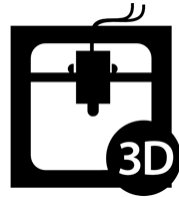# Bambu 3D Printer Overview

The 3D printing process involves building up layer upon layer of molten plastic to create an object. As each layer sets, the next layer is printed on top and the object is built up.

To make a 3D print, a digital file is needed that tells the 3D printer where to print the material. Tualatin Library Makerspace primarily uses .stl files but other file types are supported.

3D printers can print these layers at different thicknesses, known as layer height. A bit like pixels on a screen, more layers in a print will give a higher 'resolution'. This will give a better-looking result, but take longer to print.

The Makerspace has a Bambu Lab X1-Carbon 3D Printer with AMS. The print bed size is 256×256×256 mm (10"×10"×10").

Materials

The Tualatin Public Library Makerspace uses PLA 1.75mm filament for this 3D printer. Several colors will be in stock. No outside filament may be used in our 3D printers and only Makerspace staff may change the filament.

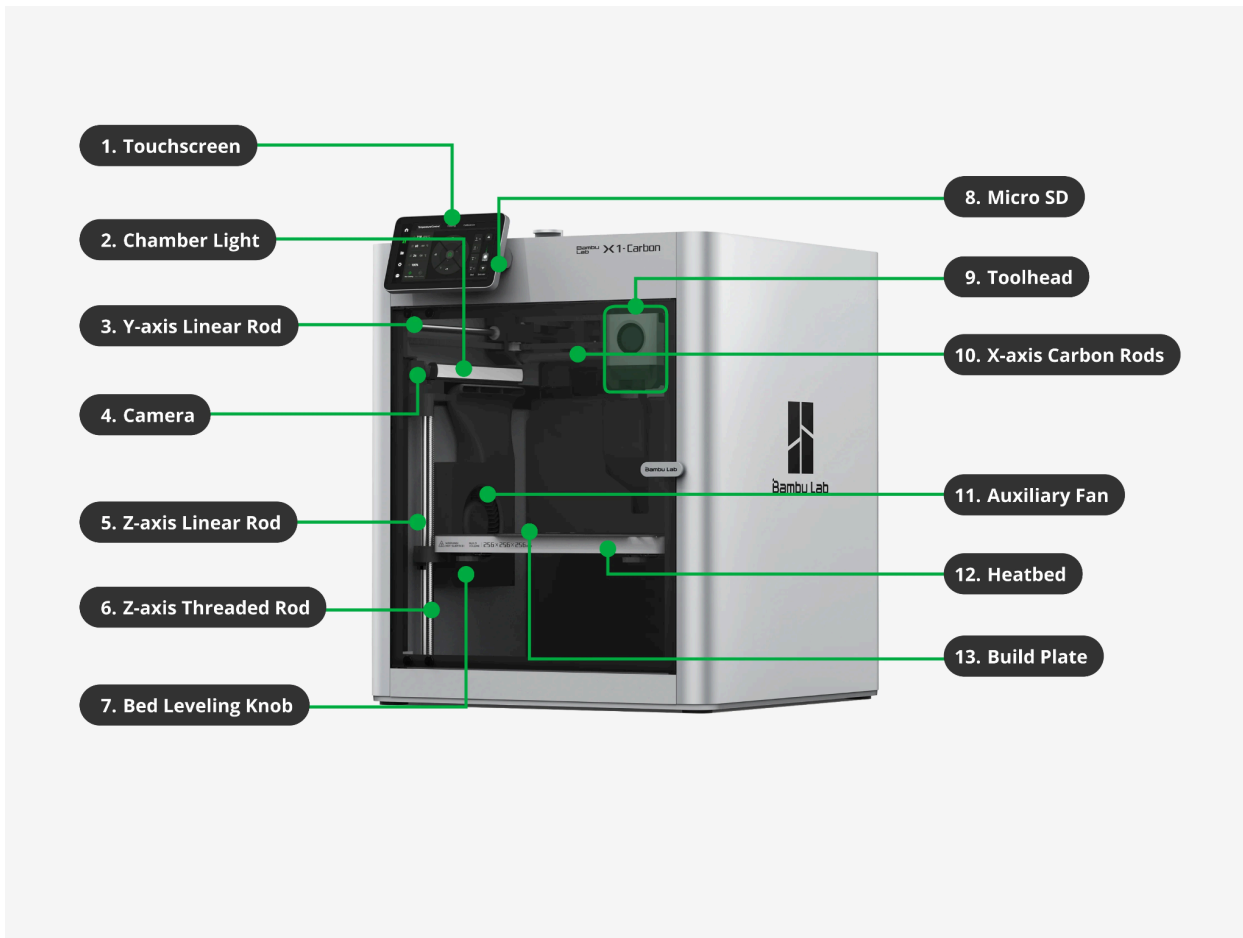## Important Terms

IMPORTANT TERMS:

PLA Filament: The printer's 'ink'.

Slicing: The process of preparing your 3D model to print.

