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RAKENNUSTIETOSÄÄTIÖ RTS  
BUILDING INFORMATION  
FOUNDATION RTS SR

# RTS PCR



Protocol for drawing up Environmental Product Declarations of building  
products (RTS EPD)  
Complies with the standard SFS-EN15804:2019

**PT 18 RTS EPD Committee**

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**FOREWORD**

The purpose of this protocol (RTS PCR) is to facilitate the drawing up of declarations according to SFS-EN 15804:2019 and to gradually replace the declarations according to the previous standard SFS-EN 15804:2014. This protocol includes all the information that was available during the drawing up process. To supplement the protocol, a model Declaration, Guideline and Guideline Appendix A, have been added. Opinions on the protocol were requested in 2019 and all feedback have been processed during the spring of 2020.

The following members of the PT18 RTS EPD committee have participated in the drawing up process of this protocol:

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PT18 RTS EPD Environmental Product Declarations

The Building Information Foundation RTs sr

## INTRODUCTION

EPDs for construction materials and products, such as RTS EPDs, present the environmental impacts caused by products during their manufacturing, use and final disposal, as well as during the acquisition of raw materials. EPDs verified by a third party contain impartial information about the environmental impacts of construction products. Product information and environmental impact calculations shall be presented in EPDs according to the European standard EN 15804:2012 + A2:2019. EPDs constitute the basis for the building assessment to be carried out at the building level considering the entire life cycle. RTS EPDs can be drawn up for the raw materials, preparations, products, product groups, product combinations, building parts or technical equipment to be used in the construction works. Furthermore, they can be drawn up as needed for the assessment of buildings, HVACe, BAS and infrastructure. RTS EPDs can be

- product-specific (one product, one manufacturing site or one product, several manufacturing sites)
- product type-specific (similar products, one/several manufacturing site(s) /manufacturer(s))

This protocol (RTS PCR) shall be used together with EN 15804:2012 + A2:2019 “Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products” followed by SFS-EN 15804:2019. The protocol (RTS PCR) only contains the necessary additional requirements and information.

The table of contents of the protocol is built in accordance with EN 15804:2019. The protocol only deals with the parts that required additional information. Otherwise, EPDs shall be drawn up according to the standard. Modules A1–A3, C and D are mandatory under EN 15804:2019. Other modules shall be declared in accordance with the standard.

Section 7.3.1 of the protocol (RTS PCR) establishes when the following modules, which are otherwise optional, must be contained in EPDs:

- Construction phase: Transport to construction site (A4) and Construction site operations (A5)
- Product description

In order to use previously made EPDs that comply with SFS-EN15804:2012 as initial data for the drawing up new declarations during their period of validity, the characterisation of SFS-EN 15804:2012 is also accepted. In this case, valid EPDs published in accordance with the SFS-EN15804:2012 standard, which have been supplemented to cover the SFS-SFS-EN 15804:2019 impact classes, shall be used as data source.

The separate RTS EPD declaration template specifies the information to be included in the final EPD. The protocol provides no indications regarding the RTS EPD layout. Verified RTS EPDs can be recognised from the RTS EPD sign. See Section 9.

The environmental impacts of construction products can be only compared at the building or infrastructure level. EPD information shall be collected, calculated, and declared in a modular manner. The building level comparison shall cover the entire life cycle. Therefore, the required technical and functional properties of the products and the related requirement levels must be known for the application in question. Single pieces of information related to life cycle phases must not be used separately from other EPD information. Emission compensation is not considered in the EPD.

## 1 SCOPE

EPDs shall be drawn up in accordance with SFS-EN 15804:2019 (SFS-EN 15804:2012 + A2:2019 “Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products”). The protocol (RTS PCR) shall be used together with the aforementioned standard. CEN approved product group-specific PCRs are used if the information or requirements are not in conflict with SFS-EN 15804:2019 or the RTS PCR.

The protocol (RTS PCR) contains the necessary requirements and additional information along SFS-EN 15804:2019. The declaration template that meets the requirements of both the standard and this PCR is available at cer.rts.fi. Declarations made for other systems can be approved if they contain the information specified in this RTS PCR.

## 2 NORMATIVE REFERENCES

As in SFS-EN 15804:2019.

## 3 TERMS AND DEFINITIONS

As in SFS-EN 15804:2019.

## 4 ABBREVIATIONS

|                       |   |
|-----------------------|---|
| CEMBUREAU             | The European Cement Association's   |
| CO <sub>2</sub>       | Carbon dioxide  |
| CO <sub>2</sub> -ekv. | Carbon dioxide equivalent, , the climate impact of greenhouse gases   |
| c-PCR                 | Product group specific standard (EN) supplementing the general rules of EN 15804, Product Category Rules  |
| ECHA                  | European Chemicals Agency ( <a href="https://echa.europa.eu/fi/home">https://echa.europa.eu/fi/home</a> )   |
| EPD                   | Environmental Product Declaration   |
| GWP                   | Global Warming Potential  |
| LCA                   | Life Cycle Assessment   |
| HVACE                 | Heating, Water, Air conditioning and Ventilation and Electricity  |
| M1                    | Emission classification of building materials (M1)  |
| ND                    | Not declared  |
| PCR                   | Product Category Rules  |
| PT18 RTS EPD          | Principal Committee of the Building Information Foundation RTS sr   |
| BAS                   | Building Automation System  |
| REACH                 | Registration, Evaluation, Authorisation and Restriction of Chemicals- regulation  |
| RTS                   | Building Information Foundation RTS sr  |
| SVHC                  | Candidate list of Substances of Very High Concern ( <a href="https://echa.europa.eu/fi/information-on-chemicals/candidate-list-substances-in-articles-table">https://echa.europa.eu/fi/information-on-chemicals/candidate-list-substances-in-articles-table</a> ) |

5 GENERAL ASPECTS

5.1 Objective of the Core PCR

As in SFS-EN 15804:2019.

