

Kodak Approval Digital Color Imaging System For GRACoL Coated #1 with 2213 Donors

The IDEAlliance Print Properties Working Group has established a certification process for off-press proofs as input material to publications. In accordance with this process: "The appearance of a hard copy or monitor proof used in this application must have the ability to closely match specific CGATS or other documented characterization data sets within outlined tolerances. See further explanations and recommendations outlined on www.swop.org or www.gracol.org.

The following information is intended to assist producers and consumers in the use of vendor specified proofing materials in an off-press proof application:

I. Manufacturer

Eastman Kodak Company
343 State Street
Rochester, NY 14650 U.S.A.

II. Product

Kodak Approval Digital Color Imaging System

III. Introduction

Kodak Approval Digital Color Imaging System is a thermal laser halftone proofing solution offering true halftone contract quality proofs laminated on the customer's custom stock. The **Kodak Approval** System is based on a unique, highly accurate process offering image integrity with complete control over density, dot gain, overprints, traps, bump plates, and moiré. It also has built in specialty and corporate color capability. A proof made with a **Kodak Approval** Digital Color Imaging System, to this Application Data Sheet specification, is intended to simulate the characteristics of a production press operating within **GRACoL** Guidelines for production printing.

IV. Control Guide

IDEAlliance specifies a control guide such as an ADS Proofing Certification Strip be supplied on every off-press proof. As a minimum, this guide should contain solids for the primary process colors (YMCK), two-color overprints (RGB) and a three-color overprint (YMC), as well as a 25%, 50%, and 75% tint in stated line screen resolution of each of the primary process colors and 3-color gray patches. All control guides should be checked for accuracy of the original values. Use and interpretation of a control guide is the responsibility of the creator.



ADS Proofing Certification Strip

V. System Components

For a proof from the **Kodak Approval System** to be considered a **GRACoL Coated #1 Proof**, the system front-end must be color management enabled and the device link profile indicated below (under **Output Parameters**) must be installed and selected during the printing step. In addition, the following components must be used.

CAT Numbers /Description		
Materials	XP, NX 34 cm	XP4, NX 68 cm
Cyan Donor – DC02	192-5718	105-5003
Magenta Donor – DM02	804-9355	816-0459
Yellow Donor – DY01	164-6405	118-7038
Black Donor – DK03	812-8936	822-3547
Intermediate – I01	816-0319	106-7560
Pre-laminate – P02	832-3131	882-3791
Paper Stock	80# Lustro Gloss or equivalent	
Laminator	800XL	

Approval System Target Values for C1 D2213 (Before Applying DVL)				
Dot In	Cyan	Magenta	Yellow	Black
100	100.0	100.0	100.0	100.0
95	98.0	98.1	97.1	98.1
90	95.9	96.1	94.2	96.2
85	93.5	94.0	91.2	94.0
80	90.9	91.5	88.0	91.6
75	87.7	88.7	84.7	88.8
70	84.1	85.6	81.1	85.6
65	80.0	82.1	77.5	82.1
60	75.5	78.3	73.6	78.3
55	70.8	74.2	69.5	74.1
50	66.0	69.7	65.0	69.5
45	61.1	64.9	60.2	64.6
40	56.1	59.7	54.9	59.2
35	50.8	54.1	49.4	53.4
30	45.2	48.3	43.7	47.5
25	39.3	42.3	37.8	41.4
20	32.6	35.9	31.6	35.0
15	25.1	28.8	24.8	28.0
10	17.2	20.9	17.4	20.2
8	14.0	17.3	14.3	16.7
6	10.6	13.3	10.9	12.8
4	7.1	9.0	7.4	8.7
2	3.1	4.6	3.7	4.4
0	0.0	0.0	0.0	0.0

Output Parameters:

- Line screen ruling: 175 lpi
- Dot Shape: Euclidean (Round-Square-Round)
- Proofing sequence: KCMY
- Screen Angles: Y=0, M=105, C=165, K=45
- Target Solid Densities (Before applying DVL): Cyan=1.42, Magenta=1.44, Yellow=0.94, Black=1.76
Note: Solid densities were measured with an X-Rite 500 Series Spectrophotometer with non-UV over white backing.
- Device Link: APP_D2213_GRAC_C1_06_v1_a_U.dvl is available on the Kodak website: <http://graphics.kodak.com>



VI. Finishing Procedures

None required.

