Aardenburg Imaging
& Archives

*Tested System:*
***ID#: 324***

Printer: Canon iPF8300

Inks/Colorants: Canon Lucia EX

Media: Moab Entrada Rag Natural 300gsm

Coating(s): no additional coating

## Sample set: AaI_20161115_SN001

Testing Status: 200 Megalux hours total light exposure
*Light Fade Testing is complete. Dark storage samples continue to be updated.*

## Conservation Display Ratings (CDR) Summary to Date:

**Sample(s) exposed to light, measured immediately**
*Lower limit:* 193 Megalux hours (for weakest 10% of the color patches)
*Upper limit:* >200 Megalux hours, testing is complete

**Light exposed samples measured after 3 to 4 years dark storage**
*Lower limit:* 193 Megalux hours – evaluation is ongoing
*Upper limit:* >200 Megalux hours – evaluation is ongoing

**Dark Storage control sample, no light exposure, measured after 4 years**
*Lower limit:* excellent condition, not exceeding lower CDR limit
*Upper limit:* excellent condition, not exceeding upper CDR limit

*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"**,

This report has been prepared for the exclusive use of members of Aardenburg Imaging & Archives. Members may share this information with other members, friends, colleagues, and individual clients. It may also be distributed to groups for educational purposes (classes, lectures, educational seminars. etc). However, all contents including but not limited to Conservation Display Ratings may not be posted to web sites and may not be reproduced or distributed for corporate research, marketing, or other promotional purposes without written permission from Aardenburg Imaging & Archives.

copyright ©2021

# Table of Contents


| | |
|---|---|
| **I Process Description ( Printer Inks, Media, etc.)** | **page 3** |
| Tone curve and gray scale neutrality | page 5 |
| **II Accelerated Light Exposure Test Results** | **Page 6** |
| Media Whitepoint stability during lightfade test | page 6 |
| I* Color and Tone Graph, Delta E graph | page 7 |
| 30 patch target color values (before and after) | pages 8-22 |
| **III Light Induced Low-intensity Staining/yellowing Test Results** | **page 23** |
| I* Color and Tone Summary Scores and Δb* plot for increasing exposure doses and dark storage times | pages 23-24 |
| 30 patch target L*a*b* values (before and after) | pages 25-41 |
| **IV Dark Storage Control Sample Test Results** | **page 42** |
| I* Color and Tone graph | page 42 |
| 30 patch target L*a*b* values (before and after) | pages 43-48 |
| **V Comments and Conclusions** | **page 43** |
| **Addenda** | **page 49** |
| Table to convert megalux hours to "years on display" | page 50 |
| About this report | page 51 |
| Conservation Display Rating Criteria | page 52 |

# Section I: Process Description

This section contains a description of the tested print process, typically comprised of an inkjet printer, a specific set of inks, and a specific choice of media. However, the test report may also describe other photographic and/or photomechanical printing processes such as conventional chromogenic color processes, alternative B&W processes, dye subimation, xerographic processes, etc., and the tested samples may also include additional coatings or laminates applied to the print surface at a later stage in the fabrication. This section may also contain illustrations and other documentation about the the process as well.

*Canon iPF8300, Canon Lucia EX, Moab Entrada Rag Natural 300gsm, no additional coating*

Moab Entrada Natural 300 gsm offers a classic fine art smooth matte finish, paper thickness/weight, and near-neutral media whitepoint color very similar to the renowned Hahnemuhle Photo Rag 308, yet unlike Photo Rag, it contains no optical brighteners. Dmax is not quite as high as some of the more modern multi-coated matte papers like Canson Rag Photographique. Nevertheless, Entrada Natural 300 gsm prints beautifully with most modern pigmented ink sets, plus the Entrada 190 gsm and 300 gsm weights are one of very few inkjet paper stocks on the market today that can be found double-side coated in both cut sheet and roll form. This feature alone makes Entrada an exceptional value.

The double-sided coating symmetry and cotton fiber core also gives Entrada exceptional lay-flat and other physical handling characteristics. The printmaker can make physical test strips and even full sheet proofs using both sides for testing. Metadata (e.g., camera and print data, logos, digitally printed chops, etc.) can be printed on the verso of the print using the same ICC profile for both front and back printing.

| | | | |
|---|---|---|---|
| **Sample Set:** | **AaI_20161115_SN001** | **Batch #:** | P1 |
| **Printer:** | Canon iPF8300 | | |
| **Ink:** | Canon Lucia EX | | |
| **Media:** | Moab Entrada Rag Natural 300gsm | | |
| **Coating(s):** | no additional coating | | |
| **Test Print Prepared by:** | AaI&A | | |
| **Printed:** | November 15, 2016 | | |
| **Initial Print colors measured** | November 29, 2016 | | |
| **Test Started:** | November 30, 2016 | | |
| **Test Image:** | AaI_StandardColorSet(v2)forSRGB.tif | | |
| **RIP/Driver settings:** | 600dpi, highest quality,uni-directional | | |
| **Media Setting** | Moab Entrada Rag (preset made by Legion Paper using Canon Media Config. Utlity | | |
| **Profile:** | AaI_iPF8300_EntradaNat300_MER_HQ_max_uni_bcC.icc | | |
| **Profile type:** | custom | | |
| **Rendering intent:** | perceptual | | |

## Paper White and Maximum Printed Black Values (M0 readings)

| ***Optical brighteners Present?*** *no* | **L*** | | **a*** | | **b*** | |
|---|---|---|---|---|---|---|
| | UV inc | UV exc | UV inc | UV exc | UV inc | UV exc |
| **M0 Media Whitepoint Color** ISO 13655-2009: | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 2.0 |
| | ***UV-inc/UV-exc ΔL*, Δa*, Δb* respectively*** | | | | | |
| | 0.0 | | 0.0 | | 0.0 | |
| L* = 98.4<br>a* = 0.1<br>b* = 2.0 | *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) |
|---|---|---|---|---|
| | 17.6 | 0.6 | 1.4 | 1.62 |

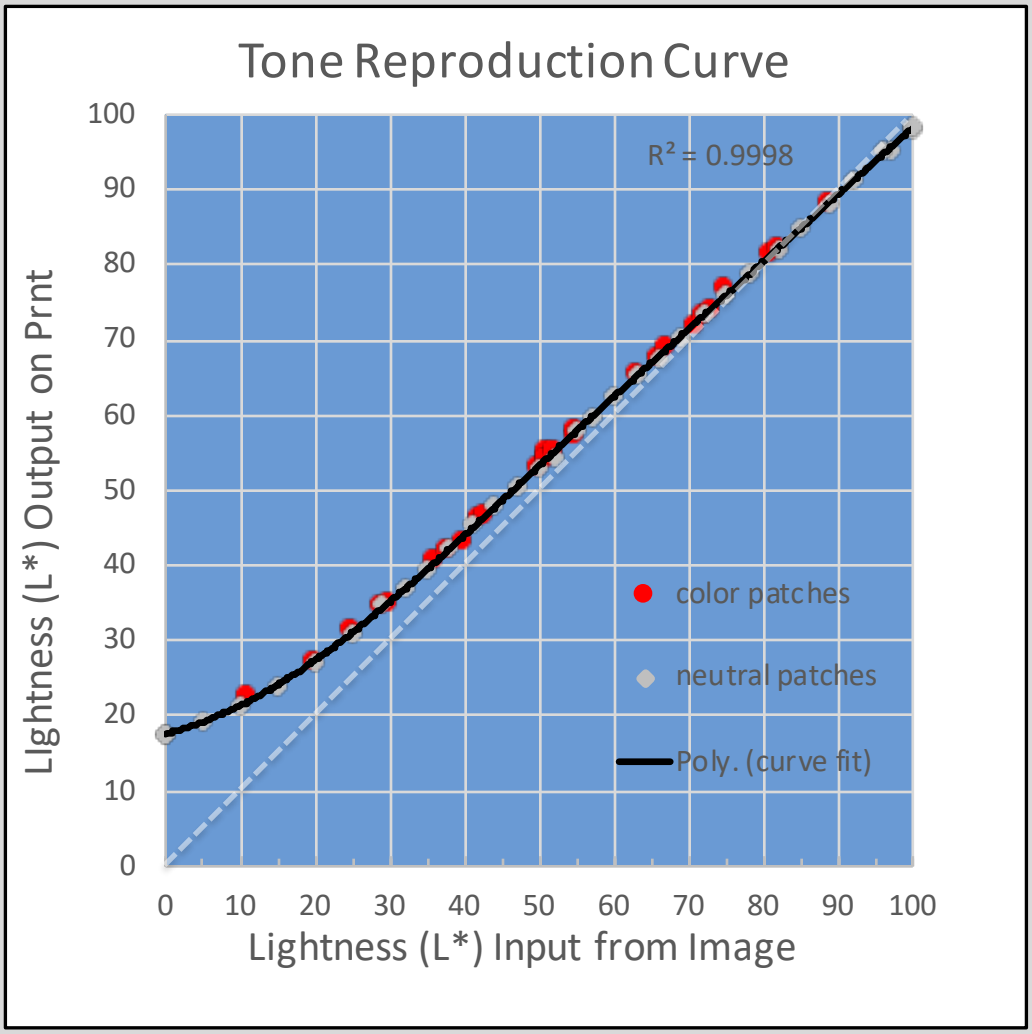
## Paper White and Maximum Printed Black Values (M1 readings)

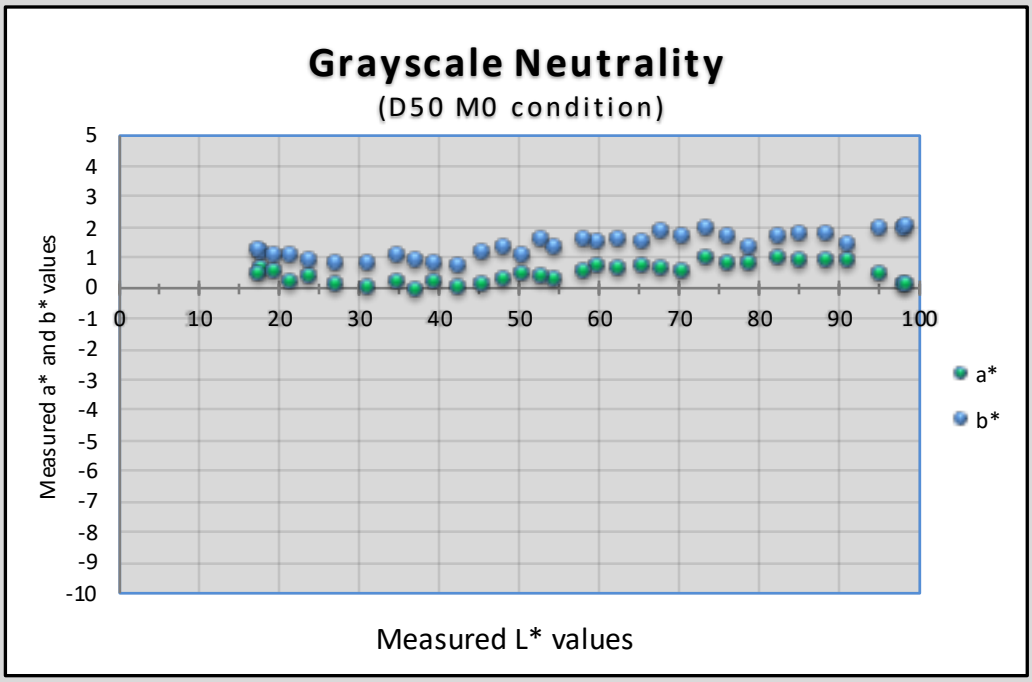
| | **L*** | | **a*** | | **b*** | |
|---|---|---|---|---|---|---|
| | UV inc | UV exc | UV inc | UV exc | UV inc | UV exc |
| **M1 Media Whitepoint Color** ISO 13655-2009: | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 2.0 |
| | ***UV-inc/UV-exc ΔL*, Δa*, Δb* respectively*** | | | | | |
| | 0.0 | | 0.0 | | 0.0 | |
| L* = 98.4<br>a* = 0.1<br>b* = 2.0 | *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) |
|---|---|---|---|---|
| | 17.6 | 0.6 | 1.3 | 1.62 |

| | |
|---|---|
| **Light source:** | Phillips Colortone F40T12/C50 – 5000˚K full spectrum fluorescent. Color rendering Index (CRI) =92) |
| **Light Exposure Cycle:** | ~12klux illumination, 24 hours per day |
| **Average Temperature:** | 24.9˚C over full test duration, 25.1˚C during light exposure. |
| **Average Relative humidity:** | 53.3%RH over full test duration, 53.2%RH during light exposure. |
| **CIELAB measurements:** | D50 2˚ observer, Xrite i1Pro2, M0,M1, and M2 conditions where applicable |

# Initial Image Reproduction – Tone Curve and Grayscale Neutrality

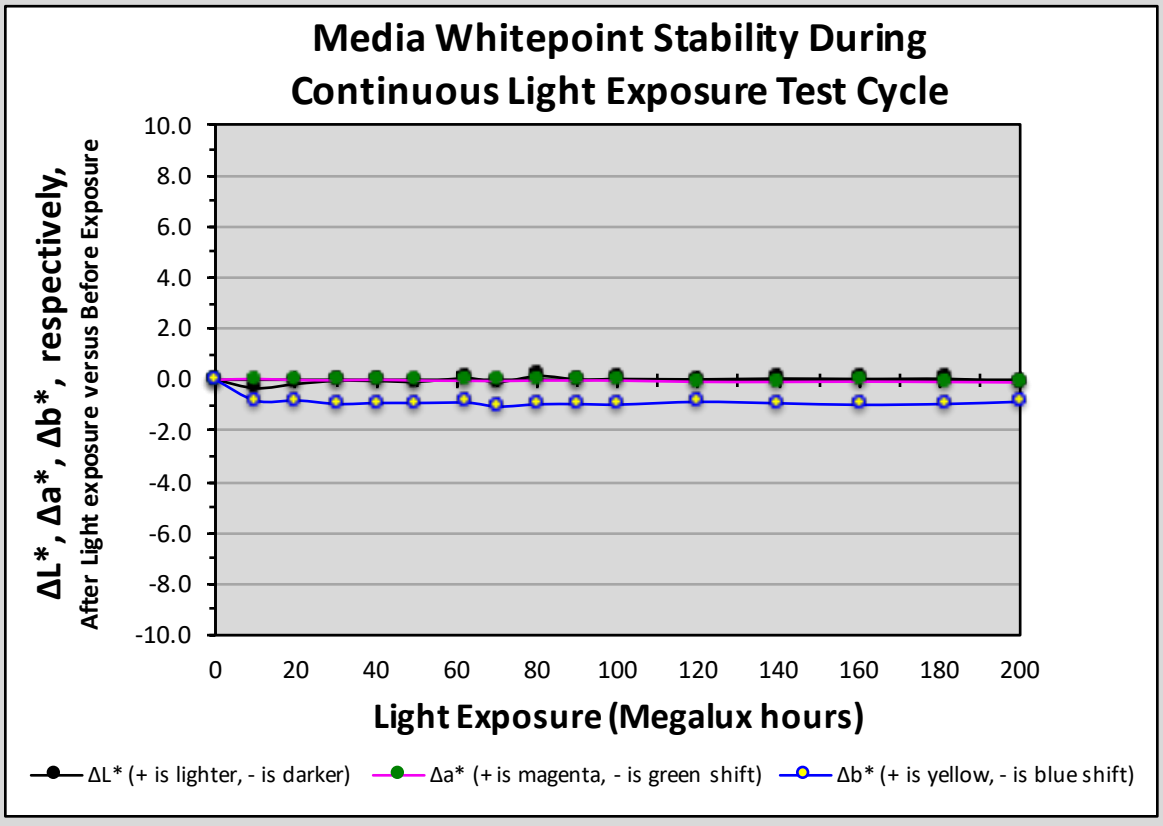


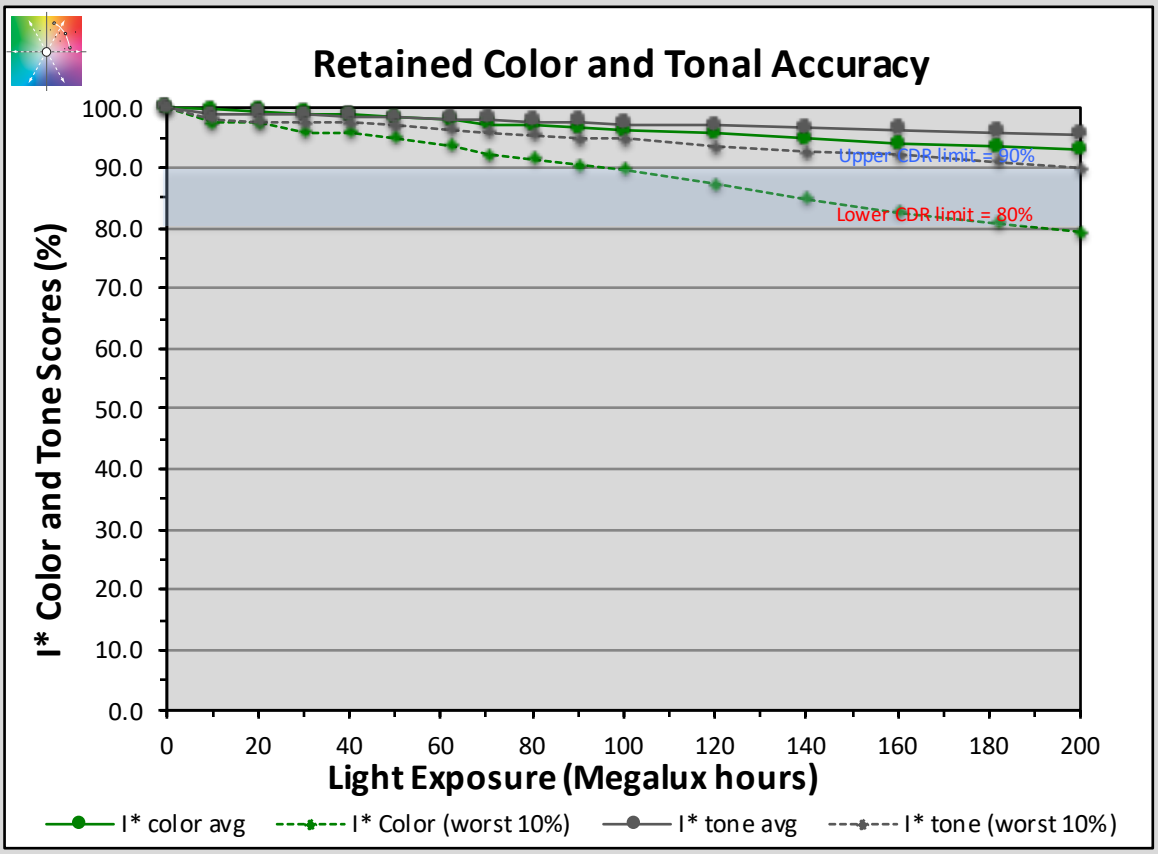



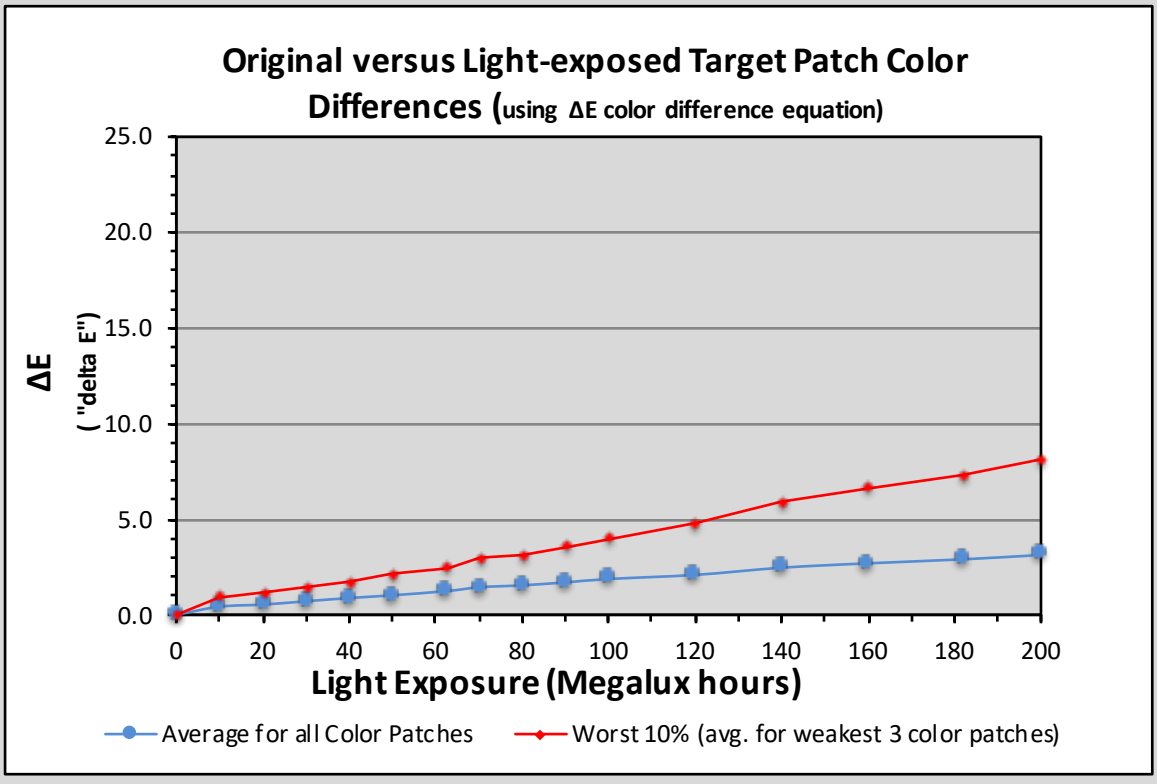
## Section II: Accelerated Light Fade test results

This section of the report contains the light exposure test results measured immediately after each exposure interval is completed. Samples are pulled directly from the light fade test unit, measured within a few hours using an Xrite i1 Pro2 spectrophotometer, and then returned to the test unit for additional ongoing exposure. This methodolody is a traditional scientific approach to light fastness testing of photographic materials, and provides insight into the fade resistance of the image forming colorants as well as the fade and discoloration resistance of the media when exposed to continuous illumination on display. However, it does not acccount for any photochemical reaction products which may require longer time periods at ambient room temperature and relative humidity levels to form additional staining or yelowing appearance. Some reaction products are metastable and thus light bleachable, appearing and/or reappearing only over time when the print is displayed under significantly lower average illumination levels or stored in the dark when not continuously on display. See section III for test conditions designed to track this other potential media yellowing issue.

*Canon iPF8300, Canon Lucia EX, Moab Entrada Rag Natural 300gsm, no additional coating*

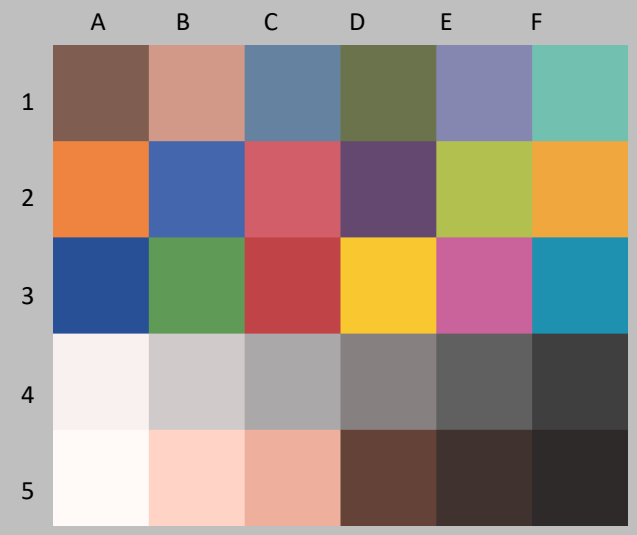




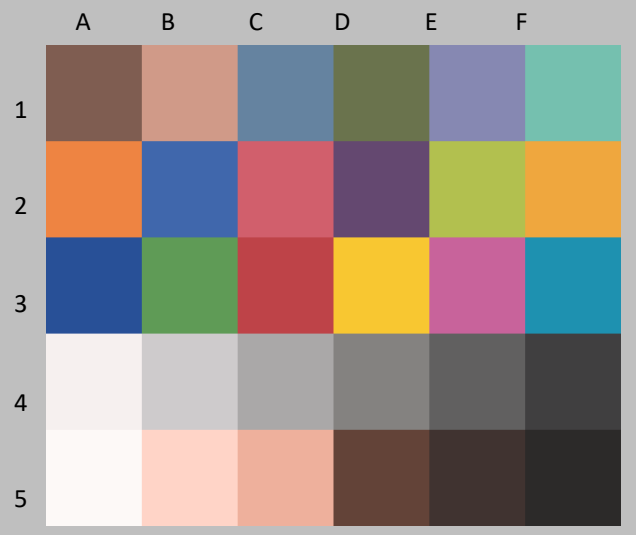




*Canon iPF8300, Canon Lucia EX, Moab Entrada Rag Natural 300gsm, no additional coating*

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



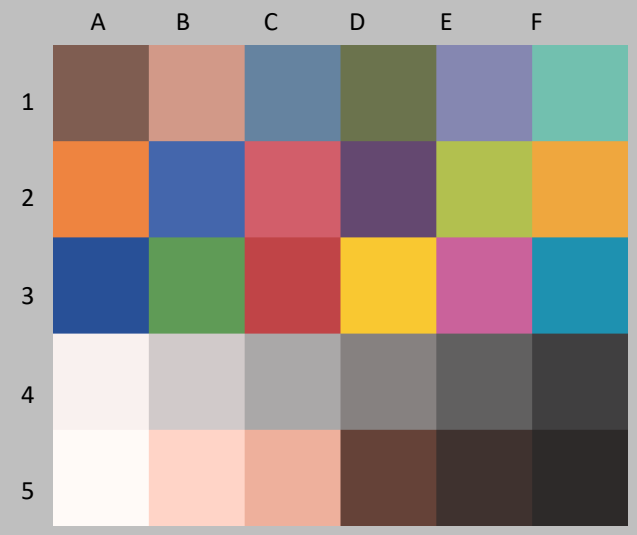

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 100.0 | 0.2 | 42.6 | 42.6 | 12.1 | 12.0 | 12.4 | 12.4 |
| B1 | Light Skin | 99.8 | 0.5 | 68.1 | 68.1 | 17.7 | 17.2 | 17.4 | 17.2 |
| C1 | Blue sky | 100.0 | 0.3 | 53.6 | 53.7 | -3.9 | -4.1 | -19.2 | -19.3 |
| D1 | Foliage | 100.0 | 0.1 | 47.0 | 46.9 | -11.1 | -11.0 | 20.1 | 20.2 |
| E1 | blue flower | 99.8 | 0.6 | 57.7 | 57.9 | 8.2 | 7.7 | -21.8 | -21.6 |
| F1 | bluish green | 100.0 | 0.5 | 72.4 | 72.4 | -28.8 | -28.4 | 0.7 | 0.5 |
| A1 | orange | 100.0 | 0.4 | 65.9 | 65.7 | 33.8 | 33.5 | 52.6 | 52.4 |
| B2 | purplish blue | 100.0 | 0.5 | 43.8 | 43.9 | 8.6 | 8.1 | -40.9 | -40.8 |
| C2 | moderate red | 99.7 | 0.7 | 55.0 | 55.0 | 45.8 | 45.2 | 15.6 | 15.3 |
| D2 | purple | 100.0 | 0.3 | 35.5 | 35.4 | 19.2 | 19.0 | -17.8 | -17.7 |
| E2 | yellow green | 100.0 | 0.5 | 74.6 | 74.4 | -21.4 | -21.1 | 54.1 | 53.8 |
| F2 | orange yellow | 100.0 | 0.5 | 73.8 | 73.6 | 17.4 | 17.0 | 62.3 | 62.1 |
| A3 | blue | 99.5 | 0.7 | 34.8 | 34.9 | 11.2 | 10.7 | -43.1 | -42.5 |
| B3 | green | 100.0 | 0.4 | 58.5 | 58.3 | -34.0 | -33.6 | 29.8 | 29.8 |
| C3 | red | 100.0 | 0.5 | 46.6 | 46.4 | 49.1 | 48.7 | 24.6 | 24.4 |
| D3 | yellow | 100.0 | 0.4 | 82.7 | 82.5 | 3.4 | 3.2 | 75.2 | 75.2 |
| E3 | magenta | 98.6 | 1.2 | 55.6 | 55.6 | 46.9 | 45.8 | -12.1 | -11.7 |
| F3 | cyan | 100.0 | 0.2 | 55.8 | 55.9 | -20.2 | -20.2 | -24.9 | -24.7 |
| A4 | white | 97.4 | 0.8 | 95.6 | 95.3 | 0.7 | 0.7 | 2.2 | 1.5 |
| B4 | neutral 8 | 100.0 | 0.3 | 81.9 | 81.9 | 0.6 | 0.4 | 0.8 | 0.5 |
| C4 | neutral 6.5 | 100.0 | 0.2 | 69.2 | 69.2 | 0.3 | 0.2 | 0.1 | 0.0 |
| D4 | neutral 5 | 100.0 | 0.1 | 54.4 | 54.3 | 0.6 | 0.5 | 1.0 | 0.9 |
| E4 | neutral 3.5 | 100.0 | 0.1 | 40.8 | 40.7 | 0.1 | -0.1 | 0.2 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.2 | 27.1 | 0.3 | 0.2 | -0.1 | 0.0 |
| A5 | paper white | 96.6 | 0.9 | 98.3 | 98.0 | 0.1 | 0.2 | 1.9 | 1.1 |
| B5 | Skin highlight L*=88 | 99.1 | 0.7 | 88.3 | 88.3 | 12.7 | 12.2 | 12.4 | 12.0 |
| C5 | Skin highlight L* =75 | 99.6 | 0.6 | 77.1 | 77.1 | 19.1 | 18.6 | 19.3 | 19.0 |
| D5 | Skin shadow L*=28 | 100.0 | 0.3 | 31.6 | 31.7 | 12.7 | 12.5 | 12.0 | 11.8 |
| E5 | Skin shadow L*=13 | 100.0 | 0.2 | 22.5 | 22.6 | 5.0 | 5.0 | 4.3 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.1 | 17.5 | 17.6 | 0.6 | 0.5 | 1.3 | 1.3 |

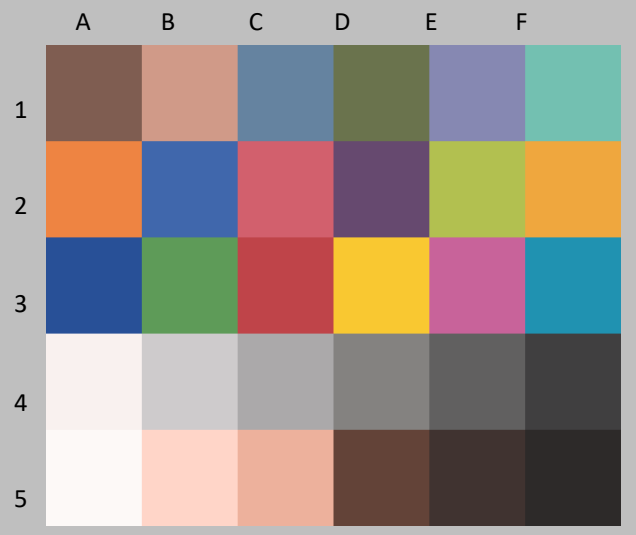
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.7 | 98.9 | 0.4 |
| Worst 10% (3 lowest scoring patches) | 97.5 | 98.2 | 0.9 |

10 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



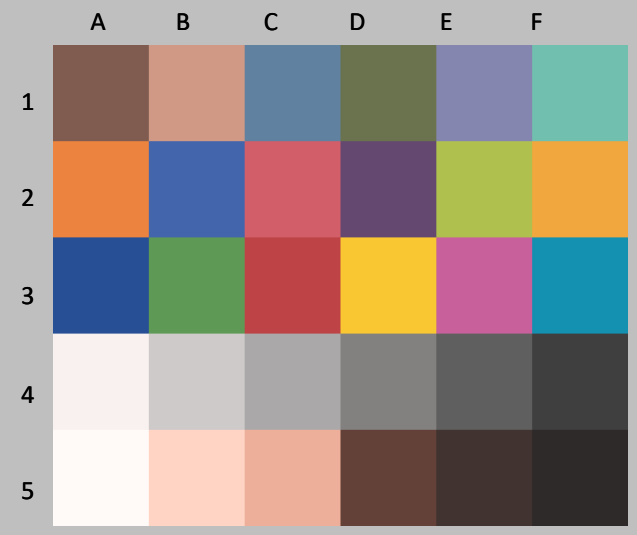

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 100.0 | 0.3 | 42.6 | 42.7 | 12.1 | 11.8 | 12.4 | 12.4 |
| B1 | Light Skin | 99.3 | 0.7 | 68.1 | 68.2 | 17.7 | 17.0 | 17.4 | 17.4 |
| C1 | Blue sky | 100.0 | 0.4 | 53.6 | 53.7 | -3.9 | -4.2 | -19.2 | -19.4 |
| D1 | Foliage | 100.0 | 0.4 | 47.0 | 46.9 | -11.1 | -10.9 | 20.1 | 19.8 |
| E1 | blue flower | 99.2 | 0.7 | 57.7 | 57.9 | 8.2 | 7.5 | -21.8 | -21.7 |
| F1 | bluish green | 99.8 | 0.5 | 72.4 | 72.4 | -28.8 | -28.3 | 0.7 | 0.5 |
| A1 | orange | 100.0 | 0.5 | 65.9 | 65.8 | 33.8 | 33.6 | 52.6 | 52.2 |
| B2 | purplish blue | 100.0 | 0.4 | 43.8 | 43.9 | 8.6 | 8.2 | -40.9 | -40.9 |
| C2 | moderate red | 99.3 | 0.9 | 55.0 | 55.2 | 45.8 | 45.0 | 15.6 | 15.4 |
| D2 | purple | 99.8 | 0.6 | 35.5 | 35.6 | 19.2 | 18.8 | -17.8 | -17.5 |
| E2 | yellow green | 99.8 | 0.6 | 74.6 | 74.6 | -21.4 | -21.2 | 54.1 | 53.5 |
| F2 | orange yellow | 99.7 | 0.7 | 73.8 | 73.7 | 17.4 | 17.0 | 62.3 | 61.8 |
| A3 | blue | 99.8 | 0.6 | 34.8 | 34.9 | 11.2 | 10.7 | -43.1 | -42.7 |
| B3 | green | 99.9 | 0.6 | 58.5 | 58.5 | -34.0 | -33.6 | 29.8 | 29.4 |
| C3 | red | 99.7 | 0.7 | 46.6 | 46.6 | 49.1 | 48.5 | 24.6 | 24.3 |
| D3 | yellow | 99.9 | 0.5 | 82.7 | 82.7 | 3.4 | 3.0 | 75.2 | 74.9 |
| E3 | magenta | 97.8 | 1.6 | 55.6 | 55.8 | 46.9 | 45.5 | -12.1 | -11.4 |
| F3 | cyan | 100.0 | 0.2 | 55.8 | 55.9 | -20.2 | -20.3 | -24.9 | -24.8 |
| A4 | white | 98.4 | 0.7 | 95.6 | 95.5 | 0.7 | 0.6 | 2.2 | 1.6 |
| B4 | neutral 8 | 100.0 | 0.4 | 81.9 | 82.0 | 0.6 | 0.3 | 0.8 | 0.5 |
| C4 | neutral 6.5 | 100.0 | 0.3 | 69.2 | 69.3 | 0.3 | 0.1 | 0.1 | 0.0 |
| D4 | neutral 5 | 100.0 | 0.2 | 54.4 | 54.6 | 0.6 | 0.4 | 1.0 | 1.0 |
| E4 | neutral 3.5 | 100.0 | 0.1 | 40.8 | 40.9 | 0.1 | 0.0 | 0.2 | 0.2 |
| F4 | black | 100.0 | 0.1 | 27.2 | 27.2 | 0.3 | 0.2 | -0.1 | -0.1 |
| A5 | paper white | 96.7 | 0.8 | 98.3 | 98.1 | 0.1 | 0.1 | 1.9 | 1.1 |
| B5 | Skin highlight L*=88 | 98.1 | 0.9 | 88.3 | 88.5 | 12.7 | 11.9 | 12.4 | 12.1 |
| C5 | Skin highlight L* =75 | 98.6 | 0.9 | 77.1 | 77.3 | 19.1 | 18.3 | 19.3 | 19.0 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.6 | 31.8 | 12.7 | 12.4 | 12.0 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.8 | 5.0 | 4.8 | 4.3 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.3 | 17.5 | 17.7 | 0.6 | 0.6 | 1.3 | 1.1 |

