

Add products in Madaster Platform

Process description for adding different product types in the Madaster Platform

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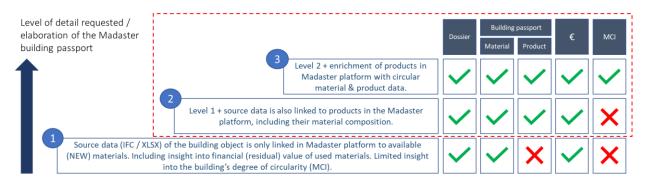


1 Add products in Madaster

For a more accurate building passport in Madaster and the ability to provide insight into elements and their numbers, so that they can be reused at the highest possible level in the long term, it is recommended to link as many building elements as possible from a source file (IFC and / or Excel) to a 'product' in the Madaster database (in the manual 'Madaster Action plan' this is referred to as 'level 2').

To be able to link a building element to a product in the Madaster platform, the product must be available in the Madaster database. If this is not the case (which means that an element from the source file cannot be automatically linked), the Madaster platform offers the functionality to add products themselves, including their material composition.

In addition, adding products in Madaster also allows the user to add circular data (e.g., applied raw materials, recycled materials, etc.). Subsequently, the Madaster platform, by means of the Madaster Circularity Index, then provides insight into the degree of circularity of the entire building (in the manual 'Madaster Action plan' this is referred to as 'level 3').



Picture 1: Elaboration levels of the Madaster building passport.

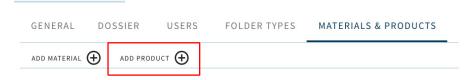
By adding products in Madaster, a 'private' materials/products database is also built up on your own (company) account, which can then be applied again when registering each successive building in Madaster. If desired, this database can be shared with other Madaster accounts, so that the materials and products from this database are also available for buildings in other accounts, folders or buildings.

In Madaster a distinction is made between four different types of products, namely: volume, area, length & Quantity products. The choice for one of these types depends primarily on the available geometric data of the relevant building element in the source file. This means that if, for example, the volume of a building element is included in the source file (IFC and Excel), it is best to set up a so-called 'volume' product in Madaster. If a building element in the source file does not contain volume information, but does contain area (m²) information, it is best to select an 'area' product in Madaster. Etc. Ideally, "volume" products are used as much as possible, because the Madaster system mainly displays this unit in its "Building" tab. However, it is also possible to work towards this unit using area and / or length products.

All product types in Madaster can be added (and changed) by the user in the databases he is allowed to contribute by clicking the button "Add product". The user can find the databases under the



Materials & Products tab of an account or directly in the navigation drawer under account, folder or building(s).



Picture 2: Materials & Products (add product).

In this way, all products added in the database at account level are also available on the underlying (folder type) levels (e.g., portfolio, area, project, etc.) of the Madaster account. If this is not desirable, the user can also choose to create his own dataset at a specific (folder type) level in Madaster. For example, only at portfolio, company and / or building level. This means that the private product dataset is only available at the selected (folder type) level (incl. underlying levels). In picture 3, a product dataset is created at "portfolio" level in Madaster by clicking the "New database" button. Products listed in this database are then only available in this portfolio and the levels below it.

PORTFOLIO: PORTFOLIO 2



Picture 3: Add new database (portfolio level).

<u>FYI</u>: Products can be added to the Madaster platform at any time, i.e., before or after the source data (IFC / Excel) of the building in Madaster has been uploaded. To automatically link as many building elements as possible from the source data to newly added products, it is recommended to first add the products in Madaster and then upload the source file in Madaster. If a source file is already uploaded in Madaster, then after all products have been added in Madaster, the source file must simply be enriched again (via: Dossier> "View details" button > "Enrich again" button).

Below, it is first described per product type how a product is added to Madaster ("level 2"). Where circular information ("level 3") is added to the product, this has been indicated by means of the text: [level 3].

The following chapters describe how newly added products are linked, in an automatic and manual way. In addition, it is briefly explained how comparable products can be easily copied. Finally, it is described how self-added products can be activated and deactivated in Madaster.



1.1 Add Volume product (level 2 & 3)

This section describes how to add a "volume" product to Madaster. First, the minimum input to add this product is considered. Then it is described step by step how this type of product is added in Madaster ("level 2"). It also considers additional optional fields.

Minimum requirements to set up this type of product in Madaster:

- Building elements in the source file (IFC and Excel), for which a volume product is set up in Madaster, must contain volume information.
- (Brand) Name / description of the product to be set up.
- Volume of the product to be set up.
- Use of raw materials (% ratio of new product vs. being reused).
- Product composition (in % used materials).

Add Volume product in Madaster:

<u>Tip</u>: Determine in advance at which (folder type) level the new product to be added should be created. The steps below assume that a volume product is entered at the "account" level and is then available at all underlying levels. If it is desired to deviate from this standard and to list products on a specific (folder type), a database must first be created at this specific (folder type) level (see image 3 on the previous page). Then the steps below can be followed.

1. In the "Materials & Products" tab, click the "Add Product" button (see picture 2). A new product screen (with tab "Product information") is displayed (see picture 4).



Picture 4: New product.

2. Enter the product name of the new product to be added in the (mandatory) "Product name*" field. For example: "UNIDEK SIPS PANELS 250 MM".

<u>Suggestion</u>: If the name of an element in the source file (IFC / Excel) is unique, consider giving the new product to be added in Madaster the exact same name / description. By including this exact name / description also in the product's tab 'Search criteria', the Madaster system will automatically link the element to the newly added Madaster product.

3. In the field "Type *" (mandatory) select "Volume".



Picture 5: Product type: Volume.



- 4. If available, enter a description of the new product in the "Description" field (optional).
- 5. If available, enter a code of the new product in the "Product code" field (optional).
- 6. If available, enter a GTIN code of the new product in the "GTIN" field (optional).
- 7. If available, add one/multiple product images in the "Product Images" field (optional).
- 8. **[level 3]** If available, enter the functional lifespan of the product to be added in the field "Functional lifespan (years)" (optional).
- 9. Select (optional) the tick box "Do not use Bill of Materials Calculations" if the product composition should not be used for the calculations. In that case, the "Density" (specific weight) field (in kg/m3) must also be filled in.

Do not use Bill of Materials Calculations

Picture 6: Do not use Bill of Materials Calculations.

- 10. If available, for this product, under the "Manufacturer" section, fill in the available (optional) fields, including Name, website, address, etc.
- 11. If available, for this product, under the "Production site" section, fill in the available (optional) fields, including Name, Website, Street, etc.
- 12. By default, the volume unit of a "volume" product should be set to 1m³. When processing an element from the source file (IFC / Excel), the Madaster system will take the initial volume metric of the element (calculation method: volume element source file multiplied by 1m3).

