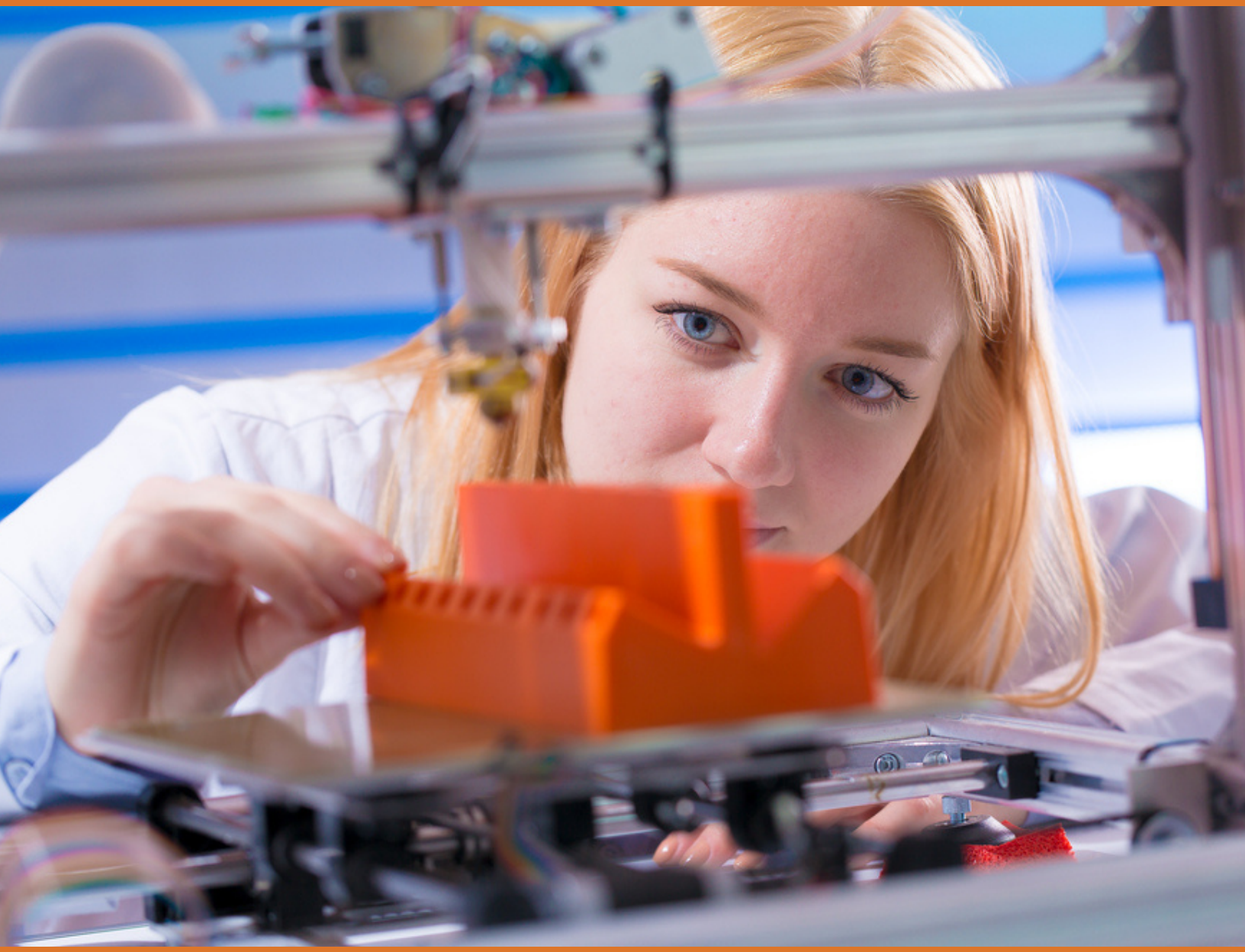
3D PRINTING RESOURCE GUIDE



THE PATH TO UNLEASHING YOUR CREATIVITY

DESKTOP MAKES

The Workflow

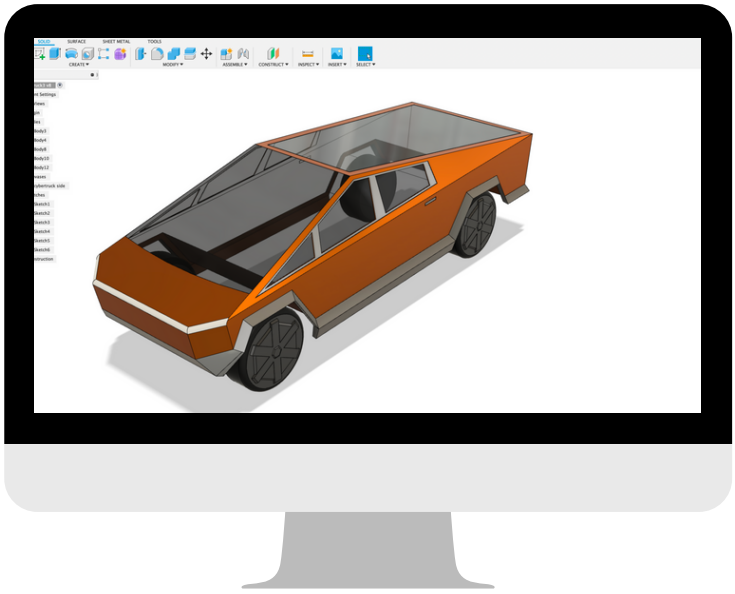
Websites to download 3D designs

- Thingiverse.com
- Pinshape.com
- Myminifactory.com
- Youmagine.com
- Cults3d.com
- Yeggi.com (search engine for 3D printing models)

Downloading models from sites like thingiverse is a great way to get started with 3D printing. Above is a 3D model of Baby