How to save resin？

In the 3D printing process, resin can be one of the most ideal materials when you want smoother surfaces and fine details. However, resins are not as affordable as PLA materials, with standard SLA resins averaging around $50/liter. Some specialty resins, such as dental resins or ceramic resins, are even more expensive.

Therefore, in addition to choosing economical resins, 3D printing practitioners must also know some other resin-saving techniques, which can save a lot of cost. Here, we list 4 little tips that you may have overlooked.

1. Hollow out your model

In most cases, you don't have to print the model as a solid, hollowing out the original solid model in the software will save you a lot of resin. There are two points to pay attention to when hollowing out:

Thinner walls are certainly more economical, but it can also make your model fragile and may even increase the risk of failure to print delicate structures.
The hollow part may form a closed cavity during the printing process, the low pressure in the cavity may destroy your model or cause unexpected problems, you need to use CHITUBOX to perforate the model to balance the internal and external pressure to avoid Such problems.
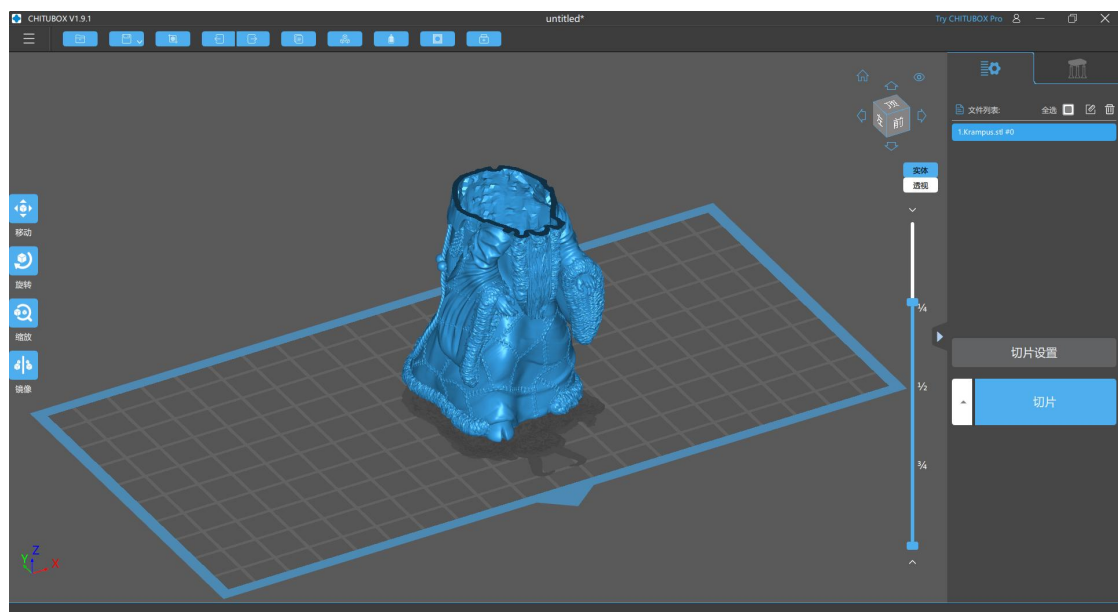
CHITUBOX provides a simple tool for punching holes in the surface of your hollowed out models, and the job is done in just a few clicks.

