



EPEA Generic Dataset

For Madaster | Version 1.0

Reasoning and Description

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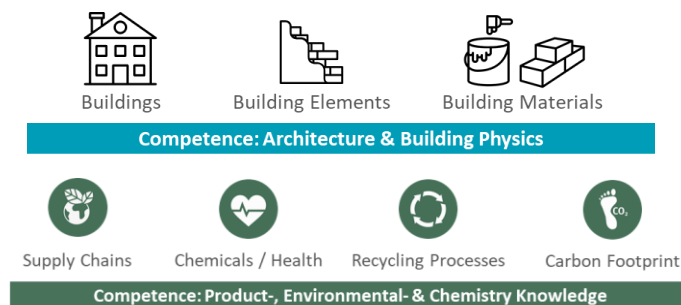
1 INITIAL SITUATION AND OBJECTIVES

1.1 BACKGROUND AND REASONING FOR THE DATASET

The EPEA Generic Material Dataset is intended as a source of information that can be used by people involved in construction projects to easily calculate the circularity properties of a building in early planning stages or when trying to make high-level estimations on the circularity properties of an asset.

EPEA has collected experience and feedback while leading the development of Material Passports on product and building level within the scientific project Buildings as Material Banks (BAMB). Based on these developments EPEA tried and tested this approach within many different projects and gained the following experiences:

1. Currently there is the problem that the industry is not capable of managing a transition to a circular economy because they “can’t manage what they can’t measure”. For a true transformation of the industry it is essential to have a harmonized project-overarching approach to calculate the circularity properties of a building. Material Passports are an approach to solve this issue.
2. The modeling of these Material Passports requires knowledge that goes beyond traditional competences of architecture and building physics. To model a reliable material passport in-depth knowledge of building materials is required. This includes knowledge about supply chains, chemical components and their toxicity, recycling processes, carbon footprints and much more.



3. Environmental Product Declarations (EPDs) aim on delivering this knowledge in form of data to enable these calculations. The current challenge is, that EPDs:
 - a. Are not available for every type of product
 - b. Are sometimes available in many variations for the same type of product
 - c. Do not always include information about material sourcing and recyclability
 - d. Do not include information about single chemical components and toxicity in a structured format.
4. This is why experience showed that an intermediate information layer is necessary to make circularity information processable by planners. The EPEA Generic Dataset aims to provide this layer of information.

1.2 ABOUT THE DATA

EPEA is well aware, that providing a complete dataset, that includes a well categorized catalogue of generic materials which considers any scientific information that is available for this material will not be feasible. Therefore this dataset is intended as a “living dataset”, which will be launched with a set of information that is from our experience sufficient to model most contemporary buildings within the defined scope. From then on this will be continuously expanded, reviewed and improved by EPEA-Experts. **Therefore EPEA assumes no responsibility or legal liability concerning the Data’s accuracy, reliability, completeness, timeliness, or usefulness.** We are happy to receive and process any constructive feedback on the dataset within the following E-Mail: mailEPEA_RE_Material_Experts@dreso.com

1.2.1 INCLUDED CIRCULARITY DATA

Circularity data is generated by an open research approach. Often the source for this data is also EPDs but we do not limit it to this source. If no data can be found within EPDs we expand the research to other scientific or public sources. The following data regarding circularity is included in the dataset:

Material Sourcing:

- “ Secondary Material (% of total Mass in kg)
 - “ This only includes post-consumer recycled content
- “ Renewable Material (% of total Mass in kg)
- “ Renewable, Rapid (10 Years) (% of total Mass in kg)
- “ Primary Material (% of total Mass in kg)

Reutilization Potential:

- “ Recycling (% of total Mass in kg)
 - “ In Madaster no differentiation between Recycling and Downcycling (if the secondary material that can be gained from recycling is of substantially lesser quality) is possible which is why both scenarios are accounted under this category.
- “ Thermal Utilization (% of total Mass in kg)
- “ Landfill / Thermal Treatment (% of total Mass in kg)

For all Commodities, the following data fields are omitted:

- “ Sustainably Produced Renewable Shares
 - “ Because this is impossible to state for generic materials
- “ Recycling Efficiencies (In and Out)
 - “ Because of general lack of information on this topic
- “ Scarcity Fields
 - “ Will be introduced at a later point.

