



# Designing in Full Color

Optimizing Files for Nanographic Printing

Charmaine Martinez

02 CMYK random 1P i1i0  
Chart Page 1 of 1, Size: 25.8 x 31 cm

# CMYK OGB



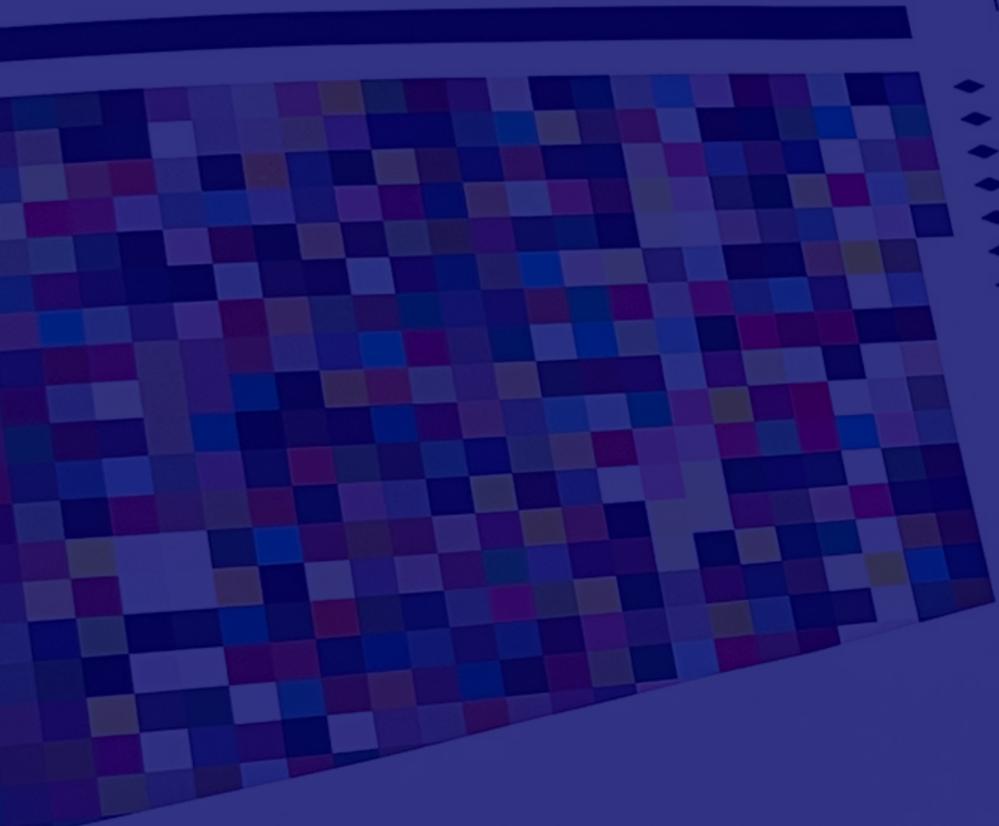
THIN LINES



Landa SP10  
Resolution:  
0.00167 in,  
0.04233 mm

- Black
- CMYK
- Rich Black

8 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
9 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
10 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
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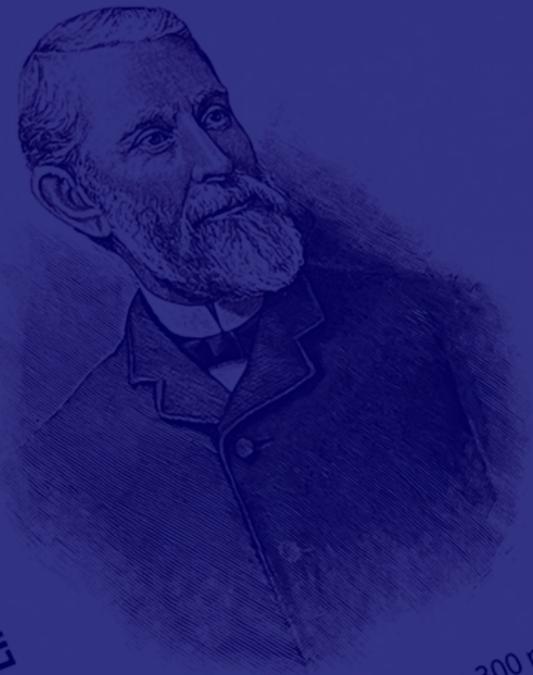


Professor Lawler  
Graphic Communication  
Cal Poly

# BOV

Chart 2033 Patches RGB  
Test Chart Page: 1 of 1, Size: 27.6 x 37 cm

LINE ART/RESOLUTION TESTING



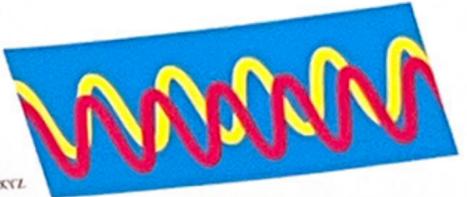
Bitmap image scanned at 300 ppi in .bmp

Bitmap image scanned at 800 ppi in .bmp

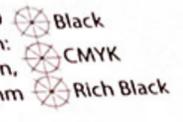
02 CMYK random 1P i1i0  
Chart Page: 1 of 1, Size: 25.8 x 31 cm



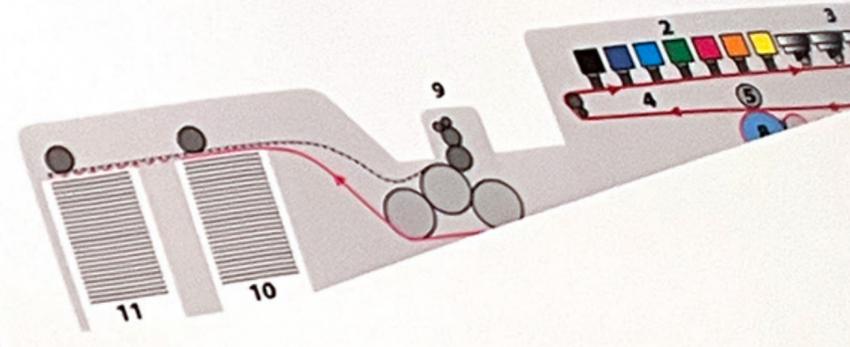
# CMYK OGB



Landa SP10  
Resolution:  
0.00167 in,  
0.04233mm



8 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
7 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
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3 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
2 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
1 ABCDEFGHIJKLMNOPQRSTUVWXYZ



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# BOV

Chart 2033 Patches RGB  
Test Chart Page: 1 of 1, Size: 27.6 x 37 cm



201

LINE ART/RESOLUTION TESTING



Bitmap image scanned at 300 ppi in .bmp

Bitmap image scanned at 600 ppi in .bmp

Bitmap image scanned at 800 ppi in .bmp



test sheets printed on a Landa S10P

# What is a nanopress?

image: Landa.com

# Landa Nanopress

- production ink-jet printing press
- B1 press sheet (707 × 1000 mm / 27.8 × 39.4 inches)
- concentrated water-based ink
- 7 colors: CMYK + orange, green, and blue-violet





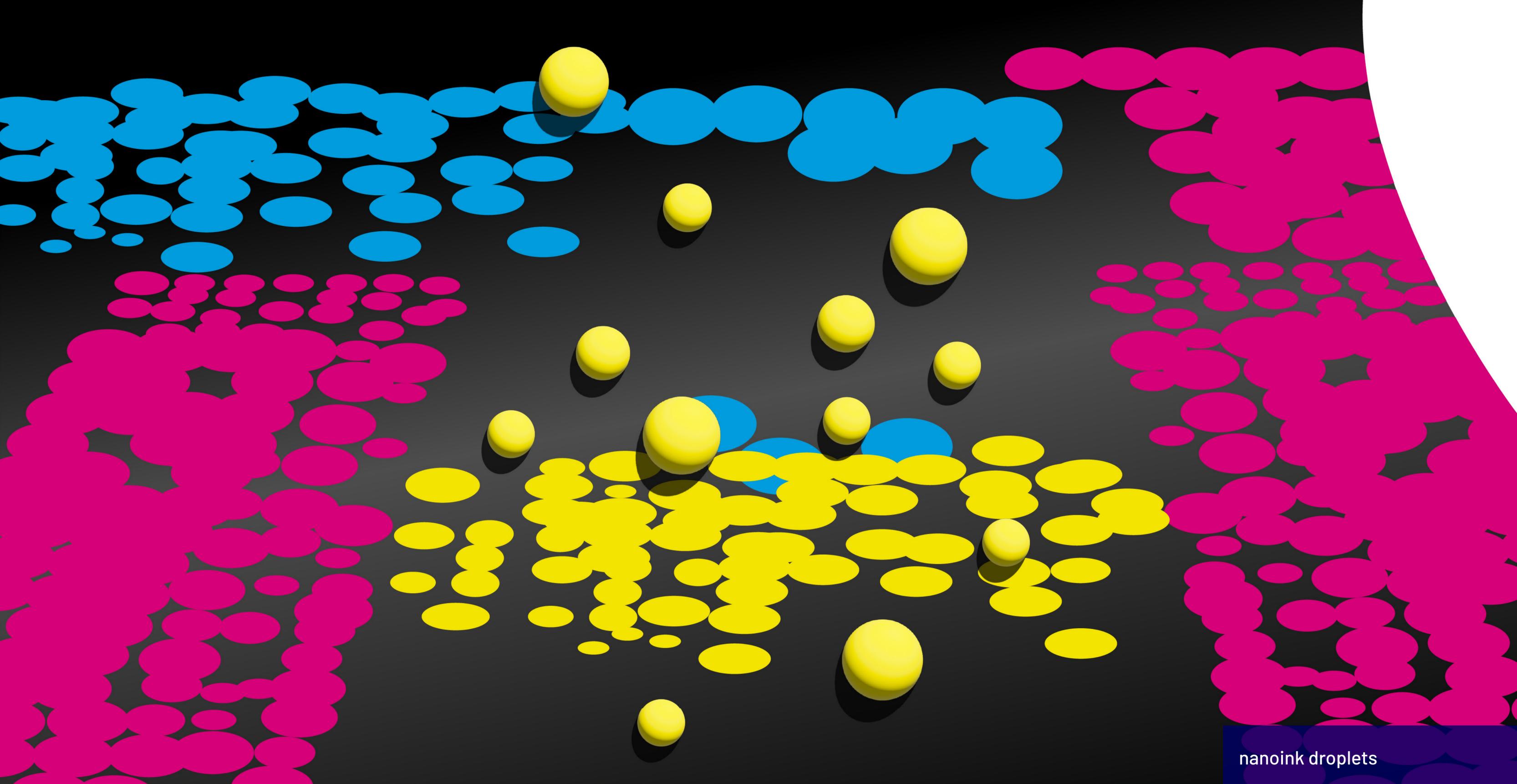
image: Landa.com

# How does nanographic printing work?

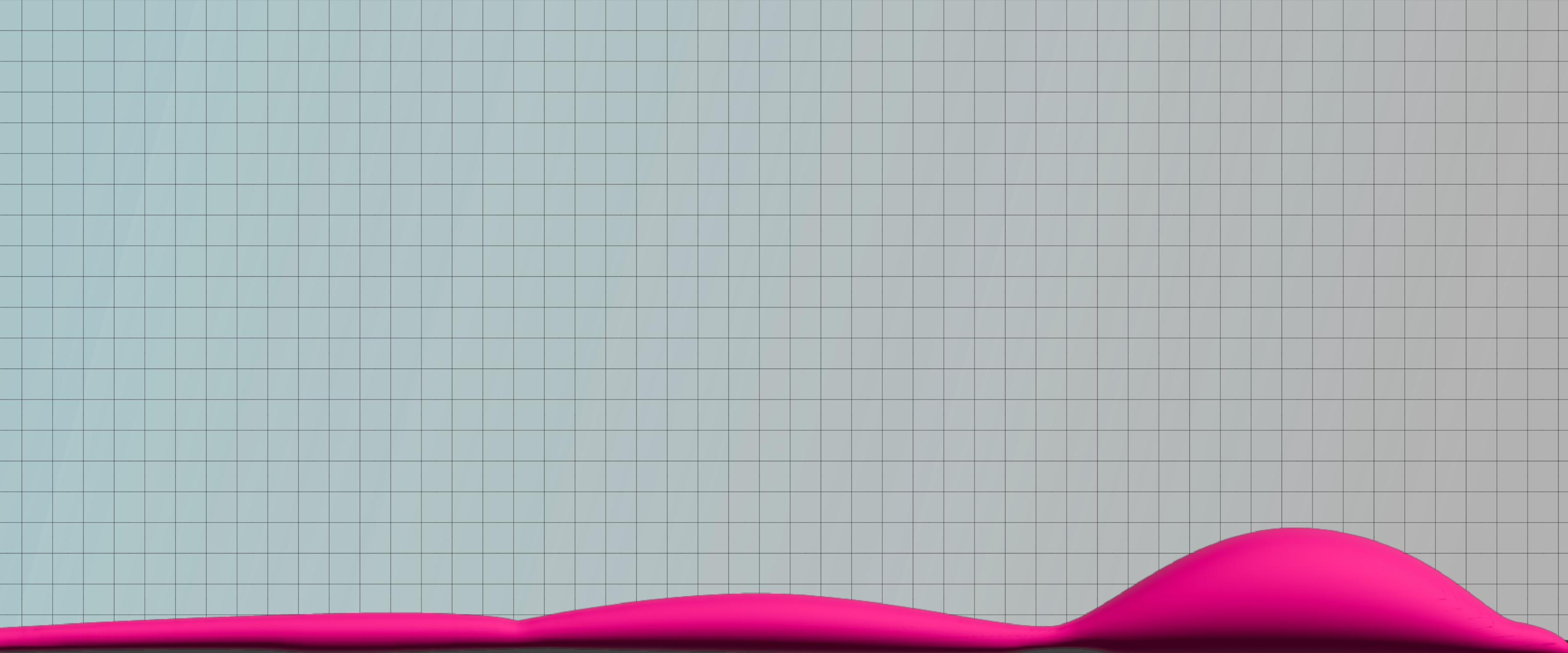
image: Landa.com



image: Landa.com

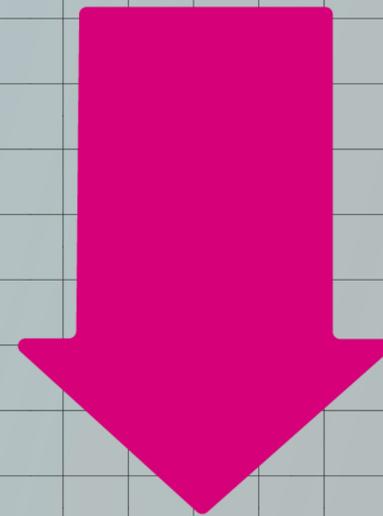


nanoink droplets



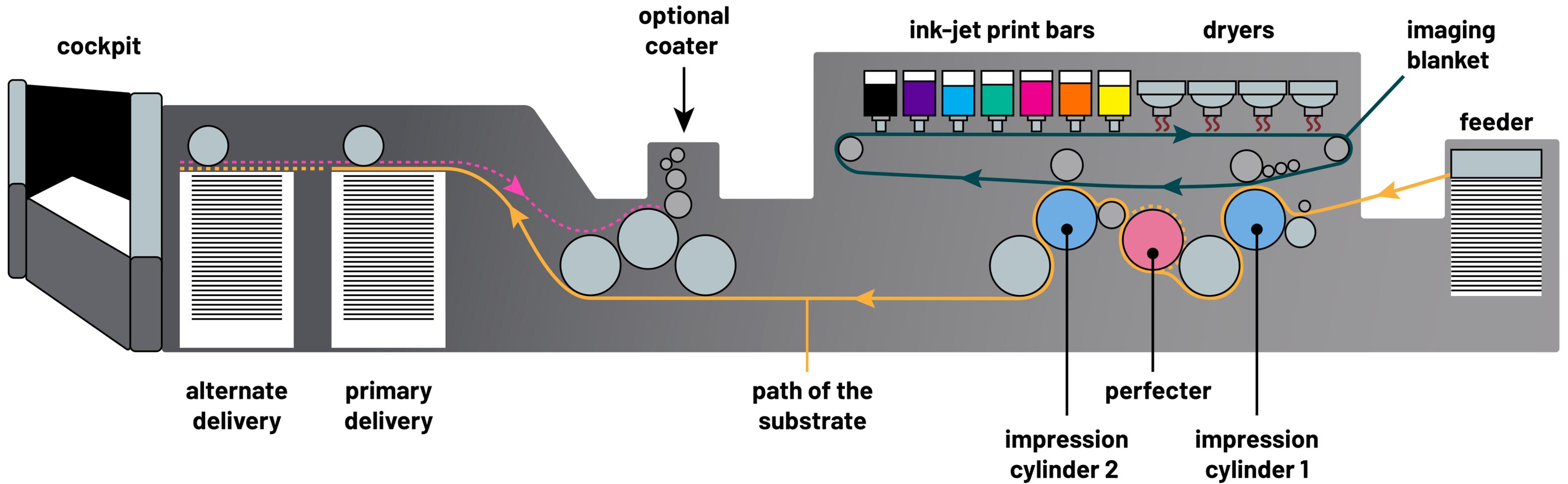
water in nanoink evaporating

**NANOGRAPHIC INK IMAGE**  
**500 nanometers / 0.0005 mm**



very thin image film

# Landa S10P Diagram



# Conceptualizing Projects

image: Landa.com

# Substrates

- untreated papers and boards
- thin or thick weights (60-600um)
- plastic packaging film
- label stock

