Ultimate fully customizable swatches holder generator

This is an OpenSCAD script to generate filament and infill swatches tiles holder. Holders generated with the default settings are fully compatible with Bambu Lab sample swatches , swatches generated by my other project Ultimate fully customizable swatches generator and are the full compatible parametrization of the Swatch Display Board by Bambu Lab, **any** parameter of the swatches and holder can be changed.

This script has been published and can be found and used directly on MakerWorld's page.

Summary

A guide through the tabs of parameters

Here's an detailed explanation of every possible setting. Feel free to explore the endless possibilities of combining these values.

Dimensions

In this tab you can customize the dimension of every aspect of this design.

Parameter	Description	unit	min	max	default
columns	The number of tiles for each row	n	1	10	4

Parameter	Description	unit	min	max	default
columns	The number of tiles for each row.	n.	1	10	4
rows	The number of tiles for each column.	n.	1	15	5
columns_spacer	The distance of the raised border between columns.	mm	0.1	25	5
rows_spacer	The distance of the raised border between rows.	mm	0.1	25	5
outside_border	The dimension of the border all around the holder.	mm	0.1	25	2.2
tile_size	Being the tile a rounded-corners square, this defines the length of the side of that square.	mm	10	100	24.1
tile_height	This is the tile depth.	mm	1	5	2.15
tile_radius	This sets the roundness of the above mentioned square.	mm	1	10	3.1
outside_border_chamfer	This is the chamfer applied to the external border at top. (0 = no chamfer)	mm	0	10	0.5
outside_border_radius	The radius of the corners in the external border. (0 = squared borders)	mm	0	10	5
back_height	The height of the back part of the grid (the one below the tiles).	mm	0.4	10	1.35
create_back_hole	If a hole in the back back, at the middle of each tile must be cut. This hole allows to easily extract a tile by placing a finger behind it and pushing forward.	bool			true
back_hole_diameter	The diameter of the back hole above mentioned.	mm	2	25	15.5
back_hole_chamfer	Specifies if a chamfer must be cut around the bottom border of the back hole. (0 = no chamfer)	mm	0	1	0.4
create_pin	This sets if a holding pin must be created for each tile.	bool			true
pin_diameter	Diameter of the pin to be created.	mm	1	5	3.1
pin_x_offset	X-axis distance from the left border of a tile to the center of the pin.	mm	1	10	3.9
pin_y_offset	Y-axis distance from the top border of a tile to the center of the pin.	mm	1	10	4.6

Parameter	Description	unit	min	max	default
pin_chamfer	Specifies if a chamfer must be created around the top border of the pin. (0 = no chamfer)	mm	0	1	0.1

Sides

All the sides have the same settings available or better to say, horizontal sides (top and bottom) have the same settings, vertical sides (left and right) have the same settings. In these sections you can enable the creation of an expanded border with a text and one/two/no holes for using a collector.

Top side

Parameter	Description	unit	min	max	default
top_create	Indicates if a expanded border must be created on this side.	bool			true
top_dimension	Specified the dimension (height) of this side.	mm	3	50	10
top_text	Specifies the text to create on this side. (leave this field blank to have no text)	text			“Top text”
top_direction	The direction on Z-axis where the text extends, allows these values: - **Extrude** - **Chisel**				Chisel
top_height	The height in millimeters of extrusion or chisel.	mm	0.1	5	0.4
top_font	Choose one of the supported fonts from the list to apply it to the text on this side.				Liberation Serif
top_custom_font	Here you can override the above setting by putting the name of a font installed in the system where this script is executed. Please keep in mind that when you use Parametric Model Maker, the system the script is running on is MakerWorld's server, not your computer.				*none*
top_style	Choose the style of the text. **Note:** not all fonts support all styles.				Bold
top_size	The size of the text.	pt	1	12	5

Parameter	Description	unit	min	max	default
top_align	Alignments of the text, accepted values: - **Left** - **Center** - **Right**				Center
top_spacing	Spacing between letters, the greater the number, the far the letters are.		0.1	5	1
top_x_offset	X offset of the text to compensate and correct calculated position.	mm	-100	100	0
top_y_offset	Y offset of the text to compensate and correct calculated position.	mm	-100	100	0
top_holes	Create holes in this, this value can be: - **None** - no holes are cut; - **Left** - only a hole on the left side is created; - **Right** - only a hole on the right side is created; - **Both** - two holes are created, one on the left and one on the right side.				None
top_holes_diameter	The diameter of the holes.	mm	0.2	10	5
top_holes_distance	The distance from the side of the border to the middle of the hole.	mm	0.2	100	3
top_left_hole_x_offset	An offset on the X-axis to give to the left hole.	mm	-100	100	0
top_left_hole_y_offset	An offset on the Y-axis to give to the left hole.	mm	-100	100	0
top_right_hole_x_offset	An offset on the X-axis to give to the right hole.	mm	-100	100	0
top_right_hole_y_offset	An offset on the Y-axis to give to the right hole.	mm	-100	100	0

Left side

Left side has almost the same configuration as the top side, here only the differences will be shown.

Parameter	Description	unit	min	max	default
left_text	Specifies the text to create on this side. (leave this field blank to have no text)	text			*empty*

Parameter	Description	unit	min	max	default
left_orientation	The orientation of the text, which can be: - **Rotated text (CCW)** - counter-clockwise rotated text; - **Rotated text (CW)** - clockwise rotated text; - **Vertical text** - letters are horizontal, one below the other				Rotated text (CCW)
left__align	Alignments of the text, accepted values: - **Top** - **Center** - **Bottom**				Center
left_holes	Holes can be created: - **None** - no holes are created; - **Top** - only the top hole is created; - **Bottom** - only the bottom hole is created; - **Both** - both the top and bottom holes are created.				Both

Right side

Right side has the same configuration as left side, only parameters that change are shown here.

Parameter	Description	unit	min	max	default
right_create	Indicates if a expanded border must be created on this side.	bool			false
right_text	Specifies the text to create on this side. (leave this field blank to have no text)	text			“Right text”

Bottom side

Bottom side has the same configuration as top side, only parameters that change are shown here.

Parameter	Description	unit	min	max	default
bottom_create	Indicates if a expanded border must be created on this side.	bool			false
bottom_text	Specifies the text to create on this side. (leave this field blank to have no text)	text			“Bottom text”