VII. Finished Proof Characteristics

A proof with the color characteristics referenced in Appendix 1 is to be expected when measured from the ADS Proofing Certification Strip or a FOGRA Wedge having been properly made to all the listed system components and finishing procedures.

Note: Three-color grays are comprised of Cyan, Magenta, Yellow: 75, 66, 66; 50, 40, 40; and 25, 19, 19 values.

All measurements to certify the **Kodak Approval** System to the **GRACoL** 2006 C1 characterization data were made using a calibrated **X-Rite** DTP70 Spectrophotometer (D50, 2 degree observer, UV excluded, with white backup). All tolerances reflect normal systems variability and assume the use of a calibrated measurement device.

VIII. Sample Proofs

Kodak has supplied three (3) sets of hard copy proofs for retention and has verified that they conform to this Application Data Sheet by an IDEAlliance certifying contractor.

Appendix 1

Characterization Data CIELab Values

ADS Proofing Certification Strip GRACoL 2006 Coated #1

Patch ID	CIELab Data			Maximum Delta E(ab)
	L*	a*	b*	
Paper	95.00	-0.02	-1.96	3
Yellow Solid	88.94	-5.02	93.17	5
Yellow 75%	90.28	-4.69	69.03	-
Yellow 50%	91.66	-3.87	43.57	-
Yellow 25%	93.15	-2.14	20.33	-
Magenta Solid	47.93	74.11	-3.01	5
Magenta 75%	57.88	56.32	-5.35	-
Magenta 50%	70.24	35.30	-6.06	-
Magenta 25%	82.55	16.79	-4.98	-
Cyan Solid	54.96	-37.12	-50.00	5
Cyan 75%	64.50	-27.32	-39.44	-
Cyan 50%	74.69	-17.15	-27.45	-
Cyan 25%	84.68	-8.25	-15.29	-
Black Solid	14.95	0.19	-0.14	-
Black 75%	39.75	-0.57	-1.02	-
Black 50%	59.77	-0.53	-1.61	-
Black 25%	77.43	-0.40	-1.93	-
Red Solid	47.37	68.25	48.79	6
Green Solid	50.12	-68.43	25.00	6
Blue Solid	24.13	17.20	-46.14	6
3 Color 100%	23.00	0.17	-0.25	6
3 Color 75%	39.40	-0.54	-0.45	-
3 Color 50%	57.54	-0.12	-1.44	3
3 Color 25%	75.41	0.30	-1.36	-

Note: 3-color 25% and 75% CIELab values are calculations from the IT8/7.4 characterization data as these patches are not a subset of that data.

FOGRA Wedge Characterization Data CIELab Values for GRACoL 2006 Coated #1

Patch ID	CIELab Data		
	L*	a*	b*
Top 1-1	54.96	-37.12	-50.00
Top 1-2	66.60	-25.13	-37.01
Top 1-3	78.64	-13.52	-22.72
Top 1-4	47.93	74.11	-3.01
Top 1-5	60.35	51.93	-5.67
Top 1-6	75.10	27.61	-5.85
Top 1-7	88.94	-5.02	93.17
Top 1-8	90.56	-4.57	63.58
Top 1-9	92.21	-3.24	33.89
Top 1-10	53.40	36.61	28.63
Top 1-11	40.54	20.86	14.82
Top 1-12	31.57	36.90	22.52
Top 1-13	32.32	40.62	-2.26
Top 1-14	49.01	0.15	40.24
Top 1-15	33.50	-36.22	11.08
Top 1-16	35.04	-25.01	-20.60
Top 1-17	20.89	6.27	-23.50
Top 1-18	87.93	-0.20	-1.98
Top 1-19	80.88	-0.38	-1.99
Top 1-20	67.04	-0.47	-1.76
Top 1-21	52.32	-0.59	-1.47
Top 1-22	35.39	-0.56	-0.87