5.2 Types of EPD with respect to life cycle phases covered

|  |                                |                    |                                     |   |                                 |
|--|--------------------------------|--------------------|-------------------------------------|---|---------------------------------|
| INFORMATION ABOUT THE IMPACTS OF THE VARIOUS PHASES OF BUILDING ASSESSMENT | BUILDING LIFE CYCLE            | PRODUCT PHASE      | A1                                  | <input checked="" type="checkbox"/>                 | Acquisition of raw materials    |
|  |                                |                    | A2                                  | <input checked="" type="checkbox"/>                 | Transport to manufacturing site |
|  |                                |                    | A3                                  | <input checked="" type="checkbox"/>                 | Manufacturing                   |
|  |                                | CONSTRUCTION PHASE | A4                                  | <input checked="" type="checkbox"/>                 | Transport to construction site  |
|  |                                |                    | A5                                  | <input type="checkbox"/>                            | Construction site operations    |
|  |                                | OPERATING PHASE    | B1                                  | <input type="checkbox"/>                            | Use                             |
|  |                                |                    | B2                                  | <input type="checkbox"/>                            | Maintenance                     |
|  |                                |                    | B3                                  | <input type="checkbox"/>                            | Repair                          |
|  |                                |                    | B4                                  | <input type="checkbox"/>                            | Substitution of parts           |
|  |                                |                    | B5                                  | <input type="checkbox"/>                            | Large-scale repairs             |
|  | B6                             |                    | <input type="checkbox"/>            | Energy use (only electricity and building services) |                                 |
|  | B7                             |                    | <input type="checkbox"/>            | Water use (only electricity and building services)  |                                 |
|  | BUILDING DEMOLITION PHASE      | C1                 | <input checked="" type="checkbox"/> | Demolition  |                                 |
|  |                                | C2                 | <input checked="" type="checkbox"/> | Transport during demolition phase                   |                                 |
|  |                                | C3                 | <input checked="" type="checkbox"/> | Demolition waste treatment                          |                                 |
|  |                                | C4                 | <input checked="" type="checkbox"/> | Final disposal of demolition waste                  |                                 |
|  | IMPACTS OUTSIDE THE LIFE CYCLE | D                  | <input checked="" type="checkbox"/> | Reuse   |                                 |
|  |                                | D                  | <input checked="" type="checkbox"/> | Recovery  |                                 |
|  |                                | D                  | <input checked="" type="checkbox"/> | Recycling   |                                 |

- Mandatory modules
- Mandatory in accordance with the provisions of section 6.2.1 of the RTS EPD protocol
- Optional modules based on scenarios

Figure 5-1 Phases of a construction product's life cycle and associated information modules SFS-EN 15804:2019/.

RTS EPDs shall be drawn up in accordance with the modular structure and subdivision into life cycle phases referred to in SFS-EN 15804:2019 "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products."

The RTS EPD must cover the manufacturing phase of the product from the procurement of raw materials to the factory gates, i.e. the information modules A1...A3 and modules A4, C1...C4 and D. For electrical and building services products, parts B6 and B7 are optionally declarable.



### 5.3 Comparability of EPD for construction products

The data in the EPD can be compared at the building block and building level as presented in the standard. The EPDs are drawn up in accordance with the standard SFS-EN 15804:2019, so they can be used together with the EPDs drawn up in accordance with the standards SFS-SFS-EN 15804:2019 and SFS-EN15804:A1.

### 5.4 Additional environmental information

### 5.5 Ownership, responsibility, and liability for the EPD

As in SFS-EN 15804:2019.

Responsibilities and obligations related to EPD, are reported in the protocol (Guideline, Guideline Appendix A).

### 5.6 Communication formats

As in SFS-EN 15804:2019.

## 6 PRODUCT CATEGORY RULES FOR LCA

The EPDs for construction products are drawn up in accordance with SFS-EN 15804:2019. Emission compensation is not considered in the EPD.

Standard SFS-EN 50693: 2019 provides more detailed rules for electrical equipment. End-of-life modules (C1-4 and D) and indicators missing from SFS-EN 50693: 2019 are drawn up in accordance with SFS-EN 15804: 2019.

### 6.1 Product category

As in SFS-EN 15804:2019.

### 6.2 Life cycle phases and their information modules to be included

#### 6.2.1 General

Modules A1–A3 (Acquisition of raw materials, Transport to manufacturing site, Manufacturing), C and D are mandatory under SFS-EN 15804:2019. Furthermore, as per the protocol (RTS PCR), EPDs (RTS EPDs) must include module A4 and A5 in accordance with the following provisions:

- **Module A4 (Transports to construction site):** The environmental impacts must be declared if their GWP (global warming potential) is over 20% of the GWP of modules A1–A3 or the transport distance is greater than 1000 km.
- **Module A5 (Construction site operations):** Mandatory if the atmospheric carbon dioxide uptake of packaging material is allocated to module A1.



For electrical and building service products, the operating phase modules B6 (Energy use) and B7 (Water use) can be declared if the product uses energy or water during use.

### **6.2.2 A1...A3, Product phase, information modules**

As in SFS-EN 15804:2019.

