Collaborative Testing Services, Inc.

Color & Appearance Testing Program

Summary Spectophotometric Report # 149 - 3rd Q 2009

About the Color Program, About CTS

Key to Tables and Graphs

Analysis	Analysis Name
411	**Spectrophotometric (Paint Chips) - Sphere**

Instrument Code List

ABOUT THE PROGRAM

The Collaborative Reference Program for Color & Appearance is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance and advice provided by representatives from various instrument manufacturers. The program allows laboratories to compare periodically the performance of their testing with that of other laboratories.

Paint chip samples, which have been custom-made specifically for Collaborative Testing Services by Munsell Color, X-Rite Inc., Grand Rapids, MI, are distributed four times per year to participating laboratories. Gloss participants test two pairs of paint chip samples at different gloss levels, approximately 5-10 units apart. Color & Color Difference participants measure a set of three opaque color paint chips, selected from throughout the full color spectrum, consisting of a metameric and nonmetameric match with small color differences. These data are analyzed in two separate tables based on the conditions of measurement used. Laboratories that also participate in the Spectrophotometric analyses measure one of the opaque color chips for % reflectance at 16 wavelengths.

Please refer to each test's 'Key' for definitions of terms used in the tables and graphs and guidelines to interpreting the results. Also shown are notes concerning specific laboratory results, as well as significant findings related to instrument types or other testing variations.

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 50 countries, currently participate in the CTS programs.

If there are any questions on the report or testing program, please contact:

Collaborative Testing Services, Inc.
21331 Gentry Drive
Sterling, Virginia 20166 USA

+1-571-434-1925
FAX #: +1-571-434-1937
color@cts-interlab.com

(Toll-free fax within the U.S.: 1-866-fax-2cts)

Office Hours: 8:00 a.m. - 4:30 p.m. ET

Key for Spectrophotometric Web Summary Report

WebCode — Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Color Report published on the CTS web site. The Web Code for each analysis can be found in the Performance Analysis Report mailed to each participant.

Grand Mean — The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.

Between-Lab Standard Deviation — An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).

Graphs — For comparison purposes, a plot of spectrophotometric curves of single paint chip specimens is provided (courtesy of Hemmendinger Color Laboratory, Princeton, New Jersey).

Inst Code — A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section).

Data Flag — DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

DATA FLAG	STATISTICALLY INCLUDED/EXCLUDED	ACTION REQUIRED
*	INCLUDED	**CAUTION** - review testing procedure and monitor future results. Results fall outside 95% ellipse but within a 99% ellipse that is calculated but not drawn.
X	EXCLUDED	**STOP** - immediate review of data and/or testing procedure is required. See specific notes following each table for more information on why the data is excluded.

In addition to the DATA FLAG column, it is also possible to have an X on individual wavelength values as follows:

X - The laboratory's mean for that wavelength is greater than a 95% deviation from the GRAND MEAN.

.

