

3D Printer Design Guidelines

Material & Sizes

Our main material stock for 3D printing is PLA. We can provide a wide array of standard colours and can also look at finding something more specific if required. Please ask what we have available when ordering or if your print requires a specific colour.

The maximum model sizes we can print must fit within a 20x20x20cm cube, which is the working area of our printers.

Cura

As we only use Ultimaker printers, we advise you to download Cura (model slicing software) from their website. It is freely available and will provide automated settings for Ultimaker printers. It will also in some cases reveal some possible issues, such as overhangs.

If you are unsure how to use Cura, please send us the model file directly and specify the print quality required, rather than trying to create the gcode for the printer. Alternatively if you are familiar with Cura, please send us the gcode exported from Cura as well as the model file in case we need it.

Typical FDM Printing Considerations

The nature of FDM printing means that, without supports, we can not print objects with overhangs. For example, a model of a figurine with the arms held out at a 90 degree angle would likely print from the feet up perfectly well, but then the arms would be printing in mid-air. With nothing beneath the arms the freshly extruded material will have nothing to layer on to. This is where supports come in, weak layers of additional material built up from the bed to hold up any part of the model considered and overhang. Supports don't always work (sometime they break apart during printing) and if they do work the model may need some light sanding or filing to remove any rough surfaces left over after the support is broken away from the model.

Very small models may not print. The nozzle size of our printers is 0.4mm, meaning this is the thickness of the plastic extruded. General the outer shell thickness of a model will be at least twice this, therefore if part of the model is too close to this size, the print may not come out as expected, or it could fail altogether.

It is best to have the largest flat surface lying on the bed of the printer. This will help the adhesion of the model to the print bed and will prevent the model coming loose during printing (if this happens the print is immediately failed, and would need to be run again).

File Formats

For 3D printing we can accept OBJ and STL file formats.

You can upload your files via our enquiry form at <https://machinesroom.co.uk/fabrication-enquiry/>