



# Madaster User Manual

General user guide of the Madaster platform

**Voor**  
Madaster users

**Door**  
Madaster

**Datum**  
15 September 2020

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## Getting started.

### What is Madaster?

Madaster is the brand name of the Madaster Foundation. The aim of the Madaster Foundation is to keep materials available in all economic cycles, by registering these materials and thus facilitating their availability at the highest possible level. The Madaster Foundation wants to realize this goal by offering a digital platform in which the built environment can be fully documented. Madaster is an independent Platform that is accessible to everyone: individuals, companies, governments and the scientific community. Madaster is the "land register of materials".

In our closed system, the earth, raw materials are limited and scarce. In order to keep materials available indefinitely, they need to be documented/registered in use. With the help of a Materials Passport, materials retain their identity, so that they are not lost anonymously, as waste. Madaster thus acts as a library of materials in the built environment: it links the material identity to the location and records this in a Materials Passport.

### What is a Materials passport?

A Materials Passport is based on the entered materials and products of a building or building section, as created from one or more source files. In this Materials Passport, the quantities of the materials used are made transparent within the so-called 'building framework'. The materials in the various layers of the building are shown on the basis of the NL/SfB classification coding applied in the Netherlands, and these can be classified according to seven 'material families' or according to the NL/SfB table 3 categorisation.

### How does it work?

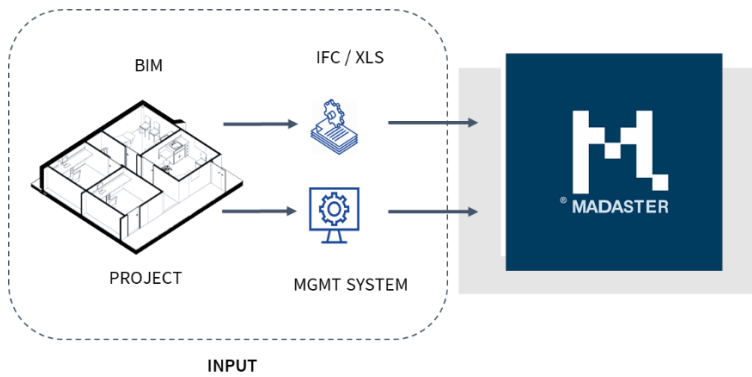
In order to register a new or existing building in Madaster, information (data) of this building is needed. The more extensive and complete this data is available (input), the more detailed and complete the report (output) is displayed in the Madaster Platform and specifically in the Materials Passport.

The Madaster Platform can process two types of source files; namely:

1. IFC files (based on a 3D/BIM model);
2. a Madaster Excel template (if no 3D/BIM model of the building is available).

The various 3D CAD applications in which buildings are currently modelled digitally use their own file format, but communicate with each other using the universal IFC file format. This IFC format can therefore be exported by all 3D CAD applications. For more information about the export possibilities of the 3D CAD application you are using, please contact your software supplier.

If a building is not modelled in 3D or certain elements are not worked out in the 3D model, an Excel template can be used in Madaster. On the basis of this secondary source of information, a building can still be registered in Madaster (without a 3D/BIM model), where the materials and products used in the building are recorded in a Materials Passport.



Madaster then categorizes and summarizes the information contained in the source files, so that for a building or for each building section it is possible to see where and how much of which material is in the building. Madaster does not calculate quantities itself; all geometric information and quantities are imported directly from the IFC model.

The quality (completeness) of the source files is validated by Madaster and displayed in the system after the source file has been read. All calculations within Madaster take place within these frameworks. Missing or incomplete information in the source files leads directly to inaccuracies of the result compared to 100% accuracy.

## What do you need?

A Materials Passport is created based on the available information (data) that the user uploads into so-called 'source files' in the Madaster Platform. These source files (in IFC and/or Excel file format) are automatically validated for completeness when imported into Madaster in terms of: material description, classification code and geometric data.

Madaster focuses on the use of IFC files as source files as they can be exported in 3D CAD applications such as Autodesk Revit, Archicad, etc. This usually happens in the design phase of a building or during its renovation. If this type of source file is not available (e.g. for an existing building), the Materials Passport can be created in Madaster based on an Excel template.

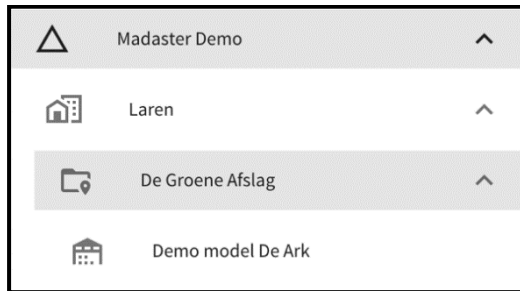
More information about collecting and preparing the required building information (source data) is described in the Manual '[Madaster Action plan Materials Passport](#)' (see Step 2). This guide also describes the necessary process steps how to create a Materials Passport for your building(s).

## Workflow

### Flexible folder structure

The Madaster platform works from "Accounts" - usually the owner of the property or the primary, leading party in a particular phase (e.g. the architect in the design phase, the contractor in the execution phase, or a designated building manager in the use phase).

