basICColor®

MatchPatch

Manual

Index

1. Preface **7**

2 Profile optimization with MatchPatch **6**

2.1 Working principle and applications 6

2.2 White point adaptation with basICColor IMProve 7

2.3 Work routine 8

2.3.1 Printing and measuring a test target *9*

2.3.2 Loading the printer profile, measurement file and reference file... ..... *10*

2.3.3 Selecting for the optimization *12*

2.3.4 Calculating and saving the new profile... .....

2.4 Limits of the profil optimization 14

2.5 Summary / Recommendations 15

3. Workflow of MatchPatch and basICColor catch **18**

5. Produkt Information basICColor MatchPatch **22**

Chapter 1

Preface

1. Preface

Module for spot color and media wedge optimization

In some cases (ie, proofing) colors must comply with certain standards. It is particularly annoying if the specified target is just missed and you end up outside the tolerances. With this tool from the basICColor series you can optimize individual colors to an output color space. And you will be amazed at it's precision. *MatchPatch* modifies an existing printing profile so that selected target colors, spot colors for example, can be reproduced with very high accuracy. These spot colors might be company logos, product colors or the fields of the media wedge. Printing profiles are usually a compromise between color gamut, drawing reproduction and color space accuracy. To create printer profiles only a limited number of measurement fields can be evaluated. When calculating the ICC profiles all color areas are equally weighted first and interpolated between the interfaces. With *basICColor MatchPatch* you now have an easy to use and extremely powerful solution to achieve a particularly high color space accuracy for selected locations in proofing and digital printing.

Chapter 2

Profile optimization with MatchPatch

2 Profile optimization with MatchPatch

2.1 Working principle and applications

basICColor MatchPatch has been developed to optimize the color reproduction accuracy for selected color spaces in an existing printer profile. It therefore finds its use with the proof, when absolute colorimetric reproduction priority is desired. (for example when using the relative colorimetric rendering intent with adjustment of the paper white tone via a suitable choice of media). The adaptation with *basICColor MatchPatch* can be applied to any color location. The most common cases will be the improvement of reproduced spot colors (such as company logos, product colors, ...), and the optimization of problem patches in quality control targets such as the Ugra/Fogra media wedge.
The working principle is very simple. Create a proof print with the printer profile you wish to optimize. The proof print should contain a measurable and technically analyzable target (eg Ugra / Fogra media wedge). This target is then measured. *basICColor MatchPatch* compares this data to the reference file and corrects the areas that were selected for improvement. A new printer profile is generated.

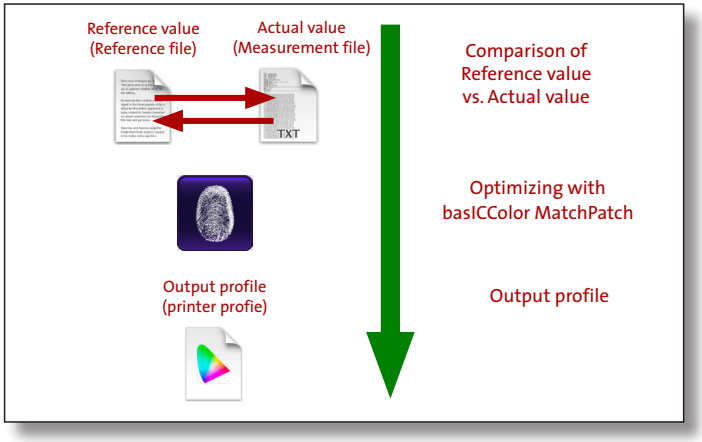
basICColor MatchPatch basically works with all sorts of targets. (media wedge, basICColor profiling targets, ECI2002, IT8/7.x...)
This manual shows the improvement of problem patches of a media wedge as an example.

2.2 White point adaptation with basICColor IMProve

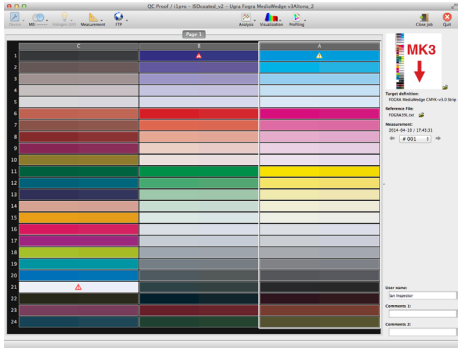
The algorithm of *basICColor MatchPatch* makes spot corrections in the profile tables. At the specified color coordinates changes in the CLUT (color table) are made with a soft transition. If the white point of the proof profile is to be changed, you should use the provided *basICColor IMProve*. It only changes the white point tag of the profile and leaves the tables untouched.
If you want to use both tools, you should adjust the white point with *basICColor IMProve* first and then correct the colors with *basICColor MatchPatch*.

