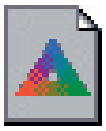
PLEASE KEEP THESE INSTRUCTIONS FOR LATER USE

LYSON
The Digital Ink Company

What are Profiles and Why Do I Need Them?

Profiles are essentially descriptions of the way any particular device reproduces colour information. You can think of them as a colour adjustment and curve adjustment all in one. There are 3 different types of profile used by Photoshop:



1. An **input** (source) profile. This is the profile that describes the colour characteristics of the device where the image came from, most often a scanner, digital camera, or RGB working space (see terminology below).
2. A **display** profile. A profile of the monitor being used. Many high end monitors come with their own profile information. PC Photoshop installations can create ICC profile of your monitor through the "Adobe Gamma" programme. Apple Macs users can take advantage of the colorsync utility to create monitor profiles.
3. An **output** (printer/destination) profile. A profile of the Printer/ Media/ Ink combination used to print the images. Every media is different and will usually require it's own profile. These profiles are supplied by Lyson or written for individual customers by independent specialists.

All three types of profile will be used by Photoshop. For example, users of OEM inks such as Epson's would normally select a media type from the printer driver selection, and a colour adjustment mode such as "Photo-realistic". These settings call up an output profile automatically from within the print driver for that combination of Epson ink and media.

Different output profiles are needed for Lyson products because our inks have a different colour balance compared to Epson inks. These differences are necessary so that our inks can provide the performance benefits our customers want, such as true fade resistance and improved vibrancy. Once the colours of the inks have changed then the printer driver can no longer manage the colour reproduction correctly without help. This is where Lyson profiles come in, correcting the reproduction and in many cases enhancing it.

Where Profiles Live

Both PC's and Apple Macs store profiles in one or more folders in the operating system directory. When a profile has been downloaded or taken from a CD, simply right-clicking on the profile and selecting "install profile" will send the profile to the correct folder on a PC. Otherwise move the profile to the correct folder:

Macintosh users: *Copy the ICC profiles to the "Color Sync" folder.*

OS 8.6/ 9/ 9.1/ 9.2	Hard Drive \ System Folder \ Color Sync Profiles
OS X	Hard Drive\Users\"your name"\Library \ ColorSync \ Profiles

Wintel PC users: *Copy the ICC profiles to the "Color" folder*

Windows 9x:	C: \ windows \ system \ color
NT Workstation:	C: \ WINNT \ system32\ color
Windows 2000:	C: \ WINNT \ system32 \ spool \ drivers \ color
Windows XP:	C: \ WINDOWS \ system32 \ spool \ drivers \ color

Photographic

print essential

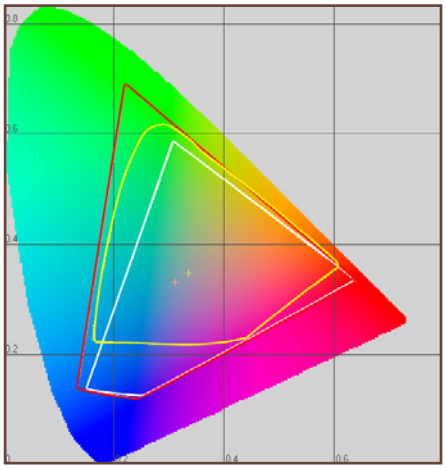
The day to day use of profiles is actually quite easy. The pdf file which accompanies most of our profiles will give installation instructions as well as the correct printer driver settings to use. From that point on it is usually just a matter of selecting the printer profile when printing and everything will take care of itself. However in some cases you may be getting results that you might not expect. This is when some knowledge of colour management terminology will come in useful.

Colour Management Terminology

Working Space

Colour Management in Photoshop can be daunting because of the number of new options available to the user. One of the biggest changes introduced was the choice of different RGB and CMYK working spaces in which to edit and manipulate your image file. We will concentrate on RGB spaces as RGB is the recommended mode in which to work in Photoshop when printing to desktop photo printers. Different RGB working spaces will give a range of colour casts to your image because they will display different ranges of colours on your monitor, all with different brightness and white point values. Crucially, the colour space that was used to create a file can be recorded or "embedded" within the image file when it is saved.

It is important to be using a working space that, firstly, displays the colours in your image accurately, and secondly, shows a range of colours that can be reproduced by the average ink jet printer. The working space Lyson recommend is "Adobe RGB (1998)". Some users may prefer to use "ColorMatch RGB" which is also acceptable.