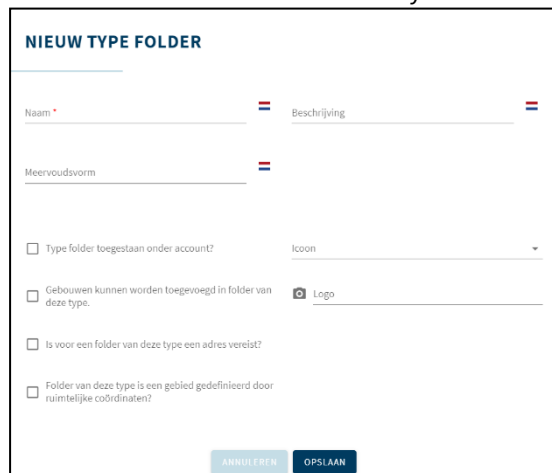
You can set up your account in Madaster completely as you wish. In an account, "Leaflets" can be created containing buildings or other folders (e.g. a region, department or subsidiary). A folder contains the "Buildings", the existing real estate properties or projects or those under development. This structure is flexible and allows you to configure your Madaster environment according to your needs.



"Users" can be assigned different roles in Madaster with specific management, write & read or read-only rights. These rights can be granted by an account manager to other users who have access to one or more folders, folders and/or buildings in the Madaster Platform.

## Type of folders

In the "Type Folders" tab, different types of folders can be created. Think of the above examples of regions, subsidiaries or another definition of your desired organizational structure.



A few examples:

- A large construction company has several companies and subsidiaries. The projects for the different clients can now be organized per company/subsidiary;
- A nationally operating developer has divided his company into regions, with a department for "residential construction" and "non-residential construction" for each region. Various projects or area developments are underway in which the buildings are registered.
- An architectural firm wants to organise the projects per year and per sector (care, education, offices). Within the sectors there are projects with several buildings.

Each account is completely free to decide what the structure of leaflets will look like. By means of the different rights and roles of users, it is possible to determine per level who sees what and who can do what.

## Users

On account level, different users can be invited with different roles and permissions. Madaster has three types of users:

Administrator: the account holder who is the owner of one or more portfolios and the buildings located within them; the owner can also delete them and has all the features of the role Manager and Reader;

Manager: a person who is enabled by an owner to manage his portfolios and buildings. In addition, the Manager has all the features of a Reader;

Reader: a person who can upload (source) files, use information and generate Material passports.

#### AVAILABLE ROLES AND PERMISSIONS AT ACCOUNT LEVEL:

Account niveau	Beheerder	Manager	Lezer
Folders types aanmaken en wijzigen	Ja	Nee	Nee
Folders aanmaken	Ja	Ja	Nee

#### AVAILABLE ROLES AND PERMISSIONS AT FOLDER LEVEL:

Gebouwniveau	Beheerder	Manager	Lezer
Folders en subfolders aanmaken	Ja	Nee	Nee
Folder en onderliggende gebouwen bekijken	Ja	Ja	Ja
Folder en onderliggende gebouwen aanpassen	Ja	Ja	Nee
Folder en onderliggende gebouwen verwijderen	Ja	Nee	Nee
Gebouw toevoegen aan een folder	Ja	Ja	Nee
Gebruikers toevoegen en verwijderen	Ja	Nee	Nee
Materialen en producten toevoegen en aanpassen	Ja	Ja	Nee
Materialenpaspoort exporteren	Ja	Ja	Nee
Materialenpaspoort downloaden naar PDF-bestand	Ja	Ja	Ja

## Types of files

Within the Madaster Platform a distinction is made between two types of files, namely :

1. **Source files:** the files with which the materials and products and the quantities of a building are delivered to be registered in Madaster. These include the IFC files and the Excel template of Madaster.
2. **General files:** static files that contain information about the building and can be added to the building file in Madaster, but which cannot be used to serve as a source file.

## Source files

The Madaster Platform primarily uses IFC files (4 or 2x3) of the buildings to provide insight into the quantities of materials used. As an alternative, Madaster offers an Excel template. This template is made available on the Madaster Platform.

The elements in these two types of source files should, as far as possible, include:

- **Geometric properties** (so-called 'base quantities') of the CAD objects; information about the quantities in volume and weight.
- A **material** description, on the basis of which the Madaster system can provide insight into the materials used in the building.
- A **classification** coding (in the Netherlands the NL/SfB code is common) on the basis of which the Madaster Platform can assign the elements to the building envelope in which the element is located (location).

Multiple source files can be uploaded in Madaster per building. For example construction, installation and architecture. You decide which file is made active. If multiple source files are active, they will be added together in the different tabs of Madaster (e.g. 'Building'-tab, 'Financial').

Attention: duplications can occur! This can be displayed in specialized 3D-viewers, such as Solibri, BIMcollabZoom, etc. The latter functionality is not available in the Madaster system.  
A source file can be made active or inactive at any time (depending on user rights).

## IFC-source file manuals

- The manual “Madaster BIM-IFC guidelines UK\_v20-1 UK” outlines the Madaster guidelines for setting up the BIM model and exporting the IFC file..
- The manual “Madaster BIM - IFC import UK\_v20-1” describes in detail how to prepare an IFC file for processing within Madaster. It explains, among other things, how the geometric properties, classification coding, construction phase and material use is determined.
- The manual “Madaster BIM - IFC export UK\_v20-1” describes in more detail how to export an IFC file (from Archicad and Revit).

