

Technical Advice for digital black & white prints

General:

The Variochromat is essentially a digitally driven enlarger, not a conventional electronic printer. Prints produced with the Variochromat system are individually printed, effectively by hand, rather than being mass produced. We bring the craft skills of conventional photographic printing to the world of digital imaging. Variochromat prints can be every bit as good as analogue hand prints, and sometimes even exceed them. From taking a picture to the final print there is a chain of procedures - the end result will only be as good as the weakest link in the chain.

The quality of a digital print depends on the quality of its data.

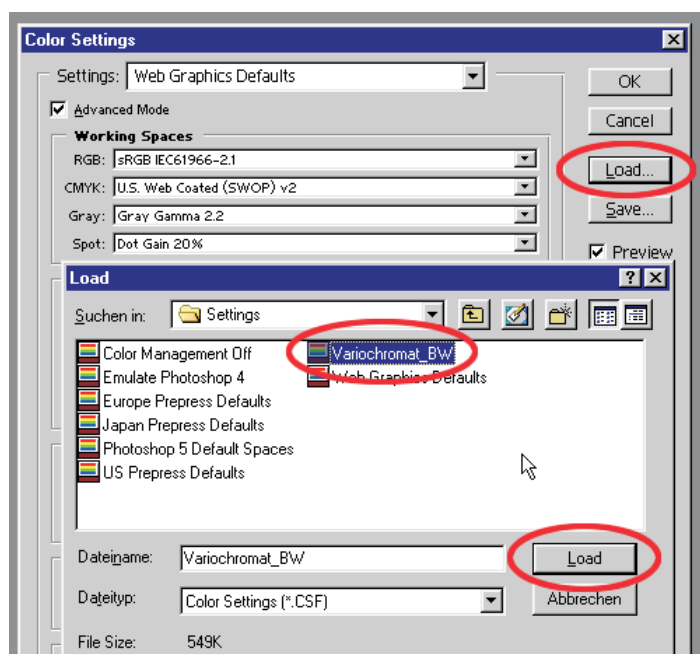
Traditionally technicians would determine how the final print from a negative looked, hopefully matching the photographer's expectations. Now much of that control can be handed back to the photographer. However, with just a few mouse clicks, it's possible to ruin an image in seconds. A picture, which looks stunning on a monitor, can be rather less than stunning when it's printed! In the digital domain it's the lab's job to reproduce the photographer's images as faithfully as possible. This means both lab and photographer need a standard to work to.

Monitors and digital printing

It's essential that your monitor gives you the closest possible preview of the final print. If you have a calibrated monitor, and Photoshop 6 or higher, we recommend the following procedure to adjust your monitor for Variochromat prints:

1) In the download area of www.variochromat.de you'll find the greyscale profile "Variochromat_BW.CSF".

Download it and put it in the folder where Photoshop saves the colour settings. With Windows this is usually: C:\Program Files\Common Files\Adobe\Color\Settings.



3) Once the profile is installed your monitor will give a much closer idea of how Variochromat prints will look.

However, to check the profile, and make any necessary corrections you'll need the Polycolor Calibration Aid. This is a print of our test picture "Calibration_Aid_Variochromat" (JPG) on photographic paper. It can be purchased for 5,- EUR at us.



When you have the Calibration Aid, get the file of the test picture from the download area of www.variochromat.de, and open it in Photoshop.



