



Di-Plast - Digital Circular Economy for the Plastics Industry

Matrix Tool Guidelines

Version from 22 August 2022

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1 General Information

This information sheet should help with the different use-cases and how to interact with the Matrix Tool in general.

To get access to the Matrix Tool, an account creation needs to be requested from Polymer Science Park (PSP).

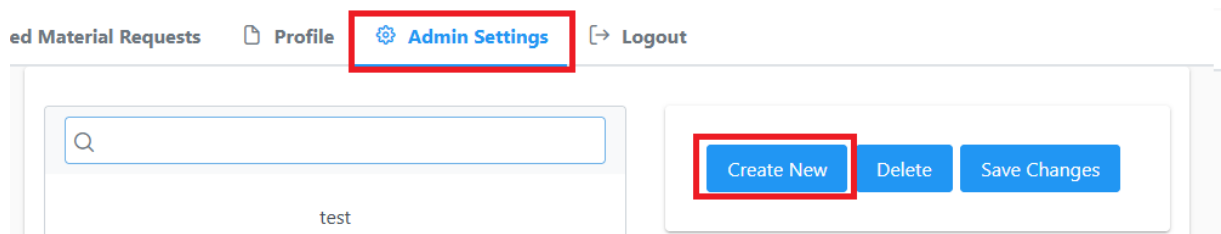


2 Managing User

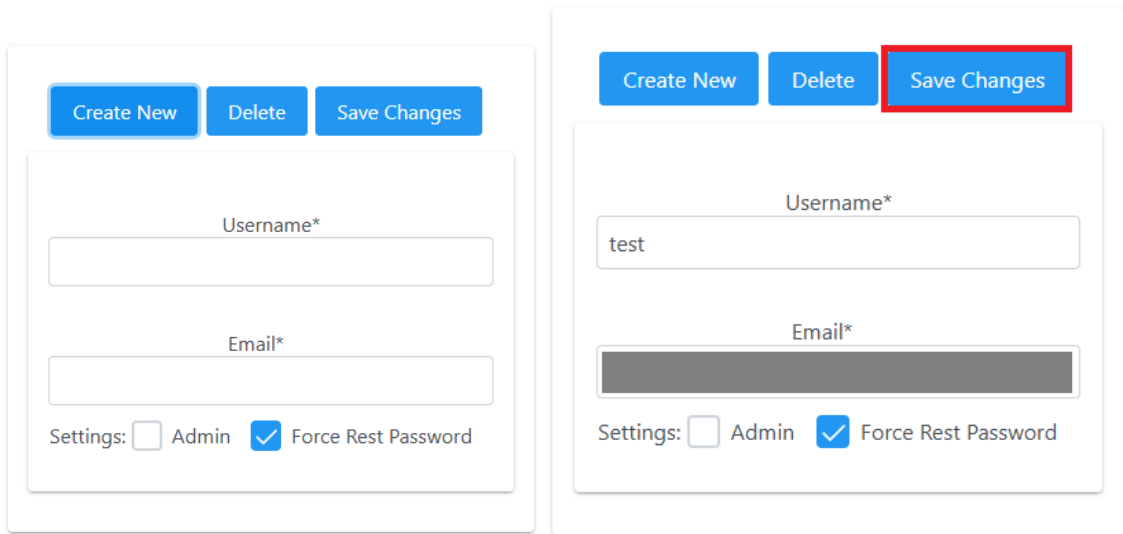
To execute all named use-cases from this section, an admin account is needed!

2.1 Create Users

A new user can only be created by an admin user, by pressing the “Create New” button in the “Admin Settings” tab.

