



Color & Appearance Testing Program

Summary Spectrophotometric Report # 148 - 2nd Q 2009

[About the Color Program](#), [About CTS](#)

[Key to Tables and Graphs](#)

<u>Analysis</u>	<u>Analysis Name</u>
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411	Spectrophotometric (Paint Chips) - Sphere
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[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:

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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:

<u>DATA FLAG</u>	<u>STATISTICALLY INCLUDED/EXCLUDED</u>	<u>ACTION REQUIRED</u>
*	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

WebCode	Data Flag	Spectrophotometric Reflectance values (as %) at selected wavelengths															Instr Code	
		400	420	440	460	480	500	520	540	560	580	600	620	640	660	680		700
Sample B91																		
17S2SZ		20.88	22.86	22.18	21.60	21.07	20.73	19.87	18.54	19.55	22.56	25.74	26.70	28.86	40.23	52.08	59.05	PE
17SZ72		21.18	23.30	22.65	22.00	21.48	21.13	20.23	18.98	20.10	23.09	26.28	27.15	29.69	40.95	52.58	58.45	AJ
1AGYPB		20.99	23.14	22.49	21.91	21.41	21.04	20.16	18.91	20.06	23.17	26.20	27.00	29.58	41.23	52.68	58.48	AJ
23MWG		21.14	23.00	22.36	21.78	21.21	20.82	19.95	18.76	19.84	22.83	26.00	26.86	29.82	41.17	52.39	58.99	MM
2GTZ6S		20.74	23.39	22.68	22.08	21.53	21.09	20.23	18.96	19.89	22.78	26.00	27.06	29.50	40.65	52.58	58.39	AJ
2UZVFG		20.95	23.03	22.35	21.78	21.25	20.85	20.02	18.81	19.87	22.86	26.02	26.93	29.87	41.10	52.23	58.77	MM
3NDE9P		20.90	23.26	22.56	21.97	21.40	21.07	20.17	19.00	19.97	23.00	26.17	27.12	29.76	41.25	52.61	59.03	AJ
3NM2CR		20.75	22.83	22.19	21.63	21.11	20.71	19.87	18.68	19.73	22.69	25.86	26.74	29.58	40.77	52.02	58.59	MM
