Dragon Powered

Candle Lantern

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 battery candles and is 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 recommend suspending the sheet clear of the laser cutter's table. I use a jig for cutting which is described here:

http://dragonpowered.co.uk/laser-cutting-4mm-ply/

http://dragonpowered.co.uk/laser-cutting-jig/

If you don't want to go to the trouble of making a cutting jig, I recommend cutting on a honeycomb table to reduce smoke stains. If sheet materials are cut on a flat steel table, a lot of smoke staining is likely. If you don't use a jig, you may need to tape the sheet down as 6mm ply isn't guaranteed to be flat.

If you use a jig to suspend the sheet above the table, the order of cutting is important. The holes must be cut before the outside edges in case the parts drop before the laser attempts to cut the holes. The cutter files have different coloured lines for the parts that must be cut first. Be sure to order them correctly in your laser cutting software. Some laser cutter software claims to be intelligent enough to know which parts must be cut first. In practice, mine is easily confused and so I order the cuts manually.

The dark blue 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.

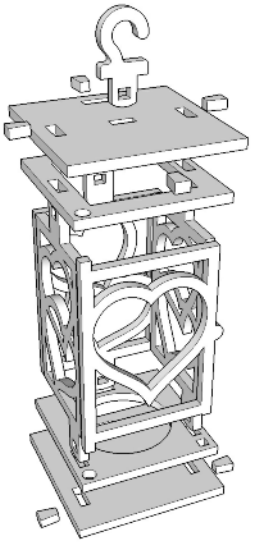
Glazing

The sides of the lantern can be left unglazed. I think the lanterns look best with glazing, though. 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.**

Glue the glazing to the inner side of the three lantern sides and the door using PVA or standard wood glue. You can tell the inside of parts as they are marked “L”, “R”, “B” and “D” (for Left, Right, Back & Door).

A low cost alternative to polypropylene glazing is vellum or tracing paper which won't be nearly as durable.

Assembly



The lantern is held together using wedges.

First, fit the hook into the lid so that the door hinge hole is at the front left. Push a wedge into the slot to hold the hook in place.

The sides must go in the correct place for the lantern to go together as designed. Match the sides' numbers to the numbers on the base with the numbers facing inside the lantern. After each side is fitted, push a wedge into the slot to hold the side in place. When all three sides have been fitted, fit the top and the door. Push a wedge into each of the three slots.

I will post a lantern assembly video on YouTube if someone requests it – please e-mail me if you're having difficulty.

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 two lanterns.

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

Candles

The candles I use are Phillips battery rechargeable 6x6x6cm. They are sold in pairs with a charger. They are available on eBay in the UK for around £7. The full retail price is closer to £25, so it is worth shopping around.

To use different battery candles, the circular cutout in the inner base can be changed using Corel Draw or any drawing application that can import a DXF file. The largest candle that would fit is 6.5cm wide, 11cm high (those dimension allow a little room for manouver).

Sanding

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