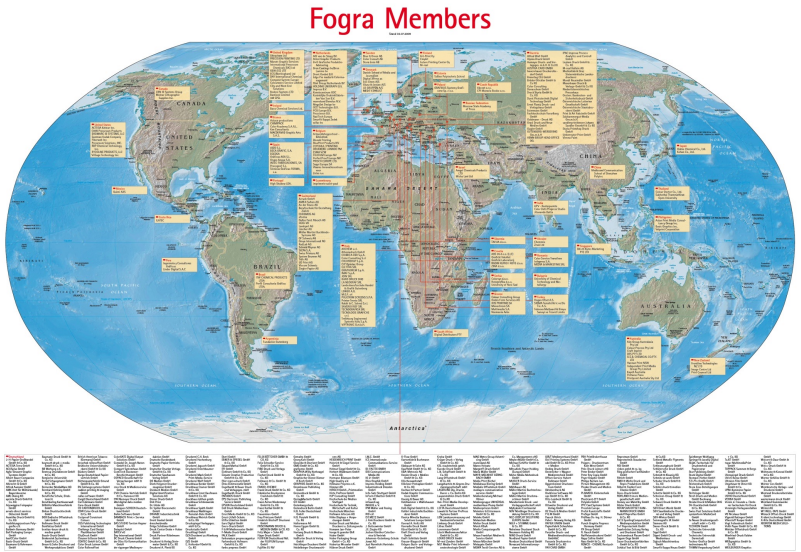
Sourcing meets Production – How to prepare print data to universal printing aims & specify spot colours

Fogra : An unique combination of research and testing

900 Fogra Members in 50 Nations!



Speaker

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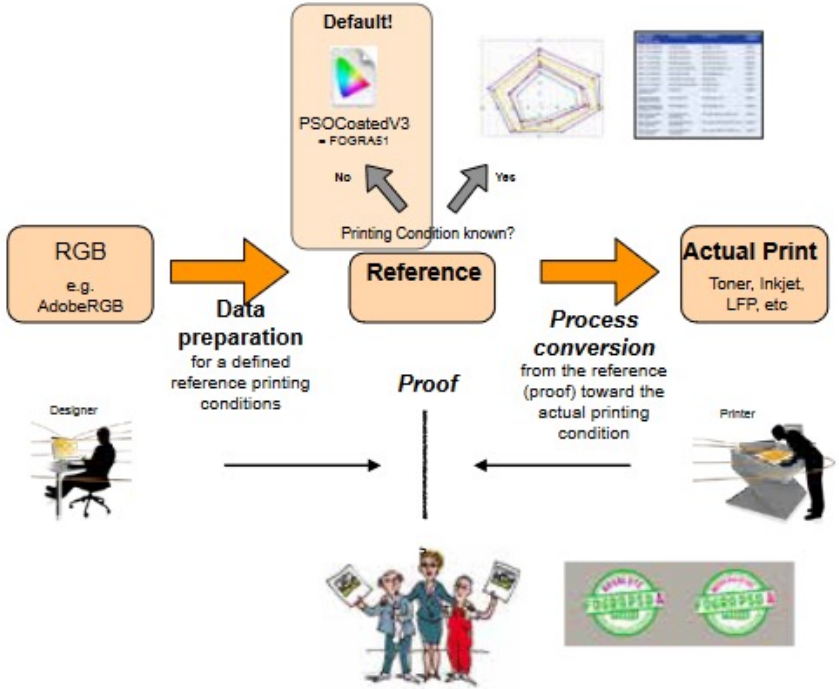
Sourcing meets Production – Today

SOURCING



Production

FOGRA39 (F51)

CRPC6 (GRACoL2013)

