Prinect
Color & Quality

HEIDELBERG

Optimal printing and proofing results in critical papers with UV brighteners, using heaven 42 as an example

Working with Prinect Color Toolbox

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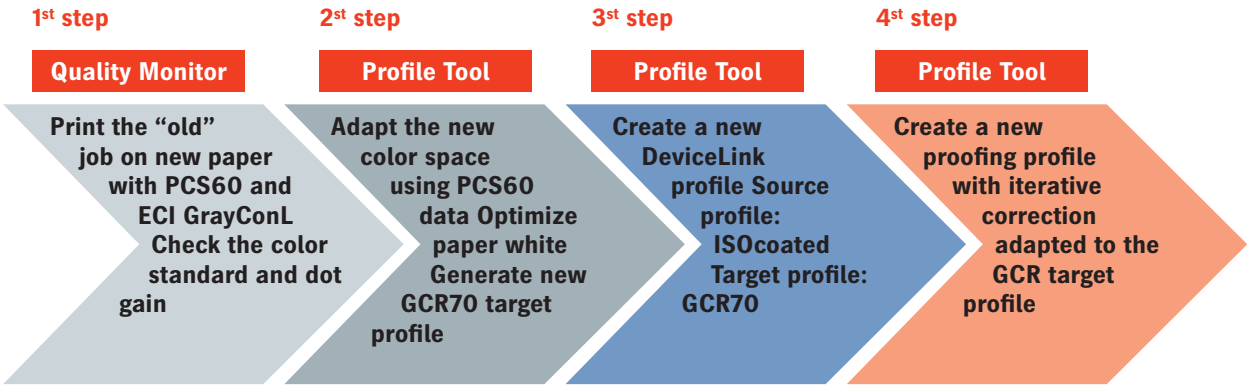
Contents

1 Introduction

This User Guide describes the various steps necessary in Prinect Color Toolbox to achieve optimal printing and proofing results when printing on critical papers containing UV brighteners (using heaven 42 as an example).

Some of the features and functions described are only available in Prinect Color Toolbox 2010 upwards.



The following Toolbox modules are used:

- Quality Monitor
- Profile Tool

This User Guide also shows you how to incorporate DeviceLink technology in this process.

Using DeviceLink technology generates a whole series of additional benefits, ranging from more stable printing and finishing processes to saving on inks.

2 Printing jobs with Mini Spots

1st step

Quality Monitor

Print the "old" job on new paper with PCS60 and ECI GrayConL Check the color standard and dot gain

The "old job" needs to be printed again, but this time on new paper. Not only color measurement strips but also the control elements PCS60_AB and ECI_GrayConL_FOGRA39 are positioned on the printed sheet.

These so-called Mini Spots are positioned vertically on the sheet to ensure there are no zonal influences on the print result.
To make sure the results are even more consistent, we measure several printed sheets and take their mean values.

After measuring these control elements, we check the color standard and dot gain using Quality Monitor.

Positioned control elements

Mini Spot at the top of sheet centre	PCS_60AB
Mini Spot at the bottom of sheet centre	ECI_GrayConL_FOGRA39

3 Individual analysis of Mini Spots

1st step

Quality Monitor

Print the "old" job on new paper with PCS60 and ECI GrayConL Check the color standard and dot gain

Go to Process Standard in the left-hand menu and select the following process standard as a reference: ISO 12647-2_2007BB (the process standard should be selected according to the backing; a white backing is more usual for hand-held measurement devices, in this case select ISO 12647-2_2007WB).
Click the Measure tab and open the Mini Spots you measured previously one after the other to compare them with the process standard.

The screenshot above tells you that the b-value of paper white at –4.67 is outside the tolerance range.

Paper white for paper type 1 is defined in the process standard as follows:
Black measurement background: L = 93.00, a = 0.00, b = –3.00
White measurement background: L = 95.00, a = 0.00, b = –2.00
(Tolerances: L-value Delta-E 3.00, a-value Delta-E 2.00, b-value Delta-E 2.00)

This comparison also shows us that cyan and yellow are actually within the tolerance range but show sub-optimal values nearing the tolerance threshold.

4 Long-term analysis of Mini Spots

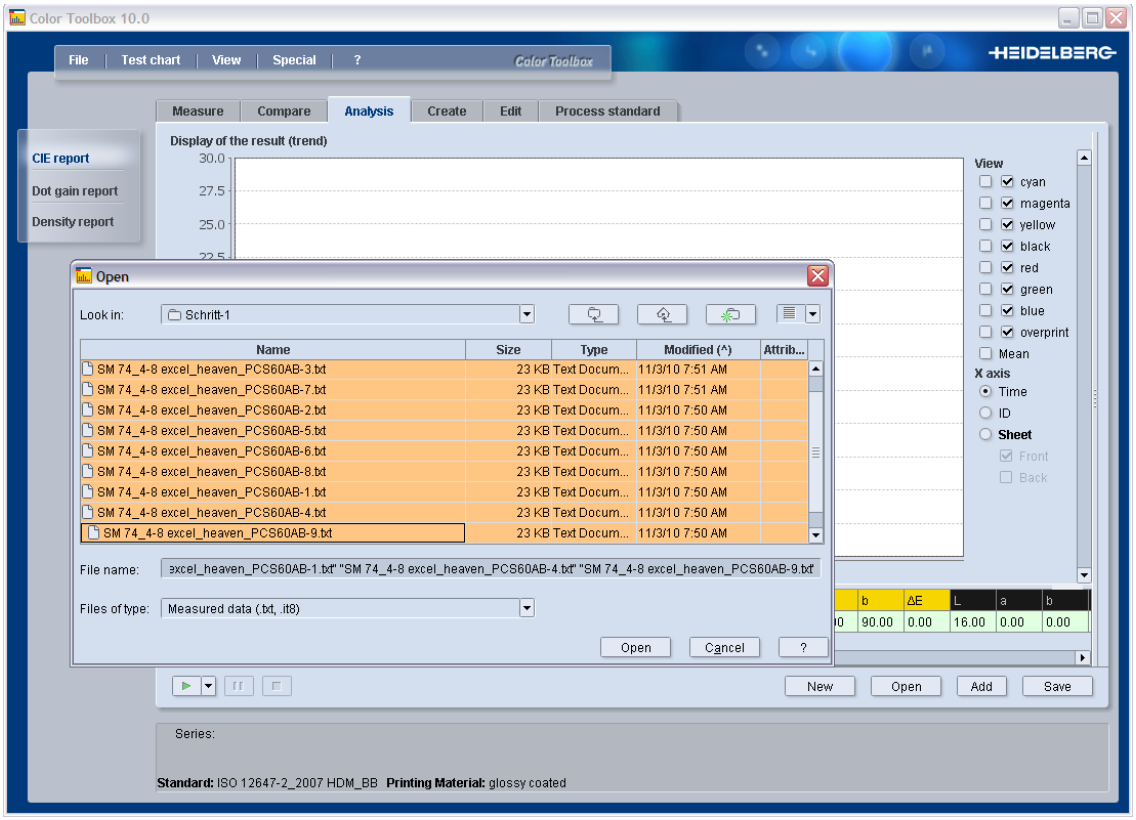
1st step

Quality Monitor

Print the "old" job on new paper with PCS60 and ECI GrayConL Check the color standard and dot gain

As an alternative, you can also check the measurement data in the long-term analysis view. To do this, you will need to change to the Analysis tab.

Click Add to open all measurement data of the same-type at the same time. Use Multiselection to do this.



The advantage of long-term analysis is that the charts enable you to identify any measurement data outliers more easily.

Note: Deactivate all measurement data outliers before calculating the mean data!

