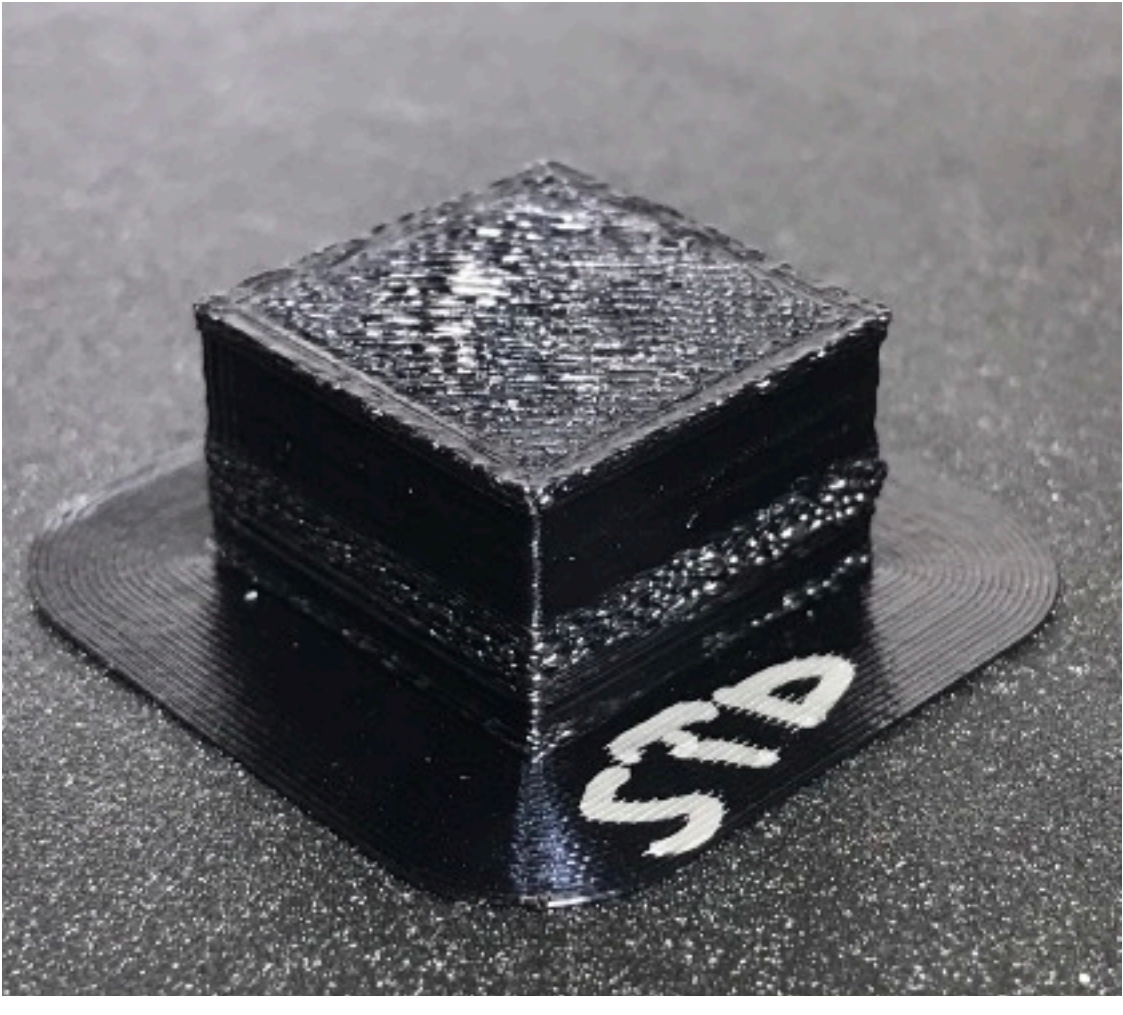
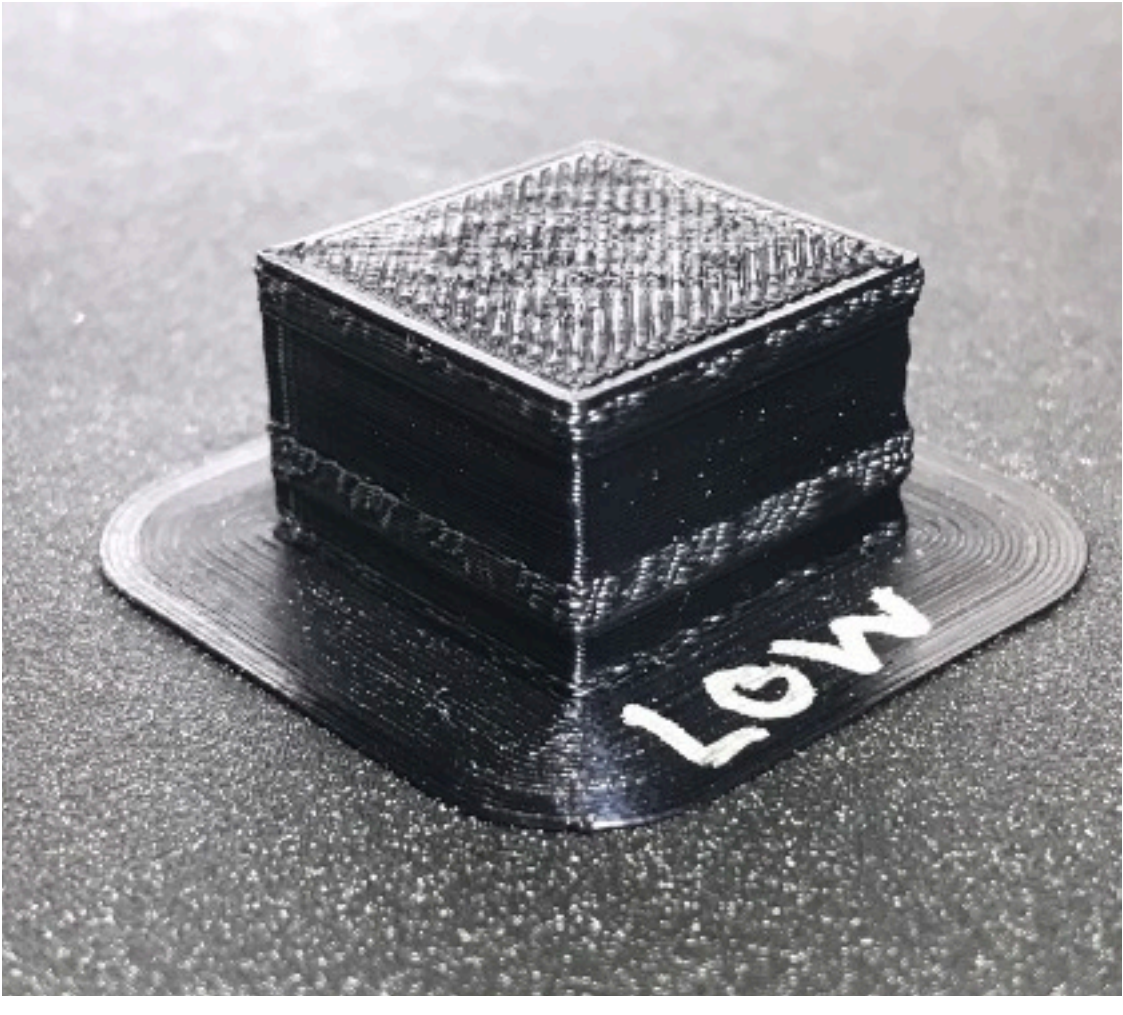
Test Prints


