

10 WAYS TO BETTER ALIGN EN 15804 WITH PEF

This paper outlines 10 additional requirements that are needed on top of EN 15804 for the purposes of referring the standard to meet the Basic Works Requirement 7 & 3 of the Construction Products Regulation. These rules are essential to improve the consistency of EN15804 assessments between products and to bring EN 15804 into line with the principles and spirit of circular economy policies, in particular PEF. Without this alignment, the steel industry has to provide data to different markets with different methods and yielding different results. The construction industry also faces inconsistent information and the inability to compare different design solutions in a robust way. An inconsistency between EN 15804 and the PEF principles can even lead to lasting damage to the instrument of ecological evaluation of products and materials.

System Boundaries – Waste/end-of-waste

- 1) *All **collected** waste materials, liquids or gases from a previous use, to be subsequently used as inputs in the supply chain for making construction products, shall immediately be classed as secondary materials or fuels. This ensures that all subsequent processing and transport is included in the assessment of the user. A similar logic can be applied for product reuse.*

Justification: This will ensure all emissions occurring from any further processing, after becoming waste, are assigned to the construction product and not the waste producer. Currently there is a grey area and some input materials are still called ‘wastes’ during the manufacturing process, and so emissions, such as burning as a fuel, are not always reported in the EPD result. This goes against circular economy principles by potentially incentivising energy recovery of waste rather than reuse or recycling. The same boundary should be set for all input materials for all products to ensure consistency. In PEF there is no distinction between waste and secondary materials – everything is included.

By-product allocation and the resource use Indicator ‘use of secondary material’

- 2) *The hierarchy of allocation methods outlined in ISO 14044 shall be followed wherever possible. The EN 15804 allocation methods are not fully in line with the same hierarchy, which can lead to diverging results. The Commission should encourage common agreements between industrial symbiosis actors, and facilitate where needed. When there is no common agreement amongst the relevant sectors, which might cause inconsistency in the allocation procedure between producers and users of co-products for the purposes of regulation, then a default allocation shall be used. The default allocation shall be determined by taking half of the inventory flows of the functionally equivalent amount of primary material(s) being substituted as a result of the use of the co-product (i.e. following the 50:50 approach that can be applied in PEF).*
- 3) *The system boundary related to by-products shall be determined as soon as it leaves the production site or goes to a separate company (legal entity) on the same site.*
- 4) *The resource use indicator ‘use of secondary material’ shall be expanded to include by-products by re-naming the indicator to ‘use of secondary materials and by-products’. The information can also be reported separately as two indicators.*

Justification:

- 2) Currently there is a situation where the ironmaking by-product, Granulated Blast Furnace Slag, is used in cement or concrete production. The steel products take all the benefit via system expansion, or are allocating using physical relationships. The users of the slag are using economic value or treating it as a waste. When steel and concrete products are used in a building assessment, there is an inconsistency and double accounting issue. If there can be no agreement between the parties, then the Commission could use a 50:50 method by default. This considers the benefit of substitution, which is shared equally as a burden between the producer and user. This means the user is still able to show benefits relative to the use of primary materials, and there is consistent accounting at building level.
- 3) In order to ensure consistency in approach for setting the system boundary, between processes included by the producer and processes included by the user of a by-product, then a simple rule is needed to avoid another grey area. Without this rule, there will be different approaches in different member states and different impacts assigned to the same by-product. The fact that a material is leaving the production site, or going to another legal entity, means that the use is certain and can be deemed to have met by-product criteria under the WFD.
- 4) By-products are not, and never have been waste, and so may not be counted in the indicator 'use of secondary material'; yet they have the same benefit from a circular economy perspective, in that they also displace the need for extraction of primary material. In order to capture this benefit, the indicator should be re-named to 'use of secondary materials and by-products' or as separate indicators with equal importance.

Biogenic Carbon and Impact indicators

- 5) *The GWP-Biogenic result shall be the same result when the GWP characterisation factors of biogenic CO₂ and other biogenic emissions are set to those used in PEF.*

Justification: There is no clear instruction in EN15804 that ensures the -1+1 characterisation factors, for biogenic CO₂ inputs and outputs, will achieve the same result as in PEF, which uses a characterisation factor of zero for biogenic CO₂ (also adjusted for biogenetic methane). Whilst the principle was agreed during the EN15804 amendment process, the clear instruction was lost in difficult to understand notes. There has to be a clear instruction that the verifier has to check.