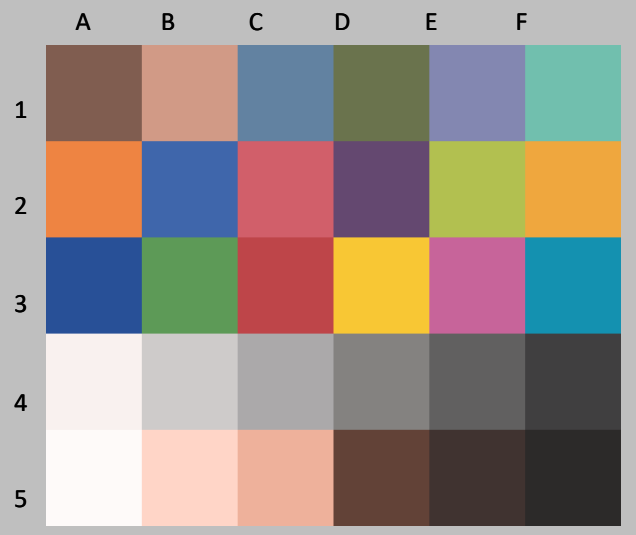
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.5 | 98.9 | 0.5 |
| Worst 10% (3 lowest scoring patches) | 97.5 | 97.7 | 1.1 |

20 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating



Original Print Colors before light exposure



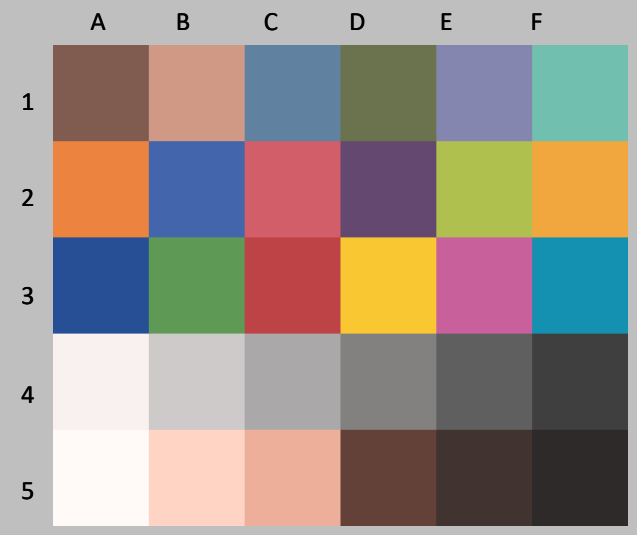
Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 100.0 | 0.4 | 42.4 | 42.6 | 12.0 | 11.8 | 12.7 | 12.6 |
| B1 | Light Skin | 98.5 | 0.9 | 67.8 | 68.1 | 17.4 | 16.6 | 18.2 | 17.8 |
| C1 | Blue sky | 100.0 | 0.5 | 53.1 | 53.5 | -4.0 | -4.4 | -19.6 | -19.6 |
| D1 | Foliage | 100.0 | 0.4 | 46.7 | 46.8 | -11.1 | -10.8 | 20.1 | 19.8 |
| E1 | blue flower | 97.6 | 1.2 | 57.2 | 57.8 | 8.3 | 7.5 | -22.2 | -21.5 |
| F1 | bluish green | 99.1 | 0.8 | 72.1 | 72.3 | -29.3 | -28.6 | 1.2 | 0.8 |
| A1 | orange | 99.5 | 0.8 | 65.6 | 65.8 | 34.2 | 33.7 | 52.8 | 52.1 |
| B2 | purplish blue | 99.8 | 0.7 | 43.4 | 43.7 | 8.9 | 8.4 | -41.5 | -41.3 |
| C2 | moderate red | 98.8 | 1.1 | 54.8 | 55.1 | 45.8 | 44.8 | 16.4 | 15.9 |
| D2 | purple | 99.7 | 0.6 | 35.2 | 35.4 | 19.2 | 18.7 | -17.9 | -17.6 |
| E2 | yellow green | 99.2 | 0.9 | 74.3 | 74.4 | -21.7 | -21.4 | 54.0 | 53.1 |
| F2 | orange yellow | 99.5 | 0.8 | 73.5 | 73.7 | 17.7 | 17.1 | 62.2 | 61.5 |
| A3 | blue | 100.0 | 0.5 | 34.7 | 34.9 | 11.1 | 10.7 | -43.2 | -43.0 |
| B3 | green | 99.0 | 0.9 | 58.1 | 58.2 | -34.3 | -33.7 | 29.6 | 28.8 |
| C3 | red | 99.2 | 1.0 | 46.5 | 46.6 | 49.0 | 48.3 | 24.8 | 24.2 |
| D3 | yellow | 99.2 | 1.1 | 82.4 | 82.4 | 3.5 | 3.0 | 75.1 | 74.1 |
| E3 | magenta | 97.3 | 1.8 | 55.5 | 55.8 | 46.8 | 45.2 | -12.2 | -11.2 |
| F3 | cyan | 100.0 | 0.3 | 55.5 | 55.7 | -20.6 | -20.7 | -24.8 | -24.9 |
| A4 | white | 96.1 | 0.9 | 95.6 | 95.5 | 0.8 | 0.6 | 2.4 | 1.5 |
| B4 | neutral 8 | 99.5 | 0.6 | 81.7 | 81.9 | 0.4 | 0.1 | 1.2 | 0.7 |
| C4 | neutral 6.5 | 100.0 | 0.4 | 69.0 | 69.2 | 0.2 | -0.1 | 0.3 | 0.2 |
| D4 | neutral 5 | 100.0 | 0.3 | 54.2 | 54.5 | 0.4 | 0.2 | 1.3 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.2 | 40.6 | 40.7 | -0.1 | -0.2 | 0.4 | 0.4 |
| F4 | black | 100.0 | 0.2 | 27.0 | 27.2 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 95.3 | 1.0 | 98.4 | 98.3 | 0.1 | 0.1 | 2.0 | 1.0 |
| B5 | Skin highlight L*=88 | 96.5 | 1.2 | 88.4 | 88.7 | 12.4 | 11.5 | 13.8 | 13.1 |
| C5 | Skin highlight L* =75 | 97.7 | 1.2 | 76.9 | 77.2 | 19.0 | 18.0 | 20.1 | 19.5 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.4 | 31.4 | 12.6 | 12.3 | 12.0 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.1 | 22.6 | 22.6 | 4.9 | 4.9 | 4.2 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.2 | 17.5 | 17.7 | 0.5 | 0.5 | 1.4 | 1.4 |

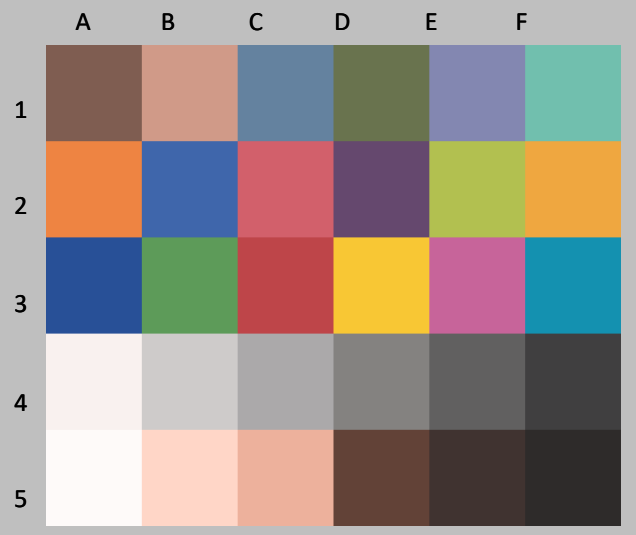
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.0 | 98.7 | 0.7 |
| Worst 10% (3 lowest scoring patches) | 95.9 | 97.4 | 1.4 |

30 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



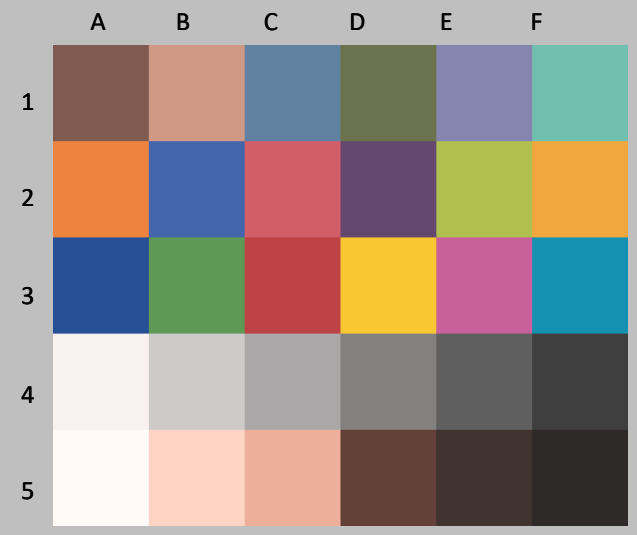

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 99.9 | 0.6 | 42.4 | 42.7 | 12.0 | 11.7 | 12.7 | 12.3 |
| B1 | Light Skin | 97.7 | 1.1 | 67.8 | 68.1 | 17.4 | 16.5 | 18.2 | 17.5 |
| C1 | Blue sky | 100.0 | 0.5 | 53.1 | 53.5 | -4.0 | -4.3 | -19.6 | -19.5 |
| D1 | Foliage | 98.9 | 0.8 | 46.7 | 46.8 | -11.1 | -10.7 | 20.1 | 19.4 |
| E1 | blue flower | 97.9 | 1.1 | 57.2 | 57.7 | 8.3 | 7.4 | -22.2 | -21.7 |
| F1 | bluish green | 98.6 | 0.9 | 72.1 | 72.3 | -29.3 | -28.5 | 1.2 | 0.7 |
| A1 | orange | 98.8 | 1.2 | 65.6 | 65.8 | 34.2 | 33.6 | 52.8 | 51.7 |
| B2 | purplish blue | 99.6 | 0.7 | 43.4 | 43.7 | 8.9 | 8.3 | -41.5 | -41.2 |
| C2 | moderate red | 98.4 | 1.3 | 54.8 | 55.1 | 45.8 | 44.6 | 16.4 | 15.9 |
| D2 | purple | 99.0 | 0.8 | 35.2 | 35.5 | 19.2 | 18.5 | -17.9 | -17.5 |
| E2 | yellow green | 98.3 | 1.5 | 74.3 | 74.4 | -21.7 | -21.4 | 54.0 | 52.5 |
| F2 | orange yellow | 98.9 | 1.2 | 73.5 | 73.7 | 17.7 | 17.0 | 62.2 | 61.1 |
| A3 | blue | 99.9 | 0.6 | 34.7 | 34.9 | 11.1 | 10.6 | -43.2 | -43.0 |
| B3 | green | 98.1 | 1.4 | 58.1 | 58.3 | -34.3 | -33.7 | 29.6 | 28.3 |
| C3 | red | 98.8 | 1.2 | 46.5 | 46.7 | 49.0 | 48.2 | 24.8 | 24.0 |
| D3 | yellow | 98.8 | 1.4 | 82.4 | 82.5 | 3.5 | 2.9 | 75.1 | 73.8 |
| E3 | magenta | 96.6 | 2.2 | 55.5 | 55.8 | 46.8 | 45.0 | -12.2 | -11.0 |
| F3 | cyan | 100.0 | 0.3 | 55.5 | 55.8 | -20.6 | -20.6 | -24.8 | -24.9 |
| A4 | white | 96.7 | 0.8 | 95.6 | 95.5 | 0.8 | 0.6 | 2.4 | 1.6 |
| B4 | neutral 8 | 99.5 | 0.6 | 81.7 | 81.9 | 0.4 | 0.1 | 1.2 | 0.7 |
| C4 | neutral 6.5 | 100.0 | 0.4 | 69.0 | 69.3 | 0.2 | -0.2 | 0.3 | 0.2 |
| D4 | neutral 5 | 100.0 | 0.4 | 54.2 | 54.5 | 0.4 | 0.2 | 1.3 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.2 | 40.6 | 40.8 | -0.1 | -0.2 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.0 | 27.2 | 0.2 | 0.2 | 0.1 | -0.1 |
| A5 | paper white | 95.7 | 0.9 | 98.4 | 98.3 | 0.1 | 0.1 | 2.0 | 1.1 |
| B5 | Skin highlight L*=88 | 95.3 | 1.4 | 88.4 | 88.7 | 12.4 | 11.5 | 13.8 | 12.8 |
| C5 | Skin highlight L* =75 | 96.8 | 1.4 | 76.9 | 77.3 | 19.0 | 18.0 | 20.1 | 19.2 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.4 | 31.5 | 12.6 | 12.4 | 12.0 | 11.6 |
| E5 | Skin shadow L*=13 | 100.0 | 0.2 | 22.6 | 22.6 | 4.9 | 4.9 | 4.2 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.5 | 17.9 | 0.5 | 0.6 | 1.4 | 1.2 |

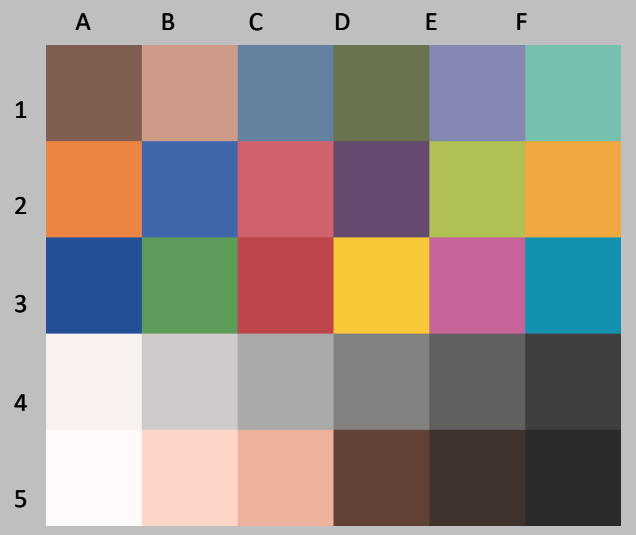
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 98.7 | 98.6 | 0.9 |
| Worst 10% (3 lowest scoring patches) | 95.9 | 97.4 | 1.7 |

40 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating



Original Print Colors before light exposure



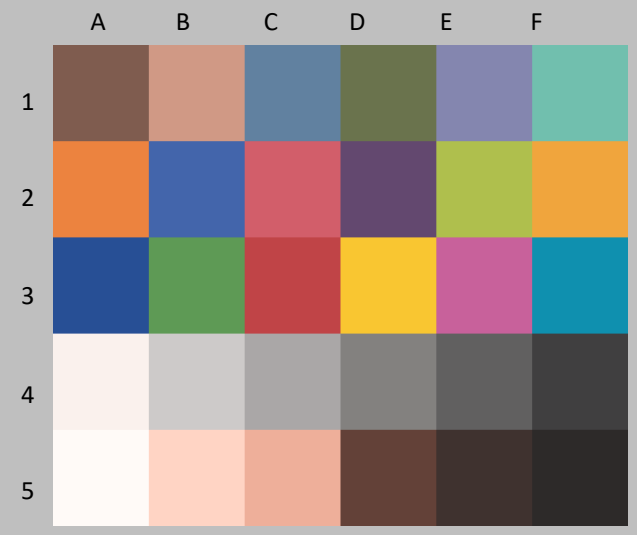
Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 99.6 | 0.7 | 42.4 | 42.7 | 12.0 | 11.6 | 12.7 | 12.3 |
| B1 | Light Skin | 97.0 | 1.3 | 67.8 | 68.2 | 17.4 | 16.5 | 18.2 | 17.3 |
| C1 | Blue sky | 100.0 | 0.6 | 53.1 | 53.5 | -4.0 | -4.4 | -19.6 | -19.3 |
| D1 | Foliage | 98.4 | 0.9 | 46.7 | 46.8 | -11.1 | -10.7 | 20.1 | 19.3 |
| E1 | blue flower | 97.1 | 1.3 | 57.2 | 57.8 | 8.3 | 7.3 | -22.2 | -21.5 |
| F1 | bluish green | 98.1 | 1.1 | 72.1 | 72.4 | -29.3 | -28.4 | 1.2 | 0.6 |
| A1 | orange | 98.6 | 1.4 | 65.6 | 65.9 | 34.2 | 33.5 | 52.8 | 51.6 |
| B2 | purplish blue | 99.2 | 0.9 | 43.4 | 43.8 | 8.9 | 8.2 | -41.5 | -41.1 |
| C2 | moderate red | 98.0 | 1.6 | 54.8 | 55.2 | 45.8 | 44.4 | 16.4 | 15.9 |
| D2 | purple | 98.5 | 1.0 | 35.2 | 35.6 | 19.2 | 18.5 | -17.9 | -17.3 |
| E2 | yellow green | 97.5 | 2.0 | 74.3 | 74.5 | -21.7 | -21.3 | 54.0 | 52.1 |
| F2 | orange yellow | 98.5 | 1.5 | 73.5 | 73.7 | 17.7 | 16.9 | 62.2 | 60.9 |
| A3 | blue | 99.2 | 1.0 | 34.7 | 35.0 | 11.1 | 10.4 | -43.2 | -42.7 |
| B3 | green | 97.4 | 1.7 | 58.1 | 58.3 | -34.3 | -33.7 | 29.6 | 28.0 |
| C3 | red | 98.7 | 1.3 | 46.5 | 46.7 | 49.0 | 48.0 | 24.8 | 24.1 |
| D3 | yellow | 98.3 | 1.8 | 82.4 | 82.6 | 3.5 | 2.8 | 75.1 | 73.4 |
| E3 | magenta | 95.8 | 2.6 | 55.5 | 55.9 | 46.8 | 44.7 | -12.2 | -10.7 |
| F3 | cyan | 100.0 | 0.3 | 55.5 | 55.8 | -20.6 | -20.6 | -24.8 | -24.8 |
| A4 | white | 96.7 | 0.8 | 95.6 | 95.5 | 0.8 | 0.6 | 2.4 | 1.6 |
| B4 | neutral 8 | 99.1 | 0.6 | 81.7 | 81.9 | 0.4 | 0.0 | 1.2 | 0.7 |
| C4 | neutral 6.5 | 100.0 | 0.5 | 69.0 | 69.3 | 0.2 | -0.2 | 0.3 | 0.2 |
| D4 | neutral 5 | 100.0 | 0.5 | 54.2 | 54.6 | 0.4 | 0.2 | 1.3 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.3 | 40.6 | 40.8 | -0.1 | -0.2 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.1 | 27.0 | 27.1 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 95.7 | 0.9 | 98.4 | 98.3 | 0.1 | 0.1 | 2.0 | 1.1 |
| B5 | Skin highlight L*=88 | 93.8 | 1.7 | 88.4 | 88.8 | 12.4 | 11.4 | 13.8 | 12.5 |
| C5 | Skin highlight L* =75 | 95.8 | 1.7 | 76.9 | 77.3 | 19.0 | 17.9 | 20.1 | 18.9 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.4 | 31.5 | 12.6 | 12.3 | 12.0 | 11.8 |
| E5 | Skin shadow L*=13 | 100.0 | 0.1 | 22.6 | 22.5 | 4.9 | 4.8 | 4.2 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 17.9 | 0.5 | 0.5 | 1.4 | 1.4 |

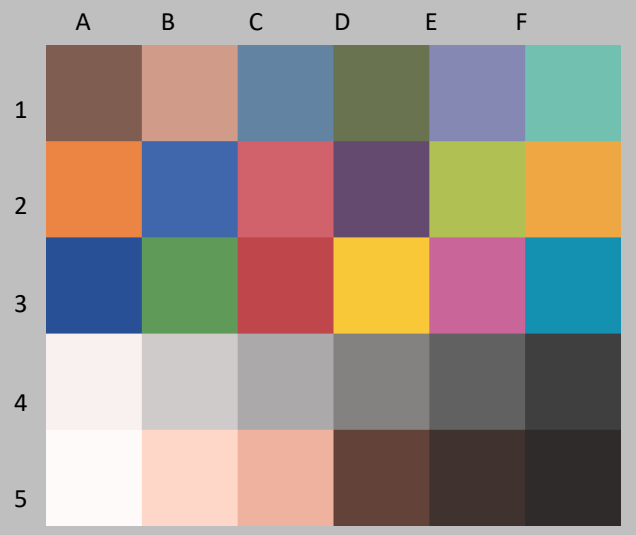
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 98.4 | 98.4 | 1.0 |
| Worst 10% (3 lowest scoring patches) | 95.1 | 97.0 | 2.1 |

50 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating



Original Print Colors before light exposure



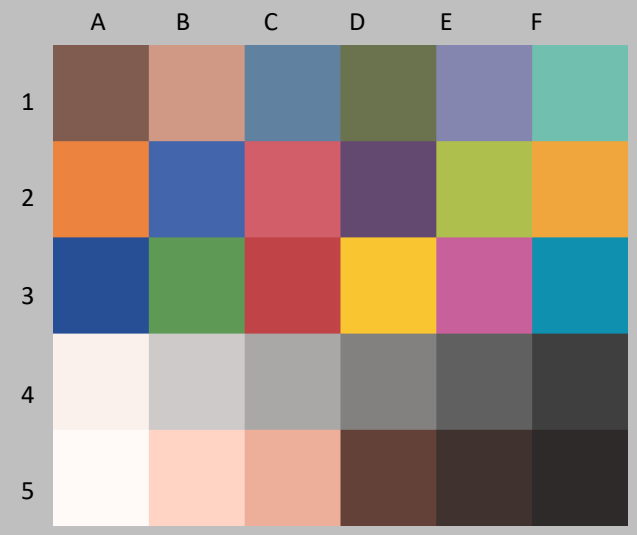
Colors After light exposure

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 98.7 | 0.9 | 42.3 | 42.8 | 12.1 | 11.7 | 12.7 | 12.1 |
| B1 | Light Skin | 95.9 | 1.7 | 67.8 | 68.5 | 17.4 | 16.4 | 18.4 | 17.2 |
| C1 | Blue sky | 100.0 | 0.7 | 53.1 | 53.6 | -3.8 | -4.3 | -19.7 | -19.5 |
| D1 | Foliage | 97.2 | 1.2 | 46.8 | 47.1 | -11.1 | -10.8 | 20.0 | 18.9 |
| E1 | blue flower | 97.2 | 1.3 | 57.3 | 57.9 | 8.3 | 7.4 | -22.2 | -21.6 |
| F1 | bluish green | 97.7 | 1.2 | 72.1 | 72.5 | -29.4 | -28.6 | 1.4 | 0.5 |
| A1 | orange | 98.2 | 1.7 | 65.5 | 66.0 | 34.1 | 33.3 | 52.6 | 51.1 |
| B2 | purplish blue | 99.0 | 1.0 | 43.4 | 43.9 | 9.0 | 8.2 | -41.5 | -41.0 |
| C2 | moderate red | 97.8 | 1.7 | 54.8 | 55.4 | 45.7 | 44.2 | 16.4 | 15.7 |
| D2 | purple | 98.4 | 1.0 | 35.1 | 35.6 | 19.1 | 18.5 | -17.9 | -17.3 |
| E2 | yellow green | 96.7 | 2.5 | 74.3 | 74.7 | -21.6 | -21.4 | 54.1 | 51.7 |
| F2 | orange yellow | 97.4 | 2.2 | 73.4 | 73.8 | 17.9 | 17.0 | 62.2 | 60.2 |
| A3 | blue | 99.4 | 0.8 | 34.6 | 35.0 | 11.3 | 10.6 | -43.4 | -43.0 |
| B3 | green | 96.2 | 2.2 | 58.2 | 58.6 | -34.1 | -33.5 | 29.7 | 27.6 |
| C3 | red | 98.6 | 1.3 | 46.6 | 47.0 | 49.0 | 48.0 | 24.8 | 24.0 |
| D3 | yellow | 97.8 | 2.2 | 82.4 | 82.8 | 3.6 | 2.7 | 74.9 | 72.9 |
| E3 | magenta | 95.6 | 2.7 | 55.4 | 56.0 | 46.7 | 44.7 | -12.1 | -10.5 |
| F3 | cyan | 100.0 | 0.5 | 55.4 | 55.8 | -20.6 | -20.8 | -24.8 | -25.0 |
| A4 | white | 95.5 | 0.9 | 95.6 | 95.7 | 0.7 | 0.5 | 2.5 | 1.6 |
| B4 | neutral 8 | 98.6 | 0.8 | 81.6 | 82.1 | 0.3 | -0.1 | 1.2 | 0.7 |
| C4 | neutral 6.5 | 99.9 | 0.8 | 68.9 | 69.4 | 0.1 | -0.4 | 0.5 | 0.3 |
| D4 | neutral 5 | 100.0 | 0.6 | 54.1 | 54.7 | 0.4 | 0.2 | 1.4 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.4 | 40.7 | 41.1 | -0.1 | -0.1 | 0.4 | 0.4 |
| F4 | black | 100.0 | 0.1 | 27.1 | 27.1 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 95.8 | 0.9 | 98.4 | 98.5 | 0.1 | 0.1 | 2.0 | 1.1 |
| B5 | Skin highlight L*=88 | 91.6 | 2.2 | 88.4 | 89.0 | 12.3 | 11.2 | 13.9 | 12.1 |
| C5 | Skin highlight L* =75 | 94.3 | 2.2 | 76.9 | 77.6 | 19.1 | 17.9 | 20.0 | 18.3 |
| D5 | Skin shadow L*=28 | 99.1 | 0.7 | 31.3 | 31.6 | 12.5 | 12.2 | 11.9 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.5 | 4.9 | 4.8 | 4.3 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 17.9 | 0.6 | 0.6 | 1.4 | 1.2 |

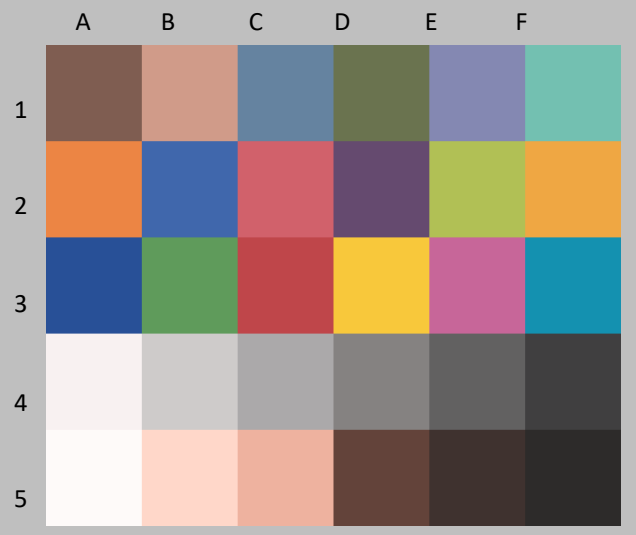
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 97.9 | 98.2 | 1.2 |
| Worst 10% (3 lowest scoring patches) | 93.8 | 96.3 | 2.5 |

62.6 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



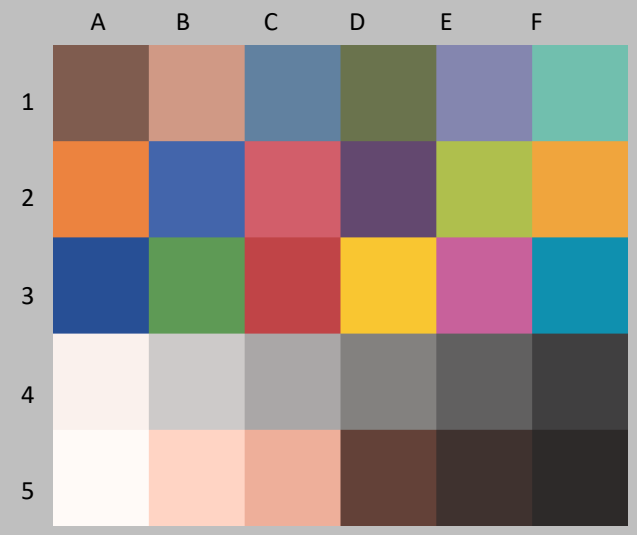

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 97.8 | 1.1 | 42.3 | 42.9 | 12.1 | 11.6 | 12.7 | 11.9 |
| B1 | Light Skin | 95.1 | 1.9 | 67.8 | 68.5 | 17.4 | 16.3 | 18.4 | 17.0 |
| C1 | Blue sky | 100.0 | 0.8 | 53.1 | 53.6 | -3.8 | -4.3 | -19.7 | -19.5 |
| D1 | Foliage | 96.3 | 1.4 | 46.8 | 47.1 | -11.1 | -10.7 | 20.0 | 18.8 |
| E1 | blue flower | 97.5 | 1.2 | 57.3 | 57.9 | 8.3 | 7.3 | -22.2 | -21.6 |
| F1 | bluish green | 96.8 | 1.5 | 72.1 | 72.5 | -29.4 | -28.4 | 1.4 | 0.3 |
| A1 | orange | 97.4 | 2.2 | 65.5 | 65.9 | 34.1 | 33.3 | 52.6 | 50.7 |
| B2 | purplish blue | 98.6 | 1.3 | 43.4 | 43.9 | 9.0 | 8.2 | -41.5 | -41.1 |
| C2 | moderate red | 97.2 | 2.0 | 54.8 | 55.4 | 45.7 | 44.1 | 16.4 | 15.5 |
| D2 | purple | 97.9 | 1.2 | 35.1 | 35.6 | 19.1 | 18.4 | -17.9 | -17.3 |
| E2 | yellow green | 95.4 | 3.2 | 74.3 | 74.6 | -21.6 | -21.3 | 54.1 | 51.1 |
| F2 | orange yellow | 96.5 | 2.8 | 73.4 | 73.8 | 17.9 | 16.9 | 62.2 | 59.7 |
| A3 | blue | 99.0 | 1.1 | 34.6 | 35.0 | 11.3 | 10.6 | -43.4 | -43.0 |
| B3 | green | 95.4 | 2.6 | 58.2 | 58.5 | -34.1 | -33.3 | 29.7 | 27.2 |
| C3 | red | 97.9 | 1.7 | 46.6 | 47.0 | 49.0 | 47.8 | 24.8 | 23.8 |
| D3 | yellow | 97.1 | 2.7 | 82.4 | 82.7 | 3.6 | 2.7 | 74.9 | 72.5 |
| E3 | magenta | 95.1 | 3.0 | 55.4 | 56.1 | 46.7 | 44.5 | -12.1 | -10.4 |
| F3 | cyan | 100.0 | 0.6 | 55.4 | 55.8 | -20.6 | -20.6 | -24.8 | -25.2 |
| A4 | white | 93.9 | 1.1 | 95.6 | 95.6 | 0.7 | 0.6 | 2.5 | 1.5 |
| B4 | neutral 8 | 96.8 | 0.9 | 81.6 | 82.0 | 0.3 | -0.1 | 1.2 | 0.6 |
| C4 | neutral 6.5 | 98.4 | 0.8 | 68.9 | 69.4 | 0.1 | -0.3 | 0.5 | 0.2 |
| D4 | neutral 5 | 100.0 | 0.6 | 54.1 | 54.7 | 0.4 | 0.2 | 1.4 | 1.1 |
| E4 | neutral 3.5 | 100.0 | 0.3 | 40.7 | 41.0 | -0.1 | -0.1 | 0.4 | 0.2 |
| F4 | black | 100.0 | 0.1 | 27.1 | 27.2 | 0.2 | 0.1 | 0.1 | -0.1 |
| A5 | paper white | 94.2 | 1.1 | 98.4 | 98.3 | 0.1 | 0.1 | 2.0 | 1.0 |
| B5 | Skin highlight L*=88 | 89.4 | 2.5 | 88.4 | 89.0 | 12.3 | 11.2 | 13.9 | 11.8 |
| C5 | Skin highlight L* =75 | 93.4 | 2.4 | 76.9 | 77.6 | 19.1 | 17.9 | 20.0 | 18.1 |
| D5 | Skin shadow L*=28 | 99.3 | 0.6 | 31.3 | 31.6 | 12.5 | 12.2 | 11.9 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.5 | 4.9 | 4.9 | 4.3 | 3.8 |
| F5 | Maximum Black | 100.0 | 0.2 | 17.5 | 17.9 | 0.6 | 0.5 | 1.4 | 1.2 |

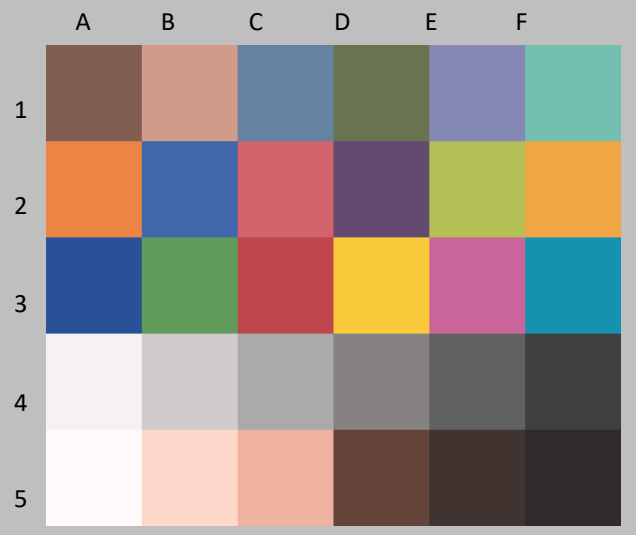
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 97.2 | 98.0 | 1.4 |
| Worst 10% (3 lowest scoring patches) | 92.2 | 95.8 | 3.0 |