SAP


LOW

Failed 2cm 26min print time
13.37mm H x 20.50mm W x 20.20mm L

Failed 2cm 26min print time
14.78mm H x 20.91mm W x 20.65mm L

Experiments

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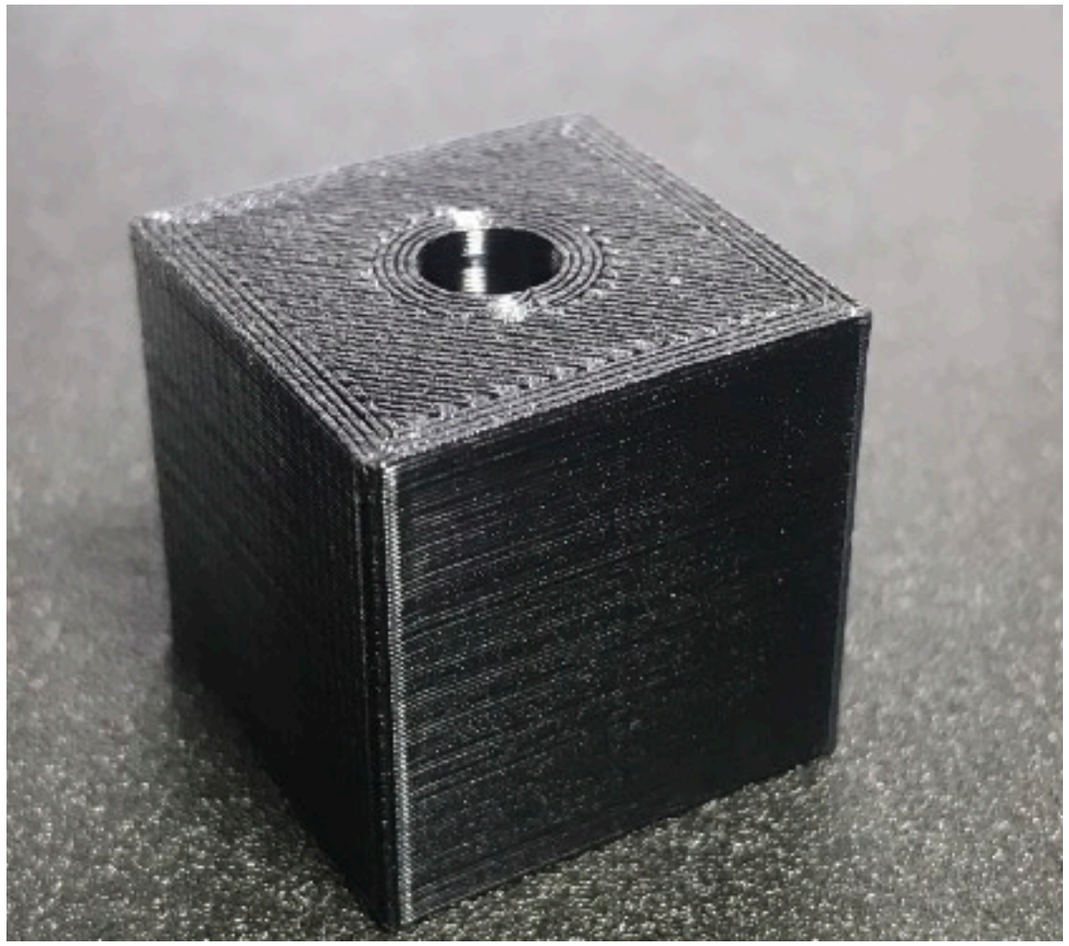
Test Prints



2cm Cube 5.01mm Hole 35min print time
20.02mm H x 19.99mm W x 20.04mm L

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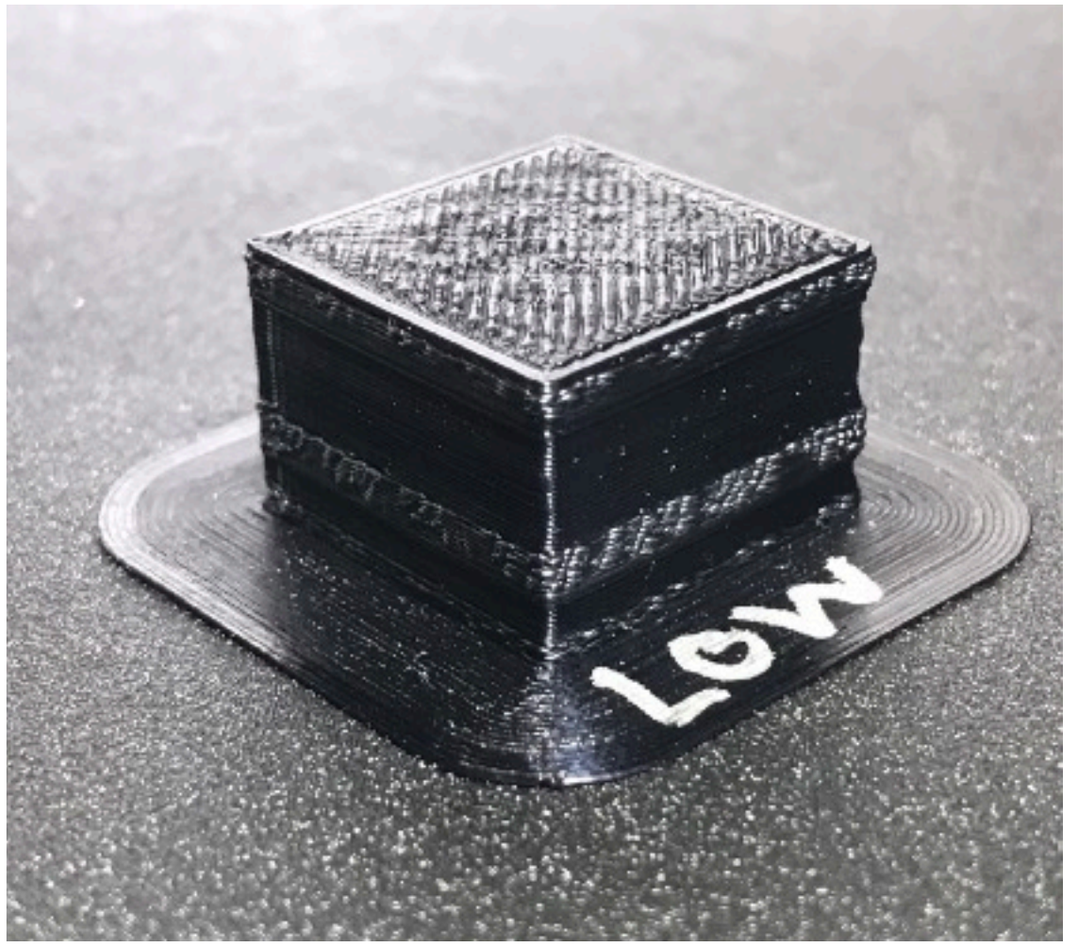
Test Prints



Failed 2cm 26min print time
14.78mm H x 20.91mm W x 20.65mm L

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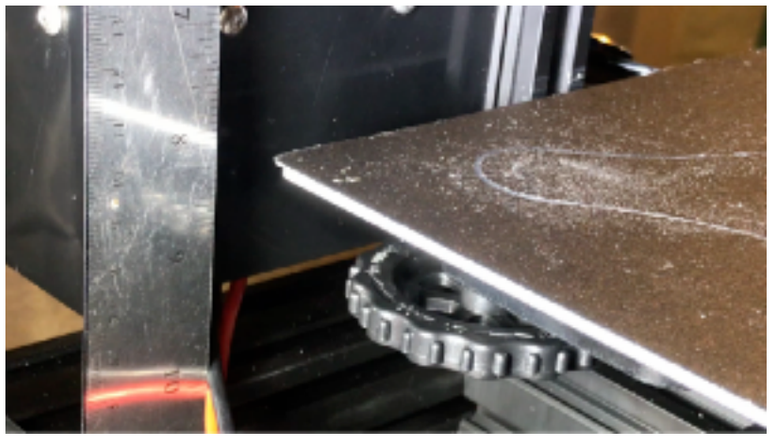
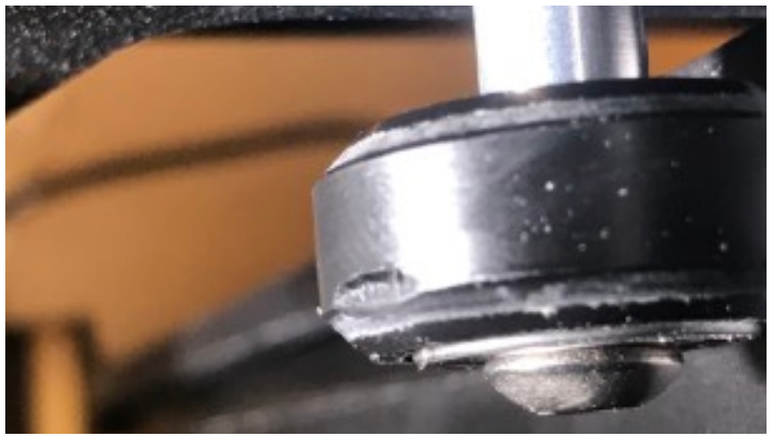
Printer Assembly Notes

- Printer purchased Wednesday, April 1
- Arrived Friday, April 3 from Shenzhen, China
- Build took 3 hours using included Creality instructions and Youtube set-up videos.
- May have over tightened eccentric bolts which caused Z Axis binding and wheel issue.
- Purchased a fire blanket, smoke detectors and fire extinguisher.





