



Paper & Paperboard Testing Program

Summary Report #4362 - June 2025

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The CTS Paper & Paperboard Interlaboratory Program

In 1969, the National Bureau of Standards (now designated the National Institute for Standards and Technology) and the Technical Association of the Pulp and Paper Industry (TAPPI) developed an interlaboratory program for paper and paperboard testing. Since 1971, Collaborative Testing Services has operated the Collaborative Reference Program for Paper and Paperboard. With hundreds of organizations from around the world participating in these tests, this program has become one of the largest of its kind. The program allows laboratories to compare the performance of their testing with that of other participating laboratories, and provides a realistic picture of the state of paper testing.

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 Web Summary Reports (Page 1 of 2)

WebCode	Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Paper Report published on the CTS Website. The WebCode for each analysis can be found on the datasheets and in the Performance Analysis Report mailed to each participant.
Lab Mean	The average of the values obtained for each sample 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), if instruments are tracked.
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.

Graph - 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 on the previous page.

Common Problems Highlighted in Footnotes

1. **Extreme data** - The laboratory's results for one or both samples are so inconsistent with those of the other participants that the lab mean(s) fall outside the plot. The participant is advised to immediately review his data and/or testing procedure.
2. **Systematic bias** - The laboratory's results are either consistently high or low for both samples when compared to the other participants (the plotted point falls near the top or bottom of the ellipse). This indicates that the participant is performing the test with a constant bias. Causes of systematic errors include improper calibration, the particular make/model of equipment or a modification to the testing procedure.
3. **Inconsistency in testing between samples/sample sets** - The laboratory's results indicate that there are differences in the way the two samples tested (the plotted point falls to the side of the ellipse). This type of error may be attributed to the analyst deviating from the procedure when testing one of the samples or a material interaction occurrence with the instrument or room conditions. The inconsistency is reflected in the CPVs for the two samples, such as a +1.5 CPV for sample A and a -2.2 CPV for sample B. CTS also will specify if the laboratory's data for one sample are high/low compared to the other participants. If this inconsistency is slight, the lab's plotted point will be an * that falls on the edge of the ellipse.
4. **Inconsistency in testing within a sample** - The laboratory's within-lab standard deviation for a specified sample is high when compared to the other participants, often causing the lab's plotted point to fall outside of the ellipse.

Labs flagged with an * are not typically included in the footnotes of a data table. These labs may locate their position in the control ellipse and use the definitions above to help identify the type of testing error. An * should serve as a caution flag, a "yellow light", to a lab. If this error is repeated in future rounds, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm. Interlaboratory tests conducted at regular intervals permit a lab to recognize trends in testing.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3501 Thickness (Caliper), Packaging papers TAPPI Official Test Method T411

WebCode	Data Flag	Sample CK41			Sample CK42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3RJFCF		10.63	-0.32	-2.07	10.64	-0.30	-2.01	OK
3Y79MF		10.78	-0.17	-1.09	10.84	-0.10	-0.67	XX
7CW838		10.85	-0.10	-0.62	10.75	-0.19	-1.30	LW
8R8ECA		11.29	0.34	2.20	11.28	0.34	2.30	PP
9K3T7R		10.91	-0.03	-0.21	10.87	-0.07	-0.49	XX
ATVLRQ		10.87	-0.08	-0.52	10.79	-0.15	-0.99	LW
BX2G97		10.98	0.03	0.21	10.95	0.01	0.07	LB
CJHD4L		10.96	0.01	0.09	11.00	0.06	0.41	LW
CQHRPN		10.99	0.04	0.26	11.02	0.08	0.53	OK
G9YQWF		11.08	0.13	0.88	11.01	0.07	0.46	XX
HD7HHY		10.88	-0.07	-0.44	10.94	0.01	0.03	EM
HKVXDX		11.03	0.09	0.57	11.01	0.08	0.51	TA
JEYQ9U		10.70	-0.25	-1.60	10.74	-0.20	-1.37	LC
M4BWMB		10.68	-0.26	-1.73	10.68	-0.26	-1.78	XX
MACB7R		11.19	0.25	1.61	11.15	0.21	1.44	LW
MGE6KT		11.03	0.08	0.55	11.02	0.08	0.54	LW
MLNFJE		10.83	-0.12	-0.79	10.87	-0.07	-0.48	LW
MZAVKT		11.17	0.23	1.47	11.11	0.17	1.12	LW
NR9VMC		10.93	-0.02	-0.11	10.88	-0.06	-0.40	PP
PR7PJM		10.93	-0.02	-0.14	10.95	0.01	0.09	LC
QWVPBN		10.92	-0.03	-0.19	10.84	-0.09	-0.64	LW
T62BCM		10.95	0.01	0.04	10.94	0.00	0.01	EM
UCYX69		10.89	-0.06	-0.40	10.93	0.00	-0.03	LA
VW6RC6	X	10.67	-0.28	-1.80	10.92	-0.02	-0.16	TB
XLBNVF		11.01	0.07	0.44	10.99	0.06	0.37	XX
YB7ZCG		11.17	0.22	1.44	11.15	0.21	1.43	PP
YDXW6H		11.01	0.06	0.42	10.92	-0.02	-0.11	EM
YNWR3D		10.75	-0.19	-1.27	10.77	-0.17	-1.15	MS
Z467XF		11.09	0.14	0.93	11.15	0.21	1.41	LW
ZBLGBG		10.90	-0.04	-0.28	10.95	0.01	0.08	EM
ZCY94X		11.00	0.05	0.35	11.03	0.09	0.61	LC

Summary Statistics

Sample CK41

Sample CK42

Grand Means

10.95 mils

10.94 mils

Std Dev Btwn Labs

0.15 mils

0.15 mils

Statistics based on 30 of 31 reporting participants.

Comments on Assigned Data Flags for Test #3501

VW6RC6 (X) - Inconsistent in testing between samples.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3501
Thickness (Caliper), Packaging papers
TAPPI Official Test Method T411

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Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LB	L & W Autoline 600	LC	L & W Autoline 400
LW	L & W	MS	Messmer
OK	Oakland	PP	Technidyne Profile/Plus
TA	Thwing-Albert	TB	Thwing-Albert 89-100
XX	Instrument make/model not specified by lab		



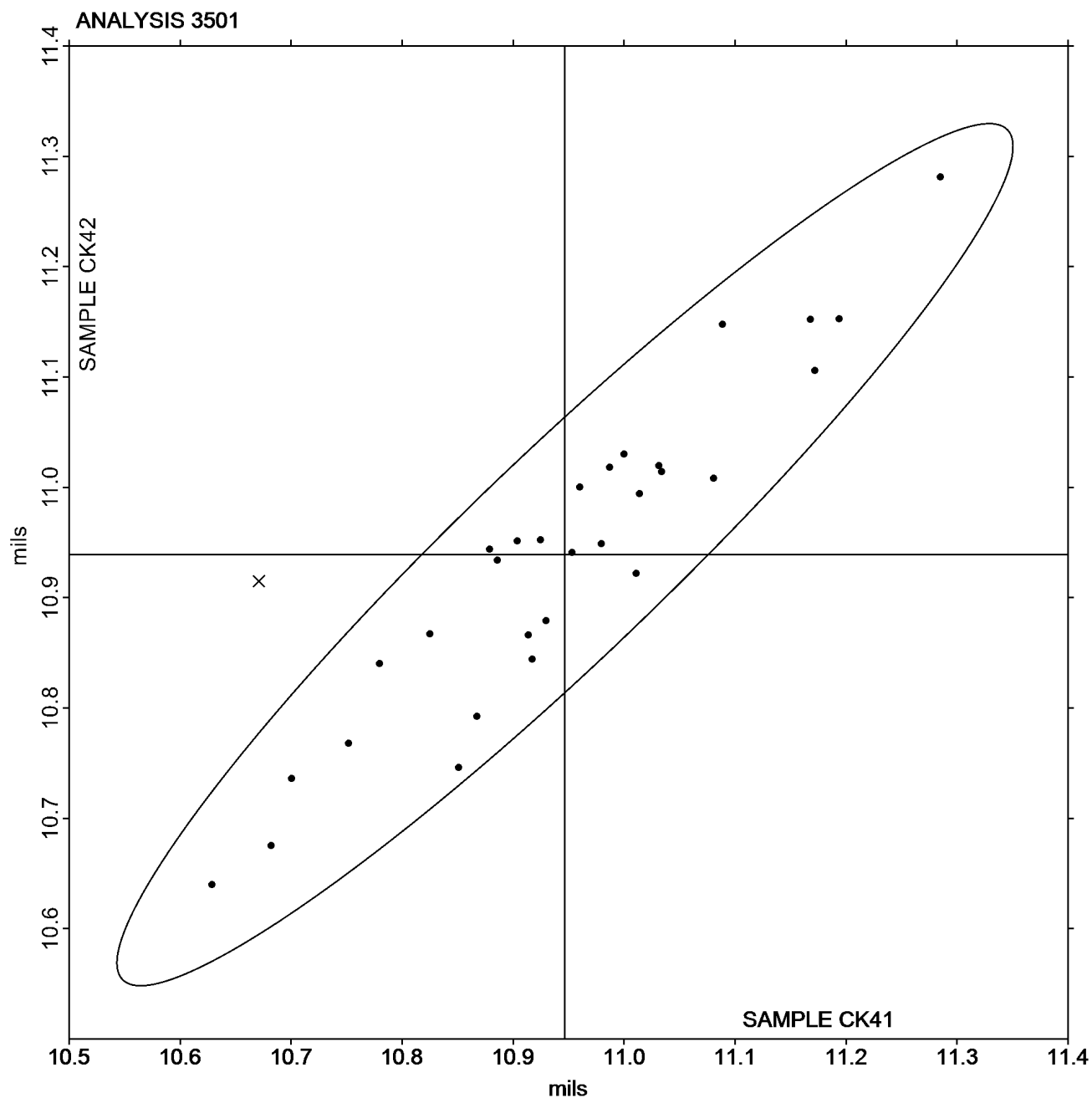
Paper & Paperboard Interlaboratory Testing Program

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Analysis 3501
Thickness (Caliper), Packaging papers
TAPPI Official Test Method T411

Grand Mean Sample CK41 = 10.947
mils

Grand Mean Sample CK42 = 10.939
mils





Paper & Paperboard Interlaboratory Testing Program

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Analysis 3511

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample BK41			Sample BK42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
FAHUD3		67.94	0.28	0.05	91.80	1.28	0.17	ZZ
FBVL4Y		64.20	-3.46	-0.58	85.20	-5.33	-0.71	ZZ
HD7HHY		66.75	-0.91	-0.15	85.89	-4.64	-0.62	ZZ
JRQHTX		64.56	-3.10	-0.52	88.02	-2.51	-0.34	ZZ
MACB7R		59.31	-8.35	-1.40	81.53	-8.99	-1.21	ZZ
MGE6KT		68.41	0.76	0.13	88.72	-1.81	-0.24	ZZ
NR9VMC		82.30	14.64	2.45	107.00	16.47	2.21	ZZ
QWVPBN		66.66	-1.00	-0.17	91.62	1.09	0.15	ZZ
VW6RC6		72.30	4.64	0.78	96.60	6.07	0.81	ZZ
Z42D7Y		69.21	1.55	0.26	96.89	6.36	0.85	ZZ
Z467XF		62.59	-5.07	-0.85	82.53	-8.00	-1.07	ZZ

Summary Statistics

Sample BK41

Sample BK42

Grand Means

67.66 psi

90.53 psi

Std Dev Btwn Labs

5.98 psi

7.46 psi

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



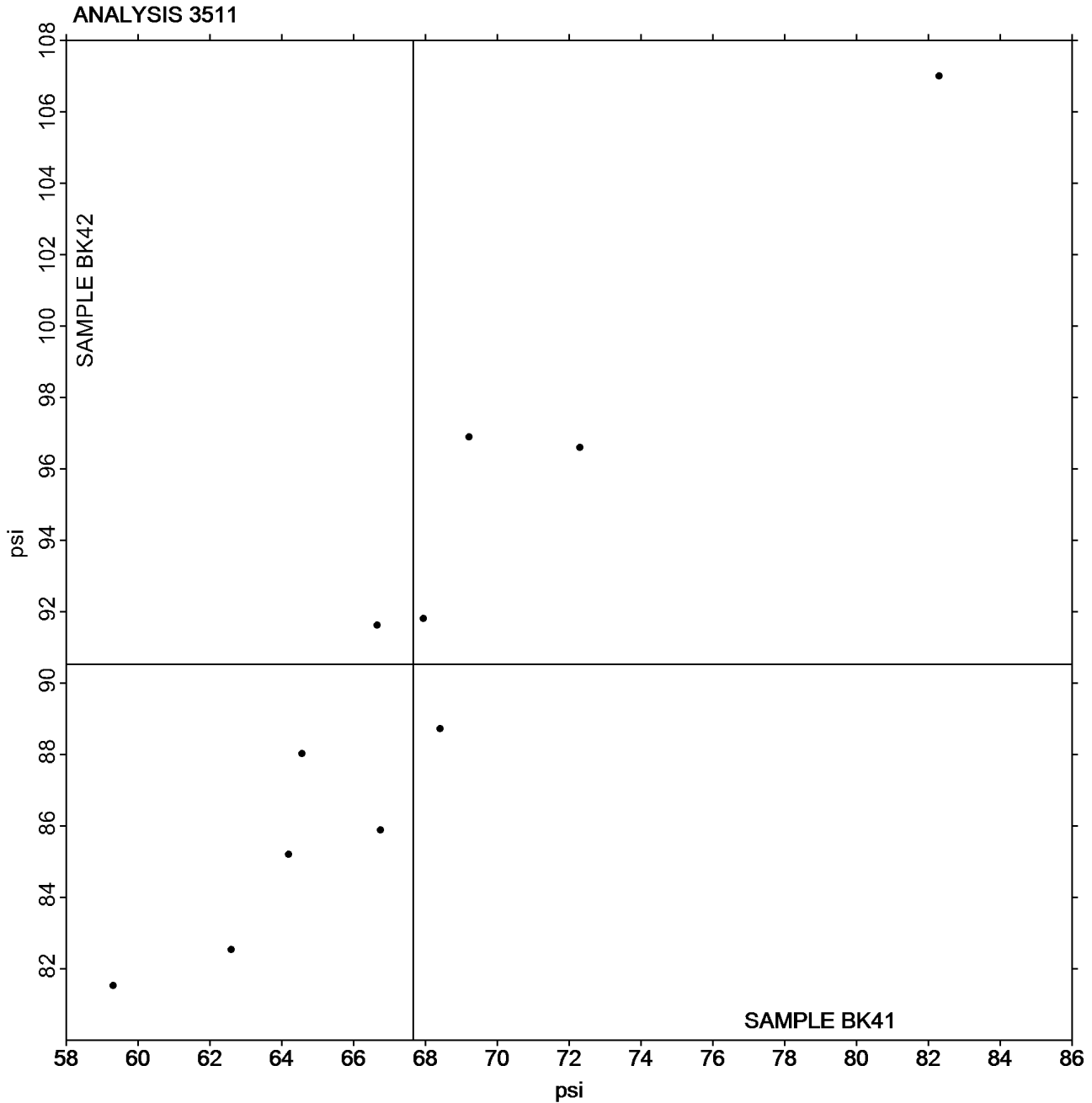
Paper & Paperboard Interlaboratory Testing Program

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Analysis 3511 Bursting Strength - Packaging Papers TAPPI Official Test Method T403

Grand Mean Sample BK41 = 67.658
psi

Grand Mean Sample BK42 = 90.527
psi



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
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Analysis 3513 Tearing Strength - Packaging Papers TAPPI Official Test Method T414

WebCode	Data Flag	Sample RK41			Sample RK42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3RJFCF	*	177.7	12.9	1.02	196.3	-16.9	-0.94	ZZ
3Y79MF		178.8	14.0	1.11	226.8	13.6	0.75	ZZ
4YZF3C		145.8	-18.9	-1.49	184.0	-29.2	-1.62	ZZ
7CW838		149.6	-15.1	-1.19	193.2	-20.1	-1.11	ZZ
9UV747		167.1	2.4	0.19	217.1	3.9	0.22	ZZ
ATVLRQ		196.0	31.2	2.46	238.8	25.6	1.42	ZZ
E33UJZ		171.3	6.6	0.52	223.2	9.9	0.55	ZZ
FBVL4Y		172.5	7.7	0.61	222.2	8.9	0.49	ZZ
G9YQWF		162.0	-2.8	-0.22	224.0	10.8	0.60	ZZ
HKVXDX		175.4	10.6	0.84	224.4	11.1	0.62	ZZ
JEYQ9U		149.7	-15.1	-1.19	180.7	-32.5	-1.80	ZZ
JRQHTX		153.0	-11.8	-0.93	203.6	-9.6	-0.53	ZZ
MACB7R		166.9	2.1	0.17	228.3	15.1	0.84	ZZ
MLNFJE		153.1	-11.7	-0.92	176.7	-36.5	-2.03	ZZ
MZAVKT	X	233.0	68.2	5.37	257.9	44.7	2.48	ZZ
NR9VMC		163.6	-1.1	-0.09	222.2	8.9	0.50	ZZ
PR7PJM		165.4	0.6	0.05	232.8	19.6	1.08	ZZ
PT29KP		158.7	-6.1	-0.48	205.0	-8.3	-0.46	ZZ
QWVPBN		156.4	-8.4	-0.66	204.1	-9.2	-0.51	ZZ
RGGJYN		172.1	7.3	0.58	235.6	22.3	1.24	ZZ
T62BCM		168.6	3.9	0.30	216.9	3.6	0.20	ZZ
U3AEHM		170.4	5.6	0.44	220.8	7.5	0.42	ZZ
UCYX69		157.3	-7.5	-0.59	207.3	-5.9	-0.33	ZZ
YB7ZCG		172.9	8.1	0.64	222.1	8.9	0.49	ZZ
Z467XF		177.0	12.2	0.96	234.6	21.4	1.19	ZZ
ZBLGBG		137.8	-26.9	-2.12	190.4	-22.9	-1.27	ZZ

Summary Statistics	Sample RK41	Sample RK42
Grand Means	164.76 Grams	213.24 Grams
Std Dev Btwn Labs	12.70 Grams	18.03 Grams
Statistics based on 25 of 26 reporting participants.		

