38
7.4.7.2 Transmission and Distribution Losses.....	39
7.4.8 Data Quality Requirements	39
7.4.8.1 Foreground and Data Requirements.....	40
7.4.8.2 Background Data Requirements.....	40
7.4.8.3 Data Age Thresholds.....	40
7.4.8.4 Data Uncertainty and Conservatism	41
7.4.8.5 Documentation and Verification.....	41
7.4.9 Developing Product Level Scenarios.....	41
7.5 Inventory Analysis	43
7.5.1 Collection of Data.....	43
7.5.2 Allocation of Input Flows and Output Emissions.....	44
7.5.2.1 General.....	44
7.5.2.2 Co-Product Allocation.....	44
7.6 Impact Assessment.....	45
7.6.1 General.....	45
7.6.2 Core Environmental Impact Indicators.....	46
7.6.3 Additional Environmental Impact Indicators	46
7.6.4 Primary Energy Use Indicators Calculation Methodology.....	47
7.7 Biogenic Carbon Calculation Methodology	49
8.0 CONTENTS OF THE EPD.....	51
8.1 Declaration of General Information	51
8.2 Declaration of Environmental Parameters.....	51
8.2.1 General.....	51
8.2.2 Rules for Declaring LCA Details	52
8.2.3 Indicators Describing Environmental Impacts.....	52
8.2.4 Indicators Describing Resource Use.....	53
8.2.5 Information on Biogenic Carbon Content.....	53
8.3 Scenarios and Additional Technical Information.....	53
8.3.1 General.....	53
8.3.2 A4–A5 Construction Process Stage.....	53
8.3.2.1 A4–Transport from Production Site to the Construction Site	54
8.3.2.2 A5–Installation.....	54
8.3.3 B1–B7 Use Stage	54
8.3.4 C1–C4 End-of-Life.....	54
8.4 Additional Information.....	54
8.4.1 Release of Dangerous Substances–Indoor Air	54
8.4.2 Release of Dangerous Substances–Soil and Water	54
8.4.3 GHG Emissions from Electricity Use in Manufacturing (A3).....	55
8.4.4 Hazardous Substances and Content Declaration	55
8.4.5 Carbon Footprint–Optional.....	55



8.4.6 Additional LCIA Indicators –Optional.....	56
8.5 Aggregation of Information Modules.....	56
9.0 ABBREVIATIONS.....	56
10.0 REFERENCES.....	57
11.0 DOCUMENT REVISION HISTORY.....	58

1.0 INTRODUCTION

The guidelines in this document are intended for organisations preparing Environmental Product Declarations (EPDs) for construction materials and services. These include construction components, building products, raw materials, intermediate products, and combined technical systems used in any type of building or civil engineering work. For the purpose of this PCR, such components and systems are considered construction products.

The objective of this PCR is to provide clear and consistent instructions for conducting Life Cycle Assessments (LCAs) for construction products, ensuring comparability and harmonised methodology across product groups. The modularity principle is applied so that each EPD can serve as an information module for building-level assessments.

This PCR is prepared to be used together with the General Programme Instructions (GPI) of the relevant EPD programme and with key normative standards (for example EN 15804 and ISO 21930), and it includes specifications where required to align with current programme and sector rules. Detailed methodological rules and additional requirements are provided in the subsequent sections of this document.

2.0 SCOPE

The purpose of this PCR is to provide clear and consistent instructions for preparing EPDs for construction products and services. This PCR clarifies the methodological and reporting requirements for LCA studies used to develop EPDs and provides guidance for including additional information where necessary. These core rules apply to all construction products as defined in EN 15804:2012+A2:2019.

The structure of this document follows the modular framework of EN 15804. This PCR shall be used together with the General Programme Instructions (GPI) for EPD of the International Climate Intelligence System (ICIS). Users must have access to EN 15804, ISO 21930, and the ICIS EPD GPI when preparing an EPD under this PCR.

In accordance with EN 15804, the following EPD types are permitted for construction products;

- a) Cradle-to-gate with modules C1–C4 and module D (A1–A3 + C1–C4 + D)
- b) Cradle-to-gate with options, including modules C1–C4, module D, and optional modules (A1–A3 + C + D + selected A4–A5 and/or B1–B7)
- c) Cradle-to-grave and module D (A1–A5 + B1–B7 + C1–C4 + D)
- d) Cradle-to-gate (A1–A3)
- e) Cradle-to-gate with options (A1–A3 + selected A4–A5)

The EPDs type "d" and "e" can only be used if all three of the following conditions are met:

- The product or material cannot be physically separated from other products after installation (at the end of life).

- The product or material is no longer recognizable after a physical or chemical change at the end of life.
- The product or material does not contain biogenic carbon.

If the packaging contains more than 5% biogenic carbon, module A5 must be included to account for emissions or removals associated with biogenic carbon flows in accordance with EN 15804:2012+A2:2019 rules.

2.1 Geographical Detail

This PCR can be applied globally in accordance with EN 15804:2012+A2:2019/AC:2021 and the international standard ISO 21930:2017. EPDs developed under this PCR shall represent the geographical location(s) of production as accurately as possible.

Life Cycle Inventory (LCI) data used in the LCA shall reflect the actual manufacturing site(s) where production takes place. When site-specific data is not available, the use of representative regional or national datasets is permitted, provided that their geographical relevance is justified and documented in the LCA report.

The EPD shall clearly state the geographical validity of the results (e.g., country, region, or market area). Any limitations regarding geographical representativeness, including the use of proxy datasets or generic background data, shall be transparently declared.

For EPDs covering multiple production sites or regions, all applicable locations shall be listed, and the approach used to combine data (e.g., averaging, weighting by production volume, or worst-case selection) shall be documented and justified in accordance with EN 15804 requirements.

2.2 EPD Validity

An EPD developed under this PCR takes effect on the issue date indicated on the front page. Unless the EPD owner defines a shorter duration, or the declaration is replaced or discontinued earlier, the EPD remains in force for a maximum period of five (5) years from that date.

The EPD owner is responsible for maintaining the accuracy and relevance of the declaration throughout its active period. A new version of the EPD shall be prepared and verified whenever identified errors or subsequent changes to the product system, background data, or operating conditions materially affect the declared results.

Such an update is mandatory where any of the following conditions apply:

- the combined GWP-GHG or GWP-total values, evaluated across all reported life cycle stages, increase by ten percent (10%) or more compared to the published results; or
- the declared product description no longer reflects actual production or performance, including cases such as:
 - relocation or addition of production facilities;
 - modification of manufacturing methods or technologies;

- changes in service life, functional performance, or intended use;
- expansion of product scope within a multi-product declaration; or
- revisions to material composition, content disclosure, or reported supplementary information.

In addition, where modifications to operations under the direct influence of the EPD owner are judged—based on expert evaluation supported by hotspot identification in the LCA documentation—to cause an increase of thirty percent (30%) or more in any other reported environmental indicator, the declaration shall likewise be revised.

If any of the above conditions are met and no updated declaration is issued, the existing EPD shall be removed from public use to prevent reliance on superseded information.

Where the need for revision arises from changes to the LCA model itself, the EPD owner may defer publication of an updated declaration until operational data representative of the revised system are available. As a general rule, this shall involve data covering at least one full year of operation, consistent with good LCA practice.

Each EPD shall clearly state its issue date and applicable period of validity.

The publication of revised versions of this PCR or of program-level instructions does not, by itself, invalidate EPDs already in circulation, provided that the underlying product system and declared results remain unchanged.

2.3 Intended Audience

This PCR is developed to support the preparation and use of EPDs for transparent communication of environmental performance to professional users involved in the planning, specification, procurement, construction, assessment, and management of buildings and infrastructure projects.

The intended audience includes, but is not limited to:

- architects and designers;
- structural and sustainability consultants;
- contractors and construction companies;
- procurement agencies and public authorities;
- material manufacturers and suppliers;
- building owners and real-estate developers;
- LCA practitioners and verifiers;
- rating scheme and certification bodies.

3.0 PCR REVIEW

This PCR has been developed and reviewed in accordance with the principles and requirements of ISO 14025 to ensure technical quality, objectivity, transparency, and broad stakeholder acceptance.

An independent PCR review panel has been established to evaluate this PCR prior to publication. The review process verifies that the PCR:

- is consistent with applicable international standards, including ISO 14025, ISO 21930, and EN 15804;
- provides appropriate, clear, and unambiguous rules for the development of EPDs;
- enables transparency, reproducibility, and comparability between EPDs prepared under this PCR;
- has considered relevant market, regulatory, and technical developments.

3.1 PCR Review Panel

In compliance with ISO 14025 requirements, this PCR has been reviewed by a panel of three (3) independent external experts with competence in:

- LCA,
- environmental declarations and sustainability standards, and
- construction products and building materials.

Name	Role	Expertise
S. Eugene Kennedy	Chairman, PCR Review	LCA, EPDs, and PCR review in accordance with EN 15804 and ISO 14025
Luis Manuel	LCA Expert	Advanced Life Cycle modelling for construction products aligned with EN 15804+A2
SB Rajan	Industry Representative	Construction product manufacturing and sector-specific environmental data
Sk Emdadul Islam	Industry Representative	Operational practices and industry data relevant to construction materials
Review Dates: 03-Dec-2025 to 18-Jan-2026 Validity Date: 20-Jan-2028		

Reviewers are independent of the PCR development team and the participating industry organizations. All reviewers act impartially and have no conflicts of interest with stakeholders associated with this PCR.

The review ensures verification that stakeholder viewpoints have been adequately considered and that the PCR rules are suitable for practical implementation across different construction product categories.

3.2 Public Availability and Transparency

This PCR, including the names of the appointed reviewers and documentation of the review process, shall be made publicly available as part of the ICIS program documentation system.

The outcomes of the PCR review process shall be recorded and maintained by ICIS to demonstrate compliance with the procedural rules of ISO 14025.

4.0 NORMATIVE REFERENCES

The following standards and normative documents shall be applied when preparing Environmental Product Declarations (EPDs) in accordance with this PCR. If dated references are cited, only the edition referenced applies. If undated references are cited, the latest edition of the referenced document (including amendments) shall apply.

1. ISO 14025:2006, Environmental management — Type III environmental declarations — Principles and procedure.
2. ISO 21930:2017, Sustainability in buildings and civil engineering works — Core rules for EPDs of construction products and services
3. ISO 14044:2006, Environmental management — LCA — Requirements and guidelines.
4. ISO 14040:2006, Environmental management — LCA — Principles and framework.
5. ISO 15686-1:2000, Buildings and constructed assets — Service life planning — Part 1: General principles.
6. ISO 15686-8:2008, Buildings and constructed assets — Service life planning — Part 8: Reference service life.
7. EN 15804:2012+A2:2019, Sustainability in construction works — EPDs – Core rules for the product category of construction products.
8. EN15942: 2011, Sustainability of construction works — EPDs — Communication formats: business to-business.
9. ISO 14067:2018, Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification.

EN 15804:2012+A1:2013, Sustainability of construction works — EPDs — Core rules for the product category of construction products (where regionally applicable or transitional use is required).

Note: The standards may be referred to in short format for readability. E.g. EN 15804:2012+A2:2019 is referred to as EN 15804 in this document.

5.0 TERMS AND DEFINITIONS

For the purpose of this PCR, the following terms and definitions apply. When relevant, definitions are consistent with EN 15804, ISO 14025, ISO 14040, and ISO 14044.

Environmental Product Declaration (EPD)

Environmental declaration providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information. (EN 15804:2012 definition of type III EPD)

Life cycle assessment (LCA)

Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (ISO 14044: 2006).

Life Cycle Inventory (LCI)

Compilation and quantification of inputs and outputs for a product system throughout its life cycle.

Life Cycle Impact Assessment (LCIA)

Phase of LCA aimed at understanding and evaluating the magnitude and significance of potential environmental impacts of a product system based on inventory results.

Declared unit (DU)

The quantity of a construction product for use as a reference unit in an EPD when the complete function or service of the product cannot be fully described, especially for cradle-to-gate studies. (EN 15804)

Functional unit (FU)

The quantified performance of a product system for use as reference unit when comparing complete systems performing an equivalent function. (EN 15804)

Construction Product

Any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of the construction works with respect to the basic requirements for construction works. (Construction Products Regulation (EU) No. 305/2011)

Product System

Collection of unit processes with elementary and product flows, performing one or more defined functions.