**11,200  
SPH**



# Sustainability

- no plates / no solvents to wash plates
- NanoInk colorants are concentrated and mixed onsite
- can print on 100% PCW paper
- printed materials are fully recyclable

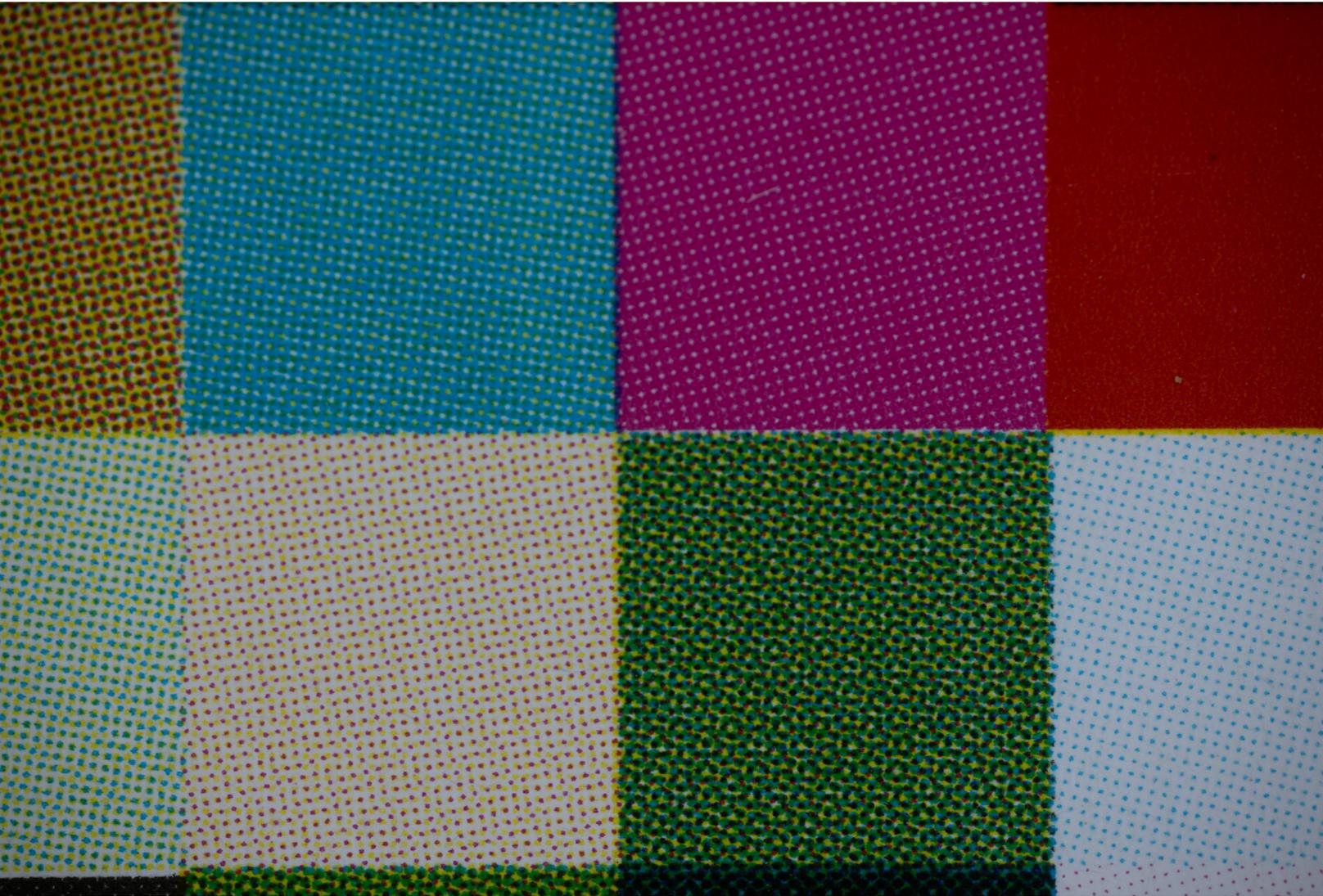
The background of the slide is a dark blue gradient with a faint grid pattern. Overlaid on this are several hand-drawn sketches in black ink and colored pencil. The sketches include various floral and geometric shapes, such as a large multi-petaled flower at the top, a circular shape with a scalloped edge, and several abstract, angular forms. The text 'Design Process' is centered in a white, serif font.

# Design Process

# Potential Imagery

- wide range of skin tones
- bright, vibrant colors
- soft pastels
- subtle transitions in value

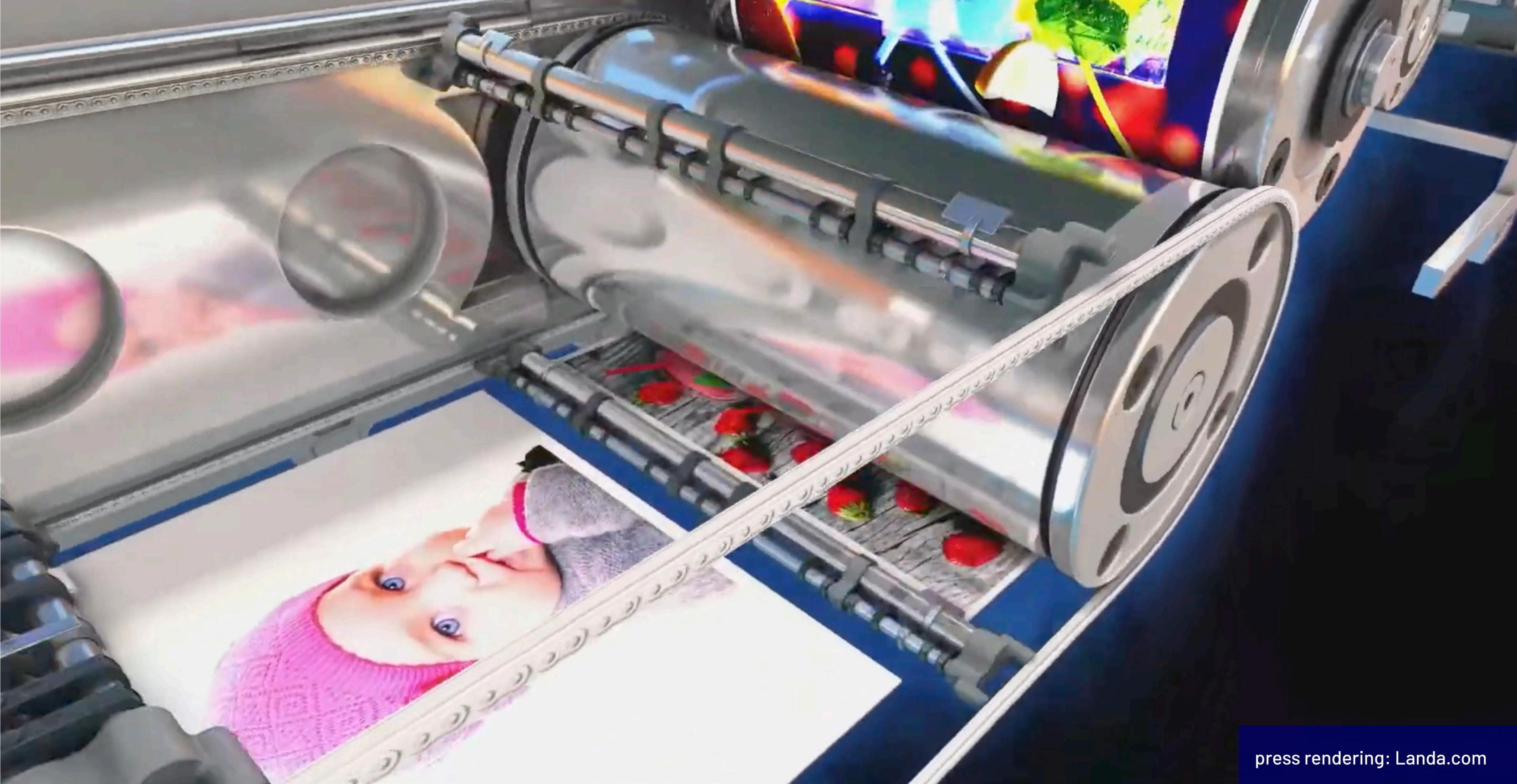




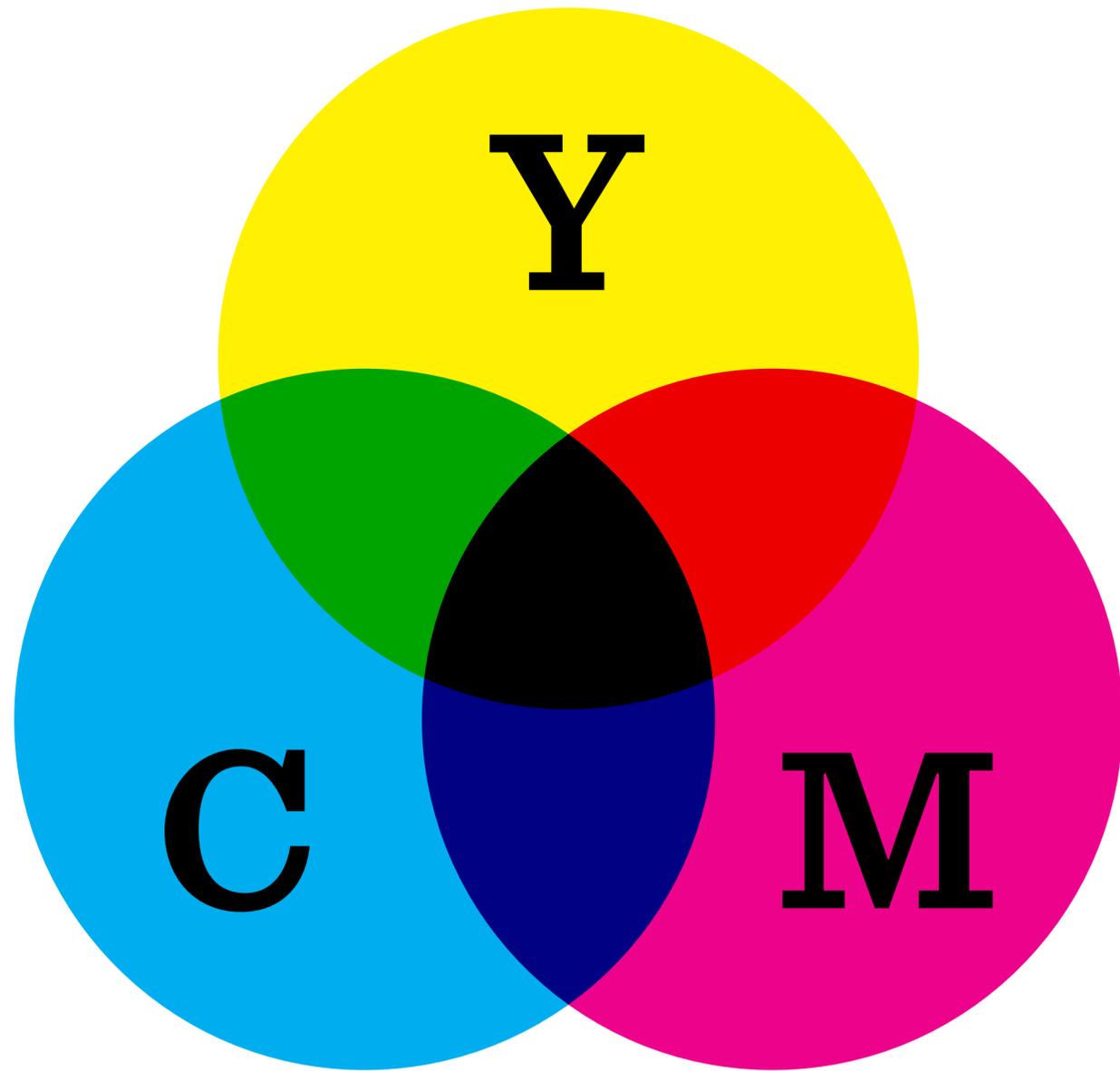
traditional halftone screens / offset press



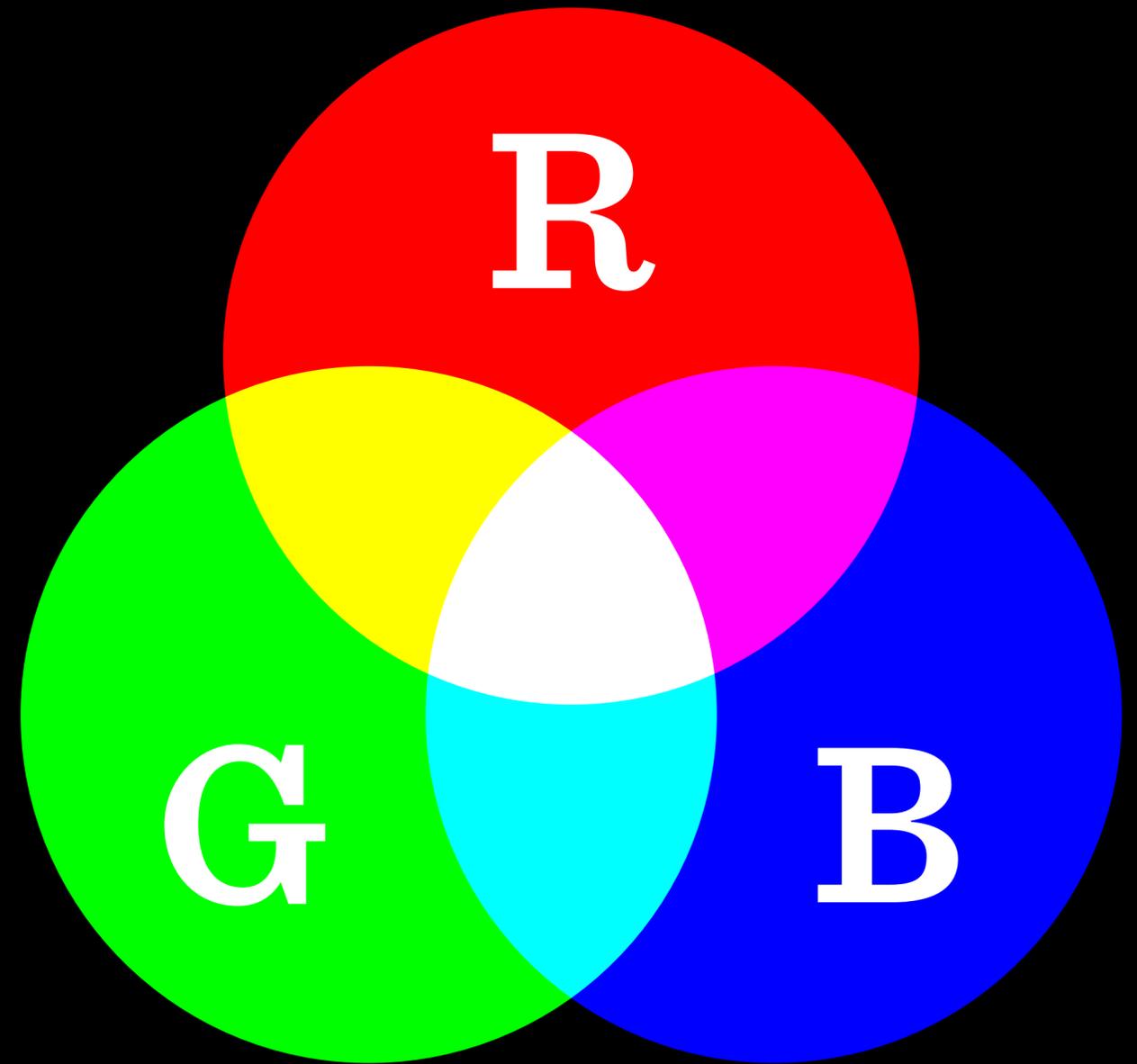
stochastic screens / Landa S10P



press rendering: Landa.com



subtractive



additive

# Selecting Color Palettes

**COOLORS** Shopify Turn your passion into a business. Launch a Digital Products store with your Shopify free trial. [Sign Up Now](#)

## The super fast color palettes generator!

AND MUCH MORE

Create the perfect palette or get inspired by thousands of beautiful color schemes.

