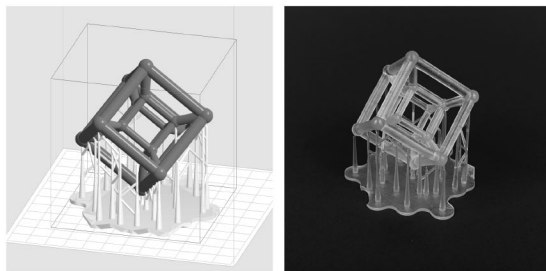## SUPPORT MATERIAL

All 3D printers generate support material differently, and all support material types have different post-processing and finishing requirements. A couple of our printers allow for the support material to be dissolvable – it washes away in a cleansing bath, and a few do not have dissolvable support material and their support structures must be clipped and/or sanded away manually.
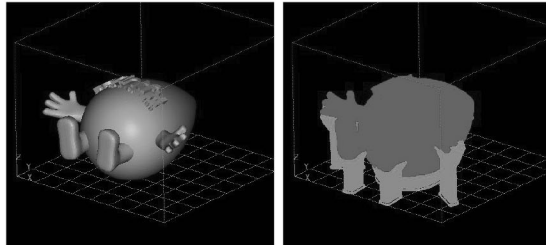
Model before support generation   Model with support generation

MEASUREMENTS IN AUTODESK® NETFABB®

In the bottom right panel of the Netfabb window, you will see basic dimension information about your part, including size and volume, which can be used to estimate your cost (not including support material).

Information					
Length:	9.50	in	Volume:	23.06	in³
Width:	9.50	in	Area:	162.21	in²
Height:	0.49	in	Triangles:	20208	
			1 of 1 part is selected.		

PRICING

You are responsible for paying for all build and support material. When dropping off your job, you must indicate on the order form whether you would like to be called with a cost estimate prior to printing your model.

Stratasys F120   **FormLabs Form 2 & 3**   **Ultimaker 3 & 3S**

Bambu X1 Carbon

fablab fabrication ·lab | FIT State University of New York

fablab fabrication · lab

3D
PRINTING
GUIDELINES

Pomerantz Center   5th Floor   D529A
www.fitnyc.edu/printfx
212 217.5470

The Stratasys F120 Highlights:
Good for: Large durable models like toys, functional prototypes, with very clean grain printing
Print Quality: Durable & High Details
Material: ABS Plastic
Type of Printing: Fused-Deposition Modeling
Support Material Type: Dissolvable Material
Build Size: 10"L x 10"W x 10"H

The FormLabs Form 2 & 3 Highlights:
Good for: Jewelry, miniature models, and hollow shapes with very high resolution
Print Quality: Extremely High Details
Material: Resins Plastic
Type of Printing: Stereolithography
Support Material Type: Clippable Material
Build Size: 5.7"L x 5.7"W x 6.9"H

The Ultimaker 3 & 3S Highlights:
Good for: Multi-colored models like toys, offers multiple materials, with nominal clean grain printing
Print Quality: Durable & High Details
Materials: PLA, Nylon, Stonefil, Metal Composite, Wood Composite, Carbon Fiber, Magnetic PLA, Electrical Conducting PLA, Flexible PLA, and other Composite Resin Materials.
Type of Printing: Fused-Deposition Modeling
Support Material Type: Clippable and Water Soluble Support Materials
Build Size: 8.5"L x 8.5"W x 7.9"H
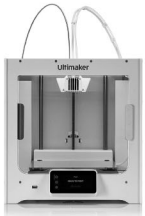
The Bambu X-1 Carbon Highlights:
Good for: Medium size models, functional prototypes, with very low cost printing
Print Quality: Basic & Limited Details
Material: PLA Plastic (Corn based bio-plastic)
Type of Printing: Fused-Deposition Modeling
Support Material Type: Clippable Material
Build Size: 10 "L x 10"W x 10"H

Only STL files will be accepted for 3D printing.

- Most 3D CAD platforms (e.g. AutoCAD, SolidWorks, Rhino, etc) can natively export 3D files as STLs.

- Netfabb Standard (freeware) can be used to convert multiple file formats to STLs.

All 3D file formats are prone to errors in geometry. The most common errors are inverted faces due to reversed normals, and holes in the mesh due to bad/open edges. Files with these errors will not print correctly, and must be fixed by the client before a job can be submitted to our 3D printer.

Netfabb Standard is a freeware STL viewer that can open your 3D files and diagnose common errors, as well as perform basic fixing and scaling functions on your models. Netfabb Standard is installed on the computers in the Self-Service 3D Lab.

To check your file for errors in Netfabb Standard, open the program and choose Project —> add Part, and select your file. The program will open and display your STL file, and if it detects errors in your file it will display a large exclamation point in the bottom right hand corner of the screen.

For a more detailed analysis of the problems with your file, choose Extras —> New Analysis —> Standard Analysis
You will see this information in the side panel.

Holes:	269	Bad edges:	0
Boundary edges:	1052	Boundary Length:	16.98 in
Flipped triangles:	6		
Surface is closed:			No
Surface is orientable:			Yes

Inverted Normals (Flipped Triangles): This indicates the highlighted faces are inverted, simply put, that the geometry is "inside-out." This is often a result of improperly scaled or duplicated geometry in a 3D program. Reversing the face normals in your 3D program will fix this error.

Bad Edges: This indicates the highlighted edges are disconnected or open. The 3D printer software can only properly recognize a piece of geometry that is a completely closed, solid shell with no openings. If your model requires a hollow opening or hole, you must create a backside and interior wall, so the faces of the model still form a closed surface.

Netfabb Standard has an automated repair function that will resolve many of the most basic errors that occur in STL files.

In some cases, you may have to return to the original 3D program you used to create the file in order to fix larger errors.

PLEASE NOTE: You are responsible for performing these fixes before submitting your file to us. If we detect any problems with your file, we will stop processing your job and will not continue until an updated file is submitted with the appropriate fixes.