Aardenburg
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IMAGING & ARCHIVES

Tested System:
ID#:211

Printer: Epson Stylus Pro 3800

Inks/Colorants: Inkjetfly IMA24/36 V3

Media: Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626)

Coating(s): no additional coating

Sample #: AaI_20100905_SN006

Testing Status: 140 Megalux hours total light exposure

Testing is complete - there are no more updates

Conservation Display Rating (CDR)

Lower limit: 47 Megalux hours (for weakest 10% of the color patches)
Upper limit: 65 Megalux hours (for average of all the color patches)

Note: a CDR with narrow range (typically less than 2:1) indicates relatively even overall fading of the image. A wide range indicates faster fading in certain local colors/tones prior to general fading of most colors/tones in the entire image. Compare ratings for different systems directly and/or use the table on page 2 to estimate time (years) on display.

* Please read document AaI_2009_0118_TA-01.pdf, **"An Overview of the AaI&A Conservation Display Ratings"**, located on the Documents page of the AaI&A website for furhter explanation of the Conservation display ratings.

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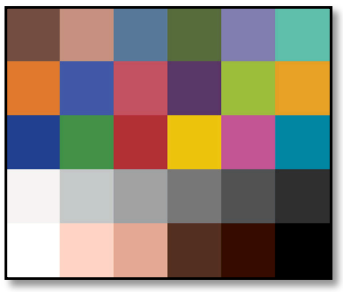
About this Report

This report contains light fastness information about a sample test print produced by a specific digital printing system. "System" refers to all hardware, software, and materials used to make the finished print. The hardware, software, material components, and printmaker's skills contribute to the final image quality and image permanence. The tested sample is made with current or recently discontinued stocks of commercially available products unless otherwise stated. Each sample has been prepared by Aardenburg Imaging & Archives or one of its members in accordance with customary print making practices unless otherwise noted. The sample may also contain additional finishing materials such as overcoats and laminates which are also noted when used. Finally, the sample has been tested under standardized conditions that are defined on the Sample Description page (see page 4). AaI&A makes every effort to ensure but cannot guarantee that the samples are properly identified and documented and that test results are accurate. For this reason, AaI&A also strives to test independently produced sample replicates in order to increase sampling confidence and to provide information on process variability. Please compare the results in this report to replicate test samples when the data become available.

Understanding this Report



The magnitude and visual appearance of fading depends not only on the chosen printing system but the chosen image as well. In other words, different images are comprised of different colors, and the fading relationships between those colors dictate how the image will look as it fades. The sample print in this test report was made by reproducing the digital image shown on the left. It contains 30 standard colors. 24 of the colors are colorimetrically matched to the Macbeth ColorChecker™ chart viewed under D50 illumination. The remaining six colors supplement the ColorChecker™ array with four additional skin tone colors, one patch for paper white, and another for maximum black. The additional colors also round out the distribution of CIELAB L* (lightness) values in the test target.

Information about the fading characteristics of the product is provided in three ways:

1) You can visually assess the fading. The target images reproduced in this report are digitally reconstructed from the spectrally measured color data rather than scanning or otherwise reproducing the physical print by conventional techniques. This method ensures a colorimetrically accurate representation of the print appearance as the print fades. A calibrated monitor is recommended to experience the best possible reproduction of the test sample appearance. The side-by-side "before and after" presentation of the target images simulates looking at a perfect copy of the unexposed original print along side the same print after light exposure. You can also use Adobe Reader's full screen mode to cycle through the pages and "animate" the fading.

2) I* Color and tonal accuracy scores are reported. This report includes I* metric scores that compare the color and tonal relationships of the light exposed samples to the color and tonal relationships existing in the original print prior to light exposure. Perfect I* scores of 100% can be approached when no significant fading occurs. Average scores above 90% generally indicate excellent retention of original quality, 80% good, 70% fair, etc., but your conclusions may vary depending on your image quality requirements. I* color rates the retained color accuracy (hue and chroma) while I* tone rates the retained tonal accuracy (lightness and contrast). The score is on a percentile scale where 100% is a perfect match between the comparison image (e.g., "after" light exposure) and the reference image (e.g., "before" any light exposure). 0% I* color means no color accuracy is left. 0% I* tone means essentially no tonality remains and all image information content is lost. Negative I* values have significance as well and contribute to the average I* score when they occur. Negative I* color values mean false color has occurred, for example, when a skin tone turns green or a neutral gray becomes distinctly colorful. Negative I* tone scores mean visual contrast between colors has become inverted (i.e., like the tonal relationships in a photographic film negative). Serious image quality problems must arise before false colors and/or tones appear. For more information on the I* metric, please refer to the AaI&A web site.

3) Color changes are also reported using the classic color difference model, ΔE. Note that ΔE values lose perceptual scaling significance when they become large (e.g., > 15). Also, the ΔE equation does not unambiguously measure changes in image contrast. This limitation is generally not a problem for paints and textiles, but can be a serious oversight when evaluating photographic images. Properly tracking changes in image contrast was a major reason behind the development of the I* metric.

Table to Convert Megalux-hours of Light Exposure to estimated "Years on Display" Light Fastness Ratings.											
Indoor Light Levels for Print Display		Multiply Mlux-hrs by	Megalux-hours in test									
Light Exposure	Description		10	20	30	40	50	60	70	80	90	100
≤ 10 Lux 24 hours per day	Interior rooms, storage areas, or hallways without windows, illuminated sparingly by artificial lighting	11.42	114	228	342	457	571	685	799	913	1027	1142
50 Lux 12 hours per day	"Museum Standard" display condition	4.57	46	91	137	183	228	274	325	365	411	457
120 Lux 12 hours per day "Kodak Display Years" (1)	Average home illumination level for photos is ~ 60 lux. 90% of all displayed photos do not exceed 120 lux (1).	1.90	19	38	57	76	95	114	133	152	171	190
228 Lux 12 hours per day	Relatively bright home or office. Note the simple 1:1 relationship between "years on display" and Mlux-hr values at this condition.	1.00	10	20	30	40	50	60	70	80	90	100
450 Lux 12 hours per day "WIR Display Years" (2) Also equals 500 lux for 11.8 hours per day	A bright home or commercial office building illumination level is 200-500 lux. Also, good illumination for color critical viewing and color matching tasks begins at about 500 lux.	0.51	5	10	15	20	25	30	35	41	46	51
2000 Lux 12 hours per day	Commercial Gallery. Also, critical color evaluation standards call for 2000 lux and a D50 illumination source.	0.114	1.1	2.3	3.4	4.6	5.7	6.8	8.0	9.1	10.3	11.4
5000 Lux 12 hours per day	E.g., Sunlight through a window striking print at an angle.	0.046	0.5	0.9	1.4	1.8	2.3	2.7	3.2	3.7	4.1	4.6
10,000 Lux 12 hours per day	South-facing window in U.S.A. , e.g., storefront display with photos directly facing window.	0.023	0.2	0.5	0.7	0.9	1.1	1.4	1.6	1.8	2.1	2.3

Light levels commonly encountered in the real world fluctuate widely throughout indoor print display environments and produce large variations in how long it takes for artwork to acquire light-induced damage. Use this table as a guide to estimate how many "years on display" (denoted in red text) it takes to accumulate an equivalent light exposure dosage. Review the test results to decide which Megalux-hour dose has caused fading to your level of concern (e.g., just noticeable, easily noticeable, objectionable, etc.). Then choose the "Light Exposure" description that best represents how your print is likely to be displayed. You may want to obtain a lux meter and make some measurements in your own display environment!

Note that as the years of display time increase, light-induced fading can be eclipsed by other serious aging mechanisms such as fading and/or staining caused by heat, humidity, and air pollutants. Mould damage can also occur at high humidity. Even when colorants remain water fast, direct contact with liquids may result in physical deformation and staining of the substrate. Also, temperature and especially strong seasonal humidity fluctuations can cause physical cracks and/or flaking, etc., over time. Handling damage such as scratching, abrasion, tears and creases, and catastrophic damage by smoke, fire, flood, etc., also destroy print quality over time. Thus, as illumination levels are reduced other forms of print degradation take on greater probability of occurrence.

(1) Eastman Kodak cited this exposure condition with a 90% confidence limit as a rationale for estimating print fading times of traditional color photo materials in typical home display environments. However, for light fading claims regarding its line of pigment-based inkjet printers, Kodak adopted the higher level of 450lux/12 hours per day which is also used by Wilhelm Imaging Research, Inc. (See below).

(2) Wilhelm Imaging Research (WIR) standardized its light fastness ratings on 450 lux for 12 hours per day in order to estimate the years on display necessary to reach "easily noticeable" fading. This average daily light exposure dosage, at an assumed 75˚F/60%RH temperature and humidity level, has become a de facto industry standard for most industry-sponsored predictive "years of life" light fading estimates in the absence of a published International Standards Organization (ISO) test standard. The table above readily shows how much error occurs in such "print lifetime" predictions as actual real world light levels for prints on display routinely deviate above and below the assumed 450 lux intensity value.

Sample Description

Sample #	**AaI_20100905_SN006** **Batch #:** K1
Printer:	Epson Stylus Pro 3800
Ink:	Inkjetfly IMA24/36 V3
Media:	Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626)
Coating(s):	no additional coating
Test Print Prepared by:	AaI&A member
Printed:	September 26, 2010
Initial Print colors measured	August 10, 2011
Test Started:	August 11, 2011
Test Image:	AaI_StandardColorSet(v2)forSRGB.tif
RIP?Driver settings:	Colorbyte ImagePrint v6.1, 1440 8 pass high speed
Media Setting	Premium Glossy Photo Paper
Profile:	n.a. **Rendering** relative w/bpc
Profile type:	custom

Paper White Color (UV-included versus UV-excluded)

Optical Brighteners Present? *yes (high)*	**L***		**a***		**b***	
Media Whitepoint Color	UV inc	UV exc	UV inc	UV exc	UV inc	UV exc
	95.3	95.1	1.3	-1.1	-10.2	-1.7
	UV-inc/UV-exc ΔL*, Δa*, Δb* respectively					
	0.2		2.4		8.5	
	Calculated differences, especially for Δb, indicate the role and magnitude of fluorescence on original paper color*					

Maximum Printed Black	**L***	**a***	**b***	Optical Density (Dmax)
	9.2	0.4	-1.5	1.99

Light source: Phillips Colortone F40T12/C50 – 5000˚K full spectrum fluorescent. Color rendering Index (CRI) =92), soda lime glass filtered

Light Exposure Cycle: 8 hours on, 4 hours off, twice per 24 hours

CIELAB measurements: D50 2˚ observer, Xrite Gretag/Macbeth Spectrolino/Spectroscan

Average Illuminance during "on" cycle: 10906 Lux

Average Temperature: 23.6˚C over full test duration, 25.0˚C during light exposure.

Average Relative humidity: 56.7%RH over full test duration, 56.3%RH during light exposure.

Replicates/Compare to:

Compare to sample # AaI_20100905_SN007 which was printed on the same printer and same batch of Costco, Kirkland Professional Glossy Inkjet Paper but using the Epson OEM Ultrachrome K3 inkset. These two samples have also been tested side-by-side in the light fade testing unit (i.e., batch K1) to eliminate the testing equipment as a potential source of variablity in the comparative results.