Reference Service Life (RSL)

Service life of a construction product determined based on standardized assumptions and used as a reference parameter in life cycle calculations. (ISO 15686-8)

System Boundary

Set of criteria specifying which unit processes are included in the product system of the LCA.

Life Cycle Modules

Information modules defined in EN 15804 that structure the life cycle of construction products are defined as follows:

- **A1—Raw material supply:** Extraction and processing of primary and secondary raw materials, including recycling processes, and all upstream supplies relevant to production of the product.
- **A2—Transport:** Transport of raw materials and intermediate products to the manufacturing site.

- **A3—Manufacturing:** Manufacturing of the construction product, including processing, assembly, packaging, internal transport, and waste treatment related to production.
- **A4—Transport to site:** Transport of the finished product from the manufacturing plant to the construction site.
- **A5—Installation:** Installation of the product into the building or infrastructure, including auxiliary materials, packaging waste handling, and installation losses.
- **B1—Use:** Environmental impacts arising from emissions or releases during normal use of the product, if relevant.
- **B2—Maintenance:** Activities related to maintaining the product’s functionality throughout the service life.
- **B3—Repair:** Activities related to restoring the product after damage or malfunction.
- **B4—Replacement:** Replacement of the product or its components during the service life.
- **B5—Refurbishment:** Activities related to refurbishing or upgrading the product.
- **B6—Operational energy use:** Energy use attributable to the installed product during the use stage, where applicable.
- **B7—Operational water use:** Water use attributable to the installed product during the use stage, where applicable.
- **C1—Deconstruction/Demolition:** Deconstruction, demolition or removal of the product from the building or infrastructure at end of life.
- **C2—Transport:** Transport of the product or waste materials from the site to waste processing or disposal facilities.
- **C3—Waste processing:** Processing of waste materials for reuse, recycling, or other recovery operations.
- **C4—Disposal:** Final disposal of waste materials, including landfill or incineration without energy recovery.
- **Module D—Benefits and loads beyond the system boundary:** Information module reporting the potential environmental benefits and burdens associated with material reuse, recycling, and/or energy recovery occurring beyond the assessed product system boundary. These impacts result from materials or energy leaving the product system and substituting primary production in subsequent life cycles.

For terms and definitions not explicitly provided herein, the provisions of EN 15804, Section 3, and the referenced ISO standards shall apply.

Biogenic Carbon

Carbon originating from biological material that has been absorbed from atmospheric carbon dioxide through biological processes.

Biogenic Carbon Storage

Temporary sequestration of atmospheric carbon dioxide in biogenic materials contained within products, reported separately according to EN 15804+A2 reporting rules.

Climate Neutral Biogenic Carbon Flow

Accounting principle whereby uptake and release of biogenic carbon shall be balanced over the product system life cycle, provided sustainable sourcing conditions are met.

Cut-off Criteria

Criteria specifying the minimum amount of material or energy flow that shall be included in the LCA. In accordance with EN 15804:

- At least 99% of mass and energy flows must be included.
- No environmentally relevant flows shall be omitted.

Co-product

Two or more products resulting from the same production process where allocation of environmental burdens may be required.

Scenario

Set of assumptions describing the operation of the product or system over a defined life cycle stage such as installation, use, maintenance, or end-of-life treatment.

Data Quality Requirements (DQR)

Criteria defining the reliability and representativeness of LCA data, including:

- Technological representativeness
- Geographical representativeness
- Temporal representativeness
- Completeness
- Precision

Foreground Data

Primary process data directly collected from the product manufacturer or operator.

Background Data

Secondary process data sourced from generic LCA databases or literature.

Impact Category Indicator

Quantified representation of environmental impact using characterization factors defined by international standards (e.g., EN 15804+A2 impact categories).

Global Warming Potential (GWP)

GWP is an index that measures the cumulative radiative forcing impact of a greenhouse gas (GHG) over a specified time horizon, relative to that of carbon dioxide (CO₂), which is assigned a reference value of 1. The indicator therefore represents the contribution of a substance to climate change compared to CO₂ on a mass basis.

GWP results are expressed as a mass of carbon-dioxide equivalents (kg CO₂-eq) and are reported in accordance with EN 15804 using the following components:

- **GWP-f (fossil):** Emissions from fossil carbon sources

- **GWP-bio (biogenic):** Emissions and removals related to biogenic carbon flows
- **GWP-luluc:** Emissions from land-use and land-use change
- **GWP-total:** Sum of all GWP components

6.0 GENERAL CONDITIONS

The PCR outlines ICIS's method for creating EPDs for all construction products and services. The benefit of using a single PCR is that it ensures a consistent methodology for all product categories, supporting the modularity principle of ISO 21930 and EN 15804. This allows for easier combination of results from different subsystems.

This PCR document follows the requirements of EN 15804. Any information already included in EN 15804 is not repeated here. To make it easier to use, this document uses the almost same headings as EN 15804, with additional sub-headings as needed.

An EPD created using EN 15804 provides quantified environmental information for all types of construction products and services in a consistent and scientific way. The purpose of an EPD in the construction sector is to provide the foundation for evaluating buildings and other construction projects. This is done by identifying building solutions that have a lower environmental impact.

EPDs based on EN 15804 are not inherently comparative. This means that simply having two EPDs doesn't automatically allow for a direct comparison. Several factors can prevent comparability:

- Non-compliance with EN 15804: EPDs must follow the specific guidelines and standards set out in EN 15804 to ensure consistency and comparability.
- Lack of building context: EPDs should be considered within the context of their intended use in a building. Comparing products without understanding their specific applications can lead to inaccurate conclusions.
- Different FUs: A FU defines the amount of service a product provides. If EPDs are based on different FUs, it becomes difficult to compare their environmental performance directly.

Therefore, when comparing EPDs, it's essential to ensure that they meet all these conditions to avoid drawing misleading conclusions.

EPDs developed under this PCR constitute transparent, standardized information tools and shall not be used directly as product performance claims or comparative assertions unless applied within a complete building or system-level assessment meeting all requirements of EN 15804 and ISO 21930.

6.1 PCR Structure

The PCR structure applied in ICIS allows for the development of specifications in a sub-PCR that provide additional product or service specific requirements to the requirements given in this document. Sub-PCR is optional if the EPD being developed is based on a declared unit.

For most construction products, it is recognised that rules given in PCR are sufficient when developing an EPD based on a declared unit. PCR for construction products and services can therefore be used as basis for an EPD, even if a sub-PCR has not yet been developed. However, this implies that the EPD is restricted to always use a declared unit, and not a FU.

Moreover, a declared unit does not include a full life cycle and is not intended for comparison. An EPD that aims for comparison must be based on a full life cycle and therefore use a FU. In this case, it is a requirement to develop sub-PCR. The key reasons for developing a sub-PCR is given below, but not limited to these aspects:

- The calculation rules must be clarified for a specific construction product or service.
- To support inventory data, for instance where common generic data must be accepted as specific (used by all).
- Make it possible to add additional environmental aspects or indicators to the EPD reporting format, which are common to that specific product group.
- Make it possible to publish an EPD for comparative purposes that, amongst other things, include the definition of a FU and harmonised scenario settings.

The structure of PCR approach simplifies the creation and understanding of PCRs. It avoids repeating information from PCR in sub-PCR, which reduces redundancy and makes the system easier to maintain. This approach ensures modularity between different PCRs.

By referencing EN 15804 or PCR instead of repeating text, changes to PCR automatically update existing sub-PCR documents. Therefore, all EPDs should reference the current version of PCR and, if necessary, the relevant sub-PCR. Any future revisions to PCR will also affect all related PCRs, potentially overriding specifications in sub-PCR. To prevent confusion, it's recommended that these sub-PCR documents be updated within a specific timeframe.

Application to Services: Where construction-related services are declared under this PCR, the same requirements for the use of DUs, system boundaries, modelling rules, and module reporting apply as for physical construction products, adapted as necessary to reflect service-life modelling.

Hierarchy of PCR documents: This PCR forms the governing core document. Any sub-PCR developed for specific products or services shall be consistent with and subordinate to this parent PCR and shall not contradict its requirements. Where discrepancies arise, the requirements of this PCR shall take precedence.

EPD template consistency: All EPDs developed under this PCR or any associated sub-PCR shall use the ICIS EPD template to ensure harmonized structure, terminology, and presentation of reported data.

6.2 EPD Types

Following type of EPDs is possible for construction products as required by EN 15804;

- a) Cradle to gate with modules C1—C4 and module D (A1—A3 + C + D).

- b) Cradle to gate with options, modules C1—C4, module D and with optional modules (A1—A3 + C + D and additional modules). The additional modules may be one or more selected from A4—A5 and/or B1—B7.
- c) Cradle to grave and module D (A + B + C + D).
- d) Cradle to gate (A1—A3).
- e) Cradle to gate with options (A1—A3 and additional modules). The additional modules may be A4 and A5.

The life cycle modules reported within EPD types defined in this section shall follow the module structure and definitions specified in [Section 5 \(Terms and Definitions\)](#) and EN 15804.

Where optional life cycle modules may be reported (for example A4—A5 or modules within B1—B7), their inclusion shall be based on documented relevance to the actual application and service conditions of the product. Any inclusion or exclusion of optional modules shall be justified and documented in the supporting LCA report used for the development of the EPD.

For products whose use stage involves the consumption of operational energy, the life cycle module B6 (Operational Energy Use) shall be included in the EPD. This requirement is aligned with the principles of EN 50693 for energy-using products, ensuring that relevant use-phase energy impacts are captured and transparently reported. It is recognised that full compliance with EN 50693 is generally not achievable within EPDs developed under this PCR, due to methodological differences between EN 15804 and EN 50693 concerning system boundary setting for waste flows and the treatment of benefits and loads beyond the product system boundary. Specifically, EN 15804 defines the system boundary at the point of end-of-waste, while EN 50693 places it at the point of substitution and applies different rules for reporting recovered energy or materials beyond the system boundary.

For all life cycle modules declared in the EPD, global warming impacts shall be reported using the required split indicators of EN 15804+A2, including GWP-fossil (GWP-f), GWP-biogenic (GWP-bio), GWP related to land use and land-use change (GWP-luluc), and GWP-total as the aggregated result. Uptake and release of biogenic carbon shall be modelled and reported separately in accordance with EN 15804 carbon accounting requirements. Where applicable, carbon storage in biogenic products shall be declared and balanced across the relevant life cycle modules unless otherwise technically justified. Further guidance on calculation and reporting of biogenic carbon is provided in [Section 7.7](#).

For EPDs developed for services rather than construction products, the selected modules shall reflect the actual service scope and the activities included within the service life cycle. Where relevant, service EPDs shall follow module combinations equivalent to options (a) to (c) defined above and include all modules that materially influence environmental performance.

If any life cycle modules are excluded based on the chosen EPD type or because they are not relevant to the product or service system, such exclusions shall be clearly stated in the EPD together with their technical justification.

6.2.1 Multiple Products EPD

A single EPD shall not include results for multiple unrelated products. However, similar products manufactured by the same organization, produced at the same manufacturing site, using the same core production processes, and covered by the same system boundaries and scenarios may be grouped and declared within one EPD, if compliance with the comparability requirements of EN 15804 and ISO 21930 can be demonstrated.

Where multiple similar products are included within one EPD, environmental impact results shall be declared using one of the following approved approaches:

a) Weighted Average Approach

Environmental impact indicator results for each life cycle module shall be calculated as a production-volume-weighted average of all included products. The resulting weighted average values shall be declared in the environmental performance tables of the EPD, and the average composition shall be declared within the content declaration.

b) Representative Product Approach

One product shall be selected to statistically represent the entire product group. Selection of the representative product shall be justified using accepted statistical methods, such as:

- production volume distribution,
- process similarity analysis, and
- material composition evaluation.

The environmental performance and material composition of the representative product shall be declared in the EPD on behalf of the entire product group.

c) Worst-Case Approach

For life cycle modules A1–C4, the highest (worst) environmental performance result among all included products shall be declared for each impact category individually.