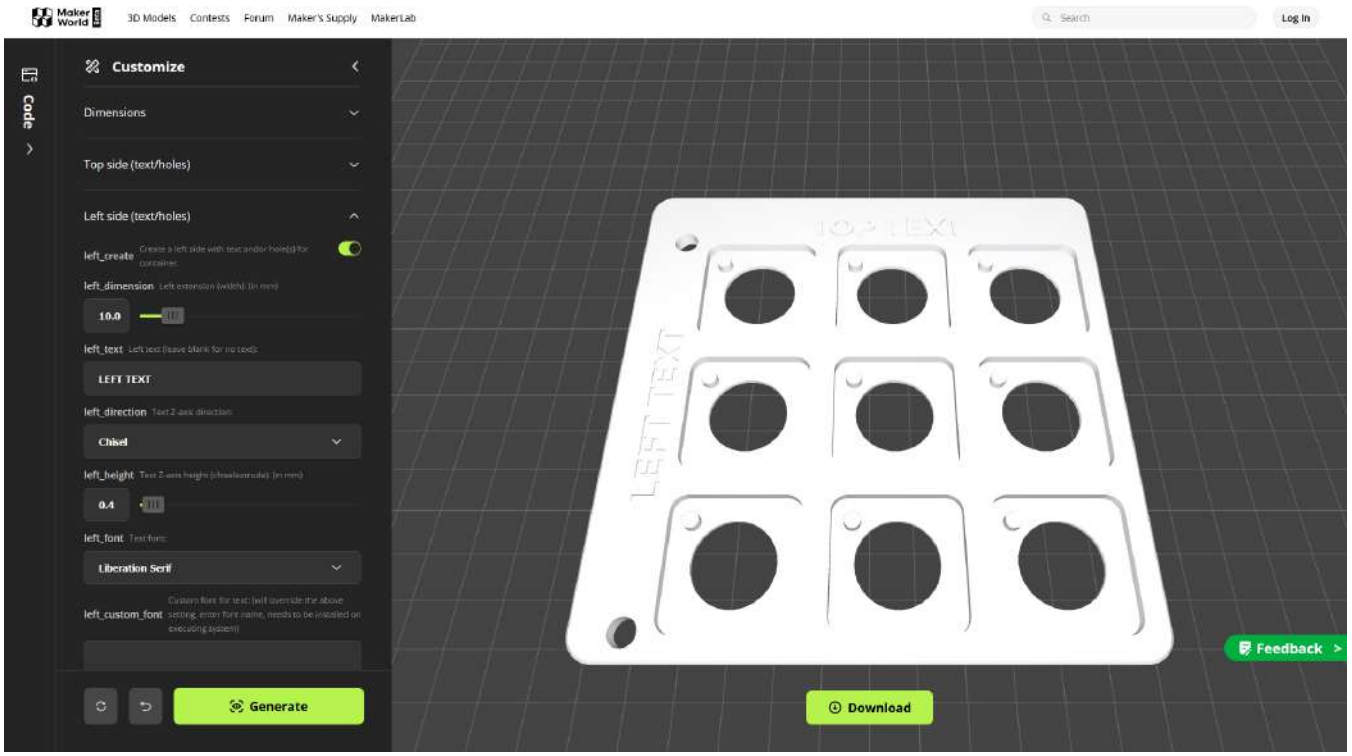
3D printing settings

Parameter	Description	default
print_mode	Switches between modes of generation. - **Monochromatic** - generates the full body with holder, chiseled and extruded texts. - **Holder only** - generates the body of the holder with chiseled texts, but not extruded texts which can be lately added with the next option. - **Texts only** - generates only chiseled and extruded texts, this can be used to create a multicolor object.	Monochromatic
curves_quality	Selects the quality of curves to be used when generating the model, the lowest the quality, the faster generation will take. You can work in Draft all the time for fast refresh, but you need to remember to switch back to Normal or something higher before exporting the model to be printed. Possible values: - **Draft** - low quality, not suitable for printing; - **Printable draft** - not for production, yet printable; - **Normal**: normal quality, ready to print; - **High quality**: good quality for high resolution printers. **Be warned:** Parametric Model Maker has a short timeout for script execution to avoid DDoS attacks, for this reason setting a quality too high could create a timeout error	Normal

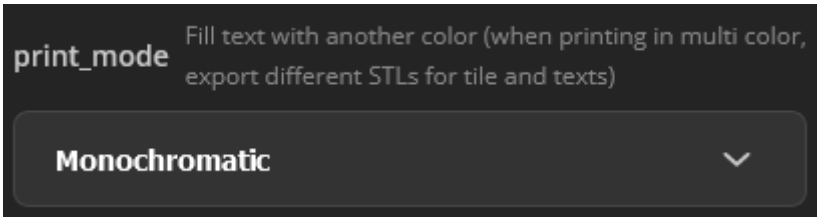
What you can create

Monochromatic holders

The easiest one, nothing to say: create a holder the way you want it.



An example holder to be printed using a single color.



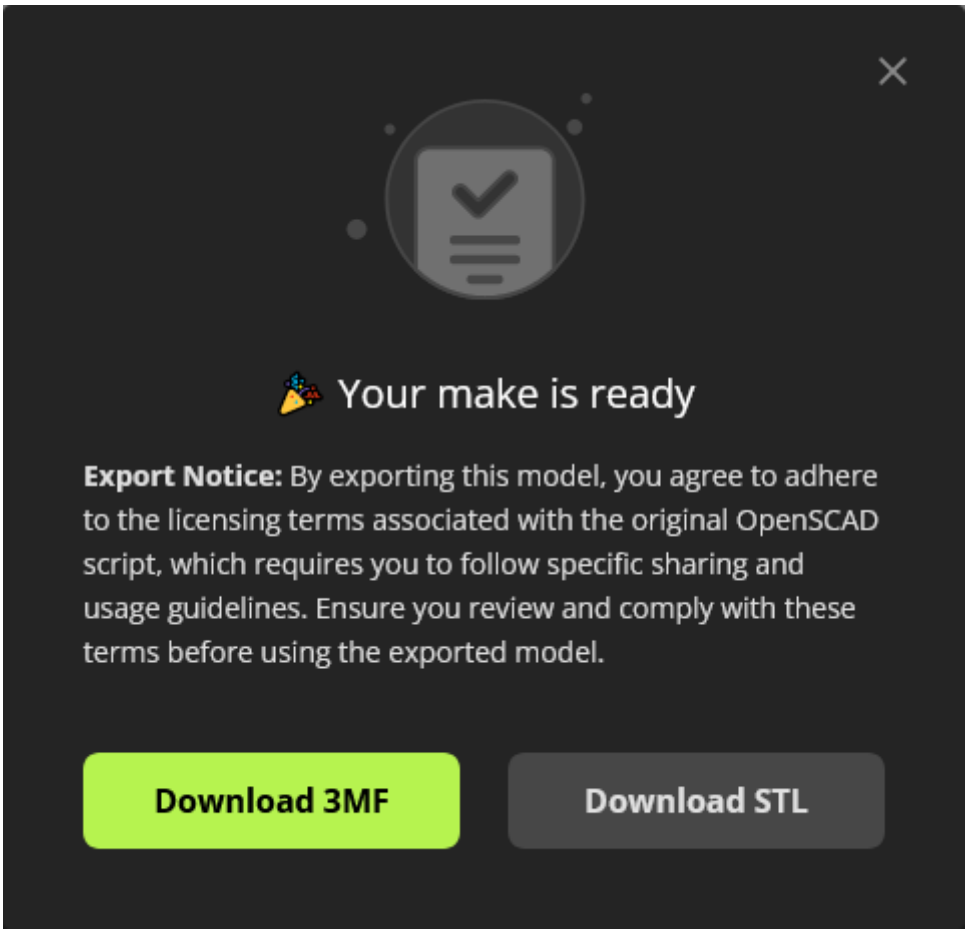
Make sure you selected **Monochromatic** for the parameter **print_mode** in the **3D printing settings** tab as shown in the image above.

Remember to left click on 

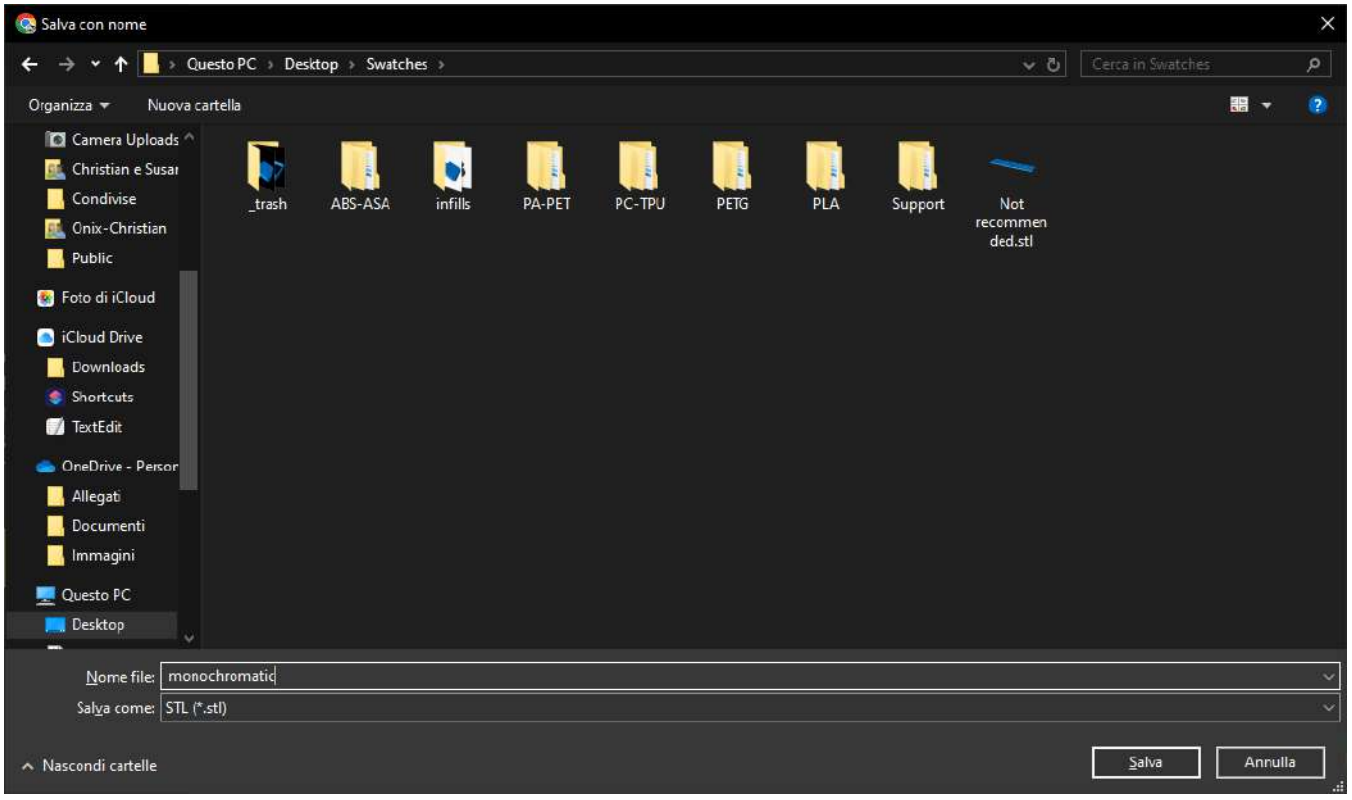
to generate a version with your current settings.