Filament Support: Extra filament to hold up or support parts of the print, especially overhanging parts.

Brim: Holds down the edges of your print to prevent warping. Brim uses less filament than raft.

Printer Parts

1. Touchscreen
2. Chamber Light
3. Y-axis Linear Rod
4. Camera
5. Z-axis Linear Rod
6. Z-axis Threaded Rod
7. Bed Leveling Knob
8. Micro SD
9. Toolhead
10. X-axis Carbon Rods
11. Auxiliary Fan
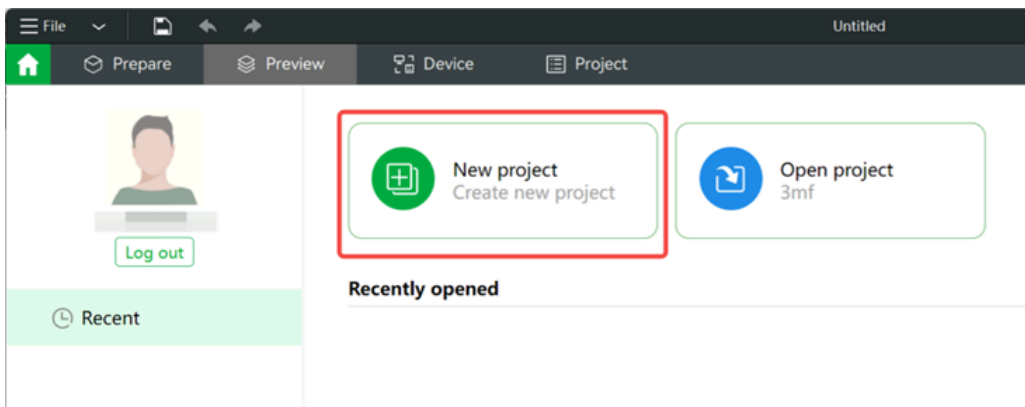12. Heatbed
13. Build Plate

Every print starts with a slicing program.

Open Bambu Studio.

Create a new project
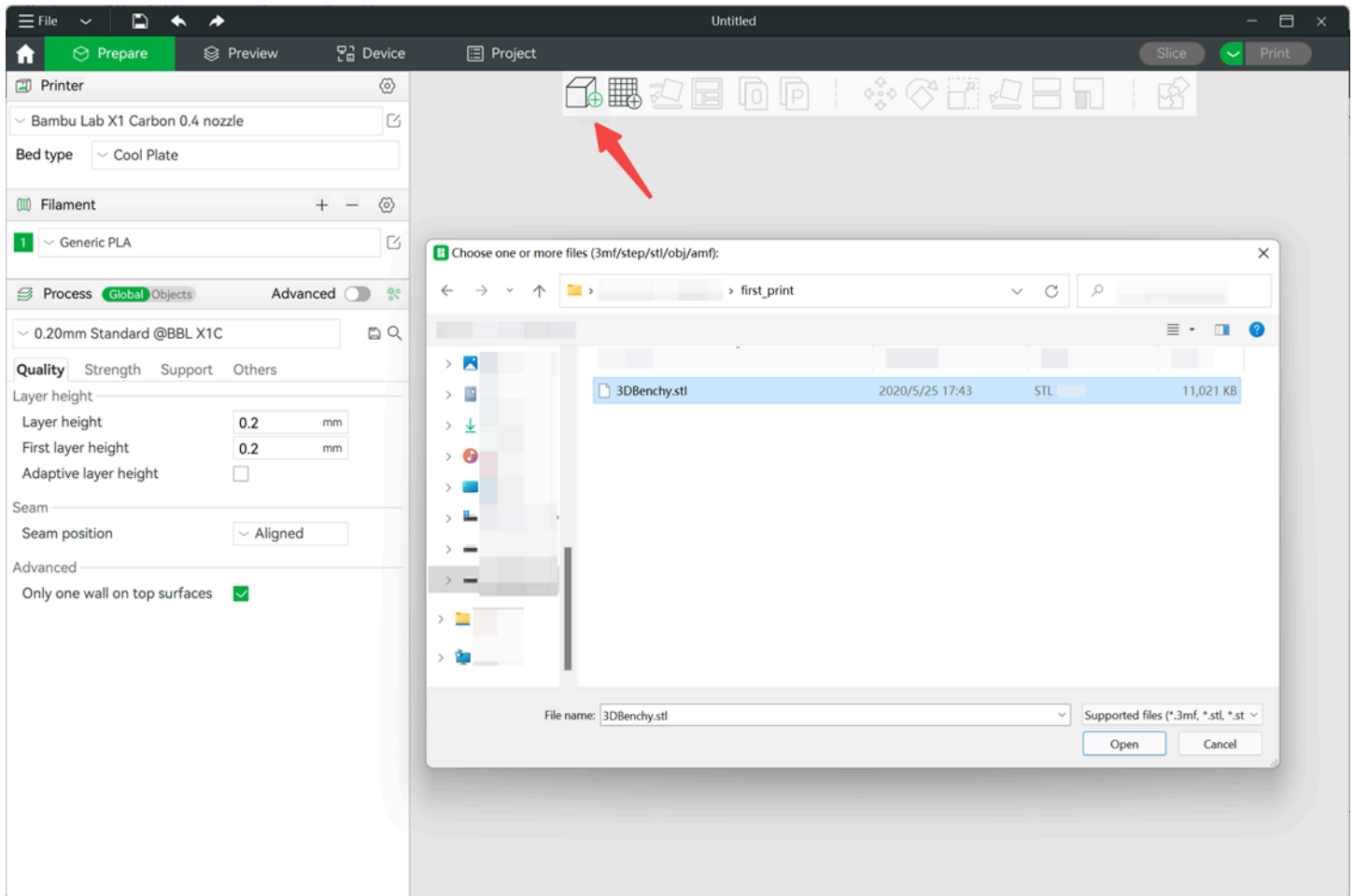
To start slicing a model, click on **New Project**.