Content declaration rules under the worst-case approach:

- Recycled and biogenic content – Declare the *lowest* recycled and biogenic content present in any included product or packaging.
- Environmental and hazardous substances – Declare the *highest* share present in any included product.
- All other parameters – Declare average values.

This approach ensures that the EPD reflects the maximum potential environmental impact of the grouped product portfolio.

Reporting of Product Variability: For all multiple-product EPD approaches (weighted average, representative, or worst-case), the range of variability across the included products shall be documented and declared either:

- in the content declaration section of the EPD, or
- in a dedicated subsection linked to the environmental performance tables.

This ensures transparency and supports correct interpretation of results.

ISO 21930 Variation Limits: Where an EPD claims compliance with ISO 21930, resulting variation among all included products shall not exceed $\pm 10\%$ for each environmental impact category across modules A1–C4:

- If the $\pm 10\%$ limit is exceeded, grouped-product declaration shall not be applied unless robust subgrouping or statistical justification is documented.
- If unresolved, separate product-specific EPDs shall be prepared.

Where ISO 21930 compliance is not required, variations exceeding $\pm 10\%$ may be permitted provided that:

- All exceedances are justified in the supporting LCA report, and
- The degree of variation for each affected indicator is disclosed within the EPD.

Declaration of Grouping Method: The chosen grouping method shall be clearly stated on the EPD cover page, using one of the following phrases:

- “EPD of multiple products, based on weighted average results.”
- “EPD of multiple products, based on a representative product.”
- “EPD of multiple products, based on worst-case results.”

GWP-GHG Consistency Requirement: For EPDs using weighted average or representative product approaches, the reported GWP-GHG results for modules A1–A3 (or A1–A5 for service EPDs) of any individual included product shall not deviate by more than $\pm 10\%$ from the declared group value. Where this requirement cannot be met:

- Deviations shall be justified in the LCA report, and
- Variations shall be disclosed in the EPD.

For worst-case-based EPDs, all deviations exceeding 10% shall also be disclosed for transparency even though worst-case values are reported.

Optional Best-Case Reporting: The “best-case product” (product with lowest GWP-GHG result) may optionally be reported in a dedicated subsection of the EPD. Where applied, the product composition and environmental performance of the best-case product shall be clearly documented.

Identical Products at Multiple Sites: Although overall variations greater than $\pm 10\%$ may be technically allowable, it is recommended that:

- EPDs for identical products manufactured at multiple sites be issued separately by site whenever possible, to maintain variations below 10% and satisfy national “product-specific” EPD recognition requirements.

EPDs Covering Multiple Production Sites: Where one EPD includes products manufactured across multiple sites contributing to Module A3, all sites shall be:

- Clearly listed within the EPD, and
- Covered by system boundary definitions and data quality documentation within the supporting LCA report.

6.2.2 Sector EPD

A Sector EPD may be developed to represent a group of similar construction products manufactured by multiple organizations and/or multiple production sites within a defined industrial sector, provided that all included products:

- belong to the same functional category,
- are manufactured using comparable production technologies,
- are covered by consistent system boundaries and scenarios, and
- comply with the same standards, PCR requirements, data quality rules, and calculation methods.

A Sector EPD is intended to provide a benchmark environmental profile for the sector rather than product-specific declarations.

Sector EPD Data Requirements: The development of a Sector EPD shall be based on:

- Primary data collection from a statistically representative sample of manufacturers and production sites within the sector.
- Standardized questionnaires or templates used for harmonized data reporting.
- Consistent background datasets and calculation tools for all participants.

All collected data shall meet the data quality and representativeness criteria of EN 15804 and the applicable PCR.

Statistical Treatment of Data: Environmental performance indicator results for a Sector EPD shall be calculated using:

- Weighted averaging of valid company datasets, typically based on relevant production volumes.
- Transparent statistical methods that ensure representativeness of the sector.

The supporting LCA report shall document:

- sample size,
- coverage of sector production volume,
- representativeness of technologies and sites,
- handling of data gaps, and
- uncertainty management procedures.

Scope and Limitations: Sector EPD results:

- Shall not be used for direct product-to-product comparison, including comparisons with product-specific EPDs.
- Shall only be applied as indicative or benchmark values for preliminary assessments, generic modelling, or screening-level environmental analyses.

Use of Sector EPD data for procurement decisions or performance claims for individual products is not permitted.

Transparency Requirements: A Sector EPD shall clearly declare:

- the scope of products and processes covered,

- the geographic and technological representativeness,
- participating organizations (where disclosure is permitted), and
- sector coverage as a percentage of total market production.

Consistency with Other EPD Types: Sector EPD methodologies shall align with the requirements applied to:

- Single-product EPDs, and
- Multiple-products EPDs

with respect to:

- system boundaries,
- life cycle module reporting,
- allocation rules,
- environmental impact indicators, and
- calculation methods.

Declaration at EPD cover page: Sector EPDs shall be identified clearly on the EPD cover page using the statement:

"Sector EPD – representing average environmental performance across the defined product sector."

This ensures transparency for EPD users regarding the representative nature of the data.

6.3 Comparability of EPD of Construction Products

Comparability of EPDs shall be in accordance with EN 15804. EPDs are only comparable when they are based on the same standard, use the same functional or DU, apply the same system boundaries and life cycle module coverage, and are developed using consistent calculation rules and DQR. EPDs subject to comparison shall also be developed in accordance with the same PCR or PCRs that are demonstrably aligned and harmonised with one another.

Comparisons shall only be made within the context of a specific building or construction application and shall account for identical technical performance and functional equivalence. EPDs not meeting these conditions shall not be used for direct product-to-product comparison.

6.4 Additional Environmental Information

Additional environmental information shall be reported according to EN 15804 and the supplementary requirements specified in this PCR, [Clause 8.4](#).

6.4.1 General Aspects

According to EN 15804.

6.4.2 Additional Impact Indicators

According to EN 15804, section 5.4.2.

6.5 Additional Information

Additional information shall be provided according to EN 15804. For the purpose of EPD development, the manufacturer or producer may be the owner of the production facilities or the company placing the product on the market, including an agent or sales company acting on behalf of the owner. Regardless of ownership arrangements, Module A3 shall always represent the physical manufacturing processes occurring at the actual production site where the product is produced.

6.6 Communication Template

The EPD shall be prepared using the official ICIS EPD template and communicated through a standardized digital data format that is aligned with the requirements of EN 15804:2012+A2:2019/AC:2021 and the structured reporting principles of ILCD+EPD.

The communication template ensures a consistent layout, terminology, and data presentation across all EPDs issued under this PCR, enabling reliable interpretation, digital exchange, and integration into building LCA software tools, databases, and national or international EPD platforms. EPDs shall include all mandatory information defined by EN 15804, including:

- product identification and manufacturer details
- functional or DU specification
- system boundaries and module coverage
- LCIA results using EN 15804+A2 indicators
- resource use and waste output indicators
- biogenic carbon flows and carbon storage declarations (where applicable)
- additional environmental and technical information required by this PCR
- data quality statements and geographical representativeness

Use of the standardized ILCD+EPD data format enables:

- machine-readable publication of EPD information
- interoperability between EPD programs and national databases
- consistent import of EPD datasets into whole-building LCA tools
- transparent verification and long-term maintenance of digital EPD records

Any deviations from the prescribed communication template or digital format shall be documented and justified within the EPD and supporting LCA report.

7.0 LCA DEVELOPMENT

This section defines the methodological requirements for performing LCA used to develop EPDs in accordance with this PCR. The procedures described herein are based on the framework provided by ISO 14040 and ISO 14044, and are fully aligned with EN 15804+A2.

All LCAs conducted under this PCR shall follow the modular life cycle structure of EN 15804 and apply the calculation, modelling, data quality, cut-off, allocation, and reporting rules specified in this section to ensure consistency, transparency, and comparability of EPD results.

7.1 Product Category

This PCR is valid for construction products and construction services intended for incorporation into building or civil engineering works, as defined in EN 15804 and ISO 21930, including both individual construction elements and integrated technical systems. The PCR covers a broad range of product types and applications across the construction sector, including:

- Single-material or multi-material construction components,
- Prefabricated or assembled products,
- Building systems or system components, and
- Construction services were defined as product-related EPDs under EN 15804 principles.

This product category allows for the development of EPDs for products ranging from basic construction materials to complex integrated technical systems, provided that:

- The product or service can be clearly connected to a defined DU or FU, and
- The LCA can be modelled according to the modular system of life cycle stages A-D as specified in EN 15804 and this PCR.

All products assessed using this PCR shall be modelled and reported using consistent system boundaries, calculation rules, background DQR, and impact assessment methods specified in this document to ensure valid comparison within appropriate building or construction application contexts.

7.2 LCA Modelling Framework

This subsection sets out the mandatory modelling principles and high-level rules to be applied when conducting LCAs for EPDs under this PCR. The objective is to ensure consistency, reproducibility and transparency of life cycle modelling across product groups and EPD types.

All LCAs shall follow ISO 14040/14044 and the modular life cycle approach of EN 15804 (modules A–D). The modelling framework adopted in this PCR uses an attributional, process-based LCA by default, with the modular reporting of results per information module (A1–A3, A4–A5, B1–B7, C1–C4 and D). Where alternative modelling choices are made (e.g., consequential approaches, market-based electricity allocation), these shall be explicitly justified, documented and reported in the LCA report.

7.2.1 Modelling Approach

Approach

An attributional, process-based modelling approach is required unless otherwise stated. The model shall allocate material, energy, emissions and waste flows to the correct module(s) following the modular principle of EN 15804.

Data hierarchy

Follow the data priority:

- a. Site- or product-specific primary (measured) foreground data;

- b. Verified supplier or partner data;
- c. High-quality regional secondary datasets;
- d. Generic international datasets as last resort.

Any deviation from this hierarchy must be justified.

System expansion vs allocation

Avoid allocation by system subdivision or system expansion where feasible. If allocation is unavoidable, apply physical allocation (mass, energy, material content) as the primary approach; economic allocation may be used only if physical causality cannot be established and must be justified (see [Section 7.5.2](#)).

Scenario modelling and representativeness

Develop scenario assumptions (transport distances, installation losses, maintenance intervals, RSL, end-of-life routes) that are representative of the declared product's typical application and geography. Document scenario choices and show sensitivity analysis for material assumptions that materially affect results.

Transparency and traceability

Document all modelling choices, dataset identifiers, system boundaries, temporal coverage and assumptions in the LCA report supporting the EPD.

7.2.2 Electricity Modelling

Default rule (location-based residual mix)

Use a location-based residual electricity mix representative of the country/region of the activity for background electricity modelling, in accordance with EN 15804+A2 principles.

Supplier-specific/contractual instruments

Where supplier-specific electricity or contractual instruments (e.g., PPAs, guarantees of origin) are used, provide documentary evidence of the instrument, state whether it is retired, and disclose both the market-based (contractual) and the location-based results in the LCA report where this materially influences outcomes.

Residual vs grid average

Prefer residual mix datasets over simple grid-average datasets when available and of adequate quality. If residual data are not available, document the proxy dataset used and the justification.

Temporal representativeness

Use electricity datasets whose vintage aligns with the primary data collection period (typical default: most recent three years). Clearly state dataset vintage and any temporal extrapolation applied.

Reporting

The electricity modelling method and dataset identifiers must be declared in the EPD or its supporting LCA report.

7.2.3 Specific Rules per EPD Type

Apply the following modelling rules depending on the declared EPD type defined in [Section 6.2](#):

Cradle-to-gate (A1–A3) EPDs

Model and report modules A1–A3 as mandatory. If packaging contains biogenic carbon, apply the A3 balancing rule and declare this in the EPD (see [Section 7.7](#)).

Cradle-to-gate with options/Cradle-to-gate + C + D

Model A1–A3 mandatory; include A4–A5, C1–C4 and Module D where claimed. Module D shall be declared only when outputs leaving the system boundary can be documented and substitution effects are described.

Cradle-to-grave (A–B–C)

Model all relevant A, B and C modules, including appropriate B-module scenarios (maintenance, repair, replacement, operational energy/water). Define and justify the RSL.

Service EPDs

Select modules that reflect the full-service scope. Operational data for services must be based on measured or well-justified representative data.

