

# 3D Printing Night Light Design Guidelines



Design a lamp that can be perfectly printed using 3D printing technology. Many things need to be planned in advance:

## 1. Wall Thickness and Layers

Aim for reasonable and uniform wall thickness. A thickness of 0.8mm is ideal for the lampshade section to ensure adequate translucency.

It's best to limit the lamp to two layers per level for better edge transition effects. This balance ensures optimal translucency, printing time, and structural strength.



Figure 1 (0.4mm thickness, uniform lighting, 5h printing time, a lot of seam defects.)

Figure 2 (0.8mm, uniform light, 5h printing time.)

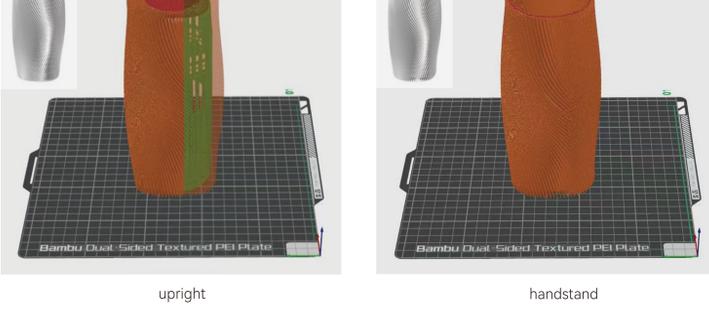
Figure 3 (1.2mm thickness, dim light, 9h printing time.)



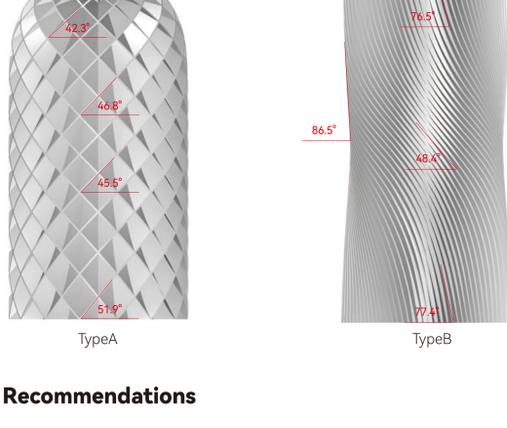
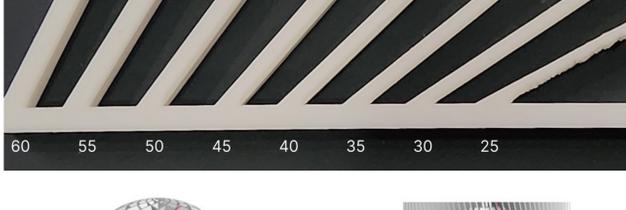
## 2. Supports

Avoid using supports whenever possible. They not only waste more material and increase printing time but also tend to introduce defects.

### 2.1 Adjust the placement to prevent overhangs

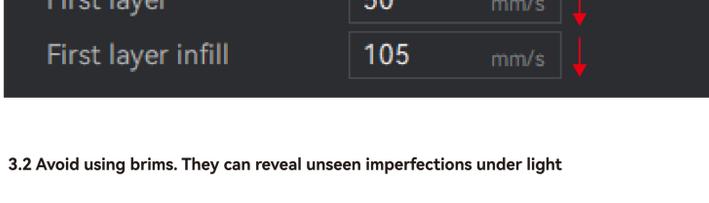
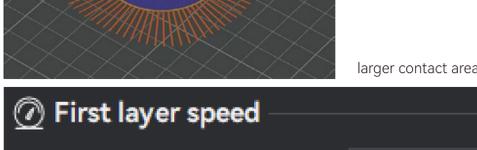


### 2.2 Introduce features and inclines to the horizontal plane. Generally, no support is needed for angles greater than 30°, and angles greater than 40° can be printed perfectly