## General files

This includes files that provide information about the building or its design, e.g. digital drawings of the building in 2D CAD formats (e.g. .dwg, .dxf), PDFs, photographs and scans of building drawings (in JPG, PNG, TIFF formats).

## Data and information

Because the Information Delivery Manual (IDM) is already widely used in the Netherlands, we recommend using it. For more information see the BIM desk. Here you will also find very extensive manuals to comply with the ILS with your specific BIM software. In the IFC check section, you can also see whether your files comply with the IDM standards. This manual discusses what is specifically required for Madaster. This is less extensive than the full IDM standard and is mainly focused on materials and NL/SfB coding.

## Geometric data

Madaster obtains all geometric data from the IFC files that are uploaded. This means that Madaster does not perform any calculations itself, only the summation of the different quantities of the obtained information. Materials information Madaster obtains the material data from the active IFC files that have been read and compares them with the Madaster Platform materials database. Madaster uses six material group codes and a group into which the unknown materials end up. In addition, it is possible to choose to display the materials on the basis of NL-SfB table 3.

	STEEN	GLAS	HOUT	PLASTIC	ORGANISCH	METAL	ONBEKEND
TOTALEN	1.788,64 m <sup>3</sup> 3,4 ME	39,76 m <sup>3</sup> 40,76 t	47,31 m <sup>3</sup> 34,33 t	25,69 m <sup>3</sup> 770,83 kg	81,3 m <sup>3</sup> 10,57 t	388,04 m <sup>3</sup> 1,2 ME	1.359,33 m <sup>3</sup> 0



Via the Materials & Products tab you can view available materials in the Madaster database and if desired add your own materials to a certain category. To do so, click on 'Add material' and assign it to a material group code. By adding search criteria (word components) the Madaster Platform can find these materials and link them automatically.

Madaster currently contains databases of materials and products that are linked to the material/product with the same designation as in your IFC file. These databases will be expanded in the future. For example, by clicking on a specific material within a specific shell of the building, you can see the quantities of the specific materials in detail.

See the image below for the material 'stone' in the 'Construction' shell of the building.:

## LOOFHOUT - AZOBE

### MATERIAALINFORMATIE

### ZOEKCRITERIA

### DOSSIER

#### MATERIAALNAAM

Loofhout - azobe

#### SOORTELIJK GEWICHT

1.020 kg/m<sup>3</sup>

#### NL-SFB TABEL 3

I3- Loofhout (bewerkt)

#### MADASTER

Hout

### Constructie | Steen

#### Materialen

Kalkzandsteen	83 stuks	102,53 m <sup>3</sup>	194,8 t
Beton	103 stuks	555,22 m <sup>3</sup>	1,28 Mt
Gipsplaat	4 stuks	1,09 m <sup>3</sup>	1,2 t
Keramische baksteen	41 stuks	67,44 m <sup>3</sup>	134,87 t
Cement	3 stuks	62,24 m <sup>3</sup>	124,48 t
Steenwol	5 stuks	82,94 m <sup>3</sup>	4,73 t

## Standard Classification (NL/SfB)

In the construction sector, the NL/SfB code indicates the building section in which a building section or material is located. This coding is given to objects in the IFC file. This allows Madaster to categorize the materials. In this way it is made clear how many materials are located where in the building. Preferably use the NL/SfB code with 4 digits. Madaster then assigns these to the building envelope (e.g. Construction, Enclosure, etc.).



## Building process – renovation phases

Many building projects consist of the renovation of existing buildings. Part of an existing building is demolished, a shell remains and is built in and attached with new materials. This construction phase (Current Demolition-Casco-New Materials-Definitive) is supported by Madaster from the information that can be provided in a source file (IFC and/or Excel template).

TOTALEN	HUDIG	SLOOP	CASCO	NIEUWE MATERIALEN	DEFINITIEF
PRODUCTEN	9.492,71 m <sup>3</sup> 23,97 ME 524	143,88 m <sup>3</sup> 254,31 10	9.239,09 m <sup>3</sup> 23,97 ME 514	361,48 m <sup>3</sup> 891,22 T 44	9.819,51 m <sup>3</sup> 22,26 ME 538

This tab will only become available as the “Building phase” is marked as: “Renovation”.

### THE ARC (DEMO V1)

Country  
Netherlands

#### MADASTER INFORMATION

Classification method  
NL-SIB

Material Classification  
Madaster

Building usage\*  
Business building >= 1000m2

Gross Surface Area\*  
6000

Building phase\*

New building  
Existing  
Renovation  
Demolition

CANCEL SAVE

#### WELL SCORE

New and Existing Buildings

New and Existing Interiors

Core and Shell

#### ENERGY

Energy label  
A+

Energy Performance Coefficient  
0.8

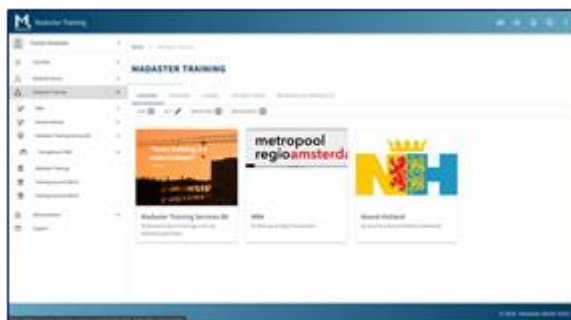
Energy Index  
0.71

#### LIFESPAN

Expected lifespan building (years)

## Databases

In Madaster it is possible to create and use multiple databases at different levels (e.g. project, portfolio and/or building level) within one's own account. A created database can be found in the navigation drawer on the left-hand side of the screen. The images below show a number of levels on which a new database can be created in the platform.