70 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



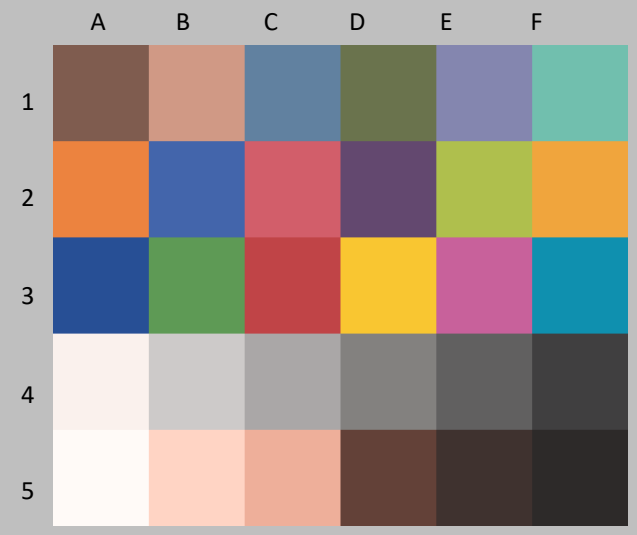

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 97.4 | 1.2 | 42.3 | 43.0 | 12.1 | 11.6 | 12.7 | 11.9 |
| B1 | Light Skin | 94.5 | 2.1 | 67.8 | 68.7 | 17.4 | 16.3 | 18.4 | 16.8 |
| C1 | Blue sky | 99.8 | 0.9 | 53.1 | 53.8 | -3.8 | -4.3 | -19.7 | -19.5 |
| D1 | Foliage | 96.0 | 1.5 | 46.8 | 47.2 | -11.1 | -10.7 | 20.0 | 18.6 |
| E1 | blue flower | 96.8 | 1.5 | 57.3 | 58.1 | 8.3 | 7.3 | -22.2 | -21.5 |
| F1 | bluish green | 96.5 | 1.6 | 72.1 | 72.7 | -29.4 | -28.4 | 1.4 | 0.2 |
| A1 | orange | 97.3 | 2.3 | 65.5 | 66.0 | 34.1 | 33.2 | 52.6 | 50.6 |
| B2 | purplish blue | 98.8 | 1.2 | 43.4 | 44.0 | 9.0 | 8.1 | -41.5 | -41.0 |
| C2 | moderate red | 97.4 | 1.9 | 54.8 | 55.6 | 45.7 | 44.1 | 16.4 | 15.5 |
| D2 | purple | 98.0 | 1.2 | 35.1 | 35.8 | 19.1 | 18.3 | -17.9 | -17.2 |
| E2 | yellow green | 95.2 | 3.3 | 74.3 | 74.8 | -21.6 | -21.4 | 54.1 | 50.8 |
| F2 | orange yellow | 96.4 | 2.9 | 73.4 | 74.0 | 17.9 | 16.8 | 62.2 | 59.5 |
| A3 | blue | 99.3 | 1.0 | 34.6 | 35.1 | 11.3 | 10.6 | -43.4 | -43.0 |
| B3 | green | 94.7 | 2.9 | 58.2 | 58.7 | -34.1 | -33.4 | 29.7 | 26.9 |
| C3 | red | 98.1 | 1.7 | 46.6 | 47.1 | 49.0 | 47.8 | 24.8 | 23.7 |
| D3 | yellow | 96.8 | 2.9 | 82.4 | 82.9 | 3.6 | 2.6 | 74.9 | 72.2 |
| E3 | magenta | 95.1 | 3.0 | 55.4 | 56.3 | 46.7 | 44.6 | -12.1 | -10.2 |
| F3 | cyan | 100.0 | 0.7 | 55.4 | 55.9 | -20.6 | -20.6 | -24.8 | -25.2 |
| A4 | white | 94.0 | 1.1 | 95.6 | 95.8 | 0.7 | 0.5 | 2.5 | 1.5 |
| B4 | neutral 8 | 97.0 | 1.0 | 81.6 | 82.2 | 0.3 | -0.1 | 1.2 | 0.5 |
| C4 | neutral 6.5 | 99.0 | 0.9 | 68.9 | 69.6 | 0.1 | -0.3 | 0.5 | 0.1 |
| D4 | neutral 5 | 100.0 | 0.8 | 54.1 | 54.8 | 0.4 | 0.2 | 1.4 | 1.1 |
| E4 | neutral 3.5 | 100.0 | 0.5 | 40.7 | 41.2 | -0.1 | -0.1 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.1 | 27.2 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 95.2 | 1.0 | 98.4 | 98.5 | 0.1 | 0.1 | 2.0 | 1.0 |
| B5 | Skin highlight L*=88 | 88.6 | 2.7 | 88.4 | 89.2 | 12.3 | 11.2 | 13.9 | 11.5 |
| C5 | Skin highlight L* =75 | 92.2 | 2.8 | 76.9 | 77.8 | 19.1 | 17.8 | 20.0 | 17.7 |
| D5 | Skin shadow L*=28 | 98.8 | 0.8 | 31.3 | 31.7 | 12.5 | 12.0 | 11.9 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.6 | 4.9 | 4.8 | 4.3 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.5 | 18.0 | 0.6 | 0.5 | 1.4 | 1.3 |

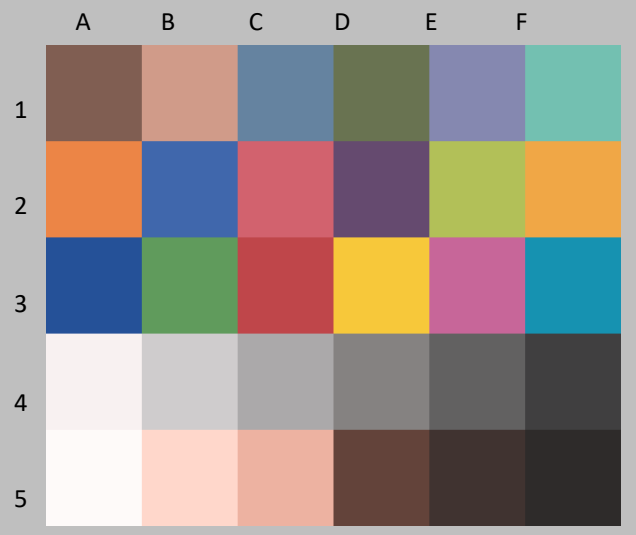
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 97.1 | 97.8 | 1.5 |
| Worst 10% (3 lowest scoring patches) | 91.6 | 95.4 | 3.1 |

80 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



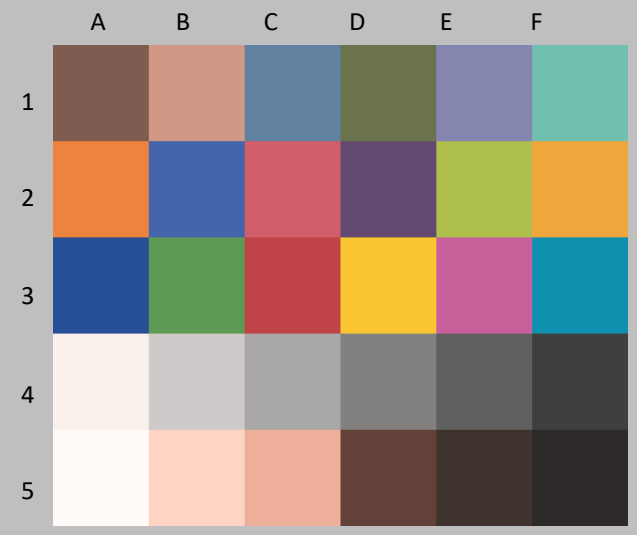

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 96.6 | 1.4 | 42.3 | 43.0 | 12.1 | 11.5 | 12.7 | 11.8 |
| B1 | Light Skin | 93.5 | 2.3 | 67.8 | 68.7 | 17.4 | 16.3 | 18.4 | 16.6 |
| C1 | Blue sky | 99.6 | 0.9 | 53.1 | 53.8 | -3.8 | -4.3 | -19.7 | -19.4 |
| D1 | Foliage | 94.9 | 1.7 | 46.8 | 47.2 | -11.1 | -10.6 | 20.0 | 18.4 |
| E1 | blue flower | 96.3 | 1.6 | 57.3 | 58.1 | 8.3 | 7.2 | -22.2 | -21.4 |
| F1 | bluish green | 96.2 | 1.7 | 72.1 | 72.7 | -29.4 | -28.3 | 1.4 | 0.1 |
| A1 | orange | 96.7 | 2.6 | 65.5 | 66.0 | 34.1 | 33.1 | 52.6 | 50.2 |
| B2 | purplish blue | 98.4 | 1.3 | 43.4 | 44.0 | 9.0 | 8.0 | -41.5 | -40.8 |
| C2 | moderate red | 96.8 | 2.2 | 54.8 | 55.6 | 45.7 | 43.9 | 16.4 | 15.4 |
| D2 | purple | 97.6 | 1.3 | 35.1 | 35.8 | 19.1 | 18.3 | -17.9 | -17.1 |
| E2 | yellow green | 94.2 | 3.9 | 74.3 | 74.8 | -21.6 | -21.3 | 54.1 | 50.2 |
| F2 | orange yellow | 95.8 | 3.3 | 73.4 | 73.9 | 17.9 | 16.8 | 62.2 | 59.1 |
| A3 | blue | 98.8 | 1.2 | 34.6 | 35.2 | 11.3 | 10.4 | -43.4 | -42.8 |
| B3 | green | 93.8 | 3.3 | 58.2 | 58.7 | -34.1 | -33.2 | 29.7 | 26.5 |
| C3 | red | 97.7 | 1.8 | 46.6 | 47.1 | 49.0 | 47.6 | 24.8 | 23.6 |
| D3 | yellow | 96.1 | 3.4 | 82.4 | 82.9 | 3.6 | 2.5 | 74.9 | 71.7 |
| E3 | magenta | 94.6 | 3.2 | 55.4 | 56.2 | 46.7 | 44.3 | -12.1 | -10.1 |
| F3 | cyan | 100.0 | 0.6 | 55.4 | 55.9 | -20.6 | -20.6 | -24.8 | -25.2 |
| A4 | white | 93.6 | 1.1 | 95.6 | 95.7 | 0.7 | 0.5 | 2.5 | 1.4 |
| B4 | neutral 8 | 96.5 | 1.0 | 81.6 | 82.2 | 0.3 | -0.1 | 1.2 | 0.5 |
| C4 | neutral 6.5 | 98.8 | 0.9 | 68.9 | 69.6 | 0.1 | -0.3 | 0.5 | 0.1 |
| D4 | neutral 5 | 100.0 | 0.8 | 54.1 | 54.8 | 0.4 | 0.3 | 1.4 | 1.1 |
| E4 | neutral 3.5 | 100.0 | 0.5 | 40.7 | 41.2 | -0.1 | -0.1 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.1 | 27.1 | 27.2 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 95.2 | 1.0 | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 1.0 |
| B5 | Skin highlight L*=88 | 86.8 | 3.0 | 88.4 | 89.2 | 12.3 | 11.1 | 13.9 | 11.2 |
| C5 | Skin highlight L* =75 | 91.0 | 3.1 | 76.9 | 77.8 | 19.1 | 17.7 | 20.0 | 17.4 |
| D5 | Skin shadow L*=28 | 98.6 | 0.8 | 31.3 | 31.7 | 12.5 | 12.1 | 11.9 | 11.2 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.6 | 4.9 | 4.8 | 4.3 | 3.9 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 18.0 | 0.6 | 0.6 | 1.4 | 1.3 |

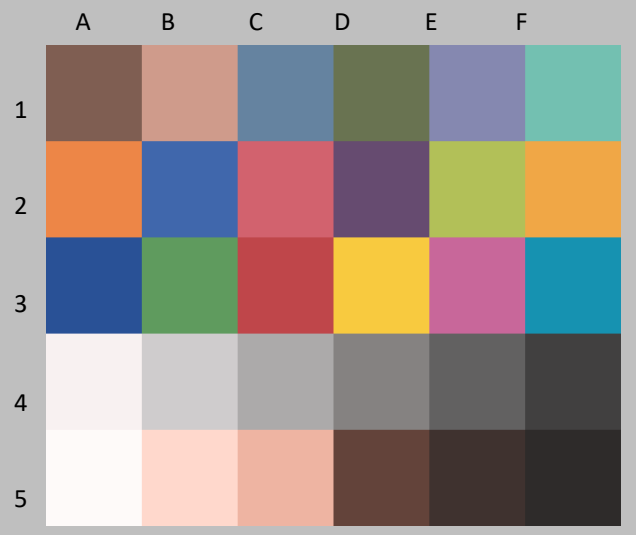
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 96.6 | 97.6 | 1.7 |
| Worst 10% (3 lowest scoring patches) | 90.4 | 94.9 | 3.6 |

90 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



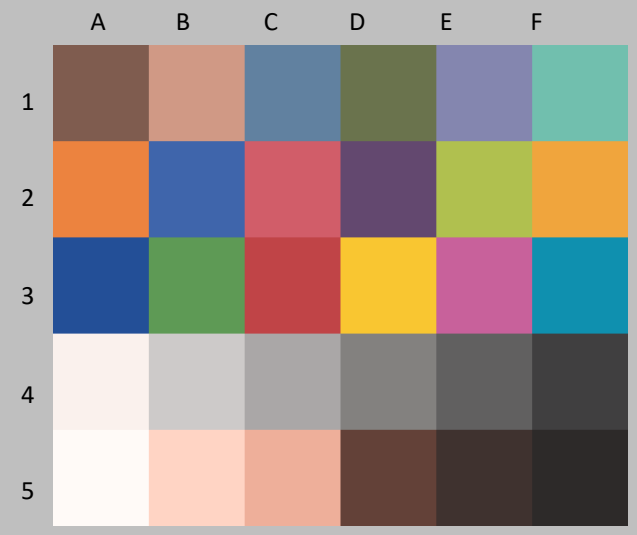

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 95.9 | 1.5 | 42.3 | 43.1 | 12.1 | 11.5 | 12.7 | 11.7 |
| B1 | Light Skin | 92.8 | 2.5 | 67.8 | 68.8 | 17.4 | 16.2 | 18.4 | 16.4 |
| C1 | Blue sky | 99.3 | 1.0 | 53.1 | 53.8 | -3.8 | -4.4 | -19.7 | -19.4 |
| D1 | Foliage | 94.2 | 1.9 | 46.8 | 47.1 | -11.1 | -10.6 | 20.0 | 18.3 |
| E1 | blue flower | 96.0 | 1.7 | 57.3 | 58.1 | 8.3 | 7.1 | -22.2 | -21.4 |
| F1 | bluish green | 95.4 | 1.9 | 72.1 | 72.7 | -29.4 | -28.1 | 1.4 | 0.0 |
| A1 | orange | 96.3 | 2.9 | 65.5 | 66.1 | 34.1 | 33.0 | 52.6 | 49.9 |
| B2 | purplish blue | 98.5 | 1.3 | 43.4 | 44.0 | 9.0 | 8.0 | -41.5 | -40.9 |
| C2 | moderate red | 96.6 | 2.3 | 54.8 | 55.7 | 45.7 | 43.8 | 16.4 | 15.3 |
| D2 | purple | 96.7 | 1.7 | 35.1 | 36.1 | 19.1 | 18.2 | -17.9 | -16.9 |
| E2 | yellow green | 93.3 | 4.4 | 74.3 | 74.8 | -21.6 | -21.3 | 54.1 | 49.7 |
| F2 | orange yellow | 95.0 | 3.8 | 73.4 | 74.0 | 17.9 | 16.8 | 62.2 | 58.6 |
| A3 | blue | 97.9 | 1.5 | 34.6 | 35.2 | 11.3 | 10.2 | -43.4 | -42.4 |
| B3 | green | 92.6 | 3.9 | 58.2 | 58.7 | -34.1 | -33.2 | 29.7 | 25.9 |
| C3 | red | 97.6 | 1.9 | 46.6 | 47.2 | 49.0 | 47.6 | 24.8 | 23.6 |
| D3 | yellow | 95.7 | 3.8 | 82.4 | 83.0 | 3.6 | 2.4 | 74.9 | 71.4 |
| E3 | magenta | 94.4 | 3.3 | 55.4 | 56.3 | 46.7 | 44.3 | -12.1 | -10.0 |
| F3 | cyan | 100.0 | 0.6 | 55.4 | 55.9 | -20.6 | -20.6 | -24.8 | -25.2 |
| A4 | white | 93.5 | 1.1 | 95.6 | 95.7 | 0.7 | 0.5 | 2.5 | 1.4 |
| B4 | neutral 8 | 95.6 | 1.1 | 81.6 | 82.2 | 0.3 | -0.1 | 1.2 | 0.4 |
| C4 | neutral 6.5 | 99.1 | 1.0 | 68.9 | 69.6 | 0.1 | -0.3 | 0.5 | 0.1 |
| D4 | neutral 5 | 100.0 | 0.9 | 54.1 | 55.0 | 0.4 | 0.2 | 1.4 | 1.0 |
| E4 | neutral 3.5 | 100.0 | 0.5 | 40.7 | 41.2 | -0.1 | -0.1 | 0.4 | 0.2 |
| F4 | black | 100.0 | 0.4 | 27.1 | 27.4 | 0.2 | 0.1 | 0.1 | 0.1 |
| A5 | paper white | 95.0 | 1.0 | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 1.0 |
| B5 | Skin highlight L*=88 | 86.1 | 3.2 | 88.4 | 89.3 | 12.3 | 11.1 | 13.9 | 11.0 |
| C5 | Skin highlight L* =75 | 90.3 | 3.3 | 76.9 | 77.9 | 19.1 | 17.6 | 20.0 | 17.2 |
| D5 | Skin shadow L*=28 | 99.4 | 0.7 | 31.3 | 31.7 | 12.5 | 12.1 | 11.9 | 11.4 |
| E5 | Skin shadow L*=13 | 100.0 | 0.5 | 22.5 | 22.5 | 4.9 | 4.9 | 4.3 | 3.8 |
| F5 | Maximum Black | 100.0 | 0.6 | 17.5 | 18.1 | 0.6 | 0.6 | 1.4 | 1.2 |

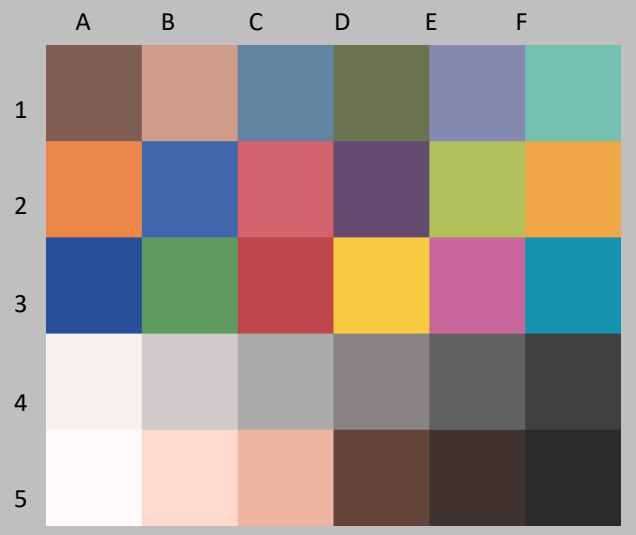
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 96.2 | 97.3 | 1.9 |
| Worst 10% (3 lowest scoring patches) | 89.7 | 94.7 | 4.0 |

100 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



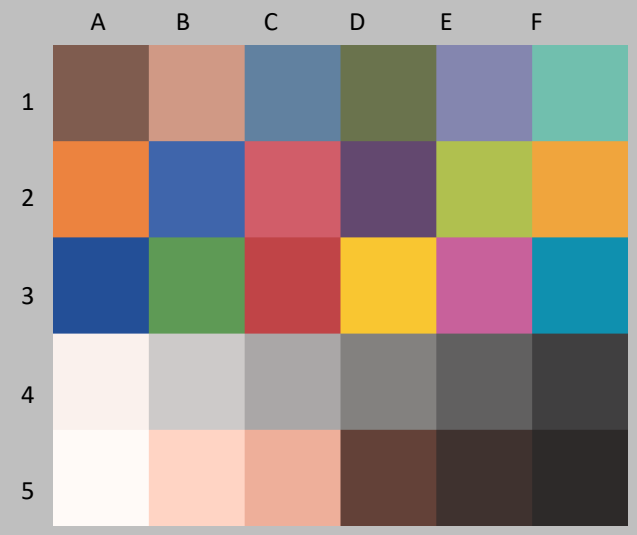

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 95.3 | 1.7 | 42.3 | 43.3 | 12.1 | 11.4 | 12.6 | 11.5 |
| B1 | Light Skin | 91.8 | 2.8 | 67.7 | 68.8 | 17.4 | 16.2 | 18.3 | 16.0 |
| C1 | Blue sky | 99.2 | 1.1 | 53.0 | 53.9 | -3.9 | -4.5 | -19.7 | -19.5 |
| D1 | Foliage | 92.7 | 2.2 | 46.6 | 47.1 | -11.0 | -10.5 | 20.1 | 18.0 |
| E1 | blue flower | 95.6 | 1.8 | 57.3 | 58.3 | 8.3 | 7.0 | -22.2 | -21.2 |
| F1 | bluish green | 94.8 | 2.1 | 72.0 | 72.8 | -29.4 | -28.2 | 1.4 | -0.2 |
| A1 | orange | 95.2 | 3.6 | 65.6 | 66.3 | 34.1 | 32.8 | 52.7 | 49.5 |
| B2 | purplish blue | 98.0 | 1.5 | 43.3 | 44.0 | 9.1 | 8.0 | -41.7 | -40.9 |
| C2 | moderate red | 96.3 | 2.5 | 54.7 | 55.8 | 45.7 | 43.7 | 16.4 | 15.2 |
| D2 | purple | 97.3 | 1.4 | 35.0 | 35.8 | 19.3 | 18.4 | -17.9 | -17.1 |
| E2 | yellow green | 92.2 | 5.1 | 74.4 | 75.1 | -21.6 | -21.3 | 54.3 | 49.2 |
| F2 | orange yellow | 94.3 | 4.3 | 73.4 | 74.2 | 17.9 | 16.5 | 62.3 | 58.3 |
| A3 | blue | 98.4 | 1.4 | 34.5 | 35.1 | 11.4 | 10.4 | -43.5 | -42.8 |
| B3 | green | 91.4 | 4.5 | 58.1 | 58.8 | -34.3 | -33.2 | 29.6 | 25.3 |
| C3 | red | 97.2 | 2.1 | 46.5 | 47.2 | 49.1 | 47.5 | 24.8 | 23.6 |
| D3 | yellow | 94.3 | 4.8 | 82.3 | 83.1 | 3.5 | 2.3 | 75.0 | 70.4 |
| E3 | magenta | 93.6 | 3.7 | 55.4 | 56.5 | 46.8 | 44.1 | -12.2 | -9.8 |
| F3 | cyan | 100.0 | 0.7 | 55.4 | 56.0 | -20.6 | -20.6 | -24.7 | -25.1 |
| A4 | white | 94.5 | 1.0 | 95.6 | 95.7 | 0.7 | 0.5 | 2.5 | 1.5 |
| B4 | neutral 8 | 96.3 | 1.1 | 81.6 | 82.3 | 0.3 | -0.2 | 1.3 | 0.6 |
| C4 | neutral 6.5 | 98.3 | 1.1 | 69.0 | 69.8 | 0.0 | -0.4 | 0.7 | 0.2 |
| D4 | neutral 5 | 100.0 | 1.0 | 54.2 | 55.1 | 0.4 | 0.2 | 1.4 | 1.0 |
| E4 | neutral 3.5 | 100.0 | 0.6 | 40.7 | 41.3 | -0.1 | -0.2 | 0.3 | 0.2 |
| F4 | black | 100.0 | 0.2 | 27.1 | 27.2 | 0.2 | 0.1 | 0.0 | -0.1 |
| A5 | paper white | 96.1 | 0.9 | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 1.2 |
| B5 | Skin highlight L*=88 | 82.3 | 3.9 | 88.4 | 89.4 | 12.3 | 11.0 | 14.1 | 10.5 |
| C5 | Skin highlight L* =75 | 87.9 | 4.0 | 76.9 | 78.1 | 19.0 | 17.5 | 20.1 | 16.6 |
| D5 | Skin shadow L*=28 | 99.9 | 0.6 | 31.5 | 31.8 | 12.5 | 12.2 | 11.8 | 11.4 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.4 | 22.3 | 4.9 | 4.8 | 4.2 | 3.8 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.7 | 18.1 | 0.6 | 0.5 | 1.3 | 1.3 |

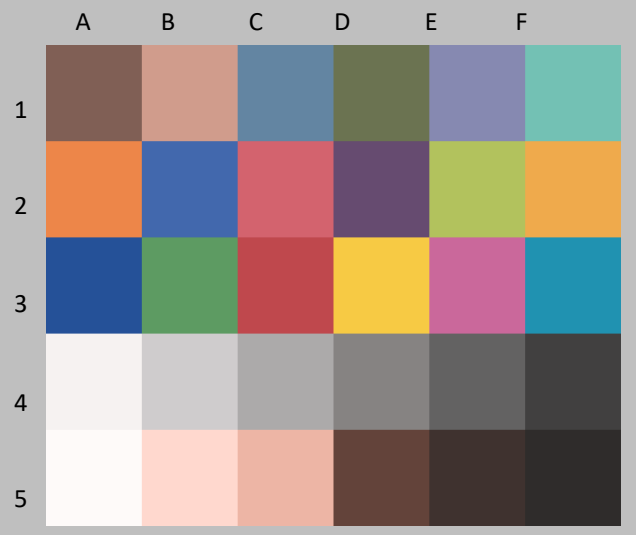
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 95.8 | 97.0 | 2.1 |
| Worst 10% (3 lowest scoring patches) | 87.2 | 93.5 | 4.8 |

120 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



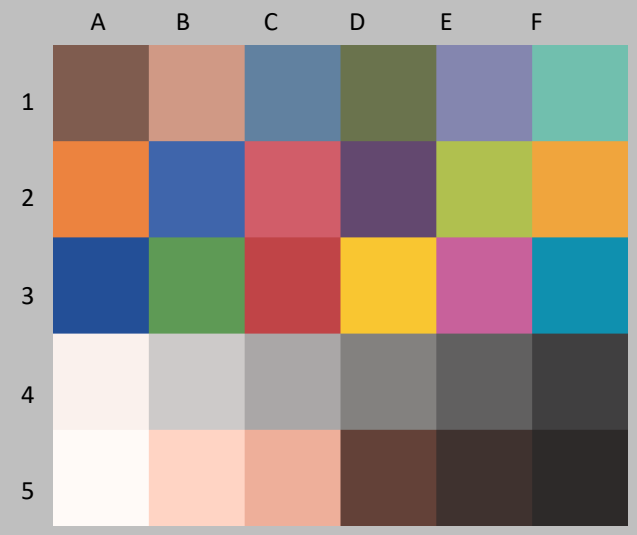

Colors After light exposure

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 93.9 | 2.0 | 42.3 | 43.5 | 12.1 | 11.3 | 12.6 | 11.3 |
| B1 | Light Skin | 89.9 | 3.3 | 67.7 | 69.1 | 17.4 | 16.2 | 18.3 | 15.5 |
| C1 | Blue sky | 99.4 | 1.1 | 53.0 | 54.0 | -3.9 | -4.5 | -19.7 | -19.5 |
| D1 | Foliage | 90.7 | 2.7 | 46.6 | 47.2 | -11.0 | -10.4 | 20.1 | 17.5 |
| E1 | blue flower | 95.2 | 2.0 | 57.3 | 58.4 | 8.3 | 7.0 | -22.2 | -21.2 |
| F1 | bluish green | 93.3 | 2.6 | 72.0 | 72.9 | -29.4 | -28.0 | 1.4 | -0.7 |
| A1 | orange | 94.2 | 4.2 | 65.6 | 66.4 | 34.1 | 32.5 | 52.7 | 48.8 |
| B2 | purplish blue | 97.8 | 1.6 | 43.3 | 44.1 | 9.1 | 7.9 | -41.7 | -40.8 |
| C2 | moderate red | 95.8 | 2.8 | 54.7 | 55.9 | 45.7 | 43.5 | 16.4 | 15.1 |
| D2 | purple | 96.9 | 1.6 | 35.0 | 36.0 | 19.3 | 18.3 | -17.9 | -17.0 |
| E2 | yellow green | 90.2 | 6.3 | 74.4 | 75.2 | -21.6 | -21.3 | 54.3 | 48.0 |
| F2 | orange yellow | 92.9 | 5.2 | 73.4 | 74.3 | 17.9 | 16.4 | 62.3 | 57.4 |
| A3 | blue | 98.4 | 1.4 | 34.5 | 35.2 | 11.4 | 10.4 | -43.5 | -42.9 |
| B3 | green | 89.4 | 5.4 | 58.1 | 58.9 | -34.3 | -33.1 | 29.6 | 24.4 |
| C3 | red | 96.7 | 2.5 | 46.5 | 47.4 | 49.1 | 47.3 | 24.8 | 23.3 |
| D3 | yellow | 92.8 | 6.0 | 82.3 | 83.2 | 3.5 | 2.1 | 75.0 | 69.3 |
| E3 | magenta | 93.2 | 4.0 | 55.4 | 56.7 | 46.8 | 44.0 | -12.2 | -9.5 |
| F3 | cyan | 99.8 | 0.9 | 55.4 | 56.1 | -20.6 | -20.5 | -24.7 | -25.3 |
| A4 | white | 92.8 | 1.2 | 95.6 | 95.8 | 0.7 | 0.5 | 2.5 | 1.4 |
| B4 | neutral 8 | 94.6 | 1.3 | 81.6 | 82.4 | 0.3 | -0.2 | 1.3 | 0.4 |
| C4 | neutral 6.5 | 97.1 | 1.2 | 69.0 | 70.0 | 0.0 | -0.4 | 0.7 | 0.1 |
| D4 | neutral 5 | 99.8 | 1.1 | 54.2 | 55.2 | 0.4 | 0.3 | 1.4 | 0.9 |
| E4 | neutral 3.5 | 100.0 | 0.8 | 40.7 | 41.4 | -0.1 | -0.1 | 0.3 | 0.1 |
| F4 | black | 100.0 | 0.3 | 27.1 | 27.4 | 0.2 | 0.1 | 0.0 | -0.2 |
| A5 | paper white | 95.5 | 0.9 | 98.4 | 98.5 | 0.1 | 0.1 | 2.0 | 1.1 |
| B5 | Skin highlight L*=88 | 79.1 | 4.6 | 88.4 | 89.6 | 12.3 | 11.0 | 14.1 | 9.9 |
| C5 | Skin highlight L* =75 | 85.8 | 4.6 | 76.9 | 78.2 | 19.0 | 17.4 | 20.1 | 15.9 |
| D5 | Skin shadow L*=28 | 98.2 | 0.9 | 31.5 | 31.9 | 12.5 | 12.2 | 11.8 | 11.1 |
| E5 | Skin shadow L*=13 | 98.2 | 0.7 | 22.4 | 22.5 | 4.9 | 4.8 | 4.2 | 3.6 |
| F5 | Maximum Black | 100.0 | 0.6 | 17.7 | 18.3 | 0.6 | 0.5 | 1.3 | 1.0 |

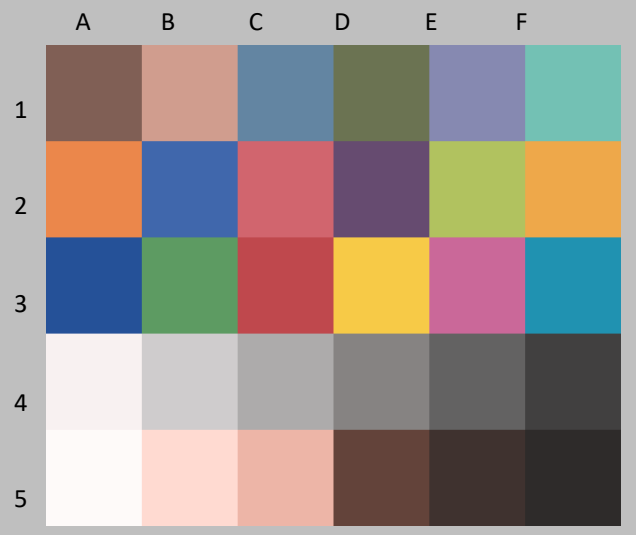
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 94.7 | 96.5 | 2.5 |
| Worst 10% (3 lowest scoring patches) | 84.8 | 92.5 | 5.9 |

140 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



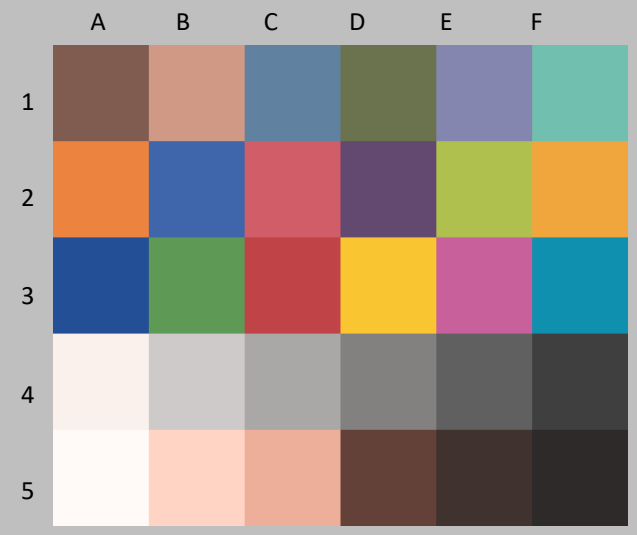

Colors After light exposure

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 93.9 | 2.0 | 42.3 | 43.5 | 12.1 | 11.3 | 12.6 | 11.2 |
| B1 | Light Skin | 88.6 | 3.7 | 67.7 | 69.2 | 17.4 | 16.1 | 18.3 | 15.2 |
| C1 | Blue sky | 99.2 | 1.2 | 53.0 | 54.0 | -3.9 | -4.5 | -19.7 | -19.4 |
| D1 | Foliage | 89.4 | 3.0 | 46.6 | 47.2 | -11.0 | -10.4 | 20.1 | 17.2 |
| E1 | blue flower | 94.8 | 2.1 | 57.3 | 58.5 | 8.3 | 6.9 | -22.2 | -21.1 |
| F1 | bluish green | 92.6 | 2.8 | 72.0 | 72.8 | -29.4 | -27.9 | 1.4 | -0.9 |
| A1 | orange | 93.3 | 4.8 | 65.6 | 66.4 | 34.1 | 32.4 | 52.7 | 48.3 |
| B2 | purplish blue | 97.4 | 1.8 | 43.3 | 44.1 | 9.1 | 7.8 | -41.7 | -40.7 |
| C2 | moderate red | 95.2 | 3.1 | 54.7 | 55.9 | 45.7 | 43.3 | 16.4 | 14.9 |
| D2 | purple | 96.3 | 1.7 | 35.0 | 35.9 | 19.3 | 18.2 | -17.9 | -16.9 |
| E2 | yellow green | 88.8 | 7.1 | 74.4 | 75.1 | -21.6 | -21.3 | 54.3 | 47.2 |
| F2 | orange yellow | 91.8 | 5.9 | 73.4 | 74.2 | 17.9 | 16.2 | 62.3 | 56.7 |
| A3 | blue | 98.1 | 1.5 | 34.5 | 35.2 | 11.4 | 10.3 | -43.5 | -42.7 |
| B3 | green | 88.0 | 6.0 | 58.1 | 58.8 | -34.3 | -33.0 | 29.6 | 23.8 |
| C3 | red | 96.3 | 2.7 | 46.5 | 47.4 | 49.1 | 47.2 | 24.8 | 23.1 |
| D3 | yellow | 91.6 | 6.8 | 82.3 | 83.1 | 3.5 | 2.0 | 75.0 | 68.4 |
| E3 | magenta | 92.7 | 4.3 | 55.4 | 56.8 | 46.8 | 43.8 | -12.2 | -9.4 |
| F3 | cyan | 99.6 | 1.0 | 55.4 | 56.1 | -20.6 | -20.4 | -24.7 | -25.3 |
| A4 | white | 91.9 | 1.3 | 95.6 | 95.8 | 0.7 | 0.5 | 2.5 | 1.3 |
| B4 | neutral 8 | 93.6 | 1.4 | 81.6 | 82.4 | 0.3 | -0.2 | 1.3 | 0.3 |
| C4 | neutral 6.5 | 96.3 | 1.3 | 69.0 | 70.0 | 0.0 | -0.4 | 0.7 | 0.0 |
| D4 | neutral 5 | 99.3 | 1.2 | 54.2 | 55.3 | 0.4 | 0.3 | 1.4 | 0.8 |
| E4 | neutral 3.5 | 100.0 | 0.8 | 40.7 | 41.5 | -0.1 | -0.1 | 0.3 | 0.1 |
| F4 | black | 100.0 | 0.3 | 27.1 | 27.3 | 0.2 | 0.1 | 0.0 | 0.0 |
| A5 | paper white | 94.9 | 1.0 | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 1.1 |
| B5 | Skin highlight L*=88 | 76.3 | 5.1 | 88.4 | 89.6 | 12.3 | 11.0 | 14.1 | 9.3 |
| C5 | Skin highlight L* =75 | 83.8 | 5.2 | 76.9 | 78.3 | 19.0 | 17.4 | 20.1 | 15.4 |
| D5 | Skin shadow L*=28 | 97.9 | 1.0 | 31.5 | 31.9 | 12.5 | 12.1 | 11.8 | 11.0 |
| E5 | Skin shadow L*=13 | 99.1 | 0.6 | 22.4 | 22.5 | 4.9 | 4.8 | 4.2 | 3.6 |
| F5 | Maximum Black | 100.0 | 0.6 | 17.7 | 18.2 | 0.6 | 0.5 | 1.3 | 1.1 |

