
Subject: Strange color differences

Posted by [Oskar_van_Deventer](#) on Mon, 05 Jul 2010 11:33:54 GMT

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Hi Shapeways,

Today, I dyed a set of puzzle rings from two different production batches. I received the first batch two weeks ago, whereas I received the second batch today. I washed and dyed rings from both batches in a single dye bath.

Yellow: 6 rings of batch 1 and 6 rings of batch 2

Green: 2 rings of batch 1 and 2 rings of batch 2

As you can see from the photo below, the rings of batch 1 turn out significantly lighter than those of batch 2.

As I have treated the rings from both batches identically at my side (washed together, together in dye bath, rinsed together), the difference must be at the Shapeways side.

Can you explain these color differences?

Thank you.

Oskar

File Attachments

1) [Strange color differences_.jpg](#), downloaded 499 times

Subject: Re: Strange color differences

Posted by [artur83](#) on Mon, 05 Jul 2010 12:09:52 GMT

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Hi Oscar.

Were both batches at separate locations in the bath? or were the rings from batch1 intermixed with the ones from #2?

was the bath agitated often (to evenly distribute the dye)

did you re-position the parts often in the bath or were they left in the same place during the whole time.

Artur.

Subject: Re: Strange color differences

Posted by [Oskar_van_Deventer](#) on Mon, 05 Jul 2010 12:15:23 GMT

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Hi Artur,

The rings were intermixed. I had two dye baths: one yellow (12 rings) and one green (4 rings).

I agitated the baths constantly, repositioning the rings all the time.

All 8 rings from batch 1 were lighter than all 8 rings from batch 2, both for the green and yellow ones.

I can come to no conclusion, other than that the differences are caused at the Shapeways side.

Best regards,

Oskar

(P.S. The color differences are not a problem for this particular production run, as I sell these rings individually. But when people buy more dyed puzzles from me, it would be nice if the color saturation would be consistent)

Subject: Re: Strange color differences

Posted by [Jettuh](#) on Mon, 05 Jul 2010 12:33:26 GMT

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have the older rings been laying in the sun?
before the bath i mean

because some old models i printed have been yellowing a bit after standing a lot in the sun,,
but the new ones are fresh white!

Subject: Re: Strange color differences

Posted by [Oskar_van_Deunter](#) on Mon, 05 Jul 2010 13:48:12 GMT
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Hi Jettuh,

> have the older rings been laying in the sun?

> before the bath i mean

No. One batch is two weeks older than the other. My studio is very light as I have big glass windows. However, my blinds are usually down, so the rings have not been exposed to direct sunlight. At least not very long. But my studio has been quite hot (25 degrees Celcius and higher), because of the heat wave in my country the last two weeks.

Note that I saw no color difference between the two-weeks-old ones and the fresh ones. Also, I have washes both sets of rings thoroughly in boiling hot soapy water.

So, should I store my models in a dark cold place before dyeing? Or is there any other hypothesis why there are differences?

Oskar

Subject: Re: Strange color differences
Posted by [shim](#) on Mon, 05 Jul 2010 16:21:16 GMT
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I do not think that the reason is exposure to sunlight. Dyeing effect should strongly depend on the structure of the sintered material - either there's some difference in a grain's size, or the particles were sintered with different laser parameters (laser power, scanning speed or spot size). The first reason could result from different batch of powder (or powder from different supplier), the second reason comes from different machine settings or production on the different machine. Only Shapeways staff can tell that for sure

Subject: Re: Strange color differences
Posted by [Jettuh](#) on Mon, 05 Jul 2010 19:25:44 GMT
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offtopic:

watch wednesday we've got great weather coming again to our small country

Subject: Re: Strange color differences
Posted by [bartv](#) on Mon, 12 Jul 2010 09:21:16 GMT
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Hi Oskar,

I've asked our production people to look into this and to reply here.

Bart

Subject: Re: Strange color differences
Posted by [rawkstar320](#) on Mon, 12 Jul 2010 21:05:42 GMT
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Just a thought:

Could one batch have used up some dye, leaving the second batch with less dye? Or different dye somehow?

I see that the first batch was lighter, and the second darker, so my theory doesnt really explain that. Well, maybe in an opposite way.

So, which batch was older? the first or second?

This is a curious case for sure, although I think i agree with @shim. There are a TON of variables, anything could have changed.

Subject: Re: Strange color differences
Posted by [Drawn-SteelHero](#) on Mon, 12 Jul 2010 21:28:14 GMT
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rawkstar320 wrote on Mon, 12 July 2010 21:05I see that the first batch was lighter, and the second darker, so my theory doesnt really explain that. Well, maybe in an opposite way. It's like anti-science!

Just a thought, but might the proportions of recycled powder to fresh be a factor? I've seen mentioned that it can make a difference to the quality of the print, so maybe that also extends to its ability to absorb the dye.

Subject: Re: Strange color differences

Posted by [Oskar_van_Deventer](#) on Mon, 12 Jul 2010 22:41:22 GMT

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rawkstar320 wrote on Mon, 12 July 2010 21:05: Could one batch have used up some dye, leaving the second batch with less dye? Or different dye somehow? No. All pieces from both batches went into the same dye bath at the same time, and stayed in the same time. Oskar

Subject: Re: Strange color differences

Posted by [crsdf](#) on Mon, 12 Jul 2010 23:56:59 GMT

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It is almost certainly a production issue.

When I say issue, I mean that this is the reality of the situation. Nearly every environmental factor you can think of will effect the process and to expect any two builds to be exactly the same would be wishful thinking. There is always a variance with any heat reliant 3DP process. It is the goal of us operators to minimize this variance to the best of our ability.

Subject: Re: Strange color differences

Posted by [rawkstar320](#) on Tue, 13 Jul 2010 20:30:53 GMT

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crsdf: Are you what of the production guys? Or just a production guy that works with 3DP?

Maybe it is Anti Science..or worse...Aliens

Subject: Re: Strange color differences

Posted by [crsdf](#) on Wed, 14 Jul 2010 00:50:55 GMT

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rawkstar320 wrote on Tue, 13 July 2010 20:30: crsdf: Are you what of the production guys? Or just a production guy that works with 3DP?

Maybe it is Anti Science..or worse...Aliens

I'm a production guy who mostly runs SLS/Z-Corp machines for a company that Shapeways has nothing to do with. I come to Shapeways to offer advice and experience with 3D Printing (and fabrication in general), and SLS in particular. Being an active member of Shapeways also gives a good insight into the dynamics of end-user manufacturing.

3DP is my occupation, but its also my hobby; I absolutely adore the technology and my machines are my babies. I love talking tech about them.
