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1.2.2. ENVIRONMENTAL DECLARATIONS OF CONSTRUCTION PRODUCTS IN PORTUGAL

OERCO2 ONLINE EDUCATIONAL RESOURCE FOR INNOVATIVE STUDY OF CONSTRUCTION MATERIALS LIFE CYCLE

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1. Introduction

“Growing concern and environmental regulation, coupled with the increasing importance and pressure of public opinion, progressively raise the question of the energy and environmental performance of buildings, increasingly on the agenda of building construction, as well as the materials used in their construction and their Relation with the surrounding space” (CTCV, 2012).

In 1994, the *Conseil International du Batiment* defined sustainable construction as “(...) creating and operating a healthy built environment, based on the resource efficiency and ecological design.” (Kibert, 2008). Methods such BREEAM, LEED, SBtool and LiderA have contributed to the introduction and international dissemination of environmental assessment processes for building construction, making them a priority to be considered in decision-making procedures at the construction project level.

Em 1994, Charles Kibert definiu a construção sustentável como “a criação e gestão de um ambiente saudável construído, baseado no uso eficiente dos recursos e nos princípios ecológicos” (Câmaras Verdes, 2017). Métodos como o BREEAM, LEED, SBtool e LiderA permitiram contribuir para a introdução e disseminação internacional dos processos de avaliação ambiental da construção de edifícios, tornando-os numa prioridade a considerar nos procedimentos de tomada de decisão a nível de projetos de construção.

There are several methodologies to determinate the environmental performance of a construction and/or products related to this industry. In order to identify and reduce negative environmental impacts from the production activity of the habitat chain, it is recognized as a good principle to study the environmental performance of the products and services used in this chain. Thus, the Environmental Product Declarations (EPD) emerge as a tool for communicating the environmental information of products / services in a life cycle perspective (ISO 14040: 2006), ensuring its scientific validity, since it is a document verified by third parties before being published.

1.1. Environmental Product Declaration (EPD)

EPD widens new dimensions to the market by providing information on the environmental performance of products and services in accordance with guiding principles, resulting in a number of advantages for both the organizations that create their EPDs and those using the EPD information. This methodology for the development of EPD for construction products should be consistent and scientifically robust in order to ensure the accounting of the environmental impacts generated, avoiding double counting (ISO 21930, 2007).

The overall aim of environmental declarations is to encourage the demand and supply of construction products with reduced environmental impacts, by communicating



verifiable and accurate information on the environmental aspects of construction products, stimulating a potential market intelligence for continuous environmental improvement.

EPDs should provide information for the proper conduct of planning and evaluation of buildings. In this context, building product EPDs can be used by architects and designers as a source of information for product selection based on sustainability, as well as sustainability assessment systems for buildings and other construction works. They can also be a very relevant tool for continuous improvement in terms of sustainability by manufacturers of materials and products. This tool allows the promotion of ecodesign (Directive 2009/125 / EC) and product development, as well as facilitating the implementation and maintenance of the environmental management system (EMS). In this way, the use of EPD allows designing a good reputation of the organizations with the consumers, increasing their competitive advantage in the market.

The main standard for the EPD is ISO 14025, where it is referred to as the "environmental label type III". These ecolabels (type III) provide standardized information on LCA on a product or service through diagrams, presenting a set of relevant environmental indicators (global warming, resource consumption, waste generation, among others), together with an interpretation of the information.

EPDs are made on the basis of previously developed rules, called PCRs (Product Category Rules), documents containing the set of rules, requirements and specific guidelines for the development of EPDs. These PCRs form the basis for the construction of any EPD, so that they can be comparable

1.2. Applied Regulation

The International Organization for Standardization (ISO) has developed two standards for EPD: a generic standard (ISO 14025) and a specific standard for the construction products sector (ISO 21930). ISO 14025 sets out the principles and specifications for the development of type III environmental declaration programs, based on the ISO 14040 series of standards. ISO 21930 aims to describe the principles and structure for environmental construction product declarations (Type III), complementing ISO 14025 for construction products, based on the use of quantified environmental data and additional environmental information.

In addition to the aforementioned standards, the European Committee for Standardization (CEN) has developed standard EN 15804 which lays down the basic rules for the categories of construction products applicable to all construction products and services. This standard provides a framework to ensure that all Environmental Product Declarations (EPD) relating to construction products, services and processes are developed, verified and presented in a harmonized way.

Europe

In the context of EPD for construction products and services, a number of projects in Europe have been developed with the aim of promoting initiatives and good environmental practices in the construction sector. Thus, in the European Union, policies and strategies were promoted to encourage the implementation and prioritization of the environmental performance aspect in decision-making processes in construction projects:

- European initiative of Single Market for Green Products: This initiative has the purpose of standardizing the methodology for evaluating the environmental performance of products, in order to restrict the labelling process, reducing costs to companies and confusion for consumers.
- Green Public Procurement: Provides methodological guides for the selection of products with reduced environmental impact for public entities, in order to promote sustainable consumption and production.
- Regulation 305/2011 of Construction Products: With the main objective of achieving the smooth functioning of the construction products market, through harmonized technical specifications to determine product performance. In the case of environmental performance, the regulation recommends the use of EPD, when available, specifying in requirement 7 that construction works should be designed, constructed and demolished in such a way that the use of natural resources is sustainable.

