Japan Color Standard
for
Sheet Fed Offset Printing

Background to Japan Color

- **Purpose**

  In the production of color printed matter, the importance and necessity of printing color standards has received low recognition. To remedy this, Japan Color was established as a standard printing color adapted to the Japanese printing market that printers can reproduce with their presses.

- **History**

  1. Japan Color for Sheet Fed Printing 2001: Established in 2000
  2. Japan Color for Newspapers (JCN) 2002: Established in 2002
  3. Japan Color for Commercial Web Offset Printing (JCW) 2003: Established in 2003

Japan Color Now

- **2001: Japan Color for Sheet Fed Printing is Established**

  In Japan, printing is traditionally performed using original in-house standards. Such standards give individual printing companies a unique identity that also serves to differentiate their products. For this reason, adoption of Japan Color has been slow.

- **2003: Digitalization & CTP Spread Rapidly**

  Adobe also began offering Japan Color-compliant products, bringing into focus the importance of color management, and giving impetus to Japan Color adoption.

- **Japan Color Now**

  At present, the number of printers adopting Japan Color as a color standard is increasing.

Who the Guidebook is For

- **Number of Printing Companies**

  27,106 companies (2003 survey), 75% with 20 employees or less.

- **Technological Expertise**

  The guidebook is created for companies having trouble implementing CMS.

- **Production of Guidebook to Promote Japan Color**

  In November 2005, the Sheet Fed Press Group of the Japan Printing Machinery Manufacturers Association (JPMA) completed the guidebook, availability beginning in December.

Benefits of Japan Color-Compliant Printing

- **Stabilization of production**
- **Printing quality improvement**
- **Increased profit**

Japan Color-Compliant Printing Control Items

Control Items	Control Particulars
• Define solid density → print	• In-house standard density
• Color is controlled using L*a*b*	• ISO 12647 chart solid/50% screen ΔE ISO 12642 chart average ΔE
• Dot gain	• Not specified, but an important factor in gray control.
• Gamut matching	• C, M, Y, R, G, B
• Gray control	• L·M·H ΔE Especially ΔE H (high density) areas
• Color correction	• Output curve correction
• Define acceptable ΔE	• Japan Color compliance < ΔE6
Define ΔE using proof	Or define ΔE with press print printed using Japan Color.

