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Mr. Klaus Eickhoff

Task: Proofing system certification  
„ORIS Color Tuner“

Submitted material: PDF/X-3 test formes A3+

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Documents enclosed: Certificates

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## 1 Purpose

This certification report comprises the FograCert programme carried out with the proofing software “ORIS Color Tuner“ in the below mentioned configurations. As of January 2007, the FograCert criteria are based on ISO/DIS 12647-7 [8].

	Printing condition	Software	Proof printer	Proofing substrate
1	FOGRA39	ORIS Color Tuner	HP Designjet Z3100	CGS PearlProof Super 200 g/m <sup>2</sup>
2	FOGRA39	ORIS Color Tuner	HP Designjet Z3100	CGS PearlProof White 185 g/m <sup>2</sup>
3	FOGRA39	ORIS Color Tuner	Epson Stylus Pro 4800	CGS Universal 280 g/m <sup>2</sup>

**Table 1: Tested configurations.**

The proofs were created under the following conditions: 24°C and 49 % relative humidity. There was an air condition.

## 2 Literature

- [1] Standard ISO 12647-2:2004 / Amd 1  
Graphic technology – Process control for the production of half-tone colour separations, proof and production prints – Part 2: Offset processes  
[www.beuth.de](http://www.beuth.de)
- [2] Dolezalek, F.:  
ProzessStandard Offsetdruck [PSO]  
Wiesbaden: Bundesverband Druck und Medien e. V., 2001  
and complement of May 2003  
[German language only]
- [3] N.N.:  
Media Standard Print 2006  
Wiesbaden: Bundesverband Druck und Medien e.V., 2006  
[www.bvdm.org](http://www.bvdm.org)
- [4] Altona Test Suite 1.2  
[www.eci.org](http://www.eci.org)
- [5] Standard ISO 15930-6:2003  
Graphic Technology – Prepress digital data exchange using PDF – Part 6: Complete exchange of printing data suitable for colour-managed workflows  
[www.beuth.de](http://www.beuth.de)
- [6] Standard ISO 13655:2000  
Graphic Technology - Spectral measurements and colorimetric computation for graphic arts images  
[www.beuth.de](http://www.beuth.de)
- [7] Standard EN ISO 8257-1:2003  
Paper and Board – Determination of Brightness – Part 1: Measurement with a 75° converging light beam TAPPI-Procedure  
[www.beuth.de](http://www.beuth.de)
- [8] ISO/DIS 12647-7:2006  
Graphic technology – Process control for the manufacture of half-tone colour separations, proof and production prints – Part 7: Off-press proofing processes working directly from digital data  
[www.beuth.de](http://www.beuth.de)

### **3 Evaluation**

#### **3.1 Setting up the proofing system**

The set up procedure was done in accordance to the requirements of the vendor. Details of the set up procedure are documented in the Annex.

#### **3.2 Colorimetric evaluation**

Using FograCert guidelines including the new criteria [8] the following evaluations were carried out:

- ↯ Proofing substrate colour and gloss
- ↯ Permanence and light fastness
- ↯ Colour accuracy [Gamut included]
- ↯ Drift of the solids CMYK and RGB
- ↯ Homogeneity
- ↯ Short- and long-term repeatability
- ↯ Rub resistance [drying]
- ↯ Tone value reproduction limits and reproduction of vignettes
- ↯ Image register and resolving power
- ↯ Margin information
- ↯ Tone value difference

At the vendors premise and for relative measurements only the proofs were measured with a XRITE EyeOne [Serial no. 810153] on a white backing [6]. All colorimetric measurements have been derived by averaging five single spot measurements.

## 4 System configuration

Tables 2 to 4 describe the significant system parameters of the tested proofing system.

	Proof printer 1	Proof printer 2
<b>Name</b>	Epson Stylus Pro 4800	HP Designjet Z3100
<b>Plant number</b>	K122A	Q5669A
<b>Serial number</b>	GK7E014564	MY6A90C04W
<b>Printer type</b>	Inkjet	Inkjet
<b>Resolution</b>	720 dpi Detail	600 x 600; 600 dpi Datenauflösung
<b>Proof printer driver</b>	N. A.	N. A.
<b>Management software [Client]</b>	ORIS Color Tuner	ORIS Color Tuner
<b>Release</b>	5.3	5.3
<b>Operating system</b>	Windows XP	Windows XP
<b>RIP [conversion PDF to TIFF]</b>	ORIS Rip	ORIS Rip
<b>RIP-Release</b>	4.4	4.4
<b>RIP serial number</b>	k. A.	k. A.
<b>Printing direction</b>	bidirectional	bidirectional

**Table 2: System features.**

	Substrate 1	Substrate 2	Substrate 3
<b>Name</b>	PearlProof Super	PearlProof White	Universal
<b>Paper mass</b>	200 g/m <sup>2</sup>	185 g/m <sup>2</sup>	280 g/m <sup>2</sup>

**Table 3: Paper types.**

	Ink set 1	Ink set 2
<b>Name</b>	Epson UltraChrome K3	HP Vivera Ink
<b>Used in</b>	Epson Stylus Pro 4800	HP Designjet Z3100

**Tabelle 4: Ink sets.**

## 5 Results

### 5.1 Proofing substrate colour and gloss

The various paper types were evaluated against TAPPI gloss [7] using a System Lehmann gloss measuring equipment. In addition the coloration was measured [6]. The aim values for gloss and substrate colour reflect ISO/DIS 12647-7 [8] and are given in Table 5. The gloss tolerances have been modified towards the classifications to be included in the next revision of ISO 12647-7.

Proof substrate type	L*	a*	b* <sup>a</sup>	Gloss
Unit	1	1	1	%
1: Glossy white	≥ 95	0	0	> 60
2: Semi-matte white	≥ 95	0	0	20 - 60
3: Matte white	≥ 95	0	0	< 20
Tolerance	-	± 2	± 2	-

Table 5: Aim values for gloss and colour of proofing substrates [8] –  
<sup>a</sup> informative only because of lack of inter-instrument agreement caused by  
different UV characteristics.

Table 6 depicts the gloss measurements on areas without paper simulation. Based on the classification in Table 5 [“Glossy”, “Semi-matte” and “Matte”] every digital proofing paper could be classified.

Proofing substrate	Gloss in %	Proofing Paper category
PearlProof Super 200 g/m <sup>2</sup>	58	Semi-matt
PearlProof White 185 g/m <sup>2</sup>	59	Semi-matt
Universal 280 g/m <sup>2</sup>	51	Semi-matt

**Table 6: Gloss measurements; classification of the pertinent proofing papers.**

The colour measurements of the unprinted substrates are shown in Table 7. The coloration of all proofing substrates conforms to the specified values [8].

Proofing substrate	L*	a*	b*	OK?
PearlProof Super 200 g/m <sup>2</sup>	97,1	0,2	-1,6	O. K.
PearlProof White 185 g/m <sup>2</sup>	97,6	0,8	-4,2	O. K.
Universal 280 g/m <sup>2</sup>	97,9	0,8	-2,5	O. K.

**Table 7: CIELAB measurements of unprinted substrate; tolerances are given in Table 5.**

## 5.2 Climatic permanence and light fastness of the proofing substrates

The unprinted proofing substrates have been evaluated against permanence and light fastness according to [8]. Here each paper was subject sequentially to the following conditions:

- ▮ 24 hours at 25 °C and a relative humidity of 25 %
- ▮ 24 hours at 40 °C and a relative humidity of 80 %
- ▮ 7 days at 40 °C and a relative humidity of 10 %.

For the same proofing substrate, the variability of colour under light exposure is limited by the condition that the light fastness as determined according to ISO 12040 shall be no less than 3. The



results of respective tests are given in Table 8, 9 and 10 for the primary solids CMYK.

<b>Proofing substrate</b>	<b><math>\Delta E</math> after permanence test</b>	<b>Tol.</b>	<b>OK?</b>
PearlProof Super 200 g/m <sup>2</sup>	0,2	1,5	O. K.
PearlProof White 185 g/m <sup>2</sup>	0,3	1,5	O. K.
Universal 280 g/m <sup>2</sup>	0,2	1,5	O. K.

**Table 8: Permanence of the proofing substrates [CIELAB colour difference are depicted for information only].**

<b>Proofing substrate</b>	<b><math>\Delta E</math> after light fastness test for information only</b>	<b>Tol. light fastness</b>	<b>OK?</b>
PearlProof Super 200 g/m <sup>2</sup>	0,8	≥ 3	O. K.
PearlProof White 185 g/m <sup>2</sup>	2,5	≥ 3	O. K.
Universal 280 g/m <sup>2</sup>	2,3	≥ 3	O. K.

**Tabelle 9: light fastness of the proofing substrates [CIELAB colour difference are depicted for information only].**

	<b>CIELAB colour difference - <math>\Delta E</math></b>				<b>OK?</b>
	<b>Cyan</b>	<b>Magenta</b>	<b>Yellow</b>	<b>Black</b>	
<b>Tol.</b>	<b>Light fastness ≥ 3 [according to ISO 12040]</b>				
<b>1</b>	0,7	0,3	0,4	0,8	O. K.
<b>2</b>	0,8	0,8	0,4	0,2	O. K.
<b>3</b>	1,4	0,3	0,4	0,1	O. K.

**Table 10: Light fastness of the primary solids [CIELAB colour difference for information only].**

Furthermore the primary solids CMYK have been checked with respect to permanence for information only. The results are given in Table 11.

	CIELAB colour difference - $\Delta E$				Result
	Cyan	Magenta	Yellow	Black	
Tol.	$\Delta E = 1,5$				
1	0,3	0,1	0,1	1,1	O. K.
2	0,3	0,3	0,2	0,2	O. K.
3	1,5	0,5	0,1	0,5	O. K.

Tabelle 11: CIELAB colour differences of the primary solids CMYK after the permanence and aging.

### 5.3 Colour accuracy [gamut included]

The proofs were created for the following printing conditions:

- ▮ FOGRA39 - Commercial printing, paper type 1 or 2, i.e. gl. or matt coated art, 115 g/m<sup>2</sup>, periodic screen according to 60/cm [150 lpi], solids and TVI according to ISO 12647-2:2004 / Amd 1 [1], TVI curves A [CMY] and B [K]

Table 13 shows the resulting colour accuracy based on the Ugra/Fogra Media Wedge CMYK 2.0.

	$\Delta E$ Paper	$\Delta E$ Avg	$\Delta E$ Max	$\Delta E$ Primaries	$\Delta H$ Primaries	$\Delta H$ Comp. Grey	OK?
Tol.	3	3	6	5	2,5	1,5	
1	0,8	1,5	2,9	2,9	2,4	0,5	O. K.
2	1,1	1,8	4,5	3,0	1,0	1,1	O. K.
3	0,9	1,5	3,1	3,1	1,4	0,4	O. K.

Tabelle 12: Results of proof simulation.

In addition, the colorimetric accuracy was tested by comparing the measurement values of the proofed ISO 12642-2 test chart [ECI

2002] and the pertinent characterisation data. These results as well as the gamut evaluation are given in Table 13.

	$\Delta E$ Avg	$\Delta E$ Gamut	95% Percentile	OK?
Tol.	4	4	6	
1	1,6	1,7	2,0	O. K.
2	2,0	2,2	3,0	O. K.
3	1,4	1,4	2,0	O. K.