Europe ~ Fogra / ISO

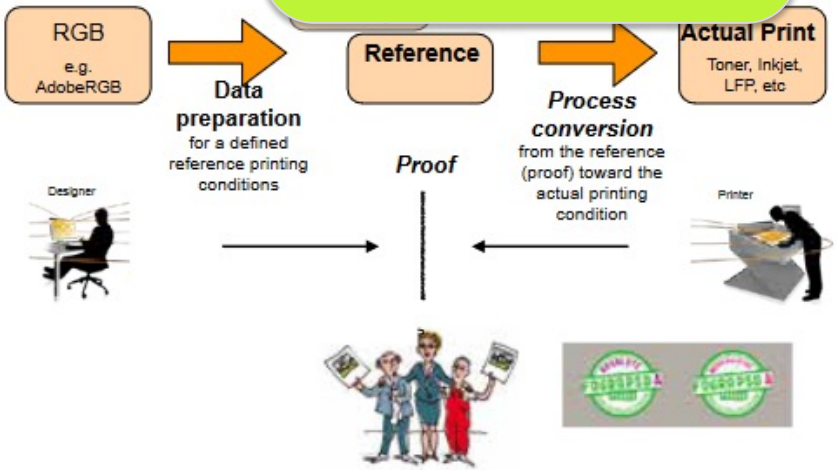
50:50

USA ~ G7

Sourcing meets Production – Tomorrow

SOURCING

ISO 12647-2:2026+
Premium Coated (PC1)
Unified Characterization Data (UCD)

