
Subject: Lens moulds

Posted by [wxs](#) on Mon, 24 Oct 2011 22:33:32 GMT

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Hi,

I'd like to use Shapeways to print moulds for some lens prototypes I'm working on. The curvature is fairly subtle (say a 20-40 micron height difference from highest to lowest point). I imagine that even FUD is too imprecise for that if I build with the lens facing "up" in the z-direction, as according to this:

[http://www.shapeways.com/forum/index.php?t=rview&th=6108 &goto=32610](http://www.shapeways.com/forum/index.php?t=rview&th=6108&goto=32610)

the layers are 31 microns thick.

I could, however, rotate my mould 90 degrees, so that the precision that matters is on the x-y axes.

What kind of accuracy is there in the x-y axes? I don't imagine that the minimum feature size is the correct number for this, as that speaks to the ability of the material to maintain a small ridge. Rather I want to know how precisely it will match my desired curvature. The surface will be gradually varying, so there are no fine ridges.

Does anyone have any input?

Thanks.

Subject: Re: Lens moulds

Posted by [denali3ddesign](#) on Tue, 25 Oct 2011 02:24:54 GMT

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Shapeways will not guarantee which way your model will be printed, so even if you model it vertically, it may be rotated before printing, since the operator tries to optimize packing in the printer.

Subject: Re: Lens moulds

Posted by [wxs](#) on Tue, 25 Oct 2011 17:00:49 GMT

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Hmm, that might be problematic then. It will be hard to do anything replicable. Is it possible to specially request a specific orientation?

Subject: Re: Lens moulds
Posted by [stannum](#) on Tue, 25 Oct 2011 17:11:15 GMT
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Not now, and if the curvature is 20 micron, all you'll get is a flat surface with a bump or two. The items aren't smooth but more like elevation maps.

Subject: Re: Lens moulds
Posted by [wxs](#) on Tue, 25 Oct 2011 21:44:21 GMT
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Well yes, that's exactly why I'm hoping to rotate it 90 degrees. I suppose I could make a model in an L-shape such that it's impossible to print at an angle where both are oriented incorrectly. It'll cost me twice the material, though.

In which case I would still need to know what kind of x-y precision is possible.

Subject: Re: Lens moulds
Posted by [stannum](#) on Tue, 25 Oct 2011 22:39:01 GMT
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No idea what kind of lens you are trying to create... but 3d prints so far aren't exactly as precise as you can get by other means. The machine is ProJet HD 3000, and the UHD mode is 656 x 656 x 800 DPI, which means the axis with thinnest layers is Z ($25.4 / 800 = 0.03175$ mm, $25.4 / 656 = 0.0387$ mm). Then you would get 0.1-0.2% shrinkage (SW docs) or accuracy (Project specs), and maybe random (micro) deformations caused by heat or cleaning.

Subject: Re: Lens moulds
Posted by [wxs](#) on Thu, 27 Oct 2011 22:12:33 GMT
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Thanks a lot stannum, those were the figures I was looking for. I realize there are more precise manufacturing techniques out there, but i'm hoping for early-stage prototypes this is good enough.

Although I'm open to other ideas if you have them

Subject: Re: Lens moulds

Posted by [degruch](#) on Sat, 03 Dec 2011 09:41:31 GMT

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denali3ddesign wrote on Tue, 25 October 2011 02:24 Shapeways will not guarantee which way your model will be printed, so even if you model it vertically, it may be rotated before printing, since the operator tries to optimize packing in the printer.

I'm looking at doing the same thing as 'wxs', I will require a specific orientation, but concerns me that there would be no guarantee of printing orientation - if Shapeways know it will compromise quality, why offer the service? Surely this is not correct...can anyone from Shapeways able to comment?

Cheers,
Duane

PS: I want clear red...is there any chance this material may be available in the near future?