The atmospheric carbon dioxide uptake of the wood material (GWP-biogenic) is allocated to module A1 and declared as a negative GWP-biogenic value in section A1 if the raw material for the product comes from a sustainably managed forest. If this organic raw material is used for energy production during the manufacturing phase of the product, the resulting CO<sub>2</sub> emissions are reported as a positive GWP-biogenic value in section A3.

If the raw material for the product does not come from a sustainably managed forest, no GWP-biogenic information is reported in section A1. If this organic raw material is used for energy production in the manufacture of the product, the resulting CO<sub>2</sub> emissions are reported as a positive GWP-luluc value in section A3.

The biogenic carbon bound into the product is reported at the factory gate as a separate indicator (see section 7.2.5) and not as additional information.

### **6.2.3 A4...A5, Construction process phase, information modules**

The information of module A4 is presented in the EPD. The environmental impact data in section A4 are declared per average transport distance. The environmental impact shall be declared if the environmental impact for the GWP data is more than 20% of the GWP for modules A1-A3 or the transport distance is greater than 1000 km. If necessary, conversion instructions for different transport distances can be added to the EPD.

If the atmospheric carbon dioxide uptake of packaging material is allocated to module A1, the transfer of biogenic carbon from packaging material to the next product system is allocated to module A5 as calculated biogenic carbon dioxide (GWP-biogenic) emission.

### **6.2.4 B1...B5, Use phase, information modules related to the building fabric**

As in SFS-EN 15804:2019.

### **6.2.5 B6...B7, Use phase, modules related to the operation of the building**

As in SFS-EN 15804:2019. Standard SFS-EN 50693:2019 provides more detailed rules for electrical equipment. End-of-life modules (C1-4 and D) and indicators missing from SFS-EN 50693:2019 are drawn up in accordance with SFS-EN 15804:2019.

### **6.2.6 C1...C4, End-of-life phase, information modules**

The information of modules C1, C2, C3 and C4 is presented in the EPD. The environmental impact data in section C2 shall be declared for the transport distance and load factor according to the scenario.

If the raw material of the product comes from a sustainably managed forest, the biogenic carbon content of the product is reported as calculated emissions in section C3 by multiplying it by 3.67 (=44/12). The result is a positive GWP-biogenic value. See Appendix C.2

If the raw material of the product does not verifiably come from a sustainably managed forest, the biogenic carbon content of the product is reported as calculated emissions in section C3 by multiplying it by 3.67 (= 44/12). The result is a positive GWP-luluc value. See Appendix C.2

The biogenic carbon bound into the product is reported at the factory gate as a separate indicator in module A3.

### **6.2.7 D, Benefits and loads beyond the system boundary, information module**

The information of module D is presented in the EPD

## **6.3 Calculation rules for Life Cycle Assessment (LCA)**

As inSFS-EN 15804:2019.

### **6.3.1 Functional unit**

As inSFS-EN 15804:2019.

### **6.3.2 Functional unit (Declared unit)**

Can be reported in units according to SFS-EN 15804:2019, but the result must be able to be converted and presented per kilogram of product. In the case of wood products, the moisture content per kilogram of dry weight must also be indicated.

In addition, if the chosen unit does not describe the typical use of the product or the sales unit, it must be possible to convert the results accordingly, for example by means of a conversion factor table. The conversion factor table is then presented in the EPD.

### **6.3.3 Declared unit**

As inSFS-EN 15804:2019.

### **6.3.4 Reference Service Life (RSL)**

As inSFS-EN 15804:2019. The RSL must be reported when the EPD covers the operating phase modules (B1-B7).

Standard SFS-EN 50693:2019 provides more detailed rules for electrical equipment. End-of-life modules (C1-4 and D) and missing indicators from SFS-EN 50693: 2019 are As inSFS-EN 15804:2019.

“Information related to the reference lifetime of a product requires the determination of appropriate scenarios for the product phase, construction phase and operating phase. The reference service life must be verifiable” (SFS-EN 15804:2019).

The reference service life is only valid under the operating conditions specified in the EPD. The reference service life may be based on: “1) field tests, 2) inspections of existing buildings and their parts, 3) test buildings, 4) exposure (stress) to the operating conditions” (SFS-EN 15804: 2019).

The reference service life is not the same as the design or typical service life. Only the reference service life is declared in the EPD.

### **6.3.5 System boundaries**

As in SFS-EN 15804:2019.

### **6.3.6 Criteria for the exclusion of inputs and outputs**

As in SFS-EN 15804:2019.

### **6.3.7 Selection of data**

As in SFS-EN 15804:2019.

### **6.3.8 Data quality requirements**

As in SFS-EN 15804:2019.

### **6.3.9 Developing product level scenarios**

To be drawn up as illustrated in section 5.2.

### **6.3.10 Units**

As in SFS-EN 15804:2019.

## **6.4 Inventory analysis**

As in SFS-EN 15804:2019.

### **6.4.1 Collecting data**

As in SFS-EN 15804:2019.

### **6.4.2 Calculation procedures**

As in SFS-EN 15804:2019.

### **6.4.3 Allocation of input flows and output emissions**

As in SFS-EN 15804:2019. Section 7.3. provides more detailed instructions on allocation.

Process-specific data on emissions from energy sources are used to calculate the eco-profile of construction products. For products manufactured in several factories, the emphasis is on the environmental impact in terms of production volumes.