Multiple-product and sector EPDs

Follow the grouping, averaging and representativeness rules in [Sections 6.2.1](#) and [6.2.2](#). Ensure sampling, weighting and statistical methods are documented in the LCA report. For all EPD types, clearly state the EPD type and list included/excluded modules on the EPD cover page and in the supporting LCA report.

7.3 LCA Stages and Information Modules

The LCA shall follow the modular life cycle framework of EN 15804+A2, reporting environmental information for each life cycle stage and module (A–D) within its defined system boundary to avoid overlap or double counting.

Module inclusion depends on the declared EPD type. Detailed rules for each EPD type are provided in [Section 7.2.3](#). Any deviations from full modular coverage shall be clearly declared and justified in the EPD and supporting LCA report.

All modelling shall comply with the principles in [Section 7](#), including attributional approach, data hierarchy, allocation, scenario assumptions, and transparent documentation, ensuring consistency, comparability, and reproducibility of result.

7.3.1 General

The life cycle stages and associated information modules are defined as follows:

Product Stage

A1—Raw material supply, A2—Transport, and A3—Manufacturing

Construction Process Stage

A4 – Transport to site and A5 – Installation

Use Stage

B1—Use, B2—Maintenance, B3—Repair, B4—Replacement, B5—Refurbishment, B6—Operational energy use, and B7—Operational water use

End-of-Life Stage

C1—Deconstruction/demolition, C2—Transport, C3—Waste processing, and C4—Disposal

Beyond System Boundary

Module D—Potential benefits and loads from reuse, recovery and recycling outside the product system boundary. Each module shall include all relevant inputs and outputs necessary to fulfil the defined function of that life cycle stage and shall be reported separately. Environmental impacts shall not be aggregated across modules except where explicitly permitted by EN 15804+A2.

Modules excluded from an EPD due to the selected EPD type or lack of relevance shall be clearly indicated as:

- MND (Module Not Declared) or
- MR (Module Relevant but Not Quantified),

in accordance with EN 15804 reporting rules.

Scenario assumptions applied within any module (e.g., transport distances, installation waste, maintenance intervals, or end-of-life routes) shall be:

- Representative of typical use in the region of application, and
- Documented in the supporting LCA report.

7.3.2 Product Stage (A1–A3)

The Product Stage shall include all processes from raw material extraction up to the finished construction product leaving the manufacturing gate (“cradle-to-gate”). The following modules apply:

A1—Raw Material Supply

Module A1 shall include:

- Extraction and processing of primary raw materials, including mining, harvesting, and initial material refining.
- Processing of secondary materials (recycled content) used as inputs to the product system.
- Production of auxiliary materials, additives, binders, coatings, and packaging materials.
- Upstream energy production associated with fuel and electricity inputs.
- Upstream transport occurring within material production supply chains.
- Associated emissions to air, water, and soil.

Emissions related to LULUC shall be reported separately under the impact category GWP-luluc, in accordance with EN 15804+A2 and the biogenic carbon methodology described in [Section 7.7](#).

A2—Transport

Module A2 shall include:

- Transport of all input materials, packaging, fuels, and consumables from suppliers to the manufacturing site.
- Internal distribution between supplier facilities where relevant and subcontracted processing is involved.

Transport modelling shall account for:

- Mode of transport (e.g., truck, ship, rail),
- Actual or representative distances,
- Load utilization and backhaul assumptions where applicable,
- Fuel types and emission factors consistent with background datasets.

Where manufacturer-specific transport data are unavailable, conservative or industry-average transport scenarios shall be applied and justified in the LCA report.

A3—Manufacturing

Module A3 shall include all processes directly involved in the transformation of input materials into the final product, including:

- Product shaping, forming, machining, surface treatment, coating, and finishing operations.
- Operation of production equipment and associated energy and water use.
- Use of process chemicals, auxiliaries, and consumables.
- Internal transport within the manufacturing plant.
- Direct emissions arising from manufacturing operations.
- Generation and management of production waste, including:
 - ❖ Recycling or reuse of internal scrap,
 - ❖ Waste treatment and disposal.
- Production of primary and secondary packaging used to protect the product for delivery.
- On-site utilities (compressed air, cooling water, process heating, etc.).

Electricity consumption modelling shall follow the requirements defined in [Section 7.2.2](#) (Electricity Modelling).

Allocation of burdens within manufacturing (e.g., for co-products or mixed production lines) shall be performed in accordance with the hierarchy rules defined later in [Section 7.5.2](#) (Allocation of Inputs and Outputs).

Internal reuse or recycling loops occurring entirely within A3 shall be treated as closed-loop processes and shall not generate credits in Module D.

Combined Reporting for A1–A3

For EPD presentation:

- Environmental impact results for modules A1–A3 should be reported both individually and as the aggregated value “A1–A3” to provide greater transparency and clarity, in compliance with EN 15804+A2.
- When aggregated results are presented, the underlying module-level data must be retained and made available in the supporting LCA report.

All data used for modelling the Product Stage shall comply with the DQR defined in [Section 7.4.8](#) and represent average production conditions over the selected reference year or data collection period.

7.3.3 Construction Process Stage (A4–A5)

The Construction Process Stage covers the impacts associated with delivery of the product to the construction site and its installation into the building or infrastructure works.

A4—Transport to Construction Site

Module A4 shall include:

- Transport of the finished product (including any associated packaging) from the manufacturing plant or distribution hub to the construction site.
- Transport of auxiliary installation materials supplied together with the product, where applicable.

Transport modelling shall consider:

- Relevant transportation modes (e.g., road, rail, ship),
- Representative or actual distances to typical or declared markets,
- Payload utilization, return trips, and fuel consumption assumptions,
- Fuel types and corresponding emission factors from background datasets.

Where manufacturer-specific transport distances are available, these shall be used. Otherwise, market-average or conservative transport scenarios shall be applied and documented in the supporting LCA report.

A5 – Installation

Module A5 shall include all processes associated with product installation at the construction site, including:

- Use of equipment, tools, machinery, and energy required for installation activities.
- Consumption of auxiliary materials required for installation (e.g., adhesives, fixings, fasteners, sealants).
- Generation and management of installation waste, including:
 - ❖ Product offcuts,
 - ❖ Packaging waste,
 - ❖ Damaged materials.

- On-site waste processing, treatment, recycling, incineration, or disposal relevant to installation wastes.

Installation scenarios shall be defined for:

- Typical installation methods for the product,
- Associated material loss rates,
- Waste segregation rates and disposal routes.

Scenario Modelling

Installation and transport scenarios shall:

- Reflect realistic market practices and known installation methods for the declared product;
- Be consistent with the functional or DU and RSL defined in [Section 7.4.1](#) and [7.4.2](#);
- Be transparently documented in the LCA report.

Where product installation has negligible environmental impact or installation activities are not relevant (e.g., products installed without additional materials or energy use), this shall be justified and explained within the supporting LCA report.

Packaging Treatment

Packaging material used for the protection and transport of products:

- Shall be modelled as part of Module A5 unless justified otherwise.
- Shall include all treatment routes (recycling, incineration, landfill) according to realistic waste management practices in the target market.

Balancing of any associated biogenic carbon flows related to packaging shall follow the methodology defined in [Section 7.7](#).

Combined Reporting for A4–A5

Environmental impacts for the construction process stage:

- Must be reported individually (A4, A5);
- Must be supported by scenario descriptions within the project documentation.

All modelling information shall meet the data quality rules defined in [Section 7.4.8](#).

7.3.4 Use Stage (B1–B5)

Modules B1 to B5 cover the environmental impacts associated with product performance and interventions during the use stage of the building. Reported modules shall include, where relevant:

B1—Use

Direct emissions or environmental impacts during normal use of the product (e.g., surface treatments, release of substances). If no direct emissions occur, this module may be declared as “No impact” with justification.

B2—Maintenance

Regular activities required to maintain product performance, such as cleaning, minor treatments, or surface coating renewal.

B3—Repair

Partial repairs intended to restore functionality without replacing the full product or component.

B4—Replacement

Complete replacement of the product or major components during the RSL. Impacts shall include:

- Production of replacement products (A1—A3),
- Transport to site (A4),
- Installation activities (A5),
- End-of-life treatment of removed products (C1—C4).

B5—Refurbishment

Activities that upgrade or renew performance beyond simple maintenance or repair. Calculation of B-modules shall be based on:

- Declared RSL of the product,
- Expected number of maintenance and replacement cycles,
- Realistic and technically verified scenarios as defined in [Section 7.4.9—Developing Product Level Scenarios](#).

Where a module is not relevant to the product:

- It may be declared as “Not applicable (MNA)”, with reason documented in the LCA report.

7.3.5 Use Stage (B6—B7)

Modules B6 and B7 address operational resource use attributable to the declared product during the use phase:

B6—Operational Energy Use

Energy consumption directly attributable to the functioning or operation of the product during building use (e.g., powered systems or energy-consuming equipment).

B7—Operational Water Use

Water consumption related to product operation (e.g., plumbing fixtures, water treatment components). Reporting rules:

- These modules shall be included only if the product directly consumes energy or water as part of its function.
- For passive construction products (e.g., profiles, insulation materials, structural components), B6 and B7 shall normally be declared as “Not relevant.”

Where included:

- Calculations shall reflect realistic operational scenarios based on typical use profiles.

- Electricity consumption modelling shall follow the rules specified in [Section 7.2.2 – Electricity Modelling](#), ensuring consistency with grid mix assumptions and temporal validity.

7.3.6 End-of-Life Stage (C1–C4)

The end-of-life stage includes all processes related to product removal and waste treatment. Each module covers the following:

C1—Deconstruction/Demolition

Activities required to dismantle or remove the product from its installed location.

C2—Transport

Transport of waste materials from site to waste processing or final disposal facilities.

C3—Waste Processing

Sorting, crushing, shredding, recycling preparation, or other treatments prior to reuse, recycling, recovery, or disposal.

C4—Disposal

Final treatment of waste materials such as landfill or incineration without energy recovery.

Modelling guidance

End-of-life modelling shall:

- Be based on conservative, regionally appropriate scenarios reflecting realistic disposal practices.
- Use standardized or authoritative waste treatment data where site-specific data are unavailable.
- Reflect country-specific regulatory frameworks when available.

Biogenic carbon flows at end-of-life shall be modelled according to the methodology established in [Section 7.7](#) and must maintain full carbon mass balance across the product life cycle.

7.3.7 Benefits and Loads Beyond the System Boundary (D)

Module D reports potential environmental benefits and loads resulting from:

- Reuse of products or components,
- Recycling of materials into new product systems,
- Energy recovery from waste treatment processes.

Rules for Module D:

- Benefits and loads shall be calculated according to the avoided burden approach defined by EN 15804.
- Only impacts beyond the product's declared system boundary are reported.
- Results shall be clearly separated from Modules A–C and shall not be aggregated into lifecycle totals.

Assumptions for substitution, recycling rates, and material quality shall:

- Be conservative,
- Reflect realistic market conditions, and
- Be transparently documented in the LCA report.

Where no recoverable materials or energy recovery is applicable, Module D may be declared “Not applicable.”

7.4 Calculation Rules for the LCA

This section defines the general calculation requirements that apply to all LCAs conducted under this PCR. These rules ensure methodological consistency, transparency, and comparability across EPDs developed in accordance with this PCR and the applicable standards:

- EN 15804+A2,
- ISO 14040 / ISO 14044, and
- ISO 21930.

The requirements in this section are mandatory for all EPD types covered by this PCR unless otherwise specified under product- or sector-specific rules.

7.4.1 Functional or Declared Unit

The FU or DU shall provide a clear and consistent reference basis to which all life cycle inputs, outputs, and environmental impacts are related.

General rules:

- For products where a clearly defined function during the building life cycle can be described and quantified, a FU shall be used.
- Where the final function of the product cannot be defined or depends on downstream applications, a DU shall be used in accordance with EN 15804.

Requirements for unit definition:

The selected unit shall:

- Be measurable, repeatable, and unambiguous;
- Represent the typical market form of the product (e.g., kg, m², m³, or piece);
- Be appropriate for fair comparison among equivalent products;
- Be fully consistent with the RSL modelling defined under [Section 7.4.2](#) when FUs are applied.