3NM3G		20.91	22.94	22.28	21.70	21.25	20.79	19.92	18.74	19.81	22.80	25.95	26.85	29.67	40.90	52.17	58.85	MM
4D2M9T		21.08	23.25	22.54	21.98	21.45	20.97	20.14	18.91	19.88	22.89	26.07	27.10	29.60	41.02	52.70	58.88	AM
4E14R3	X	21.60	23.86X	23.14X	22.50X	22.00X	21.53X	20.66X	19.32X	20.34X	23.30	26.52	27.57X	29.73	40.99	52.80	59.55	AJ
52US3A		21.08	23.31	22.59	21.96	21.46	21.09	20.15	18.96	20.01	23.03	26.16	27.10	29.95	41.18	52.78	58.46	AM
5EVNYG		21.22	23.21	22.38	21.88	21.55	21.02	20.33	19.11	20.15	23.13	26.30	27.27	29.77	40.54	52.06	58.95	GG
5QFXKQ		20.97	23.14	22.41	21.93	21.37	20.97	20.11	18.85	19.84	22.95	26.19	26.99	29.47	41.00	52.61	59.44	MT
5T1544		20.66	23.21	22.40	21.87	21.31	20.91	20.06	18.93	19.97	22.88	25.90	26.93	29.72	40.44	51.72	58.29	MJ
5VWMS		20.98	23.20	22.45	21.81	21.30	20.87	20.01	18.79	19.84	22.84	25.99	26.92	29.53	40.77	52.27	59.03	AJ
63QNMQ		21.50	23.66	22.90	22.26	21.74	21.32	20.42	19.17	20.21	23.24	26.44	27.40	30.07	41.51	53.53	60.60X	AJ
63VS8U		21.29	23.30	22.55	21.99	21.53	21.04	20.19	18.98	19.97	22.98	26.14	27.16	29.55	40.79	52.42	58.90	AO
65XZ6C		21.57	23.28	22.49	21.82	21.27	20.90	20.03	18.69	19.74	22.69	25.90	26.81	29.17	40.60	52.31	58.88	AM
693NDU		21.15	23.28	22.54	21.87	21.39	20.99	20.09	18.87	19.90	23.01	26.24	26.96	29.52	40.99	52.62	59.10	MV
6FVRVR		20.63	22.90	22.29	21.65	21.16	20.79	19.96	18.73	19.78	22.81	25.97	26.91	29.40	40.69	51.91	57.86	AJ
6JDX9T		21.17	22.95	22.47	22.03	21.34	21.06	20.17	18.97	19.99	23.04	26.21	27.09	29.46	40.44	51.89	58.88	GG
6Q954T		21.69	23.25	22.46	21.88	21.33	21.00	20.11	18.79	19.76	22.32X	26.15	26.96	29.24	40.91	52.56	59.29	MV
8CHZ92		21.27	23.41	22.63	22.17	21.58	21.13	20.25	19.08	19.97	23.14	26.27	27.22	29.71	41.15	52.93	59.24	AO
8HVNAB		20.74	23.14	22.34	21.87	21.33	20.90	20.05	18.95	19.93	22.86	25.88	26.85	29.69	40.37	51.67	58.34	MJ