DIMENSIONS

The default volume of this volume product * 1	
☐ Define standard volume by entering the standard dimensic	ons of this product

Picture 7: Volume unit.

<u>Note</u>: The option "Define standard volume by entering the standard dimensions of this product" gives the user the option to calculate the volume based on the product's standard size.



Picture 8: Define default volume by entering the default dimensions of this product.



13. Click the "Save" button. The data entered is now saved in the product sheet "Product information". At the same time, the other tabs of the product are now visible.

UNIDEK SIPS PANELS 250 MM



Picture 9: Product sheets.

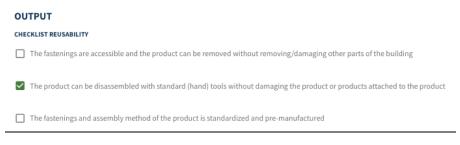
- 14. Click on the (2nd) tab "Circularity".
- 15. [level 3] If this product is reused, enter the percentage of reuse¹ of the new product to be added in the 'reuse' field (optional) on the left. If unknown, enter 0%.



Picture 10: Reuse.

<u>Note</u>: the other input percentages under PRIMARY, SECUNDARY and SCARCITY (on the left) cannot be entered. They are calculated by the system from the materials added in the 'Bill of materials' tab.

16. **[level 3]** If available, select one or more options in the "OUTPUT Checklist reusability" field (optional field), which indicate the degree of disassembly of the new product to be added. Selected values are shown in green (check mark).

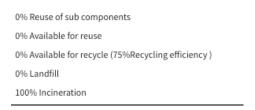


Picture 11: output flow: checklist reusability.

¹ *"Reuse" here means that the product (in this example: Unidek sips panel 250 mm) at the same level (product) has already gone through a full life cycle and is being used again during the construction of a new building.

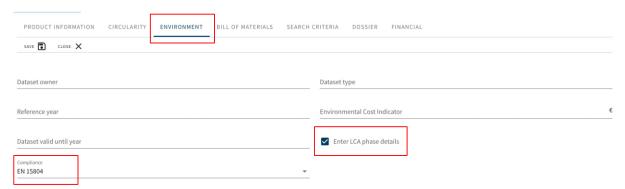


<u>Note</u>: the fields (on the right) "% reused of sub-components", "% available for reuse", etc. cannot be entered in this tab. They are calculated by the system from the materials added in the 'bill of materials' tab.



Picture 12: Output flow (end of life scenario).

- 17. Click on the "save" button. The entered data is saved.
- 18. Click on the (3rd) tab "Environment".



Picture 13: Environmental impact information of product.

Use this tab to indicate the environmental information of this product. Such data is available in so-called "Environmental Product Declarations (EPDs) at product level.

After selecting one/several compliances, the environmental data can be entered. By checking the tick box 'Enter LCA phase details' (see picture 14), these environmental data can also be entered per impact category (see figure 14).



Picture 14: Environmental impact information of product (per impact category).



- 19. Click on the "save" button. The entered data is saved.
- 20. Click on the (4th) tab "Bill of Materials" and then click on the "Add" button. The fields "Element *" and "Number *" are displayed.



Picture 15: Bill of Materials.

21. Click the button "Pick element *" (required field) and then select a material from the Madaster database or the user's "own material library".



Picture 16: Pick element.

22. Then fill in the field "Amount*" (mandatory field) with the percentage (between 1 and 100%) of the selected material.



Picture 17: Material ratio.

- 23. Click the "save" button (at the bottom of the page). The entered data is now stored in the "Bill of Materials" product sheet.
- 24. If the new product to be added consists of several materials, repeat steps 21 to 23 until the bill of materials (material composition of the product) is 100%.



Picture 18: Product with material ratio (example).

25. Click on the (5th) tab "Search criteria" and then click on the "Add criterion" button. Here, one or more search criteria can be added, which enable the Madaster system to automatically link elements from the source file (IFC and / or Excel) of the building to be read to this new product to be added.





Picture 19: Search Criteria.

<u>Note</u>: When importing a source file (IFC and / or Excel), the materials of each element are validated against these search criteria. This examines whether the material of an element matches one of the search criteria at product / material level.

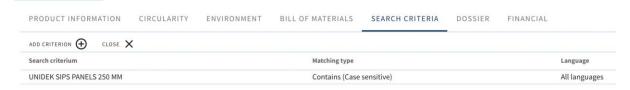
A search criterion can be set up in different ways:

- Contains the search criterion (incl. case sensitive)
- Equals the search criterion (incl. case sensitive)
- Starts with the search criterion
- Ends with the search criterion

If multiple matches are found, the largest match (largest number of matching characters) will be used.

If the material of an element matches one of the search criteria at product / material level, the Madaster system will automatically link the element. If no automatic linking takes place, the user can manually link the element in Madaster (in sub step "Enrich").

26. Add one or more search criteria (optional field) to this new product to be added, so that the Madaster platform can automatically link this product to a corresponding element from a source file (IFC / Excel). Note: To do this, the user's "own" product library must be selected as a data set when uploading and / or when enriching the source data again.



Picture 20: Add search criteria (example).

- 27. Click on the (6th) tab 'Dossier' and then click on the button 'Upload'. Here, relevant building files (e.g., product certificates, Environmental Product Declarations, etc.) can be linked to the product to be added.
- 28. Click on the "select file(s)" field to select the file to be added (e.g., product certificates, etc.).
- 29. Select the destination folder in the Madaster Dossier, in which the file to be added (e.g., product certificates, etc.) is saved.
- 30. If desired, add "tags" (keywords), which will facilitate the search for this file to be added in the file in Madaster.



- 31. Finally click on the "Save" button. The selected file (e.g., product certificates, etc.) is added and is visible in this tab.
- 32. If desired, multiple files can be added in the product Dossier sheet.

Select file(s) * Select file(s) * Tags (Press enter or tab to add) CANCEL SAVE

Picture 21: Product Dossier (add file).

Note: The (7th) tab "Financial" is under development for all Madaster product types.

33. Return to the first sheet "Product information" and finally click on the "save" button. The entered data is stored, with which the self-added 'volume' product is stored in the user's 'own' product database.



1.2 Add Area product (level 2 & 3)

This section describes how to add an "area" product to Madaster. First, the minimum input to add this product is considered. Then it is described step by step how this type of product is added in Madaster ("level 2"). It also considers additional optional fields.