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Digital Files

- 2cm Cube Low Quality 3d STL Gcode
- 2cm Cube Med Quality 3d STL Gcode
- 2cm Cube Ultra Quality 3d STL Gcode
- 2cm Cube Concentric Top/Bottom 3d STL Gcode
- 2cm Tube Single Extrusion 3d STL Gcode
- 2cm Tube Double Extrusion, Random Z axis 3d STL Gcode
- 2cm Cylinder .1cm Tolerance w/ supports 3d STL Gcode
- 2cm Cylinder .005cm Tolerance 3d STL Gcode
- 20mm Cube with 5mm hole 3d STL Gcode

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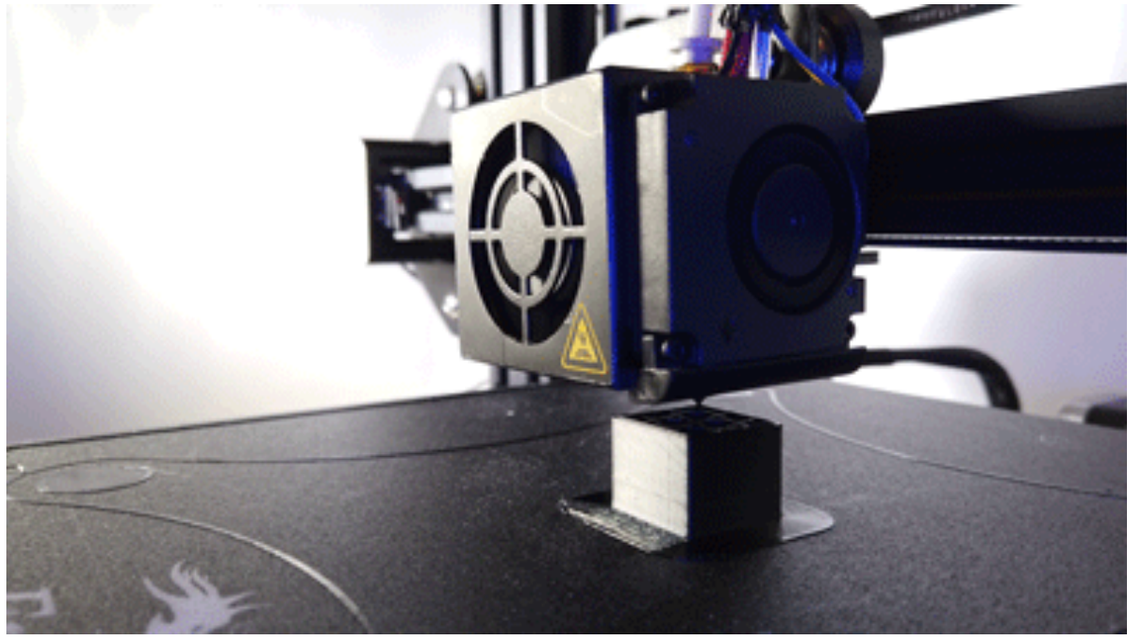
Summary & Learnings

- Assembly was the easy part.
- Many chances for failure; even simple things take patience and preparation.
- HCD documentation is its own kind of skill. Takes time and forward thinking!
- Print Bed Leveling issues. Must be patient. A tuned printer and manifold print work well together.
- Frame and Table leveling issues: Must start with a solid surface.
- Software programs take persistence.

A2: Getting Started with 3D Printing



Kevin Philbin
Human Centered Design + Engineering
Digital Fabrication 598

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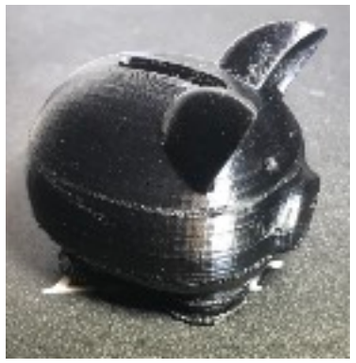
Experiments

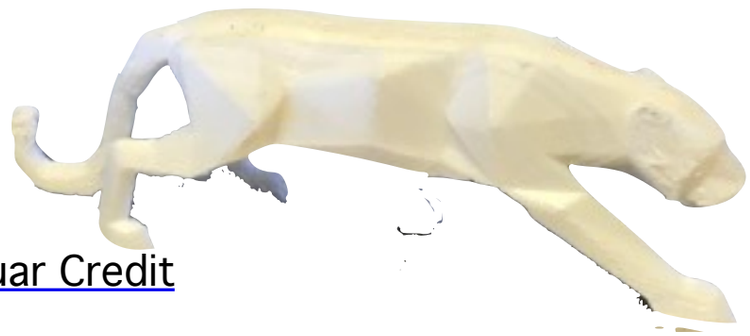
These were taken from Thingiverse.com as STL files or G-code included in Ender 3 Pro.

Boba Credit

Lion Credit



Creality G-code



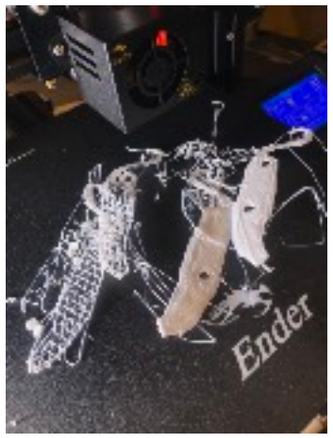
Jaguar Credit

X-Wing Credit

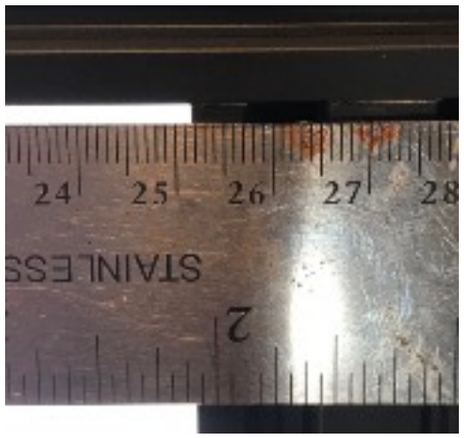
Complications & Workarounds

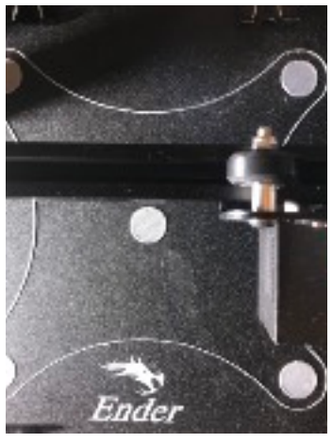
- Jaguar Print, Making Spaghetti from poor leveling.
- Cube Prints, Z axis bind from misalignment and unleveled table, printer frame and Y axis.
- Print Bed Leveling issues. Used Ben’s solution.
- Used clamps to get Z frame top and bottom aligned.
- Finger print adhesion issues, cleaned bed.











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Slack Threads

Working to answer questions

Please is there a prefered mac iOS Slicer to use with the Ender 3 Pro? It appears that Rhino has a slicer for Windows.

Joshua 17 days ago
For starters, I'd recommend Cura, as there are many predefined printers that you can simply import with their own printer-specific settings.

👍
2

kevin philbin 17 days ago
thx Joshua!

———

kevin philbin Apr 5th at 8:27 PM
My corners started peeling up mid build. Any recommendations on setting changes or best practices?

Robert 17 days ago
Most likely cause, at least in my experience, would be that the nozzle is too far from the print bed. If room temperature is varying a lot (printer is by a fan/vent/window/door) the temperature change could be a cause as well.

kevin philbin 17 days ago
Thx Robert. I'll check my nozzle gap. Maybe print on a raft would help?

———

kevin philbin 8:55 AM
Cyrus, If I'm hearing you correctly, your Y axis is not working? Therefore we need to troubleshoot the movement of the print bed?

Cyrus Apr 7th at 8:57 AM
Thanks for looking at this @kevin philbin, but the elephant printed correctly and I have no issues printing the test pattern you posted. So I'm not sure why it's okay in some cases and not other ones

kevin philbin 12:57 PM
Nice! You're making progress!

———

kevin philbin Apr 7th at 3:50 PM
I'm getting closer! But still had some issues. I ran the clean calibration test then immediately ran the panther print. Anyone have thoughts about what could help with the loose spaghetti? I'm extruding at 200c and bed is at 50c. Thx!
Image from iOS

kevin philbin 15 days ago
Nadya @JoshuaV
please any thoughts on how to improve?

Cyrus 15 days ago
@kevin philbin, not ready to call it fully tested, but firmware upgrade seems to have resolved all my issues! More to come on this soon; test should be done in 3-4 hrs …

kevin philbin 15 days ago
Rad! Thx for the update.

Nadya 14 days ago
loose spaghetti can also come from how you slice

kevin philbin 14 days ago
Thx! I'll look into slicing setti ents.

Cyrus 14 days ago
Update first test looks great!!! I fe asleep and nd test now.
One negative thing that stood out is the new firmware slowing down the prints (edited)
Screen Shot 2020-04-14 at 9.12.57 AM.png

Jasper 8 days ago
Some things to check: did you BooleanUnion everything in Rhino so that it's a single closed polysurface? Also can you try loading this in Cura or slic3r or another slicer? It's kind of hard to see what's going on with MacOS's default STL previewer———

kevin philbin Apr 14th at 9:20 AM
Please help with STL export. I've tried a few settings but it appears I'm missing something. (edited)

Victor 8 days ago
It's also a little difficult to tell from the screen shot, if the cutting edge is capped/solid or not.

kevin philbin 8 days ago
Thx for the input!

Ben 8 days ago
Can you share your 3dm file?

kevin philbin 8 days ago
happy to. lemme check Jasper and Victor's points and i'll post it. thx for looking.

kevin philbin 8 days ago
Binary

kevin philbin 8 days ago
@Victor Allen Good point. Cutting edge was not capped.

kevin philbin 8 days ago
I tried cap command then selected both extrusions but then it filled across entire plane. Please do know how to cap just between my extruded walls?