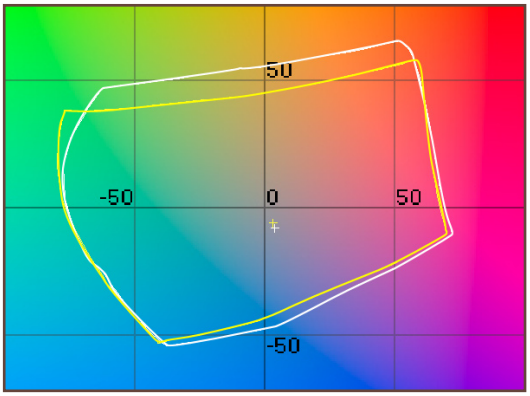
Red Line: Adobe RGB (1998)
White Line: sRGB
Yellow Line: Typical Lyson Printer Colour Space

(Epson Stylus Pro 4000/PhotoChrome/DarkRoom Pearl)

This gamut example shows the advantages of using Adobe RGB (1998) as a working space compared to the default sRGB. The full colour spectrum that can be reproduced with your inkjet printer is available under Adobe RGB.

Colour Gamut

Simply the range of colours that can be reproduced. A large number of variables come into play when dictating how large a colour gamut can be produced. The same ink set and printer will produce different colour gamuts depending on which media it is being printed on to. The same ink set and media may also produce different colour gamuts depending on what printer they are used on. Gloss and Satin coatings often produce the largest colour gamuts, matt coatings the smallest.



Vibrancy is often confused with colour gamut. A vibrant dye-based ink set may look more punchy compared to a pigment-based ink. However the colour gamut of that pigment-based ink may well be wider. Most colour gamut models do not take into account the vibrancy or visual quality of an ink/media combination.

Yellow Line: Fotonic / DarkRoomGloss / Canon S9000

White Line: Fotonic / DarkRoom Gloss / Epson 1290

These two colour gamuts come from the same ink / media combination but two different printers. The larger colour gamut of the 1290 is achieved through the higher colour density achievable with the Epson head. The trade off in this case however is print speed. The Canon is a far faster printer.

Engine

When colour values are translated or converted from one colour space to another the calculations involved are handled by an "Engine". This is the short name for the Colour Management Module (CMM). There are often a range of Engines available for selection, especially for the Macintosh platform. Lyson recommend the "Adobe (ACE)", "Heidelberg" or "Kodak" engines.

Rendering Intent

This tells the Engine how to convert one colour value to another when mapping colour values from a source space to a destination space.

The **"Relative Colormetric"** intent provides the truest, most accurate conversion possible as individual colour values are mapped directly to their equivalent. However, colours that lie outside the reproducible range of the destination source space are clipped. This results in "blocked in" colours where areas of high colour intensity cannot be reproduced with any detail.

The **"Perceptual"** intent is often known as the Photographic intent because it provides a punchy high contrast conversion. Tonal values may be shifted around to accommodate as wide a tonal range as possible but the relationship between colour values is maintained; this means that the detail contained in areas of high intensity colour is preserved. The need for this type of conversion is greater when converting from a wide colour gamut (RGB) to a smaller colour gamut (CMYK) or vice versa. It is often recommended for photographic printing.

Other rendering intents such as "Absolute Colormetric" or "Saturation" should be avoided for desktop photo printing.

Relative Colormetric is preferred when using a printer with a large colour gamut as it produces a more accurate printout. Many modern desktop and wide format printers are capable of producing a very wide colour gamut, especially on satin and gloss papers. The pdf which accompanies our profiles will often give a recommended rendering intent based on the colour gamut achievable.

Black Point Compensation

This helps to preserve the tonal range during a colour conversion. It is best used when converting between RGB and CMYK modes. In many cases this option can result in improved shadow detail when used in combination with the "Relative Colormetric" rendering intent and a Lyson output profile.

Embedding Profiles

When saving your RGB image file, Photoshop can "tag" the file with the RGB working space it was created in. It is important to recognise the how these embedded profiles or profile "tags" can affect your work. By embedding an RGB working space with your image when saving it in Photoshop you are recording how your images appear on your monitor as well as the raw data in your image file. This enables you to send images to other printers or bureaus and for them to open your files and have Photoshop convert them into the colour space that they might be using. This conversion changes the appearance of the file to match its appearance on your monitor under your selected RGB working space. In this way they can see how it was intended to appear. The conversion process actually changes the data of the image file as it appears in Photoshop. However, unless the file is re-saved in a new RGB colour space, the embedded profile remains intact. Photoshop gives the user options such as discarding embedded profiles without the need for re-saving the file and deciding on an individual basis whether the current working space be embedded with the file when saving. It can also assign any working space to an image without the need for resaving.

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