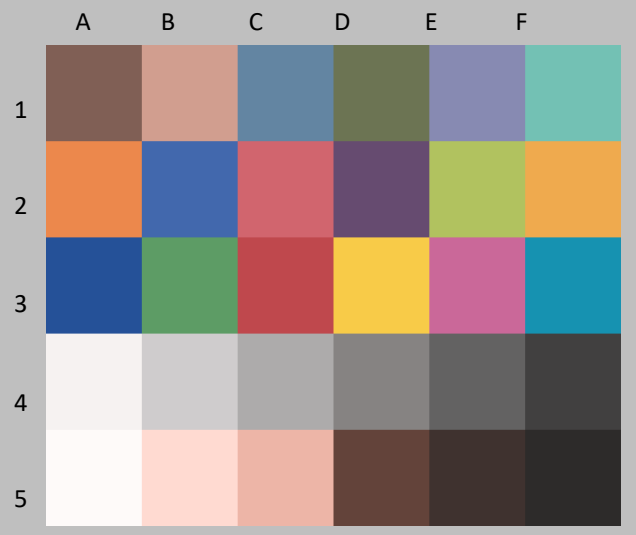
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 94.0 | 96.3 | 2.7 |
| Worst 10% (3 lowest scoring patches) | 82.7 | 92.1 | 6.6 |

160 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



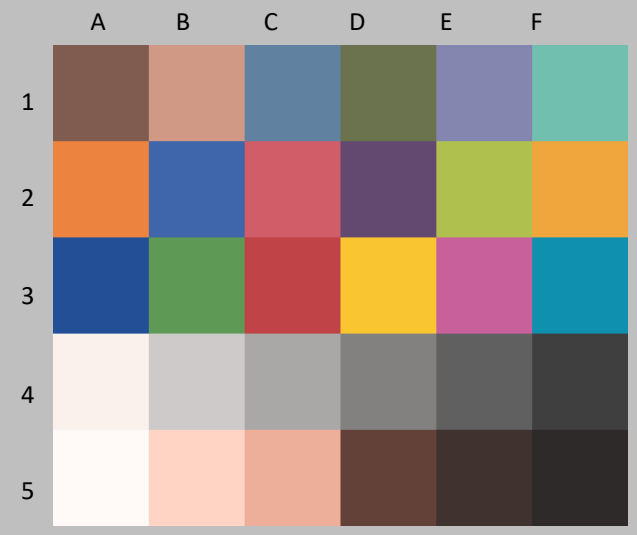

Colors After light exposure

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 93.3 | 2.1 | 42.3 | 43.6 | 12.1 | 11.3 | 12.6 | 11.1 |
| B1 | Light Skin | 87.1 | 4.1 | 67.7 | 69.3 | 17.4 | 16.0 | 18.3 | 14.8 |
| C1 | Blue sky | 98.9 | 1.3 | 53.0 | 54.1 | -3.9 | -4.6 | -19.7 | -19.4 |
| D1 | Foliage | 88.3 | 3.3 | 46.6 | 47.3 | -11.0 | -10.3 | 20.1 | 17.0 |
| E1 | blue flower | 94.2 | 2.3 | 57.3 | 58.6 | 8.3 | 6.8 | -22.2 | -21.0 |
| F1 | bluish green | 91.9 | 3.1 | 72.0 | 73.0 | -29.4 | -27.8 | 1.4 | -1.1 |
| A1 | orange | 92.8 | 5.1 | 65.6 | 66.6 | 34.1 | 32.3 | 52.7 | 48.0 |
| B2 | purplish blue | 97.2 | 2.0 | 43.3 | 44.3 | 9.1 | 7.7 | -41.7 | -40.7 |
| C2 | moderate red | 95.1 | 3.2 | 54.7 | 56.2 | 45.7 | 43.3 | 16.4 | 14.9 |
| D2 | purple | 96.3 | 1.8 | 35.0 | 36.1 | 19.3 | 18.2 | -17.9 | -16.8 |
| E2 | yellow green | 87.7 | 7.8 | 74.4 | 75.4 | -21.6 | -21.3 | 54.3 | 46.6 |
| F2 | orange yellow | 91.0 | 6.4 | 73.4 | 74.5 | 17.9 | 16.0 | 62.3 | 56.2 |
| A3 | blue | 97.9 | 1.7 | 34.5 | 35.3 | 11.4 | 10.2 | -43.5 | -42.7 |
| B3 | green | 86.9 | 6.5 | 58.1 | 59.1 | -34.3 | -33.0 | 29.6 | 23.3 |
| C3 | red | 96.1 | 2.9 | 46.5 | 47.5 | 49.1 | 47.1 | 24.8 | 23.0 |
| D3 | yellow | 90.8 | 7.5 | 82.3 | 83.4 | 3.5 | 1.8 | 75.0 | 67.8 |
| E3 | magenta | 92.2 | 4.5 | 55.4 | 57.0 | 46.8 | 43.7 | -12.2 | -9.2 |
| F3 | cyan | 99.5 | 1.0 | 55.4 | 56.2 | -20.6 | -20.5 | -24.7 | -25.4 |
| A4 | white | 91.4 | 1.3 | 95.6 | 95.8 | 0.7 | 0.5 | 2.5 | 1.2 |
| B4 | neutral 8 | 93.2 | 1.5 | 81.6 | 82.5 | 0.3 | -0.2 | 1.3 | 0.3 |
| C4 | neutral 6.5 | 96.2 | 1.4 | 69.0 | 70.1 | 0.0 | -0.4 | 0.7 | -0.1 |
| D4 | neutral 5 | 99.3 | 1.3 | 54.2 | 55.4 | 0.4 | 0.3 | 1.4 | 0.8 |
| E4 | neutral 3.5 | 100.0 | 0.8 | 40.7 | 41.5 | -0.1 | -0.1 | 0.3 | 0.1 |
| F4 | black | 100.0 | 0.3 | 27.1 | 27.4 | 0.2 | 0.1 | 0.0 | 0.0 |
| A5 | paper white | 95.3 | 1.0 | 98.4 | 98.4 | 0.1 | 0.1 | 2.0 | 1.1 |
| B5 | Skin highlight L*=88 | 73.9 | 5.5 | 88.4 | 89.8 | 12.3 | 10.9 | 14.1 | 8.9 |
| C5 | Skin highlight L* =75 | 81.8 | 5.7 | 76.9 | 78.5 | 19.0 | 17.2 | 20.1 | 14.9 |
| D5 | Skin shadow L*=28 | 98.9 | 0.8 | 31.5 | 31.9 | 12.5 | 12.1 | 11.8 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.4 | 22.5 | 4.9 | 4.8 | 4.2 | 3.9 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.7 | 18.2 | 0.6 | 0.4 | 1.3 | 1.3 |

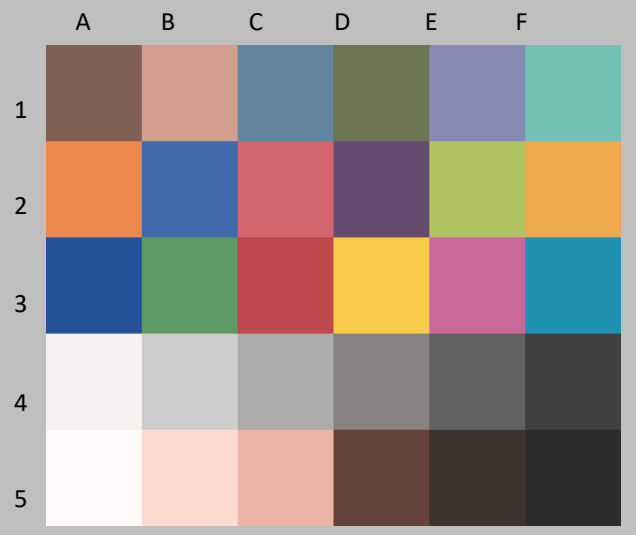
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 93.6 | 95.9 | 2.9 |
| Worst 10% (3 lowest scoring patches) | 80.9 | 91.1 | 7.3 |

180 Megalux hours

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, 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 | 92.8 | 2.3 | 42.3 | 43.7 | 12.1 | 11.2 | 12.6 | 11.1 |
| B1 | Light Skin | 86.0 | 4.4 | 67.7 | 69.4 | 17.4 | 15.9 | 18.3 | 14.6 |
| C1 | Blue sky | 98.6 | 1.4 | 53.0 | 54.1 | -3.9 | -4.6 | -19.7 | -19.3 |
| D1 | Foliage | 87.0 | 3.6 | 46.6 | 47.3 | -11.0 | -10.3 | 20.1 | 16.7 |
| E1 | blue flower | 93.5 | 2.4 | 57.3 | 58.7 | 8.3 | 6.8 | -22.2 | -20.8 |
| F1 | bluish green | 91.1 | 3.3 | 72.0 | 73.0 | -29.4 | -27.7 | 1.4 | -1.3 |
| A1 | orange | 91.9 | 5.7 | 65.6 | 66.6 | 34.1 | 32.1 | 52.7 | 47.5 |
| B2 | purplish blue | 96.8 | 2.1 | 43.3 | 44.3 | 9.1 | 7.6 | -41.7 | -40.5 |
| C2 | moderate red | 94.7 | 3.5 | 54.7 | 56.3 | 45.7 | 43.1 | 16.4 | 14.8 |
| D2 | purple | 95.6 | 2.0 | 35.0 | 36.1 | 19.3 | 18.2 | -17.9 | -16.7 |
| E2 | yellow green | 86.1 | 8.7 | 74.4 | 75.4 | -21.6 | -21.2 | 54.3 | 45.6 |
| F2 | orange yellow | 89.9 | 7.1 | 73.4 | 74.5 | 17.9 | 15.9 | 62.3 | 55.5 |
| A3 | blue | 97.5 | 1.8 | 34.5 | 35.2 | 11.4 | 10.1 | -43.5 | -42.6 |
| B3 | green | 85.2 | 7.3 | 58.1 | 59.0 | -34.3 | -32.8 | 29.6 | 22.5 |
| C3 | red | 95.7 | 3.1 | 46.5 | 47.6 | 49.1 | 46.9 | 24.8 | 22.9 |
| D3 | yellow | 89.5 | 8.5 | 82.3 | 83.3 | 3.5 | 1.7 | 75.0 | 66.8 |
| E3 | magenta | 91.7 | 4.8 | 55.4 | 57.0 | 46.8 | 43.6 | -12.2 | -8.9 |
| F3 | cyan | 99.5 | 1.0 | 55.4 | 56.1 | -20.6 | -20.5 | -24.7 | -25.4 |
| A4 | white | 92.1 | 1.3 | 95.6 | 95.7 | 0.7 | 0.4 | 2.5 | 1.3 |
| B4 | neutral 8 | 93.4 | 1.4 | 81.6 | 82.5 | 0.3 | -0.2 | 1.3 | 0.3 |
| C4 | neutral 6.5 | 95.8 | 1.4 | 69.0 | 70.1 | 0.0 | -0.4 | 0.7 | -0.1 |
| D4 | neutral 5 | 99.2 | 1.3 | 54.2 | 55.4 | 0.4 | 0.3 | 1.4 | 0.8 |
| E4 | neutral 3.5 | 100.0 | 0.8 | 40.7 | 41.5 | -0.1 | -0.1 | 0.3 | 0.1 |
| F4 | black | 100.0 | 0.3 | 27.1 | 27.4 | 0.2 | 0.1 | 0.0 | 0.0 |
| A5 | paper white | 96.1 | 0.9 | 98.4 | 98.3 | 0.1 | 0.0 | 2.0 | 1.2 |
| B5 | Skin highlight L*=88 | 72.4 | 5.8 | 88.4 | 89.7 | 12.3 | 10.8 | 14.1 | 8.6 |
| C5 | Skin highlight L* =75 | 80.6 | 6.1 | 76.9 | 78.5 | 19.0 | 17.2 | 20.1 | 14.5 |
| D5 | Skin shadow L*=28 | 98.5 | 0.9 | 31.5 | 32.0 | 12.5 | 12.1 | 11.8 | 11.1 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.4 | 22.5 | 4.9 | 4.7 | 4.2 | 3.8 |
| F5 | Maximum Black | 100.0 | 0.7 | 17.7 | 18.4 | 0.6 | 0.4 | 1.3 | 1.4 |

| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 93.0 | 95.5 | 3.1 |
| Worst 10% (3 lowest scoring patches) | 79.4 | 90.0 | 8.1 |

200 Megalux hours

## Section III: Light Induced Low-intensity Staining Test Results

This section presents test results for samples that are retired from the light fade testing unit to dark storage (0 lux,~21˚C, 50% RH) at five discreet exposure intervals (0 luxhrs, i.e., the dark storage control sample, 20 Mluxhrs, 50 Mluxhrs, 100 Mluxhrs, and 200 Mluxhrs). All of the sample image targets were printed at the same time on the same sheet of media to ensure maximum uniformity of the sample set. Also, reference measurements were initially made for each individual target to account for any minor printer output variations withn the complete sample set. The retired targets undergo a series of remeasurements at specified intervals (6 months, 1year, 2 years, etc.) from the time each sample was retired to dark storage. I* color and tonal accuracy scores and Conservation Display ratings decrease while Δb* values increase if the media shows ongoing light-induced post-exposure yellowing. The dark storage control sample (see section IV) reveals if any humidity-induced colorant shifts, thermal aging, and/or gas contaimination is also contributing to color appearance changes over time.

*AaI 30 Patch Color Target*

### I* Color (Average) Summary

| Light Exposure (Mluxhrs) | Years of Dark Storage Time after exposure | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.5 | 1 | 2 | 3 | 4 | 5 |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| 20 | 99.5 | 99.7 | 99.7 | 99.6 | 99.5 | 99.5 | |
| 50 | 98.4 | 98.6 | 98.7 | 98.6 | 98.6 | | |
| 100 | 96.2 | 96.8 | 96.8 | 96.9 | 96.7 | | |

*values in red* exceed Conservation Display Rating *Upper* limit

### I* Color (Worst 10%) Summary

| Light Exposure (Mluxhrs) | Years of Dark Storage Time after exposure | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.5 | 1 | 2 | 3 | 4 | 5 |
| 0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | |
| 20 | 97.5 | 98.5 | 98.4 | 97.9 | 97.6 | 97.8 | |
| 50 | 95.1 | 95.5 | 95.9 | 95.8 | 95.8 | | |
| 100 | 89.7 | 90.3 | 90.5 | 91.0 | 91.0 | | |

*values in red* exceed Conservation Display Rating *Lower* limit

### I* Tone (Average) Summary

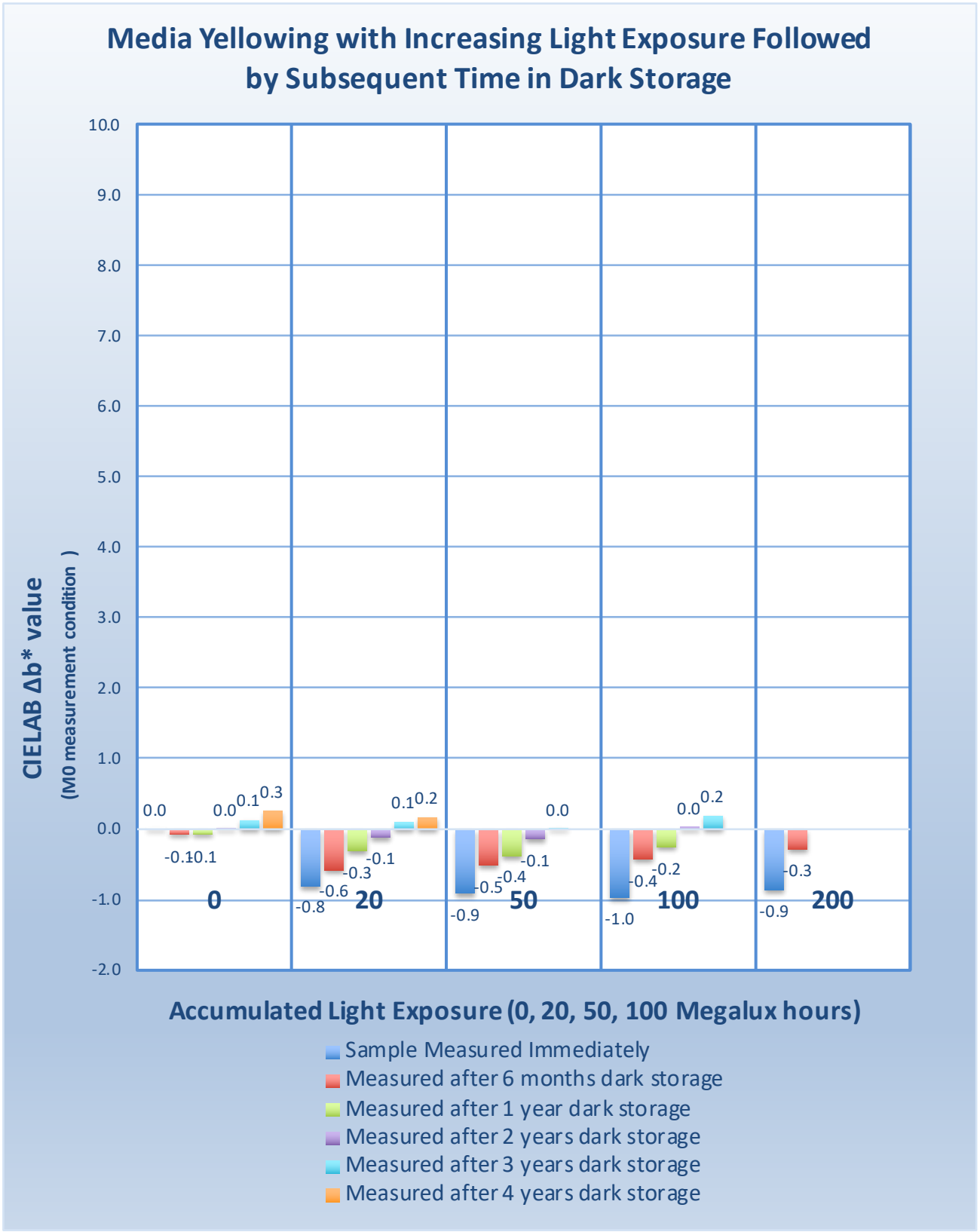
| Light Exposure (Mluxhrs) | Years of Dark Storage Time after exposure | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.5 | 1 | 2 | 3 | 4 | 5 |
| 0 | 100.0 | 99.3 | 98.0 | 99.6 | 99.7 | 99.5 | |
| 20 | 98.9 | 98.8 | 98.8 | 98.8 | 98.6 | 98.8 | |
| 50 | 98.4 | 98.3 | 98.2 | 98.2 | 98.2 | | |
| 100 | 97.3 | 97.2 | 97.2 | 97.2 | 97.2 | | |

*values in red* exceed Conservation Display Rating Upper limit

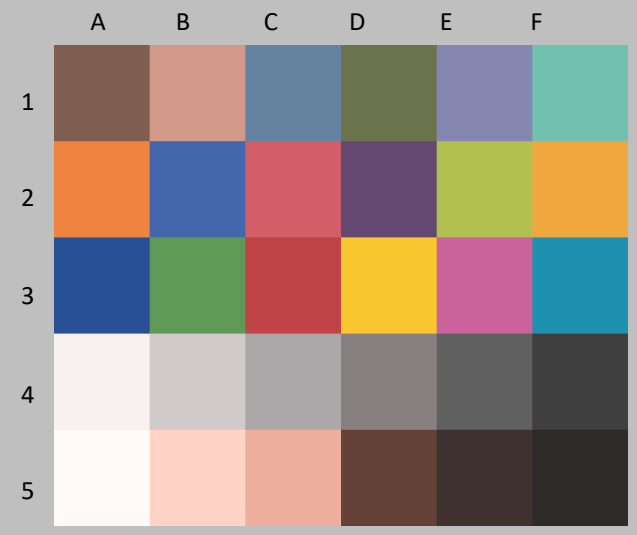
### I* Tone (Worst 10%) Summary

| Light Exposure (Mluxhrs) | Years of Dark Storage Time after exposure | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.5 | 1 | 2 | 3 | 4 | 5 |
| 0 | 100.0 | 98.5 | 94.5 | 98.8 | 99.3 | 98.6 | |
| 20 | 97.7 | 97.7 | 97.8 | 97.4 | 97.0 | 97.7 | |
| 50 | 97.0 | 96.6 | 96.1 | 96.6 | 96.3 | | |
| 100 | 94.7 | 94.5 | 94.2 | 94.3 | 93.8 | | |

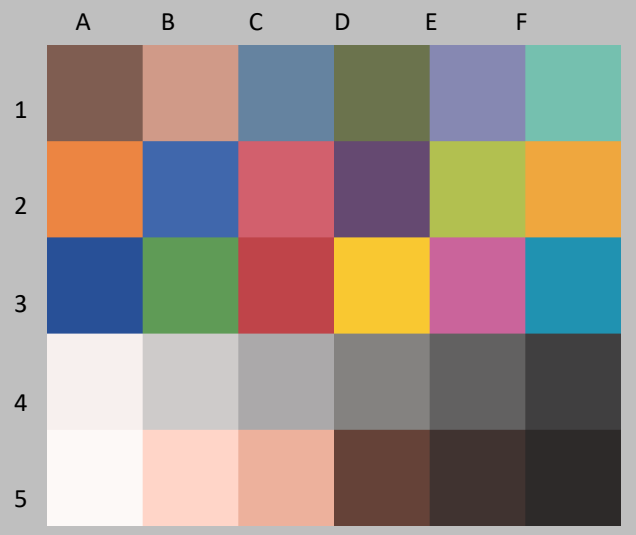
*values in red* exceed Conservation Display Rating *Lower* limit


Media Yellowing with Increasing Light Exposure Followed by Subsequent Time in Dark Storage
CIELAB Δb* value
(M0 measurement condition )
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
0.0
0.0
0.1
0.3
-0.1
0
-0.8
-0.6
-0.3
-0.1
0.1
0.2
20
-0.9
-0.5
-0.4
-0.1
0.0
50
-1.0
-0.4
-0.2
0.0
0.2
100
-0.9
-0.3
200
Accumulated Light Exposure (0, 20, 50, 100 Megalux hours)
Sample Measured Immediately
Measured after 6 months dark storage
Measured after 1 year dark storage
Measured after 2 years dark storage
Measured after 3 years dark storage
Measured after 4 years dark storage

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating



Original Print Colors before light exposure



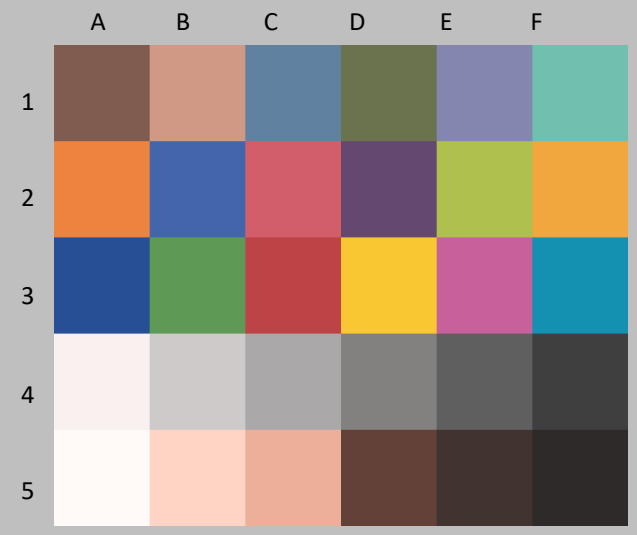
Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 100.0 | 0.3 | 42.6 | 42.8 | 12.1 | 11.9 | 12.4 | 12.3 |
| B1 | Light Skin | 99.7 | 0.6 | 68.1 | 68.3 | 17.7 | 17.1 | 17.4 | 17.3 |
| C1 | Blue sky | 100.0 | 0.5 | 53.6 | 53.9 | -3.9 | -4.2 | -19.2 | -19.1 |
| D1 | Foliage | 100.0 | 0.4 | 47.0 | 47.1 | -11.1 | -10.9 | 20.1 | 19.8 |
| E1 | blue flower | 99.4 | 0.7 | 57.7 | 58.0 | 8.2 | 7.6 | -21.8 | -21.6 |
| F1 | bluish green | 100.0 | 0.5 | 72.4 | 72.6 | -28.8 | -28.4 | 0.7 | 0.6 |
| A1 | orange | 99.9 | 0.6 | 65.9 | 65.9 | 33.8 | 33.4 | 52.6 | 52.2 |
| B2 | purplish blue | 99.8 | 0.6 | 43.8 | 44.0 | 8.6 | 8.1 | -40.9 | -40.7 |
| C2 | moderate red | 99.5 | 0.8 | 55.0 | 55.2 | 45.8 | 45.1 | 15.6 | 15.4 |
| D2 | purple | 100.0 | 0.5 | 35.5 | 35.7 | 19.2 | 18.8 | -17.8 | -17.6 |
| E2 | yellow green | 99.5 | 0.8 | 74.6 | 74.7 | -21.4 | -21.1 | 54.1 | 53.4 |
| F2 | orange yellow | 99.9 | 0.6 | 73.8 | 73.9 | 17.4 | 17.0 | 62.3 | 61.9 |
| A3 | blue | 99.8 | 0.6 | 34.8 | 35.0 | 11.2 | 10.7 | -43.1 | -42.7 |
| B3 | green | 100.0 | 0.5 | 58.5 | 58.6 | -34.0 | -33.6 | 29.8 | 29.5 |
| C3 | red | 99.7 | 0.7 | 46.6 | 46.7 | 49.1 | 48.6 | 24.6 | 24.2 |
| D3 | yellow | 99.9 | 0.6 | 82.7 | 82.7 | 3.4 | 3.1 | 75.2 | 74.8 |
| E3 | magenta | 98.1 | 1.5 | 55.6 | 56.0 | 46.9 | 45.8 | -12.1 | -11.2 |
| F3 | cyan | 100.0 | 0.3 | 55.8 | 56.0 | -20.2 | -20.3 | -24.9 | -24.8 |
| A4 | white | 99.2 | 0.6 | 95.6 | 95.5 | 0.7 | 0.6 | 2.2 | 1.7 |
| B4 | neutral 8 | 100.0 | 0.3 | 81.9 | 82.1 | 0.6 | 0.3 | 0.8 | 0.6 |
| C4 | neutral 6.5 | 100.0 | 0.4 | 69.2 | 69.5 | 0.3 | 0.1 | 0.1 | 0.1 |
| D4 | neutral 5 | 100.0 | 0.3 | 54.4 | 54.6 | 0.6 | 0.4 | 1.0 | 1.0 |
| E4 | neutral 3.5 | 100.0 | 0.2 | 40.8 | 41.0 | 0.1 | 0.0 | 0.2 | 0.2 |
| F4 | black | 100.0 | 0.1 | 27.2 | 27.2 | 0.3 | 0.2 | -0.1 | -0.1 |
| A5 | paper white | 99.1 | 0.6 | 98.3 | 98.1 | 0.1 | 0.1 | 1.9 | 1.3 |
| B5 | Skin highlight L*=88 | 98.5 | 0.8 | 88.3 | 88.6 | 12.7 | 12.1 | 12.4 | 12.1 |
| C5 | Skin highlight L* =75 | 99.0 | 0.8 | 77.1 | 77.4 | 19.1 | 18.4 | 19.3 | 19.1 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.6 | 31.9 | 12.7 | 12.5 | 12.0 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.7 | 5.0 | 5.0 | 4.3 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 17.8 | 0.6 | 0.6 | 1.3 | 1.1 |

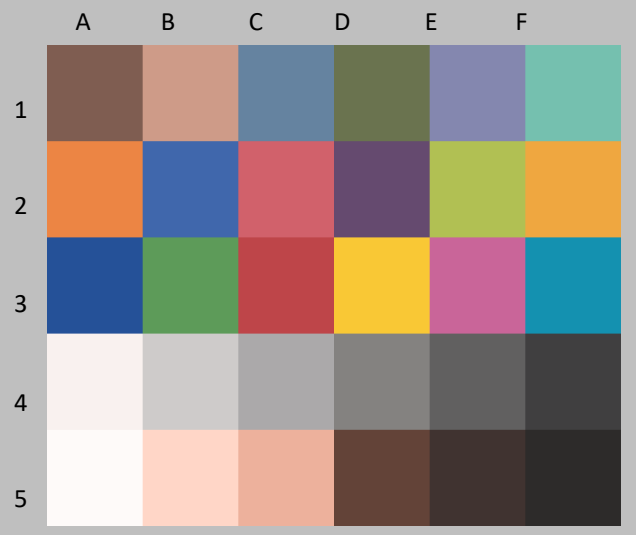
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.7 | 98.8 | 0.5 |
| Worst 10% (3 lowest scoring patches) | 98.5 | 97.7 | 1.0 |

20 Mluxhrs + 6 months

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating



Original Print Colors before light exposure



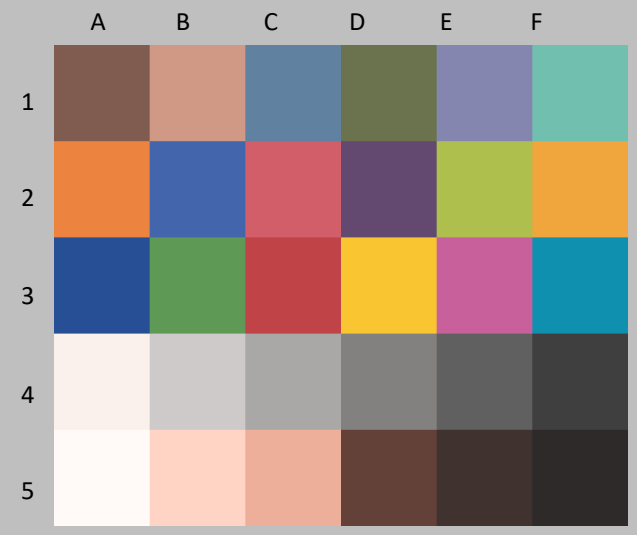
Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 99.6 | 0.7 | 42.4 | 42.8 | 12.0 | 11.6 | 12.7 | 12.3 |
| B1 | Light Skin | 97.1 | 1.3 | 67.8 | 68.2 | 17.4 | 16.5 | 18.2 | 17.4 |
| C1 | Blue sky | 99.4 | 0.8 | 53.1 | 53.6 | -4.0 | -4.3 | -19.6 | -19.1 |
| D1 | Foliage | 98.5 | 0.9 | 46.7 | 46.9 | -11.1 | -10.7 | 20.1 | 19.3 |
| E1 | blue flower | 96.7 | 1.4 | 57.2 | 57.8 | 8.3 | 7.3 | -22.2 | -21.4 |
| F1 | bluish green | 98.4 | 1.0 | 72.1 | 72.4 | -29.3 | -28.4 | 1.2 | 0.7 |
| A1 | orange | 98.1 | 1.7 | 65.6 | 65.8 | 34.2 | 33.5 | 52.8 | 51.3 |
| B2 | purplish blue | 98.9 | 1.1 | 43.4 | 43.8 | 8.9 | 8.1 | -41.5 | -40.9 |
| C2 | moderate red | 98.0 | 1.6 | 54.8 | 55.3 | 45.8 | 44.4 | 16.4 | 15.8 |
| D2 | purple | 97.8 | 1.2 | 35.2 | 35.7 | 19.2 | 18.4 | -17.9 | -17.2 |
| E2 | yellow green | 97.6 | 1.9 | 74.3 | 74.6 | -21.7 | -21.3 | 54.0 | 52.1 |
| F2 | orange yellow | 98.3 | 1.6 | 73.5 | 73.8 | 17.7 | 16.9 | 62.2 | 60.8 |
| A3 | blue | 98.9 | 1.1 | 34.7 | 35.1 | 11.1 | 10.4 | -43.2 | -42.6 |
| B3 | green | 97.2 | 1.8 | 58.1 | 58.4 | -34.3 | -33.5 | 29.6 | 27.9 |
| C3 | red | 98.7 | 1.3 | 46.5 | 46.8 | 49.0 | 48.0 | 24.8 | 24.1 |
| D3 | yellow | 98.4 | 1.7 | 82.4 | 82.7 | 3.5 | 2.8 | 75.1 | 73.5 |
| E3 | magenta | 95.7 | 2.7 | 55.5 | 56.1 | 46.8 | 44.8 | -12.2 | -10.5 |
| F3 | cyan | 100.0 | 0.3 | 55.5 | 55.8 | -20.6 | -20.6 | -24.8 | -24.8 |
| A4 | white | 99.9 | 0.5 | 95.6 | 95.6 | 0.8 | 0.5 | 2.4 | 1.9 |
| B4 | neutral 8 | 100.0 | 0.5 | 81.7 | 82.0 | 0.4 | 0.0 | 1.2 | 1.0 |
| C4 | neutral 6.5 | 100.0 | 0.5 | 69.0 | 69.4 | 0.2 | -0.2 | 0.3 | 0.3 |
| D4 | neutral 5 | 100.0 | 0.5 | 54.2 | 54.7 | 0.4 | 0.2 | 1.3 | 1.3 |
| E4 | neutral 3.5 | 100.0 | 0.4 | 40.6 | 40.9 | -0.1 | -0.2 | 0.4 | 0.4 |
| F4 | black | 100.0 | 0.2 | 27.0 | 27.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| A5 | paper white | 99.8 | 0.5 | 98.4 | 98.2 | 0.1 | 0.0 | 2.0 | 1.4 |
| B5 | Skin highlight L*=88 | 94.8 | 1.5 | 88.4 | 88.8 | 12.4 | 11.4 | 13.8 | 12.7 |
| C5 | Skin highlight L* =75 | 96.0 | 1.6 | 76.9 | 77.1 | 19.0 | 17.8 | 20.1 | 19.0 |
| D5 | Skin shadow L*=28 | 100.0 | 0.5 | 31.4 | 31.7 | 12.6 | 12.2 | 12.0 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.2 | 22.6 | 22.7 | 4.9 | 4.9 | 4.2 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 17.9 | 0.5 | 0.5 | 1.4 | 1.3 |