2.3 Work routine

It is quite simple: print a test target absolute colorimetric using your proofer profile. (If the white points of your proof paper and the printing paper match, you can print the target relative colorimetric also) The test target is measured, *basICColor MatchPatch* compares to a reference and corrects if needed. The corrections result in a new ICC profile.

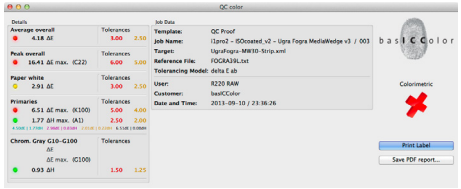


basICColor MatchPatch can be used to optimize spot colors or to offset small system drifts. No more than 100 colors for optimizing should be selected within a target. The colors should be a minimum of 10 ΔE apart for *basICColor Match-Patch* to perform a soft transition.



2.3.1 Printing and measuring a test target

basICColor MatchPatch works with all measurable targets. Spot measurements on the proof and a reference source or original materials (ie. product color on original packaging, paint...) are possible. *basICColor MatchPatch* only needs the profile used in the print and a measurement- and reference file in the ISO format. The color coordinates can be chosen freely. Single colors can be selected on larger targets. It is not advisable to use too many color patches for the optimization. The color coordinates should be a minimum of 10 ΔE apart so that a soft transition is possible. Please avoid to select more than 100 color patches for the optimization. Proceed to measure the target with *basICColor catch*.

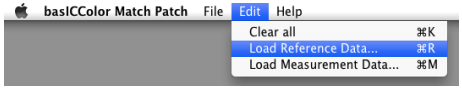


It is very likely that the most common use will be the optimization of the media wedge. In the example on the left you can see a measurement with a couple of errors. You can directly use the measurement that you checked your proof with to adapt your profile.

2.3.2 Loading the printer profile, measurement file and reference file

- Start *basICColor MatchPatch*
- Open the proofer profile that was used to print

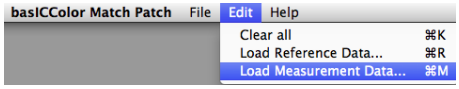
The name of the active profile is displayed in the topline of the *MatchPatch* window.



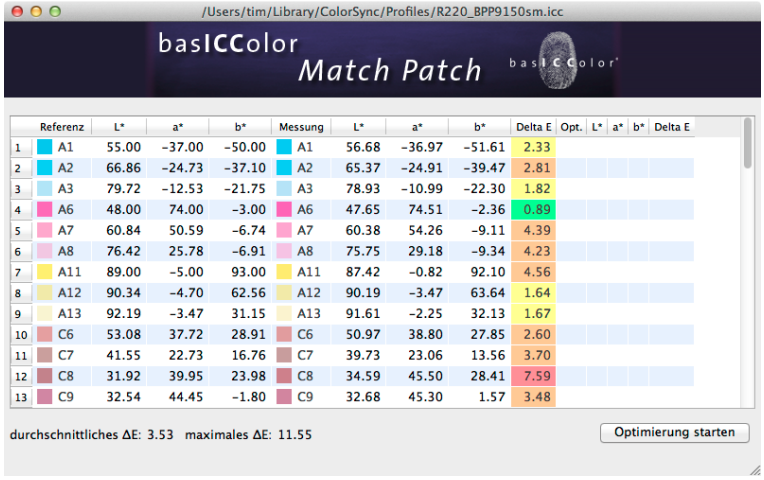
- Load the reference file (for example Fogra 27/39...) next.

Now the reference data is shown in the main window. If there is no reference data displayed, then the reference file is not in the ISO format.

Note: *If you haven't got the reference file in the ISO format, import it via the „Load" button in the measurement window of basICColor catch and save the file again. This ensures measurement file and reference file share the same file structure.*



- Load the measurement file of your print.