Carbonation and fossil global warming potential (GWP-fossil)

- 6) *Fossil CO₂ uptake and corresponding emissions (e.g. due to carbonation) shall be modelled in a simplified way when calculating the results (meaning, no emissions or uptakes shall be modelled). When the amount of fossil CO₂ uptake is required for additional environmental information, the CO₂ uptake may be modelled with the flow "CO₂ (fossil), uptake from air".*

Justification: EN 15804 includes CO₂ removals due to carbonation, whereas PEF only allows it as additional information i.e. not in the main results. Carbonation is an unintended degradation process of concrete that can reduce functionality and lifespan, but it can also occur in other products without degradation. The amount of carbonation is subject to high uncertainties due to variation surface porosity/coatings, in use conditions, lifetime and particle size after crushing at

EoL. The proposed text above is copied from the PEF method to ensure consistency of GWP fossil calculations between the two methods.

Module D and End-of-Life

- 7) *Module D is inextricably linked to the building lifecycle from both climate change mitigation and circular economy perspectives. Modules C and D shall always be part of an assessment of building or product performance, including when assessing performance against benchmarks. The ability to re-generate secondary materials of sufficient quality is part of the functionality in any comparison. A total score including Module D shall be provided alongside a disaggregated score.*
- 8) *A default EU wide scenario is needed for the end of life stage. This can be defined at material, or product level, but has to be consistent with current building demolition practices and reflecting the building level scenario for how those materials and products are typically dealt with. National scenarios may also be used in addition to the EU wide scenario.*
- 9) *Double accounting of secondary material input and output flows shall be prevented by summing up the mass of all secondary material input flows that become part of the product (i.e. only where used as materials and not fuels), and calculating their input as a ratio relative to the total material inputs, excluding those used as fuels. Similarly the secondary material output flows from Modules A5, B and C3 shall be summed and expressed as a ratio relative to the total material inputs, excluding those used as fuels. The ratio of secondary material outputs minus the ratio of secondary material inputs shall be used to calculate the net amount of secondary material to be considered in Module D. This would align the approach to calculating net impacts of secondary inputs and outputs, as done in PEF.*


Justification: 7) PEF includes the benefit of both recycled content and end-of-life recycling in a consistent way through use of the Circular Footprint Formula. EN 15804 is more modular and considers only recycled content to be part of the lifecycle but not Module D, as it is considered supplementary, outside the lifecycle and outside the system boundary, even though it is part of the ‘functionality’ of a building from a cradle-to-cradle perspective. More clarity to consumers is needed on whether Module D is part of the performance assessment or not. The use of allocation factors in the Circular Footprint Formula could be introduced into A1 and Module D to try to increase alignment even further.

8) It is important the scenarios used are realistic and consistent with the building level, and so the use of an EU scenario is needed, with oversight for accuracy from JRC/Commission checked in relation to PEF default values and published statistics.

9) EN 15804 can be susceptible to double accounting if the net flows in Module D are not calculated consistently, especially in open loop recycling situations because it relies on mass flows of material inputs and outputs being classed as the same material flow type, rather than using the ratio of all secondary material inputs vs. outputs as done in PEF. Such inconsistency of EN15804 for open loop vs. closed loop cases is reported in the [following paper](#).

Data quality, transparency and consistency

- 10) *One common database for upstream data shall be used with mandatory scores of data quality for the most relevant processes. The study report shall be made public with confidential data or data not compatible with anti-trust laws being redacted.*



Justification: A major source of inconsistency and therefore comparability is the use of different databases. The PEF database could be used to address this issue. The data quality of foreground data is equally important, especially if it has a significant contribution to the overall environmental impact. Foreground and background data can be average or supply chain specific, but has to be representative and appropriate for the product supply chain being claimed for. Therefore, clarification about when to use different types of data in any environmental claim is needed to ensure fair and consistent comparisons. Given that the calculations will be used for regulatory purposes, then more transparency over the data and assumptions are needed in the form of the study report.