2. Reduce the size of the model

Undoubtedly another direct factor in resin consumption is the size of the model. In CHITUBOX, you can enter a precise ratio in the left toolbar to adjust the size of the model, or manually drag the handle to scale the model. CHITUBOX allows you to scale models simultaneously in 3 dimensions or individually along a single axis.
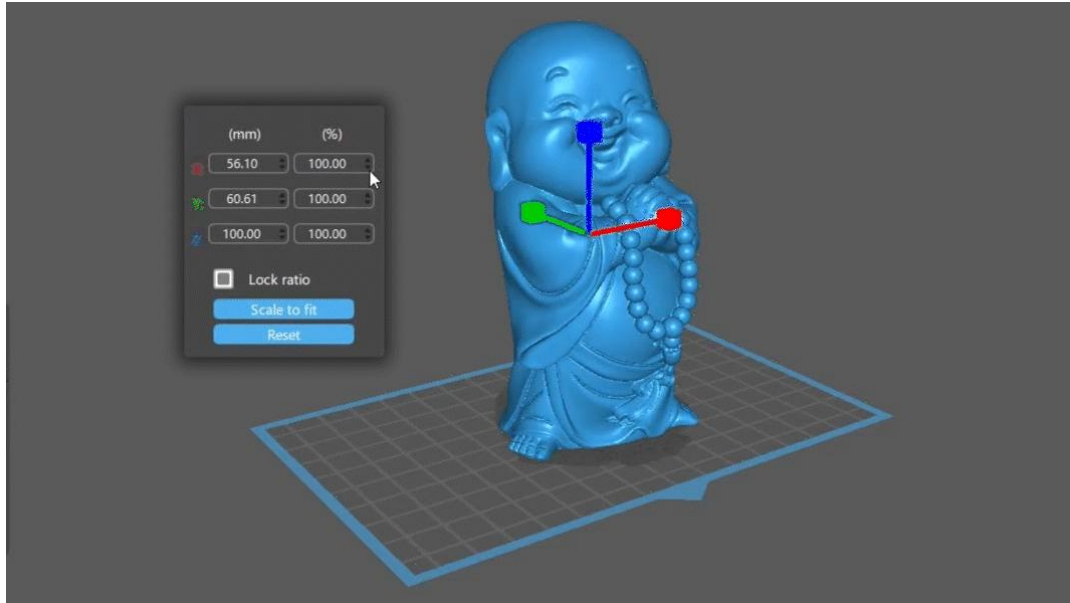

3. Optimize the 3D model structure

Print failure is the biggest cause of resin waste, especially for large models, and a print failure on a high-resolution printer with a large print size may waste half of your bottle of resin, or even more.

To avoid a failed print, if you are able to modify the model using 3D modeling software, you need to pay attention to the structure of the model and optimize it as much as possible. For example, thinner walls can reduce model weight, which means less resin consumption, but also means sacrificing model robustness, and the impact of insufficient structural strength on pull-up resin printing can be fatal. The model hangs upside down on the build plate and bears the force of gravity during printing. Sharper corners increase structural stress and also increase the likelihood of cracks. Small holes smaller than 0.5mm are difficult to deal with, you may need to use the tolerance compensation in CHITUBOX to deal with this problem. Skeleton and gusset construction helps you reinforce certain places that need to withstand external forces.

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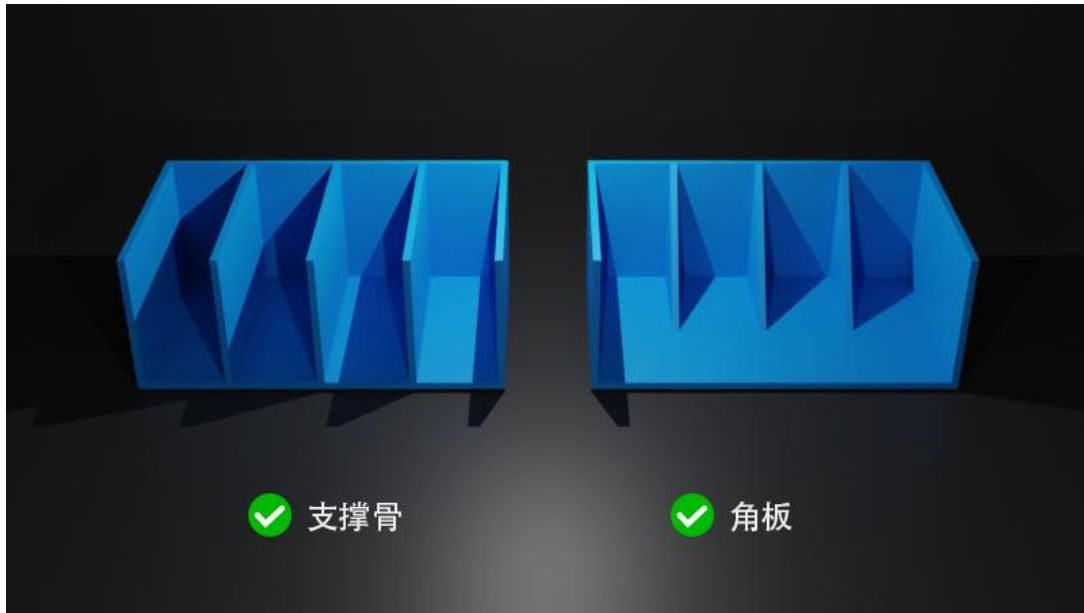
4. Remove unnecessary supports and rafts