Add a model

On the top toolbar of the preview pane, click on the first icon to import a model. You can also drag and drop model files from a folder into Studio. Supported files include .3mf .stl .stp .step .amf .obj.

Move

To move your model around the plate, click on your model then the move icon on the toolbar.

Rotate

To rotate your model, click on your model then the rotate icon on the toolbar. You can rotate around the X, Y or Z axis.

Scale

To scale your model, click on your model then the scale icon on the toolbar. You can either type the exact dimensions in the pop up menu or grab the handles that appear on your model and move them.

Flatten

To flatten your model onto the plate, click on your model then the flatten icon on the toolbar. This is useful if you have rotated your model and it is floating in the air.

Select Printer/Filament/Process presets

To start slicing the model, you need to choose the presets for the machine you are using, for the filament you will print with and also the settings you want to print the model in.

1.   Select the printer you are using from the drop-down list under **Printer**. This will also include the nozzle size you will be printing with

2.   Under the **Filament** section, select the type of filament you intend to use from the drop-down list

3.   Choose the layer height you want your model to be printed in from the **Process** drop-down menu. **Always remember that the smaller the layer height, the longer the print will take. For the majority of prints, a 0.20mm layer height is the norm.**
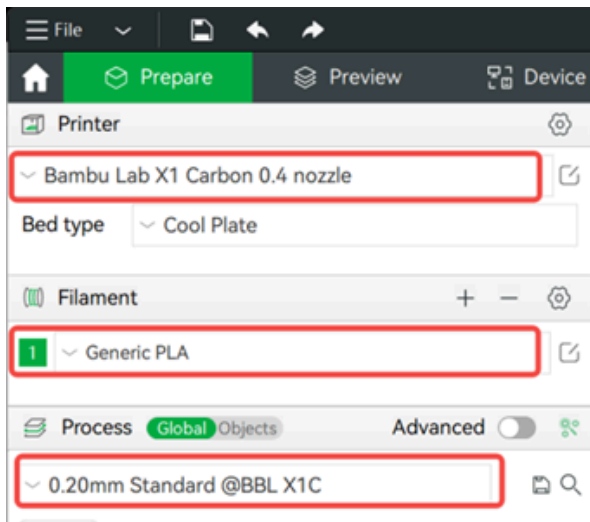
Slice plate

Once done, click on the **Slice** button located on the top hand right of Bambu Studio. This will generate a .3mf file which is the file format used for the printer to be able to print the model.
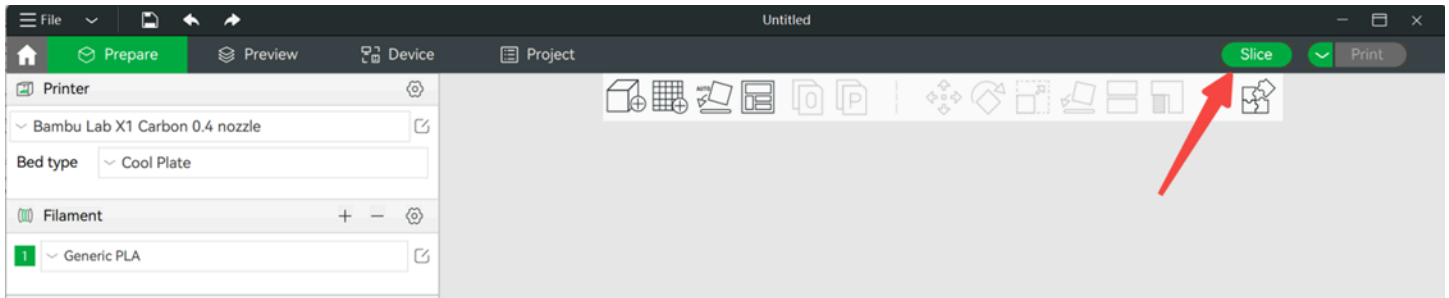