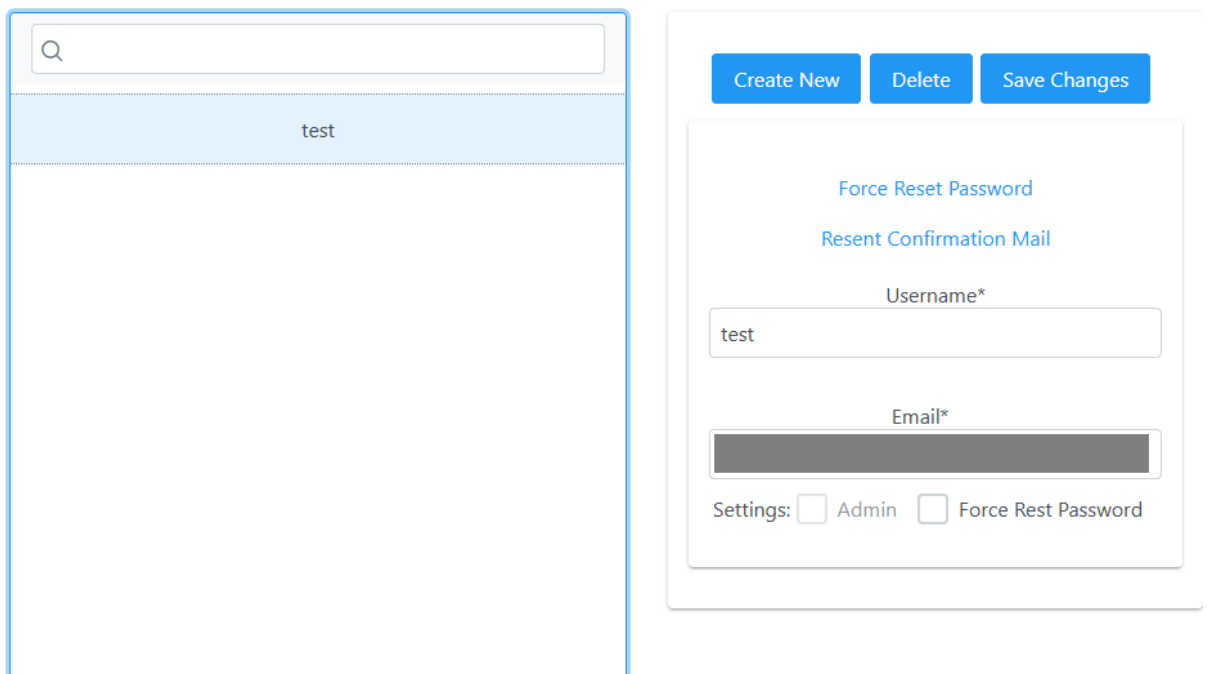


A new user form opens afterwards where the username and the e-mail of the new user can be set. The “Admin” checkbox makes the new user an admin, so please take caution when selecting it. The “Force Rest Password” forces the user to reset his password on the next login. It is recommended to let this option stay enabled, to force the user to change the auto-generated password. By pressing the “Save Changes” button, the new user is created and two confirmation e-mails will be sent to the set e-mail address; one containing a random generated password and the other a 6 digit e-mail confirmation code.

2.2 Managing Accounts

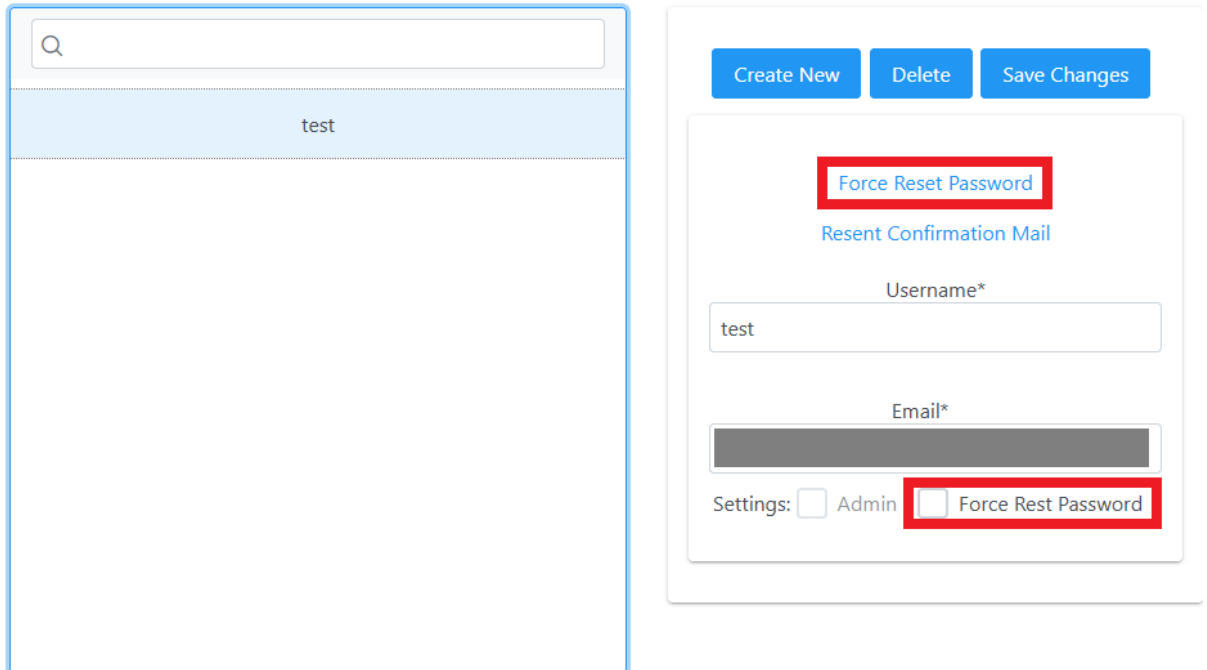
An account can be managed by selecting a user on the left panel.



