Environmental Product Declaration

General Guide
Last Updated: March 2025

BRICK DEVELOPMENT ASSOCIATION

The Brick Development Association

The Brick Development Association is the national authority on clay bricks and pavers. The membership accounts for almost 99% of the bricks produced in the UK; with BDA members committed to manufacturing products of outstanding quality and developing one of the nation's most productive and sustainable supply chains.

The BDA Essential, General, Structural and Technical Guides are continually updated to take account of the latest materials, systems and products developed in the clay brick and paver sector.

Scope of Document

This is an initial guidance document for the general public and members of the construction profession.

The guide provides an overview of Environmental Product Declaration (EPD) with a specific focus on their application to clay brick.

The BDA are committed to providing impartial and authoritative information.

We make every effort to ensure the accuracy and quality of information and guidance when it is published. However, we can take no responsibility for the subsequent use of this information, nor for any errors or omissions it may contain.

What is an EPD

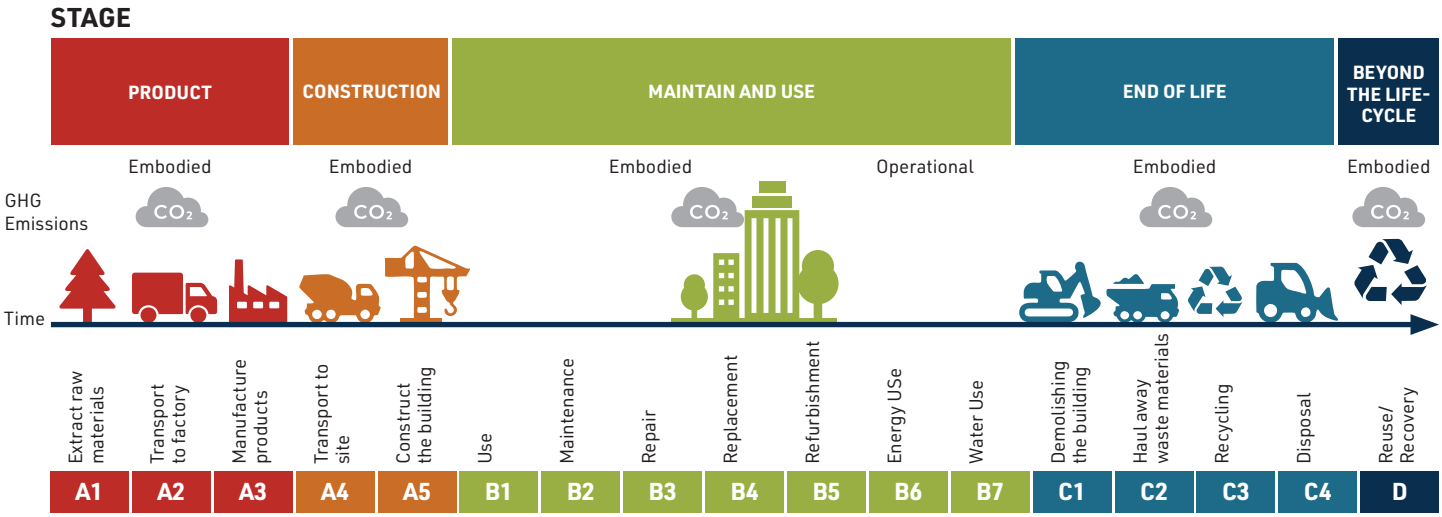
Environmental Product Declaration (EPD) are documents that report information on the environmental impact of a construction product. EPD can have different life cycle scopes but should encompass the entire lifecycle of a product; from the extraction of raw materials, its manufacturing phase, installation and use on-site (including maintenance and repairs), through to a product's end of life and disposal.

Produced by, or on behalf of a product manufacturer or group of manufacturers, an EPD is the main source of information about construction products required for input to Whole Life Carbon Assessments (WLCA) of infrastructure and building projects.

Assessing the impact against a range of environmental indicators, such as global warming potential (also known as embodied carbon), an EPD is an output of a life cycle assessment methodology (LCA).

While an EPD will identify global warming potential, it's important to bear in mind that an EPD does not measure carbon content, which is a measurement of mass. EPD will assess embodied carbon through LCA and study the impact of the product through the entire construction life cycle.

One LCA methodology used to produce an EPD is the European Standard EN 15804. This sets out the Product Category Rules for the development of an EPD for construction products to ensure that all required products are assessed consistently, using the same approaches and methodology.



