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ASBP The Alliance for Sustainable Building Products

ENVIRONMENTAL PRODUCT DECLARATIONS (EPD) - AN INTRODUCTION

ASBP Briefing Paper | December 2019

This paper is the first in a series of ASBP industry briefing papers focussing on Environmental Product Declarations (EPD). The aim is to generate a greater understanding of sustainable construction products and the methods of assessing sustainability. In doing this, we hope to enable industry to deliver better buildings that utilise information provided by Environmental Product Declarations.

Introduction

What are Environmental Product Declarations (EPD)?

EPD provide a standard way of declaring the impacts of manufacturing and using products through Life Cycle Assessment (LCA). Construction products are assessed using a single set of Product Category Rules (PCR) ensuring consistent reporting for similar products. EPD should be independently verified by an expert familiar with the product category.

Governing standards

ISO 14025: 2006 sets out the overarching procedures and requirements for producing EPD for all product types. EN 15804:2012+A1:2013 sets out the Core PCR for the product category, construction products. There are additional standardised PCR for specific types of construction products that include timber, concrete, thermal insulation, cement and ceramic tiles.

EPD programmes

This is database of verified EPD's managed and updated by an EPD Programme Operator that is usually an independent operator and sometimes a manufacturing group or trade association. The governing standards determine General Programme Instructions, PCR, rules for appointing Verifiers and any EPD format that must be followed. A PCR that fairly reflects the product type and EPD verification that is fully independent are essential.

Verification

EN 15804 requires EPD to be verified by an expert in LCA not associated with the owner of the EPD, and not involved in the EPD development. The verifier ensures that the EPD has been produced in accordance with the Governing Standards, the PCR and General Programme Instructions.

Mutual recognition

It is possible for an EPD to be listed in more than one EPD programme where the programmes follow the same rules. This avoids producing separate EPD for each programme. A number of EPD programmes for construction products now have mutual recognition agreements in place, shown in Figure 1.

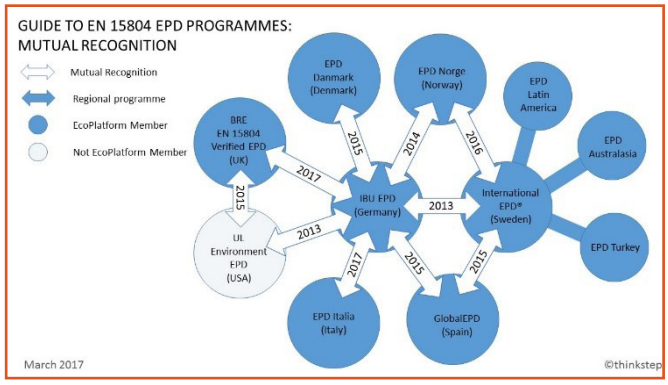

Figure 1: Mutual recognition agreements in 2017

Availability of EPD

The number of construction product EPD has grown steadily since 2012. In 2019 there were over 6000 downloadable EPD to EN 15804 within EPD Programmes. The largest number are in France (inies, PEP ecopassport), Germany (IBU) and the USA (UL Environment). A small but growing number have been produced by UK companies.

The largest product groups in terms of published EPD include insulation, floor coverings, gypsum products, paints, precast concrete, ready mix concrete and mortars, metal products, windows and doors.

Many EPD programmes are now providing their EPD data digitally for use within BIM and building LCA tools. Some are providing this free whilst others charge and/or require the data use to be approved.

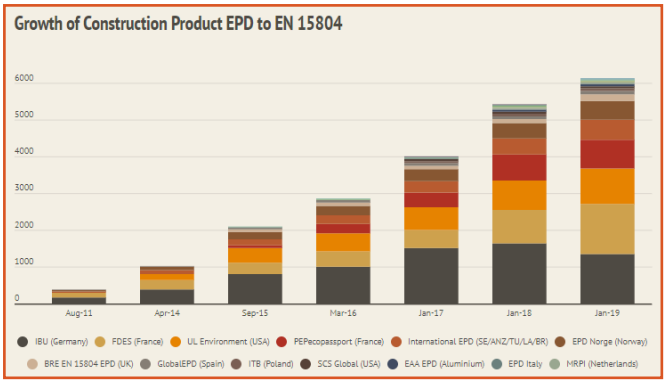

Figure 2: Growth of construction products EPD to EN 15804

Information provided by an EPD

All EN 15804 EPD must provide the same core information:

Life cycle stages

Each stage has a number of modules corresponding to an aspect of that stage. The stages comprise the product stage (A1-A3); construction stage (A4-transport, A5-installation); use stage (B1-B7), end of life stage (C1-C4) that includes disposal and waste recovery and a module showing the benefits of waste recovery in the next product system (Module D).

It is mandatory to provide the data for the product stage A1-A3 or "cradle to gate". These cover all processes including material extraction until the product is ready to leave the factory gate. Where recovered waste material or energy is used, the impacts of generating the waste are not included.

Impact indicators

EN 15804 currently provides 7 impact indicators for the product:

Global Warming Potential (GWP) relates to greenhouse gases and global warming and includes emissions and removals of both fossil and biogenic carbon.

Ozone Depletion Potential (ODP) relates to damage to ozone in the upper atmosphere.

Acidification Potential (AP) relates to acidification of soil or water and its impact.

Eutrophication Potential (EP) relates to how over-fertilisation causes excessive growth of biomass.

Photochemical Ozone Creation Potential (POCP) covers the impacts of ozone and other oxidants in the lower atmosphere.

Abiotic Depletion Potential: Elements (ADPE) - the impact of elements, minerals and energy consumed.

Abiotic Depletion Potential: Fossil (ADPE) - the impact of consuming fossil resources (e.g. oil, coal gas).

Resource and waste data: EPD also provide indicators for primary and secondary energy, freshwater consumption; secondary material use; final waste, recovered material and energy produced.

Future developments

A new amendment to EN 15804 (EN 15804:2012+A2:2019) aligns construction product EPD with the EU Product Environmental Footprint initiative. This means that construction product EPD will see the number of impact indicators increase to 10 with an additional 6 optional indicators. Eutrophication Potential will be divided into 3 indicators covering terrestrial, freshwater and aquatic and a new water scarcity indicator will be added. Module C and D will also become mandatory within construction product EPD. Existing EPD will be modified accordingly over the next 3 years.

Conclusion

The UK Government has committed to reducing UK Carbon emissions to net zero by 2050 though a legally binding amendment to the Climate Change Act.

Meeting this goal requires us to rapidly address the embodied carbon associated with the extraction, manufacture, transport, use and end of life of construction products (which accounted for 33.6 million tonnes of CO2 in 2010), emphasising the need for credible and verifiable EPD for all construction products.

It is envisaged by 2022 that EPD will become mandatory as will mandatory assessment and reporting of whole life carbon for public buildings and the incentivisation of assessment and reporting of whole life carbon for private buildings.

Aside from embodied carbon, EPD has the ability to inform many aspects of sustainability at a product and building level as well as influencing many aspects of the entire supply and value chain. The need for credible and verified EPD has never been greater.

Find out more about The Alliance for Sustainable Building Products and the ASBP Natural Fibre Insulation Group at www.asbp.org.uk.