A user's password can be force reset by pressing the "Force Reset Password" text-button or by enabling the "Force Rest Password" checkbox



and saving the user by pressing “Save Changes”. With this force reset, the user needs to change his password on the next login.



By pressing the “Resend Confirmation Mail” text-button, a new e-mail confirmation code will be sent to the selected user and the user needs to re-confirm his e-mail address.



Q

test

Create New Delete Save Changes

Force Reset Password

Resent Confirmation Mail

Username*

test

Email*

Settings: Admin Force Rest Password

Furthermore, the username and the user e-mail can be changed and saved by pressing the “Save Changes” button. When the user’s email is changed, an e-mail confirmation mail will be sent automatically.

2.3 Deleting Users

By selecting a user and pressing the “Delete” button, a user account can be deleted



Q

test

Create New **Delete** Save Changes

[Force Reset Password](#)

[Resent Confirmation Mail](#)

Username*

test

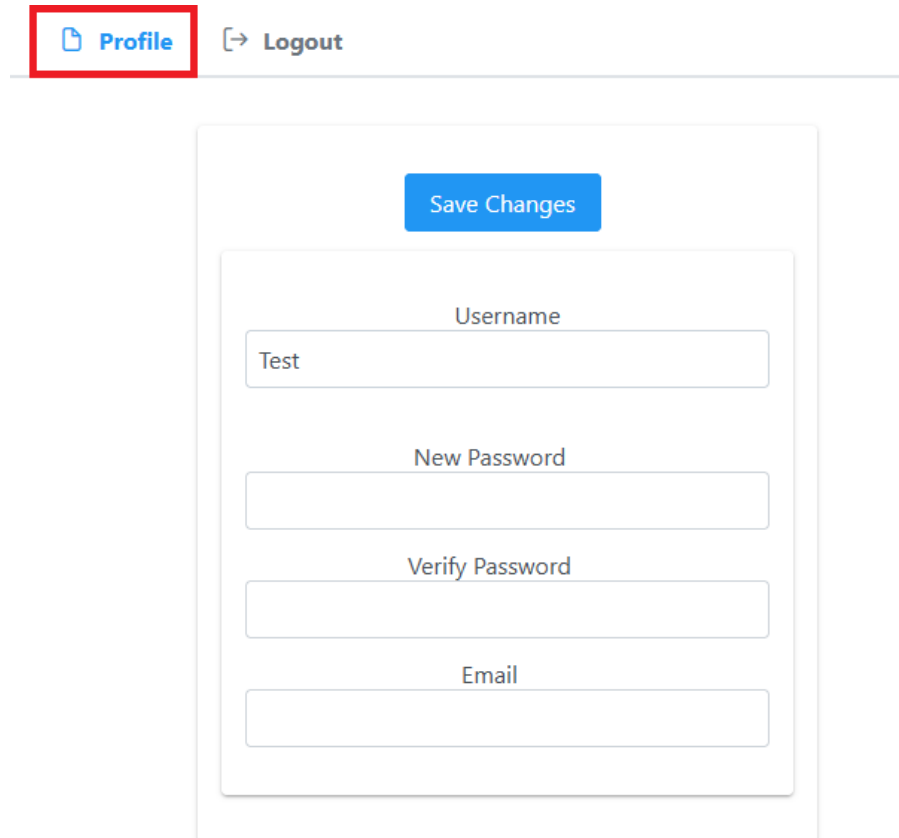
Email*

Settings: Admin Force Rest Password



3 Own Profile

Under the “Profile” tab, the users account information as username, password or e-mail can be changed.



[Profile](#) [Logout](#)

Save Changes

Username
Test

New Password

Verify Password

Email

Press the “Save Changes” button to save all edited account information. If the password is changed, the “New Password” and “Verify Password” need to be identical.



Save Changes

Username

New Password

Verify Password

Email



4 Table Interactions

The Matrix Tool provides information about offered recycled material and requested recycled material inside of two table structures. In this section it is shown how to handle the search filters, how to get suggested alternative recycled material and how to get into contact with the table item (recycled or request) creator.

4.1 Recycled and Requests Tables

The two tabs “Recycled Material Provider” and “Recycled material Requests” both contain a table to handle information.



The “Recycled Material Provider” includes all known and offered recycled material information. The included table can be used to find recycled materials with specific properties or to get suggestions for alternatives; when switching from virgin material to recycled material.