The increased transparency an EPD ensures that client demands and specifications can not only be met but exceeded. Gaining access to an EPD can also support the development of innovative products and the improvement of efficiency for materials, energy, and transport costs.

Additionally, EPD can also help enhance a product's reputation, achieving recognition by building assessment schemes (such as BREEAM / LEED); and feed into building information modelling (BIM) and computer-aided design (CAD) software towards improving a building's environmental performance. EPD can also support the deployment of innovative products which have a lower environmental impact and help deliver more-sustainable construction projects which take account of the lifecycle impact of products used.

How to read an EPD

With Environmental Product Declaration (EPD) a vital tool in the assessment of the environmental impact of a product, it's imperative that they are understood correctly.

1 General Overview

The initial section of an EPD will provide a general overview of information, detailing who the EPD Programme Operator is, the applicable Product Category Rules (PCR), who the LCA consultant was, what tool was used to support the creation of the EPD, and the type and scope of EPD.

2 Declared/ Functional Unit

The EPD will then look at the 'Declared/Functional unit'. This refers to the specific quantity or functional performance measurement of the named product. This unit is often used as a reference point for the result reporting. For instance, environmental impacts might be reported per kilogram or metres squared of product.

3 Interpretation & Additional Information

The next section, interpretation and additional information, focuses on the scope of assessment and which life cycles are included. In this section, it is mandatory to include factory impacts from start to finish as a minimum. This incorporates everything from modules A1 -A3 and End of Life to modules C and D, as illustrated above.

4 Product Description

Following this comes the Product Description. As it states, this section provides a full description of the product to aid the identification process.

5 Technical Information

The Technical Information section will provide basic technical properties of the product that are relevant to their use case, the manufacturing process and product use and installation where relevant (such as service life of a product, life expectancy and maintenance requirements, and end of life options). This would include compliance with standards or performance information.

6 Life Cycle Assessment Calculation

Next up is the Life Cycle Assessment Calculation (LCA) rules section. This covers the calculations, assumptions, and any data sources used when conducting the LCA. The subsequent LCA results section will identify quantitative findings obtained from the LCA of the product.

7 Scenarios & Summary

The Scenarios and additional technical information section is where any additional details and scenario information relating to the product's impacts beyond the factory gate are displayed.

8 Summary of Key Findings

Finally, the Interpretation and additional information section will provide a summary of key findings. It will also include any additional details that support the usefulness of the overall EPD.

Types of EPD

Manufacturer-specific EPD: Manufacturers can produce EPD for their own product(s) and site(s), these are known as manufacturer-specific EPD.

An individual manufacturer's EPD will have information specifically relating to environmental impacts of their product(s), to refer to. If a manufacturer makes many similar products (e.g. different types of clay bricks), they may have an average product EPD or site EPD, based on all products made at a particular location.

Collective EPD (across multiple manufacturers): Manufacturers can group with other manufacturers to produce collective EPD. This approach is taken by many, typically through trade associations coordinating inputs across multiple companies. For example, UK trade associations such as the Brick Development Association, European trade associations such as the European General Galvanisers Association, campaigning organisations such as WoodforGood and certification bodies such as UK CARES have all produced collective EPD.

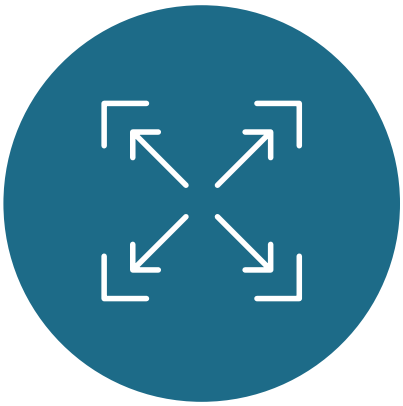
Benefits/consideration: Working with other manufacturers to produce a collective EPD will reduce costs and effort for individual manufacturers and ensure that there is representative EPD data for the product type in the market. It may also give manufacturers an idea of their impact relative to the average product, and give them the opportunity to produce a manufacturer-specific EPD as a result.