**Table 13: Colour difference between the ECI2002 tables and the pertinent characterisation data.**

The results show a very high accuracy. Therefore all configurations are able to create contract proofs for the listed printing conditions.

#### 5.4 Drift of the solids RGB and CMYK [Fading]

In order to measure the fading of the solids, the proofs were measured colorimetrically at a series of elapsed time intervals [5 min, 10 min, 20 min, 30, 45 min, 60 min, 120 min and 24 h]. Table 14 shows the results measured at 30 min and then again at 24 hours.

	C	M	Y	K	R	G	B	Tol.	OK?
1	0,2	0,2	0,3	0,1	0,4	0,2	0,2	1,5	O. K.
2	0,2	0,3	0,3	0,1	0,4	0,4	0,3	1,5	O. K.
3	0,2	0,3	0,1	0,1	0,3	0,4	0,3	1,5	O. K.

**Table 14: Drift of the solids; CIELAB colour difference between measurements 30 min and 24 h after printing.**

Thus it can be stated that the colour values after 24 h reasonably match the colour values 30 min after printing within the specified tolerance.

## 5.5 Homogeneity [flat grey tints]

Grey test targets [CMYK: 20 15 15 15; CMYK: 40 30 30 30; CMYK: 65 50 50 50] were used to evaluate the homogeneity of every pertinent combination. Colorimetric measurements were made on 9 locations, evenly spaced across the print format. Tables 15 to 17 show the average grey tone CIELAB values, the standard deviation and the maximum  $\Delta E$  with respect to the average. The variations lie well within the tolerance for the maxima and for the standard deviations.

	Average			$\sigma_{L^*}$	$\sigma_{a^*}$	$\sigma_{b^*}$	$\Delta E_{Max}$	OK?
	L*	a*	b*					
<b>Tol.</b>				<b>0,5</b>	<b>0,5</b>	<b>0,5</b>	<b>2</b>	
<b>1</b>	73,1	0,5	-2,1	0,2	0,1	0,2	0,3	O. K.
<b>2</b>	74,6	0,0	-2,0	0,1	0,0	0,1	0,2	O. K.
<b>3</b>	72,9	0,6	-3,0	0,1	0,1	0,2	0,3	O. K.

Table 15: Results of homogeneity measurements on flat grey tint 1  
 [CMYK: 20,15,15,15].

	Average			$\sigma_{L^*}$	$\sigma_{a^*}$	$\sigma_{b^*}$	$\Delta E_{Max}$	OK?
	L*	a*	b*					
<b>Tol.</b>				<b>0,5</b>	<b>0,5</b>	<b>0,5</b>	<b>2</b>	
<b>1</b>	53,0	-0,6	-2,2	0,2	0,1	0,1	0,4	O. K.
<b>2</b>	55,1	0,1	-1,9	0,1	0,0	0,1	0,2	O. K.
<b>3</b>	52,6	0,2	-2,4	0,1	0,1	0,2	0,3	O. K.

Table 16: Results of homogeneity measurements on flat grey tint 2  
 [CMYK: 40,30,30,30].

	Average			$\sigma_{L^*}$	$\sigma_{a^*}$	$\sigma_{b^*}$	$\Delta E_{Max}$	OK?
	L*	a*	b*					
<b>Tol.</b>				<b>0,5</b>	<b>0,5</b>	<b>0,5</b>	<b>2</b>	
<b>1</b>	30,0	-1,5	-2,5	0,4	0,1	0,1	0,7	O. K.
<b>2</b>	33,1	-2,1	-2,4	0,3	0,0	0,1	0,5	O. K.
<b>3</b>	28,8	-1,5	-2,4	0,1	0,3	0,1	0,7	O. K.

**Table 17: Results of homogeneity measurements on flat grey tint 3.**  
[CMYK: 65,50,50,50].

## 5.6 Short-term repeatability of the solids CMYK and RGB

Table 18 shows the results of the test of the short-term repeatability of the solids CMYK RGB. One hour after an initial print test, target 2 was printed again and colorimetrically measured. All tested combinations of media and printer showed a good short-term repeatability[less than  $\Delta E=1,5$ ].

	C	M	Y	K	R	G	B	C 50 %	M 50 %	Y 50 %	K 50 %	Tol.	OK?
<b>1</b>	0,5	0,5	0,4	0,3	0,3	0,6	0,4	0,4	0,7	0,6	0,3	<b>1,5</b>	OK
<b>2</b>	0,4	0,2	0,2	0,3	0,1	0,2	0,1	0,2	0,6	0,2	0,2	<b>1,5</b>	OK
<b>3</b>	0,7	0,5	0,2	0,4	0,3	0,8	0,7	0,4	1,3	0,8	0,5	<b>1,5</b>	OK

**Table 18: Short-term repeatability; CIELAB colour differences [ $\Delta E$ ] between subsequent prints [1 h].**

## 5.7 Long-term repeatability of the solids CMYK RGB

Table 19 shows the results of the test of the long-term repeatability of the solids CMYK RGB. On two separate days, test form 2 were printed and colorimetrically measured. All configurations show a good long-term repeatability [less than  $\Delta E=1,5$ ].

	C	M	Y	K	R	G	B	C 50 %	M 50 %	Y 50 %	K 50 %	Tol.	OK?
1	0,5	0,5	0,4	0,3	0,3	0,6	0,4	0,4	0,7	0,6	0,3	1,5	OK
2	0,6	0,3	0,7	0,1	0,5	0,9	0,5	0,7	0,9	0,3	0,5	1,5	OK
3	0,7	0,3	0,2	0,6	0,3	1,2	0,2	1,1	1,2	0,0	0,5	1,5	OK

Table 19: Long-term repeatability; CIELAB colour differences [ $\Delta E$ ] between subsequent prints [24 h].

### 5.8 Rub resistance [drying]

The time required for printed solids [CMYKRGB] to reach mechanical stability against a rubbing action should not exceed 30 min or the print stabilization period, whichever is longer. This test was performed for each configuration for which the proofing system is to be certified. Table 20 shows the results of the visually inspection of the printed test areas and the adjacent unprinted parts for traces of the rubbing of transferred colorant.

	Tol.	OK?
1	No significant traces.	OK
2	No significant traces.	OK
3	No significant traces.	OK

Table 20: Results of the rub resistance test.

### 5.9 Tone value reproduction limits and reproduction of vignettes

Proofs of the vignette test forms 2 and 3 were visually examined for banding. The findings for every printing condition are listed in Table 21. The test images of ISO 12640-1 and -3 show for all combinations no artefacts viewed under standard lighting.

	Results	OK?
1	No problems.	OK
2	No problems.	OK
3	No problems.	OK

Table 21: Evaluation of vignettes.

### 5.10 Image register and resolving power

The maximum deviation between the image centres of any two printed colours shall not be larger than 0,05 mm. The resolving power of each proof print shall be such that C, M, K positive, non-serif type of 2 point size, reverse [negative] of 8 point size and 2 point reverse line are legibly reproduced [8]. Also the Siemens stars of ISO12640-1 have been controlled. This test was carried out using the test forme 3. The results are listed in Table 22.

	Max. deviation between image centres	non-serif type of 2 point size	non-serif reverse type [negative] of 8 point size	2 point reverse line	OK?
1	<0,05	legible	legible	legible	OK
2	<0,05	legible	legible	legible	OK
3	<0,05	legible	legible	legible	OK

Table 22: Evaluation of image register and resolving power.

### 5.11 Margin information

Every digital proof shall bear a human readable commentary [status] line according to ISO/DIS 12647-7 with the following information:

- ↯ Proofing system designation
- ↯ Colorants
- ↯ Substrate material types

- ▮ Printing condition to be simulated
- ▮ Date und time of the printing process
- ▮ Colour management profile[s] used.

All information was printed on the evaluated proofs.

### 5.12 Tone value difference

The digital proof print shall reproduce the colorimetric tone values given by the intended printing condition. Though the tone values are calculated using the method in ISO 12647-1 both from the CIEXYZ values of the proof and the CIEXYZ values of the intended printing condition. For all combinations the tone value difference shall be within a tolerance of  $\pm 5\%$ . The differences for each combination are shown in Figure 1 to 3.

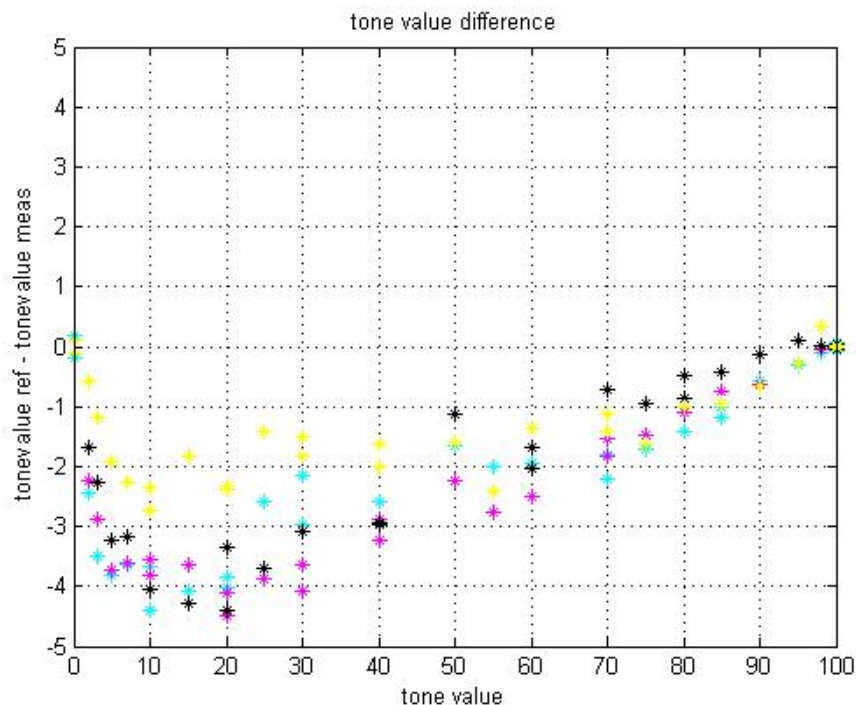


Figure 1: Tone value difference for combination 1.