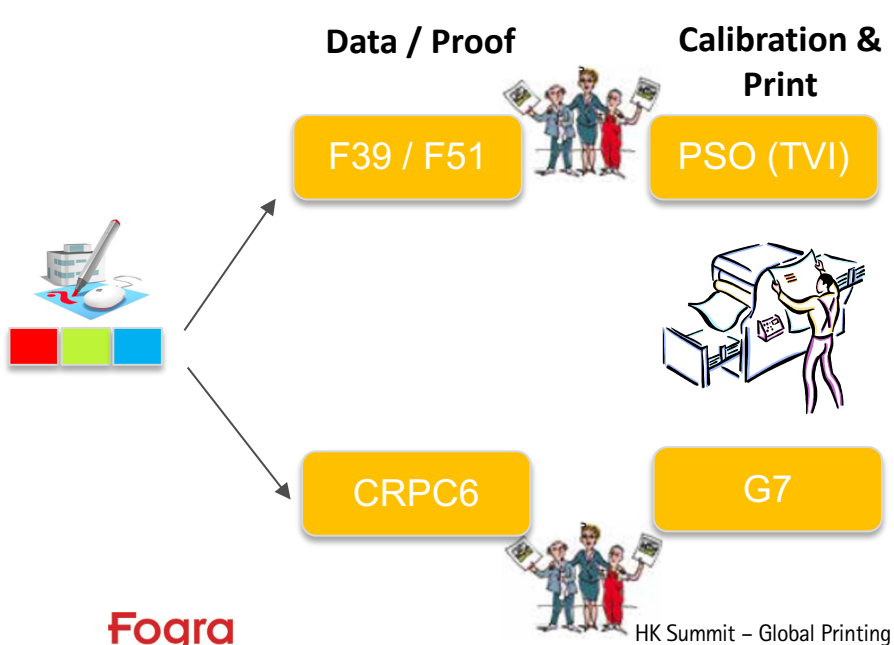


Production

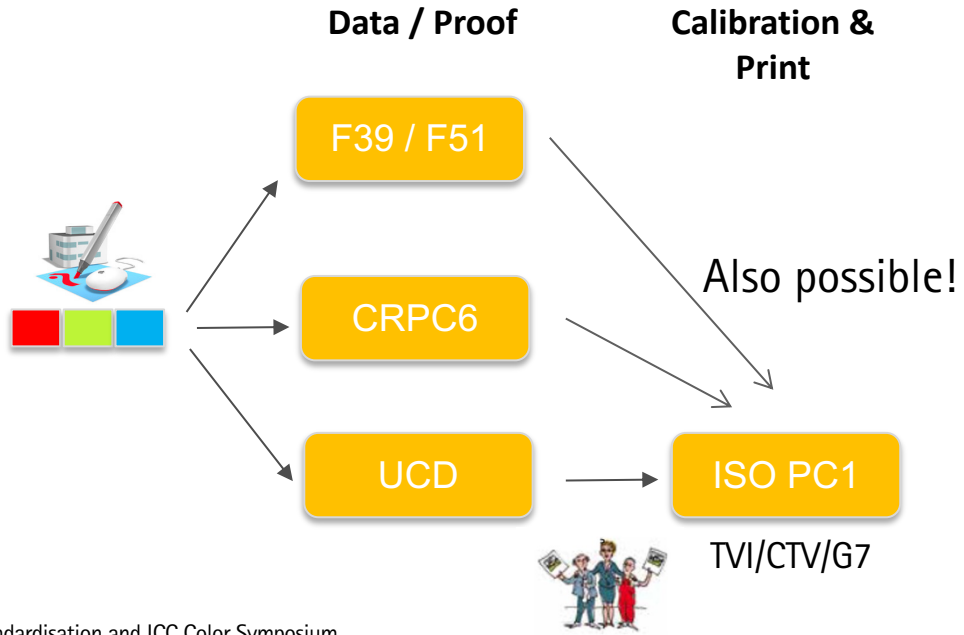
CTV/TVI calibration for all 12 printing substrates!

PrintService Provider can serve „both worlds“

Workflow – Today

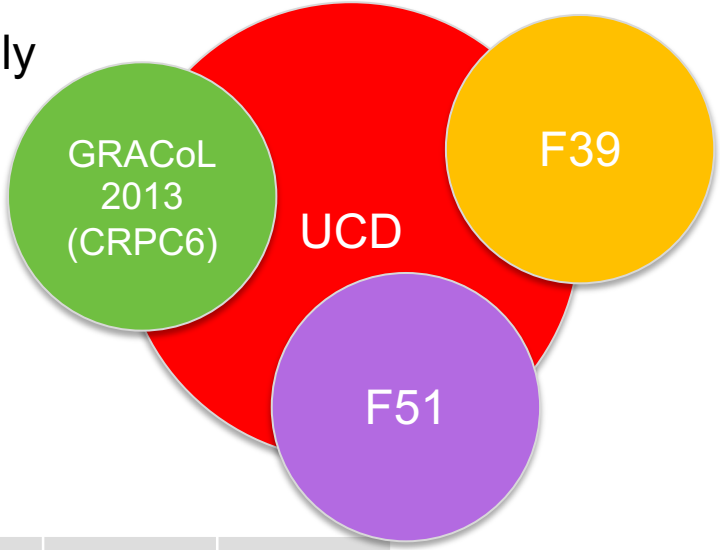


Workflow – Tomorrow



Global Printing Aims will be nicely aligned

Instrumentally



UCD vs.	F39	F51	CRPC6
$\Delta E00_{mean}$	1.5	0.7	1.0
$\Delta E00_{95th}$	2.8	1.7	1.9
$\Delta E00_{max}$	3.7	3.0	3.8

Visually

Spot colours: colour accuracy beyond CMYK

- Print buyers (brands, agencies) choose colours by using known/established colour order systems such as Pantone, HKS, TOYO, DIC, NCS or RAL
- Spot colours challenge print productions in many ways

Challenges known (but not on the sourcing side)