Minimum requirements to set up this type of product in Madaster:

- Building elements in the source file (IFC and Excel), for which an area product is set up in Madaster, must contain area (m²) information.
- Product name / description of the product to be set up.
- Height / depth of the product to be set up.
- Use of raw materials (% ratio of new product vs. being reused).
- Bill of Materials (product's composition in m³ used materials).

Add Area product in Madaster:

<u>Tip</u>: Determine in advance at which (folder type) level the new product to be added should be created. The steps below assume that an area product is entered at the "account" level and is then available at all underlying levels. If it is desired to deviate from this standard and to list products on a specific (folder type), a database must first be created at this specific (folder type) level (see image 3 on page 4). Then the steps below can be followed.

1. In the "Materials & Products" tab, click the "Add Product" button (see picture 2). A new product screen (with tab "Product information") is displayed.



Picture 22: New product.

2. Enter the product name of the new product to be added in the (mandatory) "Product name*" field. For example: "GYPROC GF 100 RD / 1.75.1.A".

<u>Suggestion</u>: If the name of an element in the source file (IFC / Excel) is unique, consider giving the new product to be added in Madaster the exact same name / description. By including this exact name / description also in the product's tab 'Search criteria', the Madaster system will automatically link the element to the newly added Madaster product.

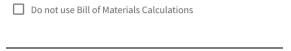
3. In the field "Type *" (mandatory) select "Area".



GENERAL Product name* GYPROC GF 100 RD / 1.75.1.A Type* Area

Picture 23: Product type: Volume.

- 4. If available, enter a description of the new product in the "Description" field (optional).
- 5. If available, enter a code of the new product in the "Product code" field (optional).
- 6. If available, enter a GTIN code of the new product in the "GTIN" field (optional).
- 7. If available, add one/multiple product images in the "Product Images" field (optional).
- 8. **[level 3]** If available, enter the functional lifespan of the product to be added in the field "Functional lifespan (years)" (optional).
- 9. Select (optional) the tick box "Do not use Bill of Materials Calculations" if the product composition should not be used for the calculations. In that case, the "Density" (specific weight) field (in kg/m2) must also be filled in.



Picture 24: Do not use Bill of Materials Calculations.

- 10. If available, for this product, under the "Manufacturer" section, fill in the available (optional) fields, including Name, website, address, etc.
- 11. If available, for this product, under the "Production site" section, fill in the available (optional) fields, including Name, Website, Street, etc.
- 12. By default, the unit of an "area" product should be set to 1m². When processing an element from the source file (IFC / Excel), the Madaster system will take the initial area metric of the element (calculation method: surface element source file multiplied by 1m²).



Picture 25: Area unit

To calculate the volume and display it on the "Building" tab, the height (mandatory field) of the new product to be added must also be entered.



13. Enter the height (in meters) in the "Fixed dimension*" field of this area product" (mandatory field).



Picture 26: Area unit: insert height.

<u>Note</u>: The option "Define standard surface by entering the standard dimensions of this product" gives the user the option to calculate the surface based on the product's standard size.



Picture 27: Define default surface by entering the default dimensions of this product.

- 14. Click the "Save" button. The data entered is now saved in the product sheet "Product information". At the same time, the other tabs of the product are now visible.
- 15. Click on the (2nd) tab "circularity".
- 16. **[level 3]** If this product is reused, enter the percentage of reuse² of the new product to be added in the 'reuse' field (optional) on the left. If unknown, enter 0%.



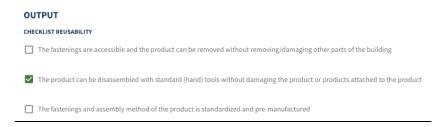
Picture 28: Reuse.

<u>Note</u>: the other input percentages under PRIMARY, SECUNDARY and SCARCITY cannot be entered. They are calculated by the system from the materials added in the 'Bill of materials' tab.

17. [level 3] If available, select one or more options in the "OUTPUT Checklist reusability" field (optional field), which indicate the degree of disassembly of the new product to be added. Selected values are shown in green (check mark).

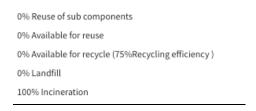
² *"Reuse" here means that the product has already gone through a full life cycle and is being used again (as a product) during the construction of a new building.





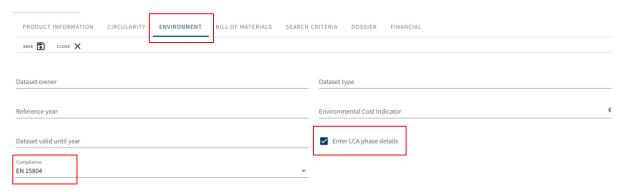
Picture 29: output flow: checklist reusability.

<u>Note</u>: the fields (on the right) "% reused of sub-components", "% available for reuse", etc. cannot be entered in this tab. They are calculated by the system from the materials added in the 'bill of materials' tab.



Picture 30: Output flow (end of life scenario).

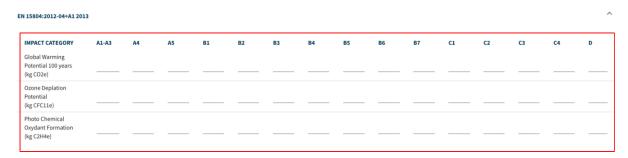
- 18. Click on the "save" button. The entered data is saved.
- 19. Click on the (3rd) tab "Environment".



Picture 31: Environmental impact information of product.

Use this tab to indicate the environmental information of this product. Such data is available in so-called "Environmental Product Declarations (EPDs) at product level.

After selecting one/several compliances, the environmental data can be entered. By checking the tick box 'Enter LCA phase details' (see picture 31), these environmental data can also be entered per impact category (see figure 32).



Picture 32: Environmental impact information of product (per impact category).

- 20. Click on the "save" button. The entered data is saved.
- 21. Click on the (4th) tab "Bill of Materials" and then click on the "Add" button. The fields "Element *" and "Number *" are displayed.



Picture 33: Bill of Materials.

22. Click the button "Pick element *" (required field) and then select a material from the Madaster database or the user's "own material library".



Picture 34: Pick element.

23. Then fill in the field "Amount*" (mandatory field) with the percentage (between 1 and 100%) of the selected material.



Picture 35: Material ratio.

- 24. Click the "save" button (at the bottom of the page). The entered data is now stored in the "Bill of Materials" product sheet.
- 25. If the new product to be added consists of several materials, repeat steps 22 to 24 until the bill of materials (material composition of the product) is 100%.