Patch ID	CIELab Data		
	L*	a*	b*
Bottom 2-1	24.13	17.20	-46.14
Bottom 2-2	40.84	17.09	-35.77
Bottom 2-3	61.97	10.77	-23.84
Bottom 2-4	47.37	68.25	48.79
Bottom 2-5	59.09	47.55	39.25
Bottom 2-6	73.54	24.66	23.99
Bottom 2-7	50.12	-68.43	25.00
Bottom 2-8	62.69	-41.44	20.96
Bottom 2-9	76.12	-20.37	11.54
Bottom 2-10	70.23	19.71	18.63
Bottom 2-11	70.88	22.91	72.40
Bottom 2-12	48.28	70.95	17.76
Bottom 2-13	37.89	52.56	-22.07
Bottom 2-14	72.70	-25.21	65.09
Bottom 2-15	52.53	-53.19	-19.34
Bottom 2-16	42.57	-16.27	-48.19
Bottom 2-17	95.00	-0.02	-1.96
Bottom 2-18	87.56	-0.34	-3.00
Bottom 2-19	80.65	-1.08	-3.55
Bottom 2-20	66.41	-2.16	-3.96
Bottom 2-21	52.30	-2.93	-3.25
Bottom 2-22	38.23	-4.77	-3.50

ISO12647-7 Digital Control Strip 2007

The IDEAlliance Print Properties Working Group has developed a new digital control strip for off-press proofs. As of November 2007, this control strip replaces the current FOGRA Wedge and proofing bar on the proofing certification test forms. This ADS Attachment provides the CIE Lab data for all fifty-four (54) patches contained in the new strip. These data sheets will replace Appendix 1 in the Application Data Sheets for all previous certified proofing systems to the specific data set for GRACoL C1, SWOP C3, or SWOP C5.



Control Strip Patch Values

Patch ID Top	Patch Tint % Values			
	CMYK_C	CMYK_M	CMYK_Y	CMYK_K
A1	100	0	0	60
A2	100	0	0	0
A3	70	0	0	0
A4	30	0	0	0
A5	0	100	0	60
A6	0	100	0	0
A7	0	70	0	0
A8	0	30	0	0
A9	0	0	100	60
A10	0	0	100	0
A11	0	0	70	0
A12	0	0	30	0
A13	100	0	40	0
A14	40	100	0	0
A15	0	40	100	0
A16	0	40	70	40
A17	0	70	40	40
A18	40	70	0	40
A19	40	0	70	40
A20	70	40	0	40
A21	0	0	0	3
A22	0	0	0	10
A23	0	0	0	25
A24	0	0	0	50
A25	0	0	0	75
A26	0	0	0	90
A27	0	0	0	100

Patch ID Bottom	Patch Tint % Values			
	CMYK_C	CMYK_M	CMYK_Y	CMYK_K
B1	100	100	0	60
B2	100	100	0	0
B3	70	70	0	0
B4	30	30	0	0
B5	0	100	100	60
B6	0	100	100	0
B7	0	70	70	0
B8	0	30	30	0
B9	100	0	100	60
B10	100	0	100	0
B11	70	0	70	0
B12	30	0	30	0
B13	100	40	0	0
B14	0	100	40	0
B15	40	0	100	0
B16	10	40	40	0
B17	20	70	70	0
B18	0	70	70	40
B19	70	0	40	40
B20	0	0	0	0
B21	3.1	2.2	2.2	0
B22	10.2	7.4	7.4	0
B23	25	19	19	0
B24	50	40	40	0
B25	75	66	66	0
B26	100	100	100	0
B27	80	70	70	100