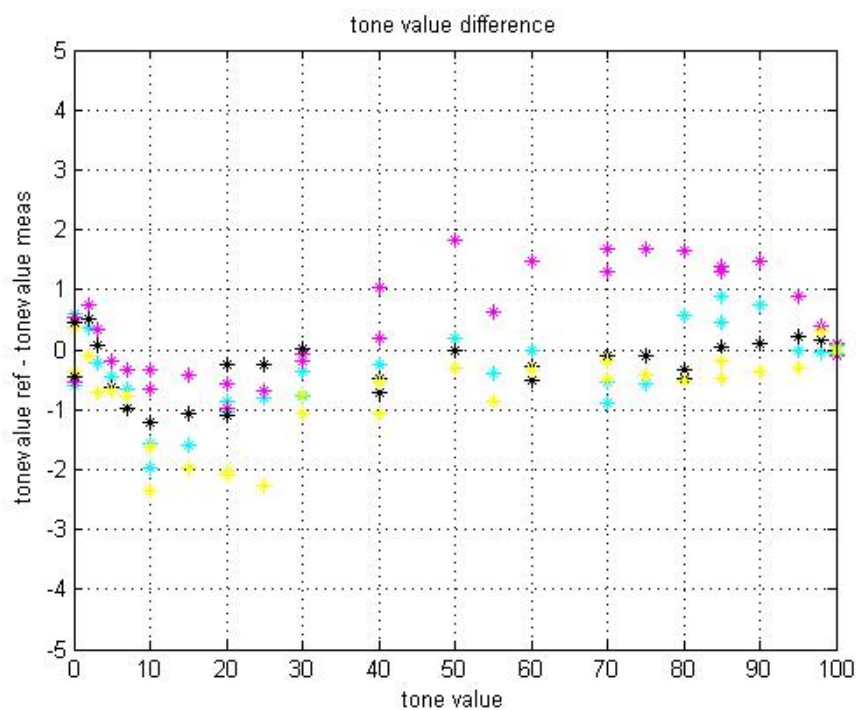


Figure 2: Tone value difference for combination 2.

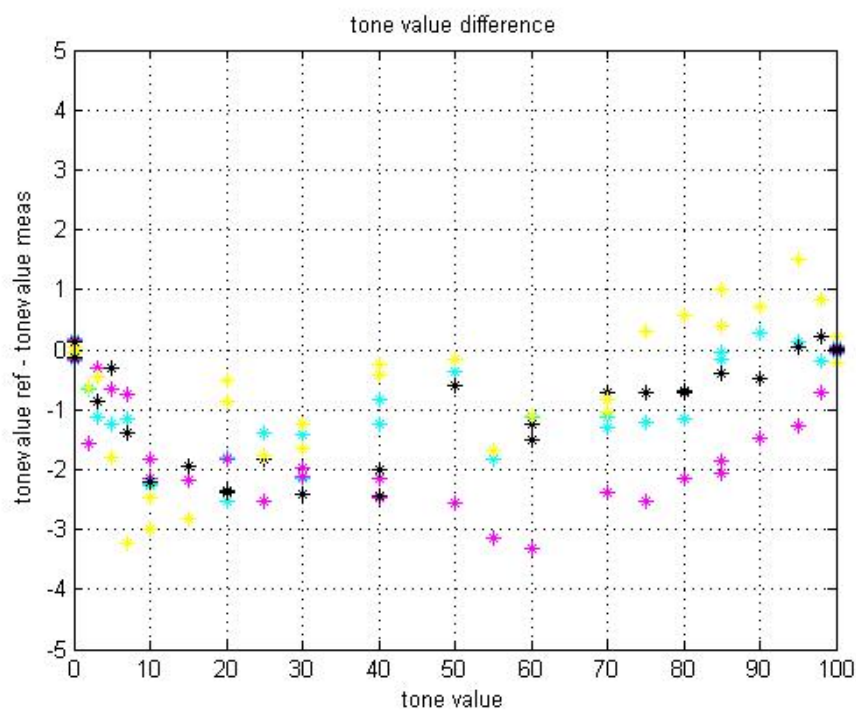


Figure 3: Tone value difference for combination 3.

## 6 Conclusion

The configurations listed in Table 23 were subject of this certification:

	Printing condition	Software	Proof printer	Proofing substrate
1	FOGRA39	ORIS Color Tuner	HP Designjet Z3100	CGS PearlProof Super 200 g/m <sup>2</sup>
2	FOGRA39	ORIS Color Tuner	HP Designjet Z3100	CGS PearlProof White 185 g/m <sup>2</sup>
3	FOGRA39	ORIS Color Tuner	Epson Stylus Pro 4800	CGS Universal 280 g/m <sup>2</sup>

**Table 23: Tested configurations.**

All configurations have been positively tested according to the following FograCert proofing system criteria:

- ▮ Proofing substrate colour and gloss
- ▮ Permanence and light fastness
- ▮ Colour accuracy [Gamut included]
- ▮ Drift of the solids CMYK and RGB
- ▮ Homogeneity
- ▮ Short- and long-term repeatability
- ▮ Rub resistance [drying]
- ▮ Tone value reproduction limits and reproduction of vignettes
- ▮ Image register and resolving power
- ▮ Margin information
- ▮ Tone value difference

The evaluation of the Ugra/Fogra Media Wedge CMYK 2 has shown for all configurations that the proofing software “ORIS Color Tuner” produce proofs that comply with the required printing conditions. For the configurations where FOGRA39 has been simulated a purchaser of these systems can be sure that other printing conditions that have smaller colour gamuts [e.g. FOGRA28] will be equally well simulated, however the appropriate simulation of the printing stock gloss will need to be taken into account.

The proofing system “ORIS Color Tuner” as tested therefore fulfils all criteria of the FograCert programme.

Fogra  
Graphic Technology Research Association

Dipl.-Ing. A. Kraushaar

Claas Bickeböller

## Instructions for Creating FOGRA39 Color Matches with ORIS Color Tuner 5.3 (Windows Version)

This document explains how to color-match a HP Z3100 printer to the FOGRA39 (ISOcoated v2) printing conditions, using ORIS Color Tuner Version 5.3 on a Microsoft Windows system.

Before you start to print, you have to do the following:

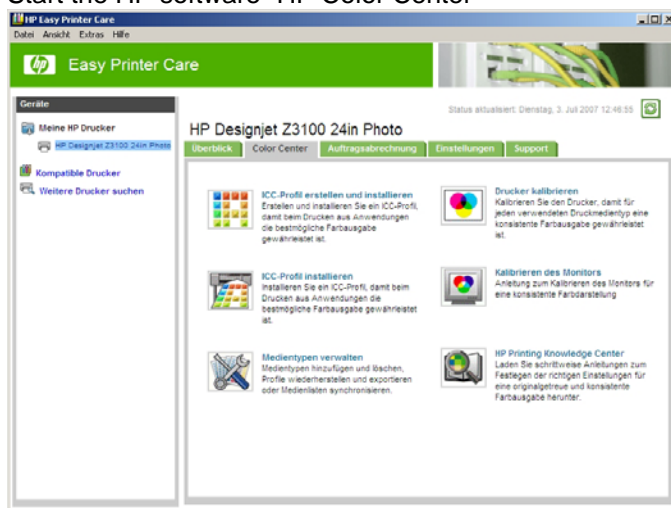
At first you have to download and install the HP Software:

- HP printer driver (the Raster-Driver)
- HP Easy Printer Care
- HP Color Center

### Download the HP media profiles from the CGS-Hompage

Check out the CGS web site <http://www.cgs.de/> and select SUPPORT | DOWNLOADS | Color | ORIS Color Tuner Plug-Ins. Then download the zip file "HP Media Profile Update" for your HP printer (e.g. HP Z3100) and extract the files.

Start the HP software "HP Color Center"



HP Easy Printer Care opens

### Update the media profiles on your HP Printer

Open "Support" and then "Firmware update". Check the option "update media profile" and navigate to your folder with the extracted HP media profiles (OMS) and choose the following file:

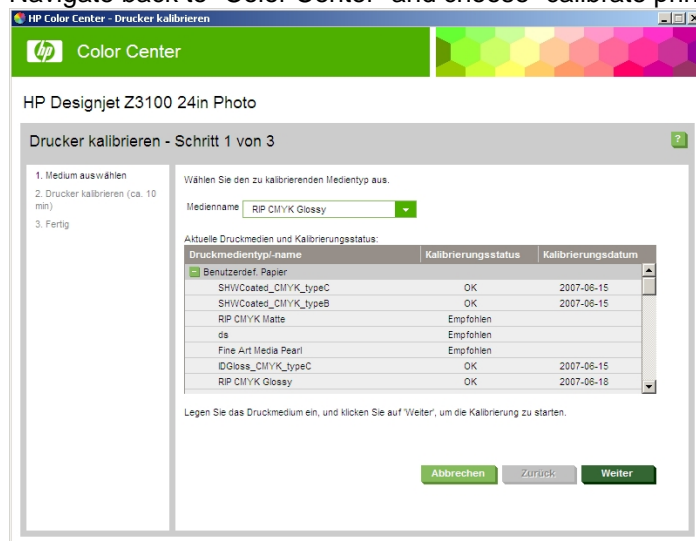
- Z3100\_RIP\_CMYK\_Glossy\_3.0.5.oms

Upload this file to your HP Printer.

Load your printer with the paper ((PearlProof Super 200g/sq.m; PearlProof White 185 g/sq.m). Now choose the uploaded media profile on the printer display.

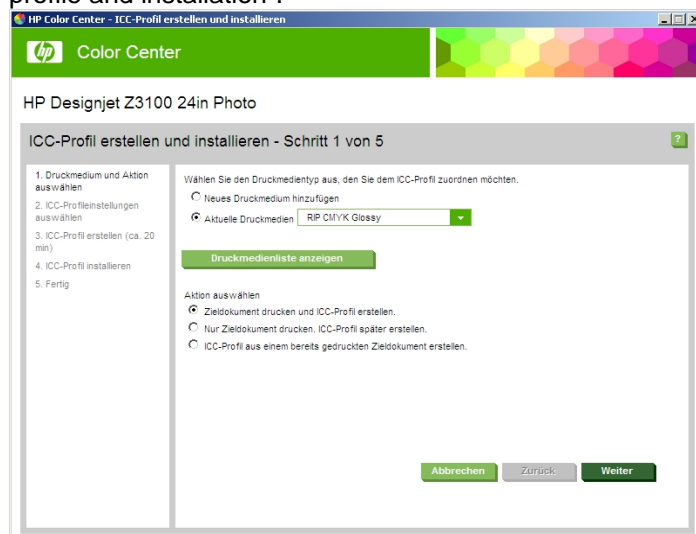
## Calibration and profile creation of your printer

Navigate back to “Color Center” and choose “calibrate printer”



Now select the medianame „RIP CMYK Glossy” and go on. Follow the steps of the HP software. The software will do a automatic calibration for that paper.

After calibration you have to create a ICC profile for your paper by HP software. Choose “Create ICC profile and installation”.



Select once again the media profile „RIP CMYK Glossy” and “print target and create ICC profile”. Klick “Next” and follow the steps of the software.

The calibration and profile creation is done. Close the HP software.

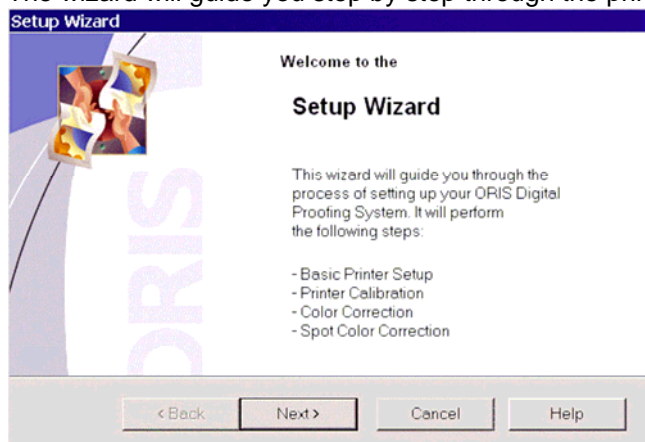
## Download ORIS Color Tables

Check out the CGS web site <http://www.cgs.de/> and select SUPPORT | DOWNLOADS | COLOR TABLES & TEST CHARTS. Then download the ZIP file for your printer (FOGRA39) and extract the files to the directory ...\\Program Files\\CGS\\Common Files\\ICC\\Reference Printer Profiles\\.