Groot that was downloaded and 3D printed using wood fill - a composite filament made of pla and wood fibers. The model was then painted.

List of free design software to get started on making your own models

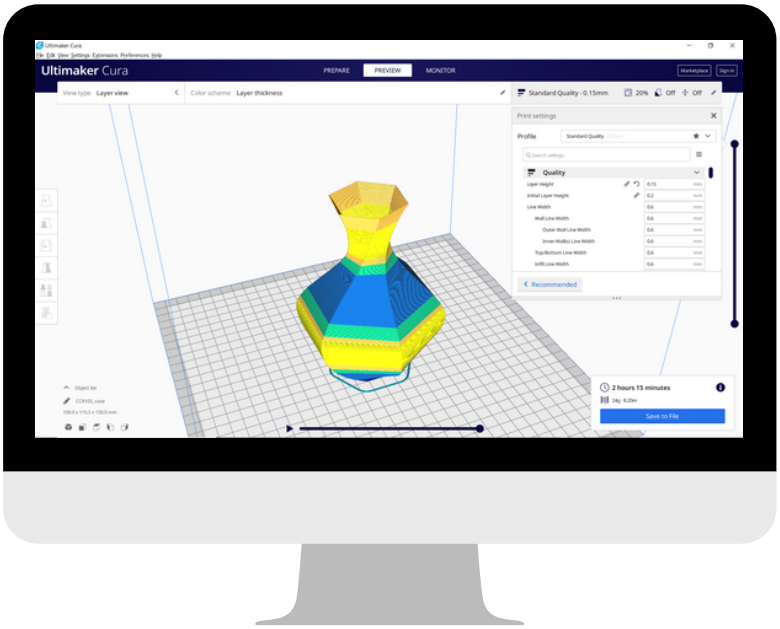
- Fusion 360
- Tinkercad
- Sketchup
- Sculptris
- Blender
- OpenSCAD
- Meshmixer
- Freecad



Slicers

The Slicer is the software used to prepare your model for 3D printing. Below are some of examples of slicer programs.