**ACCEPTABLE DATA BANKS**

- European Reference Life Cycle Database (ELCD) (<http://lca.irc.ec.europa.eu/lcainfohub/dataset2.vm?id=85>)
- GaBi (<http://www.gabi-software.com/databases/gabi-databases/>)
- ecoinvent database ([www.ecoinvent.ch](http://www.ecoinvent.ch))

**Figure 6-1** Acceptable data banks

**ENVIRONMENTAL INFORMATION ON THE ELECTRICITY AND DISTRICT HEATING CONSUMED**

For construction products manufactured in Finland, it is advisable to use a specific profile for the electricity generated or, alternatively, the average electricity consumption in Finland, calculated as a five-year average, considering imports and exports. If electricity produced from renewable energy is used in the calculation of the EPD, it must be used in production for the entire period of validity of the EPD. The usage must also be able to be verified afterwards. If there is a significant change (more than 20%) in the share of electricity produced from renewable energy, the EPD is no longer valid. If the EPD covers manufacturing in different countries, it is advisable to follow the order of priority:

- (a) used in production,
- (b) in the calculation, an average based on the country-specific distributions of electricity production in the countries of manufacture
- (c) the European average;

The environmental information on the energy consumed shall be reported and explained in the project report. Fuel purchase (A3) is always included. If the discarded product is used for energy, the allocation in A3 is as recycled fuel or waste. The author of the EPD must specify the principle of allocation in the project report and the declaration.

Emissions from cement production are reported in accordance with The European Cement Association's (CEMBUREAU) EPD policy, which is in line with the reporting rules under the Emissions Trading Directive (Directive 2003/87/EC). In the recovery of energy from recycled fuel and waste combustion, emissions are allocated to cement production. The emissions from waste combustion can be deducted from the total emissions and reported as additional information.

As regards the electricity and district heating used in modules A3, the following additional information shall be included in the declaration: quality of electricity and district heating data and at least CO<sub>2</sub> emissions (kg CO<sub>2</sub> eq. /kWh). The term "data quality" refers to, for example, the five-year average value for each supplier.

For the electricity and district heating used in module A3, the following additional information shall be provided in the EPD: electricity and district heating data quality and at least CO<sub>2</sub> emissions (kg CO<sub>2</sub> eq./kWh). The term "data quality" refers to, e.g., the five-year average for each supplier.

**Table 6-1:** Declaration the average values (1,3 and 5 years) for electricity and district heating.

**The information is declared in the project report.**

| Object  | Value | Data quality |
|---|-------|--------------|
| A3 Electricity data quality and CO <sub>2</sub> emissions kg CO <sub>2</sub> ekv. /kWh                          |       |              |
| District heating/cooling data quality and CO <sub>2</sub> emissions kg CO <sub>2</sub> ekv. /kWh                |       |              |
| B6 Electricity data quality and CO <sub>2</sub> emissions kg CO <sub>2</sub> ekv. /kWh (if B6 data is declared) |       |              |

#### 6.4.3.1 General

As in SFS-EN 15804:2019.

#### 6.4.3.2 Allocation of co-product

The project report shall indicate the allocation of co-product data and the allocation procedure used. The project report also indicates the datasets used and whether the allocation has been made according to sales volumes or emission effects.

#### 6.4.3.3 Allocation procedure of reuse, recycling, and other recovery

Waste flows are treated as recoverable material if they fulfil the requirements in accordance with SFS-EN 15084:2019. In the calculation, the direct emissions of waste processing shall be considered until waste processing has reached the so-called "end of waste" state. When a building is demolished, all materials are, in principle, waste. When the material meets the criteria for "end of waste" state outlined in the standard, the material is no longer waste. See section 6.3.4.5 of the standard.

The allocation procedure is necessary when calculating the data of section D. The substitution effects can be determined for **metals** (closed loop) according to the following equation (Equation 1). For other materials, the procedure of standard SFS-EN 15804: 2019 is followed.

$$e_{module D1} = (M_{MR out} - M_{MR in}) \left( E_{MR after EoW out} - E_{VMSub out} \cdot \frac{Q_{R out}}{Q_{Sub}} \right) \quad (1)$$

**Equation 1.** Equation of net benefits. The equation considers waste generation, use of resources and net emissions compensated by material recycling. Furthermore, the equation considers the quality ratio between replacement material and virgin material and reduces the recovered material already used by the product system, i.e. the net benefits.

**Table 6-2** Equation 1 variables and declarations, see detailed information from the standard (Execution of steel structures and aluminium structures - Environmental Product Declarations - Product category rules complementary to EN 15804 for Steel, Iron and Aluminium products for use in construction works, section F3.5 Module D).

| Equation 1 variable          | Declaration   |
|------------------------------|---|
| $M_{MR\ out}$                | Amount of scrap metal exiting the system  |
| $M_{MR\ in}$                 | The amount of scrap metal fed into the system   |
| $M_{MR\ out} - M_{MR\ in}$   | Net amount of scrap metal produced by the system  |
| $E_{MR\ after\ EoW\ out}$    | The amount of emissions, resources and waste from steel billets made from recycled scrap metal. (EU average can be used in the calculations)  |
| $E_{VMSub\ out}$             | The amount of emissions, resources and waste from a steel billet made from primary materials. (EU average can be used in the calculations)  |
| $\frac{Q_{R\ out}}{Q_{Sub}}$ | Coefficient of quality difference, where $Q_{R\ out}$ corresponds to a steel billet made of recycled metal and $Q_{Sub}$ to a steel billet made of primary materials. A value of 1 can be used for steel. |

#### 6.4.4 Information on biogenic carbon content

As in SFS-EN 15804:2019. The biogenic carbon content (kg C) of the wood material is allocated in section A3.

### 6.5 Impact assessment

As in SFS-EN 15804:2019.