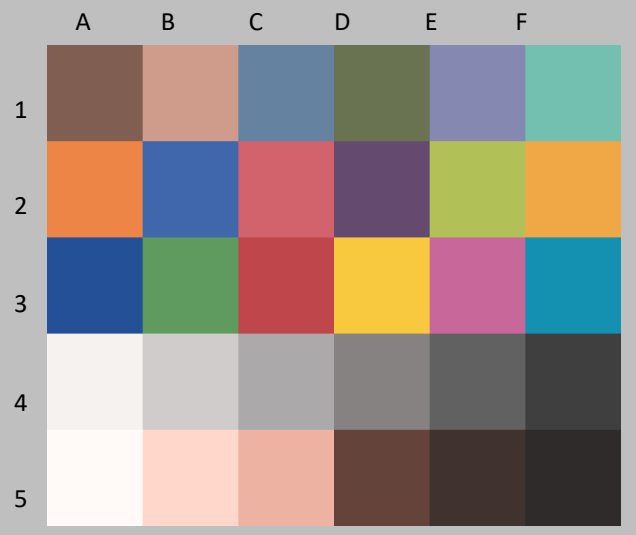
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 98.6 | 98.3 | 1.0 |
| Worst 10% (3 lowest scoring patches) | 95.5 | 96.6 | 2.1 |

50 Mluxhrs + 6 months

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



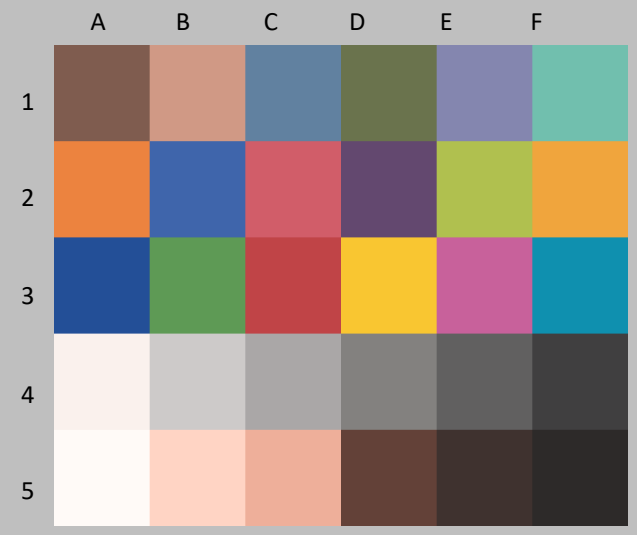

Colors after both light exposure + dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 96.7 | 1.3 | 42.3 | 43.0 | 12.1 | 11.6 | 12.7 | 11.8 |
| B1 | Light Skin | 93.3 | 2.4 | 67.8 | 68.7 | 17.4 | 16.3 | 18.4 | 16.5 |
| C1 | Blue sky | 99.1 | 1.0 | 53.1 | 53.8 | -3.8 | -4.3 | -19.7 | -19.2 |
| D1 | Foliage | 94.0 | 1.9 | 46.8 | 47.2 | -11.1 | -10.6 | 20.0 | 18.2 |
| E1 | blue flower | 95.5 | 1.7 | 57.3 | 58.1 | 8.3 | 7.2 | -22.2 | -21.2 |
| F1 | bluish green | 95.9 | 1.8 | 72.1 | 72.6 | -29.4 | -28.3 | 1.4 | 0.1 |
| A1 | orange | 96.4 | 2.8 | 65.5 | 66.0 | 34.1 | 33.0 | 52.6 | 50.0 |
| B2 | purplish blue | 97.9 | 1.5 | 43.4 | 44.0 | 9.0 | 8.0 | -41.5 | -40.6 |
| C2 | moderate red | 97.1 | 2.1 | 54.8 | 55.7 | 45.7 | 43.9 | 16.4 | 15.7 |
| D2 | purple | 96.9 | 1.5 | 35.1 | 35.9 | 19.1 | 18.2 | -17.9 | -16.9 |
| E2 | yellow green | 93.2 | 4.5 | 74.3 | 74.8 | -21.6 | -21.3 | 54.1 | 49.6 |
| F2 | orange yellow | 95.2 | 3.7 | 73.4 | 74.0 | 17.9 | 16.8 | 62.2 | 58.7 |
| A3 | blue | 98.7 | 1.2 | 34.6 | 35.1 | 11.3 | 10.4 | -43.4 | -42.7 |
| B3 | green | 92.9 | 3.7 | 58.2 | 58.7 | -34.1 | -33.2 | 29.7 | 26.1 |
| C3 | red | 97.7 | 1.9 | 46.6 | 47.2 | 49.0 | 47.6 | 24.8 | 23.7 |
| D3 | yellow | 95.4 | 4.0 | 82.4 | 82.9 | 3.6 | 2.6 | 74.9 | 71.1 |
| E3 | magenta | 94.1 | 3.5 | 55.4 | 56.4 | 46.7 | 44.5 | -12.1 | -9.7 |
| F3 | cyan | 100.0 | 0.5 | 55.4 | 55.8 | -20.6 | -20.6 | -24.8 | -25.1 |
| A4 | white | 98.3 | 0.7 | 95.6 | 95.6 | 0.7 | 0.5 | 2.5 | 1.9 |
| B4 | neutral 8 | 98.7 | 0.8 | 81.6 | 82.2 | 0.3 | -0.1 | 1.2 | 0.8 |
| C4 | neutral 6.5 | 100.0 | 0.9 | 68.9 | 69.6 | 0.1 | -0.3 | 0.5 | 0.2 |
| D4 | neutral 5 | 100.0 | 0.8 | 54.1 | 54.9 | 0.4 | 0.3 | 1.4 | 1.1 |
| E4 | neutral 3.5 | 100.0 | 0.5 | 40.7 | 41.2 | -0.1 | -0.1 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.1 | 27.2 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.4 | 98.4 | 98.3 | 0.1 | 0.0 | 2.0 | 1.5 |
| B5 | Skin highlight L*=88 | 87.1 | 3.0 | 88.4 | 89.2 | 12.3 | 11.2 | 13.9 | 11.2 |
| C5 | Skin highlight L* =75 | 90.8 | 3.2 | 76.9 | 77.8 | 19.1 | 17.8 | 20.0 | 17.3 |
| D5 | Skin shadow L*=28 | 99.1 | 0.7 | 31.3 | 31.6 | 12.5 | 12.2 | 11.9 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.5 | 4.9 | 4.8 | 4.3 | 3.9 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.5 | 18.1 | 0.6 | 0.5 | 1.4 | 1.3 |

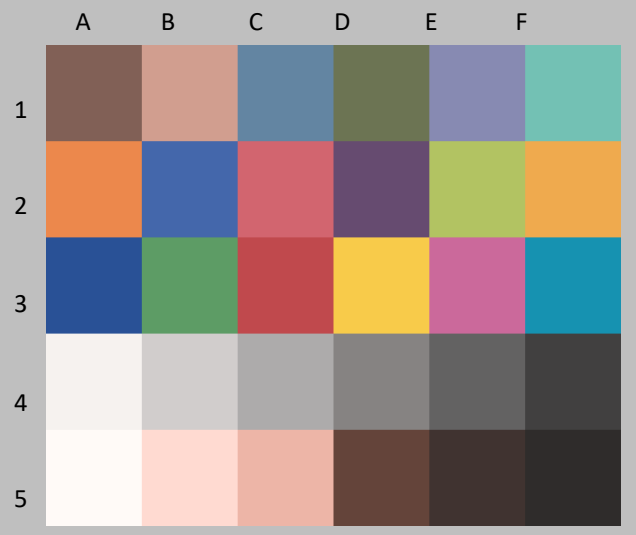
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 96.8 | 97.2 | 1.8 |
| Worst 10% (3 lowest scoring patches) | 90.3 | 94.5 | 4.1 |

100 Mluxhrs + 6 months

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



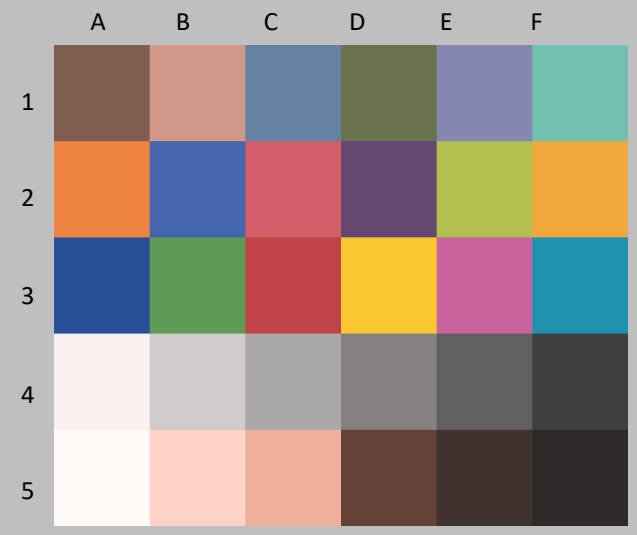

Colors after both light exposure + dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 91.7 | 2.5 | 42.3 | 43.9 | 12.1 | 11.1 | 12.6 | 10.9 |
| B1 | Light Skin | 86.2 | 4.4 | 67.7 | 69.5 | 17.4 | 16.0 | 18.3 | 14.6 |
| C1 | Blue sky | 98.0 | 1.5 | 53.0 | 54.2 | -3.9 | -4.6 | -19.7 | -19.2 |
| D1 | Foliage | 87.1 | 3.6 | 46.6 | 47.5 | -11.0 | -10.3 | 20.1 | 16.7 |
| E1 | blue flower | 92.7 | 2.6 | 57.3 | 58.7 | 8.3 | 6.7 | -22.2 | -20.6 |
| F1 | bluish green | 91.7 | 3.1 | 72.0 | 73.1 | -29.4 | -27.7 | 1.4 | -1.1 |
| A1 | orange | 92.0 | 5.6 | 65.6 | 66.7 | 34.1 | 32.0 | 52.7 | 47.6 |
| B2 | purplish blue | 96.5 | 2.3 | 43.3 | 44.3 | 9.1 | 7.6 | -41.7 | -40.4 |
| C2 | moderate red | 95.1 | 3.3 | 54.7 | 56.4 | 45.7 | 43.2 | 16.4 | 15.0 |
| D2 | purple | 95.4 | 2.1 | 35.0 | 36.2 | 19.3 | 18.2 | -17.9 | -16.6 |
| E2 | yellow green | 86.2 | 8.6 | 74.4 | 75.5 | -21.6 | -21.1 | 54.3 | 45.7 |
| F2 | orange yellow | 90.0 | 7.1 | 73.4 | 74.6 | 17.9 | 16.0 | 62.3 | 55.5 |
| A3 | blue | 97.0 | 2.1 | 34.5 | 35.4 | 11.4 | 10.0 | -43.5 | -42.3 |
| B3 | green | 85.6 | 7.1 | 58.1 | 59.2 | -34.3 | -32.9 | 29.6 | 22.7 |
| C3 | red | 95.7 | 3.1 | 46.5 | 47.7 | 49.1 | 47.0 | 24.8 | 22.8 |
| D3 | yellow | 89.6 | 8.4 | 82.3 | 83.5 | 3.5 | 1.8 | 75.0 | 66.9 |
| E3 | magenta | 91.6 | 4.9 | 55.4 | 57.1 | 46.8 | 43.8 | -12.2 | -8.7 |
| F3 | cyan | 99.9 | 1.0 | 55.4 | 56.2 | -20.6 | -20.5 | -24.7 | -25.2 |
| A4 | white | 97.2 | 0.8 | 95.6 | 95.8 | 0.7 | 0.4 | 2.5 | 1.8 |
| B4 | neutral 8 | 96.0 | 1.3 | 81.6 | 82.6 | 0.3 | -0.2 | 1.3 | 0.6 |
| C4 | neutral 6.5 | 97.4 | 1.4 | 69.0 | 70.2 | 0.0 | -0.3 | 0.7 | 0.1 |
| D4 | neutral 5 | 99.8 | 1.3 | 54.2 | 55.5 | 0.4 | 0.3 | 1.4 | 0.9 |
| E4 | neutral 3.5 | 100.0 | 0.8 | 40.7 | 41.5 | -0.1 | 0.0 | 0.3 | 0.1 |
| F4 | black | 100.0 | 0.4 | 27.1 | 27.5 | 0.2 | 0.2 | 0.0 | -0.1 |
| A5 | paper white | 100.0 | 0.3 | 98.4 | 98.4 | 0.1 | 0.0 | 2.0 | 1.8 |
| B5 | Skin highlight L*=88 | 74.3 | 5.5 | 88.4 | 89.8 | 12.3 | 10.8 | 14.1 | 9.0 |
| C5 | Skin highlight L* =75 | 81.2 | 6.0 | 76.9 | 78.6 | 19.0 | 17.3 | 20.1 | 14.7 |
| D5 | Skin shadow L*=28 | 97.7 | 1.1 | 31.5 | 32.1 | 12.5 | 12.1 | 11.8 | 11.0 |
| E5 | Skin shadow L*=13 | 97.9 | 0.7 | 22.4 | 22.6 | 4.9 | 4.8 | 4.2 | 3.5 |
| F5 | Maximum Black | 100.0 | 0.7 | 17.7 | 18.4 | 0.6 | 0.5 | 1.3 | 1.0 |

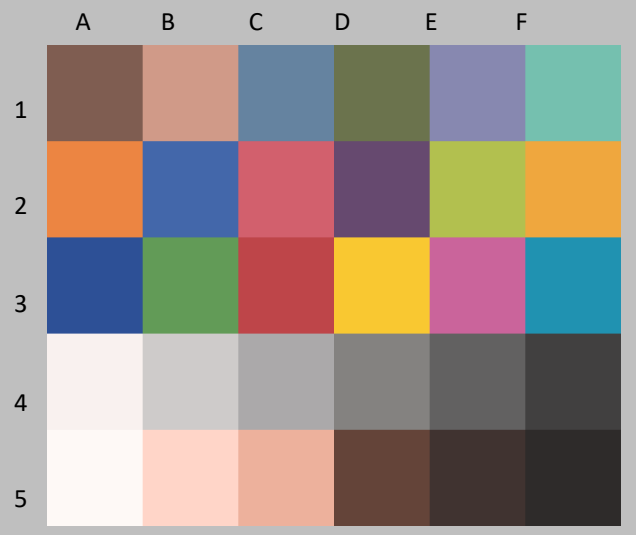
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 93.5 | 95.4 | 3.1 |
| Worst 10% (3 lowest scoring patches) | 80.4 | 90.2 | 8.0 |

200 Mluxhrs + 6 months

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



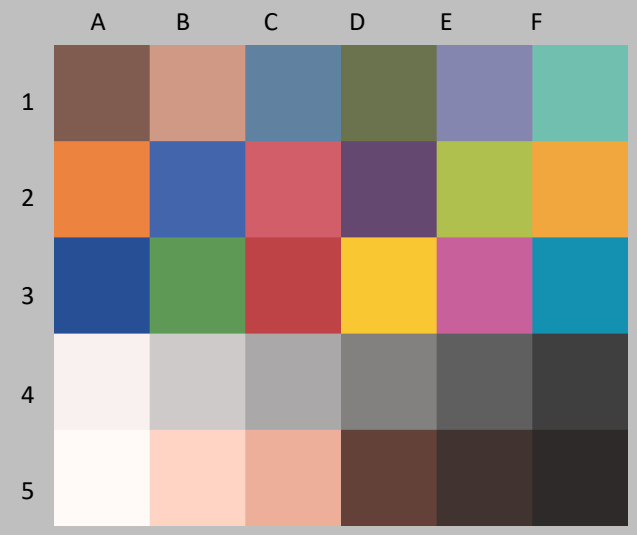

Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 100.0 | 0.4 | 42.6 | 42.8 | 12.1 | 11.8 | 12.4 | 12.4 |
| B1 | Light Skin | 99.5 | 0.7 | 68.1 | 68.3 | 17.7 | 17.0 | 17.4 | 17.4 |
| C1 | Blue sky | 100.0 | 0.5 | 53.6 | 53.9 | -3.9 | -4.2 | -19.2 | -18.9 |
| D1 | Foliage | 100.0 | 0.4 | 47.0 | 47.1 | -11.1 | -10.9 | 20.1 | 19.9 |
| E1 | blue flower | 98.8 | 0.9 | 57.7 | 58.1 | 8.2 | 7.5 | -21.8 | -21.4 |
| F1 | bluish green | 100.0 | 0.5 | 72.4 | 72.6 | -28.8 | -28.4 | 0.7 | 0.7 |
| A1 | orange | 99.8 | 0.6 | 65.9 | 66.0 | 33.8 | 33.4 | 52.6 | 52.2 |
| B2 | purplish blue | 99.4 | 0.8 | 43.8 | 44.1 | 8.6 | 7.9 | -40.9 | -40.5 |
| C2 | moderate red | 99.4 | 0.9 | 55.0 | 55.3 | 45.8 | 45.0 | 15.6 | 15.5 |
| D2 | purple | 99.4 | 0.7 | 35.5 | 35.8 | 19.2 | 18.8 | -17.8 | -17.3 |
| E2 | yellow green | 99.8 | 0.6 | 74.6 | 74.7 | -21.4 | -21.1 | 54.1 | 53.6 |
| F2 | orange yellow | 99.8 | 0.6 | 73.8 | 73.9 | 17.4 | 16.9 | 62.3 | 62.0 |
| A3 | blue | 99.3 | 0.9 | 34.8 | 35.1 | 11.2 | 10.6 | -43.1 | -42.5 |
| B3 | green | 99.9 | 0.6 | 58.5 | 58.6 | -34.0 | -33.5 | 29.8 | 29.6 |
| C3 | red | 99.6 | 0.7 | 46.6 | 46.8 | 49.1 | 48.4 | 24.6 | 24.4 |
| D3 | yellow | 100.0 | 0.5 | 82.7 | 82.8 | 3.4 | 3.1 | 75.2 | 74.9 |
| E3 | magenta | 97.6 | 1.7 | 55.6 | 56.0 | 46.9 | 45.6 | -12.1 | -11.0 |
| F3 | cyan | 100.0 | 0.4 | 55.8 | 56.1 | -20.2 | -20.3 | -24.9 | -24.6 |
| A4 | white | 100.0 | 0.3 | 95.6 | 95.5 | 0.7 | 0.6 | 2.2 | 2.0 |
| B4 | neutral 8 | 100.0 | 0.4 | 81.9 | 82.2 | 0.6 | 0.3 | 0.8 | 0.9 |
| C4 | neutral 6.5 | 100.0 | 0.5 | 69.2 | 69.5 | 0.3 | 0.1 | 0.1 | 0.3 |
| D4 | neutral 5 | 100.0 | 0.3 | 54.4 | 54.7 | 0.6 | 0.5 | 1.0 | 1.1 |
| E4 | neutral 3.5 | 100.0 | 0.4 | 40.8 | 41.1 | 0.1 | -0.1 | 0.2 | 0.4 |
| F4 | black | 100.0 | 0.3 | 27.2 | 27.4 | 0.3 | 0.2 | -0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.3 | 98.3 | 98.2 | 0.1 | 0.1 | 1.9 | 1.6 |
| B5 | Skin highlight L*=88 | 98.8 | 0.8 | 88.3 | 88.5 | 12.7 | 12.0 | 12.4 | 12.2 |
| C5 | Skin highlight L* =75 | 99.2 | 0.8 | 77.1 | 77.4 | 19.1 | 18.4 | 19.3 | 19.1 |
| D5 | Skin shadow L*=28 | 100.0 | 0.5 | 31.6 | 32.0 | 12.7 | 12.5 | 12.0 | 11.9 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.8 | 5.0 | 5.0 | 4.3 | 4.2 |
| F5 | Maximum Black | 100.0 | 0.3 | 17.5 | 17.9 | 0.6 | 0.6 | 1.3 | 1.3 |

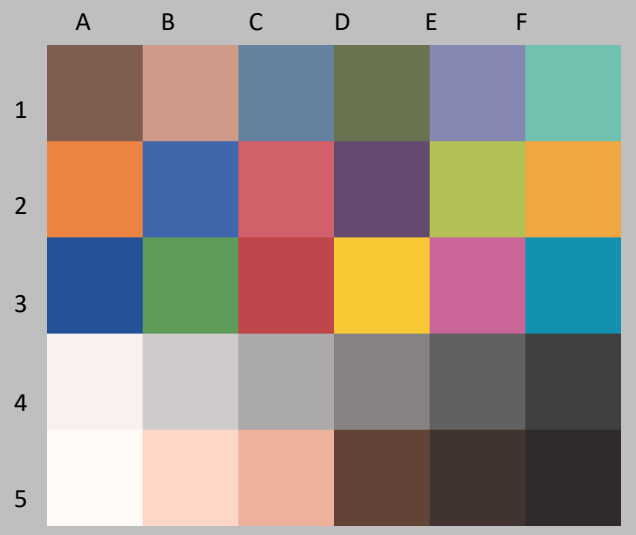
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.7 | 98.8 | 0.6 |
| Worst 10% (3 lowest scoring patches) | 98.4 | 97.8 | 1.2 |

20 Mluxhrs + 1 year

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating



Original Print Colors before light exposure



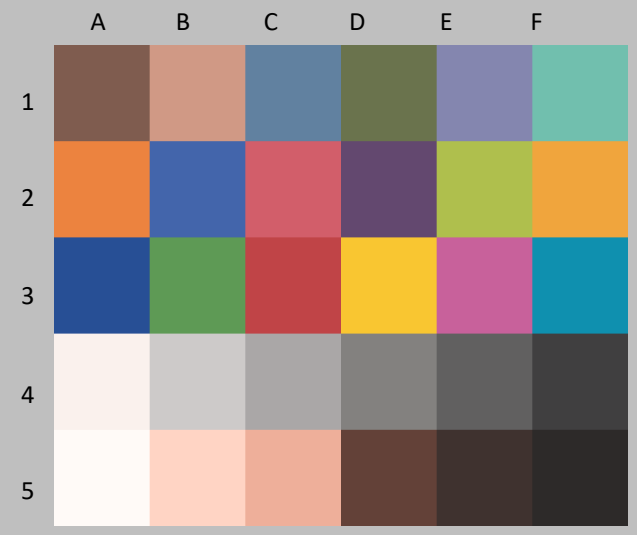
Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 99.2 | 0.8 | 42.4 | 42.9 | 12.0 | 11.6 | 12.7 | 12.3 |
| B1 | Light Skin | 97.6 | 1.3 | 67.8 | 68.4 | 17.4 | 16.6 | 18.2 | 17.4 |
| C1 | Blue sky | 100.0 | 0.7 | 53.1 | 53.6 | -4.0 | -4.3 | -19.6 | -19.3 |
| D1 | Foliage | 98.1 | 1.0 | 46.7 | 46.9 | -11.1 | -10.7 | 20.1 | 19.2 |
| E1 | blue flower | 96.9 | 1.4 | 57.2 | 57.9 | 8.3 | 7.4 | -22.2 | -21.4 |
| F1 | bluish green | 98.4 | 1.1 | 72.1 | 72.6 | -29.3 | -28.5 | 1.2 | 0.6 |
| A1 | orange | 98.5 | 1.5 | 65.6 | 66.0 | 34.2 | 33.5 | 52.8 | 51.5 |
| B2 | purplish blue | 99.3 | 0.9 | 43.4 | 43.9 | 8.9 | 8.3 | -41.5 | -41.0 |
| C2 | moderate red | 98.5 | 1.4 | 54.8 | 55.5 | 45.8 | 44.6 | 16.4 | 16.1 |
| D2 | purple | 98.2 | 1.1 | 35.2 | 35.8 | 19.2 | 18.5 | -17.9 | -17.2 |
| E2 | yellow green | 97.5 | 2.0 | 74.3 | 74.7 | -21.7 | -21.4 | 54.0 | 52.1 |
| F2 | orange yellow | 98.5 | 1.5 | 73.5 | 73.9 | 17.7 | 17.0 | 62.2 | 60.9 |
| A3 | blue | 99.3 | 0.9 | 34.7 | 35.1 | 11.1 | 10.5 | -43.2 | -42.7 |
| B3 | green | 97.1 | 1.9 | 58.1 | 58.5 | -34.3 | -33.7 | 29.6 | 27.8 |
| C3 | red | 99.2 | 1.1 | 46.5 | 46.9 | 49.0 | 48.2 | 24.8 | 24.3 |
| D3 | yellow | 98.4 | 1.7 | 82.4 | 82.8 | 3.5 | 2.8 | 75.1 | 73.5 |
| E3 | magenta | 95.8 | 2.6 | 55.5 | 56.2 | 46.8 | 45.0 | -12.2 | -10.3 |
| F3 | cyan | 100.0 | 0.4 | 55.5 | 55.9 | -20.6 | -20.6 | -24.8 | -24.8 |
| A4 | white | 100.0 | 0.4 | 95.6 | 95.7 | 0.8 | 0.5 | 2.4 | 2.1 |
| B4 | neutral 8 | 100.0 | 0.6 | 81.7 | 82.1 | 0.4 | 0.0 | 1.2 | 1.0 |
| C4 | neutral 6.5 | 100.0 | 0.6 | 69.0 | 69.5 | 0.2 | -0.2 | 0.3 | 0.3 |
| D4 | neutral 5 | 100.0 | 0.6 | 54.2 | 54.8 | 0.4 | 0.2 | 1.3 | 1.3 |
| E4 | neutral 3.5 | 100.0 | 0.4 | 40.6 | 41.0 | -0.1 | -0.1 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.0 | 27.3 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.4 | 98.4 | 98.4 | 0.1 | 0.0 | 2.0 | 1.6 |
| B5 | Skin highlight L*=88 | 95.5 | 1.5 | 88.4 | 89.0 | 12.4 | 11.5 | 13.8 | 12.9 |
| C5 | Skin highlight L* =75 | 96.4 | 1.6 | 76.9 | 77.3 | 19.0 | 17.9 | 20.1 | 19.1 |
| D5 | Skin shadow L*=28 | 100.0 | 0.5 | 31.4 | 31.7 | 12.6 | 12.3 | 12.0 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.2 | 22.6 | 22.7 | 4.9 | 4.8 | 4.2 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 17.9 | 0.5 | 0.5 | 1.4 | 1.3 |

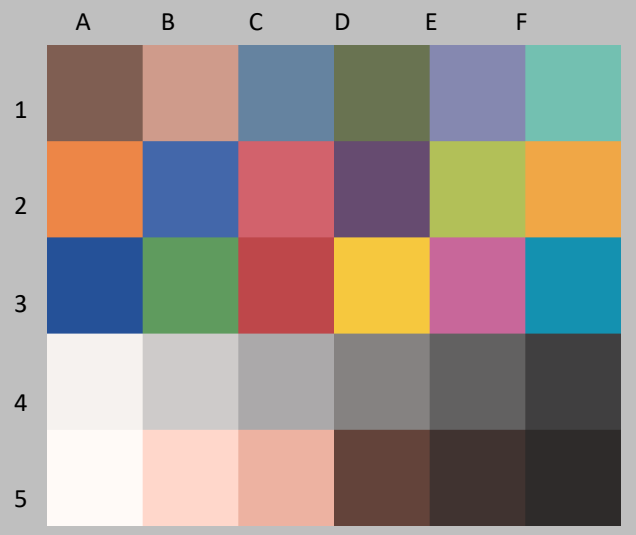
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 98.7 | 98.2 | 1.0 |
| Worst 10% (3 lowest scoring patches) | 95.9 | 96.1 | 2.1 |

50 Mluxhrs + 1 year

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



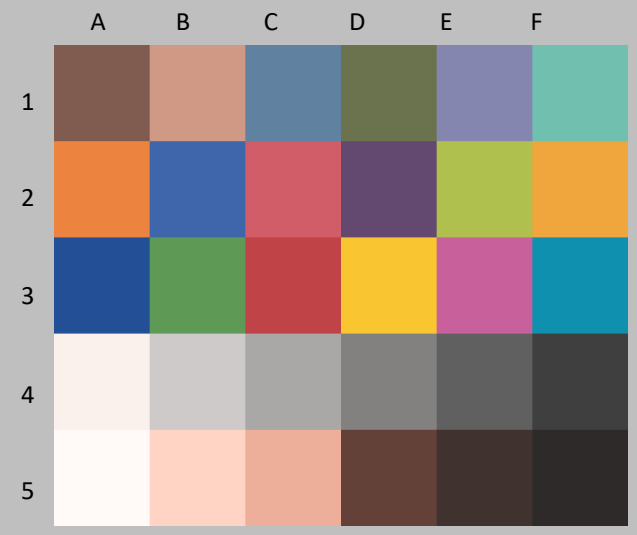

Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 96.3 | 1.4 | 42.3 | 43.1 | 12.1 | 11.5 | 12.7 | 11.8 |
| B1 | Light Skin | 93.1 | 2.4 | 67.8 | 68.7 | 17.4 | 16.2 | 18.4 | 16.5 |
| C1 | Blue sky | 98.9 | 1.0 | 53.1 | 53.8 | -3.8 | -4.3 | -19.7 | -19.2 |
| D1 | Foliage | 93.8 | 2.0 | 46.8 | 47.2 | -11.1 | -10.7 | 20.0 | 18.1 |
| E1 | blue flower | 95.1 | 1.9 | 57.3 | 58.1 | 8.3 | 7.1 | -22.2 | -21.1 |
| F1 | bluish green | 96.3 | 1.7 | 72.1 | 72.6 | -29.4 | -28.3 | 1.4 | 0.2 |
| A1 | orange | 96.3 | 2.9 | 65.5 | 66.1 | 34.1 | 32.9 | 52.6 | 50.0 |
| B2 | purplish blue | 97.6 | 1.6 | 43.4 | 44.0 | 9.0 | 7.9 | -41.5 | -40.5 |
| C2 | moderate red | 96.7 | 2.3 | 54.8 | 55.7 | 45.7 | 43.7 | 16.4 | 15.6 |
| D2 | purple | 96.7 | 1.6 | 35.1 | 35.9 | 19.1 | 18.2 | -17.9 | -16.9 |
| E2 | yellow green | 93.2 | 4.5 | 74.3 | 74.8 | -21.6 | -21.3 | 54.1 | 49.7 |
| F2 | orange yellow | 95.3 | 3.6 | 73.4 | 74.0 | 17.9 | 16.7 | 62.2 | 58.8 |
| A3 | blue | 98.3 | 1.4 | 34.6 | 35.2 | 11.3 | 10.3 | -43.4 | -42.6 |
| B3 | green | 93.0 | 3.7 | 58.2 | 58.7 | -34.1 | -33.2 | 29.7 | 26.1 |
| C3 | red | 97.6 | 1.9 | 46.6 | 47.2 | 49.0 | 47.5 | 24.8 | 23.7 |
| D3 | yellow | 95.5 | 3.9 | 82.4 | 82.9 | 3.6 | 2.5 | 74.9 | 71.2 |
| E3 | magenta | 93.8 | 3.6 | 55.4 | 56.4 | 46.7 | 44.3 | -12.1 | -9.6 |
| F3 | cyan | 100.0 | 0.5 | 55.4 | 55.8 | -20.6 | -20.6 | -24.8 | -25.0 |
| A4 | white | 99.6 | 0.5 | 95.6 | 95.6 | 0.7 | 0.4 | 2.5 | 2.1 |
| B4 | neutral 8 | 99.5 | 0.7 | 81.6 | 82.1 | 0.3 | -0.1 | 1.2 | 0.9 |
| C4 | neutral 6.5 | 100.0 | 0.9 | 68.9 | 69.5 | 0.1 | -0.4 | 0.5 | 0.3 |
| D4 | neutral 5 | 100.0 | 0.8 | 54.1 | 54.9 | 0.4 | 0.2 | 1.4 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.5 | 40.7 | 41.2 | -0.1 | -0.1 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.1 | 27.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| A5 | paper white | 100.0 | 0.3 | 98.4 | 98.3 | 0.1 | 0.0 | 2.0 | 1.7 |
| B5 | Skin highlight L*=88 | 87.7 | 2.9 | 88.4 | 89.2 | 12.3 | 11.1 | 13.9 | 11.4 |
| C5 | Skin highlight L* =75 | 90.9 | 3.2 | 76.9 | 77.8 | 19.1 | 17.7 | 20.0 | 17.4 |
| D5 | Skin shadow L*=28 | 99.0 | 0.8 | 31.3 | 31.7 | 12.5 | 12.0 | 11.9 | 11.4 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.6 | 4.9 | 4.8 | 4.3 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.5 | 18.0 | 0.6 | 0.5 | 1.4 | 1.3 |

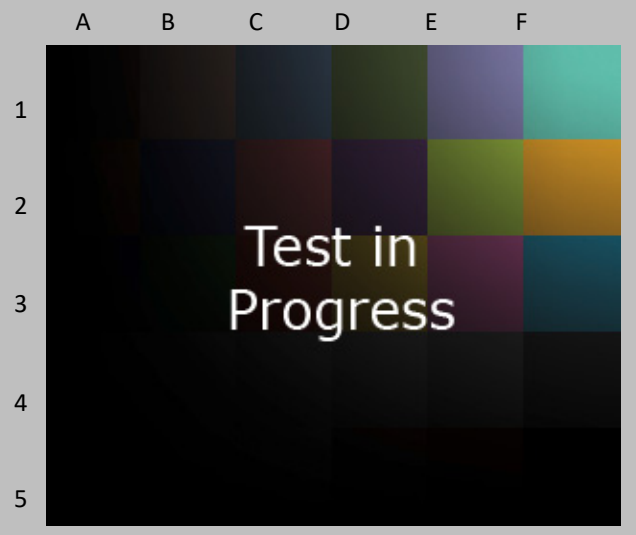
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 96.8 | 97.2 | 1.8 |
| Worst 10% (3 lowest scoring patches) | 90.5 | 94.2 | 4.0 |