- Cura (ultimaker.com/software/ultimaker-cura)
- PrusaSlicer (prusa3d.com/prusaslicer)
- Slic3r (https://slic3r.org/)
- Mattercontrol (mattercontrol.com)
- Simplify3D - $150 (simplify3d.com/)

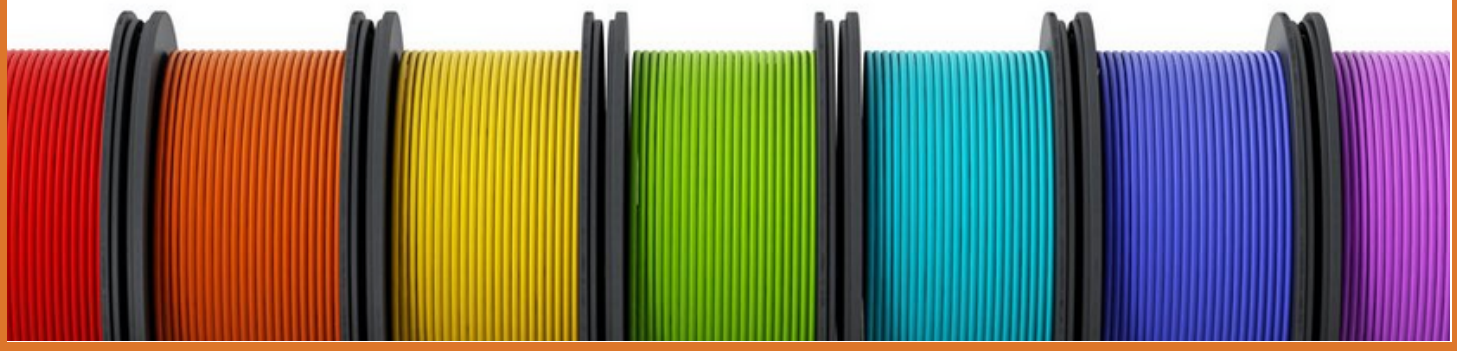


Above is a screenshot of Cura slicer. I recommend downloading Cura Slicer from the website listed above and then following along in the next tutorial to learn how to prepare your downloaded model for 3D printing.

Filament Guide

Common Filaments

- **PLA** - Easy to print, doesn't warp easily, biodegradable, and doesn't smell bad.
- **ABS** - More durable and able to withstand higher temps than PLA. Requires heated bed and enclosure to print.
- **PETG** - Combines the good qualities of PLA and ABS. Easy to print (although not as easy as PLA) plus close in strength and flexibility to ABS.
- **Nylon** - Very strong and durable. Great for functional prototypes. Great for making gears. Must be stored in a dry place.
- **TPU** - Flexible filament, very durable, great for phone cases and other impact resistant applications



Filament Guide Cont'd

Composites

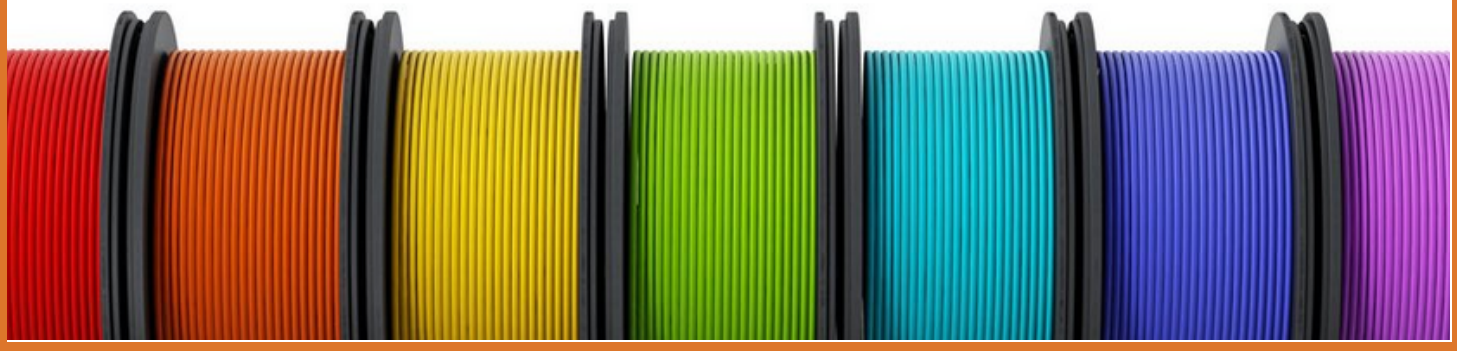
- **Woodfill** - PLA infused with wood fibers, prints look and smell like wood and can even be sanded and stained

