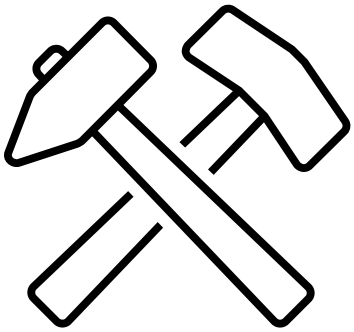
Tools and Skills for 3d Printing

This document is designed to serve as an introduction some of the tools that you may find helpful when using a 3d Printer. Other useful guides and videos can be found at OT3d.org



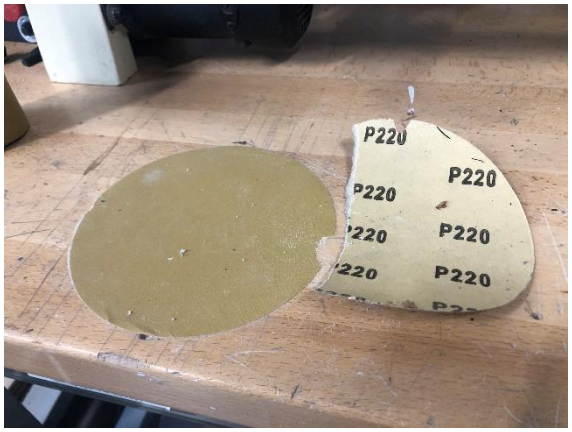
If you have been following along with the guides that have been developed through the website, you may have seen some other tools that have been used. This guide will show you some of those tools and their uses.

The first category of tools that we will be talking about are tools that can help you to measure objects. A regular ruler is a great tool for measuring real world objects, especially flat objects. Other tools like goniometers or protractors can be used in a comparable way to measure angles on flat surfaces.

If you are measuring a curved object or something that has in irregular shape, you might find a fabric measuring tape to be helpful. Because it is flexible, you can use it to measure the circumference of objects with ease.

Tools and Skills for 3d Printing

For detailed measurements, I highly recommend a good set of digital calipers. You can use these to measure depth, width, and height of existing objects with high accuracy. In addition, they come in handy if you are duplicating an existing object for a client.



The next components that we will be talking about are tools that you can use to clean up your prints. One that many will be familiar with is sandpaper. You can use sandpaper to help remove layer lines and smooth out rough surfaces on prints. An electric sander can make the process even easier if you have access to one.

Lower grit sandpapers are good for removing larger defects while higher grit sandpapers and wet sanding sandpapers can help you achieve a smoother finish.

Helpful Hint: While electric sanders can speed up the finishing process, going too fast can heat up your prints and cause the material to deform and melt. Low speeds and pressure are recommended for most projects.

Tools and Skills for 3d Printing

Flush cutters are one of my favorite tools. They can be used to snip off supports and when gripped lighter can be used to pull supports off in chunks. This tool will come with many printers, and it is worth holding onto.

Tweezers are another tool that come with many printers. They can be used to reach into small areas to remove supports. Craft knives with replaceable blades are good for removing supports and small imperfections in prints. Just be careful because they are very sharp!

A Dremel or other small rotary tool can be used for finishing prints as well. They will often come with attachments that can help you to cut, sand and polish materials. If you take care of them, they will last a long time and can make the finishing process much easier.

Helpful Hint: If you find yourself using a tool frequently, it may be worthwhile to purchase a backup tool. If your flush cutters get dull and you need to remove supports, a backup set can be a lifesaver.

Tools and Skills for 3d Printing

3d pens are a tool that I do not see used as often, but I have found them to be extremely helpful. They extrude low temperature plastics like PLA well and can be used to weld cracks in prints together, provide additional support, or even on their own for free-formed prints. They are surprisingly versatile, and I recommend picking one up for fixing prints.

In a similar vein, heat guns are tools that are excellent for finishing prints. They can be used to reform areas that might have warped, bring color back into marred or sanded areas, and smooth out rough surfaces. Use caution as these get extremely hot!