Examples:

Typical DUs include:

- 1 kg of construction product
- 1 m² of panel or sheet material
- 1 m³ of insulation or aggregate
- 1 linear meter of profile

- 1 piece or module of system component

FUs may be applied where relevant to capture in-use performance, provided technical equivalence between products can be ensured. Examples include:

- 1 kW of installed heating capacity
- 1 m² of thermal insulation delivering a specified U-value over its RSL
- 1 m³ of concrete achieving a defined compressive strength over the product's RSL
- 1 piece of mechanical component delivering a specified number of operational cycles

Mandatory documentation:

The EPD and supporting LCA report shall document:

- The rationale for selecting the declared or FU;
- Any conversion factors applied between secondary units and the DU;
- Any assumptions influencing functional performance equivalency, where applicable.

7.4.2 Reference Service Life (RSL)

Where life cycle modules B1–B5 (use stage) or replacement scenarios are included, a RSL shall be declared for the product.

RSL requirements:

- The RSL shall represent the expected technical lifetime of the product under normal use conditions within a building context.
- Values shall be based on:
 - ❖ Product testing or technical literature,
 - ❖ Manufacturer evidence,
 - ❖ Industry data or standards (e.g., ISO 15686 series),
 - ❖ Independent technical assessments where available.

Use in calculations:

The RSL shall be used to:

- Determine the frequency of:
 - ❖ Maintenance activities (B2),
 - ❖ Repair actions (B3),
 - ❖ Refurbishment (B5),
 - ❖ Replacement cycles (B4).
- Model end-of-life flows associated with replacement events.

Documentation:

All assumptions related to:

- Selected RSL values,
- Usage conditions,
- Maintenance frequencies,
- Replacement intervals,

shall be transparently documented in the supporting LCA report.

Where no relevant use-stage scenarios apply:

- RSL may be reported for information only,
- B-modules may be declared as “Not applicable.”

7.4.3 System Boundaries

The system boundaries for LCA studies and EPDs developed under this PCR shall comply with the requirements of EN 15804:2012+A2:2019/AC:2021 and ISO 21930:2017. The modular structure divides the product life cycle into information modules covering the product stage, construction process stage, use stage, end-of-life stage, and benefits and loads beyond the system boundary (Module D).

All processes relevant to each module shall be included as defined in EN 15804, with no deviations or exclusions that would affect result consistency or transparency. The assignment of inputs, outputs, emissions, and environmental impacts to the respective life cycle stages shall follow the standardized modular rules set by EN 15804.

Table1: System boundary diagram for EPDs according to EN 15804

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction & demolition	Transport	Waste processing	Disposal	Reuse, Recycling & Recovery potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared																	
Geography																	
Share of specific data																	
Variation-products																	
Variation-sites																	

Allocation of life—cycle processes:

EN 15804 provides a detailed description of the activities included in each life cycle information module. These module descriptions apply without exception under this PCR. EPD developers shall follow the process inclusion rules precisely as defined in EN 15804+A2 when modelling and reporting the LCA results.

Clarification on electricity modelling in Module A3:

A methodological difference exists between EN 15804 and ISO 21930 regarding the treatment of electricity consumption during the manufacturing stage (A3):

- Under EN 15804, electricity used in manufacturing is classified as an energy carrier input and modelled upstream as part of raw material supply. Consequently, the related environmental burdens are assigned to Module A1.
- Under ISO 21930, electricity is treated as a direct manufacturing process input, and its impacts are therefore reported in Module A3.

Although this procedural difference affects the distribution of impacts between individual modules A1 and A3, the aggregated results for the product stage (A1–A3) remain identical under both standards. Therefore, this methodological difference has no effect on the interpretation or comparability of EPD results when product-stage results are assessed as required by EN 15804.

All EPDs developed under this PCR shall be modelled and reported following the EN 15804 allocation approach, ensuring consistency of system boundary implementation and comparability between declarations.

7.4.4 End of Life Stage

This subsection defines the methodological rules for modelling end-of-life (EoL) processes included in Modules C1–C4 and for reflecting related flows into Module D where applicable.

General principles

- End-of-life modelling shall be based on realistic, regionally relevant scenarios for the removal, transport, treatment, recovery and final disposal of the product and its packaging.
- EoL scenarios shall reflect typical or best-estimate practices in the product's intended geographic market(s) and be documented in the LCA report.
- All assumptions must be conservative where significant uncertainty exists, and sensitivity analysis shall be provided for key EoL parameters that materially affect results.

Module assignments

Follow [section 7.3.6](#).

Recycling, reuse and energy recovery

- Reuse, recycling and energy recovery routes must be modelled in C3/C4 as appropriate and must be consistent with the regional waste management infrastructure.
- Where material or energy leaves the product system and provides a measurable substitution benefit to other product systems, those avoided impacts shall be reported in Module D following EN 15804 rules and the avoided burden approach. Documentation shall include the substitution assumptions, evidence of market relevance, and quality of recovered material.

- Virtual emissions or uptake required for balancing biogenic carbon related to materials leaving the system shall follow [Section 7.7](#).

End-of-life distribution and allocation

- If multiple EoL processing routes apply (e.g., some fraction is recycled, some incinerated, some landfilled), the distribution fractions must be based on measured data, industry statistics, or conservative estimates; the source and justification must be documented.
- Where allocation between recovery routes is required, apply primary physical allocation principles (mass or energy); economic allocation is only permitted if physical causality cannot be established and must be justified.

Contingency for missing data

- If specific EoL data for the product or region are unavailable, use authoritative national/regional datasets or industry averages and document the data source and justification.
- The total contribution of EoL proxy data to any impact indicator shall be quantified and reviewed against the cut-off rules in [Section 7.4.5](#).

Documentation and transparency

- The LCA report and EPD shall include a full description of EoL assumptions, transport distances and modes, processing technologies, recycling rates, recovery efficiencies, treatment of residues, and any virtual emissions applied for carbon balancing.
- Any Module D credits shall be fully transparently documented, including the logic and data used for substitution modelling and the identity/quality of substituted products.

7.4.5 Cut-Off Criteria (Criteria for Inclusion and Exclusion)

The selection of inputs, outputs, data flows, processes, and materials to be included in the LCI shall follow the cut-off requirements defined in EN 15804:2012+A2:2019/AC:2021 and ISO 21930:2017.

The overall principle is that all environmentally relevant flows shall be included within the system boundaries unless they can be demonstrated to be insignificant according to the criteria defined below.

General inclusion rules

The following shall always be included in the LCA model:

- All mass and energy flows contributing to at least 99% of the total mass and energy inputs to each declared life cycle module.
- All processes expected to contribute meaningfully to the environmental impacts of the product, even if their mass contribution is small (e.g., hazardous substances, auxiliaries, coatings, additives, fuels).

- All upstream and downstream processes required to model energy supply, fuel combustion, transport, water use, waste treatment, recycling, and disposal activities relevant to the declared modules.

Permitted exclusions

Exclusions may only be applied if all of the following conditions are met:

- The excluded flow:
 - ❖ Represents less than 1% of total mass, less than 1% of total energy use, or less than 1% of any individual environmental impact indicator; and
- The sum of all excluded flows shall not exceed 5% of any of the following totals:
 - ❖ Mass,
 - ❖ Energy use, or
 - ❖ Environmental impact for any declared indicator; and
- The exclusion does not affect the completeness, comparability, or representativeness of the results.

Prohibited exclusions

The following shall never be excluded, regardless of magnitude:

- Inputs or outputs associated with:
 - ❖ Hazardous substances,
 - ❖ Highly impactful toxic flows, or
 - ❖ Legally regulated materials.
- Processes that may have a significant environmental impact even if physical quantities are small (e.g., catalysts, specialty chemicals, surface treatments, or emissions with high characterization factors).
- Any flow necessary to maintain compliance with EN 15804 indicator calculations, including biogenic carbon flows, LULUC emissions, or energy-related emissions.

Documentation of cut-off rules

All applied cut-off rules and exclusions shall be:

- Justified and documented in the LCA study report,
- Transparently described so that verification bodies can assess their validity,
- Confirmed to be in compliance with:
 - ❖ EN 15804+A2 completeness rules,
 - ❖ ISO 21930 transparency requirements.

Where exclusions are applied, their total estimated contribution (mass, energy, and environmental impact) shall be quantified to demonstrate conformity with the permitted limits.

Consistency requirement

The same cut-off criteria shall be applied consistently across:

- All life cycle modules,
- All declared products within a multi-product EPD, and

- All participating manufacturers in a sector EPD.

This ensures that environmental impact results remain comparable and reproducible as required by EN 15804 and ISO 21930.

7.4.6 Information on Biogenic Carbon Content

Biogenic carbon content of products and packaging shall be quantified and declared in accordance with:

- EN 15804:2012+A2, and
- The detailed methodology defined in [Section 7.7](#).

Inventory modelling of biogenic carbon shall:

- Apply verified carbon content data for relevant materials,
- Incorporate documented uptake and release flows,
- Maintain full mass-balance accounting across life cycle modules.

Assumptions and calculation methods for biogenic carbon shall be reported transparently within the LCA report.

7.4.7 Selection of Data

EN 15804, Clauses 6.3.7 and 6.3.8, provide the general requirements for the selection and quality of both generic and specific data used in EPD development. These rules, together with the data quality principles defined in ISO 14044, shall be applied in this PCR. The following data selection rules shall be followed;

Manufacturing data (Module A3)

Manufacturer-specific site data or production-weighted annual average data shall be used for all processes under direct control of the EPD owner. If representative site data cannot be obtained, the use of alternative datasets shall be justified and clearly documented in the EPD and supporting LCA report.

Data age

The period of data collection shall be clearly stated. Primary data should normally be representative of the most recent 12-month production period and shall not exceed five years of age at the time of EPD publication.

Upstream processes

Priority shall be given to the use of verified EPDs for upstream materials and processes where available. When such EPDs are not available, high-quality specific LCI datasets shall be used. Only where neither EPDs nor suitable specific datasets exist may generic background data be applied.

Downstream processes

For transport, installation, use, and end-of-life stages, data shall be selected to represent realistic scenarios for the target market or region and shall be consistent with assumptions defined in [Sections 7.4.3](#) and [7.4.8](#).

Background data and PCR alignment

Where PCRs exist for upstream materials, energy carriers, transport processes, or waste treatment, data selection and modelling shall follow the methodological requirements of those PCRs in addition to the rules of EN 15804 and this PCR.

Data representativeness

All datasets used shall be evaluated for:

- Technological relevance,
- Geographical relevance,
- Temporal representativeness, and
- Completeness relative to the defined system boundaries.

Any limitations related to data quality, proxies, or representativeness shall be documented transparently in the LCA report and summarized in the EPD where relevant.

The following hierarchy for data selection shall apply across life cycle stages:

Table 2: Data selection hierarchy by module

	Product stage	Construction stage	Use stage	End-of-Life Stage	Beyond System Boundary
Modules	A1-A3	A4-A5	B1-B7	C1-C4	D
Process Covered	Production of commodities and raw materials (A1); product manufacturing and packaging (A3)	Transport to site (A4); installation and construction processes (A5)	Use, maintenance, repair, replacement, refurbishment, operational energy and water use	Deconstruction/de molition, transport, waste processing, disposal	Recycling, reuse, or energy recovery substituting primary production
Process Control	Upstream processes and processes under manufacturer influence	Downstream construction processes	Downstream use-related processes	Downstream waste treatment processes	Processes in subsequent product systems
Data Type	a) Product-specific EPD data b) Specific LCI data c) Generic data	Manufacturer's average or site-specific data where available;	Generic data representing typical use scenarios	Generic or authoritative waste treatment data	Generic substitution datasets consistent with EN

Data Represents	Representative of average production during reference period	Representative of intended market and construction practice	Representative of typical service conditions and geography	Representative of regional waste management practices	Representative of substituted materials, fuels, or energy
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This hierarchy ensures that the best available data of appropriate quality and representativeness are consistently applied across all life cycle modules.

7.4.7.1 Selection of Electricity Data

LCIA results shall be calculated using the physical national electricity grid mix for all energy-consuming processes. The physical grid mix shall represent the country where electricity consumption occurs.