Comments on Assigned Data Flags for Test #3513

MZAVKT (X) - Data for sample RK41 are high.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



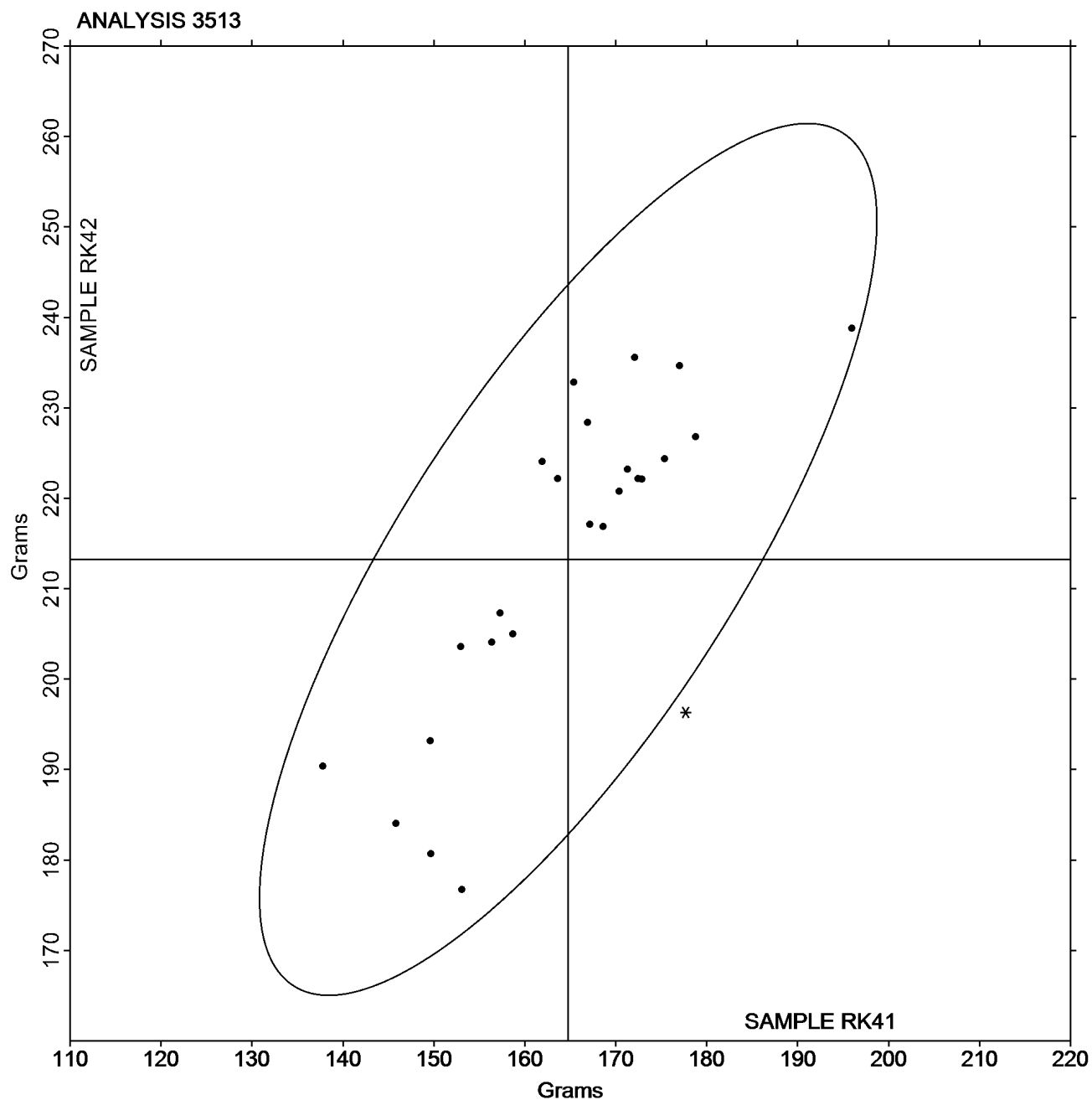
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Analysis 3513 Tearing Strength - Packaging Papers TAPPI Official Test Method T414

Grand Mean Sample RK41 = 164.76
Grams

Grand Mean Sample RK42 = 213.24
Grams





Paper & Paperboard Interlaboratory Testing Program

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Analysis 3515

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK41			Sample NK42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		9.53	-0.97	-1.46	9.62	-0.87	-1.44	TS
3MRCKW		11.49	0.99	1.49	10.81	0.32	0.52	LA
3Y79MF		10.51	0.01	0.02	11.10	0.60	0.99	XX
4PAQNW		10.56	0.06	0.09	10.58	0.08	0.14	LX
6W78DT		11.70	1.20	1.79	11.72	1.22	2.02	LI
7CW838		10.26	-0.24	-0.36	10.23	-0.26	-0.43	LW
9K3T7R		10.81	0.31	0.46	10.83	0.34	0.56	TB
9UV747		10.24	-0.26	-0.38	10.19	-0.31	-0.50	LE
AM2V38		9.48	-1.02	-1.53	10.23	-0.26	-0.44	MA
ATVLRQ		10.92	0.42	0.63	10.66	0.16	0.27	TX
BX2G97		11.63	1.13	1.69	11.76	1.26	2.08	LC
CJHD4L		9.48	-1.02	-1.53	10.22	-0.28	-0.46	TH
E33UJZ		10.02	-0.48	-0.72	9.58	-0.92	-1.52	XX
FBVL4Y		10.36	-0.14	-0.21	10.46	-0.03	-0.05	LE
G9YQWF		9.70	-0.79	-1.19	9.95	-0.54	-0.89	ID
HKVXDX		10.01	-0.49	-0.73	9.83	-0.67	-1.11	TB
JEYQ9U		10.84	0.34	0.50	10.93	0.44	0.72	IN
JNATTV		9.88	-0.62	-0.93	9.72	-0.77	-1.28	IM
JRQHTX		10.30	-0.20	-0.30	9.92	-0.58	-0.95	TX
MACB7R		10.20	-0.30	-0.45	9.89	-0.60	-0.99	IM
MLNFJE		10.91	0.41	0.62	10.85	0.35	0.58	LE
MZAVKT		9.61	-0.89	-1.34	10.08	-0.42	-0.69	LW
NR9VMC		10.60	0.10	0.15	10.20	-0.29	-0.48	TA
PALYJN		11.12	0.62	0.93	10.68	0.18	0.30	IR
PT29KP		10.36	-0.14	-0.21	10.38	-0.12	-0.20	LE
QWVPBN		10.61	0.11	0.17	10.35	-0.15	-0.24	LW
RGGJYN		9.79	-0.71	-1.06	10.00	-0.50	-0.82	LH
RLTLM7		11.23	0.73	1.09	11.16	0.66	1.09	DM
UCYX69		10.99	0.49	0.73	11.35	0.85	1.41	LA
VW6RC6		10.69	0.19	0.29	10.73	0.24	0.39	TV
YDXW6H		11.97	1.47	2.20	11.72	1.22	2.02	LE
Z467XF		10.19	-0.31	-0.46	10.14	-0.36	-0.59	LE

Summary Statistics

Sample NK41

Sample NK42

Grand Means

10.50 kN/m

10.50 kN/m

Std Dev Btwn Labs

0.67 kN/m

0.61 kN/m

Statistics based on 32 of 32 reporting participants.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
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Analysis 3515

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 Series
IM	Instron 5500 Series	IN	Instron 3360 Series
IR	Instron 5900 Series	LA	L & W Autoline
LC	L & W Tensile - Autoline 600	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LI	Lloyds Instruments
LW	L & W Tensile Tester SE062	LX	L & W (model not specified)
MA	Mark-10 ESM301L	TA	Thwing-Albert Tensile Tester
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TS	TMI Horizontal Tensile Tester 84-58	TV	Thwing-Albert Vantage NX
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab



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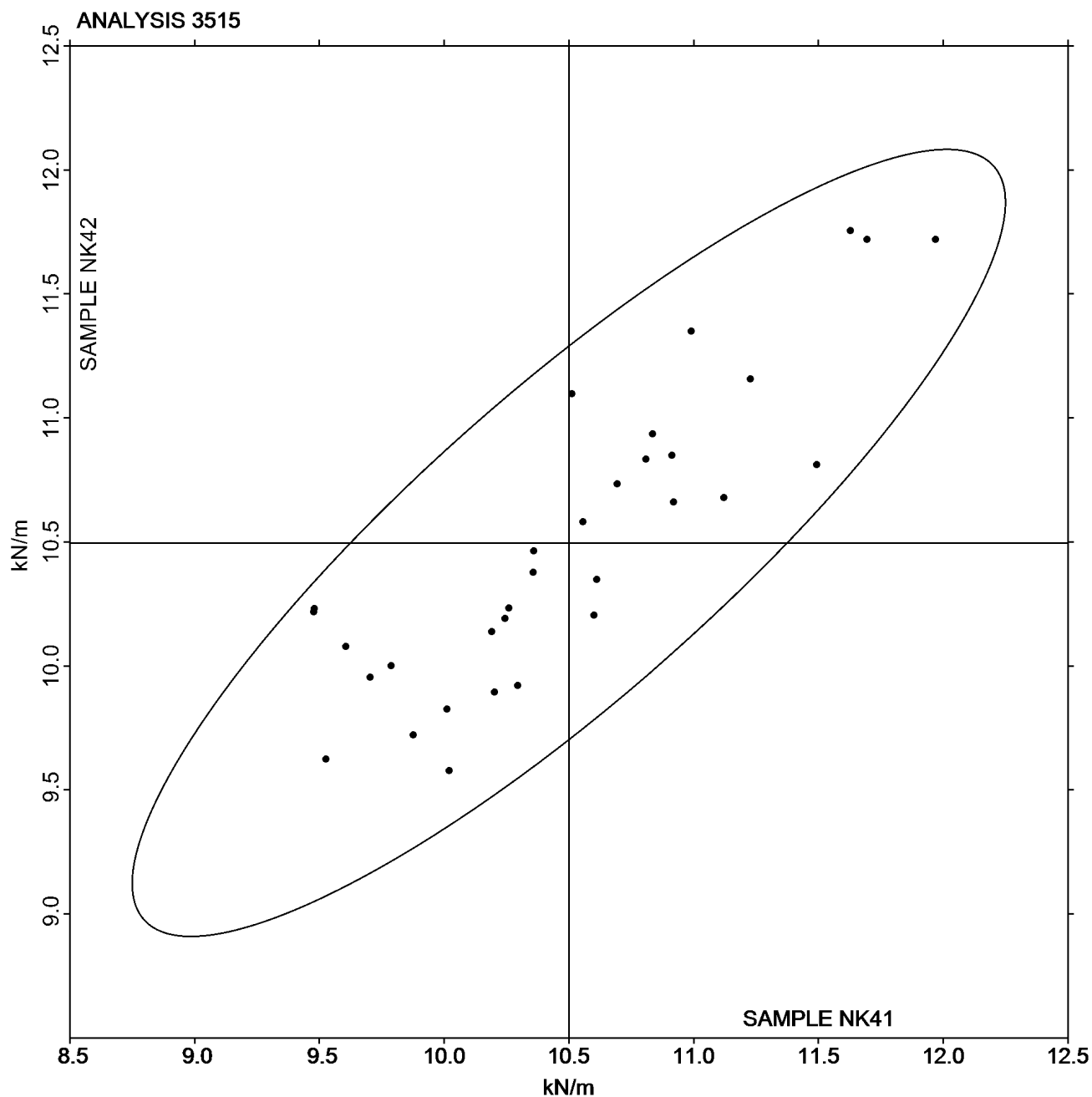
Analysis 3515

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

Grand Mean Sample NK41 = 10.499
kN/m

Grand Mean Sample NK42 = 10.496
kN/m





Paper & Paperboard Interlaboratory Testing Program

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Analysis 3516

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK41			Sample NK42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		128.4	-0.5	-0.03	127.9	-0.1	0.00	TS
3MRCKW		149.9	21.0	1.30	142.3	14.3	1.00	LA
3Y79MF		164.2	35.3	2.18	162.6	34.7	2.43	XX
4PAQNW		113.8	-15.1	-0.93	120.5	-7.4	-0.52	LX
7CW838		109.4	-19.5	-1.20	113.8	-14.2	-0.99	LW
9K3T7R		131.9	3.0	0.19	125.8	-2.1	-0.15	TB
9UV747		117.5	-11.3	-0.70	116.1	-11.9	-0.83	LE
ATVLRQ		133.7	4.9	0.30	130.1	2.2	0.15	TH
BX2G97		144.7	15.8	0.98	147.1	19.1	1.34	LC
CJHD4L	*	115.2	-13.6	-0.84	135.4	7.4	0.52	TH
E33UJZ		135.5	6.7	0.41	119.8	-8.1	-0.57	XX
FBVL4Y		121.7	-7.1	-0.44	127.0	-0.9	-0.07	LE
JEYQ9U		116.9	-12.0	-0.74	116.8	-11.2	-0.78	IN
JNATTV		108.0	-20.9	-1.29	106.6	-21.4	-1.50	IM
JRQHTX		135.2	6.4	0.39	128.1	0.2	0.01	TX
MACB7R		136.5	7.6	0.47	127.9	-0.1	-0.01	IM
MLNFJE		119.4	-9.4	-0.58	117.5	-10.4	-0.73	LE
MZAVKT		103.6	-25.3	-1.56	112.7	-15.2	-1.07	LW
NR9VMC		139.5	10.6	0.66	132.2	4.3	0.30	TA
PALYJN		121.7	-7.2	-0.44	111.1	-16.9	-1.18	IR
PT29KP		119.5	-9.3	-0.58	118.2	-9.7	-0.68	LE
QWVPBN		117.4	-11.5	-0.71	114.8	-13.2	-0.92	LE
RGGJYN		114.2	-14.7	-0.91	116.3	-11.7	-0.82	LH
RLTLM7		161.4	32.6	2.01	154.2	26.2	1.84	DM
UCYX69		145.4	16.5	1.02	149.9	21.9	1.54	LA
VW6RC6		136.1	7.2	0.44	140.2	12.3	0.86	TV
YDXW6H		152.1	23.2	1.43	143.5	15.5	1.09	LE
Z467XF		115.5	-13.4	-0.83	124.4	-3.5	-0.25	LE

Summary Statistics

Sample NK41

Sample NK42

Grand Means

128.87 Joules/sq m

127.95 Joules/sq m

Std Dev Btwn Labs

16.21 Joules/sq m

14.28 Joules/sq m

Statistics based on 28 of 28 reporting participants.