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

Spectrophotometric Reflectance values (as %)at selected wavelengths

WebCode	Data Flag	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	Instr Code
Sample C91																		
177URH		19.78	25.23	30.79	34.29	34.64	35.40	33.03	25.16	16.28	11.72	10.03	9.27	9.18	9.57	9.44	8.75	MV
17P673		19.60	24.75	30.32	34.24	34.70	35.36	33.24	25.45	16.53	11.85	10.07	9.27	9.14	9.50	9.32	8.76	AJ
1GBGRQ		20.63	24.82	30.57	34.54	34.34	35.72	33.12	25.44	16.52	11.81	9.84	9.28	9.14	9.53	9.59	8.68	MX
1J5TKA		19.31	25.04	30.46	34.25	34.61	35.32	33.22	25.40	16.41	11.80	10.07	9.32	9.20	9.59	9.46	8.87	MV
1Q6MJR		19.32	24.46	30.19	33.95	34.35	35.12	33.12	25.27	16.40	11.73	10.00	9.21	9.06	9.45	9.33	8.67	PE
211SX2		19.71	24.96	30.72	34.31	34.84	35.35	33.23	25.30	16.27	11.79	10.01	9.25	9.13	9.40	9.28	8.70	AM
251U8X		19.72	25.09	30.50	34.13	34.59	35.19	33.06	25.46	16.76	11.92	10.07	9.27	9.14	9.46	9.35	8.74	MM
2654QN		19.76	25.44	30.63	34.45	34.91	35.44	33.07	25.57	16.96	12.23X	10.38	9.61X	9.49X	9.82	9.72X	9.16	MJ
27VGZT		19.69	24.92	30.43	33.96	34.40	35.03	32.86	25.12	16.41	11.75	9.93	9.16	9.05	9.40	9.27	8.60	MM
28NJTN		21.53X	25.16	30.48	33.80	34.39	34.95	32.38	25.15	16.42	11.95	10.08	9.33	9.19	9.51	9.34	8.69	XU
299ESN		19.55	25.25	30.71	34.44	34.92	35.51	33.23	25.37	16.59	11.87	10.05	9.27	9.13	9.50	9.31	8.61	AJ
2CXRRT		19.62	25.12	30.77	34.31	34.84	35.28	33.21	25.36	16.47	11.82	10.02	9.27	9.13	9.43	9.28	8.73	AJ
2EL3QZ		19.97	25.04	30.38	34.06	34.47	35.11	32.94	25.13	16.40	11.75	9.97	9.17	9.06	9.37	9.31	8.54	HP
2EQJ25		19.78	25.54	31.05	34.59	35.08	35.63	33.40	25.53	16.62	11.91	10.11	9.32	9.20	9.53	9.34	8.76	AM
2QEDB6		19.68	25.15	30.57	34.13	34.62	35.22	33.01	25.21	16.48	11.79	10.01	9.22	9.09	9.47	9.33	8.71	AJ
32LEUG		19.54	24.94	30.43	34.09	34.48	35.09	32.83	25.07	16.37	11.74	9.96	9.20	9.09	9.46	9.32	8.67	MM
34FEB7	X	16.24X	20.98X	26.44X	30.36X	30.70X	31.41X	29.41X	21.66X	12.59X	7.88X	6.16X	5.37X	5.25X	5.61X	5.55X	4.86X	MV
3AYBUH		19.72	24.90	30.50	33.98	34.41	35.02	32.77	25.02	16.34	11.72	9.93	9.18	9.07	9.41	9.25	8.60	MM
3LK485		19.52	25.21	30.60	34.32	34.76	35.36	33.23	25.50	16.71	11.86	10.04	9.26	9.11	9.44	9.29	8.73	AM
3MQ2C1		19.39	24.94	30.39	34.15	34.47	35.23	33.28	25.52	16.52	11.76	9.98	9.25	9.12	9.57	9.40	8.78	MV
3TEMFF		19.53	24.86	30.33	33.92	34.35	34.94	32.82	25.18	16.49	11.78	9.95	9.17	9.06	9.40	9.28	8.64	MM
3W4H8L		19.70	25.27	30.63	34.24	34.71	35.27	33.05	25.30	16.58	11.85	10.04	9.23	9.10	9.46	9.33	8.73	AJ
4G2DDU		19.60	24.72	30.47	34.10	34.48	35.11	32.94	25.22	16.50	11.79	9.98	9.21	9.11	9.45	9.33	8.69	MK
4GEBLE		19.53	24.88	30.45	33.94	34.43	35.01	32.81	25.04	16.42	11.81	9.99	9.24	9.12	9.47	9.32	8.69	MO
4JQQCZ		20.17	25.21	30.63	34.23	34.68	35.29	33.15	24.99	16.22	11.93	10.23	9.46	9.35	9.74	9.58	8.89	MZ

