

Color & Appearance Testing Program

Summary Report #217 - 3rd Qtr 2026

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

[Key to Tables and Graphs \(Color Tests\)](#)

[Key to Tables and Graphs \(Spectro Test\)](#)

[Key to Tables and Graphs \(Gloss Tests\)](#)

<u>Analysis</u>	<u>Analysis Name</u>
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408	Color & Color Difference-45-0, D65/10° Observer
409	Color & Color Difference Sphere, D65/10°Observer
411	Spectrophotometric - Sphere
440	Gloss 60 Degree

About The Color & Appearance 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 two opaque color paint chips, selected from throughout the full color spectrum, consisting of a 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, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of industries including color, rubber, plastics, fasteners and metals, containerboard, paper, agriculture, hemp, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 100 countries, currently participate in the CTS programs.

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Key for Color Program 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 emailed to each participant.
Lab Mean	The average of the 2 test results obtained by the participant for CIE L*,a*,b* color space values.
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).
Comparative Performance Value	An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa). The critical value for each CPV will vary depending on the number of labs participating in a test.
Graphs	For each laboratory, the LAB MEAN for the first sample is plotted against the LAB MEAN for the second sample with each point representing a laboratory. The horizontal and vertical axes are the GRAND MEANS for each sample. For each test there are three plots: L*2 vs L*1, a*2 vs a*1 and b*2 vs b*1. The a* and b* plots are created using absolute values.
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. Results fall outside the 99% ellipse and one or more CPV are greater than critical value. See specific notes following each table for more information on why the data is excluded. It is also possible to have an "X" for individual color coordinate (L*, a* or b*) without overall "X" flag. It means that results fall outside the 99% ellipse for particular coordinate but have no CPV flags. Those results will not require any action.
M	EXCLUDED	PROCEED - lab was unable to report data for at least one sample. However, a lab receiving two of more M flags for a test may need to stop and review its testing procedures.

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 emailed 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).
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>
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 a flag on individual wavelength values as follows:

*	The laboratory's mean for that wavelength deviates from the GRAND MEAN by more than two BETWEEN-LAB STANDARD DEVIATIONS.
X	The laboratory's mean for that wavelength deviates from the GRAND MEAN by more than the critical limit determined by a 99.5% confidence interval.

Key for Gloss 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 emailed to each participant.

Lab Mean The average of the test results obtained by the 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.

Difference from Grand Mean The difference of the LAB MEAN 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).

Comparative Performance Value An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa). The critical value for each CPV will vary depending on the number of labs participating in a test.

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

Graphs For each laboratory, the LAB MEAN for the first sample (x-axis) is plotted against the LAB MEAN for the second sample (y-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the GRAND MEANS for each sample. When 20 or more laboratories are in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained above.

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. Results fall outside the 99% ellipse. See specific notes following each table for more information on why the data is excluded.
M	EXCLUDED	PROCEED - lab was unable to report data for at least one sample. However, a lab receiving two of more M flags for a test may need to stop and review its testing procedures.



Report #217
3rd Qtr 2026

CTS Interlaboratory Testing Program for Color & Appearance
Analysis 408

Color and Color Difference - Paint Chips - 45-0 Geometry Instruments
CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
4X7RUZ		C261	47.48	-13.28	-9.53	0.65	-0.39	-0.63	0.99	WA
		C262	48.13	-13.67	-10.16					
67G978		C261	46.77	-12.77	-9.44	0.52	-0.40	-0.65	0.92	XE
		C262	47.28	-13.17	-10.08					
694R86		C261	47.79	-13.24	-9.82	0.60	-0.41	-0.65	0.97	XL
		C262	48.39	-13.65	-10.47					
6J6FY2		C261	47.67	-13.35	-9.42	0.65	-0.38	-0.63	0.98	XU
		C262	48.32	-13.72	-10.05					
79NVF6		C261	47.04	-13.28	-9.53	0.65	-0.42	-0.69	1.04	GG
		C262	47.69	-13.70	-10.21					
7U3FC7		C261	47.31	-13.27	-9.50	0.61	-0.39	-0.66	0.98	HY
		C262	47.93	-13.67	-10.16					
8KBKPV		C261	47.96	-13.23	-10.03	0.45 X	-0.39	-0.69	0.91	XI
		C262	48.41	-13.62	-10.72					
9FEFAW		C261	47.42	-13.26	-9.63	0.63	-0.40	-0.62	0.97	HK
		C262	48.05	-13.67	-10.25					
9QVYR8		C261	47.62	-13.37	-9.31	0.65	-0.43	-0.76 X	1.09	XU
		C262	48.27	-13.79	-10.07					
BWYKY2		C261	47.62	-13.14	-9.41	0.61	-0.39	-0.67	0.99	XU
		C262	48.23	-13.54	-10.08					
C6L3NT		C261	48.08	-13.12	-9.74	0.66	-0.40	-0.63	0.99	XJ
		C262	48.74	-13.51	-10.36					
CMHN8Y		C261	47.09	-12.98	-9.95	0.58	-0.38	-0.68	0.96	HW
		C262	47.66	-13.36	-10.62					
CQ2NKH		C261	48.40	-13.25	-8.99	0.60	-0.45	-0.68	1.00	XE
		C262	49.00	-13.70	-9.67					
CUZYE9		C261	47.89	-12.99	-9.65	0.77	-0.39	-0.67	1.09 X	XQ
		C262	48.66	-13.38	-10.32					
CX3ZGQ		C261	47.21	-13.32	-9.52	0.66	-0.39	-0.66	1.01	GG
		C262	47.87	-13.71	-10.17					
D2GUWN		C261	47.23	-13.21	-9.56	0.61	-0.40	-0.68	1.00	XF
		C262	47.84	-13.61	-10.24					



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Color and Color Difference - Paint Chips - 45-0 Geometry Instruments
CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
DX3YE7		C261	47.46	-12.88	-9.83	0.61	-0.41	-0.69	1.00	HW
		C262	48.06	-13.30	-10.51					
E43X3Z		C261	47.54	-13.19	-9.56	0.70	-0.36	-0.61	1.00	XO
		C262	48.24	-13.55	-10.17					
EL6H3A		C261	47.74	-13.55	-9.55	0.62	-0.40	-0.67	1.00	XW
		C262	48.36	-13.95	-10.22					
ETGUV2		C261	47.74	-13.13	-9.56	0.58	-0.42	-0.69	1.00	XM
		C262	48.31	-13.55	-10.26					
FZVZ7X		C261	47.39	-13.33	-9.27	0.63	-0.44	-0.61	0.98	XG
		C262	48.02	-13.77	-9.88					
H3WMYT		C261	47.05	-13.27	-9.44	0.63	-0.41	-0.69	1.02	GG
		C262	47.68	-13.68	-10.13					
HGDHC4		C261	47.41	-13.40	-9.54	0.58	-0.38	-0.66	0.95	MT
		C262	47.99	-13.78	-10.19					
HHPH9Y		C261	47.31	-13.01	-9.80	0.54	-0.38	-0.66	0.93	HW
		C262	47.85	-13.38	-10.46					
JH9KGY		C261	47.43	-12.87	-9.90	0.63	-0.40	-0.67	1.00	MG
		C262	48.06	-13.26	-10.57					
JUZ8MU		C261	47.00	-13.24	-9.45	0.63	-0.40	-0.63	0.98	GG
		C262	47.63	-13.64	-10.08					
KYBHFN	X	C261	47.32	-13.93	-9.42	0.72	-0.38	-0.62	1.02	BG
		C262	48.04	-14.31	-10.03					
MGJLRQ		C261	47.77	-13.47	-9.47	0.66	-0.41	-0.65	1.01	XG
		C262	48.44	-13.88	-10.12					
MHRVJM		C261	47.22	-13.18	-9.48	0.65	-0.39	-0.65	1.00	XY
		C262	47.87	-13.57	-10.13					
PGAJXN		C261	47.64	-13.21	-9.38	0.55	-0.39	-0.67	0.95	XU
		C262	48.19	-13.61	-10.05					
QVAPNC		C261	46.74	-13.15	-9.43	0.70	-0.38	-0.60	1.00	HX
		C262	47.43	-13.54	-10.03					
TFRFXT		C261	47.37	-13.25	-9.29	0.53	-0.37	-0.63	0.91	XU
		C262	47.91	-13.62	-9.92					



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WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
TZBKKG		C261	47.88	-13.15	-9.64	0.67	-0.38	-0.64	1.01	HL
		C262	48.55	-13.54	-10.28					
UKVYCC	X	C261	47.24	-14.03	-9.46	0.59	-0.38	-0.61	0.94	BG
		C262	47.83	-14.42	-10.07					
WZHYFF	X	C261	48.28	-13.86	-9.67	0.88 X	-0.47 X	-0.77 X	1.26 X	PR
		C262	49.16	-14.33	-10.44					
XUQ7MD		C261	47.55	-13.25	-9.48	0.60	-0.39	-0.66	0.98	XP
		C262	48.15	-13.65	-10.14					
XV3N3C		C261	47.05	-13.32	-9.38	0.65	-0.38	-0.64	0.98	GA
		C262	47.70	-13.70	-10.02					
ZNCCG8		C261	47.54	-13.30	-9.30	0.61	-0.39	-0.65	0.97	XS
		C262	48.14	-13.69	-9.95					

Summary Statistics

Samples	<u>L*</u>	<u>a*</u>	<u>b*</u>	<u>ΔL*</u>	<u>Δa*</u>	<u>Δb*</u>	<u>ΔE*</u>
Grand Means							
C261	47.46	-13.20	-9.53	0.62	-0.40	-0.66	0.99
C262	48.08	-13.60	-10.19				
Std Dev Btwn Labs							
C261	0.36	0.16	0.21	0.06	0.02	0.03	0.04
C262	0.36	0.17	0.21				

Statistics based on 35 of 38 reporting participants

KYBHFN(X) - Low a* values for both samples.

UKVYCC(X) - Low a* values for both samples.