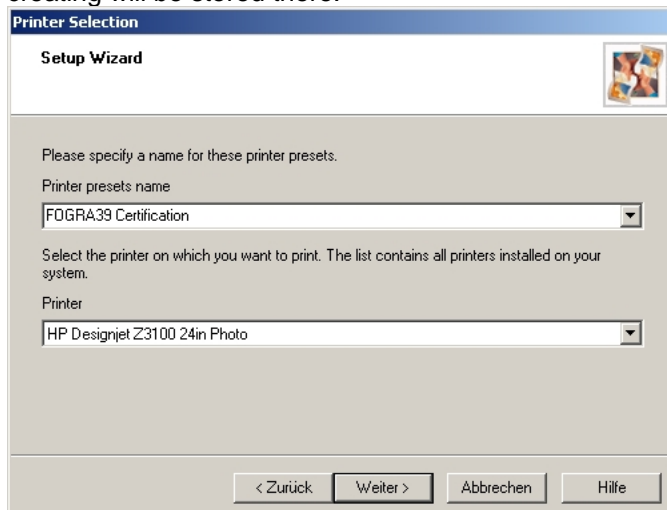
## Basic Settings

Before calibrating the printer, connect it to the computer (e.g. via USB or LAN) and bring it into a repeatable state by performing a print head cleaning/alignment cycle according to your printer manual. Then start the ORIS Color Tuner 5.3 software.

Start the PRINTER SETUP WIZARD from the FILE menu.  
The wizard will guide you step by step through the printer setup process.



Select the printer and enter a name for the PRINTER PRESETS you are going to specify with this wizard. Thus all of these settings can later be applied in one go by simply selecting this name from a list. A directory with the specified name will be created under ...\\Program Files\\CGS\\Common Files\\CTuner Setups (depending on where the program is installed). Most of the files you are creating will be stored there.

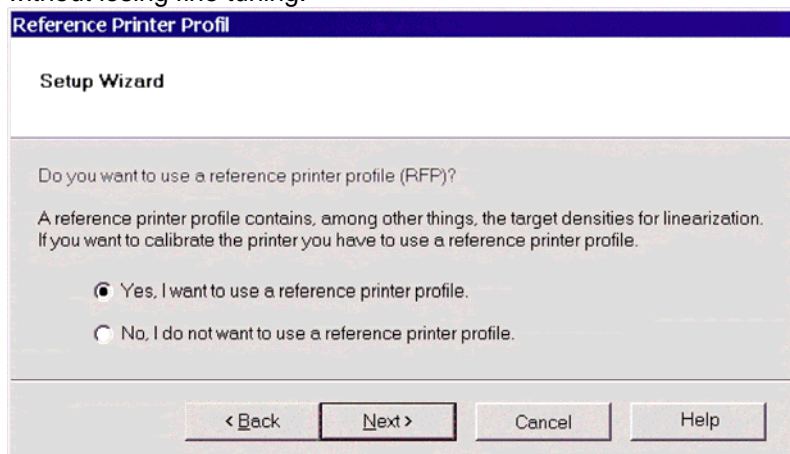


Select the black mode used with your printer. This step appears only if a printer allows you to choose between different black ink modes.

Specify the paper type, resolution and printing mode (uni/bidirectional). Choose the BIDIRECTIONAL mode for FOGRA39 matches.

## Selecting Reference Printer

Select YES in this dialog to calibrate the proof printer to a standard, i.e. to a so-called *reference printer*. This process, which is referred to as *Automatic Printer Calibration*, is required when aligning multiple printers used for remote proofing or load-balancing print jobs. It also allows you to recalibrate a printer without losing fine tuning.



**Reference Printer Profil**

**Setup Wizard**

Do you want to use a reference printer profile (RFP)?

A reference printer profile contains, among other things, the target densities for linearization. If you want to calibrate the printer you have to use a reference printer profile.

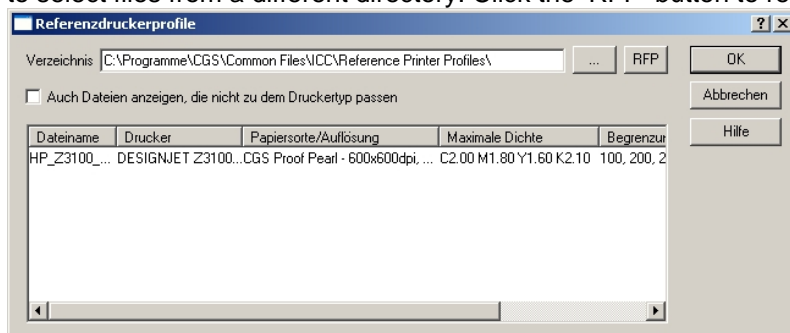
☒ Yes, I want to use a reference printer profile.

☐ No, I do not want to use a reference printer profile.

< Back   Next >   Cancel   Help

Select one of the *reference printer profiles* (\*.RFP) you have downloaded (see page 1), i.e. a virtual master printers to which your proof printer will be calibrated. Every \*.RFP file characterizes a particular combination of printer model, ink, paper type, print resolution, solid densities and maximum ink coverage. Make sure the selected \*.RFP file matches your proofing conditions by 100%.

**Note:** By default, this dialog displays only \*.RFP files which reside in the installation path ...\\Program Files\\CGS\\Common Files\\ICC\\Reference Printer Profiles. Use the ... button if you want to select files from a different directory. Click the 'RFP' button to return to the installation path.



**Referenzdruckerprofile**

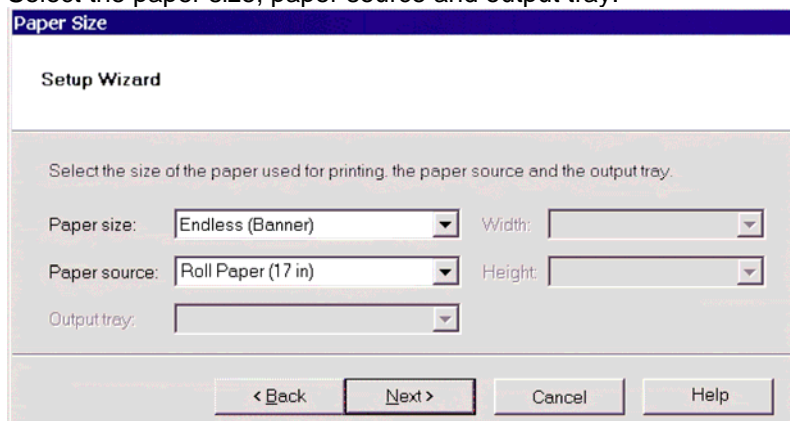
Verzeichnis: C:\\Programme\\CGS\\Common Files\\ICC\\Reference Printer Profiles\\ ... RFP OK

☐ Auch Dateien anzeigen, die nicht zu dem Druckertyp passen Abbrechen

Dateiname	Drucker	Papiersorte/Auflösung	Maximale Dichte	Begrenzung
HP_Z3100...	DESIGNJET Z3100...	CGS Proof Pearl - 600x600dpi, ...	C2.00 M1.80 Y1.60 K2.10	100, 200, 2

Hilfe

Select the paper size, paper source and output tray.



**Paper Size**

**Setup Wizard**

Select the size of the paper used for printing, the paper source and the output tray.

Paper size: Endless (Banner) Width:

Paper source: Roll Paper (17 in) Height:

Output tray:

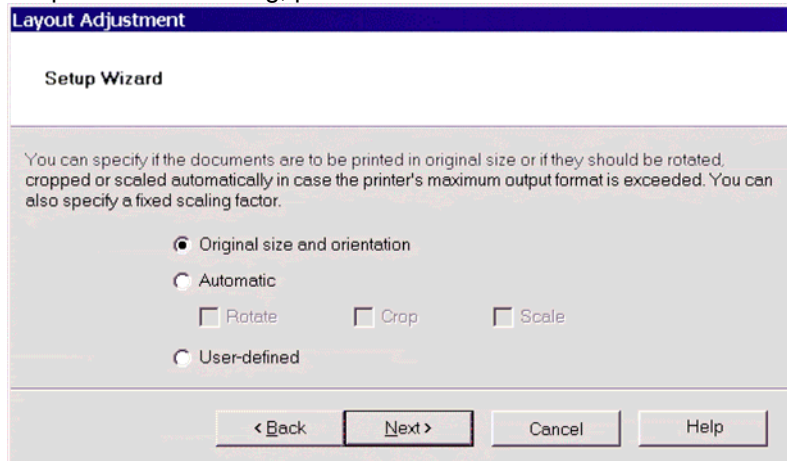
< Back   Next >   Cancel   Help

Specify what to do with documents exceeding the paper size. You can choose between the following settings:

- ORIGINAL SIZE AND ORIENTATION  
Documents are cropped if they don't fit on the print medium.
- AUTOMATIC  
Documents are rotated, cropped or scaled down automatically so that they fit on the print medium.

*FOGRA39 Matches: Please select AUTOMATIC/ROTATE.*

*Note:* Documents are also rotated automatically if this saves paper or time, even if they would fit on the print medium. Long, portrait-sized test charts are rotated with this setting, for example.



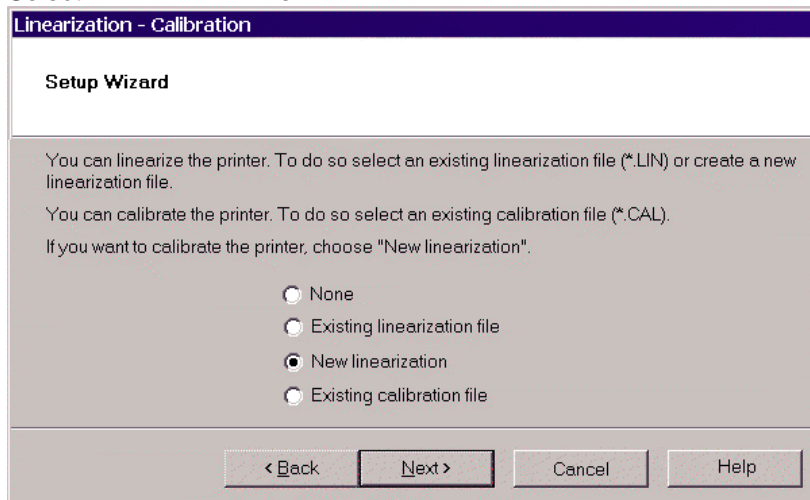
This dialog allows you to add the following information to every proof sheet:

- HEADER  
A text printed at the top of the document, e.g. your company name. Do not use any quotes (") here.
- COLOR BAR  
A TIFF or JPEG image containing a color bar. There are predefined color bars in the ORIS Color Tuner installation directory ... \Program Files \CGS \CommonFiles \Extras \Proofing Bars. The color bar will be omitted if it doesn't fit on the print medium.
- CUSTOMER LOGO  
A TIFF or JPEG image containing a customer logo. It will be placed at the top of the document, to the left of the header text. In the POSTSCRIPT/PDF OPTIONS dialog, which follows next, leave all settings at their default values.



