
Subject: 3d printing of metal to make injection molding mold?

Posted by [davidnhutch](#) on Mon, 26 Mar 2012 12:59:59 GMT

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Hi

We are discussing with a plastic injection molding company regarding making our next product. In order to do plastic injection molding they first machine a steel mold, and then inject the plastic. Making the steel mold will be costly for us. I wonder if we could 3d print a metal mold and then give it to them for injecting plastic. Of course it may be a different metal and not be as durable as steel, but this is ok as it is just a limited run. Have you done anything like that before?

Of course, the injection molding company wants us to use their mold-making facilities but I think this will be cheaper. However I'm not sure that this can be done, that's why I'm asking.

I expect the bumpiness/roughness will be higher and the mold may not last as long as a steel machined one, but bumpiness and life doesn't matter much for us as this is a limited-run (several thousand units) prototype.

Thanks
David

Subject: Re: 3d printing of metal to make injection molding mold?

Posted by [bradykineticcuriosities](#) on Wed, 25 Apr 2012 19:19:46 GMT

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Intriguing...

While I have no experience with 3D printing a two part mold, here is what I would look out for.

- Surface roughness -

While you may not mind a rough surface, any extra roughness will make it harder for the part to be ejected. The injected plastic would "grab" the divots if there are any. This may mean you may need to increase your draft angle, decrease your thickness, or both.

- Parting line -

The steel molds they make are precision cut to where a parting line is almost indistinguishable. 3D printing in metal *may* not be able to duplicate this. There is also no guarantee with 3D printing that the mating surfaces will even be parallel and flat. Basically, this means that each piece may have significant flashing - and you're not going to want to pay someone to manually finish 1000 pieces...

There are other concerns I'm sure, but these are the first two that come to mind.

Is there a certain material you were looking to inject with?
Send me a PM, I have some other ideas you may want to explore.

Subject: Re: 3d printing of metal to make injection molding mold?

Posted by [wiwa](#) on Mon, 18 Jun 2012 06:51:32 GMT

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Unfortunately there are serious limitations with the steel process that render it useless for full tooling applications, especially in an injection molding machine, primarily:

- Lack of precision: your mold will never mate properly, and the holes for gates and sprues will never seal together right
- Material: The bronze/stainless printed material is not rightfully stainless, the features would warp quickly under the pressure of injection

You may be able to make tool inserts for hard-to-machine shapes but an EDM or even CNC mill would be able to make those shapes more economically

However, there has been some hints that Shapeways is considering a DMLS process for metals, which would enable tooling-quality metal parts. Lets stay hopeful about that

You might consider making a temporary mold using the other processes, then you can simply pour any plastic resin into the mold. It's called reaction molding. If you want to re-use the mold you will have to separate it into halves, which adds complexity (like the message above me) - and don't forget to use mold release.

Subject: Re: 3d printing of metal to make injection molding mold?

Posted by [Phxman](#) on Mon, 25 Jun 2012 19:08:51 GMT

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I think a group has experimented with this to injection mold the printed parts for the RepRap Mendal machine.

Regards
