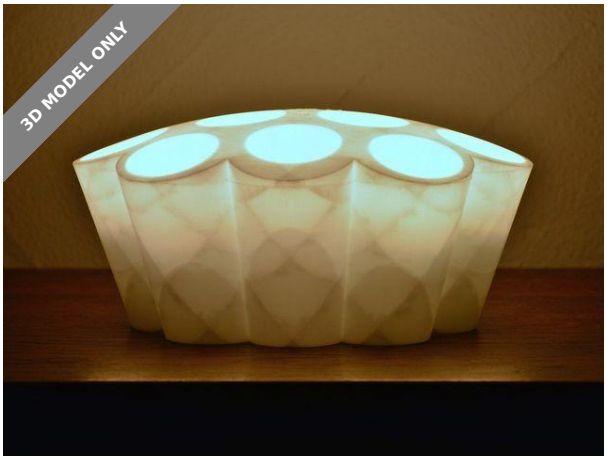

Cloud lamp

Tifn

VIEW IN BROWSER

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Summary

Decorative lamp using 10 GU10 led bulbs

Household > Home Decor

Tags: lamp gu10

Version 2

The first prototype had a few issues, so I modified the design and printed a new one. The new model has an identical outside shape, but has a lot more void inside to allow some air flow to cool the bulbs (the original version shrunk due to the heat, and several bulbs overheated and failed during the first year of use).

Four new feet parts have to be printed separately and glued, to raise the lamp for air intake. I also added a “bottom” part to cover the wiring (secured with m3 screws), which is meant to be printed with zero bottom/top layer, with only infill and perimeter.

Print settings

The main part can be printed with 2 perimeters and 3 our 4% infill. The bottom needs some supports (not so easy to remove around the feet mount holes, this could be improved) but the top is designed to rely on

bridging, so you should use support blockers to disable supports above 50mm or so.

The bottom part can be printed with two perimeters, zero bottom/top thickness, 12.6% triangular infill aligned with the Y axis. bottom_screws.stl is meant to be used as a mask ("modify settings for overlaps" in Cura) to add more perimeter lines around the screw holes.

This new version definitely improves heat dissipation, though I would advise using more effective led bulbs than the ones I have (7W for ~400 lumen, with a poor 0.5 efficiency rating) to keep it even cooler.

Original description

I finally decided to replace my 400W halogen light with something more energy efficient. I like strong indirect lighting and found it difficult to obtain this with leds. There are some powerful projectors that are meant for exterior, but the affordable ones usually provide an unpleasant light, with perceptible scintillation and a bad color accuracy.

So I designed this decorative cloud-shaped lamp which needs ten GU10 bulbs (led only!) with their sockets. The holes are shaped according the the cheap leds and sockets that I bought, so the model might need some adjustment depending on the provider. The bulbs should have a narrow angle (30°) so that the lamp itself does not get to much light.

I printed it in white PETG (avoid PLA as the temperature would be too high even with leds) and after some time, I can see that some of the tubes that contains the bulbs have shrunk a little, opening small cracks between layers, so polycarbonate would probably be a better choice. Printed with 0.8 wall thickness and 3% cubic infill, and the result is really rigid. Due to its size, the model is rotated 45° to fit the build plate, but it still requires a 230x230 area, which can be obtained on Ender 3 by hacking the slicer's configuration. A small amount of supports is required. I used 0.15 layer height for a nice finish but I don't think this is critical. My print was partially successful: I had a layer shift just at the start of the top surface, so I re-printed the top and assembled it on the bottom with superglue (the seam is slightly visible on the pictures).

Each bulb should be inserted in its socket before putting it into the lamp, as it would be difficult to rotate it afterwards. The wiring is somewhat messy, there is limited room bellow the bulbs. I used a glue gun at some places to maintain everything and ensure that it can lay flat.

I'm happy with the result ! It looks like what I had in mind. The light is mainly indirect, but a little amount goes through the lamp as the material is quite translucent (the infill pattern is visible so it should be carefully

chosen). And the holes are significantly deeper than the bulbs' height which effectively prevents dazzling (unless looking at the lamp with a high incidence angle).

If anyone wants to replicate or modify this, fell free to ask for further details !

Model files

lamp_v2.scad

lamp_v2.stl

bottom.stl

bottom_screws.stl

foot.stl

lamp.scad

lamp.stl

Other files

20221102_0006_plain.svg

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