

## Using Photoshop's Soft Proof Setup.

One of the most powerful and useful features in Photoshop 6.0 and 7.0 is the accurate soft proofing capabilities. Soft proofing is a term that describes using a display to produce a preview on screen that accurately shows what the printed output of a file will look like. This takes a great deal of guesswork out of editing images for final output.

For soft proofing to work correctly, a few areas need to be addressed. First, the accuracy of any soft proof depends on accurate ICC profiles for both the display and for the output device the user hopes to eventually send their files to. If the monitor isn't properly calibrated and profiled, there is no way in which the preview of files will be correct. Consequently, if the output profile for the device a user hopes to soft proof isn't accurate, there is no way the preview will be an accurate indication of the printed output. Keep in mind that a display is glowing phosphors while a print is reflective and **MUST** be viewed under proper lighting conditions (a D50 lightbox). Nonetheless, when setup properly, Photoshop can provide a very accurate on screen indication of what a final output will look like!

Why soft proof? When should one use the feature? Just because a user is working on an RGB file that may be in a Working Space like Adobe RGB 1998, doesn't mean that what they are seeing on screen has any relationship to what output device will produce. A soft proof is necessary to predict the final output and will allow the user to edit the file based on those conditions. RGB Working Spaces are useful for editing and archiving a file that may be used for multiple printing needs. However, at some point in time, a user will want to see how that file will appear when output without having to actually print the file. Here is where the soft proofing in Photoshop comes into play. At a certain time in the editing process, the file will appear acceptable to the user in the RGB Working Space. At this point, the user may now wish to see how the file will appear to output on their Epson printer. One would setup a soft proof for the Epson printer and the preview on screen may radically change based on that single output devices behavior. The file is still in the pristine RGB Working Space; it is only previewing as it will appear when printed. The user may wish to continue to edit the file so it appears on screen as they prefer, based on the preview for the Epson printer. Before altering the file based on a single output device, it is a good idea to make a copy of the file (use the Image->Duplicate command). Then edit this file while in the RGB Working Space while being previewed based on the soft proof to the desired printer. The numbers in the file are being altered to insure acceptable output to that one Epson printer and therefore it is a good idea to do this on a copy of the original RGB file (the archive). As we will see, using Adjustment layers can be handy for creating multiple "corrections" per image for each output device.

Let us examine the pre-existing items in the Proof setup menu before we make custom settings. Under the "View Menu" select "Proof Setup." While holding down the mouse, notice the menu options. Below "Custom..." there is a number of submenu's beginning with "Working CMYK." If that menu item is selected, a soft proof of the currently selected CMYK output profile loaded in the Color Settings will be provided. For example, if the current Color Settings are set for U.S. Prepress defaults, the SWOP Coated v2 would be the CMYK profile loaded and that profile would be used if one selected "Working CMYK." Below "Working CMYK" are several menu options that allow the user to see a soft proof of individual color channels that make up the CMYK process. Picking "Working Magenta Plate" would show on screen the soft proof of just that channel. It is important to know that when picking "Working CMYK" that the profile being used is the one currently loaded in the Color Settings.

Below CMYK, options for soft proof are three methods of viewing files as if they were being seen outside an ICC savvy application. For example, "Macintosh RGB, Windows RGB or Monitor RGB" are each different ways to examine a file without using Photoshop's "Display using Monitor Compensation" features\*\*\*. That is, you can see what a file would look like in an application that doesn't know how to recognize the embedded profiles in a current open document and properly preview it with a display profile. Opening a file in