[Start the Generator](#) [Explore 10M+ Palettes](#)

**Color Hunt** Vintage Add tag

- New
- Popular
- Random
- Collection
- Pastel
- Vintage**
- Retro
- Neon
- Gold
- Light
- Dark
- Warm
- Cold

296 Yesterday 333 1 week 721 1 week

**Adobe Color** CREATE EXPLORE TRENDS LAB LIBRARIES

## Create beautiful palettes with Adobe Color

**Create color themes**  
Design color themes based on color theory with our color palette generator. Use color harmonies on the color wheel to generate beautiful color palettes.

**Extract themes & gradients**  
Adobe Color gives you the power to extract a beautiful gradient from any image you choose. Create on trend gradients with up to 16 different colors.

**Transfer Adobe stunning content**  
Create your logos, using Adobe Color, Adobe Express.

### Explore color themes

Discover popular color palettes from the community and search for themes by keyword using color search. One click and edit it directly on the color wheel.

**COOLORS** Shopify Turn your passion into a business. Launch a Digital Products store with your Shopify free trial. [Sign Up Now](#)

## Vintage Color Palettes

Timeless retro palettes with aged nostalgic warmth.

Manage your marketing, customers, and checkout flow with Squarespace. ads via Carbon

**Colormind** Website Colors Templates Image Upload

F3F1EF 9792AD EC654F 947974 2E273F

[Generate](#)

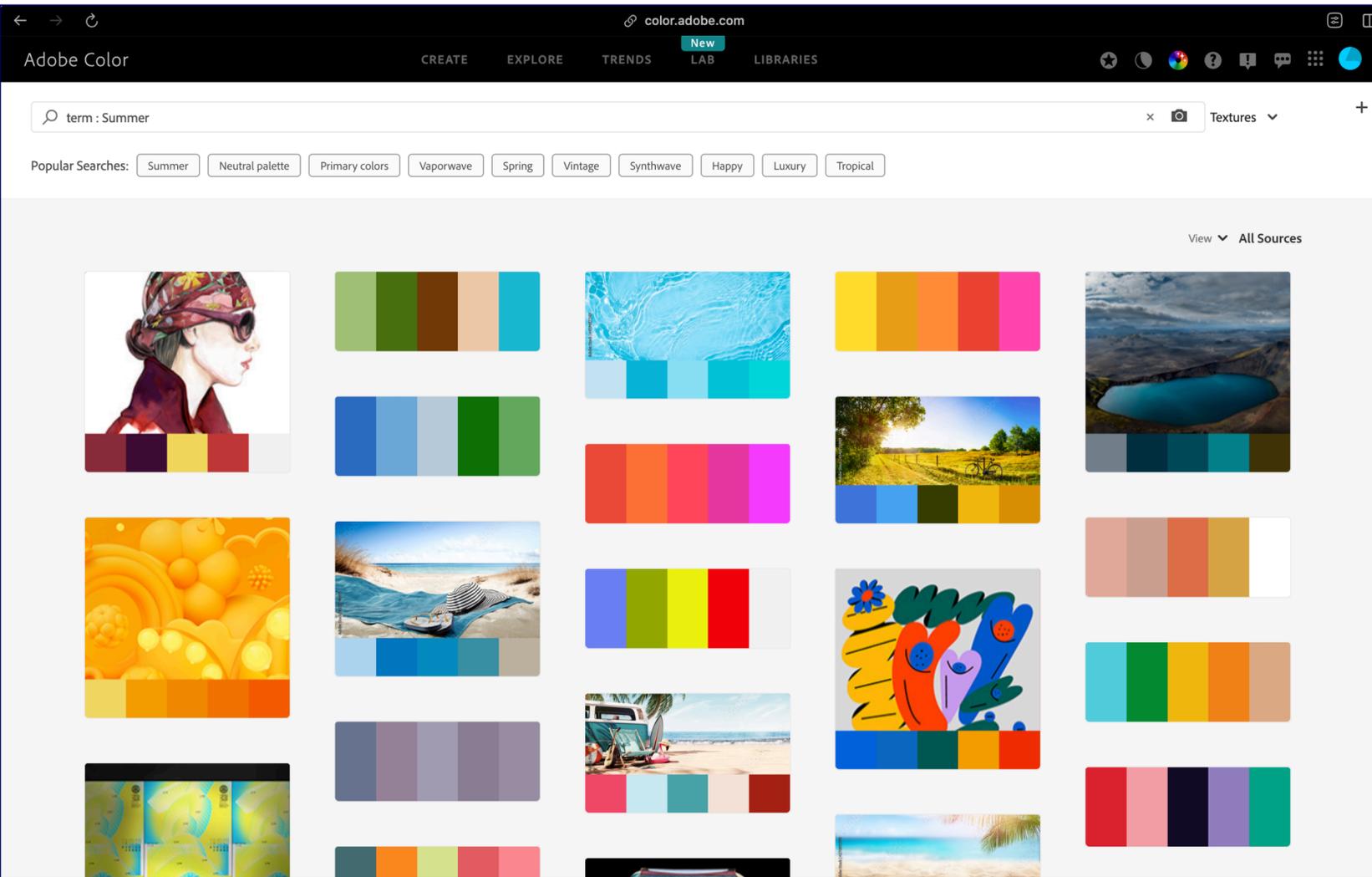
See the color palette applied to a demo landing page. For this palette, lighter shades will appear on the left.

For best results try selecting the main (middle) color and generating the rest of the palette.

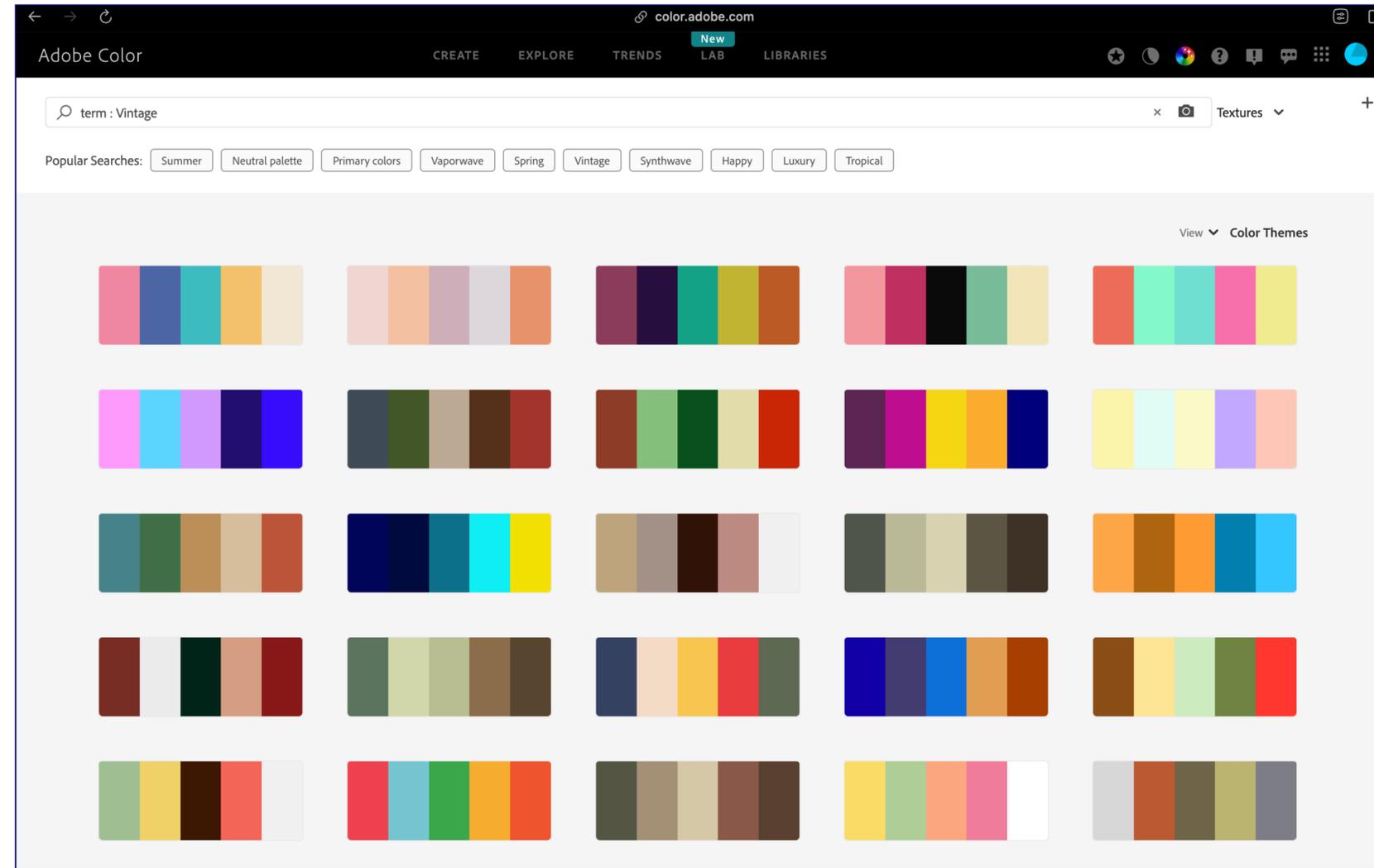
**Adobe Color** CREATE EXPLORE TRENDS LAB LIBRARIES

term: Summer

Popular Searches: Summer Neutral palette Primary colors Vaporwave Spring Vintage Synthwave Happy Luxury Tropical



Adobe Color search: "summer"



Adobe Color search: "vintage"



