White Paper

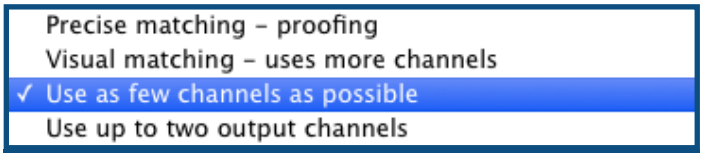
New spot color calculation methods

ZePrA 4.5

COLOR Logic

Calculation methods for spot colors

The ***Calculation method*** is used to define how ZePrA converts spot colors, combinations of spot colors and process colors, or several spot colors to the target color space. In ZePrA 4.5 we added the new method ***Precise matching - proofing*** which sums up to four different conversion methods for spot color conversions.

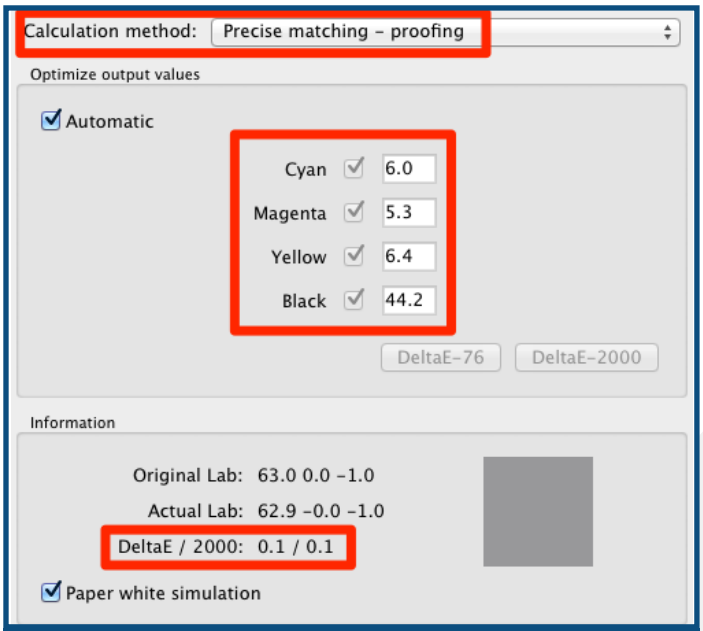


Spot color conversion methods
FIG 1.1

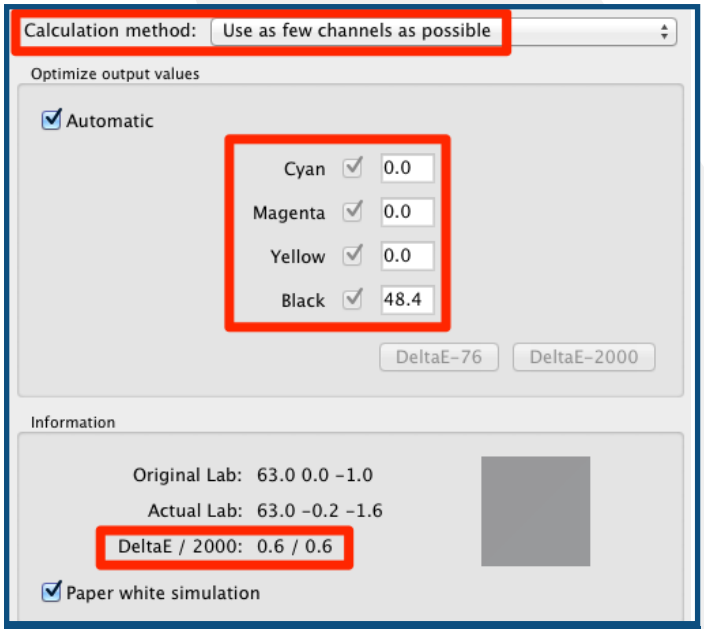
How the method *Precise matching - proofing* works

Use ***Precise matching - proofing*** if you want to reproduce your spot colors on your proofing printer as precisely as possible. Please be aware that this method is not meant to be used in production as it may use all process colors to achieve the closest match (based on DeltaE 2000). The full tone will be calculated in a way that it will result in the lowest possible DeltaE 2000 value. No channel minimizing and print optimization will be applied.

Example: The spot color Pantone Cool Gray 7 C converts into CMYK (FOGRA39) with 0.1 Delta E. With the method ***Precise matching - proofing*** it may be that all available output channels are used (**FIG 1.2**). In the screen shot on the right side you see the conversion of the same spot color with the method ***Use as few channels as possible*** (**FIG 1.3**). This conversion method focuses on the usage of less channels while maintaining the best possible color match. In our example this will lead to a very low DeltaE 2000 value of 0.6.