100 Mluxhrs + 1 year

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



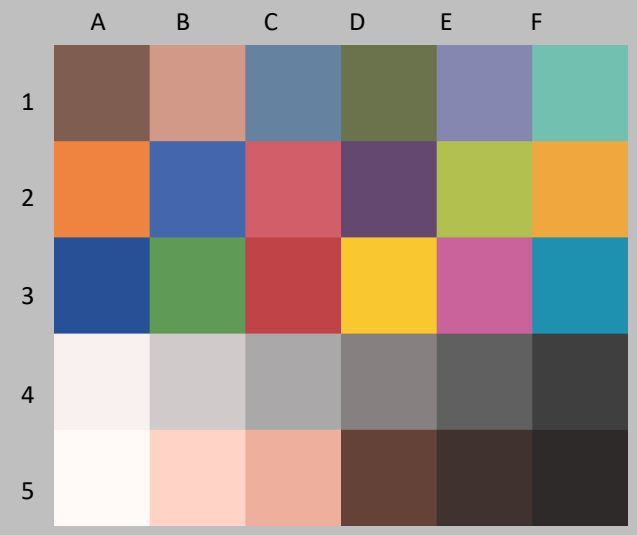

Colors after both light exposure + dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | | | 42.3 | | 12.1 | | 12.6 | |
| B1 | Light Skin | | | 67.7 | | 17.4 | | 18.3 | |
| C1 | Blue sky | | | 53.0 | | -3.9 | | -19.7 | |
| D1 | Foliage | | | 46.6 | | -11.0 | | 20.1 | |
| E1 | blue flower | | | 57.3 | | 8.3 | | -22.2 | |
| F1 | bluish green | | | 72.0 | | -29.4 | | 1.4 | |
| A1 | orange | | | 65.6 | | 34.1 | | 52.7 | |
| B2 | purplish blue | | | 43.3 | | 9.1 | | -41.7 | |
| C2 | moderate red | | | 54.7 | | 45.7 | | 16.4 | |
| D2 | purple | | | 35.0 | | 19.3 | | -17.9 | |
| E2 | yellow green | | | 74.4 | | -21.6 | | 54.3 | |
| F2 | orange yellow | | | 73.4 | | 17.9 | | 62.3 | |
| A3 | blue | | | 34.5 | | 11.4 | | -43.5 | |
| B3 | green | | | 58.1 | | -34.3 | | 29.6 | |
| C3 | red | | | 46.5 | | 49.1 | | 24.8 | |
| D3 | yellow | | | 82.3 | | 3.5 | | 75.0 | |
| E3 | magenta | | | 55.4 | | 46.8 | | -12.2 | |
| F3 | cyan | | | 55.4 | | -20.6 | | -24.7 | |
| A4 | white | | | 95.6 | | 0.7 | | 2.5 | |
| B4 | neutral 8 | | | 81.6 | | 0.3 | | 1.3 | |
| C4 | neutral 6.5 | | | 69.0 | | 0.0 | | 0.7 | |
| D4 | neutral 5 | | | 54.2 | | 0.4 | | 1.4 | |
| E4 | neutral 3.5 | | | 40.7 | | -0.1 | | 0.3 | |
| F4 | black | | | 27.1 | | 0.2 | | 0.0 | |
| A5 | paper white | | | 98.4 | | 0.1 | | 2.0 | |
| B5 | Skin highlight L*=88 | | | 88.4 | | 12.3 | | 14.1 | |
| C5 | Skin highlight L* =75 | | | 76.9 | | 19.0 | | 20.1 | |
| D5 | Skin shadow L*=28 | | | 31.5 | | 12.5 | | 11.8 | |
| E5 | Skin shadow L*=13 | | | 22.4 | | 4.9 | | 4.2 | |
| F5 | Maximum Black | | | 17.7 | | 0.6 | | 1.3 | |

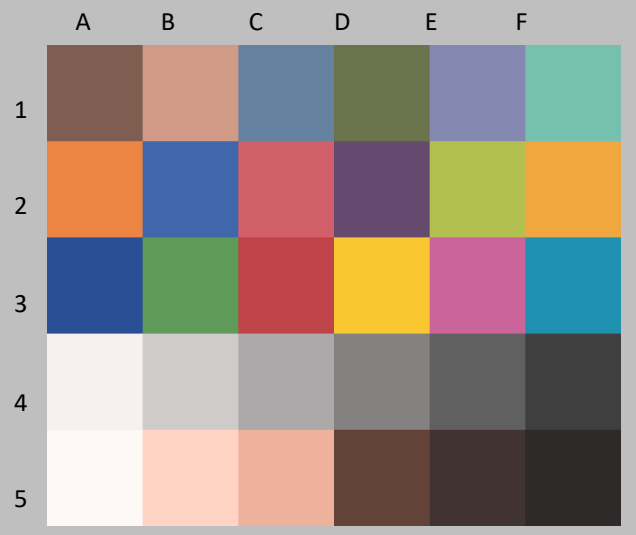
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | | | |
| Worst 10% (3 lowest scoring patches) | | | |

200 Mluxhrs + 1 year

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



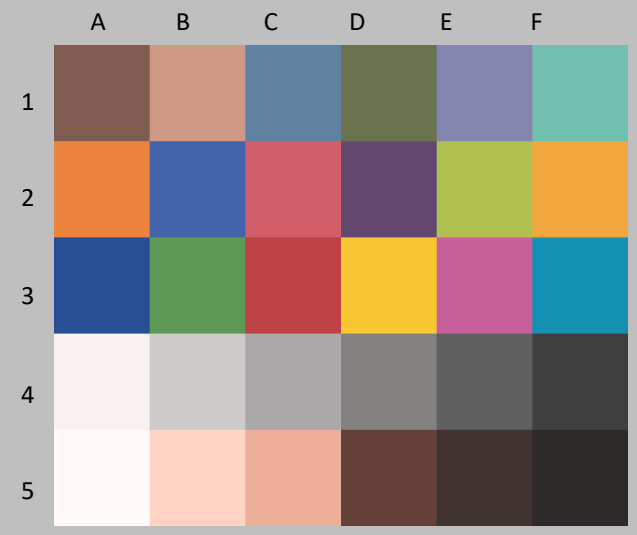

Colors after both light exposure + dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.3 | 42.6 | 42.7 | 12.1 | 11.8 | 12.4 | 12.4 |
| B1 | Light Skin | 99.2 | 0.7 | 68.1 | 68.3 | 17.7 | 17.0 | 17.4 | 17.6 |
| C1 | Blue sky | 100.0 | 0.4 | 53.6 | 53.7 | -3.9 | -4.2 | -19.2 | -19.0 |
| D1 | Foliage | 100.0 | 0.4 | 47.0 | 46.9 | -11.1 | -10.9 | 20.1 | 19.8 |
| E1 | blue flower | 98.2 | 0.9 | 57.7 | 57.9 | 8.2 | 7.4 | -21.8 | -21.3 |
| F1 | bluish green | 100.0 | 0.4 | 72.4 | 72.4 | -28.8 | -28.4 | 0.7 | 0.8 |
| A1 | orange | 99.9 | 0.6 | 65.9 | 65.8 | 33.8 | 33.5 | 52.6 | 52.2 |
| B2 | purplish blue | 99.7 | 0.6 | 43.8 | 43.8 | 8.6 | 8.1 | -40.9 | -40.5 |
| C2 | moderate red | 99.2 | 0.9 | 55.0 | 55.2 | 45.8 | 44.9 | 15.6 | 15.7 |
| D2 | purple | 98.8 | 0.8 | 35.5 | 35.6 | 19.2 | 18.7 | -17.8 | -17.2 |
| E2 | yellow green | 99.7 | 0.7 | 74.6 | 74.5 | -21.4 | -21.2 | 54.1 | 53.4 |
| F2 | orange yellow | 99.7 | 0.7 | 73.8 | 73.7 | 17.4 | 17.0 | 62.3 | 61.8 |
| A3 | blue | 99.0 | 0.9 | 34.8 | 34.9 | 11.2 | 10.6 | -43.1 | -42.4 |
| B3 | green | 99.9 | 0.5 | 58.5 | 58.5 | -34.0 | -33.6 | 29.8 | 29.4 |
| C3 | red | 99.8 | 0.6 | 46.6 | 46.7 | 49.1 | 48.5 | 24.6 | 24.4 |
| D3 | yellow | 100.0 | 0.5 | 82.7 | 82.6 | 3.4 | 3.1 | 75.2 | 74.8 |
| E3 | magenta | 97.4 | 1.8 | 55.6 | 55.9 | 46.9 | 45.6 | -12.1 | -10.9 |
| F3 | cyan | 100.0 | 0.4 | 55.8 | 55.8 | -20.2 | -20.4 | -24.9 | -24.5 |
| A4 | white | 100.0 | 0.3 | 95.6 | 95.4 | 0.7 | 0.5 | 2.2 | 2.2 |
| B4 | neutral 8 | 100.0 | 0.5 | 81.9 | 81.9 | 0.6 | 0.2 | 0.8 | 1.0 |
| C4 | neutral 6.5 | 100.0 | 0.4 | 69.2 | 69.3 | 0.3 | 0.0 | 0.1 | 0.3 |
| D4 | neutral 5 | 100.0 | 0.4 | 54.4 | 54.5 | 0.6 | 0.3 | 1.0 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.2 | 40.8 | 40.9 | 0.1 | -0.1 | 0.2 | 0.3 |
| F4 | black | 100.0 | 0.1 | 27.2 | 27.2 | 0.3 | 0.2 | -0.1 | -0.1 |
| A5 | paper white | 100.0 | 0.4 | 98.3 | 98.0 | 0.1 | 0.0 | 1.9 | 1.8 |
| B5 | Skin highlight L*=88 | 98.2 | 0.8 | 88.3 | 88.4 | 12.7 | 11.9 | 12.4 | 12.6 |
| C5 | Skin highlight L* =75 | 98.6 | 0.9 | 77.1 | 77.3 | 19.1 | 18.2 | 19.3 | 19.4 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.6 | 31.7 | 12.7 | 12.4 | 12.0 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.6 | 5.0 | 4.9 | 4.3 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.1 | 17.5 | 17.6 | 0.6 | 0.6 | 1.3 | 1.3 |

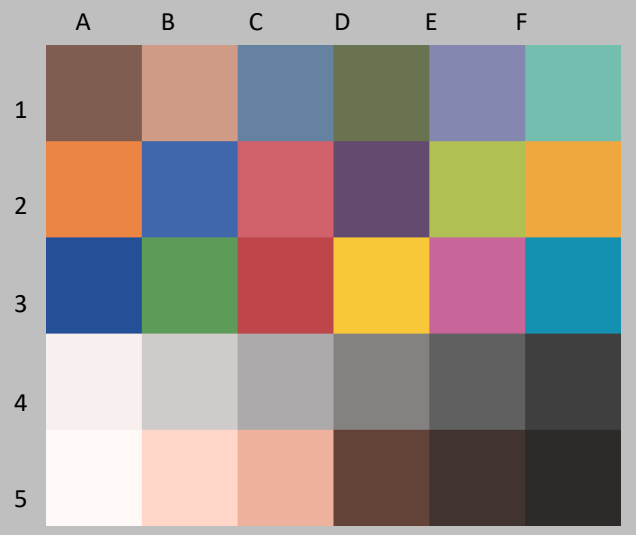
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.6 | 98.8 | 0.6 |
| Worst 10% (3 lowest scoring patches) | 97.9 | 97.4 | 1.2 |

20 Mluxhrs + 2 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



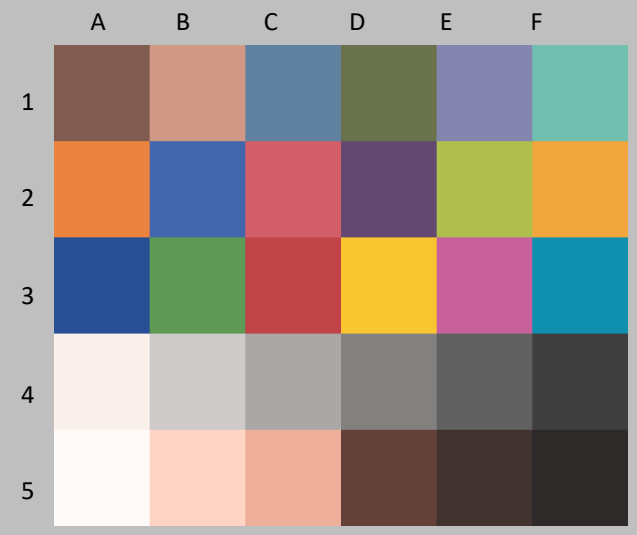

Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 99.5 | 0.7 | 42.4 | 42.8 | 12.0 | 11.6 | 12.7 | 12.3 |
| B1 | Light Skin | 97.5 | 1.2 | 67.8 | 68.2 | 17.4 | 16.5 | 18.2 | 17.5 |
| C1 | Blue sky | 99.6 | 0.7 | 53.1 | 53.6 | -4.0 | -4.4 | -19.6 | -19.2 |
| D1 | Foliage | 98.4 | 0.9 | 46.7 | 46.9 | -11.1 | -10.7 | 20.1 | 19.3 |
| E1 | blue flower | 96.3 | 1.5 | 57.2 | 57.7 | 8.3 | 7.3 | -22.2 | -21.3 |
| F1 | bluish green | 98.6 | 0.9 | 72.1 | 72.3 | -29.3 | -28.5 | 1.2 | 0.8 |
| A1 | orange | 98.2 | 1.7 | 65.6 | 65.8 | 34.2 | 33.4 | 52.8 | 51.3 |
| B2 | purplish blue | 98.5 | 1.2 | 43.4 | 43.8 | 8.9 | 8.1 | -41.5 | -40.7 |
| C2 | moderate red | 98.2 | 1.4 | 54.8 | 55.3 | 45.8 | 44.5 | 16.4 | 16.1 |
| D2 | purple | 98.0 | 1.1 | 35.2 | 35.6 | 19.2 | 18.5 | -17.9 | -17.2 |
| E2 | yellow green | 97.3 | 2.1 | 74.3 | 74.4 | -21.7 | -21.3 | 54.0 | 52.0 |
| F2 | orange yellow | 98.2 | 1.7 | 73.5 | 73.7 | 17.7 | 16.9 | 62.2 | 60.7 |
| A3 | blue | 98.9 | 1.0 | 34.7 | 35.0 | 11.1 | 10.4 | -43.2 | -42.5 |
| B3 | green | 97.1 | 1.8 | 58.1 | 58.3 | -34.3 | -33.6 | 29.6 | 27.9 |
| C3 | red | 98.8 | 1.2 | 46.5 | 46.8 | 49.0 | 48.0 | 24.8 | 24.2 |
| D3 | yellow | 98.2 | 1.9 | 82.4 | 82.6 | 3.5 | 2.9 | 75.1 | 73.3 |
| E3 | magenta | 95.4 | 2.8 | 55.5 | 56.0 | 46.8 | 44.9 | -12.2 | -10.2 |
| F3 | cyan | 100.0 | 0.3 | 55.5 | 55.8 | -20.6 | -20.7 | -24.8 | -24.6 |
| A4 | white | 100.0 | 0.3 | 95.6 | 95.4 | 0.8 | 0.5 | 2.4 | 2.3 |
| B4 | neutral 8 | 100.0 | 0.4 | 81.7 | 81.9 | 0.4 | 0.0 | 1.2 | 1.2 |
| C4 | neutral 6.5 | 100.0 | 0.5 | 69.0 | 69.3 | 0.2 | -0.2 | 0.3 | 0.5 |
| D4 | neutral 5 | 100.0 | 0.5 | 54.2 | 54.6 | 0.4 | 0.2 | 1.3 | 1.4 |
| E4 | neutral 3.5 | 100.0 | 0.3 | 40.6 | 40.9 | -0.1 | -0.2 | 0.4 | 0.4 |
| F4 | black | 100.0 | 0.2 | 27.0 | 27.1 | 0.2 | 0.2 | 0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.3 | 98.4 | 98.1 | 0.1 | 0.0 | 2.0 | 1.8 |
| B5 | Skin highlight L*=88 | 95.8 | 1.3 | 88.4 | 88.7 | 12.4 | 11.4 | 13.8 | 13.0 |
| C5 | Skin highlight L* =75 | 96.3 | 1.6 | 76.9 | 77.2 | 19.0 | 17.9 | 20.1 | 19.1 |
| D5 | Skin shadow L*=28 | 99.8 | 0.6 | 31.4 | 31.6 | 12.6 | 12.2 | 12.0 | 11.5 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.6 | 22.7 | 4.9 | 4.9 | 4.2 | 4.0 |
| F5 | Maximum Black | 100.0 | 0.4 | 17.5 | 17.8 | 0.5 | 0.6 | 1.4 | 1.2 |

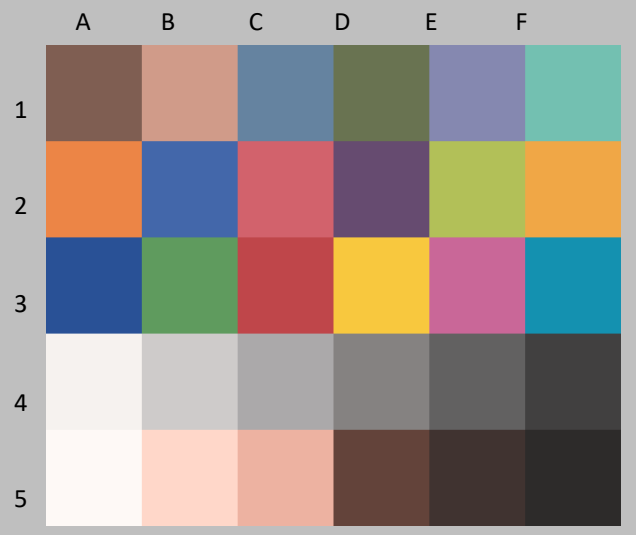
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 98.6 | 98.2 | 1.0 |
| Worst 10% (3 lowest scoring patches) | 95.8 | 96.6 | 2.2 |

50 Mluxhrs + 2 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



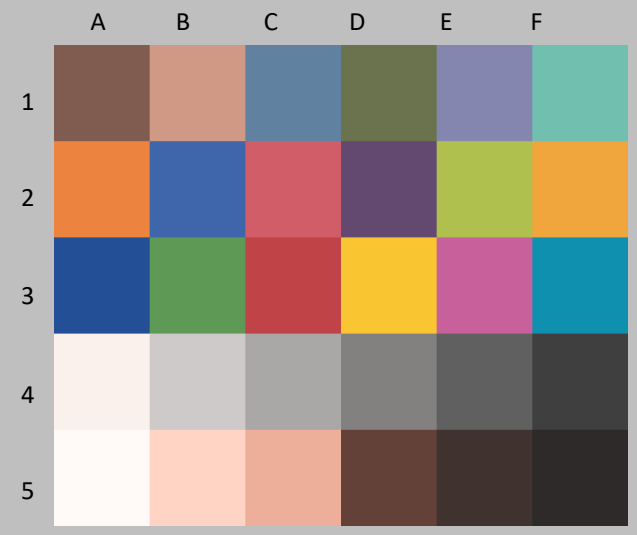

Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 96.7 | 1.4 | 42.3 | 43.1 | 12.1 | 11.5 | 12.7 | 11.8 |
| B1 | Light Skin | 93.5 | 2.3 | 67.8 | 68.7 | 17.4 | 16.2 | 18.4 | 16.6 |
| C1 | Blue sky | 98.3 | 1.1 | 53.1 | 53.8 | -3.8 | -4.4 | -19.7 | -19.1 |
| D1 | Foliage | 94.3 | 1.9 | 46.8 | 47.2 | -11.1 | -10.6 | 20.0 | 18.3 |
| E1 | blue flower | 94.6 | 2.0 | 57.3 | 58.1 | 8.3 | 7.1 | -22.2 | -20.9 |
| F1 | bluish green | 96.5 | 1.6 | 72.1 | 72.6 | -29.4 | -28.3 | 1.4 | 0.3 |
| A1 | orange | 96.1 | 3.0 | 65.5 | 66.1 | 34.1 | 32.9 | 52.6 | 49.9 |
| B2 | purplish blue | 97.5 | 1.7 | 43.4 | 44.0 | 9.0 | 7.9 | -41.5 | -40.4 |
| C2 | moderate red | 97.0 | 2.2 | 54.8 | 55.7 | 45.7 | 43.8 | 16.4 | 15.7 |
| D2 | purple | 96.5 | 1.6 | 35.1 | 35.9 | 19.1 | 18.2 | -17.9 | -16.8 |
| E2 | yellow green | 93.1 | 4.5 | 74.3 | 74.8 | -21.6 | -21.2 | 54.1 | 49.6 |
| F2 | orange yellow | 95.0 | 3.8 | 73.4 | 73.9 | 17.9 | 16.7 | 62.2 | 58.6 |
| A3 | blue | 98.1 | 1.4 | 34.6 | 35.1 | 11.3 | 10.3 | -43.4 | -42.5 |
| B3 | green | 93.0 | 3.7 | 58.2 | 58.7 | -34.1 | -33.2 | 29.7 | 26.1 |
| C3 | red | 97.7 | 1.9 | 46.6 | 47.2 | 49.0 | 47.5 | 24.8 | 23.8 |
| D3 | yellow | 95.5 | 3.9 | 82.4 | 82.9 | 3.6 | 2.6 | 74.9 | 71.1 |
| E3 | magenta | 93.6 | 3.7 | 55.4 | 56.4 | 46.7 | 44.4 | -12.1 | -9.4 |
| F3 | cyan | 100.0 | 0.5 | 55.4 | 55.8 | -20.6 | -20.6 | -24.8 | -24.8 |
| A4 | white | 100.0 | 0.3 | 95.6 | 95.6 | 0.7 | 0.4 | 2.5 | 2.3 |
| B4 | neutral 8 | 100.0 | 0.7 | 81.6 | 82.1 | 0.3 | -0.1 | 1.2 | 1.1 |
| C4 | neutral 6.5 | 100.0 | 0.8 | 68.9 | 69.5 | 0.1 | -0.4 | 0.5 | 0.4 |
| D4 | neutral 5 | 100.0 | 0.8 | 54.1 | 54.9 | 0.4 | 0.2 | 1.4 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.6 | 40.7 | 41.3 | -0.1 | -0.1 | 0.4 | 0.3 |
| F4 | black | 100.0 | 0.2 | 27.1 | 27.3 | 0.2 | 0.1 | 0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.2 | 98.4 | 98.2 | 0.1 | 0.0 | 2.0 | 2.0 |
| B5 | Skin highlight L*=88 | 88.6 | 2.7 | 88.4 | 89.1 | 12.3 | 11.2 | 13.9 | 11.5 |
| C5 | Skin highlight L* =75 | 91.4 | 3.0 | 76.9 | 77.8 | 19.1 | 17.7 | 20.0 | 17.5 |
| D5 | Skin shadow L*=28 | 98.9 | 0.8 | 31.3 | 31.7 | 12.5 | 12.1 | 11.9 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.6 | 4.9 | 4.7 | 4.3 | 3.9 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.5 | 18.0 | 0.6 | 0.5 | 1.4 | 1.2 |

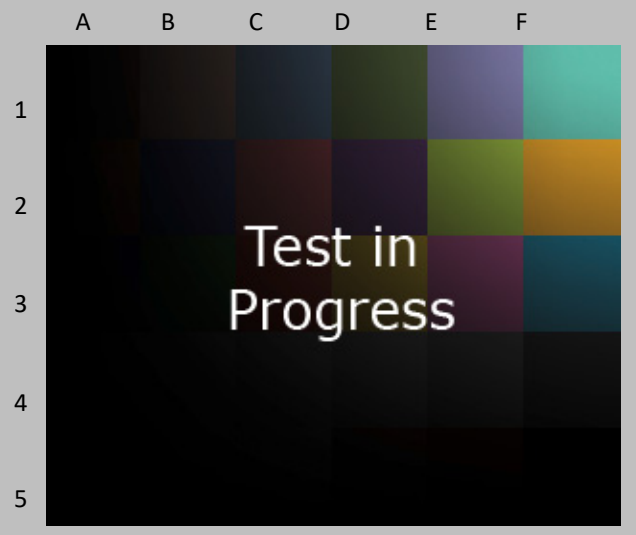
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 96.9 | 97.2 | 1.8 |
| Worst 10% (3 lowest scoring patches) | 91.0 | 94.3 | 4.1 |

100 Mluxhrs + 2 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure

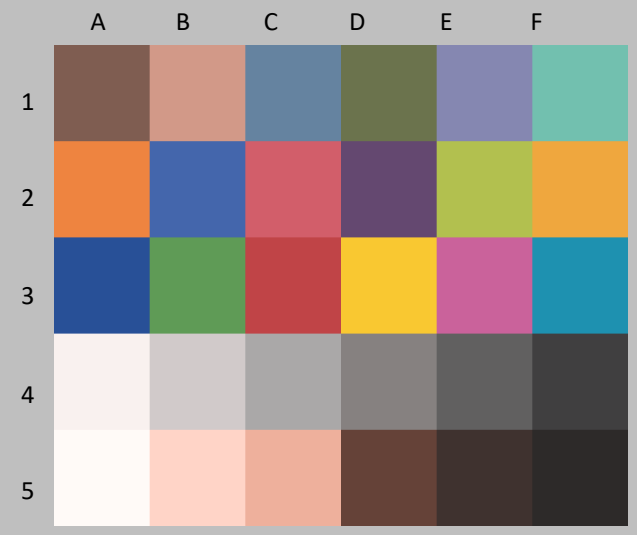



Colors after both light exposure + dark storage

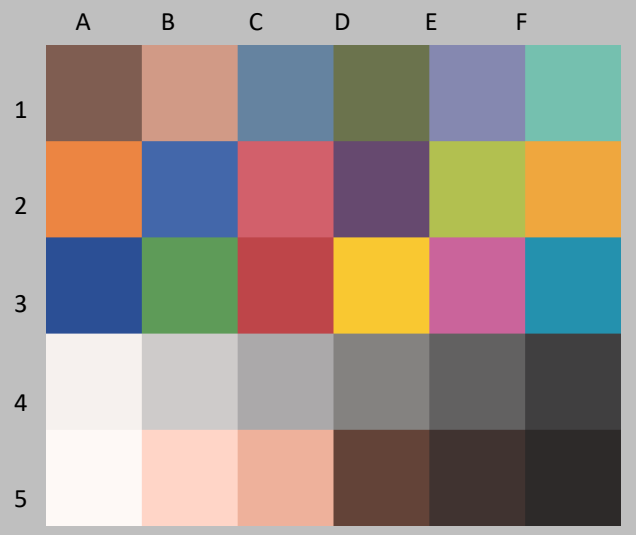
| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | | | 42.3 | 34.9 | 12.1 | | 12.6 | |
| B1 | Light Skin | | | 67.7 | 63.1 | 17.4 | | 18.3 | |
| C1 | Blue sky | | | 53.0 | 46.8 | -3.9 | | -19.7 | |
| D1 | Foliage | | | 46.6 | 40.2 | -11.0 | | 20.1 | |
| E1 | blue flower | | | 57.3 | 52.3 | 8.3 | | -22.2 | |
| F1 | bluish green | | | 72.0 | 65.9 | -29.4 | | 1.4 | |
| A1 | orange | | | 65.6 | 58.6 | 34.1 | | 52.7 | |
| B2 | purplish blue | | | 43.3 | 37.0 | 9.1 | | -41.7 | |
| C2 | moderate red | | | 54.7 | 46.6 | 45.7 | | 16.4 | |
| D2 | purple | | | 35.0 | 26.2 | 19.3 | | -17.9 | |
| E2 | yellow green | | | 74.4 | 66.9 | -21.6 | | 54.3 | |
| F2 | orange yellow | | | 73.4 | 67.1 | 17.9 | | 62.3 | |
| A3 | blue | | | 34.5 | 25.6 | 11.4 | | -43.5 | |
| B3 | green | | | 58.1 | 49.3 | -34.3 | | 29.6 | |
| C3 | red | | | 46.5 | 37.8 | 49.1 | | 24.8 | |
| D3 | yellow | | | 82.3 | 76.5 | 3.5 | | 75.0 | |
| E3 | magenta | | | 55.4 | 48.1 | 46.8 | | -12.2 | |
| F3 | cyan | | | 55.4 | 48.3 | -20.6 | | -24.7 | |
| A4 | white | | | 95.6 | 92.2 | 0.7 | | 2.5 | |
| B4 | neutral 8 | | | 81.6 | 76.0 | 0.3 | | 1.3 | |
| C4 | neutral 6.5 | | | 69.0 | 65.3 | 0.0 | | 0.7 | |
| D4 | neutral 5 | | | 54.2 | 48.4 | 0.4 | | 1.4 | |
| E4 | neutral 3.5 | | | 40.7 | 34.2 | -0.1 | | 0.3 | |
| F4 | black | | | 27.1 | 17.5 | 0.2 | | 0.0 | |
| A5 | paper white | | | 98.4 | 95.1 | 0.1 | | 2.0 | |
| B5 | Skin highlight L*=88 | | | 88.4 | 84.2 | 12.3 | | 14.1 | |
| C5 | Skin highlight L* =75 | | | 76.9 | 72.1 | 19.0 | | 20.1 | |
| D5 | Skin shadow L*=28 | | | 31.5 | 23.2 | 12.5 | | 11.8 | |
| E5 | Skin shadow L*=13 | | | 22.4 | 11.6 | 4.9 | | 4.2 | |
| F5 | Maximum Black | | | 17.7 | 4.2 | 0.6 | | 1.3 | |
| **Summary Results** | | I* Color | I* tone | ΔE | | | | | |
| Average Score for all patches | | | | | | | | | |
| Worst 10% (3 lowest scoring patches) | | | | | | | | | |

200 Mluxhrs + 2 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



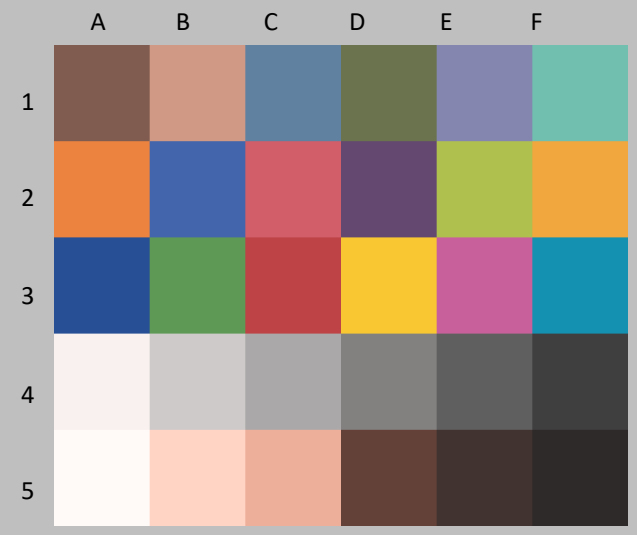

Colors after both light exposure + dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.4 | 42.6 | 42.8 | 12.1 | 11.8 | 12.4 | 12.4 |
| B1 | Light Skin | 99.2 | 0.7 | 68.1 | 68.2 | 17.7 | 17.0 | 17.4 | 17.6 |
| C1 | Blue sky | 100.0 | 0.4 | 53.6 | 53.7 | -3.9 | -4.2 | -19.2 | -19.0 |
| D1 | Foliage | 100.0 | 0.5 | 47.0 | 46.9 | -11.1 | -10.9 | 20.1 | 19.7 |
| E1 | blue flower | 97.9 | 1.0 | 57.7 | 57.9 | 8.2 | 7.4 | -21.8 | -21.2 |
| F1 | bluish green | 100.0 | 0.4 | 72.4 | 72.4 | -28.8 | -28.4 | 0.7 | 0.8 |
| A1 | orange | 100.0 | 0.5 | 65.9 | 65.8 | 33.8 | 33.5 | 52.6 | 52.2 |
| B2 | purplish blue | 99.5 | 0.7 | 43.8 | 43.9 | 8.6 | 8.1 | -40.9 | -40.4 |
| C2 | moderate red | 99.0 | 1.0 | 55.0 | 55.2 | 45.8 | 44.8 | 15.6 | 15.8 |
| D2 | purple | 98.8 | 0.8 | 35.5 | 35.6 | 19.2 | 18.7 | -17.8 | -17.2 |
| E2 | yellow green | 99.5 | 0.8 | 74.6 | 74.5 | -21.4 | -21.1 | 54.1 | 53.4 |
| F2 | orange yellow | 99.6 | 0.7 | 73.8 | 73.7 | 17.4 | 17.1 | 62.3 | 61.7 |
| A3 | blue | 98.8 | 1.1 | 34.8 | 35.0 | 11.2 | 10.5 | -43.1 | -42.2 |
| B3 | green | 99.7 | 0.6 | 58.5 | 58.5 | -34.0 | -33.5 | 29.8 | 29.3 |
| C3 | red | 99.6 | 0.7 | 46.6 | 46.7 | 49.1 | 48.4 | 24.6 | 24.4 |
| D3 | yellow | 100.0 | 0.5 | 82.7 | 82.6 | 3.4 | 3.2 | 75.2 | 74.8 |
| E3 | magenta | 97.2 | 1.9 | 55.6 | 56.0 | 46.9 | 45.7 | -12.1 | -10.7 |
| F3 | cyan | 100.0 | 0.5 | 55.8 | 55.8 | -20.2 | -20.5 | -24.9 | -24.4 |
| A4 | white | 100.0 | 0.4 | 95.6 | 95.4 | 0.7 | 0.4 | 2.2 | 2.4 |
| B4 | neutral 8 | 99.0 | 0.6 | 81.9 | 81.9 | 0.6 | 0.2 | 0.8 | 1.2 |
| C4 | neutral 6.5 | 99.7 | 0.6 | 69.2 | 69.4 | 0.3 | 0.0 | 0.1 | 0.5 |
| D4 | neutral 5 | 100.0 | 0.5 | 54.4 | 54.6 | 0.6 | 0.3 | 1.0 | 1.3 |
| E4 | neutral 3.5 | 100.0 | 0.3 | 40.8 | 41.0 | 0.1 | -0.1 | 0.2 | 0.4 |
| F4 | black | 100.0 | 0.2 | 27.2 | 27.2 | 0.3 | 0.1 | -0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.3 | 98.3 | 98.0 | 0.1 | 0.0 | 1.9 | 2.0 |
| B5 | Skin highlight L*=88 | 97.8 | 0.9 | 88.3 | 88.5 | 12.7 | 11.9 | 12.4 | 12.8 |
| C5 | Skin highlight L* =75 | 98.3 | 1.0 | 77.1 | 77.4 | 19.1 | 18.2 | 19.3 | 19.6 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.6 | 31.7 | 12.7 | 12.4 | 12.0 | 11.8 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.7 | 5.0 | 4.9 | 4.3 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.2 | 17.5 | 17.8 | 0.6 | 0.6 | 1.3 | 1.3 |

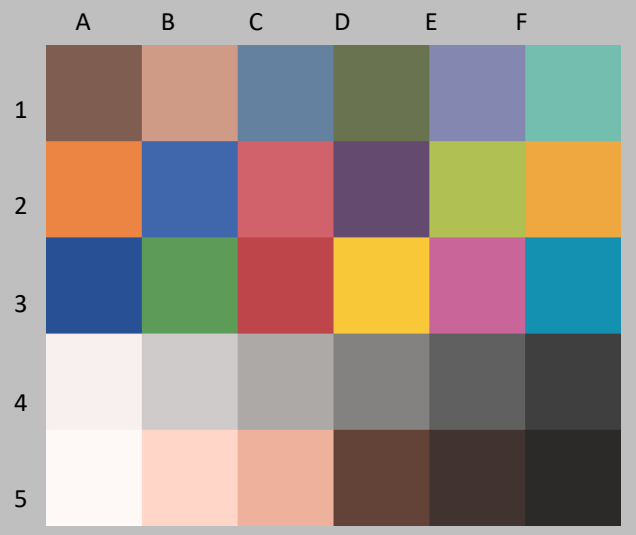
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.5 | 98.6 | 0.6 |
| Worst 10% (3 lowest scoring patches) | 97.6 | 97.0 | 1.3 |