[Home](#) | [Recycled Material Provider](#) | [Recycled Material Requests](#) | [Profile](#) | [Logout](#)

List of Recycled Material Show only owned
Reset Filter Upload Data New Recycled Columns

RightClick to View Edit Options on Owned Entries

Material \updownarrow	Process Technology \updownarrow	MFI Range Between 0.0 and 70.0 \updownarrow	Density \updownarrow	E-Modulus \updownarrow	Tensile Strength at Yield \updownarrow	Color \updownarrow
> ?	extrusie	0.0-1.0 gr/10min	0.94 gr/3cm	350.0 Mpa	18.0 Mpa	Bl
> ?	extrusie	0.0-1.0 gr/10min	0.94 gr/3cm	350.0 Mpa	18.0 Mpa	Gr
> ?	extrusie	0.0-1.0 gr/10min	0.94 gr/3cm	350.0 Mpa	18.0 Mpa	Bl
> ?	extrusie	0.0-1.0 gr/10min	0.94 gr/3cm	350.0 Mpa	18.0 Mpa	Gn
> LDPE	extrusie	0.1-0.4 gr/10min	UNK	UNK	UNK	Nat
> HDPE	extrusie	0.2-0.45 gr/10min	0.955 gr/3cm	UNK	UNK	Nat
> HDPE	extrusie	0.2-0.45 gr/10min	0.955 gr/3cm	UNK	UNK	Bl
> HDPE	extrusie	0.2-0.45 gr/10min	0.955 gr/3cm	UNK	UNK	Gr
> HDPE	extrusie	0.2-0.45 gr/10min	0.955 gr/3cm	UNK	UNK	Wt



The “Recycled material Requests” tab contains all known requests for recycled material and can for example be used to see what kind of properties are in demand right now.

[Home](#)
[Recycled Material Provider](#)
[Recycled Material Requests](#)
[Profile](#)
[Logout](#)

List of Requested Material

 Show only owned
[Reset Filter](#)
[Upload Data](#)
[New Request](#)
[Columns](#)

RightClick to View Edit Options on Owned Entries

Target Markets	Target Product	Material	Process Technology	MFI Range Between 0.0 and 70.0	Density	E-Modulus	Color
> infra	Drainagebuis	HDPE	extrusie	1.5-1.45 gr/10min	UNK gr/3cm	693.0 Mpa	Nat
> infra	Drainagebuis	HDPE	extrusie	1.9 gr/10min	UNK gr/3cm	447.0 Mpa	Bl
> infra	Drinkwaterleiding	PE 40	extrusie	0.2-1.4 gr/10min	0.93 gr/3cm	UNK Mpa	Bl/B
> infra	Drinkwaterleiding	PE 80	extrusie	0.2-1.4 gr/10min	0.93 gr/3cm	UNK Mpa	B
> infra	Drinkwaterleiding	PE 100	extrusie	0.2-1.4 gr/10min	0.93 gr/3cm	UNK Mpa	B
> bouw	Ventilatiekoker	HDPE	extrusie	0.3-0.5 gr/10min	0.96 gr/3cm	900.0 Mpa	UNK
> infra	infiltratiekrat	PP	sputgieten	6.0-10.0 gr/10min	0.905 gr/3cm	1200.0 Mpa	UNK
> infra	Draingoot	PP	inkoop	4.0-6.0 gr/10min	0.905 gr/3cm	1350.0 Mpa	UNK
> infra	Fittingen zwart	PP	sputgieten	4.0-6.0 gr/10min	0.905 gr/3cm	1350.0 Mpa	UNK

In the following section the search, ranking and contact functions will be described in more detail.

4.2 Search Form

The tables included search function inside the header, which show the most common properties for plastic materials.