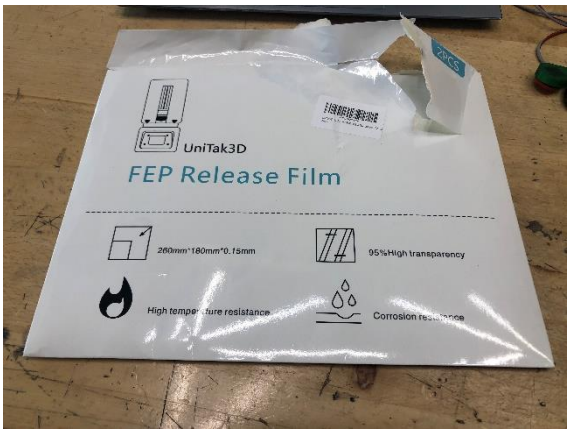
One way that you can make your prints more personal is by adding color. If you tend to print in one color, using spray paint is a great option. I recommend using a filler primer first, sanding away rough surfaces, then painting with your preferred color!

Helpful Hints: If you plan to use spray paint, you will want to have a well ventilated area that that will not leave paint in undesirable places. Superglue can also be used to join prints together if you do not have a 3d pen handy.

Tools and Skills for 3d Printing

If you are planning to do any resin printing, you may want to look into purchasing a curing station. The one at my local makerspace is able to wash prints in an alcohol bath and then use UV light to cure the resin prints.

Up next, we will talk about replacement parts. Unfortunately, there are some parts on your printer that are subject to wear and tear. On a filament printer, I would recommend having a few replacement hot end nozzles in your preferred diameter. If your printer uses a Bowden tube, having a few extra feet can come in handy.



Resin printers will have slightly different wear parts. The plastic film on the bottom of the resin vat is subject to becoming deformed and tearing over time. Having a few replacement films can save you a lot of headaches.

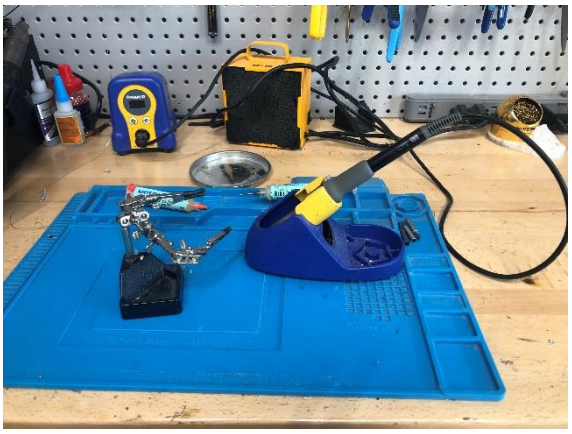
Helpful Hint: You can order replacement parts for most current printers through Amazon and other trusted retailers. User manuals that walk you through specific repairs can be found on manufacturer websites as well as on YouTube.

Tools and Skills for 3d Printing

In line with replacing parts, having the tools to replace those parts is equally important. Printers will typically come with the tools needed to make repairs, usually consisting of a few Allen keys, wrenches, and zip ties. I recommend having these stored in a convenient place where you are not likely to lose them.

If your printer is having issues with adhesion that are related to the filament that you are using, there are a few tools that may come in handy. Blue painters' tape, glue sticks, and hairspray have all helped to get troublesome filament to adhere to print beds and are worth a shot if you have already verified that it is not a printer side issue.

I would also recommend learning about tools used with basic electronics like soldering irons. These tools can be used to join and repair wires, make adapted switches and adapted switch toys. Kits are inexpensive and with a little practice your can take on a valuable skillset to make even more useful prints.



Helpful Hint: Makers Making Change has a few switch designs on their website with instructional pdfs that guide you through the assembly process. If you are just getting started, it is an excellent place to learn.