Ben 8 days ago
i made a quick video for you. no sound sorry. delete the extrusion with a right to left selection. use extrude curve and make sure you select the solid option. the extrude outer curves the ame way and then boolean union. sending video link in a minute

kevin philbin 8 days ago
thx Ben!

Ben 8 days ago
https://drive.google.com/file/d/1W6egYdUMCNwFcLvezf1ZIoPG98LNlqqb/view?usp=sharing

kevin philbin 8 days ago
Sweet that totally helped

kevin philbin 8 days ago
Thanks a ton!

kevin philbin 10:05 AM
ok thx. I'll check that too.

kevin philbin 10:26 AM
Been crashing a bunch! Having issues with saving and permissions. So I'm delaying in posting the file.

———

kevin philbin 10:56 AM
My prints are off by 5mm on the Z axis. Is this All3dp.com calibration workflow the right approach?
Screen Shot 2020-04-17 at 10.34.55 AM.png

Joshua 10:57 AM
wait, 5mm? Hmm, that sounds like more than tuning the extruder would fix. In your Ender3 menu settings, what is the Z steps-per-mm

kevin philbin 11:02 AM
Thx for chiming in . I'll take a look.
11:05400

Paige Johnson 11:06 AM
Hey Kevin, you might be skipping z-steps. Make sure your coupler on the lead screw is tight!

Joshua 11:07 AM
Ok 400 is correct (for ender3). Looking at your part, the first half (in Z) looks rather squished. @Paige Johnson is right. Check those screws! (edited)

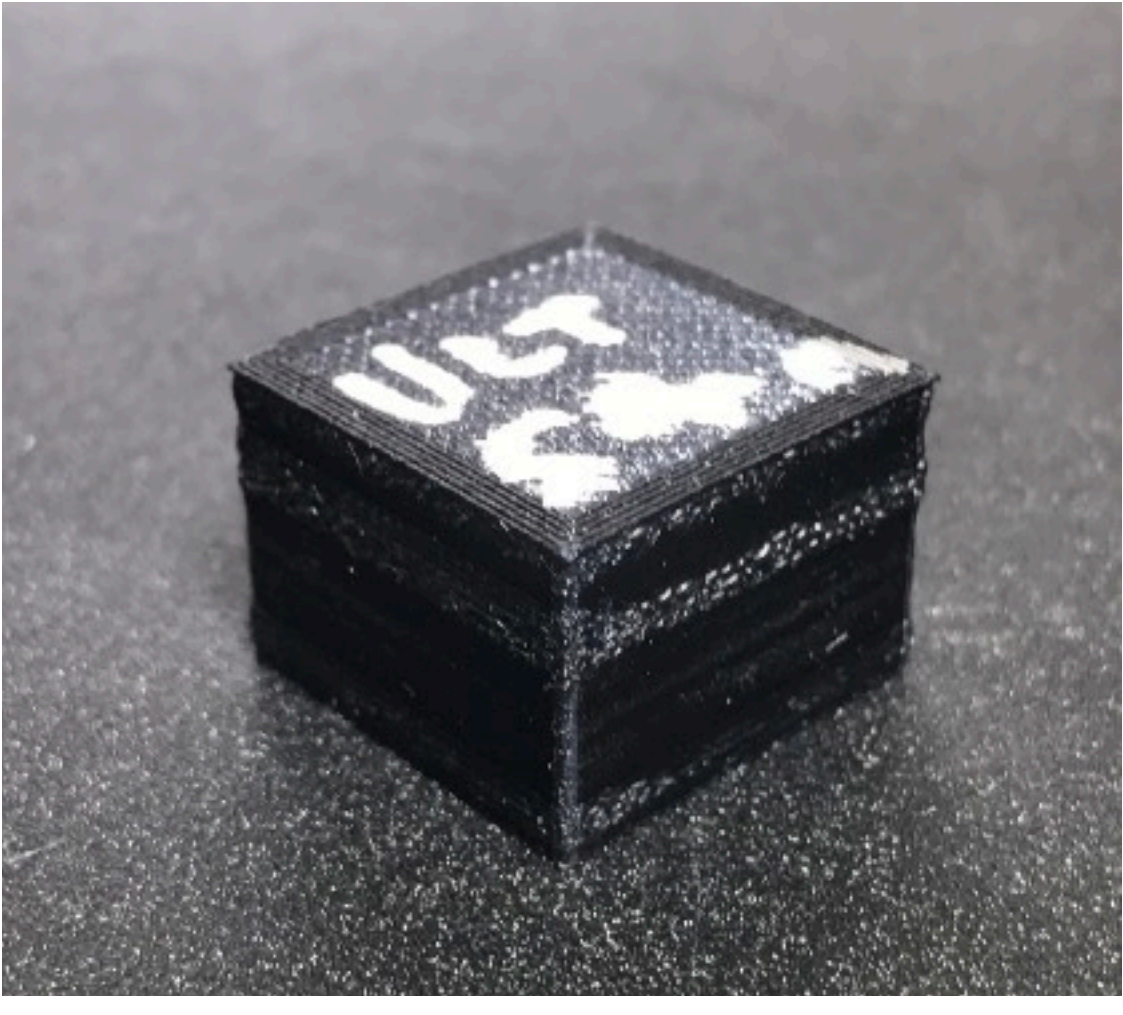
kevin philbin 11:15 AM
Ok checked and snugged! Thx for the fast response @JoshuaV @Paige

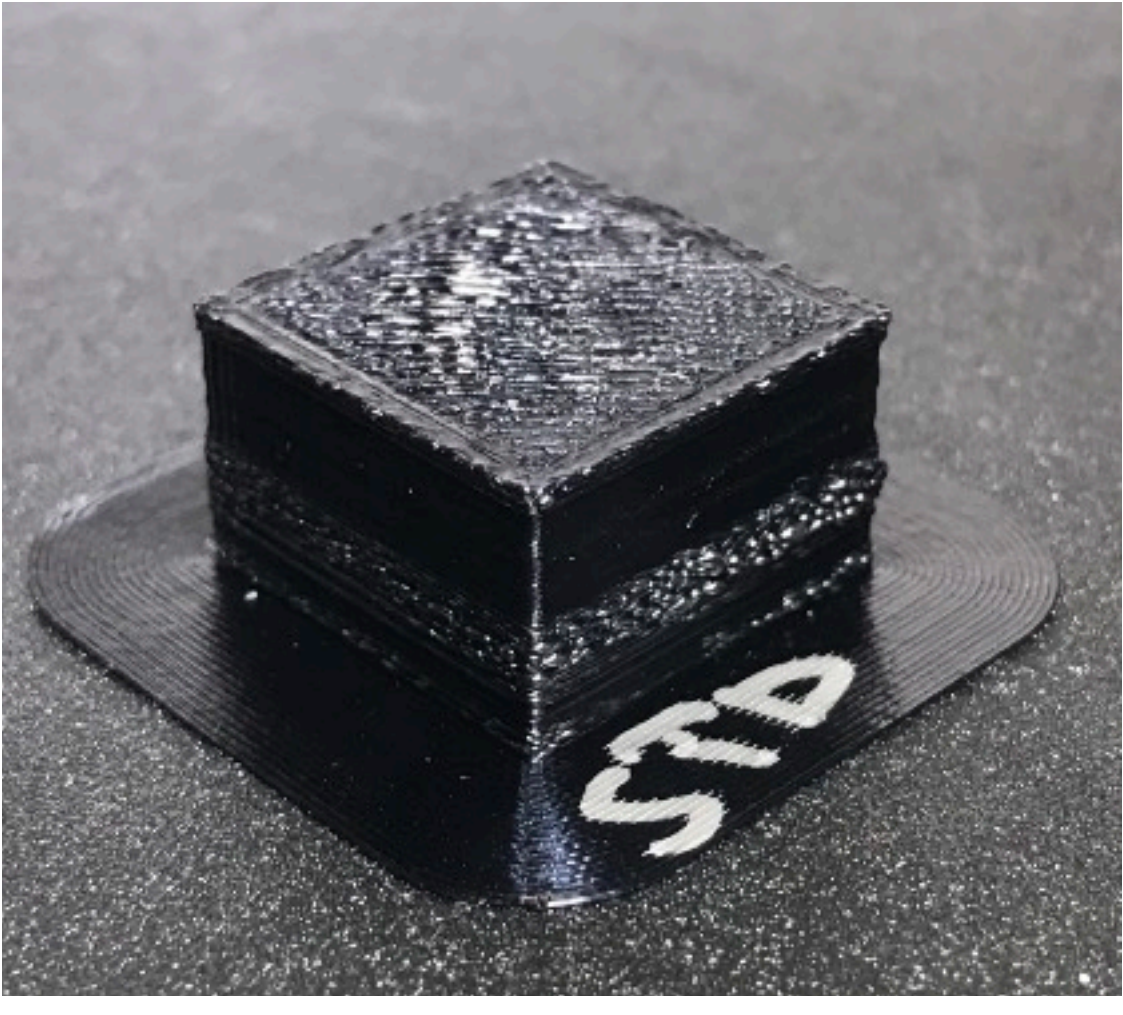
kevin philbin 11:41 AM
Oh my. Maybe too snug?
Image from iOS

