



**Construct  
Innovate**

Built Environment  
Research Ireland



# National Digital carbon database

Carbon data for construction products



<b>Report Name</b>	National Digital carbon database: Carbon data for construction products
<b>Document Number</b>	CI-AHARDD06-IGBC-R-01.01
<b>Report Coordinators</b>	Pat Barry, Irene Rondini – Irish Green Building Council
<b>Authors</b>	Pat Barry (IGBC), Irene Rondini (IGBC)
<b>Website</b>	www.constructinnovate.ie

<b>Dissemination Level</b>	Public
<b>Date</b>	4 <sup>th</sup> February 2024
<b>Cite As</b>	Barry P & Rondini I (2024), 'National Digital carbon database: Carbon data for construction products', Report No. CI-AHARDD06-IGBC-R-01.01, Construct Innovate, Galway, Ireland, 4 <sup>th</sup> February 2024.

<b>Revision</b>	<b>Date</b>	<b>Modifications</b>
R00	28/11/23	1st version
R01	07/12/23	2nd version



# Table of Contents

Table of Contents.....	3
1 Introduction.....	4
2 EPD Ireland digitisation.....	4
2.1 EPD datasets digitisation.....	4
2.2 National Generic data.....	5
2.3 Streamlining the production of EPD.....	6
3 EPD awareness and learning videos.....	8



# 1 Introduction

The project aimed to build on work done to date to support and improve the digital availability of construction product data both through Environmental Product Declarations (EPDs) and generic product data. The aim was to make EPD data normally available through an EPD, machine readable and available through an Application Programming Interface (API) to all building level Life Cycle Analysis (LCA) tools.

The project also aimed to contribute to the streamline the cost and time involved in developing EPD as these are expected scale in 2024 with the introduction of mandatory EPD for suppliers to Transport Infrastructure Ireland (TII).

Finally, the intent was to increase the awareness and literacy of construction professionals on interpreting EPDs.

## 2 EPD Ireland digitisation

This action aimed to fully digitise all the existing EPD and making them available in CSV/XML formats on ECO Portal to worldwide specifiers.

The second goal was to streamline digitally the production of EPD to reduce the cost to the producer and enable scaling of the system.

### 2.1 EPD datasets digitisation

This part of the project consisted of creating Excel datasets of all our existing EPD (108) products and then inputting the datasets and all the product information included in EPDs in a cloud-based (EPDigi) tool to digitise them. These involved declarations developed to EN15804+A2 standard which form most of EPD Ireland's published EPD. Previous versions of the standard (+A1) were already digitised.

To perform this task, Irish Green Building Council (IGBC) contracted two University of Galway engineering students, trained them to use the tool and assigned them tasks. The first task consisted of creating Excel datasets for every product on each EPD in the format required by the tool. The second task consisted of inputting all the information contained in the EPD and importing the Excel dataset into the tool. The students cross-checked their work. After completion, their work was reviewed by the project lead and sample-checked by IGBC staff.

Finally, the published data was sent to the EPD owners to carry out a final check.

The final output of this project task can be found on:

- ECO Portal, a central European access point for digital EPD data – free of charge and without registration, at <https://www.eco-platform.org/epd-data.html> (filtering by node = EPD Ireland)
- EPD Ireland Node at <https://epdireland.lca-data.com/processList.xhtml?stock=PUBLIC>

The datasets are now available to worldwide specifiers and can be used in Building LCA tools via API.



**List datasets (Total number of entries: 194 of 10851) (Page 1 of 20)**

show more/less columns OPTIONS X RESET FILTER AND SORTING

EPD Product Name ↑	Language	Country / Region ↑↓	Valid Until ↑↓	EPD Owner ↑↓	Program Operator	Node ↑↓	View Download
Search...	Choose ▾	Choose ▾	Choose ▾	Search...		1 selected ▾	
● EPS 200	en	GB	2024	Mannok	EPD Ireland	<a href="#">EPD_IRELAND</a>	
● PIR insulation board - 100mm FR/MG	en	IE	2026	Unilin	EPD Ireland	<a href="#">EPD_IRELAND</a>	
● ASC (Anti-stick agent)	en	IE	2027	Chemoran	EPD Ireland	<a href="#">EPD_IRELAND</a>	
● Acrylic soft sheen	en	IE	2028	Castle Paints	EPD Ireland	<a href="#">EPD_IRELAND</a>	
● Acrylic washable matt	en	IE	2028	Castle Paints	EPD Ireland	<a href="#">EPD_IRELAND</a>	
● Aluminium Louvered Systems	en	IE	2029	QEF Ltd	EPD Ireland	<a href="#">EPD_IRELAND</a>	