Pantone GOE, 2007-2017

# RGBOV

Chart 2033 Patches RGB  
I1Profiler Test Chart Page: 1 of 1; Size: 27.6 x 37 cm

LINE ART/RESOLUTION TESTING

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# Test Sheet Findings

Bitmap image scanned at 300 ppi in .bmp

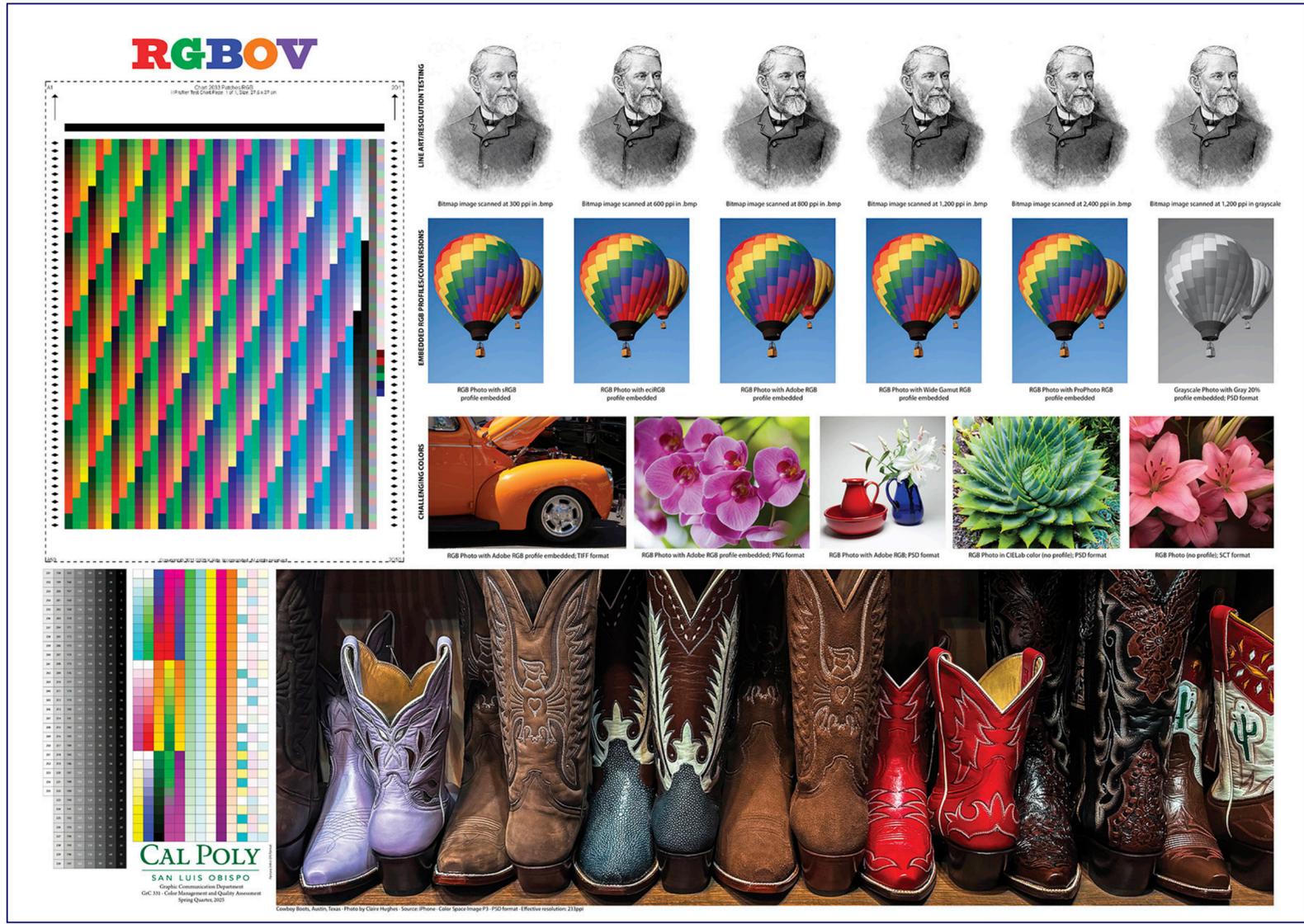
Bitmap image scanned at 600 ppi in .bmp

Bitmap image scanned at 800 ppi in .bmp

EMBEDDED RGB PROFILES/CONVERSIONS

RGB Photo with sRGB profile embedded

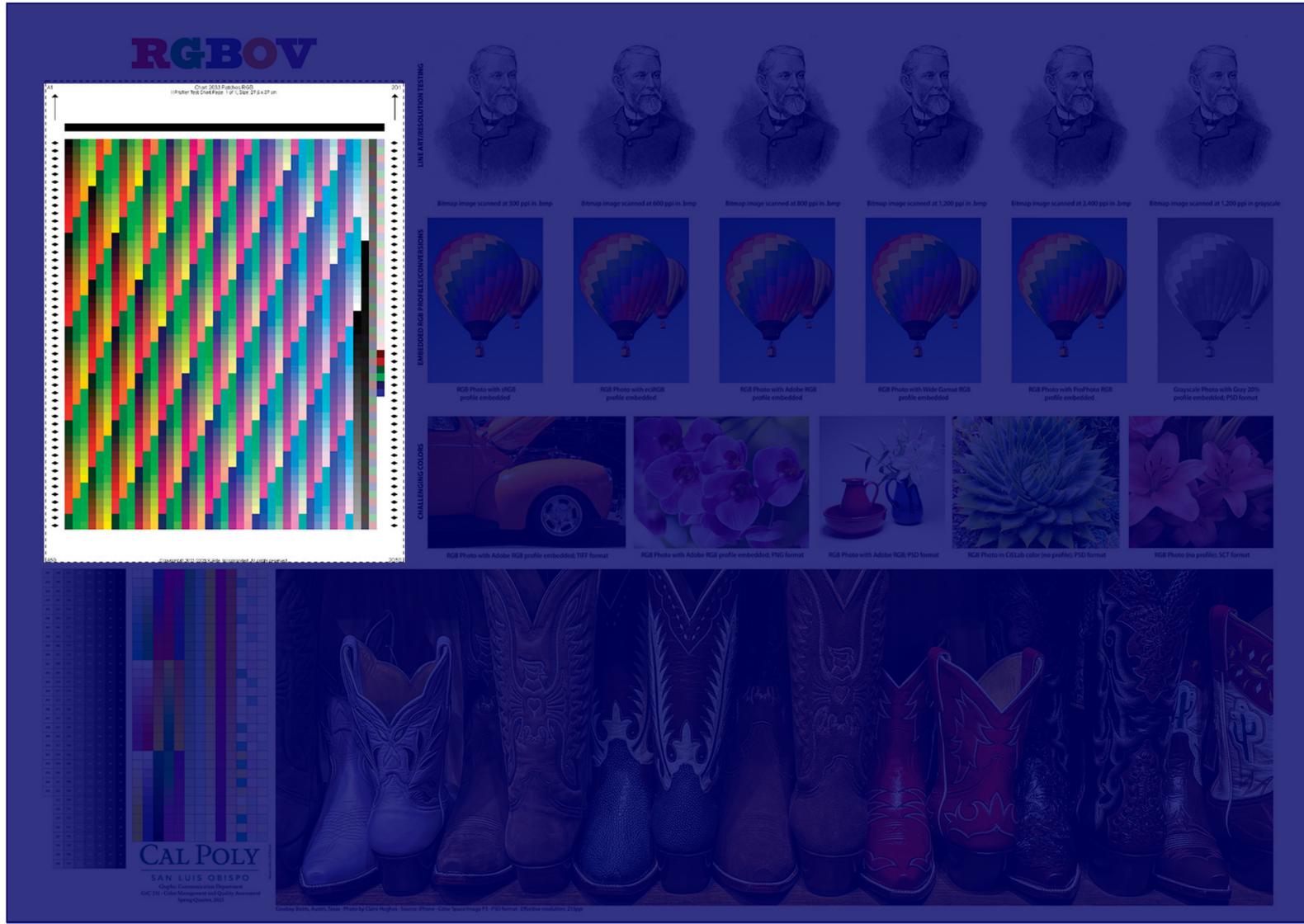
RGB Photo with eciRGB profile embedded



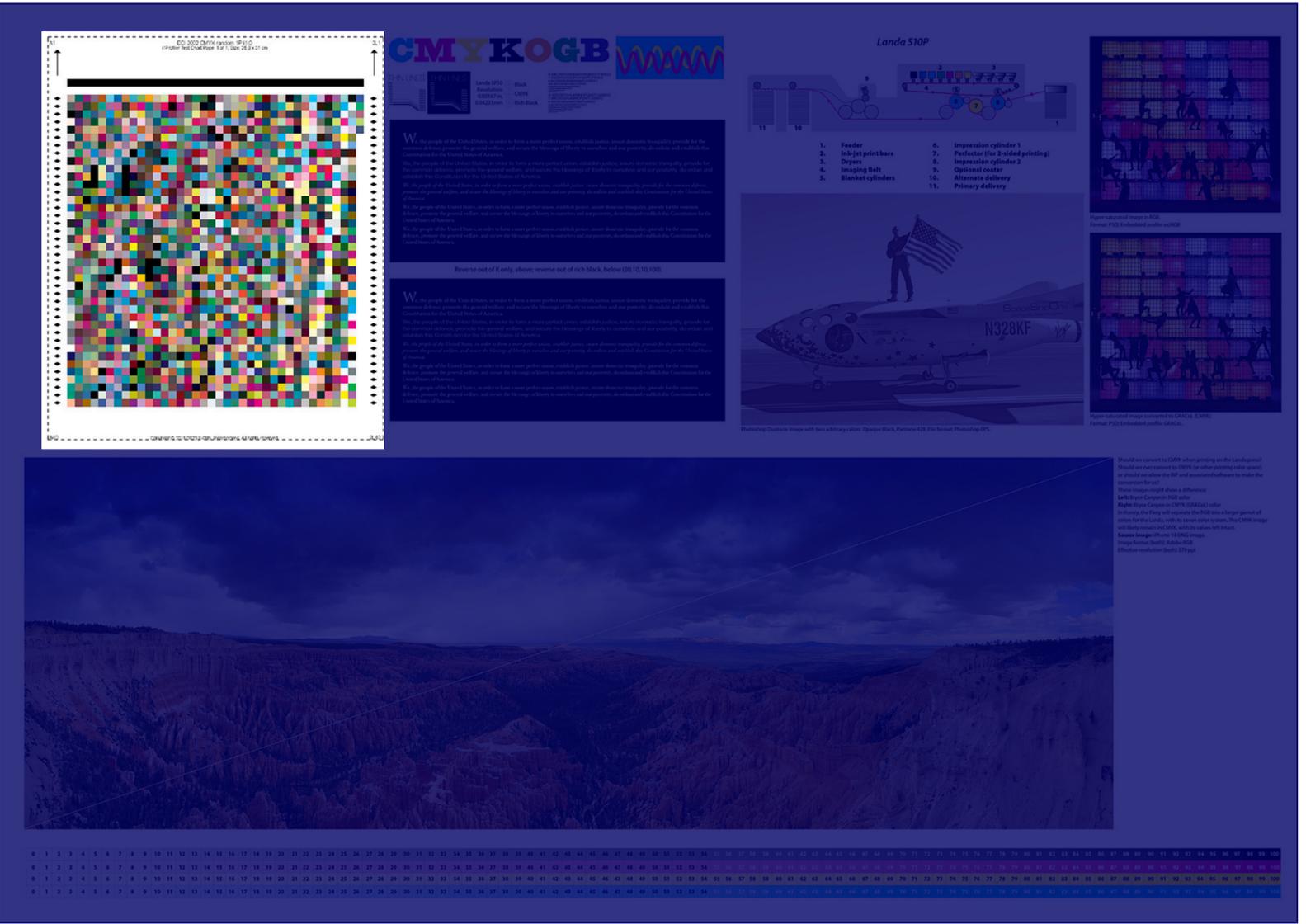
RGB test sheet



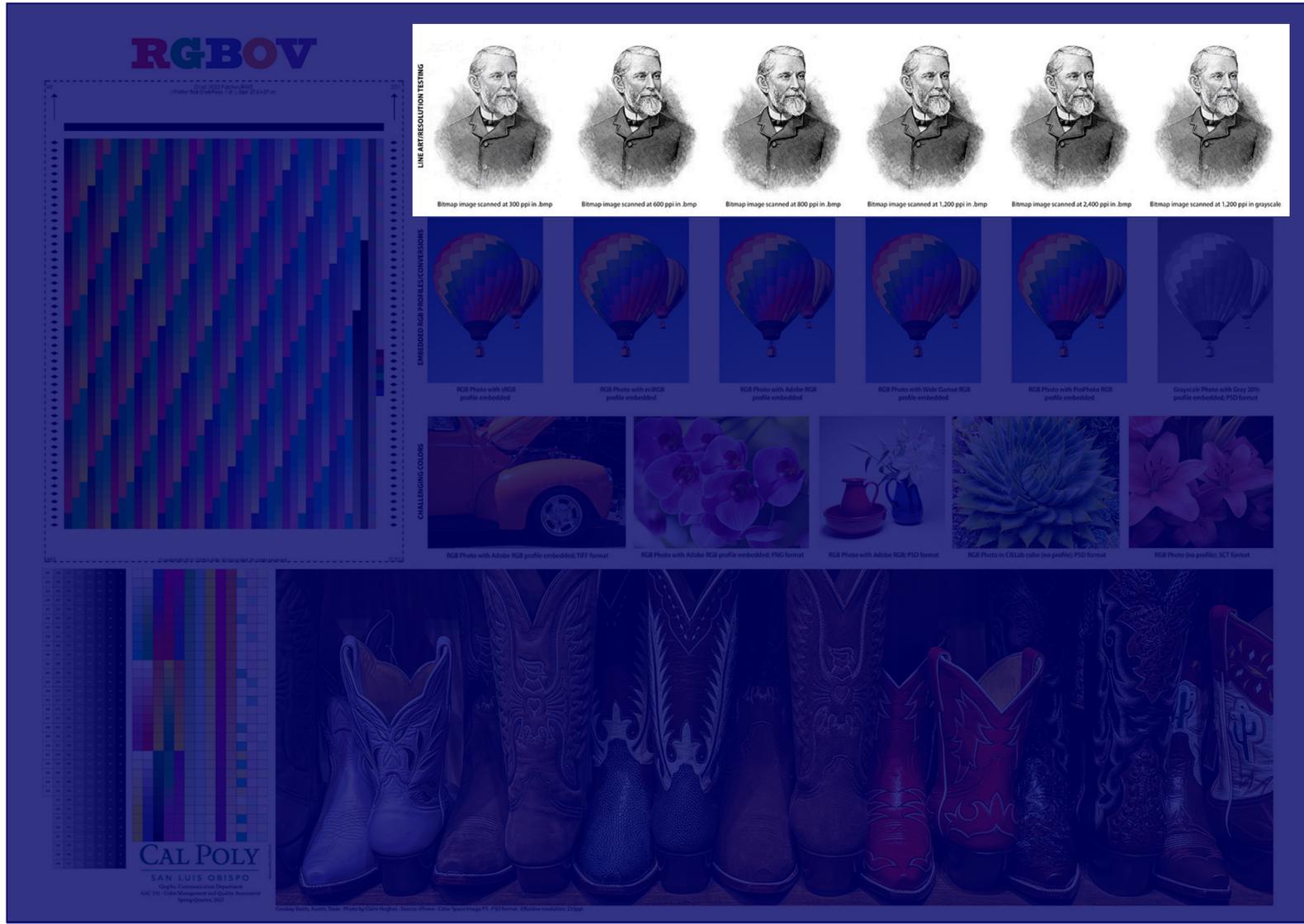
CMYK test sheet



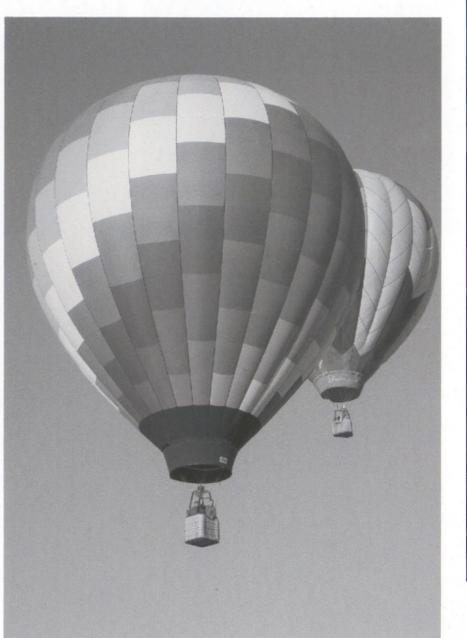
RGB color profile test patch



CMYK color profile test patch



line art scans of a fine engraving



Grayscale Photo with Gray 20% profile embedded; PSD format

grayscale image



Photoshop duotone

**RGBOV**

LINE ART RESOLUTION TESTING

EMBEDDED RGB PROFILES/CONVERSIONS

CHALLENGING COLORS

CAL POLY  
SAN LUIS OBISPO  
Color Management and Quality Assurance  
Spring Quarter 2016

EMBEDDED RGB PROFILES/CONVERSIONS

RGB Photo with sRGB profile embedded

RGB Photo with eciRGB profile embedded

RGB Photo with Adobe RGB profile embedded

RGB Photo with Wide Gamut RGB profile embedded

RGB Photo with ProPhoto RGB profile embedded

same image with different embedded profiles





Landa SP10  
Resolution:  
0.00167 in,  
0.04233mm

Black  
CMYK  
Rich Black

8 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
7 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
6 ABCDEFGHIJKLMNOPQRSTUVWXYZ 5  
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4 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
3 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
2 ABCDEFGHIJKLMNOPQRSTUVWXYZ

- thin lines
- tiny type
- type reversed out of single-color black
- type reversed out of rich black

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Reverse out of K only, above; reverse out of rich black, below (20,10,10,100).

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**CMYKGB**

**Landa SP10**  
Resolution: 0.00167 in, 0.04233mm

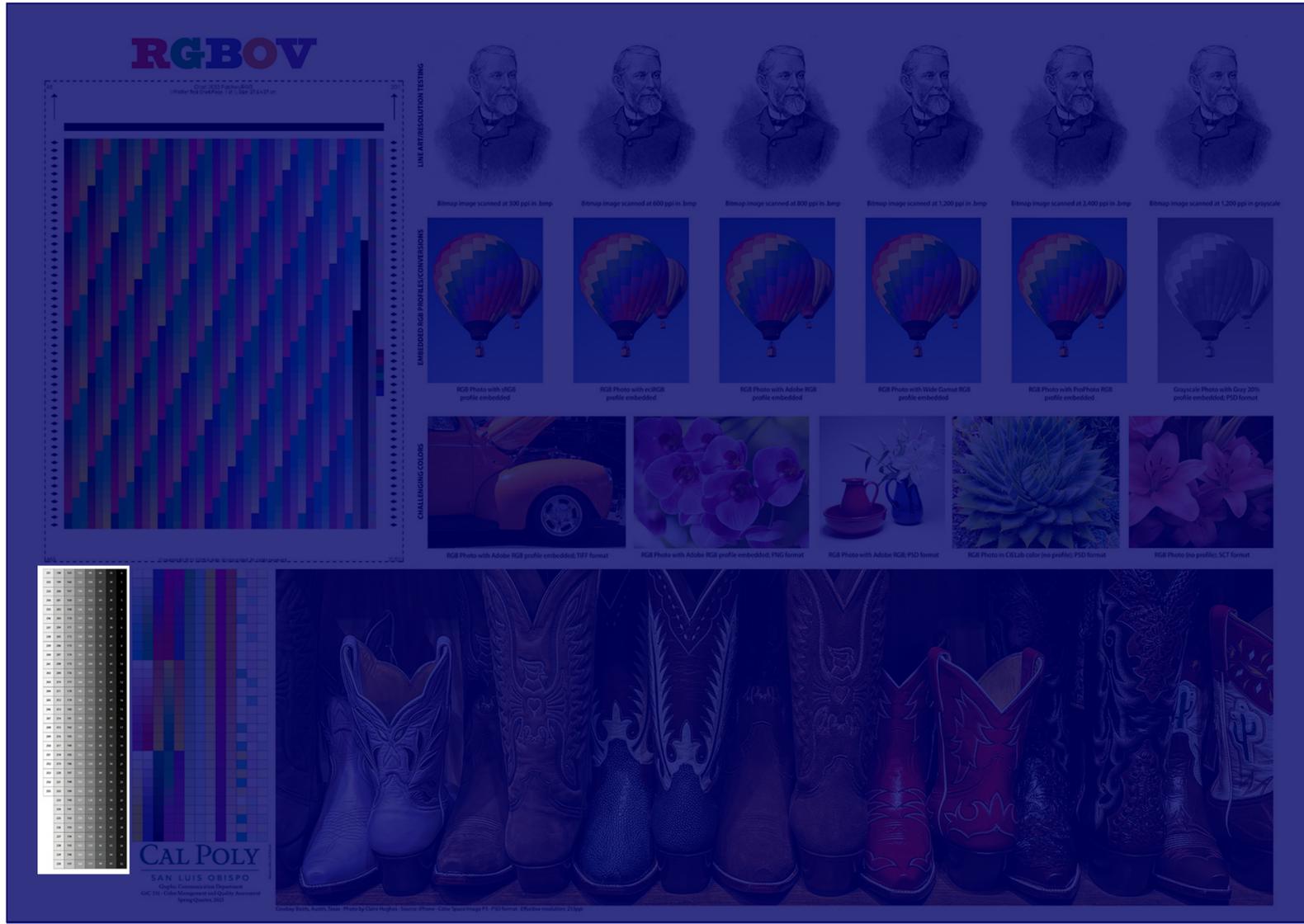
**Color Bars:** Black, CMYK, Rich Black

**Process Diagram:** Landa S10P  
1. Feeder, 2. Ink jet print bars, 3. Dryers, 4. Imaging belt, 5. Blanket cylinders, 6. Impression cylinder 1, 7. Perfecter (for 2-sided printing), 8. Impression cylinder 2, 9. Optional coater, 10. Alternate delivery, 11. Primary delivery

