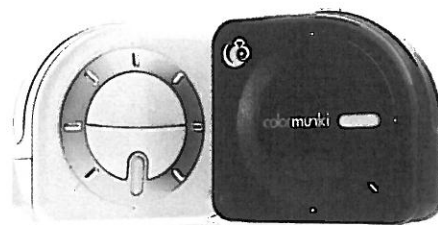


# Perfect Prints: Step 2 Printer Profiles

**Your computer monitor needs a profile to perform at its best, and so does your printer. In fact, your printer needs a different profile for every type of paper you use.**



Just as a monitor profile is used to ensure the monitor reproduces correct colours and contrast, so a printer profile is used to ensure a printer produces colours and images as you see them on the screen.

(Technically, it is impossible for a print to perfectly match a computer monitor. A monitor produces an image with transmissive light while a print is viewed with reflected light. A print is generally produced with CMYK colours, while a monitor uses RGB colours. However, despite some fundamental differences in how the image is produced, we can still get our prints to match our computer screens very closely, certainly closely enough to make us happy!)

## Using Printer Profiles

Like a monitor profile, a printer profile comprises information about the printer, the ink and the paper. You need a different printer profile for every combination of printer, ink and paper you use (although sometimes if, say, two papers are very similar, the one profile could work very well given you are generally using the same ink and printer).

The printer profile allows the colour management system (which simplistically means Photoshop for most of us) to take the colours and contrast in the photo image file and output them to the printer so the final print matches the original image file.

Essentially, a printer profile enables Photoshop to make prints that look like the image on our monitor.

What happens if you don't have a profile? Without a profile, Photoshop can only send the image to the printer on the assumption that the printer is set-up to a neutral state and will reproduce the

colours correctly. Unfortunately, this rarely happens.

Any printer, ink and paper combination will have particular colour and contrast characteristics that mean it is far from neutral. A printer profile describes these unique colour and contrast characteristics so the colour management system can translate the photograph into the correct colours and contrast.

You can think of a profile as a dictionary and Photoshop as the interpreter.

Photoshop knows one language, the language of your photo image file embedded as a colour space profile (such as sRGB or Adobe RGB [1998]).

However, if the printer doesn't have a language of its own, then how will Photoshop know what language to translate the printer information into? For the colour management system to work, Photoshop needs to know the language of the printer. If it doesn't, all it can assume is that the printer speaks the same language – which we know it doesn't.

## Profile Types

So what happens if you don't have a printer profile? Well, actually all printers have printer profiles built into the printer driver. Some are relatively dumb profiles, while others can actually use the colour space profile embedded into your photo image file.

However, these profiles rarely produce the best quality print. You also have a problem if the paper you're printing to isn't on the printer's list.

For serious printers, there are two types of printer profiles: canned and custom.

A canned profile is a profile supplied by the printer or paper manufacturer for a specific printer, ink and paper

combination. On the assumption that the ink and paper have very stable characteristics, and the added assumption that the printer is working accurately and to specification, canned profiles can work brilliantly well.

In other words, if your printer, your ink and the paper are *exactly* the same as the printer, ink and paper used to make the canned profile, of course it will work.

The problem we all have is that printers, inks and papers do change over time and with different batches. Consistency is high, very high with the professional printers and papers, but still there can be differences between the theoretical specifications and what your printer, ink and paper are actually doing. For this reason, a custom profile is preferred.

## Spectrophotometer

To produce a custom profile, you need a device that can measure the colours output by your printer onto a print. Such a device is the spectrophotometer and you can purchase models from ColorVision, ColorMunki and X-Rite.

While they are not cheap devices, they will pay for themselves with the ink and paper you save over the next few years.

The spectrophotometers plug into your computer, just like the colorimeter you use on your monitor (it may even be the same device as with the I1 Photo or ColorMunki).

The printer profile software is then used to print a series of colour swatches. The print is allowed to dry, then each swatch is measured and the software uses the measurements to produce a custom printer profile. If you can afford it, we recommend you purchase a printer profiling system.

## No Profile

If you choose to use no printer profile when making a print, you are assuming that the printer, ink and paper combination you have chosen can produce a neutral result. Unfortunately, this can be a wrong assumption. While some printer, ink and paper combinations can produce acceptable results, once you compare them with a print made using a good quality profile, you'll never go back. Many people would be quite happy with the print reproduced to the right, even if the image on the screen looked more like the image at the bottom. What a pity humans are so easily satisfied with second best!



## Canned Profile

Of course, not all humans are happy with second best. Then again, not all humans have the money to purchase a printer profile system, or have the time or inclination to produce the printer profiles! Fortunately, there is a solution for the better quality printers – canned profiles.

Canned profiles are so called because they are a one-size-fits-all printers. They assume that all printers of a particular brand *and* model operate exactly the same, and to a certain extent this is true of the professional inkjet printers and the more upmarket enthusiast models too.



## Custom Profile

For readers of this magazine who have the budget, the ultimate solution is to use a printer profiling system to produce a custom profile. A custom profile is tailor-made for your printer. Different profiles are required for each ink and paper combination, but of course many photographers will only use one ink set, so it becomes just a matter of requiring a profile for each paper or media type being used.



SIMULATED EFFECT OF USING PROFILES