

Digital Fabrication



Know the lingo:
3D Printing

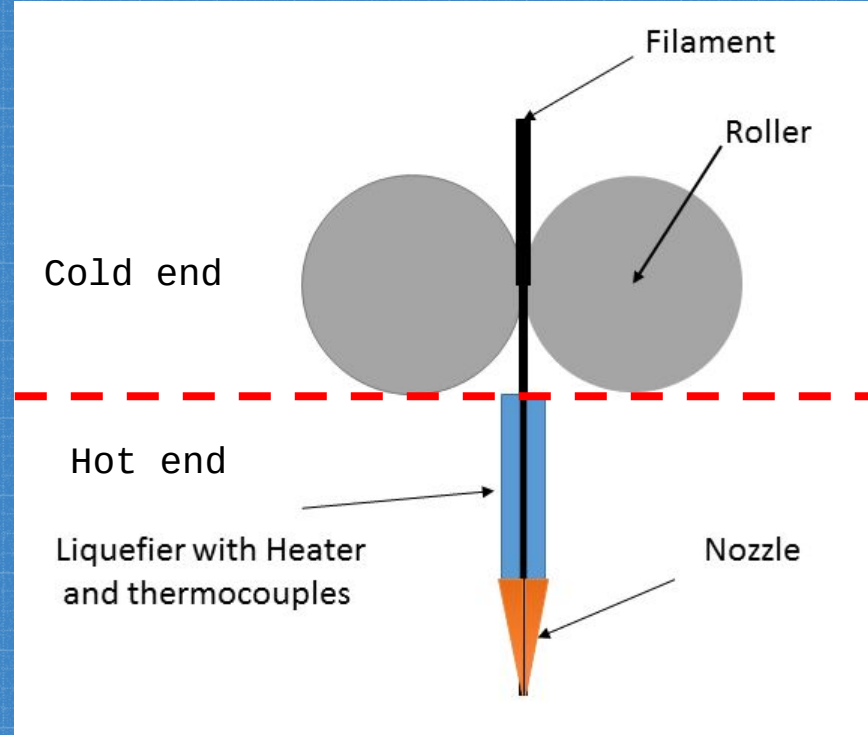
Term: **Filament**

Filament refers to the material you are using to print. There are many different types of filaments that require different temperatures to print. Check with your 3D printer manufacturer about proper temperature settings.



Term: Print Head

The Print head is a combination of parts that is responsible for melting your **filament**. The diagram to right illustrates the components of the print head. Filament is moved by rollers connected to motors. The Filament is heated and then extruded through the nozzle. Some 3D printers can have multiple nozzles for printing in multiple colors.



Term: Print Bed/ Build Plate

The print bed or build plate refers to the surface the 3D print is built on. Most build plates are glass, and people will either put a bit of blue painters tape or stick glue to make sure there is good adhesion between the plate and filament.

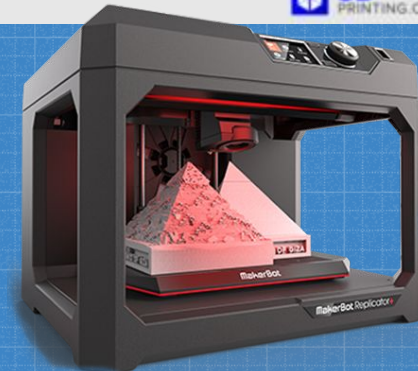
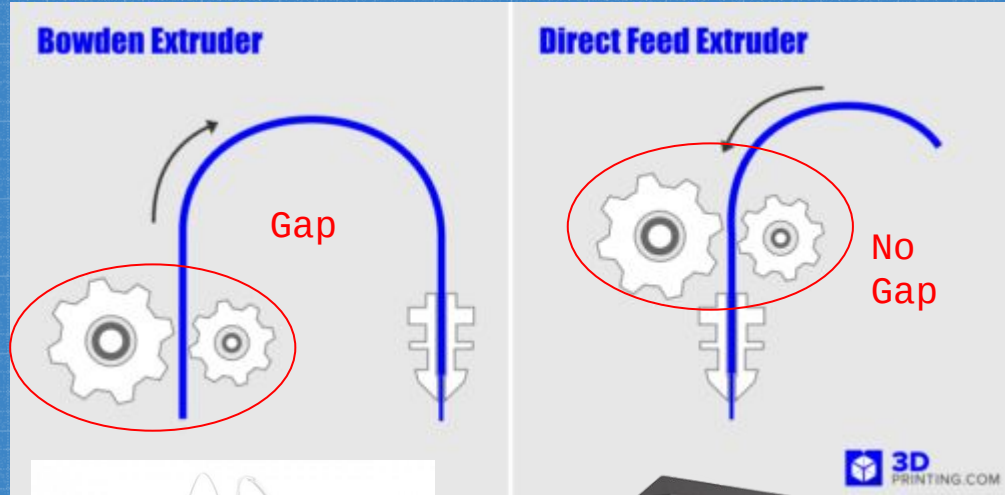


Term: Direct vs Bowden Extruders

Extruders refers to the motors that move your filament to the print head. The location of these motors tells you if the 3D printer is a Direct Extruder or Bowden Extruder.

Direct Feed extruders place the motors as close to the print head as possible.

Bowden Extruders have a gap between the gears and the print head. Filament often moves through tubing to the extruder. These tubes are called Bowden Tubes.