Notes/Comments:

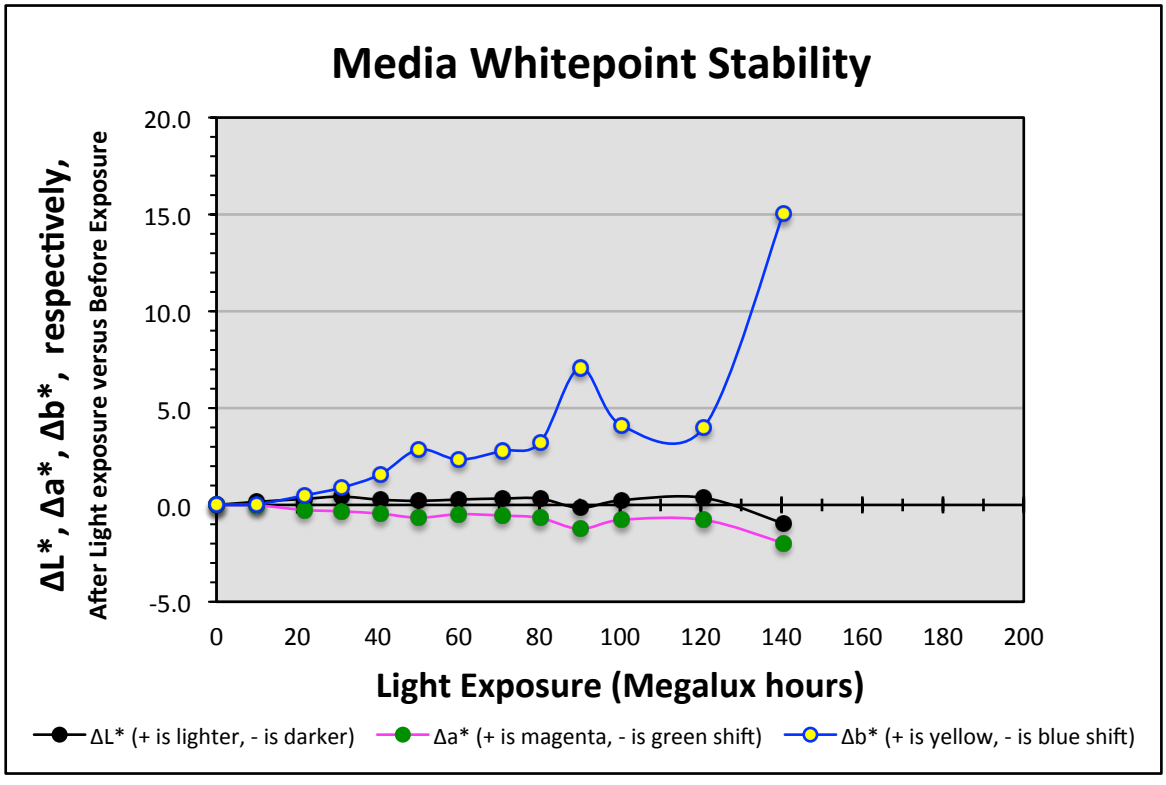
MHMG 2014-01-28: The dips in the graphs at 50 and 90 Mluxhrs and recovery at 60 and 100 Mluxhrs were not measurement errors. The 50 and 90 Mluxhr measurements were delayed a few weeks after removing the sample from the light fade unit. The temporary "dark storage" period caused a phenomenon I call "light-induced low intensity staining (LILIS). Additional media yellowing occurs which can be partially or fully reversed with more light exposure of sufficient intensity (as evidenced by the 60,100,and 120 exposure results), but the stain will return again with further storage in low intensity or dark storage environments. The LILIS behavior appears to be related to optical brighteners in the media, but more research is needed.

MHMG 2015-06-24: The 140 Mluxhr exposure dose marks a deliberate effort to induce the LILIS effect. The sample was not meausured immediately after removal from the light fade testing unit. Rather, the sample was placed in dark storage for a period of several months prior to taking the 140Mlux hour sample reading. The result of the additional dark storage time is a severe increase in media discoloration (ie., the LILIS effect). It affects all the highlight values and can even influence the color reproduction of midtone colors like "blue sky" patch number A3.

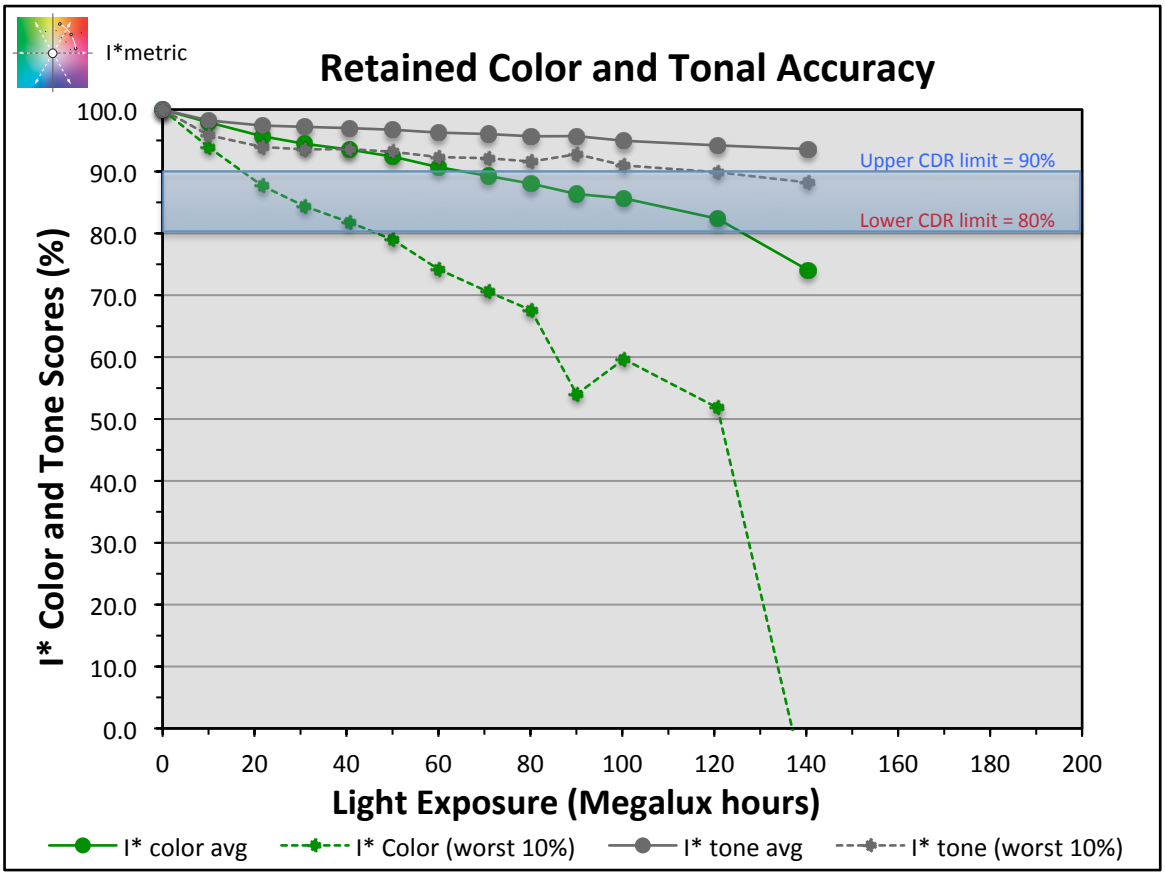
This paper's susceptibility to light induced discoloration severely compromises the overall performance of this printer/ink/media combination. This RC photo paper is therefore NOT RECOMMENDED FOR FINE ART APPLICATIONS where long term media color stability on and off display is essential.

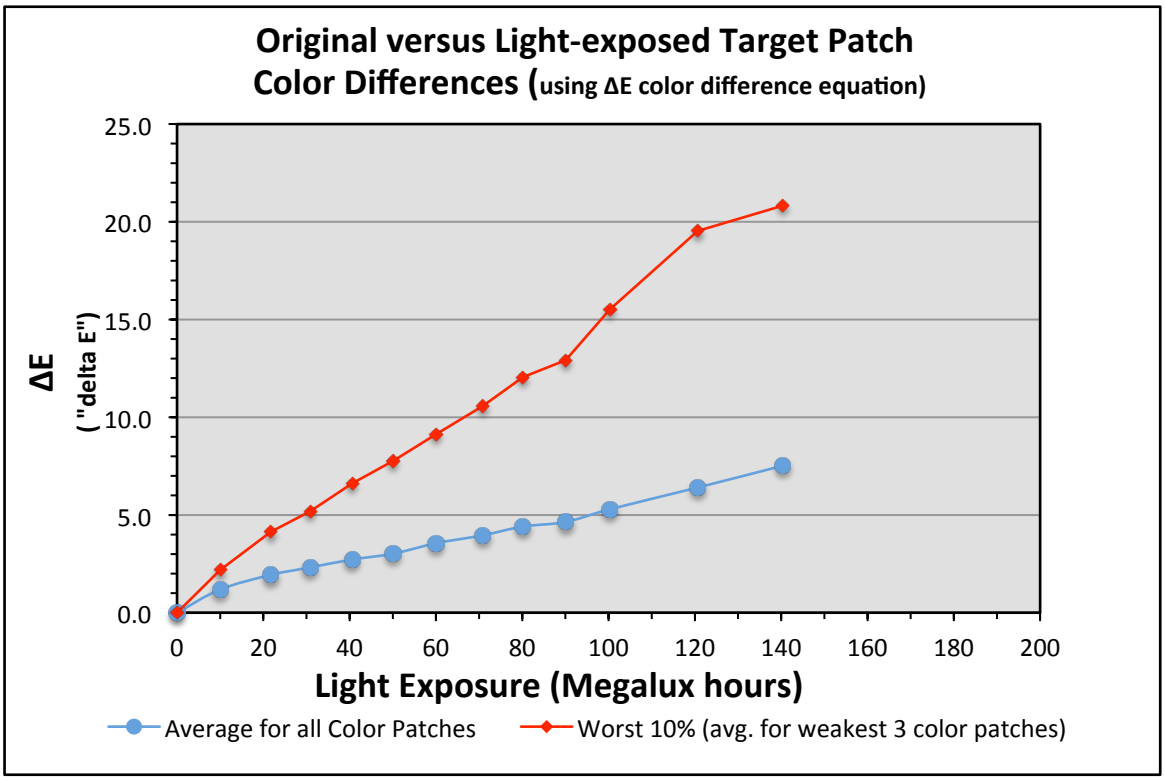
Graphs:

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating

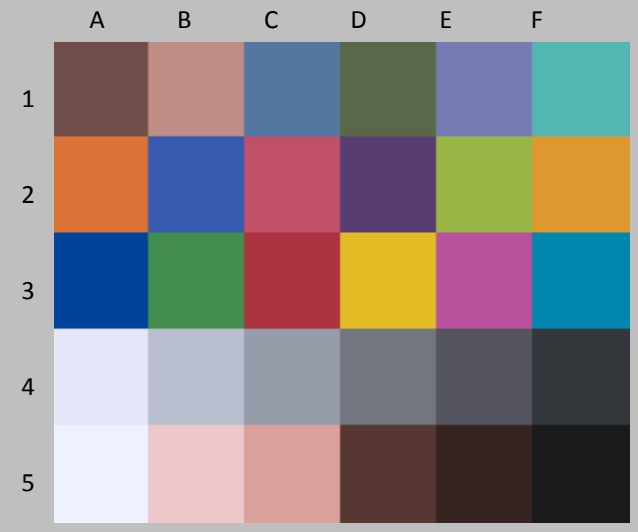


Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating

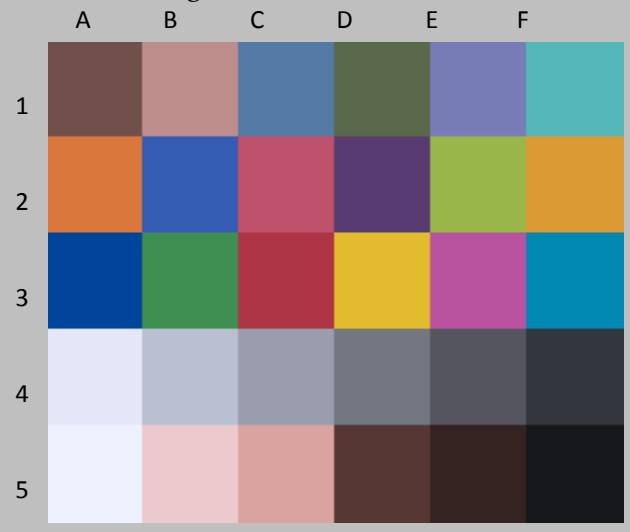




Values: *Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating*



Original Print Colors before light exposure



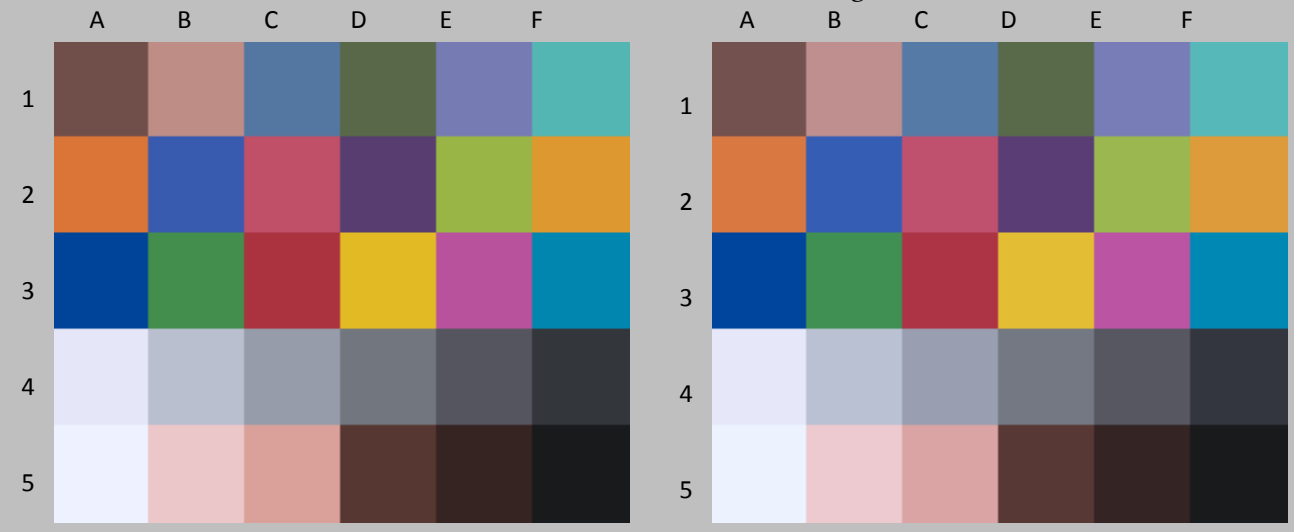
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	98.0	0.9	37.3	37.7	13.7	13.9	8.3	7.5
B1	Light Skin	93.2	2.0	63.0	63.5	18.4	18.3	10.9	9.0
C1	Blue sky	98.5	1.1	48.6	49.2	-3.9	-3.8	-27.2	-28.1
D1	Foliage	98.0	1.0	41.9	42.3	-11.2	-11.3	16.5	15.6
E1	blue flower	98.3	1.2	53.0	53.5	8.7	9.0	-30.6	-31.6
F1	bluish green	97.2	1.5	68.1	68.6	-30.9	-30.4	-7.3	-8.6
A1	orange	97.8	2.0	60.3	60.7	36.5	36.0	51.2	49.4
B2	purplish blue	99.6	0.9	39.4	39.9	9.5	9.5	-50.3	-51.0
C2	moderate red	97.0	2.0	49.6	50.0	47.0	47.2	10.0	8.1
D2	purple	98.3	1.1	30.5	30.8	20.4	20.8	-25.4	-26.4
E2	yellow green	97.7	1.8	69.8	70.2	-22.0	-22.3	51.7	50.0
F2	orange yellow	97.2	2.4	68.7	69.1	19.9	19.1	62.4	60.2
A3	blue	99.3	1.0	29.4	29.8	10.4	10.3	-53.5	-54.3
B3	green	98.0	1.5	52.9	53.4	-35.3	-35.5	26.8	25.4
C3	red	98.2	1.5	40.9	41.1	49.9	49.8	21.9	20.5
D3	yellow	97.7	2.2	77.6	78.1	5.4	4.5	73.0	71.0
E3	magenta	99.1	1.1	50.6	51.0	48.9	49.0	-20.4	-21.4
F3	cyan	98.8	1.1	50.9	51.4	-21.8	-21.8	-32.3	-33.3
A4	white	100.0	0.4	91.7	91.9	1.9	1.9	-8.8	-9.1
B4	neutral 8	98.7	0.7	77.3	77.7	0.3	0.1	-8.9	-9.5
C4	neutral 6.5	95.2	1.0	64.2	64.5	0.4	0.5	-8.5	-9.4
D4	neutral 5	96.4	0.9	49.3	49.7	0.4	0.3	-5.4	-6.2
E4	neutral 3.5	97.6	0.8	36.3	36.7	1.1	1.2	-5.1	-5.8
F4	black	99.9	0.5	22.4	22.5	0.0	0.0	-4.4	-4.9
A5	paper white	100.0	0.2	95.3	95.5	1.6	1.6	-10.4	-10.3
B5	Skin highlight L*=88	94.3	1.3	83.6	84.0	13.5	13.3	4.1	2.9
C5	Skin highlight L* =75	94.2	2.0	71.7	72.3	20.7	20.4	11.9	10.1
D5	Skin shadow L*=28	99.4	0.6	26.6	26.7	13.7	13.9	8.7	8.1
E5	Skin shadow L*=13	100.0	0.4	15.9	15.6	7.7	8.0	4.6	4.6
F5	Maximum Black	100.0	0.8	9.2	8.4	0.4	0.3	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	97.9	98.3	1.2
Worst 10% (3 lowest scoring patches)	93.9	95.9	2.2

10 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

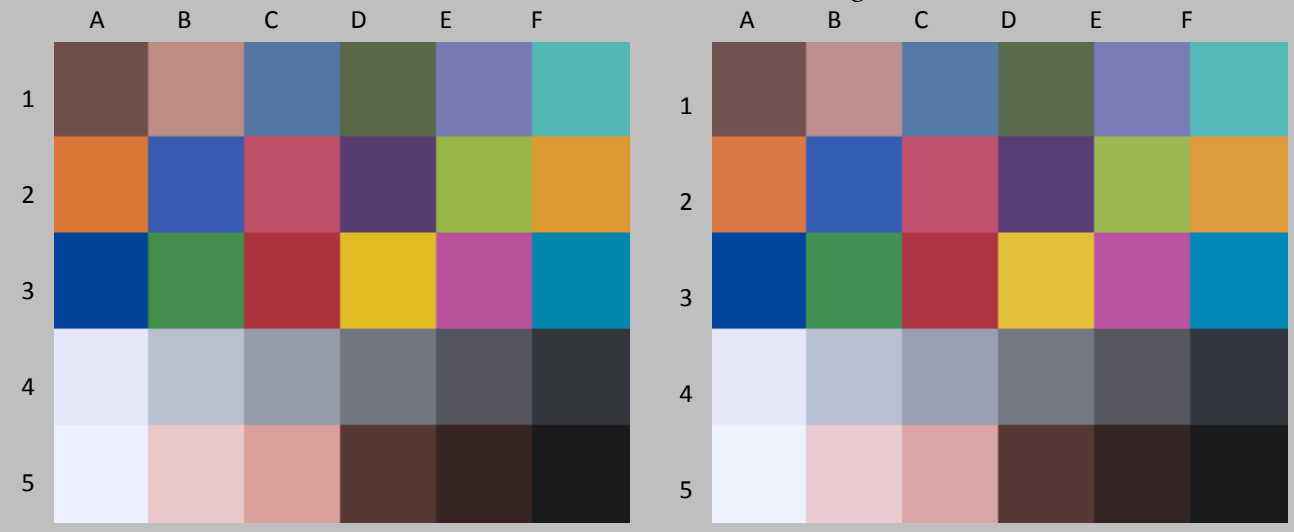
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	94.8	1.6	37.3	38.1	13.7	14.0	8.3	7.0
B1	Light Skin	88.0	3.2	63.0	63.7	18.4	18.3	10.9	7.9
C1	Blue sky	97.9	1.5	48.6	49.7	-3.9	-3.9	-27.2	-28.2
D1	Foliage	94.0	1.9	41.9	42.7	-11.2	-11.4	16.5	14.8
E1	blue flower	97.8	1.4	53.0	53.8	8.7	9.1	-30.6	-31.7
F1	bluish green	94.6	2.4	68.1	69.0	-30.9	-30.2	-7.3	-9.4
A1	orange	94.6	3.9	60.3	61.0	36.5	35.7	51.2	47.4
B2	purplish blue	99.7	1.2	39.4	40.3	9.5	9.2	-50.3	-50.9
C2	moderate red	95.3	2.8	49.6	50.4	47.0	46.7	10.0	7.3
D2	purple	97.7	1.4	30.5	31.2	20.4	20.7	-25.4	-26.6
E2	yellow green	94.7	3.6	69.8	70.6	-22.0	-22.5	51.7	48.3
F2	orange yellow	94.2	4.4	68.7	69.5	19.9	18.6	62.4	58.3
A3	blue	99.0	1.3	29.4	30.1	10.4	10.1	-53.5	-54.5
B3	green	95.0	2.9	52.9	53.9	-35.3	-35.6	26.8	24.1
C3	red	96.1	2.7	40.9	41.4	49.9	49.9	21.9	19.3
D3	yellow	95.2	4.1	77.6	78.5	5.4	4.0	73.0	69.2
E3	magenta	98.8	1.4	50.6	51.4	48.9	49.0	-20.4	-21.5
F3	cyan	98.1	1.6	50.9	51.9	-21.8	-21.8	-32.3	-33.5
A4	white	100.0	0.4	91.7	92.0	1.9	1.7	-8.8	-8.8
B4	neutral 8	96.8	1.1	77.3	78.0	0.3	-0.1	-8.9	-9.7
C4	neutral 6.5	93.6	1.4	64.2	65.0	0.4	0.7	-8.5	-9.6
D4	neutral 5	91.3	1.6	49.3	50.1	0.4	0.3	-5.4	-6.7
E4	neutral 3.5	94.2	1.4	36.3	37.1	1.1	1.2	-5.1	-6.2
F4	black	97.8	0.9	22.4	22.9	0.0	0.0	-4.4	-5.1
A5	paper white	99.5	0.6	95.3	95.6	1.6	1.3	-10.4	-9.9
B5	Skin highlight L*=88	86.0	2.6	83.6	84.2	13.5	13.1	4.1	1.7
C5	Skin highlight L* =75	89.0	3.3	71.7	72.7	20.7	20.4	11.9	8.8
D5	Skin shadow L*=28	96.9	1.1	26.6	27.1	13.7	13.9	8.7	7.7
E5	Skin shadow L*=13	100.0	0.3	15.9	16.0	7.7	7.9	4.6	4.4
F5	Maximum Black	100.0	0.3	9.2	8.9	0.4	0.4	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	95.7	97.4	1.9
Worst 10% (3 lowest scoring patches)	87.7	94.0	4.1