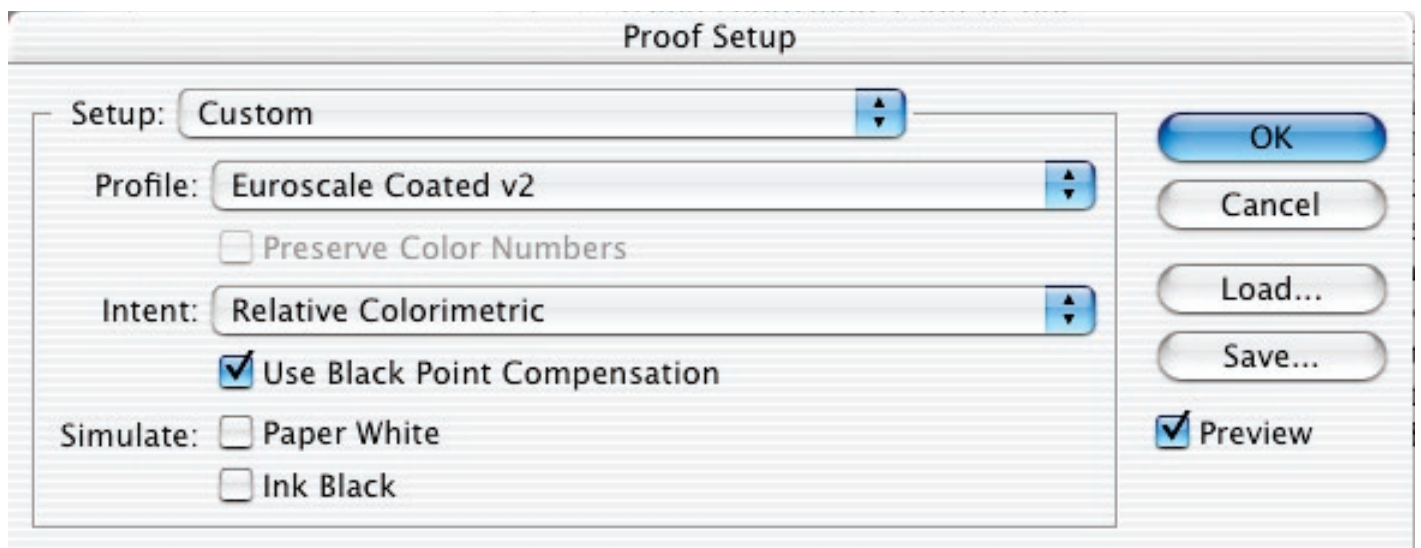
“Adobe RGB 1998” outside of an ICC savvy application usually results in a preview where the colors appear unsaturated. The colors do appear correct in Photoshop since it operates correctly with files that have embedded profiles. Using the “Macintosh RGB” would show a user what a file looks like on a Mac (using a 1.8 display gamma) outside of an ICC savvy application like most web browsers. “Windows RGB” does the same but uses a 2.2 display gamma. These two options might be useful for someone that wants to see how files will appear on different platforms outside of smart, ICC savvy applications like Photoshop. This is a good indication of how poorly and inaccurately files will appear and it is useful to show how much better it is to use ICC savvy applications when viewing images accurately is important. “Monitor RGB” produces the same function but uses the actual users ICC display profile to produce the previews (without regard to the documents embedded profile). This shows how a file will appear on a users machine outside of Photoshop (or any non ICC savvy applications).

\*\*For more information about “Display Using Monitor Compensation” and other Photoshop related color architecture, please see the PDF “PS5 Color Management” on the digital dog web site.

To test this series of features out and see why non ICC applications can produce poor and inaccurate color, try this:

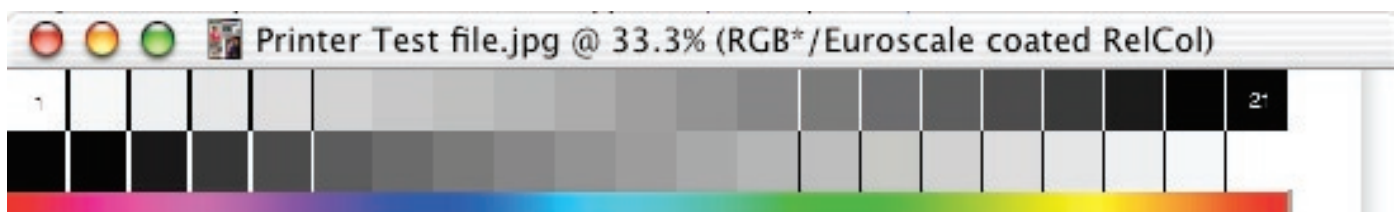
1. Open a file in a Working Space like “Adobe RGB 1998” or even better, “ProPhoto RGB”. You may need to actually take an existing file and, using the “Convert to Profile” command, convert the document into one of these wider gamut colorspaces.
2. Select the “View Menu” then go to the “Proof Setup” submenu and try viewing the file in “Macintosh RGB”, “Windows RGB” and “Monitor RGB.”
3. The file should appear desaturated compared to how it appeared with these soft proof options off. The previews being seen are similar to how this file would appear outside of Photoshop or any ICC savvy application. Bottom line is the previews are not a correct indicator of how the files really should appear.