## Linearization

Select NEW LINEARIZATION.



**Linearization - Calibration**

**Setup Wizard**

You can linearize the printer. To do so select an existing linearization file (\*.LIN) or create a new linearization file.

You can calibrate the printer. To do so select an existing calibration file (\*.CAL).

If you want to calibrate the printer, choose "New linearization".

☐ None  
☐ Existing linearization file  
☒ New linearization  
☐ Existing calibration file

In the next dialog you have to select and configure the measurement device connected to your computer.

The next dialog informs you that the test chart will be printed as soon as you click NEXT. The program automatically uses a test chart which is suitable for your measurement device.

The next dialog informs you that you will have to measure the densities of your linearization test chart. Click NEXT to open a dialog allowing you to start the measuring process and to reduce the solid color density values. The measurements are directly transmitted from the device to ORIS Color Tuner.

Use this dialog to measure the test chart and to create a linearization file. Refer to the online help file for details on the dialog options.



**Linearization by Densities**

Measurement Device  
Device: Eye-One

Target Densities  
Max. density: ☐ From measurements ☒ User defined  C: 2.00 M: 2.00 Y: 2.00 K: 2.00  
C: 1.90 M: 1.85 Y: 1.75 K: 1.95

Options  
☐ Optimize active gradation ☐ Set maximum color density to 100% ☐ Smooth

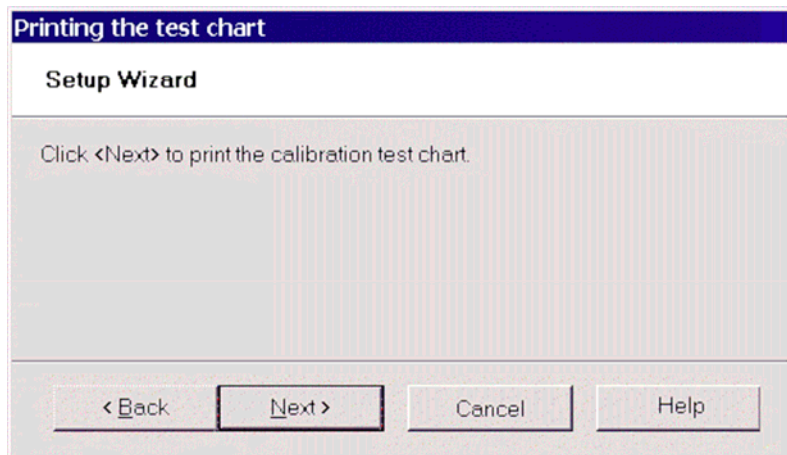
Density Values

Color %	Target C	Meas. C	Target M	Meas. M	Target Y	Meas. Y	Target K	Meas. K
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
10.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
15.00	0.12	0.13	0.12	0.13	0.12	0.13	0.13	0.13
20.00	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
25.00	0.22	0.22	0.22	0.22	0.21	0.22	0.22	0.22
30.00	0.27	0.27	0.27	0.27	0.26	0.27	0.27	0.27
35.00	0.32	0.33	0.32	0.33	0.31	0.33	0.33	0.33
100.00	1.90	2.00	1.85	2.00	1.75	2.00	1.95	2.00

## Calibration

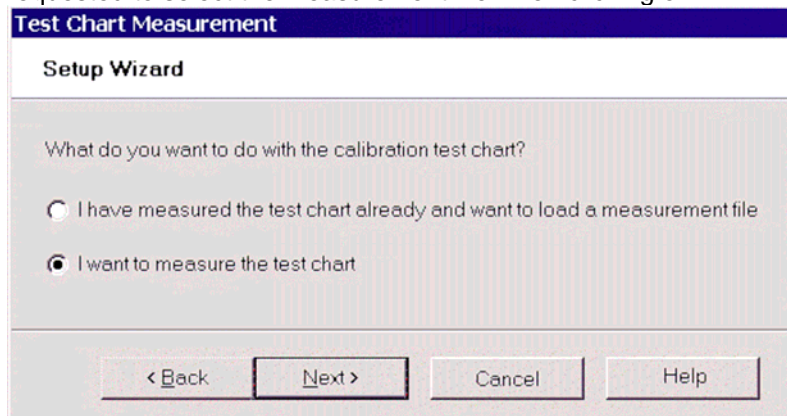
The INK LIMITS dialog, which follows next, can be ignored, because the inklimits are reduced by the RFP file.

The printer will now be calibrated to the *reference printer* (\*.RFP file) selected beforehand. Click NEXT in the following dialog to print the calibration test chart.



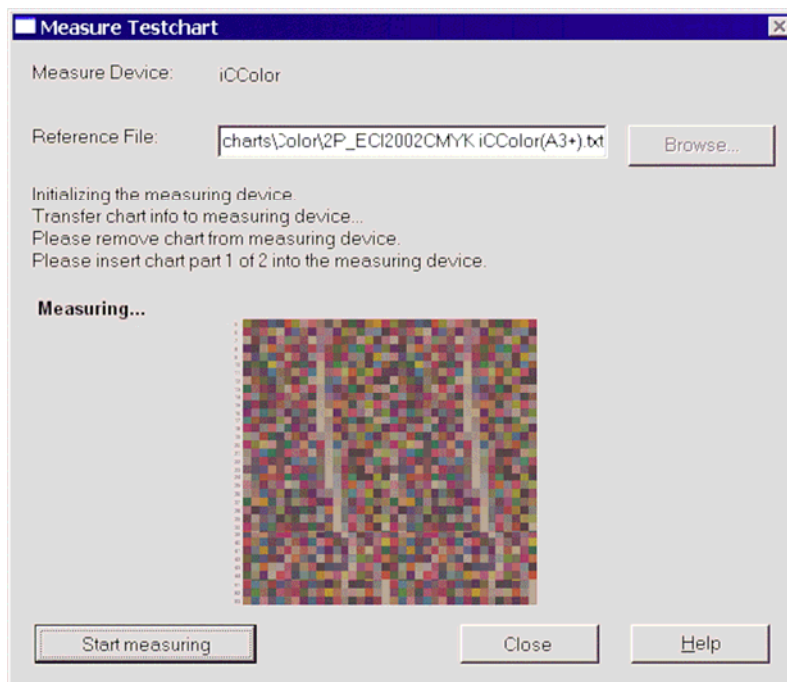
In this dialog select I WANT TO MEASURE THE TEST CHART if you are using one of the measurement devices supported by ORIS Color Tuner. The supported devices are listed on page 2-1 of the manual *Calibrating and Applying Color Match*, which can be opened from the HELP menu. Click NEXT to open a dialog allowing you to start the measuring process.

If you had to use a third-party tool for measuring, select I...WANT TO LOAD A MEASUREMENT FILE. You are requested to select the measurement file when clicking on NEXT.

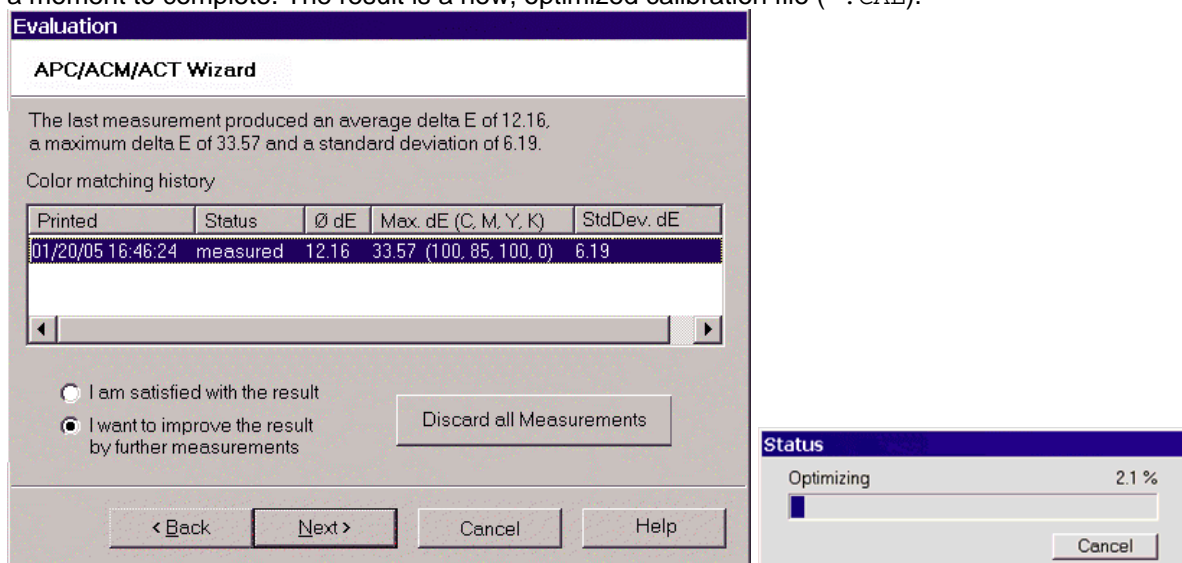


Use this dialog to measure the calibration test chart. Click on START MEASURING and follow the instructions on the screen.

Having successfully measured the colors, the measurements are automatically saved to the folder with the name you have specified for your *printer presets* (see page 2). This is usually ...\\Program Files\\CGS\\Common Files\\CTuner Setups\\<printer presets>\\Measurement. Click on CLOSE.



The measurement results are displayed in the next dialog. These values include the average Delta E, maximum Delta E and the standard deviation. If you select **I AM SATISFIED WITH THE RESULT** and click on **NEXT**, Automatic Printer Calibration is completed and you are taken to the color matching process. In most cases, however, **I WANT TO IMPROVE THE RESULT BY FURTHER MEASUREMENTS** is a better choice. The measurement values are then matched with the reference printer profile (\*.RFP), which may take a moment to complete. The result is a new, optimized calibration file (\*.CAL).



Now the steps described above must be repeated.

The test chart will be reprinted using the optimized calibration and must be measured. The result of the second measurement is displayed. Again, decide whether the Delta E values need to be minimized.

Repeat the calibration process until a substantial reduction of color deviations is no longer achieved. Usually two iterations are required to achieve an average Delta E < 0.8. The maximum Delta E value should be < 5.

**Note:** The calibration file (\*.CAL) is stored in the folder with the name you have specified for your printer presets (see page 2). The save location is usually ...\\Program Files\\CGS\\Common Files\\CTuner Setups\\<Printer Presets>\\PCF.

Evaluation

APC/ACM/ACT Wizard

The last measurement produced an average delta E of 0.72, a maximum delta E of 4.42 and a standard deviation of 0.6.

Calibration history

Printed	Status	Ø dE	Max. dE (C, M, Y, K)	StdDev. dE
25.11.04 13:29:57	calculated	11.76	24.74 (0, 100, 0, 0)	
25.11.04 13:54:27	measured	0.72	4.42 (10, 100, 0, 0)	

☐ I am satisfied with the result
 ☒ I want to improve the result by further measurements

Discard all Measurements

< Back

Next >

Cancel

Help

## Applying Color Match

To color-match your calibrated proof printer according to ISOcoated v2 (FOGRA39), enable the option 'ORIS\_DAT COLOR TABLE' and, using the BROWSE button, select one of the color tables (\*.DAT) you have downloaded (see page 1).