Database creation at account level

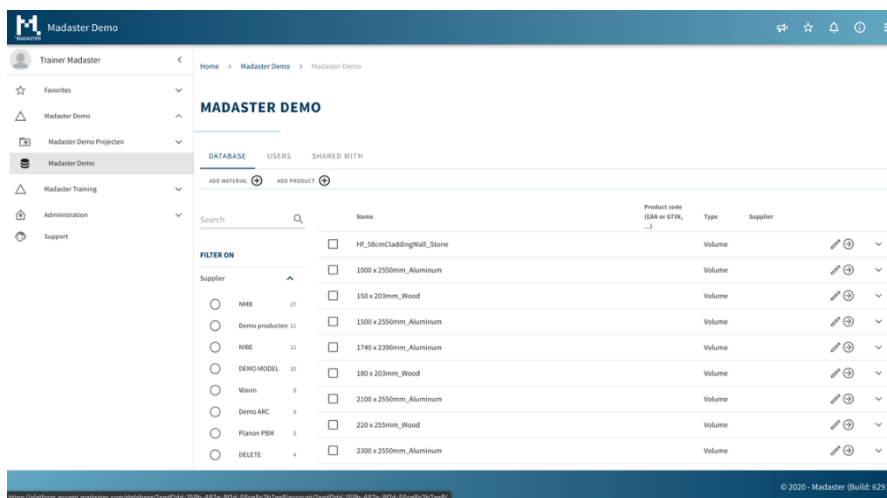


Database creation at folder level



Database creation at building level

It is also possible to create multiple databases at one particular level for a folder or building. These databases are always visible in the navigation drawer at the level of the account, the (sub)folder or the building.



## Database properties

A database itself has, in the first instance, minimal properties: a name and the possibility to use this database as a standard selected database when uploading a source file. If a database is shared, a number of properties are added, which relate to the use of the (shared) database.

## Users

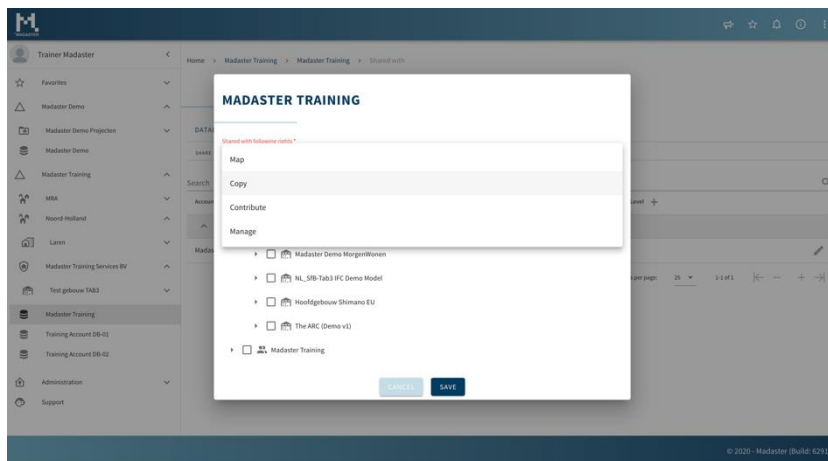
Just as with accounts, folders and buildings, databases can also be used by several people or by another IT system using an API token. Users can now be invited and receive rights as administrator or contributor. The latter role can only create or modify materials and products in the platform.

## Sharing databases with other accounts, folders, buildings

A database can be shared with multiple accounts, folders or buildings. This makes it possible, for example, for a company to set up your own database and then make these materials and products available to another user working under a different account.

## Sharing a database: rights

At the moment a database is shared, it is necessary to determine the rights with which the users -of the account/folder/building with which you share it- can use the materials and/or products.



A database can be shared with four different rights, properties:

**Map** – elements can be linked to the materials and products in this database.

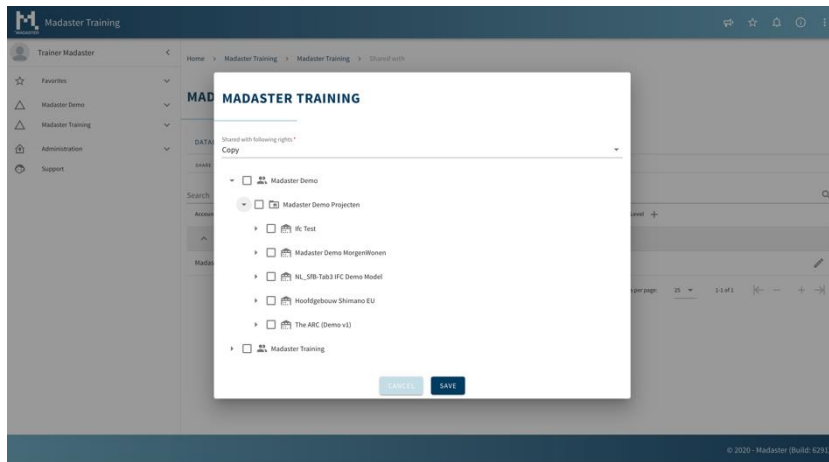
**Copy** – the materials and products from this database can be copied.