Picture 36: Product with material ratio (example).

26. Click on the (5th) tab "Search criteria" and then click on the "Add criterion" button. Here, one or more search criteria can be added, which enable the Madaster system to automatically link elements from the source file (IFC and / or Excel) of the building to be read to this new product to be added.



Picture 37: Search Criteria

<u>Note</u>: When importing a source file (IFC and / or Excel), the materials of each element are validated against these search criteria. This examines whether the material of an element matches one of the search criteria at product / material level.

A search criterion can be set up in different ways:

- Contains the search criterion (incl. case sensitive)
- Equals the search criterion (incl. case sensitive)
- Starts with the search criterion
- Ends with the search criterion

If multiple matches are found, the largest match (largest number of matching characters) will be used.

If the material of an element matches one of the search criteria at product / material level, the Madaster system will automatically link the element. If no automatic linking takes place, the user can manually link the element in Madaster (in sub step "Enrich").

27. Add one or more search criteria (optional field) to this new product to be added, so that the Madaster platform can automatically link this product to a corresponding element from a source file (IFC / Excel). Note: To do this, the user's "own" product library must be selected as a data set when uploading and / or when enriching the source data again.





Picture 38: Add search criteria (example).

- 28. Click on the (6th) tab 'Dossier' and then click on the button 'Upload'. Here, relevant building files (e.g., product certificates, Environmental Product Declarations, etc.) can be linked to the product to be added.
- 29. Click on the "select file(s)" field to select the file to be added (e.g., product certificates, etc.).
- 30. Select the destination folder in the Madaster Dossier, in which the file to be added (e.g., product certificates, etc.) is saved.
- 31. If desired, add "tags" (keywords), which will facilitate the search for this file to be added in the file in Madaster.
- 32. Finally click on the "Save" button. The selected file (e.g., product certificates, etc.) is added and is visible in this tab.
- 33. If desired, multiple files can be added in the product Dossier sheet.



Picture 39: Product Dossier (add file).

Note: The (7th) tab "Financial" is under development for all Madaster product types.

34. Return to the first sheet "Product information" and finally click on the "save" button. The entered data is stored, with which the self-added 'area' product is stored in the user's 'own' product database.



1.3 Add Length product (level 2 & 3)

This section describes how to add a "length" product to Madaster. First, the minimum input to add this product is considered. Then it is described step by step how this type of product is added in Madaster ("level 2"). It also considers additional optional fields.

Minimum requirements to set up this type of product in Madaster:

- Building elements in the source file (IFC and Excel), for which a length product is set up in Madaster, must contain length (m) information.
- Product name / description of the product to be set up.
- Standard surface (in m²) of the product to be set up.
- Use of raw materials (% ratio of new product vs. being reused).
- Bill of Materials (product's composition (in m³ used materials)).

Add Length product in Madaster:

<u>Tip</u>: Determine in advance at which (folder type) level the new product to be added should be created. The steps below assume that a length product is entered at the "account" level and is then available at all underlying levels. If it is desired to deviate from this standard and to list products on a specific (folder type), a database must first be created at this specific (folder type) level (see image 3). Then the steps below can be followed.

1. In the "Materials & Products" tab, click the "Add Product" button (see picture 2). A new product screen (with tab "Product information") is displayed.



Picture 40: New product.

2. Enter the product name of the new product to be added in the (mandatory) "Product name*" field. For example: "500mm 304 Stainless Steel Tube Pipe OD6mm ID4mm".

<u>Suggestion</u>: If the name of an element in the source file (IFC / Excel) is unique, consider giving the new product to be added in Madaster the exact same name / description. By including this exact name / description also in the product's tab 'Search criteria', the Madaster system will automatically link the element to the newly added Madaster product.

3. In the field "Type *" (mandatory) select "length".

Type *		
Length		
Lenge.		

Picture 41: Product type: length.

- 4. If available, enter a description of the new product in the "Description" field (optional).
- 5. If available, enter a code of the new product in the "Product code" field (optional).
- 6. If available, enter a GTIN code of the new product in the "GTIN" field (optional).
- 7. If available, add one/multiple product images in the "Product Images" field (optional).
- 8. **[level 3]** If available, enter the functional lifespan of the product to be added in the field "Functional lifespan (years)" (optional).
- 9. Select (optional) the tick box "Do not use Bill of Materials Calculations" if the product composition should not be used for the calculations. In that case, the "Density" (specific weight) field (in kg/m1) must also be filled in.

\sqcup	Do not use Bill of Materials Calculations

Picture 42: Do not use Bill of Materials Calculations.

- 10. If available, for this product, under the "Manufacturer" section, fill in the available (optional) fields, including Name, website, address, etc.
- 11. If available, for this product, under the "Production site" section, fill in the available (optional) fields, including Name, Website, Street, etc.
- 12. Enter the default "length" of the product (or leave it to 1 meter and enter the bill of material amounts in m3/m). When processing an element from the source file (IFC / Excel), the Madaster system will calculate all values based on the ratio between the real length as found in the source file and the default length.

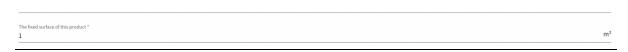
DIMENSIONS

n

Picture 43: length unit.

13. Enter the fixed surface (in meters) in the "Fixed surface of this product*" field of this length product" (mandatory field).





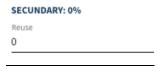
Picture 44: Area unit: insert fixed surface.

<u>Note</u>: The option "Define fixed surface by entering dimensions" gives the user the option to calculate the fixed surface based on the product's fixed size.



Picture 45: Define fixed surface by entering the fixed diameter of this product.

- 14. Click on the "Save" button. The data entered is now saved in the product sheet "Product information". At the same time, the other tabs of the product are now visible.
- 15. Click on the (2nd) tab "Circularity".
- 16. **[level 3]** If this product is reused, enter the percentage of reuse³ of the new product to be added in the 'reuse' field (optional) on the left. If unknown, enter 0%.



Picture 46: Reuse.

<u>Note</u>: the other input percentages under PRIMARY, SECUNDARY and SCARCITY cannot be entered. They are calculated by the system from the materials added in the 'Bill of materials' tab.

17. **[level 3]** If available, select one or more options in the "OUTPUT Checklist reusability" field (optional field), which indicate the degree of disassembly of the new product to be added. Selected values are shown in green (check mark).

³ *"Reuse" here means that the product has already gone through a full life cycle and is being used again as a product during the construction of a new building.