WZHYFF(X) - High L* values for Sample C262. Low a* values for both samples. Large replication difference for L* Sample C261 & b* Sample C262. Large Delta L & E. Small Delta a & b.



Color and Color Difference - Paint Chips - 45-0 Geometry Instruments

CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

D₁ D₂ D₃ D₄

Key to Instrument Codes Reported by Participants

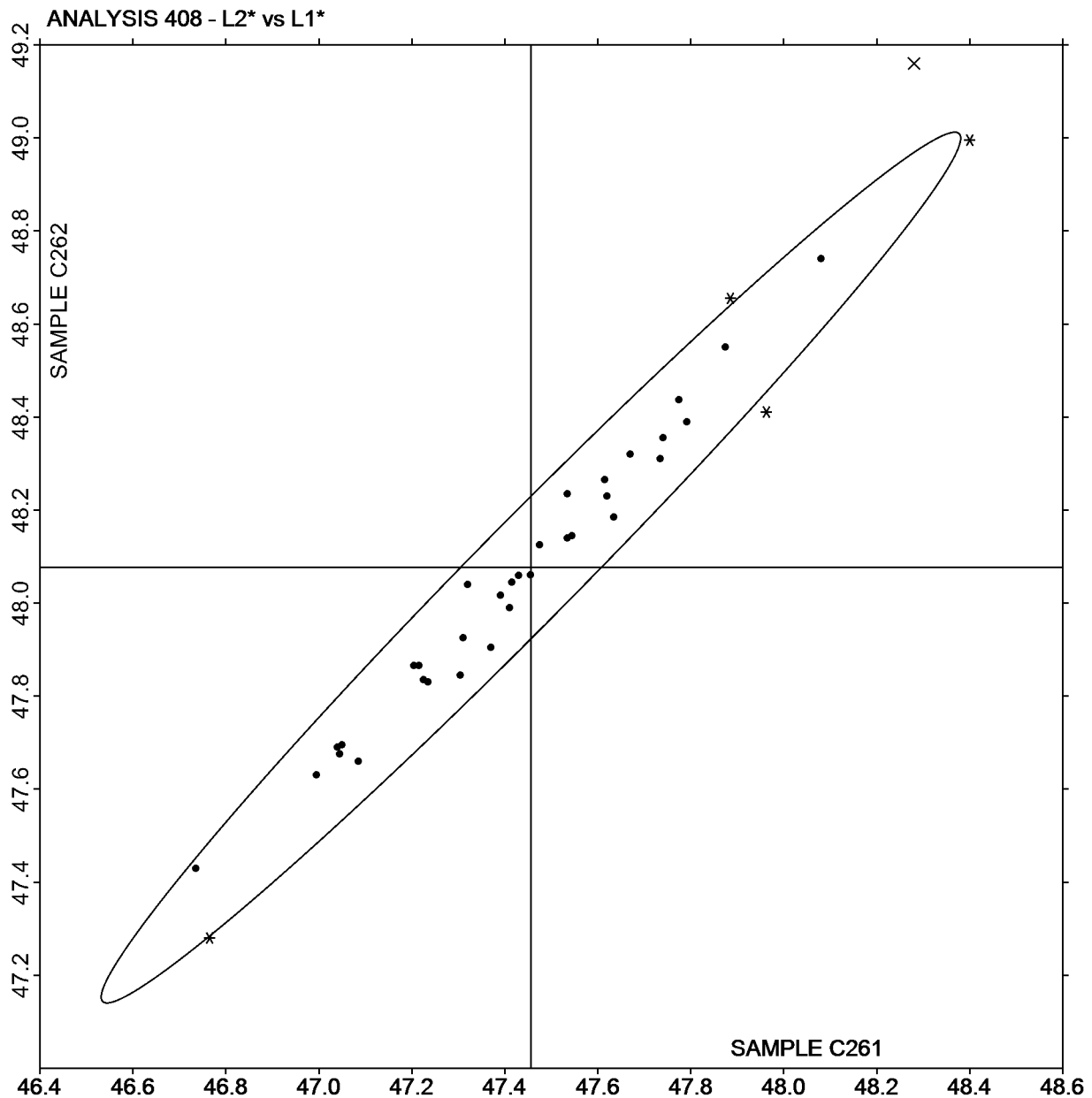
BG	BYK Mac i	GA	BYK-Gardner
GG	BYK-Gardner spectro2-guide (45/0) gloss	HK	Hunter MiniScan XE (45/0)
HL	Hunter Agera	HW	Hunter LabScan XE
HX	Hunter Color FlexEZ 45/0	HY	Hunter Color Flex 45/0
MG	Macbeth 1500/PLUS or 2025+ Color Eye	MT	Minolta CM-25cG Spectrophotometer
PR	PhotoResearch PR730	WA	X-Rite MA-5 QC Multi-Angle Spectrophotometer
XE	X-Rite eXact Portable Spectrophotometer	XF	X-Rite i1 iSis
XG	X-Rite i1 Pro 2	XI	X-Rite i1 Pro 3
XJ	X-Rite Ci7XX0	XL	X-Rite i1 iSis 2
XM	X-Rite MA58 Multi-Angle Spectrophotometer	XO	X-Rite MA68 II Multi-Angle Spectrophotometer
XP	X-Rite MA9 Multi-Angle Spectrophotometer	XQ	X-Rite Ci6x
XS	X-Rite 962 Portable Spectrophotometer	XU	X-Rite 964 Portable Spectrophotometer
XW	X-Rite	XY	X-Rite MA T6 Multi-Angle Spectrophotometer