**Contribute** – new materials and products can be entered into this database by the users with whom this database is shared.

**Manage** – the database can be managed by the users with the rights, on the account/folder/building with which this database is shared.

## Sharing a database: account, folders, buildings

A database can be shared with multiple accounts, folders or buildings. This makes it possible to create a central database that supports multiple folders and buildings or specific databases for certain types of buildings. After sharing a database you get the choice to determine which accounts, folders, buildings have access to the shared database.



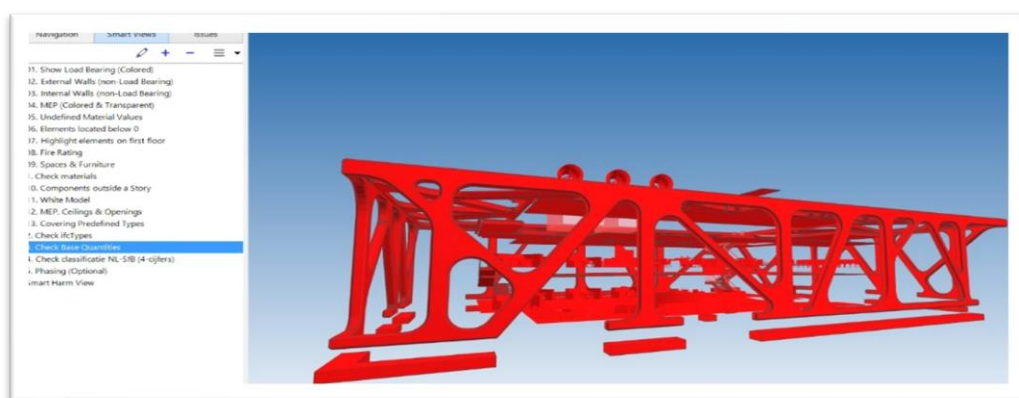
A database can be shared with other account(s), and/or one or more folders and/or buildings..

## Share and use

The materials and products in a shared database are "synchronised": it is the same database, accessible from multiple accounts, folders and/or buildings. Changes and additions made by one user are also available to all other users of this database.

## IFC check, BIMcollab zoom

Before reading an IFC file into the Madaster system, you can perform a validation to determine whether the basic settings, such as materials and NL/SFB classification, are correct and complete. For this purpose a Madaster smart view is available, which can be used with the free version of the "view" program BIMcollab ZOOM. BIMcollab ZOOM Public Viewer and the Madaster smart view can be downloaded for free via this link. If you want to check directly to what extent your file complies with IDM, there is also an IDM checker available via BIMcollab Zoom.



## Uploading Madaster SmartView in BIMcollab Zoom

After loading your IFC model in BIMcollab Zoom, you can load the Madaster smart views under smart views. Now a number of 5 pre-programmed views are loaded with which you can quickly scan elements that are missing a NL/SFB coding or do not yet have a material allocation. After this check and any adjustments in Archicad, the IFC models can be uploaded into the Madaster Platform. Quick start BIMcollab.

## Upload files & enrichment process

### Upload

In the tab file of your building you can add source files, etc. During the import process in Madaster, source files are automatically validated for completeness in terms of completeness:

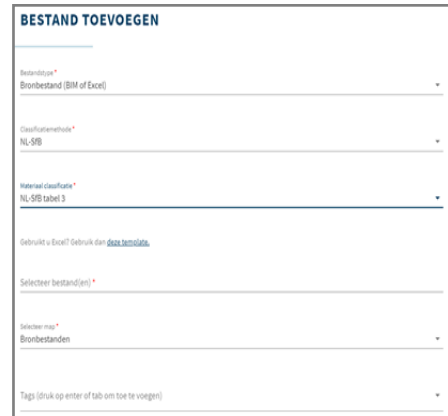
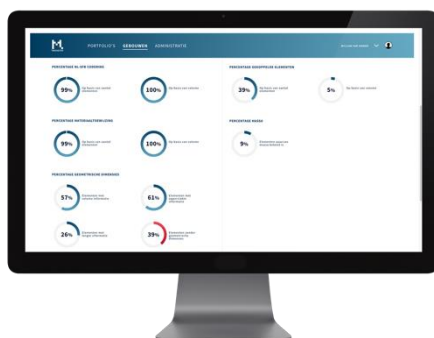
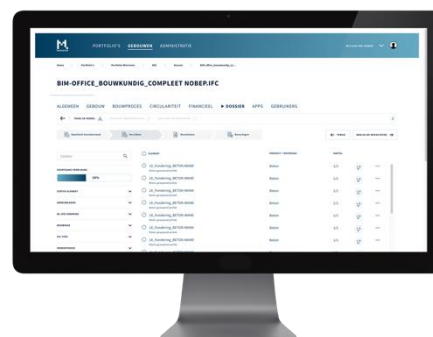
1. material description;
2. classification code;
3. geometric data.

In addition, based on the material description, the platform will try to link each element in the source file to a corresponding material or product registered in the Madaster database.

If the material description of an element is recognised, the Madaster system will automatically link the element. If no automatic coupling takes place, it is possible to manually link the element in Madaster at a later stage ("Enrich"). Alternatively, the source file can be modified and a new version of the IFC file can be read and processed in Madaster.