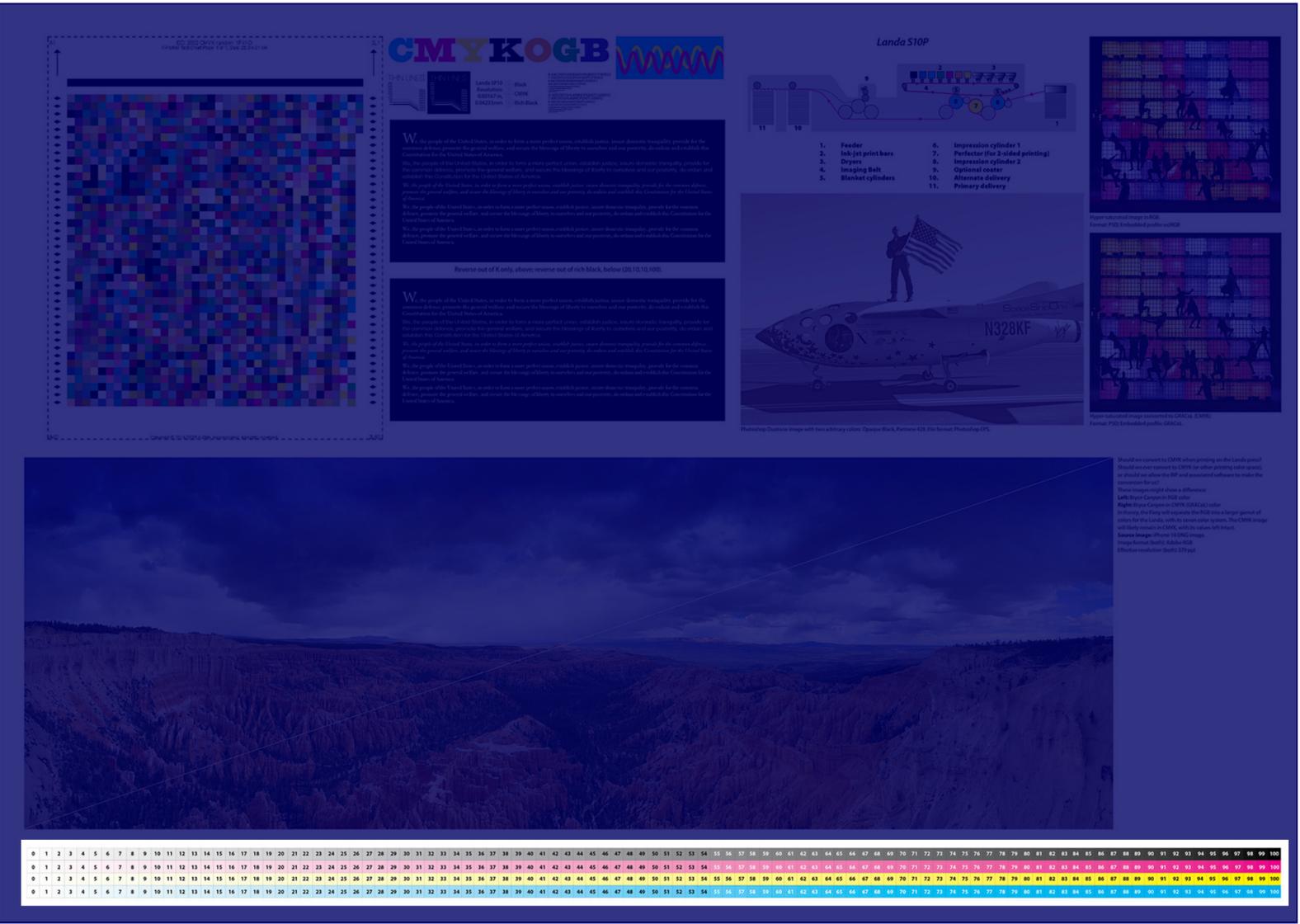
**Text:** We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defence, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.

**Grid:** 0-30 columns, 0-30 rows

**Footnote:** Should be converted to CMYK when printing on this Landa press. Should be converted to CMYK for other printing applications. Should use the RIP and associated software to make the conversion to CMYK. These images might show a difference with other conversion methods. Right-click on this image to download the image. To change the way we convert the RGB into a larger range of colors for the Landa, visit the conversion system. Your CMYK image will likely remain in CMYK, with its values left intact. Image images (Image 1) CMYK image. Image images (Image 2) CMYK image. Image images (Image 3) CMYK image. Image images (Image 4) CMYK image. Image images (Image 5) CMYK image. Image images (Image 6) CMYK image. Image images (Image 7) CMYK image. Image images (Image 8) CMYK image. Image images (Image 9) CMYK image. Image images (Image 10) CMYK image. Image images (Image 11) CMYK image. Image images (Image 12) CMYK image. Image images (Image 13) CMYK image. Image images (Image 14) CMYK image. Image images (Image 15) CMYK image. Image images (Image 16) CMYK image. Image images (Image 17) CMYK image. Image images (Image 18) CMYK image. Image images (Image 19) CMYK image. Image images (Image 20) CMYK image. Image images (Image 21) CMYK image. Image images (Image 22) CMYK image. Image images (Image 23) CMYK image. Image images (Image 24) CMYK image. Image images (Image 25) CMYK image. Image images (Image 26) CMYK image. Image images (Image 27) CMYK image. Image images (Image 28) CMYK image. Image images (Image 29) CMYK image. Image images (Image 30) CMYK image. Image images (Image 31) CMYK image. Image images (Image 32) CMYK image. Image images (Image 33) CMYK image. Image images (Image 34) CMYK image. Image images (Image 35) CMYK image. Image images (Image 36) CMYK image. Image images (Image 37) CMYK image. Image images (Image 38) CMYK image. Image images (Image 39) CMYK image. Image images (Image 40) CMYK image. Image images (Image 41) CMYK image. Image images (Image 42) CMYK image. Image images (Image 43) CMYK image. Image images (Image 44) CMYK image. Image images (Image 45) CMYK image. Image images (Image 46) CMYK image. Image images (Image 47) CMYK image. Image images (Image 48) CMYK image. Image images (Image 49) CMYK image. Image images (Image 50) CMYK image. Image images (Image 51) CMYK image. Image images (Image 52) CMYK image. Image images (Image 53) CMYK image. Image images (Image 54) CMYK image. Image images (Image 55) CMYK image. Image images (Image 56) CMYK image. Image images (Image 57) CMYK image. Image images (Image 58) CMYK image. Image images (Image 59) CMYK image. Image images (Image 60) CMYK image. Image images (Image 61) CMYK image. Image images (Image 62) CMYK image. Image images (Image 63) CMYK image. Image images (Image 64) CMYK image. Image images (Image 65) CMYK image. Image images (Image 66) CMYK image. Image images (Image 67) CMYK image. Image images (Image 68) CMYK image. Image images (Image 69) CMYK image. Image images (Image 70) CMYK image. Image images (Image 71) CMYK image. Image images (Image 72) CMYK image. Image images (Image 73) CMYK image. Image images (Image 74) CMYK image. Image images (Image 75) CMYK image. Image images (Image 76) CMYK image. Image images (Image 77) CMYK image. Image images (Image 78) CMYK image. Image images (Image 79) CMYK image. Image images (Image 80) CMYK image. Image images (Image 81) CMYK image. Image images (Image 82) CMYK image. Image images (Image 83) CMYK image. Image images (Image 84) CMYK image. Image images (Image 85) CMYK image. Image images (Image 86) CMYK image. Image images (Image 87) CMYK image. Image images (Image 88) CMYK image. Image images (Image 89) CMYK image. Image images (Image 90) CMYK image. Image images (Image 91) CMYK image. Image images (Image 92) CMYK image. Image images (Image 93) CMYK image. Image images (Image 94) CMYK image. Image images (Image 95) CMYK image. Image images (Image 96) CMYK image. Image images (Image 97) CMYK image. Image images (Image 98) CMYK image. Image images (Image 99) CMYK image. Image images (Image 100) CMYK image.



0-255 grayscale ramp in RGB



0-100% ramps of Cyan, Magenta, Yellow and Black

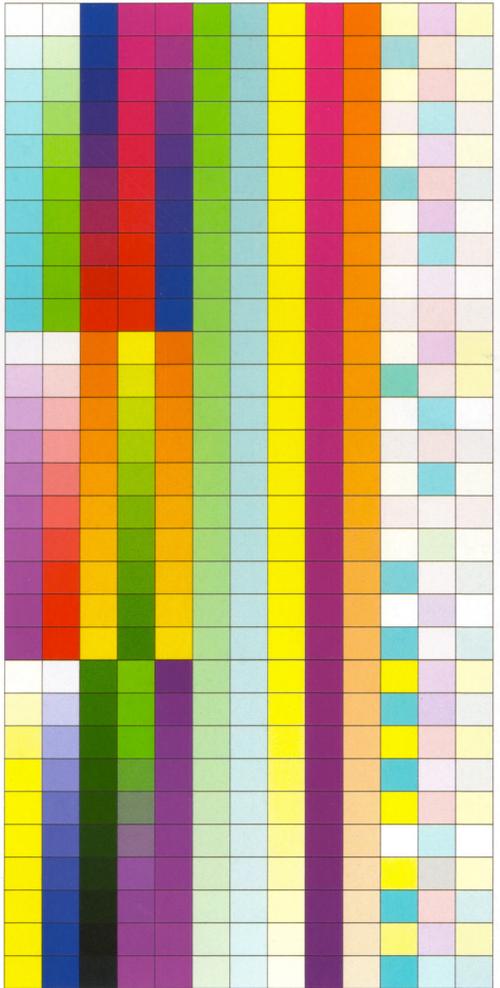
**RGBOV**

LINE ART RESOLUTION TESTING

EMBEDDED RGB PROFILES CONVERSIONS

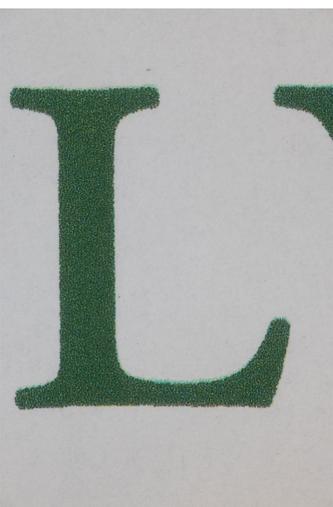
CHALLENGING COLORS

**CAL POLY**  
SAN LUIS OBISPO



**CAL POLY**  
SAN LUIS OBISPO

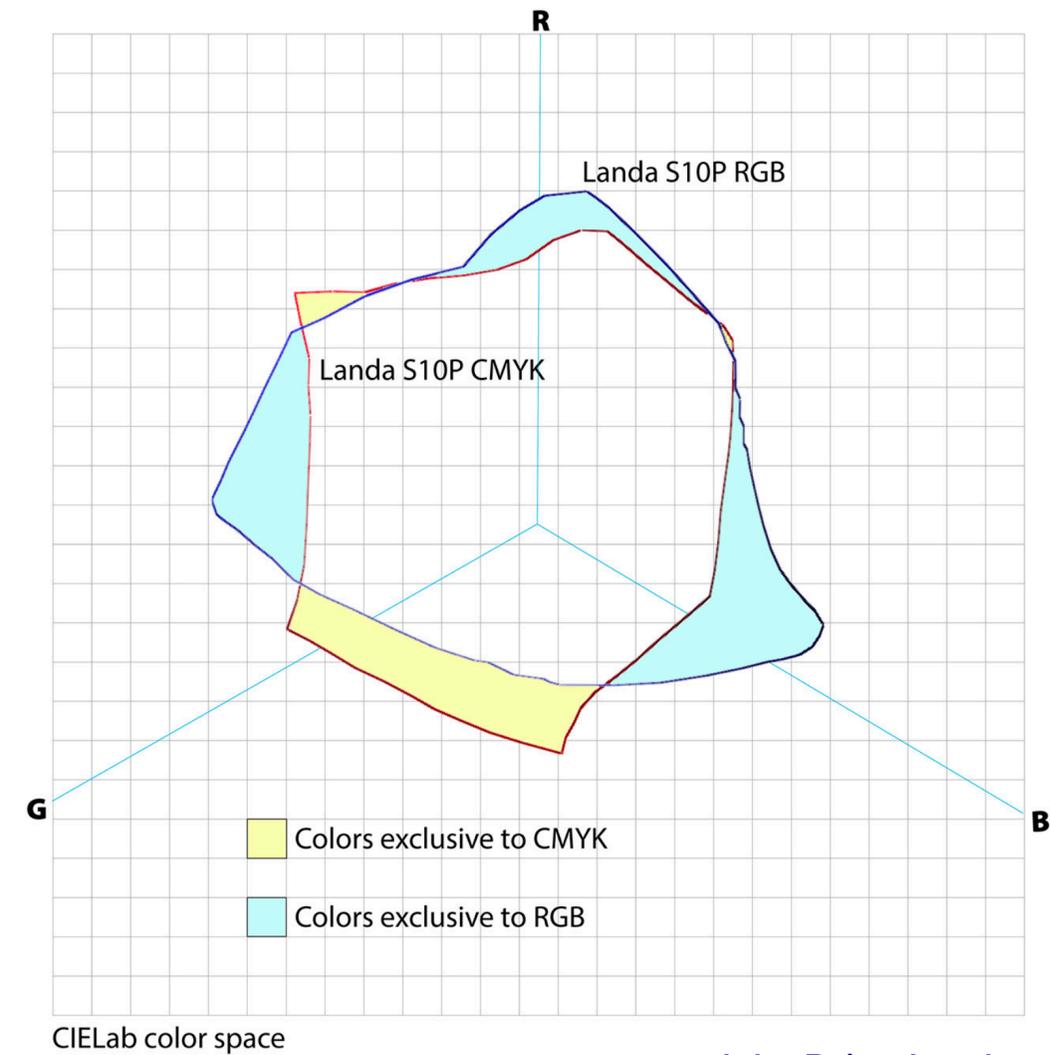
bright + pastel colors



named Pantone spot color

# *Image Test Results* | ICC Profiles + Color Gamut

- there are colors exclusive to both RGB and CMYK files
- strange that some CMYK mixed colors are out of gamut in RGB



## *Image Test Results* | ICC Profiles + Color Gamut

- Epson P9000 ink-jet printer comparison
- Landa and the Epson P9000 share an expanded color gamut



X-Rite Isis 2 XL spectrophotometer reading the test sheet

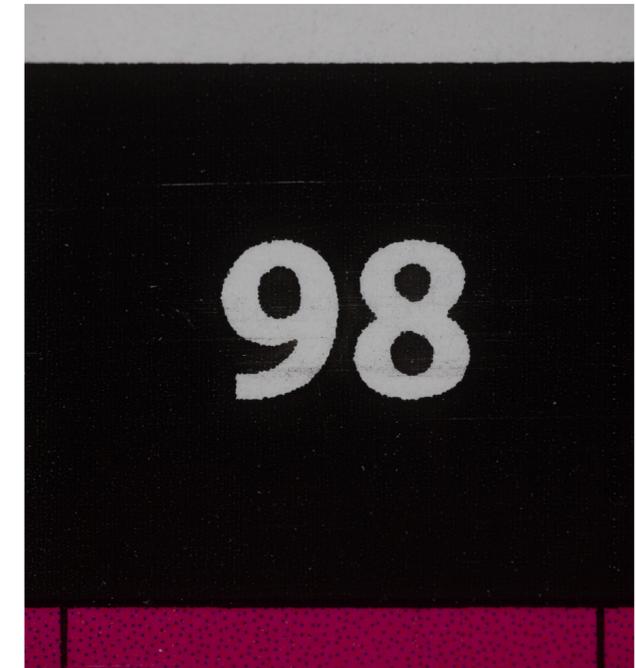
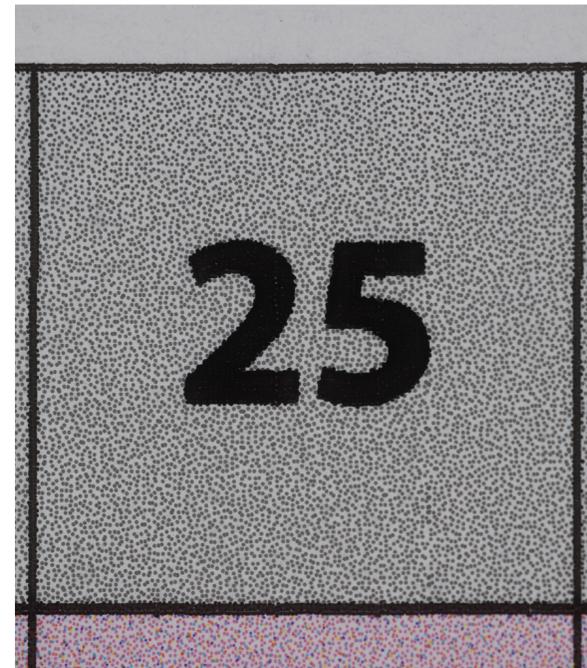
# *Image Test Results* | ICC Profiles + Color Gamut

