

# Preparing Your Models for 3D Printing



The following guidelines will help you to avoid printing errors or broken parts when printing to a 3D printing service.

## Thin Shells and Walls

If the shell or walls of a model are too thin, it may break during printing or shipping, be vulnerable to breaking after delivery, print with errors, or may not print at all.

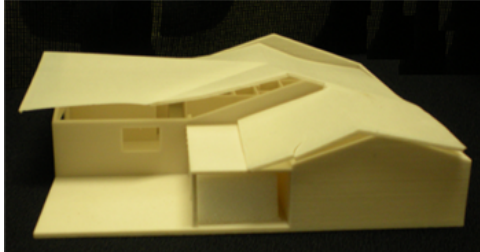
Each service provider has their own requirements for minimum shell and wall thickness. Before printing, check the exact specifications of your service provider. For example, one vendor cannot guarantee that your model will print if the walls are less than 0.508 mm. Another service provider requires that a shell with an aspect ratio of 1:5 or more have a minimum thickness of 1.25 mm.

### **Use Caution When Scaling Down Models**

If you scale a model down, make sure the shell or walls meet the minimum requirements for thickness set by your service provider. Also, pay particular attention to smaller objects such as the following:

- Handrails,
- Pillars,
- Pins,
- Window sashes, and

- Wires.



This model of a house was scaled down. As a result, the roof of the model was too thin and it cracked.

## Structural Problems

Models that have a large mass on top or a slender stem or base may break during printing or shipping, and be vulnerable to breaking after delivery.

For example, a figure with a ball on top of a thin pin would probably break after printing. Check the service provider's website for the minimum requirements of models such as this.

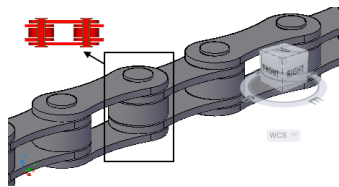


This model printed and shipped without breaking, but it illustrates the type of construction that can easily break: a large mass on top of a slender stem.

## Moving Parts

When you print a model, be sure to allow enough clearance or tolerance between moving parts such as gears, cogs, or links in a chain.

If you do not allow for enough clearance between moving parts, the printout may be a solid, non-moving object. To ensure that the parts of a model move, you can make clearance adjustments in AutoCAD as illustrated in the following model of a chain.



The side view of the link (shown in red) illustrates where extra space was added so that the model moves.

## Miscellaneous

- You can print 3D solids, but not surfaces, parts of a block, meshes, 2D geometry or text.
- You cannot print colors and materials.

