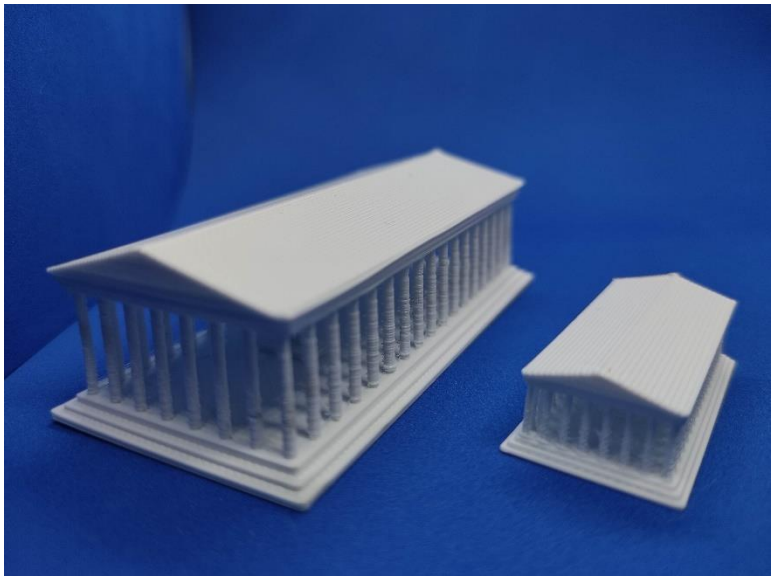
PARTHENON´S PRINTING PARAMETERS



Once we have already finished the Parthenon´s shaping we are going to get ready to print it.

Problems we can find.

The main problem in this 3D model is related to ¨bridging¨, the process of printing the material in the air.

In this structure we can see most of the roof parts has no support, so it could be a problem when printing the building.

How can we solve this problem?

In the slicer software we usually find the ¨add supports¨ option.

They are structures created with the same materials that can increase the successful in the printing.

This brackets should only be used when there is no way to do it, because it costs us a lot of time when printing and post processing, besides the quality will be reduced because of the brackets in contact with the structure.

Adding brackets in our structure is impossible due to the lack of space inside the building when removing them without damaging the printing.

To get a nice ¨bridging¨ we are going to reduce the speed printing to 40 mm/s and the extruder temperature to 205º.

Another problem could be the ¨stringing¨

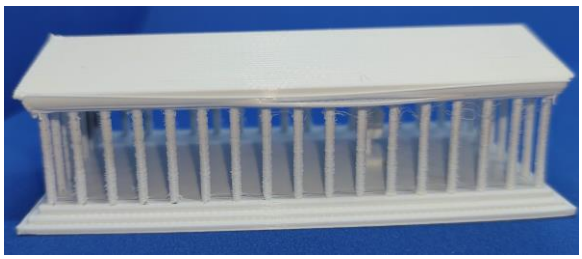
The stringing is one of the most commons problems in 3D printing, it appears when the printhead moves between the different printing points, in that movement it extrudes some melted plastic that solidifies and creates a strand.

This problem appears when we print the Parthenon's pillars.

The strand´s retraction, the retraction´s speed, the printing suitable temperature and the extruder´s movement speed are the key values to avoid that strands.

To adjust this values, we have to take into account the type of strand, its printing temperature, and the kind of our printer´s extruder, so universal parameters does not exists in all the printers.

The bridging is the reason why our designs are impossible to print, and the stringing is an aesthetic problem we can fix, depending on the model, with a nice post processing.



Stringing and bridging example in Parthenon 3D printing, retraction distance 6.5 mm and retraction speed 20mm/s.

Printing examples.

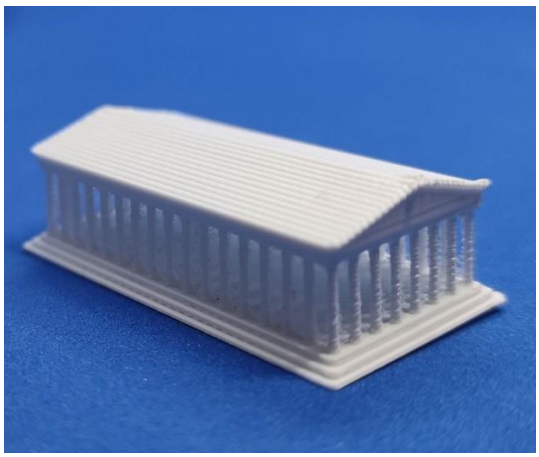
Printing created with PLA

Scaled→ 25%

Printing size→ X: 20mm Y: 40mm Z: 12'5mm

Printing speed→ 40 mm/s

Expected time → 55 Minutes.



Scaled→ 50%

Printing size→ X: 40mm Y: 80mm Z: 25mm

Printing speed→ 30 mm/s

Expected time→ 3 h 30 min.