FINE ART PRINTING WORKSHOP

Paris, October 2019
What are you looking for Marianna?

- A perfect color match between your monitor and your prints?
- That all the colors you see can be printed?
- That your prints do not fade or change over time?
- That your prints look and feel like a genuine piece of artwork?
The Color Management
For a perfect color match between your monitor and your prints
Each device (Camera, scanner, monitor, printers)

- Has its own way of displaying or capturing colors.
- Has its own limited quantity of colors.

The Colors that a particular device can produce is called:

**Gamut**

It is a subset of **colors** within a **color space**

For example
• Each device or color space can be represented and compared

- Working space (Adobe RGB)
- Monitor
- Printer
Each device have not the same space in color management & They do not speak the same language...

They need a link to communicate with each others
The ICC Profile
ICC Profile

- A small file including the Gamut
- It does not regulate a device
- It gives instructions to the devices to communicate correctly with each other
How to make an ICC Profile for a Printer

Test target + Measurement Instrument + Software

- Print a target of colour patches.
- Measure the Data
- Profile is generated using the calculations.
Warning
The ICC profile is Unique

- Valid only for the complete package
  - Printer / Paper / Ink / and the setup used for the calculation (Color T°).
Making an ICC profile
Step 1
Print Patches

How many Patches?

Depends on time and device selected for the measurement of the patches
Step 1
Number of patches

Ex: 1733 patches with a chart reader X-Rite i1iSIs 2.
Step 2
Printer setup

Choose the setup config to use with the ICC profile (paper, ink, resolution ..).

Save this Setup !!
Step 2

Printer setup

Choose the setup config to use with the ICC profile (paper, ink, resolution ..).
Step 3
Batch measurements

Which Measurement Mode?

- M0
  - (Without UV filter), for the papers without OBAs.
- M1
  - For a correct measurement of the papers with OBAs.
- M2
  - Without UV filter.
OBAs

- Chemical compounds contained in the paper to increase the whiteness

- Visible under UV light
OBAs

The UV rays are wavelengths situated just before the visible spectrum. Not visible to the human eye.
White paper with OBA

![Graph showing the effect of Optical Brightening Agents (OBA) on paper's radiance factor across different wavelengths. The graph compares paper with and without OBA, highlighting the increase in radiance with the use of OBA.]
Optical Brightening Agents

- **Advantage**: + White + Luminous
- **Disadvantage**: Yellowing over time
Step 4
Profile Calculation

Select the Illuminant Choice

The Color temperature (Metamerism)
Each light source corresponds to a color temperature
Metamerism

The diagram illustrates the concept of metamerism by showing different lighting conditions and their corresponding color temperatures. The images below each temperature level demonstrate how the same scene can look different under various lighting conditions:

- 500K: Candlelight
- 1000K: Sunrise
- 2000K: Incandescent Light Bulb
- 3000K: Noon
- 4000K: Daylight
- 5000K: Electronic flash
- 6000K: Daylight middle day
- 7000K: Cloudy Sky
- 8000K: Blue Sky, snow
- 10000K: Sunrise
Example

Config ICC profile
9000 K

Config ICC profile
D50

Config ICC profile
2500 K

Metamerism
Lighting conditions generally used are D50 D65.
ICC profile and result
What are you looking for Marianna?

✓ A perfect color match between your monitor and your prints → ICC profiles

- That all the colors you see can be printed?
- That your prints do not fade or change over time?
- That your prints look and feel like a genuine piece of artwork?
Each display has been calibrated but…

Can all the colors I see on my monitor be printed ??
Each display has been calibrated but...

Can all the colors I see on my monitor be printed ??

The color management or the ICC profile is color matching but it is not guaranteed that all the colors can be printed !!!
The Printable Colors controls

With Gamut visualisation from ICC Profiles.
Adobe RGB Volume space (camera) + Picture Lab values
Adobe RGB Volume gamut
- camera -
+ Picture Lab values
+ Baryta paper
+ Matt coated paper (Rag)
Printable Colors control

With Photoshop Proof color menu
Photoshop Proof color menu

1. Select proof color setup in View menu
2. Select custom
3. Choose the ICC profile
4. Choose the rendering intent
Photoshop Proof color menu

Colours are the same but just less saturated
Print with Photoshop with a perfect color management
Photoshop Print Menu

Print Menu

Step 1: Select Printer
Print Menu

Step 2: Printer Setup
Printer Setup

Paper / Quality:

