



INTERNATIONAL
PRINECT USER DAYS

8th and 9th October 2014

5th International Prinect User Days, October 8th and 9th, 2014

Quo Vadis ISO 12647-2? The Workshop

Bernd Utter, HDM AG; Karl Michael Meinecke, bvdm

HEIDELBERG



What's new?

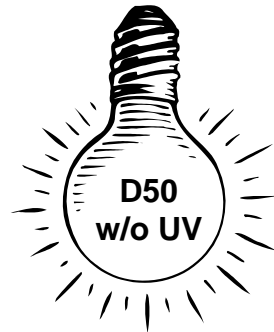
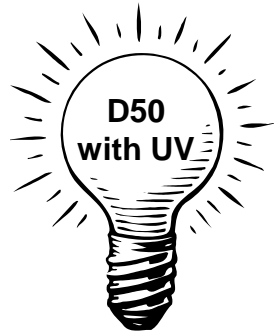
1. ISO 3664:2009 → Color viewing conditions
2. ISO 5-3:2009 → Density measurement
3. ISO 13655:2009 → Spectral measurement
4. ISO 12647-2:2013 → Process control in Offset printing

Color viewing conditions

- **Previous version: ISO 3664:2000**
 - Mainly UV-free illuminant
 - No stimulation of OBA in the printing paper
 - Prinect CP2000 Center, Prinect Press Center until mid of 2010
- **Actual version: ISO 3664:2009**
 - Illuminat with defined UV part
 - Printing paper with OBA appears bluish or rather more neutral, proof without OBA more yelloish Aufheller gelblicher
 - Prinect Press Center since mid of 2010



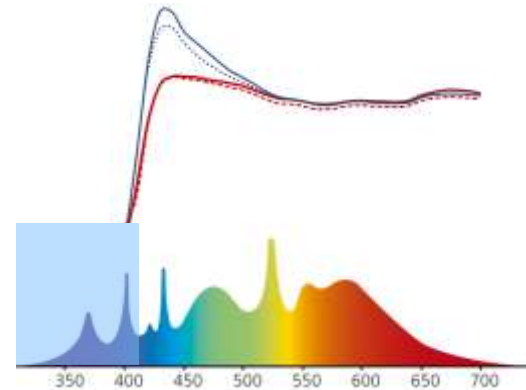
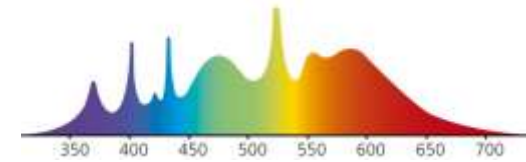
Viewing light



Without
OBA

Substrate

With
OBA



Viewing light

- Problem:
Proof on OBA-free paper does not match the print
- What should be modified?
Proof standard ISO 12647-7 should clearly permit proofs on paper with OBA.
- Heidelberg approach:
 - Either using proofing paper with identical $L^*a^*b^*$ -values or rather similar amount of OBA like the printing paper
→ Conforming to standard
 - or downgrade to old illumination. A corresponding retrofit kit is available as spare part from Heidelberg.

Density measurement

Description of the new density filters

- ISO 5-3 status E
- ISO 5-3 status I
- ISO 5-3 status T



Description of the old density filters

- DIN 16536
- DIN 16536 NB
- ANSI Status T

Heidelberg recommends:

→ **Status E for all ISO-compliant measurements**

→ Status I for special applications

→ Status T for measurements in accordance to US-standards

Spectral measurement

- Previous version: ISO 13655:1996
 - Illuminant A with adaptation to D50, UV not defined, non-polarized

- Actual version: ISO 13655:2009
 - M0 = Illuminant A
 - **M1 = D50 with a defined part of UV-light**
 - M2 = UV-free illuminant
 - M3 = M2 + polarization filter



M1 or „New D50“

Since years D50 (color temperature 5.000 K) is the direction for a normative measurement according to ISO 12647-2

Before:

- Tungsten lamps don't have D50, UV was not defined
- D50 was artificially created by calibrations, a "real" D50 did not exist
- Optical brightening agents were captured differently

Today:

- M1 defines a UV-part in the light source to stimulate the OBA
- M1 is the preferred illuminant for the measurement of papers, dry inks and proofs according to ISO 12647-2:2013

Process control in sheetfed Offset printing

What are the essential differences?

1. L*a*b*-values for paper and reference coloring were adapted
2. Tone value increase (TVI) are identical now for C, M, Y and B, FM-screen with 20 – 30 μm defined
3. Illuminant M1, means all measurements on proofs and dry print sheets are executed non-polarized in consideration of the OBA
4. **No** M1 for the print production, only M2 or M3. For the measurement of dot gain in wet sheets, preferably M3
5. ΔE 2000 informative implemented, ΔE_{ab} still normative!