In addition to the physical grid mix results, separate LCIA results may optionally be calculated using electricity sources backed by valid Guarantees of Origin (GoO). Where guarantees of origin are applied, both sets of results — (a) *physical grid mix results* and (b) *guarantee-of-origin-based results* — shall be reported separately within the EPD.

Use of guarantees of origin shall follow the guidance provided in ISO 14067 to minimize the risk of double counting renewable electricity claims within product carbon footprints.

For the physical electricity grid mix:

- The national production mix shall be used, including:
 - ❖ Electricity imports and exports,
 - ❖ Direct generation emissions,
 - ❖ Associated infrastructure burdens, and
 - ❖ Transmission and distribution losses.
- The methodology and datasets used to derive the grid mix shall be documented in the supporting LCA report.
- If available LCI datasets do not correctly represent national grid conditions for electricity consumed in modules A3 or A5, a calculation based on official national statistics shall be performed to establish a compliant electricity mix.

When manufacturers purchase valid guarantees of origin, they may calculate additional, separate LCIA results using certified electricity mixes subject to the following conditions:

- **Specific electricity data:** Electricity mix datasets shall represent a stable production average, typically covering a period of three to five years, unless more recent representative data are available.
- **Upstream processes:** If guarantees of origin are not applied to upstream production processes, background electricity data from commercially available national databases may be used for those processes.
- **Downstream processes:** Guarantees of origin shall not be used for downstream life cycle modules (B1–B7, C1–C4, and D).

- **Validity:** Guarantees of origin shall remain valid for the full validity period of the EPD. If a guarantee expires before the end of the EPD validity period, the associated EPD shall no longer be considered valid for claims based on guarantee-backed electricity.

For European electricity modelling, datasets derived from ENTSO-E statistics may be applied when establishing national physical electricity mixes.

7.4.7.2 Transmission and Distribution Losses

Where electricity transmission and distribution losses are not already included within national electricity mix datasets, grid losses shall be explicitly modelled and added to the electricity input quantities within the LCI.

Loss percentages applied shall be:

- Based on official national statistics or peer-reviewed datasets, and
- Documented transparently in the supporting LCA report.

7.4.8 Data Quality Requirements

Data quality for all LCI datasets used for development of EPDs under this PCR shall comply with the requirements of EN 15804:2012+A2:2019, Clause 6.3.7 and ISO 14044:2006, Clause 4.2.3.6. The LCA report shall document and evaluate data quality characteristics for all foreground and background datasets applied in the study.

Data quality assessment shall address at minimum the following criteria:

- **Time-related representativeness** — Data shall reflect current production conditions and technology. Foreground manufacturing data shall normally represent the most recent 1–3 years, and background datasets shall not exceed acceptable age limits defined in recognized databases unless justified.
- **Geographical representativeness** — Data shall reflect the region or country of operation for each life cycle stage. Where site-specific or national datasets are unavailable, geographically representative proxy datasets may be used and shall be justified.
- **Technological representativeness** — Data shall correspond to the actual production technologies, materials, fuels, and treatment systems applied in the declared product system. Generic datasets shall only be used where specific data are unavailable or impractical to obtain.
- **Completeness** — All relevant material flows, energy inputs, emissions to air, water, and soil, and wastes required to calculate declared indicators shall be included unless valid cut-off criteria under [Section 7.4.5](#) apply.
- **Precision and consistency** — Input and output data shall be internally consistent and calculated using harmonized processes, units, conversion factors, and modelling assumptions across all life cycle stages.
- **Reliability and transparency** — The origin of all data shall be documented, including sources, assumptions, modelling approaches, and any applied corrections or

conservative estimates. Allocation methods applied to resolve multifunctional processes shall follow the hierarchy defined in [Section 7.5.2](#).

7.4.8.1 Foreground and Data Requirements

Foreground data relating to the product manufacturer's activities (modules A1–A3 and, where relevant, A5 or B modules):

- Shall be based on measured or calculated site-specific annual production data, reflecting typical operating conditions.
- Shall include:
 - ❖ Energy consumption by type,
 - ❖ Raw material and auxiliary material inputs,
 - ❖ Transport distances and modes,
 - ❖ Water use,
 - ❖ Direct emissions,
 - ❖ Waste generation and treatment routes.
- Shall be averaged across facilities when multiple production sites are covered by one EPD, provided variation criteria defined in [Section 6.2 \(Multiple Products/Sector EPD\)](#) are met.

7.4.8.2 Background Data Requirements

Background datasets shall be sourced from:

- Recognized international or regional LCA databases (like Ecoinvent) compliant with EN 15804 and ISO 14044 requirements, or
- Verified third-party EPDs following EN 15804 or equivalent PCR rules.

Priority for background datasets shall follow the data hierarchy:

1. Product-specific EPD data (the best data, as it is highly specific and verified),
2. Verified specific LCI datasets (detailed data from specific processes, though maybe not a full EPD),
3. Geographically and technologically representative generic datasets (industry averages used as a last resort).

Generic datasets shall only be used where higher quality alternatives are unavailable and must be justified within the LCA report.

7.4.8.3 Data Age Thresholds

Unless otherwise justified:

- Foreground data shall be no older than 3 years at the time of EPD publication.
- Background datasets shall normally not exceed 10 years, except where older datasets represent stable technologies with no known significant changes.

Any deviations from age limits shall be documented and technically justified in the LCA report.

7.4.8.4 Data Uncertainty and Conservatism

Where uncertainty exists in selected datasets or modelling assumptions:

- Conservative assumptions shall be applied, favoring higher environmental impact results over underestimation.
- Major uncertainty contributors shall be described qualitatively within the LCA report.

7.4.8.5 Documentation and Verification

The LCA report supporting each EPD shall include:

- A data quality assessment summary, referencing the criteria above,
- Description of all data sources, modelling decisions, and assumptions, and
- Disclosure of any known data limitations or uncertainty drivers.

During third-party verification, the verifier shall assess the suitability, consistency, and compliance of all datasets with the requirements of this PCR, EN 15804, and ISO 14044 prior to EPD registration or publication.

7.4.9 Developing Product Level Scenarios

Product-level scenarios shall be developed to model relevant life cycle processes beyond the manufacturer's direct control, including transport, installation, use-phase activities, maintenance, repair, replacement, and end-of-life treatment. These scenarios ensure consistency and representativeness where site-specific data are not available.

Scenarios shall be established in accordance with:

- EN 15804:2012+A2, Clause 6.3.6 — Scenarios for life cycle modules, and
- ISO 14044 — scenario modelling and transparency requirements.

Scenario assumptions shall:

- Represent typical and realistic conditions of use for the applicable construction context and geographic region,
- Reflect average industry practice or commonly applied technologies,
- Be technically feasible and market-representative, and
- Avoid the use of best-case or worst-case extremes unless clearly justified.

Each scenario shall be:

- Clearly documented in the LCA report,
- Consistently applied across all comparable products within the EPD scope, and
- Fully transparent, including all assumptions, parameters, and source references.

Scenario Requirements by Life Cycle Stage

Product Stage (A1—A3)

Scenarios shall address:

- Raw material extraction, processing, and production processes (A1)
- Transport of materials to the manufacturing site (A2)

- Product manufacturing, including energy and auxiliary material use, and waste generation (A3)

Construction Stage (A4–A5)

Scenarios shall address:

- Average transport distances and modes from factory gate to construction site (A4),
- Typical installation methods,
- On-site energy consumption where relevant,
- Auxiliary materials,
- Construction waste generation and waste treatment routes (A5).

Transport and installation assumptions shall reflect the intended primary market region of the product.

Use Stage (B1–B7)

Where applicable, scenarios may include:

- Expected maintenance and repair activities (B2–B3),
- Replacement frequencies based on RSL assumptions (B4),
- Refurbishment activities if relevant (B5),
- Operational energy use (B6) and water consumption (B7) for products contributing to building operation.

If no significant use-stage impacts occur, the relevant modules shall be declared as “Not relevant” with technical justification documented in the LCA report.

End-of-Life Stage (C1–C4)

Scenarios shall define realistic end-of-life treatment routes, including:

- Demolition or dismantling processes (C1),
- Transport to waste processing facilities (C2),
- Waste processing for reuse, recycling, or recovery (C3),
- Final disposal pathways such as landfill or incineration (C4).

Scenario selection shall be based on:

- Current waste management practices in the target market region, and
- Applicable regulatory or industry standards.

Module D—Benefits and Loads Beyond the System Boundary

Where recycling, reuse, or energy recovery results in potential downstream benefits, scenarios for module D shall:

- Follow the modelling rules of EN 15804:2012+A2,
- Ensure no double counting of environmental benefits, and
- Apply consistent allocation principles aligned with [Section 7.5.2 Allocation of Input Flows and Output Emissions](#).

Scenario Documentation

For all modelled life cycle stages, the following shall be documented:

- Key parameters (transport distances, replacement rates, energy demand, recycling rates, etc.),
- Data sources used (industry reports, statistics, databases, literature),
- Assumptions and limitations, and
- Justifications for scenario selection.

Any deviations from default or PCR-recommended scenarios shall be:

- Clearly explained, and
- Identified as conservative or alternative approaches within the supporting LCA report.

7.5 Inventory Analysis

LCI analysis shall be conducted in accordance with ISO 14044:2006, Clause 4.3 and EN 15804:2012+A2, Clause 6.3.

All material and energy flows associated with the product system shall be quantified for each declared life cycle information module (A1–A3, A4–A5, B1–B7 where applicable, C1–C4, and D where relevant). The same calculation procedures and modelling principles shall be applied consistently across all modules to ensure data coherence and comparability.

For combustible materials used within the system, conversion of material flows into energy inputs and outputs shall be performed using net calorific values (NCV) based on scientifically accepted reference data specific to the relevant fuel type.

All inventory data shall:

- Represent average conditions of the manufacturing site or sector defined within the EPD scope,
- Maintain mass and energy balance consistency, and
- Be documented transparently within the LCA report.

7.5.1 Collection of Data

Data collection shall comply with the requirements of:

- ISO 14044:2006, Clause 4.3.2, and
- EN 15804:2012+A2, Clauses 6.3.4 and 6.3.7.

Primary (specific) data shall be collected for:

- Raw material inputs,
- Energy consumption,
- Water use,
- Auxiliary materials,
- Direct emissions to air, water, and soil,
- Waste generation and treatment.

Primary data shall be:

- Representative of at least 12 consecutive months of operation unless otherwise justified,
- Geographically representative of the manufacturing site(s),
- Technologically representative of current production methods.

Where direct measurement is not available, data may be derived from:

- Mass or energy balances,
- Meter readings,
- Supplier documentation, or
- Internally validated estimates.

All upstream and downstream processes not under direct control of the manufacturer may use secondary data consistent with the data selection hierarchy defined in [Section 7.4.7 – Selection of Data](#).

All data sources, assumptions, and timeframes shall be fully documented in the LCA report.

7.5.2 Allocation of Input Flows and Output Emissions

7.5.2.1 General

Allocation procedures shall comply with the allocation hierarchy defined in:

- EN 15804:2012+A2, Clause 6.3.3, and
- ISO 14044:2006, Clause 4.3.4.

Allocation shall be applied only when processes cannot be subdivided, or system expansion cannot be technically or economically implemented.

The following hierarchical approach shall be used:

- Avoid allocation wherever possible by subdividing unit processes or expanding system boundaries.
- Apply physical allocation based on relevant physical relationships such as mass, energy content, or material composition.
- Apply economic allocation only where physical relationships cannot reasonably be established.

7.5.2.2 Co-Product Allocation

Joint co-production is defined as processes where:

- More than one product is generated simultaneously, and
- Products cannot be produced independently of each other, or
- Output ratios vary significantly over normal operating conditions.

When co-products occur:

- If physical relationships (mass, energy content, material composition) provide a meaningful causal link between co-products, allocation shall be based on these parameters.

- Where large disparities in economic value exist or physical causality cannot reasonably be established, allocation shall be conducted based on economic value at the point where co-products leave the process.

Economic value shall be determined by:

- Multiplying representative unit prices by annual production volumes,
- Using price averages over a suitable time period (e.g., annual rolling averages) to dampen market fluctuations.