In order to make this automated 'matching process' as effective as possible, prior to processing the source files, a selection can be made of and priority given to relevant data sources in the Madaster platform. The selected sources are used during the automated matching process.

Make sure that after uploading the file is set to active (in the Process tab). This ensures that the source file actually contributes to the building tab. After uploading, you will immediately see how complete the information of the building is. If certain elements have not yet been provided with a material, this can still be added manually in the enrich tab.

### Enrichment process

It is recommended to pair the products with the most volume in any case. To do this, use the sorting function. Then press pairing to assign the correct material. You can then actually activate the file in the Process tab.

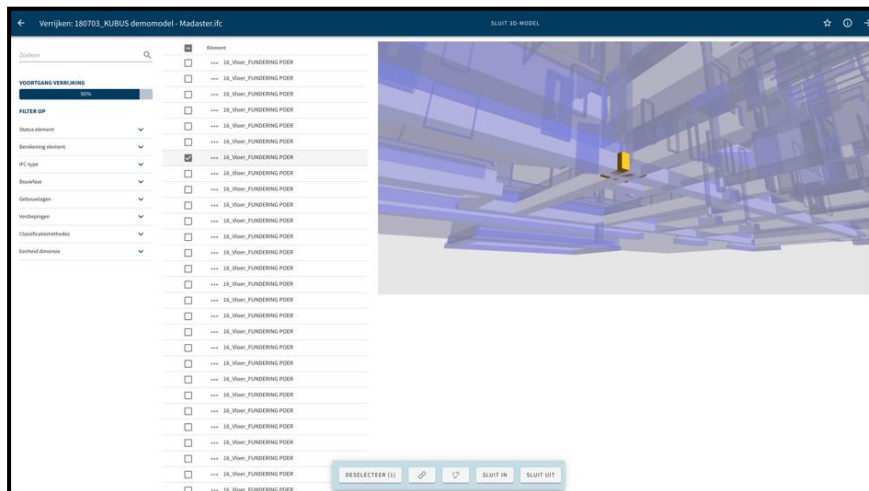
In Madaster it is only possible to manually create or modify a link between element and material or product. There is no possibility in Madaster to manually enrich elements of which the NL-SfB code or geometric data is incomplete or missing with the desired data. This data can only be added by uploading a modified source file (IFC or Excel) in Madaster.

### 3D-model viewer

After uploading your file you can also view it in the 3D viewer. This allows you to see which IFC file contains which parts of the building. See for example the structural elements below.

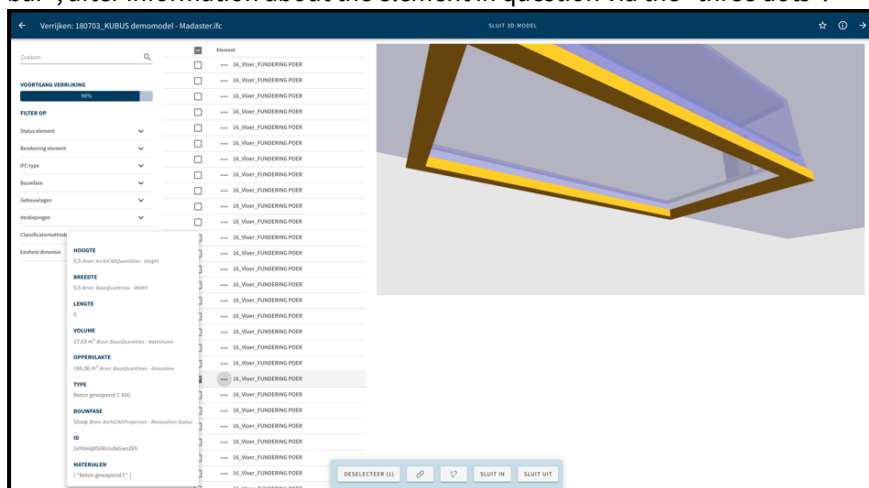
3D selection of ifc elements.

After selecting one or more elements, those elements can be displayed in 3D, in the screen itself (and no longer on a separate screen). Because of this, it is also possible to use the functionalities of the "candy bar" after visual feedback about the element in question.



Selecting elements in viewer: possibility to connect/disconnect

After clicking on one or more elements in the 3D window itself, where they will then be displayed, these elements are also selected in the list. This makes it also possible to use the functionalities of the "candy bar", after information about the element in question via the "three dots".



## Materials passport

### A Materials Passport

A Building Materials Passport displays the building's information as shown in the 'building tab' on the Madaster Platform. The Materials Passport consists of the selected source files uploaded into the Madaster Platform of which the user has indicated to use the results with the building information.

### Generating a Materials Passport

Go to the tab "General" in the Building. By clicking on the "Create Materials Passport" button, the user can create a Materials Passport based on the active source files. This Materials Passport will be created in a PDF and Excel format and saved directly in the 'File' tab, under the 'Passports' folder. Each time a new Materials Passport is generated it will be added as a new file. The previous Materials Passports will remain available and accessible..

