Assign4.2-Slicing an STL File for 3d-Printing

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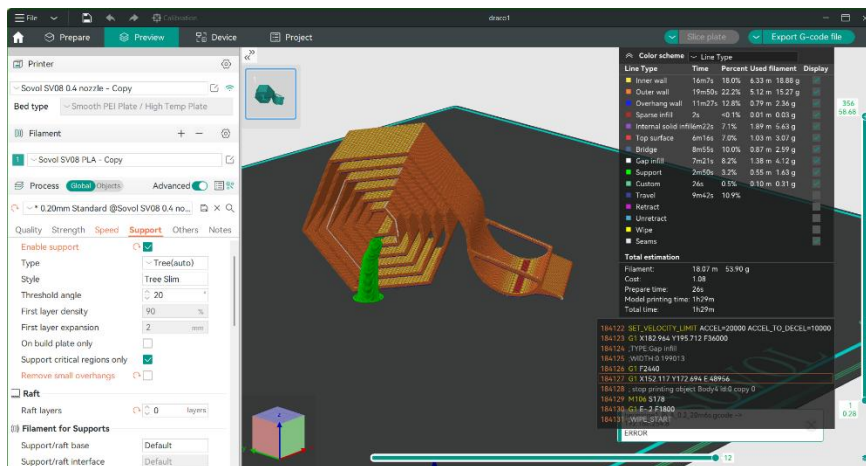
University of Advancing Technology

RBT205 – Mechanisms and Materials

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For this project, I decided to tap into my final for this class and slice an important component from my design. This piece is the torsion spring in which will be the centerpiece. This spring needs to be able to launch a dice, but not too far. We don't want to hit anyone in the eye. I also would like for it to last a while without breaking.

In the example below, I decided to try slicing at the angle I would place a die at. On my machine, I can get better details if the numbers are not directly on the build plate so tree supports are my best option. In this case however, I would not recommend printing in this orientation. There is not much contact with the base plate and this spring will essentially jiggle as it is being printed, seriously effecting our quality and strength.

For the best quality and strength for our torsion spring, we will slice it on it's side. This gives a better footprint to contact the build-plate with and will now move the layer lines down the length of the spring, resulting in a much stronger part. This will also prevent the spring from jiggling with the motions of the printer. There is still a small bridging section that my printer can handle but I would rather go ahead and support it. As it is the only component of my part that needs support, I opted to paint in a manual support just to make sure that it's the only place that orca-slicer tries to generate them. I'm actually very happy with this design and it works even better than expected.

draco1

File ⌄ | Calibration

🏠 | Prepare | Preview | Device | Project

Slice plate | Export G-code file

Printer
Sovol SV08 0.4 nozzle - Copy
Bed type ⌄ Smooth PEI Plate / High Temp Plate

Filament + −
1 ⌄ Sovol SV08 PLA - Copy

Process | Global Objects | Advanced ⬤
⌄ * 0.20mm Standard @Sovol SV08 0.4 no...

Quality | Strength | Speed | Support | Others | Notes

Support
Enable support ✓
Type ⌄ Tree(manual)
Style Tree Slim
Threshold angle 20
First layer density 90 %
First layer expansion 2 mm
On build plate only ☐
Remove small overhangs ☐

Raft
Raft layers 0 layers

Filament for Supports
Support/raft base Default
Support/raft interface Default

Color scheme ⌄ Line Type

Line Type	Time	Percent	Used filament	Display
Inner wall	24m23s	38.8%	8.96 m 26.72 g	
Outer wall	29m52s	47.6%	8.38 m 24.99 g	
Overhang wall2s	<0.1%	0.00 m 0.01 g	
Gap infill	1m7s	1.8%	0.07 m 0.21 g	
Support	1m39s	2.6%	0.31 m 0.94 g	
Custom	26s	0.7%	0.10 m 0.31 g	
Travel	5m17s	8.4%		
Retract				
Unretract				
Wipe				
Seams				

Total estimation
Filament: 17.63 m 53.18 g
Cost: 1.06
Prepare time: 26s
Model printing time: 1h2m
Total time: 1h3m

```
160399  G1 X217.673 Y148.302 Z40.68
160400  G1 Z40.08
160401  G1 E.5 F1800
160402  ;WIDTH:0.602931
160403  G1 F11249.785
160404  G1 X218.621 Y147.732 E.0505
160405  G1 X218.737 Y147.674 E.0059
160406  G1 X219.207 Y147.513 E.02267
160407  ; stop printing object Body4 id 0 copy 0
160408  G1 E-.22275 F1800
160409  ;WIPE_START
160410  G1 F11249.785
160411  G1 X218.737 Y147.674 E-.07949
160412  G1 X218.621 Y147.732 E-.02069
```

315
40.08

1
0.28