Portugal

Within the framework of the European initiatives mentioned above and in order to take part in them, Portugal entities developed the DAP Habitat System, a national registration program for Type III Environmental Declarations for housing products.

The EPD Habitat system was built within the framework of the *Sistema de Apoio a Ações Coletivas (SIAC)* project, approved in the context of the *Cluster Habitat Sustentável* collective efficiency Strategy (QREN POFC 01 / SIAC / 2011 nº18653).

The objective of this project was to develop a system of verification and registration of housing EPD, based on objective and independent criteria. These criteria allow the creation and availability of Product Category Rules (PCRs), which in turn support the preparation of EPDs validated in a publicly accessible database.

2. Types of EPD Emission Systems

Like DAP Habitat in Portugal, there are other international EPD systems that allow the verification and certification of declarations issued by entities, while providing resources for their realization, contributing to the worldwide standardization of EPDs. Several

systems are presented below, some of which analyse products from Portuguese companies:

- **International EPD® System:** international organization localized in Sweden. The program performs EPD and PCR for all types of products. EPDs are all available and it is possible to verify if they have been performed for a particular company in a given country. Although there are EPDs for construction products, it is not specific to this industry.
(web: <http://www.environdec.com>)
- **EPD Aenor (Global EPD):** Located in Spain, performs EPD and PCR, mainly for construction products. Although there are still only a few declarations available, its numbers are increasing. This system has signed agreements with the EDP System so that its EPDs are also internationalized. Its regulatory and policy structure is the Technical Building Code (CTE), which sets out the requirements for buildings in Spain. The CTE has a general regulatory registry, by order VIV / 1774/2008, created to increase the transparency and public control of the instruments that facilitate the implementation of the CTE. Here is the general register of environmental certifications of the life cycle assessment, in which the first EPDs were registered. There are currently two program managers: The GlobalEDP Program of the Spanish Association for Standardization and Certification, applicable to all industrial sectors, but especially active in the construction sector; And the EDPc of the Sustainable Construction Agenda, applied to construction.
(web: <http://www.aenor.es>)
- **EPD construcción:** developed by ITEC and COAAT of Barcelona. This program is specific to construction, where all EPD are accessible. The goal is to join manufacturers who want to commit to the environmental improvement of production processes with the purpose of providing the construction industry with the necessary transparency so that technicians and professionals can make environmentally friendly decisions in choosing products for their projects. It should be noted that they do not do PCR because their EPDs comply with ISO 21930.
(web: http://www.csostenible.net/index.php/es/sistema_EPDC)
- **GBCe Spain:** although not certified, this system has established EPD procedures so that they can be easily integrated into the environmental certification tools of the agency responsible for the system (GREEN and LEED). It works specifically in the field of construction.
(web: <http://www.gbce.es/es/materiales/EPDe>)



- Vida Sostenible: foundation that identifies products, services or organizations committed to the environment and sustainable economy, interested in obtaining EPDs. The Foundation grants the *Huella Ambiental* FVS seal to entities, products or services that have been submitted to environmental impact studies that follow the criteria and methodologies necessary to obtain EPD.
(web: <http://www.vidasostenible.org/empresas/sellos-de-huella/metodologia-de-analisis/>)

- ECO-Platform: platform with the purpose of developing environmental information on construction products, namely type III declarations. The presented EPDs can be used in both the European and international markets. ECO-Platform represents a group of entities working together to ensure a coherent structure for EPD. The ones published on the platform are supported by the most important program operators in Europe and their quality and international acceptance is guaranteed.
(web: <http://www.eco-platform.org/>)

- Institut Bauen und Umwelt e.V. (IBU): created through an initiative of manufacturers of construction products that decided to support the expansion of sustainability in the construction sector. Within this program companies can obtain EPDs for their construction products. In a first stage PCR are developed if they do not already exist for the product under analysis. In the second phase, the EPD is reviewed by third parties and published after verification by the IBU. The institution already has more than 1,000 EPDs published.
(web: <http://ibu-epd.com>)

- Donnés environnementales et sanitaires de référence pour le bâtiment (INIES): managed in a participatory manner by entities from the construction sector, including public authorities, INIES is the French national database of environmental and health declarations of products, equipment and evaluation services of construction performances.
(web: <http://www.inies.fr>)

3. Comparative analysis

In order to understand the EPDs already carried out at national level, both in the DAP Habitat system and in other international systems, the following EPDs are from Portuguese companies registered in systems such as those mentioned above, as well as their associated characteristics.