Joshua 11:42 AM
Hmm, something on the Z axis may be binding
th brim
s pic lo
M
le mine binding crews es to the extruder is not to
tight

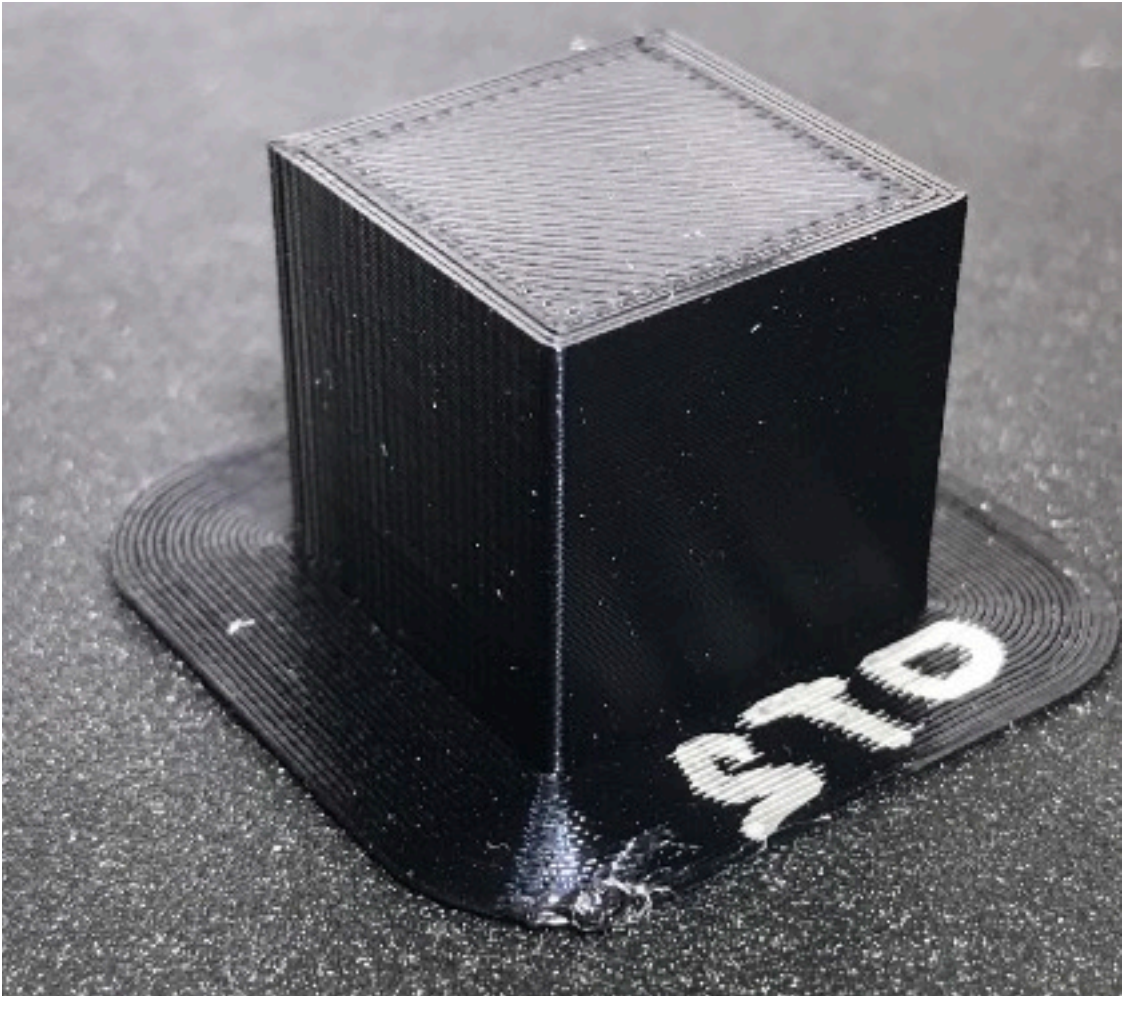
Joshua 11:45 AM
Here's one suggestion for debugging: unscrew the coupler from the leadscrew. You should now be able to freely move the y axis up a down with your hand (and the leadscrew will come with it). By hand, move it up-and-down. Does it bind? If so, you may need to loose and-readjust some parts of the Y axis (Step 6) until they slide smoothly.
11:47
Also check page 3 of this to see if your motor is holding the leadscrew at an angle.
https://docs.google.com/presentation/d/1QpFYa3phjAkS3OK3oN58TejI3rdL9JeuzDDMPDz3TRI/edit#slide=id.g738f6ce37f_0_117