The real power of the soft proof is when using the “Custom...” submenu found in “Proof Setup.” Here a user can pick any ICC output profile that resides on their machine and save these settings to quickly produce a soft proof. To see how this all works, lets do a step by step and setup a soft proof. First, open a file (for this tutorial, open the “Printer Test File. jpg” file that can be downloaded from the Digital Dog web site).



1. Under the “View” menu, select “Proof Setup” and then the “Custom...” submenu. The dialog seen in figure one will appear (the actual profile seen may not match what you see in this figure; don’t worry).
2. Click on the “Profile:” popup menu and notice that all the ICC profiles installed on listed but grouped in such a way that all the “Working” profiles found in the color settings (Working RGB, CMYK and Gray). Below that are all the profiles that Photoshop has installed on a users machine, followed by all additional profiles that are in on the users machine (grouped by colorspace). Since Photoshop has installed various profiles, pick “Euroscale Coated v2” which is a CMYK output profile.
3. Notice that the background “Printer Test File. jpg” image actually changes its appearance as Photoshop produces a soft proof with this profile! Notice a popup menu called “Intent” where one can see the effect of the various rendering intents on the preview. Pick “Relative Colorimetric.”
4. For this part of the tutorial, we will save these settings. Click on the “Save...” button and when the Save dialog appears, name this “Euroscale coated RelCol” and click the “OK” button. Photoshop will default to save this setting file in the right location (the Proofing Folder) and as a .psf file. One can save this anywhere but it is recommended that these .psf files be saved in the Proofing folder. Notice there is a “Load” button where one can locate and reload any saved .psf file.
5. Click on the OK button to dismiss the Custom Proof Setup. Select the “View” menu, then the “Proof Setup” Submenu and notice that a setting by the name of “Euroscale coated RelCol” is now found at the bottom of the sub menu and can be selected at any time. There should be a check mark next to this name, indicating that this is the currently selected Proof Setup file to be used for Soft Proofing.
6. To turn the soft proof on and off, select the “View Menu” and then move down and select “Proof Colors” or better, use the Command Y key command. Toggle this on and off while examining the “Printer Test File. jpg” image and you will see the preview change. The soft proof using the Euroscale Coated v2 profile should look a bit muted. This is because “Printer Test File. jpg” has saturated colors (especially the spectral gradient) that is out of gamut of the Euroscale Coated v2 output profile!

When the soft proof is in operation, notice that the file name at the top of the document window will change from the file name (“Printer Test File. jpg”) to “Printer Test File. jpg (zoom ratio) (CMYK/ Euroscale coated RelCol).” This is an important indicator that the soft proof is on so keep this in mind.



When building a custom soft proof, it is usually a good idea to make at least two: one for a Perceptual rendering intent and one for a Relative Colorimetric rendering intent. This allows one to pick which intent they will want to use when they eventually convert the file. It also shows how rendering intents can affect the colors (and often density) of the file. When the time comes to do a conversion using the profile being used in the soft proof, simply pick one that produces the best/preferable preview! No single intent is always the correct intent to use. The soft proof makes determining which intent to use fast and easy. Pick the intent and then, if necessary, begin to edit the file based on the soft proof.

Advanced options:

Preserve Color Numbers:

Going back the Custom Proof Setup, there are some options, which should be discussed. The first is a neat little check box named “Preserve Color Numbers” which doesn’t make a great deal of sense until explained. What this check box does is show the user what the image would look like printed without first using the output profile selected in the “Proof Setup”. In other words, if I have a file in “Adobe RGB 1998” going out to an Epson 2200 and I’ve selected one of the Epson output profiles, clicking on this check box would show me how ugly the image would appear. “Adobe RGB 1998” isn’t close to the correct set of numbers needed for this printer. If I simply send the file to the printer, this is how awful it will print. With the check box off, I’m seeing how the file would look if I first converted from “Adobe RGB 1998” to the Epson printer profile. Is this checkbox useful? Sometimes it is. First, it illustrates the need for output profiles and why we must convert from the Working Space to a Print Space using a profile. For those working with untagged files or files that are in an output space (CMYK specifically), it is useful to see what the file would look like if the current set of numbers were simply sent to the printer “as is.” For example, if someone provides a file in “SWOP Uncoated v2” but the file will be output to a device where “Eurocoated” v2 is the behavior of the device. By un-checking “Preserve Color Numbers”, a soft proof is produced showing what the output would look like if those numbers from SWOP were sent directly to this output device that prints as Eurocoated!

