

Dragon Powered LED Lamp Makers' Notes



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I hope you enjoy making the lantern and that you won't have any difficulty with it. If you have any questions, you are welcome to e-mail me. As laser cutters vary, I'm afraid I won't be able to advise on general questions about your cutter.

The lantern has been designed for use with LED light strings and is not safe for use with conventional incandescent bulbs which heat up. It is also not safe for use with wax candles or other naked flames.

Cutting

The DXF file has units of 1mm.

I designed the lantern to be cut from 6mm poplar ply. It is likely to work well using other 6mm thick materials such as birch ply. My laser cutter is barely powerful enough to cut 6mm birch ply and I haven't had good results.

I have found 6mm poplar ply to be flatter than the 4mm birch ply I also use. I cut the poplar ply on the cutter's honeycomb table.

The yellow lines are to be engraved, not cut, and so will require much less power or more speed.

Sanding

I remove smoke stains from ply using a random orbital sander. For small parts, I use the scrap as a jig to hold the parts steady while they are sanded. See the appendix for a photo.

Glazing

For glazing, I use frosted polypropylene from Kitronik which is safe for the laser cutter. Polypropylene can also be cut with a craft knife. Also available is frosted PVC. **Do not attempt to laser cut PVC.**

Assembly

The lantern is held together using wedges.

Assembly is quite difficult and I recommend setting aside 20 to 30 minutes the first time you assemble one. The glazing is cut to be held in place by the same tabs that hold the lantern together. The smallest part of the lid and base have slightly larger cut outs to allow the glazing to be held top and bottom. If you find the procedure too fiddly, you can make things a little easier by glueing or taping the glazing in place. Make sure you stick the glazing to the correct face of each side as they are not symmetrical.

The top tree pieces go on in size order, starting with the smallest. Fit these first. Press in four wedges. Hold the open end of the lamp in place with a rubber band. Insert the LED light string.

The bottom three pieces also go on in size order, again starting with the smallest. Feed the power connector of the light string through the hole and fit this piece to the lamp. The second bottom piece is a cable clamp. Press the cable into the longer cable path section first, then around the bend and out through the hole. Fit this piece to the lamp and then fit the last piece of the base, feeding the cable out through the hole. Press in four wedges.

If requested, I will make a video of the lantern's assembly and post it to you tube.

License

The license for the cutter files is for one person to make as many lanterns as you like and sell them if you wish. The license is **not** commercial production by a business of more than one person. Please enquire if you wish to manufacture larger quantities of the lanterns.

Please do **not** share or sell the cutter files. I am a one man business, making a small living from my laser cutter. If you give away my files, you are potentially depriving me of my income.

Appendix

Materials

I designed the lantern to be made from 6mm poplar ply. In UK, all the materials I used are available from Kitronik. A 600x400mm sheet is enough to make one lantern.

Poplar ply:

https://www.kitronik.co.uk/materials/laser-plywood.html?acrylic_sheet_size=255&acrylic_thickness=1001&cat=192

Frosted polypropylene:

<https://www.kitronik.co.uk/43140-frosted-polypropolene-sheet-05mm-x-1100mm-x-650mm.html>

LED light strings

The LED light strings in the photos are available from eBay. I use 10 metre, 100 LED strings. I recommend strings with solid copper wire rather than flexible, so they can be bent into a shape which they will tend to retain. If you can wait, they will be a lot cheaper directly from China. They require a 12 Volt adaptor for use with your local AC mains supply. They are available on eBay in the UK for around £7 without the adaptor, £12 to £14 with the adaptor.

Sanding

Using the scrap material as a jig to hold small parts while they are sanded. (In this photo, I'm sanding one of my smaller tea light lanterns, the principle is the same).