### Download a Materials Passport

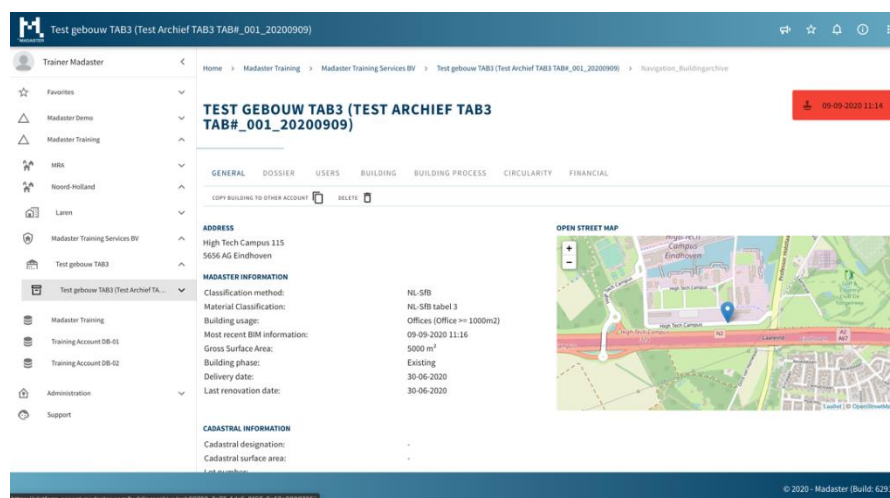
Materials passports can be downloaded from the 'File' tab. All generated Materials passports can be downloaded under the category 'General File'. By clicking on the download icon, the PDF file will be downloaded to the computer. When the PDF file is opened the Materials Passport can be printed.

### Archiving of buildings

In order to preserve a fixed, certain state of a building or to transfer a building to another account, the "archive a building" functionality has been added. This functionality is available on the "General" tab of a building.

By archiving a building, the platform creates a collection of all the files of a building, with the active source files at its core. The archive is given a Version Name and a Version ID when it is created (entered by the user). All materials and products linked to these active source files are copied to a new database belonging to the archive. This includes all general documents from the Dossier. Finally, a new materials passport is generated. The archived building receives a time stamp and is available as a separate archive at the building (in the navigation drawer on the left side of the screen).

The archive will be available as a separate item under the building in the left navigation drawer. All tabs available in a building can also be viewed in the archive. All linked materials and products are also added to the archive in a separate database.



The screenshot shows the Madaster platform interface for a specific building. The top navigation bar includes the Madaster logo and the building name: "TEST GEBOUW TAB3 (TEST ARCHIEF TAB3 TAB#\_001\_20200909)". Below the navigation bar, there is a sidebar with a list of buildings and a main content area. The main content area displays the "GENERAL" tab for the selected building. It includes a red button for "Create Materials Passport" with a timestamp "09-09-2020 11:14". Below this, there are tabs for "GENERAL", "DOSSIER", "USERS", "BUILDING", "BUILDING PROCESS", "CIRCULARITY", and "FINANCIAL". The "GENERAL" tab is active, showing the following information:

- ADDRESS:** High Tech Campus 115, 5656 AG Eindhoven
- HADASTER INFORMATION:**
  - Classification method: NL-SfB
  - Material Classification: NL-SfB tabel 3
  - Building usage: Offices (Office >= 1000m2)
  - Most recent BIM information: 09-09-2020 11:16
  - Gross Surface Area: 5000 m²
  - Building phase: Existing
  - Delivery date: 30-06-2020
  - Last renovation date: 30-06-2020
- CADASTRAL INFORMATION:**
  - Cadastral designation: -
  - Cadastral surface area: -
  - Link to cadastral: -

On the right side of the main content area, there is an "OPEN STREET MAP" showing the location of the building. The bottom of the page features a footer with the URL "https://platform.account.madaster.com/buildings/overview/88790-7a77-4d4d-8198-9a8a4880c726" and the copyright notice "© 2020 - Madaster (Build: 6291)".



### Transfer Archive

A desired functionality is transferring a building to another account. For example, by a builder who wants to transfer the Madaster registration of the building to the owner after completion. Or, for example, a developer who wants to transfer the dwellings including the file and Madaster materials passport to the owner. Madaster now offers this functionality, whereby an (unchangeable) copy of the archive remains available in the original folder/account. This is activated by clicking on the "Copy building to other account" button and selecting another account and/or folder.

## Circularity

### Circularity indication

The value of the data stored in the Madaster Platform increases as the value of the products and materials in the building is better preserved. The Madaster Circularity Indicator has been developed in order to gain an idea of how a building scores in the field of circular construction. This Madaster CI gives an indication of the degree of circularity of the building. A fully circular building achieves a score of 100%.

The Circularity Indicator assesses the building during 3 life phases: (1) the materials used to construct the building (ratio of new materials to materials used), (2) the life span (in relation to average life) and (3) how products and materials are processed at the end of the life span (ratio of re-use/recycling and waste to landfill or incineration).

The Madaster Circularity Indicator is based on the international open source Material Circularity Indicator (MCI) of the Ellen MacArthur Foundation.

*CONCEPT PHASE*; The Circularity Indicator is in a development phase and has a low to moderate reliability due to the limited availability of the information currently available in the source files being uploaded. In addition, most of the qualitative information has been pre-set at a fixed quantity and now mainly concerns the quantitative addition.

### Current state

The information shown with the Madaster Circularity Indicator is based on the active source files that have been read in this building. The table shows how much is scored on circularity and is vertically subdivided into the three phases of circularity, with the Circularity score at the top. Next to this subdivision a horizontal subdivision is made in the six different shells of the building.

