



Product Category Rules : Part A

**Implementation and use of I.S. EN 15804
and CEN TR 16970:2016 in Ireland – Draft
Version 2.0 Date -01/07/2020**

Irish Green Building Council

Contents

1.0 Overview	2
2.0 Parameters describing environmental impacts	2
3.0 Parameters describing resource use, waste and non-elementary flows crossing the system boundary	3
4.0 Modules	3
4.1 EPD Scope	3
4.2 Module D.....	4
5.0 Reference Database	6
6.0 Generic Data	6
7.0 Generic default values for use in calculations and scenarios	6
7.1 Electricity.....	6
7.2 Transportation distances	6
7.2.1 Transportation (Module A.2)	7
7.2.2 Transportation (Module A.4)	7
7.2.3 Transportation to waste treatment (Module C2)	7
7.3 Loss in the form of construction waste (Module A5)	8
7.3.1 Prefabricated products	8
7.3.2 In-situ products	8
7.3.3 Ancillary and finishing materials	8
7.4 Disposal and Recycling (Modules C4, D)	9
7.4.1 Disposal methods and recycling rates	9
7.4.2 Incineration in waste-to-energy plants (WtE).....	10
References	11

1.0 Overview

I.S. EN 15804¹ and associated guidance document CEN TR 16970:2016 [2] form the core Product Category Rules Part A for the development of EPD in Ireland. 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. Environmental impact categories that are mandatory for use in the environmental impacts in the Environmental Product Declarations (EPD).
2. Resource use categories that are mandatory for inclusion in the EPDs.
3. Types of EPD that may be published in the EPD Ireland programme
4. Life cycle stage modules that are mandatory for inclusion in the different types of EPD.
5. Default values for use in calculations for particular modules.

At the outset of work to produce a new EPD, the practitioner shall check for the existence of any specific PCR 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 the relevant version of EN15804 and use the appropriate EPD Ireland template specified in the General Programme Instructions.

2.0 Parameters describing environmental impacts

The impact assessment published in the EPD certificate shall be carried out applying the environmental impact categories and indicators:

- as specified in EN15804+A1:2013 clause 7.2.3, for EPD compliant with EN15804+A1:2013
- as specified in EN15804+A2:2019 clause 7.2.3, for EPD compliant with EN15804+A2:2019

The above impact categories are mandatory. EPD compliant with EN15804+A2:2019 shall include the disclaimers in relation to certain category indicator results that are specified in EN15804+A2:2019 Clause 7.2.3.3, Table 5.

EPD that are compliant with both EN15804+A1:2013 and EN15804+A2:2019 shall include both sets of environmental indicators and categories noted above. One shall be reported as "additional environmental information".

For EPD compliant with IS EN 15804:2012+A1:2013, 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).

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

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

characterisation factors specified in C.4, published at:
<http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>

Additional environmental impact categories shall be included within the impact assessment underpinning EPD compliant with IS EN 15804:2012+A2:2019, for the categories specified in Clause 7.2.3.2. Indicators for these categories shall be calculated using the methods and models specified in IS EN 15804:2012+A2:2019 Table 4. Results shall be reported in the LCA project report.

The results of these and other non-mandatory impact categories may be included in the EPD for information or in order to allow validity in other jurisdictions.

3.0 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. Information specified in clause 7.2.5 of IS EN 15804:2012+A2:2019 (biogenic content of the product and its packaging) is mandatory for EPD compliant with this version of the standard.

4.0 Modules

4.1 EPD Scope

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+A1:2013, Modules A1-A3 are mandatory for the EPD. Additional modules can also be added, at the discretion of the producer.

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 EPD may be based on either a declared unit of product or a functional 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 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.

EPD for such exempt products may have the following scopes, as alternatives to those listed above:

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

For any EPD relating to a product for which specific Product Category Rules (PCRs) have been approved, the modules and 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)² is specified; this shall be reported in the EPD and be verifiable.