kevin philbin 11:58 AM
Great input. I'll get to it. Thx @JoshuaV and @Vincent

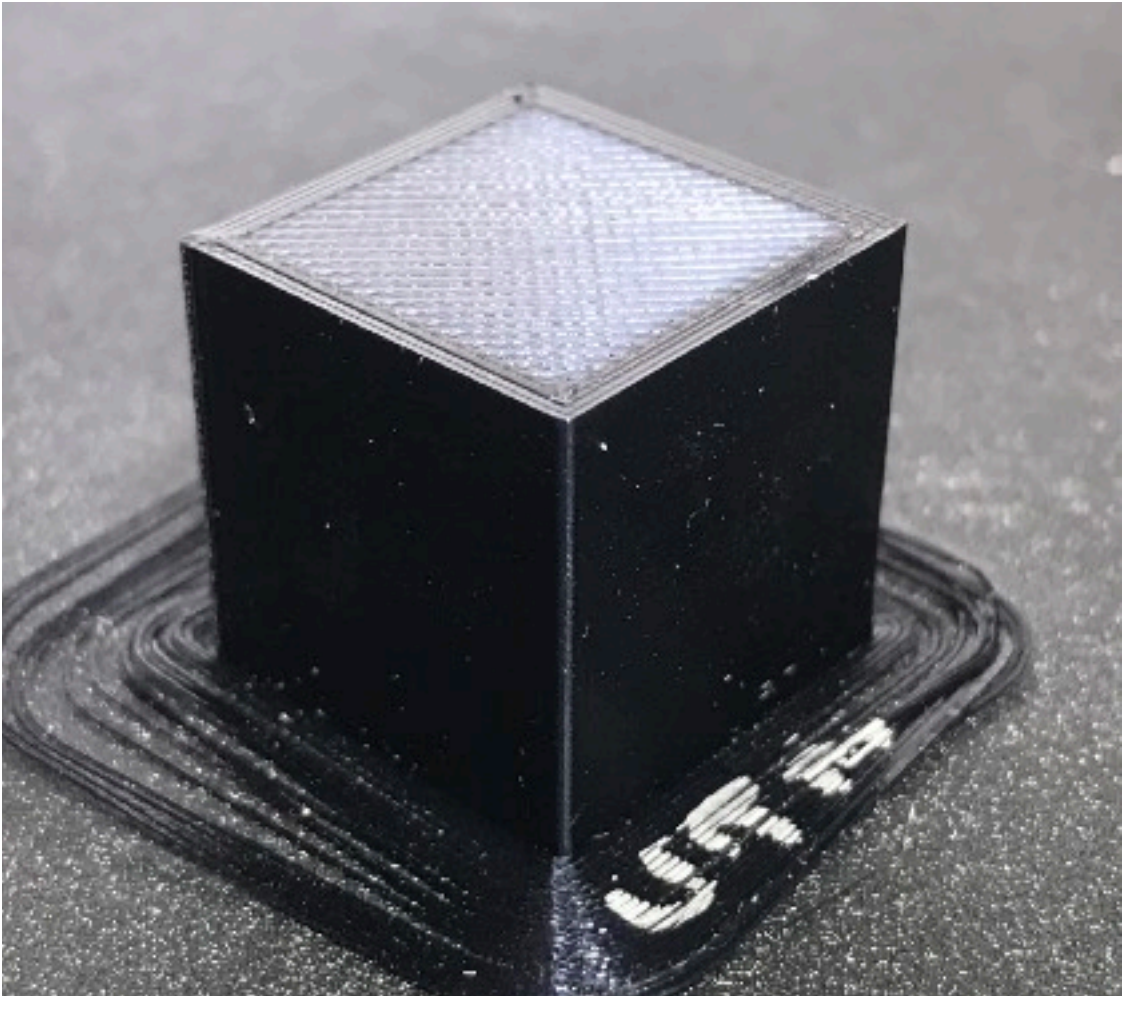

UST

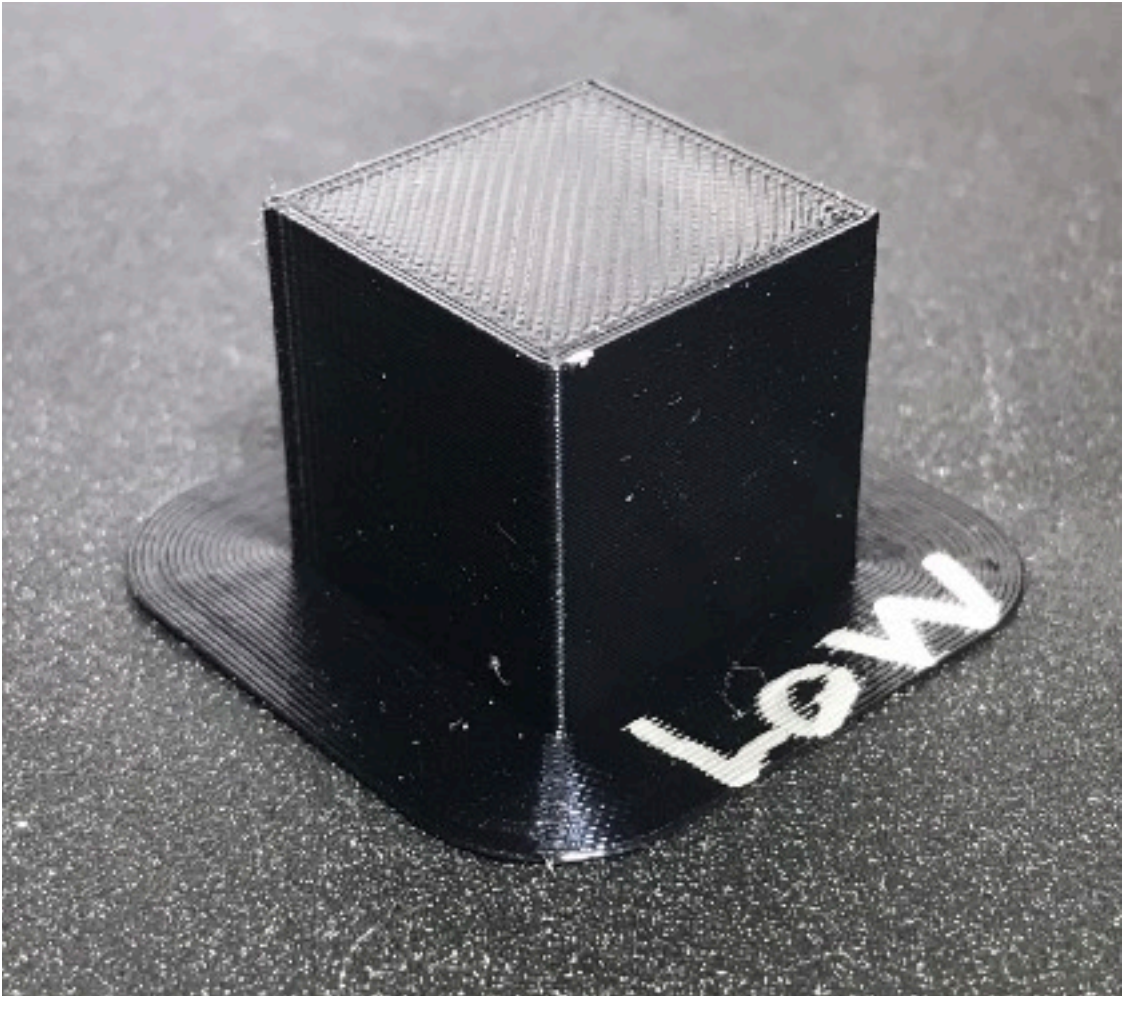

SAP

Failed 2cm Cube Ultra Quality 14.75mm Height, 54min print time

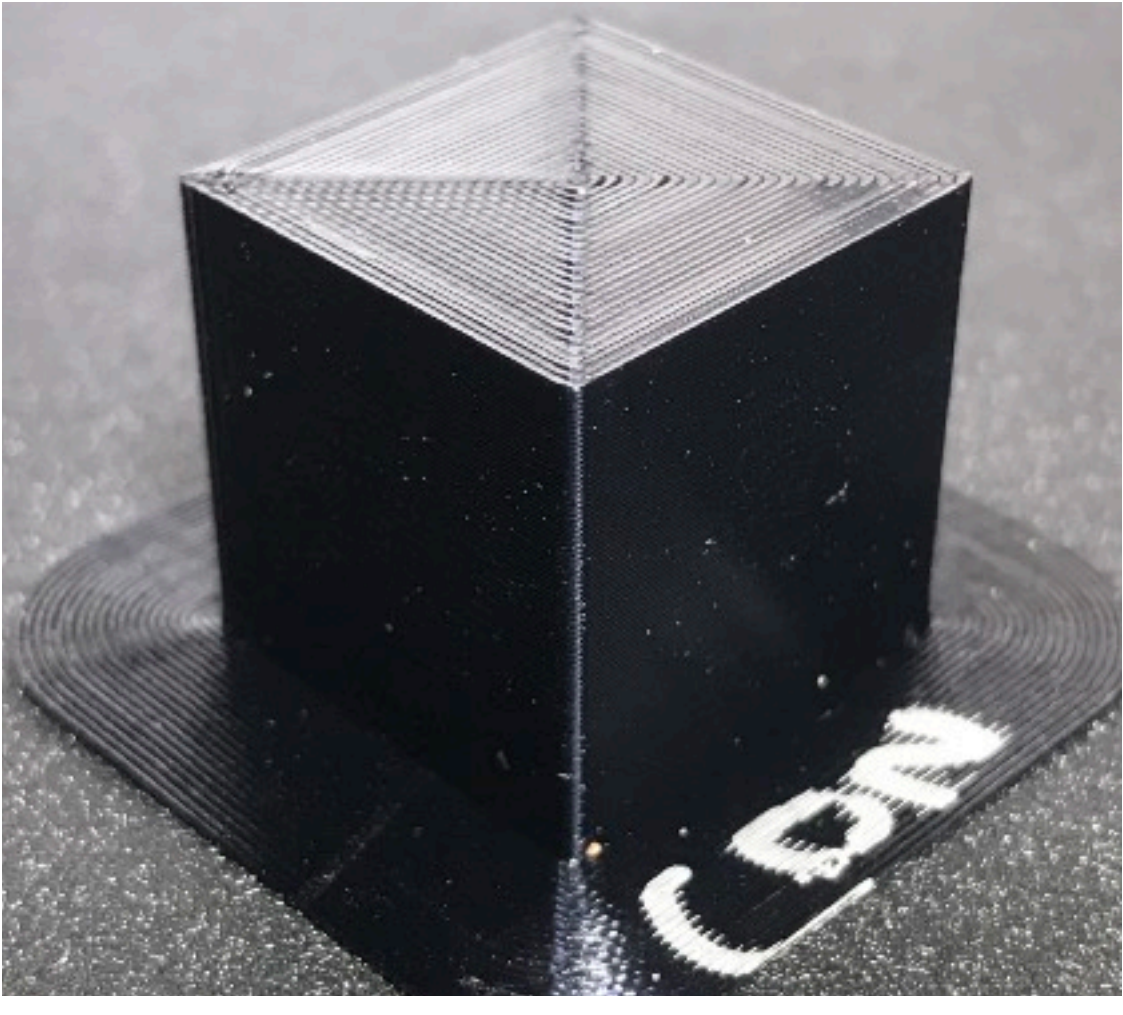

SID