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

Spectrophotometric Reflectance values (as %)at selected wavelengths

WebCode	Data Flag	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	Instr Code
Sample C91																		
4X4L7G		19.35	24.99	30.51	34.17	34.67	35.26	33.09	25.29	16.48	11.77	10.00	9.20	9.03	9.38	9.08	8.21X	AJ
55JKGL		19.53	25.01	30.61	34.19	34.68	35.11	33.19	25.43	16.57	11.85	10.08	9.32	9.21	9.46	9.38	8.80	AO
5ED2DN	X	19.29	23.58X	25.33X	26.68X	27.00X	27.05X	25.89X	22.14X	17.34X	15.16X	14.56X	15.18X	18.62X	21.02X	18.92X	17.72X	XO
75RJME		19.86	25.23	30.83	34.30	34.81	35.24	33.28	25.40	16.49	11.82	10.07	9.32	9.18	9.45	9.35	8.82	AO
83KB4M		19.83	25.20	30.53	34.03	34.49	35.06	32.82	25.06	16.39	11.73	9.95	9.18	9.06	9.40	9.27	8.66	AJ
8NTHQ1	X	20.51	26.04X	31.89X	35.59X	36.16X	36.68X	34.50X	26.28X	16.98X	12.11	10.24	9.46	9.27	9.59	9.51	8.91	AN
8Y5Y76		19.63	25.41	30.91	34.40	34.87	35.46	33.14	25.29	16.50	11.83	10.06	9.27	9.15	9.42	9.29	8.71	AJ
91Q7Q6		19.61	24.56	30.15	33.57	34.04	34.69	32.51	24.73	16.34	11.78	10.05	9.24	9.13	9.46	9.37	8.75	MG
93FBGS		19.55	25.18	30.60	34.25	34.75	35.34	33.15	25.30	16.51	11.91	10.12	9.35	9.21	9.50	9.38	8.81	AM
9LPGRU		19.50	25.34	30.53	34.35	34.79	35.34	32.99	25.44	16.86	12.11	10.31	9.51	9.41	9.75	9.63	9.07	MJ
9QKFPT		20.06	24.84	30.43	34.09	34.40	35.11	32.98	25.21	16.47	11.89	10.06	9.19	9.03	9.40	9.21	8.68	HP
9T8UDZ		19.20	24.78	30.31	34.06	34.52	35.11	32.88	25.19	16.45	11.75	9.89	9.10	8.91	9.28	9.11	8.56	XI
9VW6D5		20.01	24.30X	30.78	34.15	34.58	35.27	32.73	24.86	16.25	11.78	10.09	9.34	9.28	9.65	9.49	8.84	XO
AHXTES		19.22	25.15	30.23	34.14	34.62	35.18	32.85	25.41	16.88	12.12	10.30	9.54	9.42	9.76	9.65	9.08	MJ
ANW6FP		18.95	24.36	29.81X	33.37X	33.82X	34.52X	32.20X	24.63X	16.08	11.53	9.86	9.16	9.18	9.57	9.27	8.64	MI
ATH5PK		20.00	25.19	30.78	34.29	34.84	35.31	33.35	25.53	16.58	11.88	10.08	9.34	9.17	9.46	9.33	8.77	AO
AUDPPQ		19.63	25.01	30.55	34.22	34.74	35.21	33.24	25.32	16.59	11.83	10.07	9.29	9.14	9.44	9.34	8.76	AJ
AZFYFR		19.91	25.01	30.39	34.05	34.46	35.13	32.92	25.13	16.36	11.76	10.00	9.21	9.05	9.36	9.29	8.58	HP
B6E4S2		19.90	25.24	30.68	34.16	34.73	35.25	33.01	25.18	16.57	11.82	10.14	9.34	9.24	9.59	9.43	8.79	XR
B6S1X6		19.70	24.79	30.31	33.78	34.22	34.86	32.63	24.92	16.27	11.65	9.85	9.09	8.97	9.32	9.17	8.51	MM
BC58PG		20.38	25.12	30.77	34.16	34.81	35.38	33.13	25.18	16.44	11.77	10.04	9.22	9.14	9.52	9.46	8.82	GG
BJBJEP		20.02	25.19	30.63	34.12	34.64	35.25	32.75	24.94	16.31	11.85	10.13	9.37	9.31	9.66	9.50	8.83	XL
C7PH42		19.53	25.04	30.53	34.13	34.62	35.22	32.97	25.14	16.43	11.75	9.98	9.20	9.08	9.45	9.32	8.69	AJ
C856DM		20.48	24.83	29.93	33.93	34.54	35.19	33.31	25.79	16.87	11.88	9.99	9.13	8.98	9.30	9.21	8.60	HG
CCRRV2		19.96	25.27	30.65	34.17	34.68	35.36	33.01	25.25	16.46	11.94	10.19	9.43	9.35	9.64	9.54	8.87	XO