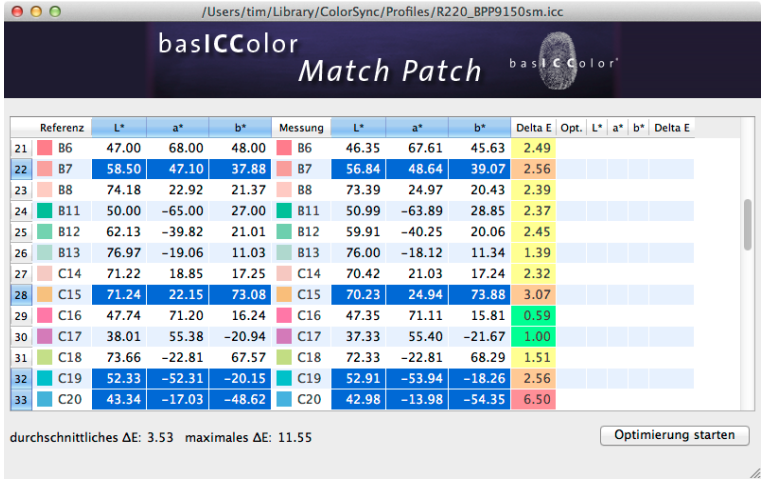


	Referenz	L*	a*	b*	Messung	L*	a*	b*	Delta E	Opt.	L*	a*	b*	Delta E
1	A1	55.00	-37.00	-50.00	A1	56.68	-36.97	-51.61	2.33					
2	A2	66.86	-24.73	-37.10	A2	65.37	-24.91	-39.47	2.81					
3	A3	79.72	-12.53	-21.75	A3	78.93	-10.99	-22.30	1.82					
4	A6	48.00	74.00	-3.00	A6	47.65	74.51	-2.36	0.89					
5	A7	60.84	50.59	-6.74	A7	60.38	54.26	-9.11	4.39					
6	A8	76.42	25.78	-6.91	A8	75.75	29.18	-9.34	4.23					
7	A11	89.00	-5.00	93.00	A11	87.42	-0.82	92.10	4.56					
8	A12	90.34	-4.70	62.56	A12	90.19	-3.47	63.64	1.64					
9	A13	92.19	-3.47	31.15	A13	91.61	-2.25	32.13	1.67					
10	C6	53.08	37.72	28.91	C6	50.97	38.80	27.85	2.60					
11	C7	41.55	22.73	16.76	C7	39.73	23.06	13.56	3.70					
12	C8	31.92	39.95	23.98	C8	34.59	45.50	28.41	7.59					
13	C9	32.54	44.45	-1.80	C9	32.68	45.30	1.57	3.48					

In the *MatchPatch* window you can now see the measurement data as well as the differences between reference data and measurement data. The differences are indicated in color from red to orange, yellow and green.

2.3.3 Selecting for the optimization

Mark the fields you wish to optimize. The most simple way is to mark all fields. But it doesn't make sense to try to futher optimize the accuracy of color coordinates that are already near the wanted result. These fields can be unmarked for the optimization.



	Referenz	L*	a*	b*	Messung	L*	a*	b*	Delta E	Opt.	L*	a*	b*	Delta E
21	B6	47.00	68.00	48.00	B6	46.35	67.61	45.63	2.49					
22	B7	58.50	47.10	37.88	B7	56.84	48.64	39.07	2.56					
23	B8	74.18	22.92	21.37	B8	73.39	24.97	20.43	2.39					
24	B11	50.00	-65.00	27.00	B11	50.99	-63.89	28.85	2.37					
25	B12	62.13	-39.82	21.01	B12	59.91	-40.25	20.06	2.45					
26	B13	76.97	-19.06	11.03	B13	76.00	-18.12	11.34	1.39					
27	C14	71.22	18.85	17.25	C14	70.42	21.03	17.24	2.32					
28	C15	71.24	22.15	73.08	C15	70.23	24.94	73.88	3.07					
29	C16	47.74	71.20	16.24	C16	47.35	71.11	15.81	0.59					
30	C17	38.01	55.38	-20.94	C17	37.33	55.40	-21.67	1.00					
31	C18	73.66	-22.81	67.57	C18	72.33	-22.81	68.29	1.51					
32	C19	52.33	-52.31	-20.15	C19	52.91	-53.94	-18.26	2.56					
33	C20	43.34	-17.03	-48.62	C20	42.98	-13.98	-54.35	6.50					

Accuracy and profile smoothness are not endlessly impoveable. If you wish to archieve above average accuracy in some locations you will lose some smoothness. Again, for a smooth transition, try to use a max. of 100 fields and ensure the color coordinates are at least a minimum of 10 ΔE apart

2.3.4 Calculating and saving the new profile

Once you have selected the fields you wish to optimize start the calculation via the „Start Optimisation“ Button.

In the right column you can see the results of the calculation in detail. In the left bottom corner of the *MatchPatch* window the expected avarage and maximum deviation is shown.