Analysis Notes:

4PAQNW - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on data entry form. CTS will not correct the Units going forward.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3516

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	IM	Instron 5500 Series
IN	Instron 3360 Series	IR	Instron 5900 Series
LA	L & W Autoline	LC	L & W Tensile - Autoline 600
LE	L & W Tensile Tester 066	LH	L & W Alwetron TH1 (Horizontal) SE 060
LW	L & W Tensile Tester SE062	LX	L & W (model not specified)
TA	Thwing-Albert Tensile Tester	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TS	TMI Horizontal Tensile Tester 84-58
TV	Thwing-Albert Vantage NX	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

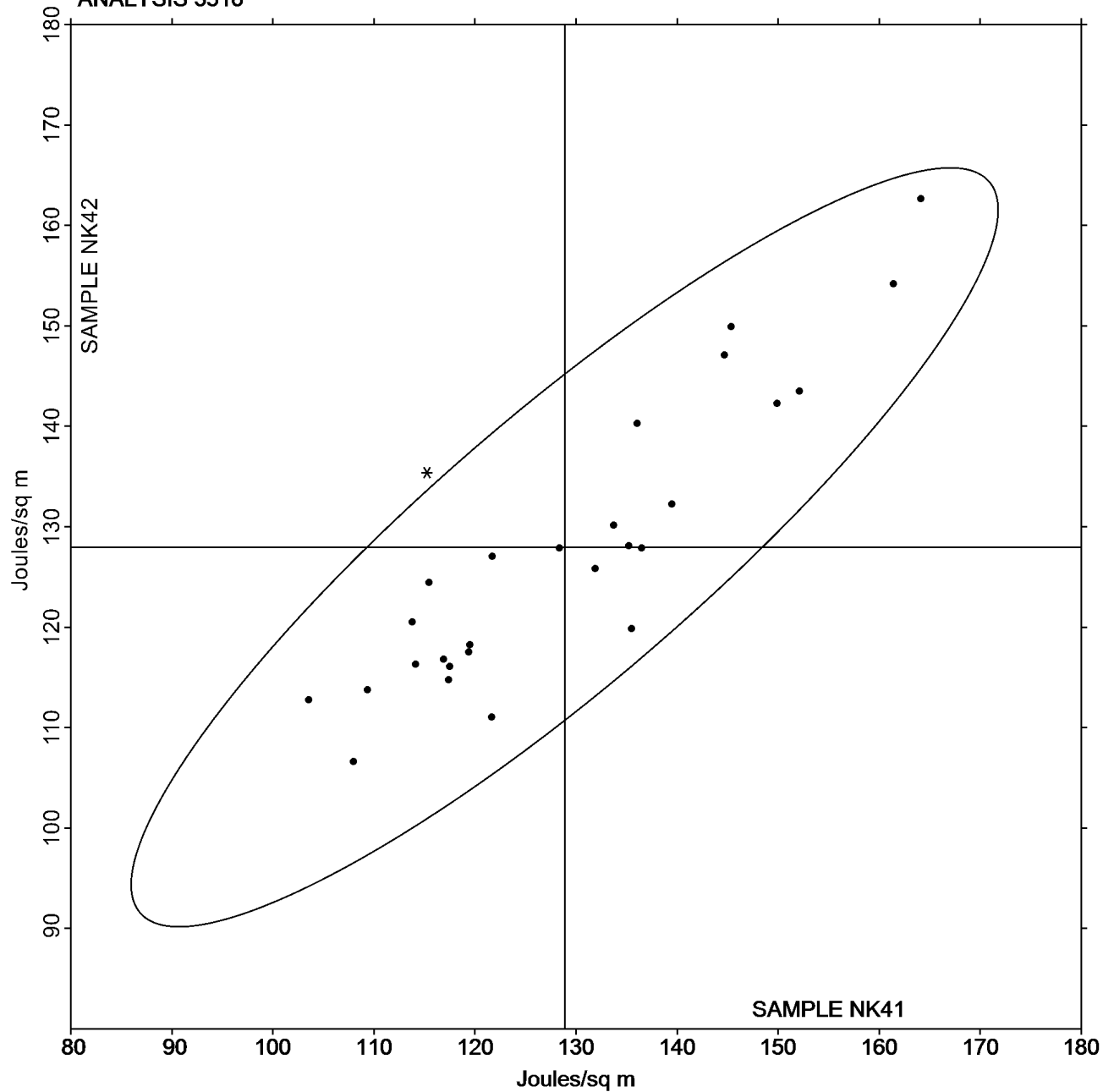
Report #4362,
June 2025

Analysis 3516 Tensile Energy Absorption - Packaging Papers TAPPI Official Test Method T494

Grand Mean Sample NK41 = 128.87
Joules/sq m

Grand Mean Sample NK42 = 127.95
Joules/sq m

ANALYSIS 3516





Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3517

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK41			Sample NK42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		2.125	0.210	1.17	2.100	0.197	1.19	TS
3MRCKW		1.960	0.045	0.25	1.953	0.050	0.30	XX
3Y79MF		1.800	-0.115	-0.64	1.733	-0.170	-1.02	XX
4PAQNW	X	0.098	-1.817	-10.13	0.106	-1.797	-10.81	LA
7CW838		1.671	-0.244	-1.36	1.725	-0.178	-1.07	LW
9K3T7R		1.916	0.001	0.00	1.840	-0.063	-0.38	XX
9UV747		1.765	-0.150	-0.84	1.758	-0.145	-0.87	LE
ATVLRQ		2.290	0.375	2.09	2.266	0.363	2.19	LX
BX2G97		1.792	-0.123	-0.69	1.799	-0.104	-0.62	LC
CJHD4L	*	1.925	0.010	0.06	2.094	0.191	1.15	TH
E33UJZ		2.103	0.188	1.05	1.958	0.055	0.33	XX
FBVL4Y		1.808	-0.107	-0.60	1.868	-0.035	-0.21	LE
G9YQWF		1.858	-0.057	-0.32	1.846	-0.057	-0.34	XX
HKVXDX		1.890	-0.025	-0.14	1.893	-0.010	-0.06	TB
JEYQ9U		1.720	-0.195	-1.09	1.698	-0.205	-1.23	IN
JNATTV		1.948	0.033	0.18	1.928	0.025	0.15	IM
JRQHTX		2.036	0.121	0.67	2.018	0.115	0.69	TX
MACB7R		2.082	0.166	0.93	2.009	0.107	0.64	IM
MLNFJE		1.715	-0.200	-1.12	1.703	-0.200	-1.20	LE
MZAVKT		1.685	-0.230	-1.28	1.735	-0.168	-1.01	LW
NR9VMC		2.190	0.275	1.53	2.088	0.185	1.11	TA
PALYJN		1.707	-0.208	-1.16	1.634	-0.269	-1.62	XX
PT29KP		1.790	-0.125	-0.70	1.740	-0.163	-0.98	LE
QWVPBN	X	3.187	1.272	7.09	3.147	1.244	7.48	LW
RGGJYN		1.788	-0.127	-0.71	1.789	-0.114	-0.68	LH
RLTLM7		2.273	0.358	1.99	2.193	0.290	1.75	DM
UCYX69		1.981	0.066	0.37	1.982	0.079	0.48	LX
VW6RC6		2.085	0.170	0.95	2.146	0.243	1.46	TV
YDXW6H		1.981	0.066	0.37	1.915	0.012	0.07	LE
Z467XF		1.740	-0.175	-0.98	1.862	-0.041	-0.24	LE

Summary Statistics

Sample NK41

Sample NK42

Grand Means

1.92 Percent

1.90 Percent

Std Dev Btwn Labs

0.18 Percent

0.17 Percent

Statistics based on 28 of 30 reporting participants.

Comments on Assigned Data Flags for Test #3517

QWVPBN (X) - Extreme Data.

4PAQNW (X) - Extreme Data.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3517

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	IM	Instron 5500 Series
IN	Instron 3360 Series	LA	L & W Autoline
LC	L & W Tensile - Autoline 600	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LW	L & W Tensile Tester SE062
LX	L & W (model not specified)	TA	Thwing-Albert Tensile Tester
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TS	TMI Horizontal Tensile Tester 84-58	TV	Thwing-Albert Vantage NX
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab



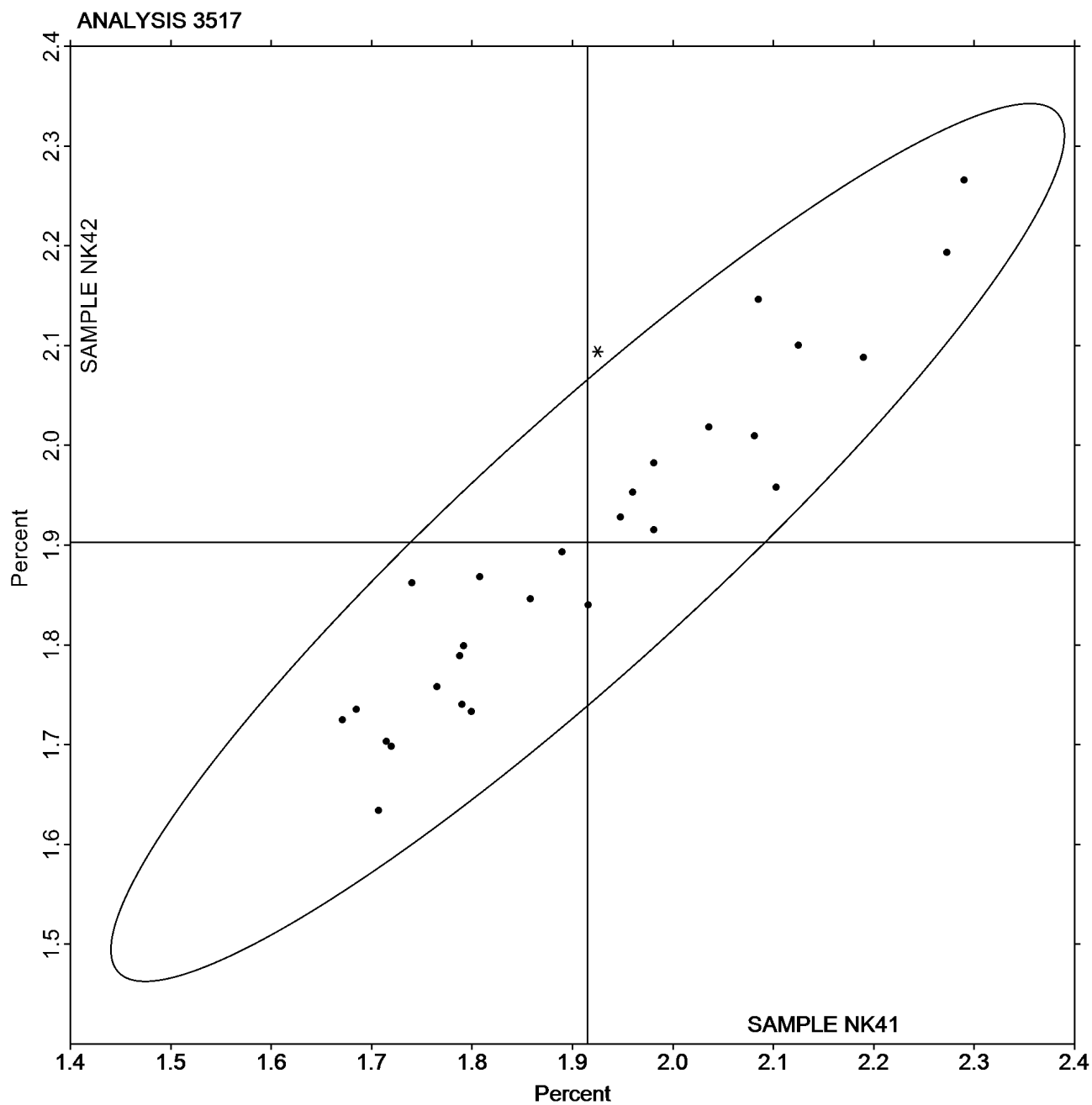
Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3517 Elongation to Break - Packaging Papers TAPPI Official Test Method T494

Grand Mean Sample NK41 = 1.9151
Percent

Grand Mean Sample NK42 = 1.9026
Percent





Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3531

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample PS41			Sample PS42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		0.7550	-0.0176	-0.31	0.7470	-0.0277	-0.51	ZZ
3RJFCF		0.8180	0.0454	0.81	0.8060	0.0313	0.57	ZZ
4FK72C		0.7530	-0.0196	-0.35	0.7520	-0.0227	-0.42	ZZ
9K3T7R		0.7580	-0.0146	-0.26	0.7800	0.0053	0.10	ZZ
BGAWWP		0.8620	0.0894	1.59	0.8520	0.0773	1.42	ZZ
BX2G97		0.7210	-0.0516	-0.92	0.7230	-0.0517	-0.95	ZZ
CJHD4L		0.7310	-0.0416	-0.74	0.7180	-0.0567	-1.04	ZZ
CQHRPN		0.8420	0.0694	1.23	0.8390	0.0643	1.18	ZZ
G2MCEK		0.6900	-0.0826	-1.47	0.7000	-0.0747	-1.37	ZZ
JCUYFG		0.8360	0.0634	1.13	0.8440	0.0693	1.27	ZZ
KBUK7T		0.7920	0.0194	0.34	0.8070	0.0323	0.59	ZZ
LHUZTF		0.7390	-0.0336	-0.60	0.7490	-0.0257	-0.47	ZZ
M26DLU		0.6830	-0.0896	-1.59	0.6860	-0.0887	-1.63	ZZ
MMYH6D		0.7350	-0.0376	-0.67	0.7340	-0.0407	-0.75	ZZ
MZAVKT		0.6660	-0.1066	-1.89	0.6810	-0.0937	-1.72	ZZ
T4NGVM		0.8250	0.0524	0.93	0.8330	0.0583	1.07	ZZ
T62BCM		0.7820	0.0094	0.17	0.8110	0.0363	0.67	ZZ
U3QKN6		0.8530	0.0804	1.43	0.8520	0.0773	1.42	ZZ
YDXW6H		0.7510	-0.0216	-0.38	0.7520	-0.0227	-0.42	ZZ
YVFVAF		0.8200	0.0474	0.84	0.8140	0.0393	0.72	ZZ
ZBLGBG		0.8060	0.0334	0.59	0.8020	0.0273	0.50	ZZ
ZCY94X		0.7790	0.0064	0.11	0.7620	-0.0127	-0.23	ZZ

Summary Statistics

Sample PS41

Sample PS42

Grand Means

0.77 Microns

0.77 Microns

Std Dev Btwn Labs

0.06 Microns

0.05 Microns

Statistics based on 22 of 22 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

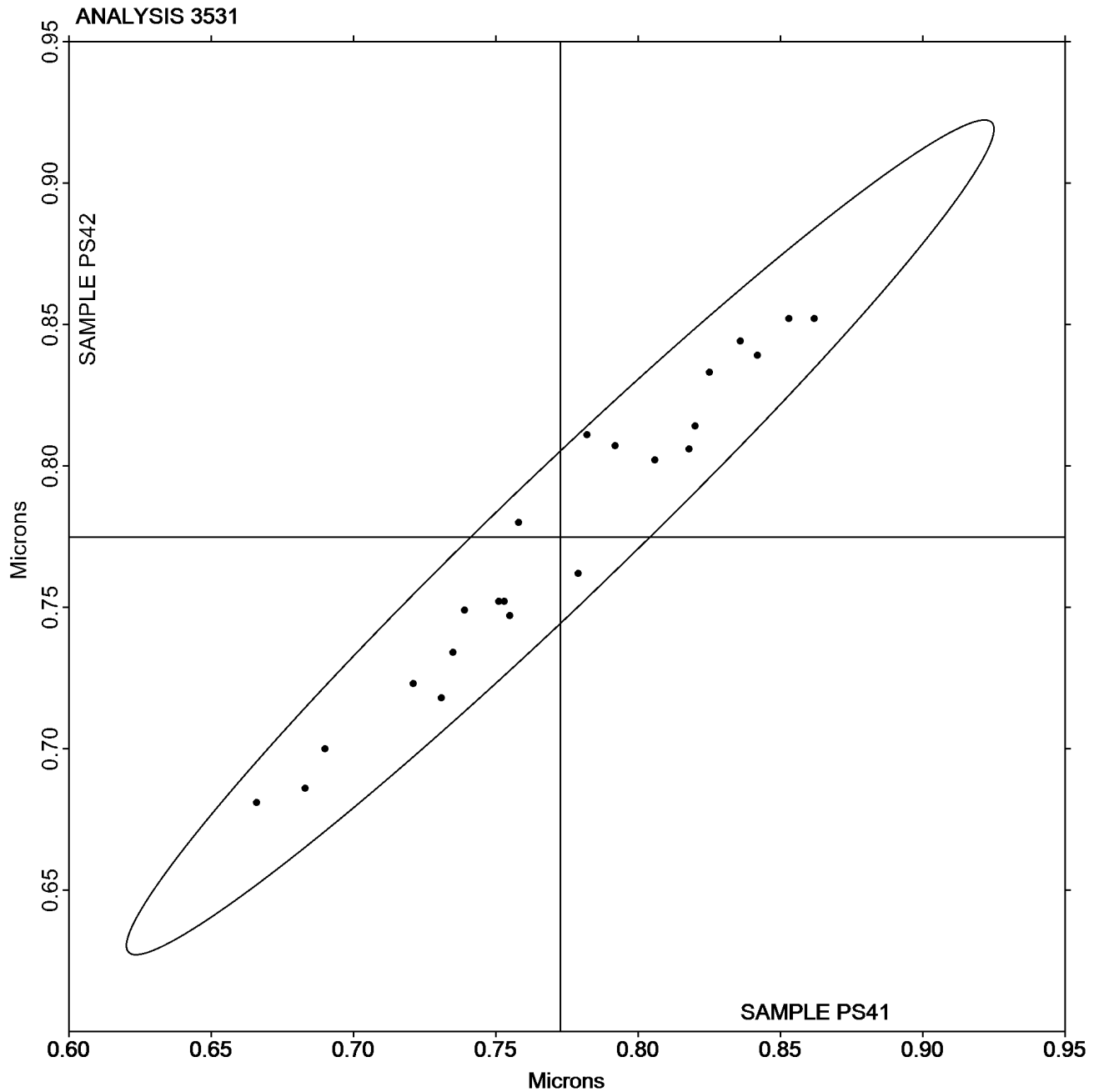
Analysis 3531

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

Grand Mean Sample PS41 = 0.77259
Microns

Grand Mean Sample PS42 =
0.77473 Microns





Paper & Paperboard Interlaboratory Testing Program
Analysis 3545
Directional Brightness
TAPPI Official Test Method T452

Report #4362,
June 2025

WebCode	Data Flag	<u>Sample BR41</u>			<u>Sample BR42</u>			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2ABYRB		78.63	2.35	0.74	78.74	2.44	0.75	TP
3G4QDB		75.67	-0.61	-0.19	75.94	-0.36	-0.11	TS
3RJFCF	*	65.76	-10.53	-3.32	65.52	-10.78	-3.32	TD
3Y79MF		77.63	1.35	0.42	77.73	1.43	0.44	XX
4FK72C		76.44	0.16	0.05	76.32	0.02	0.01	HZ
7CW838		76.04	-0.25	-0.08	76.04	-0.26	-0.08	TS
7K7VG7		78.64	2.36	0.74	78.70	2.40	0.74	TT
CJHD4L		76.08	-0.21	-0.07	75.86	-0.44	-0.13	TP
CQHRPN		77.93	1.65	0.52	77.66	1.36	0.42	HG
CZ364L		74.75	-1.53	-0.48	74.31	-1.99	-0.61	TS
HKVXDX	*	76.83	0.54	0.17	77.64	1.34	0.41	XD
JCUYFG		76.43	0.14	0.05	76.34	0.04	0.01	TP
KBUK7T		75.77	-0.51	-0.16	75.73	-0.57	-0.18	PP
MZAVKT		76.41	0.13	0.04	76.08	-0.22	-0.07	TP
PR7PJM		72.01	-4.27	-1.35	72.17	-4.13	-1.27	LA
T62BCM		79.75	3.47	1.09	79.72	3.42	1.06	HG
UKPMJM		78.93	2.65	0.84	78.93	2.63	0.81	TP
YDXW6H		79.97	3.69	1.16	80.21	3.91	1.20	HG
ZBLGBG		75.70	-0.58	-0.18	76.07	-0.23	-0.07	TP

Summary Statistics	<u>Sample BR41</u>	<u>Sample BR42</u>
Grand Means	76.28 Percent	76.30 Percent
Std Dev Btwn Labs	3.17 Percent	3.24 Percent
Statistics based on 19 of 19 reporting participants.		