Material ↑↓

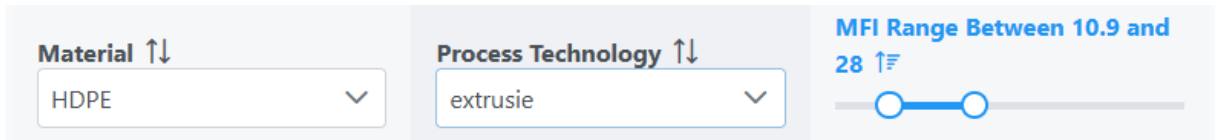
Process Technology ↑↓

MFI Range Between 0.0 and 70.0 ↑⇅

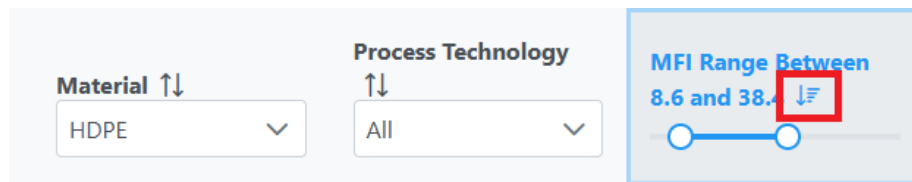
By setting the filters to specific values, the shown material can be searched and limited to a filter selection. It is to note, that the smart filtering is including expert knowledge for each property to also include, for example, bigger values for the “Tensile Strength at Yield”; because a larger Tensile Strength (than the desired one) does typically not matter. Therefore, some properties also show smaller or larger values than the selected filtered



value. This functionality is not to be confused with the ranking of alternative suggestions (described later).

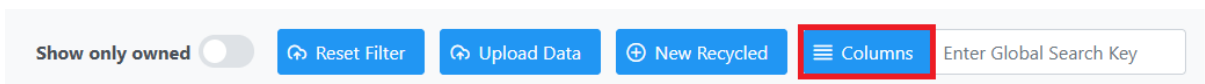


Ordering for specific properties is also possible, by clicking on the column name.

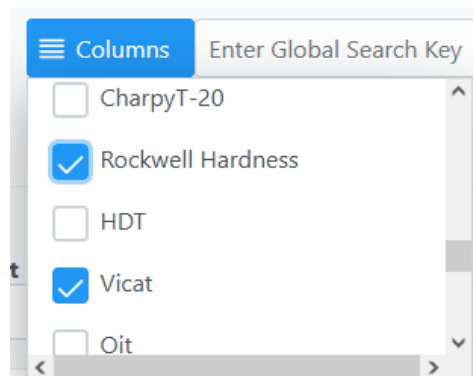


4.2.1 Selecting Search Properties

If the desired filtering properties are not shown, the columns of the tables can be changed by using the “Columns” button in the top right corner of the view.



In the following menu, the desired columns can now be selected or deselected.



Because of the limited space, it is recommended to only select the desired properties. It is important to keep in mind that deselecting a property does not reset its filter.



4.2.2 Details View

By pressing the triangle on the left of an item, a detailed view will be shown with all known properties of the selected item.

Material \updownarrow
 Process Technology \updownarrow
 MFI Range Between 0.0 and 70.0 $\downarrow\uparrow$
 Density \updownarrow
 E-Modulus \updownarrow

<input type="checkbox"/>	PP	sputigieten	70.0 gr/10min	0.915 gr/3cm	1250.0 Mpa
--------------------------	----	-------------	---------------	--------------	------------

Material Details:

Supplier	supplier 19	Tested By	Supplier
Material	PP	Process Technology	sputigieten
MFI Weight	2.16	MFI Range	70.0 gr/10min
Apparent Density	620.0 gr/tr	E Modulus	1250.0 Mpa
Tensile Elongation at Yield	10.0 %	Elongation at Break	UNK
CharpyT-20	UNK	Rockwell Hardness	UNK
Vicat	UNK	OIT	UNK
Ash Content	2.0 %	Color	Gr
Mould Shrinkage	UNK	Flammability	UNK

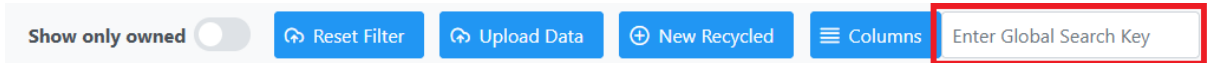
To reduce the detailed view, the “Show Unknown Properties” toggle can be deactivated to only show known properties of an item.

Show Unknown Properties

Plastics Marked	recyclaat
Recycling Content	95.0 %
Density	0.915 gr/3cm
Tensile Strength at Yield	26.0 Mpa
Ash Content	2.0 %

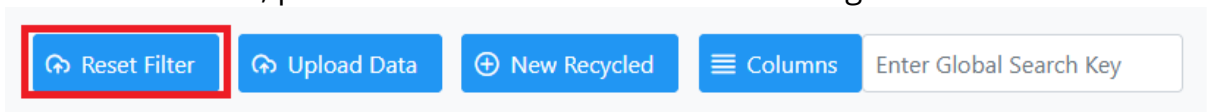


Beside those option, a general search function is included in the top right corner, which filters all elements for one specific text input regardless of the selected columns.



4.3 Resetting Filter

To reset all filters, press the “Reset Filter” button at the right corner.