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

Spectrophotometric Reflectance values (as %)at selected wavelengths

WebCode	Data Flag	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	Instr Code
Sample C91																		
CJBSBE		20.37	25.21	30.86	34.30	34.82	35.28	33.25	25.39	16.46	11.81	10.05	9.26	9.17	9.40	9.29	8.70	AM
CSWA2E		19.68	25.01	30.52	34.04	34.47	35.08	32.88	25.18	16.47	11.83	10.01	9.26	9.12	9.49	9.34	8.68	MM
CWPJ1E		19.70	25.54	30.82	34.26	34.72	35.43	33.03	25.39	16.61	11.89	10.00	9.21	9.03	9.69	9.43	9.16	HF
CZ75SW		20.13	25.02	30.73	34.15	34.53	35.17	33.04	25.22	16.53	11.91	10.06	9.16	9.08	9.32	9.29	8.62	HP
D3HJRM		19.78	24.81	30.88	34.52	34.92	35.63	33.56	25.44	16.37	11.70	9.95	9.16	9.02	9.39	9.21	8.36	CA
D8EQHF		19.39	24.84	30.28	33.89	34.39	34.97	32.77	25.17	16.56	11.84	10.00	9.22	9.10	9.43	9.30	8.68	MM
DHKKQ		19.87	25.04	30.64	34.13	34.59	35.22	32.96	25.17	16.49	11.85	10.01	9.25	9.13	9.49	9.33	8.69	MK
DKUFKS		19.51	25.38	30.86	34.38	34.85	35.46	33.18	25.39	16.50	11.86	10.09	9.30	9.18	9.52	9.37	8.73	AM
DNHSJX		19.63	24.80	30.35	33.91	34.35	34.99	32.86	25.15	16.46	11.79	9.96	9.20	9.08	9.44	9.30	8.68	MK
DPCEBU	X	24.01X	90.92X	119.64X	106.55X	100.23X	94.97X	90.27X	88.01X	89.11X	87.71X	87.02X	86.76X	87.59X	88.20X	87.36X	87.78X	AJ
DXHSPP		19.63	24.93	30.45	34.01	34.44	35.06	32.83	25.07	16.41	11.76	9.93	9.20	9.08	9.41	9.20	8.52	MM
E433J5		19.66	25.15	30.70	34.41	34.76	35.51	33.14	25.43	16.51	11.80	10.04	9.26	9.13	9.55	9.38	8.66	MT
EAKKT6		19.42	24.96	30.41	34.21	34.50	35.31	33.21	25.42	16.37	11.75	10.00	9.27	9.13	9.54	9.40	8.78	MV
EBCZ2B		19.53	25.16	30.72	34.41	34.96	35.41	33.41	25.40	16.44	11.81	10.02	9.22	9.06	9.34	9.22	8.63	AJ
EC4ZYM		19.27	24.59	30.23	34.11	34.40	35.17	33.16	25.59	16.61	11.80	10.05	9.27	9.13	9.56	9.43	8.79	MV
ERU4TJ		20.00	25.09	31.03	34.10	34.71	35.27	33.05	25.03	16.39	11.85	10.10	9.35	9.28	9.79	9.60	8.97	HH
HE5G6M		19.79	25.30	30.95	34.44	34.88	35.52	33.19	25.30	16.50	11.89	10.10	9.33	9.20	9.59	9.48	8.76	AJ
HNYPRD		19.69	25.02	30.50	34.06	34.56	35.19	32.90	25.18	16.38	11.82	10.13	9.36	9.29	9.63	9.50	8.85	XO
L47CB5		19.76	25.15	30.57	34.07	34.65	35.24	33.01	25.14	16.49	11.88	10.16	9.37	9.32	9.64	9.50	8.85	HW
LG95FM		19.84	25.02	30.64	33.96	34.33	35.02	32.73	25.00	16.48	11.94	10.21	9.41	9.33	9.72	9.50	8.93	MG
LLJG22		19.68	25.08	30.76	34.39	34.87	35.32	33.32	25.46	16.52	11.86	10.09	9.30	9.15	9.45	9.29	8.76	AJ
LMPF8H		20.12	25.12	30.64	34.11	34.57	35.16	32.87	25.13	16.47	11.87	10.03	9.27	9.16	9.50	9.35	8.72	MK
LPWLGC		19.45	24.81	30.34	33.93	34.42	34.98	32.69	24.88	16.22	11.66	9.93	9.23	9.07	9.44	9.27	8.64	MI
LUBSDH		19.46	25.40	31.05	34.68	35.16	35.77	33.51	25.64	16.67	11.94	10.11	9.32	9.17	9.51	9.33	8.74	AJ
LUQNW		19.83	25.22	30.63	34.14	34.59	35.16	32.93	25.29	16.68	11.93	10.06	9.28	9.16	9.47	9.38	8.77	MM