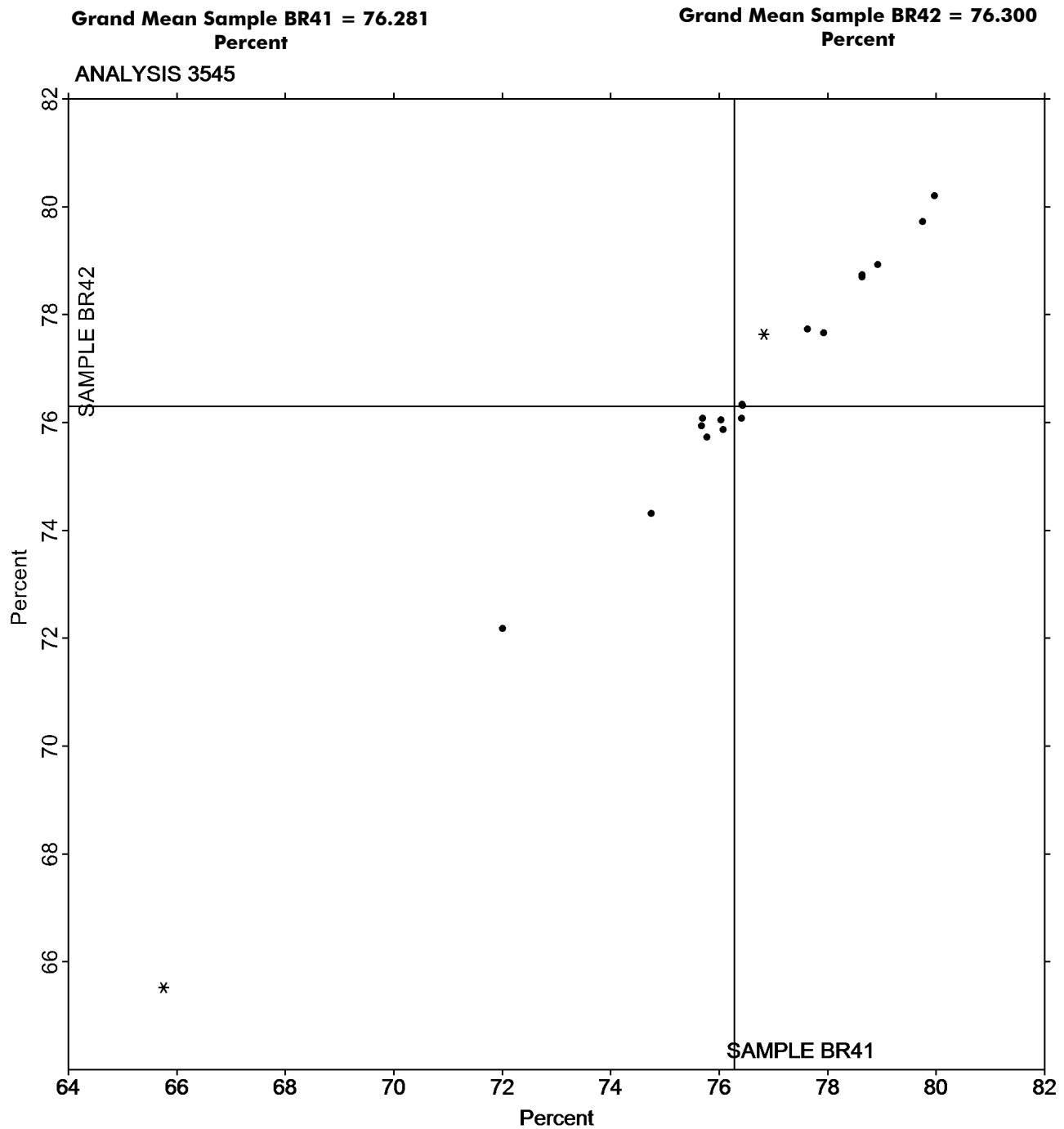
Key to Instrument Codes Reported by Participants

HG Hunter Labscan / XE	HZ Hunter Lab ColorFlex EZ Series
LA L & W Elrepho - Autoline	PP Technidyne Profile/Plus
TD Technidyne Color Touch 45X	TP Technidyne Test/Plus
TS Technidyne Brightimeter Micro S-5	TT Technidyne Brightimeter Micro S4-M
XD X-Rite Color Ci7600	XX Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program
Analysis 3545
Directional Brightness
TAPPI Official Test Method T452

Report #4362,
June 2025



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3547 Diffuse Brightness

TAPPI Official Test Method T525

WebCode	Data Flag	Sample BR41			Sample BR42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		77.04	0.48	2.18	77.33	0.71	2.30	LT
CJHD4L		76.50	-0.06	-0.26	76.39	-0.23	-0.75	LT
CQHRPN		76.51	-0.05	-0.21	76.69	0.07	0.22	TC
H9HT6G		76.68	0.12	0.55	76.62	0.00	0.00	LE
MZAVKT		76.40	-0.16	-0.72	76.49	-0.13	-0.43	EA
QWVPBN		76.55	-0.01	-0.05	76.55	-0.07	-0.23	LT
YVFVAF		76.33	-0.23	-1.04	76.56	-0.06	-0.19	LE
ZBLGBG		76.46	-0.10	-0.45	76.34	-0.28	-0.91	TC

Summary Statistics

Sample BR41

Sample BR42

Grand Means

76.56 Percent

76.62 Percent

Std Dev Btwn Labs

0.22 Percent

0.31 Percent

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

EA Datacolor Elrepho
LT L & W Elrepho SE 071

LE L & W Elrepho
TC Technidyne Color Touch Series



Paper & Paperboard Interlaboratory Testing Program

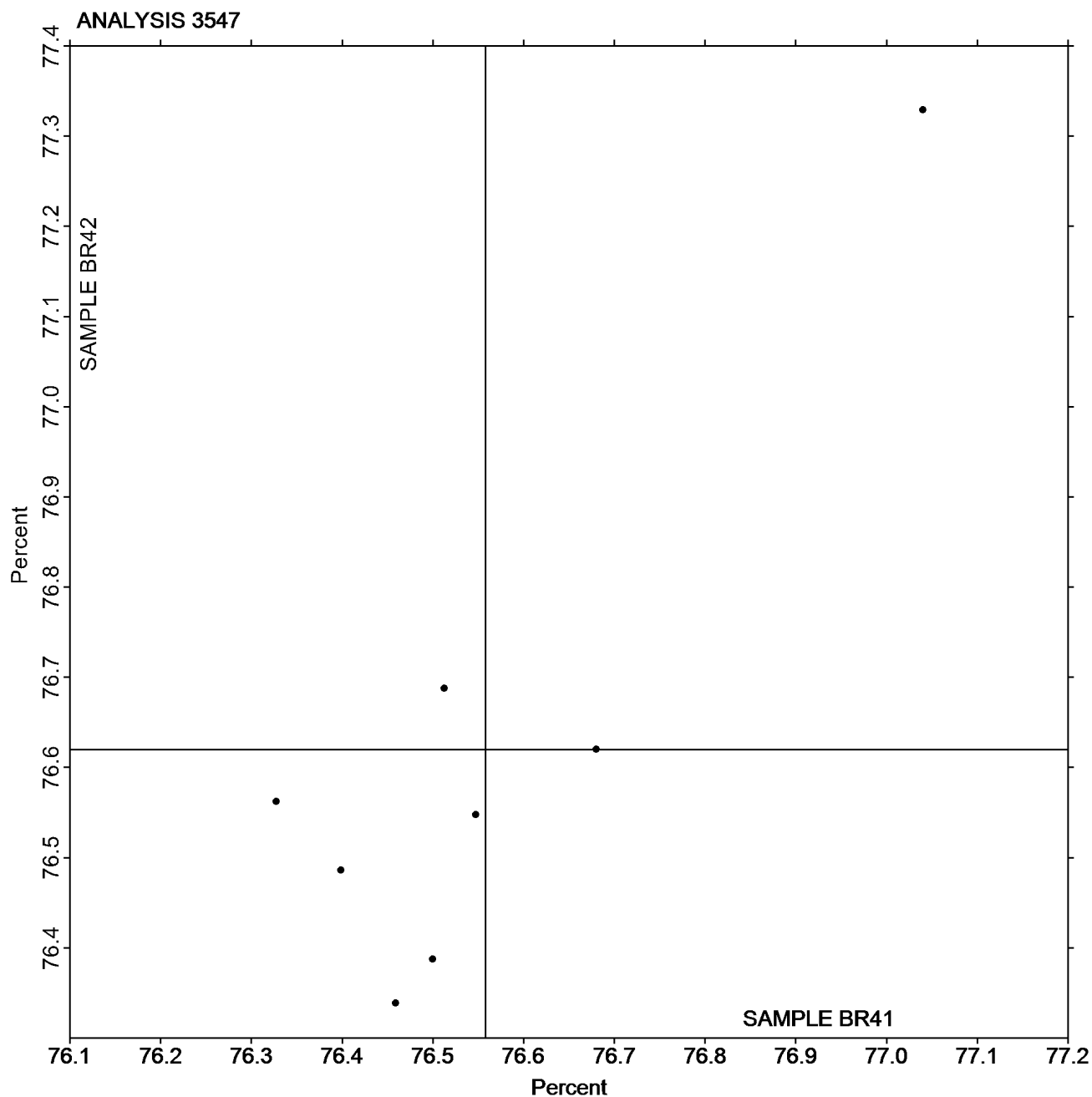
Report #4362,
June 2025

Analysis 3547
Diffuse Brightness

TAPPI Official Test Method T525

Grand Mean Sample BR41 = 76.558
Percent

Grand Mean Sample BR42 = 76.620
Percent



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3549

Report #4362,
June 2025

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	Data Flag	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
3G4QDB		CA41	85.45	2.19	-1.58	0.01	-0.17	0.25	0.31	TS
		CA42	85.46	2.01	-1.33					
3RJFCF		CA41	80.32	0.49	-0.91	-0.07	0.06	-0.15	0.18	TC
		CA42	80.25	0.55	-1.06					
3Y79MF		CA41	89.86	0.27	-0.54	0.24	-0.02	0.23	0.34	XX
		CA42	90.10	0.24	-0.30					
BXJRM6		CA41	85.90	1.78	-0.54	-0.08	0.05	-0.19	0.21	TS
		CA42	85.82	1.83	-0.73					
CQHRPN		CA41	87.42	0.84	-0.58	0.08	-0.12	0.41	0.43	HK
		CA42	87.50	0.71	-0.17					
G2MCEK		CA41	85.18	0.92	-1.28	0.04	-0.08	0.24	0.26	TC
		CA42	85.22	0.84	-1.04					
HD7HHY		CA41	89.71	0.37	-0.09	0.01	0.05	-0.21	0.21	TC
		CA42	89.72	0.42	-0.29					
KBUK7T		CA41	86.75	0.22	-0.25	-0.14	0.05	-0.08	0.17	TC
		CA42	86.61	0.26	-0.33					
MMYH6D		CA41	88.51	0.82	-0.99	-0.05	0.00	-0.03	0.06	TC
		CA42	88.46	0.82	-1.02					
PR7PJM		CA41	86.94	-0.06	0.04	0.01	0.00	0.06	0.06	XX
		CA42	86.95	-0.06	0.09					
T62BCM		CA41	86.93	0.65	-0.58	0.06	-0.01	0.04	0.07	HK
		CA42	86.99	0.64	-0.54					
U3QKN6		CA41	89.80	0.16	-0.04	-0.07	0.08	-0.29	0.30	TC
		CA42	89.73	0.24	-0.33					
V8Y9YK		CA41	89.61	-0.42	0.11	0.21	0.00	0.05	0.22	NH
		CA42	89.83	-0.42	0.17					
YDXW6H		CA41	87.41	0.81	-0.85	0.06	-0.03	0.08	0.10	HK
		CA42	87.48	0.79	-0.77					
ZBLGBG		CA41	86.88	0.23	-0.26	-0.12	0.05	-0.17	0.22	TC
		CA42	86.75	0.28	-0.43					



Paper & Paperboard Interlaboratory Testing Program
Analysis 3549
Color & Color Difference - Near White Papers - C/2deg obs
Hunter L,a,b - Illuminant C - 2 Degree Observer

Report #4362,
June 2025

Grand Means			Summary Statistics					
CA41	87.112	0.618	-0.555					
CA42	87.124	0.610	-0.539	0.012	-0.007	0.016	0.209	
Std Dev Btwn Labs								
CA41	2.454	0.669	0.495					
CA42	2.501	0.635	0.440	0.110	0.071	0.202	0.109	
Statistics based on 15 of 15 reporting participants								

Key to Instrument Codes Reported by Participants

HK	Hunter LabScan XE	NH	Minolta CM-3700A Spectrophotometer
TC	Technidyne Color Touch Series	TS	Technidyne Brightimeter Micro S-5
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