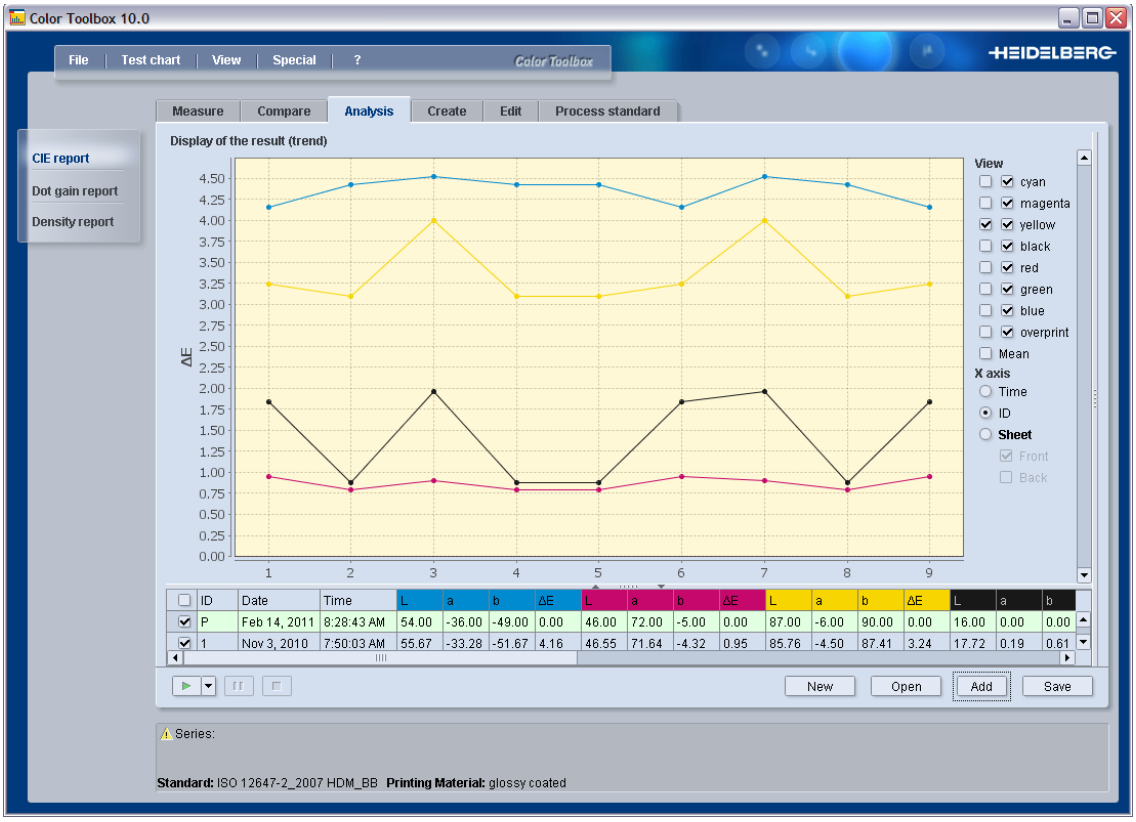
5 Long-term analysis of CIE reports

1st step

Quality Monitor

Print the "old" job on new paper with PCS60 and ECI GrayConL Check the color standard and dot gain

The CIE report indicates whether the color target for the process standard you selected has been complied with and to what extent. The active process standard is shown on the bottom left-hand side of the status bar.



The y-axis shows the Delta-E values. The x-axis shows the nine measurement data sets.
The colors can be selected on the right-hand side. All colors are checked in this example, and in addition the tolerance indicator for yellow has also been activated.

All measurement values are within tolerance. Cyan and yellow are – as we saw previously in the analysis of the individual data – in a sub-optimal range.

Note: These poor values are the result of the optical brighteners in the substrate.

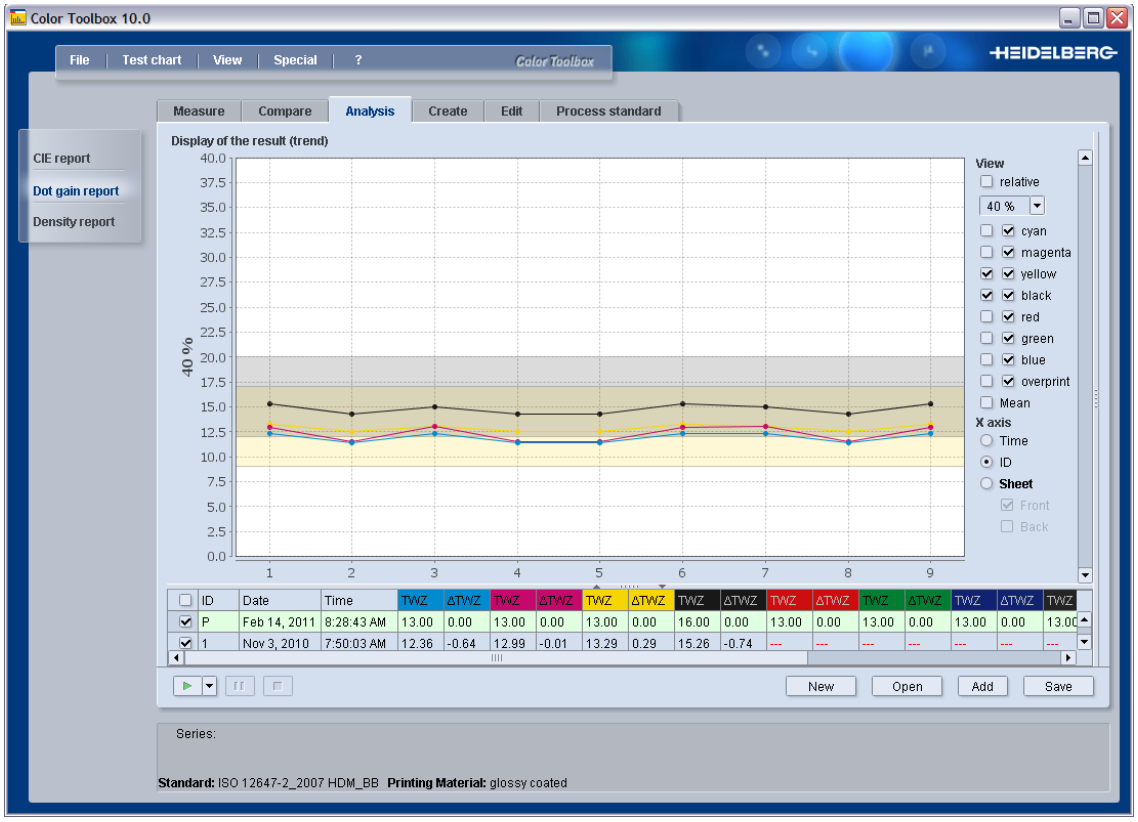
6 Long-term analysis of dot gain reports

1st step

Quality Monitor

Print the "old" job on new paper with PCS60 and ECI GrayConL Check the color standard and dot gain

Switch from CIE Report to Dot Gain Report. You can view dot gain in either absolute or relative mode.
The absolute mode shows you the absolute values on the y-axis, such as 16 %, 17 % ... etc.
The relative mode shows you all the differential values on the y-axis, relative to zero, e.g. + 2 %, – 1.5 % ... etc.



The example above shows the results in the absolute view. All colors are activated, and in addition the tolerance range for black is shown in gray and for yellow in light yellow.
A 40 % range has been selected for the analysis. Any scale between 10 % and 90 % can be selected in this pull-down menu.

The chart shows that all dot gain is uniformly distributed within the tolerance range.

Note: The density report is for information only, with no normative significance, so there is no need for us to take a closer look at it here.

7 Calculating the mean value of the measurement data

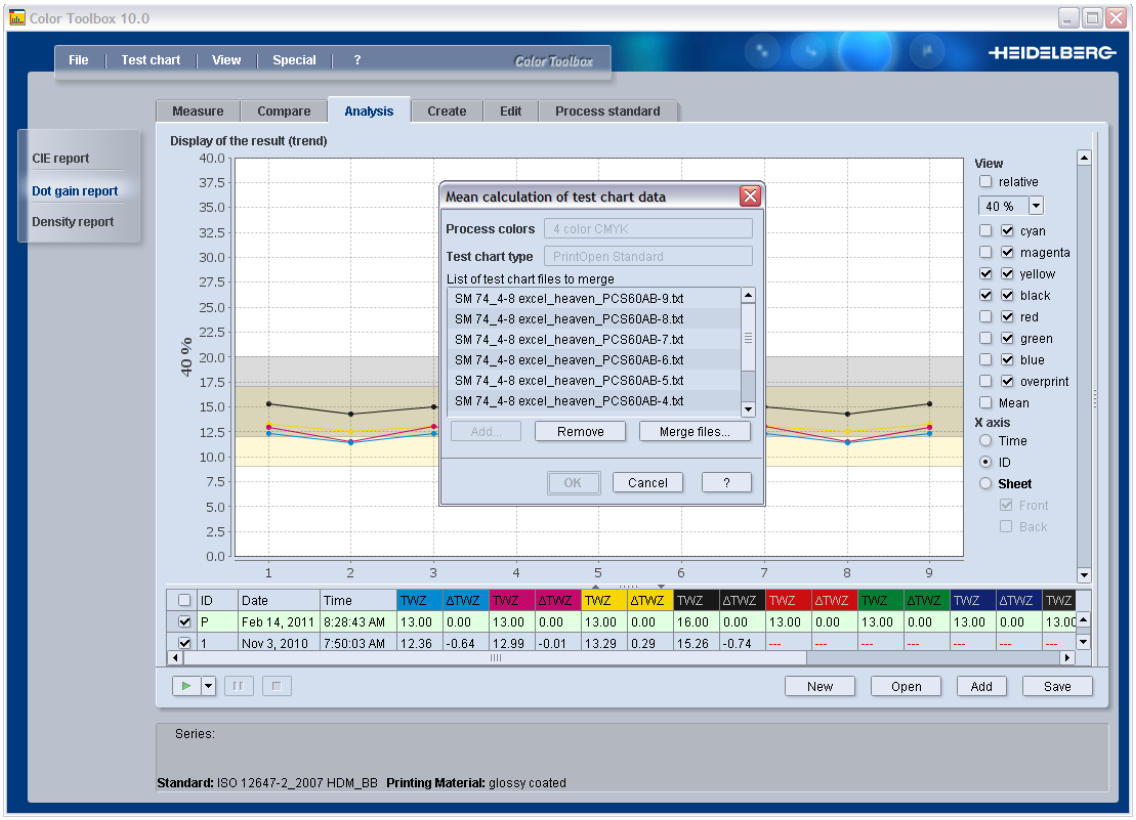
1st step

Quality Monitor

Print the "old" job on new paper with PCS60 and ECI GrayConL Check the color standard and dot gain