This protocol can be used for a variety of products. In order to use previously made EPDs that comply with SFS-EN 15804:2014 as initial data for the drawing up of new declarations during their period of validity, the characterisation of SFS-EN 15804:2014 is also accepted.

In this case, valid EPDs published in accordance with the SFS-EN 15804:2014, which have been supplemented to cover the SFS-SFS-EN 15804:2019 impact classes, shall be used as data source. The characterisation coefficients according to SFS-EN 15804: 2019 can be found at <http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>.

#### 6.5.1 General

As in SFS-EN 15804:2019.

#### 6.5.2 Core environmental impact indicators

As in SFS-EN 15804:2019.

#### 6.5.3 Additional environmental impact indicators

Additional indicators are not mandatory information to be reported in the RTS EPD. However, a table is available in the model declaration to present the information. If the information on the indicators is not presented in the EPD, indicate ND (Not declared).

## **7 CONTENT OF THE EPD**

As in SFS-EN 15804:2019.

### **7.1 Declaration of general information**

As in SFS-EN 15804:2019.

If the product contains SVHC substances (599/2013, (EC) No 1272/2008, (EC) No 1907/2006), they are declared in the EPD. A list of SVHCs can be found on the ECHA website

<http://echa.europa.eu/web/guest/candidate-list-table>.

In order to increase the usability of information contained in the EPD (environmental classifications and programs) and to promote the circular economy, information of the main product composition (product specification) shall be provided by weight percentage of the product, at least the following: metals, aggregates, fossil materials and bio-based materials (see table in the sample EPD).

The author of the EPD must declare the most frequently searched values as a separate table: GWP, Biogenic carbon content (kg C), Potential effect on depletion of non-renewable resources, Minerals and metals (ADP-Minerals & metals), Potential effect on depletion of non-renewable resources, fossil fuels (ADP-fossil), Potential effect on water scarcity, scarce weighted water consumption (WDP) and used recycling materials (use of secondary materials) (see table in the sample EPD).

### **7.2 Declaration of environmental indicators derived from LCA**

As in SFS-EN 15804:2019.

#### **7.2.1 General**

As in SFS-EN 15804:2019.

#### **7.2.2 Rules for declaring LCA information per module**

As in SFS-EN 15804:2019.

#### **7.2.3 Indicators describing environmental impacts based on Life Cycle Impact Assessment (LCIA) (core indicators 13pcs, additional indicators 6 pcs)**

Additional indicators are not mandatory information to be reported in the RTS EPD. However, a table is available in the model declaration to present the information. If the information on the indicators is not presented in the EPD, indicate ND (Not declared).

The table of additional indicators outlined in the model EPD is not mandatory in the EPD.

#### **7.2.4 Indicators describing resource use and environmental information based on Life Cycle Inventory (LCI)**

As in SFS-EN 15804:2019.



**7.2.5 Information on biogenic carbon content**

The biogenic carbon contain into the wood product is declared separately in the model EPD (Table section 22) (see standard section "biogenic carbon content, table 9").

**7.3 Scenarios and additional technical information: product categories**

As in SFS-EN 15804:2019. Product phase scenarios are drawn up for the operation phase and the demolition phase, see section 5.2.

**7.3.1 General**

**7.3.2 Construction process phase**

**7.3.2.1 A4, Transportation to the construction site**

The environmental information on the transport must be declared (Table 7-1) for all modes of transport used. The transports consider the average transport distances and mode of transport.

**Table 7-1:** Declaration of the average values for transport. The information shall be declared in the project report.

| Object  | Value | Data quality |
|---|-------|--------------|
| A4 Specific transport emissions, CO <sub>2</sub> emissions kg CO <sub>2</sub> ekv. /tn x km |       |              |
| A4 Average transport distance km  |       |              |

If precise transport information is not available, the typical transport method and the average transport distance are used. Alternatively, the distance from the place of manufacture to Helsinki can be used as a transport trip.

The technical data shall be declared in accordance with *Table 10 of section 7.3.2.1 of the standard*. The quality and source of the information used shall be indicated in the process. For example, the data sources presented in section 6.4.3 can be used as the source of environmental information. The environmental impact shall be declared if the environmental impact for the GWP data is more than 20% of the corresponding GWP data for modules A1-A3 or the transport distance is greater than 1000 km.

For domestic transports, the Lipasto database (<http://lipasto.vtt.fi/> and VTT 336/2018) is used as GWP data. The use of another source must be explained in the EPD. If the environmental impact of returning empty is significant, it is also considered in the calculations. If, due to transport equipment or other factors, the average profiles do not adequately describe the environmental impact of the transport operation, this must be indicated in the project report.

### **7.3.2.2 A5, Operations on the construction site**

As in SFS-EN 15804:2019. Scenario for packaging shall be declared, if relevant.

### **7.3.3 B1-B7, Use phase**

#### **7.3.3.1 B1...B5, Information modules related to building**

As in SFS-EN 15804:2019.

#### **7.3.3.2 Reference Service Life (RSL)**

As in SFS-EN 15804:2019.

#### **7.3.3.3 B6, Energy use and B7, water use**

The EPDs for construction products are drawn up in accordance with SFS-EN 15804:2019. In principle, the environmental impact of energy and water consumption during operation (B6 and B7) is reported at the building level. If desired, the product manufacturer can report the product's water and energy consumption data at the product level. Instead, the impact of a product on a building's energy balance is only addressed in a building-level assessment (e.g., heat recovery ventilation and geothermal heat pump).