L2* vs L1*

SAMPLE C261 = 47.46

SAMPLE C262 = 48.08

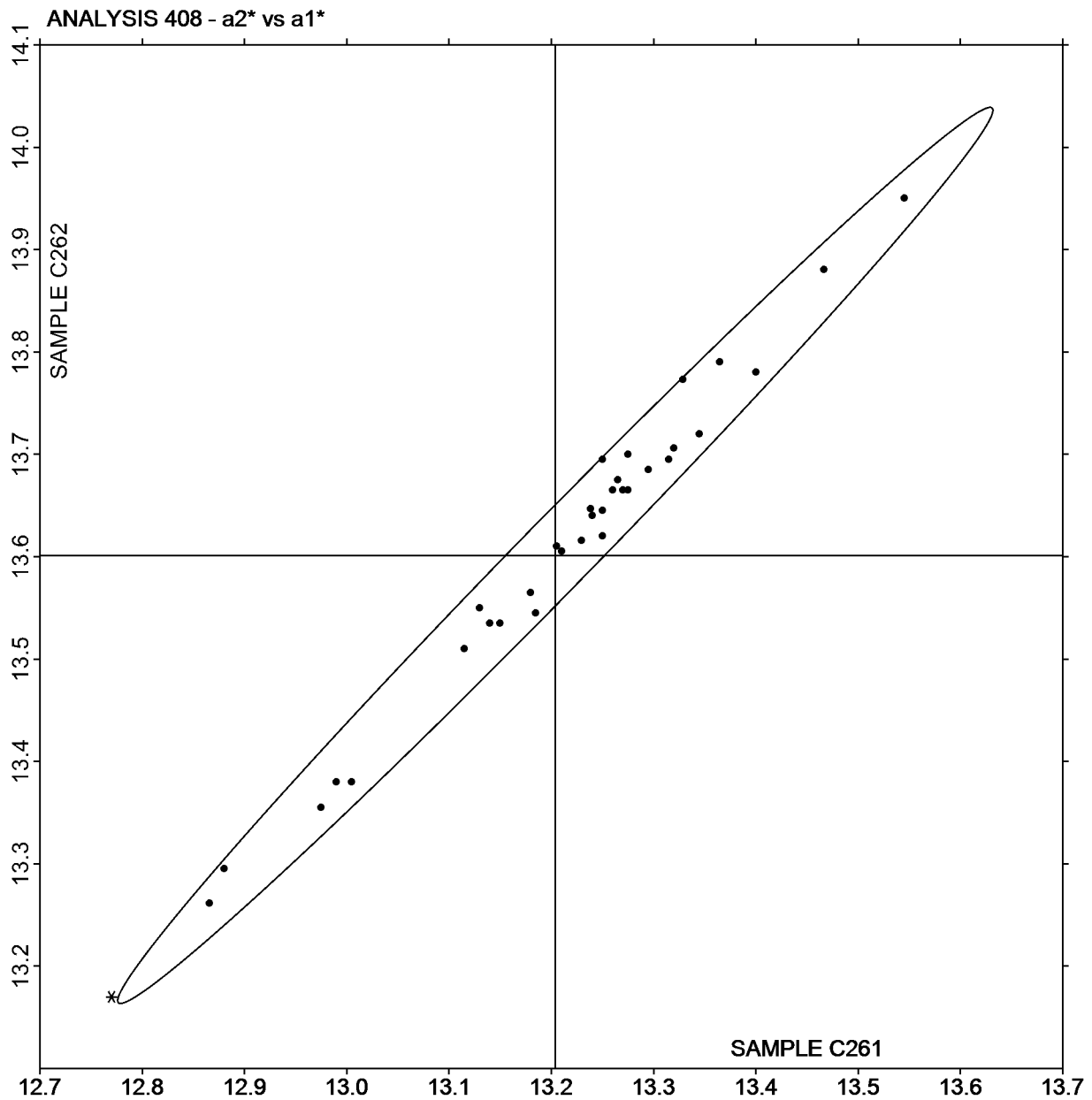




a2* vs a1*

SAMPLE C261 = -13.20

SAMPLE C262 = -13.60



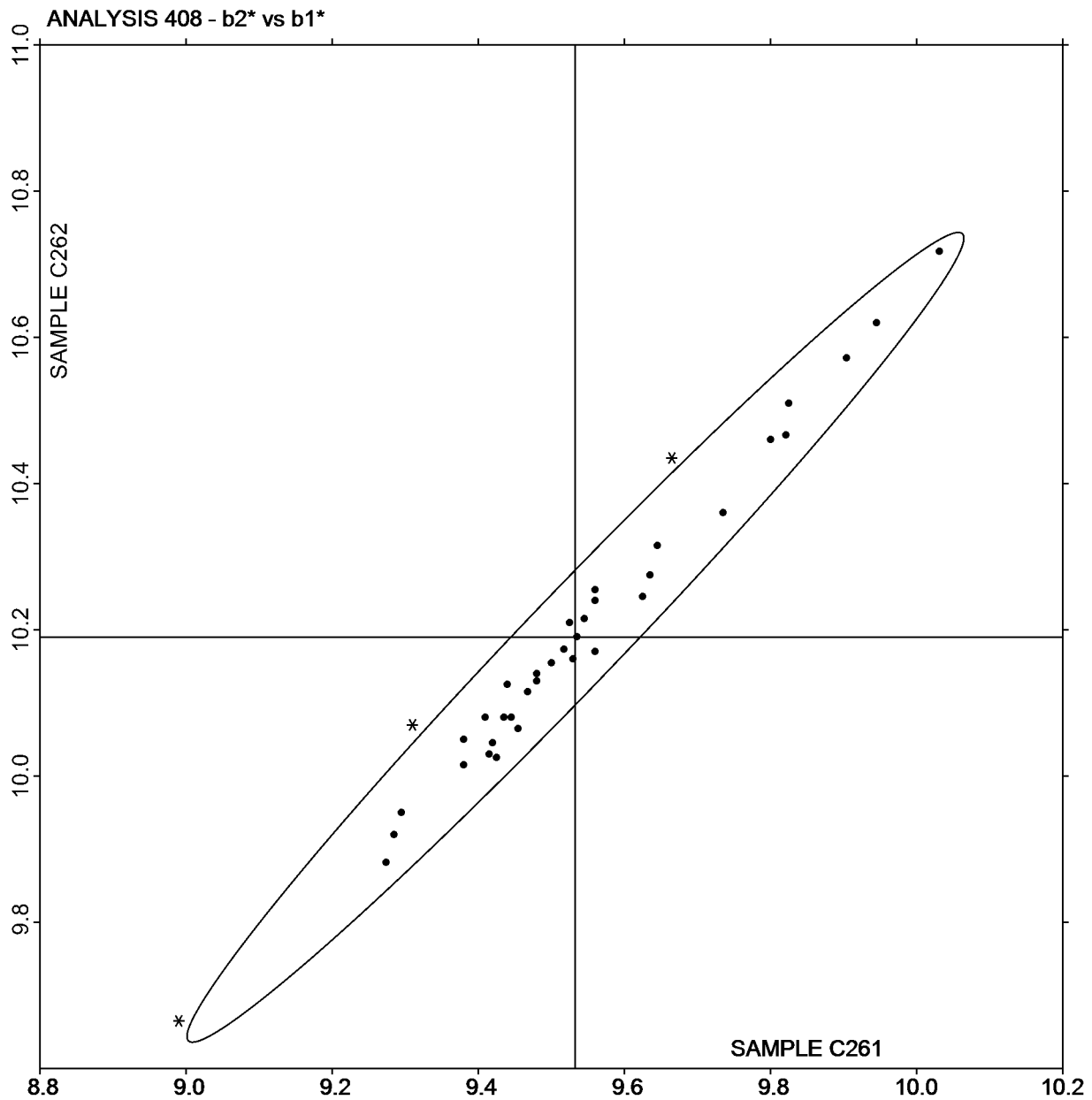
Plot created using absolute values.



b2* vs b1*

SAMPLE C261 = -9.53

SAMPLE C262 = -10.19



Plot created using absolute values.



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WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
246AGG		C261	48.27	-13.25	-9.54	0.66	-0.37	-0.61	0.97	AT
		C262	48.93	-13.62	-10.15					
2RCND7		C261	48.04	-13.03	-9.65	0.60	-0.40	-0.67	0.98	XH
		C262	48.64	-13.42	-10.32					
2YPY4C		C261	48.01	-13.06	-9.74	0.61	-0.39	-0.65	0.97	XD
		C262	48.62	-13.45	-10.39					
33RUP2		C261	47.87	-13.22	-9.58	0.66	-0.38	-0.63	0.99	AU
		C262	48.54	-13.59	-10.21					
3T39GH		C261	48.11	-12.97	-9.46	0.68	-0.35	-0.57	0.96	AJ
		C262	48.79	-13.32	-10.03					
44YWN6		C261	48.05	-13.16	-9.52	0.61	-0.41	-0.68	1.00	MW
		C262	48.66	-13.57	-10.20					
4T2VBZ		C261	48.04	-13.03	-9.74	0.67	-0.35	-0.60	0.97	XD
		C262	48.71	-13.38	-10.35					
4TWED2		C261	48.17	-13.13	-9.52	0.59	-0.43	-0.69	1.00	AU
		C262	48.76	-13.56	-10.21					
4X7RUZ		C261	48.24	-13.07	-9.48	0.63	-0.38	-0.61	0.96	HP
		C262	48.87	-13.45	-10.09					
6AZ8HG	X	C261	48.95	-13.09	-9.61	-0.37 X	-0.40	-0.65	0.85 X	XI
		C262	48.58	-13.49	-10.26					
6J6FY2		C261	48.12	-13.07	-9.74	0.66	-0.34	-0.62	0.97	XB
		C262	48.78	-13.41	-10.36					
6UMYJX		C261	47.91	-13.04	-9.77	0.62	-0.38	-0.63	0.97	XR
		C262	48.53	-13.42	-10.40					
6UQGGW		C261	48.13	-13.16	-9.42	0.64	-0.38	-0.63	0.98	MW
		C262	48.77	-13.54	-10.05					
7AUDBF		C261	47.89	-13.08	-9.74	0.57	-0.41	-0.68	0.97	XC
		C262	48.46	-13.49	-10.41					
7F277B		C261	48.32	-13.16	-9.41	0.62	-0.38	-0.68	1.00	AT
		C262	48.94	-13.54	-10.10					
86F3XC		C261	48.33	-13.25	-9.48	0.62	-0.39	-0.66	0.99	AP
		C262	48.95	-13.64	-10.15					



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CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
8NAVLV		C261	48.23	-13.09	-9.58	0.58	-0.43	-0.67	0.99	AT
		C262	48.82	-13.52	-10.26					
8XWW26	X	C261	48.44	-12.67	-9.32	0.50 X	-0.51 X	-0.68	0.98	XD
		C262	48.94	-13.18	-10.00					
8YRF47		C261	48.02	-12.89	-9.68	0.66	-0.36	-0.63	0.99	XG
		C262	48.68	-13.26	-10.31					
9CBJN8		C261	47.96	-12.98	-9.62	0.62	-0.39	-0.65	0.98	XE
		C262	48.58	-13.38	-10.27					
9PZGP7	X	C261	95.31	1.60	-7.86	0.01 X	-0.04 X	0.13 X	0.14 X	XD
		C262	95.32	1.57	-7.72					
9QVYR8		C261	47.89	-12.96	-9.65	0.69	-0.38	-0.65	1.02	XH
		C262	48.58	-13.33	-10.31					
AG6ZD8		C261	48.27	-13.17	-9.42	0.60	-0.42	-0.65	0.98	AW
		C262	48.87	-13.58	-10.07					
AUQB3X		C261	48.33	-13.19	-9.54	0.66	-0.36	-0.63	0.98	AS
		C262	48.99	-13.55	-10.17					
B7YFQ6		C261	47.80	-13.08	-9.45	0.73	-0.37	-0.62	1.03	MP
		C262	48.53	-13.45	-10.07					
BV2CLB		C261	47.90	-13.10	-9.76	0.78 X	-0.40	-0.61	1.07 X	XC
		C262	48.68	-13.50	-10.36					
BWYKY2		C261	48.13	-13.08	-9.67	0.63	-0.39	-0.68	1.01	XE
		C262	48.76	-13.46	-10.35					
CLQAZA		C261	48.03	-13.09	-9.58	0.64	-0.39	-0.61	0.97	XD
		C262	48.67	-13.48	-10.19					
CQ2MH9		C261	48.16	-13.12	-9.57	0.63	-0.39	-0.68	1.00	MV
		C262	48.79	-13.51	-10.25					
CUZYE9		C261	47.89	-12.99	-9.65	0.77 X	-0.39	-0.67	1.09 X	XF
		C262	48.66	-13.38	-10.32					
DCYEEY		C261	48.08	-13.17	-9.45	0.69	-0.37	-0.61	0.99	MW
		C262	48.77	-13.54	-10.05					
DH687A		C261	47.88	-12.88	-9.64	0.56	-0.44	-0.65	0.97	XH
		C262	48.44	-13.32	-10.29					