Click on the 

button to download the object to a file.

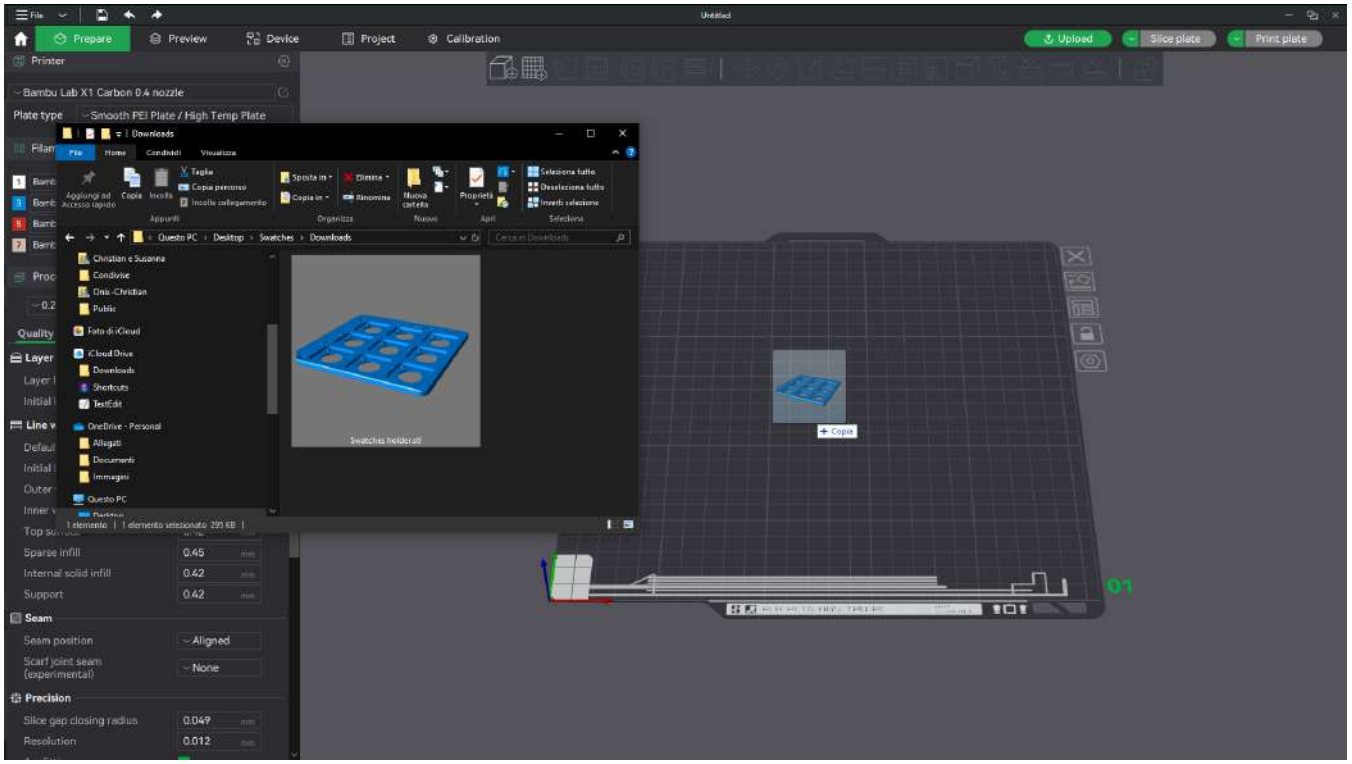


When this windows pops up, left click on the  button to select the .STL file format.

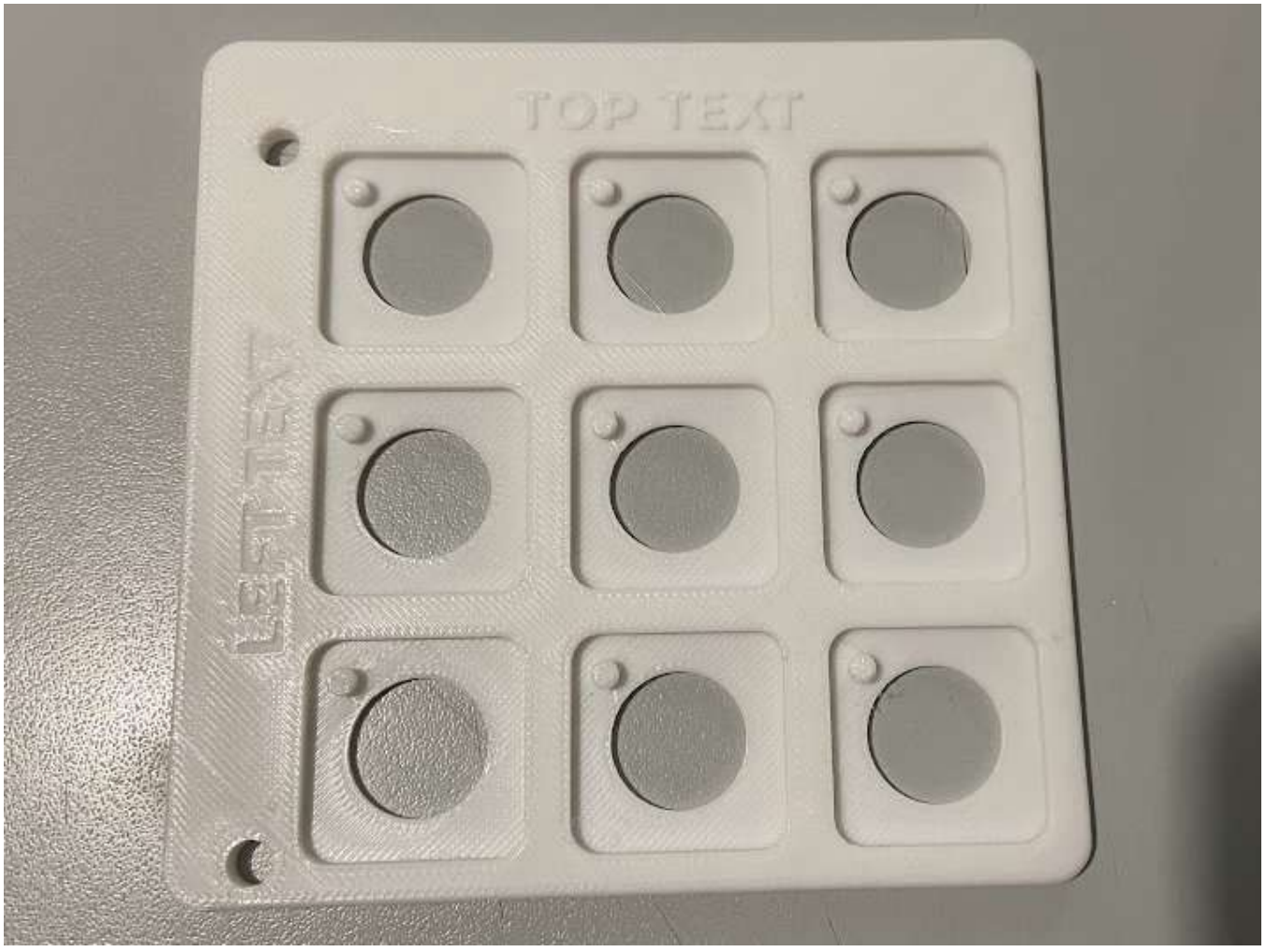


If your computer offers the possibility to save the file to a desired location, select a folder where you want to save it and choose a proper name, e. g. “monochromatic”, which fill create “monochromatic.stl”.