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

WebCode	Data Flag	Spectrophotometric Reflectance values (as %) at selected wavelengths																Instr Code
		400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	
Sample B91																		
8MKK7N		21.30	23.28	22.65	21.98	21.54	21.05	20.26	18.91	19.95	23.07	26.34	26.84	28.53	40.78	53.18	59.37	HH
9D2HES		21.60	23.17	22.45	21.87	21.32	20.99	20.10	18.76	19.87	22.93	26.08	26.87	29.27	40.93	52.49	59.14	CA
9VCBT2		21.90	23.14	22.40	21.86	21.32	20.93	20.04	18.90	19.93	22.81	25.87	26.84	29.65	40.27	51.47	58.19	MJ
9X7MXP		20.97	23.14	22.48	21.89	21.35	20.95	20.06	18.83	19.83	22.76	26.02	26.97	29.66	40.87	52.24	58.90	MM
AZ59P5		20.81	23.25	22.56	21.97	21.41	21.05	20.13	18.86	19.89	22.89	26.00	26.99	29.59	41.15	52.53	57.89	AM
B6KGJF		20.55	23.14	22.39	21.90	21.36	20.95	20.11	19.00	20.00	22.90	25.95	26.95	29.76	40.48	51.91	58.65	MJ
B9U8FP		21.96	23.38	22.24	21.46	20.94	20.52X	19.60X	19.04	19.75	22.66	25.59X	26.67	29.42	40.59	52.30	59.14	GD
BQJNDT		20.89	23.12	22.27	21.73	21.22	20.86	19.98	18.76	19.84	23.01	26.13	26.87	29.42	40.98	52.82	59.52	MV
CRSHLJ		21.20	23.27	22.57	21.96	21.43	20.99	20.14	18.93	19.95	22.86	26.09	27.05	29.90	41.05	52.29	58.93	MM
D2V1T6		20.72	22.81	22.21	21.58	21.05	20.66	19.86	18.77	19.77	22.64	25.71	26.71	29.58	40.74	51.94	58.63	XQ
D5TH5Z		21.03	23.01	22.33	21.74	21.31	20.81	20.04	18.82	20.00	22.89	26.00	26.94	29.85	40.65	52.48	59.18	XP
DFKS3A		21.27	22.97	22.27	21.71	21.15	20.80	19.95	18.63	19.57	22.59	25.80	26.89	28.08X	39.72	52.03	59.04	HP
ES3BSR		21.05	23.01	22.28	21.64	21.15	20.78	19.97	18.74	19.83	22.72	26.00	27.07	29.44	40.88	52.45	58.96	MH
EVK6GG		20.90	22.98	22.30	21.73	21.22	20.79	20.00	18.77	19.80	22.76	25.91	26.85	29.80	40.96	52.06	58.53	MM
G58KR5		21.62	23.36	22.58	21.99	21.43	21.06	20.22	18.89	19.76	22.81	26.12	27.06	28.93	40.46	52.35	59.29	MV
GU5HBZ		20.77	22.86	22.23	21.71	21.22	20.85	20.00	18.75	19.71	22.57	25.84	26.91	29.17	40.02	51.52	58.19	HX
H2XJ4S	X	20.64	22.80	22.07	21.42	20.87X	20.47X	19.60X	18.36X	19.39X	22.39X	25.57X	26.53	29.11	40.25	51.28	57.39X	AJ
H5QHN8		21.25	23.43	22.74	22.07	21.54	21.12	20.21	18.96	20.02	22.99	26.17	27.18	29.85	41.32	53.08	58.45	AM
H7UKN1		21.00	23.19	22.55	21.94	21.38	21.00	20.15	18.87	19.87	22.81	26.06	27.09	29.60	41.06	52.83	58.35	AM
HC4TZ3		20.94	23.43	22.51	21.92	21.37	20.93	20.09	18.88	19.87	22.81	26.00	27.06	29.65	41.00	52.50	58.35	AJ
HCGBT8		21.28	22.90	22.15	21.56	21.05	20.70	19.90	18.74	19.86	22.85	25.96	26.44X	27.76X	38.18X	50.55X	57.66	HW
HKZXM		21.19	23.08	22.43	21.83	21.31	20.90	20.06	18.85	19.93	22.96	26.12	26.96	29.94	41.25	52.40	58.91	MK
HYB2L7		20.89	23.10	22.39	21.79	21.28	20.90	20.07	18.74	19.74	22.84	26.09	26.92	29.21	40.95	52.64	59.36	MV
HZ3RJL		21.55	23.22	22.56	22.00	21.53	21.11	20.27	19.08	20.31X	23.35	26.49	27.07	28.52	39.12X	51.71	58.57	HW
J9252T		20.78	23.36	22.74	22.12	21.57	21.16	20.28	19.02	20.02	23.00	26.20	27.22	29.73	41.08	52.99	58.43	AJ