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CTS Interlaboratory Testing Program for Color & Appearance
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Color and Color Difference - Paint Chips - Sphere Geometry Instruments
CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
DQGY3Y		C261	47.96	-12.97	-9.61	0.61	-0.40	-0.68	0.99	XG
		C262	48.57	-13.37	-10.29					
ETKEKP		C261	47.98	-12.97	-9.67	0.66	-0.37	-0.58	0.95	XD
		C262	48.63	-13.34	-10.25					
GHBQPU		C261	48.02	-13.10	-9.57	0.66	-0.40	-0.64	1.00	XD
		C262	48.67	-13.50	-10.21					
H88XRM		C261	48.02	-12.98	-9.74	0.58	-0.41	-0.67	0.97	XD
		C262	48.60	-13.39	-10.40					
H8T86X		C261	48.29	-13.12	-9.48	0.62	-0.41	-0.63	0.97	AS
		C262	48.91	-13.53	-10.11					
HGDHC4		C261	48.07	-13.21	-9.69	0.65	-0.39	-0.61	0.98	XB
		C262	48.72	-13.61	-10.30					
JH44HZ		C261	48.13	-13.07	-9.52	0.69	-0.35	-0.60	0.98	AP
		C262	48.81	-13.42	-10.12					
K4GBAJ		C261	48.03	-13.09	-9.58	0.63	-0.39	-0.65	0.98	XG
		C262	48.66	-13.49	-10.23					
K9C66Z		C261	47.98	-13.08	-9.60	0.61	-0.42	-0.66	0.99	XD
		C262	48.59	-13.49	-10.26					
KH3QBX		C261	47.97	-12.94	-9.52	0.58	-0.41	-0.70	0.99	XG
		C262	48.55	-13.35	-10.22					
L8BRWX		C261	48.27	-13.17	-9.57	0.68	-0.37	-0.56	0.96	AP
		C262	48.96	-13.53	-10.13					
LHWV7H		C261	48.17	-13.14	-9.56	0.63	-0.38	-0.66	0.99	AS
		C262	48.80	-13.52	-10.22					
MHRVJM		C261	47.89	-13.06	-9.39	0.61	-0.42	-0.65	0.98	MP
		C262	48.50	-13.48	-10.04					
NDCPKT		C261	48.12	-13.11	-9.50	0.61	-0.42	-0.69	1.01	MW
		C262	48.73	-13.53	-10.19					
NNXR4M		C261	48.04	-13.15	-9.63	0.63	-0.40	-0.67	1.00	AQ
		C262	48.67	-13.55	-10.30					
P4KQ8R		C261	48.20	-13.16	-9.65	0.59	-0.41	-0.67	0.98	AT
		C262	48.79	-13.57	-10.32					



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Color and Color Difference - Paint Chips - Sphere Geometry Instruments
CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
PEMPHM		C261	48.21	-13.16	-9.47	0.63	-0.39	-0.65	0.99	AU
		C262	48.83	-13.55	-10.13					
PGAJXN		C261	48.03	-13.05	-9.64	0.61	-0.42	-0.67	1.00	XD
		C262	48.65	-13.46	-10.31					
R6BCDN		C261	48.12	-13.05	-9.53	0.63	-0.41	-0.64	0.99	AU
		C262	48.74	-13.47	-10.17					
RD6EGK		C261	48.11	-13.13	-9.50	0.57	-0.41	-0.66	0.97	MU
		C262	48.68	-13.54	-10.17					
RF8DRD		C261	48.34	-13.23	-9.41	0.63	-0.40	-0.61	0.97	AS
		C262	48.98	-13.63	-10.03					
RF9DQR		C261	48.26	-13.21	-9.50	0.70	-0.36	-0.57	0.97	AP
		C262	48.95	-13.56	-10.07					
RVNBVT		C261	48.20	-13.11	-9.58	0.69	-0.38	-0.60	0.99	AT
		C262	48.89	-13.49	-10.18					
T4AWFG		C261	48.25	-13.13	-9.46	0.62	-0.41	-0.68	1.01	AT
		C262	48.87	-13.54	-10.14					
T66EHJ		C261	48.07	-13.08	-9.67	0.62	-0.42	-0.63	0.98	XD
		C262	48.69	-13.49	-10.31					
T66H8M		C261	47.87	-13.00	-9.71	0.74	-0.36	-0.62	1.03	XF
		C262	48.60	-13.36	-10.33					
T6AY6L		C261	48.06	-12.97	-9.71	0.60	-0.37	-0.64	0.96	XD
		C262	48.67	-13.34	-10.35					
TG3HKR		C261	48.09	-13.13	-9.53	0.62	-0.40	-0.61	0.95	MK
		C262	48.71	-13.53	-10.13					
TRJ379		C261	48.00	-13.12	-9.54	0.63	-0.39	-0.69	1.01	MQ
		C262	48.63	-13.51	-10.23					
URE69H	X	C261	48.07	-13.12	-9.70	0.12 X	-0.29 X	-0.63	0.70 X	XC
		C262	48.19	-13.40	-10.33					
UVDJUM		C261	47.88	-13.04	-9.82	0.59	-0.39	-0.66	0.97	XF
		C262	48.47	-13.43	-10.48					
WB6ZXB		C261	48.27	-13.01	-9.75	0.61	-0.38	-0.63	0.96	XD
		C262	48.88	-13.39	-10.38					



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Color and Color Difference - Paint Chips - Sphere Geometry Instruments
CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
WL3ZBF		C261	48.03	-13.13	-9.57	0.59	-0.40	-0.66	0.98	MM
		C262	48.62	-13.53	-10.23					
WMXGMC		C261	48.24	-13.02	-9.57	0.64	-0.36	-0.61	0.96	HP
		C262	48.88	-13.38	-10.18					
WUBGXF		C261	48.00	-12.93	-9.68	0.59	-0.38	-0.66	0.97	XD
		C262	48.59	-13.31	-10.34					
WZHYFF		C261	48.00	-13.11	-9.62	0.59	-0.41	-0.66	0.98	CA
		C262	48.59	-13.52	-10.29					
XRMH4G		C261	48.02	-13.00	-9.75	0.59	-0.40	-0.65	0.97	XO
		C262	48.61	-13.40	-10.40					
XUQ7MD		C261	47.95	-13.04	-9.71	0.58	-0.38	-0.66	0.96	XF
		C262	48.53	-13.41	-10.37					
XV3N3C		C261	48.20	-13.19	-9.44	0.65	-0.40	-0.60	0.97	AU
		C262	48.84	-13.58	-10.04					
XXA729		C261	48.03	-13.04	-9.69	0.65	-0.39	-0.63	0.99	XB
		C262	48.68	-13.43	-10.33					
Y24MQ8	X	C261	48.25	-13.44	-9.57	0.64	-0.14 X	-0.64	0.92 X	MT
		C262	48.89	-13.57	-10.22					
YGGVRB		C261	47.99	-13.04	-9.68	0.61	-0.37	-0.61	0.94	XF
		C262	48.60	-13.41	-10.29					
YGX8AF		C261	48.00	-13.05	-9.72	0.62	-0.38	-0.67	0.99	XD
		C262	48.62	-13.44	-10.38					
YRYE9L		C261	48.06	-13.07	-9.66	0.65	-0.38	-0.63	0.98	XB
		C262	48.70	-13.45	-10.29					
YTC4AD		C261	48.34	-13.21	-9.42	0.63	-0.39	-0.62	0.97	AW
		C262	48.97	-13.61	-10.04					
YW9RQK		C261	48.04	-13.03	-9.65	0.63	-0.35	-0.67	0.98	XU
		C262	48.67	-13.38	-10.31					
Z3U8UH		C261	47.95	-12.99	-9.61	0.59	-0.40	-0.70	1.00	XI
		C262	48.55	-13.40	-10.30					
Z4A6MG		C261	48.32	-13.19	-9.49	0.62	-0.40	-0.67	1.00	AW
		C262	48.94	-13.60	-10.16					



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Color and Color Difference - Paint Chips - Sphere Geometry Instruments
CIE L*a*b* Color Space - Illuminant D65 - CIE 1964 (10 Degree) Observer

WebCode	Flag	Samples	CIE L* a* b* Color Values			Color Difference Values				InstrCode
			L*	a*	b*	ΔL^*	Δa^*	Δb^*	ΔE^*	
Z9KEFC		C261	48.38	-13.19	-9.54	0.61	-0.40	-0.66	0.98	CA
		C262	48.99	-13.60	-10.19					
ZNCCG8		C261	48.06	-13.09	-9.48	0.62	-0.41	-0.67	1.00	AJ
		C262	48.67	-13.50	-10.15					
ZP9RRH		C261	48.02	-12.94	-9.72	0.62	-0.44	-0.62	0.98	XE
		C262	48.63	-13.38	-10.34					

Summary Statistics

Samples	<u>L*</u>	<u>a*</u>	<u>b*</u>	<u>Δl*</u>	<u>Δa*</u>	<u>Δb*</u>	<u>ΔE*</u>
Grand Means							
C261	48.10	-13.08	-9.59	0.63	-0.39	-0.64	0.98
C262	48.72	-13.47	-10.23				
Std Dev Btwn Labs							
C261	0.13	0.08	0.11	0.04	0.02	0.03	0.02
C262	0.14	0.09	0.11				

Statistics based on 78 of 83 reporting participants

6AZ8HG(X) - High L* values for Sample C261. Large replication difference for L* values for Sample C261. Small Delta L & E.

8XWW26(X) - High a* values for both samples. Large replication difference for L* & a* for both samples. Small Delta L & a.

9PZGP7(X) - Extreme data for both samples for all values. Lab apparently measured back of the samples.

URE69H(X) - Low data for L* values for Sample C262. Large replication difference for L* & a* for both samples. Small Delta L & E. Large Delta a.

Y24MQ8(X) - Low a* values for Sample C261. Large replication difference for a* values for Sample C261.