20 Mluxhrs + 3 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



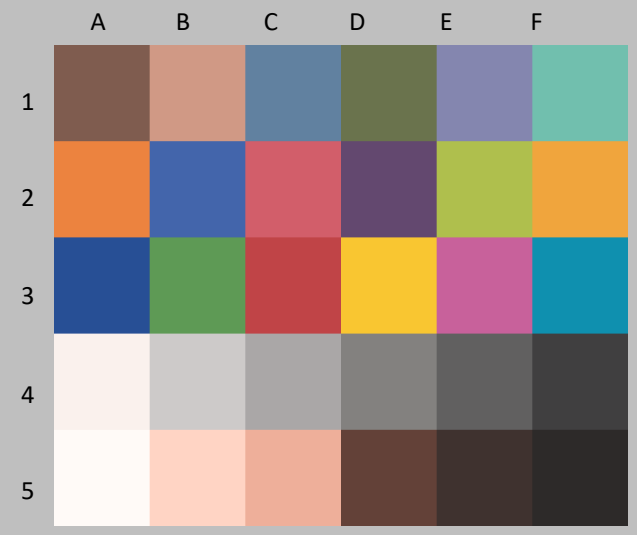

Colors after both light exposure + dark storage

| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 99.4 | 0.8 | 42.4 | 42.8 | 12.0 | 11.6 | 12.7 | 12.3 |
| B1 | Light Skin | 97.5 | 1.2 | 67.8 | 68.2 | 17.4 | 16.5 | 18.2 | 17.5 |
| C1 | Blue sky | 99.3 | 0.8 | 53.1 | 53.5 | -4.0 | -4.4 | -19.6 | -19.1 |
| D1 | Foliage | 98.4 | 0.9 | 46.7 | 46.9 | -11.1 | -10.8 | 20.1 | 19.3 |
| E1 | blue flower | 95.9 | 1.6 | 57.2 | 57.7 | 8.3 | 7.3 | -22.2 | -21.2 |
| F1 | bluish green | 98.8 | 0.9 | 72.1 | 72.3 | -29.3 | -28.5 | 1.2 | 0.8 |
| A1 | orange | 98.3 | 1.6 | 65.6 | 65.8 | 34.2 | 33.4 | 52.8 | 51.4 |
| B2 | purplish blue | 98.4 | 1.2 | 43.4 | 43.8 | 8.9 | 8.1 | -41.5 | -40.7 |
| C2 | moderate red | 98.0 | 1.6 | 54.8 | 55.3 | 45.8 | 44.3 | 16.4 | 16.1 |
| D2 | purple | 97.7 | 1.2 | 35.2 | 35.6 | 19.2 | 18.4 | -17.9 | -17.1 |
| E2 | yellow green | 97.2 | 2.1 | 74.3 | 74.5 | -21.7 | -21.3 | 54.0 | 51.9 |
| F2 | orange yellow | 98.3 | 1.6 | 73.5 | 73.8 | 17.7 | 16.9 | 62.2 | 60.8 |
| A3 | blue | 98.8 | 1.1 | 34.7 | 35.0 | 11.1 | 10.4 | -43.2 | -42.5 |
| B3 | green | 97.2 | 1.8 | 58.1 | 58.3 | -34.3 | -33.6 | 29.6 | 27.9 |
| C3 | red | 98.6 | 1.3 | 46.5 | 46.8 | 49.0 | 47.9 | 24.8 | 24.2 |
| D3 | yellow | 98.3 | 1.8 | 82.4 | 82.6 | 3.5 | 2.9 | 75.1 | 73.4 |
| E3 | magenta | 95.2 | 2.9 | 55.5 | 56.1 | 46.8 | 44.9 | -12.2 | -10.1 |
| F3 | cyan | 100.0 | 0.4 | 55.5 | 55.8 | -20.6 | -20.7 | -24.8 | -24.6 |
| A4 | white | 100.0 | 0.3 | 95.6 | 95.4 | 0.8 | 0.5 | 2.4 | 2.4 |
| B4 | neutral 8 | 100.0 | 0.5 | 81.7 | 81.9 | 0.4 | 0.0 | 1.2 | 1.2 |
| C4 | neutral 6.5 | 100.0 | 0.6 | 69.0 | 69.3 | 0.2 | -0.2 | 0.3 | 0.5 |
| D4 | neutral 5 | 100.0 | 0.5 | 54.2 | 54.7 | 0.4 | 0.2 | 1.3 | 1.4 |
| E4 | neutral 3.5 | 100.0 | 0.4 | 40.6 | 40.9 | -0.1 | -0.2 | 0.4 | 0.5 |
| F4 | black | 100.0 | 0.2 | 27.0 | 27.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| A5 | paper white | 100.0 | 0.3 | 98.4 | 98.1 | 0.1 | 0.0 | 2.0 | 2.0 |
| B5 | Skin highlight L*=88 | 96.2 | 1.3 | 88.4 | 88.7 | 12.4 | 11.5 | 13.8 | 13.1 |
| C5 | Skin highlight L* =75 | 96.6 | 1.5 | 76.9 | 77.3 | 19.0 | 17.9 | 20.1 | 19.2 |
| D5 | Skin shadow L*=28 | 100.0 | 0.5 | 31.4 | 31.6 | 12.6 | 12.2 | 12.0 | 11.8 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.6 | 22.8 | 4.9 | 4.7 | 4.2 | 4.2 |
| F5 | Maximum Black | 100.0 | 0.3 | 17.5 | 17.8 | 0.5 | 0.4 | 1.4 | 1.5 |

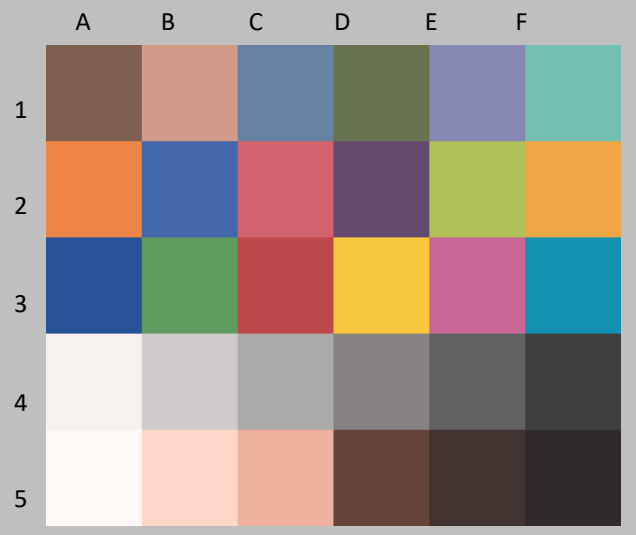
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 98.6 | 98.2 | 1.0 |
| Worst 10% (3 lowest scoring patches) | 95.8 | 96.3 | 2.3 |

50 Mluxhrs + 3 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



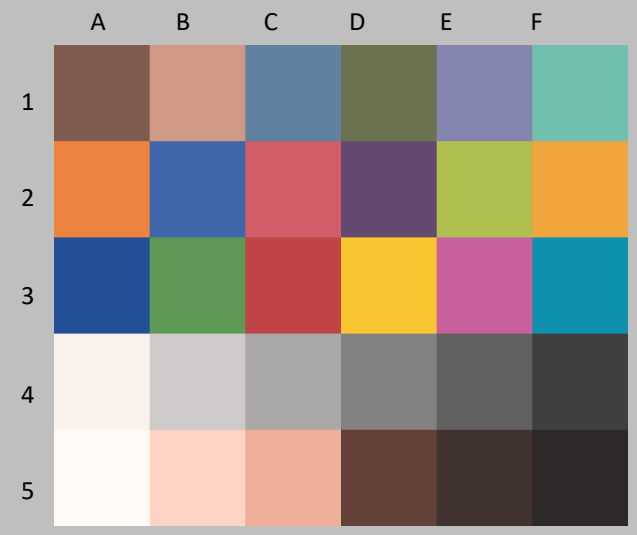

Colors after both light exposure + dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 95.9 | 1.5 | 42.3 | 43.0 | 12.1 | 11.4 | 12.7 | 11.7 |
| B1 | Light Skin | 93.2 | 2.4 | 67.8 | 68.6 | 17.4 | 16.2 | 18.4 | 16.5 |
| C1 | Blue sky | 98.1 | 1.1 | 53.1 | 53.7 | -3.8 | -4.3 | -19.7 | -19.0 |
| D1 | Foliage | 94.1 | 1.9 | 46.8 | 47.1 | -11.1 | -10.6 | 20.0 | 18.2 |
| E1 | blue flower | 94.1 | 2.0 | 57.3 | 58.1 | 8.3 | 7.1 | -22.2 | -20.8 |
| F1 | bluish green | 96.4 | 1.6 | 72.1 | 72.5 | -29.4 | -28.3 | 1.4 | 0.3 |
| A1 | orange | 95.7 | 3.2 | 65.5 | 66.0 | 34.1 | 32.8 | 52.6 | 49.6 |
| B2 | purplish blue | 97.3 | 1.7 | 43.4 | 43.9 | 9.0 | 7.9 | -41.5 | -40.3 |
| C2 | moderate red | 96.8 | 2.2 | 54.8 | 55.6 | 45.7 | 43.7 | 16.4 | 15.8 |
| D2 | purple | 96.3 | 1.6 | 35.1 | 35.8 | 19.1 | 18.2 | -17.9 | -16.7 |
| E2 | yellow green | 92.8 | 4.7 | 74.3 | 74.7 | -21.6 | -21.1 | 54.1 | 49.4 |
| F2 | orange yellow | 95.0 | 3.8 | 73.4 | 73.9 | 17.9 | 16.6 | 62.2 | 58.6 |
| A3 | blue | 97.9 | 1.6 | 34.6 | 35.2 | 11.3 | 10.2 | -43.4 | -42.4 |
| B3 | green | 92.7 | 3.8 | 58.2 | 58.7 | -34.1 | -33.1 | 29.7 | 26.0 |
| C3 | red | 97.5 | 1.9 | 46.6 | 47.1 | 49.0 | 47.4 | 24.8 | 23.7 |
| D3 | yellow | 95.2 | 4.1 | 82.4 | 82.7 | 3.6 | 2.5 | 74.9 | 71.0 |
| E3 | magenta | 93.3 | 3.8 | 55.4 | 56.3 | 46.7 | 44.2 | -12.1 | -9.3 |
| F3 | cyan | 100.0 | 0.3 | 55.4 | 55.7 | -20.6 | -20.6 | -24.8 | -24.8 |
| A4 | white | 100.0 | 0.4 | 95.6 | 95.2 | 0.7 | 0.4 | 2.5 | 2.4 |
| B4 | neutral 8 | 100.0 | 0.5 | 81.6 | 81.9 | 0.3 | -0.1 | 1.2 | 1.1 |
| C4 | neutral 6.5 | 100.0 | 0.7 | 68.9 | 69.4 | 0.1 | -0.4 | 0.5 | 0.5 |
| D4 | neutral 5 | 100.0 | 0.6 | 54.1 | 54.7 | 0.4 | 0.3 | 1.4 | 1.2 |
| E4 | neutral 3.5 | 100.0 | 0.5 | 40.7 | 41.2 | -0.1 | -0.1 | 0.4 | 0.4 |
| F4 | black | 100.0 | 0.1 | 27.1 | 27.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| A5 | paper white | 100.0 | 0.5 | 98.4 | 98.0 | 0.1 | 0.0 | 2.0 | 2.2 |
| B5 | Skin highlight L*=88 | 88.9 | 2.6 | 88.4 | 89.0 | 12.3 | 11.2 | 13.9 | 11.6 |
| C5 | Skin highlight L* =75 | 91.4 | 3.0 | 76.9 | 77.7 | 19.1 | 17.7 | 20.0 | 17.5 |
| D5 | Skin shadow L*=28 | 99.0 | 0.8 | 31.3 | 31.7 | 12.5 | 12.1 | 11.9 | 11.3 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.7 | 4.9 | 4.8 | 4.3 | 3.9 |
| F5 | Maximum Black | 100.0 | 0.5 | 17.5 | 18.1 | 0.6 | 0.5 | 1.4 | 1.4 |

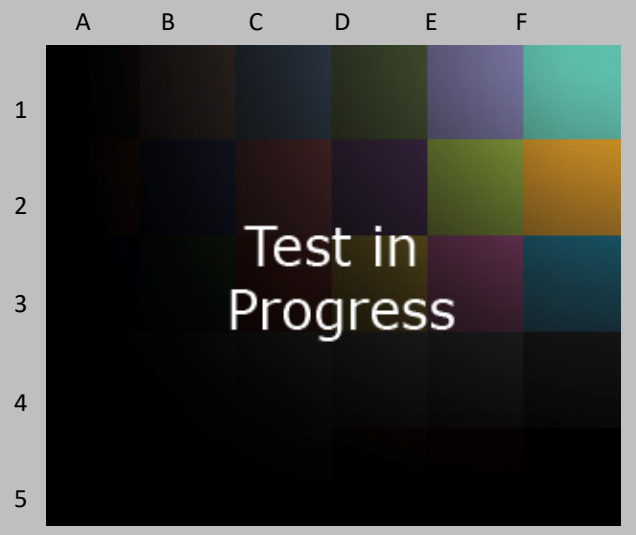
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 96.7 | 97.2 | 1.8 |
| Worst 10% (3 lowest scoring patches) | 91.0 | 93.8 | 4.2 |

100 Mluxhrs + 3 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure

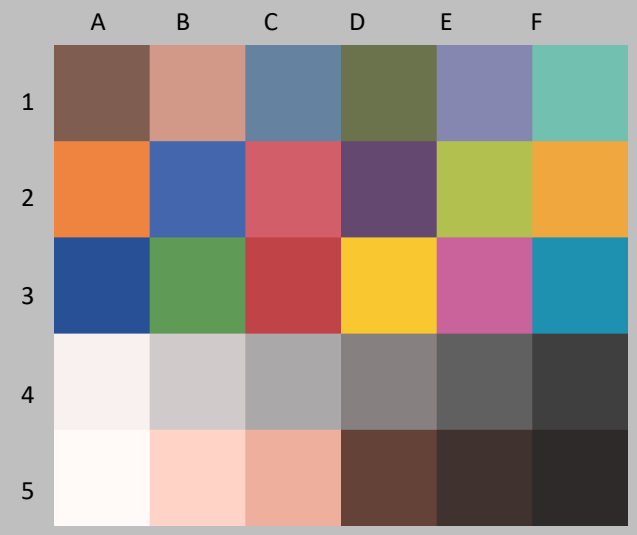



Colors after both light exposure + dark storage

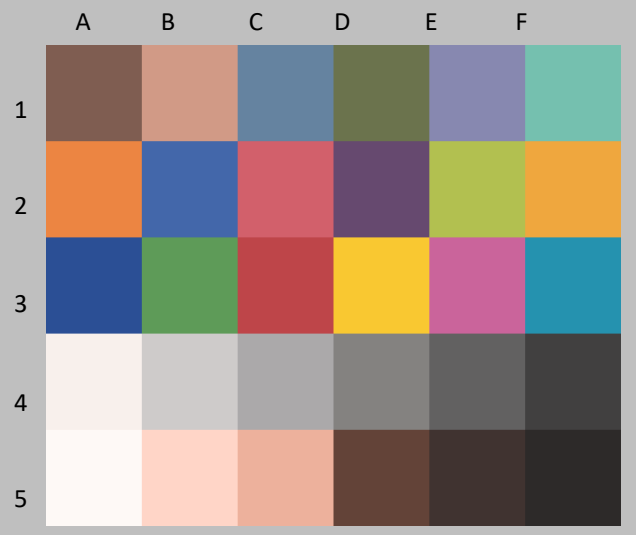
| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | | | 42.3 | | 12.1 | | 12.6 | |
| B1 | Light Skin | | | 67.7 | | 17.4 | | 18.3 | |
| C1 | Blue sky | | | 53.0 | | -3.9 | | -19.7 | |
| D1 | Foliage | | | 46.6 | | -11.0 | | 20.1 | |
| E1 | blue flower | | | 57.3 | | 8.3 | | -22.2 | |
| F1 | bluish green | | | 72.0 | | -29.4 | | 1.4 | |
| A1 | orange | | | 65.6 | | 34.1 | | 52.7 | |
| B2 | purplish blue | | | 43.3 | | 9.1 | | -41.7 | |
| C2 | moderate red | | | 54.7 | | 45.7 | | 16.4 | |
| D2 | purple | | | 35.0 | | 19.3 | | -17.9 | |
| E2 | yellow green | | | 74.4 | | -21.6 | | 54.3 | |
| F2 | orange yellow | | | 73.4 | | 17.9 | | 62.3 | |
| A3 | blue | | | 34.5 | | 11.4 | | -43.5 | |
| B3 | green | | | 58.1 | | -34.3 | | 29.6 | |
| C3 | red | | | 46.5 | | 49.1 | | 24.8 | |
| D3 | yellow | | | 82.3 | | 3.5 | | 75.0 | |
| E3 | magenta | | | 55.4 | | 46.8 | | -12.2 | |
| F3 | cyan | | | 55.4 | | -20.6 | | -24.7 | |
| A4 | white | | | 95.6 | | 0.7 | | 2.5 | |
| B4 | neutral 8 | | | 81.6 | | 0.3 | | 1.3 | |
| C4 | neutral 6.5 | | | 69.0 | | 0.0 | | 0.7 | |
| D4 | neutral 5 | | | 54.2 | | 0.4 | | 1.4 | |
| E4 | neutral 3.5 | | | 40.7 | | -0.1 | | 0.3 | |
| F4 | black | | | 27.1 | | 0.2 | | 0.0 | |
| A5 | paper white | | | 98.4 | | 0.1 | | 2.0 | |
| B5 | Skin highlight L*=88 | | | 88.4 | | 12.3 | | 14.1 | |
| C5 | Skin highlight L* =75 | | | 76.9 | | 19.0 | | 20.1 | |
| D5 | Skin shadow L*=28 | | | 31.5 | | 12.5 | | 11.8 | |
| E5 | Skin shadow L*=13 | | | 22.4 | | 4.9 | | 4.2 | |
| F5 | Maximum Black | | | 17.7 | | 0.6 | | 1.3 | |
| **Summary Results** | | I* Color | I* tone | ΔE | | | | | |
| Average Score for all patches | | | | | | | | | |
| Worst 10% (3 lowest scoring patches) | | | | | | | | | |

200 Mluxhrs + 3 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure




Colors after both light exposure + dark storage

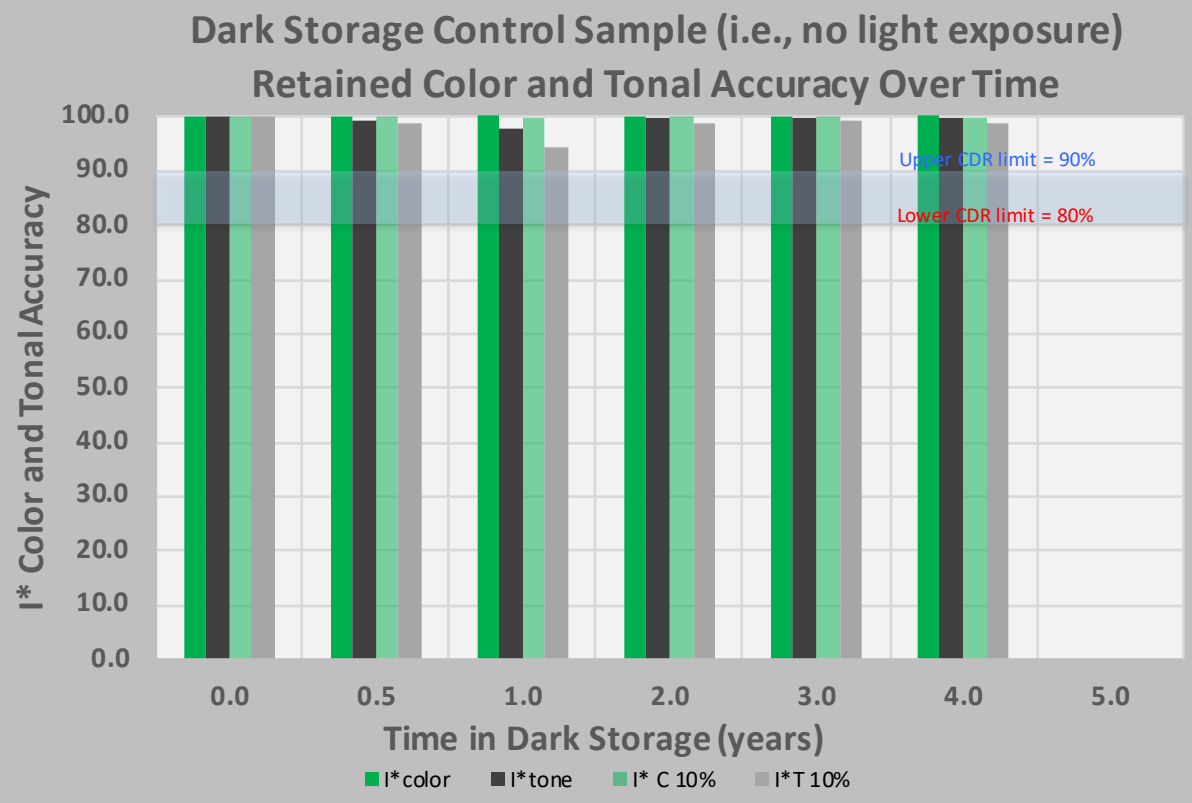
| | | | | L* | | a* | | b* | |
|---|---|---|---|---|---|---|---|---|---|
| Patch # | Description | I* Color | ΔE | Before | After | Before | After | Before | After |
| A1 | Dark Skin | 100.0 | 0.4 | 42.6 | 42.8 | 12.1 | 11.8 | 12.4 | 12.4 |
| B1 | Light Skin | 99.5 | 0.7 | 68.1 | 68.3 | 17.7 | 17.0 | 17.4 | 17.5 |
| C1 | Blue sky | 99.6 | 0.6 | 53.6 | 53.9 | -3.9 | -4.2 | -19.2 | -18.8 |
| D1 | Foliage | 100.0 | 0.4 | 47.0 | 47.1 | -11.1 | -10.9 | 20.1 | 19.9 |
| E1 | blue flower | 98.1 | 1.0 | 57.7 | 58.0 | 8.2 | 7.5 | -21.8 | -21.1 |
| F1 | bluish green | 100.0 | 0.4 | 72.4 | 72.5 | -28.8 | -28.4 | 0.7 | 0.8 |
| A1 | orange | 99.6 | 0.7 | 65.9 | 65.9 | 33.8 | 33.3 | 52.6 | 52.1 |
| B2 | purplish blue | 99.0 | 0.9 | 43.8 | 44.0 | 8.6 | 8.0 | -40.9 | -40.2 |
| C2 | moderate red | 99.2 | 0.9 | 55.0 | 55.3 | 45.8 | 44.9 | 15.6 | 15.7 |
| D2 | purple | 98.9 | 0.8 | 35.5 | 35.7 | 19.2 | 18.7 | -17.8 | -17.2 |
| E2 | yellow green | 99.6 | 0.7 | 74.6 | 74.6 | -21.4 | -21.1 | 54.1 | 53.4 |
| F2 | orange yellow | 99.7 | 0.7 | 73.8 | 73.8 | 17.4 | 16.9 | 62.3 | 61.8 |
| A3 | blue | 98.9 | 1.0 | 34.8 | 35.0 | 11.2 | 10.5 | -43.1 | -42.3 |
| B3 | green | 99.8 | 0.6 | 58.5 | 58.5 | -34.0 | -33.6 | 29.8 | 29.4 |
| C3 | red | 99.6 | 0.7 | 46.6 | 46.8 | 49.1 | 48.4 | 24.6 | 24.4 |
| D3 | yellow | 99.9 | 0.6 | 82.7 | 82.7 | 3.4 | 3.1 | 75.2 | 74.8 |
| E3 | magenta | 97.0 | 2.0 | 55.6 | 55.9 | 46.9 | 45.6 | -12.1 | -10.6 |
| F3 | cyan | 100.0 | 0.5 | 55.8 | 55.9 | -20.2 | -20.4 | -24.9 | -24.4 |
| A4 | white | 100.0 | 0.4 | 95.6 | 95.4 | 0.7 | 0.5 | 2.2 | 2.5 |
| B4 | neutral 8 | 99.8 | 0.5 | 81.9 | 82.0 | 0.6 | 0.2 | 0.8 | 1.2 |
| C4 | neutral 6.5 | 100.0 | 0.5 | 69.2 | 69.4 | 0.3 | 0.0 | 0.1 | 0.5 |
| D4 | neutral 5 | 100.0 | 0.5 | 54.4 | 54.6 | 0.6 | 0.4 | 1.0 | 1.3 |
| E4 | neutral 3.5 | 100.0 | 0.3 | 40.8 | 41.0 | 0.1 | -0.1 | 0.2 | 0.4 |
| F4 | black | 100.0 | 0.2 | 27.2 | 27.3 | 0.3 | 0.2 | -0.1 | 0.0 |
| A5 | paper white | 100.0 | 0.3 | 98.3 | 98.1 | 0.1 | 0.0 | 1.9 | 2.1 |
| B5 | Skin highlight L*=88 | 98.4 | 0.8 | 88.3 | 88.5 | 12.7 | 12.0 | 12.4 | 12.7 |
| C5 | Skin highlight L* =75 | 99.0 | 0.8 | 77.1 | 77.4 | 19.1 | 18.4 | 19.3 | 19.5 |
| D5 | Skin shadow L*=28 | 100.0 | 0.4 | 31.6 | 31.9 | 12.7 | 12.4 | 12.0 | 11.8 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.7 | 5.0 | 4.9 | 4.3 | 4.1 |
| F5 | Maximum Black | 100.0 | 0.3 | 17.5 | 17.8 | 0.6 | 0.5 | 1.3 | 1.3 |

| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 99.5 | 98.8 | 0.6 |
| Worst 10% (3 lowest scoring patches) | 97.8 | 97.7 | 1.3 |

20 Mluxhrs + 4 years

## Section IV: Ongoing Dark Storage Test Results

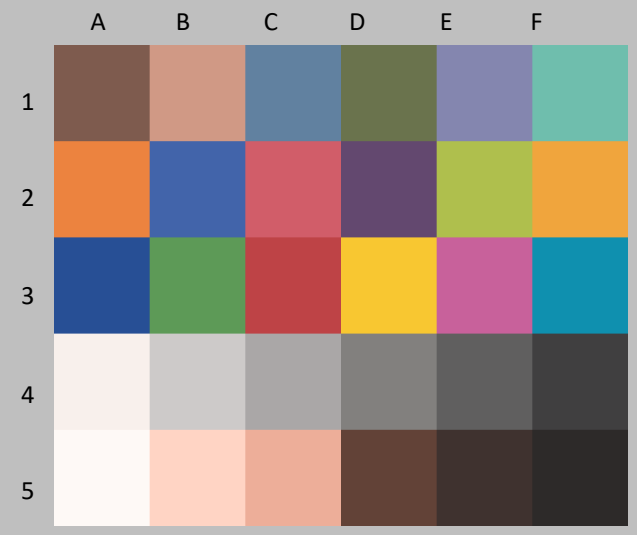
This section of the report tracks a sample of this print process (i.e., printer/ink/media) that remains in an amibient room temperature/moderate RH dark storage environment and has not been subjected to light exposure tests like the other samples. It is essentially a "control" sample that will remain in natural aging conditions (e.g., photo album storage) while the other light fastness tests are ongoing, and then in the Aardenburg Archives under simliar conditions indefinitely along with the retired light fade samples. The chart below will be rescaled to longer time intervals once total acumulated storage time exceeds 5 years.



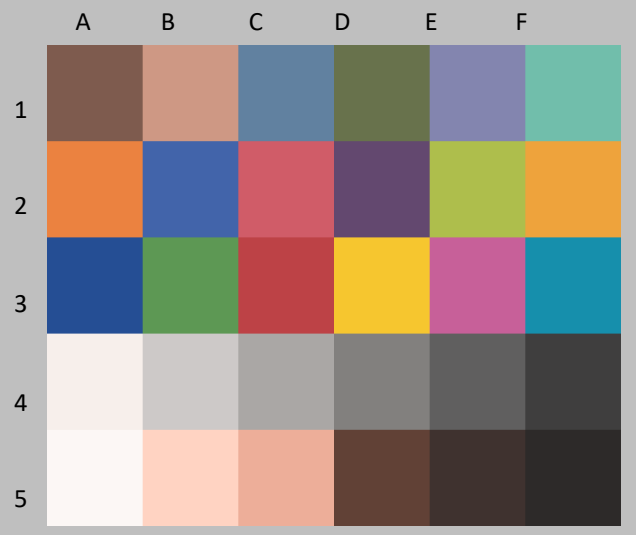

**Time in Storage Summary for Dark Storage Control Sample**

| *Years* | *I*color (worst 10%)* | *I* Tone (10%)* | I* Color | I* tone | ΔE avg. | ΔE (worst 10%) |
|---|---|---|---|---|---|---|
| 0.0 | 100.0 | *100.0* | 100.0 | 100.0 | 0.0 | 0.0 |
| 0.5 | 100.0 | *98.5* | 100.0 | 99.3 | 0.3 | 0.4 |
| 1.0 | 99.9 | *94.5* | 100.0 | 98.0 | 0.5 | 1.0 |
| 2.0 | 100.0 | *98.8* | 100.0 | 99.6 | 0.2 | 0.3 |
| 3.0 | 100.0 | *99.3* | 100.0 | 99.7 | 0.2 | 0.4 |
| 4.0 | 100.0 | *98.6* | 100.0 | 99.5 | 0.3 | 0.5 |
| 5.0 | | | | | | |

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



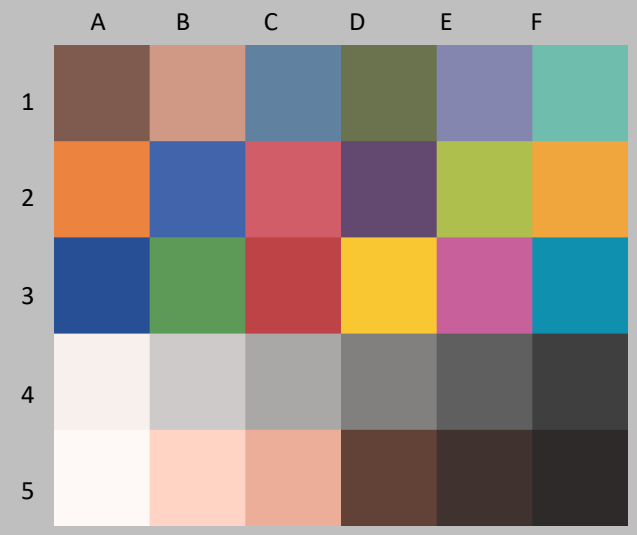

Colors after additional time in dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.2 | 42.1 | 41.9 | 12.0 | 12.0 | 12.6 | 12.5 |
| B1 | Light Skin | 100.0 | 0.2 | 67.7 | 67.4 | 17.2 | 17.2 | 18.0 | 18.0 |
| C1 | Blue sky | 100.0 | 0.2 | 53.0 | 52.8 | -3.9 | -4.0 | -19.7 | -19.7 |
| D1 | Foliage | 100.0 | 0.2 | 46.5 | 46.3 | -11.1 | -11.0 | 19.7 | 19.7 |
| E1 | blue flower | 100.0 | 0.2 | 57.1 | 56.9 | 8.2 | 8.1 | -22.0 | -22.0 |
| F1 | bluish green | 100.0 | 0.2 | 71.9 | 71.7 | -29.5 | -29.5 | 1.4 | 1.6 |
| A1 | orange | 100.0 | 0.3 | 65.4 | 65.1 | 34.2 | 34.1 | 52.7 | 52.5 |
| B2 | purplish blue | 100.0 | 0.2 | 43.2 | 43.0 | 8.9 | 8.7 | -41.5 | -41.4 |
| C2 | moderate red | 100.0 | 0.3 | 54.5 | 54.2 | 45.6 | 45.6 | 16.3 | 16.1 |
| D2 | purple | 100.0 | 0.2 | 35.0 | 34.7 | 19.1 | 19.0 | -17.7 | -17.8 |
| E2 | yellow green | 100.0 | 0.3 | 74.1 | 73.9 | -21.6 | -21.5 | 54.2 | 54.2 |
| F2 | orange yellow | 100.0 | 0.3 | 73.2 | 72.9 | 17.8 | 17.8 | 62.0 | 61.9 |
| A3 | blue | 100.0 | 0.2 | 34.4 | 34.2 | 11.4 | 11.3 | -43.4 | -43.3 |
| B3 | green | 100.0 | 0.3 | 57.9 | 57.7 | -34.1 | -34.1 | 29.4 | 29.5 |
| C3 | red | 100.0 | 0.3 | 46.4 | 46.1 | 48.9 | 48.8 | 24.7 | 24.6 |
| D3 | yellow | 100.0 | 0.3 | 82.2 | 81.9 | 3.5 | 3.5 | 74.9 | 75.0 |
| E3 | magenta | 100.0 | 0.3 | 55.2 | 54.9 | 46.7 | 46.6 | -12.2 | -12.3 |
| F3 | cyan | 100.0 | 0.3 | 55.2 | 55.0 | -20.6 | -20.7 | -24.7 | -24.5 |
| A4 | white | 100.0 | 0.4 | 95.4 | 95.0 | 0.7 | 0.7 | 2.6 | 2.6 |
| B4 | neutral 8 | 100.0 | 0.3 | 81.4 | 81.1 | 0.2 | 0.2 | 1.4 | 1.4 |
| C4 | neutral 6.5 | 100.0 | 0.3 | 68.9 | 68.6 | 0.0 | 0.0 | 0.7 | 0.7 |
| D4 | neutral 5 | 100.0 | 0.2 | 53.9 | 53.7 | 0.3 | 0.3 | 1.3 | 1.4 |
| E4 | neutral 3.5 | 100.0 | 0.2 | 40.4 | 40.2 | -0.1 | -0.1 | 0.3 | 0.4 |
| F4 | black | 100.0 | 0.2 | 27.0 | 26.8 | 0.2 | 0.2 | 0.0 | 0.1 |
| A5 | paper white | 100.0 | 0.3 | 98.0 | 97.7 | 0.1 | 0.1 | 2.0 | 1.9 |
| B5 | Skin highlight L*=88 | 100.0 | 0.4 | 88.1 | 87.7 | 12.2 | 12.2 | 13.8 | 13.9 |
| C5 | Skin highlight L* =75 | 100.0 | 0.3 | 76.6 | 76.3 | 18.9 | 18.9 | 20.0 | 19.8 |
| D5 | Skin shadow L*=28 | 100.0 | 0.2 | 31.3 | 31.1 | 12.3 | 12.3 | 11.7 | 11.8 |
| E5 | Skin shadow L*=13 | 100.0 | 0.4 | 22.5 | 22.3 | 4.8 | 4.8 | 4.1 | 4.4 |
| F5 | Maximum Black | 100.0 | 0.3 | 17.6 | 17.5 | 0.6 | 0.5 | 1.1 | 1.4 |