The next stage is to merge the measurement data sets to calculate their mean. Since there are no measurement data outliers here, we can use all nine data sets for this.

To access the pop-up menu Merge Files, go to Test Chart and select Mean Calculation of Test Chart Data.



Select all 9 measurement data files from the list and click the button Merge Files.

Save the mean calculation as a new measurement data set.

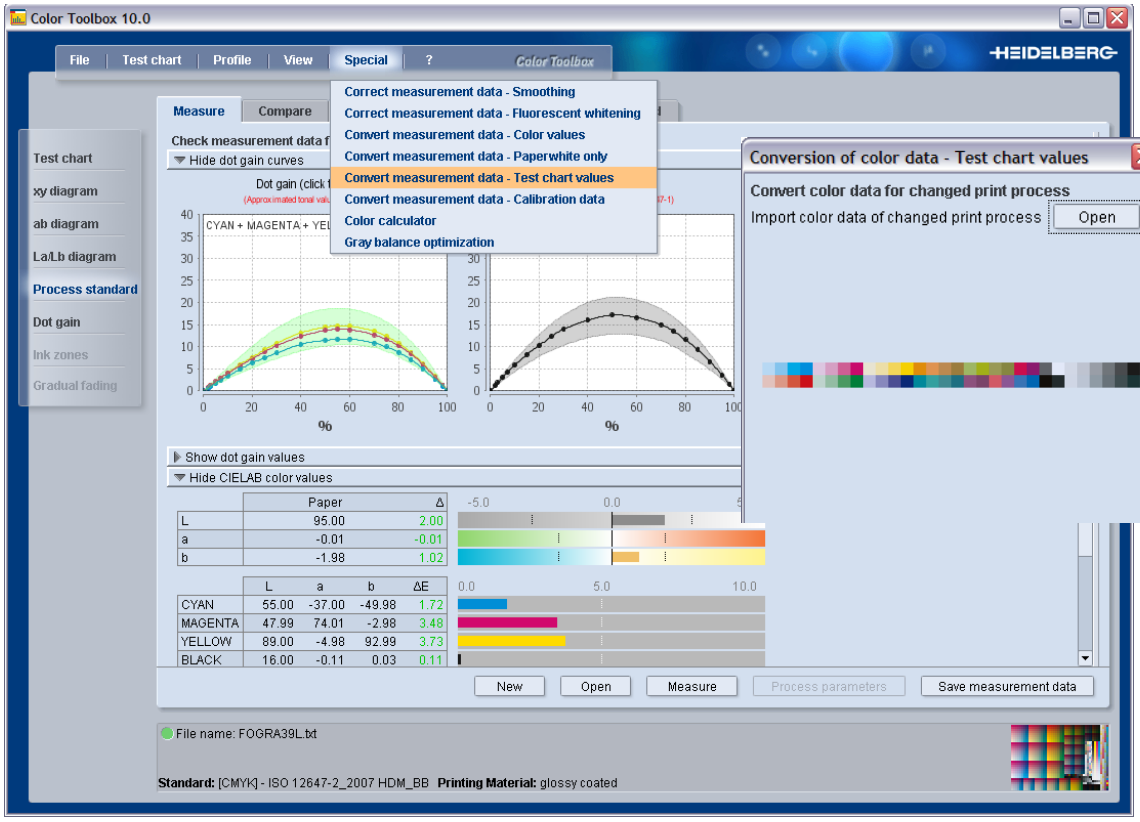
8 Converting FOGRA39L data with PCS60

2st step

Profile Tool

Adapt the new color space using PCS60 data Optimize paper white Generate new GCR70 target profile

Switch to the Measure tab and open the FOGRA39L characteristic data from the directory D:\Color Toolbox\Color Tool 10.0\data\fogra (the path may have a different starting point, depending on the installation, e.g. C: \...).
Path in Color Toolbox 3.5: C:\Documents and Settings\All Users\ Application Data\Heidelberg ...).



Now change to the menu Special and go to Convert Measurement Data – Test Chart Values and open the data set you carried out the mean calculation for.

Using these mean data, convert the FOGRA39L characteristic data and save the converted data under a new name.

Note: This operation adapts the FOGRA39L color space to the new color space on the basis of the substrate heaven 42.

9 Optimizing paper white

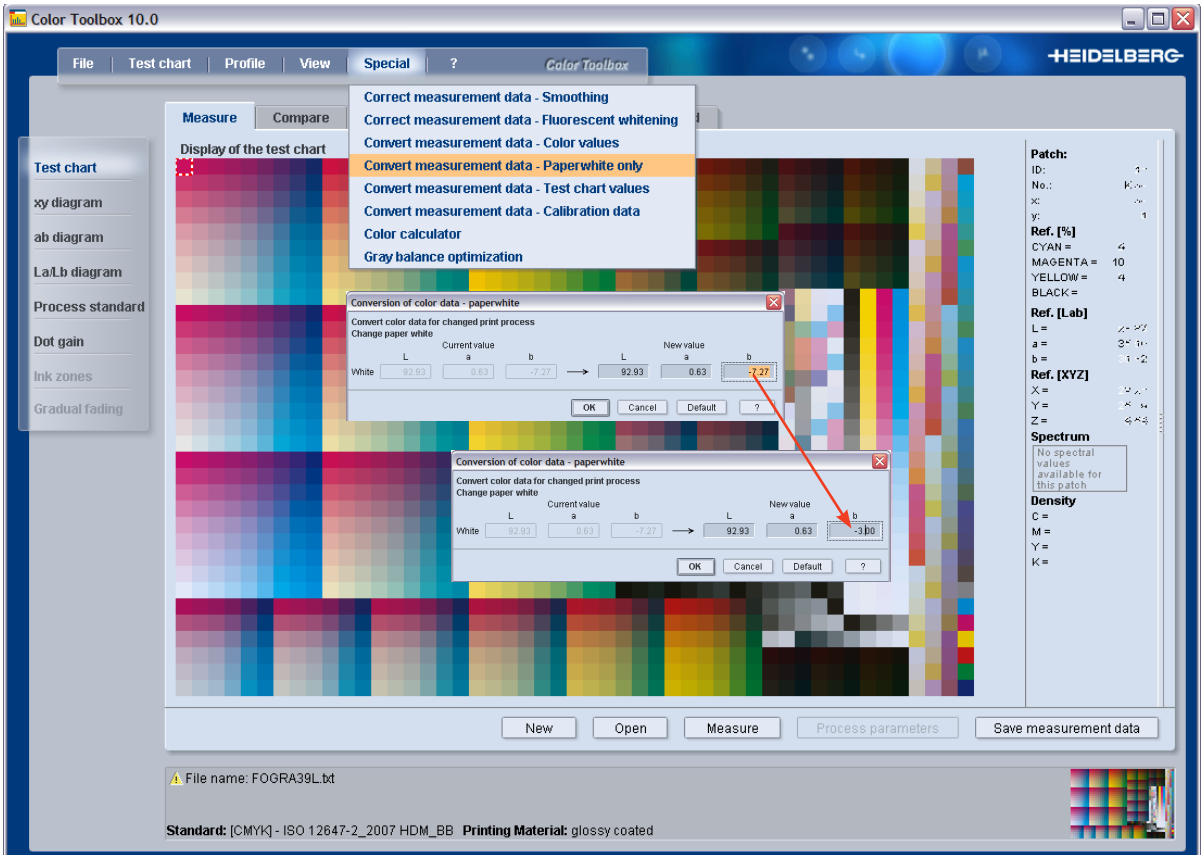
2st step

Profile Tool

Adapt the new color space using PCS60 data Optimize paper white Generate new GCR70 target profile

Open the converted FOGRA39L data and switch in Special to Convert Measurement Data – Paper White only. Change the current b-value of –7.26 to a b-value of –3.00.