Key to Instrument Codes Reported by Participants

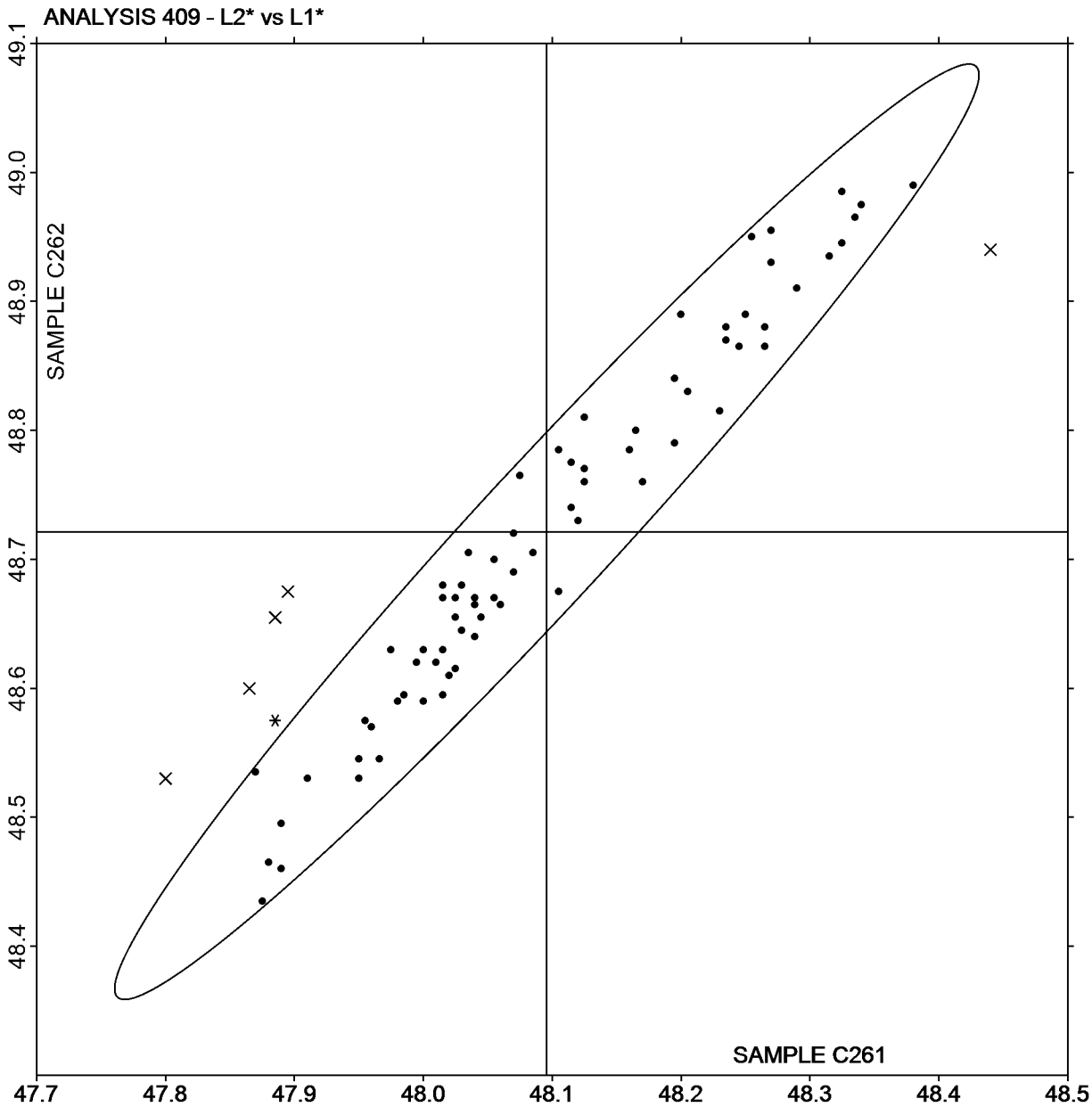
AJ	Datascolor 600	AP	Datascolor 750
AQ	Datascolor 600x	AS	Datascolor 800
AT	Datascolor 850	AU	Datascolor 1000
AW	Datascolor 1050	CA	Cary 5000
HP	Hunter UltraScan PRO	MK	Macbeth Color-Eye 7000
MM	Macbeth Color-Eye 7000a	MP	Minolta CM-36dG
MQ	Minolta CM-700d	MT	Minolta CM-2600d
MU	Minolta	MV	Minolta CM-3000d Spectrophotometer
MW	Minolta CM 3700a Spectrophotometer	XB	X-Rite Ci7000 Series Benchtop Spectrophotometer
XC	X-Rite Ci4200 Benchtop Spectrophotometer	XD	X-Rite Ci7800 Benchtop Spectrophotometer
XE	X-Rite Ci7600 Benchtop Spectrophotometer	XF	X-Rite Ci6x Portable Spectrophotometer
XG	X-Rite Ci7860 Benchtop Spectrophotometer	XH	X-Rite Color i5 Benchtop Spectrophotometer
XI	X-Rite Color i7 Benchtop Spectrophotometer	XO	X-Rite SP64 Portable Sphere Spectrophotometer
XR	X-Rite	XU	X-Rite Color Premier 8200 Spectrophotometer



L2* vs L1*

SAMPLE C261 = 48.10

SAMPLE C262 = 48.72

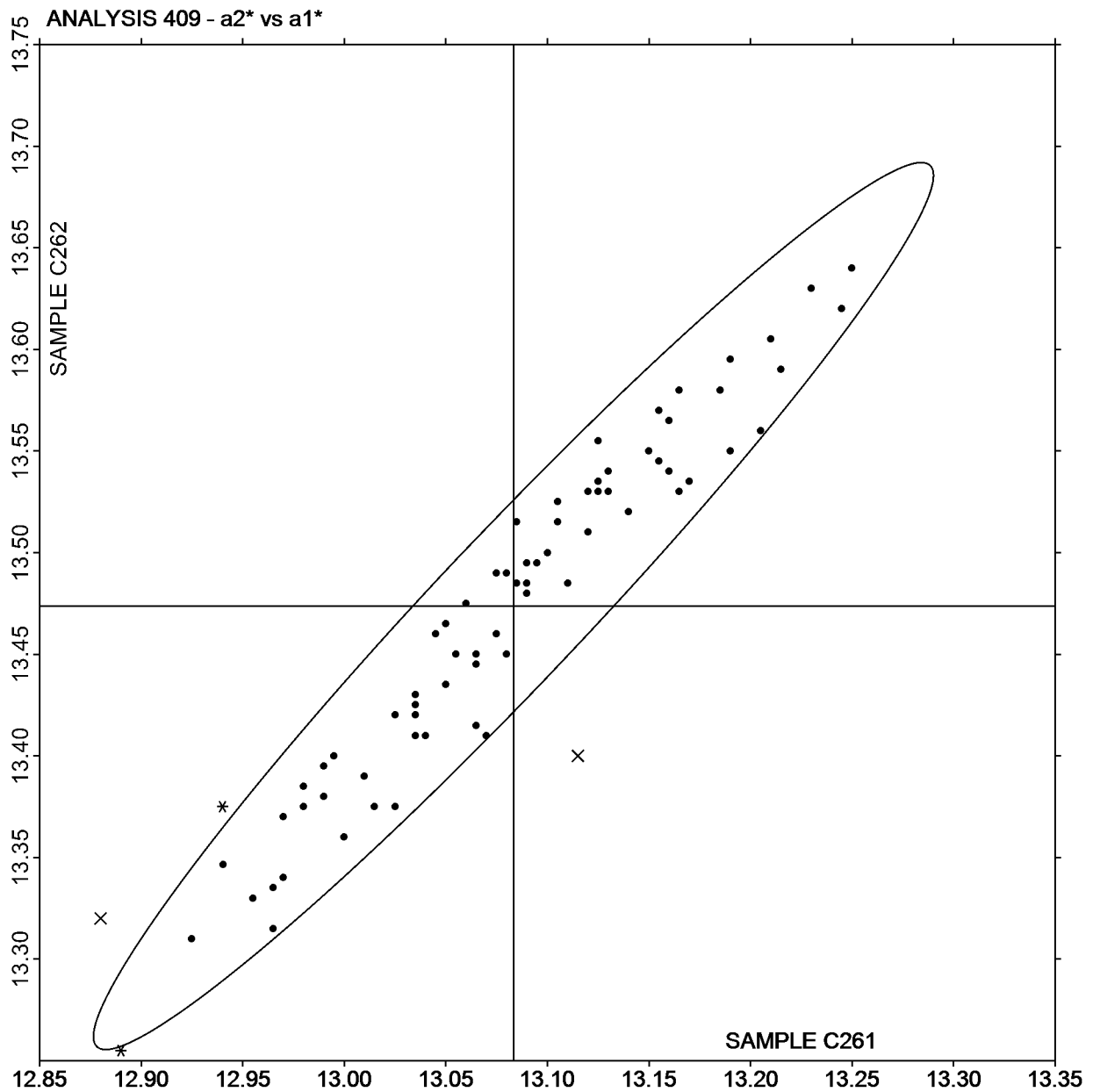




a2* vs a1*

SAMPLE C261 = -13.08

SAMPLE C262 = -13.47



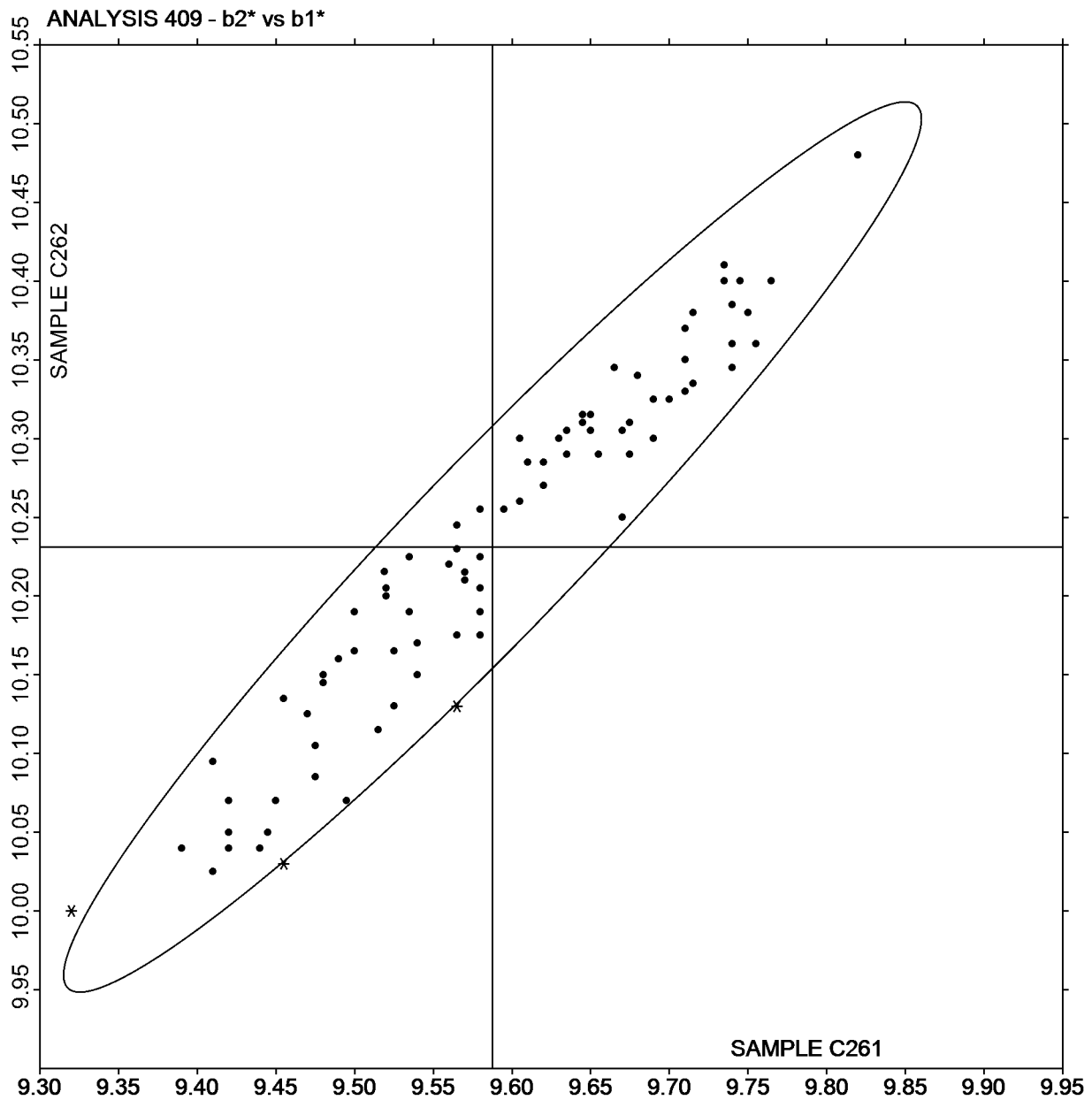
Plot created using absolute values.