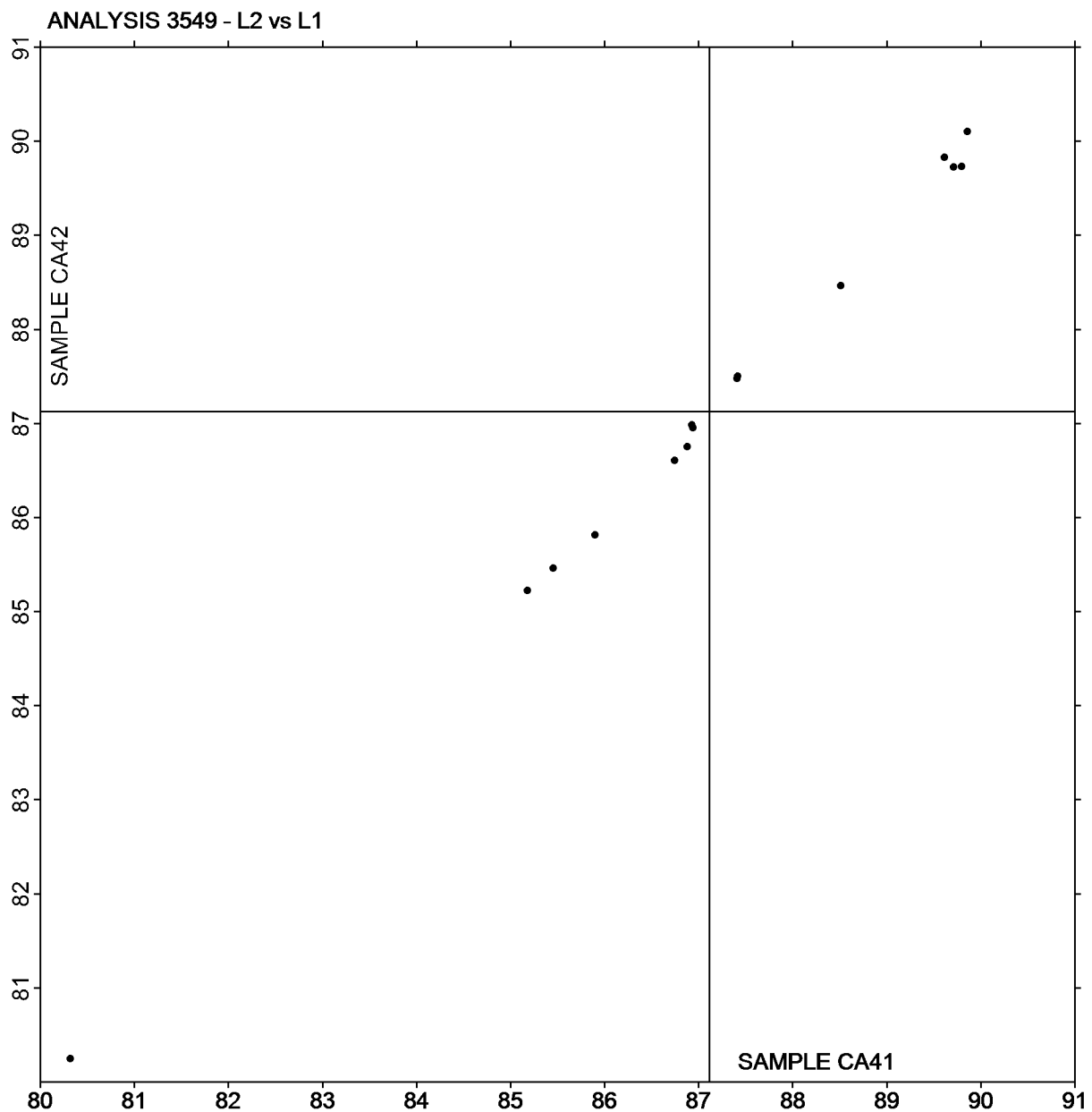
Analysis 3549

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Report #4362,
June 2025

Plot of L values CA42 vs L values CA41



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

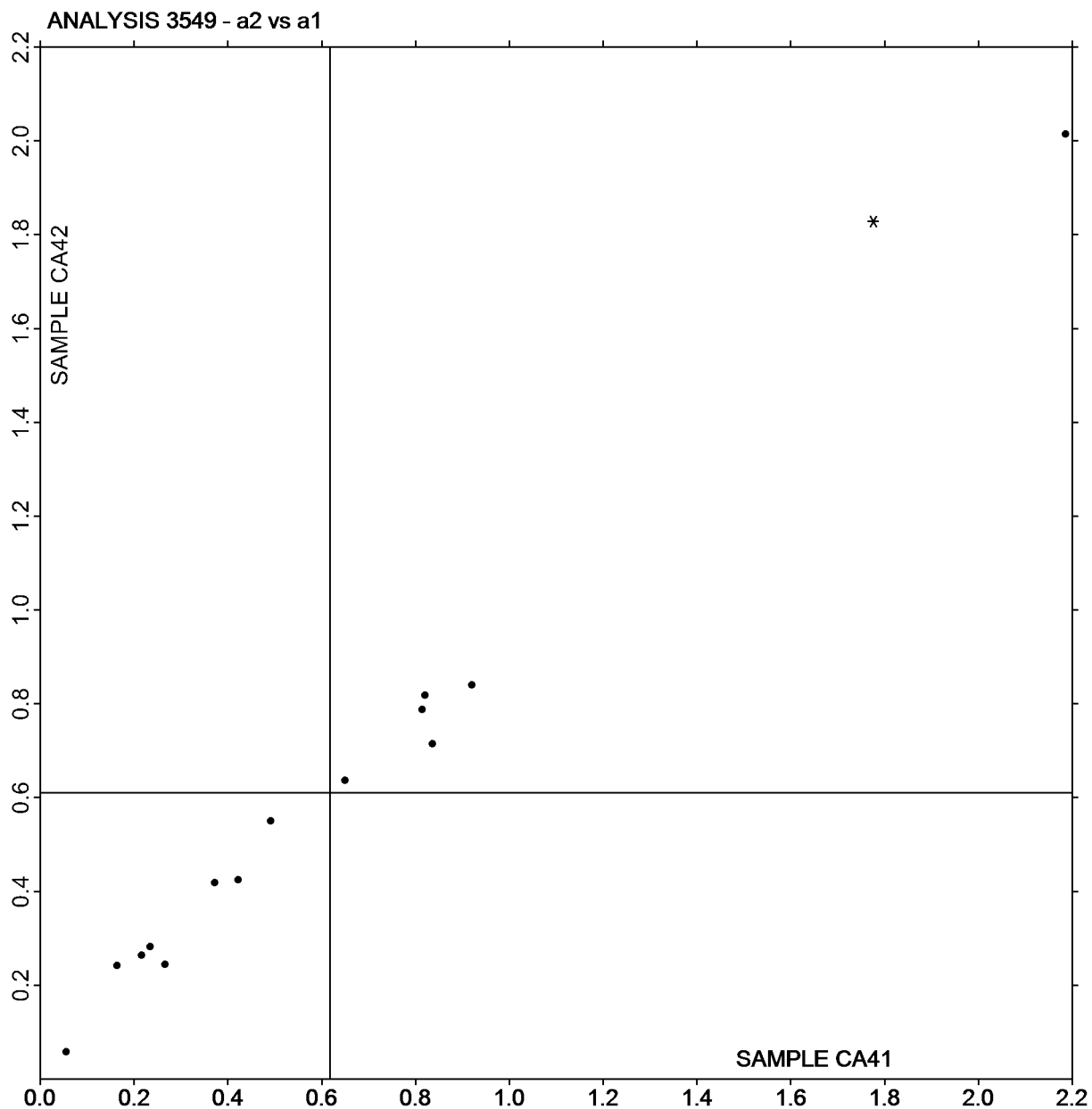
Analysis 3549

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Report #4362,
June 2025

Plot of a values CA42 vs a values CA41



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

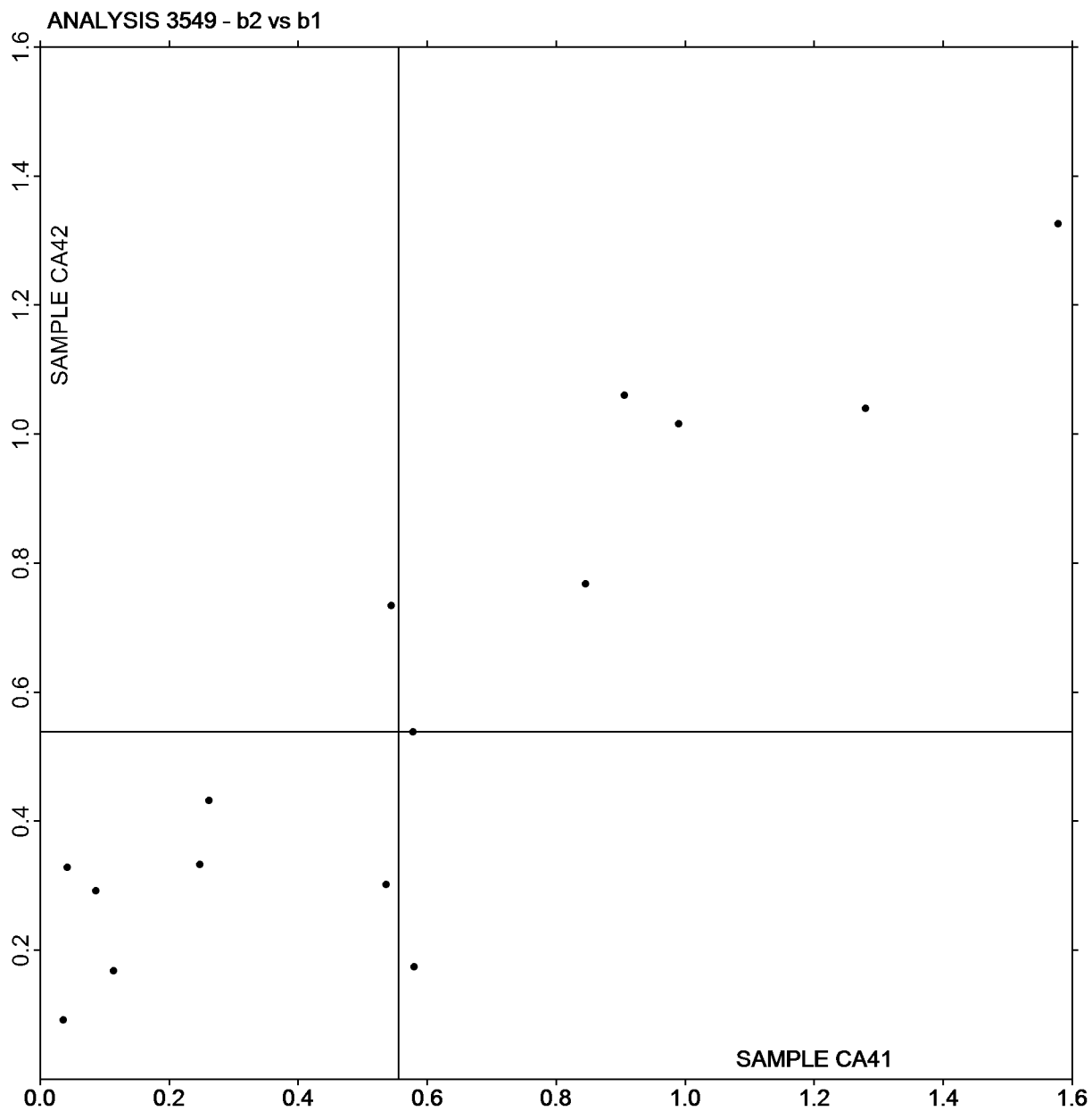
Analysis 3549

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Report #4362,
June 2025

Plot of b values CA42 vs b values CA41



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3551
Color & Color Difference - Near White Papers - D65/10deg obs
Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Report #4362,
June 2025

Web Code	Data Flag	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
7K7VG7		CA41	92.12	-0.22	1.14	0.07	0.00	0.00	0.07	XB
		CA42	92.19	-0.22	1.14					
BVBKF6		CA41	89.68	-0.50	-0.18	0.04	0.20 X	-0.28	0.35	TC
		CA42	89.72	-0.30	-0.46					
CJHD4L		CA41	89.69	-0.46	0.23	-0.04	0.01	-0.16	0.16	LT
		CA42	89.65	-0.45	0.08					
CQHRPN		CA41	86.79	0.31	-0.49	0.14	-0.04	0.13	0.19	TC
		CA42	86.93	0.27	-0.36					
JCUYFG		CA41	88.47	-0.54	-0.11	-0.06	0.00	0.05	0.08	HL
		CA42	88.41	-0.54	-0.07					
MRUCZU		CA41	89.67	-0.61	0.09	0.06	0.00	0.08	0.10	XX
		CA42	89.73	-0.61	0.17					
MZAVKT		CA41	89.71	-0.56	0.12	0.00	0.02	0.11	0.12	EG
		CA42	89.71	-0.54	0.23					
QWVPBN		CA41	89.59	0.31	-0.45	-0.13	0.03	-0.12	0.18	LS
		CA42	89.47	0.34	-0.57					
ZNBDEZ		CA41	89.98	-0.53	0.20	-0.19	0.01	-0.22	0.29	XX
		CA42	89.79	-0.52	-0.02					

Grand Means

CA41	89.524	-0.310	0.060	-0.013	0.026	-0.044	0.171
CA42	89.510	-0.285	0.016				

Std Dev Btwn Labs

CA41	1.400	0.369	0.484	0.104	0.068	0.154	0.096
CA42	1.384	0.360	0.509				

Statistics based on 9 of 9 reporting participants

Key to Instrument Codes Reported by Participants

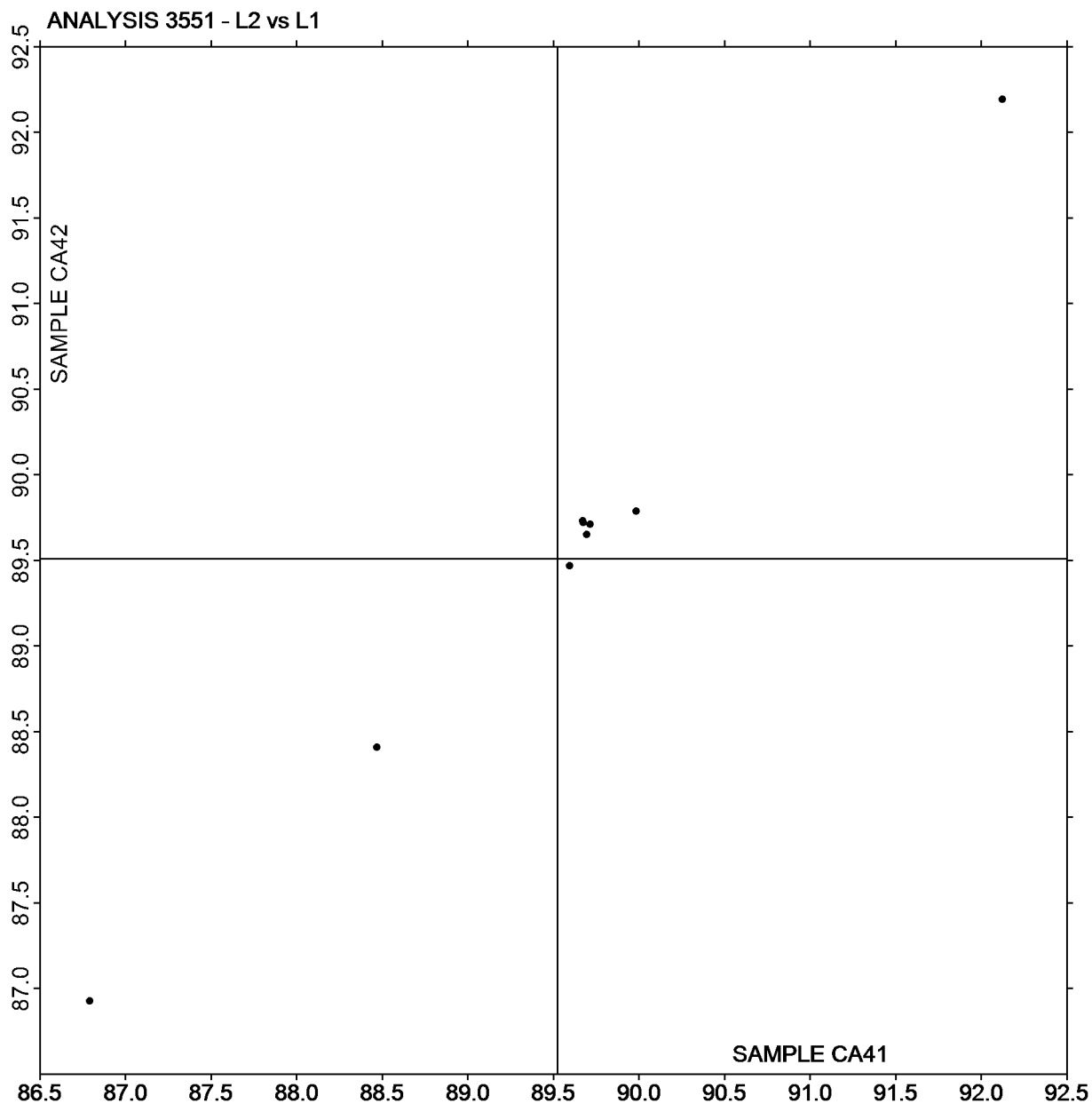
EG	Datacolor Elrepho	HL	Hunter Agera
LS	L & W Elrepho SE 070	LT	L & W Elrepho SE 071
TC	Technidyne Color Touch Series	XB	X-Rite Ci7
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program
Analysis 3551
Color & Color Difference - Near White Papers - D65/10deg obs
Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Report #4362,
June 2025