If your browser is configured to automatically save files, you will find the file named “Swatches holder.stl” in the location you usually receive downloaded file, usually called the “Downloads” folder.



Open [Bambu Studio] or your preferred slicer, start a new project and drag the file onto it.

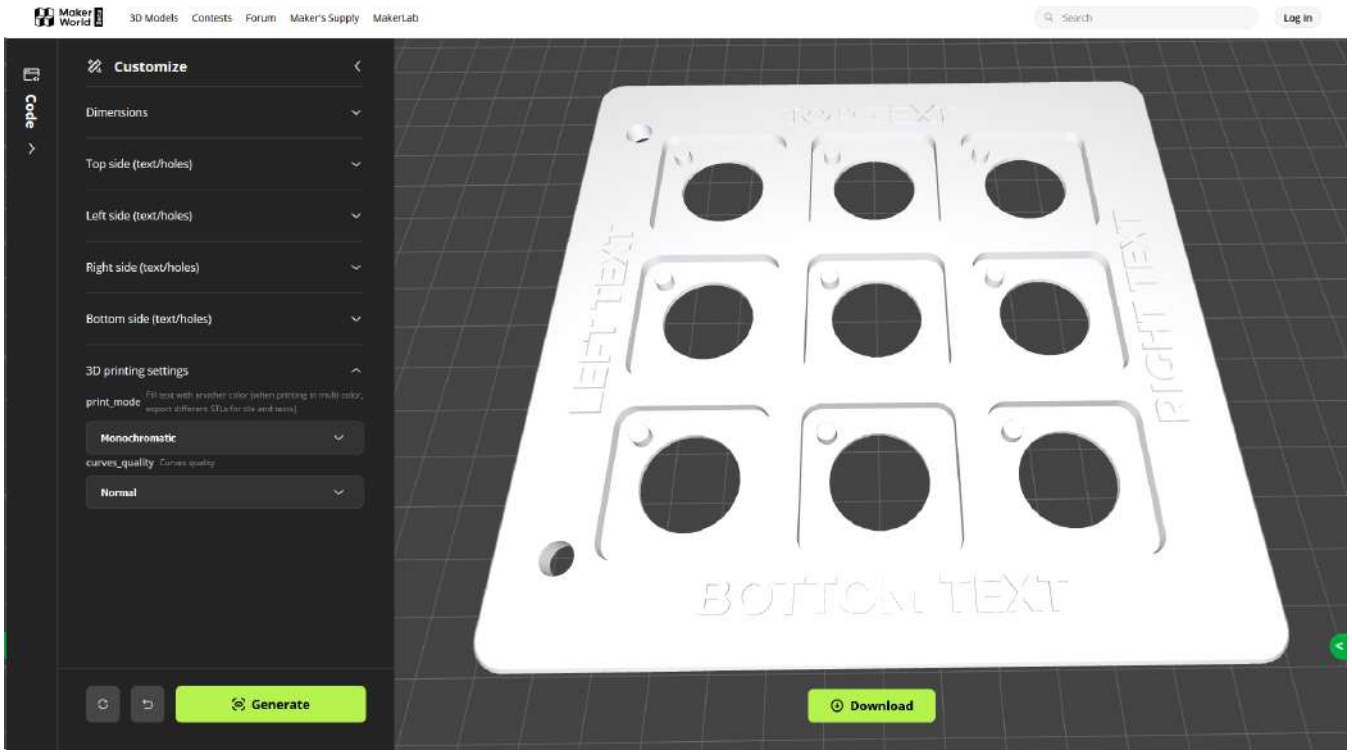


Sample result of the above operations.

Multi color holders on mono printers or for non AMS compatible filaments (using pause at layer/height)

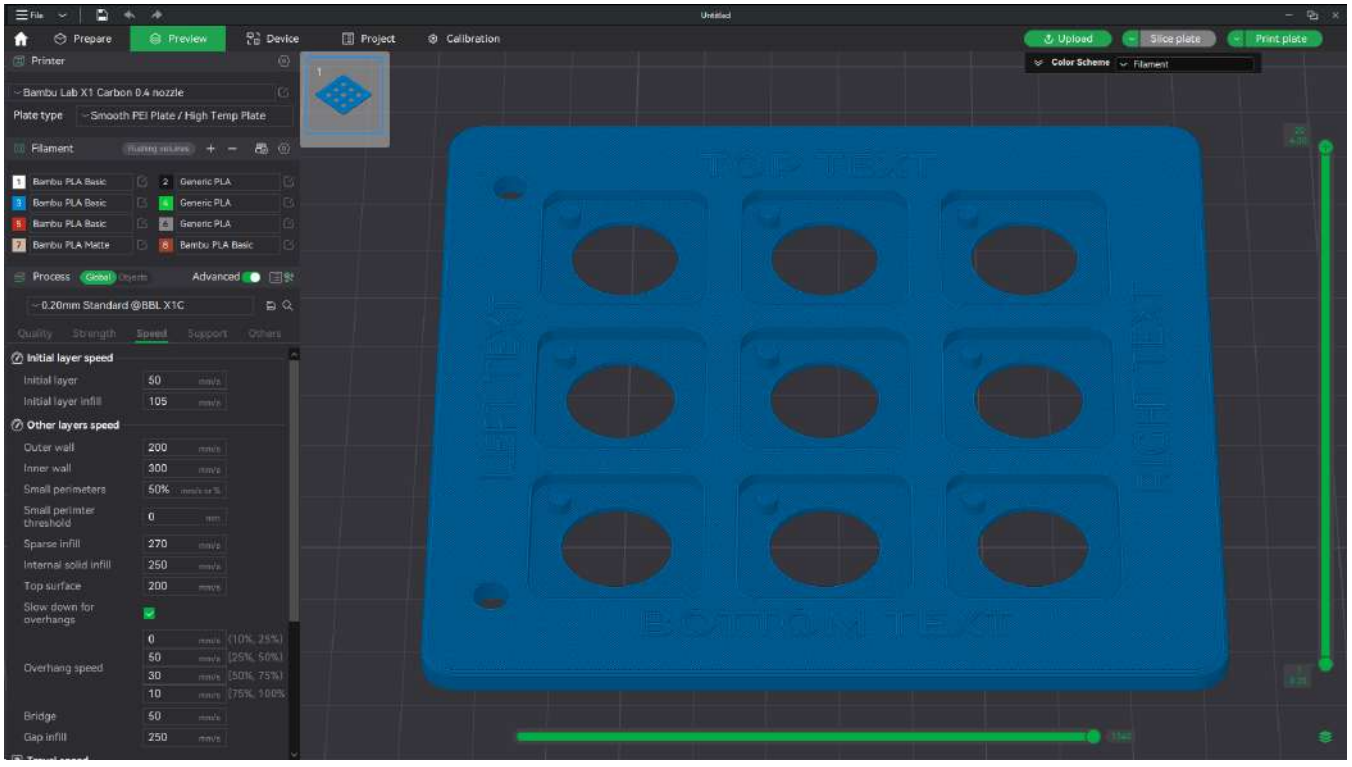
Please read the *Monochromatic holders* section for basic information about how to manage the whole process before continuing.

A limitation of the monochromatic printer can be partially bypassed, printing the texts with another color by using some clever tricks, here's how to do it.