4.4 Ranking Alternatives

At the end of the recycled material view, a suggestion table is presented. This table shows alternatives for the given filter, while considering expert knowledge, the target contexts and previous requests, to provide a ranking of similar materials. While the upper table shows only recycled materials which fits the filters, this second table provides a ranking with alternatives that are as close as possible to the filter (based on expert knowledge).

Context Options ⓘ			
Target Market:			
<input type="text" value="All"/>			
Ranking Algorithm:			
<input type="text" value="Recommended"/>			
Ranking for Alternative Recycled Material ⓘ			
Ranking	Material	Process Technology	MFI Range Between 0.0 and 70.0
>	0.020843225392538984	PP	sputgieten
			40.0-40.0 gr/10min
>	0.04085272176937642	PP	sputgieten
			20.0-30.0 gr/10min

By selecting a “Target Market” a context can be given, to for example provide more relevant alternatives from the infrastructure market.




Context Options ⓘ

Target Market:

infra


4.5 Contact Recycled/Requester of interest


When a recycled material or material request of interest is found, the creator of the item can be contacted via the “Receive Contact per Mail” button in the details view.

Ranking	Material
<div style="border: 1px solid red; display: inline-block; padding: 2px;">  </div> 0.2616384512460936	PP

Material Details:

Supplier	supplier 19
Color	Gr

 Receive Contact per Mail

 Request Testing by PSP

A short questionnaire will be shown. Please select your context of the request, to help further improve the tool.

Provide the context of your search ×

What is your industrial context?

automotive

For which kind of product do you want to use this plastics for?

Afdekprofiel

Submit


Discard

By pressing the “Submit” button, the contact e-mail of the item creator will be sent to the current account’s e-mail. With this e-mail address, the provider or converter can be contacted, to for example ask for a sample batch.





4.6 Request for Testing

The “Request Testing by PSP” button can be used for two purpose. Firstly, it can be used to request testing of currently unknown properties. Secondly, this function can be used to request verification of the stated properties.

Ranking	Material
 0.2616384512460936	PP

Material Details:

Supplier	supplier 19
Color	Gr

 Receive Contact per Mail  Request Testing by PSP

By pressing the button, PSP will get a notification and will get in touch with you to further discuss the process and pricing.

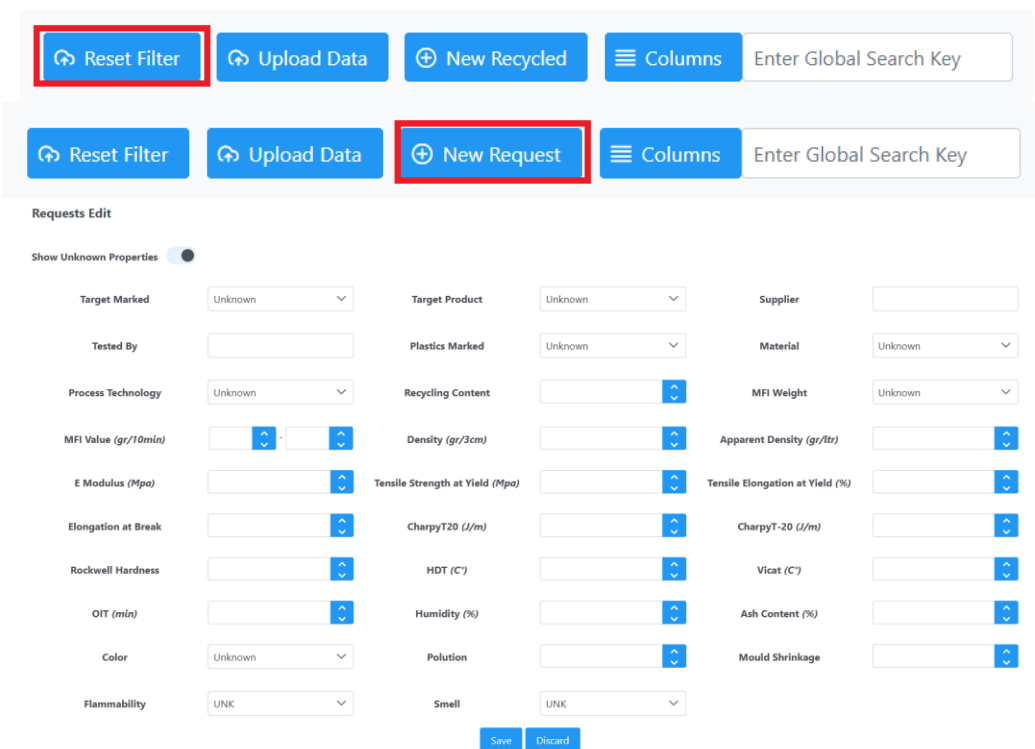


5 Data Handling

In this section the general data handling will be described, as in how to create, delete or update recycled materials or requested materials.

