EPD IRELAND

THE ENVIRONMENTAL PRODUCT DECLARATION PROGRAMME

Product Category Rules: Part A

Implementation and use of I.S. EN 15804 and CEN TR 16970:2016 in Ireland – Draft Version 3.0 Date 19/11/2025

Irish Green Building Council

EPD IRELAND
THE ENVIRONMENTAL PRODUCT DECLARATION PROGRAMME

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1.0 Overview

I.S. EN 15804:2012+A2:2019 [1][1] and the ECO Platform Calculation Rules v2.0 [2] form the core Product Category Rules Part A for the development of EPD in Ireland, and need to be read alongside this document. Care has been taken in the development of this PCR to avoid conflicts with these two documents. However, should a conflict arise, the requirements of EN 15804 takes precedence. This document should be read together with the General Programme Instructions and its annexes.

This document sets out further rules for the implementation of the core PCR as follows.

1. Types of EPD that may be published in the EPD Ireland programme, and life cycle stage modules that are mandatory for inclusion in the different types of EPD
2. Requirements concerning data and data quality
3. Default values for use in calculations for particular modules
4. Requirements concerning the content of EPD
5. Environmental impact categories that are mandatory for use in the environmental impacts in the Environmental Product Declarations (EPD).
6. Resource use categories that are mandatory for inclusion in the EPDs.

At the outset of work to produce new EPD, the practitioner shall check for the existence of specific complementary PCR (cPCR) developed by CEN Product Technical Committees for the product type or other applicable PCR in the order of preference set out in Section 5.3.2 of the General Programme Instructions. If no such PCR is found that absence shall be confirmed in the LCA Project Report.

EPD shall include all information specified in clause 7 of EN 15804 and use the appropriate EPD Ireland template specified in the General Programme Instructions.

2.0 EPD Scope

2.1 Modules

The building life cycle and the modular structure by which it is represented in IS EN 15804 and IS EN 15978 is shown in Figure 1.

For EPD compliant with IS EN 15804:2012+A2:2019, each EPD shall have one of the scopes listed below:

1. Modules A1-A3, C1-C4 and D: "cradle-to-gate with modules C1 -C4 and D". These EPD must be based on a declared unit of product.
2. Modules A1-A3, C1-C4, D and additional modules: "cradle-to-gate with options, modules C1 -C4 and D". Additional modules may be A4 and/or A5 and/or B1-B7. These

[1] In this document, references to EN15804 without a version number indicate that the reference is valid for both I.S.EN15804+A1 and I.S.EN 15804+A2 until their respective expiry dates

EPD may be based on either a declared unit of product or a functional unit. If B-modules and use scenarios are not declared the EPD shall be based on a declared unit.

3. Modules A, B, C, D: "cradle to grave and module D". These EPD may be based on either a declared unit of product or a functional unit.

EPD of certain products are exempt from the requirement for inclusion of modules C&D within the EPD. Exempt products shall meet **all three** of the following criteria set out in IS EN 15804:2012+A2:2019 clause 5.2:

- the product is physically integrated with other products during installation so that it cannot be physically separated from them at the end of life.
- the product is no longer identifiable at the end of life as a consequence of a physical or chemical transformation.
- the product or material does not contain biogenic carbon.

The exemption must be justified in the project report. EPD for such exempt products may have the following scopes, as alternatives to those listed above:

4. Modules A1 - A3: "cradle-to-gate"
5. Modules A1-A3 and additional modules A4 and/or A5: "cradle-to-gate with options".

Module B6 (energy consumption) shall be calculated and reported in the EPD of final products which consume energy, directly or indirectly[2]. These EPD should consider the requirements of EN 50693 [to be superseded by EN IEC 63366:2025] where possible.

For any EPD relating to a product for which specific complementary Product Category Rules (cPCRs) have been approved, the modules, and the functional or declared units specified in the applicable PCR shall be used.

For EPD based on a functional unit, the functional unit shall be defined according to the method set out in clause 6.3.2 of I.S. EN 15804:2012+A2:2019. Reporting of the functional unit in any EPD shall include those elements of its definition specified in clause 6.3.2.1 of that standard. The functional unit definition requires that a Reference Service Life (RSL)[3] and reference in-use conditions are specified; these shall be reported in the EPD and be verifiable.

Any product providing a reference service life (RSL) within the EPD shall also include any maintenance (B2), repair (B3) and replacement (B4) processes required to achieve the stated service life of the products, as well as emissions in use (B1) if relevant, and these shall be consistent with the stated reference in-use conditions for the RSL. It is recognized that it may be difficult to separate maintenance, repair and replacement processes and the connected

[2] "Indirectly" refers to products that store or transport energy, such as cables consuming energy through dissipation/losses, but not, e.g., windows or thermal insulation

[3] For definition of RSL and reference in-use conditions, and requirements relating to the determination of the RSL, refer to clauses 3.26 and 6.3.4 of I.S. EN 15804:2012+A2:2019

aspects and impacts into these separate modules, but all relevant processes to achieve the declared service life shall be assigned to one or more of these modules, and the description of the processes in each module shall be described in the EPD.

Technical information for the relevant declared B module(s) shall be provided in the EPD as per Table 12 in EN 15804.For the development of scenarios, for example for transport and disposal, conversion factors to mass per declared or functional unit shall be provided in the EPD.