Plot of L values CA42 vs L values CA41



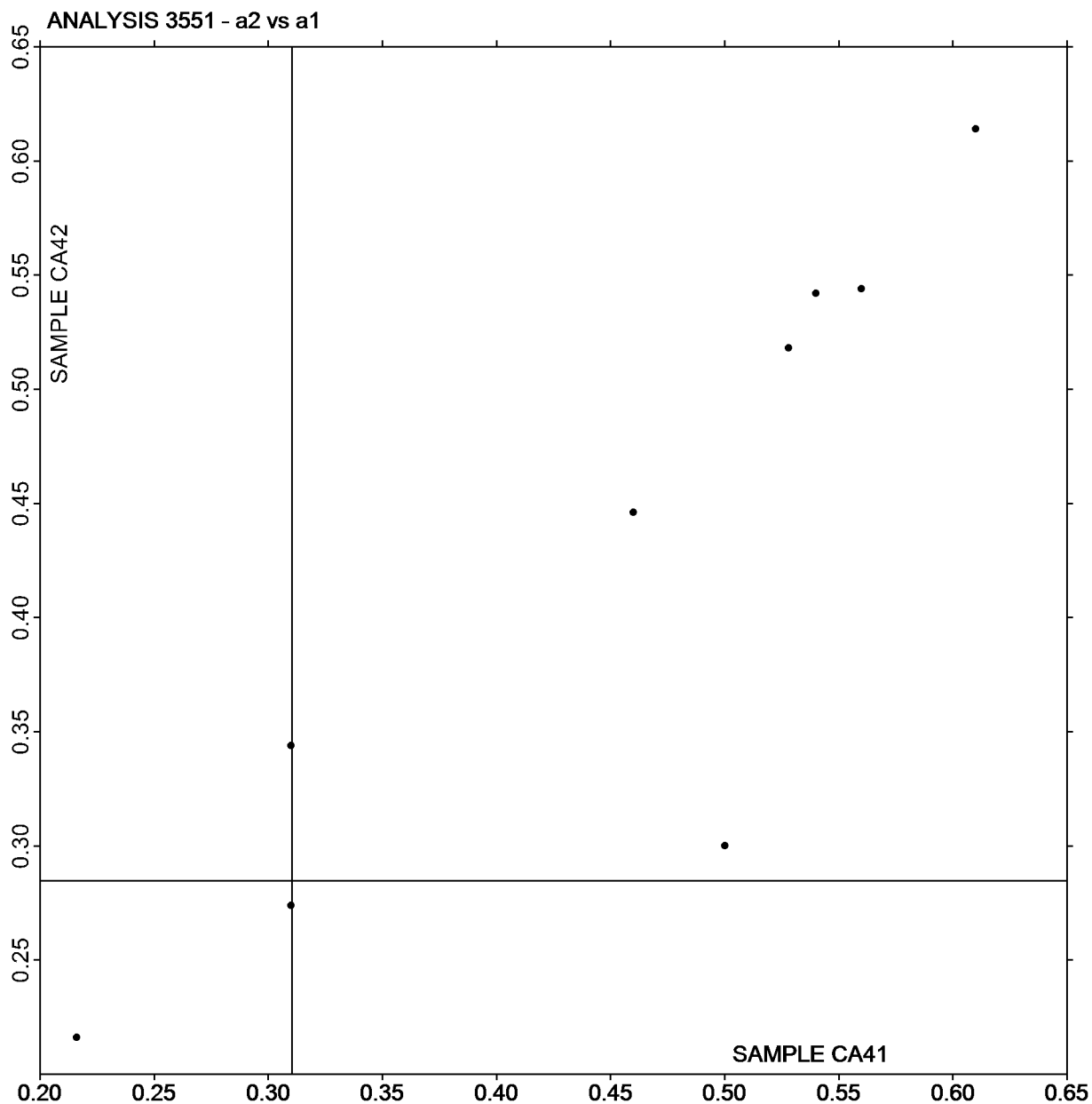
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3551
Color & Color Difference - Near White Papers - D65/10deg obs
Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Report #4362,
June 2025

Plot of a values CA42 vs a values CA41



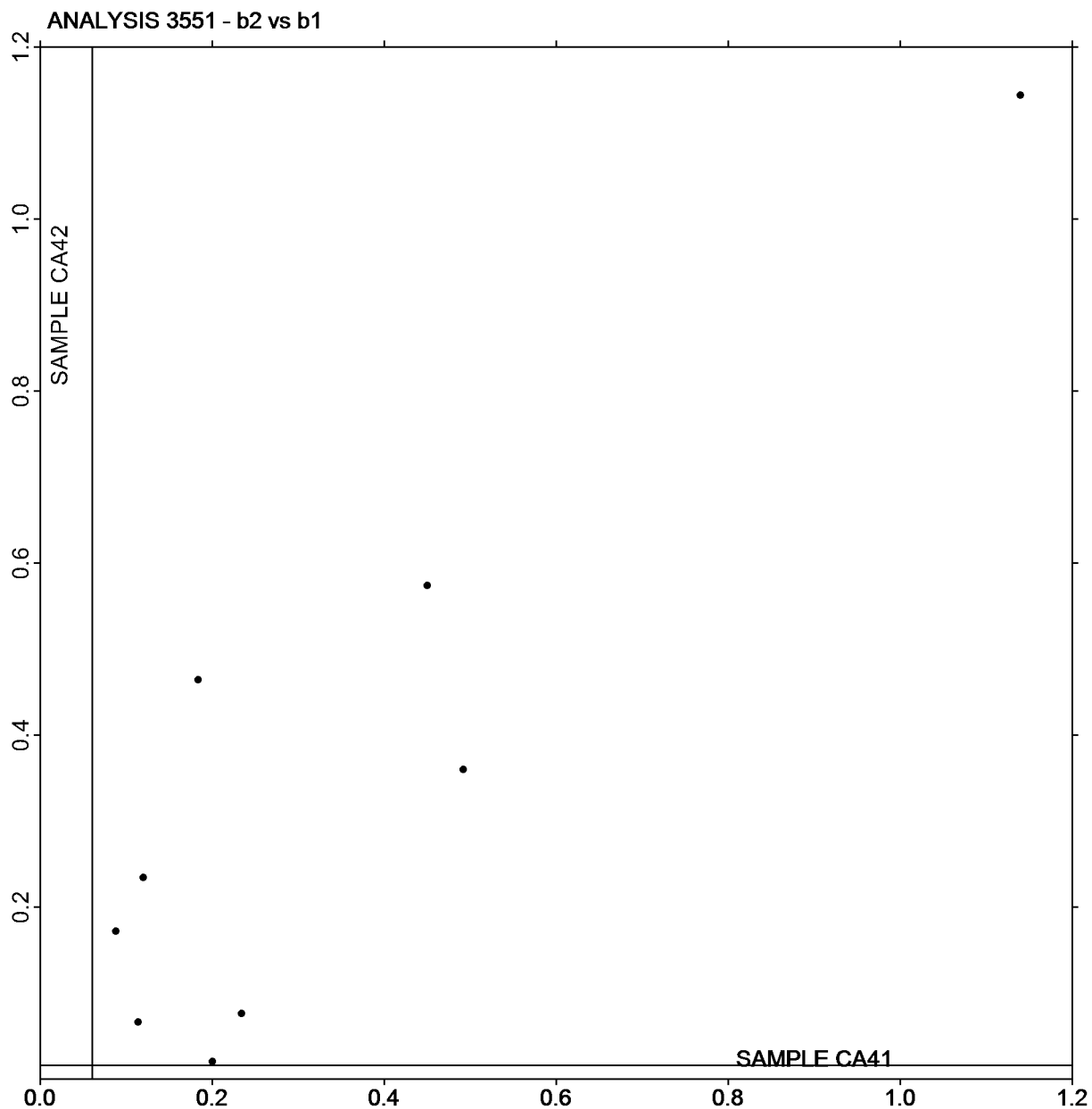
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3551
Color & Color Difference - Near White Papers - D65/10deg obs
Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Report #4362,
June 2025

Plot of b values CA42 vs b values CA41



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3553

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GH41			Sample GH42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4YEX4W		67.76	1.64	0.39	67.49	1.80	0.33	GM
BX2G97		68.20	2.08	0.49	67.52	1.83	0.34	LG
CJHD4L		65.07	-1.05	-0.25	65.00	-0.69	-0.13	GA
KBUK7T		68.91	2.79	0.66	68.29	2.60	0.48	PP
MZAVKT		68.44	2.32	0.55	67.89	2.20	0.40	TH
T4NGVM		69.74	3.62	0.85	69.67	3.98	0.73	VM
T62BCM		64.01	-2.11	-0.50	64.41	-1.28	-0.24	TP
U3QKN6		66.91	0.79	0.19	67.41	1.72	0.32	LF
YDXW6H		66.15	0.03	0.01	65.95	0.26	0.05	PP
ZBLGBG		67.73	1.61	0.38	68.95	3.26	0.60	GM
ZCY94X		54.41	-11.71	-2.77	50.06	-15.63	-2.88	LF

Summary Statistics

Sample GH41

Sample GH42

Grand Means

66.12 Gloss Units

65.69 Gloss Units

Std Dev Btwn Labs

4.23 Gloss Units

5.42 Gloss Units

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

GA BYK-Gardner (model not specified)

GM BYK-Gardner micro-gloss

LF L & W Autoline 400

LG L & W Autoline 600

PP Technidyne Profile/Plus

TH Technidyne T480A

TP Technidyne Profile Plus

VM Valmet PaperLab (was Kajaani/Robotest)



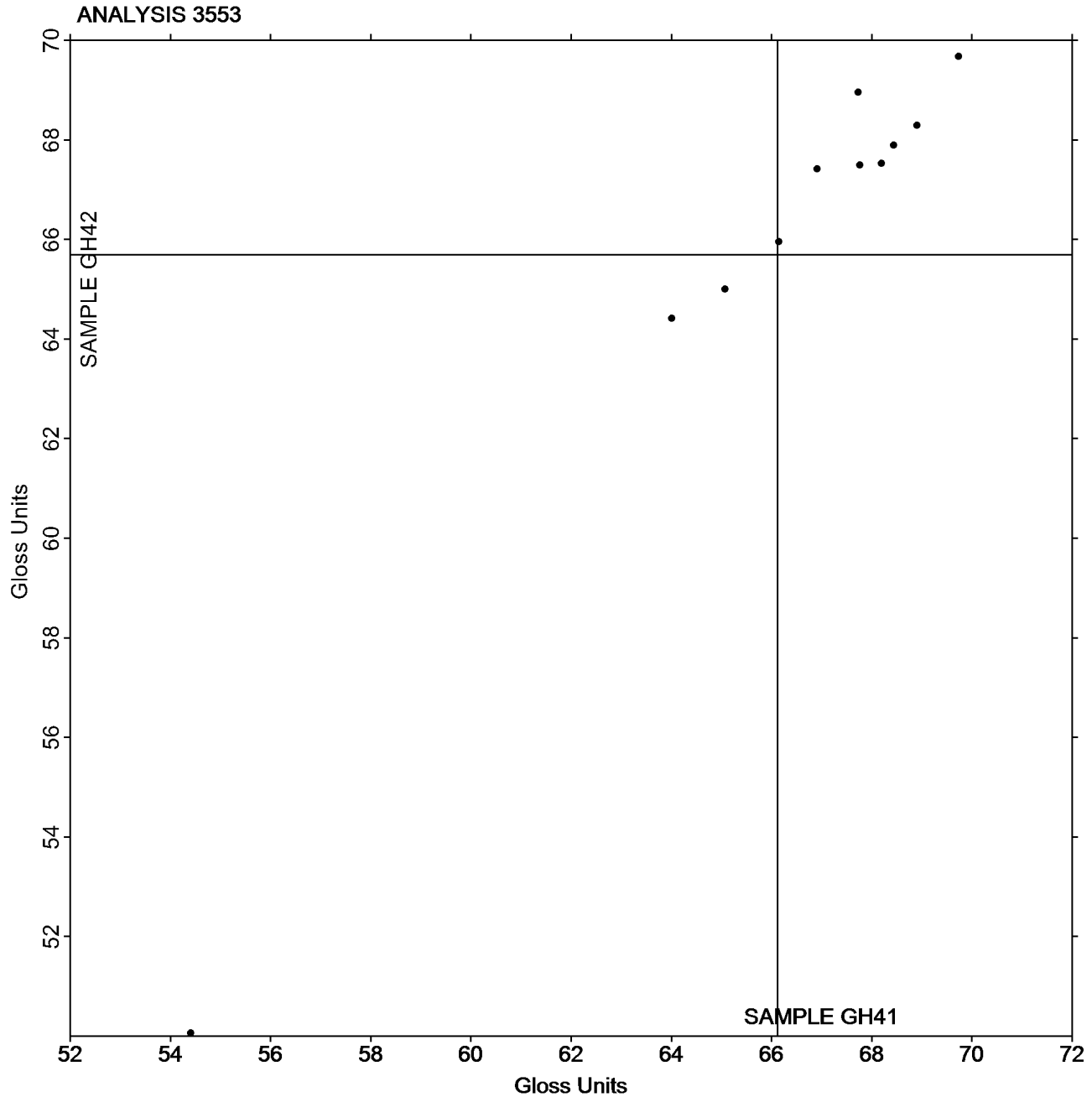
Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3553 Specular Gloss at 75 Degrees - High Range TAPPI Official Test Method T480

Grand Mean Sample GH41 = 66.121
Gloss Units

Grand Mean Sample GH42 = 65.695
Gloss Units



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3555

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GL41			Sample GL42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4FK72C		35.75	1.90	1.02	36.17	2.02	0.99	GS
7K7VG7		31.84	-2.01	-1.08	32.00	-2.15	-1.05	TH
BXJRM6		33.63	-0.22	-0.12	34.90	0.75	0.37	TP
CQHRPN		36.71	2.86	1.54	37.03	2.88	1.41	PP
FAHUD3		34.31	0.46	0.25	34.40	0.25	0.12	WJ
HKVXDX		32.53	-1.32	-0.71	32.74	-1.41	-0.69	TH
MLNFJE		32.15	-1.70	-0.91	31.78	-2.37	-1.15	GM

Summary Statistics

Sample GL41

Sample GL42

Grand Means

33.85 Gloss Units

34.15 Gloss Units

Std Dev Btwn Labs

1.86 Gloss Units

2.05 Gloss Units

Statistics based on 7 of 7 reporting participants.

Key to Instrument Codes Reported by Participants

GM BYK-Gardner micro-gloss

GS BYK-Gardner Glossgard II

PP Technidyne Profile/Plus

TH Technidyne T480A

TP Technidyne Profile Plus

WJ Zehntner ZLR 1020



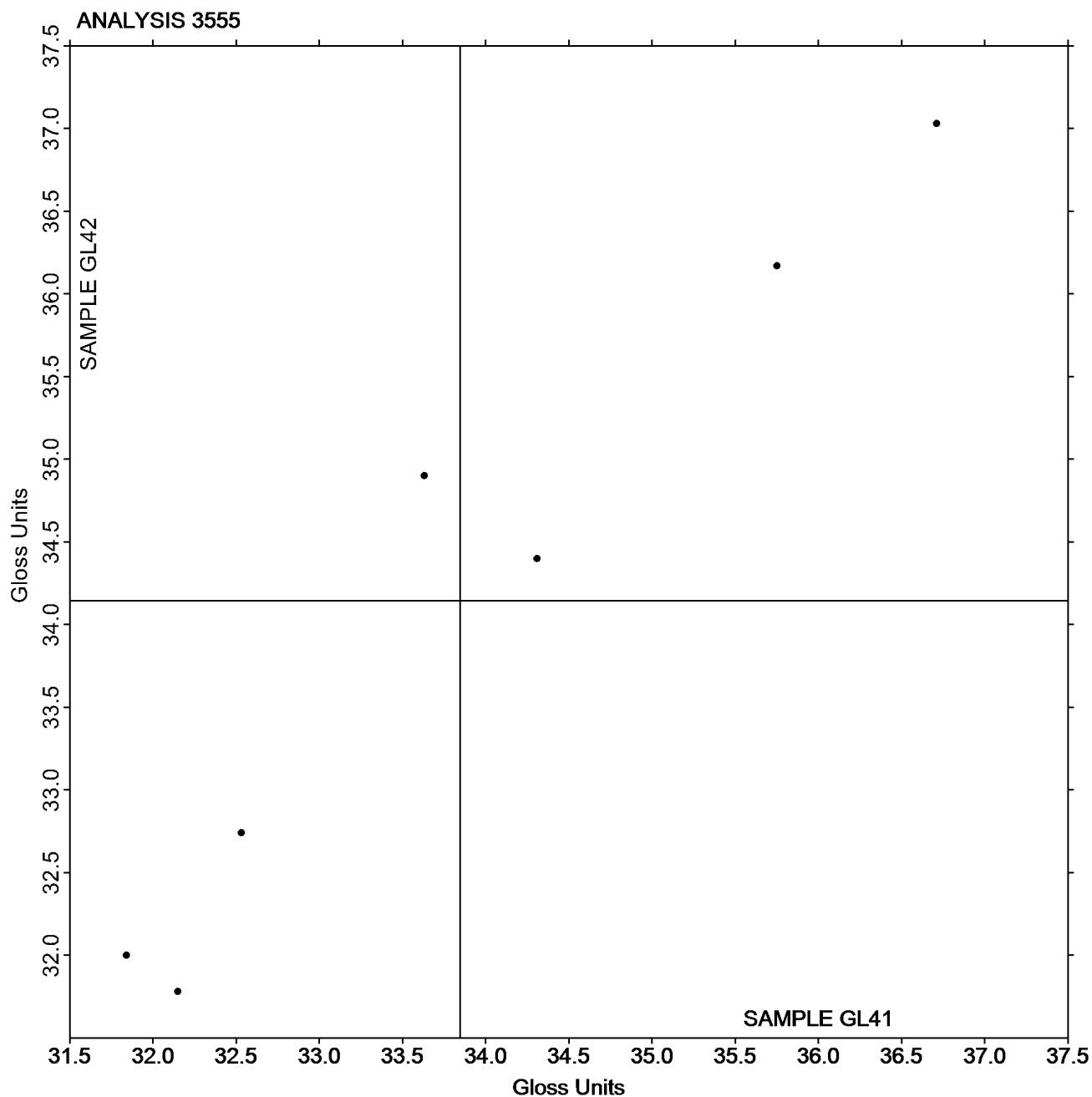
Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3555 Specular Gloss at 75 Degrees - Low Range TAPPI Official Test Method T480

Grand Mean Sample GL41 = 33.846
Gloss Units

Grand Mean Sample GL42 = 34.146
Gloss Units



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3601 Folding Endurance (MIT) - Double Folds TAPPI Official Test Method T511

WebCode	Data Flag	Sample MT41			Sample MT42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
7K7VG7		36.00	-0.86	-0.09	38.60	-0.19	-0.02	MT
7UXC6A		36.90	0.04	0.00	57.10	18.31	1.65	MT
CJHD4L		25.00	-11.86	-1.28	26.90	-11.89	-1.07	MT
H2FPCW		32.40	-4.46	-0.48	26.30	-12.49	-1.13	XX
HKVXDX		44.30	7.44	0.80	45.30	6.51	0.59	MT
MACB7R		36.20	-0.66	-0.07	36.80	-1.99	-0.18	MT
MRUCZU		57.40	20.54	2.21	56.50	17.71	1.60	XX
MZAVKT		30.80	-6.06	-0.65	33.80	-4.99	-0.45	MT
T4NGVM		28.00	-8.86	-0.95	29.60	-9.19	-0.83	MT
WX7HRJ		41.60	4.74	0.51	37.00	-1.79	-0.16	MT

Summary Statistics

Sample MT41

Sample MT42

Grand Means

36.86 Double Folds

38.79 Double Folds

Std Dev Btwn Labs

9.29 Double Folds

11.08 Double Folds

Statistics based on 10 of 10 reporting participants.

