

COL '18 OR
#Color2018

Princt Color Validation with Color Toolbox

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PRINTING INDUSTRIES OF AMERICA

Princt, Color Validation with Color Toolbox

A Comprehensive Color Management Suite

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Today's Agenda

- Power and Diversity of Color Toolbox v18
- Overview
- Process Standard (s)
- Pass / Fail Metrics
- Graphical Analysis
- Reporting

Color Toolbox - Overview

Main Menu at Top Center

- Measure:
- Compare
- Analysis
- Create
- Edit
- Process Standard

Color Toolbox - Overview

Colorimetrics & Statistics at right

- Reference:
- Sample
- Comparison
- Delta E (ab, 00)
- Mean:
- Std Deviation
- Maximum
- Patch ID
- A Visual Patch Comparison

Color Toolbox - Overview

Analysis Tools Menu at left

- Test Charts:
- a/b Diagram
- Substrate
- Color Values
- CIE Report
- Compare:
- ΔE (a/b) report
- ΔE (Ch) report

Color Toolbox - Overview

Sample Name & Process Standard at top & bottom

- Reference:
 - Sample
- Current Proc. Std:
 - Color Mode
 - Material
 - Proc. Norm
 - Preview of the Measured Chart

Color Toolbox – Overview (continued)

Colorimetrics & Statistics at right

Difference Values:
 ΔE Color Deviation Map

- Red - large var.
- Green – minor var.
- Blue - excellent

- ΔE Patch Slider
- 95th percentile

Process Standards: Series

- Print: ISO 12647-2
- Proof: ISO 12647-7
- Digital: ISO 15311
- G7™: ISO 15339

Notes:

- Viewing: ISO 3664, D50
- Measurement: ISO 13655, M1
- Calibration: ISO/TS 10128
- 3 Methods: TVI, 1-D Curves, DVL

Process Standard: Proof

Overview

Proof (ISO 12647-7)	
Metrics	
.1	Reference: CRPC 1-7 Series, Characterization datasets
.2	Colorimetrics: Primary's & Secondary's
.3	Gray Balance: ΔL , ΔCh
.4	Test Charts: 12647-7 DCS; P2P (25x, 51); IT8.7/4 profiling chart
.5	Gray Controls: 25%, 50%, 75%
.6	Profile: CRPC 1-7.icc

Process Standards: CGATS/ANSI

Comparison, Overview

	G7 Master Color Targeted Requirements	Proof	Print
	Metrics	Tolerance	Tolerance
.1	Substrate	$\Delta E (00) \leq 1.5$	$\Delta E (00) \leq 3.0$
.2	CMY Solids	$\Delta E (00) \leq 3.5$	$\Delta E (00) \leq 3.5$
.3	K Solid	$\Delta E (00) \leq 5.0$	$\Delta E (00) \leq 5.0$
.4	RGB, Overprint Solids	$\Delta H (00) \leq 4.2$	$\Delta H (00) \leq 4.2$
.5	All patches of P2P25 or P2P51, (IT8.7/4 = Colorspace)	Ave $\Delta E (00) \leq 2.0$ 95 th percentile $\Delta E (00) \leq 5.0$	Ave $\Delta E (00) \leq 3.5$ 95 th percentile $\Delta E (00) \leq 5.0$

Note: These tolerances are relative to the substrate -absolute or relative aim CIELAB values

Process Standards: Digital

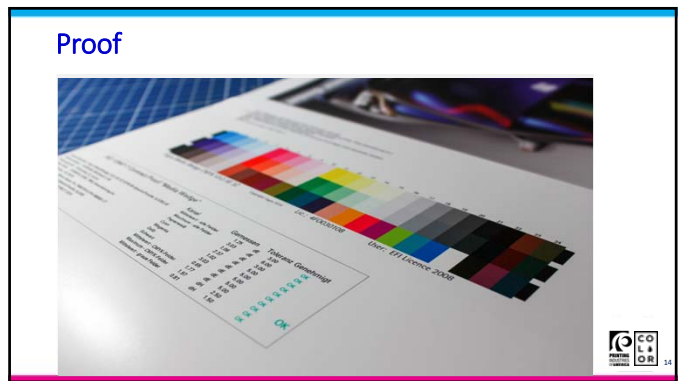
ISO 15311 • Overview

Criteria / Levels	A	B	C	
Class	Proof	Offset	Office	
Quality Level	A = High	B = Good	C = Acceptable	
.1	Substrate	$\Delta E (00) \leq 2.5$	$\Delta E (00) \leq 3.5$	$\Delta E (00) \leq 4.5$
.2	All patches (Max)	$\Delta E (00) \leq 6.5$	$\Delta E (00) \leq 7.5$	$\Delta E (00) \leq 8.5$
	All patches (Mean)	$\Delta E (00) \leq 2.5$	$\Delta E (00) \leq 3.5$	$\Delta E (00) \leq 4.5$
.3	KCMY, RGB	$\Delta H (ab) \leq 4.5$	$\Delta H (ab) \leq 5.5$	$\Delta H (ab) \leq 6.5$
.4	Gray Reproduction	Mean $\Delta Ch \leq 2.5$	Mean $\Delta Ch \leq 3.5$	Mean $\Delta Ch \leq 4.5$

Process Standards: Press/Print

Comparison, Overview

	ANSI / CGATS (ISO 15339) G7	BVDM / FOGRA (ISO 12647-2)
1	Colorimetrics: Substrate (abs, or rel.)	Paper Types: absolute (informative)
2	Colorimetrics: Primary's	Primary's
3	Colorimetrics: Secondary's	Secondary's
4	Gray Balance: NPDC	Tone Value Increase (Dot Gain)
5	Reference: Characterization dataset (CRPC1-7)	Reference: Characterization dataset (Fogra 51, 52)
6	Gray Controls: 25%, 50%, 75%	Gray Controls: 30%, 50%, 70%
7	Profile: CRPC6, Gracol 2013 C1	Fogra51