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

WebCode	Data Flag	Spectrophotometric Reflectance values (as %) at selected wavelengths																Instr Code
		400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	
Sample B91																		
K5YE5H		20.36	22.95	22.43	21.86	21.36	20.89	20.05	19.03	19.97	22.85	25.92	27.07	30.26	40.76	51.88	58.71	MM
KLWYAT		20.97	23.21	22.47	21.86	21.35	20.93	20.07	18.84	19.83	22.76	26.01	26.98	29.33	40.66	53.02	58.74	AM
LM1T6S		20.32	23.07	22.32	21.84	21.29	20.91	20.06	18.95	19.92	22.80	25.86	26.92	29.70	40.36	51.65	58.31	MJ
LZWU71		21.19	23.28	22.54	21.94	21.46	21.01	20.18	18.96	19.93	22.98	26.12	27.10	29.59	41.01	52.95	58.77	AM
M4JNBS		20.65	22.94	22.33	21.77	21.23	20.81	19.99	18.86	19.87	22.94	26.01	26.89	29.71	41.04	52.35	58.90	XI
M765UC		20.93	22.93	22.47	21.79	21.22	20.87	20.08	18.91	20.00	23.06	26.20	26.92	30.20	41.49	52.75	59.37	XO
M9L7AB		21.36	23.28	22.58	21.98	21.50	21.06	20.21	18.99	20.23	23.26	26.40	27.18	30.08	41.81	53.02	59.50	MZ
MFSYJ9		22.59X	23.19	22.54	21.87	21.46	21.05	20.19	19.04	19.84	22.74	25.99	27.05	29.39	40.07	51.82	59.02	HG
MRZP2J		21.49	23.23	22.28	22.28	21.42	21.07	20.19	18.86	19.82	22.69	25.92	27.10	28.06X	39.64	51.89	58.93	HP
MUCSA8		21.13	23.10	22.42	21.84	21.26	20.85	20.03	18.90	19.89	23.00	26.00	26.90	29.64	40.83	51.92	57.77	MG
N2PQGL		21.16	23.45	22.65	21.94	21.44	21.01	20.09	18.86	19.91	22.89	26.05	27.04	29.58	40.82	52.38	57.98	AJ
N4BDTL		20.96	22.94	22.52	21.80	21.42	20.98	20.16	18.97	20.17	23.15	26.30	27.11	30.35	41.51	52.89	59.18	XO
NM4E9W		21.34	23.22	22.52	21.91	21.46	21.02	20.17	18.96	20.06	23.10	26.10	27.21	30.28	41.19	52.98	59.74	XR
NNA2KF		20.98	23.02	22.39	21.83	21.32	20.90	20.04	18.88	19.97	23.01	26.16	27.01	30.00	41.32	52.59	59.23	MK
NUGWW		20.88	23.15	22.49	21.83	21.30	20.88	20.04	18.81	19.80	22.78	25.93	26.91	29.45	40.59	52.18	59.01	AJ
NY9TU2	X	20.38	22.63	21.81X	21.05X	20.58X	20.28X	19.40X	18.27X	19.29X	22.20X	25.45X	26.60	29.34	40.26	51.63	58.81	MI
PAWPM		21.38	23.63	22.74	22.02	21.45	20.95	20.06	18.86	19.81	22.74	25.93	26.96	29.43	40.47	52.04	58.85	AJ
PFULS6		21.23	23.21	22.50	21.93	21.39	20.98	20.14	18.85	19.80	22.63	25.82	26.93	28.46	39.97	51.84	58.76	HP
PGQPA2		20.87	22.71	22.10	21.50	20.99	20.63	19.78	18.49X	19.67	22.63	25.70	26.52X	29.06	40.13	51.35	57.62	MG
PHTJMZ	X	22.20X	24.29X	23.57X	22.98X	22.37X	22.01X	21.08X	19.72X	20.63X	23.64X	26.88X	27.95X	29.10	40.81	52.91	59.77	HP
PVLGV		21.19	23.01	22.38	21.79	21.31	20.82	19.99	18.85	20.07	23.03	26.21	26.93	30.03	41.45	52.57	58.75	XL
Q3ARC5		21.02	23.52	22.73	22.10	21.54	21.15	20.32	19.09	20.10	23.06	26.25	27.23	29.87	41.13	52.78	58.07	AJ
Q3NHVX		20.44	23.18	22.64	22.08	21.55	21.10	20.21	19.21	20.12	22.99	26.03	27.26	30.17	40.82	52.24	58.03	AM
Q8D5VQ		21.75	23.25	22.41	21.84	21.28	21.06	20.04	18.74	19.85	22.91	26.10	26.98	29.07	40.69	52.80	59.24	MX
QX5EJ8		21.71	23.86X	23.07X	22.34X	21.78	21.33	20.40	19.11	20.06	23.05	26.22	27.19	29.54	40.98	53.08	58.86	AJ

Interlaboratory Testing Program for Color & Appearance

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Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