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Printing Test Results

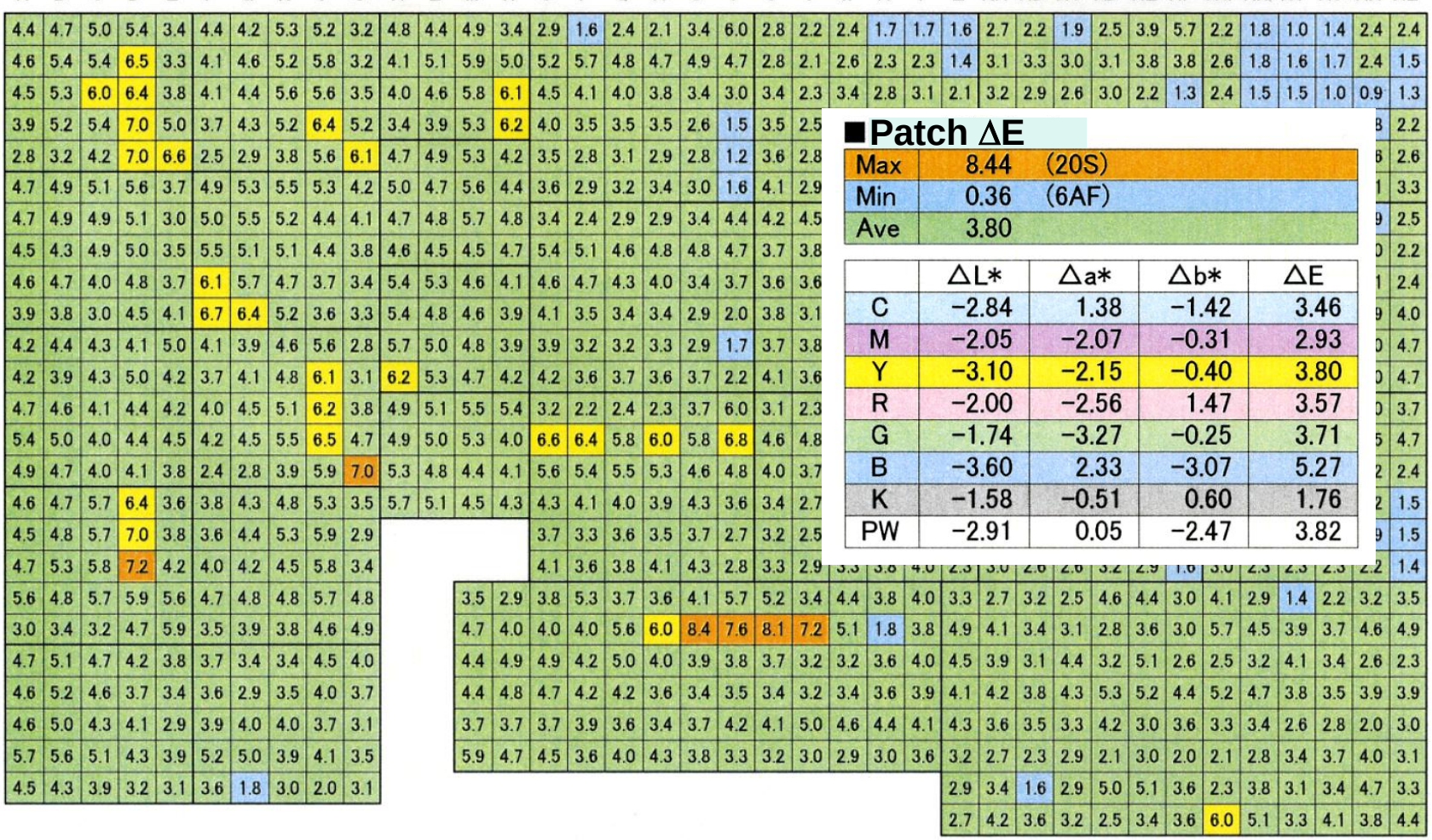
- Average ΔE = 3.82; Max = 8.44
- Areas that exceeded ΔE6 appear to be areas of large ink coverage.
- Factors affecting results appear to be solid density, ink emulsification, output curve calibration.

  Dot gain in shadows should be reconsidered.

  ⇩

  The printing company is successfully applying the corrected conditions as its standard printing conditions.