Why?

Reasons for the revision of the ISO 12647-2:2013:

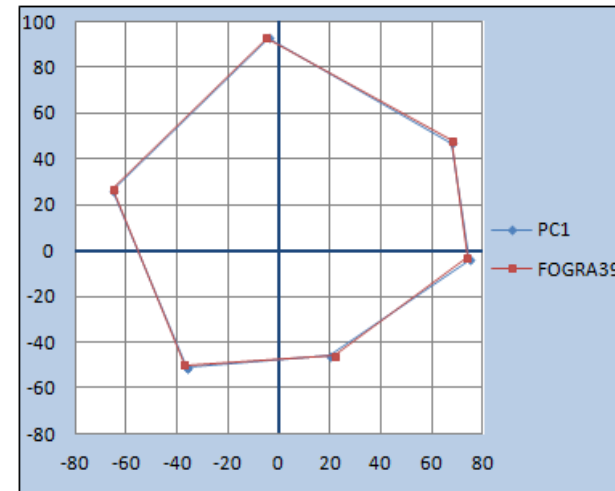
1. Papers and reference values did no longer correspond to practical application
2. Tone value increase was based on plate making from film (positiv / negativ)
3. No clear table for TVI
4. Standard printing conditions not exactly defined
5. No printing condition defined for FM-screening

Comparison PC1 Premium coated and FOGRA39

- Values of the paper color – stronger consideration of OBA
- Primary- and secondary solid color values – confirmed by print tests
- Color values for black backing – consistent by proven conversion according to ISO 13655

Comparison of colors PC1 – Fogra39

PC1 Premium coated				FOGRA39			
	L*	a*	b*		L*	a*	b*
Paper	95,0	1,0	-4,0	Paper	95,0	0,0	-2,0
Cyan	56,0	-36,0	-51,0	Cyan	55,0	-37,0	-50,0
Magenta	48,0	75,0	-4,0	Magenta	48,0	74,0	-3,0
Yellow	89,0	-4,0	93,0	Yellow	89,0	-5,0	93,0
Black	16,0	0,0	0,0	Black	16,0	0,0	0,0
Red	48,0	68,0	47,0	Red	47,0	68,0	48,0
Green	50,0	-65,0	26,0	Green	50,0	-65,0	27,0
Blue	25,0	20,0	-46,0	Blue	24,0	22,0	-46,0
C+M+Y	23,0	0,0	-1,0	C+M+Y	23,0	0,0	0,0



L*a*b*-solid coloring (dry)

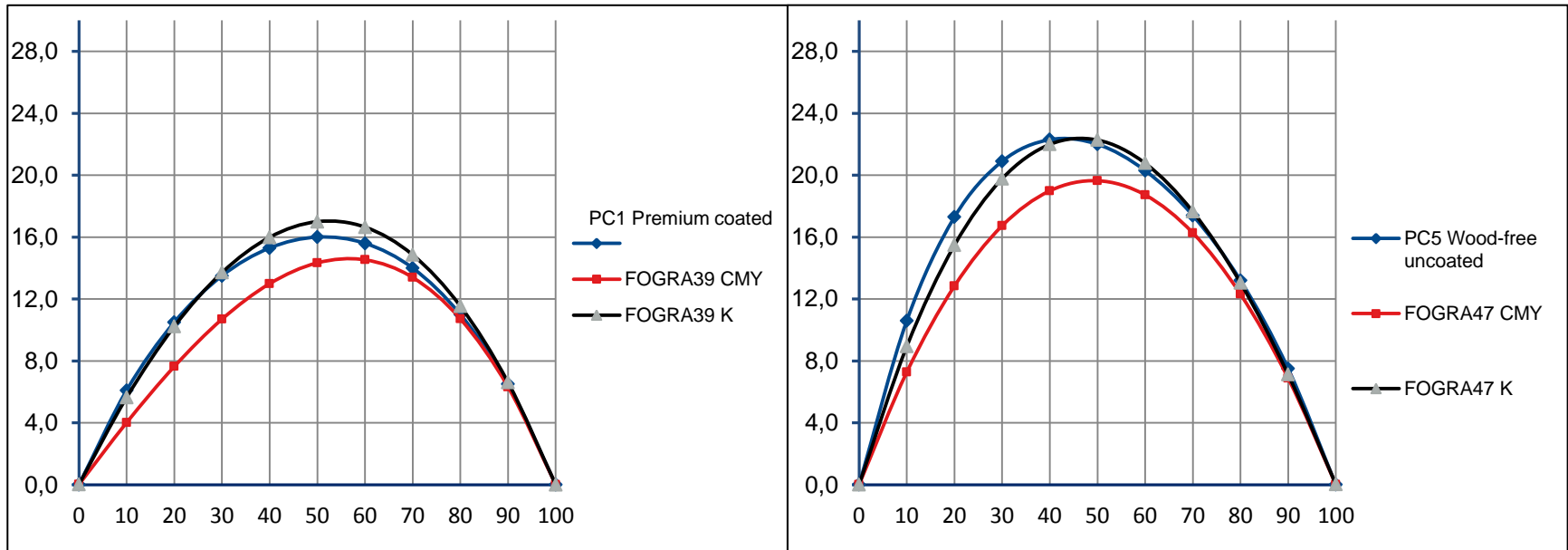
D50, 2°, 0°/45° or 45°/0°, M1 recommended