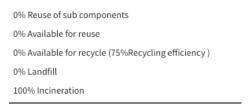
OUTPUT

CHECKLIST REUSABILITY

- ☐ The fastenings are accessible and the product can be removed without removing/damaging other parts of the building
- The product can be disassembled with standard (hand) tools without damaging the product or products attached to the product
- ☐ The fastenings and assembly method of the product is standardized and pre-manufactured

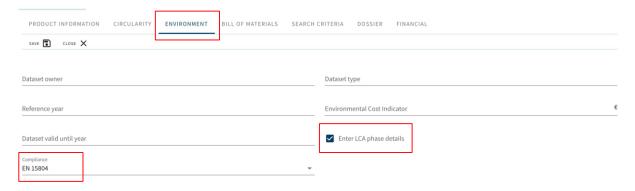
Picture 47: output flow: checklist reusability.

<u>Note</u>: the fields (on the right) "% reused of sub-components", "% available for reuse", etc. cannot be entered in this tab. They are calculated by the system from the materials added in the 'bill of materials' tab.



Picture 48: Output flow (end of life scenario).

- 18. Click on the "save" button. The entered data is saved.
- 19. Click on the (3rd) tab "Environment".

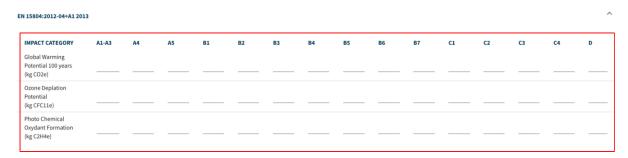


Picture 49: Environmental impact information of product.

Use this tab to indicate the environmental information of this product. Such data is available in so-called "Environmental Product Declarations (EPDs) at product level.

After selecting one/several compliances, the environmental data can be entered. By checking the tick box 'Enter LCA phase details' (see picture 49), these environmental data can also be entered per impact category (see figure 50).





Picture 50: Environmental impact information of product (per impact category).

- 20. Click on the "save" button. The entered data is saved.
- 21. Click on the (4th) tab "Bill of Materials" and then click on the "Add" button. The fields "Element *" and "Number *" are displayed.



Picture 51: Bill of Materials.

22. Click the button "Pick element *" (required field) and then select a material from the Madaster database or the user's "own material library".



Picture 52: Pick element.

23. Then fill in the field "Amount*" (mandatory field) with the volume amount of the selected material per length of the product.



Picture 53: Material ratio.

24. Click the "save" button (at the bottom of the page). The entered data is now stored in the "Bill of Materials" product sheet.

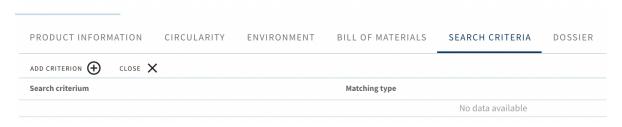


25. If the new product to be added consists of several materials, repeat steps 22 to 24 until the bill of materials (material composition of the product) is complete.



Picture 54: Product with material ratio (example).

26. Click on the (5th) tab "Search criteria" and then click on the "Add criterion" button. Here, one or more search criteria can be added, which enable the Madaster system to automatically link elements from the source file (IFC and / or Excel) of the building to be read to this new product to be added.



Picture 55: Search Criteria.

<u>Note</u>: When importing a source file (IFC and / or Excel), the materials of each element are validated against these search criteria. This examines whether the material of an element matches one of the search criteria at product / material level.

A search criterion can be set up in different ways:

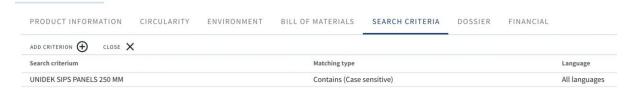
- Contains the search criterion (incl. case sensitive)
- Equals the search criterion (incl. case sensitive)
- Starts with the search criterion
- Ends with the search criterion

If multiple matches are found, the largest match (largest number of matching characters) will be used.

If the material of an element matches one of the search criteria at product / material level, the Madaster system will automatically link the element. If no automatic linking takes place, the user can manually link the element in Madaster (in sub step "Enrich").

27. Add one or more search criteria (optional field) to this new product to be added, so that the Madaster platform can automatically link this product to a corresponding element from a source file (IFC / Excel). Note: To do this, the user's "own" product library must be selected as a data set when uploading and / or when enriching the source data again.





Picture 56: Add search criteria (example).

- 28. Click on the (6th) tab 'Dossier' and then click on the button 'Upload'. Here, relevant building files (e.g., product certificates, Environmental Product Declarations, etc.) can be linked to the product to be added.
- 29. Click on the "select file(s)" field to select the file to be added (e.g., product certificates, etc.).
- 30. Select the destination folder in the Madaster Dossier, in which the file to be added (e.g., product certificates, etc.) is saved.
- 31. If desired, add "tags" (keywords), which will facilitate the search for this file to be added in the file in Madaster.
- 32. Finally click on the "Save" button. The selected file (e.g., product certificates, etc.) is added and is visible in this tab.
- 33. If desired, multiple files can be added in the product Dossier sheet.

ADD FILE



Picture 57: Product Dossier (add file).

Note: The (7th) tab "Financial" is under development for all Madaster product types.

Return to the first sheet "Product information" and finally click on the "save" button. The entered data is stored, with which the self-added 'length' product is stored in the user's 'own' product database.



1.4 Add Quantity product (level 2 & 3)

This section describes how to add a "quantity" product to Madaster. First, the minimum input to add this product is considered. Then it is described step by step how this type of product is added in Madaster ("level 2"). It also considers additional optional fields.

Minimum requirements to set up this type of product in Madaster:

- Product name / description of the product to be set up.
- The volume (in m³) of the product to be set up.
- Use of raw materials (% ratio of new product vs. being reused).
- Bill of Materials (product's composition (in m³ used materials)).

Add Quantity product in Madaster:

<u>Tip</u>: Determine in advance at which (folder type) level the new product to be added should be created. The steps below assume that a quantity product is entered at the "account" level and is then available at all underlying levels. If it is desired to deviate from this standard and to list products on a specific (folder type), a database must first be created at this specific (folder type) level (see image 3 on page 4). Then the steps below can be followed.

1. In the "Materials & Products" tab, click the "Add Product" button (see picture 2 on the previous page). A new product screen (with tab "Product information") is displayed (see image 1).



Picture 58: New product

2. Enter the product name of the new product to be added in the (mandatory) "Product name*" field. For example: "GU- Light dome".

<u>Suggestion</u>: If the name of an element in the source file (IFC / Excel) is unique, consider giving the new product to be added in Madaster the exact same name / description. By including this exact name / description also in the product's tab 'Search criteria', the Madaster system will automatically link the element to the newly added Madaster product.