Once done, the slicer will take you to the Preview pane which will show you what the sliced model looks after processing the .3mf file. The histogram on the right hand side will also show you information on the printing times for each parameter of the print.
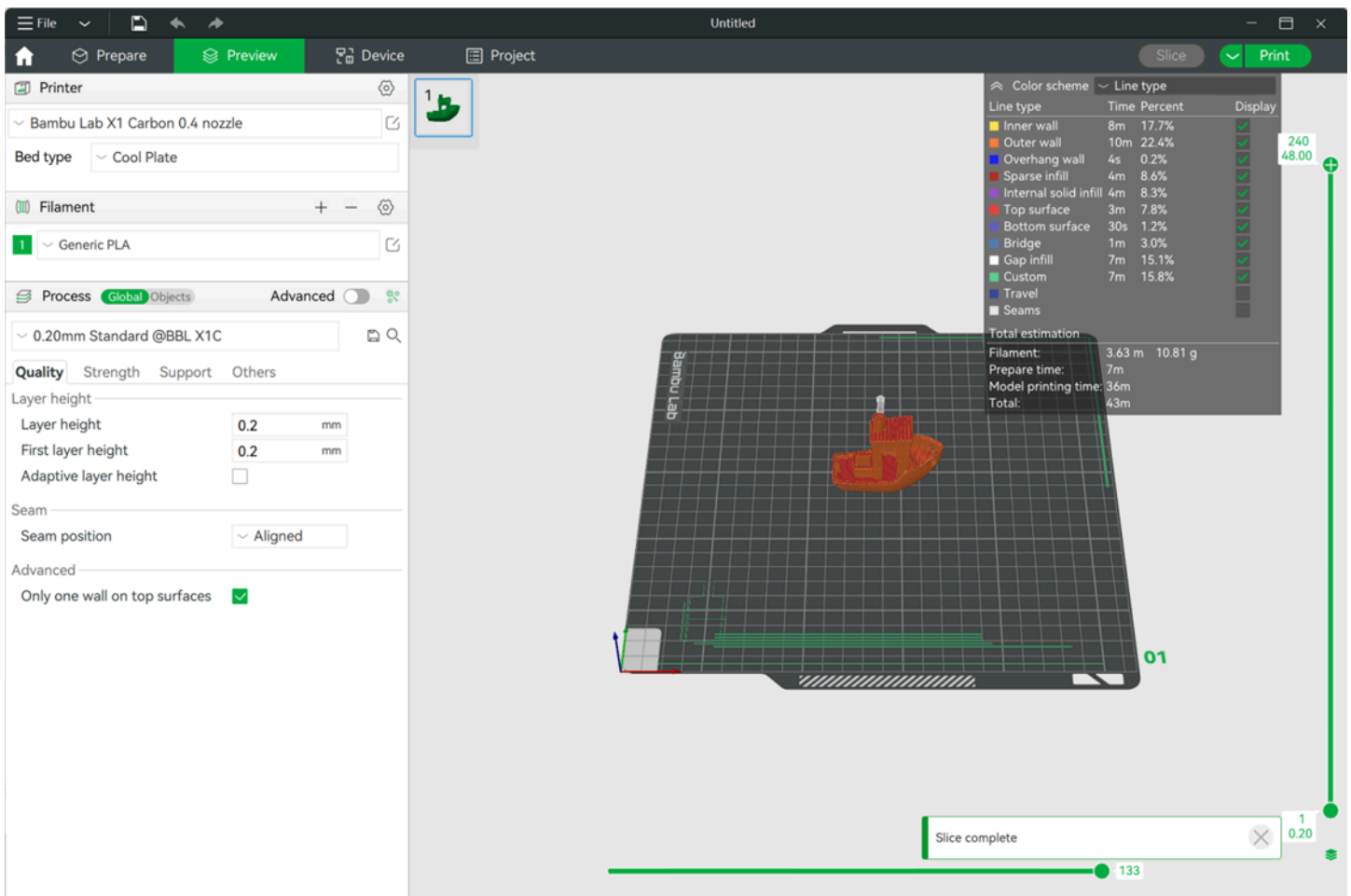
Send print job