The number of automatically added supports and rafts may vary if you place the model in a different orientation. Find an angle that creates less supports and rafts (make sure the supports are strong first). Pick out redundant supports and delete them manually. Usually, placing the model vertically requires less support.
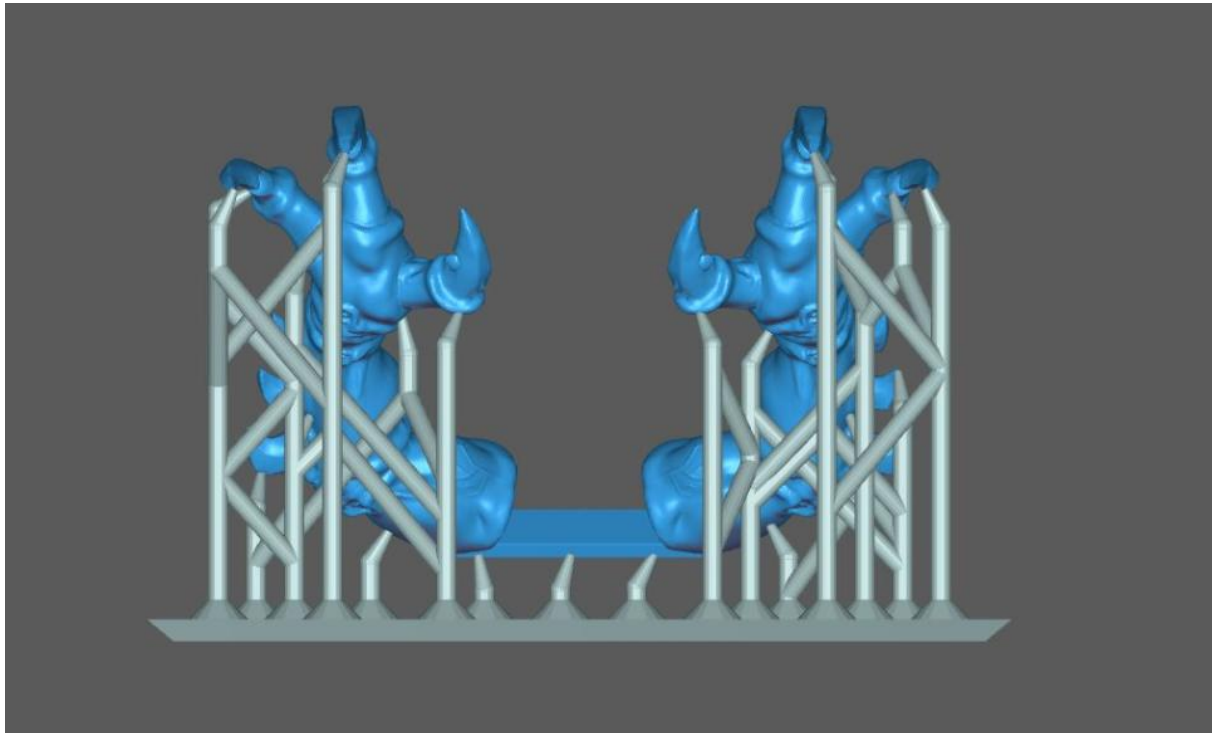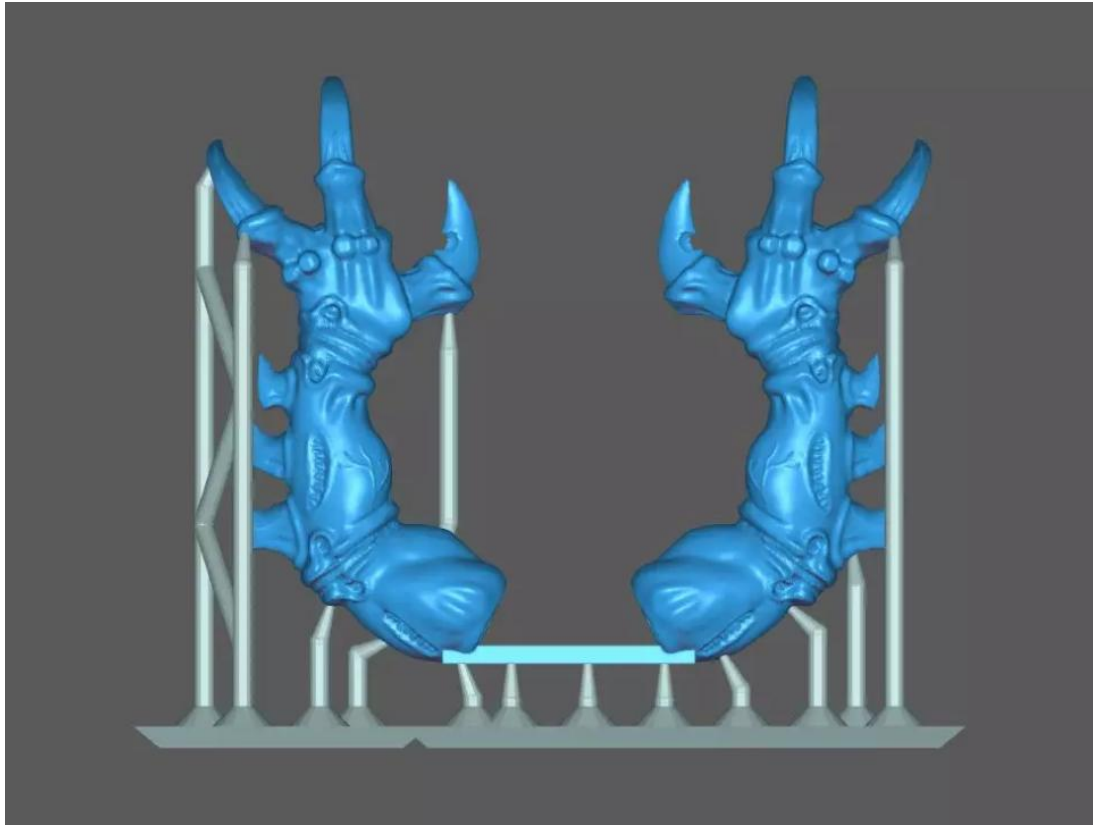
On the premise of a stable structure, fewer supports can bring a smoother printing surface and reduce the workload of post-processing.

The 4 tips above can help reduce resin consumption. CHITUBOX calculates the resin consumption after slicing the model by summing each generated voxel (pixel area × layer height). The algorithm is simple and should be accurate enough and less error-prone in most cases. There are also third-party online resin calculation tools, and if the site is trustworthy, you can also upload your model to estimate resin consumption.