
Subject: WSF thinner than 0.7mm ?

Posted by [rusalkin](#) on Fri, 11 Jan 2013 22:18:09 GMT

[View Forum Message](#) <> [Reply to Message](#)

i know the thinnest wall allowed is 0.7mm but under what circumstances can i go thinner ?

say i want to build a honeycomb like structure, the diameter of a single cell is 2cm and would be equally deep cant i make the walls thinner ?

even 0.6mm would be a big step, given the nature of the honeycomb everything should be really well supported, any pressure exerted would spread out:

http://www.youtube.com/watch?v=4jYcX_D09ig

Subject: Re: WSF thinner than 0.7mm ?

Posted by [stop4stuff](#) on Fri, 11 Jan 2013 22:32:47 GMT

[View Forum Message](#) <> [Reply to Message](#)

There's two very good reasons why Shapeways arrived at 0.7mm for WSF

1, If the wall is too thin a piece might break off in the printer and ruin the whole print run.

2, Compressed air is used to clean the support powder from the model - whilst a thinner structure may be strong as a structure, the thin parts will still get a good blast of air and may break.

Paul

[stop4stuff](#) Modeller for hire [Shapeways Shop](#) - [Controller](#) [Pendant](#) [Twitter](#) [YouTube](#)

Subject: Re: WSF thinner than 0.7mm ?

Posted by [rusalkin](#) on Sat, 12 Jan 2013 01:22:44 GMT

[View Forum Message](#) <> [Reply to Message](#)

ok lets assume i want to add fine detail to a plane surface that is lower than 0.7mm, surely i can make a protrusion that is say 0.2mm in height and width ?

that would not brake off would it ? if so what are the limits ? can it be say 0.3mm high and 0.2mm width for instance ? where is the height limit ?

Subject: Re: WSF thinner than 0.7mm ?

Posted by [stonysmith](#) on Sat, 12 Jan 2013 04:45:46 GMT

[View Forum Message](#) <> [Reply to Message](#)

Check the Design Guidelines for WSF

The details you are speaking of are essentially the same as engraving/embossing text that is mentioned at the bottom of the page.

A good rule of thumb is that protruding (embossed) items need to be wider than they are tall. Also, if your detail is much more than 0.2mm tall, it becomes a wall and must be 0.7mm thick.

Both of these suggestions are to keep the details from shearing off during cleaning or shipping. If you have specific problems, you may need to add fillets to add strength to the protrusions.

Subject: Re: WSF thinner than 0.7mm ?

Posted by [rusalkin](#) on Sun, 13 Jan 2013 16:08:17 GMT

[View Forum Message](#) <> [Reply to Message](#)

i am just trying to roughly find out what this "much more than 0.2mm" is

in any case thank you

Subject: Re: WSF thinner than 0.7mm ?

Posted by [Mhagan](#) on Tue, 15 Jan 2013 21:44:49 GMT

[View Forum Message](#) <> [Reply to Message](#)

Quote:i am just trying to roughly find out what this "much more than 0.2mm" is

in any case thank you

A good rule of thumb is to keep the aspect ratio (Height / Width) under 0.9. Also, as was mentioned earlier, filleting the edge where the detail meets the body really does help with strength and lets you push closer the the recommended ratio of 0.9

I hope this helps

Subject: Re: WSF thinner than 0.7mm ?

Posted by [NormL](#) on Tue, 22 Jan 2013 21:58:46 GMT

[View Forum Message](#) <> [Reply to Message](#)

Are you trying to print a working model of a Tweel? I was thinking of doing that myself and looked at the same issue you are seeing. I was trying 1/24th scale and there was no way for my application

Subject: Re: WSF thinner than 0.7mm ?
Posted by [rusalkin](#) on Tue, 22 Jan 2013 22:27:14 GMT
[View Forum Message](#) <> [Reply to Message](#)

no i am doing something else, seeing that complexity does not cost anything anymore i am looking at new ways of building stuff, check out my other post that goes a bit more into this, my biggest beef is that i understand why they keep these limits on the "wet sand castle" stuff, but why with WSF if simulations say its ok?

http://www.shapeways.com/forum/index.php?t=msg&goto=6015_1&#msg_60151

Subject: Re: WSF thinner than 0.7mm ?
Posted by [NormL](#) on Tue, 22 Jan 2013 22:39:22 GMT
[View Forum Message](#) <> [Reply to Message](#)