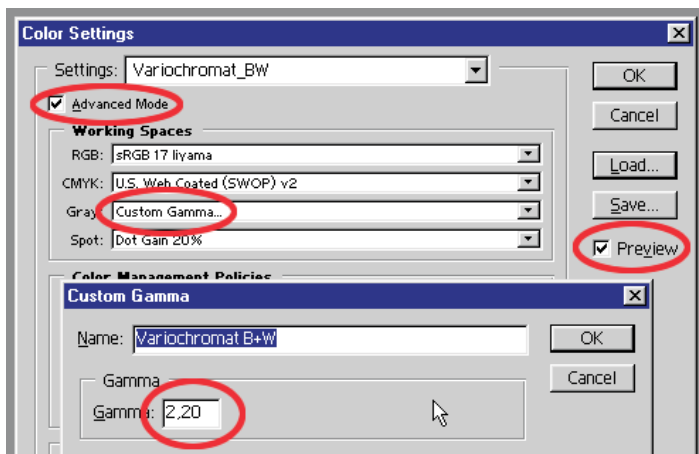
Sandner
Variochromat

Making sure the Calibration Aid print is illuminated by daylight, or daylight matched tubes, compare the monitor image with the print. The densities should match on print and monitor.

Also the highest (1 & 2) and lowest (16 & Dmax) steps on the grayscale wedge should be clearly visible.

It is not possible to get an exact match of screen and paper.

If the Calibration Aid is a good match with the monitor, your images will print as closely as possible with what you see on screen.



4) If not: In the Photoshop "Edit" menu select "Colour settings". Make sure checkboxes "Advanced mode" and "Preview" are selected (with ticks). Choose under "Working spaces" menu, in the "Gray" section; "Custom gamma". Try different values (between 0.75 and 3.0) until you get the best match between the density of the grey circle on your monitor and the test print. **IMPORTANT** - Unless you can lock the settings of your monitor don't use the monitor controls to adjust brightness and contrast. Then save the corrected profile.

Resolution and Colour Depth

The Variochromat exposes with 6400x4800 pixels (around. 30,7 million pixels!) It uses a depth of 8 bits (256 tonal values). To reduce file size we recommend converting RGB files to greyscale. The Variochromat exposes with 6400x4800 pixels (around. 30,7 million pixels!) It uses a depth of 8 bits (256 tonal values). To save reduce file size we recommend converting RGB files to greyscale. There are several ways to do this, the simplest being to change to greyscale mode in the "Image" menu. Other methods, such as the "Channel Mixer" within the "New Adjustment Layer" option in the "Layers" menu allow selective density for each colour. If you are unsure, send us your RGBfile, and we will convert to greyscale as we consider most appropriate for your image. Very few digital cameras can achieve 30 Megapixel resolution, but for a good quality print it's quite sufficient to use around a quarter of this resolution. There is no need to interpolate the data. This will just increase the file size with no improvement in quality. If you are sending a digital camera file just send us the image at the original resolution and we will adjust as necessary.

If you are scanning film the following table gives our standard format resolutions:

20 x 30 cm ~ 8 x 12":	4267 x 6400	26 Mb
30 x 40 cm ~ 12 x 16":	4800 x 6400	29 Mb
40 x 50 cm ~ 16 x 20":	4800 x 6000	29 Mb
50 x 65 cm ~ 20 x 25":	4800 x 6400	29 Mb
50 x 75 cm ~ 20 x 30":	4267 x 6400	26 Mb

The file sizes are for greyscale scans.

Artefacts

We would recommend against using "lossy" compression, such as Jpeg, unless you are sending us data online and have a slow connection. We would prefer Tiff files. If you do use Jpeg or J2K use the maximum or highest quality level possible. This will reduce the artifacts introduced into the file. If you make any adjustments to your image remember that each time you save it back to disk as a Jpeg more degradation is introduced. However Tiffs with LZW compression are fine, with no reduction in quality.



file without compression artefacts



file damaged by compression artefacts

Aspect ratio

If your image is different in aspect ratio (shape) to the chosen print format we will not normally crop. We will print with a white border on one side. Alternatively you may wish to crop the image to fit a given print format. (Aspect ratio = 1 : Width / Length)