WebCode	Data Flag	Spectrophotometric Reflectance values (as %) at selected wavelengths																Instr Code
		400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	
Sample B91																		
R2VAEC		21.10	23.31	22.59	22.01	21.47	21.03	20.17	18.99	19.95	22.97	26.14	27.18	29.58	40.97	52.85	58.90	AJ
R4DYP6		21.10	22.95	22.32	21.72	21.20	20.78	19.94	18.75	19.86	22.91	26.03	26.86	29.83	41.14	52.29	58.76	MM
RALUXR		20.98	22.98	22.37	21.77	21.27	20.85	20.00	18.83	19.83	22.80	25.96	26.96	29.71	40.67	51.89	58.64	MM
RD41AT		21.27	23.04	22.40	21.85	21.46	20.98	20.05	18.91	20.02	23.01	26.09	27.01	28.68	40.92	52.29	58.68	HF
RDJNPV		20.95	23.57	22.79	22.25	21.75	21.39X	20.56X	19.19	20.08	23.18	26.58X	27.60X	29.49	41.15	53.09	60.17X	MV
RFG46A		21.01	22.95	22.28	21.70	21.19	20.80	19.95	18.72	19.76	22.75	25.94	26.85	29.61	40.76	52.07	58.72	MM
RG3CTL		21.01	23.40	22.67	21.97	21.46	21.04	20.15	18.89	19.99	22.98	26.16	27.10	29.89	41.45	53.24	58.10	AJ
SPLTKN		21.08	23.16	22.47	21.88	21.34	20.93	20.08	18.89	19.86	22.89	26.02	26.95	29.69	40.75	52.05	58.74	MM
SRMJEB		21.11	23.18	22.55	21.99	21.42	20.96	20.13	18.87	19.89	22.93	26.09	27.06	29.43	40.71	52.91	58.76	AO
SS4ZYQ		21.14	23.26	22.49	21.89	21.38	20.94	20.10	18.88	19.87	22.84	26.06	27.10	29.43	40.82	52.95	59.15	AM
SY7YF6		21.10	23.40	22.72	22.14	21.58	21.19	20.30	19.05	20.12	23.13	26.33	27.24	29.91	41.29	52.67	58.35	AJ
TAQAL		21.56	22.88	22.26	21.71	21.07	20.93	19.94	18.62	19.78	22.92	26.01	26.69	29.26	40.56	52.27	58.59	MV
TV99UY		20.67	22.80	22.16	21.53	21.11	20.64	19.84	18.64	19.74	22.85	25.98	26.84	29.98	41.48	52.48	58.67	MI
TXKL1N		21.34	23.30	22.62	22.00	21.46	21.03	20.17	18.90	19.94	22.95	26.09	27.08	29.64	41.20	52.96	58.84	AJ
UH9RCP		21.02	23.24	22.57	21.93	21.37	20.98	20.08	18.87	19.90	22.87	26.05	27.05	29.60	40.77	52.42	58.39	AM
UJ3LRL	X	22.58X	23.54	23.01X	22.44X	21.98X	21.49X	20.64X	19.61X	20.42X	23.39X	26.59X	27.57X	30.25	41.07	52.59	59.49	HG
V7XZN1		21.11	23.53	22.77	22.14	21.61	21.22	20.34	19.07	20.15	23.26	26.38	27.30	29.91	41.49	53.13	58.41	AG
VTABEH		21.32	23.04	22.39	21.83	21.27	20.95	20.04	18.75	19.75	22.59	25.84	26.98	29.10	40.42	52.10	59.09	HP
VUL8NT		20.98	23.04	22.39	21.82	21.28	20.89	20.03	18.83	19.84	22.81	26.05	26.99	29.74	40.94	52.39	58.90	MM
WBNPN5		20.97	23.01	22.40	21.81	21.26	20.90	20.04	18.74	19.72	22.54	25.75	26.89	29.28	40.01	51.63	58.66	HP
WGDN1		20.92	23.03	22.40	21.79	21.26	20.86	20.03	18.81	19.90	22.88	26.05	26.94	29.88	41.11	52.50	59.12	MM
WL15NY		20.99	23.01	22.35	21.75	21.22	20.82	19.98	18.75	19.76	22.67	25.92	26.87	29.59	40.70	52.03	58.74	MO
X2ANJA		20.73	23.13	22.32	21.73	21.24	20.84	20.05	18.68	19.76	22.83	26.06	26.85	29.07	40.62	52.24	58.98	MV
XEV8K5		21.27	23.23	22.49	21.81	21.30	20.88	20.03	18.81	19.84	22.84	25.99	26.94	29.60	40.79	52.33	59.05	AJ
XT1BAJ		21.53	23.31	22.70	22.05	21.57	21.12	20.26	19.09	20.00	23.01	26.24	27.29	29.75	41.25	53.06	59.43	AO