3. In the field "Type *" (mandatory) select "Quantity".



Picture 59: Product type: Quantity.



- 4. If available, enter a description of the new product in the "Description" field (optional).
- 5. If available, enter a code of the new product in the "Product code" field (optional).
- 6. If available, enter a GTIN code of the new product in the "GTIN" field (optional).
- 7. If available, add one/multiple product images in the "Product Images" field (optional).
- 8. **[level 3]** If available, enter the functional lifespan of the product to be added in the field "Functional lifespan (years)" (optional).
- 9. Select (optional) the tick box "Do not use Bill of Materials Calculations" if the product composition should not be used for the calculations. In that case, the "Density" (specific weight) field (in kg) must also be filled in.

Picture 60: Do not use Bill of Materials Calculations.

- 10. If available, for this product, under the "Manufacturer" section, fill in the available (optional) fields, including Name, website, address, etc.
- 11. If available, for this product, under the "Production site" section, fill in the available (optional) fields, including Name, Website, Street, etc.
- 12. Click on the "Save" button. The data entered is now saved in the product sheet "Product information". At the same time, the other tabs of the product are now visible.
- 13. Click on the (2nd) tab "Circularity".
- 14. [level 3] If this product is reused, enter the percentage of reuse⁴ of the new product to be added in the 'reuse' field (optional) on the left. If unknown, enter 0%.

SECUNDARY: 0%	
Reuse	
0	

Picture 61: Reuse.

<u>Note</u>: the other input percentages under PRIMARY, SECUNDARY and SCARCITY cannot be entered. They are calculated by the system from the materials added in the 'Bill of materials' tab.

⁴ *"Reuse" here means that the product has already gone through a full life cycle and is being used again as product during the construction of a new building.



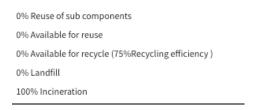
15. **[level 3]** If available, select one or more options in the "OUTPUT Checklist reusability" field (optional field), which indicate the degree of disassembly of the new product to be added. Selected values are shown in green (check mark).

OUTPUT

CHECKLIST REUSABILITY ☐ The fastenings are accessible and the product can be removed without removing/damaging other parts of the building ✓ The product can be disassembled with standard (hand) tools without damaging the product or products attached to the product ☐ The fastenings and assembly method of the product is standardized and pre-manufactured

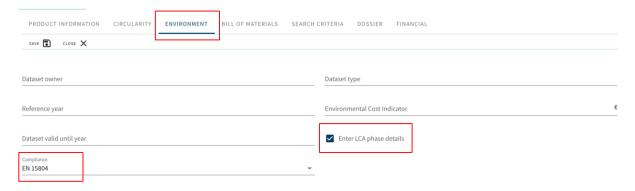
Picture 62: output flow: checklist reusability.

<u>Note</u>: the fields (on the right) "% reused of sub-components", "% available for reuse", etc. cannot be entered in this tab. They are calculated by the system from the materials added in the 'bill of materials' tab.



Picture 63: Output flow (end of life scenario).

- 16. Click on the "save" button. The entered data is saved.
- 17. Click on the (3rd) tab "environment".

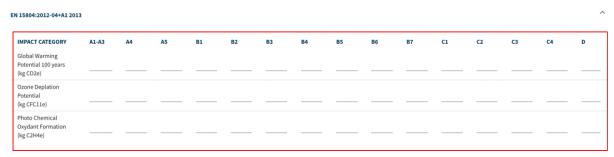


Picture 64: Environmental impact information of product.

Use this tab to indicate the environmental information of this product. Such data is available in so-called "Environmental Product Declarations (EPDs) at product level.



After selecting one/several compliances, the environmental data can be entered. By checking the tick box 'Enter LCA phase details' (see picture 64), these environmental data can also be entered per impact category (see picture 65).



Picture 65: Environmental impact information of product (per impact category).

- 18. Click on the "save" button. The entered data is saved.
- 19. Click on the (4th) tab "Bill of Materials" and then click on the "Add" button. The fields "Element *" and "Number *" are displayed.



Picture 66: Bill of Materials.

20. Click the button "Pick element *" (required field) and then select a material from the Madaster database or the user's "own material library".



Picture 67: Pick element.

21. Then fill in the field "Amount*" (mandatory field) with volume amount of the selected material.



Picture 68: Material ratio.

22. Click the "save" button (at the bottom of the page). The entered data is now stored in the "Bill of Materials" product sheet.



23. If the new product to be added consists of several materials, repeat steps 20 to 22 until the bill of materials (material composition of the product) is complete.

GU - LIGHT DOME



Picture 69: Product with material ratio (example).

24. Click on the (5th) tab "Search criteria" and then click on the "Add criterion" button. Here, one or more search criteria can be added, which enable the Madaster system to automatically link elements from the source file (IFC and / or Excel) of the building to be read to this new product to be added.



Picture 70: Search Criteria.

<u>Note</u>: When importing a source file (IFC and / or Excel), the materials of each element are validated against these search criteria. This examines whether the material of an element matches one of the search criteria at product / material level.

A search criterion can be set up in different ways:

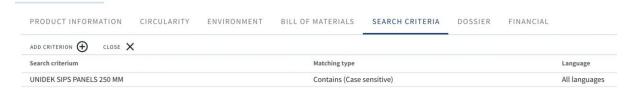
- Contains the search criterion (incl. case sensitive)
- Equals the search criterion (incl. case sensitive)
- Starts with the search criterion
- Ends with the search criterion

If multiple matches are found, the largest match (largest number of matching characters) will be used.

If the material of an element matches one of the search criteria at product / material level, the Madaster system will automatically link the element. If no automatic linking takes place, the user can manually link the element in Madaster (in sub step "Enrich").

25. Add one or more search criteria (optional field) to this new product to be added, so that the Madaster platform can automatically link this product to a corresponding element from a source file (IFC / Excel). Note: To do this, the user's "own" product library must be selected as a data set when uploading and / or when enriching the source data again.





Picture 71: Add search criteria (example).

- 26. Click on the (6th) tab 'Dossier' and then click on the button 'Upload'. Here, relevant building files (e.g., product certificates, Environmental Product Declarations, etc.) can be linked to the product to be added.
- 27. Click on the "select file(s)" field to select the file to be added (e.g., product certificates, etc.).
- 28. Select the destination folder in the Madaster Dossier, in which the file to be added (e.g., product certificates, etc.) is saved.
- 29. If desired, add "tags" (keywords), which will facilitate the search for this file to be added in the file in Madaster.
- 30. Finally click on the "Save" button. The selected file (e.g., product certificates, etc.) is added and is visible in this tab.
- 31. If desired, multiple files can be added in the product Dossier sheet.