Save these corrected measurement data under a new name.



This white dot correction is carried out to compensate for the difference between visual perception and the measured LAB values. The paper heaven 42 is perceived as brilliant white, but from a measurement viewpoint is considered to be more “on the blue side”.

Note: Without this adjustment to paper white, the proof would appear bluish. The print profile calculated from these data is used as the target proofing profile in the workflow.

10 New color space compared to FOGRA39L

2st step

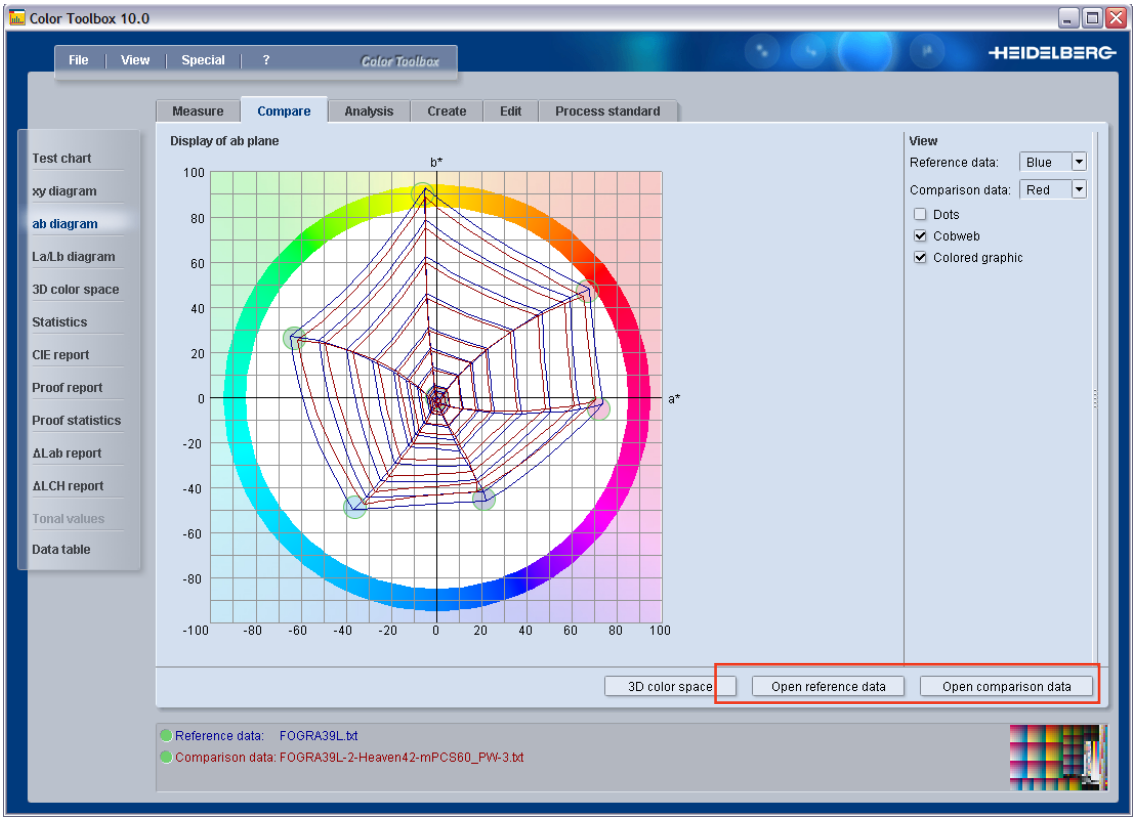
Profile Tool

Adapt the new color space using PCS60 data Optimize paper white Generate new GCR70 target profile

Switch to the tab Compare and open:

– as reference data, FOGRA39L
– as comparison data, the measurement data you changed last

(including Mini Spot and paper white conversions).



You can clearly see in the ab diagram above that the print result using heaven 42 as a substrate has a smaller color space than FOGRA39L (or ISOcoated_v2_eci.icc).

11 Settings for the ICC print profile

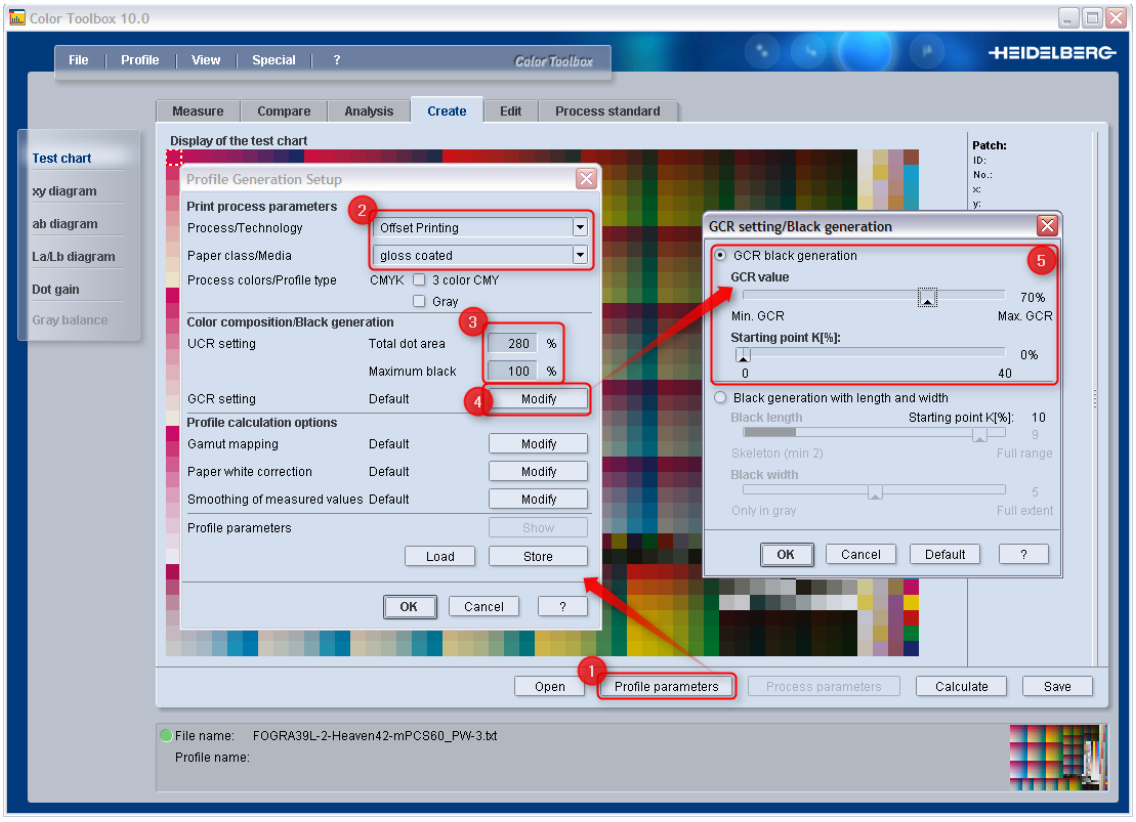
2st step

Profile Tool

Adapt the new color space using PCS60 data Optimize paper white Generate new GCR70 target profile

Switch to the tab Create (Profile Tool Module) and open the measurement data you last changed (including Mini Spot and paper white conversions).

Click the button Profile Parameters to open Profile Generation Setup window.



Under Color Composition, enter 280 % for total dot area and 100 % for maximum black.

Clicking the GCR setting takes you to the GCR Setting/Black Generation window. Enter a GCR value of 70 % here.

Click OK to close the window.

Click Save to save the settings you selected in case you want to use them again.