2.2 Chain of Custody approaches

"Mass balance credit method" and "book and claim" methods as described in ISO 22095 (e.g. Biomass balance or virtual attribution of recycled content) shall not be used in EPD within the EPD Ireland EPD Programme, except as described in section **Error! Reference source not found.**.

This also means that EPD shall not be modelled using any supplier EPD that have used of "Mass balance credit method" and "book and claim", except as described in section **Error! Reference source not found.**. It will be the responsibility of the manufacturer making the declaration to obtain confirmation from their supplier providing the EPD that these approaches have not been used.

2.3 Offsetting

No methods of offsetting or insetting are allowed

2.4 Averages and product variability in EPD

EPD apply to specified products produced in specified locations.

Where the EPD applies to a product produced in more than one location, the overall LCA calculation shall represent production in all locations in appropriate proportions. The way in which production in the separate locations is combined in the overall LCA shall be described and justified in the project report. For an EPD from a manufacturer or reseller, the location of all the manufacturing sites for which the EPD is representative shall be listed in the EPD at least at country and city level.

An EPD may be developed for an "average product", representative of a range of products of similar composition. The products included in an EPD for an "average product" shall not differ in any environmental impact indicator results by more than +/- 10%.

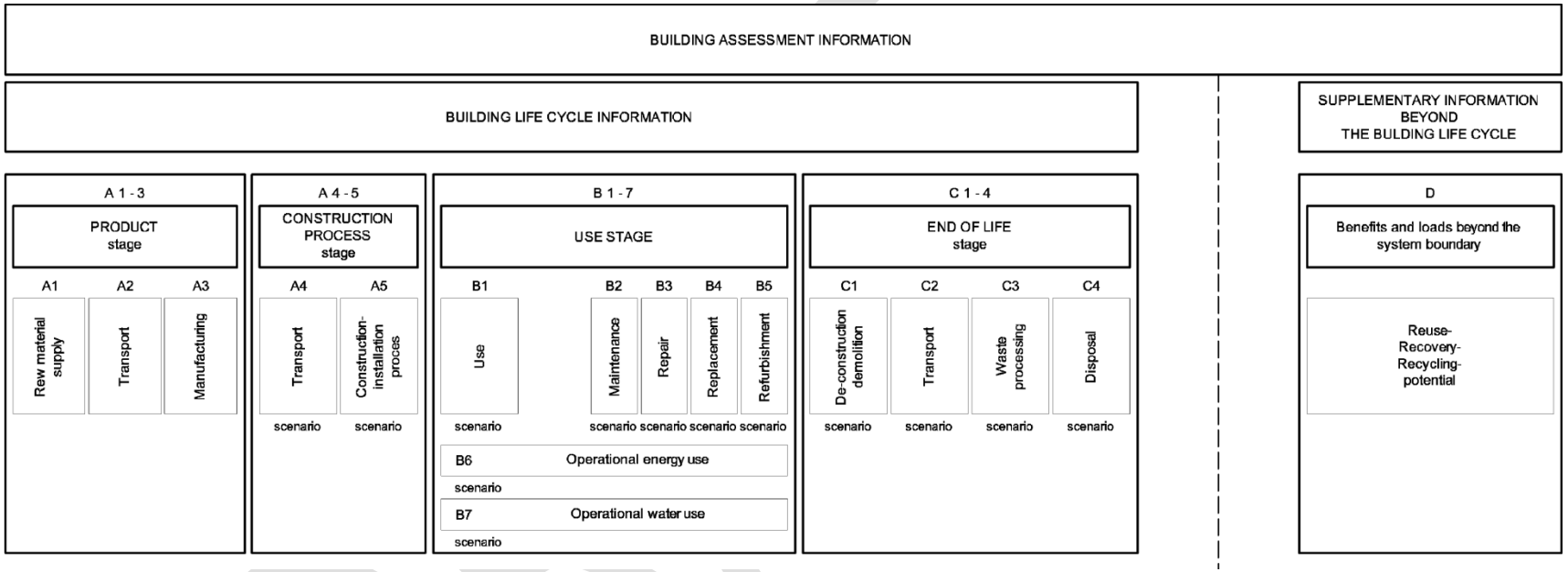

Figure 1 —Life cycle stages and modules for assessment of the environmental performance of buildings

3 Calculation Rules

3.1 Electricity

EPD Ireland uses the market-based approach for electricity as per ISO 14067 and EN 19541 and accepts the use of contractual instruments such as Guarantee of Origin or Power Purchase Agreements subject to the requirements below.

The modelling of electricity in Module A3 and any other modules the manufacturer has direct control over shall adopt the following principles:

3.1.1 Internally generated electricity

For internally generated electricity (e.g. on-site generated electricity) consumed at the site producing a product under study and for which no contractual instruments have been sold to a third party, the life cycle data for that electricity shall be used for the site, unless contractual instruments have been sold to a third party, in which case the relevant residual electricity mix[5] shall be used. If internally generated electricity does not cover the full electricity consumption at a site, all products must use the same proportion of internally generated electricity, the internally generated electricity cannot be attributed to a proportion of the products.

3.1.2 Electricity from a directly connected supplier

Life cycle data representing the consumed electricity obtained from the supplier to facilities within the scope of Module A3 may be used if there is a dedicated transmission line between the organization and the generation plant from which the emission factor is derived, and no contractual instruments have been sold to a third party for that consumed electricity. If contractual instruments have been sold to a third party, the relevant residual electricity mix[5] shall be used.