Company	System	Availability	Validity	Product	Regulation Applied	System boundaries	Verifier
Sofalca Sociedade Central de produtos de cortiça, Lda.	DAPHabitat/Eco platform	Yes (PDF)	01/06/2020	Aglomerado de cortiça expandido	ISO 14025, EN 15804:2012+A1:2013, EN 159042	Cradle-to-Gate	Certif
Saint-Gobain Weber Portugal, S.A.	DAPHabitat/Eco platform	Yes (PDF)	19/10/2020	Argamassa weber.therm.kal	ISO 14025, EN 15804:2012+A1:2013, EN 159042	Cradle-to-Gate	Certif
Saint-Gobain Weber Portugal, S.A.	DAPHabitat/Eco platform	Yes (PDF)	19/10/2020	Revestimento mineral colorido Weber.rev.naturkal	ISO 14025, EN 15804:2012+A1:2013, EN 159042	Cradle-to-Gate	Certif
Saint-Gobain Weber Portugal, S.A.	DAPHabitat/Eco platform	Yes (PDF)	03/01/2021	Revestimento isolante térmico weber.therm.natura (sistema ETICs)	ISO 14025, EN 15804:2012+A1:2013, EN 159042	Cradle-to-Gate	Certif
Amorim Isolamentos, S.A.	DAPHabitat	Yes (PDF)	05/10/2021	Aglomerado de cortiça expandida	ISO 14025, EN 15804:2012+A1:2013, EN 159042	Cradle-to-Gate	Certif
Amorim Isolamentos, S.A.	DAPHabitat	Yes (PDF)	05/10/2021	Granulado de cortiça expandida	ISO 14025, EN 15804:2012+A1:2013, EN 159042	Cradle-to-Gate	Certif
Amorim Revestimentos, S.A.	Eco platform/IBU	Yes (PDF)	11/08/2021	Decor Vinyl Cork Flooring Floating	ISO 14025, EN 15804	Cradle-to-Gate	Patricia Wolf (independent)
Amorim Revestimentos, S.A.	Eco platform/IBU	Yes (PDF)	11/08/2021	Cork Flooring Floating waterproof	ISO 14025, EN 15804	Cradle-to-Gate	Patricia Wolf (independent)
Amorim Revestimentos, S.A.	IBU	Yes (PDF)	01/11/2020	Cork on Flooring Floating with digital print and PUR	ISO 14025, EN 15804	Cradle-to-Gate	Patricia Wolf (independent)



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Amorim Revestimentos, S. A	IBU	Yes (PDF)	30/06/2018	Artcomfort Floating HPS	ISO 14025, EN 15804	Cradle-to-Gate	Dr. Frank Werner (independent)
Amorim Revestimentos, S. A	IBU	Yes (PDF)	15/01/2020	Artcomfort Floating WRT	ISO 14025, EN 15804	Cradle-to-Gate	Patricia Wolf (independent)
Amorim Revestimentos, S. A	IBU	Yes (PDF)	30/06/2018	Corkcomfort Glue-down HPS	ISO 14025, EN 15804	Cradle-to-Gate	Dr. Frank Werner (independent)
Amorim Revestimentos, S. A	IBU	Yes (PDF)	30/06/2018	Vinylcomfort Floating	ISO 14025, EN 15804	Cradle-to-Gate	Dr. Frank Werner (independent)
Amorim Revestimentos, S. A	IBU	Yes (PDF)	30/06/2018	Vinylcomfort glue-down	ISO 14025, EN 15804	Cradle-to-Gate	Dr. Frank Werner (independent)
Amorim Revestimentos, S. A	IBU	Yes (PDF)	30/06/2018	Corkcomfort Floating HPS	ISO 14025, EN 15804	Cradle-to-Gate	Dr. Frank Werner (independent)
Amorim Revestimentos, S. A	IBU	Yes (PDF)	30/06/2018	Corkcomfort Floating WRT	ISO 14025, EN 15804	Cradle-to-Gate	Dr. Frank Werner (independent)
BLB – Indústrias Metalúrgicas, S.A.	International EPD System	Yes (PDF)	10/05/2019	Vitreous enamel steel bathtubs, shower trays, wash basins and panels	EN 14527, EN 14688, EN 10209, EN 15804	« Cradle-grave»	Serumano, S.L.
SN Maia – Siderurgia Nacional, S.A.	Eco platform	Yes (PDF)	31/07/2019	Carbon steel reinforcing bar	EN 14025, EN 15804:2012+A1:2013	Cradle-to-Gate	BREGLOBAL, Lda.
SN Seixal – Siderurgia Nacional, S.A.	Eco platform	Yes (PDF)	31/07/2019	Carbon steel reinforcing bar	EN 14025, EN 15804:2012+A1:2013	Cradle-to-Gate	BREGLOBAL, Lda.

Despite the initiatives and existing legislation, there is still little adhesion from the Portuguese construction industry. Even so, the companies that make EPD, make these declarations in several international platforms, for several products, showing environmental concern, both in the national and international markets.

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NP EN ISO 1421:2008 – Rótulos e Declarações Ambientais – Auto Declarações Ambientais. Instituto Português da Qualidade (IPQ)

NP EN ISO 1424:2006 – Rótulos e Declarações Ambientais – Rotulagem ambiental tipo I. Instituto Português da Qualidade (IPQ)

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