PANTONE GUIDE

Basic rules when using the PANTONE matching System

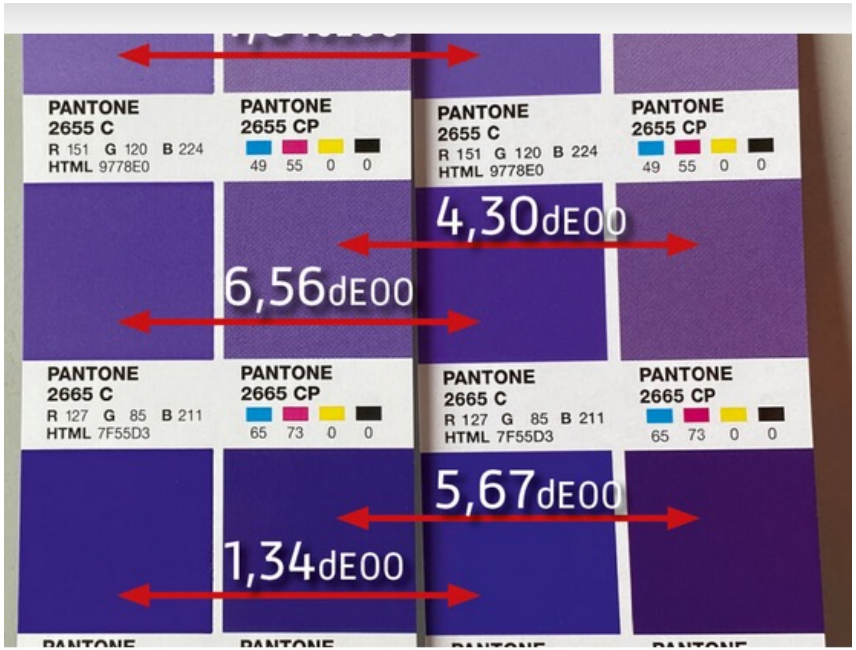
- PANTONE is not a standard but a communication system.
- PANTONE guides are valid for one year only.
- PANTONE guides are NO printing references.
- They are printed products with all limitations and tolerances.

Important to know

- Recipes shown are based on the paper and ink system used.
- The only valid standards are the digital spectral references of each color.
- PANTONE colors previously changed with every major launch and were not optimized for printing.
- Since PANTONE+ from 2010 a printable film thickness was used.
- The digital standards remained unchanged since then.
- More colors are added regularly.

If you don't follow these basic rules you can have ΔE = 20!

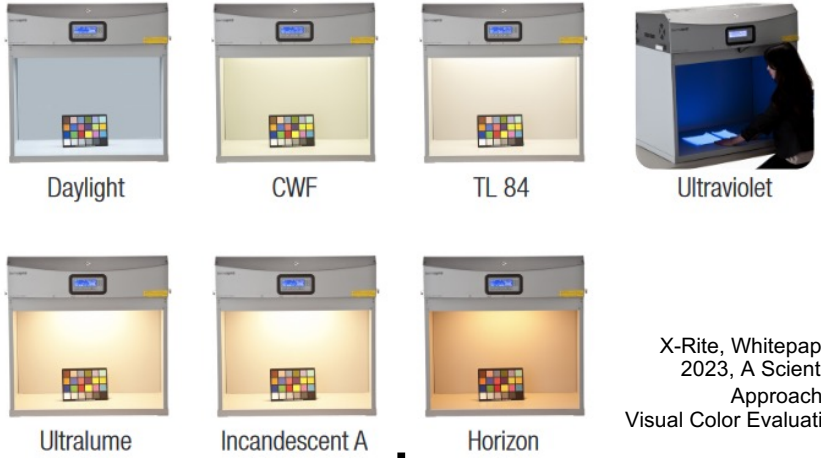
x-rite PANTONE®



https://www.proof.de/farbabweichungen-der-pantone-color-bridge-farbfaecher/

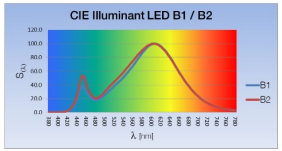
How to specify a spot colour

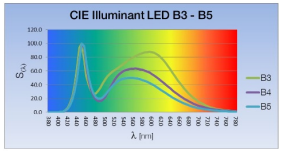
- Pantone 650 C
  - M1: 87, 0, -15 (Dayligh
  - M2: 86, -1, -8 (UV-Cut)
  - ΔE00 = 6 (ΔE76 = 8)
  - What value to pick?
- Do you know how your customers view your brand colours
- New Research project will start soon to work on tools for colour communication with D50 (M1) and D50noUV (M2)