Standard SFS-EN 50693:2019 provides more detailed rules for electrical equipment. End-of-life modules (C1-4 and D) and missing indicators from SFS-EN 50693: 2019 are As in SFS-EN 15804: 2019.

The reference service life of the product is used as the calculation period for energy and water use.

### **ENVIRONMENTAL INFORMATION ON THE OPERATIONAL ENERGY**

The environmental information on the energy use during service life is calculated primarily on the basis of the profile of the target country. If there are several target countries, the European average may be used. The scenario and environmental information on the consumption of operational energy must be reported.

As regards the energy consumed, it must be ensured that the production profile used when calculating the aforementioned databases corresponds sufficiently well to the production profile of the energy consumed at the time of calculating the emissions (e.g. JRC Joint Research Center). The environmental information on the energy consumed shall be reported and explained in the project report. See section 7.3.2.1.

### **ENVIRONMENTAL INFORMATION ON THE OPERATIONAL WATER**

The environmental information on water use during operation is primarily calculated on the basis of the profile of the target country / application. The scenario and environmental information of consumption of operational water must be reported.

**7.3.4 End-of-life**

Material and/or product group-specific scenarios for the proportions of waste treatment options related to modules C and D shall be developed. Based on the scenarios, the environmental impacts are calculated for modules C and D. The calculation is performed for the most probable market area, Finland or, alternatively, transported to a port in Finland or transported to the main market area.



**Figure 7-1** Likely final scenario for product waste treatment. The values shown in the figure are examples.

In addition, the results of the environmental impact calculation can be presented separately in an appendix for all possible waste treatment methods (reuse, recycling, energy recovery, disposal). Waste treatment can take place in the destination country according to existing legislation. In this way, the same EPD can be used across Europe, if necessary, in a probable waste recovery scenario of the country in question. The geographical and technological coverage must be considered and indicated in the drawing up of the EPD in accordance with the standard.

**Examples of possible scenarios are given on the following page in Table 7–2. More detailed rules can be found in standard SFS-EN 15804:2019.**

**Table 7-2** Examples of possible scenarios. Existing legislation must be considered when drawing up scenarios.

| Product                   | Reuse of components   | Recycling of material  |   | Recovery of energy content  | Disposal of product or material, including losses   |
|---------------------------|---|--|---|---|---|
|                           |   | Recycling method   | System boundaries (module D)                            |   |   |
| <b>Mineral wool</b>       | Reused if meeting the requirements of the new application   | Used in earthworks and foundation or as a raw material for blown wool                        |   | Not possible  | To landfill   |
|                           |   | Used as a raw material or binder for geopolymers   |   |   |   |
| <b>Concrete</b>           | Concrete elements and concrete structures can be reused if they meet the requirements of the new application (joints allow dismantling) | Used as an aggregate in earthworks   | Crushed concrete replaces aggregate                     | Not possible  | Contaminated concrete is taken to appropriate treatment of hazardous waste                            |
|                           | Reuse the building frame on the same site   | Used as an aggregate in concrete   |   | Not possible  | Contaminated concrete is taken to appropriate treatment of hazardous waste                            |
|                           |   | The steels contained in the concrete structure are used in the manufacture of steel          |   | Not possible  |   |
| <b>Metal</b>              | Reused if meeting the requirements of the new application   | Used as a raw material for new metal   | Iron slab made of primary raw material. Aluminium ingot | Not possible  |   |
| <b>Wood</b>               | Reused if meeting the requirements of the new application   | Recycled as raw material for chipboard   |   | Energy recovered by combusting  | Chemically treated or unrecyclable wood material is taken to appropriate treatment of hazardous waste |
| <b>Plastics</b>           | Plastic sewer pipes can be reused if they meet the requirements of the new application  | Recycled as a raw material for recycled plastics   |   | Combustible parts are used as a source of energy (see standard)                   | To appropriate treatment of hazardous waste   |
| <b>e-waste</b>            | Reused if meeting the requirements of the new application   | Disassembled into waste fractions and used as a raw material according to the waste fraction |   | Cut into waste fractions and the combustible parts are used as a source of energy | Disposal of complete SER products is not possible by law. To appropriate treatment of hazardous waste |
| <b>Plastic insulators</b> | Reused if meeting the requirements of the new application   | Recycled as a raw material   |   | Energy recovered by combusting  |   |
| <b>Asphalt</b>            |   | Used as a raw material for reclaimed asphalt   | Crushed asphalt replaces aggregate and bitumen          | Not possible  | Contaminated asphalt is taken to appropriate treatment of hazardous waste                             |

## **7.4 Additional information on release of dangerous substances to indoor air, soil and water during the use phase: RTS EPD coverage**

### **7.4.1 Indoor air**

Additional information on releases of hazardous substances to indoor air, soil and water during the operation phase of the building shall be reported in accordance with section 7.4 of standard SFS-EN 15804:2019. In addition, the RTS EPD can indicate the emission class (M1) of the product's building materials, if the product is classified, or the results of emission measurement.

### **7.4.2 Soil and water**

As in SFS-EN 15804:2019.

## **7.5 Aggregation of information modules**

As in SFS-EN 15804:2019.

## **8 RTS EPD PROJECT REPORT: GENERAL RULES FOR DRAWING UP RTS EPDS**

### **8.1 General**

As in SFS-EN 15804:2019.

### **8.2 LCA-related elements of the project report**

As in SFS-EN 15804:2019.

### **8.3 Documentation on additional information**

As in SFS-EN 15804:2019.