5.1 Create Data

By pressing the “New Recycled” or “New Request” button, a dialog window can be opened.



Requests Edit

Show Unknown Properties

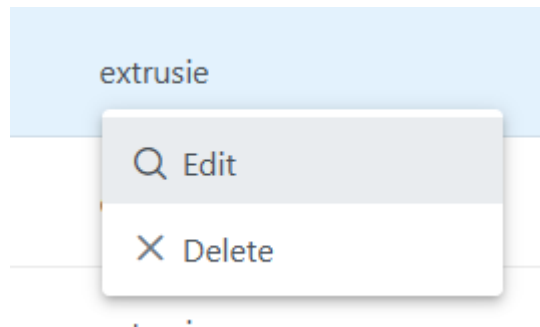
Target Marked	<input type="text" value="Unknown"/>	Target Product	<input type="text" value="Unknown"/>	Supplier	<input type="text"/>
Tested By	<input type="text"/>	Plastics Marked	<input type="text" value="Unknown"/>	Material	<input type="text" value="Unknown"/>
Process Technology	<input type="text" value="Unknown"/>	Recycling Content	<input type="text"/>	MFI Weight	<input type="text" value="Unknown"/>
MFI Value (gr/10min)	<input type="text"/>	Density (gr/3cm)	<input type="text"/>	Apparent Density (gr/ltr)	<input type="text"/>
E Modulus (Mpa)	<input type="text"/>	Tensile Strength at Yield (Mpa)	<input type="text"/>	Tensile Elongation at Yield (%)	<input type="text"/>
Elongation at Break	<input type="text"/>	CharpyT20 (J/m)	<input type="text"/>	CharpyT-20 (J/m)	<input type="text"/>
Rockwell Hardness	<input type="text"/>	HDT (C°)	<input type="text"/>	Vicat (C°)	<input type="text"/>
OIT (min)	<input type="text"/>	Humidity (%)	<input type="text"/>	Ash Content (%)	<input type="text"/>
Color	<input type="text" value="Unknown"/>	Polution	<input type="text"/>	Mould Shrinkage	<input type="text"/>
Flammability	<input type="text" value="UNK"/>	Smell	<input type="text" value="UNK"/>		

This window includes all supported material properties, which can be selected as needed. By pressing the “Save” button at the bottom of the dialog, the new item can be saved. By pressing the “Discard” button, all entries will be discarded and NOT saved!



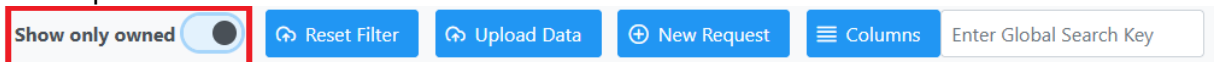
5.2 Update Data

To update any item (only admins and the item's owner can update or delete items) the desired item needs to be selected via right-clicking on it.



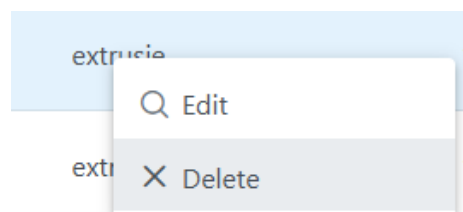
By pressing "Edit" the same Dialog with the same functionality from the "Create Data" section will pop-up; but now showing the properties of the selected item. After editing the information, the changes can be again saved or discarding via the corresponding buttons.

To help find owned items, the "Show only owned" toggle can be selected, at the top of the view.



5.3 Delete Data

To delete any item (only admins and the item's owner can update or delete items) the desired item needs to be selected via right-clicking on it. Afterwards, by selecting "Delete" and confirming it, the selected item is deleted.

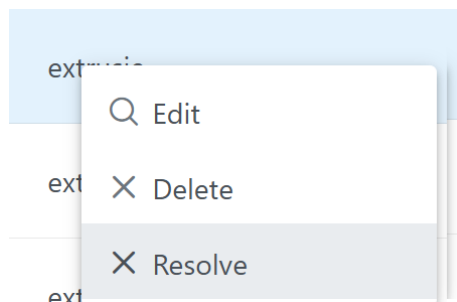


If your created request was complete, please do not delete the request, but resolve it by following the steps in the next section.



5.4 Resolve Requests

If your created request was successfully resolved, please resolve the request rather than deleting it, so it can be used to improve the ranking. This can be done by selected the request via right-clicking on it. Afterwards, by selecting “Resolve” and confirming it, the selected item is resolved.