Make sure to use the \*.DAT file whose file name starts with the same number as the reference printer profile.

**Note:** There is a variant for most color tables, with the additional word *Relativ* in the file name. Use these \*.DAT files if *no paper white simulation* should be made.

Color Correction

Setup Wizard

Choose the method to be used for color-matching your printer. You can use ICC profiles or an ORIS\_DAT color table.

☐ None
 ☐ ICC
 ☒ ORIS\_DAT color table

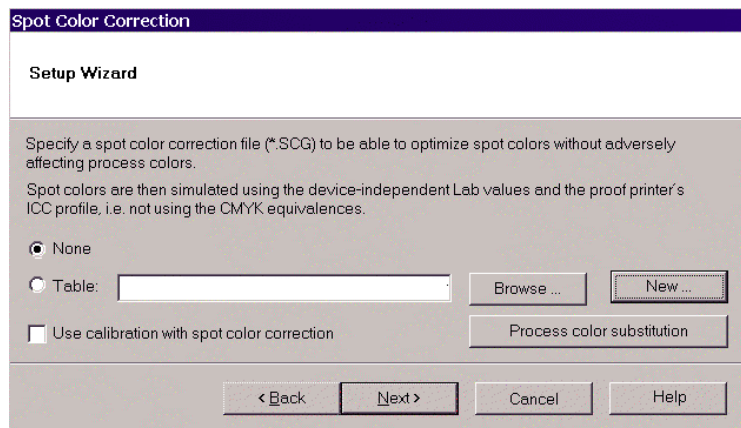
< Zurück

Weiter >

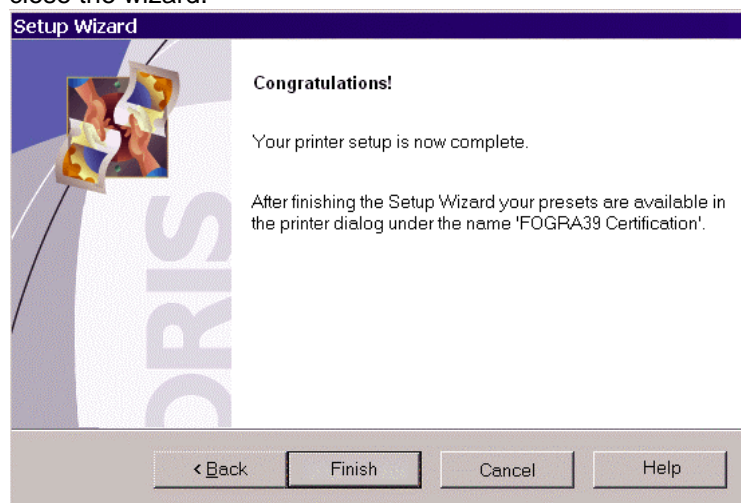
Abbrechen

Hilfe

In this dialog select NONE to define that spot colors should *not* be handled independently of CMYK process colors. Spot colors are then simulated using the CMYK equivalence values, which are corrected by the ORIS\_DAT color table.



Congratulations! Your proof printer setup is complete and you can start printing now. Click on FINISH to close the wizard.



## Printing

Select FILE | PRINT to open the PRINT dialog, then select the file to be printed and the proof printer. From the list named PRESETS, select the printer presets name you have entered (see page 2) to apply all of the settings specified with the *Printer Setup Wizard*. Click the PRINT button. The file will be printed and color-corrected according to ISOcoated v2 (FOGRA39).



## Instructions for Creating FOGRA39 Color Matches with ORIS Color Tuner 5.3 (Windows Version)

This document explains how to color-match Epson Stylus Pro 4800, 7800 and 9800 printers to the FOGRA39 (ISOcoated v2) printing conditions, using ORIS Color Tuner Version 5.3 on a Microsoft Windows system.

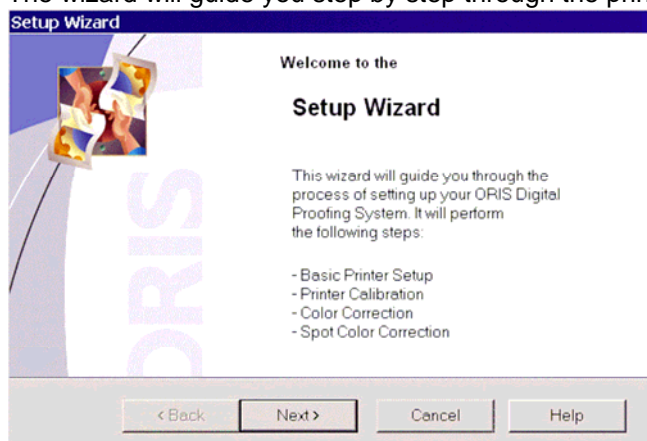
### Download ORIS Color Tables

Check out the CGS web site <http://www.cgs.de/> and select SUPPORT | DOWNLOADS | COLOR TABLES & TEST CHARTS. Then download the ZIP file for your printer (FOGRA39) and extract the files to the directory ...\\Program Files\\CGS\\Common Files\\ICC\\Reference Printer Profiles\\.

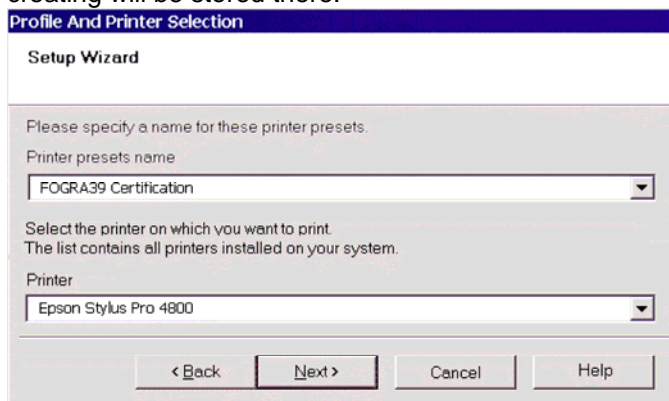
### Basic Settings

Before calibrating the printer, connect it to the computer (e.g. via USB or LAN) and bring it into a repeatable state by performing a print head cleaning/alignment cycle according to your printer manual. Then start the ORIS Color Tuner 5.3 software.

Start the PRINTER SETUP WIZARD from the FILE menu.  
The wizard will guide you step by step through the printer setup process.



Select the printer and enter a name for the PRINTER PRESETS you are going to specify with this wizard. Thus all of these settings can later be applied in one go by simply selecting this name from a list. A directory with the specified name will be created under ...\\Program Files\\CGS\\Common Files\\CTuner Setups (depending on where the program is installed). Most of the files you are creating will be stored there.

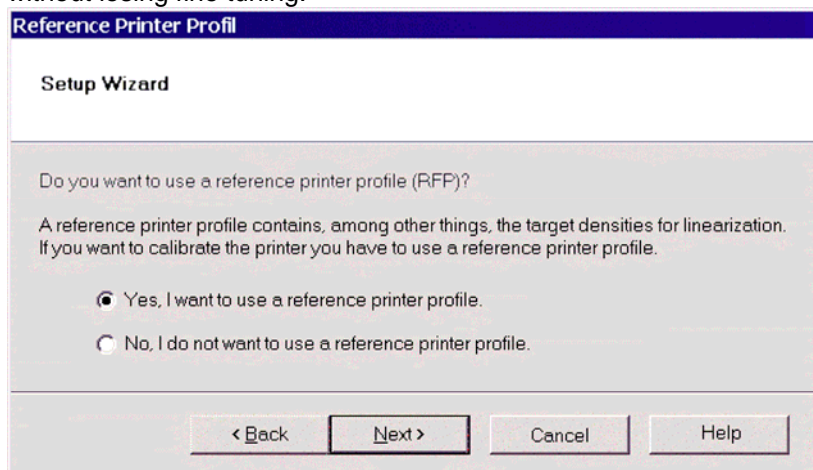


Select the black mode used with your printer. This step appears only if a printer allows you to choose between different black ink modes.

Specify the paper type, resolution and printing mode (uni/bidirectional). Choose the BIDIRECTIONAL mode for FOGRA39 matches.

## Selecting Reference Printer

Select YES in this dialog to calibrate the proof printer to a standard, i.e. to a so-called *reference printer*. This process, which is referred to as *Automatic Printer Calibration*, is required when aligning multiple printers used for remote proofing or load-balancing print jobs. It also allows you to recalibrate a printer without losing fine tuning.



**Reference Printer Profil**

**Setup Wizard**

Do you want to use a reference printer profile (RFP)?

A reference printer profile contains, among other things, the target densities for linearization. If you want to calibrate the printer you have to use a reference printer profile.

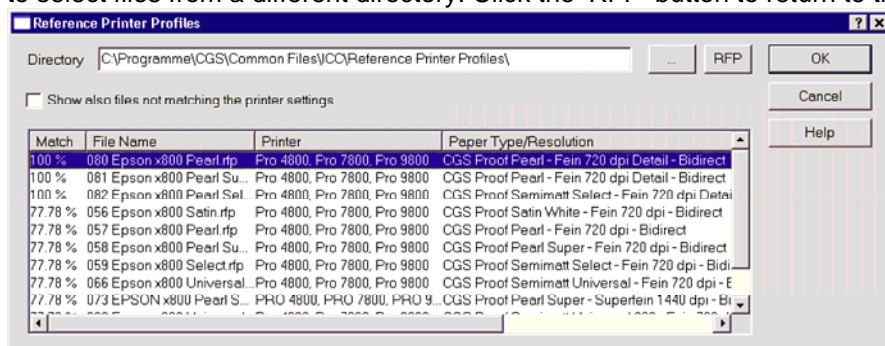
☒ Yes, I want to use a reference printer profile.

☐ No, I do not want to use a reference printer profile.

< Back   Next >   Cancel   Help

Select one of the *reference printer profiles* (\*.RFP) you have downloaded (see page 1), i.e. a virtual master printers to which your proof printer will be calibrated. Every \*.RFP file characterizes a particular combination of printer model, ink, paper type, print resolution, solid densities and maximum ink coverage. Make sure the selected \*.RFP file matches your proofing conditions by 100%.

**Note:** By default, this dialog displays only \*.RFP files which reside in the installation path ...\\Program Files\\CGS\\Common Files\\ICC\\Reference Printer Profiles. Use the ... button if you want to select files from a different directory. Click the 'RFP' button to return to the installation path.