Appendix 1
Characterization Data CIELab Values

ISO12647-7 Digital Control Strip 2007 for GRACoL 2006 Coated #1 Data Set

Patch ID Top	CIELab Data			Maximum
	L*	a*	b*	ΔE (ab)
A1	30.05	-22.65	-28.82	-
A2	54.96	-37.12	-50.00	5
A3	66.60	-25.13	-37.01	-
A4	82.64	-9.99	-17.85	-
A5	26.45	41.59	-1.73	-
A6	47.93	74.11	-3.01	5
A7	60.35	51.93	-5.67	-
A8	80.03	20.38	-5.35	-
A9	48.53	-5.30	49.19	-
A10	88.94	-5.02	93.17	5
A11	90.56	-4.57	63.58	-
A12	92.84	-2.51	24.77	-
A13	52.53	-53.19	-19.34	-
A14	37.89	52.56	-22.07	-
A15	70.88	22.91	72.40	-
A16	50.86	15.13	33.06	-
A17	42.17	33.42	13.25	-
A18	34.60	23.09	-17.15	-
A19	52.45	-18.04	26.12	-
A20	36.56	-1.43	-26.62	-
A21	92.88	-0.08	-1.96	-
A22	87.93	-0.20	-1.98	-
A23	77.43	-0.40	-1.93	-
A24	59.77	-0.53	-1.61	-
A25	39.75	-0.57	-1.02	-
A26	25.57	-0.21	-0.53	-

Patch ID Bottom	CIELab Data			Maximum
	L*	a*	b*	ΔE (ab)
B1	15.18	8.84	-24.61	-
B2	24.13	17.20	-46.14	6
B3	40.84	17.09	-35.77	-
B4	69.57	8.37	-19.26	-
B5	26.22	35.38	24.54	-
B6	47.37	68.25	48.79	6
B7	59.09	47.55	39.25	-
B8	78.62	17.92	18.20	-
B9	28.47	-39.38	12.04	-
B10	50.12	-68.43	25.00	6
B11	62.69	-41.44	20.96	-
B12	80.64	-14.75	8.25	-
B13	42.57	-16.27	-48.19	-
B14	48.28	70.95	17.76	-
B15	72.70	-25.21	65.09	-
B16	70.23	19.71	18.63	-
B17	53.40	36.61	28.63	-
B18	41.61	32.01	26.83	-
B19	45.40	-26.20	-3.82	-
B20	95.00	-0.02	-1.96	3
B21	92.43	0.19	-2.06	-
B22	86.74	0.31	-2.04	-
B23	75.52	0.07	-1.50	-
B24	57.54	-0.12	-1.44	3
B25	39.39	-0.30	-0.55	-
B26	23.00	0.17	-0.25	-

Note: Color measurements comparing measured proof data to this reference data requires the use of a calibrated spectrophotometer.

Appendix 2
Characterization Data CIELab Values

ISO12647-7 Digital Control Strip 2007 for SWOP 2006 Coated #3 Data Set

Patch ID Top	CIELab Data			Maximum
	L*	a*	b*	ΔE (ab)
A1	31.96	-21.01	-26.32	-
A2	56.99	-37.23	-44.95	5
A3	66.07	-27.13	-33.53	-
A4	80.52	-11.80	-15.33	-
A5	25.80	40.75	-2.90	-
A6	47.84	72.08	-3.11	5
A7	58.95	51.61	-4.46	-
A8	78.03	20.64	-3.18	-
A9	47.67	-4.29	45.76	-
A10	87.97	-5.03	88.10	5
A11	89.28	-5.09	62.78	-
A12	91.24	-2.93	25.28	-
A13	54.86	-51.51	-16.56	-
A14	38.04	51.19	-21.63	-
A15	69.74	23.44	67.23	-
A16	49.55	15.84	31.56	-
A17	40.89	33.29	12.00	-
A18	34.01	22.69	-16.52	-
A19	52.24	-17.96	25.88	-
A20	36.91	-2.13	-25.08	-
A21	90.46	-0.06	-0.21	-
A22	85.69	-0.18	-0.70	-
A23	75.49	-0.39	-1.61	-
A24	58.21	-0.51	-2.27	-
A25	39.28	-0.34	-1.80	-
A26	26.88	-0.14	-0.89	-

