

EPD READING GUIDE

UNDERSTANDING PRODUCT-SPECIFIC ENVIRONMENTAL PRODUCT DECLARATIONS

This content helps you understand what environmental product declarations (EPDs) are, what they are used for and how to understand the data correctly. This guide explains the standards behind EPDs as well as life cycle modules and key emission and energy consumption figures. The goal is to make it easier to compare products and make low-emission choices in construction projects (eco-design).

WHAT IS AN EPD?

An EPD is a product-specific environmental declaration that details the environmental impacts of a product over its life cycle in a comparable format.

EPDs for construction products are prepared in accordance with the European EN 15804 standard. This standard is based on the general ISO 14025 standard for environmental declarations and the ISO 21930 standard for life cycle assessment (LCA) of construction products. In addition, the preparation of an EPD is guided by product category-specific rules known as Product Category Rules (PCR).

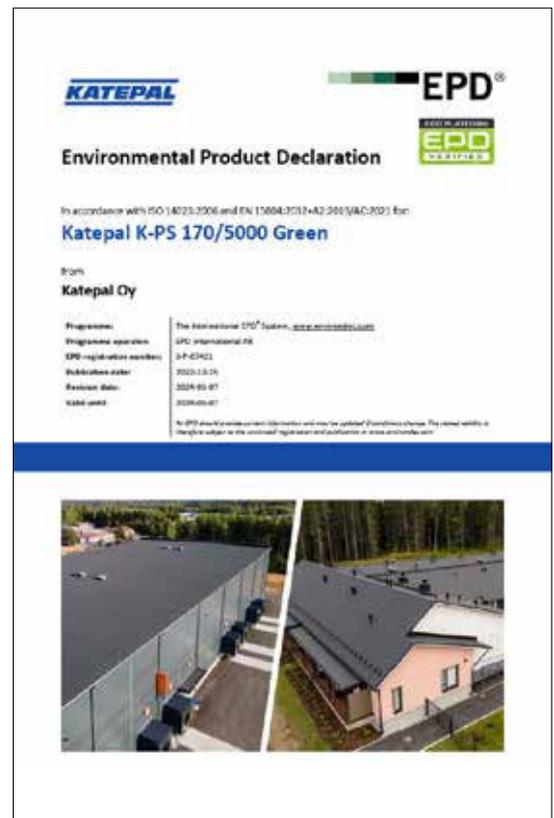
The standards and PCR rules define::

- what information an EPD must contain,
- how the information should be presented, and
- how the LCA must be carried out.

An EPD for a construction product can only be published after its accuracy has been verified by an independent third party. An EPD is assigned a unique registration number upon publication.

A published EPD is valid for five years. After this the LCA must be updated and the document must be verified and published again.

The standardised methodology, third-party verification and dedicated publication databases ensure that EPDs are credible and comparable. Thanks to EPDs, you can rely on consistent and comparable figures to help you select construction products with the lowest possible emissions for your project.



WHAT IS EPD DATA USED FOR?

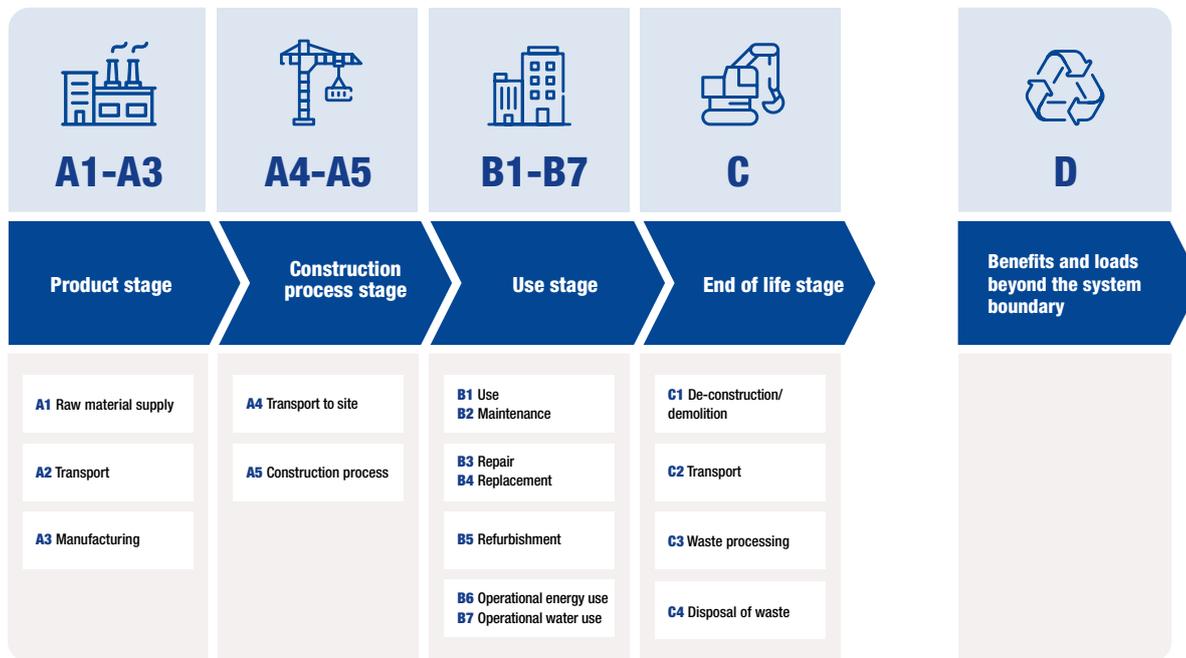
Information from product-specific EPDs is used in construction projects, for example for:

- calculating and optimising a building's total carbon footprint
- assessing environmental impacts
- comparing material choices

Designers, contractors and architects use EPDs when searching for more environmentally friendly and low-carbon solutions.

MODULAR EPD

An EPD document is divided into modules according to the stages of a product's life cycle. This makes it possible to examine environmental impacts separately at different life cycle stages.



MODULES A1, A2 AND A3: MANUFACTURING (CRADLE-TO-GATE)

Modules A1, A2 and A3 cover environmental impacts from raw material sourcing and product manufacturing up to the point where the product is ready to leave the factory. A1, A2 and A3 values are most commonly used when comparing products.

These environmental impacts are the ones manufacturers can most effectively influence through their own production solutions and raw material choices.

MODULES A4 AND A5: TRANSPORT AND INSTALLATION

When modules A4 and A5 are added to the values from A1–A3, the result describes the product's environmental impacts up to the point where the product is installed on site.

Modules A4 and A5 include transport to the construction site and installation work as well as the associated emissions.

Manufacturers can reduce the impacts of these modules, for example through low-emission distribution, making products easier to install and reducing waste during the installation phase.

MODULE B: USE

Module B describes the environmental impacts of a construction product during its use phase. For some products (for example, technical systems) the impacts during use can be significant, while for others (such as long-lasting and maintenance-free products like a correctly installed bitumen membrane) the impact can be very low.

If there are no impacts during the use phase, or if the impacts are deemed insignificant, Module B can be marked as 'module not declared' (MND).

MODULE C: END OF LIFE (DEMOLITION)

Module C covers the end-of-life stage of the product:

- demolition
- transport
- waste treatment and final disposal

Unlike the calculations for the A modules, the calculations for Module C are based on future scenarios. Manufacturers can influence the results of Module C, for example by providing guidance for removal and by improving the recyclability and reusability of the material.

MODULE D: BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY

Module D sits outside the product system boundary. It describes the potential environmental benefits or burdens after the end of the product's life cycle.

Benefits may include, for example, replacing virgin raw materials by recycling demolition materials or utilising the material's energy content.

For bitumen membranes, the material must not be landfilled; instead, it must be utilised as recycled material or for energy production.

EPD READING GUIDE

WHERE TO START?

An EPD includes several tables and indicators. Before reviewing the emission figures, it is important to check:

- which product the EPD refers to,
- which life cycle stages are covered by the EPD (e.g. A1–A3 or A–D),
- whether the EPD has been verified and is valid, and
- the time period on which the background data is based

DECLARED UNIT AND FUNCTIONAL UNIT

Products can only be compared if the declared unit is the same.

EPDs for bitumen membranes can be calculated in several different ways. For example:

- per square metre manufactured on the production line
- per functional square metre installed on the roof
- per kilogram

An installed square metre includes overlaps, meaning the material consumption is higher than a production-line square metre. This has a direct impact on the reported emission figures, which is why it is essential to check which unit is being used.



KEY EPD VALUES

Global Warming Potential (GWP)

GWP describes the climate impact of a product by expressing its emissions as carbon dioxide equivalent (CO₂e). The value indicates how much a product unit (e.g. one square metre of bitumen membrane) contributes to global warming compared to the greenhouse gas carbon dioxide.