- Epson P9000 gamut is greater than Landa S10P
- Landa S10P gamut *appears* to align to sRGB



graph by Brian Lawler

# *Image Test Results* | Dot Gain



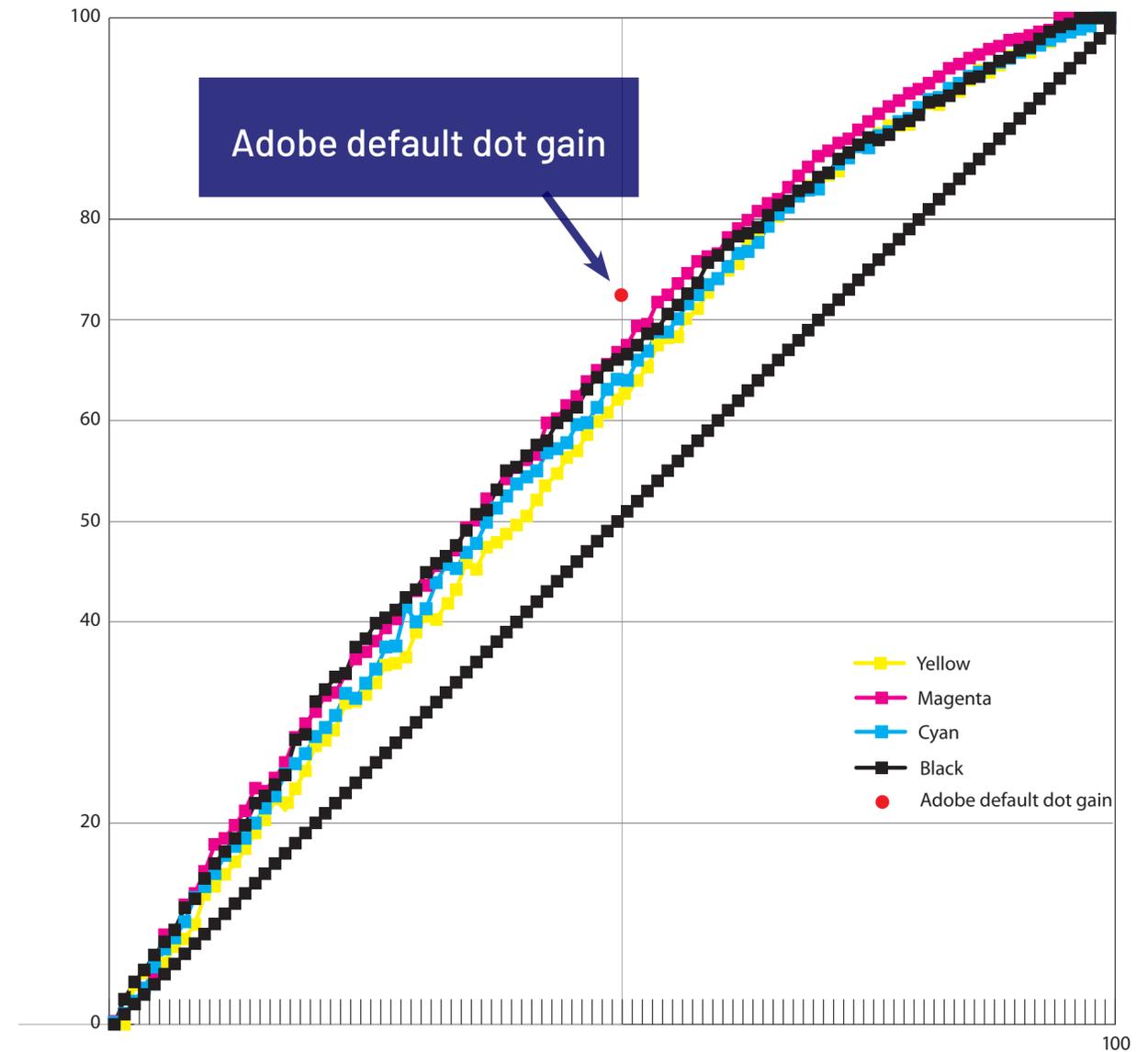
examples of images that were used for dot-area readings

# Image Test Results | Dot Gain

- 400 patches for tone value were read and plotted



Tone Value Increase (Dot Gain) of the Landa S10P press on coated stock (using Murray-Davies calculations)



graph by Brian Lawler

## *Image Test Results* | Dot Gain

- Landa press has less dot gain than an offset press
- little to no wet trapping



Brian Lawler

## *Image Test Results* | Resolution

- 600 spi – machine spots per linear inch



## *Image Test Results* | Resolution

- twice as many machine spots in the direction of travel (left-to-right) and 600 in the lateral direction.
- the resolution is technically 1,200 x 600 dpi, or 1,200 x 1,200 dpi “with PrintAI Module”
- can produce images that are comparable to offset printing with a much higher resolution



printed on a Heidelberg CD74 offset press with black ink only

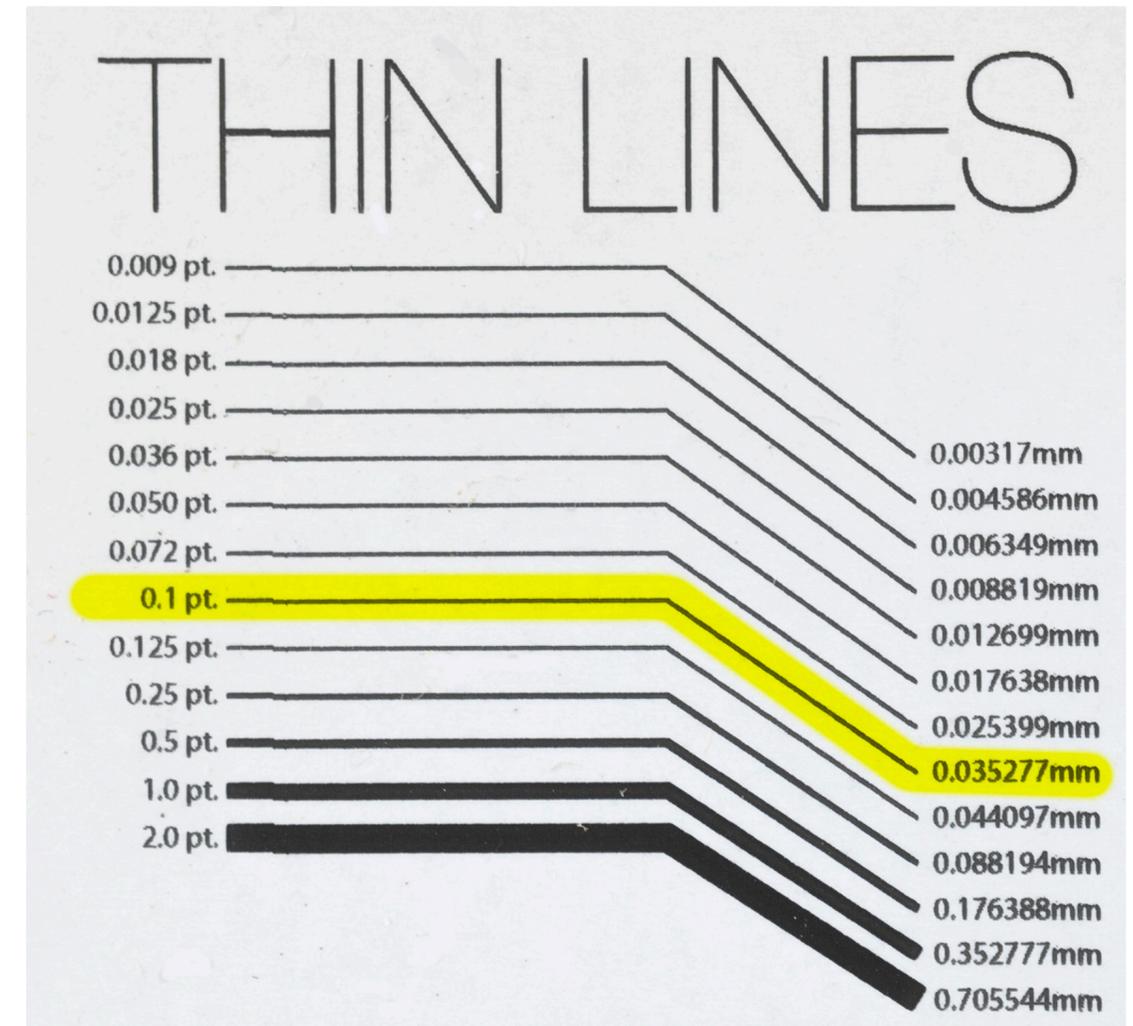


300 ppi, and saved as a monochrome .bmp file, printed on Landa S10P

photographic documentation by Brian Lawler

## *Image Test Results* | Thin Lines

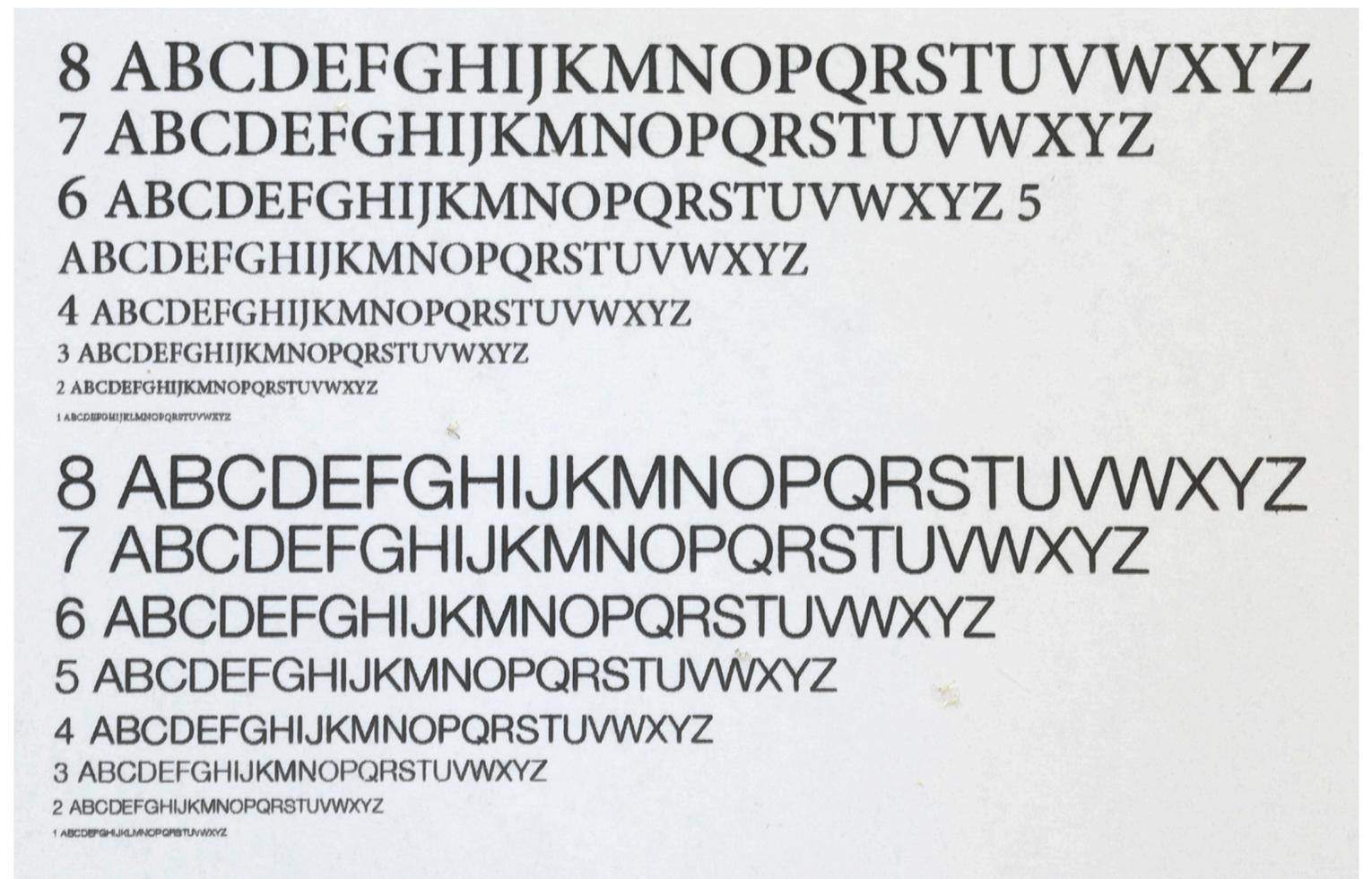
- can draw a stroke as thin as about 1/10 of a point (0.1 pt)
- a line below that thickness will be rendered at the minimum weight



Brian Lawler

## *Image Test Results* | **Tiny Type**

- 8pt to 1pt type successfully rendered
- fine details: thin strokes and serifs look sharp



Brian Lawler

## Image Test Results | Tiny Type

- single color black works well for reversed type
- rich black seems to affect the white type

*blessings of libe*

We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defence, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.

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Reverse out of K only, above; reverse out of rich black, below (20,10,10,100).

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*Formal Scripts* ..... Sloop ScriptOne