Sample Data



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1	4.4	4.7	5.0	5.4	3.4	4.4	4.2	5.3	5.2	3.2	4.8	4.4	4.9	3.4	2.9	1.6	2.4	2.1	3.4	6.0	2.8	2.2	2.4	1.7	1.7	1.6	2.7	2.2	1.9	2.5	3.9	5.7	2.2	1.8	1.0	1.4	2.4	2.4
2	4.6	5.4	5.4	6.5	3.3	4.1	4.6	5.2	5.8	3.2	4.1	5.1	5.9	5.0	5.2	5.7	4.8	4.7	4.9	4.7	2.8	2.1	2.6	2.3	2.3	1.4	3.1	3.3	3.0	3.1	3.8	3.8	2.6	1.8	1.6	1.7	2.4	1.5
3	4.5	5.3	6.0	6.4	3.8	4.1	4.4	5.6	5.6	3.5	4.0	4.6	5.8	6.1	4.5	4.1	4.0	3.8	3.4	3.0	3.4	2.3	3.4	2.8	3.1	2.1	3.2	2.9	2.6	3.0	2.2	1.3	2.4	1.5	1.5	1.0	0.9	1.3
4	3.9	5.2	5.4	7.0	5.0	3.7	4.3	5.2	6.4	5.2	3.4	3.9	5.3	6.2	4.0	3.5	3.5	3.5	2.6	1.5	3.5	2.5																2.2
5	2.8	3.2	4.2	7.0	6.6	2.5	2.9	3.8	5.6	6.1	4.7	4.9	5.3	4.2	3.5	2.8	3.1	2.9	2.8	1.2	3.6	2.8																2.6
6	4.7	4.9	5.1	5.6	3.7	4.9	5.3	5.5	5.3	4.2	5.0	4.7	5.6	4.4	3.6	2.9	3.2	3.4	3.0	1.6	4.1	2.9																3.3
7	4.7	4.9	4.9	5.1	3.0	5.0	5.5	5.2	4.4	4.1	4.7	4.8	5.7	4.8	3.4	2.4	2.9	2.9	3.4	4.4	4.2	4.5																2.5
8	4.5	4.3	4.9	5.0	3.5	5.5	5.1	5.1	4.4	3.8	4.6	4.5	4.5	4.7	5.4	5.1	4.6	4.8	4.8	4.7	3.7	3.8																2.2
9	4.6	4.7	4.0	4.8	3.7	6.1	5.7	4.7	3.7	3.4	5.4	5.3	4.6	4.1	4.6	4.7	4.3	4.0	3.4	3.7	3.6	3.6																2.4
10	3.9	3.8	3.0	4.5	4.1	6.7	6.4	5.2	3.6	3.3	5.4	4.8	4.6	3.9	4.1	3.5	3.4	3.4	2.9	2.0	3.8	3.1																4.0
11	4.2	4.4	4.3	4.1	5.0	4.1	3.9	4.6	5.6	2.8	5.7	5.0	4.8	3.9	3.9	3.2	3.2	3.3	2.9	1.7	3.7	3.8																4.7
12	4.2	3.9	4.3	5.0	4.2	3.7	4.1	4.8	6.1	3.1	6.2	5.3	4.7	4.2	4.2	3.6	3.7	3.6	3.7	2.2	4.1	3.6																4.7
13	4.7	4.6	4.1	4.4	4.2	4.0	4.5	5.1	6.2	3.8	4.9	5.1	5.5	5.4	3.2	2.2	2.4	2.3	3.7	6.0	3.1	2.3																3.7
14	5.4	5.0	4.0	4.4	4.5	4.2	4.5	5.5	6.5	4.7	4.9	5.0	5.3	4.0	6.6	6.4	5.8	6.0	5.8	6.8	4.6	4.8																4.7
15	4.9	4.7	4.0	4.1	3.8	2.4	2.8	3.9	5.9	7.0	5.3	4.8	4.4	4.1	5.6	5.4	5.5	5.3	4.6	4.8	4.0	3.7																2.4
16	4.6	4.7	5.7	6.4	3.6	3.8	4.3	4.8	5.3	3.5	5.7	5.1	4.5	4.3	4.3	4.1	4.0	3.9	4.3	3.6	3.4	2.7																1.5
17	4.5	4.8	5.7	7.0	3.8	3.6	4.4	5.3	5.9	2.9					3.7	3.3	3.6	3.5	3.7	2.7	3.2	2.5																1.5
18	4.7	5.3	5.8	7.2	4.2	4.0	4.2	4.5	5.8	3.4					4.1	3.6	3.8	4.1	4.3	2.8	3.3	2.9																1.4
19	5.6	4.8	5.7	5.9	5.6	4.7	4.8	4.8	5.7	4.8			3.5	2.9	3.8	5.3	3.7	3.6	4.1	5.7	5.2	3.4	4.4	3.8	4.0	3.3	2.7	3.2	2.5	4.6	4.4	3.0	4.1	2.9	1.4	2.2	3.2	3.5
20	3.0	3.4	3.2	4.7	5.9	3.5	3.9	3.8	4.6	4.9			4.7	4.0	4.0	4.0	5.6	6.0	8.4	7.6	8.1	7.2	5.1	1.8	3.8	4.9	4.1	3.4	3.1	2.8	3.6	3.0	5.7	4.5	3.9	3.7	4.6	4.9
21	4.7	5.1	4.7	4.2	3.8	3.7	3.4	3.4	4.5	4.0			4.4	4.9	4.9	4.2	5.0	4.0	3.9	3.8	3.7	3.2	3.2	3.6	4.0	4.5	3.9	3.1	4.4	3.2	5.1	2.6	2.5	3.2	4.1	3.4	2.6	2.3
22	4.6	5.2	4.6	3.7	3.4	3.6	2.9	3.5	4.0	3.7			4.4	4.8	4.7	4.2	4.2	3.6	3.4	3.5	3.4	3.2	3.4	3.6	3.9	4.1	4.2	3.8	4.3	5.3	5.2	4.4	5.2	4.7	3.8	3.5	3.9	3.9
23	4.6	5.0	4.3	4.1	2.9	3.9	4.0	4.0	3.7	3.1			3.7	3.7	3.7	3.9	3.6	3.4	3.7	4.2	4.1	5.0	4.6	4.4	4.1	4.3	3.6	3.5	3.3	4.2	3.0	3.6	3.3	3.4	2.6	2.8	2.0	3.0
24	5.7	5.6	5.1	4.3	3.9	5.2	5.0	3.9	4.1	3.5			5.9	4.7	4.5	3.6	4.0	4.3	3.8	3.3	3.2	3.0	2.9	3.0	3.6	3.2	2.7	2.3	2.9	2.1	3.0	2.0	2.1	2.8	3.4	3.7	4.0	3.1
25	4.5	4.3	3.9	3.2	3.1	3.6	1.8	3.0	2.0	3.1																2.9	3.4	1.6	2.9	5.0	5.1	3.6	2.3	3.8	3.1	3.4	4.7	3.3
26																										2.7	4.2	3.6	3.2	2.5	3.4	3.6	6.0	5.1	3.3	4.1	3.8	4.4