Figure 1. ECO Portal, a central European access point for digital EPD data – free of charge and without registration, at <https://www.eco-platform.org/epd-data.html> (filtering by node = EPD Ireland)

Selected data stock: PUBLIC A B

**EPD IRELAND**  
THE ENVIRONMENTAL PRODUCT DECLARATION PROJECT

**EPD Ireland**  
Data stock: Data that has been made publicly available

Home **Process data sets** Filter results

entries: 206 (206 total) (page 1 of 21) 10 ▾ entries per page

Name	Location	Classification	Reference year	Valid until	Compliance systems
EPS 200	GB		2019	2024	• EN 15804 • ISO 14025 • ISO 21930
PIR insulation board - 100mm FR/MG	IE		2021	2026	• EN 15804+A2 • ISO 14025 • ISO 21930
Acrylic soft sheen	IE		2023	2028	• EN 15804+A2 • ISO 14025 • ISO 21930
Acrylic washable matt	IE		2023	2028	• EN 15804+A2 • ISO 14025 • ISO 21930
Aircrete Blocks Super	GB		2018	2023	• EN 15804 • ISO 14025 • ISO 21930
Aircrete Seven block	GB		2018	2023	• EN 15804 • ISO 14025 • ISO 21930
Aircrete Standard block	GB		2018	2023	• EN 15804 • ISO 14025 • ISO 21930

<https://epdireland.lca-data.com>

Figure 2. EPD Ireland node (<https://epdireland.lca-data.com/processList.xhtml?stock=PUBLIC>)

## 2.2 National Generic data

The work involved bringing together and publishing a set of default generic data developed by IGBC under Lifelevel(s) and Buildinglife projects for use in the Irish Construction sector. This is now available on IGBC’s Whole life carbon hub since October 2023 – <https://www.igbc.ie/generic-data/>. The text below gives an overview of how this data was developed.

### Background to development of national generic database

The creation of a national generic database of the carbon intensity of materials manufacture is essential to enable the consistent measurement of buildings’ Global Warming Potential (GWP) across the state. A problem with performing whole life carbon assessments without supplier data on the carbon emissions involved in production of material is knowing what data to use as a substitute. There are multiple sources of



generic data available in databases such as the ICE Database in the UK, INIES in France and OKOBAUDAT in Germany. These generic data can vary, and none are specific to Ireland. Using different data will produce different results. In order to carry out consistent assessments in line with Ireland's Climate Action Plan, it was important to provide a consistent national set of background data for all assessments.

In 2020, IGBC commissioned Cambridge Architectural Research in the UK to carry out a study of the emissions involved in producing high-volume materials (aggregate, brick, cement, glass, steel, aluminium, timber) being used in Irish construction and provide an estimate of the average carbon footprint of production for each (A1-3). In 2022, IGBC commissioned Circular Ecology, another UK based consultancy, to carry out similar studies on further high-volume materials in the Irish market (concrete blocks, various insulation materials, slate, stone, windows and doors, plasterboard, and various floor types).

Both of these studies were in line with the method used in Finland and Sweden, which is to review the market share of suppliers, assess what environmental data is available on their products and try to determine a weighted average for the country.<sup>1</sup>

The A1-A3 carbon data that these two studies produced was then supplemented with EPDs from Cement Manufacturers Ireland and data from the UK ICE database for other materials to provide consistent figures for most materials used in Ireland today. Also included was the type of material the product will be categorised as at other stages of its lifecycle – transportation (A4), construction (A5) and end of life (C2-C4). This aids estimation of associated emissions at those stages.

The figures were published and a call for public consultation was made. Response was limited but small further adjustments were made as a result.

One set of generic data should provide consistent results for all building level whole life carbon assessments<sup>2</sup>. More accurate assessments can be done by using EPD data where available and should be encouraged.

## 2.3 Streamlining the production of EPD

The development of EPD can be expensive for producers of materials particularly for Small and medium-sized enterprises (SMEs). The aim of this work was to investigate the process of speeding up and reducing the cost of developing EPD. The work involved here was mainly through meetings and workshops with various stakeholders, software producers, consultants and EPD Ireland's panel of verifiers.

