

# Using the 3D printer

## ZCorp Spectrum Z510

Get your file to us by one of the following ways:

- USB jump drive
- Email: [cdes3dp@umn.edu](mailto:cdes3dp@umn.edu)

### Cost:

3D printing costs \$3.00 per cubic inch. The total volume of your object(s) is determined by the ZCorp software. You will be notified of the cost of your part before printing.

### Size recommendations:

- Cantelivers should be shorter than 2" and thicker than 1/8".
- Beams/pillars should be no less than 1/8" square.

If your part appears to be too fragile to extract safely, we will let you know before printing.

The print chamber size is 10" x 14" x 8". Make sure your parts are either scaled to fit that size, or are scalable to that size without becoming too fragile (see size recommendations). It is possible to orient your part in such a way that you can fit a much longer part in the print chamber.

If your file is not 1:1, let us know the biggest dimension you want it scaled to.

### Files supported:

- .STL - ProE, Rhino, SolidWorks, Sketchup (with [su2stl.rb script](#))
- .3DS - Autodesk 3DS Max

The 3D printer will print in 24 bit color.

Color can be added to your model either in your modeling program or by using ZCorp's ZEdit software after it has been imported into ZPrint. The ZEdit software is available to use on the 3D printer computer.

### Pre-printing Procedure:

After we have reviewed your file, it can be printed. Depending upon the number of students wishing to use the 3D printer, your file may be printed in a batch with other students' files. Therefore, it may be more effective for us to wait until the virtual print chamber is full before printing.

Once the print is ready to go, we can give you an estimate of the time it will take to print. If there are others waiting to use the 3D printer, it is important that you show up on time to remove your part(s). You are responsible for the removal of your parts. Bad things can happen and we don't want to be responsible for your broken part.

### Parts Removal:

Extracting your parts from the print chamber can be tricky. Our best piece of advice is to be patient. Allow yourself enough time to extract your part (it may take 30 minutes or more). Rushing to remove your part will most likely result in a bunch of broken pieces. It is also important to be aware of others' parts that may be in the print chamber.

1. Use ZPrint to locate your part in the print chamber.
2. Press the **ONLINE** button on the front of the printer.
3. Lower the **FEED** chamber using the down arrow on the front of the printer.
4. Use the paintbrush and trowels to remove the excess powder from around your part, being careful to not spill outside of the build chamber.
5. For tall parts, raise the **FEED** chamber as you remove powder.
6. Once your part is extracted, use the powder recycling station to blow off any dust that was not removed during extraction. Turn the powder recycling station on by using the power strip above and to the left.

If necessary, there is a pictorial on the 3D printer computer that you may consult.

### Strengthening Parts:

After all excess dust has been removed, you may wish to infiltrate your part with a hardening agent. The following have been used to strengthen parts:

- Cyanoacrylate glue (a.k.a. superglue)
- Spray lacquer