X-Rite, Whitepaper, 2023, A Scientific Approach to Visual Color Evaluation

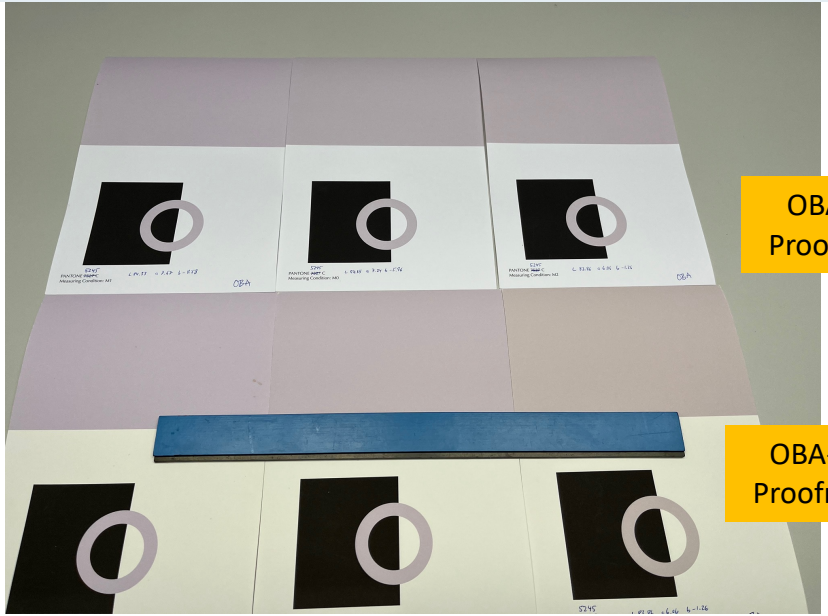
+





Examples

P5245 C (under P1)

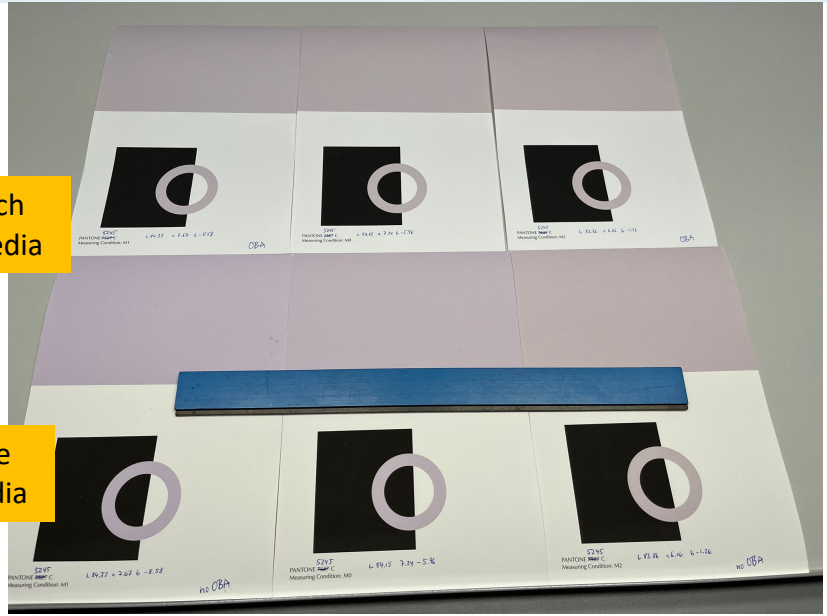


M1 M0 M2

OBA-rich Proofmedia

OBA-free Proofmedia

P5245 C (under P3, D50noUV)



