Subject: Color Sandstone Resolution is NOT 500+DPI
Posted by ttoinou on Fri, 19 Apr 2013 12:17:28 GMT
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Hi,

I've just received a full color sandstone object.
I took a picture of a textured cylinder.

I reduced the image until the picture isn't blurry.
It is about 840 pixels for 8.4 cm so 100 pixels per cm.
The true resolution of the color sandstone would be 254 DPI, half of the 540 DPI written.

But I'm being very nice with the image reduction...
Comparing with the bitmap I sent (see attached picture), it would be more like 50 pixels per cm => a quarter of the DPI written.

File Attachments
1) fullcolorsandstone127dpicomparison.png, downloaded 176 times

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by mkroeker on Fri, 19 Apr 2013 13:29:08 GMT
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Have you contacted service to make sure this is the expected quality and not just something that slipped through ? (Not sure what you meant with "reduced the picture until it isn't blurry, and it is not clear to me what the blurry upper half of your picture shows - is this the printed object close up without a macro lens ?)

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by Youknowwho4eva on Fri, 19 Apr 2013 14:37:28 GMT
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Thank you for bringing this up. We are investigating.

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by ttoinou on Fri, 19 Apr 2013 18:07:15 GMT
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Looks like I posted that on the wrong forums (the best one would be "3D Printing")..

@mkroeker: No i didn't I think my object is all right.
Look at theses objects they also have low resolution : New Earth and Happy Event Bead.
Yes in the upper part of the picture is the "real" printed object (without a macro lens) and in the lower part is the image I send.
Here is attached the 254 dpi version comparison.
I have to admit that reducing the photo resolution "until it is not blurry" is quite experimental and not objective but I don't know what to do else.

@Youknowwho4eva : Thanks. Maybe this is normal, and the resolution is not 500+ DPI.
You could try to print a 3 mm thick square with a photo textured in order to test the resolution..

File Attachments
1) fullcolorsandstone254dpicomparison.png, downloaded 113 times

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by stannum on Sat, 20 Apr 2013 00:29:14 GMT
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It matches the results. The printer is 540-600 DPI but that refers to on/off ink, pure dots. So it will only approach that for pure C, M, Y or K areas. Take into account the "paper" is fuzzy, absorbent, so it will be less. Then take into account that to generate colors it has to use a pattern of dots. The higher the color range (bit depth) desired the lower the real resolution it will give.

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by ttoinou on Sat, 20 Apr 2013 06:54:34 GMT
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Your object is very useful .

Quote:The higher the color range (bit depth) desired the lower the real resolution it will give
You mean that for example if your the colors of your object were a real 8 bit color gradient the printed result would be more fuzzy (lower resolution) ?

The letters are pretty clear anyway.

Quote:paper is fuzzy, absorbent
explains why the colors are a bit washed-out on my object.
Did you find a formula to describe the color "washed-out" effect ?

For example : "color saturation drops by 80%".
We could use this enhance the result for all the color objects on this site : in the same example I would increase color satruation by 25% (1.25 * 0.8 = 1) before sending the object to print.

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by stannum on Sat, 20 Apr 2013 23:58:04 GMT
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Glad you like the model, it was created to study the resolution and color change, even if from a more visual than technical perspective. Sadly no sensor to measure the result, so no formula computed; it ended being more a live reference of what to expect.

Also it seems the results change with the print orientation and the coating (maybe even printer settings we have no control over, too), so it would be hard to get a "strong" formula, and it would be best if the maker and operators just provided color profiles. This 3D print system is never going to provide photo quality without some big improvements.

Quote:You mean that for example if your the colors of your object were a real 8 bit color gradient the printed result would be more fuzzy (lower resolution) ?
8 bit color is probably converted to 24 bit. And then that has to be converted to CMYK for the print head. But there is no info about the conversions, how are they done, with what precision, etc. The Quick Reference model includes single color gradients in some of the edges (RGB & "CMYK" as per the RGB source file). Sadly Shapeways' 3D viewer renders as a grey object, so you can't see the full layout. They are in the top and bottom edges shown in the photos. The parts were two or more blocks of color meet are not exactly sharp. You can also see there is bleed to the sides (where big areas of squares meet the thing edges with text and bars).

Quote:The letters are pretty clear anyway.
The text is black over white with some minimal edge pixels in grey (in the file) but appears as very dark grey over dirty white (in the print). It all has some kind of extra fuzzyness or halo too, more than font rendering has. The pattern used to test DPI are the bar blocks in the edges, they have black vs white as most extreme case and then different greys. The maximum resolution is achieved with the B&W (0x00 & 0xFF) and the next grey pair (0x24 & 0xDA).

Quote:You mean that for example if your the colors of your object were a real 8 bit color gradient

the printed result would be more fuzzy (lower resolution) ?
It's a printer problem, in general. You can find 2D printers with resolutions of 600-2400DPI and even more. That just defines the size of the dots of ink. Source material is fine with 300-350DPI (that will go to high quality printing machines for magazines and books) as that DPI is about color pixels (PPI would be more correct), and each "dot" can range from zero to full intensity in multiple steps (256 is pretty common, 8 bit per channel). For old inkjet printers (that's what the 3D printer is based around, 90s tech) 75-100 should be fine. If you want, give yourself some extra margin, say 150-200, but anything more is a waste.

Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by MitchellJetten on Fri, 20 Sep 2013 09:46:47 GMT
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I like this topic, very interesting!

@stannum, the new 3d viewer on the upload process will allow you to rotate and zoom, it might help you out
In addition, the 3d viewer on the product page does have colors since some time so if you update the model with the same file it should reflect the colors in the 3d viewer

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Subject: Re: Color Sandstone Resolution is NOT 500+DPI
Posted by stannum on Fri, 20 Sep 2013 22:01:32 GMT
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The model was visible in the 3D app used to create it, there is nothing to check as it uploaded correctly long ago, and printed some times.

Anyway, great that the rotating slides are color now, and people can see the color areas at top and bottom. There was no need to waste time reuploading.