Term: Adhesion

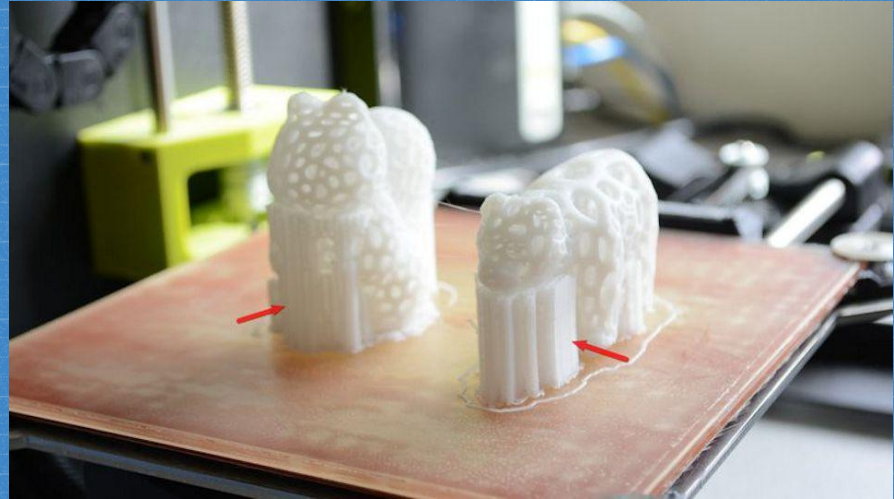
Adhesion refers to the “stick-ability” of your print filament to the build plate. To improve adhesion, some use a thin layer of glue stick or blue painters tape. Issues arise when the filament does not stick to the plate.



This print did not stick to the plate.

Term: Supports

Supports can be compared to scaffolding. These are the extra structures your 3D print may need in order to print complex shapes. If you are printing a shape with gaps or holes, you will need supports, as you will need a surface to apply filament. Supports in your 3D printer's software, and you will see the option to add supports before printing.



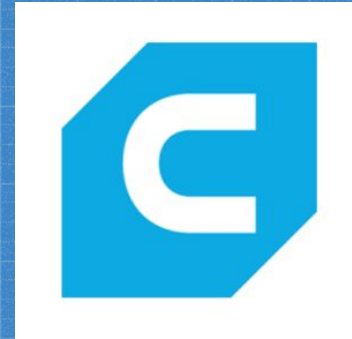
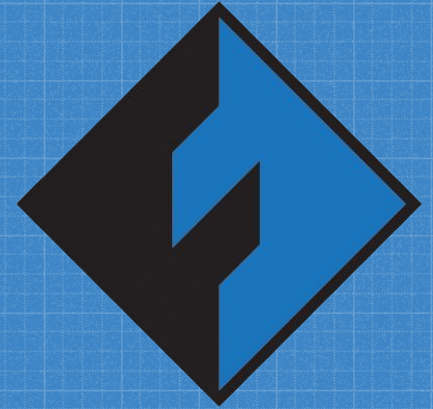
This print needs supports in order for the animal heads to be printed. Otherwise, there would be no surface for the filament that makes the head to sit on.

Term: Slicing software

Slicing software is the software that comes with your 3D printer. This software is what takes your .stl design file from a 3D modeling program (like Tinkercad) and turns it into instructions for your printer to create a 3D object. To the right a common slicing softwares.



MakerBot
Print

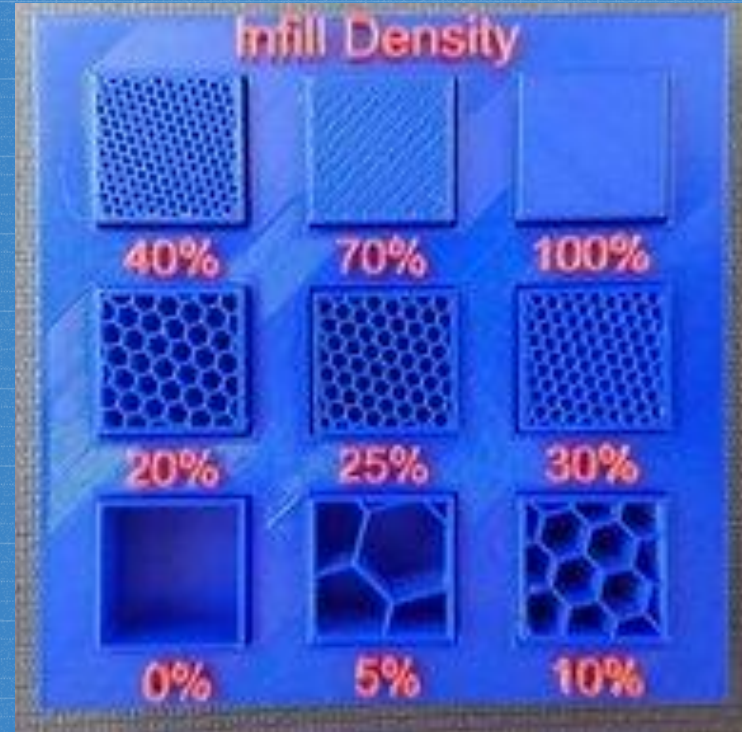


Ultimaker
Cura

Term: Infill

Infill refers to the filling inside a 3D print. Infill has 2 basic properties: shape and density both of which you can select before printing. Adjust infill impacts the rigidity of your object and the length of time your print takes.

To the right is a honeycomb shaped infill with varying densities.



THIS is a great project to create and display in a lab!