12 Calculating the new print profile

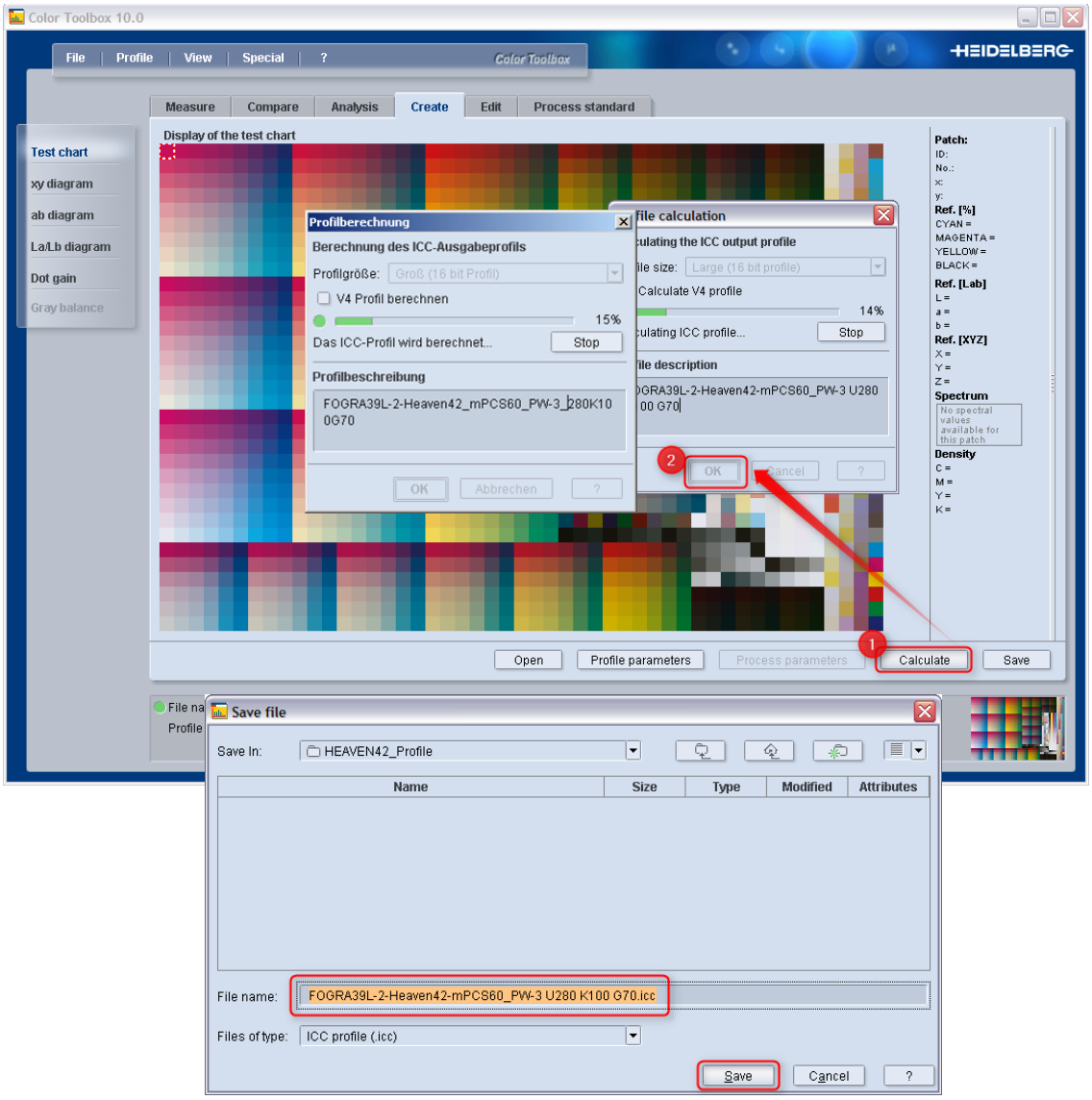
2st step

Profile Tool

Adapt the new color space using PCS60 data Optimize paper white Generate new GCR70 target profile

Calculate the new ICC print profile by first selecting the profile size Large (16 bit profile).

Save this new ICC print profile under a name that refers to the process carried out, e.g. FOGRA39L-Heaven42-mPCS60-PW-3_280K100G70.



This new ICC print profile is:

- the target component for the DeviceLink profile
- the destination color space that is simulated for the proofing process

13 Creating DeviceLink profiles

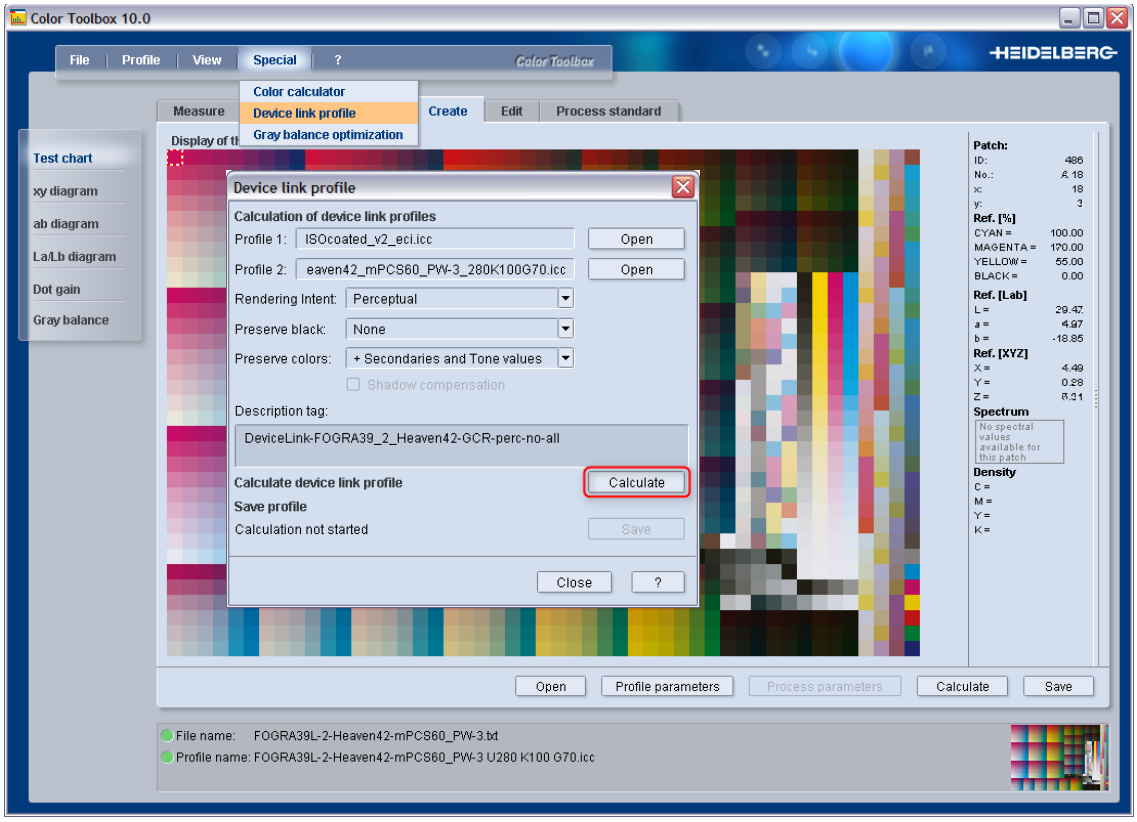
3st step

Profile Tool

Create a new DeviceLink profile Source profile: ISOcoated Target profile: GCR70

Switch to the Special menu and select DeviceLink Profile from the drop-down menu.

Under Profile 1, open the profile ISOcoated_v2_eci.icc
Under Profile 2, open the newly generated profile from Step 2 with the adapted measurement data.



Select Perceptual as the Rendering intent, since the color spaces for the two processes are so different.

In Preserve black, select None. This enables you to full utilize GCR, even for the light hue areas.

In Preserve Colors, select +Secondaries and tonal values.
This means that black text is retained as black. All colors made up of one or two colors are still made up of one or two colors after conversion, with no other additional colors that might cause soiling.