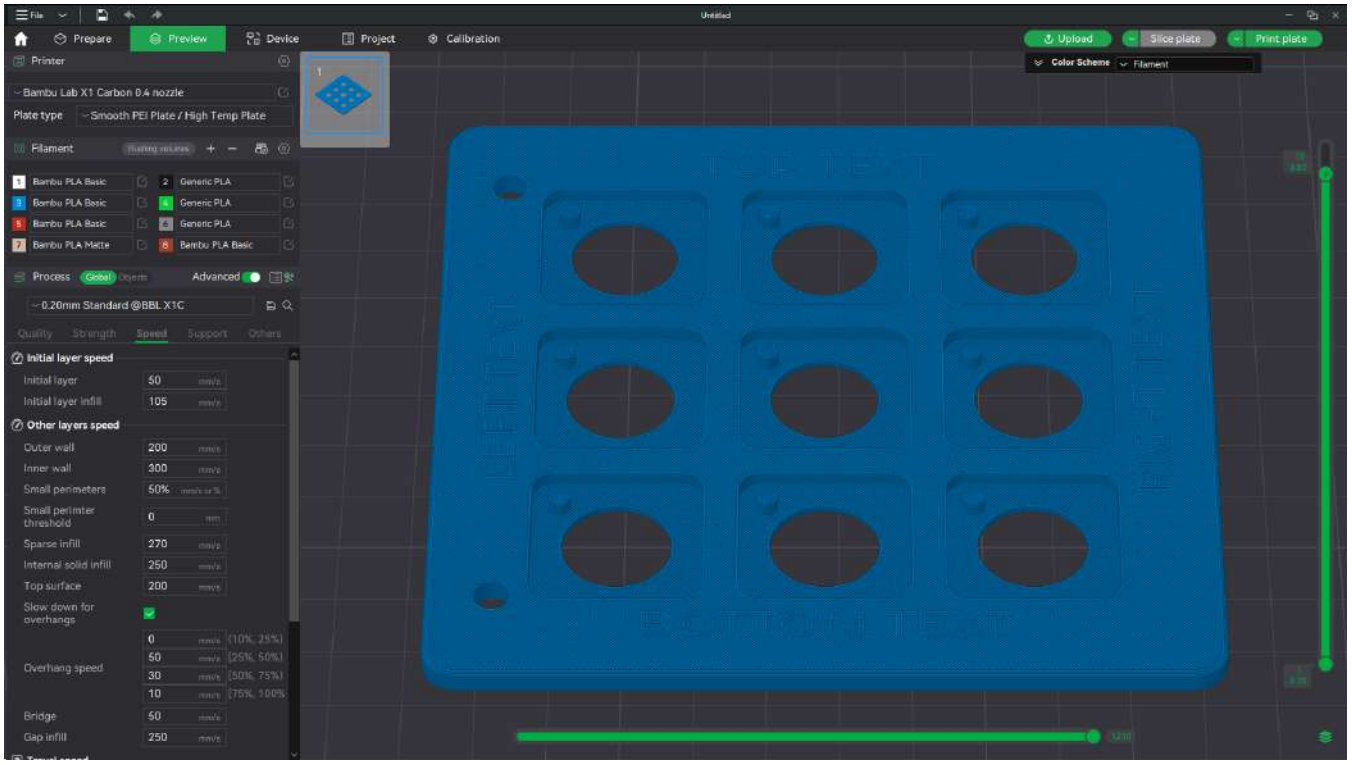
First of all make sure you designed your holder with all the texts as extruded, chiseled texts will not be colored.

Export it as STL and import into Bambu Studio following the same instructions for monochromatic printing until you reach the step where you slice it.

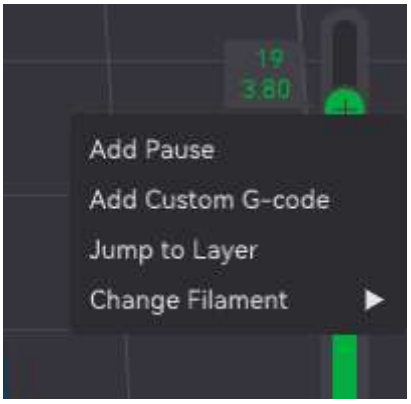


Once you sliced the plate, use drag the **+** icon of the vertical scrollbar down.

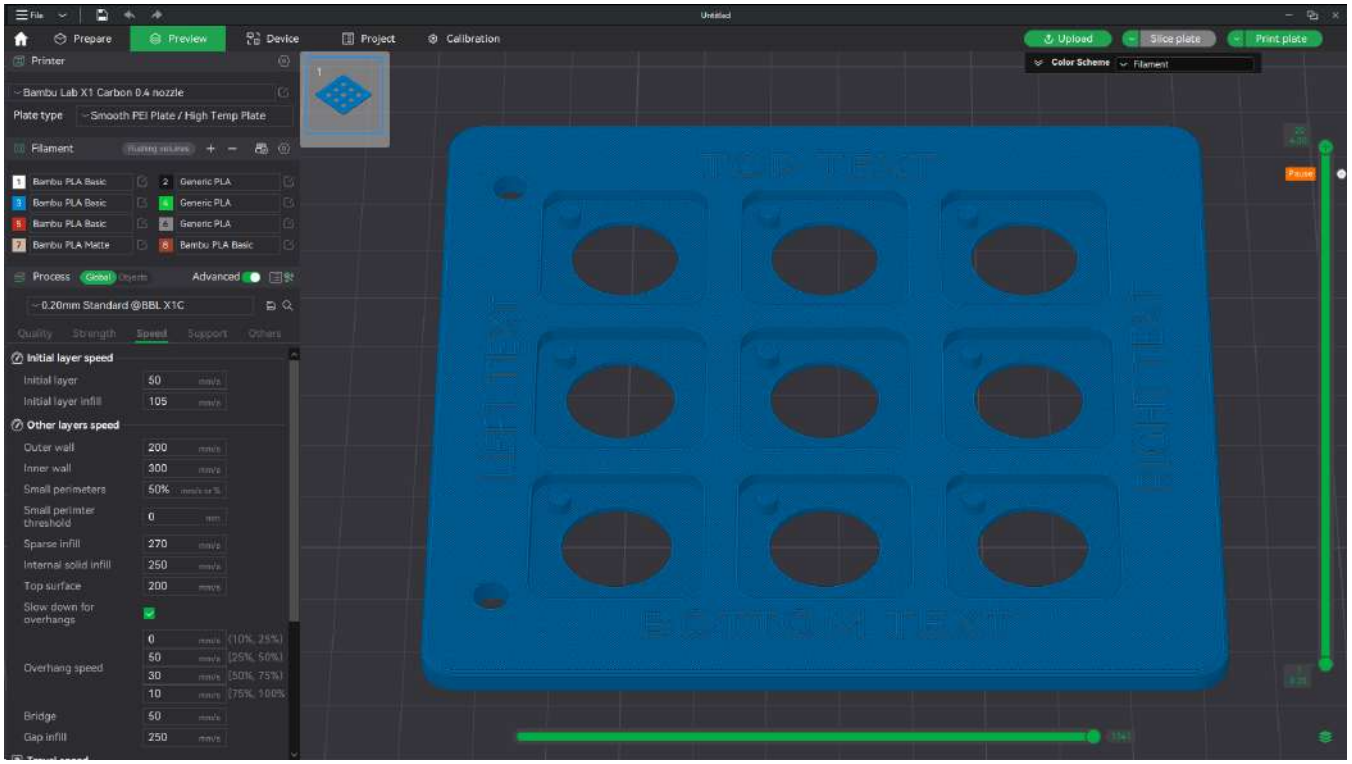
As you scroll top layers will disappear from view, continue scrolling down until only one layer with texts is visible.



Now, right click on the **+** icon and a menu will pop out.