ADD FILE



Picture 72: Product Dossier (add file).

Note: The (7th) tab "Financial" is under development for all Madaster product types.

32. Return to the first sheet "Product information" and finally click on the "save" button. The entered data is stored, with which the self-added 'quantity' product is stored in the user's 'own' product database.



2 Link added products

Elements of a source file (IFC and / or Excel) of the building can be linked to newly added products in the Madaster platform. In the Madaster system this works in the same way as with existing materials and / or products. There are two ways to link elements of a source file, namely: (1) automatic and (2) manual.

2.1 Link automatically

During the import process of a source file in Madaster, the platform will, based on the material description, automatically try to link each element in the source file to a corresponding material or product (based on the defined 'search criteria') registered in the Madaster database. For this reason, it is therefore very important that, when adding your 'own' set of products (and materials) in Madaster, the search criteria (of these products (and materials) are filled in and correspond to the naming of the elements of the source file. Products in Madaster that are set-up without search criteria cannot be found and subsequently cannot be automatically linked by the system.

If a source file is already uploaded into Madaster (in Dossier) and products (or materials) have been added afterwards in Madaster, the source file does not have to be uploaded again. Instead, the import process can be reactivated in the platform by using the "Enrich again" function (File> "View details" button> "Enrich again" button). The system will then attempt to reconnect each element in the source file to a product (or material) in the Madaster database. Alternatively, the source file is modified and a new version of the IFC file must be uploaded and processed in Madaster.

Note: by using the "Enrich again" function in Madaster, existing manual links will be lost.

2.2 Link manually

If there is no automatic link between an element from a source file (IFC and / or Excel) and a product (or material) in the Madaster database, it is possible to manually link the element (at a later stage) in Madaster to a corresponding product (or material) in the Madaster database (see also step 4 "Checking & enriching source data" in the Madaster Step-by-Step Manual). This manual process is briefly explained below.

1. In the "Dossier" sheet, click on the name (link) of the source file (or click on the "View details" button located behind the source file).



Picture 73: View details.

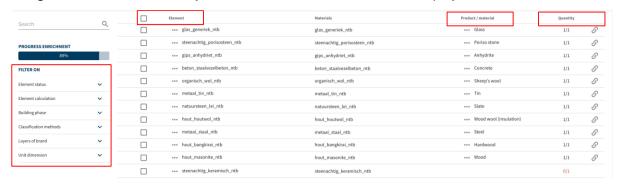
2. The "Quality Source file" screen is displayed. Click on the "Enrich" step in the submenu of this page. The "Enrich" page is displayed.





Picture 74: Submenu 'Enrich'.

In the 'Enrich' page, the 'Element' column shows the name of the element of the source file (including the material description) and in the column 'Product / Material' the linked / yet to be linked product or material from the Madaster- database. In the column "Quantity" the linked elements are shown in blue color and the non-linked elements in red color. To the left of the page, using various filters, the variety of elements of a source file can be displayed.



Picture 75: Submenu 'Enrich'.

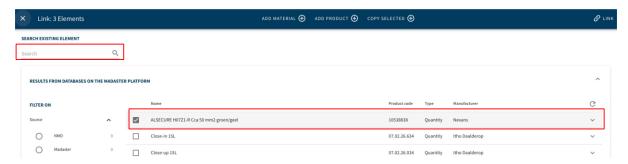
- 3. In the 'Element' column select one/multiple elements by ticking the radio button before the element.
- 4. Click the "(Re) Link Selection" button in the submenu. The "Link elements" screen is displayed.



Picture 76: Select elements.

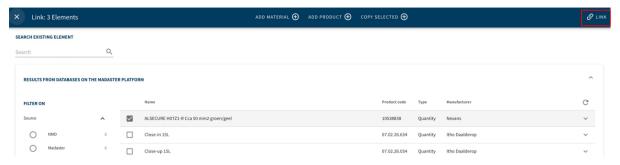
5. Search for and select the (added) product in the Madaster database.





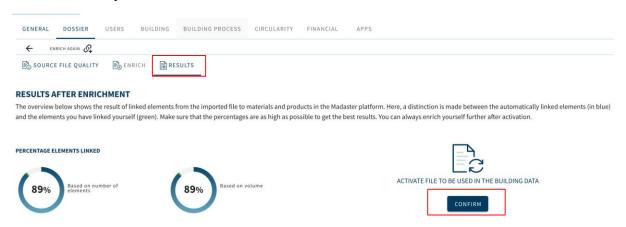
Picture 77: Link element(s) to newly added product.

6. Click the "Link" button. This links the selected elements of the source file to a product (or material) from the Madaster database. Repeat this process until all elements are linked.



Picture 78: Linked element(s).

<u>Note</u>: Changes in linked elements as well as changes in products (and materials) in the Madaster database must first be manually confirmed before these changes are visible in the various Madaster sheets (e.g., "Building" tab, etc.). To do this, click on the "Confirm" submenu, select the "yes" radio button and finally click on the "Confirm" button.



Picture 79: Confirm changes.

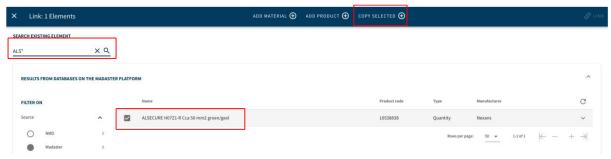


3 Copy products

If several comparable products need to be added to the user's "own" product library in the Madaster platform, it is possible to copy an existing product and then adjust this copied product as desired. The copy function is available within the "manual enrich" process and on database level. This function is briefly explained below.

3.1 Manual enrichment process

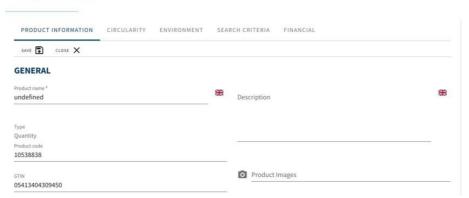
- 1. Repeat steps 1 to 6 as described above in the section "Link manually". This selects one or more elements of the source file (IFC and / or Excel) that you want to link (to a product that is already available in the Madaster database or own products library and you want to copy).
- 2. Click the "Copy selected product" button (on right hand side) in the "Link" screen.



Picture 80: Copy selected product.

3. In the "Create new product" screen you change the fields (e.g., "product name", etc.), with which you distinguish the copied product from the original.