 Print wirelessly

To send a print to the Makerspace Bambu printer, you must use one of the provided laptops. Select print when you are ready to send your print to the printer. The Print button is in green in the upper right-hand corner.
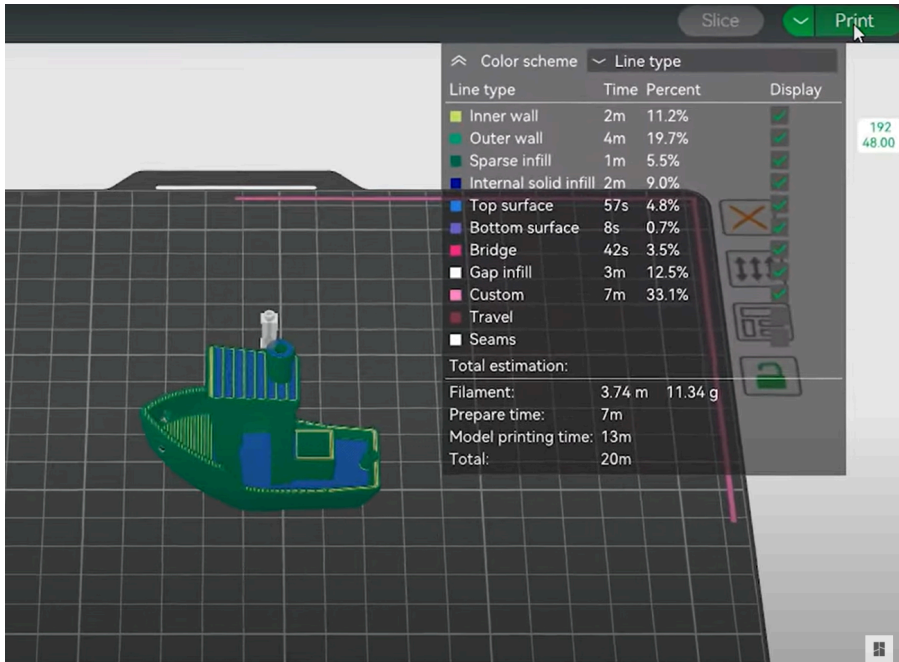
A pop up will appear that shows the Makerspace printer and some check boxes. Simply click on the Send button. This will send it directly to the printer and start the print. Once the print is sent you can close the software.
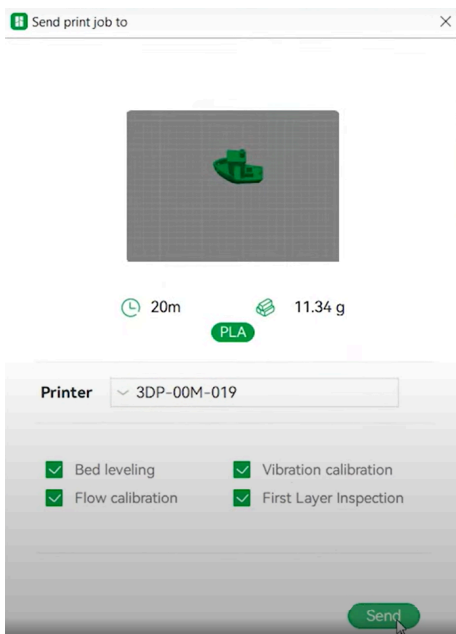
Multi-color printing

Welcome to the colorful world! Multi-Color printing is one of the most amazing features of Bambu Studio. After importing a model, you can complete a colorful model in just several steps:

1.   Add filaments according to the colors that you want. If you want to use support filament for better overhang quality, please also add it.

2.   Colorize the model.

3.   Slicing & Print.

Manage Filaments in a Project

Filaments in a project are all listed in the Filament block of the left sidebar.
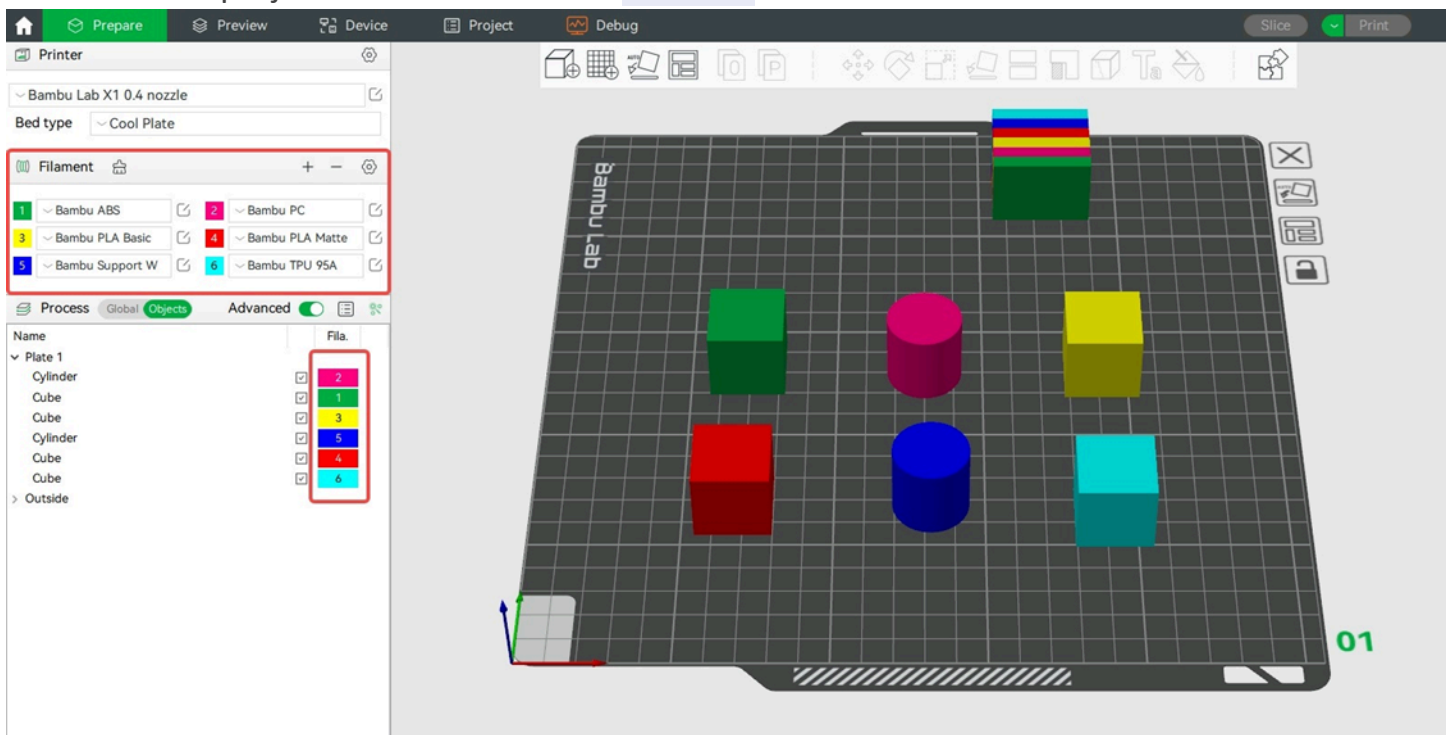
In Filament block, you can complete all filament management tasks:
· **Add a filament**
Click the ➕ button to add a new filament to the project. The newly added filament will be appended to filament list.