2cm Cube Standard Qual 35min print time
219.98mm H x 20.08mm W x 20.02mm L




LOW

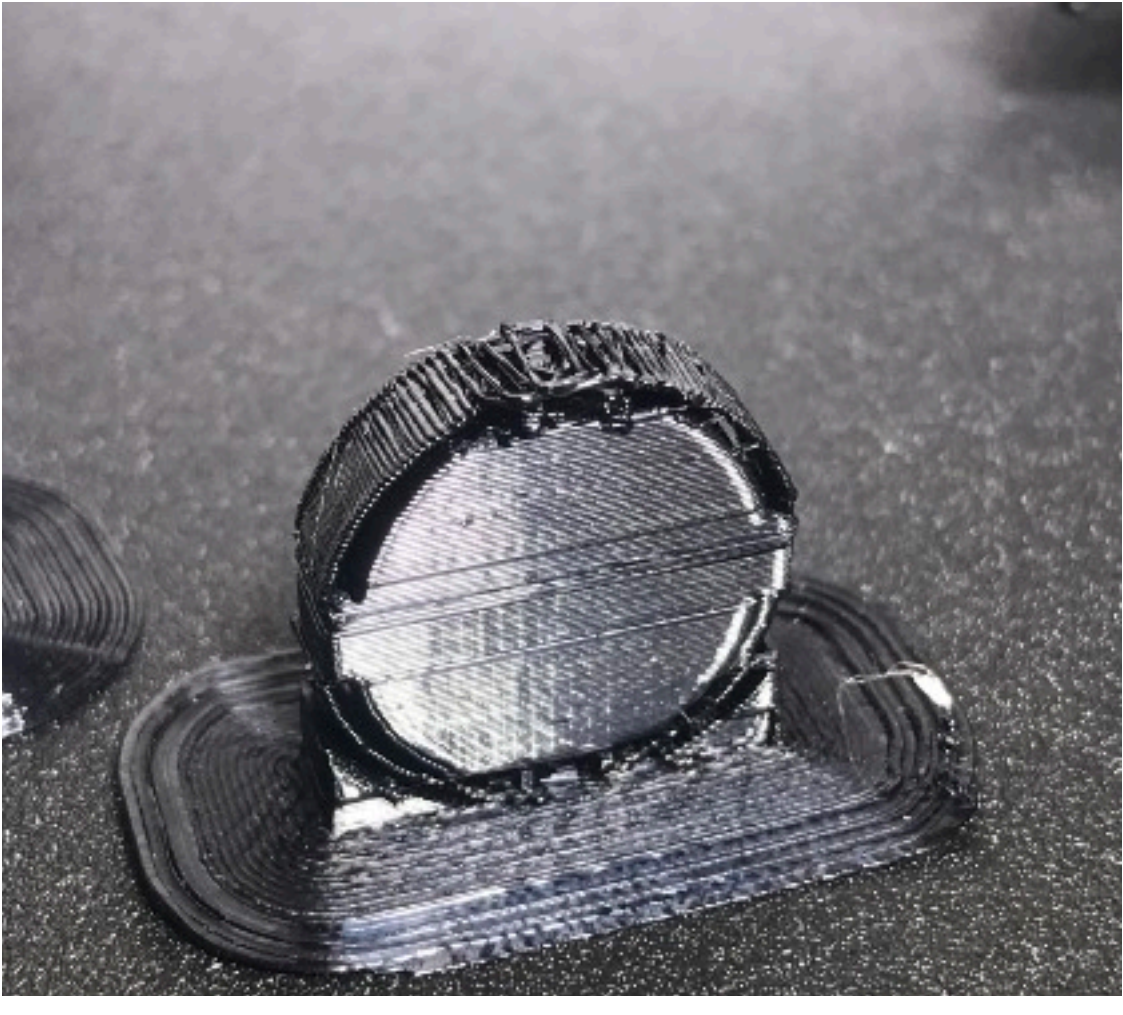
2cm Cube Low Qual 25min print time
19.86mm H x 20.14mm W x 20.09mm L



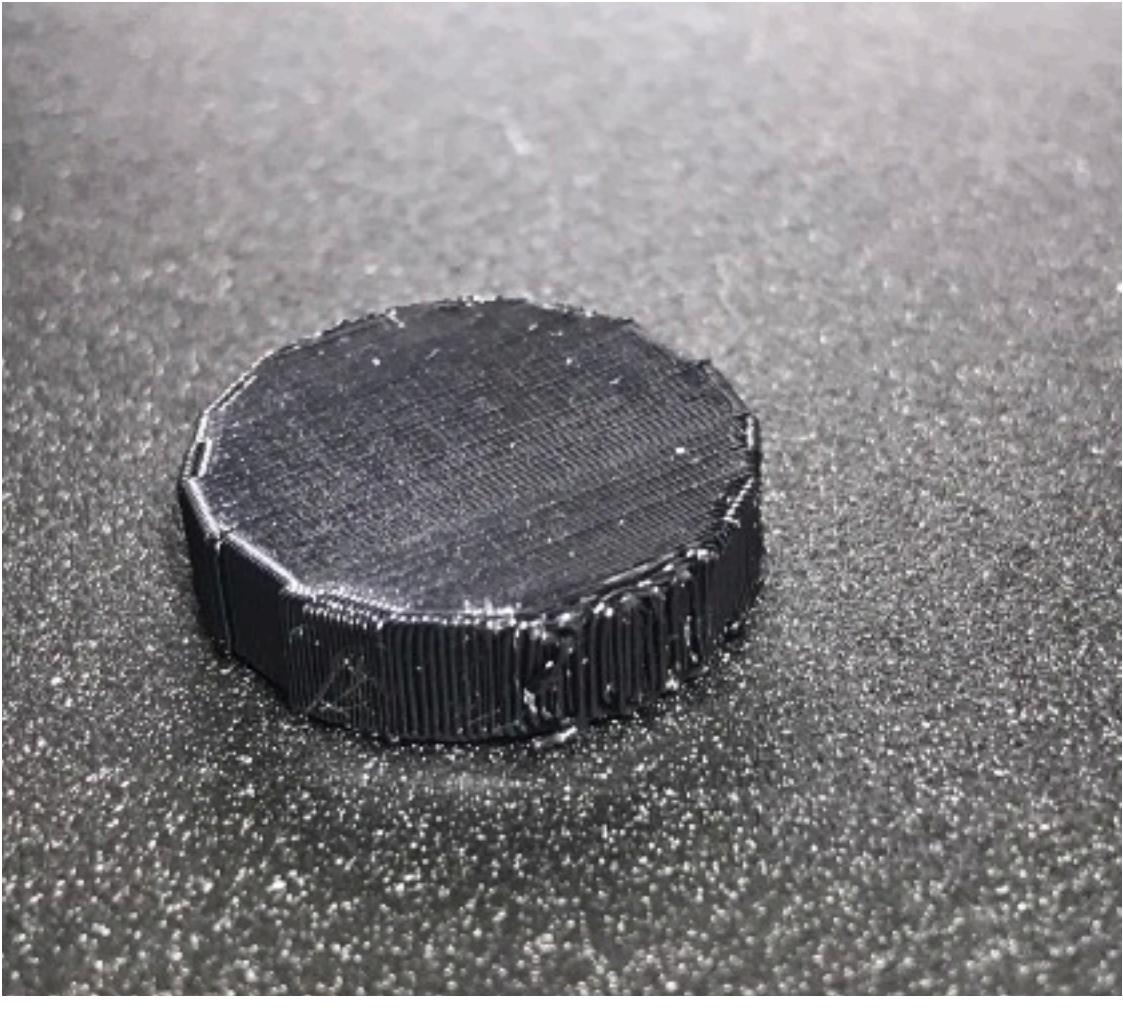
2cm Cube Concentric Top 35min print time
20.05mm H x 20.03mm W x 20.02mm L