b2* vs b1*

SAMPLE C261 = -9.59

SAMPLE C262 = -10.23



Plot created using absolute values.



CTS Interlaboratory Testing Program for Color & Appearance Analysis 411

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3rd Qtr 2026

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 C261																		
246AGG		16.94	20.05	21.75	22.40	22.27	22.19	21.67	19.69	15.94	12.78	11.18	10.31	10.07	10.27	10.14	9.48	AT
2RCND7		17.05	19.94	21.63	22.28	22.08	21.99	21.47	19.43	15.74	12.68	11.05	10.20	10.00	10.25	9.99	9.25	XH
2YPY4C		18.56X	19.97	21.63	22.26	22.05	21.98	21.43	19.39	15.70	12.64	11.05	10.18	9.94	10.18	9.96	9.25	XD
3T39GH		16.55	19.93	21.57	22.21	22.09	21.96	21.45	19.49	15.83	12.76	11.15	10.30	10.08	10.17	9.91	9.37	AJ
4T2VBZ		17.22	20.01	21.68	22.29	22.09	22.02	21.46	19.41	15.70	12.68	11.07	10.21	9.99	10.25	10.03	9.33	XD
4TWED2		16.92	19.96	21.68	22.31	22.14	22.05	21.58	19.51	15.90	12.76	11.18	10.26	10.04	10.24	10.03	9.41	AU
4X7RUZ		17.23	19.90	21.70	22.38	22.22	22.14	21.61	19.56	15.95	12.86	11.22	10.28	9.99	10.26	10.20	9.40	HP
6AZ8HG		16.99	19.80	21.48	22.17	22.01	21.91	21.38	19.34	15.65	12.59	11.01	10.13	9.91	10.18	9.98	9.31	XI
6J6FY2	X	17.63	20.53X	22.24X	22.86X	22.63X	22.53X	21.95X	19.81*	13.12X	11.48X	11.20	10.34	10.06	10.34	10.11	9.39	XB
6UMYJX		17.08	19.88	21.57	22.16	21.99	21.96	21.39	19.30	15.56	12.55	10.97	10.13	9.93	10.19	10.04	9.33	XC
6UQGGW		16.65	19.93	21.49	22.29	22.06	22.02	21.55	19.55	15.86	12.71	11.12	10.23	10.01	10.29	10.18	9.47	MW
7AUDBF		16.91	19.83	21.50	22.12	21.94	21.92	21.36	19.27	15.54	12.55	10.96	10.12	9.91	10.17	10.04	9.33	XC
7F277B		17.21	20.03	21.73	22.36	22.26	22.18	21.74	19.66	16.00	12.87	11.25	10.39	10.13	10.40	10.23	9.58	AT
8NAVLV		17.50	20.04	21.77	22.40	22.23	22.17	21.61	19.58	15.89	12.79	11.24	10.32	10.10	10.37	10.28	9.54	AT
8XWW26		17.18	20.15*	21.82	22.46	22.28	22.20	21.67	19.70	16.11*	13.09X	11.47X	10.60X	10.39X	10.60X	10.37*	9.70X	XD
8YRF47	X	17.95*	20.92X	22.64X	23.23X	22.99X	22.87X	22.23X	20.00X	16.11*	12.93*	11.27	10.39	10.18*	10.50X	10.25	9.49	XG
9PZGP7	X	35.94X	94.72X	108.17X	99.42X	95.10X	91.57X	89.08X	87.35X	86.44X	86.04X	86.04X	86.73X	88.06X	88.72X	88.34X	88.17X	XD
9QVYR8		16.96	19.81	21.46	22.13	21.90	21.81	21.29	19.29	15.55	12.61	11.02	10.18	9.97	10.17	9.93	9.24	XH
AG6ZD8		17.15	19.96	21.65	22.36	22.21	22.16	21.64	19.61	15.95	12.83	11.25	10.33	10.10	10.31	10.25	9.49	AW
AUQB3X		17.23	20.09	21.85	22.44	22.35	22.21	21.69	19.70	16.00	12.83	11.24	10.33	10.10	10.29	10.12	9.47	AS
B7YFQ6		16.63	19.57X	21.27X	21.96X	21.76*	21.71*	21.25	19.27	15.53	12.51*	10.95	10.09	9.88	10.18	10.04	9.43	MP
BWYKY2		17.19	19.99	21.73	22.34	22.14	22.06	21.55	19.46	15.82	12.76	11.13	10.22	9.95	10.17	9.96	9.20	XE



CTS Interlaboratory Testing Program for Color & Appearance Analysis 411

Report #217
3rd Qtr 2026

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 C261																		
CLQAZA		16.96	19.85	21.53	22.22	22.04	21.95	21.43	19.40	15.73	12.66	11.07	10.21	9.97	10.20	9.99	9.29	XD
CQ2MH9		17.05	19.98	21.69	22.35	22.18	22.15	21.62	19.55	15.78	12.72	11.15	10.27	10.09	10.35	10.22	9.49	MV
CUZYE9		16.76	19.83	21.48	22.10	21.89	21.86	21.34	19.26	15.57	12.57	10.98	10.14	9.96	10.17	10.06	9.39	XF
DCYEEY		16.60	19.90	21.50	22.20	22.00	22.00	21.50	19.50	15.80	12.70	11.05	10.20	9.95	10.25	10.15	9.45	MW
DH687A		16.98	19.81	21.46	22.09	21.87	21.75*	21.25	19.27	15.61	12.62	11.04	10.17	9.93	10.17	10.02	9.32	XH
DQGY3Y		18.42X	19.86	21.52	22.16	21.96	21.88	21.35	19.34	15.69	12.66	11.03	10.16	9.94	10.15	9.97	9.26	XG
GHBQPU		16.95	19.85	21.55	22.22	22.06	21.98	21.44	19.41	15.72	12.67	11.05	10.19	9.94	10.21	10.01	9.30	XD
H88XRM		18.57X	19.97	21.65	22.27	22.06	21.99	21.44	19.39	15.70	12.65	11.05	10.20	9.97	10.22	10.01	9.26	XD
H8T86X		17.16	20.08	21.63	22.42	22.26	22.15	21.63	19.68	15.98	12.86	11.22	10.37	10.12	10.30	10.29	9.44	AS
HGDHC4		17.01	19.93	21.67	22.29	22.13	22.06	21.52	19.47	15.76	12.65	11.05	10.17	9.89	10.13	9.92	9.17*	XB
JH44HZ		17.16	19.98	21.67	22.25	22.09	22.01	21.50	19.47	15.87	12.73	11.16	10.27	10.05	10.23	10.23	9.43	AP
K4GBAJ		16.97	19.85	21.52	22.22	22.04	21.97	21.44	19.39	15.72	12.67	11.08	10.21	9.96	10.20	10.00	9.30	XI
K9C66Z		16.94	19.84	21.53	22.17	21.97	21.89	21.38	19.37	15.71	12.67	11.03	10.16	9.94	10.14	10.02	9.36	XD
KH3QBX		16.98	19.82	21.48	22.14	21.94	21.85	21.34	19.36	15.70	12.66	11.08	10.19	9.97	10.21	10.05	9.38	XD
L8BRWX		17.17	20.09	21.81	22.43	22.27	22.19	21.69	19.63	15.98	12.81	11.21	10.32	10.07	10.26	10.27	9.48	AP
LHWV7H		16.95	19.94	21.66	22.31	22.17	22.09	21.57	19.54	15.85	12.75	11.16	10.26	10.04	10.26	10.04	9.41	AS
MHRVJM		16.64	19.61X	21.34*	22.01*	21.81*	21.72*	21.31	19.36	15.65	12.59	11.01	10.13	9.92	10.20	10.10	9.48	MP
NDCPKT		17.36	19.87	21.58	22.34	22.08	22.02	21.54	19.54	15.84	12.70	11.11	10.27	10.00	10.28	10.17	9.46	MY
NNXR4M		16.77	19.85	21.60	22.25	22.12	21.99	21.44	19.42	15.76	12.66	11.05	10.20	9.96	10.11	9.96	9.33	AQ
P4KQ8R		17.14	20.06	21.79	22.37	22.26	22.19	21.65	19.56	15.85	12.74	11.17	10.27	10.05	10.28	10.07	9.45	AT
PEMPHM		17.04	19.92	21.68	22.32	22.20	22.09	21.62	19.56	15.91	12.80	11.18	10.31	10.07	10.27	10.11	9.44	AU
PGAJXN		16.96	19.89	21.62	22.25	22.06	21.98	21.45	19.40	15.76	12.66	11.08	10.19	9.91	10.15	9.93	9.17*	XD