4.2 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 in 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 Clause 6.4.3.3 in IS EN 15804:2012+A2:2019.

Module D calculations are based on scenarios. The scenarios used should be consistent with other scenarios used in the EPD, and based on current average practice or technologies (see Section 7 for relevant guidance); a conservative approach shall be adopted where the average is unknown.

The benefits reported in Module D are calculated for net flows of secondary materials across the system boundary (secondary materials leaving the system minus secondary materials used in manufacture, and other modules declared in the EPD). The burdens of returning waste materials to functional equivalent of 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.

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 rate 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 would lead to negative benefits resulting from the Module D calculation (i.e. imply that there is an environmental burden associated with recycling). In such cases, indicator values of 0 shall be recorded for Module D.

²For definition of RSL, and requirements relating to its determination, refer to clauses 3.26 and 6.3.4 of I.S. EN 15804:2012+A2:2019

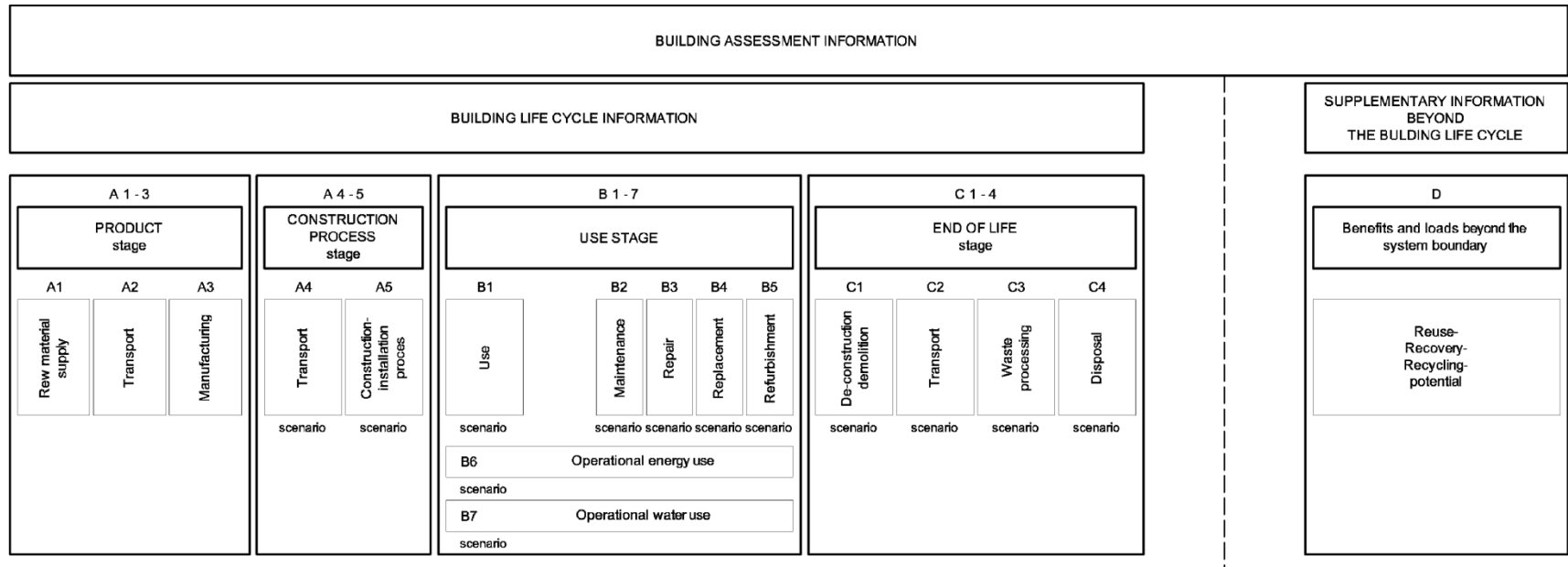


Figure 1 — Life cycle stages and modules for assessment of the environmental performance of buildings

5.0 Reference Database

The latest version of the reference database shall be used, i.e. ecoinvent database 3.5, or later version, Gabi 2017 or later version. The “allocation, cut-off by classification” system model approach in ecoinvent (called "Allocation, recycled content" in Simapro) most closely follows EN 15804 rules and should be used in EPD. In choosing the reference database, the best available data should be used³.