20 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

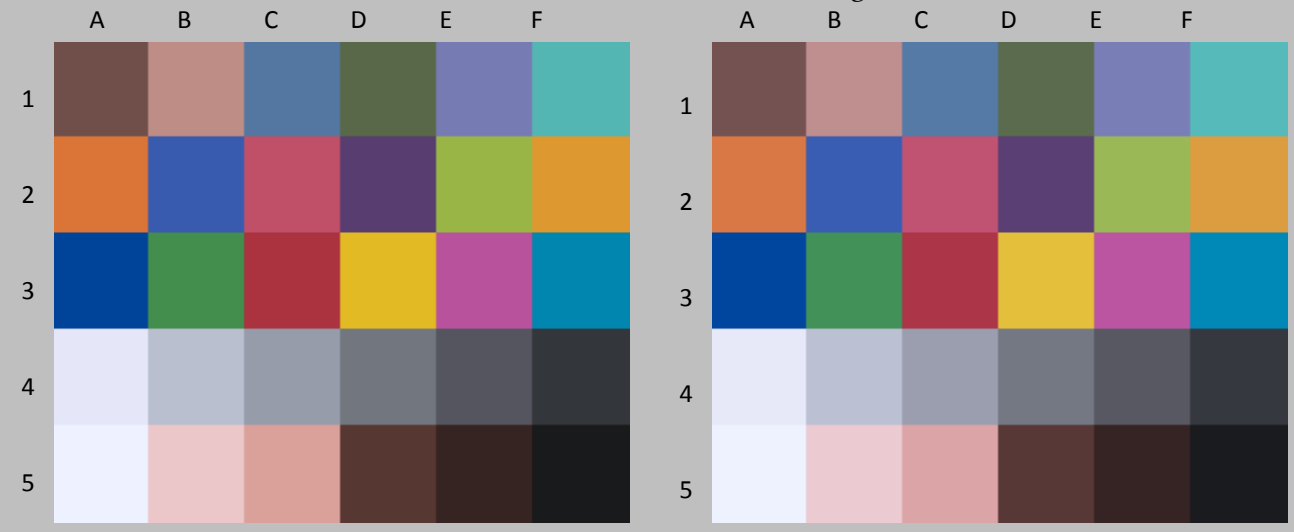
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	92.4	2.0	37.3	38.2	13.7	14.1	8.3	6.7
B1	Light Skin	85.4	3.7	63.0	63.8	18.4	18.4	10.9	7.3
C1	Blue sky	97.6	1.7	48.6	49.8	-3.9	-3.9	-27.2	-28.3
D1	Foliage	91.8	2.3	41.9	42.8	-11.2	-11.4	16.5	14.3
E1	blue flower	97.8	1.5	53.0	53.9	8.7	9.3	-30.6	-31.6
F1	bluish green	93.0	3.0	68.1	69.2	-30.9	-30.0	-7.3	-9.9
A1	orange	93.0	5.0	60.3	61.2	36.5	35.8	51.2	46.4
B2	purplish blue	99.8	1.2	39.4	40.5	9.5	9.2	-50.3	-50.8
C2	moderate red	93.7	3.6	49.6	50.5	47.0	47.4	10.0	6.5
D2	purple	97.9	1.5	30.5	31.3	20.4	20.8	-25.4	-26.6
E2	yellow green	93.1	4.5	69.8	70.8	-22.0	-22.4	51.7	47.4
F2	orange yellow	92.6	5.5	68.7	69.7	19.9	18.5	62.4	57.2
A3	blue	99.1	1.3	29.4	30.2	10.4	10.0	-53.5	-54.4
B3	green	93.1	3.7	52.9	54.1	-35.3	-35.5	26.8	23.2
C3	red	95.3	3.1	40.9	41.5	49.9	50.0	21.9	18.9
D3	yellow	93.9	5.1	77.6	78.7	5.4	3.9	73.0	68.2
E3	magenta	99.0	1.4	50.6	51.5	48.9	48.9	-20.4	-21.4
F3	cyan	97.5	1.8	50.9	52.0	-21.8	-21.7	-32.3	-33.8
A4	white	100.0	0.6	91.7	92.2	1.9	1.8	-8.8	-8.6
B4	neutral 8	97.9	1.1	77.3	78.1	0.3	-0.1	-8.9	-9.6
C4	neutral 6.5	93.1	1.5	64.2	65.1	0.4	0.8	-8.5	-9.6
D4	neutral 5	89.3	1.8	49.3	50.2	0.4	0.4	-5.4	-6.9
E4	neutral 3.5	92.4	1.6	36.3	37.3	1.1	1.2	-5.1	-6.3
F4	black	96.6	1.0	22.4	23.0	0.0	0.0	-4.4	-5.2
A5	paper white	95.7	1.0	95.3	95.8	1.6	1.3	-10.4	-9.5
B5	Skin highlight L*=88	81.7	3.2	83.6	84.4	13.5	13.3	4.1	1.1
C5	Skin highlight L* =75	86.1	4.0	71.7	72.9	20.7	20.5	11.9	8.1
D5	Skin shadow L*=28	95.5	1.4	26.6	27.1	13.7	14.0	8.7	7.5
E5	Skin shadow L*=13	100.0	0.4	15.9	16.1	7.7	8.0	4.6	4.5
F5	Maximum Black	100.0	0.2	9.2	9.2	0.4	0.4	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	94.5	97.2	2.3
Worst 10% (3 lowest scoring patches)	84.4	93.6	5.2

30 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

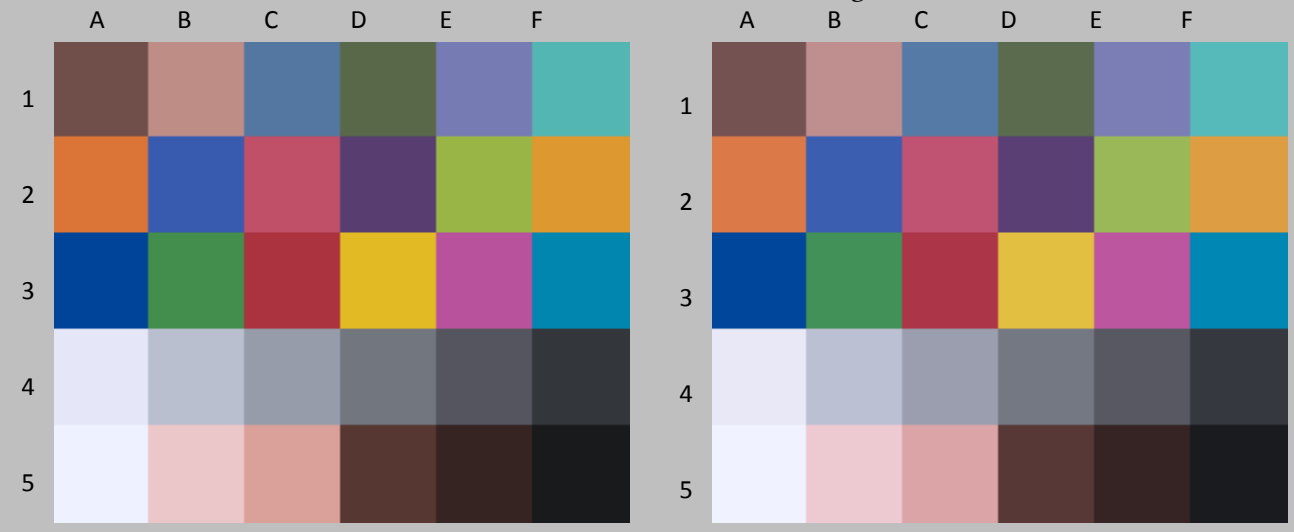
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	90.9	2.3	37.3	38.4	13.7	14.1	8.3	6.4
B1	Light Skin	83.6	4.1	63.0	63.9	18.4	18.6	10.9	6.9
C1	Blue sky	98.7	1.5	48.6	49.9	-3.9	-3.8	-27.2	-28.0
D1	Foliage	89.2	2.9	41.9	43.0	-11.2	-11.2	16.5	13.8
E1	blue flower	99.5	1.2	53.0	54.0	8.7	9.2	-30.6	-31.0
F1	bluish green	91.7	3.4	68.1	69.3	-30.9	-29.7	-7.3	-10.2
A1	orange	90.9	6.3	60.3	61.3	36.5	35.7	51.2	45.0
B2	purplish blue	99.7	1.4	39.4	40.6	9.5	8.9	-50.3	-50.1
C2	moderate red	93.1	3.9	49.6	50.6	47.0	47.3	10.0	6.2
D2	purple	99.1	1.3	30.5	31.6	20.4	20.4	-25.4	-26.2
E2	yellow green	90.3	6.0	69.8	70.8	-22.0	-22.3	51.7	45.8
F2	orange yellow	90.5	6.8	68.7	69.7	19.9	18.4	62.4	55.8
A3	blue	99.5	1.3	29.4	30.4	10.4	9.7	-53.5	-53.6
B3	green	90.7	4.8	52.9	54.2	-35.3	-35.2	26.8	22.2
C3	red	94.1	3.8	40.9	41.6	49.9	49.8	21.9	18.2
D3	yellow	91.7	6.7	77.6	78.8	5.4	3.8	73.0	66.6
E3	magenta	99.9	1.1	50.6	51.6	48.9	48.6	-20.4	-20.9
F3	cyan	97.9	1.7	50.9	52.0	-21.8	-21.6	-32.3	-33.6
A4	white	97.1	0.9	91.7	92.1	1.9	1.7	-8.8	-8.1
B4	neutral 8	98.5	1.0	77.3	78.1	0.3	-0.1	-8.9	-9.5
C4	neutral 6.5	95.5	1.4	64.2	65.2	0.4	1.0	-8.5	-9.2
D4	neutral 5	89.6	1.8	49.3	50.3	0.4	0.4	-5.4	-6.9
E4	neutral 3.5	92.9	1.7	36.3	37.6	1.1	1.2	-5.1	-6.3
F4	black	97.0	1.2	22.4	23.3	0.0	0.0	-4.4	-5.1
A5	paper white	89.1	1.7	95.3	95.6	1.6	1.1	-10.4	-8.8
B5	Skin highlight L*=88	78.4	3.6	83.6	84.4	13.5	13.4	4.1	0.6
C5	Skin highlight L* =75	83.4	4.7	71.7	73.1	20.7	20.5	11.9	7.5
D5	Skin shadow L*=28	93.9	1.7	26.6	27.5	13.7	13.9	8.7	7.2
E5	Skin shadow L*=13	100.0	0.8	15.9	16.6	7.7	7.9	4.6	4.3
F5	Maximum Black	100.0	0.6	9.2	9.7	0.4	0.5	-1.5	-1.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	93.6	97.0	2.7
Worst 10% (3 lowest scoring patches)	81.8	93.6	6.6