Precise match - proofing Cool Gray 7 C
FIG 1.2



Use as few channels as possible Cool Gray 7 C
FIG 1.3

Note: A ColorLogic PDF file to test the spot color conversion quality containing several spot colors is available for download: http://www.colorlogic.de/seiten/download/ColorLogic-SpotColors-Testfile_V2.pdf

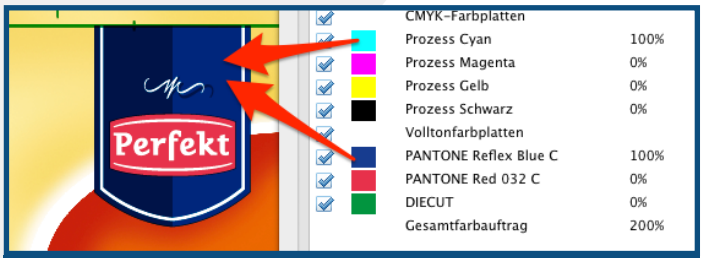
Print and color optimization during spot color conversion

ZePrA converts spot colors automatically visual and print (channel minimizing) optimized. A visual optimized conversion will prioritize the lowest visual color difference based on DeltaE 2000. This may lead to the fact that more process colors are used to simulate the spot color. With a channel minimizing method we prioritize the usage of less possible channels while maintaining a low DeltaE 2000 value. Obviously, channels will only not be used if the resulting color is still close enough to the original spot color. Spot color shades will only be printed with those process colors, which you defined for the full tone either manually or with the help of the ***Automatic*** function.

Major improvements for calculating overprinting spot colors

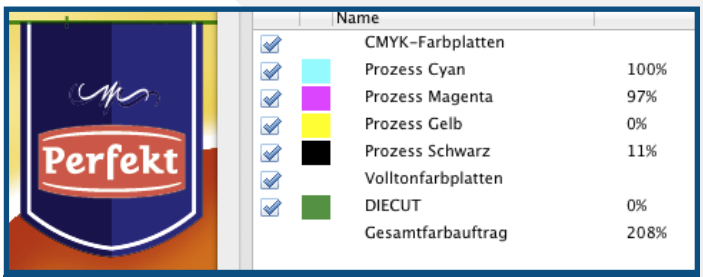
One of the most challenging tasks when converting spot colors is the combination of spot colors with other process colors or spot colors. We already handled this challenge in our former spot color module very successfully. With ZePrA 4.5 we enhanced this even further. Noticeable improvements have been made to the quality of our spot color conversion while we accelerated the calculation time dramatically. Meanwhile, the conversion of spot colors is done on-the-fly. They are so fast that we are not able to show the status of calculating the different spot colors anymore.

With the following **Example** (see **FIG 1.4** - Download available here: ftp://guestdl:colorlogic@ftp.farblogik.de/ColorLogic_Webinar_SpotColor-Testfile_V1.pdf) we would like to visualize the conversion of a logo created with 100% cyan and 100% Pantone Reflex Blue to CMYK (FOGRA39) with two different calculation methods.



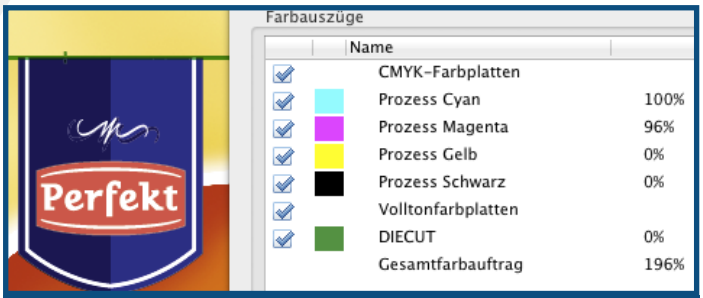
Original file spot and process color
FIG 1.4

Note: Pantone Reflex Blue is far out of the printable FOGRA39 color space. Nevertheless, this example shows clearly the different output by using either ***Visual matching - use more channels*** or ***Use as few channels as possible.***



Example: Visual matching method
FIG 1.5

By choosing ***Visual matching - use more channels***, you opt for the visually best conversion with high colorimetric accuracy and yet still with good printability (**FIG 1.5**). With this method, solid tones and gradients of the spot colors are converted with a minimum of channels and still colorimetrically accurate. However, spot colors that are present in combination with process colors or other spot colors may consist of several process colors after conversion. This option is suitable for digital printing, large-format inkjet printing, proof printing or offset printing with a fine screen ruling.



Example: Use as few channels as possible
FIG 1.6

The other method ***Use as few channels as possible*** converts solid tones and gradients of the spot color with a minimum of channels and still with very high colorimetric accuracy. It allows higher tolerances so that full tones and gradients may use less channels when converted to process colors. Overprinting spot colors are composed of as few process colors as possible from the target color space to allow better printability and the purest possible colors. The screen shot shows that no black is used for the logo (**FIG 1.6**). You may choose this method for packaging production to ensure pure colors.

About ColorLogic & CrossXColor

We are an independent, technology driven company that creates strong and productive relationships between our partners, clients and our team. We believe that it doesn't matter where or how color needs to be expressed, you need to start with the best technology available.

For More **Information**

To learn more about how ColorLogic and CrossXColor can help turn your color management challenges into a streamlined color workflow, visit us on the web, www.colorlogic.de or www.crossxcolor.com

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