

ICESaver Colorimetric Analysis

What is “Color-Safe” CMYK Optimization?

FineEye’s ICESaver software optimizes CMYK values in PDF files for minimum ink usage and maximum print quality and runability on press. It is understood that these benefits are only valuable if the visual integrity of the printed image is protected in the process. So FineEye performed an objective colorimetric study to validate the claim that ICESaver delivers visually equivalent results on press, making it “color-safe” – while still substantially reducing ink usage.

The Colorimetric Analysis

Source Images: The ‘Reference’ image was produced from an IT8/7.4 patch set processed with a Photoshop® SWOPv2 profile.

The ‘Sample’ image was processed through the Sheet-Fed version of ICESaver, using the “Matte Coated Grades 2-3” paper setting.

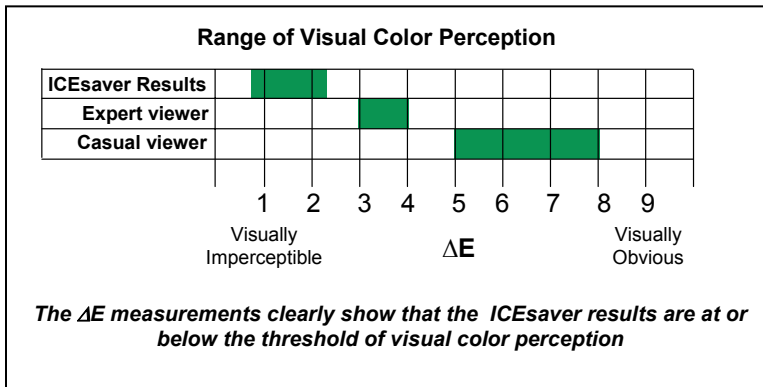
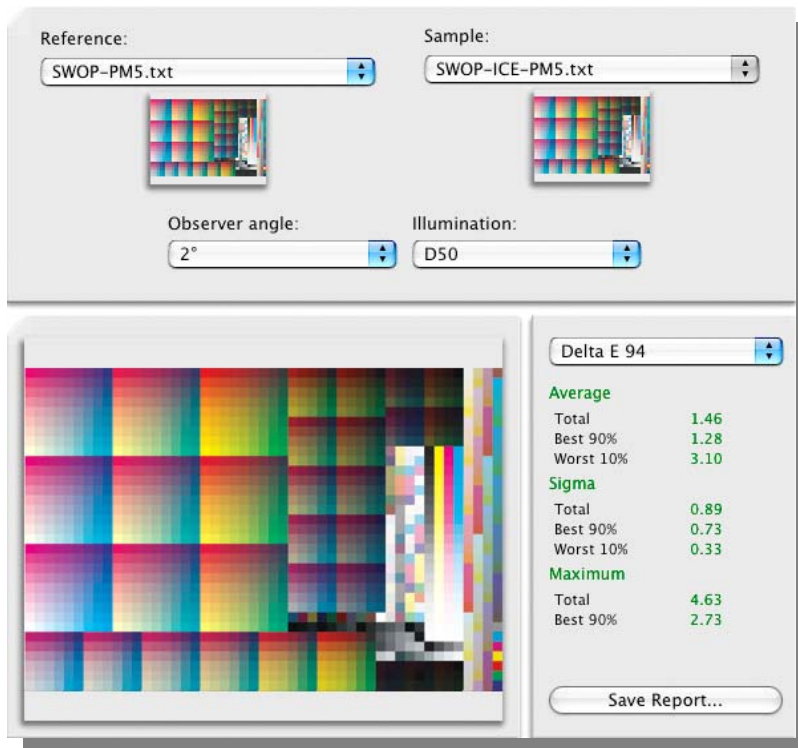
Ink Savings: The ICESaver Ink Report showed that ICESaver reduces the amount of CMY inks by 46.4% compared to the reference. (ICESaver calculates relative ink usage by counting all CMYK pixels associated with each of the images. Pixel values directly correlate with the final size of printed dots.)

Printing: The two IT8/7.4 patch sets were printed in-line by a commercial print shop on a Heidelberg 6-Unit Press from linear CTP plates. The print shop was asked to process the project as a routine job order and to print to their normal shop standards.

Measurements: Data measurements were taken from the corresponding target images on the press sheets using the popular Gretag Scanning Spectrophotometer. Delta-E¹ color differences were calculated using the CIE 1994 formula² with the ProfileMaker Pro 5.0.8 Measurement Tool.

Equivalence Methodology: Studies show that an average person is able to detect a color difference if the ΔE is in the range of 5-8³. A graphic arts expert trained in color reproduction may detect variations when differences are as low as ΔE 3-4.

Equivalency Results: With most of the ΔE values in the 1-2 range, the measurements from the two sets of printed patch sets show that a graphic arts expert would consider the ICESaver colors to be visually equivalent to the reference colors.



¹ Delta-E is a number indicating the “distance” between two colors.

² A CIE technical committee (TC 1-29) published an equation in 1995 for calculating Delta-E, called CIE 1994 or Delta E 94. CIE 1994 is widely accepted in the Graphic Arts as an accurate method for calculating color differences between a Reference and Sample color. The first major revision of CIE 1994, known as Delta-E 2000, is still under consideration and has not been universally accepted.

³ <http://www.colors.com/support/tools/deltae.asp>