3.1.3 Electricity from the grid

If the facilities within the scope of Module A3 purchase electricity under a contract in which no specific mix of fuels or generation types is specified, then the relevant residual electricity mix[4] shall be applied. The selection of the residual mix to apply shall take account of the time period covered by data for the facilities.

Life cycle data representing a specific electricity product as generated, or purchased, from an electricity supplier may be used instead of the residual mix, provided that the organisation has a commitment to purchase this specific electricity product for the duration of the EPD's validity, and that the electricity supply contract:

- conveys the information (electricity mix, amount, generation period) associated with the unit of electricity delivered together with the characteristics of the generator and the name of the manufacturer.

[4] Where residual mix is modelled, for countries covered by the Association of Issuing Bodies (AIB), the AIB published national residual mix shall be used, accounting for transmission and distribution losses. AIB residual mix information can be found at: https://www.aib-net.org/facts/european-residual-mix

- is supported by Guarantees of Origin or equivalent, which
    - — is tracked and redeemed, retired or cancelled by or on behalf of the reporting entity correspond as closely as possible in time to the period to which the contractual instrument is applied
    - — are produced within the country or within EEA covered by the AIB Registry in the case of facilities in Ireland or elsewhere in Europe, or within an electricity market interconnected to the market where the facility is located in the case of facilities in other regions.

If the characteristics of the supply mix change or use of contractual instruments change during the validity of the EPD and this has a material effect (greater than 10%) on any indicator value(s) reported in the EPD, then the EPD shall be updated.

For electricity consumed outside of the countries covered by AIB, a reliable and transparent book and claim registry must be in place for any contractual instruments to be accepted. The registry must be run by an independent organisation and must cover one geographical region and be the only one there. Within this clearly defined geographical (not necessarily national) region, energy producers shall only be allowed to declare their produced kWh in the mentioned registry.

If treatment of electricity follows this same market-based approach, then EPD can be used as input for the production of EPD. Where an EPD uses the consumption mix for a region covered by a Registry, then evidence must be provided in the project report that the impact of electricity is not significant for the input material.

3.1.4 Chain of custody mass balance credit method for Contractual Instruments

EPD shall not use the mass balance credit method for the allocation of Contractual instruments like Guarantee of Origin to products from a site where Guarantee of Origin have been used. This means if contractual instruments do not cover the full electricity consumption at a site, all products must use the same proportion of electricity covered by contractual instruments, the contractual instruments cannot be attributed to a proportion of the products.

EPD shall also not be modelled using EPD that have used of mass balance approaches for the allocation of Guarantee of Origin to products from a site where Guarantee of Origin have been used. It will be the responsibility of the manufacturer making the declaration to obtain confirmation from their supplier providing the EPD that mass balance approaches for the allocation of Guarantee of Origin to products from a site where Guarantee of Origin have not been used.

3.1.5 Calculation of residual mixes of electricity

Available datasets from background databases can be taken. Transmission and distribution losses shall be considered as for consumption mix. If the registry publishes the residual mix (as is the case for AIB in Europe), this must be used by manufacturers in the region without contractual instruments. If the registry does not publish the residual mix, then conservatively, the consumption mix minus renewables shall be used by any manufacturer in the region without contractual instruments.

If there is no registry, then the consumption mix shall be used, accounting for transmission and distribution losses. The consumption mix is national (or sub-national) production plus imports and excluding exports. The national consumption mix shall be used, except for Australia, Brazil, Canada, China, India, and USA, where sub-national consumption mix shall be used.

3.1.6 Reporting of electricity modelling

The use of the market-based approach for electricity must be reported for any results in the EPD, and the EPD shall declare how electricity has been modelled in all relevant modules, e.g. using a residual mix, electricity backed up by a contractual instrument, onsite generation, direct connection etc. Any use of contractual instruments for modelling biogas or electricity shall be reported in the EPD.

To clarify EN 15941, if electricity accounts for more than 30 % of the total energy use in stage A1-A3, provide in the EPD the GWP-total of the electricity in kg CO2e/kWh used in foreground processes and any other processes in the direct control of the manufacturer.

Justification shall be given in the project report if any information is not provided.

3.2 Biogas

Contractual instruments for biogas can be used in EPD Ireland if evidence is provided satisfying the requirements below:

Biogas from the gas network

Biogas contractual instruments shall be used for modelling biogas when the supplier is able to guarantee that the contractual instrument meets the requirements for tracking and traceability, see EN 15941 E.2.1. For gas purchased without the contractual instrument the residual mix shall be applied.

Biogas from a directly connected supplier

Life cycle data for the biogas supplied may be used if there is a dedicated pipeline or supply between the organisation and the biogas plant from which the life cycle data is derived, and no contractual instruments have been sold to a third-party for that consumed biogas. Otherwise, the residual mix shall be used.

Internally generated biogas

For internally generated and consumed biogas, where no contractual instruments have been sold to a third-party, the life cycle data for the biogas shall be used for that product. Otherwise, the residual mix shall be used.

Residual gas mix

As long as the AIB system does not provide guidance and/or data sets for residual gas mixes and the background databases also do not give appropriate data sets, the residual mix must be calculated following the AIB guidance for green electricity as closely as possible. Conservatively, it would be 100% natural gas.