Didones ..... Didot

Hairlines ..... Rothwood Hairline

*Formal Scripts*

..... Sloop ScriptOne

Didones

..... Didot

Hairlines

..... Rothwood Hairline

# *Image Test Results* | Embedded Profiles

EMBEDDED RGB PROFILES/CONVERSIONS



sRGB



eciRGB



Adobe RGB



Wide Gamut RGB



ProPhoto RGB

# *Image Test Results* | Embedded Profiles

- sRGB image looks best in this test
- Wide Gamut + ProPhoto profiles do not appear to be managed well



digital version of an image with different embedded profiles

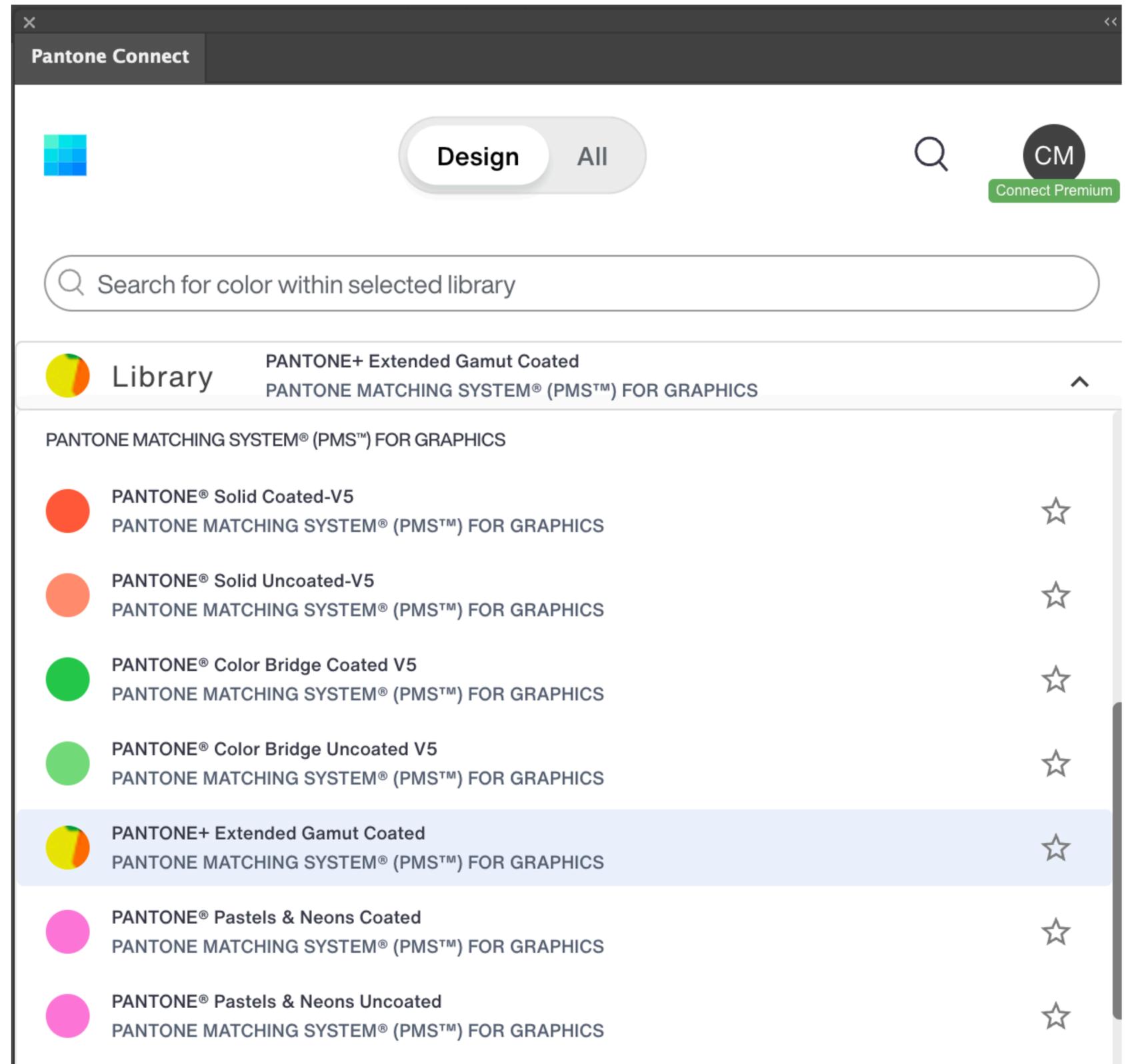


scan of the test sheet

# Color + The Pantone Problem

# Pantone Connect

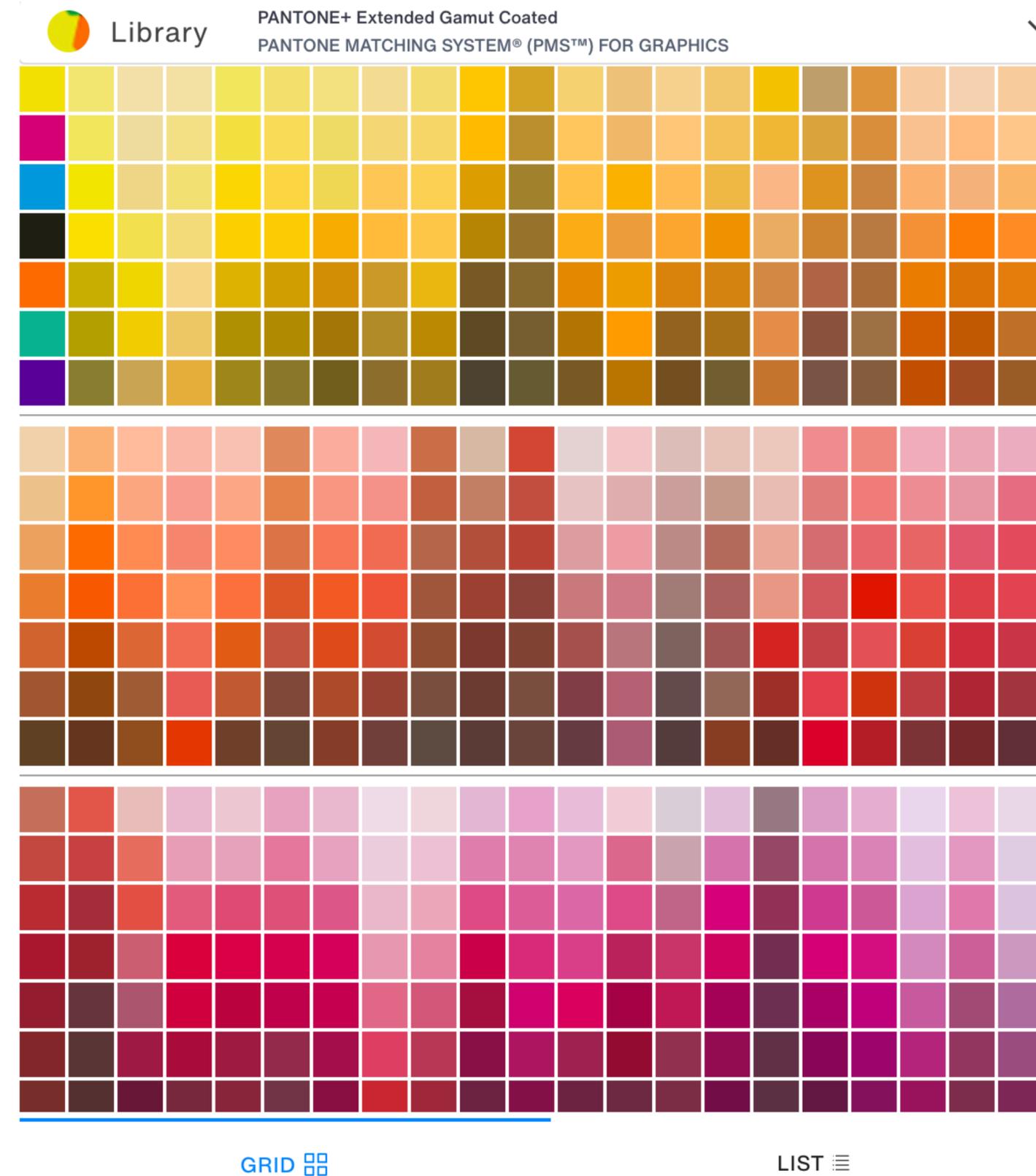
- paid subscription
- Adobe extension
- expanded libraries





# Extended Gamut?

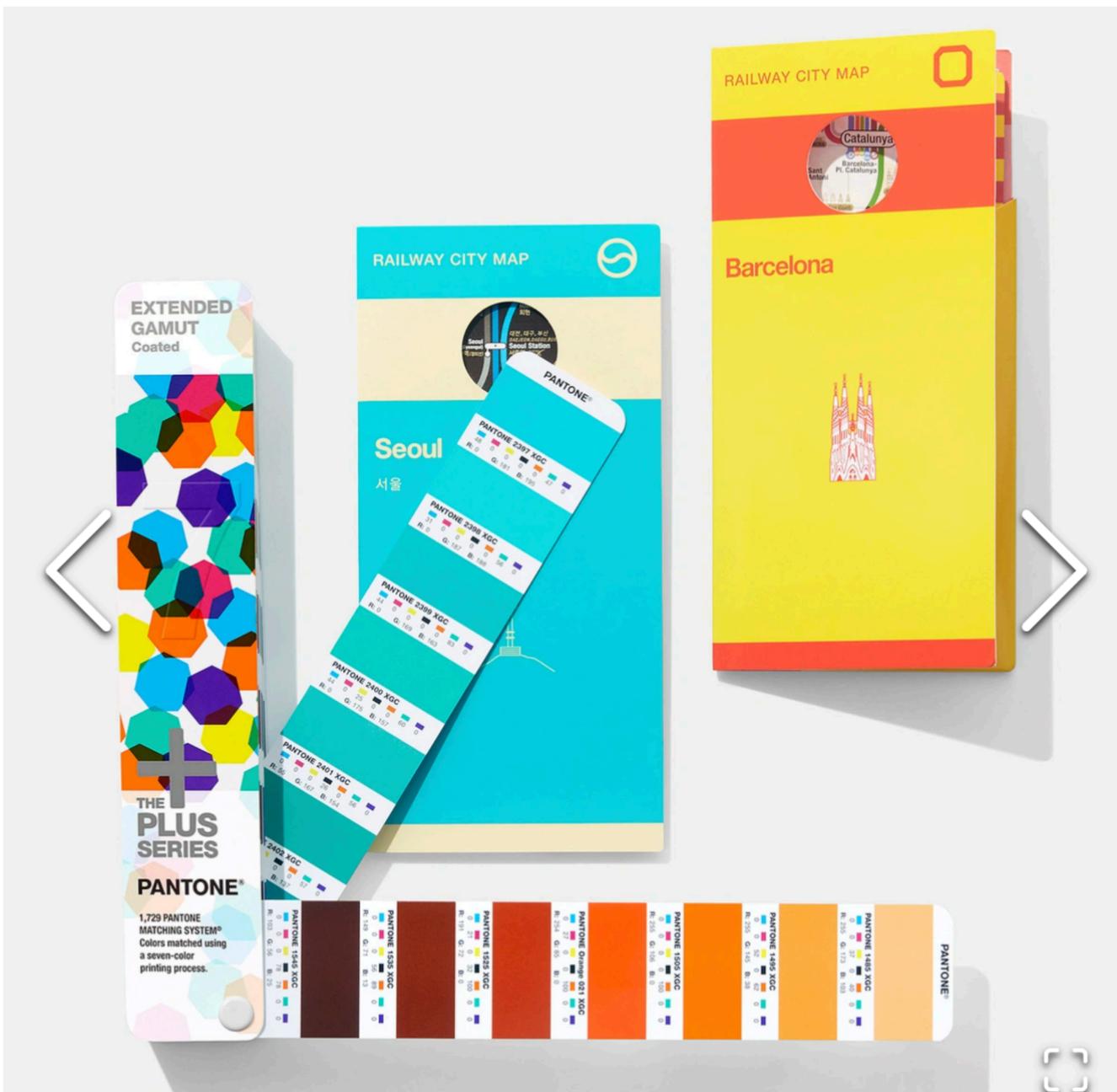
- Landa claims presses can print 96% of all Pantone colors
- Pantone Extended Gamut: same 7 colors as the Landa



*“Extended Gamut Guide is the latest development in process printing technology with 90% better Pantone spot color matches over CMYK by adding Orange, Green and Violet to the color gamut.”*

— [pantone.com](https://pantone.com)

HOME PAGE > SHOP > EXTENDED GAMUT COATED GUIDE



## EXTENDED GAMUT COATED GUIDE

The latest development in process printing technology

SKU#: GG7000

### PRODUCT DISCONTINUED

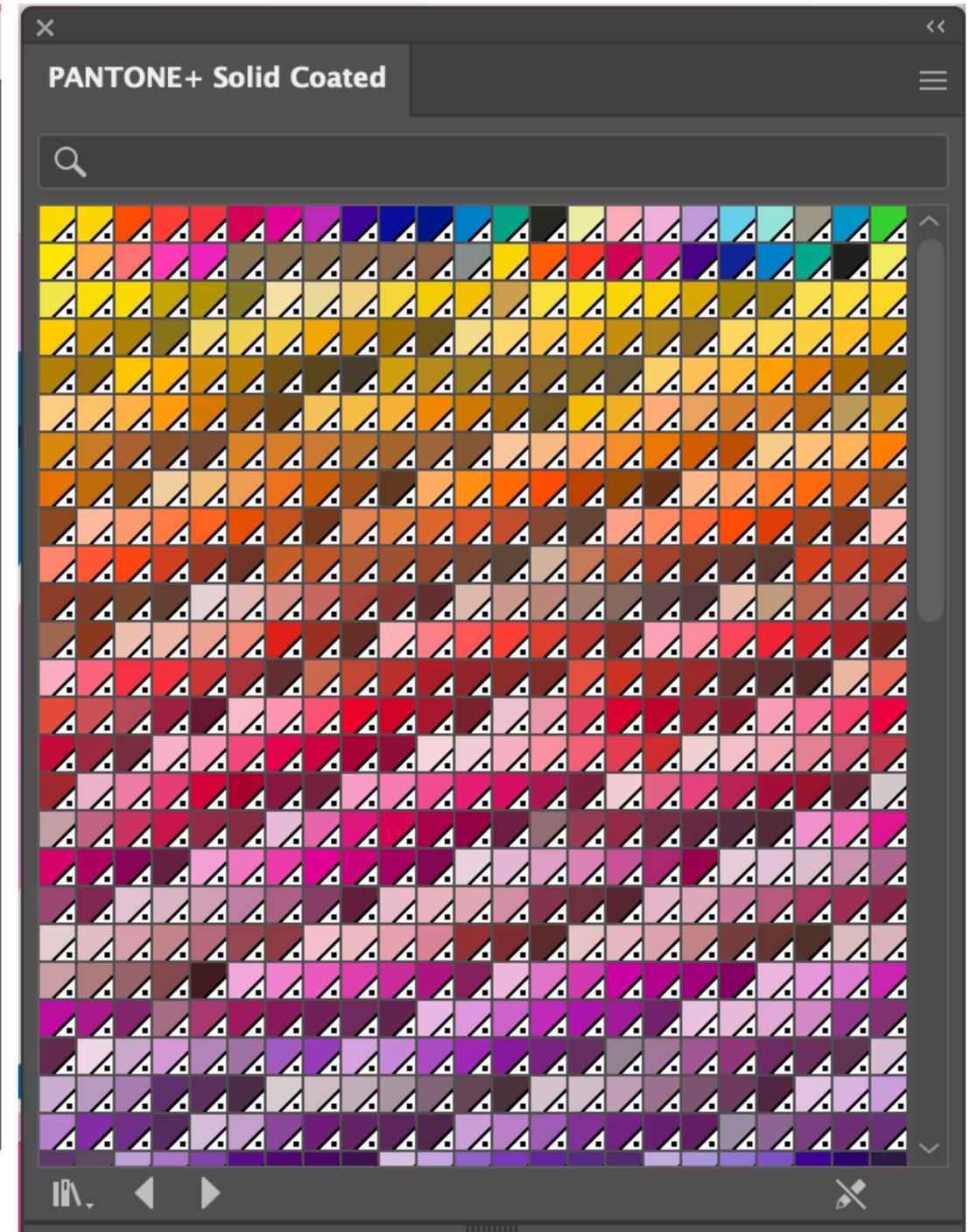
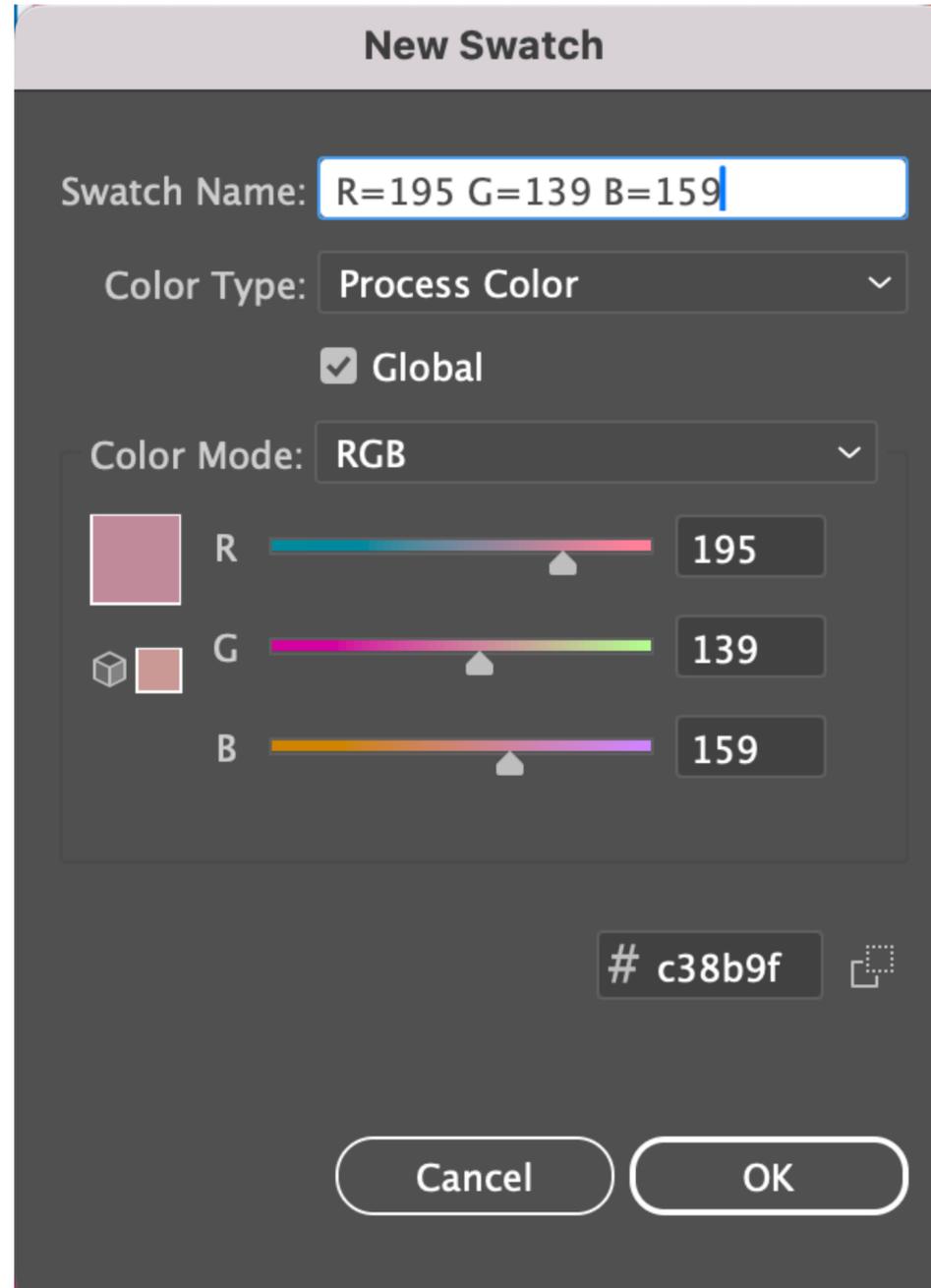
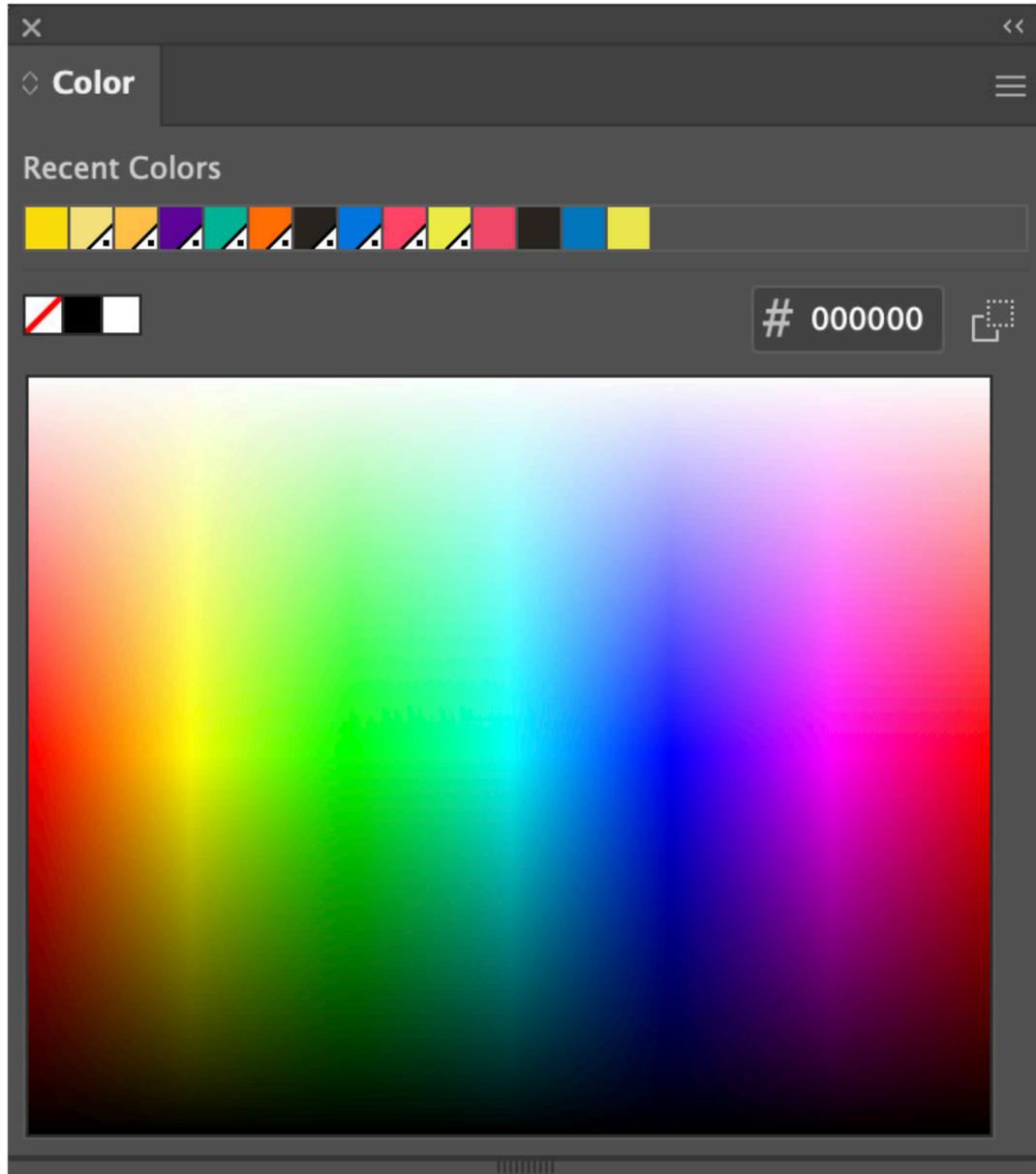
Extended Gamut Guide is the latest development in process printing technology with 90% better Pantone spot color matches over CMYK by adding Orange, Green and Violet to the color gamut. Get more vibrant colors and closer matches to Pantone spot colors when using our Extended Gamut Guide for marketing materials, signage, and packaging.