NEW PRODUCT



Picture 81: Create new product.

4. Click the "Save" button. The copied product is saved and the other product sheets (including "Bill of materials", "Search criteria", etc.) are displayed.



- 5. Where required, change the information on these sheets to match the set-up of the copied product.
- 6. Click the "Save" button to save any changes made to the product sheets of the copied product. The "Linking elements" screen is then displayed.
- 7. Click the "Link" button. This links one or more selected elements of the source file to the copied product.

3.2 Copy on database level

- 1. In the navigation drawer, select the relevant database that contains the product to be copied.
- 2. Subsequently, select the product to be copied. The "Copy selected" button appears in the subnavigation bar.

MADASTER TRAINING



Picture 82: Copy selected element.

- 3. Click on the "Copy selected" button. The product opens.
- 4. If desired, change one or more product characteristics in the various tabs and save the copied product with the "Save" button. The product will now be added to the relevant database



4 Deactivate products

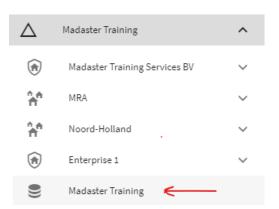
If a self-added product is no longer needed and should no longer be part of the user's 'own' library to link elements of the source file manually or automatically, this product can be deactivated. This means that the product no longer appears in the (active) selection of its own product set and the Madaster system will no longer automatically be able to link this product. Pre-existing links will be maintained. This function is briefly explained below.

1. On your account menu, click on tab 'Materials & Products' or go directly to your database on account/folder or building database

MADASTER TRAINING

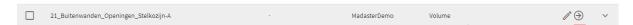


Picture 83: Materials & Products tab.



Picture 84: Select database in navigation drawer.

- 2. Use the search function or filters to find the product to be deactivated.
- 3. Click the "arrow" icon behind this product. The product features of this product (incl. The different product sheets) are displayed.



Picture 85: Arrow icon (view product).



4. Click the "Deactivate" button in the top left of the "Product information" sheet. The "Confirm" screen is displayed.

21_OUTSIDE WALL_DOOR_BRAND-E



Picture 86: Deactivate product.

5. Click the "Yes" button in the "Confirm" screen.



Picture 87: Confirm product deactivation.

The product is now deactivated in the Madaster system.

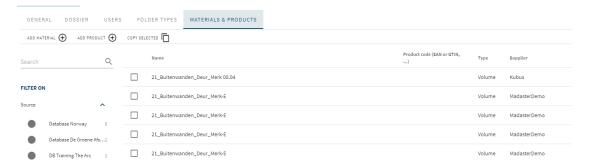
4.1 Search deactivated products

If desired, a deactivated product can be reactivated. This makes the product part again of the active selection of the user's 'own' products library in Madaster and the product is included in the process of manually or automatically linking elements from source files. This function is briefly explained below.

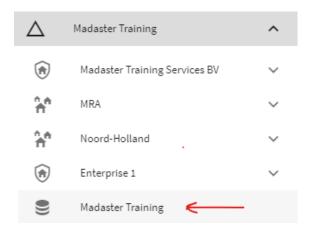
1. On your account menu, click on tab 'Materials & Products' or go directly to your database on account/folder or building database.



MADASTER TRAINING

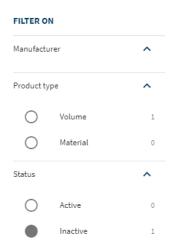


Picture 88: Materials & Products tab.



Picture 89: database link in left navigation.

2. Open the filter 'Status' in the bottom left of the Material and Product screen.



Picture 90: Filter 'Status'.



3. Select the radio button "inactive" in the filter "Status" (see picture 2). The "Administration" screen now shows all deactivated (inactive) products under the user's own Madaster account.

4.2 Activate products

- 1. Repeat steps 1 to 3 as described above in the chapter "Search deactivated products".
- 2. In the list of deactivated products, find the product to be activated.
- 3. Click on the "arrow" icon behind this product. The product features of this product (incl. The different product sheets) are displayed.



Picture 91: arrow icon (view product).

4. Click the "Activate" button in the top left of the "Product information" sheet. The "Confirm" screen is displayed.



Picture 92: Activate product.

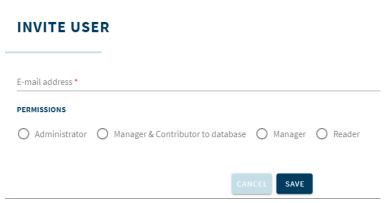
In the "Confirm" screen, click the "Yes" button. The product is now (re)activated in the Madaster system. This is visible because the fields of this product are now displayed in white color again.



5 Share Products (& materials)

By adding products (and materials) in Madaster, a ("private") products (and materials) database is built up at the account level. Besides the fact that this database remains available for each successive building under your own Madaster account, it can also be shared with external users. To this end, the party that makes its database available must explicitly share it with the receiving party. The private database can be made available in Madaster in three ways:

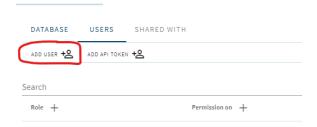
(1) by inviting an external user (personally by email) to the account, folder or building in Madaster, which includes the specific database and assigning this user a specific role as 'administrator', 'Manager & contributor', 'Manager' or 'reader' (see picture 1).



Picture 93: Invite user (account, folder or building).

(2) by inviting an external user (personally by email) to a specific database at account, folder or building level and assigning this user a specific role as "administrator" or "contributor".

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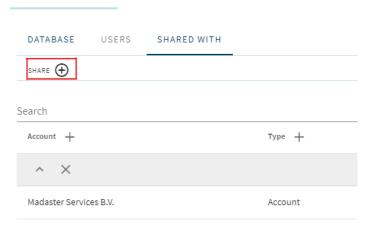
Picture 94: Invite user (account, folder or building database).

- (3) by making the database available at account or folder level ("sharing with") an external Madaster account with different rights and 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.

<u>FYI</u>: before a database can be shared in the above manner, the external party (who gains access to the database) must first grant you access to its account, folder or building in Madaster. This external party does this at the desired level by means of assign the "add user" role and the role "Manager & Contributor to Database".



Picture 95: Share database (account or folder level).



6 Madaster Support

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

When logged in your Madaster environment, you can always consult the available online support documentation. Each page in the Madaster platform contains an "I" button on the right side (midscreen). This always provides information about the relevant page and available functions.

This information and additional guides and reference works on the use and development of the Madaster platform can also be found directly at the following <u>link</u>.