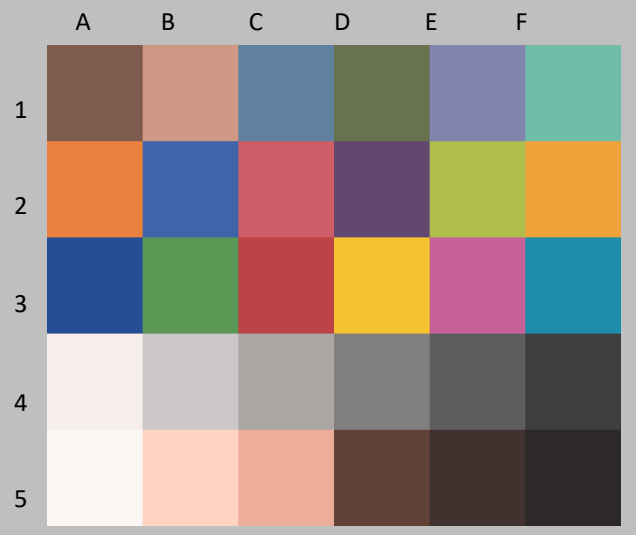
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 100.0 | 99.3 | 0.3 |
| Worst 10% (3 lowest scoring patches) | 100.0 | 98.5 | 0.4 |

DS Control at 6 months

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



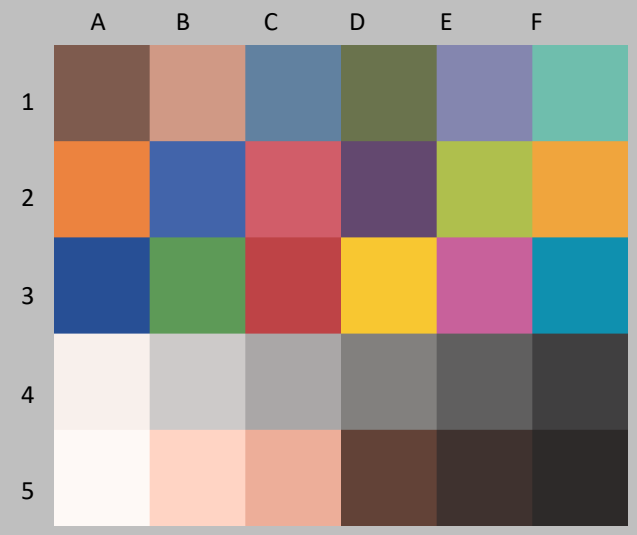

Colors after additional time in dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.3 | 42.1 | 42.0 | 12.0 | 11.9 | 12.6 | 12.4 |
| B1 | Light Skin | 100.0 | 0.4 | 67.7 | 67.3 | 17.2 | 17.2 | 18.0 | 18.1 |
| C1 | Blue sky | 100.0 | 0.3 | 53.0 | 52.7 | -3.9 | -3.9 | -19.7 | -19.5 |
| D1 | Foliage | 100.0 | 0.4 | 46.5 | 46.1 | -11.1 | -11.0 | 19.7 | 19.7 |
| E1 | blue flower | 100.0 | 0.5 | 57.1 | 56.7 | 8.2 | 8.1 | -22.0 | -21.8 |
| F1 | bluish green | 100.0 | 0.6 | 71.9 | 71.4 | -29.5 | -29.4 | 1.4 | 1.7 |
| A1 | orange | 100.0 | 0.7 | 65.4 | 64.9 | 34.2 | 33.9 | 52.7 | 52.3 |
| B2 | purplish blue | 100.0 | 0.6 | 43.2 | 42.8 | 8.9 | 8.7 | -41.5 | -41.1 |
| C2 | moderate red | 100.0 | 0.7 | 54.5 | 54.0 | 45.6 | 45.2 | 16.3 | 16.1 |
| D2 | purple | 100.0 | 0.5 | 35.0 | 34.5 | 19.1 | 18.9 | -17.7 | -17.6 |
| E2 | yellow green | 100.0 | 0.6 | 74.1 | 73.6 | -21.6 | -21.4 | 54.2 | 54.0 |
| F2 | orange yellow | 100.0 | 0.6 | 73.2 | 72.6 | 17.8 | 17.8 | 62.0 | 61.7 |
| A3 | blue | 100.0 | 0.5 | 34.4 | 34.2 | 11.4 | 11.2 | -43.4 | -43.0 |
| B3 | green | 100.0 | 0.6 | 57.9 | 57.4 | -34.1 | -33.9 | 29.4 | 29.5 |
| C3 | red | 100.0 | 0.6 | 46.4 | 45.9 | 48.9 | 48.5 | 24.7 | 24.5 |
| D3 | yellow | 100.0 | 1.1 | 82.2 | 81.3 | 3.5 | 3.5 | 74.9 | 74.4 |
| E3 | magenta | 99.9 | 1.0 | 55.2 | 54.4 | 46.7 | 46.2 | -12.2 | -11.9 |
| F3 | cyan | 99.9 | 0.9 | 55.2 | 54.5 | -20.6 | -20.5 | -24.7 | -24.2 |
| A4 | white | 100.0 | 0.9 | 95.4 | 94.4 | 0.7 | 0.6 | 2.6 | 2.6 |
| B4 | neutral 8 | 100.0 | 0.7 | 81.4 | 80.7 | 0.2 | 0.2 | 1.4 | 1.4 |
| C4 | neutral 6.5 | 100.0 | 0.7 | 68.9 | 68.1 | 0.0 | -0.1 | 0.7 | 0.7 |
| D4 | neutral 5 | 100.0 | 0.5 | 53.9 | 53.4 | 0.3 | 0.4 | 1.3 | 1.3 |
| E4 | neutral 3.5 | 100.0 | 0.3 | 40.4 | 40.1 | -0.1 | -0.1 | 0.3 | 0.4 |
| F4 | black | 100.0 | 0.3 | 27.0 | 26.6 | 0.2 | 0.2 | 0.0 | -0.1 |
| A5 | paper white | 100.0 | 0.5 | 98.0 | 97.6 | 0.1 | 0.1 | 2.0 | 1.9 |
| B5 | Skin highlight L*=88 | 100.0 | 0.4 | 88.1 | 87.7 | 12.2 | 12.1 | 13.8 | 13.9 |
| C5 | Skin highlight L* =75 | 100.0 | 0.3 | 76.6 | 76.3 | 18.9 | 18.9 | 20.0 | 20.0 |
| D5 | Skin shadow L*=28 | 100.0 | 0.2 | 31.3 | 31.2 | 12.3 | 12.3 | 11.7 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.3 | 22.5 | 22.3 | 4.8 | 4.8 | 4.1 | 4.3 |
| F5 | Maximum Black | 100.0 | 0.2 | 17.6 | 17.5 | 0.6 | 0.6 | 1.1 | 1.3 |

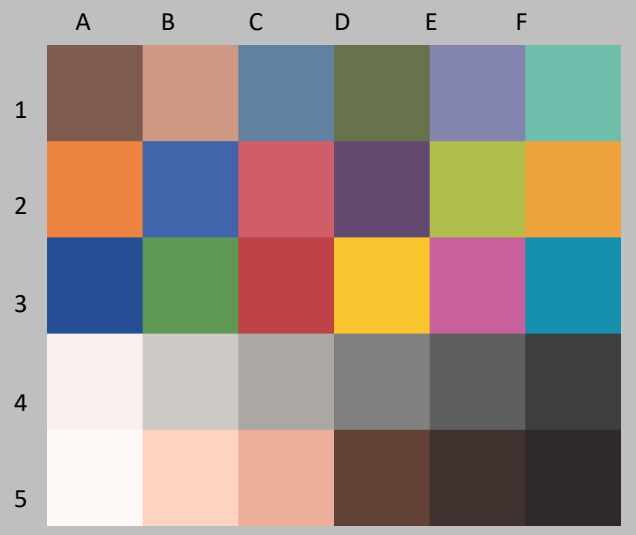
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 100.0 | 98.0 | 0.5 |
| Worst 10% (3 lowest scoring patches) | 99.9 | 94.5 | 1.0 |

DS Control at 1 year

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



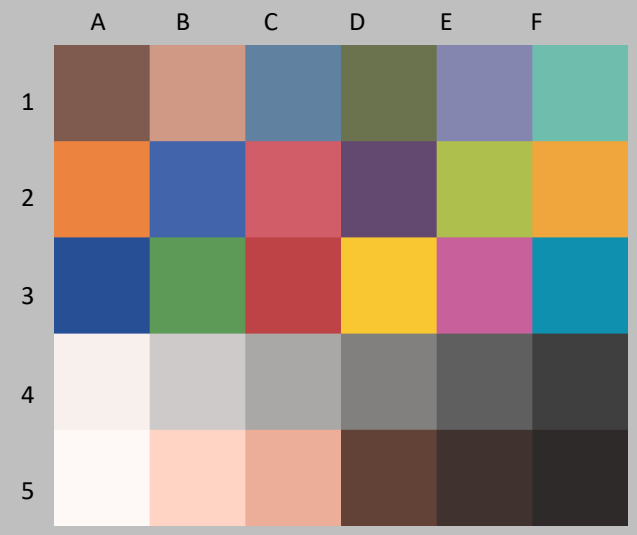

Colors after additional time in dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.2 | 42.1 | 42.1 | 12.0 | 11.9 | 12.6 | 12.4 |
| B1 | Light Skin | 100.0 | 0.1 | 67.7 | 67.6 | 17.2 | 17.2 | 18.0 | 18.1 |
| C1 | Blue sky | 100.0 | 0.2 | 53.0 | 52.9 | -3.9 | -3.9 | -19.7 | -19.5 |
| D1 | Foliage | 100.0 | 0.1 | 46.5 | 46.4 | -11.1 | -11.0 | 19.7 | 19.7 |
| E1 | blue flower | 100.0 | 0.2 | 57.1 | 57.0 | 8.2 | 8.1 | -22.0 | -21.9 |
| F1 | bluish green | 100.0 | 0.2 | 71.9 | 71.8 | -29.5 | -29.6 | 1.4 | 1.6 |
| A1 | orange | 100.0 | 0.2 | 65.4 | 65.3 | 34.2 | 34.0 | 52.7 | 52.5 |
| B2 | purplish blue | 100.0 | 0.2 | 43.2 | 43.1 | 8.9 | 8.7 | -41.5 | -41.3 |
| C2 | moderate red | 100.0 | 0.2 | 54.5 | 54.4 | 45.6 | 45.5 | 16.3 | 16.3 |
| D2 | purple | 100.0 | 0.2 | 35.0 | 34.9 | 19.1 | 19.0 | -17.7 | -17.7 |
| E2 | yellow green | 100.0 | 0.2 | 74.1 | 74.0 | -21.6 | -21.5 | 54.2 | 54.2 |
| F2 | orange yellow | 100.0 | 0.1 | 73.2 | 73.1 | 17.8 | 17.8 | 62.0 | 62.0 |
| A3 | blue | 100.0 | 0.3 | 34.4 | 34.4 | 11.4 | 11.3 | -43.4 | -43.1 |
| B3 | green | 100.0 | 0.2 | 57.9 | 57.8 | -34.1 | -34.1 | 29.4 | 29.5 |
| C3 | red | 100.0 | 0.2 | 46.4 | 46.3 | 48.9 | 48.7 | 24.7 | 24.8 |
| D3 | yellow | 100.0 | 0.2 | 82.2 | 82.0 | 3.5 | 3.6 | 74.9 | 74.9 |
| E3 | magenta | 100.0 | 0.3 | 55.2 | 55.1 | 46.7 | 46.7 | -12.2 | -11.9 |
| F3 | cyan | 100.0 | 0.3 | 55.2 | 55.1 | -20.6 | -20.6 | -24.7 | -24.4 |
| A4 | white | 100.0 | 0.3 | 95.4 | 95.2 | 0.7 | 0.6 | 2.6 | 2.7 |
| B4 | neutral 8 | 100.0 | 0.1 | 81.4 | 81.3 | 0.2 | 0.2 | 1.4 | 1.5 |
| C4 | neutral 6.5 | 100.0 | 0.1 | 68.9 | 68.8 | 0.0 | -0.1 | 0.7 | 0.7 |
| D4 | neutral 5 | 100.0 | 0.1 | 53.9 | 53.8 | 0.3 | 0.4 | 1.3 | 1.4 |
| E4 | neutral 3.5 | 100.0 | 0.1 | 40.4 | 40.4 | -0.1 | -0.1 | 0.3 | 0.3 |
| F4 | black | 100.0 | 0.1 | 27.0 | 26.9 | 0.2 | 0.2 | 0.0 | 0.0 |
| A5 | paper white | 100.0 | 0.1 | 98.0 | 97.9 | 0.1 | 0.0 | 2.0 | 2.0 |
| B5 | Skin highlight L*=88 | 100.0 | 0.3 | 88.1 | 87.9 | 12.2 | 12.2 | 13.8 | 14.0 |
| C5 | Skin highlight L* =75 | 100.0 | 0.2 | 76.6 | 76.6 | 18.9 | 18.9 | 20.0 | 20.1 |
| D5 | Skin shadow L*=28 | 100.0 | 0.0 | 31.3 | 31.3 | 12.3 | 12.3 | 11.7 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.2 | 22.5 | 22.4 | 4.8 | 4.8 | 4.1 | 4.2 |
| F5 | Maximum Black | 100.0 | 0.2 | 17.6 | 17.6 | 0.6 | 0.6 | 1.1 | 1.3 |

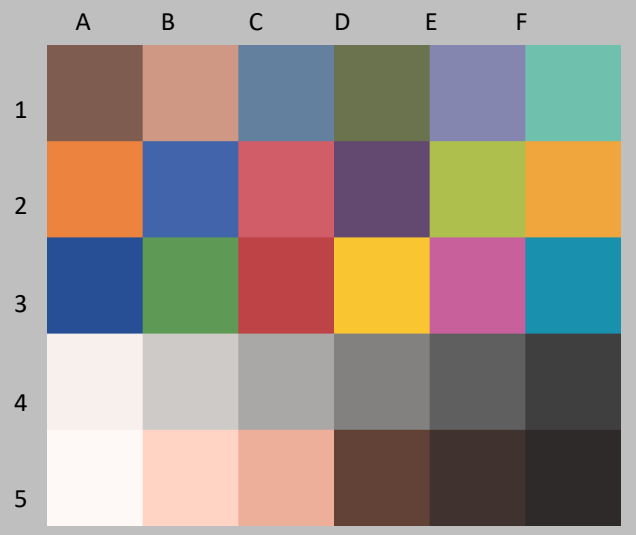
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 100.0 | 99.6 | 0.2 |
| Worst 10% (3 lowest scoring patches) | 100.0 | 98.8 | 0.3 |

DS Control at 2 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



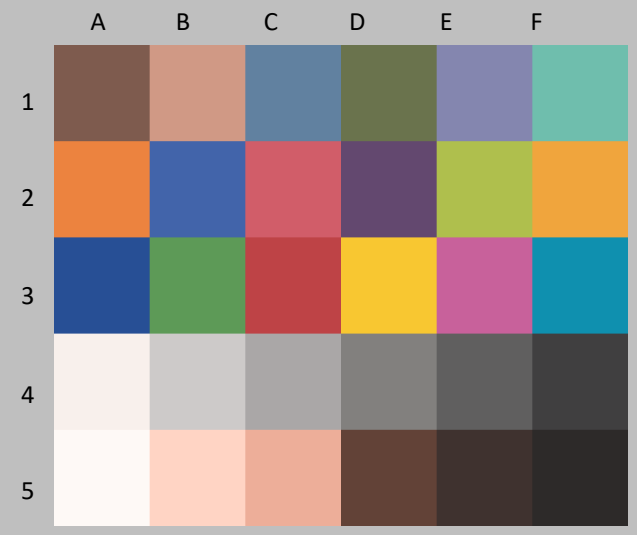

Colors after additional time in dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.2 | 42.1 | 42.2 | 12.0 | 11.9 | 12.6 | 12.5 |
| B1 | Light Skin | 100.0 | 0.2 | 67.7 | 67.6 | 17.2 | 17.2 | 18.0 | 18.3 |
| C1 | Blue sky | 100.0 | 0.3 | 53.0 | 53.0 | -3.9 | -4.0 | -19.7 | -19.5 |
| D1 | Foliage | 100.0 | 0.1 | 46.5 | 46.5 | -11.1 | -11.0 | 19.7 | 19.7 |
| E1 | blue flower | 100.0 | 0.3 | 57.1 | 57.1 | 8.2 | 8.1 | -22.0 | -21.8 |
| F1 | bluish green | 100.0 | 0.4 | 71.9 | 72.0 | -29.5 | -29.6 | 1.4 | 1.8 |
| A1 | orange | 100.0 | 0.1 | 65.4 | 65.5 | 34.2 | 34.1 | 52.7 | 52.6 |
| B2 | purplish blue | 100.0 | 0.3 | 43.2 | 43.2 | 8.9 | 8.7 | -41.5 | -41.2 |
| C2 | moderate red | 100.0 | 0.1 | 54.5 | 54.5 | 45.6 | 45.6 | 16.3 | 16.4 |
| D2 | purple | 100.0 | 0.2 | 35.0 | 35.0 | 19.1 | 19.0 | -17.7 | -17.6 |
| E2 | yellow green | 100.0 | 0.1 | 74.1 | 74.1 | -21.6 | -21.5 | 54.2 | 54.2 |
| F2 | orange yellow | 100.0 | 0.1 | 73.2 | 73.2 | 17.8 | 17.9 | 62.0 | 62.0 |
| A3 | blue | 100.0 | 0.3 | 34.4 | 34.5 | 11.4 | 11.2 | -43.4 | -43.1 |
| B3 | green | 100.0 | 0.2 | 57.9 | 57.9 | -34.1 | -34.0 | 29.4 | 29.5 |
| C3 | red | 100.0 | 0.1 | 46.4 | 46.4 | 48.9 | 48.8 | 24.7 | 24.8 |
| D3 | yellow | 100.0 | 0.2 | 82.2 | 82.2 | 3.5 | 3.6 | 74.9 | 75.0 |
| E3 | magenta | 100.0 | 0.4 | 55.2 | 55.2 | 46.7 | 46.7 | -12.2 | -11.8 |
| F3 | cyan | 100.0 | 0.4 | 55.2 | 55.2 | -20.6 | -20.8 | -24.7 | -24.3 |
| A4 | white | 100.0 | 0.3 | 95.4 | 95.4 | 0.7 | 0.6 | 2.6 | 2.8 |
| B4 | neutral 8 | 100.0 | 0.2 | 81.4 | 81.5 | 0.2 | 0.1 | 1.4 | 1.6 |
| C4 | neutral 6.5 | 100.0 | 0.2 | 68.9 | 68.9 | 0.0 | -0.1 | 0.7 | 0.9 |
| D4 | neutral 5 | 100.0 | 0.1 | 53.9 | 53.9 | 0.3 | 0.3 | 1.3 | 1.4 |
| E4 | neutral 3.5 | 100.0 | 0.1 | 40.4 | 40.4 | -0.1 | -0.1 | 0.3 | 0.4 |
| F4 | black | 100.0 | 0.1 | 27.0 | 26.9 | 0.2 | 0.2 | 0.0 | 0.0 |
| A5 | paper white | 100.0 | 0.2 | 98.0 | 98.1 | 0.1 | 0.0 | 2.0 | 2.1 |
| B5 | Skin highlight L*=88 | 100.0 | 0.4 | 88.1 | 88.1 | 12.2 | 12.2 | 13.8 | 14.2 |
| C5 | Skin highlight L* =75 | 100.0 | 0.3 | 76.6 | 76.7 | 18.9 | 18.9 | 20.0 | 20.2 |
| D5 | Skin shadow L*=28 | 100.0 | 0.1 | 31.3 | 31.4 | 12.3 | 12.3 | 11.7 | 11.7 |
| E5 | Skin shadow L*=13 | 100.0 | 0.1 | 22.5 | 22.5 | 4.8 | 4.8 | 4.1 | 4.2 |
| F5 | Maximum Black | 100.0 | 0.1 | 17.6 | 17.7 | 0.6 | 0.6 | 1.1 | 1.3 |

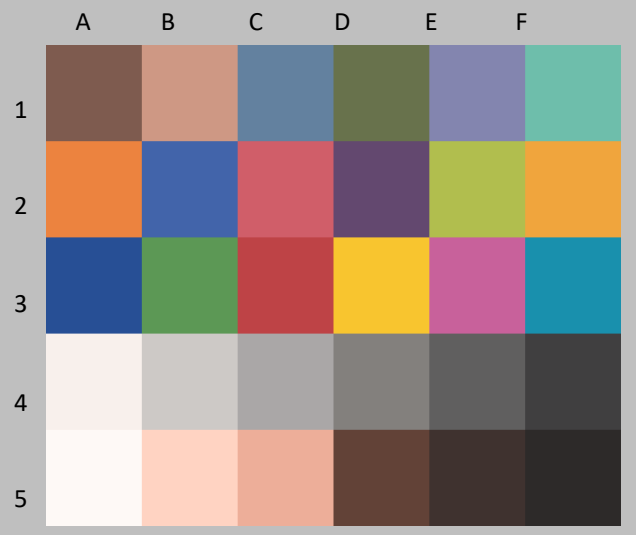
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 100.0 | 99.7 | 0.2 |
| Worst 10% (3 lowest scoring patches) | 100.0 | 99.3 | 0.4 |

DS Control at 3 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure



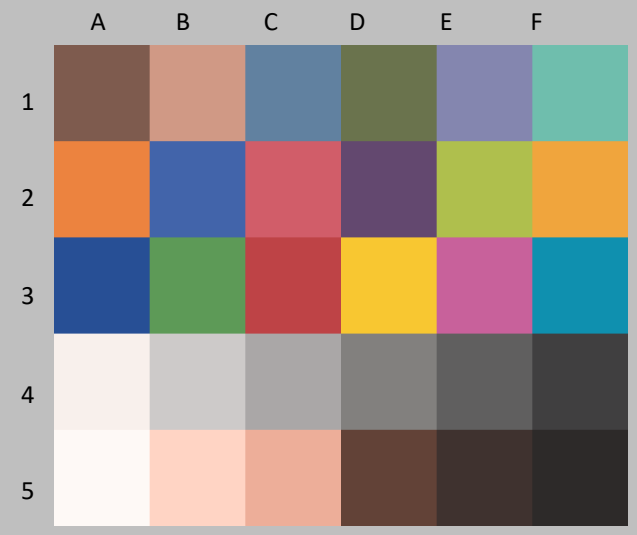

Colors after additional time in dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | 100.0 | 0.2 | 42.1 | 42.1 | 12.0 | 11.9 | 12.6 | 12.4 |
| B1 | Light Skin | 100.0 | 0.3 | 67.7 | 67.5 | 17.2 | 17.2 | 18.0 | 18.2 |
| C1 | Blue sky | 100.0 | 0.4 | 53.0 | 52.9 | -3.9 | -4.0 | -19.7 | -19.3 |
| D1 | Foliage | 100.0 | 0.1 | 46.5 | 46.4 | -11.1 | -11.0 | 19.7 | 19.7 |
| E1 | blue flower | 100.0 | 0.4 | 57.1 | 57.0 | 8.2 | 8.1 | -22.0 | -21.6 |
| F1 | bluish green | 100.0 | 0.4 | 71.9 | 71.8 | -29.5 | -29.5 | 1.4 | 1.8 |
| A1 | orange | 100.0 | 0.2 | 65.4 | 65.4 | 34.2 | 34.1 | 52.7 | 52.5 |
| B2 | purplish blue | 100.0 | 0.5 | 43.2 | 43.2 | 8.9 | 8.7 | -41.5 | -41.0 |
| C2 | moderate red | 100.0 | 0.3 | 54.5 | 54.5 | 45.6 | 45.4 | 16.3 | 16.5 |
| D2 | purple | 100.0 | 0.2 | 35.0 | 34.9 | 19.1 | 19.0 | -17.7 | -17.5 |
| E2 | yellow green | 100.0 | 0.2 | 74.1 | 74.0 | -21.6 | -21.5 | 54.2 | 54.2 |
| F2 | orange yellow | 100.0 | 0.1 | 73.2 | 73.2 | 17.8 | 17.8 | 62.0 | 62.1 |
| A3 | blue | 100.0 | 0.4 | 34.4 | 34.4 | 11.4 | 11.2 | -43.4 | -43.0 |
| B3 | green | 100.0 | 0.2 | 57.9 | 57.8 | -34.1 | -33.9 | 29.4 | 29.4 |
| C3 | red | 100.0 | 0.1 | 46.4 | 46.4 | 48.9 | 48.8 | 24.7 | 24.8 |
| D3 | yellow | 100.0 | 0.2 | 82.2 | 82.0 | 3.5 | 3.7 | 74.9 | 74.9 |
| E3 | magenta | 99.9 | 0.6 | 55.2 | 55.2 | 46.7 | 46.7 | -12.2 | -11.6 |
| F3 | cyan | 100.0 | 0.4 | 55.2 | 55.1 | -20.6 | -20.7 | -24.7 | -24.3 |
| A4 | white | 100.0 | 0.4 | 95.4 | 95.2 | 0.7 | 0.6 | 2.6 | 3.0 |
| B4 | neutral 8 | 100.0 | 0.3 | 81.4 | 81.4 | 0.2 | 0.2 | 1.4 | 1.7 |
| C4 | neutral 6.5 | 100.0 | 0.3 | 68.9 | 68.8 | 0.0 | -0.1 | 0.7 | 0.9 |
| D4 | neutral 5 | 100.0 | 0.2 | 53.9 | 53.9 | 0.3 | 0.3 | 1.3 | 1.5 |
| E4 | neutral 3.5 | 100.0 | 0.1 | 40.4 | 40.4 | -0.1 | -0.1 | 0.3 | 0.4 |
| F4 | black | 100.0 | 0.1 | 27.0 | 27.0 | 0.2 | 0.2 | 0.0 | 0.1 |
| A5 | paper white | 100.0 | 0.3 | 98.0 | 97.9 | 0.1 | 0.0 | 2.0 | 2.2 |
| B5 | Skin highlight L*=88 | 100.0 | 0.5 | 88.1 | 88.0 | 12.2 | 12.2 | 13.8 | 14.2 |
| C5 | Skin highlight L* =75 | 100.0 | 0.3 | 76.6 | 76.5 | 18.9 | 19.0 | 20.0 | 20.3 |
| D5 | Skin shadow L*=28 | 100.0 | 0.0 | 31.3 | 31.4 | 12.3 | 12.3 | 11.7 | 11.6 |
| E5 | Skin shadow L*=13 | 100.0 | 0.1 | 22.5 | 22.5 | 4.8 | 4.7 | 4.1 | 4.2 |
| F5 | Maximum Black | 100.0 | 0.2 | 17.6 | 17.6 | 0.6 | 0.6 | 1.1 | 1.4 |

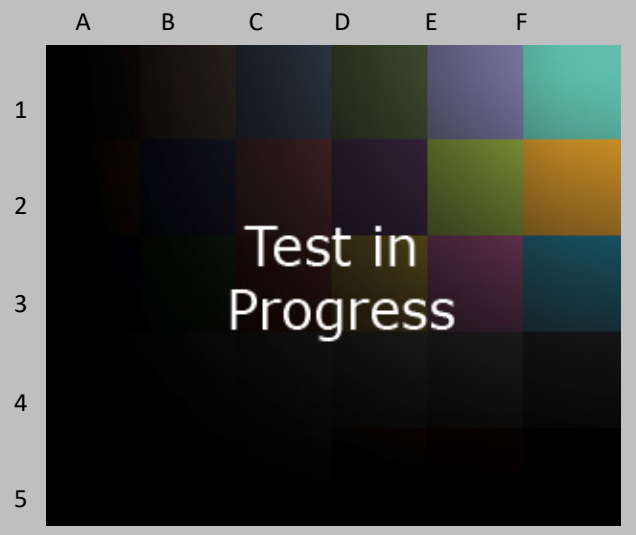
| **Summary Results** | I* Color | I* tone | ΔE |
|---|---|---|---|
| Average Score for all patches | 100.0 | 99.5 | 0.3 |
| Worst 10% (3 lowest scoring patches) | 100.0 | 98.6 | 0.5 |

DS Control at 4 years

**Printer:** Canon iPF 8300 **Ink:** Canon Lucia EX **Media:** Moab Entrada Rag Natural 300gsm, no additional coating




Original Print Colors before light exposure




Colors after additional time in dark storage

| Patch # | Description | I* Color | ΔE | L* Before | L* After | a* Before | a* After | b* Before | b* After |
|---|---|---|---|---|---|---|---|---|---|
| A1 | Dark Skin | | | 42.1 | | 12.0 | | 12.6 | |
| B1 | Light Skin | | | 67.7 | | 17.2 | | 18.0 | |
| C1 | Blue sky | | | 53.0 | | -3.9 | | -19.7 | |
| D1 | Foliage | | | 46.5 | | -11.1 | | 19.7 | |
| E1 | blue flower | | | 57.1 | | 8.2 | | -22.0 | |
| F1 | bluish green | | | 71.9 | | -29.5 | | 1.4 | |
| A1 | orange | | | 65.4 | | 34.2 | | 52.7 | |
| B2 | purplish blue | | | 43.2 | | 8.9 | | -41.5 | |
| C2 | moderate red | | | 54.5 | | 45.6 | | 16.3 | |
| D2 | purple | | | 35.0 | | 19.1 | | -17.7 | |
| E2 | yellow green | | | 74.1 | | -21.6 | | 54.2 | |
| F2 | orange yellow | | | 73.2 | | 17.8 | | 62.0 | |
| A3 | blue | | | 34.4 | | 11.4 | | -43.4 | |
| B3 | green | | | 57.9 | | -34.1 | | 29.4 | |
| C3 | red | | | 46.4 | | 48.9 | | 24.7 | |
| D3 | yellow | | | 82.2 | | 3.5 | | 74.9 | |
| E3 | magenta | | | 55.2 | | 46.7 | | -12.2 | |
| F3 | cyan | | | 55.2 | | -20.6 | | -24.7 | |
| A4 | white | | | 95.4 | | 0.7 | | 2.6 | |
| B4 | neutral 8 | | | 81.4 | | 0.2 | | 1.4 | |
| C4 | neutral 6.5 | | | 68.9 | | 0.0 | | 0.7 | |
| D4 | neutral 5 | | | 53.9 | | 0.3 | | 1.3 | |
| E4 | neutral 3.5 | | | 40.4 | | -0.1 | | 0.3 | |
| F4 | black | | | 27.0 | | 0.2 | | 0.0 | |
| A5 | paper white | | | 98.0 | | 0.1 | | 2.0 | |
| B5 | Skin highlight L*=88 | | | 88.1 | | 12.2 | | 13.8 | |
| C5 | Skin highlight L* =75 | | | 76.6 | | 18.9 | | 20.0 | |
| D5 | Skin shadow L*=28 | | | 31.3 | | 12.3 | | 11.7 | |
| E5 | Skin shadow L*=13 | | | 22.5 | | 4.8 | | 4.1 | |
| F5 | Maximum Black | | | 17.6 | | 0.6 | | 1.1 | |

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

DS Control at 5 years

# Section V: Comments and Conclusions

**ID # 324**

**Initial Print Quality:**

The tone reproduction curve shown on page 5 reveals excellent highlight and mid tone contrast retention. It also shows a predictable roll off in the deep shadows which is due to lower maximum print density typical of matte finish papers. That said, the printmaker can open up shadow detail when necessary by using a simple reverse-S shaped tone curve applied to the image shadows in the source image file. Gray scale neutrality achieved with this combination of printer/ink/media and a custom ICC profile is excellent. Overall, the iPF8300/Lucia EX ink set combined with Moab Entrada 300gsm paper produces high quality archival pigment prints with excellent whitepoint, good maximum black density, and accurate color and tone reproduction on a lovely smooth matte finish surface. Entrada Natural 300gsm is double-side coated (both cut sheet and rolls which is rare). The double-side coating symmetry also gives Entrada Natural 300gsm excellent physical print flatness properties.

**Print Longevity:**

Moab Entrada Rag Natural exhibits a very slight initial light bleaching of its media whitepoint color, shifting towards a "cooler white" within the first 10 Megalux hours in text, but then it stops changing further. This color change detected by the spectrophotometer is so negligible it would indeed go unnoticed by the viewer. Most importantly, the OBA-free Entrada Natural paper (not to be confused with Entrada Bright 300gsm which has OBAs) has not suffered from any media yellowing during the ongoing lightfastness testing, or in dark storage after the 20, 50, and 100 Mluxhr exposed samples were retired to dark storage. The dark storage control sample to date also remains visually unchanged 2 years after it was printed. Sample monitoring continues.

Compare this test result to ID# 318 also available in the Aardenburg database. ID#s 318 and 324 are a direct paired-comparison test of the older Canon LUCIA EX ink set used in the iPFx300 and x400 series printer models and the newer Canon LUCIA Pro-11 ink set used in the Pro-x000 series printers. These sample sets were printed on the same batch of Moab Entrada 300 gsm paper and placed side-by-side in the same light fade testing unit during the course of this study. The newer Pro-11 ink shows a similar fading signature as the older LUCIA EX ink, but the rate of fade for one or more of the colorants is somewhat faster. There are numerous possible reasons which might account for this finding including but not limited to finer pigment particle dispersions, changes in polymer encapsulation chemistry, and/or smaller drop sizes for improved image quality in the latest Canon printer models which use the Pro-11 inks. That said, any color print process which reaches an Aardenburg Conservation display rating over 100 megalux hours of light exposure for both lower and upper CDR limits has excellent lightfade resistance. In numerous tests of Moab Entrada with different pigmented ink sets from different manufacturers, Moab Entrada Natural 300gsm always tends to draw out maximum light fastness performance that any specific pigmented ink set can achieve.

Mark H. McCormick-Goodhart
Director, Aardenburg Imaging & Archives

**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.

Aardenburg Imaging & Archives

# 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.



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

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 I: The Conservation Display Rating Criteria Set | |
|---|---|
| Upper Exposure limit (calculated from the average score for all sampled colors) | Overall average I* Color score ≥ 90% and overall average I* tone score ≥ 90% |
| Lower Exposure limit (calculated from the average score for the worst 10% of the sampled colors) | I* Color score for worst ten percent of sampled colors ≥ 80% and I* tone score for worst ten percent of sampled colors ≥ 80% |
| Physical Properties Requirement | No cracking, crazing, flaking, delamination, or physical deformation of image receiver layer observed during the ***conservation display rated*** exposure range. |
| "Worst ten percent" refers to those 10% of the color samples from within the sampled image population that exhibit the greatest amount of change. | |

The I* metric was conceived as a colorimetric algorithm to measure and track changes in image color and tonal accuracy with respect to an original reference image.[1,2] It scores the retained color and tonal accuracy on a percentile scale from a state of perfect matching (i.e., 100%) to a state of no color and tonal accuracy (i.e., 0%). It also scores any state where false rendering of the reference image tone and color quality has occurred (i.e., negative I* values for color and tone which signify falsely substituted colors and/or tonal reversals). The I* metric is an excellent foundation upon which to build criteria for acceptable change in color and tonal accuracy.

For more information on the Aardenburg Conservation Display ratings, please see the article entitled: : "An Overview of the Aardenburg Imaging Conservation Display Ratings".

Other relevant articles are:

1) Mark McCormick-Goodhart, Henry Wilhelm, and Dmitriy Shklyarov,"A 'Retained Image Appearance' Metric For Full Tonal Scale, Colorimetric Evaluation of Photographic Image Stability," IS&T's NIP20: International Conference on Digital Printing Technologies, Final Program and Proceedings, IS&T, Springfield, VA, October 3–November 5, 2004, pp. 680–688.

2) Mark H. McCormick-Goodhart, "An Introduction to the I* Metric," Aardenburg Imaging & Archives, February 7, 2007

These papers and more are available in PDF format on the documents page of the Aardenburg website:

https://www.aardenburg-imaging.com/documents/