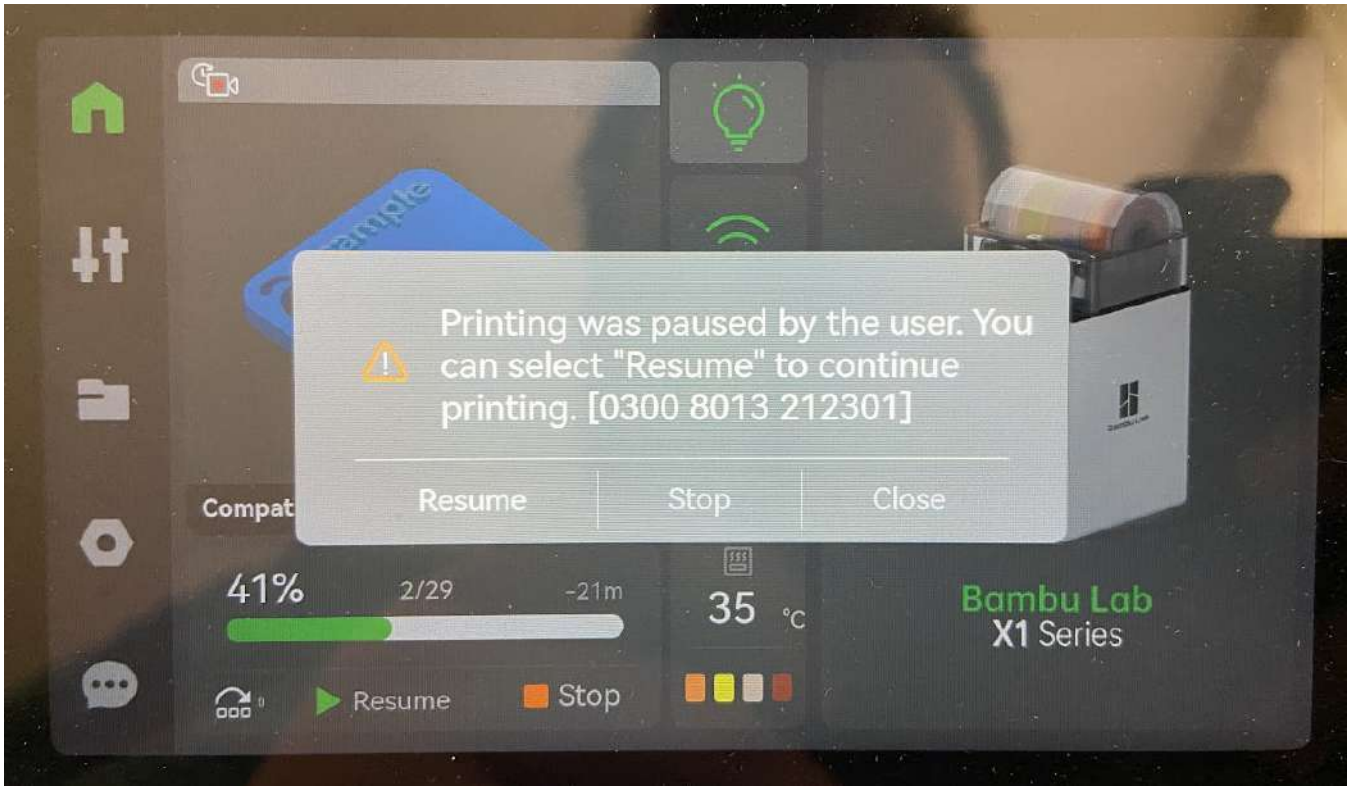


Select the **Add Pause** item, the you will have to slice the plate again.

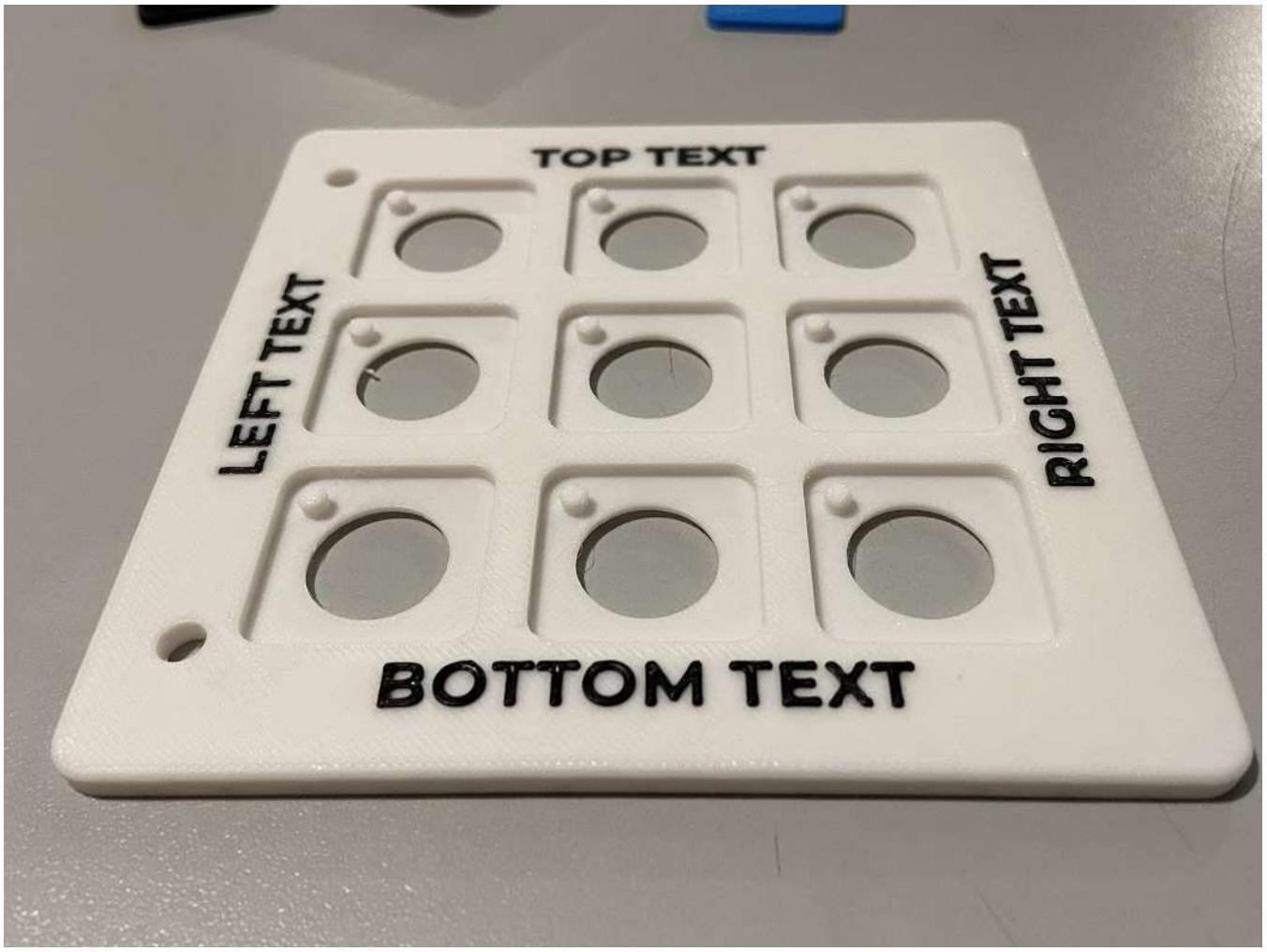


Once you sliced it again, the scrollbar will show a “Pause” label where you set it and the layer will be drawn with another color.

Now print this, when the printer is starting to print that layer, it will pause and the print head will be moved away from the piece and on the screen you will see a message.



Change the filament in the printer, then press **Resume** to continue printing using the new color.

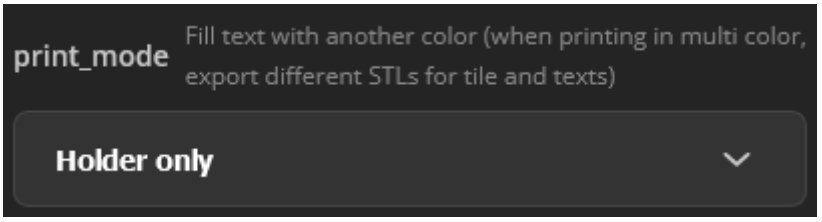


In my opinion, results are beautiful.

