
Subject: Stainless Steel Thin Sections Suggestions?
Posted by [tunabreath](#) on Thu, 07 Feb 2013 17:41:07 GMT
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I have a part here which has been deemed unprintable and I'd like some suggestions on the simplest (and least expensive, volume-wise) way to make it printable.

Attached is an image of the feature in question, a camming groove. The backing material to keep the cam from slipping off is very thin. Would adding one or two evenly spaced ribs on the back side of the groove to support the material be sufficient? (bring thickness up at the ribs to 1.5-3mm), or will I have to increase the thickness of the whole part in that section? (will have to be ground off later, the total thickness of the part is controlled)

File Attachments

1) [model.JPG](#), downloaded 111 times

Subject: Re: Stainless Steel Thin Sections Suggestions?
Posted by [bartv](#) on Fri, 08 Feb 2013 10:09:44 GMT
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I doubt it - we require the 3mm minimum wall thickness everywhere..

Bart

Subject: Re: Stainless Steel Thin Sections Suggestions?
Posted by [tunabreath](#) on Sat, 09 Feb 2013 20:15:44 GMT
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Has the exclusion procedure for stainless steel parts recently been made more strict? The part shown above was printed once successfully (received by me) as it is shown in that picture (no reinforcement to the thin section) under a previous revision/file:
<http://imgur.com/jwzrZ>

Another part was printed twice (one under the current revision to a customer, once to me under a previous revision), but is now considered unprintable:
<http://imgur.com/3Mseo>
<http://imgur.com/q7fvUuk>
(the red highlighted ribs have to be removed before use)
<http://imgur.com/hlAoj2S>

How far reaching are the advanced design rules for the stainless material? (what kind of maximum unsupported distance vs thickness, ribs/support options, etc.)

Is a 3mm flat unsupported section preferable to a 2mm thick ribbed/cross structure?

If I have to increase the total thickness on all of these parts, it's going to increase the cost quite a bit, but also really increase the amount of material that has to be removed before installation.

I'm not sure what the best way to proceed is.

Subject: Re: Stainless Steel Thin Sections Suggestions?

Posted by [AmLachDesigns](#) on Sun, 10 Feb 2013 09:04:42 GMT

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bartv wrote on Fri, 08 February 2013 10:09: I doubt it - we require the 3mm minimum wall thickness everywhere..

Bart

But then again --> 61705

If you search through the steel models, I am not sure that they all adhere to this 'rule'.

Subject: Re: Stainless Steel Thin Sections Suggestions?

Posted by [bartv](#) on Tue, 12 Feb 2013 09:32:25 GMT

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@tunabreath: I don't think we've become more strict. Sometimes we find that we need several tries to successfully print a model though, and we may decide that it is becoming too expensive to produce (as in: we're actually losing money on the production).

@tunabreath, @AmLachDesigns: Yes, it's true, I was a little too quick with the '3mm' remark. Successfully designing for steel is a little more complicated than that - for example you may be able to print thinner structures provided that your structure is sufficiently self-supporting. Please have a look at the steel guidelines here:

<http://www.shapeways.com/materials/steel-design-guidelines>

Unfortunately not all these rules are easy to quantify and we rely on operators with a lot of experience in this material to make a judgement call on printability..

Bart

Subject: Re: Stainless Steel Thin Sections Suggestions?
Posted by [AmLachDesigns](#) on Thu, 14 Feb 2013 14:32:11 GMT
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Quote:Sandcastle Rule: If this structure was made of wet sand, would it break?
There's a part in the production process for stainless steel 3D printing during which the model is fragile and brittle. It's basically like wet sand. When you design, ask yourself this question: if I made this out of wet sand or brittle clay, could I lift the design without it breaking? If the answer is "no," then your design might break in production.

I find this quite confusing: I cannot imagine moving any structure made of wet sand without it breaking. How is the print moved? Is it on some kind of transport plate or must the technician pick it up directly somehow?

I am interested in making something that would be essentially a flat plate (approx. 180mm x 100mm), pierced in places and with raised detail in other places. The whole thing would be near and in some places below 3mm thick. Is this feasible or totally impossible?

Thanks

Subject: Re: Stainless Steel Thin Sections Suggestions?
Posted by [stonysmith](#) on Thu, 14 Feb 2013 15:54:33 GMT
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This video shows you how gingerly they handle the parts:
<http://www.youtube.com/watch?v=B9VOwqtOglg>

Subject: Re: Stainless Steel Thin Sections Suggestions?
Posted by [AmLachDesigns](#) on Thu, 14 Feb 2013 16:30:56 GMT
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Thanks for that, I think I get the picture now.

I will have to re-think this particular idea, clearly.