· **Delete a filament**
Click the ➖ button to remove the last (with the largest index).

· **Set colors/types of filaments**
Set the filament type and color for each filament. When a printer is connected, you may quickly copy the color and type from an AMS slot.
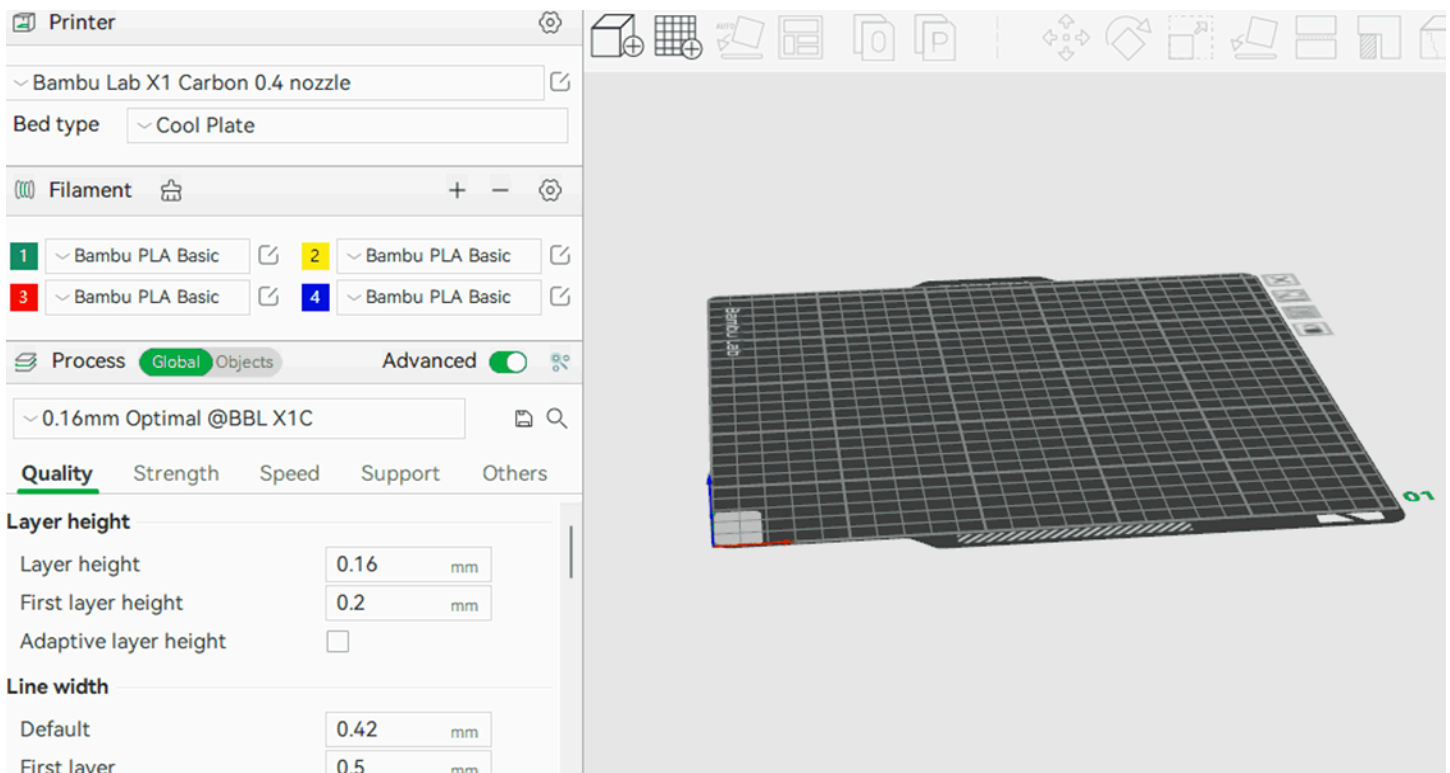
The filament list is also saved in the 3mf project file and will be restored when loading the 3mf file.