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

Spectrophotometric Reflectance values (as %)at selected wavelengths

WebCode	Data Flag	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	Instr Code
Sample C91																		
MAJ68K		19.65	24.95	30.57	34.32	34.79	35.44	33.28	25.52	16.68	11.86	10.06	9.25	9.11	9.40	9.27	8.69	AJ
MBXGH		19.23	24.98	30.19	33.86	34.55	34.95	32.62	25.23	16.87	12.02	10.09	9.28	9.15	9.42	9.30	8.72	MM
MHPMG		19.49	24.66	30.11	33.94	34.35	35.02	33.06	25.30	16.65	11.91	10.06	9.18	8.98	9.24	9.16	8.55	HP
MLPVLG		19.73	25.21	30.75	34.44	34.95	35.38	33.35	25.52	16.57	11.87	10.07	9.31	9.15	9.45	9.34	8.75	AO
NGBHB		18.97	24.86	30.15	33.99	34.48	35.15	33.05	25.41	16.53	11.78	9.92	9.13	8.98	9.29	9.03	7.90X	AM
NMRT2X		19.50	24.36	30.30	33.78	34.22	34.97	32.83	24.87	15.99X	11.41X	9.68X	8.91X	8.76X	9.14	8.99	8.31	CA
P2J6A4		19.57	24.93	30.44	34.02	34.46	35.07	32.92	25.19	16.49	11.81	9.99	9.22	9.10	9.46	9.34	8.66	MM
P7RUKZ		19.59	25.04	30.67	34.34	34.86	35.30	33.29	25.48	16.54	11.88	10.12	9.33	9.17	9.46	9.33	8.77	AJ
PD7ELQ		19.99	24.96	30.64	33.86	34.32	34.92	32.71	24.99	16.26	11.62	9.81	9.04	8.97	9.31	9.36	8.62	XQ
PPL3DH		19.65	24.93	30.43	34.02	34.42	35.05	32.84	25.06	16.33	11.70	9.87	9.14	9.04	9.37	9.11	8.37	MM
PQD1K4		19.64	25.11	30.69	34.37	34.85	35.34	33.39	25.50	16.58	11.91	10.12	9.36	9.20	9.46	9.32	8.67	AJ
PRRPTH	X	21.88X	92.65X	120.42X	105.73X	99.92X	94.59X	89.91X	87.86X	88.99X	87.67X	86.95X	86.75X	87.59X	88.11X	87.51X	88.00X	AG
QNF472		20.66	25.02	30.51	34.35	34.64	35.44	33.38	25.61	16.54	11.83	10.10	9.32	9.19	9.57	9.46	8.85	MV
QXE4BT		19.71	24.68	30.08	33.61	34.04	34.69	32.47	24.98	16.44	11.70	9.91	9.17	9.07	9.53	9.46	8.96	HW
RBVG8K		19.80	24.92	30.30	33.80	34.25	34.83	32.66	25.17	16.62	11.85	10.00	9.18	9.05	9.37	9.28	8.69	MM
RK97SR		20.31	25.04	30.39	34.36	34.65	35.46	33.53	25.94X	16.84	11.94	10.15	9.31	9.17	9.57	9.49	8.87	MV
RV66LH		19.59	25.14	30.63	34.16	34.69	35.19	33.14	25.40	16.57	11.88	10.06	9.32	9.15	9.44	9.28	8.73	AM
S15N83		20.07	25.56	31.08	34.70	35.18	35.79	33.48	25.54	16.68	11.89	10.08	9.27	9.14	9.49	9.36	8.72	AJ
TDFQRK		19.10	25.11	30.18	34.18	34.66	35.15	33.03	25.70	17.06X	12.15	10.28	9.46	9.33	9.65	9.57	9.00	MJ
TM1T6S		19.56	25.07	30.61	34.22	34.68	35.15	33.21	25.40	16.50	11.83	10.08	9.29	9.15	9.43	9.30	8.74	AM
V6NTVN		19.64	25.06	30.59	34.15	34.64	35.21	33.00	25.29	16.46	11.82	10.04	9.26	9.13	9.49	9.34	8.75	AM
VGR1LL		20.50	24.55	30.02	34.22	33.67X	35.40	32.90	25.03	16.33	11.62	9.61X	9.11	8.98	9.35	9.42	8.50	MV
VTHWB		19.82	25.26	30.91	34.38	34.89	35.34	33.56	25.41	16.66	11.88	10.13	9.35	9.23	9.52	9.42	8.82	AO
VV68BR	X	19.39	25.54	31.55X	35.48X	36.21X	36.86X	34.87X	26.79X	17.46X	12.50X	10.63X	9.84X	9.75X	10.04X	9.88X	9.23X	AQ
W7VMS		20.86	25.28	30.74	33.93	34.44	34.90	32.79	25.07	16.41	11.95	10.30	9.65X	9.57X	9.84X	9.72X	9.22X	AO