- **Metal** (Copper, Bronze, Brass) - Similar to Woodfill, you're not exactly printing with metal. These are blends of PLA or ABS with metal powder. It won't give you the strength of metal but after a little polish you'll at least have the look.

Used for Support Material

- **PVA** - Great for support material that can be dissolved in water.

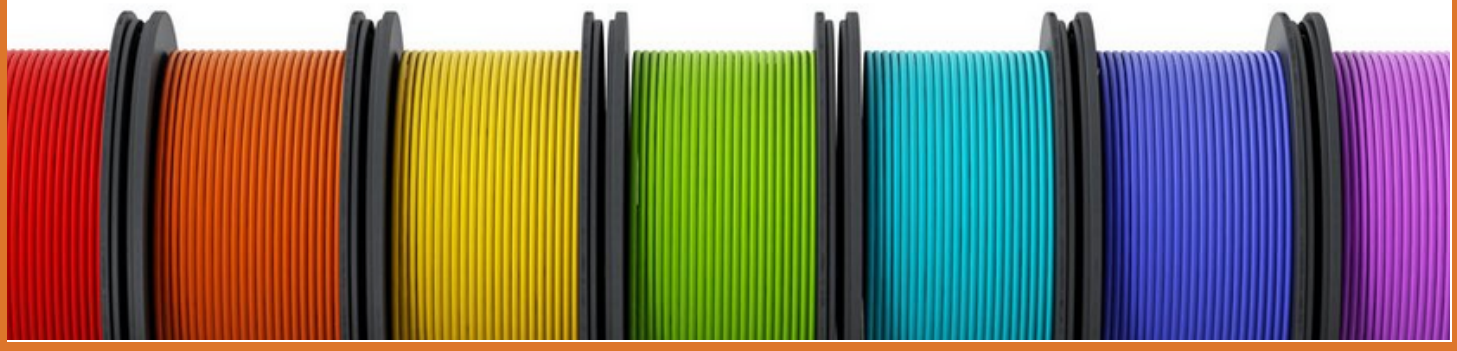
- **HIPS** - Great for support material that can be dissolved in limonene. Can also be used as primary printing material.



Filament Guide Cont'd

Fun Stuff

- **Conductive** - Great for embedding low voltage circuitry directly into your prints
- **Magnetic** - PLA or ABS infused with iron powder that allows prints to stick to magnets. Bonus - this filament can rust for when you need that, you know, rustic look.
- **Glow in the Dark** - Mixing phosphorescent materials with PLA or ABS allow this filament to absorb and release light.
- **Color changing** - Changes color based on printing temp allowing for some really cool effects.
- **Carbon Fiber** - PLA or ABS infused with carbon fiber allows for high strength low weight parts. Great for drone frames. Carbon fiber is abrasive and can lead to wear and tear on your 3D printer nozzle.



My Recommendations

Filament - Start with PLA. It's the most forgiving and easiest to work with.

Slicer - Cura Slicer is a great one that's both powerful and free. If your 3D printer manufacturer also makes its own slicer then you should use that one as it will be optimized for that specific printer.

3D Printer - Prusa i3 Mk3S+ or any of the prusa filament based printers (mk2, mk2s, mk3, mini+). These are very reliable printers with excellent quality. Visit their website at prusa3d.com. I am not sponsored or have any relation with Prusa3D.

Design Software - Fusion 360 is an excellent software to learn as they offer a free personal/hobbyist license and is a very powerful design software with direct integration for 3D printing.

Learn Fusion 360 - Start with my Quick Start Mini Series