### **8.4 Data availability for verification**

The EPDs for construction products to be published as RTS EPDs are drawn up in accordance with SFS-EN 15804:2019 and with the additional instructions referred to in section 3 of the protocol (RTS PCR). The additional instructions supplement SFS-EN 15804:2019.

## 9 VERIFICATION AND VALIDITY OF AN EPD

Additional general instructions concerning drawing up EPDs to be published as RTS EPDs and additional general guidelines supplementing SFS-EN 15804:2019 and SFS-EN 50693:2019, RTS EPD guidance and RTS EPD Verification rules for EPD-tools.

### 9.1 Verification

Verification is performed according to the principles of ISO 14025 and RTS EPD Verification rules for EPD-tools.

Approved verifiers can be found on the RTS website <http://cer.rts.fi>.

### 9.2 Approval as RTS EPD

Approval is made by the PT18 RTS EPD Committee Working Group. In the approval process, the verification data and the EPD drawn up by the company, the project report, the product specifications, the verification report, the communication report between the verifier and the assessor and the completed application form, are audited. The model EPD contains the necessary information. The required information must be found in the company's EPD. The handling process of the EPD task force is confidential.

The layout of the declaration can be either the company's / organisation's own or in accordance with the RTS model EPD. The approved EPDs are published on the website of the Building Information Foundation RTS at <http://cer.rts.fi>. A company whose declaration has been approved as an RTS EPD undertakes to comply with the general rules of the Building Information Foundation RTS "RTS EPD, general rules" drawn up for EPDs.

If, after the publication of the declaration, there is a significant change in the life cycle of the product, the EPD is no longer valid.

- significant change: 20% of the GWP (A1-A4, B6-B7, C1-C4)



Figure 9-1 Logo of RTS EPD

### 9.3 Approval process

The EPD task force of PT18 RTS EPD Committee reviews the verified reports at a working group meeting.

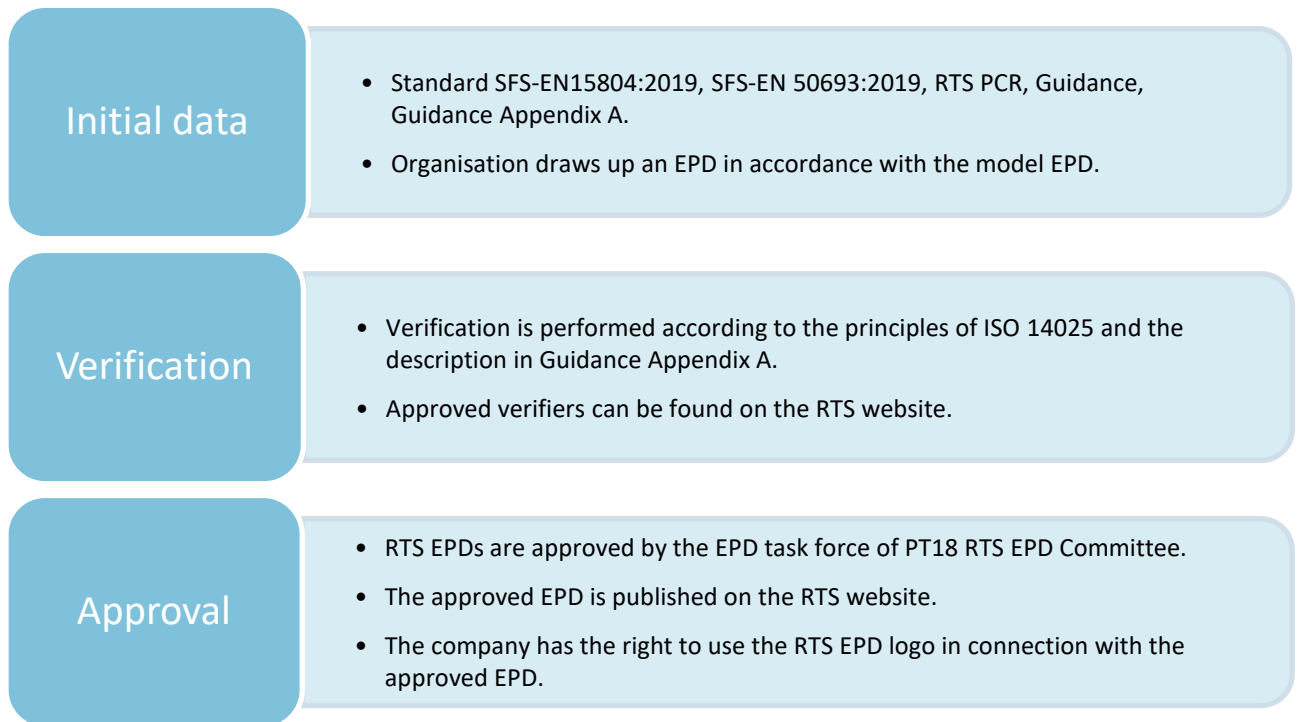


Figure 9-2 RTS EPD Approval process

### 9.4 Impact assessment

Emissions based on inventory analysis are converted to impact classes in SFS-EN 15804:2019 using the characterisation factors available at <http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>.

This protocol can be used for a variety of products. In order to use previously made EPDs that comply with SFS-EN15804:A1 as initial data for the drawing up of new declarations during their period of validity, the characterisation of SFS-EN 15804 is also accepted. In this case, valid EPDs published in accordance with the SFS-EN15804:A1, which have been supplemented to cover the SFS-SFS-EN 15804:2019 impact classes, shall be used as data source. The characterisation coefficients according to SFS-SFS-EN 15804:2019 can be found at <http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>.