My guess, the answer is heat. Getting below 0.7 mm probably just blows out from gravity and molten plastic. That said, I have printed WSF slightly below 0.6 mm by accident. It was a very very small surface though and I have since changed the model. I don't normally print WSF below 1 mm as it is just stronger and better than 0.7 mm. It is their length rule that gets me the 2D solution to a 3D issue ... I had to print my fenders in 12 pieces to get them printed and the same model would have printed fine at 25" long [/rant]

Subject: Re: WSF thinner than 0.7mm ?
Posted by [stop4stuff](#) on Tue, 22 Jan 2013 22:51:40 GMT
[View Forum Message](#) <> [Reply to Message](#)

rusalkin wrote on Tue, 22 January 2013 22:27no i am doing something else, seeing that complexity does not cost anything anymore i am looking at new ways of building stuff, check out my other post that goes a bit more into this, my biggest beef is that i understand why they keep these limits on the "wet sand castle" stuff, but why with WSF if simulations say its ok?

http://www.shapeways.com/forum/index.php?t=msg&goto=6015_1&#msg_60151

I'm curious, what are these 'simulations' and for which printer do the simulations reference?

Cheers,
Paul

Subject: Re: WSF thinner than 0.7mm ?
Posted by [rusalkin](#) on Tue, 22 Jan 2013 23:06:27 GMT
[View Forum Message](#) <> [Reply to Message](#)

a friend is currently making his own startup and is toying around where the support material dissolves in water, i managed to print something like this:
<http://mccormickdc.com/wp-content/uploads/04.jpg>

that turns out stable because there are so many and most of these fine tubes are thinner than 0.8mm

Subject: Re: WSF thinner than 0.7mm ?
Posted by [stop4stuff](#) on Wed, 23 Jan 2013 09:56:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

I was thinking that you'd got some information about the machines Shapeways uses.

Shapeways uses three different sizes of printer for WSF, the production team decide which model is printed in which printer - obviously smaller models should be printed in the smaller machine, but this is not always the case. It may be that the smallest printer Shapeways used is reliably capable of sub 0.7mm dia wires/wall thickness, however to cover the bases Shapeways have chosen design criteria that works for all of the WSF printers they use for the reasons mentioned earlier.

The first 10 minutes of the recent Shapeways Live broadcast with Bart and Alan goes into some detail on the hows & whys, and at around 13:40 there's a bit more of an explanation about the whys of walls & wires. Alan also says "For particularly wirey models the minimums might not be quite enough."

Paul
[stop4stuff](#) Modeller for hire [Shapeways Shop](#) - [Controller](#) [Pendant](#) [Twitter](#) [YouTube](#)

Subject: Re: WSF thinner than 0.7mm ?
Posted by [Mhagan](#) on Wed, 23 Jan 2013 23:01:33 GMT
[View Forum Message](#) <> [Reply to Message](#)

rusalkin wrote on Tue, 22 January 2013 23:06a friend is currently making his own startup and is toying around where the support material dissolves in water, i managed to print something like this:

<http://mccormickdc.com/wp-content/uploads/04.jpg>

that turns out stable because there are so many and most of these fine tubes are thinner than 0.8mm

I understand your frustration about this. I love to push the boundaries and see what is possible. Please understand that printing one thing that survived once is not the same as being able to be printed, cleaned, packed, and shipped potentially thousands of times. We at Shapeways have to worry about much more than just a models ability to come out of a printer intact.

If you want some feed back/ Specific issues with printability send me a PM and I will be very happy to take a look.

Subject: Re: WSF thinner than 0.7mm ?
Posted by [rusalkin](#) on Thu, 24 Jan 2013 00:01:45 GMT
[View Forum Message](#) <> [Reply to Message](#)

thank you,
the tragedy is that like most innovative stuff you first have to make it to see if it is makeable, sometimes resulting in total failure and lots of time and money spent for nothing, or at best increased costs but i guess thats just something that one has to accept if you decide to play this game.

Maybe I should have picked a simpler project

Subject: Re: WSF thinner than 0.7mm ?
Posted by [Bathsheba](#) on Thu, 24 Jan 2013 00:45:05 GMT
[View Forum Message](#) <> [Reply to Message](#)

If it were easy, some one would have done it already.