**Reference Printer Profiles**

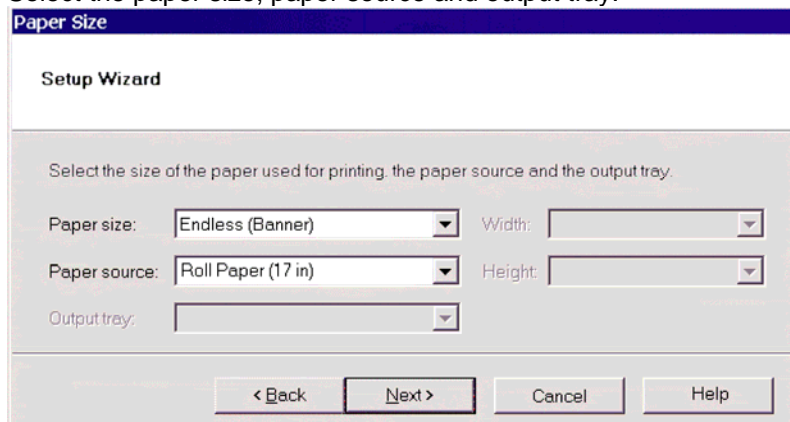
Directory: C:\\Programme\\CGS\\Common Files\\ICC\\Reference Printer Profiles\\

☐ Show also files not matching the printer settings

Match	File Name	Printer	Paper Type/Resolution
100 %	080 Epson x800 Pearl.rfp	Pro 4800, Pro 7800, Pro 9800	CGS Proof Pearl - Fein 720 dpi Detail - Bidirect
100 %	081 Epson x800 Pearl Su...	Pro 4800, Pro 7800, Pro 9800	CGS Proof Pearl - Fein 720 dpi Detail - Bidirect
100 %	082 Epson x800 Pearl Sal	Pro 4800, Pro 7800, Pro 9800	CGS Proof Semimatt Select - Fein 720 dpi Detai
77.78 %	056 Epson x800 Satin.rfp	Pro 4800, Pro 7800, Pro 9800	CGS Proof Satin White - Fein 720 dpi - Bidirect
77.78 %	057 Epson x800 Pearl.rfp	Pro 4800, Pro 7800, Pro 9800	CGS Proof Pearl - Fein 720 dpi - Bidirect
77.78 %	058 Epson x800 Pearl Su...	Pro 4800, Pro 7800, Pro 9800	CGS Proof Pearl Super - Fein 720 dpi - Bidirect
77.78 %	059 Epson x800 Select.rfp	Pro 4800, Pro 7800, Pro 9800	CGS Proof Semimatt Select - Fein 720 dpi - Bidi
77.78 %	066 Epson x800 Universal...	Pro 4800, Pro 7800, Pro 9800	CGS Proof Semimatt Universal - Fein 720 dpi - E
77.78 %	073 EPSON x800 Pearl S...	PRO 4800, PRO 7800, PRO 9...	CGS Proof Pearl Super - Superfine 1440 dpi - Bi

Buttons: ... RFP OK Cancel Help

Select the paper size, paper source and output tray.



**Paper Size**

**Setup Wizard**

Select the size of the paper used for printing, the paper source and the output tray.

Paper size: Endless (Banner) Width:

Paper source: Roll Paper (17 in) Height:

Output tray:

< Back   Next >   Cancel   Help

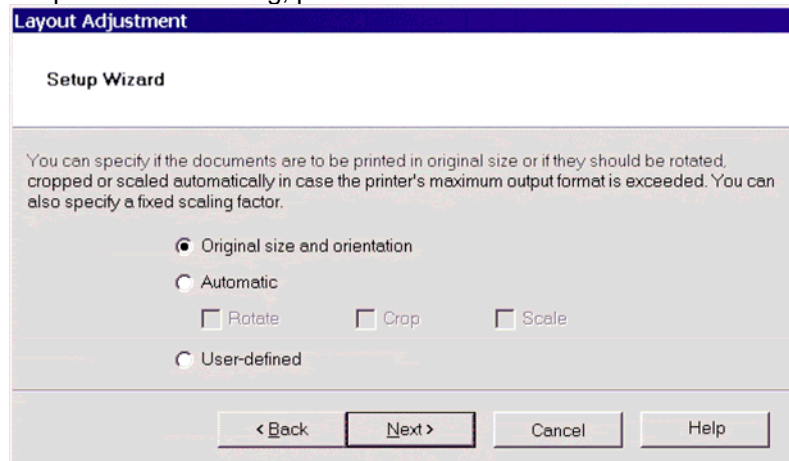
Specify what to do with documents exceeding the paper size. You can choose between the following

settings:

- ORIGINAL SIZE AND ORIENTATION  
Documents are cropped if they don't fit on the print medium.
- AUTOMATIC  
Documents are rotated, cropped or scaled down automatically so that they fit on the print medium.

*FOGRA39 Matches: Please select AUTOMATIC/ROTATE.*

*Note:* Documents are also rotated automatically if this saves paper or time, even if they would fit on the print medium. Long, portrait-sized test charts are rotated with this setting, for example.



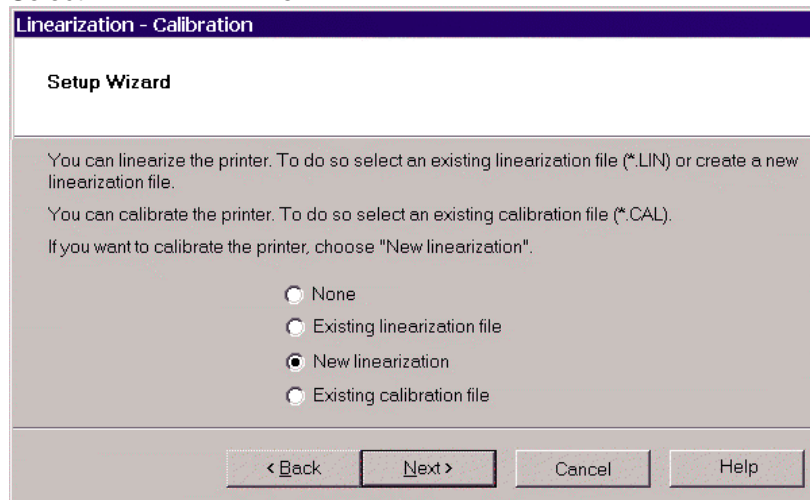
This dialog allows you to add the following information to every proof sheet:

- HEADER  
A text printed at the top of the document, e.g. your company name. Do not use any quotes (") here.
- COLOR BAR  
A TIFF or JPEG image containing a color bar. There are predefined color bars in the ORIS Color Tuner installation directory ...\\Program Files\\CGS\\CommonFiles\\Extras\\Proofing Bars. The color bar will be omitted if it doesn't fit on the print medium.
- CUSTOMER LOGO  
A TIFF or JPEG image containing a customer logo. It will be placed at the top of the document, to the left of the header text. In the POSTSCRIPT/PDF OPTIONS dialog, which follows next, leave all settings at their default values.



## Linearization

Select NEW LINEARIZATION.



**Linearization - Calibration**

**Setup Wizard**

You can linearize the printer. To do so select an existing linearization file (\*.LIN) or create a new linearization file.

You can calibrate the printer. To do so select an existing calibration file (\*.CAL).

If you want to calibrate the printer, choose "New linearization".

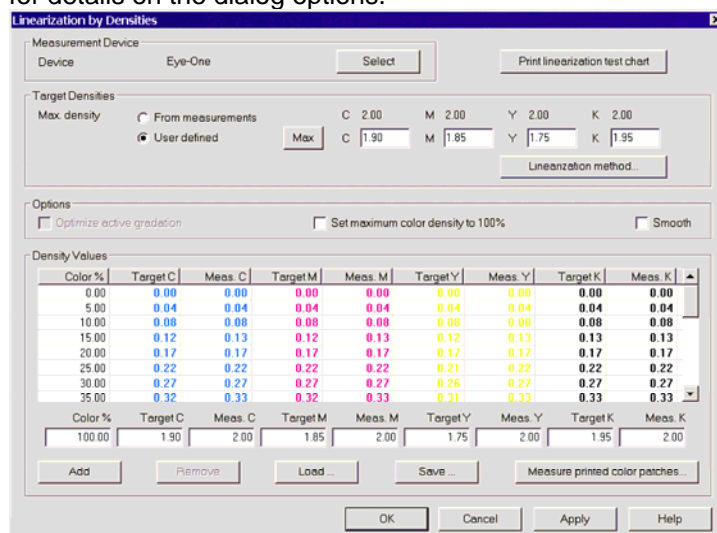
☐ None  
☐ Existing linearization file  
☒ New linearization  
☐ Existing calibration file

In the next dialog you have to select and configure the measurement device connected to your computer.

The next dialog informs you that the test chart will be printed as soon as you click NEXT. The program automatically uses a test chart which is suitable for your measurement device.

The next dialog informs you that you will have to measure the densities of your linearization test chart. Click NEXT to open a dialog allowing you to start the measuring process and to reduce the solid color density values. The measurements are directly transmitted from the device to ORIS Color Tuner.

Use this dialog to measure the test chart and to create a linearization file. Refer to the online help file for details on the dialog options.



**Linearization by Densities**

Measurement Device  
Device: Eye-One

Target Densities  
Max. density: ☐ From measurements ☒ User defined  C: 2.00 M: 2.00 Y: 2.00 K: 2.00  
C: 1.90 M: 1.85 Y: 1.75 K: 1.95

Options  
☐ Optimize active gradation ☐ Set maximum color density to 100% ☐ Smooth

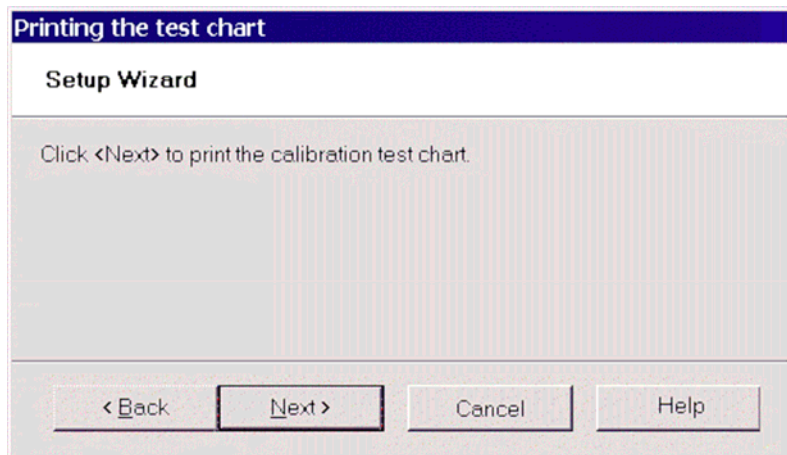
Density Values

Color %	Target C	Meas. C	Target M	Meas. M	Target Y	Meas. Y	Target K	Meas. K
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
10.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
15.00	0.12	0.13	0.12	0.13	0.12	0.13	0.13	0.13
20.00	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
25.00	0.22	0.22	0.22	0.22	0.21	0.22	0.22	0.22
30.00	0.27	0.27	0.27	0.27	0.26	0.27	0.27	0.27
35.00	0.32	0.33	0.32	0.33	0.31	0.33	0.33	0.33
100.00	1.90	2.00	1.85	2.00	1.75	2.00	1.95	2.00

## Calibration

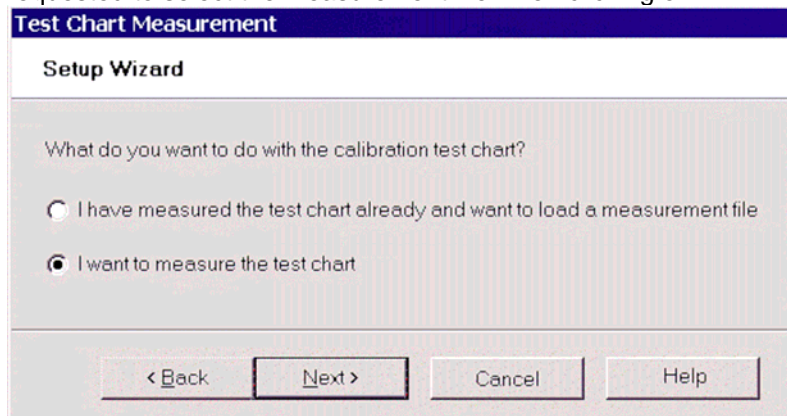
The INK LIMITS dialog, which follows next, can be ignored, because you are matching an Epson printer. Usually Epson printers do not require any ink coverage reduction.