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

Spectrophotometric Reflectance values (as %)at selected wavelengths

WebCode	Data Flag	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	Instr Code
Sample C91																		
WCUCH		19.23	24.51	30.02	33.85	34.24	34.90	32.96	25.27	16.54	11.77	10.00	9.19	9.02	9.38	9.23	8.58	HX
WFQSL1		19.98	25.07	30.56	34.20	34.53	35.23	33.12	25.44	16.73	12.02	10.18	9.34	9.11	9.69	9.39	8.76	HP
XBN5C4		18.48X	24.93	30.45	34.08	34.63	35.26	33.07	25.26	16.47	11.81	9.98	9.21	9.04	9.43	9.22	8.55	AJ
XDBGB9		19.60	25.25	30.78	34.39	34.80	35.41	33.13	25.26	16.47	11.87	10.10	9.31	9.20	9.55	9.43	8.79	AJ
XGDAEL		19.80	25.29	30.75	34.44	34.90	35.45	33.21	25.36	16.52	11.87	10.07	9.27	9.14	9.33	9.26	8.69	AM
Y7XZLD		19.87	25.20	30.51	34.09	34.66	35.16	32.96	25.06	16.44	11.84	10.06	9.30	9.23	9.57	9.41	8.81	XP
YANES7		19.35	24.55	30.35	33.95	34.30	35.10	33.05	25.20	16.35	11.65	9.95	9.15	9.05	9.35	9.25	8.60	SH
YAYCW		20.00	24.98	30.65	34.14	34.55	35.24	33.02	25.04	16.42	11.81	10.02	9.17	9.03	9.34	9.23	8.55	HP
YBTRTA		19.55	25.06	30.59	34.31	34.79	35.39	33.29	25.57	16.66	11.85	10.07	9.22	9.10	9.41	9.31	8.76	AJ
YFJ17P		20.29	25.52	30.31	34.00	34.55	34.66	32.86	25.16	16.67	11.98	10.50X	9.32	9.47	9.42	9.35	8.84	GD
YG45RU		19.43	24.91	30.35	34.01	34.52	35.13	32.96	25.24	16.50	11.76	9.96	9.18	9.02	9.35	9.22	8.43	AL
YXMQ3		19.86	24.99	30.63	34.04	34.36	35.02	32.65	24.84	16.22	11.69	9.92	9.19	9.09	9.45	9.28	8.63	MM
ZBSHSJ		19.55	25.31	30.81	34.39	34.90	35.54	33.25	25.50	16.65	11.90	10.11	9.31	9.16	9.57	9.44	8.71	AJ
ZV39X6		19.44	25.11	30.63	34.36	34.78	35.38	33.34	25.46	16.66	11.92	10.07	9.25	9.13	9.48	9.28	8.72	AM
ZXNVA8		19.61	24.97	30.66	34.10	34.48	34.11X	32.96	25.18	16.42	11.72	10.00	9.24	9.10	9.44	9.31	8.72	AP
ZYN1D3		21.32X	25.46	30.47	34.31	34.77	35.37	32.95	25.28	16.76	12.13	10.32	9.55	9.45	9.78	9.65	9.07	MJ