Note 1. The use of a single 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.

6.0 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 7. For other generic data, use the chosen reference database.

The long -term (> 100 years) emissions shall not be included in this assessment methodology. 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, and should also be selected for generic data (as well as specific data).

7.0 Generic default values for use in calculations and 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

7.1 Electricity

The electricity mix used in modules A1-A3, A5, and B1-B7, and the treatment of renewable generation, should be transparently reported in the EPD and project report. Use the national electricity mix provided in the named database or if using the supplier’s actual mix avoid the risk of double counting where traded certificates for renewables are used. On site electricity generation, whether from renewable or non-renewable sources, shall be included in the LCA underpinning the EPD.

7.2 Transportation distances

³ ISO 14025 Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2006,IDT)

7.2.1 Transportation (Module A.2)

For transportation of raw materials to the manufacturing factory gate, actual transportation distances and modes must be used.

7.2.2 Transportation (Module A.4)

If data for the transportation distances from production place to construction site are available, these shall be used. If it can be verified that there is no specific data available, because this supplier cannot or does not want to provide it, it is permitted to use generic data. The following generic default values are applicable to transportation (summarised in Table 1):

- One-way transportation distance to the construction site
 - If the construction product is manufactured in the Ireland: for bulk material: 100 km and for other materials, products and elements: 200 km. In the case of civil engineering works, the transportation distance of each work is included in the calculation;
 - If the construction material/product is imported into Ireland, the actual transportation distances and modes from the manufacturing factory gate to the port of entry in Ireland must be used. From that point, the generic default values for transportation distance in Ireland can be used.

Return transportation distances should be included in the calculation assuming that the vehicle is empty, unless it can be shown that the return transport is loaded. If specific data for capacity utilisation² is available, this shall be used. Otherwise, capacity utilisation (including return transport) of the UK's average for freight vehicles of 46% [4] shall be used.

7.2.3 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 three locations (Dunleek, Co. Meath; Ringsend, Co Dublin or Ringaskiddy, Co. Cork) or as a default transport distance of 250 km, whichever is less.

Note 2. Capacity utilisation is the ratio of the actual goods moved to the maximum tonne-kms achievable if the vehicles, whenever loaded, were loaded to their maximum carrying capacity.

Table 1 – Details of generic default values for transportation distance in Ireland

Description	Units	Default Value
Factory gate to construction site, Irish bulk products, e.g. cement, lime, gravel, bitumen	km	100
Factory gate to construction site, Irish manufactured products, e.g. windows, insulation, cladding, paints	km	200

Factory gate to construction site, imported manufactured products	km	See note 3
Waste materials from construction site to landfill	km	50
Waste materials from construction site to waste to energy plant	km	250 (see note 4)
Vehicle Capacity Utilisation: Transport, lorry > 16t, fleet average / RER U	%	46 (see note 5)

Note 3. In the case of materials/products imported into Ireland, the actual transportation distances and modes must be used from the manufacturing factory gate to the port of entry in Ireland. From that point, the generic default values for transportation distance in Ireland can be used.

Note 4. Or use transport distance from the site to the closest of three locations (Dunleek, Co. Meath; Ringsend, Co Dublin; Ringaskiddy, Co. Cork), if less.

Note 5. Return transportation loading should not be included in the calculation, unless it can be shown that the return transport is loaded. If specific data for capacity utilisation² is available, this shall be used. Otherwise, capacity utilisation (including return transport) of the UK's average for freight vehicles of 46% [4] shall be used.