The circularity process is still under development within the Madaster Platform. At this moment the results shown here have a low reliability. As soon as the Circularity results are reliable, this will be communicated here.

### Future development

Circularity is still under development within the Madaster Platform. On the basis of the current Madaster Circularity Index (MCI), further work is being done to realise a complete circular indication.

The quality of the source information made available by users will continue to determine the reliability of the Circularity Indicator. The provision of a source file with a high level of detail has a major influence on the quality of the indicator.

## Financial

### Financial value and residual value

The Financial module shows what the residual value of a building is at the end of the various lifetimes of products expressed in terms of material value. In addition, it shows the financial material value at this moment (current value) and the predicted development in the future.

The residual value of the different building layers at the different end functional lifetimes is calculated net present value back to today in the level 'building layers'. This means that this is the net present value of the residual value based on the expected functional life of materials. This functional life differs per building layer. If you assume that a building remains completely intact during the use phase, the net present value of a building depends on the end of the life of the building. This net present value calculation can be viewed for the different years in the future via the material groups tab. The current value of the materials within a building can be found in the materials groups tab.

### Financial - Materials

#### Method of calculation

The material value is preferably imported from commodity prices of common commodity exchanges. The historical price increase of materials is first corrected with the inflation of the year in question and the corresponding exchange rate in case the commodity is in a different currency. The data points in the history of commodity prices with this deduction is the basis for a linear trend line determined on the basis of a regression analysis, i.e. the least-squares method.

#### Correction factors

Subsequently, the material values were corrected for demolition costs, processing costs, a correction for the size of the raw material flow and transport costs per kg. Demolition costs are indexed with the average BDB index of the last 18 years. Processing and processing costs are material-dependent and determined on the basis of interviews and desk research. For the transport costs, a distance to the processor of 150 km per freight transport has been assumed for all materials except stone materials (20 km) and wood (40 km). What influence do inflation, BDB index (building cost index) and the discount rate have on my calculation? The influence of this can be well tested in the sensitivity analysis on the detail pages. Here the inflation, BDB index and discount rate can be adjusted. The values for inflation and the BDB-index are standard on the average of the past 18 years. For the discount rate, the 10-year government interest rate (0.7%) is taken with a number of risk (2%) and profit (0.3%) surcharges.

### Financial - Building layers

#### Method of calculation

The different building layers have a functional lifespan as specified by default by Madaster or building-specific adjusted in the general tab. In the Building Layers tab, the value of materials is determined at the end of their functional life. The materials are thus allocated to a specific year. The value in  $t = \text{end of life}$  is converted back to  $t = 0$  in net present value by means of the discount rate. The sum of the net present values (NPV) of the different building layers is the NPV of the total.

#### Trend line determination

According to the trend line of the material value, the expected value at that year is determined. The material value is preferably imported from commodity prices of common commodity exchanges. The increase in the price of materials is first corrected by the inflation of the year in question and the corresponding exchange rate if the commodity is in a different currency. The data points in the history of commodity prices with this

deduction is the basis for a linear trend line determined on the basis of a regression analysis, i.e. the least-squares method.

### Correction factors

Subsequently, the material values were corrected for demolition costs, processing costs, a correction for the size of the raw material flow and transport costs per kg. Demolition costs are indexed with the average BDB index of the last 18 years. Processing and processing costs are material-dependent and determined on the basis of interviews and desk research. For the transport costs, a distance to the processor of 150 km per freight transport has been assumed for all materials except stone materials (20 km) and wood (40 km).

## Administration

Administration is the place where you find Information about “globally” available subjects.

### Materials & products

Here you will find the databases of materials and products, which are platform-wide available for the Madaster users. You can consult various sources here, such as databases with product or material information, or supplier data.

### Classification methods

A detailed overview of the classification structures (e.g. NL-SfB, eBKP and Omniclass) that are known for countries within Madaster. For this method all codes of the classification and to which ‘Layer of Brand’ it is linked are shown.

### Partners

As a Platform for the Registration of Buildings, Madaster is part of an entire ecosystem of companies. The companies with which Madaster has entered into a partnership can be found under this tab. They are arranged by "Solution, Data, Service partners". The Madaster Partner Apps are designed to create additional value for you within the Madaster Platform. Madaster distinguishes three types of partners: Solution Partners, Data Partners and Service Partners. Each with their own knowledge, expertise and tools from which you (as a Madaster user) can benefit. Below you will find a further explanation of the different types of partners.

#### **Solution partners**

Solution Partners provide software solutions that are integrated within the Platform by means of a link. The data present in the Platform is used directly in the various links.

#### **Data partners**

Data Partners offer services to enrich the Madaster Platform and increase data reliability. Examples of data provided by Data Partners are financial, circular and material related data.

#### **Service partners**

Service Partners provide their expertise to a large group of customers through Madaster. Examples are training courses, BIM modelling services, data certification or consultancy work.

## Madaster support

The Madaster Service desk can be reached by telephone during office hours (+31 85 060 1242).

In your Madaster environment you can always consult the available support documentation online. Each page in the Madaster platform contains an "I" button on the right side (mid-screen). At all times this provides information about the relevant page and available functions.

This manual and other support documents and reference documents of the Madaster platform can also be found directly at the following [link](#).