Summary Statistics

	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700
Grand Means	19.74	25.03	30.54	34.15	34.59	35.20	33.03	25.27	16.50	11.83	10.04	9.26	9.14	9.48	9.35	8.72
Stnd Dev Btwn Labs	0.42	0.25	0.24	0.22	0.25	0.25	0.25	0.22	0.17	0.12	0.12	0.11	0.12	0.13	0.13	0.18

Comments assigned on Data Flags for Test #411

34FEB7 (X) - Low data at all wavelengths.

5ED2DN (X) - High and low data at various wavelengths.

8NTHQ1 (X) - High data for most wavelengths.

DPCEBU (X) - Apparently measured back of the samples.

PRRPTH (X) - Apparently measured back of the samples.

VV68BR (X) - Low data for most wavelengths.

Instrument Code List - Report# 149

Instrument information as provided by laboratories

Analysis	Analysis Name
411	Spectrophotometric (Paint Chips) - Sphere

Instrument code and description

AG	ACS-DataColor Intl. Spectraflash 450
AJ	ACS-Datacolor Intl. Spectraflash 600
AL	ACS-Datacolor Intl. Dataflash 100
AM	ACS-Datacolor Intl. Spectraflash 600 Plus
AN	DataColor Mercury
AO	ACS-Datacolor Intl. Spectraflash 650X
AP	DataColor Check Plus
AQ	ACS-Datacolor Intl. Spectraflash 600X
CA	Cary 5000
GD	BYK-Gardner spectro-guide sphere
GG	BYK-Gardner TCS II
HF	Hunter ColorFlex Diffuse
HG	Hunter ColorQUEST
HH	Hunter ColorQUEST XE
HP	Hunter UltraScan PRO
HW	Hunter UltraScan XE
HX	Hitachi C-2000S Spectrophotometer
MG	Macbeth 2180 Color Eye
MI	Macbeth Color i 5
MJ	Macbeth Color-Eye 3000 Spectrophotometer
MK	Macbeth Color-Eye 7000 Spectrophotometer
MM	Macbeth Color-Eye 7000a
MO	Macbeth Optiview 7000
MT	Minolta CM-2600d
MV	Minolta CM-3000d Series Spectrophotometer
MX	Minolta CM-508d Spectophotometer
MZ	Minolta CM-2002 Spectrophotometer
PE	Perkin Elmer Spectrophotometer
SH	SIMADZU UV 3101PC
XI	X-Rite Color i7
XL	X-Rite SP60 Spectrophotometer
XO	X-Rite SP64
XP	X-Rite SP88
XQ	X-Rite SP68 Portable Sphere SpectroPhotometer
XR	X-Rite SP78 Portable Sphere Spectrophotometer
XU	X-RiteColor Premier 8200 Spectrophotometer