# Pantone in Education

- Will students pay for it?  
(\$35.99 year for education customers)
- Will universities subsidize it?





ECI 2002 CMYK random 1P i1i0  
11Profiler Test Chart Page: 1 of 1; Size: 25.8 x 31 cm

CMYK OGB



Landa SP10  
Resolution:  
0.00167 in.  
0.04233mm

- Black
- CMYK
- Rich Black

8 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
7 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
6 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
5 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
4 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
3 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
2 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
1 ABCDEFGHIJKLMNOPQRSTUVWXYZ



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# Summary and Key Takeaways

RGBOV

Chart 2033 Patches RGB  
Test Chart Page: 1 of 1; Size: 27.6 x 37 cm

LINE ART/RESOLUTION TESTING



Bitmap image scanned at 600 ppi in .bmp

Bitmap image scanned at 300 ppi in .bmp

# Print Quality

- ✓ The S10P press has an extended gamut that closely aligns to sRGB.
- ✓ Color images far exceed what can be reproduced in 4-color offset.
- ✓ Epson inkjet printer (P9000) could be used to proof colors and images.

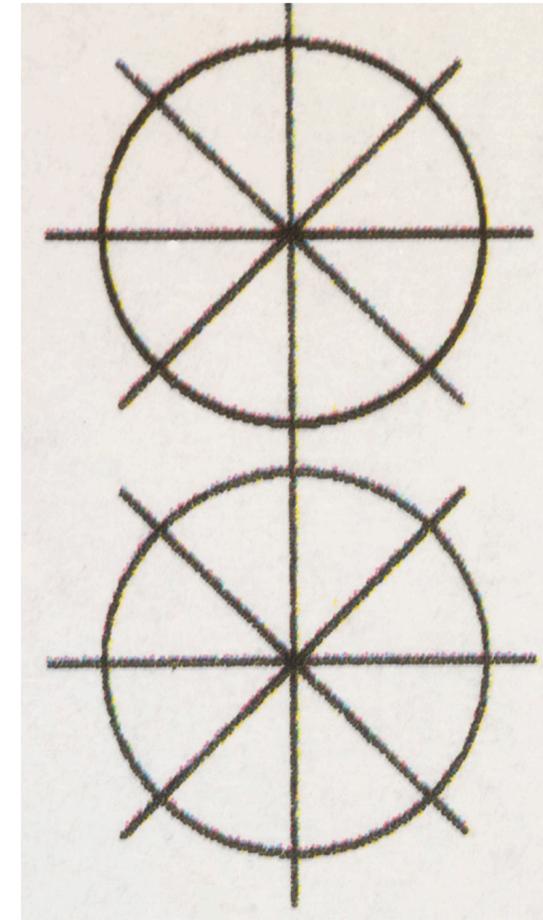
# File Settings

- ✓ Document color mode: RGB.
- ✓ Save images with sRGB or Adobe RGB embedded profiles.
- ✓ Save images in a format with no file compression to maximize quality.
- ✓ Adobe default [Black] looks great.



# Registration + Typography

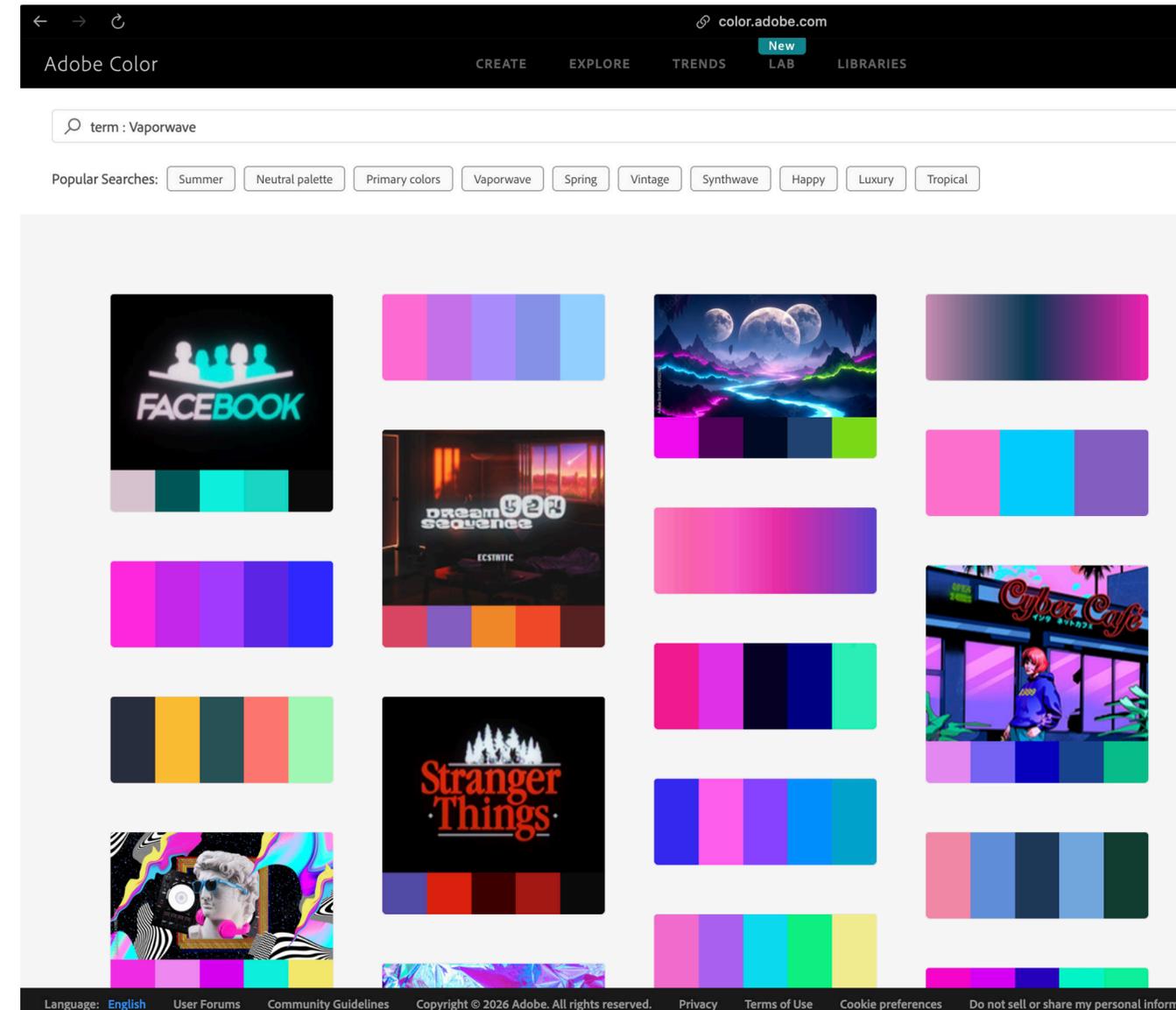
- ✓ Registration is precise.
- ✓ Fine details and thin lines look sharp.
- ✓ Rendering of type is excellent.



Brian Lawler

# Mixing + Spec'ing Color

- ✓ There is no existing palette of swatches designed for high end digital printing.
- ✓ Colors should be created in RGB and will *likely* look good in print.



Adobe Color search "Vaporwave"

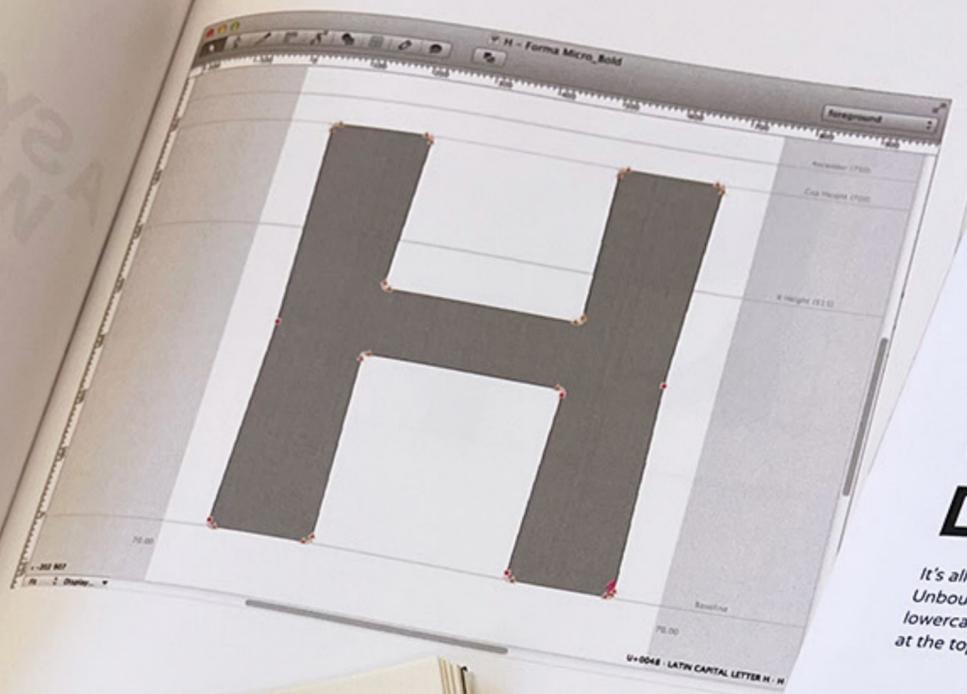
# In conclusion



-DJR

### Personal Thoughts

Through my subjective lens as a designer, Forma DJR's versatility makes it one of my favorite typefaces. Thanks to its high x-height enhancing legibility, it can be used as body text with Forma DJR Micro and Text. Display and Banner allow for subheading and display applications. It has the clean, refined look of any other sans-serif, but it also has the aesthetic flare of a more decorative display typeface while still maintaining its subtlety. The uppercase letters are very balanced and sturdy, and the italics capture natural curves without feeling digitally skewed.



## Chevron Details

It's all about attention to detail, and in Unbounded, the lowercase 'i' (i) and lowercase 'j' (j) include a chevron detail at the top of the stem.

Additionally, unlike many sans serifs, the lowercase 'i' (i) does not curl inward at the descender. Instead, it ends in a straight terminal, contributing to the typeface's clean, geometric structure.

## Human and Gro

Unbounded continues its rejection of normalcy by incorporating both humanist and grotesque typeface traits in a cohesive, natural way. This comparison is visible between the dynamic humanist terminal of the 'e,' and the 90-degree grotesque terminal of the 's'.

## ual Analysis

# height

The descenders are clean and overly long, which allows for...  
...rightly in paragraph

1 2 3 4 5  
6 7 8 9 0

SLOOP SCRIPT'S NUMERALS ARE LINING, SHARING A BASELINE WITH THE ALPHABETICAL CHARACTERS.

! @ # \$ %

Art 338: Typography II, student type specimen books



Cal Poly Graphic Design BFA Show, 2025

*Thank you.*