2cm Single wall extrusion
.55mm thick x 5.09mm H x 20.19mm D

2cm Dbl wall extrusion
.88mm thick x 5.12mm H x 19.73mm D



2cm Cylinder .1cm Tolerance w/ Supports
5.12mm W x 19.73mm H

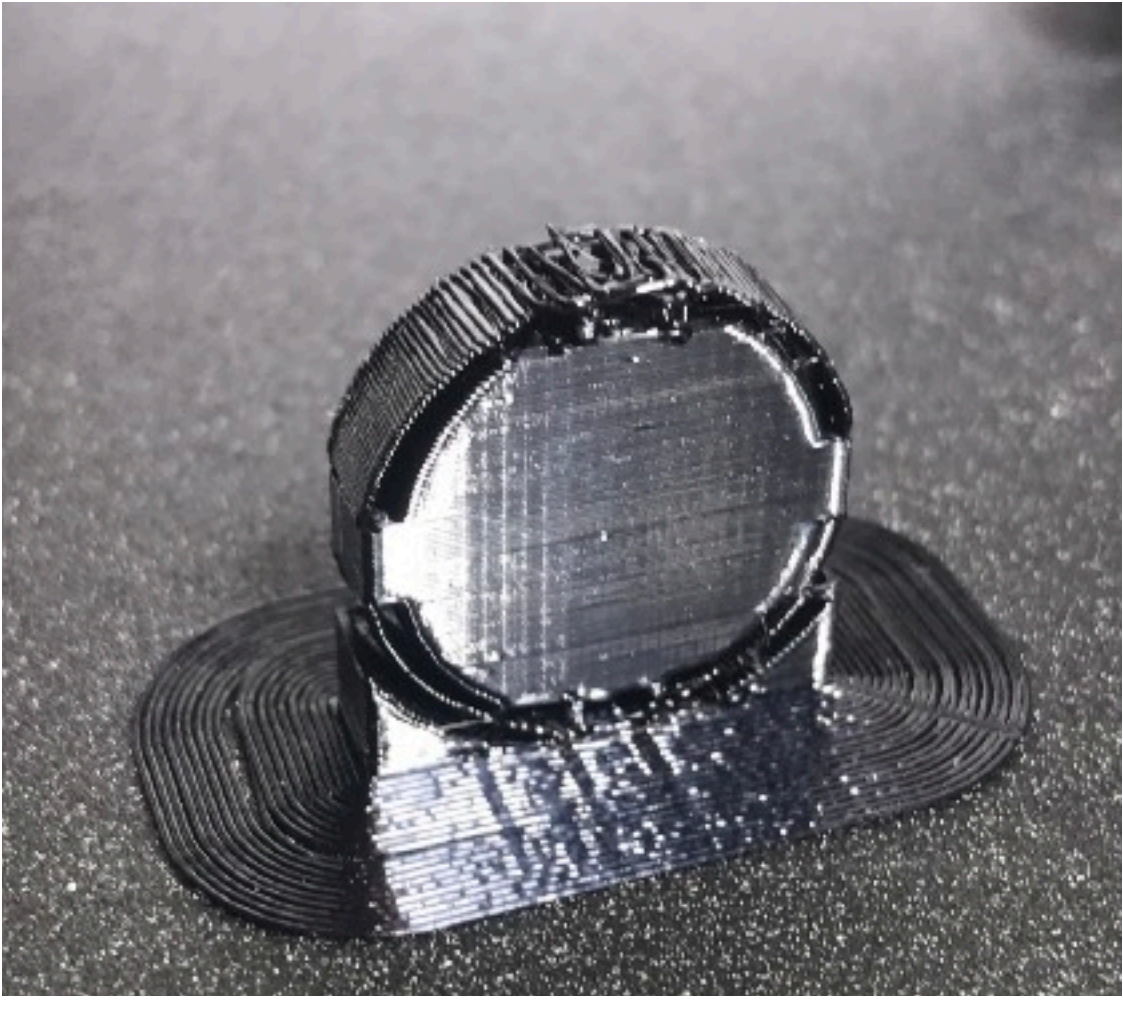


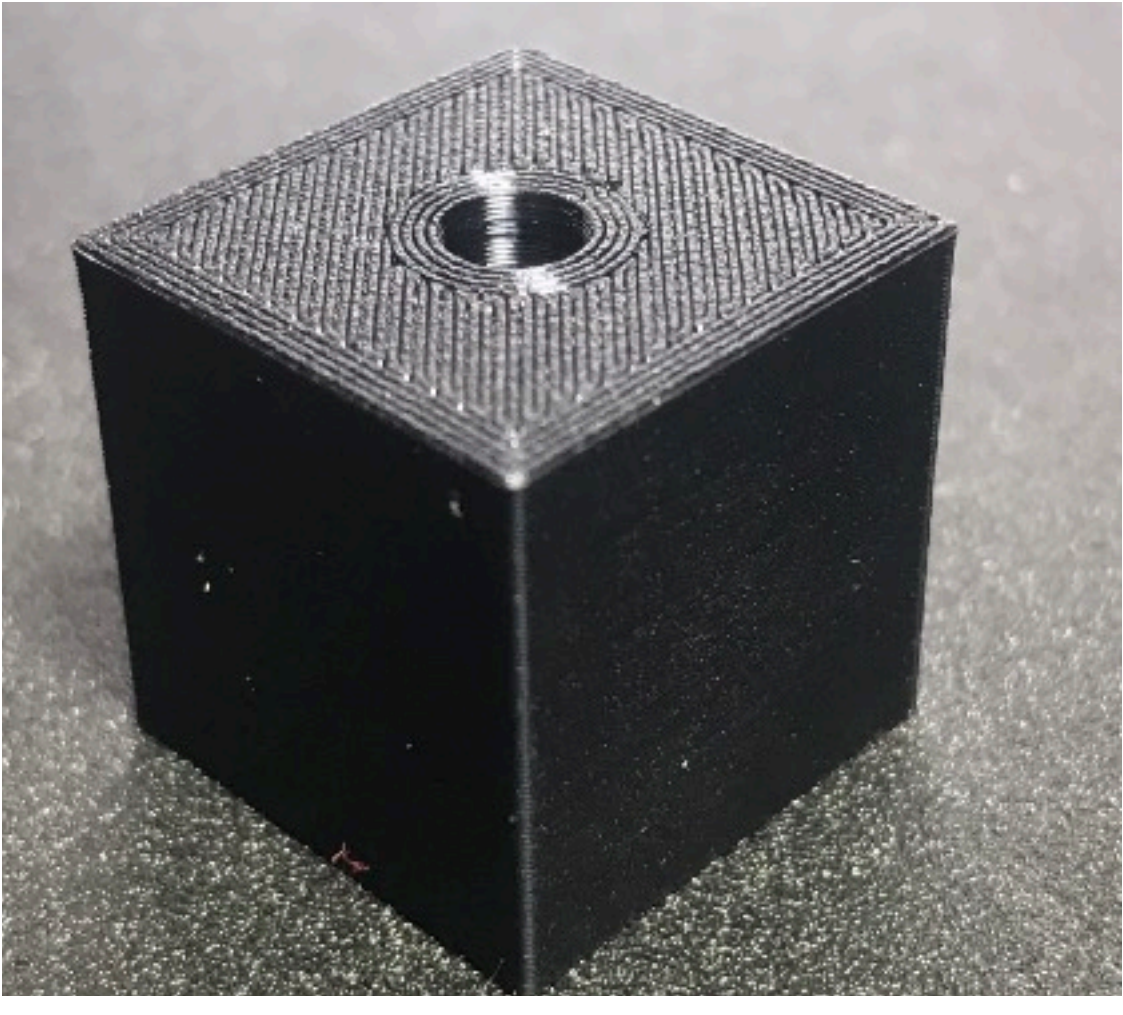
2cm Cylinder .005cm tolerance

Failed support for 2cm Cylinder on side

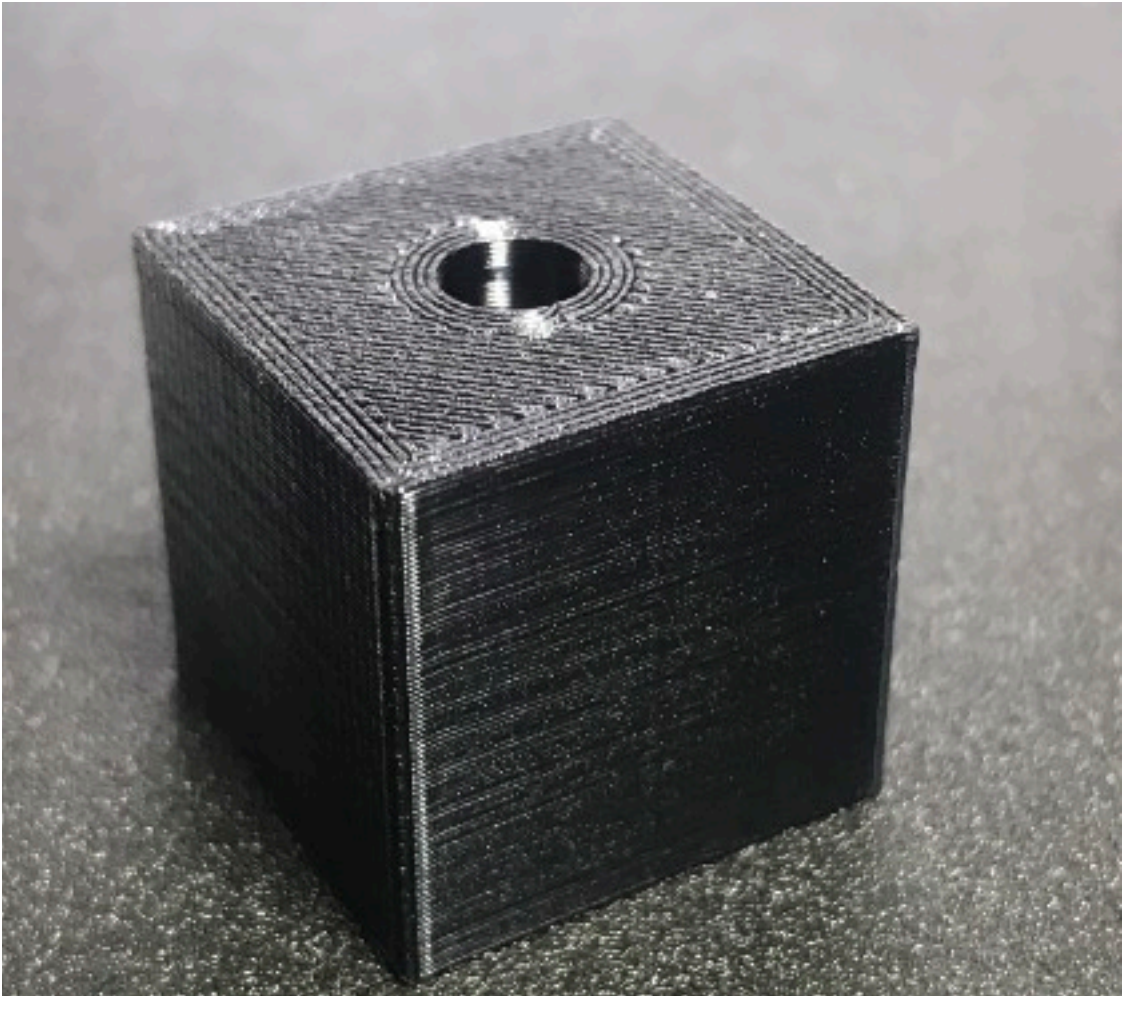

LOW
LOW

All Test Prints





2cm Cube 4.67mm Hole 35min print time
20.02mm H x 19.99mm W x 20.04mm L



2cm Cube 5.01mm Hole 35min print time
20.02mm H x 19.99mm W x 20.04mm L