Banding

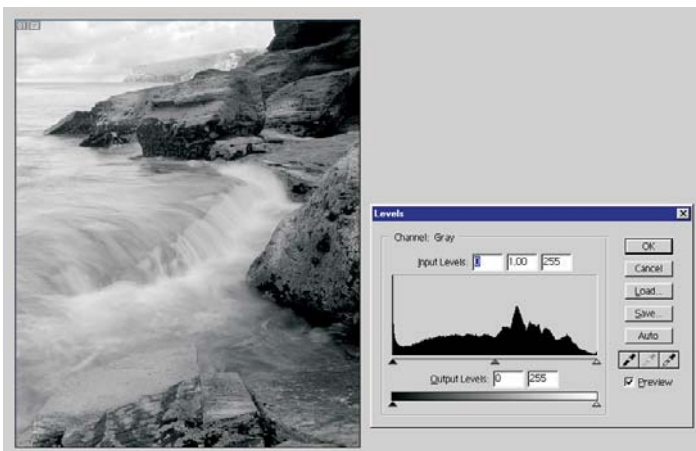


Banding between adjacent tonal areas, which should be normally smooth, can have several causes, namely:

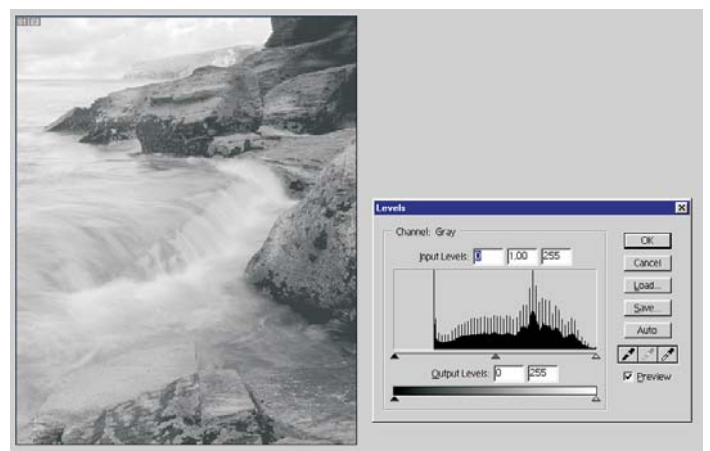
The scanner or the digital camera was not capable of recording the contrast range in the picture. Tonal corrections with software have been overdone or soft focus filters have been applied. Digital cameras have improved hugely as far as resolution goes, but they still have trouble reproducing huge differences in brightness. This shows worst on smoothly graded areas such as skies, and skin tones. Even if a file looks "pixely" - don't try correcting it with a soft filter. Brightness and contrast should be adjusted before scanning, if necessary, but only small corrections are usually needed. Unfortunately banding doesn't show on most monitors as much as on the final print.

Histograms or Levels

The "Levels" adjustment (Ctrl + L or Apple + L in Photoshop) displays a "Histogram" - a graph showing the proportion of different values of your image across the tonal range. Of course this will vary according to whether your image is high or low key etc, but in general the full tonal range should be covered. If there are gaps in the histogram, it indicates that the file is missing those tonal values - the print will be less brilliant and detailed. This often happens when images have been over manipulated, or repeatedly saved as Jpeg's. It should be emphasized that every procedure in Photoshop will increase this "gappiness" (Try a few "before and after" histograms you may be surprised!) We can correct for small gaps, but if 20% or more of the tonal range is missing the file will probably not print well. It's not possible to interpolate huge gaps - no algorithm can create information, which wasn't there to start with. If possible make sure, when taking a digital picture or scanning, that the maximum range of tonal values is covered.



The whole range of the histogram is covered - the file will give a good result.



The lower part of the tonal range is missing - a print of this file would have no depth.

Sharpness

Enlarge your file to the scale 1:1 on the monitor. If the image doesn't look sharp, it will probably not print well. Prints are very revealing! If you want to sharpen the picture you can use the "unsharp masking" filter, but do be sure that the image doesn't start breaking up tonally, or "fizzing"! Images will sometimes benefit from local sharpening - make a selection around highly detailed areas and just apply the filter to those. Unsharp masking can improve the overall sharpness of a picture if it's used with discretion. If it's overdone it can spoil the image, giving details unnatural borders. To check the impact of the filter the picture should be viewed on the monitor at 1:1 .

If you need any further information or help do not hesitate to call us.

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