Possible sources for this data are for example (non-exhaustive list):

- “ EPDs
- “ [Wecobis](#)
- “ Green Building Certification Systems: BNB, DGNB, LEED, BREEAM
- “ Published information from industry associations, manufacturers, or other industry stakeholders

1.2.2 INCLUDED LCA/EPD DATA

LCA/EPD data is generally included as a reference to a dataset of a public EPD database. Mainly those, which are available through [Eco-Platform](#) but also any other published EPD that we were able to find.

1.3 SELECTION OF BASE DATA

The biggest challenge when developing this dataset is that publicly available information about circularity and environmental impact is largely incomplete and insufficient. Therefore approximations based on the type of information and the regional context have to be made. The hierarchization of the selected information is explained in the following passages.

1.3.1 COMBINED EPD INFORMATION

As a minimum requirement for LCA-Modules that are considered in the dataset we defined that in any case the requirements provided by the [German Sustainability Council \(DGNB\) for "Building life cycle assessment"](#) need to be met. This was chosen because from our perspective this framework is currently the most elaborate and clearly defined that is available internationally.

The minimum required modules in this framework are **A1-A3, C3, C4 and D**.

Since there are still valid EPDs, that do not include information on the End-of-Life Modules C3, C4 and D it is sometimes necessary to take approximated End-of-Life scenarios. We base these assumptions also on the requirements defined by DGNB.

Also, composite materials – like windows for example – need to be assembled of different EPDs.

In both cases Madaster is not capable of referencing multiple EPDs. This is why in these cases Madaster will create a new EPD-Dataset. It is important to note, that this does not mean that EPEA created an individual EPD for this case but only referenced multiple others.

1.3.2 EPD NORMS (EN 15804+A1 VS. EN 15804+A2)

At the first publish of the dataset a transition in the standard for EPD for construction is taking place between version EN 15804+A1 and EN 15804+A2. Since EPDs of the two versions are not compatible with each other the following decision was taken regarding the provided data:

- “ The Dataset references EPD information of version EN 15804+A1 for every material dataset to make complete calculations under this version possible
- “ EPD data of version EN 15804+A2 will only be provided if available to prepare for a transition at a later point of time.

1.3.3 EPD TYPES

EPEA tries to supply information for the industry-average of materials within this dataset. The accuracy of this data depends largely on available information. We are generally considering **only public EPD** information mostly the ones available through [Eco-Platform](#) and select the most fitting information based on the following hierarchy:

- 1) If an **industry-average** EPD-dataset for the respective material is publicly available this information is taken as a basis.
- 2) If no industry-average EPD-dataset is available we try to find a fitting **generic** dataset.
- 3) If also no generic dataset is available we try to find a dataset for a **specific product** that best represents the generic material.
- 4) If also no specific product EPD is available we take information from a **material that is similar** in terms of material content, product type and production process or try to find **EPDs that are no longer valid**.

It is clear to us that options 3 and 4 are far from ideal but we think that this procedure represents the closest possible approximation based on the current state of available information.

1.3.4 REGIONAL CONTEXT

EPEA is supplying material information for 5 different countries: The Netherlands, Germany, Norway, Switzerland and Belgium. The regional accuracy depends largely on available information. We are considering regional differences mostly based on the availability of **public** EPD information and select the most fitting information based on the following hierarchy:

- 5) If a fitting country-specific EPD-dataset for the respective material is publicly available this information is taken as a basis.
- 6) If no country-specific EPD-dataset is available we try to find a fitting EU-wide dataset.
- 7) If also no EU-wide dataset is available we try to find a dataset for another country that is close to the respective country.

The same prioritization is taken into account when using other sources than EPDs for the determination of circularity properties.