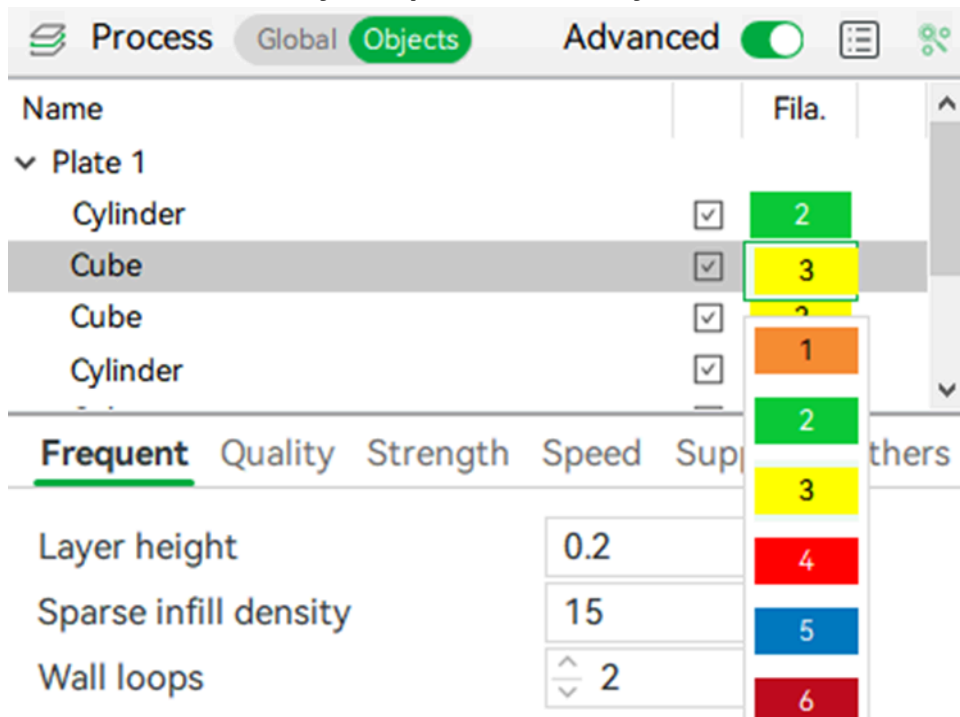
Colorize Your Model
0Bambu Studio provides versatile colorizing tools for various types of models.
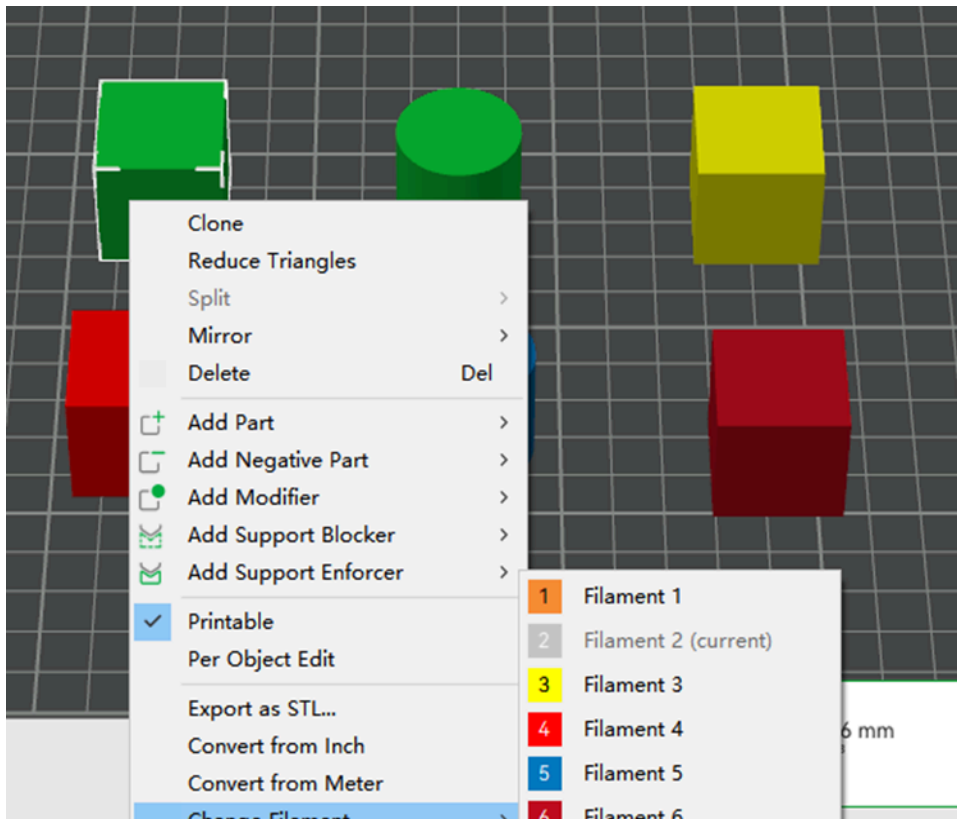
Set filament for object/part
You can bind a filament to an object or part in multiple ways:
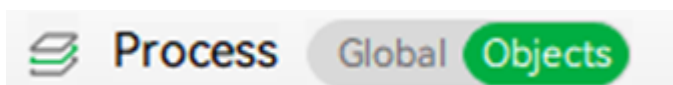
Select filament for objects/parts in the object list on the left sidebar OR

