



3D PRINTING EQUIPMENT, SUPPLIES & SERVICES

*PRODUCT DESIGN & PROTOTYPING
VIRTUAL REALTY PRODUCTS
GRAPHICS & WEB DESIGN SERVICES
TECHNOLOGY CONSULTING*



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Here's a list of links for FREE CAD software and utilities for creating printable model files. I'm familiar with most of them but use TinkerCad and AD123D for nearly all my designs. AutoCad is the industry standard however.

[Autodesk 123D](#) - A wide array of applications for G-Code, 2D & 3D related CNC & printing systems.

[TinkerCad](#) - Perhaps the simplest of programs to master.

[Sketchup](#) - Google's contribution to 3D model creation. Used primarily for architectural work, it can be used for mechanical designs & printing using downloadable extensions & plugins.

[MeshLab](#) - Open source system for processing & editing 3d triangular meshes.

[Meshmixer](#) - Neat program for morphing, scaling, hollowing & supporting models. Can be used to repair surfaces for printing.

[FreeCad](#) - Just what it says. Useful for beginner & expert.

[Blender](#) - 3D model & animation program with a steep learning curve. Can produce professional quality models.

[DesignSpark Mechanical](#) - Requires registration.

[GrabCad](#) - Cloud based, subscription system. Lots of models & engineers use this system. Probably second to AutoCad.

[InStep](#) - STP to STL file converter. Has been very handy for converting & checking file integrity.

[netFabb](#) - Free non corporate STL analysis program. License allows for file conversion, geometric repairs & many other functions.

[AutoCad](#) (FREE for educators & schools. Non-profits may qualify)

[Solidworks](#) - Another lead player in CAD software.

[eDrawings](#) - Similar.

Here are FREE programs used for processing STL & OBJ files into industry standard G-Code used for CNC & FFF/FDM printing. These programs use a number of Slicer programs to process the code, most of which can be selected from menus within these programs. I'm most familiar with MakerWare & Rep G, however Repetier Host offers many features of value and is the standard for RepRap open source systems.

[Replicator G](#)
[Repetier Host](#)
[MakerWare](#)

The [Wanhao](#) D5 series currently uses proprietary slicing & print software called [Wanhao Maker](#), however Gary in China has indicated they're working with [Simplify3D](#) to provide integration. Simplify3D is \$140 per license and offers advanced printing features like fill optimization, support structures, etc. Their license fee should support their ability to develop additional features over time. I'm waiting until they add hexagonal fill geometries before I upgrade as [Wanhao Maker](#) is sufficient for my needs.

Here are most of the materials available for fused filament printers & some suppliers suppliers. I like [Gizmodorks](#) filament for it's quality and consistency. Some of these materials require a heated build plate, higher temperature extruders or smaller 1.75 mm nozzels, and can't be used with the D5S.

ABS - <http://gizmodorks.com/abs-3d-printer-filament/>
Acetal - <http://gizmodorks.com/acetal-3d-printer-filament/>
PLA - <http://gizmodorks.com/pla-3d-printer-filament/>
PET+ - <http://madesolid.com/pet+.html>
PETG - <http://gizmodorks.com/petg-3d-printer-filament/>
Polypropylene - <http://gizmodorks.com/polypropylene-3d-printer-filament/>
HIPS - <http://gizmodorks.com/hips-3d-printer-filament/>
Nylon - <http://gizmodorks.com/nylon-3d-printer-filament/>
Taulman (misc nylon, TPE co-polymers) - <http://taulman3d.com/>
ABS Conductive - <http://www.matterhackers.com/store/3d-printer-filament/Conductive-Filament-175mm-halfkg>
Poly Carbonate - <http://gizmodorks.com/polycarbonate-3d-printer-filament/>
FlexPLA - <http://www.makergeeks.com/flsofi.html>
LayFomm - Porous filament - <http://www.makergeeks.com/flsofi.html>
woodFill - <http://gizmodorks.com/wood-3d-printer-filament/>
PLA-PHA - <http://colorfabb.com/pla-pha>
PVA - <http://gizmodorks.com/pva-3d-printer-filament/>
Bendlay - <http://www.makergeeks.com/befi1glclfi.html>
LayBrick - <http://www.makergeeks.com/3dprfisala3.html>
Stainless Steel PLA - <http://www.makergeeks.com/stst3dprfi.html>
Magnetic Iron PLA - <http://www.makergeeks.com/mair3dprfi.html>

Tungsten X-Ray Shielding ABS - <http://www.makergeeks.com/gmhidewexsh3.html>

Filastruder's website, in case you need parts or have questions and I can't be reached:
<http://www.filastruder.com/>

Places you can get 3d Prints:

3DHubs.com

Shapeways

Sculpteo

[I.materialise.](http://I.materialise)

Ponoko

Voodoo Manufacturing

ProtoLabs

Model Resources:

Thingiverse

Yeggi.com

MyMiniFactory

General 3D Printing Guides & Hints:

<http://3dprintingindustry.com/wp-content/uploads/2014/07/3D-Printing-Guide.pdf>

<http://www.instructables.com/id/Beginners-Guide-to-3-D-Printing/>

<https://www.shapeways.com/tutorials/things-to-keep-in-mind>

<http://www.3ders.org/3d-printing-basics.html>

<https://www.sketchupschool.com/sketchup/3d-printing>

http://toronto.siggraph.org/wp-content/uploads/2014/03/Autodesk_3DPrintingTutorial_Meshmixer_Toronto_ACM_SIGGRAPH_Chapter.pdf