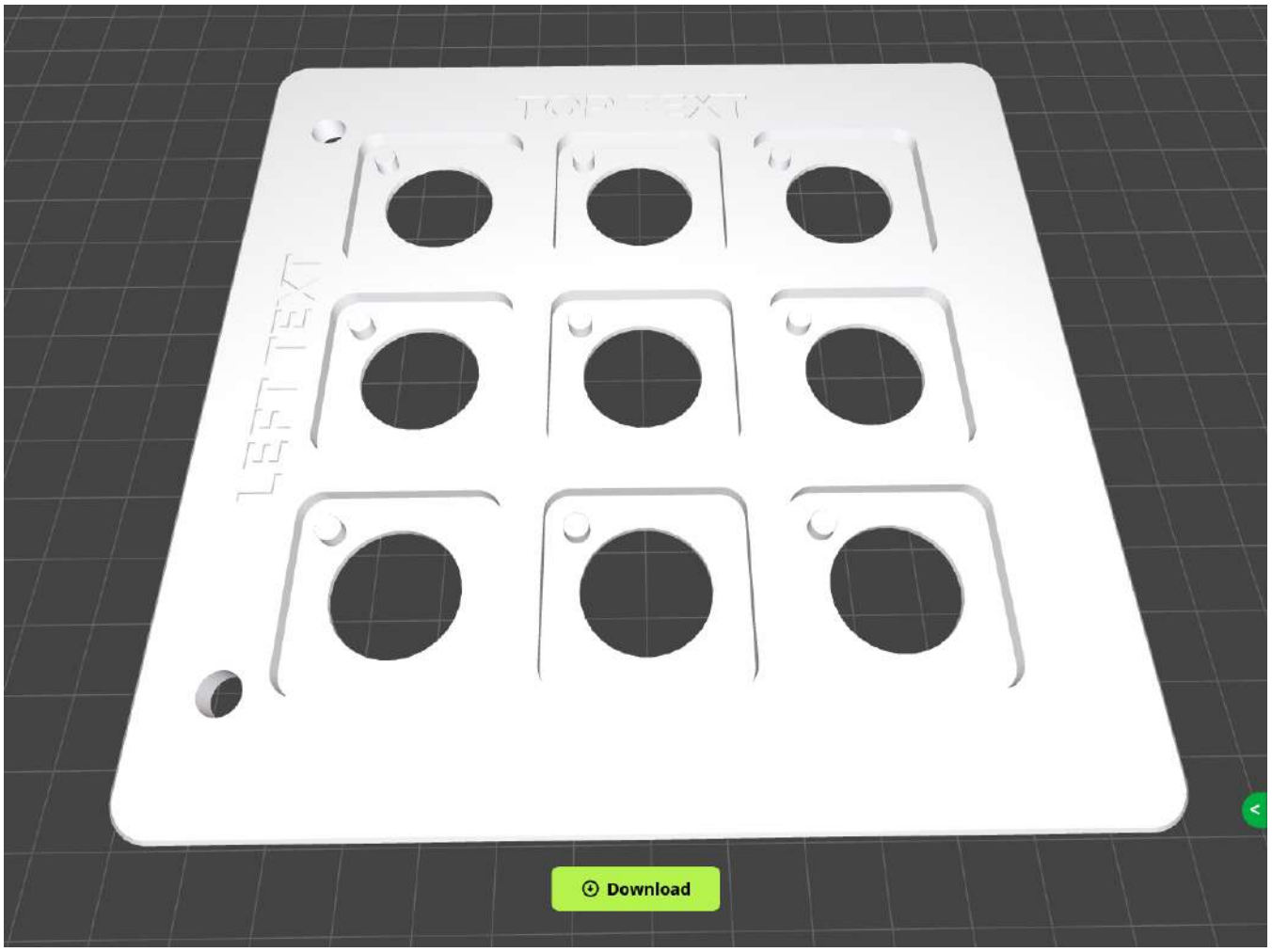
Multi color holders on multi color printers

Please read the *Monochromatic holders* section for basic information about how to manage the whole process before continuing.

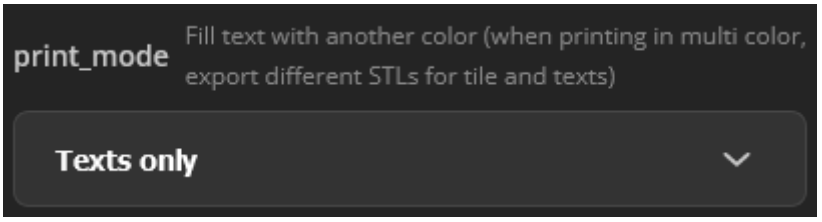
The most easy way to print these, yet the most satisfying way to customize this.



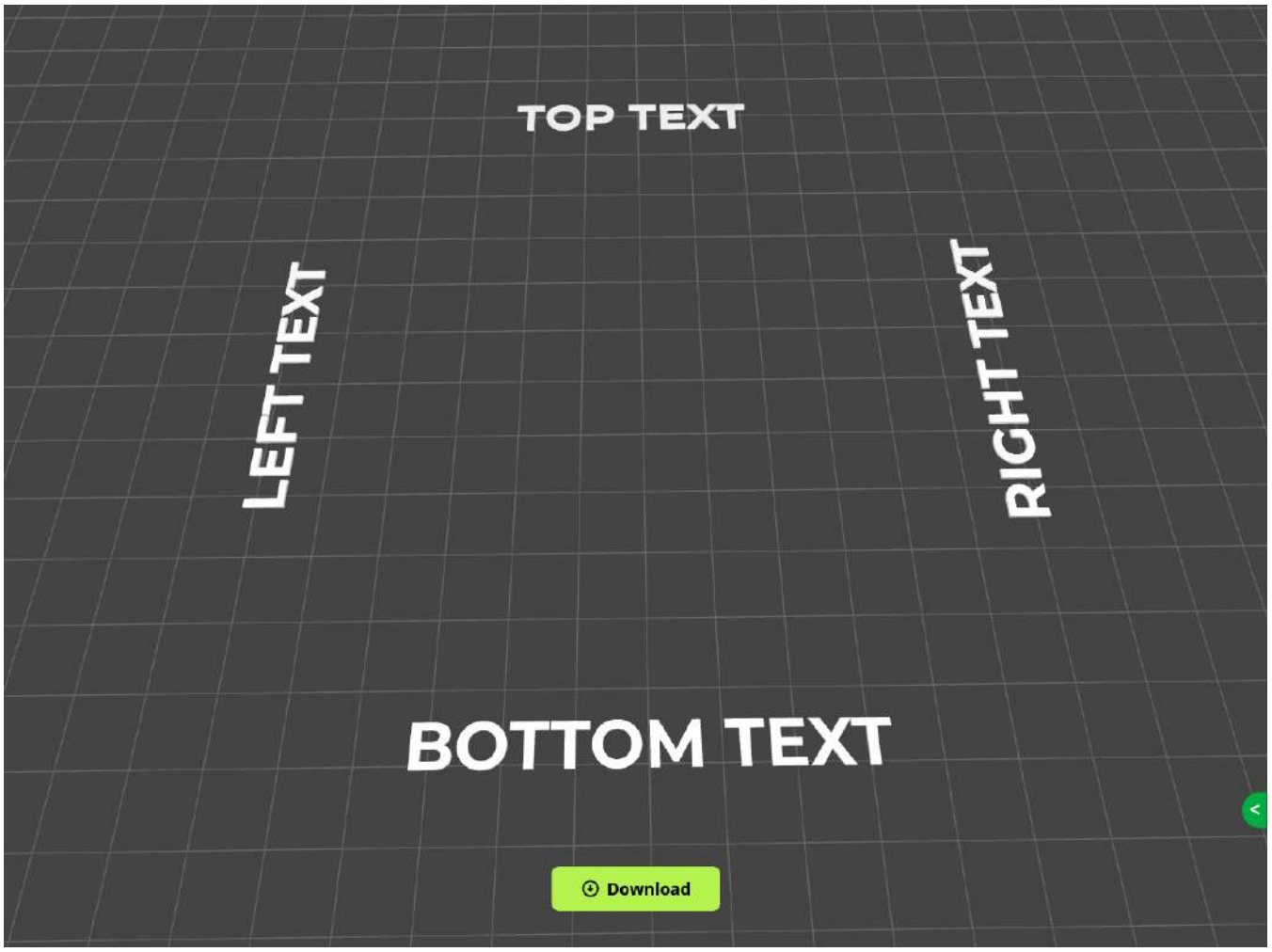
Once you draw your holder, be sure to select the **Holder only** option for the **print_mode** parameter in the **3D printing settings** tab and click on **Generate**.