40 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

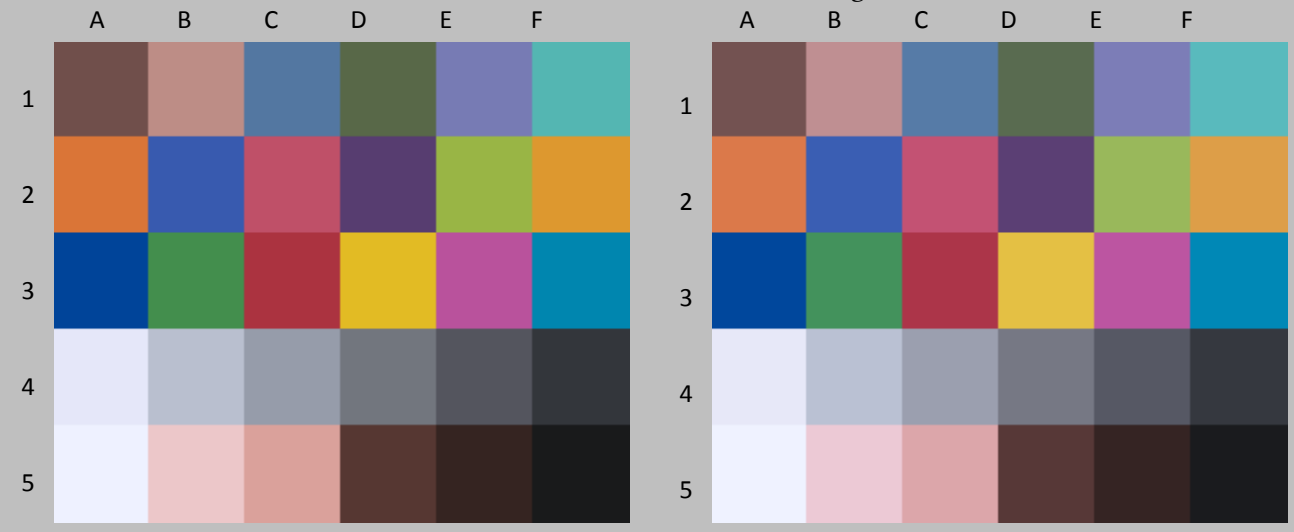
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	90.1	2.4	37.3	38.4	13.7	14.2	8.3	6.3
B1	Light Skin	82.9	4.3	63.0	64.0	18.4	18.8	10.9	6.8
C1	Blue sky	99.5	1.4	48.6	49.9	-3.9	-3.9	-27.2	-27.8
D1	Foliage	87.7	3.2	41.9	43.1	-11.2	-11.1	16.5	13.5
E1	blue flower	99.7	1.3	53.0	54.1	8.7	9.3	-30.6	-30.3
F1	bluish green	91.3	3.5	68.1	69.5	-30.9	-29.7	-7.3	-10.4
A1	orange	89.3	7.3	60.3	61.4	36.5	35.7	51.2	44.0
B2	purplish blue	98.5	1.8	39.4	40.6	9.5	8.6	-50.3	-49.4
C2	moderate red	92.6	4.2	49.6	50.7	47.0	47.3	10.0	6.0
D2	purple	99.8	1.2	30.5	31.6	20.4	20.4	-25.4	-26.0
E2	yellow green	88.6	7.0	69.8	70.9	-22.0	-22.2	51.7	44.8
F2	orange yellow	88.6	8.1	68.7	69.9	19.9	18.5	62.4	54.5
A3	blue	98.8	1.5	29.4	30.4	10.4	9.3	-53.5	-53.3
B3	green	89.5	5.3	52.9	54.2	-35.3	-35.0	26.8	21.7
C3	red	93.6	4.1	40.9	41.7	49.9	50.0	21.9	18.0
D3	yellow	90.1	7.9	77.6	79.0	5.4	3.8	73.0	65.4
E3	magenta	100.0	1.1	50.6	51.6	48.9	48.4	-20.4	-20.4
F3	cyan	98.6	1.5	50.9	52.0	-21.8	-21.5	-32.3	-33.3
A4	white	85.3	1.9	91.7	92.0	1.9	1.5	-8.8	-6.9
B4	neutral 8	99.5	0.9	77.3	78.0	0.3	-0.3	-8.9	-8.9
C4	neutral 6.5	98.3	1.3	64.2	65.2	0.4	1.0	-8.5	-8.6
D4	neutral 5	90.6	1.7	49.3	50.3	0.4	0.5	-5.4	-6.8
E4	neutral 3.5	93.3	1.7	36.3	37.5	1.1	1.2	-5.1	-6.2
F4	black	96.3	1.3	22.4	23.3	0.0	0.1	-4.4	-5.2
A5	paper white	76.8	2.9	95.3	95.5	1.6	0.9	-10.4	-7.5
B5	Skin highlight L*=88	77.9	3.7	83.6	84.3	13.5	13.6	4.1	0.5
C5	Skin highlight L* =75	82.3	4.9	71.7	73.1	20.7	20.6	11.9	7.2
D5	Skin shadow L*=28	92.6	1.9	26.6	27.4	13.7	13.9	8.7	7.0
E5	Skin shadow L*=13	100.0	0.7	15.9	16.4	7.7	8.0	4.6	4.2
F5	Maximum Black	100.0	0.5	9.2	9.7	0.4	0.4	-1.5	-1.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	92.4	96.8	3.0
Worst 10% (3 lowest scoring patches)	79.0	93.2	7.8

50 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

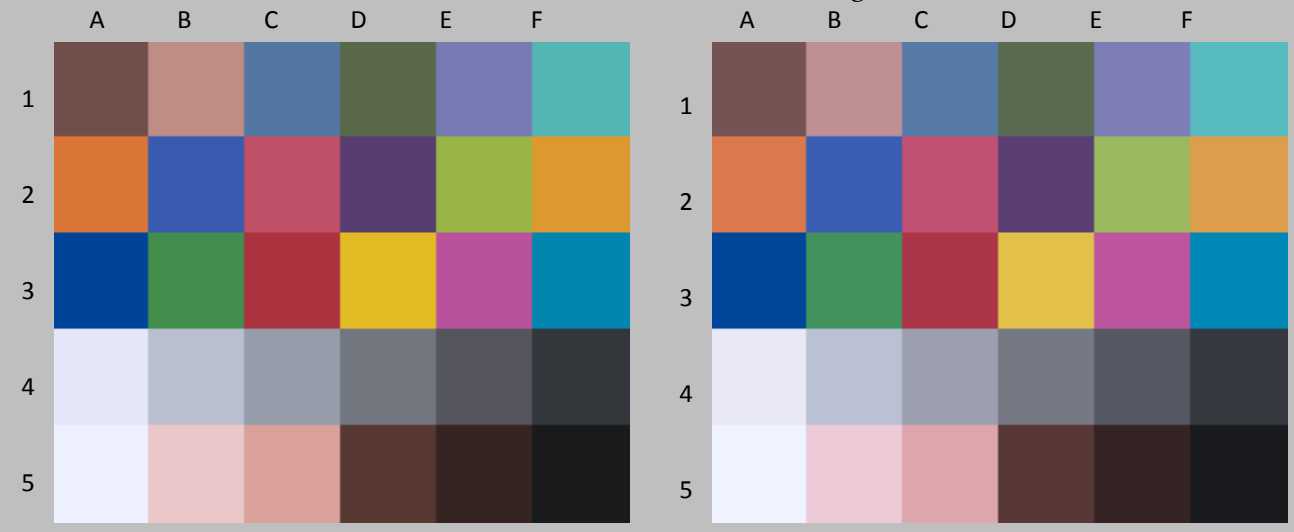
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	87.1	2.9	37.3	38.6	13.7	14.3	8.3	5.8
B1	Light Skin	78.4	5.3	63.0	64.2	18.4	19.0	10.9	5.9
C1	Blue sky	97.7	1.8	48.6	50.1	-3.9	-3.7	-27.2	-28.3
D1	Foliage	85.3	3.6	41.9	43.1	-11.2	-11.1	16.5	13.0
E1	blue flower	99.0	1.6	53.0	54.3	8.7	9.5	-30.6	-30.6
F1	bluish green	88.0	4.6	68.1	69.6	-30.9	-29.2	-7.3	-11.3
A1	orange	87.5	8.5	60.3	61.5	36.5	35.7	51.2	42.9
B2	purplish blue	99.3	1.6	39.4	40.7	9.5	8.8	-50.3	-49.9
C2	moderate red	91.0	5.0	49.6	50.8	47.0	47.6	10.0	5.3
D2	purple	98.6	1.5	30.5	31.7	20.4	20.6	-25.4	-26.4
E2	yellow green	86.2	8.4	69.8	71.1	-22.0	-22.1	51.7	43.5
F2	orange yellow	86.5	9.5	68.7	70.0	19.9	18.3	62.4	53.2
A3	blue	99.1	1.5	29.4	30.5	10.4	9.4	-53.5	-53.5
B3	green	87.3	6.3	52.9	54.4	-35.3	-35.0	26.8	20.7
C3	red	92.3	4.8	40.9	41.7	49.9	50.1	21.9	17.3
D3	yellow	87.9	9.5	77.6	79.1	5.4	3.6	73.0	63.8
E3	magenta	100.0	1.2	50.6	51.7	48.9	48.6	-20.4	-20.7
F3	cyan	97.1	2.0	50.9	52.1	-21.8	-21.2	-32.3	-33.8
A4	white	93.2	1.2	91.7	92.1	1.9	1.8	-8.8	-7.7
B4	neutral 8	97.7	1.1	77.3	78.2	0.3	-0.1	-8.9	-9.6
C4	neutral 6.5	94.0	1.7	64.2	65.5	0.4	1.3	-8.5	-9.0
D4	neutral 5	85.6	2.2	49.3	50.5	0.4	0.6	-5.4	-7.2
E4	neutral 3.5	90.0	2.0	36.3	37.7	1.1	1.3	-5.1	-6.6
F4	black	94.4	1.5	22.4	23.4	0.0	0.1	-4.4	-5.4
A5	paper white	82.0	2.4	95.3	95.6	1.6	1.1	-10.4	-8.0
B5	Skin highlight L*=88	67.5	5.2	83.6	84.4	13.5	13.9	4.1	-1.0
C5	Skin highlight L* =75	76.7	6.3	71.7	73.4	20.7	20.7	11.9	5.9
D5	Skin shadow L*=28	91.3	2.2	26.6	27.6	13.7	14.0	8.7	6.8
E5	Skin shadow L*=13	100.0	0.8	15.9	16.6	7.7	8.0	4.6	4.2
F5	Maximum Black	100.0	0.5	9.2	9.6	0.4	0.5	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	90.7	96.3	3.6
Worst 10% (3 lowest scoring patches)	74.2	92.3	9.1