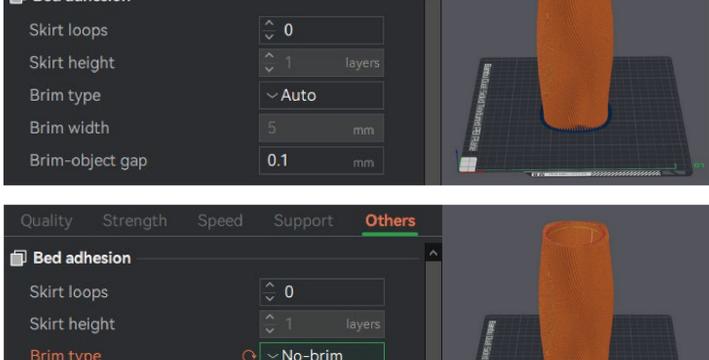


## 3. Slicing Recommendations

3.1 Ensure the first layer has as much contact with the heatedbed as possible. Increased surface contact improves adhesion, which is critical for print success. Reducing the speed of the first layer can further improve the success rate

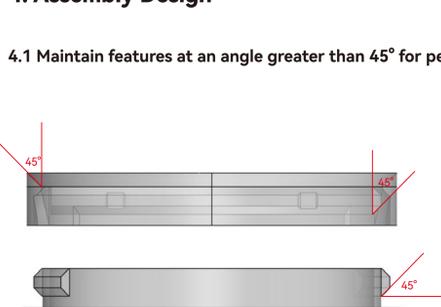


### 3.2 Avoid using brims. They can reveal unseen imperfections under light

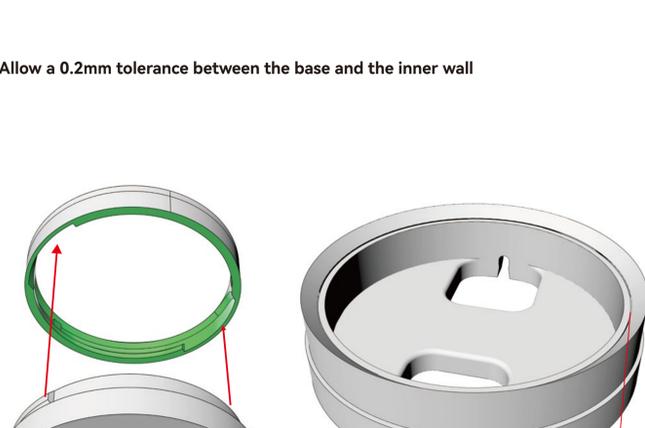


## 4. Assembly Design

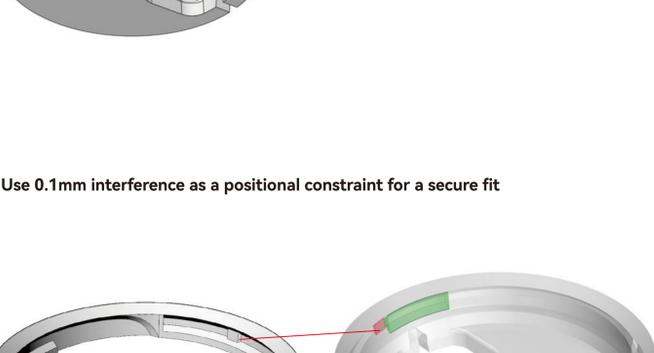
### 4.1 Maintain features at an angle greater than 45° for perfect printing



### 4.2 Allow a 0.2mm tolerance between the base and the inner wall



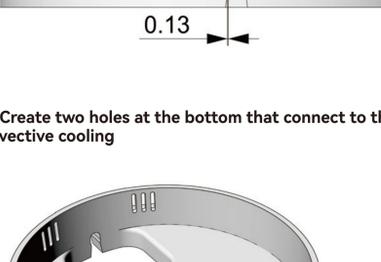
### 4.3 Use 0.1mm interference as a positional constraint for a secure fit



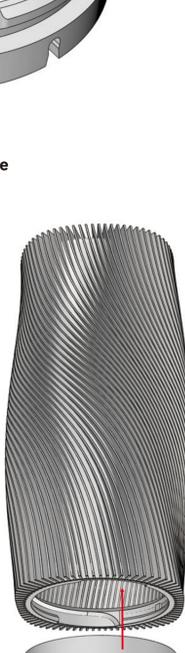
### 4.4 Design a groove at the bottom, introducing cooling holes and allowing a 0.13mm interference when designing the groove to secure the lamp wire



### 4.5 Create two holes at the bottom that connect to the outside environment to assist in convective cooling



### 4.6 Using our assembly structure



Note: We provide 3D files for parts which are designed to match with the hardware kit, so you can start with them to design your own products.