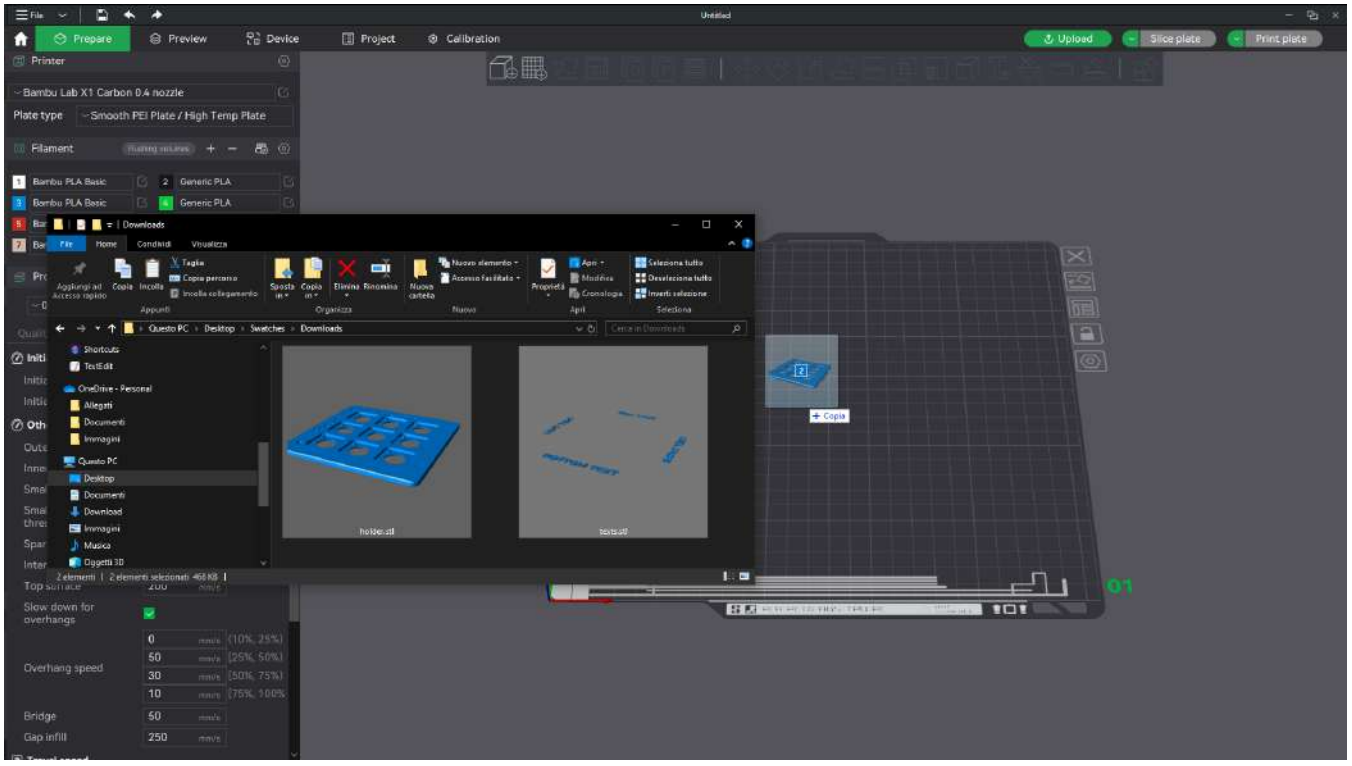
Click the **Download** button to export to a STL file, let's say holder.stl.



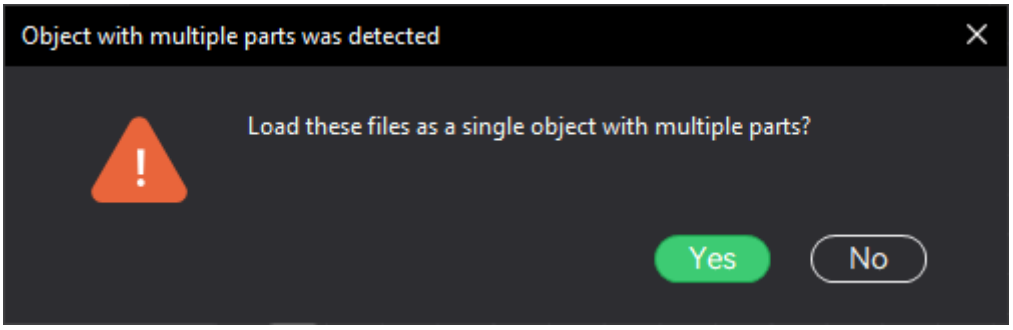
Change the **print_mode** parameter to **Texts only** and click **Generate** button again.



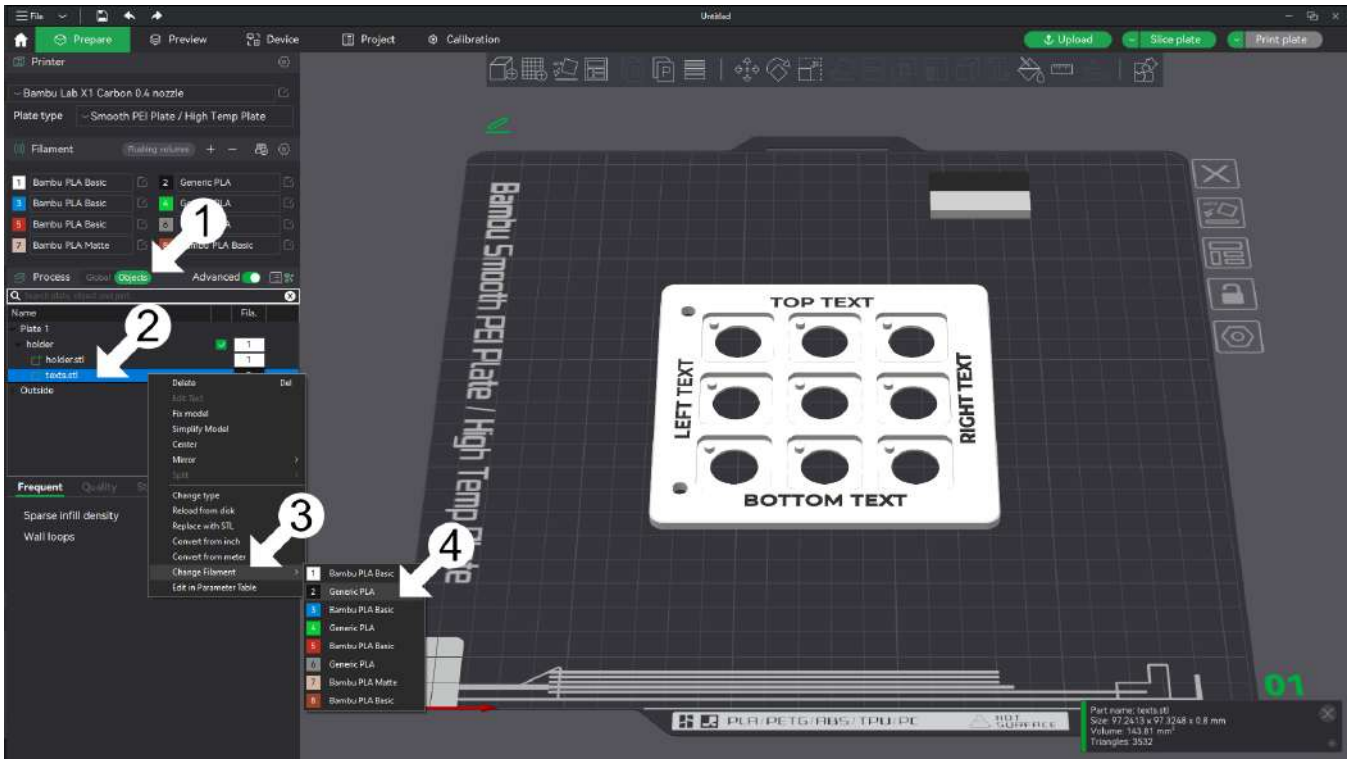
Click **Download** again and export this to a STL file and call it texts.stl.



Open a new project in Bambu Studio and drag both file at the same time on it.



When asked if these has to be considered two parts of a single object, select **Yes**.



Now follow these steps:

1. Switch to the **Objects** tab by left clicking on the Global/Objects switch;
2. Right click on the texts.stl line in the objects list;
3. Move with the mouse over the **Change filament** menu item;
4. From the sub menu select the filament you want.

This procedure has been designed to work with both chiseled and extruded modes.

Version history

Date	Description
2024-06-08	First public release

Thanks

Thanks to @Stephanos for the complete list of fonts and styles supported by MakerWorld he gave me access with his script **Parametric Model Maker ALL TEXT FONTS TEMPLATE** you can find here.