60 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

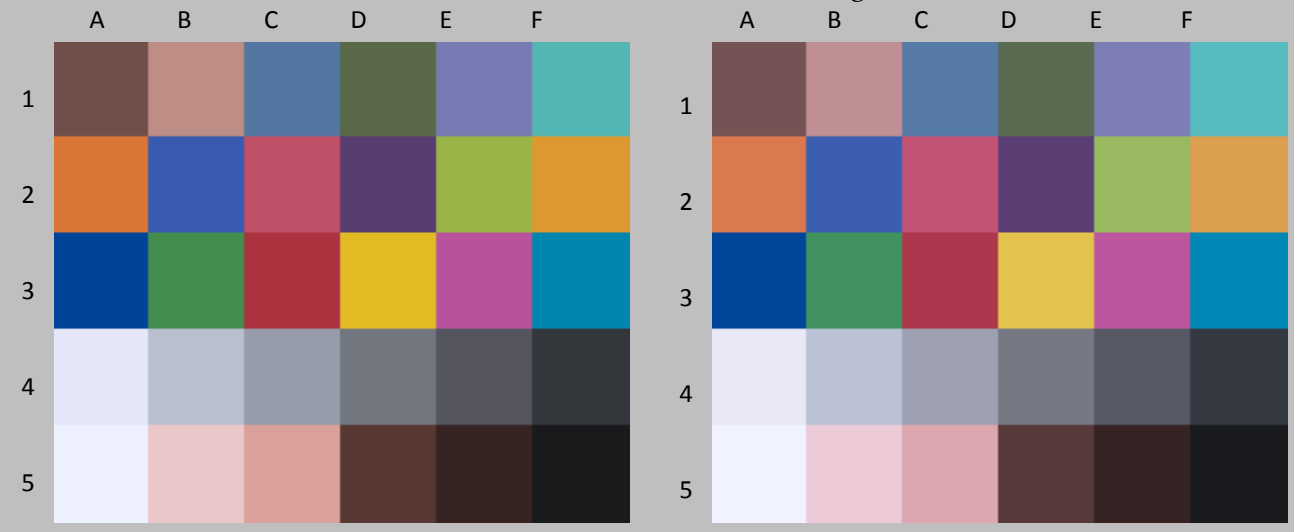
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	85.5	3.2	37.3	38.6	13.7	14.3	8.3	5.6
B1	Light Skin	75.8	5.8	63.0	64.3	18.4	19.2	10.9	5.3
C1	Blue sky	97.7	1.9	48.6	50.1	-3.9	-3.7	-27.2	-28.3
D1	Foliage	82.8	4.1	41.9	43.1	-11.2	-11.0	16.5	12.5
E1	blue flower	98.9	1.7	53.0	54.4	8.7	9.5	-30.6	-30.3
F1	bluish green	86.1	5.2	68.1	69.7	-30.9	-29.0	-7.3	-11.9
A1	orange	85.6	9.6	60.3	61.5	36.5	35.8	51.2	41.7
B2	purplish blue	98.9	1.7	39.4	40.7	9.5	8.7	-50.3	-49.6
C2	moderate red	90.2	5.3	49.6	50.7	47.0	47.8	10.0	4.9
D2	purple	98.9	1.5	30.5	31.6	20.4	20.8	-25.4	-26.2
E2	yellow green	84.3	9.4	69.8	71.2	-22.0	-22.0	51.7	42.4
F2	orange yellow	84.1	11.0	68.7	70.1	19.9	18.3	62.4	51.6
A3	blue	98.8	1.5	29.4	30.4	10.4	9.3	-53.5	-53.4
B3	green	85.6	7.1	52.9	54.5	-35.3	-34.9	26.8	19.9
C3	red	91.6	5.1	40.9	41.7	49.9	50.2	21.9	16.9
D3	yellow	85.7	11.1	77.6	79.3	5.4	3.5	73.0	62.2
E3	magenta	100.0	1.2	50.6	51.7	48.9	48.6	-20.4	-20.5
F3	cyan	97.2	2.0	50.9	52.1	-21.8	-21.2	-32.3	-33.8
A4	white	90.8	1.5	91.7	92.2	1.9	1.7	-8.8	-7.4
B4	neutral 8	97.3	1.2	77.3	78.2	0.3	-0.1	-8.9	-9.6
C4	neutral 6.5	93.7	1.8	64.2	65.6	0.4	1.4	-8.5	-8.9
D4	neutral 5	84.9	2.3	49.3	50.5	0.4	0.7	-5.4	-7.3
E4	neutral 3.5	88.5	2.1	36.3	37.7	1.1	1.3	-5.1	-6.7
F4	black	93.3	1.6	22.4	23.4	0.0	0.1	-4.4	-5.5
A5	paper white	77.6	2.9	95.3	95.7	1.6	1.0	-10.4	-7.6
B5	Skin highlight L*=88	62.6	5.9	83.6	84.5	13.5	14.1	4.1	-1.6
C5	Skin highlight L* =75	73.3	7.1	71.7	73.5	20.7	20.8	11.9	5.1
D5	Skin shadow L*=28	89.2	2.5	26.6	27.6	13.7	14.1	8.7	6.5
E5	Skin shadow L*=13	99.2	0.9	15.9	16.6	7.7	8.1	4.6	4.1
F5	Maximum Black	100.0	0.7	9.2	9.9	0.4	0.5	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	89.3	96.1	4.0
Worst 10% (3 lowest scoring patches)	70.5	92.2	10.6

70 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

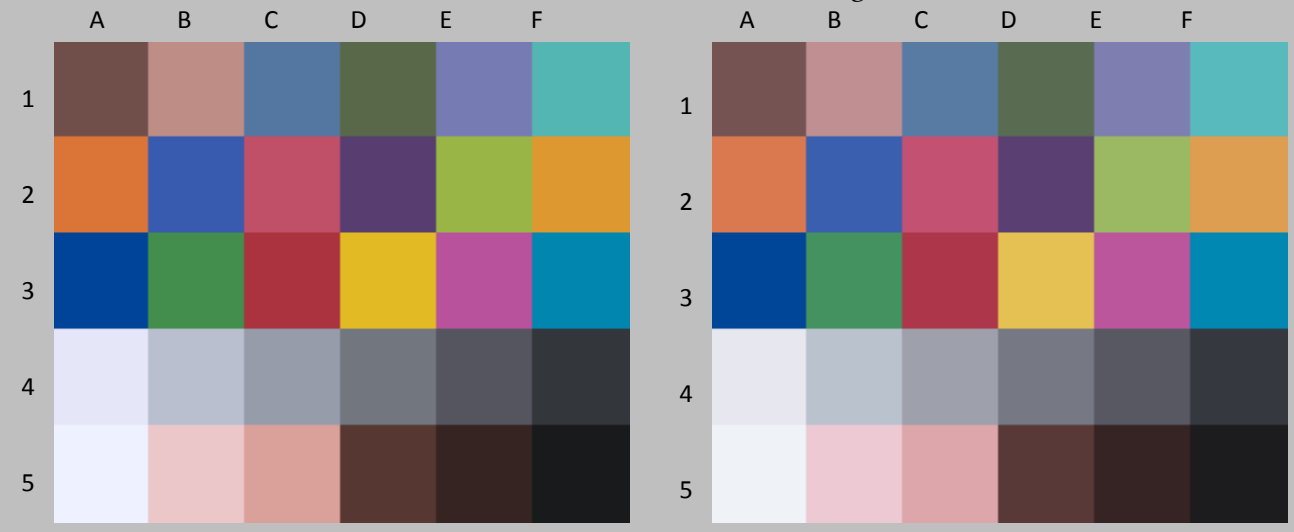
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	83.5	3.5	37.3	38.8	13.7	14.4	8.3	5.3
B1	Light Skin	73.5	6.3	63.0	64.5	18.4	19.3	10.9	4.9
C1	Blue sky	97.6	2.0	48.6	50.2	-3.9	-3.6	-27.2	-28.3
D1	Foliage	80.8	4.6	41.9	43.3	-11.2	-10.9	16.5	12.1
E1	blue flower	98.6	1.9	53.0	54.6	8.7	9.5	-30.6	-30.1
F1	bluish green	84.3	5.8	68.1	69.9	-30.9	-28.9	-7.3	-12.4
A1	orange	83.8	10.8	60.3	61.7	36.5	35.8	51.2	40.6
B2	purplish blue	98.4	2.0	39.4	40.8	9.5	8.6	-50.3	-49.4
C2	moderate red	89.3	5.8	49.6	50.9	47.0	47.8	10.0	4.5
D2	purple	98.9	1.6	30.5	31.8	20.4	20.6	-25.4	-26.2
E2	yellow green	81.6	11.0	69.8	71.5	-22.0	-22.0	51.7	40.9
F2	orange yellow	82.0	12.4	68.7	70.3	19.9	18.2	62.4	50.2
A3	blue	98.5	1.8	29.4	30.6	10.4	9.1	-53.5	-53.1
B3	green	83.4	8.0	52.9	54.7	-35.3	-34.8	26.8	19.0
C3	red	90.7	5.6	40.9	41.8	49.9	50.3	21.9	16.4
D3	yellow	83.5	12.7	77.6	79.5	5.4	3.4	73.0	60.5
E3	magenta	100.0	1.3	50.6	51.9	48.9	48.5	-20.4	-20.3
F3	cyan	97.3	2.0	50.9	52.3	-21.8	-21.1	-32.3	-33.7
A4	white	88.1	1.7	91.7	92.2	1.9	1.7	-8.8	-7.2
B4	neutral 8	97.5	1.2	77.3	78.3	0.3	-0.1	-8.9	-9.6
C4	neutral 6.5	94.7	1.9	64.2	65.8	0.4	1.3	-8.5	-8.8
D4	neutral 5	84.1	2.4	49.3	50.7	0.4	0.7	-5.4	-7.4
E4	neutral 3.5	88.2	2.3	36.3	37.9	1.1	1.4	-5.1	-6.7
F4	black	92.8	1.7	22.4	23.6	0.0	0.1	-4.4	-5.5
A5	paper white	73.4	3.3	95.3	95.7	1.6	0.9	-10.4	-7.1
B5	Skin highlight L*=88	59.2	6.4	83.6	84.6	13.5	14.2	4.1	-2.1
C5	Skin highlight L* =75	70.2	7.9	71.7	73.6	20.7	20.9	11.9	4.3
D5	Skin shadow L*=28	88.5	2.6	26.6	27.8	13.7	14.1	8.7	6.4
E5	Skin shadow L*=13	98.7	0.9	15.9	16.6	7.7	8.1	4.6	4.1
F5	Maximum Black	100.0	0.8	9.2	10.0	0.4	0.4	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	88.0	95.7	4.4
Worst 10% (3 lowest scoring patches)	67.6	91.6	12.1