■Patch ΔE

Max	8.44 (20S)
Min	0.36 (6AF)
Ave	3.80

	ΔL*	Δa*	Δb*	ΔE
C	−2.84	1.38	−1.42	3.46
M	−2.05	−2.07	−0.31	2.93
Y	−3.10	−2.15	−0.40	3.80
R	−2.00	−2.56	1.47	3.57
G	−1.74	−3.27	−0.25	3.71
B	−3.60	2.33	−3.07	5.27
K	−1.58	−0.51	0.60	1.76
PW	−2.91	0.05	−2.47	3.82

0.00−2.00 [56/6%]

2.00−6.00 [839/90%]

6.00−7.00 [27/3%]

7.00−8.50 [6/1%]

8.50− [0/0%]

Printing Conditions

1. Press	KOMORI LS-440
2. RIP	TRUEFLOW VER3.03 TF326
3. CTP	PT-R8600
4. Plate	FUJI HP-F
5. Resolution	2400dpi
6. Stock	OK Top Coat + A1, 62.5kg
7. Ink	DIC NCP-AS2
8. Fountain	pH = 5.0; Water temp. 8°C; Non-alcohol
9. Blanket	Vulcan
10. Solid density	Bk=1.85, C=1.60, M=1.50, Y=1.40 Except for Bk (1.80), all values are ink manufacturer-recommended values.
11. Output curve	48% in 50% halftone area
12. Dot gain	16% in 50% halftone area
13. Environment	Temp. 24–25°C; RH 50–54%

Future Challenges

Market Changes

- Increasing demand for color management
  - Adobe support for Japan Color
  - Spread of CTP
- Changes in printing stock and other materials
- Demand for consistent printing quality

⇨ Revise standards taking into account market trends