



## 3D Printing Q and A

### What kind of printer do we have?

We have *Pro2 Plus*, manufactured by *Raise3D*. It is a dual nozzle, fused filament fabrication (FFF) printer that takes a thin filament of meltable plastic, melts it, and extrudes it out of a nozzle to slowly build an object from the bottom up.

### What does dual nozzle mean?

Our printer has two, separate nozzles that you can choose to print an object with. This enables you to print models using more than one colour of plastic requiring the initial design of the model to be divided into two separate components, one for each colour. As well, you can print models using *dissolvable support*, consisting of a special plastic that dissolves in water.

### How big of an object can I print?

For a single nozzle print, within 305mm (12") wide x 305mm (12") deep x 605mm (23.8") tall.

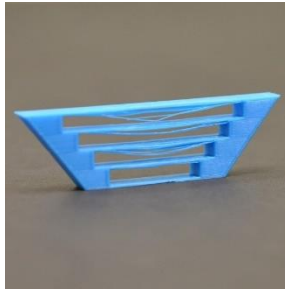
For a dual nozzle print, within 280mm (11") wide x 305mm (12") deep x 605mm (23.8") tall.

### What is the cost for a print?

The cost is based on the total weight of all objects printed: \$0.10/gram. A kitchen scale is used to determine the final weight. The support material is included in the final cost. The support material is not removed from the model.

## **What is material support?**

Our printer builds objects from the bottom up, layer by layer. Some objects have sections within their design that have nothing below them when they print. For example, here is an object printed without support for these components:



When we prepare the 3D object for the printer, our software has the ability to detect these sections of the print and generate additional components for the object that will hold these sections up as they print. They are printed using a method that is then removed afterwards instead of being fully fused to the model, and the result is a model with no imperfections as above.

## **What is dissolvable support?**

Support components can be printed with dissolvable support. The dissolvable support used is called PVA, and is water soluble. After completing the print, instead of mechanically removing the support, the entire model is placed in a bucket of water for about a day. During this time the support will melt away, leaving only the desired model. This is especially more desirable when the support may be difficult to get to inside the model, or when supporting extremely detailed or weak components of the model (to avoid damage when the support is removed).

## **Am I charged for failed prints?**

We do not charge for failed prints. A print fails for a number of reasons, including breaking filament, out of alignment components of the printer, power outages, or the object moving while it is being constructed.

## **How do I submit a print job?**

Visit [fspl.ca/services/makerspace](https://fspl.ca/services/makerspace), and fill out the form in the *3D printer* section. This form includes colour selection and a form to submit the 3D object files. You can also contact us at [3dprinting@fspl.ca](mailto:3dprinting@fspl.ca) (for inquiries only).

### **What types of materials can I print with?**

You can print with a type of plastic called PLA, and dissolvable support material called PVA. Neither are considered food safe in our application.

### **How long does an object take to print after it starts on the printer?**

Larger volume objects take longer to print, and taller objects take longer to print. (moving upwards is slower). A 1 cm<sup>3</sup> print may take on the order of 10 minutes. A 10,000 cm<sup>3</sup> print may take upwards of a couple *hundred* hours.

### **When will my print job be ready?**

Prints are done on a first come, first served basis. Most projects are completed within 2-3 weeks.

### **How do I submit my files?**

We accept **.obj** files, and **.stl** files, both common file formats in the world of 3D printing. For pre-created models please visit [Tinkercad](#), and [Thingiverse](#). These platforms host user created content designed and tested for 3D printing.