CTS Interlaboratory Testing Program for Color & Appearance

Analysis 411

Report #217
3rd Qtr 2026

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 C261																		
R6BCDN		17.36	19.93	21.62	22.24	22.08	22.02	21.49	19.50	15.86	12.72	11.16	10.26	10.03	10.23	10.26	9.44	AU
RD6EGK		16.79	19.94	21.54	22.30	22.10	22.00	21.57	19.51	15.79	12.69	11.12	10.22	10.01	10.29	10.18	9.46	MV
RF8DRD		16.89	20.06	21.73	22.42	22.29	22.17	21.70	19.73	16.09*	12.88	11.25	10.34	10.09	10.27	10.10	9.46	AS
RF9DQR		17.02	19.99	21.73	22.35	22.27	22.16	21.69	19.63	15.96	12.80	11.20	10.29	10.08	10.29	10.05	9.46	AP
RVNBVT		17.18	20.00	21.72	22.36	22.20	22.12	21.58	19.58	15.91	12.76	11.17	10.30	10.06	10.30	10.30*	9.46	AT
T4AWFG		17.19	20.05	21.70	22.32	22.20	22.16	21.66	19.65	15.91	12.82	11.22	10.29	10.09	10.20	9.98	9.48	AT
T66EHJ		17.06	19.96	21.64	22.30	22.11	22.03	21.48	19.44	15.74	12.69	11.09	10.23	10.00	10.23	10.03	9.34	XD
T6AY6L		17.19	20.00	21.68	22.31	22.11	22.03	21.48	19.42	15.71	12.70	11.10	10.23	9.99	10.23	10.02	9.32	XD
TG3HKR		16.79	19.84	21.55	22.25	22.07	21.99	21.47	19.44	15.83	12.74	11.08	10.19	9.96	10.21	10.07	9.38	MK
TRJ379		16.86	19.84	21.48	22.20	21.97	21.92	21.44	19.42	15.73	12.65	11.03	10.16	9.91	10.17	10.00	9.32	MP
URE69H		16.92	19.96	21.66	22.28	22.11	22.06	21.53	19.46	15.71	12.67	11.06	10.21	10.01	10.26	10.13	9.44	XC
WB6ZXB		17.43	20.23X	21.88*	22.52*	22.29	22.21	21.64	19.61	15.90	12.83	11.22	10.33	10.11	10.33	10.14	9.41	XD
WL3ZBF		16.91	19.83	21.53	22.21	22.04	21.96	21.44	19.41	15.73	12.66	11.06	10.18	9.96	10.22	10.01	9.30	MM
WMXGMC		17.36	19.92	21.83	22.34	22.23	22.12	21.61	19.57	15.95	12.86	11.22	10.32	9.96	10.44*	10.21	9.33	HP
WUBGXF		17.11	19.96	21.63	22.24	22.01	21.95	21.41	19.36	15.71	12.67	11.07	10.21	9.97	10.25	10.02	9.27	XD
WZHYFF		16.89	19.67*	21.52	22.24	21.97	21.92	21.44	19.44	15.74	12.61	11.04	10.17	9.91	10.19	10.05	9.35	CA
XRMH4G		16.86	19.97	21.70	22.27	22.04	22.03	21.46	19.39	15.68	12.62	11.04	10.19	10.00	10.26	10.09	9.38	XO
XUQ7MD		16.93	19.88	21.53	22.14	21.94	21.91	21.36	19.27	15.57	12.55	10.96	10.12	9.92	10.17	10.03	9.31	XF
XXA729		17.18	19.94	21.63	22.25	22.04	21.97	21.43	19.42	15.72	12.68	11.09	10.20	9.94	10.18	9.97	9.23	XD
Y24MQ8		16.87	20.00	21.74	22.50	22.28	22.16	21.69	19.64	15.93	12.78	11.18	10.28	10.02	10.30	10.15	9.46	MT
YGGVRB		17.13	19.90	21.56	22.22	22.02	21.99	21.45	19.36	15.48*	12.61	11.03	10.18	9.98	10.23	10.10	9.41	XF
YRYE9L		17.10	19.95	21.62	22.53*	22.06	22.00	21.46	19.42	15.75	12.70	11.08	10.21	9.95	10.22	10.02	9.30	XB



CTS Interlaboratory Testing Program for Color & Appearance

Analysis 411

Report #217
3rd Qtr 2026

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 C261																
YTC4AD		17.17	20.02	21.69	22.43	22.29	22.23	21.74	19.68	16.03	12.85	11.26	10.34	10.14	10.38	10.15	9.51	AW
YW9RQK		17.13	19.92	21.63	22.26	22.02	21.96	21.45	19.43	15.73	12.69	11.09	10.24	9.98	10.18	9.99	9.28	XU
Z3U8UH		16.94	19.83	21.48	22.17	21.93	21.92	21.35	19.30	15.63	12.66	11.02	10.20	10.05	10.22	9.97	9.28	XI
Z4A6MG		17.11	20.04	21.78	22.41	22.30	22.24	21.72	19.67	16.02	12.84	11.24	10.34	10.12	10.33	10.18	9.48	AW
Z9KEFC		17.23	19.98	21.89*	22.54*	22.35	22.31*	21.82*	19.77*	16.00	12.85	11.25	10.36	10.11	10.40	10.24	9.53	CA
ZP9RRH		17.19	19.95	21.67	22.23	22.07	21.98	21.41	19.37	15.67	12.64	11.11	10.25	10.02	10.28	10.05	9.24	XE

Summary Statistics

	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700
Grand Means	17.09	19.93	21.63	22.28	22.10	22.03	21.51	19.48	15.79	12.71	11.11	10.24	10.01	10.24	10.08	9.38
SD Btwn Labs	0.36	0.11	0.12	0.12	0.13	0.13	0.13	0.13	0.14	0.10	0.10	0.08	0.08	0.08	0.11	0.10

6J6FY2 (X) - High % reflectance data for six wavelengths. Low % reflectance data for two wavelengths. Large replication difference for all wavelengths.

8YRF47 (X) - High % reflectance data for half the wavelengths.

9PZGP7 (X) - High % reflectance data at all wavelengths.



CTS Interlaboratory Testing Program for Color & Appearance Analysis 411

Report #217
3rd Qtr 2026

Spectrophotometric - Sphere Geometry Instruments
Reflectance at 16 Selected Wavelengths

Key to Instrument Codes Reported by Participants

AJ Datacolor 600	AP Datacolor 750	AQ Datacolor 600x
AS Datacolor 800	AT Datacolor 850	AU Datacolor 1000
AW Datacolor 1050	CA Cary 5000	HP Hunter UltraScan PRO
MK Macbeth Color-Eye 7000	MM Macbeth Color-Eye 7000a	MP Minolta CM-36dG
MT Minolta CM-2600d	MV Minolta CM-3000d Spectrophotometer	MW Minolta CM 3700a Spectrophotometer
MY Minolta Benchtop Spectrophotometer CM-3600a	XB X-Rite Ci7000 Series Benchtop Spectrophotometer	XC X-Rite Ci4200 Benchtop Spectrophotometer
XD X-Rite Ci7800 Benchtop Spectrophotometer	XE X-Rite Ci7600 Benchtop Spectrophotometer	XF X-Rite Ci6x Portable Spectrophotometer
XG X-Rite Ci7860 Benchtop Spectrophotometer	XH X-Rite Color i5 Benchtop Spectrophotometer	XI X-Rite Color i7 Benchtop Spectrophotometer
XO X-Rite SP64 Portable Sphere Spectrophotometer	XU X-Rite Color Premier 8200 Spectrophotometer	



Interlaboratory Testing Program for Color & Appearance

Analysis 440

60 Degree Gloss - Paint Chips

ASTM Method D 523

Report #217

3rd Qtr 2026

WebCode	Data Flag	Sample G261			Sample G262			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2RCND7		44.90	0.56	0.57	54.98	0.25	0.26	GL
33RUP2	X	40.48	-3.86	-3.89	50.75	-3.98	-4.26	EN
3D78JB		43.73	-0.61	-0.62	54.75	0.02	0.02	XX
44YWN6		44.65	0.31	0.31	55.70	0.97	1.04	GN
4TWED2		44.83	0.49	0.49	55.63	0.90	0.96	GL
4X7RUZ		43.08	-1.26	-1.27	54.05	-0.68	-0.72	EN
67G978		43.83	-0.51	-0.52	55.63	0.90	0.96	DE
6AZ8HG		42.58	-1.76	-1.77	53.13	-1.60	-1.71	GL
6J6FY2		46.58	2.24	2.25	55.88	1.15	1.23	GL
6UMYJX		44.33	-0.01	-0.01	54.65	-0.08	-0.08	GL
6UQGGW		43.75	-0.59	-0.59	54.13	-0.60	-0.64	GN
78RCD4		42.90	-1.44	-1.45	53.80	-0.93	-0.99	GL
79NVF6		44.13	-0.21	-0.21	54.83	0.10	0.10	GD
86JMNZ	X	41.05	-3.29	-3.31	54.60	-0.13	-0.14	RA
8P6EMW		44.48	0.14	0.14	55.08	0.35	0.37	GL
8XWW26		44.85	0.51	0.52	54.55	-0.18	-0.19	GL
8YRF47		43.93	-0.41	-0.41	54.30	-0.43	-0.46	GL
9CBJN8		44.60	0.26	0.26	54.33	-0.40	-0.43	GL
9L4TD6		44.08	-0.26	-0.26	53.25	-1.48	-1.58	XX
9QVYR8		45.00	0.66	0.67	55.33	0.60	0.64	GL
BWYKY2		42.63	-1.71	-1.72	54.30	-0.43	-0.46	GL
CUZYE9		44.78	0.44	0.44	54.43	-0.30	-0.32	GN
DCYEEY		44.18	-0.16	-0.16	53.38	-1.35	-1.45	GK
DVQKMQ		42.33	-2.01	-2.02	52.78	-1.95	-2.09	GD
DVU4AT		43.18	-1.16	-1.17	54.45	-0.28	-0.30	GK
E43X3Z		46.15	1.81	1.82	56.25	1.52	1.63	GL
EL6H3A		44.65	0.31	0.31	54.38	-0.35	-0.38	GN
ETGUV2	*	43.28	-1.06	-1.07	52.53	-2.20	-2.36	GL
ETKEKP	X	55.95	11.61	11.68	57.33	2.60	2.78	GL
FQAYN3		43.15	-1.19	-1.19	54.60	-0.13	-0.14	GL
GHBQPU		44.35	0.01	0.01	54.05	-0.68	-0.72	GL
GRKXX		43.45	-0.89	-0.89	54.03	-0.70	-0.75	GN
H3WMYT		43.25	-1.09	-1.09	54.18	-0.55	-0.59	GK