80 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

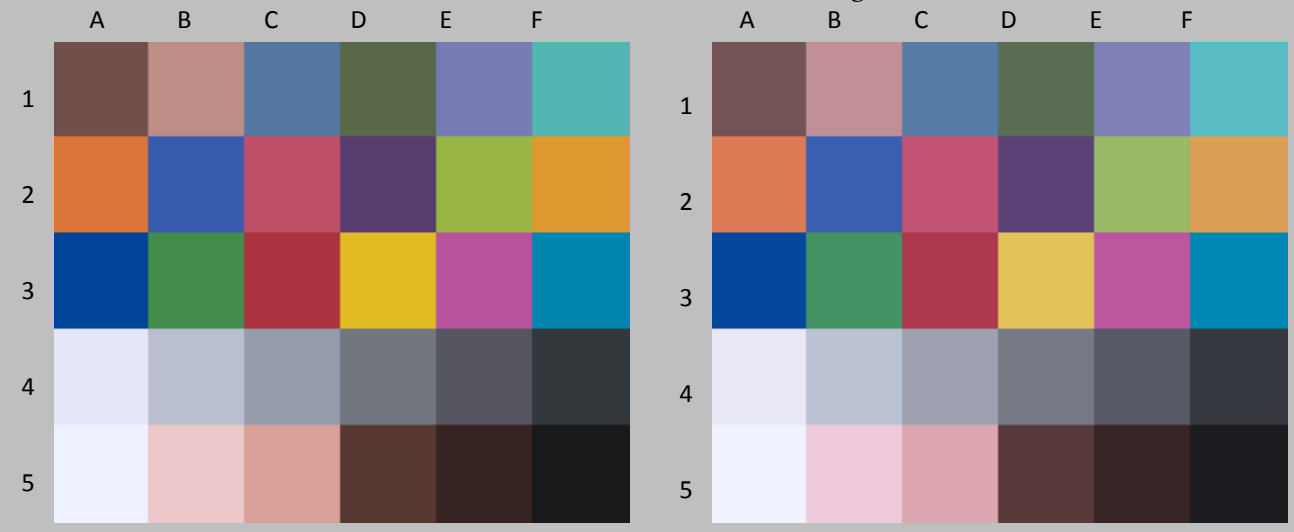
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	87.5	2.9	37.3	38.7	13.7	14.3	8.3	5.9
B1	Light Skin	79.3	5.1	63.0	64.5	18.4	19.4	10.9	6.1
C1	Blue sky	98.8	1.6	48.6	50.0	-3.9	-4.1	-27.2	-26.4
D1	Foliage	82.1	4.3	41.9	43.2	-11.2	-10.7	16.5	12.4
E1	blue flower	91.6	3.5	53.0	54.5	8.7	8.9	-30.6	-27.4
F1	bluish green	88.5	4.4	68.1	69.7	-30.9	-29.0	-7.3	-11.0
A1	orange	83.1	11.2	60.3	61.6	36.5	35.9	51.2	40.1
B2	purplish blue	93.4	4.1	39.4	40.6	9.5	7.3	-50.3	-47.1
C2	moderate red	91.6	4.7	49.6	50.9	47.0	47.7	10.0	5.6
D2	purple	99.4	1.4	30.5	31.7	20.4	20.1	-25.4	-24.8
E2	yellow green	80.5	11.6	69.8	71.4	-22.0	-21.3	51.7	40.3
F2	orange yellow	80.6	13.3	68.7	70.3	19.9	18.5	62.4	49.3
A3	blue	94.9	3.4	29.4	30.4	10.4	8.0	-53.5	-51.4
B3	green	83.1	8.2	52.9	54.5	-35.3	-34.3	26.8	18.9
C3	red	91.5	5.2	40.9	41.8	49.9	50.4	21.9	16.9
D3	yellow	81.9	13.9	77.6	79.4	5.4	3.8	73.0	59.3
E3	magenta	95.8	3.0	50.6	51.7	48.9	47.8	-20.4	-17.9
F3	cyan	99.4	1.3	50.9	52.0	-21.8	-21.8	-32.3	-31.6
A4	white	50.4	5.2	91.7	91.8	1.9	1.2	-8.8	-3.6
B4	neutral 8	81.5	2.3	77.3	77.9	0.3	-0.6	-8.9	-6.8
C4	neutral 6.5	82.3	2.7	64.2	65.7	0.4	1.1	-8.5	-6.4
D4	neutral 5	99.2	1.4	49.3	50.5	0.4	0.6	-5.4	-5.9
E4	neutral 3.5	98.2	1.7	36.3	37.8	1.1	1.2	-5.1	-5.8
F4	black	98.0	1.3	22.4	23.5	0.0	0.1	-4.4	-5.0
A5	paper white	36.3	7.2	95.3	95.2	1.6	0.4	-10.4	-3.3
B5	Skin highlight L*=88	77.1	3.8	83.6	84.3	13.5	14.0	4.1	0.4
C5	Skin highlight L* =75	75.3	6.6	71.7	73.3	20.7	20.7	11.9	5.5
D5	Skin shadow L*=28	90.1	2.4	26.6	27.7	13.7	14.1	8.7	6.6
E5	Skin shadow L*=13	99.0	0.8	15.9	16.5	7.7	8.3	4.6	4.3
F5	Maximum Black	100.0	0.8	9.2	9.9	0.4	0.5	-1.5	-1.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	86.3	95.7	4.6
Worst 10% (3 lowest scoring patches)	54.0	92.8	12.9

90 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

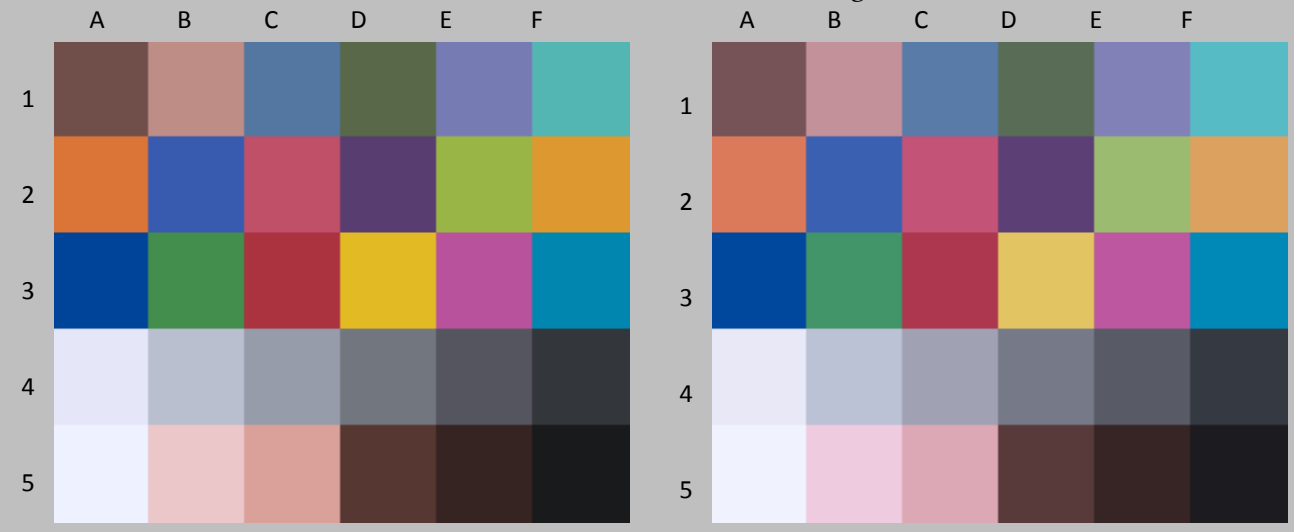
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	81.5	3.9	37.3	38.9	13.7	14.5	8.3	4.9
B1	Light Skin	69.7	7.2	63.0	64.7	18.4	19.7	10.9	4.1
C1	Blue sky	98.7	1.9	48.6	50.3	-3.9	-3.6	-27.2	-28.0
D1	Foliage	77.6	5.2	41.9	43.5	-11.2	-10.8	16.5	11.5
E1	blue flower	96.5	2.4	53.0	54.8	8.7	9.4	-30.6	-29.1
F1	bluish green	80.5	7.0	68.1	70.1	-30.9	-28.3	-7.3	-13.5
A1	orange	79.6	13.4	60.3	61.8	36.5	35.8	51.2	37.9
B2	purplish blue	96.5	2.8	39.4	41.0	9.5	8.1	-50.3	-48.5
C2	moderate red	88.0	6.4	49.6	51.0	47.0	47.8	10.0	3.8
D2	purple	100.0	1.6	30.5	32.0	20.4	20.4	-25.4	-25.8
E2	yellow green	76.3	14.0	69.8	71.7	-22.0	-21.4	51.7	37.9
F2	orange yellow	76.8	15.8	68.7	70.6	19.9	18.3	62.4	46.8
A3	blue	97.0	2.5	29.4	30.7	10.4	8.6	-53.5	-52.4
B3	green	79.8	9.6	52.9	54.8	-35.3	-34.4	26.8	17.4
C3	red	89.3	6.4	40.9	41.9	49.9	50.3	21.9	15.6
D3	yellow	77.9	16.8	77.6	79.8	5.4	3.4	73.0	56.5
E3	magenta	99.0	1.7	50.6	52.0	48.9	48.2	-20.4	-19.6
F3	cyan	98.0	1.9	50.9	52.3	-21.8	-21.0	-32.3	-33.3
A4	white	83.6	2.1	91.7	92.2	1.9	1.8	-8.8	-6.8
B4	neutral 8	97.6	1.2	77.3	78.2	0.3	-0.1	-8.9	-9.6
C4	neutral 6.5	93.7	2.3	64.2	66.2	0.4	1.4	-8.5	-8.3
D4	neutral 5	85.1	2.5	49.3	50.9	0.4	0.9	-5.4	-7.2
E4	neutral 3.5	88.9	2.4	36.3	38.1	1.1	1.3	-5.1	-6.7
F4	black	93.6	1.7	22.4	23.7	0.0	0.2	-4.4	-5.5
A5	paper white	64.9	4.2	95.3	95.6	1.6	0.8	-10.4	-6.3
B5	Skin highlight L*=88	50.9	7.5	83.6	84.7	13.5	14.5	4.1	-3.3
C5	Skin highlight L* =75	63.2	9.5	71.7	73.8	20.7	20.9	11.9	2.7
D5	Skin shadow L*=28	86.7	3.0	26.6	27.9	13.7	14.2	8.7	6.1
E5	Skin shadow L*=13	98.8	1.0	15.9	16.7	7.7	8.2	4.6	4.2
F5	Maximum Black	100.0	1.0	9.2	10.1	0.4	0.6	-1.5	-1.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	85.7	95.0	5.3
Worst 10% (3 lowest scoring patches)	59.7	91.0	15.5