14 Converting PDFs with Prinect Color Editor

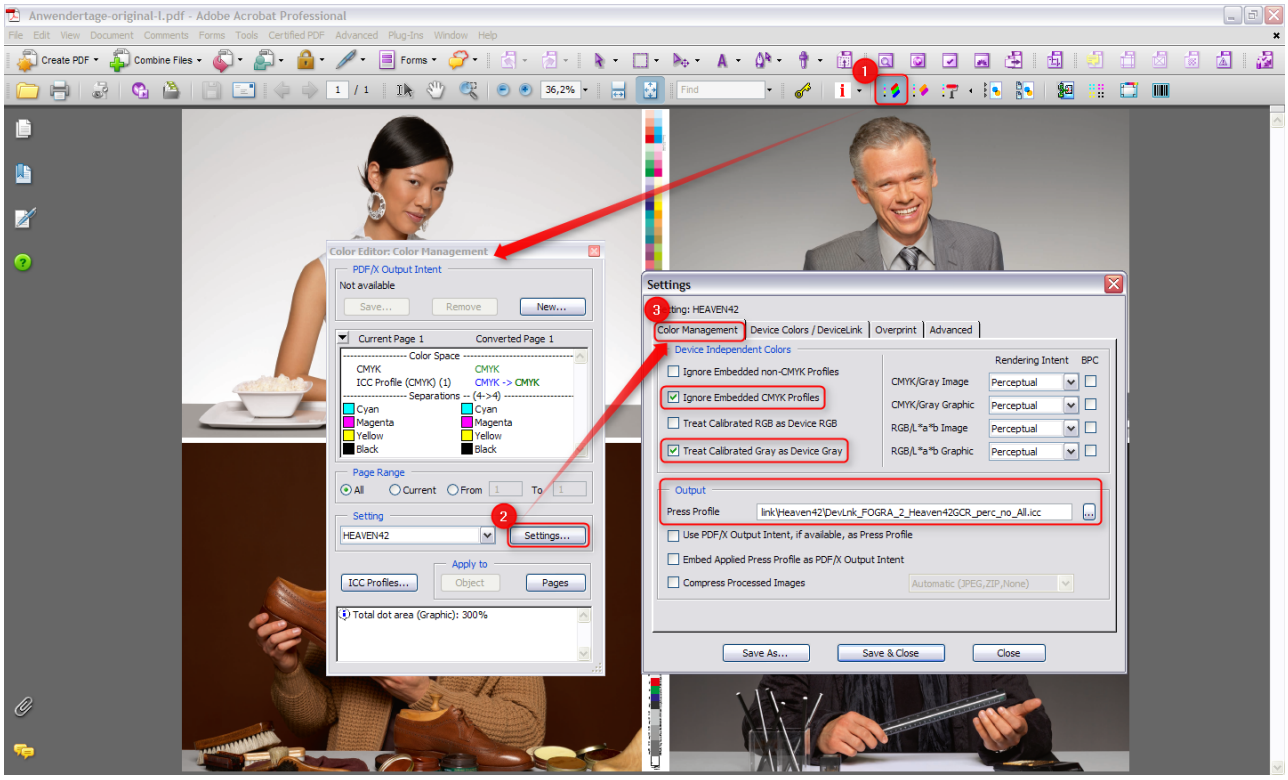
3st step

Profile Tool

Create a new DeviceLink profile Source profile: ISOcoated Target profile: GCR70

Converting PDF documents with Prinect Color Editor
(included in PDF Toolbox, Acrobat plugin)

Copy the new DeviceLink profile into the following directory:
C:\Documents and Settings\All Users\Application Data\Heidelberg\PDFToolbox\ICCProfiles\link



In Acrobat, open Prinect Color Editor under:
– Additional modules/Prinect/Color Editor/Color Management

Open Settings.

Go to the first tab Color Management and activate the checkbox Ignore Embedded CMYK Profiles. This means that all embedded ICC profiles in the documents are ignored and makes the images device-dependent.

In Press Profile, enter as the print profile the ICC target profile generated in Step 2 to convert the RGB/CIELab documents.

15 Settings in Prinect Color Editor

3st step

Profile Tool

Create a new DeviceLink profile Source profile: ISOcoated Target profile: GCR70

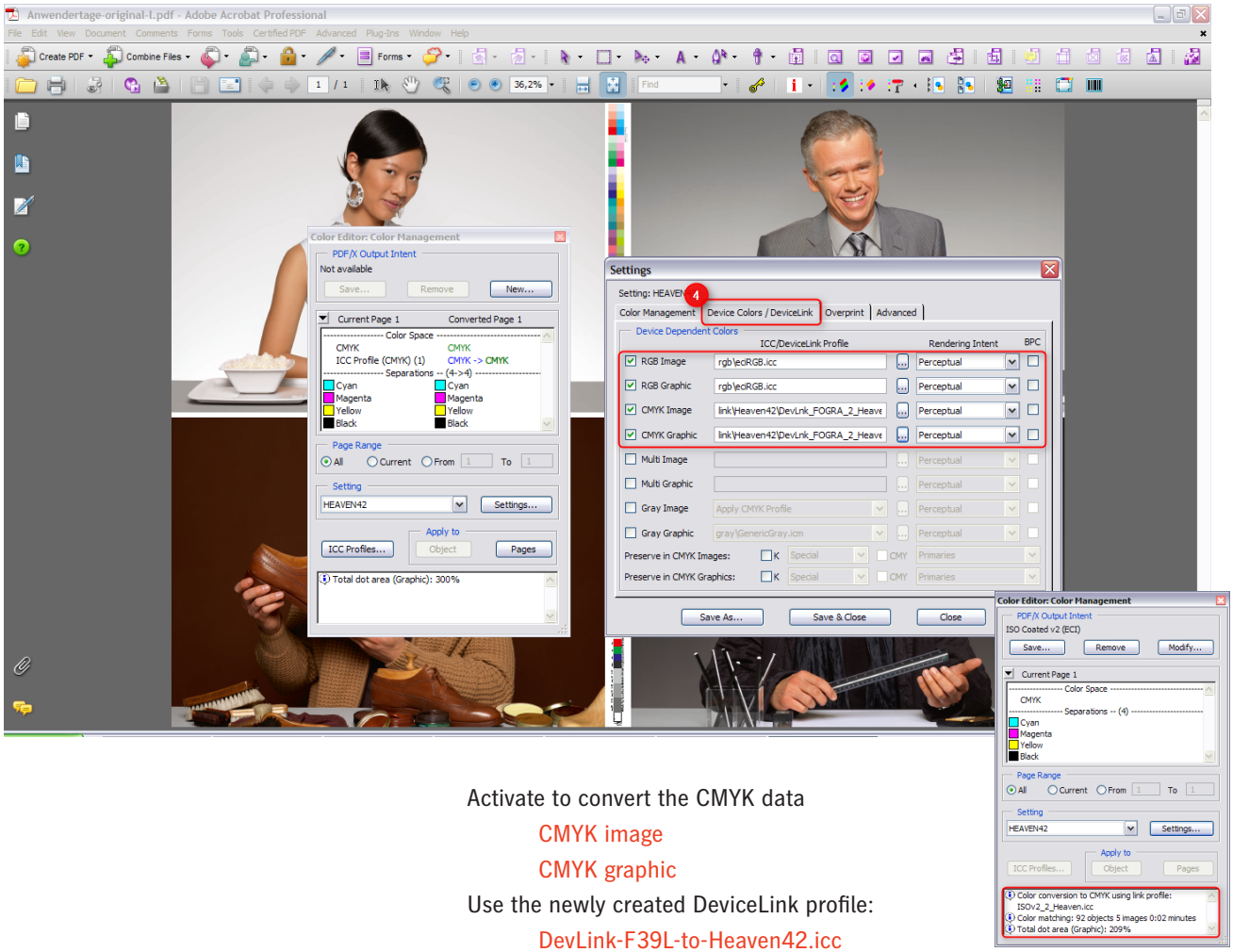
Change to the second tab Device Colors/DeviceLink

Activate to convert the RGB data

RGB image

RGB graphic

Use ECI_RGB.icc as the source profile.



Activate to convert the CMYK data

CMYK image

CMYK graphic

Use the newly created DeviceLink profile:

DevLink-F39L-to-Heaven42.icc

16 Einstellungen im Prinect Color Editor

3st step

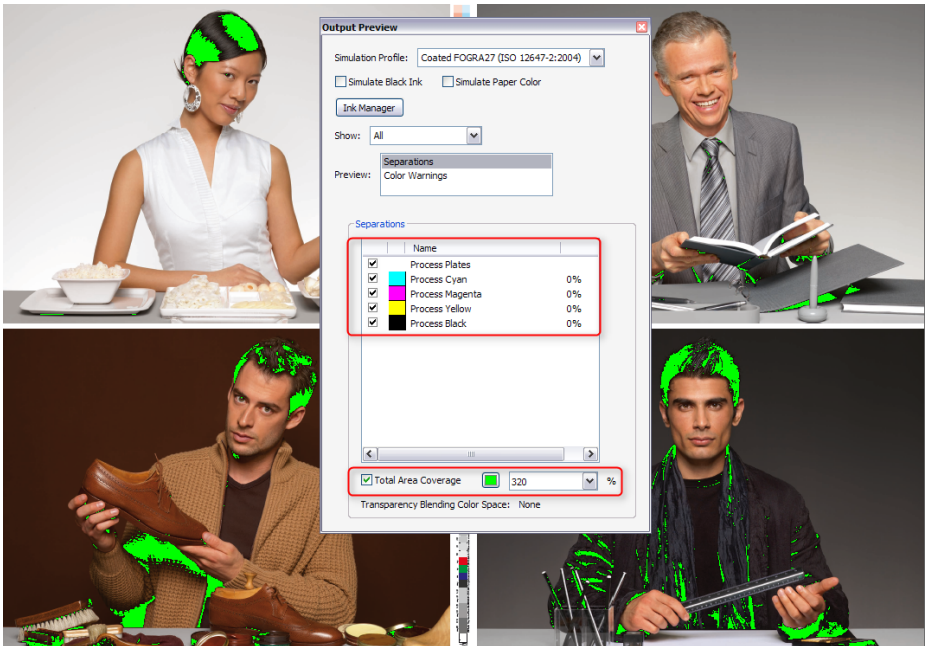
Profile Tool

Create a new DeviceLink profile Source profile: ISOcoated Target profile: GCR70

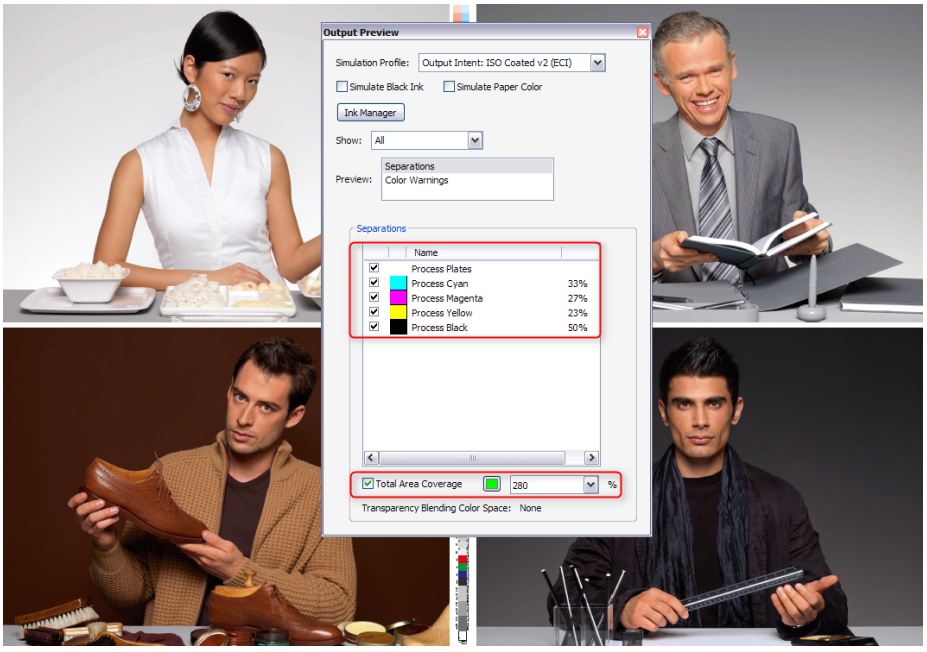
Top images: The total area coverage is higher than 320 % before conversion. These areas are shown in green.

Lower images: The total area coverage is less than 280 % after conversion. This means that if you have entered 280%, there are no longer any image areas shown in green.

325%



278%



Note: The above images are viewed in Acrobat Output Preview

17 Settings in Prinect Prepress Manager

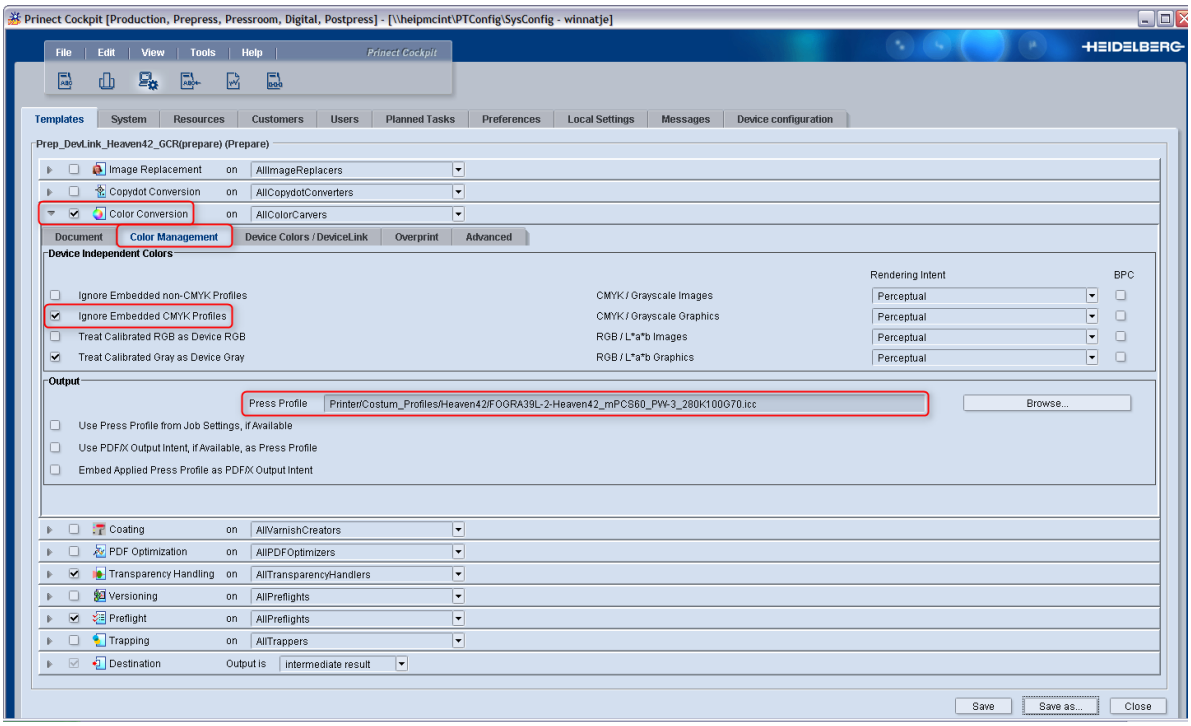
3st step

Profile Tool

Create a new DeviceLink profile Source profile: ISOcoated Target profile: GCR70

Converting PDF documents with Prinect Prepress Manager

For color conversion, use the Prepare sequence in Prinect Prepress Manager. The settings are the same as the settings in Prinect Color Editor.



The screenshot shows the settings for Color Management.

Go to the first tab Color Management and activate the checkbox Ignore Embedded CMYK Profiles. This means that all embedded ICC profiles in the documents are ignored and makes the images device-dependent.

18 Settings in Prinect Prepress Manager

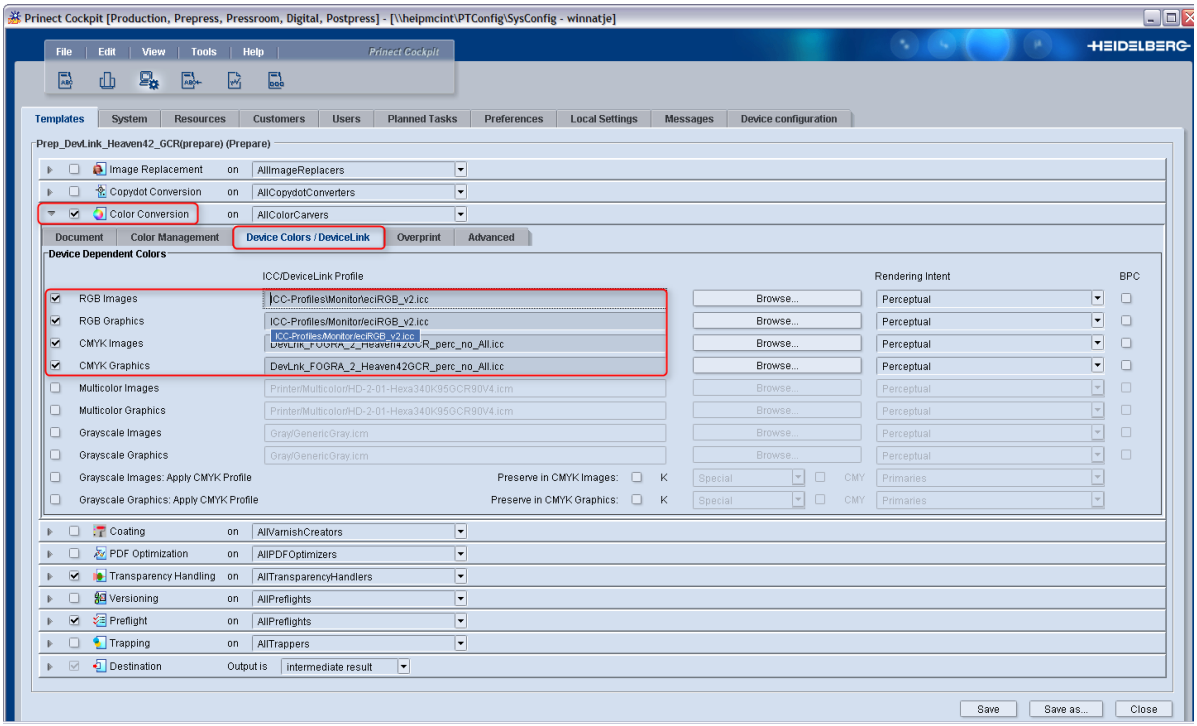
3st step

Profile Tool

Create a new DeviceLink profile Source profile: ISOcoated Target profile: GCR70

Converting PDF documents with Prinect Prepress Manager

The screenshot below shows the settings for RGB and CMYK under the tab Device Colors/DeviceLink.