Select the same setup that you choose to make the ICC profile
Step 4

Color Management

Color Handling

Always select

Photoshop Manages Colors
Step 5

ICC Profile: Select the ICC profile of the paper.
Photoshop Print Menu

Step 6

Rendering Intent

Use only
Perceptual or relative (+ BPC)
Perceptual or Relative
How does it work?
The out-of-Gamut colours
The Perceptual mode

P → P1 Printable gamut

Progressive shift to the center for the other values

Visual rendering idem but less saturated.
The Relative Colorimetric mode

All the values outside the Gamut placed in P1 at the periphery of the printable gamut

The others values inside are kept as they are
The Perceptual mode

Advantages

+ Same visual rendering as the original image
+ No loss of details in shadow areas
+ No linearization issues, no "stairs" in the black grades

Desavantages

- Image is less saturated
- All the initial color values are modified
The Relative mode

Advantages

+ Color values inside the gamut are not modified
+ Black Point Compensation option

Desavantages

- Loss of all ‘out-of-gamut’ values
- Loss of details in shadow areas
The Perceptual mode

- Good for Matt papers
- Images with a lot of colours ‘out-of-gamut

The Relative Mode + BPC

- For images with few colors ‘out-of-gamut’
- Black & White Prints
- Photo Papers (large gamut)
The Black Point Compensation

A small Perceptual dose in the black and shadows areas…

Only for Relative mode…
Black Point Compensation

Relative mode

Relative mode + BPC
Printing With Photoshop Summary

The Fundamentals

1: Color Handling: **Photoshop Manages Colors**

2: Printer Profile: **Paper profile concerned.**

3: Rendering intent: **Only Perceptual or Relative + BPC.**

4: Printer Setup: (Paper, ink, resolution) **same setup that you choose to make the ICC profile.**
Problems and issues due to a bad calibration

(The image on the display looks different to the print)
Problems of color rendering

- A bad display calibration
- A bad print setup for the print (not the right ICC profile used, the wrong paper selected)
- Degradation of black or colours are not uniform (bad linearization)
Problems not due to a bad ICC profile

- Banding
- Bronzing, gloss differential
- Poor black and colors (uncoated paper..)
- Dirts and white spots
- Yellowing (Oba, pollution..)
Canson Infinity ICC Profiles
Canson Infinity ICC Profiles

- Available on [www.cansoninfinity.com](http://www.cansoninfinity.com)
- All ICC profiles are produced internally.
- X-Rite devices (i1, isis 2 i1io, i1 profiler)
Canson Infinity ICC Profiles

- The best selection of setup driver for:
  \[ \text{The best linearization, color gamut & D-Max.} \]

- Rigorous printing procedure
  \[ \text{Preheating, nozzle check and head alignment before each printing runs} \]
  \[ \text{ICC profiles verified and tested} \]
The Canson Infinity ICC profiles are known for their quality and used by many photographers and professional labs.
The Canson Infinity range

- Digital Art Reproduction / Fine Art Matt Papers
- Digital Darkroom Papers
- Photo Papers (PE)
- Canvas
Digital Art Reproduction

All 100% Cotton, Acid-free, no optical brighteners

- Rag Photographique : Fourdrinier Extra smooth paper
- Velin Museum Rag : Mould-made fine-grained, smooth surface
- Edition Etching Rag : Fourdrinier Smooth texture, reminiscent of the original genuine etching and printmaking papers
- PrintMaking Rag : Mould-made fine textured surface
- Aquarelle Rag : Mould-made Watercolour textured paper

All 100% Cotton, Acid-free, no optical brighteners
Digital Darkroom Papers

Museum grade quality, Acid-free, ISO 9706

- **Baryta Photo**: Alpha-cellulose, acid-free, with the same barium sulphate coating as for traditional silver
- **Baryta Prestige**: Acid-free alpha-cellulose and cotton with a true barium sulphate coating
- **Platine Fibre Rag**: 100% cotton Platinum paper, with the latest microporous coating, no optical brighteners.
Photo Papers

Professional resin-coated papers, with OBA, ISO 9706

- Photo HighGloss Premium RC
- PhotoGloss Premium RC
- PhotoSatin Premium RC
- Photo Lustre Premium RC
Canvas

Poly cotton & 100% cotton, No OBA, Water resistant

- PhotoArt Pro Canvas - Lustre or Matte
- Museum Pro Canvas - Lustre or Matte
All informations concerning Ambassadors ICC profiles Technicals aspects

Available on

www.canson-infinity.com/fr
Thank you for your time