GWP is divided into five subcategories:

- GWP fossil – impact originating from fossil fuels
- GWP biogenic – impact originating from renewable biogenic sources
- GWP LULUC – impact originating from land use and land use change
- GWP GHG – includes all greenhouse gases converted into CO₂e except for the biogenic impact, which is reported as zero rather than a negative value
- GWP total – the sum of all GWP values

In comparisons, either the GWP GHG or GWP total value is typically used.

ODP, AP, EP and POCP

These indicators describe other environmental impacts, such as:

- ozone depletion
- acidification
- eutrophication
- formation of tropospheric ozone

Energy consumption (Primary Energy Resources – PER)

PER indicates the amount of energy (MJ) consumed per product unit, divided into renewable and non-renewable energy.

How are the values reported?

Environmental factors/indicators are often very small numbers. In EPDs, values are commonly presented using powers of ten (E notation) in order to clearly express very small and very large values. The power of ten is shown in the number following the letter E, as follows:

- 1E0 = 1, i.e. ten to the power of zero is one
- 1E+1 = 10, i.e. ten to the power of one is ten
- 1E+2 = 100, i.e. ten to the power of two is one hundred
- 1E-1 = 0.1, i.e. ten to the power of minus one is one tenth
- 1E-2 = 0.01, i.e. ten to the power of minus two is one hundredth

Examples

- Positive value 1.86E0: If GWP fossil A1–A3 is 1.86 kgCO₂e/kg, the value is reported as 1.86E0.
- Negative value –1.52E-1: For the same product, GWP biogenic A1–A3 might be –0.152 kgCO₂e/kg, in which case it is reported as –1.52E-1.
- Very small values: Similarly, ozone depletion potential (ODP) A1–A3 might be, for example, 0.000000945 kg CFCe, in which case the value is reported as 9.45E-7 kg CFCe.

The same notation is used throughout the entire table to make comparisons easier.

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Mandatory disclaimer: It is not advised to use the results of modules A1-A3 without considering the results of module C.

Mandatory impact category indicators according to EN 15804

Indicator	Unit	Results per 1 m ² R-PS 120/5000 Green								
		A1-A3	A4	A5	B1	B2	B3	B4	C	D
GWP-fossil	kg CO ₂ e	1,94E+00	5,12E-01	2,21E-01	0,00E+00	4,78E-02	2,62E-00	0,00E+00	1,78E+00	
GWP-biogenic	kg CO ₂ e	1,94E+00	5,88E-01	6,52E-01	0,00E+00	4,78E-02	2,38E-01	0,00E+00	1,88E+00	
GWP-LULUC	kg CO ₂ e	-1,17E-01	6,92E-04	1,98E-01	0,00E+00	1,88E-04	2,83E-01	0,00E+00	-4,89E-01	
GWP-GHG	kg CO ₂ e	1,87E-01	2,79E-01	5,81E-01	0,00E+00	4,62E-04	1,22E-01	0,00E+00	-1,02E-04	
ODP	kg CFC11 eq	6,78E-06	1,89E-14	1,21E-06	0,00E+00	6,12E-15	1,18E-06	0,00E+00	-4,88E-11	
AP	mol F ₂ eq	7,68E-01	1,84E-01	1,88E-01	0,00E+00	1,52E-04	1,77E-01	0,00E+00	-1,92E-01	
EP-freshwater	kg P eq	2,17E-04	1,11E-06	6,85E-01	0,00E+00	1,75E-07	1,98E-01	0,00E+00	-1,38E-06	
EP-marine	kg N eq	1,14E-01	6,33E-04	7,31E-04	0,00E+00	1,21E-04	1,82E-04	0,00E+00	-6,12E-04	
EP-terrestrial	mol N eq	1,52E-01	6,56E-01	6,10E-01	0,00E+00	1,36E-01	1,76E-01	0,00E+00	-1,89E-01	
POCP	kg HNO ₃ eq	6,71E-01	1,75E-01	1,91E-01	0,00E+00	2,41E-04	1,62E-01	0,00E+00	-1,24E-01	
ADP-microplastics*	kg T ₁₀ eq	4,22E-07	2,02E-06	1,62E-07	0,00E+00	1,17E-09	1,16E-07	0,00E+00	-1,24E-07	
ADP-fossil*	MJ	6,76E+01	4,21E+00	1,58E+01	0,00E+00	6,52E-01	1,82E+00	0,00E+00	-1,92E+01	
ADP*	MJ	1,52E+01	1,46E+01	6,65E+01	0,00E+00	1,75E-04	6,81E-01	0,00E+00	-7,21E-01	

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high and there is limited experience with the indicator.