Types of EPD by Product type

- **Product specific:** EPD can be provided for a specific product. Some EPD programmes allow separate results for more than one product to be included in a single EPD, other programmes require each product to have their own EPD – this will increase the costs of registration and listing.
- **Average product:** An average product EPD will cover two or more products, for example the average of all production or for a particular product range. Weighted averages by production are normally used.
- **Representative Product:** A representative product EPD provides information for an actual or theoretical product which is chosen to be representative of production.
- **Worst case:** Worst case EPD are commonly used for products which are themselves high impact, but contribute only very little to building impacts because they are used in very small quantities, e.g. adhesives and coating or building hardware. Also known as a Model EPD or Template EPD, worst case EPD are developed by a group of manufacturers based on data collection and LCA modelling to identify the worst case impacts for a product group and limit values for inputs/processes that drive impact. Any manufacturer in the group can then use these impacts to produce a Worst Case EPD if they show their product is within the limit values. IBU is the only programme to register these EPD.

EPD and Life cycle assessment

EPD are built around the life-cycle assessment practice and methodology. There are several types of EPD that differ:



By Scope

- **Single-product, single-company EPD:** This is the most common type, focusing on the environmental impact of a specific product from a single manufacturer.
- **Multi-product EPD:** This EPD covers a range of similar products from a single company, allowing for comparisons within the product line.
- **Industry-wide EPD:** This EPD represents an entire product category across multiple manufacturers. It provides a general environmental profile for the industry but lacks details on specific products.

By Focus

- **Cradle-to-gate EPD:** This EPD assesses environmental impacts from raw material extraction to the factory gate (excluding use and end-of-life stages.
- **Cradle-to-gate with options:** This includes the minimum requirements that are present in the cradle-to-gate option with a few additional information modules from cradle-to-grave EPD variation.(LCA, n.d.)
- **Cradle-to-grave EPD:** This EPD includes all life cycle stages, from raw material extraction to final disposal or recycling.

By Verification

- **Internally-verified EPD:** The manufacturer prepares the EPD based on internal data and following relevant standards (ISO 14021), but the intenral verifier must be independent from the team that developed the EPD (and not involved in the process).
- **Third-party verified EPD:** An independent body reviews and validates the EPD for accuracy and adherence to ISO 14025 standards. This is the most credible and widely accepted type of EPD. External verification adds credibility to the EPD by demonstrating that the environmental claims made are based on robust and independently verified data.

EPD & their Application to Clay Brick

EPD for clay bricks produced in the UK provide valuable information about the potential environmental impacts arising throughout their lifecycle. However, direct comparisons with other products can be both challenging and potentially misleading. EPD are often used in Building-level Life Cycle Assessments, but care must be taken as modelling may not reflect the specific benefits a particular product may have in an individual context, such as:

Product Longevity

Clay bricks differ from many other construction products in their exceptional durability. Renowned for their long lifespan, clay bricks have a service life of 150 years, often exceeded in real-world use. Other construction products may have a lower upfront environmental impact than clay brick, however their shorter lifespans can lead to increased resource consumption, emissions and waste generation over time due to greater maintenance and replacement requirements.

EPD modelling based on default values / datasets

EPD are generated through modelling approaches, which can be based on different underlying databases / reference sources and assumptions / scenarios; leading to divergence in results between EPD providers, and also over time. Such databases / values may not align with other published Government factors / reference values.

Building Life Cycle Assessment Limitations

EPD are often used as inputs to Building Life Cycle Assessments, which are a method to calculate the environmental impact of a building over its entire life cycle, including construction, use, and end-of-life phases. Building Life Cycle Assessments are considered over a reference study period, with consideration being given to the lifespan of component materials, and their need for replacement within the study period. The building reference study period for domestic and non-domestic uses is 60 years, which is the default in most BREEAM and LEED assessments and others. For clay brick, the component lifespan is also defined as 60-years, although it is crucial to recognise that clay brick has a service life of 150 years, which far exceeds this.

Clay bricks' longevity may not be truly reflected in Building Life Cycle Assessment methodologies, therefore direct comparison of clay brick with other products can be misleading. Ultimately, the environmental impact of clay brick, over its 150-year service life, will be the same when compared to the shorter 60-year study period. LCA should take account of the potential for reuse and recycling of highly durable products beyond the 60-year study period, just as they should take account of the need to replace products whose service life is less than 60 years.