In all cases:

- Inherent physical properties, including energy and material content, must be preserved within the inventory modelling.
- Allocation choice and calculation method shall be transparently documented within the LCA report with full justification.

7.6 Impact Assessment

LCIA shall be performed in accordance with:

- ISO 14044:2006, Clause 4.4, and
- EN 15804:2012+A2:2019, Clauses 6.3.5 and 7.2.

The impact categories defined by EN 15804+A2 shall be applied consistently across all declared life cycle modules. Any supplementary environmental indicators beyond those defined in EN 15804 shall be reported as additional environmental information unless a dedicated sub-PCR has been developed and approved for their inclusion.

The characterization models, indicator units, normalization rules, and reporting formats specified in EN 15804+A2 shall be applied without modification, ensuring full comparability of EPD results across programs and product categories.

7.6.1 General

LCIA modelling shall be based on the classification and characterization of all inventory flows obtained from the LCI analysis for each life cycle module. The following general principles apply:

- All environmental indicator results shall be calculated per FU or DU.
- Impact results shall be reported separately for each life cycle information module (A1–A3, A4–A5, B-modules where included, C1–C4, and D).
- Results shall be presented using the mandatory split indicators required by EN 15804+A2, including:
 - ❖ Fossil GWP (GWP-f),
 - ❖ Biogenic GWP (GWP-bio),
 - ❖ GWP related to LULUC (GWP-luluc), and
 - ❖ Total GWP as the aggregated sum.

Modelling choices and characterization methods shall be consistent with the PCR-defined LCIA approach and shall be applied uniformly across all declared products and scenarios. Any deviations must be technically justified and documented in the supporting LCA report.

7.6.2 Core Environmental Impact Indicators

The mandatory core environmental impact indicators defined by EN 15804:2012+A2, Clause 7.2.3.1 shall be calculated and reported for all declared life cycle modules in accordance with EN 15804 requirements. These indicators include, but are not limited to:

- GWP (split indicators and total),
- Ozone depletion potential,
- Acidification potential,
- Eutrophication potentials (freshwater, marine, terrestrial),
- Photochemical ozone creation potential,
- Abiotic resource depletion (minerals and fossil).

All characterization models and reference methods mandated by EN 15804+A2 shall be used without modification.

Eutrophication Aquatic Freshwater Indicator

EN 15804:2012+A2 specifies that the unit for Eutrophication aquatic freshwater shall be kg PO₄³⁻ eq. However, the referenced characterization method (“EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe”) expresses this indicator in kg P eq.

This inconsistency is considered a typographical error in EN 15804+A2 and is expected to be corrected in future revisions. Until this correction is officially issued, results for the freshwater eutrophication indicator shall be reported in both units:

- kg PO₄³⁻ eq., and
- kg P eq.

This dual reporting ensures full transparency and maintains consistency with both the indicator specification and the applied characterization model.

7.6.3 Additional Environmental Impact Indicators

Additional environmental impact indicators identified in EN 15804:2012+A2, Clause 7.2.3.2 may be calculated and reported when relevant to the declared product or building application. Such indicators shall be:

- Quantified using characterization models accepted within EN 15804+A2,
- Calculated and reported per declared life cycle module,
- Clearly distinguished from mandatory core indicators.

Any indicators reported beyond the scope defined by EN 15804 and this PCR shall be categorized as Additional Environmental Information and shall not be used for comparative assertions unless supported by an approved sub-PCR or supplemental methodology.

7.6.4 Primary Energy Use Indicators Calculation Methodology

Primary energy use indicators shall be calculated and reported in accordance with EN 15804:2012+A2, using a cumulative energy demand approach that distinguishes between renewable and non-renewable primary energy resources. Primary energy use indicators under this PCR shall be calculated using a single, harmonized methodology applied consistently across all EPDs.

Primary energy use shall be modelled and reported separately for renewable and non-renewable energy sources and further disaggregated based on their use as energy carriers or as raw materials.

Indicator structure

The following primary energy indicators shall be calculated for each declared life cycle module:

Non-renewable primary energy:

- Primary energy from non-renewable resources used as energy (PENRE)
- Primary energy from non-renewable resources used as raw materials (PENRM)
- Total non-renewable primary energy use (PENRT)

Renewable primary energy:

- Primary energy from renewable resources used as energy (PERE)
- Primary energy from renewable resources used as raw materials (PERM)
- Total renewable primary energy use (PERT)

Total primary energy use:

- Total primary energy use (PET), calculated as the sum of renewable and non-renewable primary energy use

Calculation principles

Primary energy indicators shall be based on the cumulative primary energy demand associated with all energy carriers and material inputs within the system boundary of each life cycle module. The calculation shall include:

- Upstream primary energy required for extraction, processing, and conversion of energy carriers,
- Direct energy consumption occurring within foreground processes, and
- Embedded primary energy associated with material inputs where relevant.

Electricity and fuel inputs shall be converted to primary energy using appropriate primary energy factors consistent with the electricity modelling rules defined in [Section 7.2.2](#).

Treatment of energy used as raw materials (inherent energy)

Energy used as raw materials is limited to the inherent energy content of the product and its packaging. All other inputs of primary energy resources shall be considered as energy used as energy carriers.

The inherent energy of products and packaging shall be calculated by multiplying the mass of each relevant material by its lower calorific value (net calorific value). Where necessary, inherent energy values shall be manually verified and added to the LCI to ensure correct separation between energy used as raw materials and energy used as energy carriers.

If a material is first used as a raw material and its inherent energy is later used as an energy carrier within the product system, this energy shall be classified as energy used as energy carrier to avoid double counting.

Modular input output balancing of inherent energy

Energy used as raw materials shall be declared:

- As an input to the life cycle module where the material enters the product system (modules A1–A3), and
- As an output from the life cycle module where the material exits the product system, typically:
 - ❖ Module A5 for packaging materials, and
 - ❖ Modules C3 and/or C4 for product materials.

Where inherent energy leaves the product system as waste, the corresponding energy shall be reported in the module where the loss occurs as energy used as energy carriers, even if the energy is not recovered or utilized.

If inherent energy exits the product system in modules A5 or C, but these modules are not included within the system boundary of the EPD, the corresponding energy shall be balanced by adding a virtual output of energy from modules A1–A3. Any such balancing shall be clearly documented and disclosed in the EPD.

Over the complete product life cycle, the net amount of energy used as raw materials shall be zero, as no inherent energy remains stored in the product beyond the end-of-life stage.

Treatment of renewable energy and feedstocks

Renewable energy inputs shall be classified according to their function:

- Renewable energy used for energy purposes (e.g. electricity, heat, fuels) shall be reported under PERE.
- Renewable resources used as raw materials or feedstock (e.g. biomass used as material input) shall be reported under PERM.

No credits shall be assigned for future energy recovery unless explicitly modelled and reported in Module D in accordance with EN 15804 requirements

Modular reporting and consistency

Primary energy indicators shall be reported separately for each declared life cycle module (A–D), ensuring consistency with the modular LCA structure. Aggregated values (e.g. A1–A3) may be presented in the EPD, provided that module-level results remain available in the supporting LCA report.

The same calculation methodology and classification rules shall be applied consistently across all products covered by an EPD and across comparable EPDs developed under this PCR to ensure transparency and comparability.

Documentation

All assumptions, conversion factors, data sources, and calculation procedures used to derive primary energy indicators shall be fully documented in the supporting LCA report.

7.7 Biogenic Carbon Calculation Methodology

The biogenic carbon content of products and packaging shall be declared separately in the content declaration of the EPD, unless the biogenic fraction is below 5% by mass of the product or packaging, respectively, in accordance with the requirements of EN 15804.

The calculation and reporting of biogenic carbon shall follow the principles of EN 15804:2012+A2:2019/AC:2021. The objective is to ensure transparent and consistent mass-balance accounting of biogenic carbon uptake, storage, and release across all relevant life cycle stages. LCI modelling shall distinguish between:

- Fossil GHG emissions,
- Biogenic GHG emissions (e.g., biogenic CO₂, CH₄), and
- GHGs arising from LULUC.

Emissions related to LULUC shall be reported separately and shall contribute only to GWP-luluc, to prevent double counting with GWP-fossil or GWP-biogenic.

The amount of biogenic carbon present in the product and its packaging is an inherent material property and shall always be verified, as secondary LCA datasets may not correctly account for biogenic carbon content. Where necessary, carbon content values shall be determined manually and added to the LCI model to ensure accurate calculation of GWP-biogenic and proper documentation in the content declaration of the EPD.

Biogenic CO₂ uptake and release shall be balanced within each life cycle module according to the modular LCA approach of EN 15804:

- If biogenic carbon uptake is followed by emission as CO₂ within the same module and does not become part of the product or packaging content, both flows may be balanced to zero in that module.
- Where non-CO₂ GHGs (e.g., CH₄) are emitted from biogenic processes, these emissions contribute to GWP-biogenic and shall be reported accordingly.

Where biogenic carbon becomes part of the product or packaging material:

- The initial uptake of biogenic CO₂ shall be reported in modules A1–A3.
- The subsequent release of this carbon shall normally be reported in:
 - ❖ Life cycle stage C1–C4 for product material, or
 - ❖ Module A5 for packaging material.

If stored biogenic carbon does not get oxidized at end-of-life (for example, due to permanent storage exceeding 100 years or transfer to reuse or recycling), a virtual emission of biogenic CO₂ shall be added to the module from which the carbon leaves the product system (usually module C). Similarly, the reuse or recycling of biogenic carbon as an input into new products shall be modelled as a corresponding uptake of biogenic CO₂, usually in module A1.

No climate credits shall be claimed for delayed emissions or permanent storage of biogenic carbon, in accordance with the requirements of EN 15804. Over the complete life cycle of the product, the total biogenic carbon balance shall always sum to zero.

Note: *For the purpose of this PCR, biogenic carbon emissions are considered “balanced” when the sum of GWP-biogenic results across all relevant life cycle modules (A–C) equals zero, reflecting that all biogenic carbon taken up by the product system is subsequently released or virtually released within the declared system boundary.*

Balancing is achieved by reporting equal and opposite biogenic CO₂ flows in the modules where biogenic carbon enters and exits the product system, in accordance with the modular structure of EN 15804.

Illustrative example (packaging material): *If 5 kg CO₂e of biogenic carbon uptake associated with packaging material is reported in Module A3, an equivalent release (or virtual release) of 5 kg CO₂e shall be reported in Module A5. As a result, the cumulative GWP-biogenic impact across Modules A–C equals zero.*

This approach ensures transparent mass-balance accounting of biogenic carbon uptake, storage, and release, while preventing the attribution of net climate benefits from temporary carbon storage.

For cradle-to-gate EPDs:

- Where product packaging contains biogenic carbon, the uptake reported in Module A3 shall be balanced by a corresponding virtual emission in A3.
- If such balancing has been applied, it shall be clearly stated in the environmental performance section of the EPD.

For all other EPD types, where packaging contains biogenic carbon:

- Module A5 shall be included within the system boundary, and the uptake of biogenic carbon shall be balanced through emissions or virtual emissions in A5.

The calculation of biogenic carbon shall be based on a documented mass-balance approach, using:

- Verified carbon content of dry matter where relevant,
- Stoichiometric conversion factors between carbon and CO₂ (44/12), and
- Transparent LCI documentation of emission and uptake flows.

All assumptions related to carbon content, combustion, degradation, recycling, reuse, and data corrections shall be fully documented in the supporting LCA report.

Where LCA software or background datasets do not provide balanced modular results for biogenic flows, adjustments shall be made either by correcting inventories or by conservatively setting characterization factors to zero for non-product biogenic CO₂ flows, to comply with modular balancing requirements.

8.0 CONTENTS OF THE EPD

This section specifies the information that shall be declared and presented in the EPD developed in accordance with this PCR. The EPD shall comply with EN 15804+A2, ISO 14025, ISO 21930, and ICIS EPD template.