Right click target object/part and select filament from the context menu
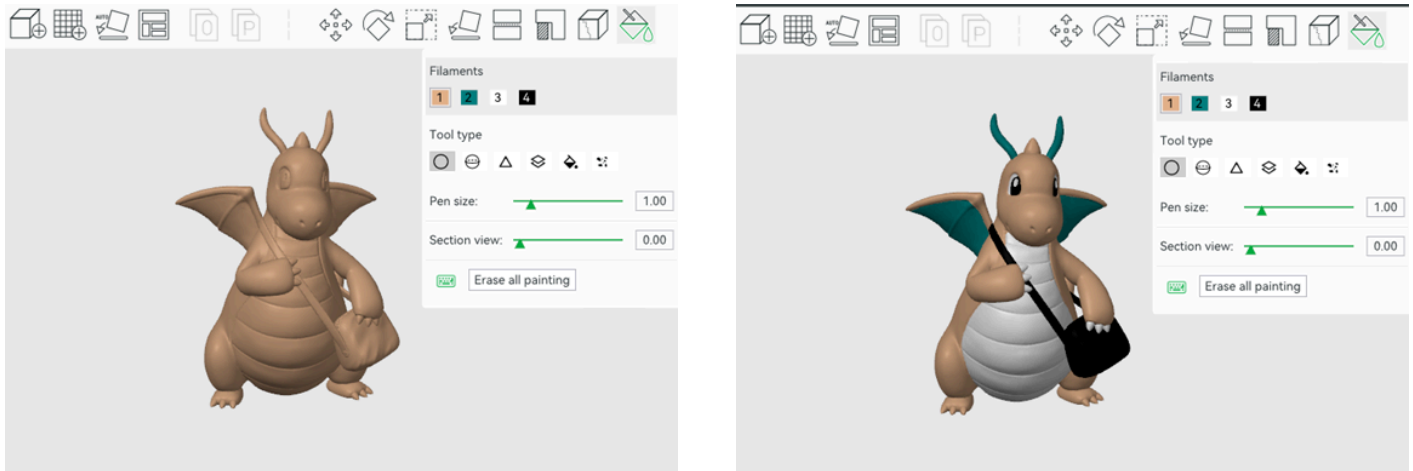

Tips: If you can't find the object list, you need to switch to Global/Object mode here

Paint on an Object

Bambu Studio provides a powerful Color Painting tool. This tool allows you to paint almost anything in different colors on the selected object.

The left image shows the original model and the right image shows the painted model. For more information on how to paint your model, visit the Bambu page about the Color Painting tool.

Finishing the print

When the print has finished, the bed will move back to its original position.

Wait until the bed has returned to its original position before removing the print by popping it off of the bed. If it is stubborn you can pull the top of the bed off (it is magnetic) and lightly bend the plate until it pops off. Be sure to reset the plate back onto the machine afterwards.

Clean up your print area and you're good to go.

Overviews and How-Tos
Bambu Studio Video Channel - You do not have to watch these for certification, but there is some great information here.
Painting PLA models

Free 3D Print Files

Thingiverse   NASA
PrusaPrinters   Dremel Lesson Plans
YouMagine   Instructables
NIH 3D Print Exchange   British Geological Survey
Printables   Morphosource
GrabCAD Library   Smithsonian

Free CAD program

Tinkercad   SketchUp Free
Vectary   Wings 3D
Meshmixer   Leopoly
SculptGL   BlocksCAD
ZBrushCoreMini   Blender

Safety

User Manual - Safety Guidelines

Legal Concerns
The Library's 3D printers may only be used for lawful purposes. Do not print items that that are:
>   Prohibited by law.
>   Unsafe, harmful, or dangerous
>   Obscene
>   In violation of another's intellectual property rights (trademark, copyright or patent).

The Library reserves the right to refuse any 3D print request. The Library cannot guarantee model quality, stability, confidentiality, or awesomeness.

Certification
Certification is required before independent use of the machine. Certification entails reading this document and answering a few questions. You must be 15 or older to get certified.

Once you have read the information and answered the questions, a demonstration of the material to a staff member is required by doing a basic print following all of the correct steps.