Rockville Public Library

Information about the Library's 3D Printer

The MakerBot Replicator 3D printer creates physical objects from a digital model. This printer is an example of additive manufacturing, because it builds the physical objects one layer at a time from the bottom up.

Suggested software:
Patrons can design their own projects using free web based programs such as Tinkercad, Sketchup or Blender. Previously designed projects can be downloaded from Thingiverse.com, an online community for sharing 3D designs.

Design files:
Designs can be prepared in these file formats:
>   Wavefront obj (.obj)
>   ACSil stl (.stl)
>   Binary stl (.stl)
>   Thing (.thing)

Files should be brought to the Library loaded on a flash drive for downloading into the printer. Files can be no larger than 250 MB.

Pricing:
3D project pricing is based on the weight of the object in grams. The cost for a project is $.25 per gram rounded up to the nearest gram. The library volunteer will calculate the price based on the projected weight of the project. Once a patron has agreed to the size and cost of a build, payment is required before the MakerBot prints the project.

Preparing to print a design:
Patrons should make an appointment to meet with a volunteer to plan their project. When a patron brings in a design, a volunteer will download the project into the MakerBot. Volunteers will not assist with creating a design. They will explain several variables that the patron has to consider before printing the downloaded design. These include the size and weight of the project and the length of time that the object will take to print. Patrons can choose to modify the size of their project. Projects taking up to 6 hours will have to be scheduled around the times that the Library is open. Once a patron has finalized these decisions, a project is ready to be printed.

Using a self-created design:
If you have created your own object file, you will be responsible for the cost of the print regardless of the success of the print.

Using a predesigned project:
When choosing a project downloaded from a creation site like Thingiverse, please review the information about the design on the project page. Look for information about the number of successful prints and review the comments section. Make sure that the number of positive comments outweighs the negative ones. You may wish to select another version of the object if prints are unsuccessful or reviews are negative. Otherwise you print at your own risk.

Colors:
A limited number of colors are available. The MakerBot can only print one color per build.

Filament:
The MakerBot uses PLA (Polyactic Acid) which is derived from plant-based starches.

Maximum print size:
The printer has a maximum build volume of
        9.9 inches long by 7.8 inches wide by 5.9 inches high
        (25.2 centimeters long by 19.9 centimeters wide by 15.0 centimeters high)

Print time:
Project must be completed during normal Library operating hours. Longer projects may be assigned for printing on days when the Library is open from 10am to 8pm.

Finishing projects:
3D printers print in layers from the bottom up. Rafts are the foundations that go down before a print begins to be formed. Sometimes a layer needs support from the bottom. In that case, fine strands called supports are included in the design. These supports should be removed when the project is complete. Brims are also used to stabilize a design.
Volunteers will take a finished object off of the build plate. They are not responsible for removing rafts, supports and brims. They will suggest tools and provide suggestions for finishing techniques.