Key to Instrument Codes Reported by Participants

MT MIT - Tinius Olsen

XX Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

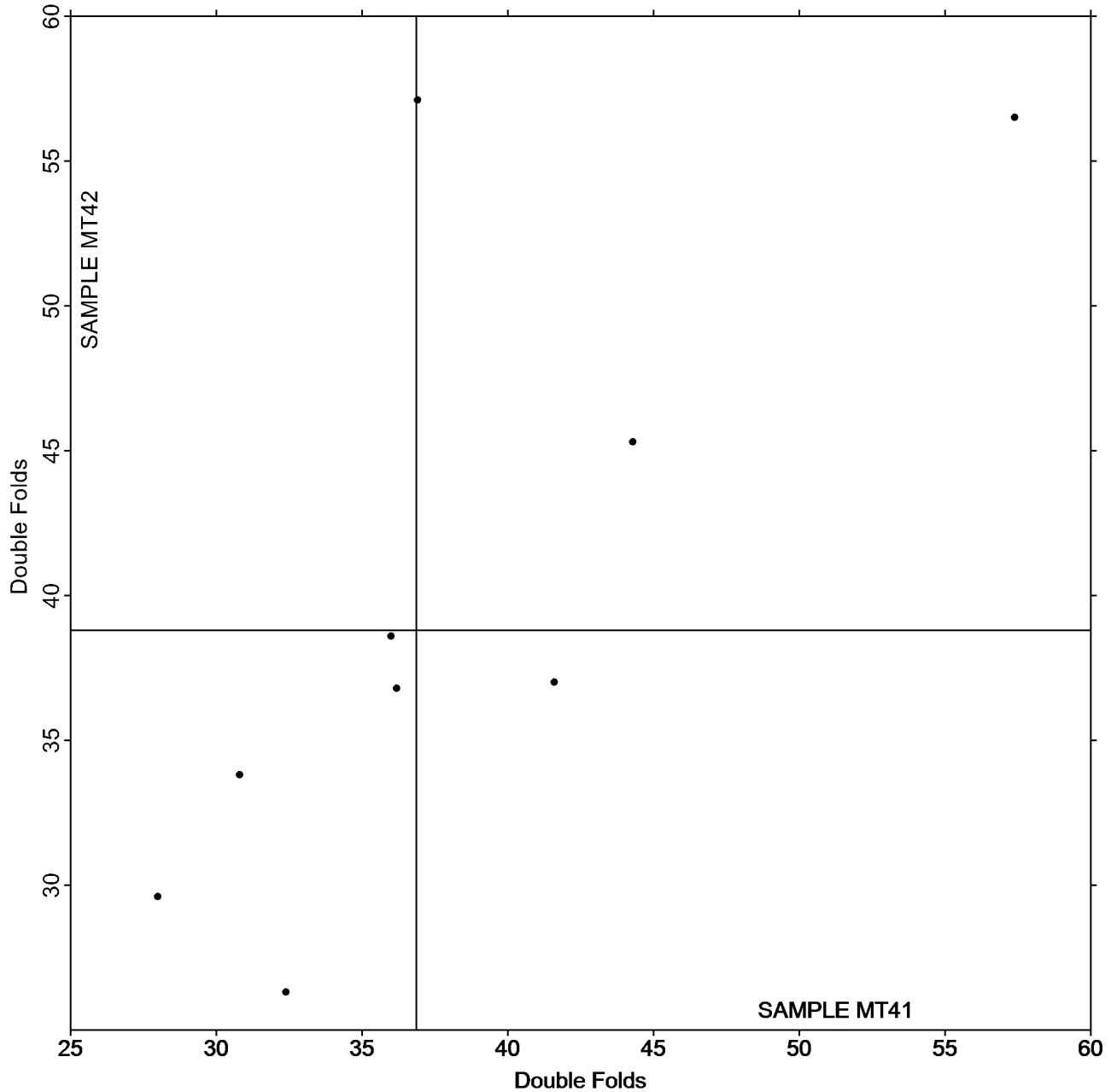
Report #4362,
June 2025

Analysis 3601 Folding Endurance (MIT) - Double Folds TAPPI Official Test Method T511

Grand Mean Sample MT41 = 36.860
Double Folds

Grand Mean Sample MT42 = 38.790
Double Folds

ANALYSIS 3601



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3603 Bending Resistance, Gurley Type TAPPI Official Test Method T543

WebCode	Data Flag	Sample BG41			Sample BG42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
7K7VG7		75.0	-34.1	-1.37	69.7	-45.0	-1.55	ZZ
8R8ECA	X	3.4	-105.7	-4.24	1.9	-112.8	-3.87	ZZ
HKVXDX	X	316.4	207.2	8.31	248.3	133.6	4.59	ZZ
JCUYFG		134.3	25.2	1.01	142.5	27.8	0.95	ZZ
M26DLU		119.7	10.5	0.42	124.8	10.0	0.34	ZZ
T4NGVM		71.7	-37.4	-1.50	76.6	-38.1	-1.31	ZZ
V8Y9YK	X	2.7	-106.5	-4.27	2.6	-112.2	-3.85	ZZ
VZ3BCH		121.7	12.5	0.50	133.6	18.9	0.65	ZZ
WX7HRJ		120.5	11.4	0.46	131.8	17.0	0.59	ZZ
YVFVAF		120.9	11.8	0.47	124.0	9.3	0.32	ZZ

Summary Statistics

Sample BG41

Sample BG42

Grand Means

109.12 Gurley Units

114.72 Gurley Units

Std Dev Btwn Labs

24.94 Gurley Units

29.13 Gurley Units

Statistics based on 7 of 10 reporting participants.

Comments on Assigned Data Flags for Test #3603

HKVXDX (X) - Extreme Data.

V8Y9YK (X) - Data for both samples are low.

8R8ECA (X) - Data for both samples are low.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



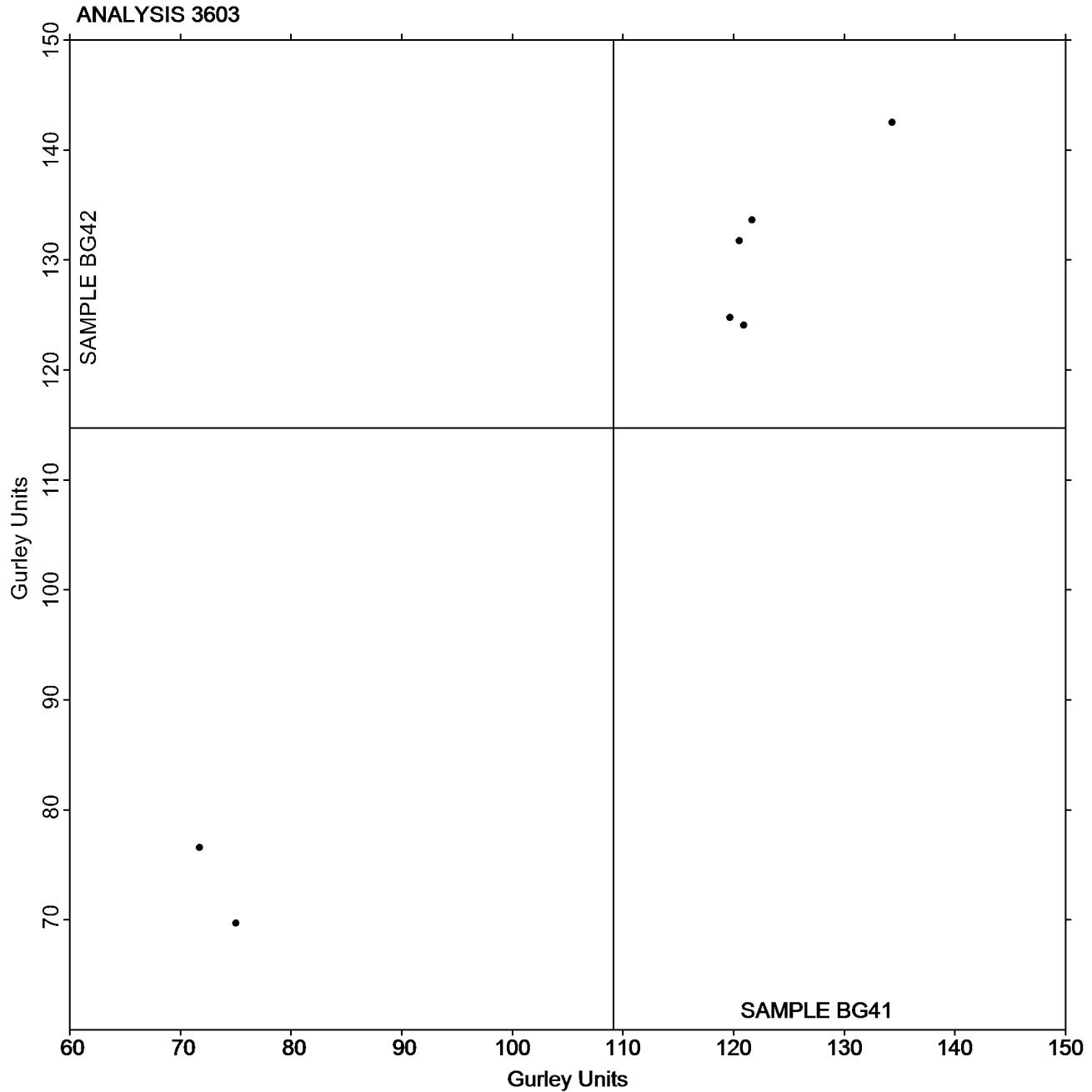
Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3603 Bending Resistance, Gurley Type TAPPI Official Test Method T543

Grand Mean Sample BG41 = 109.12
Gurley Units

Grand Mean Sample BG42 = 114.72
Gurley Units



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3611
Coefficient of Static Friction - Horizontal Plane Method - Printing Papers
TAPPI Official Test Method T549

Report #4362,
June 2025

WebCode	Data Flag	<u>Sample CF41</u>			<u>Sample CF42</u>			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		0.6306	0.0635	0.44	0.6622	0.1009	0.59	TA
3Y79MF		0.5046	-0.0625	-0.43	0.4934	-0.0679	-0.40	XX
4PAQNW		0.5324	-0.0347	-0.24	0.5000	-0.0613	-0.36	TA
BXJRM6		0.6602	0.0931	0.65	0.6354	0.0741	0.44	TA
G4Q69J		0.6970	0.1299	0.90	0.7298	0.1685	0.99	TN
M26DLU		0.6646	0.0975	0.68	0.6674	0.1061	0.63	TA
MACB7R		0.6156	0.0485	0.34	0.6320	0.0707	0.42	TM
V8Y9YK		0.2206	-0.3465	-2.40	0.1592	-0.4021	-2.37	TX
VZ3BCH		0.5780	0.0109	0.08	0.5720	0.0107	0.06	TA

Summary Statistics	<u>Sample CF41</u>	<u>Sample CF42</u>
Grand Means	0.57 COF	0.56 COF
Stnd Dev Btwn Labs	0.14 COF	0.17 COF
Statistics based on 9 of 9 reporting participants.		

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TM	TMI 32-06 Monitor/Slip and Friction
TN	TMI 32-07 Monitor/Slip and Friction	TX	TMI (model not specified)
XX	Instrument make/model not specified by lab		

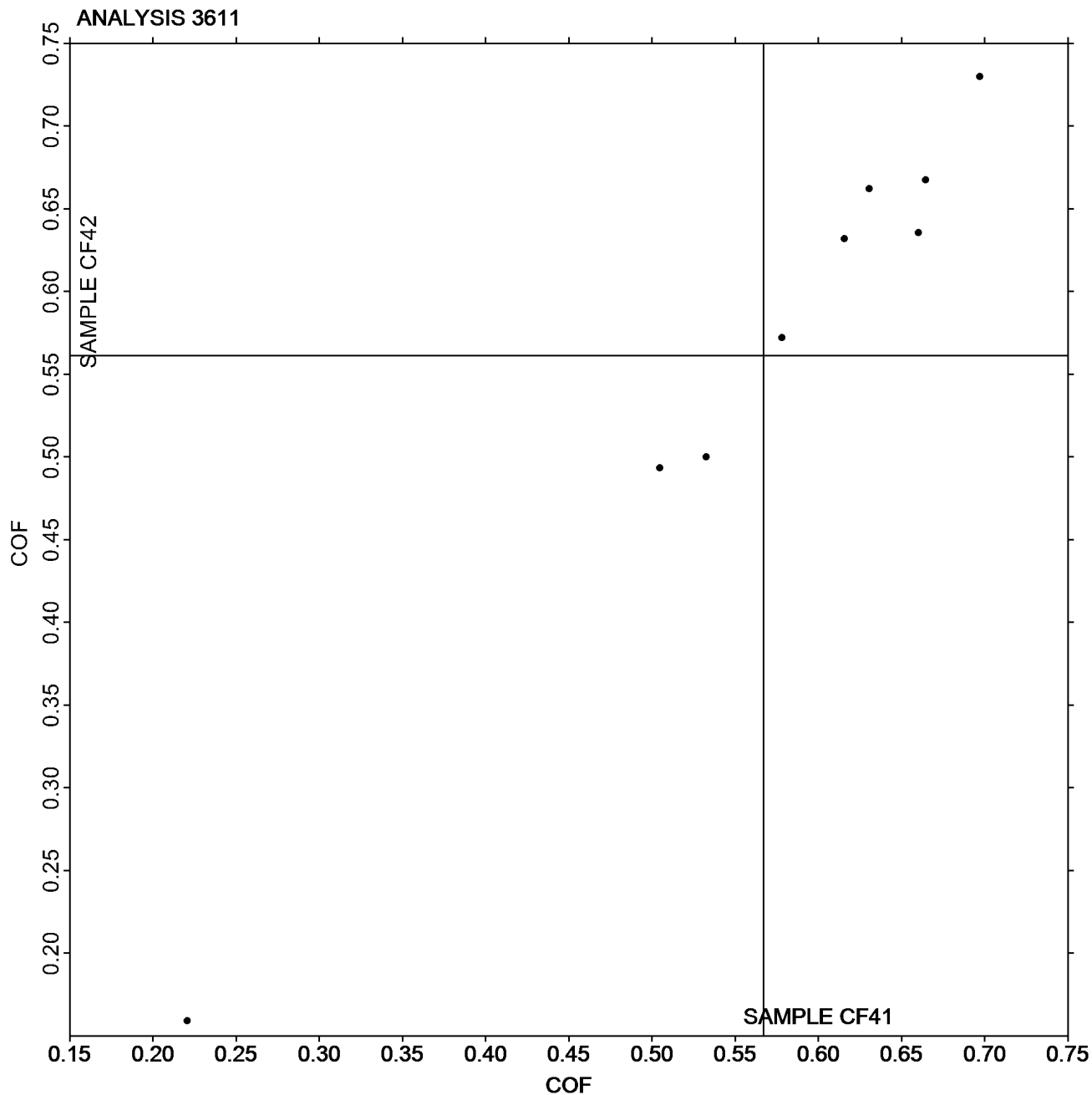


Paper & Paperboard Interlaboratory Testing Program
Analysis 3611
Coefficient of Static Friction - Horizontal Plane Method - Printing Papers
TAPPI Official Test Method T549