Note 1: For tracking and traceability, the rules of green electricity apply accordingly.

Note 2: For biogas it is not always clear at which geographical point in the gas grid the biogas is put into the pipe system nor are the pipe systems connected in a way as electricity grids are connected. Until further notice a physical connection of gas grid systems is not required to accept GOs for biogas.

Note 3: The above rules are meant only for input as energy carrier (not as feedstock).

EPD using contractual instruments for biogas can only be used for the production of an EPD in EPD Ireland if the EPD is for a product is manufactured in a country which has a Registry which meets the requirements of EN 15941.

3.2.1 Reporting of biogas modelling

The use of contractual instruments for biogas must be reported for any results in the EPD, and the EPD shall declare how biogas has been modelled in all relevant modules.

To clarify EN 15941, if electricity accounts for more than 30 % of the total energy use in stage A1-A3, provide in the EPD the GWP-total of the electricity in kg CO2e/kWh used in foreground processes and any other processes in the direct control of the manufacturer.

Justification shall be given in the project report if any information is not provided.

3.3 Cut-off Rules

The rules of EN 15804 6.3.6 apply. Cut-off rules shall not be used to hide data. All inputs and outputs to a process shall be included in the calculation, for which data are available. Data gaps should be filled by conservative assumptions, or use average or generic data. Any assumptions for such choices shall be documented in the project report.

3.4 Allocation

Until a consistent approach is in place in standardization, all ECO Platform POs are required to use economic allocation for the processes producing co-products for use in cement and concrete, for example:

- steel production and granulated blast-furnace slag or crystallised basic oxygen furnace slag;
- coal fired electricity generation, fly ash and artificial gypsum, and other processes producing artificial gypsum;
- silicon metal and ferro-silicon alloys and silica fume and
- aluminium-oxide-containing sources arising from aluminium and alumina production.

For these co-products, economic allocation shall be used even if their contribution to the overall revenue of the process is very low (below 1%), to understand the impact, even if small, connected to these co-products.
Economic allocation should use market prices, averaged over a period in time as defined in ISO 14044+A2:2020 (chapter D4.3).

Where these co-products used in cement and concrete are used in other construction products, within ECO EPDs, the same rules of allocation shall apply.

When assessing the impact of the high value co-products such as steel, electricity, silicon etc, economic allocation to these low value co-products used in cement and concrete can be omitted as a conservative choice. Other forms of allocation, for example, physical partitioning, system expansion or physical allocation, shall not be used to assign impacts to these low value co-products used in cement and concrete when assessing these high value co-products for use in ECO EPDs.

4.0 Data and Data Quality

4.1 Reference Life Cycle Inventory (LCI) Database

The most recent version of the reference LCI database should be used; where the latest version is not used, this shall be justified in the project report. The source and version of the reference LCI database(s) shall be stated in the Project Report and EPD, e.g. ecoinvent database 3.19, or later version, Sphera MLC 2025 etc. The cut-off [100:0] LCA methodology shall be used. For example, if ecoinvent is used, the LCA-method "cut-off by classification"[5] or "cut-off, EN 15804+A2" are the only accepted methods for LCA calculation

Note: The use of a single reference LCI database would maximise the comparability of EPD data within the EPD Ireland programme and aid the development of a product database for use in building level LCA in Ireland. All things being equal where data quality is not compromised, ecoinvent is preferred for use in EPD Ireland. LCA Practitioners should ensure their licence for any reference LCI database covers its use for published EPD.

4.2 Generic Data

In addition to the requirement of EN 15804, for the production of materials, it is preferred to use data originating from the producer's own supplier. For generic data (where the data from suppliers is not available) use the values given in Section 4. For other generic data, use the chosen reference LCI database.

Long-term (> 100 years) emissions shall not be included in this assessment methodology except for disposal of products containing biogenic carbon declared as GWP-biogenic, see EN 15804+A2 6.3.5.5. These are modelled separately within the named database and apply especially for mechanisms such as leaching. The long-term emissions cut-off after 100 years applies to all modules A-D and to all data except disposal of products containing biogenic carbon declared as GWP-biogenic, see EN 15804+A2 6.3.5.5, and should also be selected for generic data (as well as for specific data).

As stipulated in EN15804+A2:2019, clause 6.3.8.3, the generic data used shall include data quality assessment information according to EN ISO 14044:2006 clause 4.2.3.6.

4.3 Data Quality Assessment

A data quality assessment shall be conducted and documented in the project report. In accordance with EN15804+A2:2019 6.3.8.3, this assessment shall use one of the data quality systems specified in EN15804+A2:2019 Annex E.

[5] Known as "Allocation, recycled content" in Simapro.

Data quality information according to EN 15941 7.3.3 shall also be included in the EPD.

5.0 Generic default values for use in scenarios

To ensure consistency and facilitate interpretation, default generic data are specified here for the electricity supply mix, and for parameters relevant to the scenarios used for calculations in modules other than A1-A3.

Where the relevant modules are included in the EPD, the information set out in Tables 10-15 of in I.S. EN 15804:2012+A2:2019 (for EPD compliant with that version of the standard) or Tables 7-12 of in I.S. EN 15804:2012+A1:2013 (for EPD compliant with that version of the standard) shall be reported in the EPD. Additional information describing scenarios provided in Tables 10-23 of I.S. EN 15942:2021 may be provided if relevant.