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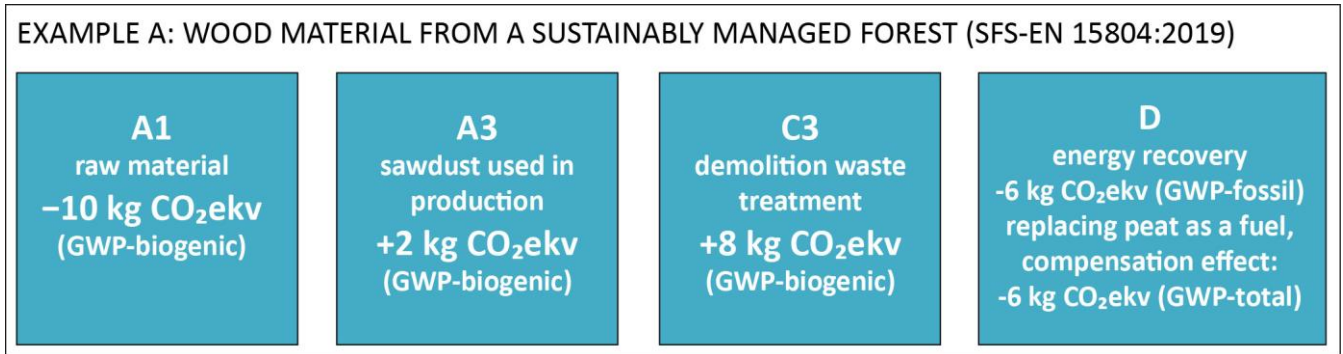
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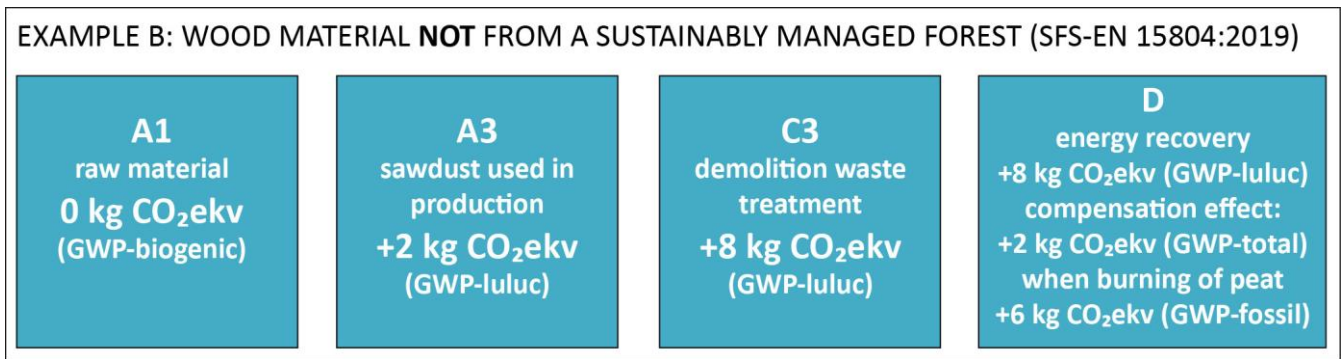
**11 Appendix C.2. Rules for calculating the climate change impact category**

Reporting the amount of biogenic carbon dioxide (GWP-biogenic) is done according to Figure 11-1 and Figure 11-2. See Directive (EU) 2018/2001 of the European Parliament.



**Figure 11-1** Example A illustrates the allocation of biogenic carbon dioxide (GWP-biogenic) to modules A1, A3, C3 and D when the origin of the wood material has been specified to come from a sustainably managed forest. Note. the numeric values in the example are arbitrary!

- The atmospheric carbon dioxide uptake of the wood material (GWP-biogenic) is allocated to module A1.
- When the wood product is manufactured using the same kind of wood material for energy production, this emission of biogenic carbon dioxide (GWP-biogenic) is allocated to module A3.
- The transfer of biogenic carbon from wood material to the next product system is allocated to module C3 as calculated biogenic carbon dioxide (GWP-biogenic) emission.
- When in the next product system (energy production) the in this example, the wood material replaces peat as a renewable fuel; carbon dioxide emissions from wood material (GWP-biogenic) to emissions from peat (GWP-fossil), in which case the compensation effect is allocated to the module outside the life cycle of the wood product, i.e. module D.
- In this example, wood material replaces peat as a renewable fuel: when in the next product system (energy production), emissions from wood material are compared with emissions caused by peat (GWP-fossil), in which case the compensation effect is allocated to the module outside the life cycle of the wood product, i.e. module D.



**Figure 11-2** Example B illustrates the allocation of biogenic carbon dioxide (GWP-biogenic and GWP-luluc) to modules A1, A3, C3 and D when the origin of the wood material has not been specified, in which case it is to be assumed that the wood material is not from a sustainably managed forest. Note. the numeric values in the example are arbitrary!

- The carbon dioxide uptake of the wood material cannot be allocated to module A1, thus the GWP-biogenic is zero.
- When the wood product is manufactured using the sawn waste from the same kind of wood material in energy production, this biogenic CO<sub>2</sub> emission is allocated to module A3 as “land use change” emission (GWP-luluc).
- The transfer of biogenic carbon from wood material to the next product system is allocated to module C3 as calculated emission of biogenic carbon from “land use change” (GWP-luluc).
- The compensations of the wood material in energy recovery cannot be allocated to module D as carbon neutral, as emissions of organic carbon from energy production are treated as emissions from biogenic carbon “land use change” (GWP-luluc).