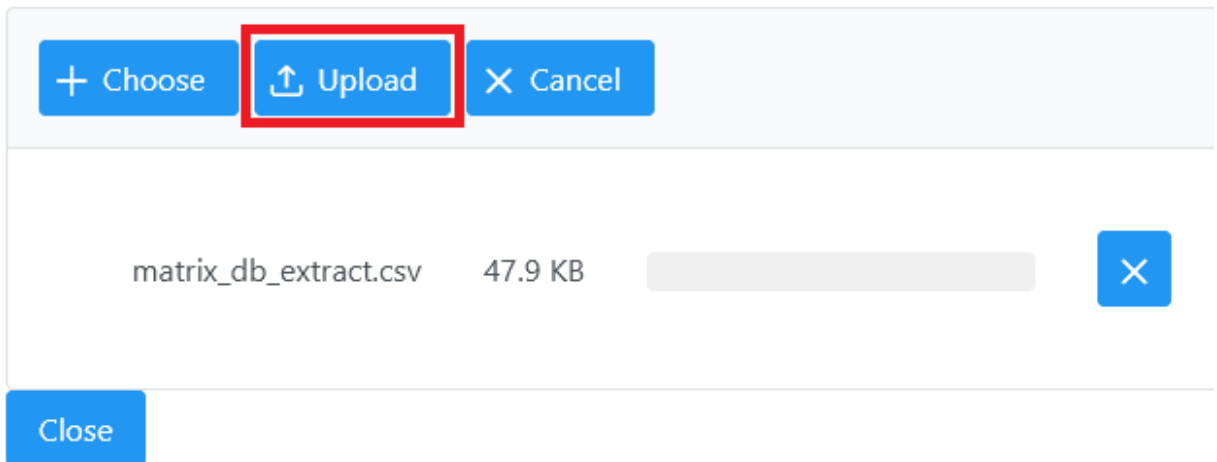


5.5 Data Batch Creation

To create multiple entries at the same time (admins only) the “Upload Data” button can be used.

Upload Requests Data File

By selecting one or multiple CSV files via the “Choose” button, multiple entries can be created at the same time. After selecting all desired files, those files can be uploaded and processed with the “Upload” button.



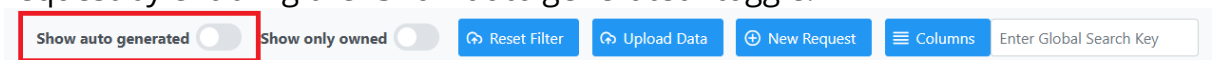
The selected files need to be in the order:

PRODUCER,PRODUCER_NAME,PRODUCT,PRODUCT_NAME,PRODUCT_TYPE,MATERIAL,MATERIAL_DESCRIPTION,PROCESSING_TECHNOLOGY,PROCESSING_TECHNOLOGY_DESCRIPTION,MARKET,MARKET_DESCRIPTION,TESTER,TESTER_DESCRIPTION,RECYCLING_CONTENT,MFI_WEIGHT,MFI_MINIMUM,MFI_MAXIMUM,K_VALUE,DENSITY,APPARENT_DENSITY,E_MODULUS,TENSILE_STRENGTH_AT_YIELD,TENSILE_ELONGATION_AT_YIELD,ELONGATION_AT_BREAK,CHARPY_T_20,CHARPY_T_20_2,ROCKWELL_HARDNESS,HDT,VICAT,OIT,TENSILE_CREEP,HUMIDITY,ASH_CONTENT,SMELL,COLOUR,FLAMMABILITY,POLLUTION,MOULD_SHRINKAGE,PILLOT

“NULL” can be used to fill in unknown values.

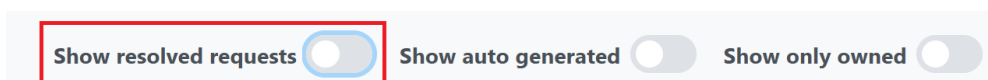
5.6 Auto-Generated Request Data

Every time a user submits a contact request, the current search of the user will be converted into a material request. Only admins can see those request by enabling the “Show auto generated” toggle.



5.7 Show Resolved Request Data

To include already resolved requests in the data, enable the “Show resolved” toggle. Only admins can use this function.





6 Funding Information

The Matrix tool is funded by the Interreg North-West Europe program (Interreg NWE), project Di-Plast - Digital Circular Economy for the Plastics Industry (NWE729, <https://www.nweurope.eu/projects/project-search/di-plast-digital-circular-economy-for-the-plastics-industry/>). For more information visit the Di-Plast Knowledge Hub via: <https://di-plast.sis.cs.uos.de/Wiki.jsp?page=Main>