5.1 Transportation distances and Modes

5.1.1 Transportation (Module A2)

For transportation of raw materials to the manufacturing factory gate, actual transportation distances and modes must be used, considering empty returns and loading capacity.

5.1.2 Transportation (Module A4)

For a project specific EPD, data for the transportation distance and expected modes of transport from production place to construction site shall be used.

If the construction product is manufactured in Ireland or Northern Ireland, the average one-way transportation distance and mode of transport from manufacturer to the construction site shall be used if available. Otherwise the one-way distance shall be taken from the latest version of the SEAI Life Cycle Global Warming Potential Calculation Methodology: Approach to the calculation of life-cycle GWP, using the appropriate Default Transport Scenario for Irish Project for locally manufactured, regionally manufactured or nationally manufactured products as below.

Differentiation between local, regional and national (short and long range) should be made by considering the number of producers within Ireland and Northern Ireland, and their location. If there is a single producer in Ireland and Northern Ireland, then the national (long range) distance should be used. If there are 2 or 3, then the national (short range) distance should be used. If there is a producer within each region of Ireland, then the regional distance should be used. If there are several producers within each region of Ireland, then the local distance should be used.

If the construction material/product is imported into Ireland or Northern Ireland, the actual transportation distances and modes of transport from the manufacturing factory gate to the port of entry in Ireland based on the most common transport route shall be used. From that point, the generic default values for transportation distance in Ireland shall be used taking the National (long range) transport distance.

Return transportation distances should be included in all transport calculations assuming that the vehicle is empty, unless it can be shown that the return transport is loaded. If specific data

for capacity utilisation[6] is available, this shall be used. Otherwise, the empty return distance shall be calculated using the empty running factor provided in the latest version of the SEAI Life Cycle Global Warming Potential Calculation Methodology: Approach to the calculation of life-cycle GWP.

5.1.3 Transportation to waste treatment (Module C2)

For removal of materials from a site to landfill or breaking/sorting sites, the default distance is 50km.

For removal of materials from a site to a waste to energy plant (WtE), the default distance shall be specified as the transport distance from the site to the closest of two locations (Dunleek, Co. Meath or Ringsend, Co Dublin) or as a default transport distance of 250 km, whichever is less.

The vehicle used shall be a lorry >16 tonnes, with the empty running factor provided in the latest version of the SEAI Life Cycle Global Warming Potential Calculation Methodology: Approach to the calculation of life-cycle GWP.

5.2 Loss in the form of construction waste (Module A5)

In the supply, storage of products and construction assembly process, some of the materials will be lost. A consequence of this loss is that more product must be manufactured to ensure that sufficient is available for the application.

The level of loss is dependent on the application, the construction site and the care with which activities are conducted. If data for losses are available, these shall be used. If it can be verified that there is no specific data available it is permitted to use generic data. The generic default values should be taken from the Waste rates for typical construction materials provided in the latest version of the SEAI Life Cycle Global Warming Potential Calculation Methodology: Approach to the calculation of life-cycle GWP. If the product/material is not listed, the following default values should be used. The disposal of waste in A5 shall be the same as for waste in module C1-C4, e.g. the same transport distance and the same waste treatment (i.e. landfill, recycling etc). Thus the impact of waste in A5 will be the % of waste multiplied by the impact of A1-A4+C2-C4.

5.2.1 Pre-assembled products

Product manufactured to size in a controlled off-site environment, for example doors and windows, can be expected to show relatively low rates of wastage, for example through occasional damage. A default wastage rate of 1% is applied

5.2.2 Prefabricated products

Prefabricated products manufactured in a controlled off-site environment (e.g. concrete blocks, roof-tiles, plasterboard, insulation): For these products, some waste can often be directly inserted back into the process. The assumption is that 5% of the materials are lost (on the construction site or during transportation to it).

5.2.3 In-situ products

Products manufactured on the construction site (e.g., site-mix mortars, carpentry works), commonly produce additional waste, and material is often lost due to damage or weather. The assumption is that 8% of materials are lost.

5.2.4 Ancillary and finishing materials

Ancillary and finishing materials refer to epoxies, glues, paints, and other materials which often remain and become obsolete after a period of time. Also, residue is left behind in packaging or on application instruments. The assumption is that 15% of the materials are lost.

Table 2 – Default values for loss in the form of construction waste, if not provided in the latest version of the SEAI Life Cycle Global Warming Potential Calculation Methodology.[7].

Type of product	Materials lost
Pre-assembled products	1%
Prefabricated products	5%
In Situ products	8%
Ancillary and finishing materials, epoxies, glues and paints.	15%

5.3 End of life Waste Treatment (Modules A1-A3, A5, C3, C4, D)

5.3.1 Manufacturing waste

Modelling for the transport and waste treatment of waste from processes in A1-A3 should be based on the actual fate. Impacts from waste treatment are attributed to the production process until the end of waste state is reached. This means for wastes disposed of in Energy from Waste plants, the impact of combustion is part of the product system creating the waste.