100 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

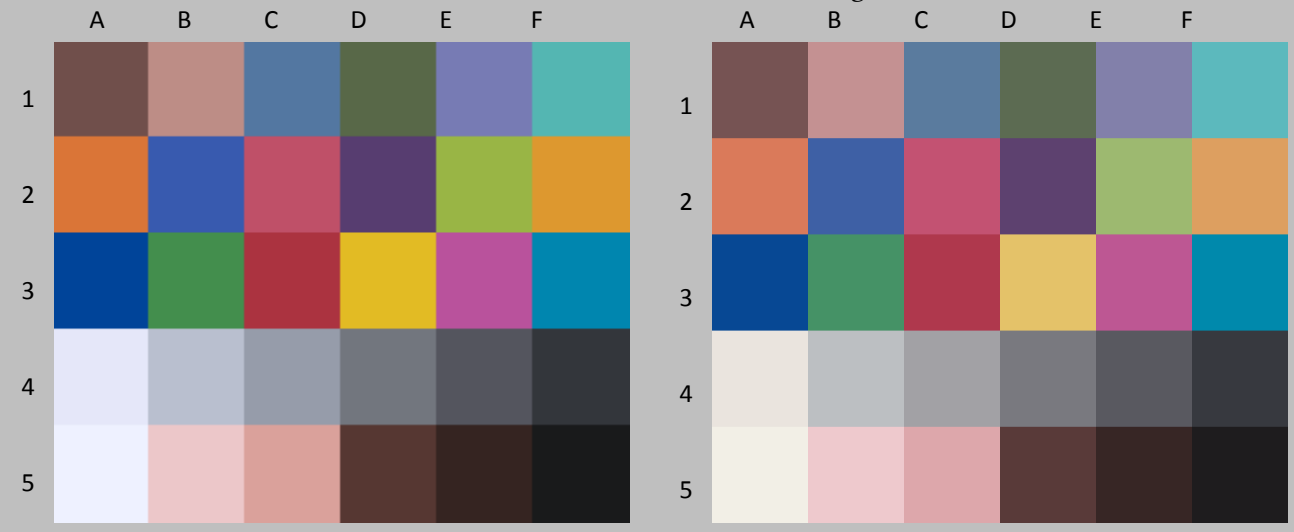
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	77.4	4.6	37.3	39.3	13.7	14.5	8.3	4.3
B1	Light Skin	62.9	8.7	63.0	65.1	18.4	20.0	10.9	2.7
C1	Blue sky	96.9	2.4	48.6	50.6	-3.9	-3.3	-27.2	-28.3
D1	Foliage	72.2	6.3	41.9	43.7	-11.2	-10.6	16.5	10.5
E1	blue flower	96.3	2.8	53.0	55.2	8.7	9.6	-30.6	-29.2
F1	bluish green	74.4	8.9	68.1	70.4	-30.9	-27.7	-7.3	-15.3
A1	orange	74.9	16.4	60.3	62.1	36.5	35.8	51.2	35.0
B2	purplish blue	96.9	2.8	39.4	41.2	9.5	8.3	-50.3	-48.6
C2	moderate red	85.6	7.6	49.6	51.3	47.0	48.0	10.0	2.7
D2	purple	99.8	1.8	30.5	32.1	20.4	20.6	-25.4	-26.0
E2	yellow green	70.1	17.5	69.8	72.2	-22.0	-21.0	51.7	34.4
F2	orange yellow	71.0	19.6	68.7	70.9	19.9	18.4	62.4	43.0
A3	blue	97.2	2.5	29.4	30.9	10.4	8.7	-53.5	-52.5
B3	green	74.9	11.9	52.9	55.1	-35.3	-34.1	26.8	15.2
C3	red	87.1	7.6	40.9	42.1	49.9	50.5	21.9	14.4
D3	yellow	71.5	21.5	77.6	80.3	5.4	3.3	73.0	51.7
E3	magenta	99.2	1.8	50.6	52.2	48.9	48.3	-20.4	-19.7
F3	cyan	96.8	2.4	50.9	52.6	-21.8	-20.6	-32.3	-33.6
A4	white	86.5	1.9	91.7	92.3	1.9	1.8	-8.8	-7.0
B4	neutral 8	92.0	1.7	77.3	78.4	0.3	0.1	-8.9	-10.2
C4	neutral 6.5	92.2	2.7	64.2	66.5	0.4	1.6	-8.5	-8.6
D4	neutral 5	80.3	3.0	49.3	51.1	0.4	1.2	-5.4	-7.6
E4	neutral 3.5	84.4	2.9	36.3	38.4	1.1	1.5	-5.1	-7.1
F4	black	90.7	2.0	22.4	23.9	0.0	0.2	-4.4	-5.7
A5	paper white	66.0	4.1	95.3	95.7	1.6	0.8	-10.4	-6.4
B5	Skin highlight L*=88	38.4	9.3	83.6	85.0	13.5	15.0	4.1	-5.0
C5	Skin highlight L* =75	54.2	11.7	71.7	74.2	20.7	21.2	11.9	0.5
D5	Skin shadow L*=28	83.6	3.5	26.6	28.1	13.7	14.3	8.7	5.6
E5	Skin shadow L*=13	97.6	1.2	15.9	16.9	7.7	8.3	4.6	4.1
F5	Maximum Black	100.0	1.2	9.2	10.4	0.4	0.6	-1.5	-1.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	82.4	94.2	6.4
Worst 10% (3 lowest scoring patches)	51.8	89.9	19.5

120 Megalux hours

Epson Stylus Pro 3800, Inkjetfly IMA24/36 V3, Costco, Kirkland Professional Glossy Inkjet Paper (item no: 503626), no additional coating



Original Print Colors before light exposure

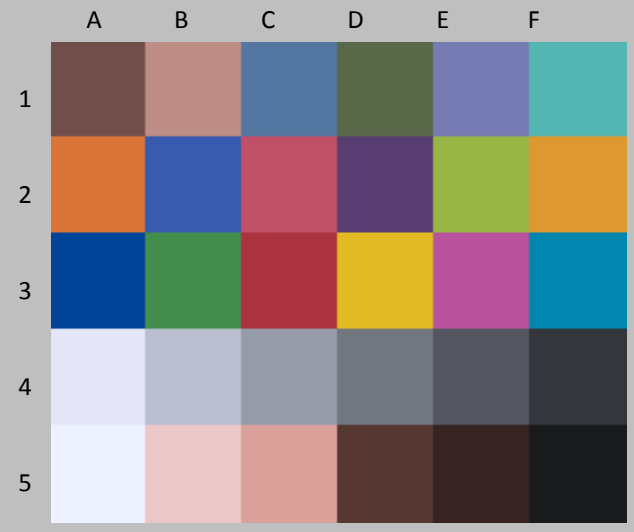
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	89.2	3.0	37.3	39.2	13.7	14.5	8.3	6.2
B1	Light Skin	82.1	4.8	63.0	65.1	18.4	20.0	10.9	6.9
C1	Blue sky	85.7	4.7	48.6	50.3	-3.9	-4.8	-27.2	-22.8
D1	Foliage	78.3	5.1	41.9	43.6	-11.2	-10.2	16.5	11.7
E1	blue flower	75.7	8.5	53.0	55.0	8.7	7.8	-30.6	-22.4
F1	bluish green	88.0	4.6	68.1	69.7	-30.9	-28.0	-7.3	-10.6
A1	orange	74.8	16.5	60.3	61.9	36.5	36.2	51.2	34.9
B2	purplish blue	83.5	9.0	39.4	40.8	9.5	5.3	-50.3	-42.4
C2	moderate red	93.0	4.1	49.6	51.1	47.0	47.5	10.0	6.2
D2	purple	90.9	3.8	30.5	32.1	20.4	19.5	-25.4	-22.1
E2	yellow green	69.0	18.0	69.8	71.9	-22.0	-19.4	51.7	34.0
F2	orange yellow	69.2	20.8	68.7	70.8	19.9	19.4	62.4	41.8
A3	blue	86.7	7.8	29.4	30.6	10.4	5.5	-53.5	-47.5
B3	green	75.2	11.6	52.9	54.8	-35.3	-33.0	26.8	15.6
C3	red	90.3	5.9	40.9	42.2	49.9	50.4	21.9	16.2
D3	yellow	68.5	23.7	77.6	80.1	5.4	4.5	73.0	49.4
E3	magenta	86.2	7.9	50.6	52.0	48.9	46.7	-20.4	-12.9
F3	cyan	88.8	5.0	50.9	52.1	-21.8	-22.6	-32.3	-27.5
A4	white	(25.2)	12.4	91.7	91.1	1.9	0.6	-8.8	3.5
B4	neutral 8	32.0	7.0	77.3	77.4	0.3	-0.9	-8.9	-2.1
C4	neutral 6.5	40.4	6.5	64.2	66.1	0.4	0.8	-8.5	-2.4
D4	neutral 5	82.6	2.7	49.3	50.8	0.4	0.9	-5.4	-3.3
E4	neutral 3.5	95.3	2.0	36.3	38.1	1.1	1.3	-5.1	-4.2
F4	black	100.0	1.6	22.4	23.9	0.0	0.1	-4.4	-4.1
A5	paper white	(39.9)	15.2	95.3	94.4	1.6	-0.4	-10.4	4.7
B5	Skin highlight L*=88	96.4	1.2	83.6	84.2	13.5	14.1	4.1	3.3
C5	Skin highlight L* =75	75.4	6.7	71.7	73.7	20.7	20.6	11.9	5.6
D5	Skin shadow L*=28	90.4	2.6	26.6	28.2	13.7	14.3	8.7	6.8
E5	Skin shadow L*=13	98.2	1.5	15.9	17.2	7.7	8.4	4.6	4.4
F5	Maximum Black	100.0	1.5	9.2	10.7	0.4	0.7	-1.5	-1.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	74.0	93.6	7.5
Worst 10% (3 lowest scoring patches)	(11.0)	88.2	20.8

140 Megalux hours

This test had been completed - no more updates



Original Print Colors before light exposure



Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin			37.3		13.7		8.3	
B1	Light Skin			63.0		18.4		10.9	
C1	Blue sky			48.6		-3.9		-27.2	
D1	Foliage			41.9		-11.2		16.5	
E1	blue flower			53.0		8.7		-30.6	
F1	bluish green			68.1		-30.9		-7.3	
A1	orange			60.3		36.5		51.2	
B2	purplish blue			39.4		9.5		-50.3	
C2	moderate red			49.6		47.0		10.0	
D2	purple			30.5		20.4		-25.4	
E2	yellow green			69.8		-22.0		51.7	
F2	orange yellow			68.7		19.9		62.4	
A3	blue			29.4		10.4		-53.5	
B3	green			52.9		-35.3		26.8	
C3	red			40.9		49.9		21.9	
D3	yellow			77.6		5.4		73.0	
E3	magenta			50.6		48.9		-20.4	
F3	cyan			50.9		-21.8		-32.3	
A4	white			91.7		1.9		-8.8	
B4	neutral 8			77.3		0.3		-8.9	
C4	neutral 6.5			64.2		0.4		-8.5	
D4	neutral 5			49.3		0.4		-5.4	
E4	neutral 3.5			36.3		1.1		-5.1	
F4	black			22.4		0.0		-4.4	
A5	paper white			95.3		1.6		-10.4	
B5	Skin highlight L*=88			83.6		13.5		4.1	
C5	Skin highlight L* =75			71.7		20.7		11.9	
D5	Skin shadow L*=28			26.6		13.7		8.7	
E5	Skin shadow L*=13			15.9		7.7		4.6	
F5	Maximum Black			9.2		0.4		-1.5	

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches			
Worst 10% (3 lowest scoring patches)			

160 Megalux hours