Substrate	1 – Premium coated		5 – wood-free uncoated	
	white backing	black backing	white backing	black backing
Black (K)	16 / 0 / 0	16 / 0 / 0	31 / 1 / 1	32 / 1 / 1
Cyan (C)	56 / -36 / -51	55 / -35 / -51	60 / -25 / -44	58 / -24 / -44
Magenta (M)	48 / 75 / -4	47 / 73 / -4	55 / 60 / -2	53 / 58 / -3
Yellow (Y)	89 / -4 / 93	87 / -4 / 91	89 / -3 / 76	86 / -3 / 73
Red (M+Y)	48 / 68 / 47	46 / 67 / 45	53 / 56 / 27	51 / 55 / 25
Green (C+Y)	50 / -65 / 26	49 / -63 / 25	53 / -43 / 14	52 / -41 / 13
Blue (C+M)	25 / 20 / -46	24 / 20 / -45	39 / 9 / -30	37 / 9 / -30
Gray (C+M+Y)	23 / 0 / -1	23 / 0 / -1	35 / 0 / -3	34 / 0 / -3

Tone Value Increase (TVI)

PC1 Premium coated (new)
in comparison to FOGRA39 (old)

PC5 Wood-free uncoated (new)
in comparison to FOGRA47 (old)



ISO 12647-2:2013, PSO 2012, Fogra 51 & 52

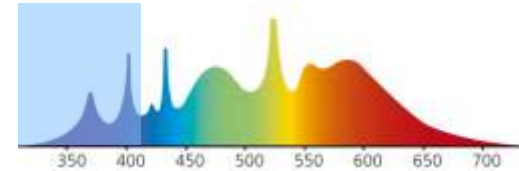
Actually unfortunately confusing:

- A new ISO-standard always overrides the old one
→ only valid standard: ISO 12647-2:2013!
- PSO is a comprehensive instruction for that
- PSO-figures have to be adapted to the new standard
- Characterization data Fogra 51 and Fogra 52 do NOT comply with the values given in ISO 12647-2:2013
- Illuminant M1 only defined as „should“

M2 and M3 are the better choice at the press!

→ Using M2 references for the print production

- HD Systems measure and control according to spectral curves, not according to density values!
- OBA in substrates and UV in lamps can extremely differ
 - Lamps: UV-part depending on the manufacturer 55% to 145%
 - Fogra tests: OBA in substrates differ up to DE 4-5, plus influence of other colorants!
 - M2 / M3 ignores OBA and UV radiation (higher stability when printing)
- Color measurement systems are designed for the ink control of the printing press!
 - Multitude of inks and applications (conventional, UV, Low Migration, varnish, ...)
 - Much more than only process colors CMYK !
 - Reaching the OK-sheet quicker based on process orientated reference values
 - stable print production (less deviation, in between tolerances)



ISO 12647-2:2013 – Now!

Heidelberg recommendation:

1. Proof and color separation with Heidelberg Profiles
HD_coated_2014, HD_uncoated_2014 (exactly spot on ISO),
PSO_coated_eci, etc.
2. Claibration of plates using the new TVI (BCMY with 16% at 50%)
3. Measuring of dry sheets and proof with illuminant M1
→ Purchase of a new handheld spectrophotometer
4. Measuring and control at the press with existing Heidelberg color measurement systems
5. Continue using old separation data
6. Using new data (PDF) with the new standard
7. Using Device Link profiles to convert periodicals
8. Using paper with a low amount of OBA for the certification process



INTERNATIONAL
PRINECT USER DAYS

8th and 9th October 2014

5th International Prinect User Days, October 8th and 9th, 2014

Thank you for your attention!

Bernd Utter, HDM AG; Karl Michael Meinecke, bvdm

HEIDELBERG