	Referenz	L*	a*	b*	Messung	L*	a*	b*	Delta E	Opt.	L*	a*	b*	Delta E
21	B6	47.00	68.00	48.00	B6	46.35	67.61	45.63	2.49					
22	B7	58.50	47.10	37.88	B7	56.84	48.64	39.07	2.56		-0.82	0.01	0.24	0.85
23	B8	74.18	22.92	21.37	B8	73.39	24.97	20.43	2.39					
24	B11	50.00	-65.00	27.00	B11	50.99	-63.89	28.85	2.37					
25	B12	62.13	-39.82	21.01	B12	59.91	-40.25	20.06	2.45					
26	B13	76.97	-19.06	11.03	B13	76.00	-18.12	11.34	1.39					
27	C14	71.22	18.85	17.25	C14	70.42	21.03	17.24	2.32					
28	C15	71.24	22.15	73.08	C15	70.23	24.94	73.88	3.07		-0.28	0.55	0.01	0.62
29	C16	47.74	71.20	16.24	C16	47.35	71.11	15.81	0.59					
30	C17	38.01	55.38	-20.94	C17	37.33	55.40	-21.67	1.00					
31	C18	73.66	-22.81	67.57	C18	72.33	-22.81	68.29	1.51					
32	C19	52.33	-52.31	-20.15	C19	52.91	-53.94	-18.26	2.56		0.20	-0.24	0.20	0.37
33	C20	43.34	-17.03	-48.62	C20	42.98	-13.98	-54.35	6.50		-0.01	0.32	-0.44	0.54

After the initial calculation you can chose single fields again and further optimise the result. Once you have achieved the desired result you can save a new ICC profile.

2.4 Limits of the profil optimization

The printer that was used in the example above did use a profile that had been generated some time ago. As expected *basICColor MatchPatch* shows a clear improvement in the accuracy of the colors that had drifted over time. The printing system in use could cover the color space which was needed for the proof. But it is also possible that the simulated color space can't be covered by the printing system. In that case *basICColor MatchPatch* can achieve an improvement in the full tone for example.

The limits of *basICColor MatchPatch* are reached when the colors are too far off the reachable color space. If it is not possible to meet the required target values on a just linearized and profiled proof system with the use of *basICColor MatchPatch*, a different combination of ink/media/printer could be the answer.

So far experience has shown that the average color deviation of a printing system can be halved.

2.5 Summary / Recommendations

a) In an adequate color space small deviations and drifts (up to 2-3 ΔE above the tolerance) can be eliminated with *basICColor MatchPatch*.

b) Problems with the color volume generally can't be fixed with the use of a profile. *basICColor MatchPatch* may achieve small measurable improvements in advantageous conditions.
Is a full tone patch just missed by the proofing system, *basICColor MatchPatch* might be able to fix it - the eliminisation of color volume deficits always require changes in the media used, changes in the hardware setup of the printing system or - if all possible - the eliminisation of disadvantageous color space restictions via the linearisation of the RIP or printer driver settings.
If you are able to make changes in the settings of your printer driver or RIP to improve the color spread please create a new profile with *basiccolor print*, CYMKIck or dropRGB first and then beginn with the fine tuning of your proof system.

c) If the proofer profile shows large color deviations (more than 5 ΔE above the tolerance) or color tear offs are already visible on the print it's not worthwhile to apply *basICColor MatchPatch*.
MatchPatch was created to fine tune and correct small deviations. Create a new profile with *basICColor print, CYMKick* or *dropRGB* before you start fine tuning your proofing system.

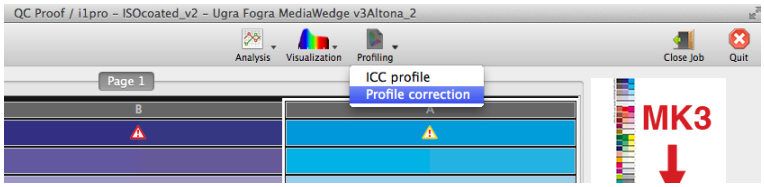
Chapter 3

MatchPatch and basICColor catch Workflow

3. Workflow of MatchPatch and basIC-Color catch

basICColor MatchPatch and *basICColor catch* were linked to improve the productivity and efficiency of the workflow.

You can now start *basICColor MatchPatch* from within *basIC-Color catch*. This might be of advantage if, let‘s say, you discover that your just printed proof which was measured with *basICColor catch control* is outside the set tolerances. This can happen when proofing systems haven’t been linearized or profiled for some time. In the *basICColor catch* measurement window click on the icon “Profiling” and then choose “Profile correction” .



basICColor catch then opens *basICColor MatchPatch* automatically and forwards the measured data.