5.3.2 Disposal methods and recycling rates5.3.2.1 Disposal of Product Packaging Waste in A5

Unless specific evidence for other waste treatment can be provided (e.g. for operational packaging take back schemes), for packaging waste disposal, the most recent available waste statistics for Ireland should be used. These are published by the Environmental Protection Agency at https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/packaging/

Table 3: Default Values for Packaging Waste

Packaging Material	Plastic	Wood	Ferrous Metal	Paper and card
Recycling	32%	50%	72%	75%
Energy Recovery	54%	50%	0%	25%
Landfill	14%	0%	28%	0%

[7] Assessment Method Environmental Performance Construction and Civil Engineering Works (GWW) Version 2.0 November 2014 : Stichting Bouwkwalliteit, Holland

Transport of packaging waste for waste treatment in A5 should use the distances provided for different end of life waste treatments for C2.

5.3.2.2 Waste treatment of construction & demolition waste:

The scenario of the end of life of construction products shall be realistic and representative of one of the most probable alternatives. If there is more than one common end of life scenario, the most representative one, or all the scenarios shall be declared. Where information about common end of life routes for waste from construction and demolition are required, the latest Statistics on Construction and Demolition waste from the EPA[8] should be used. Information in the table below provides the values, based on statistics for Ireland for 2023[9]:

Table 4: Default Values for construction & demolition waste

Constituent	Percentage to recycling	Percentage to Energy Recovery	Percentage to backfill	Percentage to landfill
Soil & stone	0%	0%	87%	13%
Concrete, bricks, tiles and similar	66%	0%	28%	6%
Metals	100%	0%	0%	0%
Segregated wood, glass and plastic	40%	26%	30%	4%
Mixed C&D waste	22%	25%	19%	33%

5.3.2 Incineration in waste-to-energy plants (WtE) at end of life

The emissions from incineration in a WtE plant with R1 status shall be considered in Module C3. Avoided energy production is taken into consideration when considering the end-of-life incineration of waste from construction and demolition at a Waste to Energy plant (WtE). This information is included in module D, and the associated loads and benefits calculated following the method specified in IS EN15804+A2:2019 6.4.3.3.

5.4 Module D

Module D indicates "the potential benefits of avoided future use of primary materials and fuels while taking into account the loads and processes associated with recycling and recovery processes beyond the system boundary". Thus, Module D in a particular EPD reports potential benefits and loads accruing to future product systems that may or may not include the product covered by that EPD.

Indicator values in the EPD for Module D shall be calculated following IS EN 15804:2012+A2:2019 Clause 6.4.3.3; the applicable formula is stated in Annex D 3.4 of the standard.

[8] https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition
[9] Table 2, https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/

Module D calculations are based on scenarios. The scenarios used shall be consistent with the other scenarios used in the EPD and based on current average practice or technologies (see Section 4 for relevant guidance on some aspects). Where the average is unknown, the lowest-impact of possible primary-production technologies should be applied, which results in a conservative calculation of any benefits. Note that the benefits and loads of using wastes and secondary materials as fuels may be included in the Module D calculation.

The benefits and / or loads reported in Module D are calculated for net flows of secondary materials, energy, and fuels across the system boundary (secondary materials, fuels or recovered energy leaving the system minus secondary materials, fuels or recovered energy used in manufacture, and other modules declared in the EPD). The burdens of returning waste materials to the point of substitution, where they have functional equivalence with the avoided virgin materials must be accounted for in the Module D calculation. In cases where the output flow does not achieve functional equivalence, a justified value-correction factor shall be applied, in order to reflect this difference in the calculated benefits. The calculation of the net flows and the processes used to model module D must be described in the Project Report.

Note that in a case where a product contains a very high proportion of recycled content for a particular material constituent but the expected recycling &/or recovery rates for that material (as a proportion of the particular material waste stream) on leaving the system is lower than the proportion in the product, the calculated net flow of this secondary material leaving the system will be negative. This could lead to loads (negative benefits) resulting from the Module D calculation (i.e., result in an environmental burden associated with recycling in Module D).

There shall be no declaration of loads and benefits in module D for recovered waste flows from A1-A3 that have been allocated as co-products.

<u>Module D for energy exported from Energy from Waste plants</u>

Note that Ireland has WtE plants with R1 status at Dublin and Meath, and a plant is proposed in Ringaskiddy while significant quantities of waste are exported for energy recovery or used as fuel in cement kilns in Ireland. Average exported energy from Irish waste sent to waste to energy plants (WtE) shall use the default assumptions on recovered energy from the SEAI Life Cycle Global Warming Potential Calculation Methodology: Approach to the calculation of life-cycle GWP.

- For avoided electricity: the Ecoinvent process “Electricity mix/IE U” (>20 kV; production and import; no transformation and transportation / distribution loss); or equivalent processes from Sphera LCM if this is used as the reference database for the EPD and
- For avoided heat generation: ’Heat, natural gas, at industrial furnace >100kW/RER U’ (process in MJ) [Ecoinvent] or equivalent from Sphera LCM if used as the reference database.

<u>Exported energy from manufacturing plants</u>

Electricity produced at manufacturers’ facilities (for example from on-site photovoltaic panel arrays) and exported to the grid does not constitute a flow of secondary fuel or recovered

energy and shall not be included in the module D calculation unless the activity producing the electricity is a waste management activity in which wastes reach the end-of-waste state.

6.0 EPD Content

The EPD shall contain the information specified in EN15804+A2:2019.

