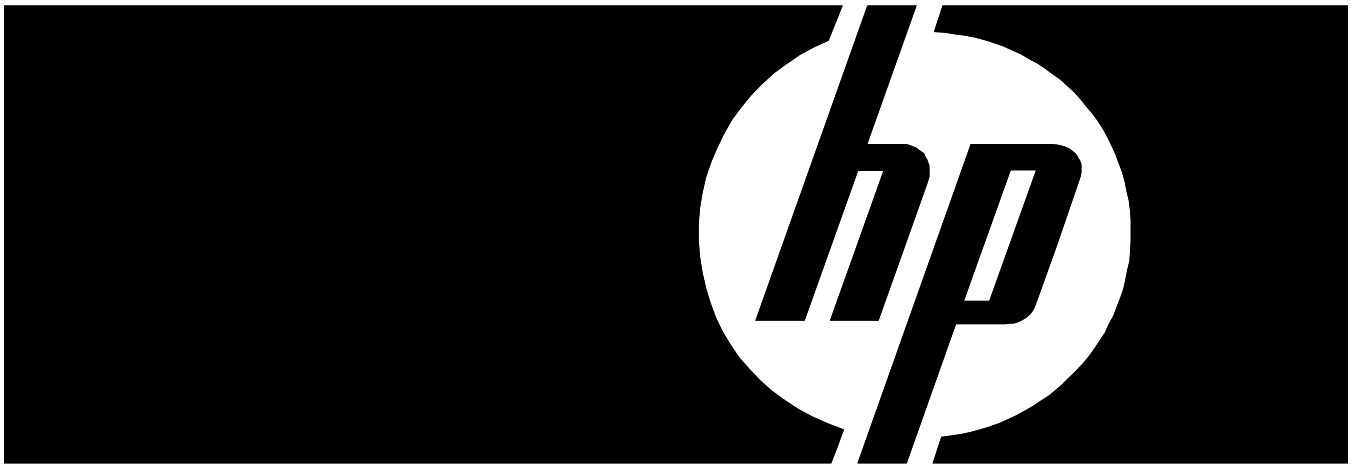
Printing Grayscale Images and Neutral Grays



As composite color printers, ColorSpan's high resolution devices combine varying amounts of all ink colors to produce grayscale values and percentages of black. An observable but unwanted side effect of this method is that color tints are sometimes visible in the resulting grays. This document offers information and suggestions for achieving optimal grayscale output.

First and foremost, you must begin by color calibrating the printer. For DisplayMaker Legacy Series XII and later models, this is a one-step linearization. For Giclee PrintMaker-FA, DisplayMaker HiRes 8-Color, and DesignWinder, the process is iterative and may take several calibration sessions. Print the calibration page, and focus your evaluation on color patches one through eight. If these patches are not neutral and free of color tint, it is unlikely that other output from the printer will be neutral. Take the readings and repeat until the first eight patches are satisfactory. For all printers, it is significant to use the ink and media profile or color transform appropriate for your media type, as this profile contains information about the characteristics of the media. Refer to your printer and print server documentation for instructions on color calibrating and selecting ink & media profiles.

When preparing files for grayscale output, data may be in RGB, CMYK, or Lab color spaces, or in grayscale values; it will not influence the final output. RGB color space, however, is always the recommended color space to use when printing to a ColorMark Legacy print server.

Rich Black vs. Pure Black

This section refers to a setting found on some older versions of the ColorMark Legacy Professional print server software. Newer versions do not have this feature.

Rich Black is a composite black produced with cyan, magenta, and yellow ink as well as black ink. Pure black is produced with black ink only. Rich Black is generally recommended for large areas of black coverage, so that the work is distributed among all the cartridges; Pure Black is better for documents where high-quality black text is desired, since using only black ink avoids registration issues. The Pure Black/Rich Black setting affects only colors specified as 100% black in CMYK color space (or equivalent values in other color spaces); any gradations from 1% to 99% black (or equivalent values) will print the same way regardless of this setting. This configuration can be made on the server at the port you will be printing to (AppleTalk, Winlink, TCP/IP, Novell), or on your workstation at the time you print the job (look for "printer-specific options" or "properties" in the print dialog box), or in the ColorSpan Downloader Utility. For details on making these configurations, consult the documentation that came with your printer and server. You cannot change between Pure and Rich Black after a job has been processed.

Producing Grayscale Output Using Black Ink Only

Grayscales or percentages of black are printed as composite colors except under one circumstance: when canonical is the selected color setting. Canonical bypasses the ColorMark Color Management System (ColorMark CMS) and uses a default CMYK conversion. As a result, only black ink is used to create all percentages of black or grayscale. The disadvantage to this color setting is that overall output quality can be degraded, particularly in photographic-quality images. Because ColorMark CMS is not used, the optimum apparent resolution of the printer can not be reached. Canonical color can be selected on the server at the port you will be printing to (AppleTalk, Winlink, TCP/IP, Novell), or on your workstation at the time you print the job (look for "printer-specific options" or "properties" in the print dialog box), or in the ColorSpan Downloader Utility. For details on making these configurations, consult the documentation that came with your printer and server. You cannot change to or from canonical color after a job has been processed.

Using ColorMark+ and the ICC Workflow to print Neutral Grays

Users of the ColorMark+ Advanced Color Management software can create ICC Color Profiles for their ColorSpan printers and use the ICC workflow to achieve high quality black & white or neutral grayscale prints. For exact details on the ICC Workflow and ColorMark+, please consult Tech Note 2801, Working with ColorMark+ and ICC Profiles. In addition to the information provided in that document, add these directions:

1. For best results, scan images in RGB colorspace, even if they are grayscale originals.
2. Open the image in Adobe Photoshop and convert to grayscale. This purges all color data.

3. Convert the image back to RGB colorspace and proceed with the instructions found in Tech Note 2801.

Multi-Density Black EnduraChrome inks for DisplayMaker Series XII, Esprit, Mach 12 and X-12

The printers named above can take advantage of ColorSpan‘s Multi-Density Black EnduraChrome inkset. Used alone as a set of four inks, or in conjunction with multidensity cyan, multidensity magenta, and yellow to create a 1x11 set, the MultiDensity black inkset offers dark black, medium black, medium light black, and light black. As a stand-alone set of four, the Multi-Density blacks offer excellent neutrality with smooth tonal gradations. Incorporated into the eleven-color inkset, the Multi-Density blacks enahance image detail and allow much better reproduction of neutral images alongside full-color images.