If the data originates from a proof evaluation in *basICColor catch certify* then the reference data that was used to check the proof will be transferred to *basICColor MatchPatch* also. Before *basICColor MatchPatch* starts its calculation you will be asked for your optimized output profile of your printer. Once you have selected the output profile *basICColor Match-Patch* starts automatically and will display a number of color coordinates with large deviations that could be optimized.

	Referenz	L*	a*	b*	Messung	L*	a*	b*	Delta E	Opt.	L*	a*	b*	Delta E
60		86.34	-8.38	4.18		85.38	-6.80	3.80	1.89	0				
61		90.79	-4.15	0.89		90.12	-3.13	0.01	1.50	0				
62		10.41	-8.20	-10.25		6.89	2.07	-6.30	11.55	1				
63		24.28	32.65	13.12		24.89	34.02	14.24	1.87	0				
64		24.67	-17.00	7.51		22.86	-7.93	9.66	9.50	1				
65		23.00	0.00	0.00		22.38	6.18	3.57	7.16	1				
66		38.53	6.58	3.87		37.58	8.26	3.29	2.02	0				
67		61.53	5.42	3.75		59.30	6.09	3.52	2.34	0				
68		78.14	2.87	0.93		77.07	5.07	-0.12	2.66	0				
69		86.56	1.46	-0.67		85.64	3.44	-1.65	2.39	0				
70		15.71	-3.08	11.68		13.40	6.10	5.84	11.12	1				
71		34.69	28.55	-4.01		34.31	29.94	-2.74	1.92	0				
72		25.84	-11.04	-14.37		25.28	-6.35	-10.38	6.18	1				

From here on the working principle of *basICColor Match-Patch* is as described in this manual.

If you wish to include (or exclude) more color fields in the list for optimization you can do this at this point.

Once all the color spaces for optimization are selected click <Start optimizing> to start the process.

	Referenz	L*	a*	b*	Messung	L*	a*	b*	Delta E	Opt.	L*	a*	b*	Delta E
61		90.79	-4.15	0.89		90.12	-3.13	0.01	1.50	0				
62		10.41	-8.20	-10.25		6.89	2.07	-6.30	11.55	1	0.86	2.98	2.55	4.02
63		24.28	32.65	13.12		24.89	34.02	14.24	1.87	0				
64		24.67	-17.00	7.51		22.86	-7.93	9.66	9.50	1	-1.37	0.27	0.46	1.47
65		23.00	0.00	0.00		22.38	6.18	3.57	7.16	1	-1.51	0.24	0.54	1.62
66		38.53	6.58	3.87		37.58	8.26	3.29	2.02	0				
67		61.53	5.42	3.75		59.30	6.09	3.52	2.34	0				
68		78.14	2.87	0.93		77.07	5.07	-0.12	2.66	0				
69		86.56	1.46	-0.67		85.64	3.44	-1.65	2.39	0				
70		15.71	-3.08	11.68		13.40	6.10	5.84	11.12	1	1.62	0.55	-1.27	2.13
71		34.69	28.55	-4.01		34.31	29.94	-2.74	1.92	0				
72		25.84	-11.04	-14.37		25.28	-6.35	-10.38	6.18	1	-1.30	0.21	0.34	1.36

Once optimized, *basICColor MatchPatch* displays the result.

Just save the output profile, embed it to the RIP and create a new proof.

Chapter 4

Product Information basICColor MatchPatch

5. Product Information basICColor Match-Patch

Copyright Information

Software - Copyright © 2001-2015 basICColor GmbH.
All rights reserved.

Manual - Copyright © 2011-2015 basICColor GmbH.

The information in this manual is furnished for informational use only and is subject to change without notice and shall not be construed as a commitment by basICColor GmbH. basICColor GmbH assumes no responsibility or liability for inaccuracies or errors that may appear in this document. No part of this user guide may be reproduced, transmitted, transcribed or translated into any language without the express written permission of basICColor GmbH.

Trademark Information

basICColor and the Fingerprint are a registered trademark of basICColor GmbH. All other trademarks or registered trademarks are the property of their respective holders (Apple, Adobe, X-Rite, Konica Minolta Sensing, ColorPartner, Barbieri) Any mention of these trademarks is for demonatrational use only and is not meant to infringe any rights of a third party.

Written by: Tim Seher

Version 2.0, September 2015