For the composition of the product, the level of detail that is required is the following:

The main components necessary to understand what type of product is concerned (detailed mass description is not necessary if confidential). For any product for which the mass of biogenic carbon-containing material in the product or in any accompanying packaging exceeds 5% of the mass of the declared unit of the product or its packaging respectively, information about the biogenic carbon content shall be included as specified in EN15804+A2:2019 6.4.4.

If the packaging contains more than 5% biogenic carbon, the uptake of this biogenic carbon, as biogenic CO2, in module A3 (or A1-A3 if aggregated) shall be balanced-out by an equal amount of emission of biogenic CO2 in module A5. Then module A5 shall, also in EPDs which otherwise have an A1-A3 scope, be included for this "balancing-out reporting". Unless module A5 is fully included, this "balancing-out reporting" for module A5 shall be included in the declared A1-A3 results; if this is done, the EPD shall describe that the A1-A3 results includes the "balancing-out reporting" of the biogenic CO2 of packaging released in module A5.

If the packaging contains less than 5% biogenic carbon, this "balancing-out" of biogenic carbon may be done directly in module A3 (or A1-A3 if aggregated) instead.

For products containing pre-consumer recycled content, the EPD shall state the allocation procedure used. For products using co-products as inputs, the EPD shall state the allocation procedure used.

The modelling of electricity and biogas must be reported in the EPD as set out in section 4.

For all products, the mass of the product in the functional or declared unit, and the mass of its packaging shall be declared in the EPD.

If data has been excluded according to the cut-off rules of EN 15804, any excluded processes or assumptions made shall be described, together with an indication of the % of excluded data.

For EPD in which any modules are represented in the LCA using scenarios, the relevant scenario information specified in EN15804+A2:2019 Tables 10-15- as appropriate to the modules included - shall be reported in the EPD. Additional information describing scenarios provided in Tables 10-23 of I.S. EN 15942:2021 may be provided if relevant.

6.1 Environmental Indicators

6.1.1 Parameters describing environmental impacts

The impact assessment in the LCA shall be carried out applying the environmental impact categories and indicators as specified in EN15804+A2:2019 clause 7.2.3, for EPD compliant with EN15804+A2:2019.

Application of the above impact categories is mandatory and the results for all categories shall be included in the project report, but inclusion of the additional indicators listed in 7.2.3.2 in

the published EPD is optional. EPD compliant with EN15804+A2:2019 shall include the disclaimers in relation to certain category indicator results that are specified in EN15804+A2:2019 7.2.3.3, Table 5.For EPD compliant with IS EN 15804:2012+A2:2019, the impact assessment methods specified in Annex C, C.1 shall be used, applying additional calculation rules specified in Annex C, C.2 and the latest characterisation factors specified in C.4, published at: http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml. A period of transition is allowed, to give time for LCA tools to implement the latest characterisation factors. This period shall be one year from the release of the updated characterisation factors.

If earlier versions of characterisation factors are identical or conservative, then EPD based on earlier versions can be used. On this basis, an EPD based on JRC EF 3.0 can be used as an input to an EPD based on JRC EF 3.1. However, EF3.0 results based for the optional indicators for eco-toxicity (freshwater), human toxicity, cancer and human toxicity, non-cancer effects, cannot be justified to be identical or conservative in relation to EF 3.1, and therefore EF3.0 results for these indicators shall not be declared in an EPD based on EF 3.1 (but they may be included in the project report)[10].

EPD may optionally provide results as "Additional Environmental Information" using all the impact categories and indicators as specified in EN15804+A1:2013 clause 7.2.3, for EPD compliant with EN15804+A1:2013, clearly labelling results as compliant with EN 15804:2012+A1:2013. In this case, the characterisation factors detailed in IS EN 15804:2012+A1:2013 Annex C [1] shall be used, which are based on the CML 2001 Baseline version that is dated October 2012 (Institute of Environmental Sciences, Faculty of Science University of Leiden, Netherlands).

Other non-mandatory impact categories may be included in the EPD as "Additional Environmental Information" in order to allow validity in other jurisdictions. These results shall be clearly labelled with the source of the characterisation factors used.

6.1.2 Parameters describing resource use, waste and non-elementary flows crossing the system boundary

The indicators describing resource use, waste generation and non-elementary flows crossing the system boundary (energy, fuel or material inputs and outputs) specified in EN15804 clause 7.2.4.and 7.2.5 are mandatory and shall be included in the EPD.

6.2 Treatment of incineration and co-incineration of waste and use of secondary fuels in production of cement and other construction products.

All secondary fuels and wastes used to provide energy shall be included in RSF or NRSF indicators as relevant, based on their net calorific value and biobased content.

[10] The characterisation factors for, for example, GWP in EF 3.1 are identical or lower than EF 3.0, but for the toxicity indicators many are higher.

For transparency reasons where wastes are used for combustion, gross GWP-total results for A1-A3 shall be provided as additional information in relevant EPD immediately below the main table of results together with the following statements:

- The GWP-total results provided in this table for A1-A3 is a net value, excluding the emissions from the incineration and co-incineration of waste which are considered, according to the polluter pays principle, to be the burden of the product system producing the waste. As these wastes do not have a clearly defined point when they cross the system boundary between product systems in all regions, for transparency, a gross value has therefore been provided which does includes the CO2 emissions from fuel classified as waste when it was combusted. The gross value of GWP-total in A1-A3 is [ ] kg CO2eq.
- For RSF and NRSF results: The RSF and NRSF results provided in these tables include the use of imported energy recovered from waste within the "use of secondary fuel" indicators as a more appropriate indicator does not currently exist.