Patch ID Bottom	CIELab Data			Maximum
	L*	a*	b*	ΔE (ab)
B1	15.57	11.13	-25.12	-
B2	26.85	18.10	-44.32	6
B3	40.85	16.19	-34.08	-
B4	67.49	7.60	-17.17	-
B5	25.19	35.01	22.46	-
B6	46.86	66.21	45.03	6
B7	57.68	47.17	37.42	-
B8	77.94	18.06	18.43	-
B9	29.42	-36.88	12.46	-
B10	52.12	-64.75	24.83	6
B11	63.15	-41.26	21.06	-
B12	79.23	-15.72	8.94	-
B13	44.63	-16.62	-44.13	-
B14	47.87	69.02	16.49	-
B15	72.78	-24.61	60.84	-
B16	68.56	20.02	18.67	-
B17	52.11	36.50	27.30	-
B18	40.29	32.11	25.13	-
B19	45.95	-26.09	-3.01	-
B20	92.50	0.00	0.00	3
B21	90.08	-0.02	-0.08	-
B22	84.59	-0.04	-0.22	-
B23	73.54	-0.15	-0.48	-
B24	56.29	-0.48	-0.41	3
B25	39.80	-0.33	0.14	-
B26	24.79	0.22	-0.52	-

Note: Color measurements comparing measured proof data to this reference data requires the use of a calibrated spectrophotometer.

Appendix 3
Characterization Data CIELab Values

ISO12647-7 Digital Control Strip 2007 for SWOP 2006 Coated #5 Data Set

Patch ID Top	CIELab Data			Maximum
	L*	a*	b*	ΔE (ab)
A1	32.65	-22.26	-23.31	-
A2	56.56	-37.98	-40.93	5
A3	64.70	-26.67	-29.70	-
A4	78.29	-11.19	-11.42	-
A5	26.42	40.29	-3.23	-
A6	47.64	69.97	-3.54	5
A7	58.14	49.08	-2.95	-
A8	75.88	19.59	0.11	-
A9	47.09	-4.83	44.51	-
A10	85.43	-5.82	84.62	5
A11	86.28	-5.18	60.33	-
A12	88.09	-2.76	26.91	-
A13	54.38	-50.05	-13.62	-
A14	37.79	50.15	-21.11	-
A15	68.36	21.69	65.39	-
A16	48.86	15.14	31.31	-
A17	40.69	32.61	12.52	-
A18	33.04	22.15	-14.98	-
A19	51.08	-17.54	25.50	-
A20	36.75	-2.64	-22.16	-
A21	87.97	-0.06	3.85	-
A22	83.35	-0.16	3.31	-
A23	73.53	-0.34	2.37	-
A24	56.84	-0.35	1.34	-
A25	38.89	0.04	0.98	-
A26	27.07	0.55	1.06	-

Patch ID Bottom	CIELab Data			Maximum
	L*	a*	b*	ΔE (ab)
B1	15.76	11.76	-23.91	-
B2	26.54	18.56	-42.01	6
B3	40.30	15.39	-31.31	-
B4	65.80	7.14	-13.75	-
B5	26.49	34.78	21.45	-
B6	47.43	64.38	42.74	6
B7	57.01	44.95	36.24	-
B8	74.61	17.32	19.99	-
B9	30.65	-35.02	14.67	-
B10	52.26	-61.49	26.76	6
B11	61.52	-39.10	20.93	-
B12	76.68	-14.80	10.89	-
B13	44.23	-17.41	-40.21	-
B14	47.52	67.23	15.19	-
B15	70.77	-24.24	58.75	-
B16	66.70	19.12	19.70	-
B17	51.52	34.92	26.64	-
B18	40.31	31.25	24.75	-
B19	45.31	-25.37	-1.12	-
B20	90.06	-0.01	4.14	3
B21	87.67	0.00	3.75	-
B22	82.19	-0.02	3.09	-
B23	71.47	-0.07	2.12	-
B24	54.70	-0.44	1.24	3
B25	39.10	-0.23	1.19	-
B26	24.73	0.21	-0.12	-

Note: Color measurements comparing measured proof data to this reference data requires the use of a calibrated spectrophotometer.