Color Toolbox - Process Standard - Proof

Proof Process Standard

- Standard: ISO 12647-7
- Material Type:
- PS Norm:
- ICC Reference file:
- Substrate White Point:
- Solids, CIE Lab:
- Delta E Tolerance:
- Density Status:

Name	L*	a*	b*	ΔE*	Density
CHN	56.00	-36.00	-33.00	3.00	2.00
ISO500A	48.00	39.00	4.00	3.00	2.00
ISO500B	39.00	-4.00	53.00	3.00	2.00
ISO500C	16.00	0.00	0.00	2.00	0.00
ISO500D	48.00	48.00	47.00	6.00	2.00
ISO500E	50.00	-45.00	26.00	6.00	2.00
ISO500F	29.00	20.00	48.00	6.00	2.00
ISO500G	39.00	3.00	-1.00	5.00	3.00

Color Toolbox - Process Standard – Proof (continued)

Proof Process Standard

- Tolerances: ISO 12647-7
- All Patches: Mean ΔE (0.0)
- All Patches: Max ΔE (0.0)
- Primary Colors: ΔE (0.0)
- Primary Colors: ΔE (0.0)
- CMY Gray: ΔE (0.0)
- Advanced (IT8/7.4)
- Gamut Patches: ΔE (0.0)
- All Patches: ΔE (0.0)
- 95% percentile: ΔE (0.0)

Group	Mean ΔE	Max ΔE
All patches	0.00	0.00
Primary colors	0.00	0.00
CMY gray	0.00	0.00
Advanced (IT8/7.4)	4.00	4.00
Gamut patches	0.00	0.00
All patches	0.00	0.00

Color Toolbox - Measured – Proof

Proof: IT8/7.4 Visual Chart

- Measured Results
- Statistics
- Process Standard
- PS Norm: Proof

Color Toolbox - Validation – Proof

Results: Proof (Passes)

- IT8/7.4 Visual Chart:
- Measured Sample
- Solids / Gamut
- CMY Gray & K
- Advanced:
- Gamut & All patches
- All patches 95th percentile

Group	Mean ΔE	Max ΔE
All patches	0.00	0.00
Primary colors	0.00	0.00
CMY gray	0.00	0.00
Advanced (IT8/7.4)	4.00	4.00
Gamut patches	0.00	0.00
All patches	0.00	0.00

Color Toolbox - Measured – Proof

Proof
ISO 12647-7
Media Wedge v3

- ISO 12647-7
- Statistics:
- Patch ID / No
- x,y coordinate
- CMYK Ref %
- Lab / XYZ Ref %
- Density:
- PS Norm: Proof
- Process Std
- Material Type

Color Toolbox - Validation – Proof

Results:
Proof (Passes)

- Media Wedge v3.0:
- Measured Sample
- Primary & Secondary Solids / Gamut
- CMY Gray & K

Validation Color Code
 • Pass (Green) (Passes)
 • Fail (Red)



Color Toolbox - Process Standard - Press/Print

Press / Print
Process Standard

- Standard: ISO or CGATS
- Material Type:
- PS Norm:
- ICC Reference file:
- G7 Parameters
- CMY patches ΔL
- K patches ΔL
- CMY patches ΔCh

Color Toolbox – Print Results - Validation

IT8/7.4 Chart
Solids Colorimetric Evaluation

- ISO 12647-2
- Measured Sample
- Primary: CMYK
- Secondary: RGB/OP
- CIE Lab
- DE (00)

Color Toolbox – Print Validation

Print vs. Process Standard

ISO 12647-2
 Validation Results

- Fail (Paper White)
- Pass (Overall)
- TVI (GMI)

White Point:
 • Recommend SCCA

Color Toolbox – Print Validation

Results vs CGATS process standard (Passes)

- ISO 15339 (G7™)
- P2P25Xa or 51 Target:
- Measured Sample
- Primary & Secondary Solids / Gamut
- CMY Gray Bal & K

Validation Color Code
 ● Pass (Green) (Passes)
 ● Fail (Red)



Color Toolbox - Process Standard – Digital

Digital Process Standard

- ISO 15311
- Digital Parameters
- Aims
- Tolerances: A, B, C
- ICC Reference file
- White point
- Delta E
- Density Status
- Ink Sequence (Rotation)

Color Toolbox – Results / Validation - Digital

Results IT8/7.4 Chart

Validation Results
 ● Pass (Overall) (Passes)

- ISO 15311
- Aims
- Tolerances: A, B, C
- Gray Balance
- Mean
- 95th Percentile

Color Toolbox – Reports

Color Space Reporting

Compare Gamut Analysts

- a/b Diagram
- Pareto
- DE L*
- DE a*/b*

Color Toolbox – Reports

Validation Reports

- Colorimetrics
- TVI
- DE (00)
- a/b Plot
- Pass / Fail
- G7 / Gray Bal
- Quality Index: 92.6%

Summary

Prinect Color Toolbox... 1 Comprehensive Software

- Validation of Measurement Data
- Print
- Proof
- Digital
- Custom specific process, as GMI or in-house standards
- Create Profiles
- Edit Measurement Data & Profiles
- Trend & Quality Reporting
- Creates Plates Curves - ISO, G7, GMI



Finally,

- *Thank You for your attention*
- Questions & Answers
- Stop by Heidelberg Table for a demonstration
- Joseph Suffoletto
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