8.1 Declaration of General Information

Each EPD developed under this PCR shall include the following general information:

- Program operator name and logo.
- EPD registration number.
- Publication date and validity period of the EPD.
- Reference to this PCR including version number.
- Name, address, and contact details of the EPD owner (manufacturer or organization).
- Product identification including:
 - ❖ Trade name(s),
 - ❖ Product description,
 - ❖ Product category/classification code,
 - ❖ Intended use or application.
- Manufacturing site(s) included under the EPD.
- FU or DU applied.
- RSL, if applicable.
- EPD type (single-product EPD, multiple-product EPD, or sector EPD).
- System boundary applied.
- Description of declared life cycle modules.
- LCA software used and background databases referenced.
- Name of LCA practitioner.
- Verification information including:
 - ❖ Independent third-party verifier,
 - ❖ Verification body or individual,
 - ❖ Statement of conformity with ISO 14025 and EN 15804+A2.

8.2 Declaration of Environmental Parameters

8.2.1 General

The EPD shall declare environmental performance results for all life cycle modules included within the defined system boundary, in accordance with EN 15804+A2 and the reporting rules of this PCR.

All declared values shall:

- Correspond to the Functional or Declared Unit defined in [Section 7.4.1](#).
- Be calculated based on the modelling rules, allocation principles, electricity modelling rules, cut-off criteria, and DQR as defined in [Sections 7.2 to 7.5](#).
- Apply the mandatory impact assessment methods and reporting indicators of EN 15804+A2.

8.2.2 Rules for Declaring LCA Details

Each EPD shall disclose:

- Type of EPD (single product, multiple products, or sector EPD) and the modelling approach applied (as defined in [Section 7.2.3](#)).
- System boundary coverage and declared life cycle modules (see [Section 7.4.3](#)).
- Key modelling assumptions.
- Electricity modelling approach used (see [Section 7.2.2](#)).
- Allocation methods applied (see [Section 7.5.2](#)).
- Data sources (foreground and background).
- Temporal, geographical, and technological representativeness of datasets (see [Section 7.4.7](#)).
- Applied cut-off criteria (see [Section 7.4.5](#)).

8.2.3 Indicators Describing Environmental Impacts

The EPD shall declare all mandatory EN 15804+A2 impact indicators, including but not limited to:

- Global Warming Potential:
 - ❖ GWP-fossil (GWP-f),
 - ❖ GWP-biogenic (GWP-bio),
 - ❖ GWP land-use and land-use change (GWP-luluc),
 - ❖ GWP-total.
- Ozone Depletion Potential (ODP).
- Acidification Potential (AP).
- Eutrophication:
 - ❖ Freshwater (EP-freshwater),
 - ❖ Marine (EP-marine),
 - ❖ Terrestrial (EP-terrestrial).
- Photochemical Ozone Creation Potential (POCP).
- Abiotic resource depletion:
 - ❖ Elements,
 - ❖ Fossil fuels.
- Water scarcity footprint.

All indicators shall be reported per life cycle module and aggregated totals where applicable, following the declaration rules defined in [Section 7.6](#).

8.2.4 Indicators Describing Resource Use

The following resource use indicators shall be declared within the EPD as required by EN 15804+A2:

- Use of renewable primary energy resources (as energy carriers and raw materials).
- Use of non-renewable primary energy resources.
- Secondary material use.
- Use of net fresh water.
- Hazardous and non-hazardous waste flows.
- Radioactive waste flows.

All resource use figures shall correspond to the same declared modules and system boundaries as the environmental impact indicators.

8.2.5 Information on Biogenic Carbon Content

Where biogenic carbon is present in products or packaging, the EPD shall:

- Separately declare stored biogenic carbon content (when above the 5% mass threshold).
- Declare GWP-biogenic results in accordance with EN 15804+A2 split indicators.
- Reference the biogenic carbon calculation methodology defined in [section 7.7](#).

8.3 Scenarios and Additional Technical Information

The EPD shall describe all scenarios that form part of the life cycle modelling, including where applicable:

- Transport to construction site (A4).
- Installation, losses, and packaging treatment (A5).
- Use phase assumptions (B-modules), including maintenance, repair, replacement, operational energy use (B6), and water use (B7).
- End-of-life scenarios (C1–C4), including demolition, transport, waste processing, recycling rates, and disposal pathways.
- Benefits and loads beyond the system boundary (D), including recycled material substitution or energy recovery.

Scenario parameters shall be derived in accordance with [Section 7.3](#) and documented qualitatively or quantitatively in the EPD.

8.3.1 General

Documentation of technical information for the construction process shall follow the requirements given in EN 15804 Clause 7.3.2.

8.3.2 A4–A5 Construction Process Stage

8.3.2.1 A4—Transport from Production Site to the Construction Site

The construction or service site transportation stage shall be specified accord to EN 15804, Table 10 for construction products and for services, if relevant. If no official statistic is available, including statistics from the manufacturer, then estimated transport scenarios and distances may be used and documented in the EPD. It must then be stated that the scenario is based on an estimated figure, and the scenario should document what it is geographically representative of. It is also possible to include numeral transportation scenarios. i.e. different alternatives for A4 in the same EPD and results table.

8.3.2.2 A5—Installation

The installation life cycle module shall be specified according to EN 15804, Table 11. The installation phase includes all materials and activities connected to installation. If the EPD deviates from the predefined scenarios in sub-PCR, then this shall be clearly stated and justified. Installation also includes the core process of a service. The scope of what is allocated in life cycle module A5 shall be reported in the EPD.

8.3.3 B1—B7 Use Stage

The use stage shall be specified accord to EN 15804, Table 12 and Table 14.

8.3.4 C1—C4 End-of-Life

The end-of-life stage shall be specified according to EN 15804, Table 15.

8.4 Additional Information

This clause covers additional information intended to supplement the environmental performance indicators derived from the LCA. The scope of this section is broader than EN 15804 and may include non-LCA-based environmental, health, safety, or regulatory information relevant for product users or authorities. Where applicable, additional information shall be presented in a transparent, verifiable, and clearly separate manner from the LCA results.

8.4.1 Release of Dangerous Substances—Indoor Air

Information regarding emissions of hazardous substances to indoor air shall be declared in accordance with EN 15804 requirements, using relevant harmonised or recognised test standards where applicable. Where data is unavailable or testing has not been conducted, this shall be clearly stated in the EPD.

8.4.2 Release of Dangerous Substances—Soil and Water

Information regarding emissions of hazardous substances to soil and water shall be declared in accordance with the requirements of EN 15804. Where results are not available, this shall be transparently stated together with a brief justification.

8.4.3 GHG Emissions from Electricity Use in Manufacturing (A3)

For transparency purposes, the EPD shall declare the specific GWP intensity of electricity consumed during manufacturing (Module A3), expressed as:

- kg CO₂e / kWh, or
- kg CO₂e / MJ

The EPD shall also specify whether electricity-related emissions are accounted for in:

- Module A1, as defined by the EN 15804 modelling convention, or
- Module A3, as defined by ISO 21930.

Where electricity procurement is based on Guarantees of Origin (GoO) or comparable contractual instruments, the EPD shall report:

- GWP results calculated using the physical national grid mix, and
- separate additional GWP results calculated using the contractual electricity mix based on GoO.

This dual reporting is required to ensure full transparency and comparability and shall apply only to the GWP indicators; other impact categories shall continue to be reported using the physical grid mix results.

8.4.4 Hazardous Substances and Content Declaration

The EPD shall declare compliance with applicable chemical regulatory requirements relevant to the market(s) in which the product is placed, including substances regulated under REACH where applicable.

Where the final product contains substances designated as SVHC in concentrations exceeding 0.1 % by weight (w/w):

- The substance(s) shall be listed in the EPD.
- The relevant authorization, restriction, or regulatory status shall be documented.

References shall be made to the official REACH Authorization List maintained by the European Chemicals Agency (ECHA) for verification purposes.

8.4.5 Carbon Footprint—Optional

The EPD may include supplementary information related to carbon footprint assessments prepared in accordance with standards such as:

- ISO 14067, or
- EN 15804 related carbon footprint methodologies.

Any such additional carbon footprint information shall be:

- Clearly distinguished from the core EN 15804 LCA results.
- Transparently documented regarding assumptions, boundaries, and calculation methods.
- Presented either as complementary narrative information or as separate reporting tables.

8.4.6 Additional LCIA Indicators –Optional

Beyond the mandatory environmental impact indicators defined in EN 15804, additional impact indicators may be reported in the EPD provided that:

- All additional indicators are clearly labelled non-standard.
- The calculation methodologies are fully documented.
- A statement is included specifying that these indicators are not necessarily compliant with EN 15804:2012+A2:2019 and therefore must be interpreted with caution.

These supplementary indicators may be used to address emerging environmental topics or regional regulatory interests but shall not compromise transparency or cause confusion with standard EN 15804 results.

8.5 Aggregation of Information Modules

Environmental impact indicator results shall be reported separately for each declared life cycle information module in accordance with EN 15804. Results from individual modules shall not be summed or aggregated into totals or sub-totals for life cycle stages A, B, or C (e.g., total A, total B, total C), as such aggregation would compromise transparency and comparability of the EPD results.

Exception: The aggregation of the production stage modules A1 (raw material supply), A2 (transport), and A3 (manufacturing) into a combined result A1–A3 is permitted and commonly applied. Where this aggregation is used, the EPD shall also maintain the capability to report the results for modules A1, A2, and A3 individually if required by applicable regulations or verification procedures.

No other module combinations or total life cycle summations are permitted within the EPD, including but not limited to aggregation of:

- Construction stage modules (A4–A5),
- Use stage modules (B1–B7),
- End-of-life modules (C1–C4).

All declared indicators shall therefore remain modular to preserve full compliance with EN 15804 and ISO 21930 requirements and to ensure transparent comparison of product environmental performance.

9.0 ABBREVIATIONS

The following abbreviations are used throughout this PCR and the corresponding EPDs:

- DU — Declared Unit
- FU — Functional Unit
- ESL — Estimated Service Life
- ICIS — International Climate Intelligence System
- DQR — Data Quality Requirements

- AC — Amendment and Corrigendum to a Standard
- A1–A3 — Product Stage (Raw material supply, transport, manufacturing)
- A4–A5 — Construction Process Stage (Transport to site, installation)
- B1–B7 — Use Stage Modules
- C1–C4 — End-of-Life Stage Modules
- D — Benefits and loads beyond the system boundary
- CPR — Construction Products Regulation (EU Regulation No. 305/2011)
- EE — Electrical Energy
- EEE — Electrical and Electronic Equipment
- EPD — Environmental Product Declaration
- GHG — Greenhouse Gas
- GWP — Global Warming Potential
- GWP-f — Global Warming Potential – fossil
- GWP-bio — Global Warming Potential biogenic
- GWP-luluc — Global Warming Potential – land use and land-use change
- GWP-total — Total Global Warming Potential
- ILCD — International Life Cycle Data System
- ISO — International Organization for Standardization
- LCI — Life Cycle Inventory
- LCIA — Life Cycle Impact Assessment
- LCA — Life Cycle Assessment
- LULUC — Land Use and Land-Use Change
- PCR — Product Category Rules
- RSL — Reference Service Life
- SVHC — Substances of Very High Concern (as defined under REACH)

10.0 REFERENCES

The following standards and guidance documents are normative or informative references for the application of this PCR and the development of EPDs in accordance with EN 15804:

1. **ISO 14025:2006**—Environmental labels and declarations—Type III environmental declarations—Principles and procedures.
2. **ISO 14040:2006**—Environmental management—LCA—Principles and framework.
3. **ISO 14044:2006**—Environmental management—LCA—Requirements and guidelines.
4. **ISO 21930:2017**—Sustainability in buildings and civil engineering works—Core rules for environmental product declarations of construction products and services.
5. **EN 15804:2012+A2:2019/AC:2021**—Sustainability of construction works—Environmental product declarations—Core rules for the product category of construction products.
6. **EN 15978:2011**—Sustainability of construction works—Assessment of environmental performance of buildings—Calculation method.

7. **EN 15251:2007**—Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics.
8. **EN 16760:2015**—Bio-based products–LCA.
9. **EN 50693:2019**—Electrical and electronic products–Requirements for environmental product declarations for electronic equipment.
10. **ILCD+EPD Communication Format**—European Commission guidance for structured digital exchange of EPD data.

11.0 DOCUMENT REVISION HISTORY

Version	Date	Revision Description
1.2.5	01.02.2024	First version of the document
1.2.6	21.01.2026	Extensive revisions across nearly the entire document.