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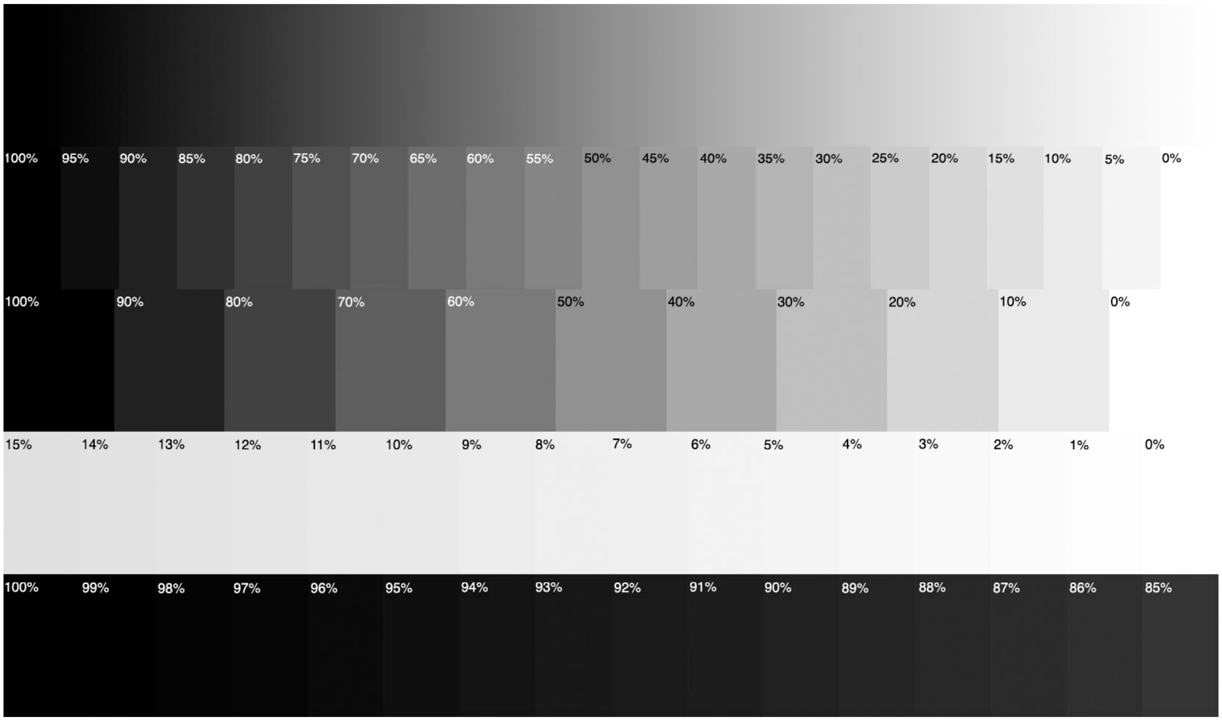
TECHNIQUE



Linear Gray Gradient

GRAY GRADIENT TEST FILE

You have to do a certain amount of testing to evaluate any printing system. A good test file contains known values designed to reveal how important and representative information is reproduced. Both photographic and synthetic (rendered by software) images are useful for testing. Tests are often most revealing when the two are used in combination with one another.

Linear gray gradient test files with and without posterization are particularly useful. They can be used to help you determine whether a print has good neutrality and graybalance, whether a driver or profile is capable of rendering smooth transitions between closely matched values, to pinpoint values at which dot structure changes, and to identify minimum and maximum printable values given a particular combination of ink/paper/driver/profile.

You can make your own synthetic gradient test files. Here's how. Create a new file (File: New). Use the Gradient tool to draw a horizontal or vertical linear gradient using black and white. Posterize the image (Image: Adjustments: Posterize). The value you enter for the posterization will determine the final number of intervals. The edges created with this method are usually a little ragged. If you want very crisp edges you may want to make the file by hand, filling selections with specific values.

Or, you can use the file that accompanies this PDF, in part or in whole.

I've created this test file by hand. It's an 8-bit Grayscale file. Values are separated into five folders: 1%, 5%, 10%, 0–15%, and 85–100%. You can simply print this file as is. Or, you can drag and drop one or more layer sets into any file before printing. Size the file or layer sets up or down as needed. If you make a conversion from one color space to another, check to see that the values have not changed significantly after the conversion.

You can use any color mode to evaluate results (LAB, HSB, RGB, CMYK, Grayscale), as long as you're comparing numbers on the same scale. For this type of test, RGB and Grayscale are the easiest to use. Equal values in RGB are neutral. 0/0/0 is pure black. 255/255/255 is pure white. Grayscale is useful for looking closely at luminosity values separate from the effects of hue and saturation. 0% is pure white. 100% is pure black. This is the one I use most often.

Print a test file.

Look at the gray and compare it to other grays. Is it neutral? Or does it contain a slight color cast? If it does contain a cast, color correct the file to eliminate it either in Photoshop or through the printer driver.

Look at the smooth gradient without posterization, particularly at transitions in the darkest values. Are the transitions smooth? Or, do they move from one tone to another abruptly? If they do transition too quickly, you may be able to use another profile or a different driver to eliminate the problem.

Look at 5% intervals of gray. Are the intervals equal? Or, do some steps between intervals seem greater than others? If they do appear unequal, you should be able to see uneven transitions in the smooth gradient as well within the same values. The cure may be found again by switching profiles or drivers.

Look at the lightest and darkest values rendered in 1% increments. At what value can you see detail? At what value do you first achieve maximum black? Typically a 2–4% dot will begin to reproduce detail and maximum black is achieved with values in the range of 94–98%. Your results will vary depending on your choice of paper, ink, driver, and profile. Typically this problem is best solved by changing drivers. See if you can avoid this by changing profiles first. The other option is to change the values in files that are printed so that they do not exceed this range.

Look very closely (use a loupe) at a print of a gradient without posterization. Identify the values that certain droplet sizes drop out of or into the total dot structure. This can cause an imperceptibly uneven appearance at these values in images with little to no texture containing very smooth transitions in the values surrounding these points. The only thing you can do to refine this dot structure further is to switch to a different driver or to a different printer model. A different driver will most likely display breaks at different points. A different printer model may be able to produce smaller dots and a finer dot structure where these breaks are even less apparent. I caution you against overreacting to what you see here. Many people get lost in these details and go down unproductive avenues fruitlessly chasing perfection. In some cases one dot structure may be visibly better than another to the naked eye; in many cases these differences are not visible. When it comes to inkjet printing, dots happen. Make sure you're pursuing results that will improve your prints significantly. Pursue the things that will improve your prints the most. You may not make any changes once you've identified these values; still, it's good to know that this happens and where it's likely to happen in your prints.

These are characteristics that can only be identified after a test file has been printed. A little testing up front can ensure that you get the finest results possible with the equipment you're using or help you decide whether you want to replace the equipment you're using. You can't softproof these things. The proof is in the proof.