7.3 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 given in the following sub-sections are applicable to losses, based on the Dutch Assessment methodology SBK 2015 [5] :

7.3.1 Prefabricated products

Prefabricated products manufactured in a controlled off-site environment (e.g. concrete blocks, roof-tiles): 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).

7.3.2 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.

7.3.3 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 waste⁴.

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

7.4 Disposal and Recycling (Modules C4, D)

7.4.1 Disposal methods and recycling rates

7.4.1.1 Packaging and Municipal Waste

For packaging and mixed municipal waste streams, the most recent available waste statistics for Ireland should be used. These are published by the Environmental Protection Agency at <http://www.epa.ie/nationalwastestatistics/nationalindicators/>

in the absence of more recent data, the following values (for 2017) may be applied:

Municipal Waste to:

- landfill disposal: 23%
- recovery in waste-to-energy plant: 65%
- recycling: 12% (based on 17% of household waste collected in dedicated recycling bins, of which c.68% is fit for recycling⁵)

Packaging Waste to:

- landfill disposal: 14%
- recovery (assumed incineration in waste-to-energy plants): 20%
- recycling: 66%

For specific packaging material streams and non-packaging material streams from manufacturing operations, default EU-27 post-consumer recycling rates collated for use with the European Commission's Product Environmental Footprint (PEF) LCA method should be used. These can be found in the file:

https://ec.europa.eu/environment/eussd/smgp/pdf/CFF_Default_Parameters_March2018.xlsx

(see column F of the tab labelled A-R1-R2)

⁴ Assessment Method Environmental Performance Construction and Civil Engineering Works (GWW) Version 2.0 November 2014 : Stichting Bouwkwalliteit, Holland

⁵ <http://www.epa.ie/nationalwastestatistics/household/>

7.4.1.2 Mixed construction & demolition waste

Where the composition of non-specific construction & demolition waste and/or the waste management applied to this stream is/are required, the following values in Table 3 should be used, based on statistics for Ireland for 2017⁶.

Table 3 – Default values for construction waste streams.⁷

Type of product	Proportion of waste stream	Proportion recovered /recycled
Soil and stone	81%	75%
Mixed C&D waste	8%	0%
Concrete, bricks, tiles and similar	6.5%	100%
Segregated metals:	4%	100%
Segregated wood, glass and plastic:	0.5%	100%

7.4.2 Incineration in waste-to-energy plants (WtE)

Avoided energy production is taken into consideration when considering the incineration at the Waste to Energy plant (WtE). If the efficiency is above 60 % or 65 % for installations after 31st of December 2008, then the impacts from combustion are reported in C3, if below 65% then in C4. This information is included in module D. Average net return of Irish waste to energy plant (WtE) are yet to be determined and subject to further research, pending the full operation of the WtE plant in Ringsend, Dublin, and for existing operational plants at Ringaskiddy and Duleek. Pending default values use data from the generic database.

To include the avoided energy production, the WtE plant is required to meet return requirements from the EU:

- For avoided electricity: theecoinvent process “Electricity mix/IE U” (>20 kV; production and import; no transformation and transportation / distribution loss); or equivalent processes from Gabi 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 Gabi if used as the reference database.
- The calculation is based on the Lower Heating Values (LHV) that ecoinvent provides in the process descriptions or based on the equivalent from Gabi.

⁶ based on data at <http://www.epa.ie/nationalwastestatistics/constructiondemolition/> and assuming that all segregated metals, wood, glass and plastic are recycled; that segregated concrete, brick, tiles are recovered, and that the remainder of the overall 71% recovery is comprised of soil and stones.

⁷ based on data at <http://www.epa.ie/nationalwastestatistics/constructiondemolition/> and assuming that all segregated metals, wood, glass and plastic are recycled; that segregated concrete, brick, tiles are recovered, and that the remainder of the overall 71% recovery is comprised of soil and stones.

References

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5. *Assessment Method Environmental Performance Construction and Civil Engineering Works (GWW) Version 2.0 November 2014:* Stichting Bouwkwalliteit, Holland
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