Interlaboratory Testing Program for Color & Appearance

Analysis 411

Spectrophotometric - Sphere Geometry Instruments

Reflectance at 16 Selected Wavelengths

WebCode	Data Flag	Spectrophotometric Reflectance values (as %)at selected wavelengths																Instr Code
		400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	
Sample B91																		
Y5J1A3		21.30	23.39	22.55	21.97	21.49	21.03	20.15	18.95	19.87	22.87	26.06	27.07	29.45	40.78	53.30	59.25	AO
YG4S7X		21.35	23.51	22.74	22.09	21.52	21.07	20.23	18.96	19.95	22.89	26.09	27.14	29.53	40.89	52.97	58.93	AJ
YLWU9C		21.50	23.06	22.41	21.87	21.38	20.98	20.13	18.96	20.23	23.30	26.39	26.81	28.43	39.02X	51.37	58.34	HW
YNJHKC		20.92	22.86	22.29	21.72	21.28	20.82	20.01	18.82	19.99	23.00	26.09	26.89	29.80	41.10	52.21	58.95	XO
Z6ZZFH		20.81	23.02	22.28	21.70	21.19	20.80	19.96	18.77	19.74	22.73	25.90	26.86	29.35	40.51	52.06	58.81	AL
Z8H6B6		21.84	23.34	22.66	22.06	21.53	21.09	20.21	19.03	20.02	23.03	26.18	27.08	29.66	41.06	52.99	59.31	AO
ZB1PP5		20.94	23.13	22.42	21.82	21.26	20.91	19.99	18.75	19.77	22.71	25.93	26.97	29.56	41.06	52.56	58.36	AM
ZHNE9E		21.01	22.99	22.30	21.70	21.27	20.82	19.99	18.84	20.07	23.02	26.17	26.91	29.88	41.08	52.57	58.93	XO
ZMC8G		20.80	22.98	22.36	21.81	21.30	20.88	20.05	18.87	19.88	22.85	26.05	27.01	29.87	40.99	52.38	59.25	MM
ZZU71T	X	20.39	94.19X	120.80X	106.17X	99.14X	93.93X	89.75X	87.43X	86.94X	86.03X	85.45X	85.79X	86.79X	87.38X	87.57X	88.06X	MK

Summary Statistics

Grand Means	21.11	23.16	22.46	21.87	21.35	20.95	20.09	18.87	19.91	22.89	26.06	26.99	29.53	40.79	52.40	58.80
Std Dev Btwn Labs	0.35	0.21	0.17	0.17	0.16	0.15	0.14	0.13	0.14	0.18	0.17	0.17	0.46	0.53	0.50	0.48

**Interlaboratory Testing Program for Color & Appearance
Analysis 411**

**Spectrophotometric - Sphere Geometry Instruments
Reflectance at 16 Selected Wavelengths**

Comments assigned on Data Flags for Test #411

4E14R3 (X) - Large replication difference at all wavelengths. Possibly second time measured Sample B92 instead of Sample B91.

H2XJ4S (X) - Low data for most wavelengths.

NY9TU2 (X) - Low data for most wavelengths.

PHTJMZ (X) - High data for most wavelengths. Possibly measured Sample B92 instead of Sample B91.

UJ3LRL (X) - High data for most wavelengths.

ZZU71T (X) - Apparently measured back of the sample.

Instrument Code List - Report# 148

Instrument information as provided by laboratories

<u>Analysis</u>	<u>Analysis Name</u>
411	Spectrophotometric (Paint Chips) - Sphere

Instrument code and description

AG	ACS-DataColor Intl. Spectraflash 450	X I	X-Rite Color i7
A J	ACS-Datacolor Intl. Spectraflash 600	X L	X-Rite SP60 Spectrophotometer
A L	ACS-Datacolor Intl. Dataflash 100	X O	X-Rite SP64
AM	ACS-Datacolor Intl. Spectraflash 600 Plus	X P	X-Rite SP88
AO	ACS-Datacolor Intl. Spectraflash 650X	X Q	X-Rite SP68 Portable Sphere SpectroPhotometer
CA	Cary 5000	X R	X-Rite SP78 Portable Sphere Spectrophotometer
GD	BYK-Gardner spectro-guide sphere		
GG	BYK-Gardner TCS II		
H F	ColorFlex Diffuse		
HG	Hunter ColorQUEST		
HH	Hunter ColorQUEST XE		
HP	Hunter UltraScan PRO		
HW	Hunter UltraScan XE		
H X	Hitachi C-2000S Spectrophotometer		
MG	Macbeth 2180 Color Eye		
MH	Macbeth Color-Eye XTH		
M I	Macbeth Color i 5		
M J	Macbeth Color-Eye 3000 Spectrophotometer		
M K	Macbeth Color-Eye 7000 Spectrophotometer		
M M	Macbeth Color-Eye 7000a		
M O	Macbeth Optiview 7000		
M T	Minolta CM-2600		
M V	Minolta CM-3000d Series Spectrophotometer		
M X	Minolta CM-508d Spectrophotometer		
M Z	Minolta CM-2002 Spectrophotometer		
P E	Perkin Elmer Spectrophotometer		