Report #4362,
June 2025

Grand Mean Sample CF41 = 0.56707
COF

Grand Mean Sample CF42 =
0.56126 COF



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3612
Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers
TAPPI Official Test Method T549

Report #4362,
June 2025

WebCode	Data Flag	<u>Sample CF41</u>			<u>Sample CF42</u>			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		0.5358	0.0237	0.34	0.5670	0.0549	0.70	TA
3Y79MF		0.5106	-0.0015	-0.02	0.4720	-0.0401	-0.51	XX
4PAQNW		0.5102	-0.0019	-0.03	0.4634	-0.0487	-0.62	TA
BXJRM6		0.5690	0.0569	0.81	0.5198	0.0077	0.10	TA
G4Q69J		0.5639	0.0518	0.74	0.6095	0.0974	1.24	TN
M26DLU		0.5326	0.0205	0.29	0.5448	0.0327	0.42	TA
MACB7R		0.5100	-0.0021	-0.03	0.5554	0.0433	0.55	TM
V8Y9YK		0.3348	-0.1773	-2.53	0.3414	-0.1707	-2.18	TX
VZ3BCH		0.5420	0.0299	0.43	0.5360	0.0239	0.30	TA

Summary Statistics

Sample CF41

Sample CF42

Grand Means

0.51 COF

0.51 COF

Std Dev Btwn Labs

0.07 COF

0.08 COF

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TM	TMI 32-06 Monitor/Slip and Friction
TN	TMI 32-07 Monitor/Slip and Friction	TX	TMI (model not specified)
XX	Instrument make/model not specified by lab		

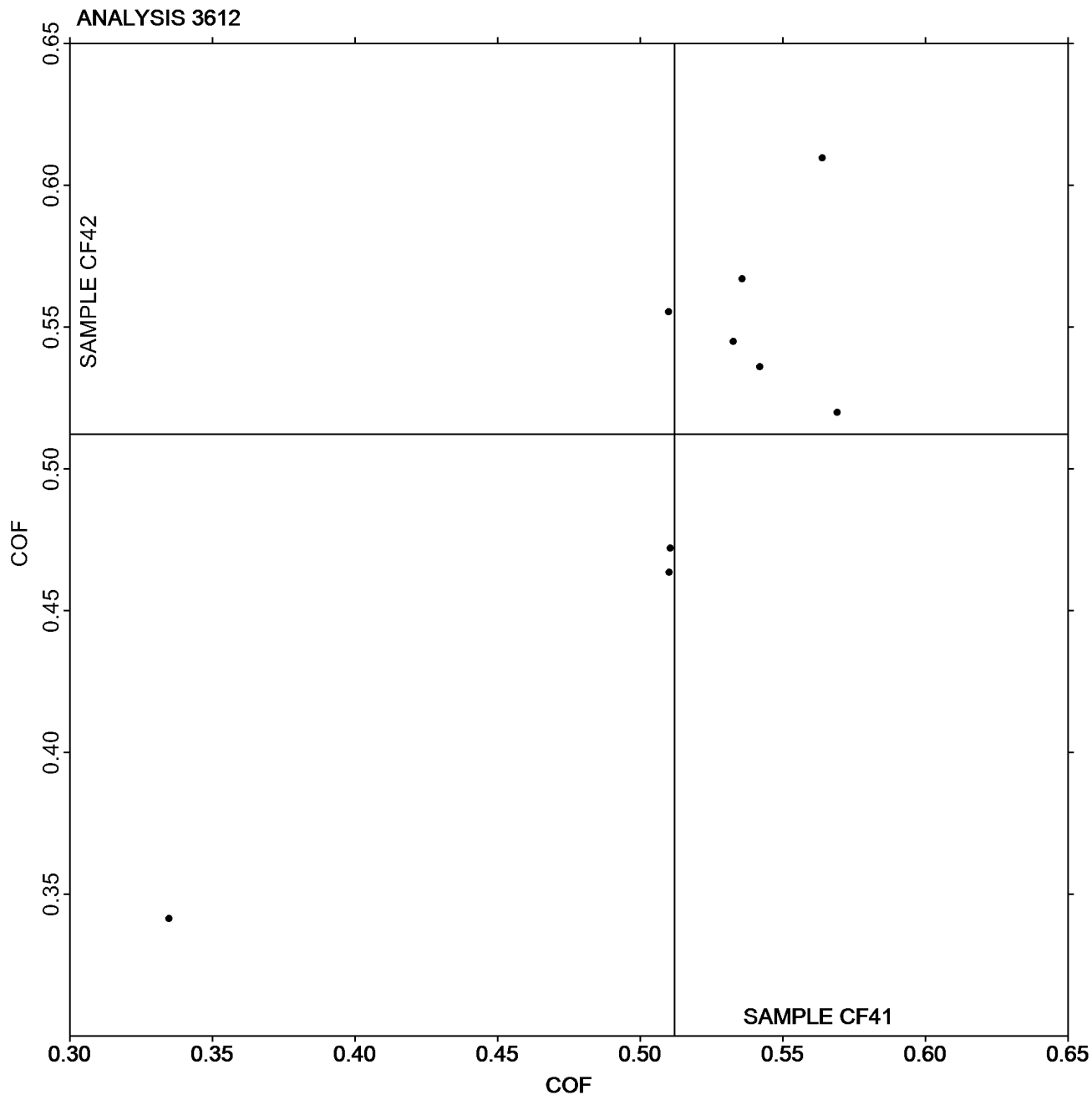


Paper & Paperboard Interlaboratory Testing Program
Analysis 3612
Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers
TAPPI Official Test Method T549

Report #4362,
June 2025

Grand Mean Sample CF41 = 0.51210
COF

Grand Mean Sample CF42 =
0.51215 COF



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3613 Moisture in Paper

TAPPI Official Test Method T412

WebCode	Data Flag	Sample MC41			Sample MC42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
FAHUD3		4.265	-0.247	-0.58	4.075	-0.350	-1.08	ZZ
G2MCEK		3.850	-0.662	-1.56	3.830	-0.595	-1.84	ZZ
G9YQWF		4.486	-0.026	-0.06	4.443	0.018	0.06	ZZ
JY62EJ		5.230	0.718	1.70	4.720	0.295	0.92	ZZ
KEVNXF		4.480	-0.032	-0.07	4.726	0.301	0.93	ZZ
PT29KP		4.420	-0.092	-0.22	4.420	-0.005	-0.01	ZZ
QCRNHQ		4.144	-0.368	-0.87	4.246	-0.179	-0.55	ZZ
VZ3BCH		4.758	0.247	0.58	4.591	0.167	0.52	ZZ
WX7HRJ		4.973	0.461	1.09	4.770	0.345	1.07	ZZ

Summary Statistics

Sample MC41

Sample MC42

Grand Means

4.51 Percent

4.42 Percent

Std Dev Btwn Labs

0.42 Percent

0.32 Percent

Statistics based on 9 of 9 reporting participants.

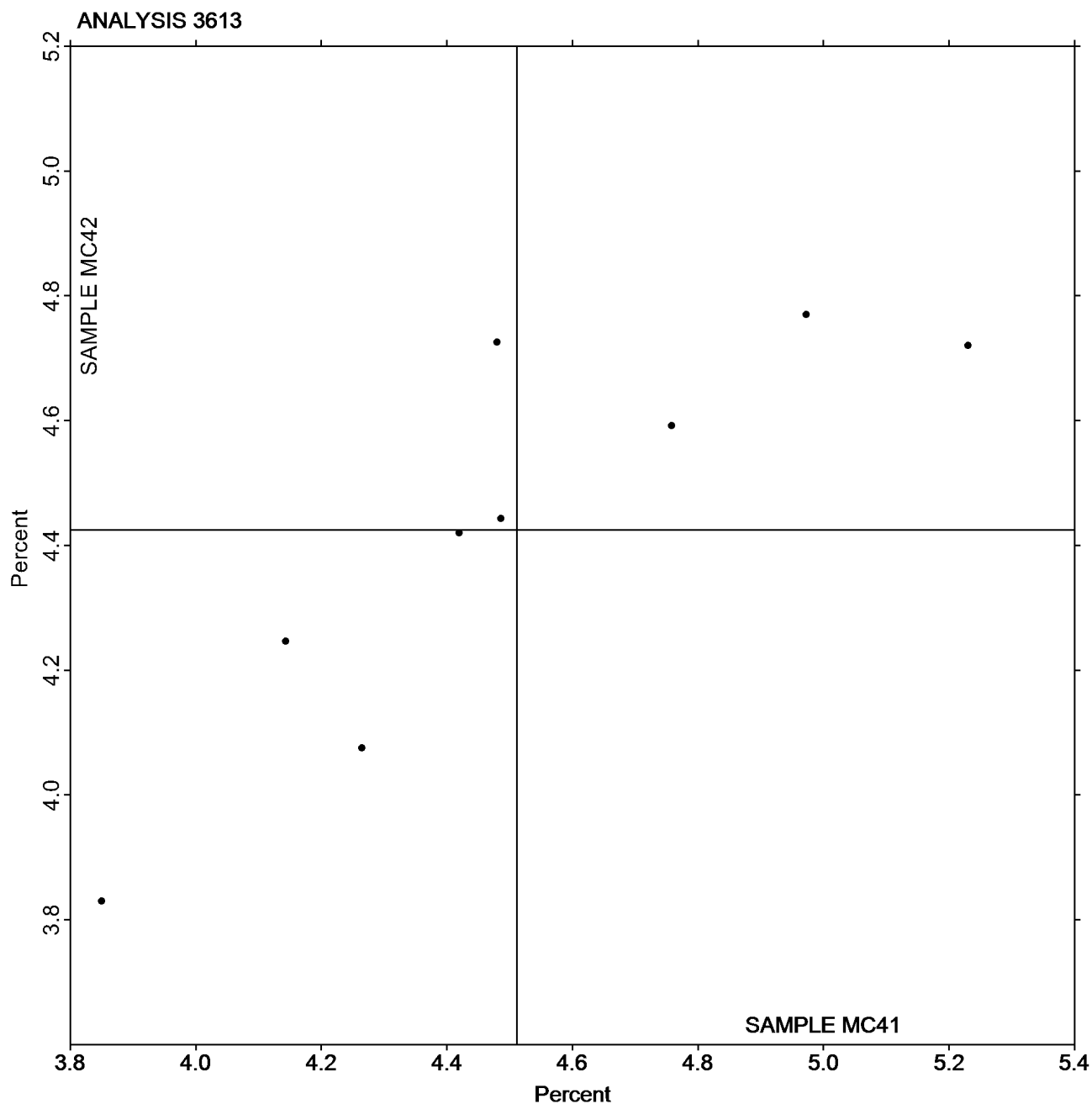
Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Grand Mean Sample MC41 = 4.5117
Percent

Grand Mean Sample MC42 = 4.4246
Percent



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.



Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3615

Sizing Test (Hercules Type)

TAPPI Official Test Method T530

WebCode	Data Flag	Sample HS41			Sample HS42			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G4QDB		17.56	-18.83	-0.68	16.51	-20.07	-0.80	HE
8R8ECA		36.73	0.34	0.01	54.79	18.21	0.72	HE
BVBKF6		37.01	0.62	0.02	30.10	-6.48	-0.26	HE
BXJRM6	*	117.73	81.34	2.94	90.68	54.10	2.15	HE
CZ364L		38.53	2.14	0.08	39.41	2.83	0.11	HE
FBVL4Y		72.45	36.06	1.30	63.74	27.16	1.08	HE
HD7HHY		9.66	-26.73	-0.97	8.88	-27.70	-1.10	HE
JCUYFG	X	291.29	254.90	9.20	311.75	275.17	10.94	HE
JEYQ9U		19.32	-17.07	-0.62	18.24	-18.34	-0.73	HE
MLNFJE		20.46	-15.93	-0.58	21.10	-15.48	-0.62	HE
PK3Q4R		42.44	6.05	0.22	40.24	3.66	0.15	XX
QVKMNP		23.40	-12.99	-0.47	23.20	-13.38	-0.53	HE
T4NGVM		19.79	-16.60	-0.60	19.13	-17.45	-0.69	HE
U3QKN6		19.36	-17.03	-0.61	19.53	-17.05	-0.68	HE
UCYX69		21.10	-15.29	-0.55	21.20	-15.38	-0.61	HE
V8Y9YK		22.53	-13.86	-0.50	30.71	-5.87	-0.23	HE
VZ3BCH	*	64.18	27.79	1.00	87.87	51.29	2.04	HE
YVFVAF	X	466.39	430.00	15.53	443.18	406.60	16.17	HE

Summary Statistics

Sample HS41

Sample HS42

Grand Means

36.39 Seconds

36.58 Seconds

Std Dev Btwn Labs

27.69 Seconds

25.14 Seconds

Statistics based on 16 of 18 reporting participants.

Comments on Assigned Data Flags for Test #3615

YVFVAF (X) - Extreme Data.

JCUYFG (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab



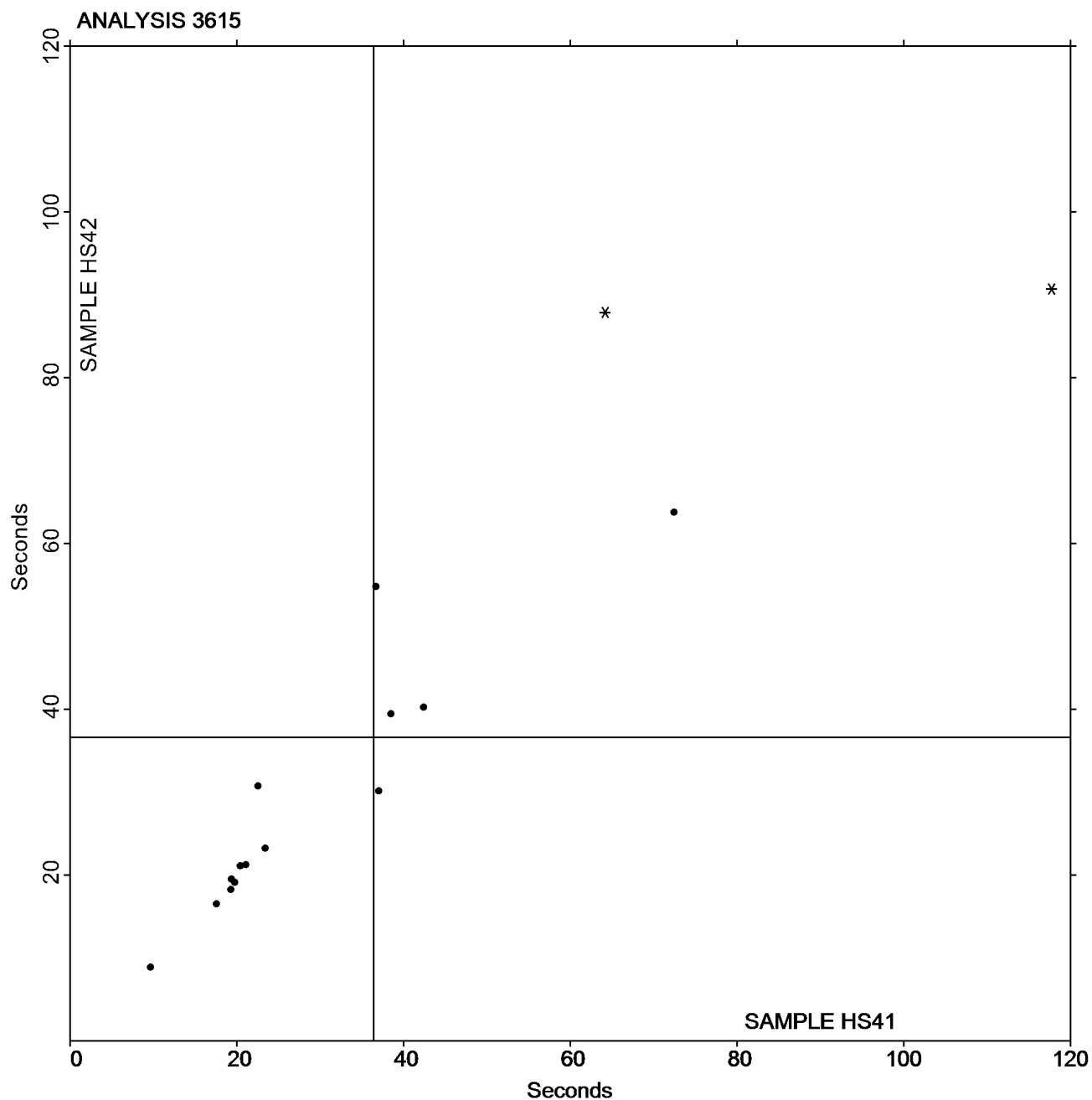
Paper & Paperboard Interlaboratory Testing Program

Report #4362,
June 2025

Analysis 3615 Sizing Test (Hercules Type) TAPPI Official Test Method T530

Grand Mean Sample HS41 = 36.391
Seconds

Grand Mean Sample HS42 = 36.583
Seconds



If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

-End of Report-