

3D Printing Tips

1. Just as with a steel beam, the longer it spans, the thicker it must be. Printed models follow the same rule. The longer unsupported spans become, the thicker the piece must be to support itself across the span. Otherwise it will warp or break.
2. As a general rule, minimum thickness is 1/8", although models can be as thin as 1/32" when these areas span small distances or are well supported.
3. If you want to interface a printed model with other model-building materials, such as basswood members, then you should adjust your model to compensate for the printing tolerance. If you want to print a wall that accepts a basswood beam, for instance, then add 1/32" to each dimension of the beam slot. If the wall is to accept a 1/16" x 1/4" stick on basswood, then the opening in the wall must be 3/32" x 9/32". If you do not include this extra width at points of interface between printed model and basswood, then the openings in the printed object will be too small to accept the basswood.
4. Do not print needless mass. If the model to be printed has a thick base, then hollow out the base before printing. By hollowing out thicker masses you pay less and your model is less likely to break under its own weight. In order to remove internal cavities from the printing cost, there must be at least *two* openings to get the powder out of the cavity. Minimum size for each open to an internal cavity is 1/8" x 1/8".
5. Do not include surfaces in the model to be printed. Only objects possessing volume can be printed. Two-dimensional surfaces will not print, and they can confuse the printer, which can stop the entire object from printing.
6. Do not print simple slabs and walls that could be quickly made out of foam board, chip board or card board. Do not print straight shafts that could be made out of basswood. Use the 3d printer only to print objects that are complex, curved and/or intricate.
7. Make a copy of your model. Never prepare for printing in the original model file.
8. Delete everything out of the file that is not to be printed.
9. Perform a *Construct Union* on all solids that are part of the object to be printed. The printer can only print single objects, so a model composed of many separate pieces must be fused together into a single, complex object. If the geometry is too complex to be fused into a single object, then you must divide it into less complex sub-objects, printed separately and then fitted together afterwards.
10. Scale the model down to the desired print size. The maximum print volume is 7.5" x 7.5" x 9.5". The model must fit into this volume or it is too big to print. When scaling down the model, remember that it must be reduced by a factor corresponding to the desired architectural scale. For example, if you want to print the model at 1/16" = 1'-0" scale, then you must reduce it by a factor of 192. If you want to print at 1/8" = 1'-0" scale, then reduce by a factor of 96. If you want to print at 1/4" = 1'-0" scale, then reduce by a factor of 48. Etc. Please refer to a scale factor chart for other architectural scales.