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Four Ways to Prepare the Printing Surface of your 3D Printer

The forums are full of ideas on preparing your 3d Printer platform for print. Why does it matter? Those first few layers are critical to the stability of the model and the completion of the print process. As soon as the extruded filament exits the nozzle, it starts to cool. And when plastic cools, it can change shape. If you see the model peeling, lifting, or warping during those first few layers, stop now. Hoping it finishes without further issue is probably not worth the time – or the wasted filament.

Of course there are three things you should make sure are in good order besides preparing the print platform on your 3d Printer:

1. Level the platform. Make sure that the nozzle is the same distance whether it is at the front, back, left, right, or center of the platform.

2. Calibrate the table height. Make sure the nozzle is the right distance from the platform: Too close and it will strike it and smear the plastic as it comes out. Too far away and it won't sit down and stick to the surface.

3. Pre-heat the platform before printing. That ensures that the plastic won't cool too quickly. Quick cooling means uneven cooling, and that means warping and peeling.

Now, how the surface is best prepared is a matter of debate. It depends on environment, materials, and even personal taste. There are tradeoffs – some types of preparation make it easier to remove the model, but also more likely for the model to remove itself prematurely. Some types are more labor intensive and save material and finishing time by eliminating the need for a raft. Some are more expensive than others.

We've consulted with the experts, and here are the four top ways they recommend adhering your model to the printer platform:

Type	Pros	Cons	Method
Perf Board	Minimal Surface Preparation Easy to remove from Platform Perforations help model "grab" surface during first layers	Can warp after repeated use Can be scratched during model removal Perforations will eventually become filled Must use a Raft when printing	Perf included with 3D Printer. Clip to platform.
Glass Treated with Acetone-ABS Combination	Good model Adhesion Easy Model Release No Raft Required	Somewhat Messy Requires advance preparation	Not included with 3D printer. Purchase 1/8" thick glass, 5.5"x5.5" in dimension. Dissolve a small amount of scrap ABS in Acetone, paint directly on to glass with paintbrush. Approximate ratio: 10" (.4g) of 1.75mm filament dissolved in 10ml of acetone. Should be approximate consistency of white glue. Clip coated glass to platform.
Kapton Tape	Good model adhesion Easy Model Release Raft Optional	Expensive Requires careful preparation Adhesive may soften when heated, and will eventually require removal (cleaning) from platform.	Not included with 3d Printer. Remove platform, apply tape carefully and evenly, replace platform.
Blue Painter's Tape (3M Type)	Easy model removal Inexpensive Raft optional	Requires moderately careful preparation. Varied results depending on humidity/air temperature	Can be applied directly to platform or to Perf Board.