The printer will now be calibrated to the *reference printer* (\*.RFP file) selected beforehand. Click NEXT in the following dialog to print the calibration test chart.



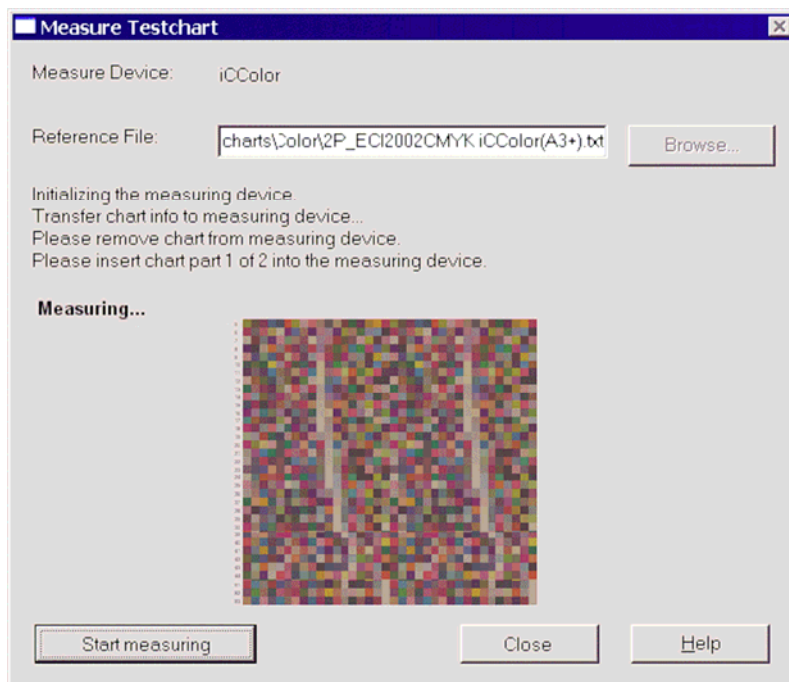
In this dialog select I WANT TO MEASURE THE TEST CHART if you are using one of the measurement devices supported by ORIS Color Tuner. The supported devices are listed on page 2-1 of the manual *Calibrating and Applying Color Match*, which can be opened from the HELP menu. Click NEXT to open a dialog allowing you to start the measuring process.

If you had to use a third-party tool for measuring, select I...WANT TO LOAD A MEASUREMENT FILE. You are requested to select the measurement file when clicking on NEXT.

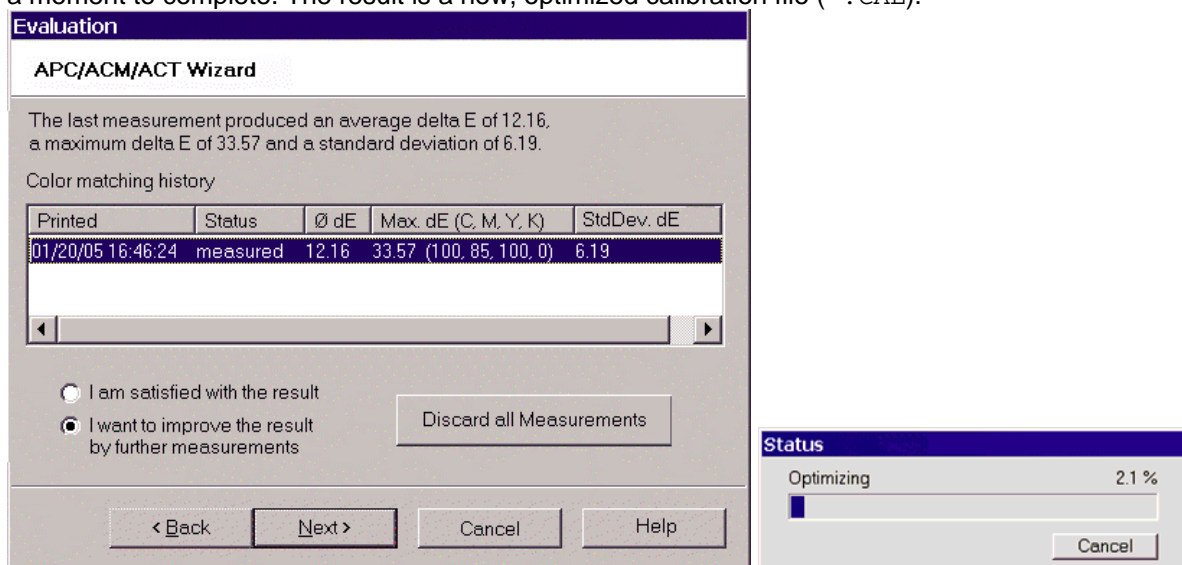


Use this dialog to measure the calibration test chart. Click on START MEASURING and follow the instructions on the screen.

Having successfully measured the colors, the measurements are automatically saved to the folder with the name you have specified for your *printer presets* (see page 2). This is usually ...\\Program Files\\CGS\\Common Files\\CTuner Setups\\<printer presets>\\Measurement. Click on CLOSE.



The measurement results are displayed in the next dialog. These values include the average Delta E, maximum Delta E and the standard deviation. If you select **I AM SATISFIED WITH THE RESULT** and click on **NEXT**, Automatic Printer Calibration is completed and you are taken to the color matching process. In most cases, however, **I WANT TO IMPROVE THE RESULT BY FURTHER MEASUREMENTS** is a better choice. The measurement values are then matched with the reference printer profile (\*.RFP), which may take a moment to complete. The result is a new, optimized calibration file (\*.CAL).



Now the steps described above must be repeated.

The test chart will be reprinted using the optimized calibration and must be measured. The result of the second measurement is displayed. Again, decide whether the Delta E values need to be minimized.

Repeat the calibration process until a substantial reduction of color deviations is no longer achieved. Usually two iterations are required to achieve an average Delta E < 0.8. The maximum Delta E value should be < 5.

**Note:** The calibration file (\*.CAL) is stored in the folder with the name you have specified for your printer presets (see page 2). The save location is usually ...\\Program Files\\CGS\\Common Files\\CTuner Setups\\<Printer Presets>\\PCF.

Evaluation

**APC/ACM/ACT Wizard**

The last measurement produced an average delta E of 0.72, a maximum delta E of 4.42 and a standard deviation of 0.6.

Calibration history

Printed	Status	Ø dE	Max. dE (C, M, Y, K)	StdDev. dE
25.11.04 13:29:57	calculated	11.76	24.74 (0, 100, 0, 0)	
25.11.04 13:54:27	measured	0.72	4.42 (10, 100, 0, 0)	

◀ ▶

☐ I am satisfied with the result  
☒ I want to improve the result by further measurements

Discard all Measurements

< Back

Next >

Cancel

Help

## Applying Color Match

To color-match your calibrated proof printer according to ISOcoated v2 (FOGRA39), enable the option 'ORIS\_DAT COLOR TABLE' and, using the BROWSE button, select one of the color tables (\*.DAT) you have downloaded (see page 1).

Make sure to use the \*.DAT file whose file name starts with the same number as the reference printer profile.

**Note:** There is a variant for most color tables, with the additional word *Relativ* in the file name. Use these \*.DAT files if *no paper white simulation* should be made.

Color Correction

**Setup Wizard**

Choose the method to be used for color-matching your printer. You can use ICC profiles or an ORIS\_DAT color table.

☐ None  
☐ ICC  
☒ ORIS\_DAT color table

ables Epson x800\080 Epson x800 Pearl FOGRA39.dat

Browse...

New color table with ICC profiles...

New color table via autom. color matching...

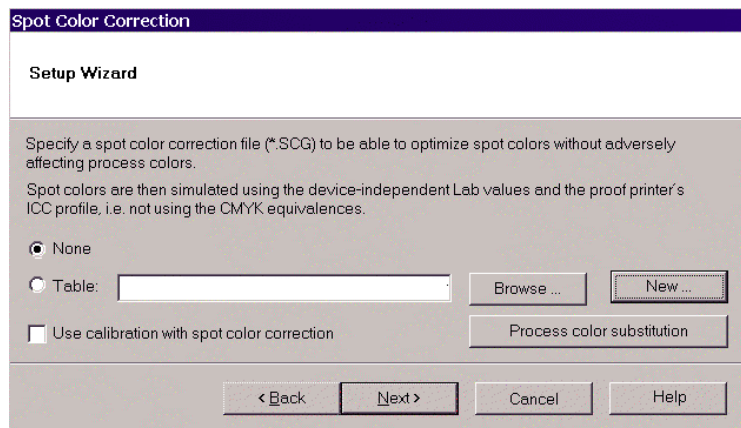
< Zurück

Weiter >

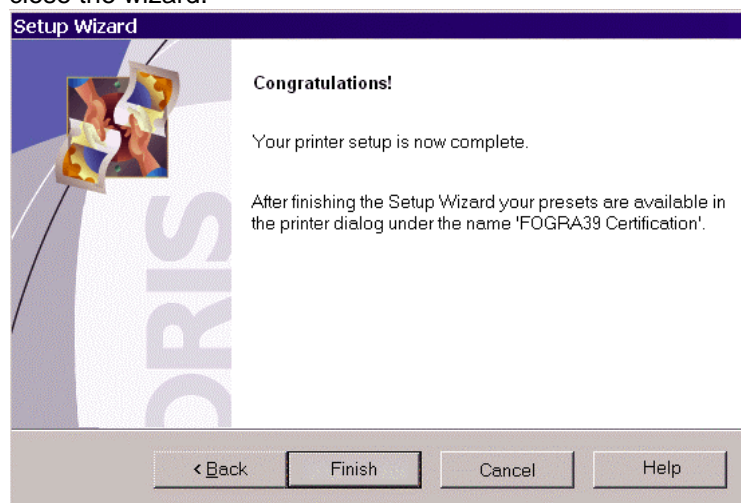
Abbrechen

Hilfe

In this dialog select NONE to define that spot colors should *not* be handled independently of CMYK process colors. Spot colors are then simulated using the CMYK equivalence values, which are corrected by the ORIS\_DAT color table.



Congratulations! Your proof printer setup is complete and you can start printing now. Click on FINISH to close the wizard.



## Printing

Select FILE | PRINT to open the PRINT dialog, then select the file to be printed and the proof printer. From the list named PRESETS, select the printer presets name you have entered (see page 2) to apply all of the settings specified with the *Printer Setup Wizard*. Click the PRINT button. The file will be printed and color-corrected according to ISOcoated v2 (FOGRA39).