This work was carried out in parallel with the development of [Transport Industry Ireland's complementary PCR for Bituminous road surfacing mixtures](#) which was reviewed by an EPD Ireland appointed expert committee and published in October 2023. Transport Industry Ireland (TII) are making it a requirement of all producers of bituminous materials to produce an EPD within 6 months. This creates a challenge of scale and cost for producers and EPD Ireland, as this will lead to the production of hundreds of EPD in 2024. This would lead to challenges due to limited number of verifiers and the time involved as TII are not proposing to provide a software solution.

In order to streamline the process, IGBC entered discussions with EcoReview an LCA consultancy, EcoChain a Dutch LCA software provider and together with IGBC's verifiers to develop a more streamlined process for generating EPD at scale. The aim was to create a pre-verified tool that reduced considerably the cost of producing and verifying EPD for Irish manufacturers.

This involved a considerable number of meetings with all parties over the summer of 2023.

An agreed protocol was agreed to be delivered in 1<sup>st</sup> quarter 2024.

- IGBC and EcoReview would develop a standardised template for TII PCR compliant EPD.
- It was agreed with EcoChain that they would develop a locked software solution based on this template and on TII's complementary PCR with the required TII product defaults to generate LCA



for road surfacing materials.

- This would then be verified independently by EPD Ireland's verifiers.
- Based on the reduced verification times IGBC would amend the fee structure for verification and publication fees.

This would reduce the required inputs by manufacturers to quantities and reduce the time required to verifiers allowing cost of EPD by two thirds. This part of the digitisation process will now happen with IGBC developing revised mass EPD fee structure.

It was also the intent to digitise entirely the process of creating EPD in EPD Ireland through adopting the Norwegian tool LCA.no that is used in the EPD Norway system, which is one of the most successful EPD programmes in Europe. The ultimate goal was to be able to publish the EPD in PDF and XML/CSV directly through the platform without the need for a graphic design. This part of the work investigated the potential link between the LCA generation software and the final EPD verification software. This has proved more challenging with the software developer running into time issues with conversion of standard templates, so this part of the work was delayed beyond the lifetime of this project.



### 3 EPD awareness and learning videos

As part of this deliverable, IGBC developed two informational and training videos to increase awareness of EPDs and made them available on IGBC’s YouTube channel, website and social media. They are also incorporating into IGBC’s online learning platform and integrated into IGBC’s Whole Life Carbon Training course on which 600 students have either completed or registered.

The topics of these two videos were chosen based on Frequently Asked Questions received by EPD Ireland from manufacturers and specifiers via emails and calls.

From EPD Ireland’s experience, few construction professionals know how to read an EPD. Specifically, some manufacturers advised IGBC that architects are confused by scientific notation leading them to erroneously interpret the numbers provided which can have serious consequences for the manufacturer.

The video script and initial graphics were developed by the IGBC, while the content and animation were developed by a graphic and animation designer.

The videos were uploaded on IGBC’s Youtube channel and widely disseminated through LinkedIn and Twitter, IGBC’s newsletters and direct emails to all stakeholders involved. Finally, the videos were included in IGBC’s Whole Life Carbon On-demand Training, in the section dedicated to EPD.

VIDEO	TARGET AUDIENCE	LINK
<p><b>What is an EPD</b></p> <p>The video explains in simple language that an EPD, Environmental Product Declarations, is a document that communicates the environmental impact of a product through its lifecycle. It explains that it is standardised, verified and transparent, providing data on the environmental impacts of a product over its lifetime. So far the video got 577 views (6 months).</p>	<p>Mainly manufacturers but the videos have been developed for an audience as broad as possible</p>	<p><a href="https://www.youtube.com/watch?v=5eZyOTFvh54">https://www.youtube.com/watch?v=5eZyOTFvh54</a></p>
<p><b>How to read an EPD</b></p> <p>This video is a short guide on how to read Environmental Product Declarations and explains to you how to understand the information and numbers presented. So far, the video got 566 views (1 month).</p>	<p>Specifiers</p>	<p><a href="https://www.youtube.com/watch?v=8J12pczLppE&amp;t=2s">https://www.youtube.com/watch?v=8J12pczLppE&amp;t=2s</a></p>