Key considerations for clay brick

- Clay, the primary raw material in clay brick production, is naturally abundant and generally sourced locally in the UK.
- Clay bricks are inert, requiring no operational energy or maintenance and producing no emissions during use.
- Clay bricks can be reused or recycled at the end of their service life reducing the environmental impact of construction.
- Clay bricks have excellent thermal mass properties, which can help regulate indoor temperatures and reduce energy consumption for heating and cooling. This contributes to lower operational energy use and reduced carbon emissions.
- Clay bricks manufactured in the UK are produced at approximately 50 locations across the country, resulting in an average supply chain distance of only 68 miles from factory to building site. This local sourcing reduces the environmental impact associated with transportation, lowering carbon emissions and supporting local economies.

Key Considerations

When undertaking a building LCA, it's crucial to consider the following factors:

- **Product longevity:** Given their active service life of 150 years or more, clay bricks offer exceptional durability which contributes to their overall environmental performance.
- **Limitations of a Building Life Cycle Assessment:** The often used 60-year Building Life Cycle Assessment timeframe does not account for the complete service life of long-life products, like clay brick, which can significantly exceed this duration.
- **Embodied Carbon:** The embodied carbon footprint of clay brick is derived from its energy-intensive manufacturing process, necessary to produce durable products for demanding applications and to high product standards / specifications. When considered over their long lifespan and broader benefits such as thermal mass (which can help reduce operational energy use of buildings) there is low annualised embodied carbon.
- **End-of-Life Considerations:** With the correct installation and demolition, clay bricks offer a circular advantage by being reusable or recyclable, reducing waste and promoting resource efficiency.

FAQ's

What is an EPD?
An EPD is a standardised document detailing a product's life cycle environmental impact.

Why are EPD important?
EPD promote transparency and enable informed decisions about the environmental impact of products.

How can EPD be used?
EPD inform decision-making in sustainable building practices and product selection.

What information does an EPD contain?
An EPD includes environmental performance indicators covering resource use, energy consumption, greenhouse gas emissions, and other environmental factors across the product's life cycle.

How are EPD created?
Life Cycle Assessment (LCA) methodology is used to assess environmental impacts throughout a product's life stages.

How to check the validity of an EPD?
There are a number of ways to check the validity of an EPD, these include (but are not exclusive to)

- **Look for the Validity Period:** Most EPD have a validity period explicitly stated in the document. This is typically found on the first page or within the general information section. EPD are generally valid for 3 to 5 years.
- **Check the Date of Issue:** Even if a validity period isn't explicitly stated, look for the date of issue of the EPD. If the EPD is significantly older than 5 years, it might not reflect current environmental impact.
- **Third-Party Verification:** EPD undergo verification by an independent body. This adds credibility and ensures the EPD adheres to relevant standards. Look for a mention of verification and the verifying organization within the EPD.
- **Program Operator Information:** The EPD should reference a program operator who oversees its creation and validity. If provided, visit the program operator's website to see if there are updates or extensions related to the specific EPD.
- **Contact the Manufacturer:** If the EPD lacks clear information on validity, you can contact the manufacturer directly. They can confirm the EPD current status and any updates available.

What standards are used for EPD?
International standards like EN 15804 & ISO 21930 (construction products), ISO 14025 and ISO14044 (the standard for Life Cycle Assessment) guide the development of EPD. In addition, ECO Platform (https://www.eco-platform.org/home.html) works to clarify areas of uncertainty in EPD standards and harmonise practice between different EPD Programmes; its standards are public: (https://www.eco-platform.org/our-relevant-documents.html)

What are the different types of EPD?
EPD can be categorised in a few different ways, depending on the specific aspect being considered. Please refer to the 'Types of EPD' section of this guidance document for more information.

How long are EPD valid for?
EPD are typically valid for five years. Some manufacturers may update an EPD before it expires to reflect its latest efficiency gains, composition or new technologies that improve the results. After five years, an EPD can be extended for a further five years, providing the manufacturer can give sufficient evidence that no significant changes have occurred to the manufacturing process.

How is data quality ensured in EPD?
Following established standards and verification by independent bodies helps ensure data quality.

Bibliography

- LCA, O. C., n.d. A simple guide to EPDs. [Online]
- Available at: https://oneclicklca.com/en/resources/articles/guide-to-epds
- Construction Products Association:
- Guidance on Environmental Product Declarations: https://www.constructionproducts.org.uk/our-expertise/sustainability/environmental-product-declarations/

Published by the Brick Development Association. (BDA).

The Brick Development Association
Commerce House
Festival Park
Stoke-on-Trent
Staffordshire
ST1 5BE

01782 744631
brick@brick.org.uk
www.brick.org.uk

BRICK
DEVELOPMENT
ASSOCIATION