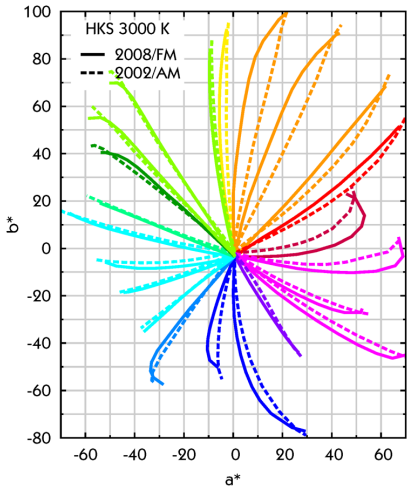
M1 M0 M2

Facts when reproducing spot colours

Influence on screening

Influence of screening (1)

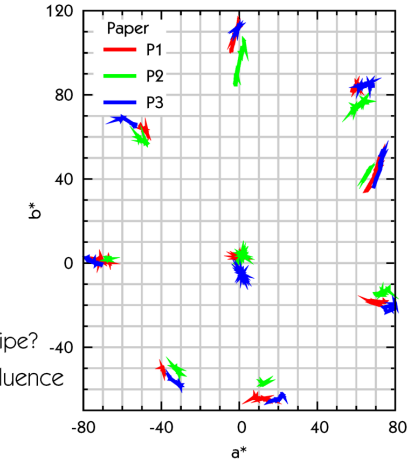
- HKS 3000 K swatchbook, measured tints
  - old (2002): AM screen
  - new (2008): FM screen
- All kinds of differences
  - sometimes small…
  - sometimes up to 10 ΔE
  - mainly in hue angle h*
  - difference in L* is not shown here



Effect on substrate

Effect of the substrate on solid inks

- Offset printing
  - 8 spot colors
  - on 3 papers
  - variable ink thickness
- P3: Bluish paper
  - solids not shifted
  - reachable by inking
  - printer has no problem
- P2: Greenish paper
  - solids are shifted
  - printer needs adjusted recipe?
- Surface roughness has big influence



Fogra recommendations


Fogra Extra

June 2024 | No. 43

Proofing of spot colours – wishful thinking meets reality

1. Introduction

Contact person

Dr Andreas Kraushaar

Head of Projects Technology

Work best in 80% (not 100)

- Assume M2 mode if nothing is said
- Work absolute if nothing is said
- Optional substrate adaptation is great (needs to be communicated)
- Ask for & Use CxF-data (libraries)
- Superb: Check out CxF/X-4 data (spectral data including solids, tints)

Use PSD tolerancing

8.4 All PSD requirements: Current Tolerances " PSD-2022"

OK-Sheet: Side-by-Side Evaluation

¬ Tolerances:

Patch in digital printing form	Quality Type C	Quality Type B	Quality Type A
Substrate	$\Delta E_{00} < 3.5$	$\Delta E_{00} < 3.5$	$\Delta E_{00} < 3.5$
All patches	Average $\Delta E_{00} < 5.5$ 95% Quantile $\Delta E_{00} < 6.5$	Average $\Delta E_{00} < 4.5$ 95% Quantile $\Delta E_{00} < 5.5$	Average $\Delta E_{00} < 2.5$ 95% Quantile $\Delta E_{00} < 4.5$
Grey Balance patches*	Maximum $\Delta C_h \leq 4.5$	Maximum $\Delta C_h \leq 3.5$	Maximum $\Delta C_h \leq 2.5$
* ΔC_h is explained in chapter 2.3.			

¬ Reproduction of Spot Colours:

	Quality Type C	Quality Type B	Quality Type A
Maximum colour difference	$\Delta E_{00} < 5.5$	$\Delta E_{00} < 3.5$	$\Delta E_{00} < 2.5$

Lessons learned

"Printing the Expected means bridging sourcing and production"

1. ISO 12647-2:2026+ has (only) one printing condition (PC1) that unifies TVI, CTV and near neutral calibration (G7) → UCD (Unified Characterization Data)
2. Field tests shows promising feedback (more in the coming presentation by Don Schroeder)
3. Show clients the effect of the interaction of OBA & UV to demonstrate you knowhow (being able to print the expected)
4. Spot colours should come as physical samples or with colorimetrical or better spectral data (incl. measurement condition).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