Change to the second tab Device Colors/DeviceLink

1. To convert the RGB data, activate
   - RGB images
   - RGB graphics

   Use ECI_RGB.icc as the source profile.

2. To convert the CMYK data, activate
   - CMYK image
   - CMYK graphic

   Use the newly created DeviceLink profile:
   - DevLink-F39L-to-Heaven42.icc

19 Proofing profile iteration with Profile Tool

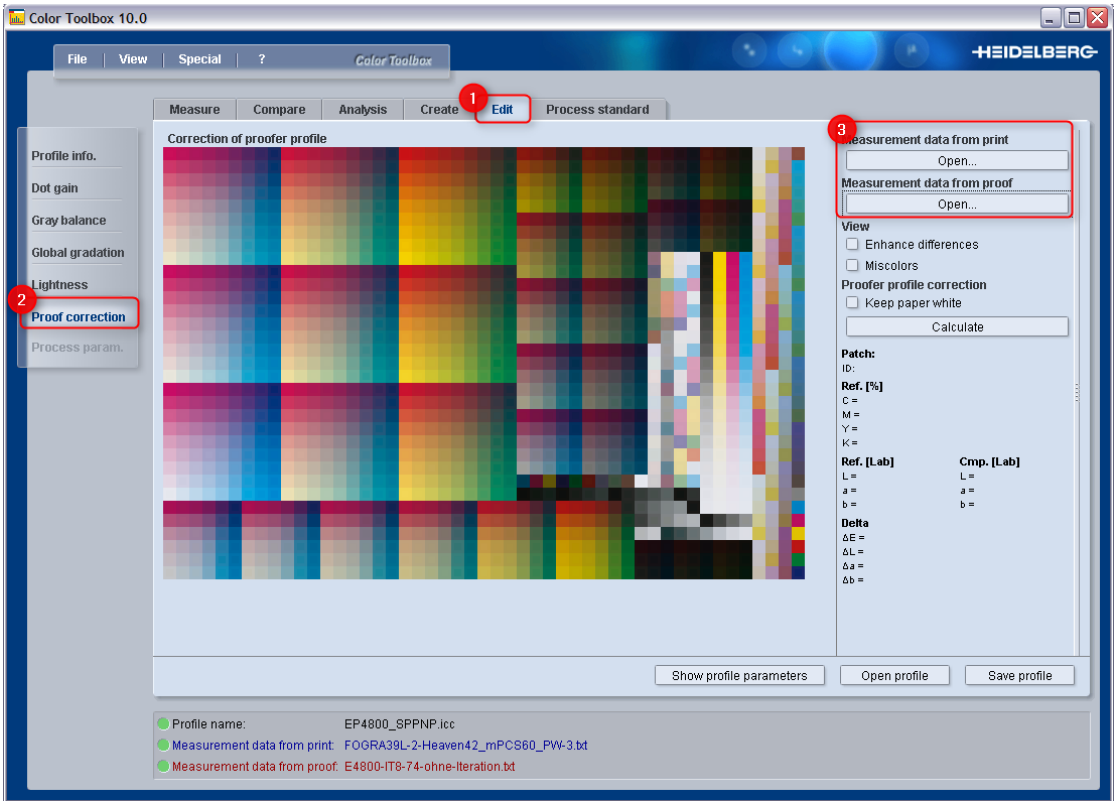
4st step

Profile Tool

Create a new proofing profile with iterative correction adapted to the GCR target profile

Proofing profile iteration is carried out in Profile Tool under Edit.

Select Proof Correction on the left-hand menu.
Then open the current proofing profile for the proofing device connected to your Prinect workflow.



After this, go to Measurement Data from Print. These are the measurement data from the print profile generated previously in Step 2. Alternatively, at this point, you could also open the generated ICC profile since the measurement data are also contained in every ICC profile.

In a third stage, open Measurement Data from Proof.
These measurement data come from the corrected profile from Step 2 that was simulated in your proofing device.

Then initiate the calculation and save the iterated proofer profile as a new file. We recommend you extend the name of this file (e.g. “it1” for the first iteration) so there is no mistaking it with the previous profile.

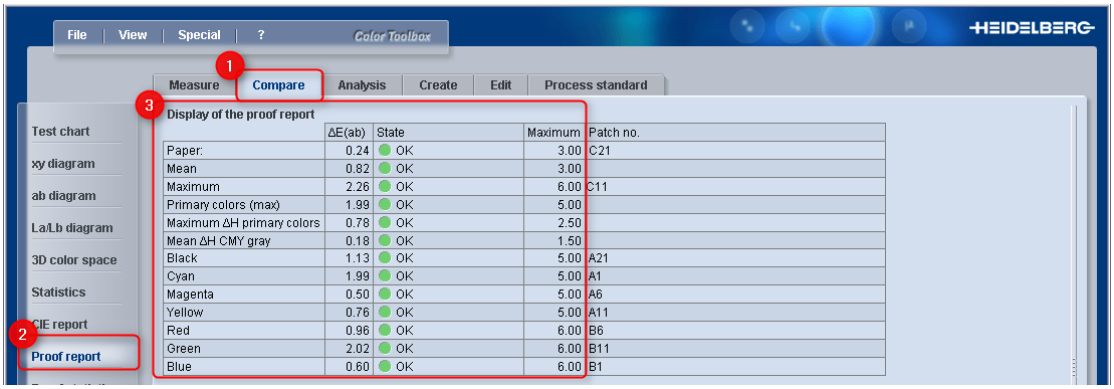
20 Proof certification with Profile Tool

4st step

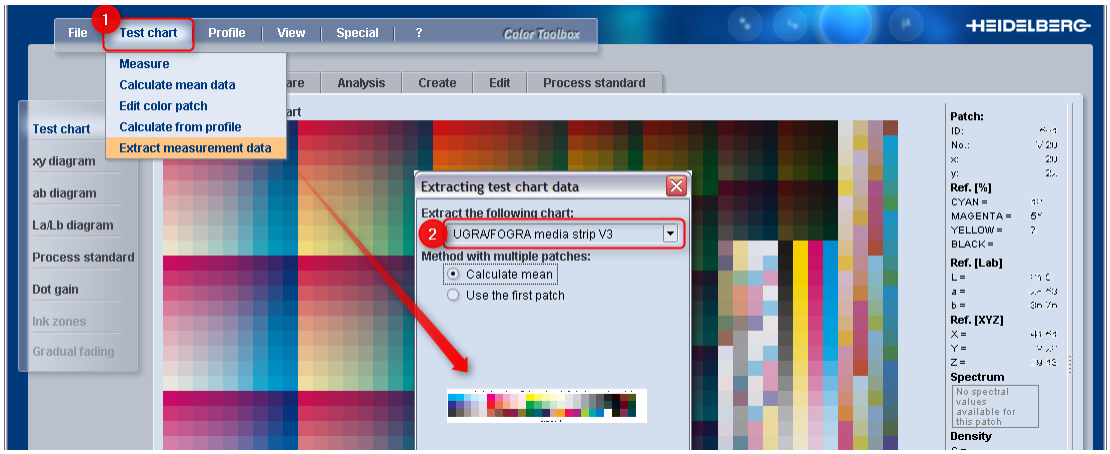
Profile Tool

Create a new proofing profile with iterative correction adapted to the GCR target profile

The comparison of the color measurement data from the print and the proof results shows up any color differences. Corrections are automatically included in the proofing profile to minimize them. Generally, one to two iterations are required to optimize the proofing profile.



After optimizing the proof profile, carry out a proof certification by clicking the Compare tab. As reference data, open the measurement data corrected in Step 2 from which the new ICC target profile has been calculated. As comparison data, open the measurement data from the proof result, as measured by the FOGRA media wedge.



You can extract the Ugra/FOGRA Media Wedge V3 test chart data from the measurement data corrected in Step 2. Thus you have the same test chart for reference and comparison data for proof certification.

1. Click the Measure tab to open the corrected measurement data.
2. Click Test Chart, select Extract Measurement Data from the dropdown menu.
3. In the pop-up Extracting Test Chart Data, select Ugra/FOGRA Media Wedge V3 and click OK.

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