The following are not considered wastes when they are combusted and they shall be included in any net GWP results reported:

- recovered fuel oil (RFO).

Note: combustion emissions from biobased waste, waste-derived fuels or biofuels are not expected to contribute to the gross or net GWP total indicator as their biogenic CO2 emissions will be balanced by the biogenic carbon removal associated with their biogenic carbon content.

The net GWP results, and RSF and NRSF indicators shall be used in the production of any EPD for products using cement or other construction materials using incineration or co-incineration of waste or secondary fuels, but the results using the gross GWP indicator shall also be provided as additional information in the EPD immediately below the main table of results if the values are different from the net results reported in the main EPD table, using the following statement.

- The GWP-total result for A1-A3 provided in this tables is a net value excluding the emissions from the incineration of waste in the production of [ ] according to the polluter pays principle. As these wastes do not have a clearly defined point when they cross the system boundary between product systems in all regions, for transparency, a gross value has therefore been provided which includes the CO2 emissions from fuel classified as waste when it was combusted. The gross value of GWP-total for A1-A3 is [ ] kg CO2eq.

6.3 Additional Information

Any kind of additional information provided in the EPD has to be verified.

6.3.1 Additional Environmental Information derived from LCA

Additional information can be put into the main part of the EPD (i.e. in separate chapters or separate tables). Additional information shall not be put into the same tables of existing mandatory results according to EN 15804+A2.

An EPD may declare as Additional Environmental Information, additional environmentally relevant information derived from the LCA which shall be clearly labelled, for example:

- Additional indicator results using other characterisation methods, for example TRACI as required for the North American market according to ISO 21930.
- Location-based approach for energy: using the actual consumption mix (= national/sub-national production + imports – exports).

Any use of non-EN 15804+A2 indicators shall provide the reference to where the methodology is provided.

Otherwise, the EPD shall not include any LCA results violating the LCA rules in EN 15804+A2 or the ECO Platform Standards or this PCR. Examples of LCA results not allowed in EPDs are results based on a mass balance credit method approach (see 2.2), results based on offsets or insets, or results showing the effects of multi-recycling in module D.

All additional information including environmental information derived from LCA shall be clearly marked as such and explain the approach used.

6.3.2 Additional environmental information not derived from LCA

An EPD may declare additional environmentally relevant information not derived from the LCA.

Any additional environmental information declared shall be derived using appropriate methods and be specific, accurate, not misleading, and relevant to the specific product and be substantiated as part of the project report and verified as part of the EPD verification. Quantitative information is preferred over qualitative information. Any quantitative information on emissions (e.g. to indoor air) shall be provided with testing results from third-party testing laboratories or links to the studies underlying the flows.

Examples for allowed content elements of additional information:

- site and address lists
- extensions for mutual recognition
- scaling tables or results with different toppings for i.e. insulation slabs…
- the release of dangerous substances into indoor air, soil, and water during the use stage, instructions for proper use of the product, e.g., to minimise energy or water consumption or to improve the durability of the product,
- instructions for proper maintenance and service of the product, e.g., to minimise energy or water consumption or to improve the durability of the product,
- information on key parts of the product that determine its durability,
- information on recycling including, e.g., suitable procedures for recycling the entire product or selected parts and the potential environmental benefits gained,

- information on a suitable method of reuse of the product (or parts of the products) and procedures for disposal as waste at the end of its life cycle,
- information regarding disposal of the product, or inherent materials, and any other information considered necessary to minimise the product's end-of-life impacts, and
- a more detailed description of an organisation's overall environmental work, in addition to the information listed in ISO 14025, Section 7.2.3 on information about EPD owner, such as:
    - the existence of any type of organised environmental activity,
    - information on where interested parties may find more details about the organisation's environmental work.

7 References

1. IS EN 15804:2012+A2:2019. Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. National Standards Authority of Ireland (NSAI), Dublin, Ireland.

2. ECO Platform Calculation Rules and Specifications for EPDs, Version 2.0 (December 2024). ECO Platform, Brussels, Belgium. https://www.eco-platform.org/files/download/Documents/2025/LCA%20Calculation%20Rules%20V2.0.pdf

3. CML - Department of Industrial Ecology, *CML-IA Characterisation Factors, Dated August 2016*, Leiden University, Leiden, Netherlands Available at: https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors

4. N. Hill, R. Watson, K. James. *2016 Government GHG Conversion Factors for Company Reporting: Methodology Paper for Emission Factors*, September 2016, Department of Business Energy & Industrial Strategy, London, UK. Should emission factors be required, the most recent version of the UK GHG emissions factors shall be used. These are found at: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting.

EN 15942:2021 Sustainability of construction works — Environmental product declarations — Communication format business-to-business. National Standards Authority of Ireland (NSAI), Dublin, Ireland.

EN 15941:2024 Sustainability of construction works — Data quality for environmental assessment of products and construction works. Selection and use of data. National Standards Authority of Ireland (NSAI), Dublin, Ireland.

SEAI Life Cycle Global Warming Potential Calculation Methodology: Approach to the calculation of life-cycle GWP. https://www.seai.ie/EPBD/life-cycle-global-warming-potential-methodology