Interlaboratory Testing Program for Color & Appearance

Report #217

Analysis 440

3rd Qtr 2026

60 Degree Gloss - Paint Chips

ASTM Method D 523

WebCode	Data Flag	Sample G261			Sample G262			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
HGDHC4		44.98	0.64	0.64	54.75	0.02	0.02	ZA
HHPH9Y		43.43	-0.91	-0.92	54.35	-0.38	-0.40	GL
J4NXDT		44.75	0.41	0.42	55.58	0.85	0.91	GK
JUZ8MU		45.98	1.64	1.65	56.03	1.30	1.39	GL
JYXN4U		44.45	0.11	0.11	54.75	0.02	0.02	GK
K4GBAJ		44.46	0.13	0.13	54.83	0.10	0.11	GL
LHWV7H		43.70	-0.64	-0.64	53.55	-1.18	-1.26	GK
MHRVJM		46.35	2.01	2.03	55.88	1.15	1.23	RQ
NAE29R		44.35	0.01	0.01	54.00	-0.73	-0.78	RA
NM392L		44.23	-0.11	-0.11	55.25	0.52	0.56	GL
PGAJXN		44.13	-0.21	-0.21	55.23	0.50	0.53	GL
RD6EGK		45.28	0.94	0.94	55.75	1.02	1.09	GL
RF8DRD		43.15	-1.19	-1.19	53.55	-1.18	-1.26	GK
RF9DQR		45.40	1.06	1.07	55.88	1.15	1.23	NH
T66H8M		43.58	-0.76	-0.77	53.10	-1.63	-1.74	GN
TFRFXT		45.35	1.01	1.02	55.75	1.02	1.09	GL
TRJ379		45.08	0.74	0.74	54.93	0.20	0.21	MW
UKVYCC		44.35	0.01	0.01	54.78	0.05	0.05	GL
VJHWNWJ		44.38	0.04	0.04	54.75	0.02	0.02	GL
WL3ZBF		44.90	0.56	0.57	55.85	1.12	1.20	GL
WUBGXF		43.03	-1.31	-1.32	54.63	-0.10	-0.11	GK
WZHYFF		43.75	-0.59	-0.59	54.23	-0.50	-0.54	GL
XC7KYG		43.85	-0.49	-0.49	54.40	-0.33	-0.35	GN
XRMH4G		44.98	0.64	0.64	55.55	0.82	0.88	RA
XUQ7MD		46.43	2.09	2.10	56.78	2.05	2.19	GL
XV3N3C		44.25	-0.09	-0.09	54.50	-0.23	-0.24	GK
YGGVRB		44.78	0.44	0.44	55.28	0.55	0.59	GN
YGX8AF		43.43	-0.91	-0.92	54.28	-0.45	-0.48	GL
YTC4AD		44.08	-0.26	-0.26	54.50	-0.23	-0.24	GL
YW9RQK	*	47.00	2.66	2.68	56.95	2.22	2.38	RC
YX9TT7		44.83	0.49	0.49	55.30	0.57	0.61	GN
Z3U8UH		44.24	-0.10	-0.10	53.80	-0.93	-0.99	GL



Interlaboratory Testing Program for Color & Appearance

Analysis 440

60 Degree Gloss - Paint Chips

ASTM Method D 523

Report #217

3rd Qtr 2026

WebCode	Data Flag	Sample G261			Sample G262			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
ZNCCG8		44.88	0.54	0.54	55.88	1.15	1.23	GL

Summary Statistics

Grand Means

44.34 Gloss Units

54.73 Gloss Units

Std Dev Btwn Labs

0.99 Gloss Units

0.93 Gloss Units

Statistics based on 63 of 66 reporting participants

Comments on Assigned Data Flags for Test #440

33RUP2(X) - Data for both samples are low. Possible systematic error.

86JMNZ(X) - Low data for Sample G261. Inconsistent within the determinations for Sample G261.

ETKEKP(X) - Extreme data.

Key to Instrument Codes Reported by Participants

DE	DeFelsko PosiTector GLS 60	EN	Elcometer 480
GD	BYK Gardner Spectro2Guide 45/0	GK	BYK-Gardner micro-gloss (60)
GL	BYK-Gardner micro-TRI-gloss	GN	BYK-Gardner new micro-TRI-gloss
MW	Minolta Multi-Gloss 268	NH	3nh NHG268 Multi-angle Precise Gloss Meter
RA	Rhopoint Novo-Gloss Glossmeter	RC	Novo-Gloss Trio 20/60/85 Glossmeter
RQ	Rhopoint IQ Goniophotometer 20/60/85°	XX	Instrument make/model not specified by lab
ZA	Zehntner ZGM Series		



Interlaboratory Testing Program for Color & Appearance

Analysis 440

60 Degree Gloss - Paint Chips

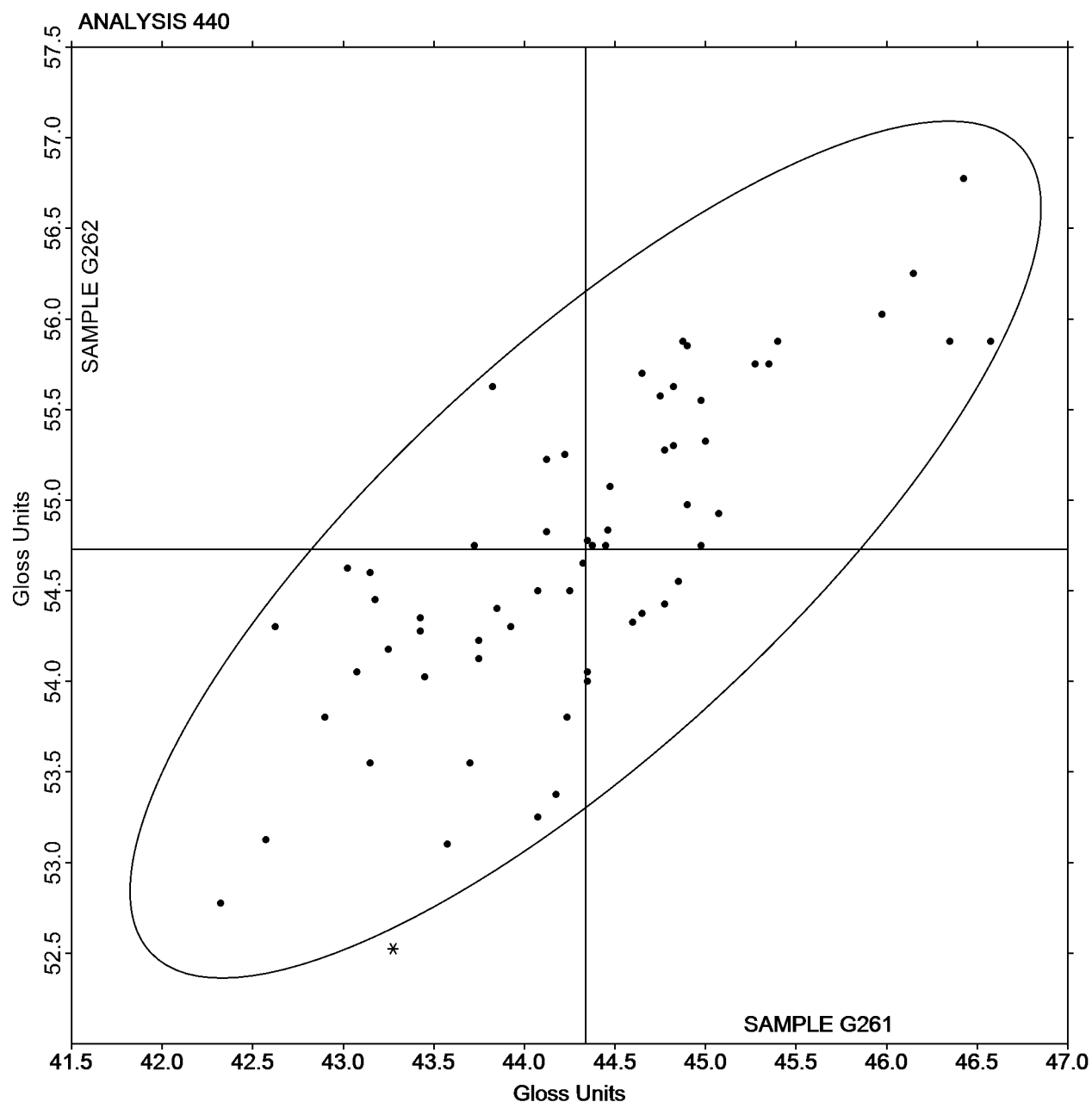
ASTM Method D 523

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SAMPLE G261 = 44.34 Gloss Units

SAMPLE G262 = 54.73 Gloss Units



-End of Report-