

AdobeSM Customer Services

Creating Predictable Separations

To generate reliable color separations in Adobe Photoshop, it's important to understand the role of calibration. This document outlines the issues involved in calibration. For more detailed information about calibration in Adobe Photoshop 2.5, refer to the *Adobe Photoshop User Guide*.

MONITOR CALIBRATION

Colors displayed on the monitor can look different from those on the printed piece. However, you can control certain factors to ensure predictable printed results.

Lighting and viewing conditions

It is important to work in a controlled environment where the ambient light in the room does not change during the course of the day. Any change can affect your perception of colors on the monitor. Ideally, you should work in an artificially lit room with the same brightness level at all times. You can control the environment by closing your room off to external light sources and taping down the monitor and room lighting controls once you have set them.

Colors

Screen colors can be affected by a monitor's aging process and varying temperatures. Such factors can cause monitors to display a color cast. If your monitor displays a color cast, follow the manufacturer's instructions to make sure that your monitor is adjusted properly. Be sure to let the monitor warm up for an hour after it is turned on before making color corrections to an image.

Monitor color cast

Most uncalibrated monitors tend to display a bluish cast. Use the monitor calibration feature supplied with Adobe Photoshop (or another, more sophisticated calibration program) to eliminate the cast. For example, if the color cast remains, add yellow and red to an image to compensate for the blue cast; the result will be a printed image that has a yellow and red color cast.

Gamma

All monitors tend to display images with a shift in the midtone values, causing an image to look darker or lighter than it actually is. This midtone shift varies among manufacturers, and even between monitors from the same manufacturer, and is compensated for by a built-in value. Give the adjustment value to Adobe Photoshop so that the affected midtone areas can be printed accurately. The default monitor gamma value is 1.8. To print or display the image using another application or on another platform, you should use a gamma of 1.8; that value is the closest match for uncorrected gamma. Images intended for video and film recorders should have a target gamma of 2.2, which is the typical gamma of most television sets. The higher value is due to the luminosity value of video. Please refer to Chapter 15, “Calibrating Your System and Producing a Separation,” in the *Adobe Photoshop User Guide*.

The Monitor Setup dialog box (accessed through the Preferences submenu of the File menu) includes options that give Photoshop information about the lighting, viewing, and monitor configurations. This data is then used to create separations.

Other factors also influence the integrity of the printed image. Make the following adjustments to produce high-quality output:

- Calibrate your output to adjust for varying dot densities on an imagesetter.
- Adjust for dot gain on-press.

Several other factors can affect color image quality. For example, the quality of the final output can vary dramatically with the imagesetter, the strength and mixture of the chemicals, the batch of film used, the paper stock used, and the nature of the press.

IMAGESETTER MISCALIBRATION

Unless the imagesetter and processor are well maintained, the dot percentage requested may not be the actual percentage measured with a densitometer on film. For example, if you specify a 65 percent halftone tint, the actual reading from a densitometer can vary by as much as 15 to 20 percent. Images that were meant to look identical will print differently unless the dot density produced by the imagesetter is well calibrated. A well-calibrated densitometer is required to measure dot densities for accurate halftone work.

If you select the Calibration Bars option in the Page Setup dialog box, an 11-step gray wedge will be printed on your separations. By using this gray wedge, you can record densities at different levels from a given imagesetter. Photoshop offers the ability to compensate for these density changes with a function called *Transfer*. If you enter information about the density recorded at the different levels, Photoshop will make the necessary adjustments to ensure *linearization*, that is to ensure that the requested tints closely match the output. (See the *Adobe Photoshop User Guide* for details.) For the best results, however, use the calibration utility provided by the manufacturer of your imagesetter rather than use Photoshop’s Transfer function.

DOT GAIN ON-PRESS

Even if the dot percentages recorded on film are accurate, they may change during printing due to dot gain on the printing press. Dot gain occurs when halftone dots reproduce larger on paper (in varying degrees depending on the paper stock used) than they do on film, and they can cause over saturated colors and an inaccurate reproduction. A certain amount of dot gain always occurs on-press, and you can compensate for it if you know what to expect.

For each project, ask the printer how much dot gain to anticipate. Photoshop allows compensation for gain on-press with easily selectable lookup tables in the Printing Inks Setup dialog box. The lookup tables take into consideration the nature of the paper stock, how colors reproduce on the stock, and the level of dot gain expected on this stock at the 50 percent mark. Photoshop uses this 50 percent value to generate a curve that applies dot gain compensation throughout the image.

OTHER CONSIDERATIONS

Separation setup

When preparing color separations, it is important to select the correct separation options in the Separation Setup dialog box.

The two types of separation you can choose are Gray Component Replacement (GCR), the default, and Undercolor Removal (UCR). Contact your printer to find out which method of generating the black plate they have the most experience with. Many printers are more comfortable with the UCR method of printing.

Other options in the dialog box—such as Black Ink Limit, Total Ink Limit, and UCA Amount—involve conditions specific to the press on which your separations will be printed. Contact your printer for advice on entering these values.

Lab color mode.

Photoshop 2.5 uses the new Lab color mode as an intermediary in most mode conversions. Lab color is a device-independent color mode that appears the same no matter what type of monitor or printer you're using, as long as the devices are calibrated. If printing to a PostScript Level 2 printer, convert the document to Lab Color mode, and let the Level 2 interpreter perform the conversion to CMYK mode. For more information about Lab color, see the technical note "The Lab Color Mode."