Preserve Color Numbers will be grayed out unless the current colorspace and the output space are the same. In other words, if the file is in “Adobe RGB 1998”, and I pick “SWOP Coated v2” in the Proof Setup Profile Popup, Preserve Color Numbers is grayed out. However, if I pick an RGB output profile (Epson 2200 Luster), then the check box will be available for use. I can see what the file would look like going to the Epson since both file and output profiles are the same colorspace (RGB).

Use Black Point Compensation:

This is new in Photoshop 7.0. It is only mildly useful. Since it is recommended that conversions using profiles be done in Photoshop and the default should be to always use “Black Point Compensation,” this check box has little value. However, it does show on screen what would happen if Black Point Compensation is NOT used when converting a file. If images are to be converted outside of an Adobe product that supports “Black Point Compensation” (like using a RIP), one can see how the image will convert without this option. For more specifics on Black Point Compensation, see the PDF on [www.digitaldog.net](http://www.digitaldog.net).

Simulate: Paper White/ Ink Black:

This is a handy option for the soft proofing of files and when used correctly can produce much more accurate screen to print matching. With these options not checked, Photoshop is producing a Relative Colorimetric rendering with Black Point Compensation to the screen. This means that when a file contains a very dark value (say 0/0/0), Photoshop is attempting to preview the image and producing as dark a preview for these values as possible on the display. The opposite is true for “Paper White”. The display is producing as high intensity as possible to “simulate” white. However, this soft proof is overly optimistic! The white of printed-paper and the black of ink on paper aren’t really close to this intensity. Therefore, with “Paper White” check box on, Photoshop attempts to simulate the white of the actual paper and not attempting to produce the brightest white the actual display is capable of producing. Checking “Ink Black” turns off Black Point Compensation in the simulation-to-monitor transform, and thus shows you somewhat weaker and muddy black (assuming the profile for what you’re simulating has an accurate black point rather than mapping to 0/0/0 which isn’t really correct).

When these check boxes are on, the actual soft proof is usually much more accurate to the printed piece viewed nearby on a D50 light box. The black on screen is more accurately previewing just how dense the black ink on paper really is. The same with paper white. The bad news is that when a user toggles on these check boxes, they

see their nice snappy image on screen get muddy! The process of seeing the preview change before your eyes is both sobering and usually is so intense that one really should not watch the conversions take place! As odd as it sounds, the best thing to do is have a series of saved soft proof settings with these options, then select them and turn away as the preview updates. After a few seconds of not viewing the original preview, the appearance of this “muddy” image will not be apparent. The soft proof should be much more accurate to the printed page. It is just dangerous to watch the Paper White/Black Ink preview “kick in.” I usually make a set for one output profile that has the Paper White/Black Ink both on and off with the two rendering intents selected for each set. So I will have four saved settings per output profile. For most editing, I may work with the check boxes OFF and then toggle them on to see how the image appears, and perhaps edit based on that preview.

Note that whenever one selects the “Paper White” check box, the “Ink Black” will always be on as well. You can’t have “Paper White” without “Ink Black” but you can pick just “Ink Black”. Generally, one will want both check boxes on but in some cases, depending on the profiles and how accurately they reflect these two ends of the tonal scale, just “Ink Black” can be a good option. Play with these options and see if the soft proof to print matching really is better or not.

#### Workflow:

The soft proof settings are a good way to work when the time comes to edit the file based on the specific output device one will use but keep in mind that the data is still in the RGB Working Space. This data should be kept unaltered since editing based on another output device may be necessary in the future. One can duplicate the file and begin editing and eventually convert to the output space but always be sure to save this as a separate file. The other option is to use Adjustment Layers! Name the Adjustment Layer for the output device the edits are going to be used for and just be sure that all the other adjustment layers (for other output corrections) are turned off. Its possible to have a file in an RGB Working Space and have half a dozen different adjustment layers all specifically created for a particular output device. Edit using these layers while viewing the soft proof so that the adjustment is tailored to product the visual effect you wish. Keep in mind that some RIP’s or output devices may not be able to accept a layered file.

The bottom line here is to use specific custom soft proof settings to preview on screen how the file will appear to any given output device. Edit the file if necessary to produce a preview that will result in output you prefer. Keep in mind that specific rendering intents can be previewed so that when time comes to do a conversion, the rendering intent to use isn’t a guessing game. With accurate display and output profiles, and a good D50 light box, Photoshop will provide excellent soft proofing which eliminates the need to print the file multiple times with multiple rounds of edits.