Paper & Paperboard Testing Program

Summary Report #4371 - July 2025

Introduction to the Paper & Paperboard Interlaboratory Program

Explanation of Tables and Definitions of Terms

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3111	Bursting Strength - Printing Papers
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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.

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

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

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:

DATA FLAG	STATISTICALLY INCLUDED/EXCLUDED	ACTION REQUIRED
*	INCLUDED	**CAUTION** -review testing procedure and monitor future results. Results fall outside 95% ellipse but within a 99% ellipse that is calculated but not drawn.
X	EXCLUDED	**STOP** - immediate review of data and/or testing procedure is required. 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.

WebCode	Data Flag	Sample CP43			Sample CP44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4E4PC7		3.949	-0.052	-0.69	3.955	-0.056	-0.80
6J9NKA		4.003	0.002	0.03	4.051	0.040	0.56
6LHVN3		4.035	0.034	0.45	4.067	0.056	0.78
73H66E		4.115	0.114	1.51	4.122	0.110	1.56
7CP6F2		4.054	0.053	0.70	4.076	0.065	0.91
8HU7CP		3.895	-0.106	-1.40	3.957	-0.054	-0.77
8LTG9N		3.961	-0.040	-0.53	3.975	-0.036	-0.51
93W9R6		3.976	-0.025	-0.33	3.979	-0.032	-0.46
AGPKFZ		3.967	-0.034	-0.45	3.963	-0.048	-0.68
AV8C2L		3.988	-0.013	-0.17	3.991	-0.020	-0.29
BEGRX7		3.996	-0.005	-0.07	3.999	-0.013	-0.18
BPHVMA		3.863	-0.138	-1.82	3.872	-0.140	-1.98
CHTYYB		3.953	-0.048	-0.64	3.977	-0.034	-0.49
CTFXR2		3.950	-0.051	-0.67	3.961	-0.050	-0.71
DX6XJ2		4.039	0.038	0.51	4.079	0.067	0.95
DYVYM6	X	4.032	0.031	0.41	4.138	0.127	1.79
DZREXF		4.064	0.063	0.83	4.031	0.020	0.28
E6FEQ2		4.043	0.042	0.56	4.007	-0.005	-0.07
EFYQ6Z		4.011	0.010	0.13	4.068	0.056	0.79
F9DGVU		4.124	0.123	1.62	4.108	0.096	1.36
GY4AQD		4.091	0.089	1.18	4.078	0.067	0.95
GZCJLW		3.948	-0.053	-0.71	3.991	-0.021	-0.29
JC6KDQ		4.032	0.031	0.41	3.985	-0.026	-0.37
JHPKT4		4.028	0.027	0.36	4.022	0.011	0.15
KJGYVL		3.890	-0.111	-1.47	3.946	-0.065	-0.92
M372M8		3.969	-0.032	-0.42	4.005	-0.006	-0.09
M7KYR9		4.024	0.023	0.30	4.002	-0.009	-0.13
MJQRL7		4.064	0.063	0.83	4.061	0.050	0.70
NA2FPJ		4.021	0.020	0.26	4.044	0.033	0.46
NPDWWL		3.831	-0.170	-2.25	3.844	-0.167	-2.37
NTD9RL		4.003	0.002	0.03	3.996	-0.015	-0.21
NY4H2K		4.024	0.023	0.31	4.054	0.043	0.60
Q3R4LH		4.028	0.026	0.35	4.031	0.020	0.28
QYBEKU		3.866	-0.135	-1.78	3.870	-0.141	-2.00
TJALQN		4.177	0.176	2.32	4.192	0.181	2.55
UWRVQY	X	3.854	-0.147	-1.94	3.780	-0.232	-3.28
VF4X3C		4.102	0.101	1.33	4.103	0.092	1.29
VVU37Z		3.972	-0.029	-0.38	3.972	-0.039	-0.56
WGTNMG		4.061	0.060	0.80	4.052	0.041	0.57
Z2TQCW		3.922	-0.079	-1.04	3.949	-0.062	-0.88

Summary Statistics	Sample CP43	Sample CP44
Grand Means	4.00 mils	4.01 mils
Stnd Dev Btwn Labs	0.08 mils	0.07 mils
		Statistics based on 38 of 40 reporting participants.

Comments on Assigned Data Flags for Test #3101

UWRVQY (X) - Data for sample CP44 are low. Inconsistent within the determinations of sample CP44.

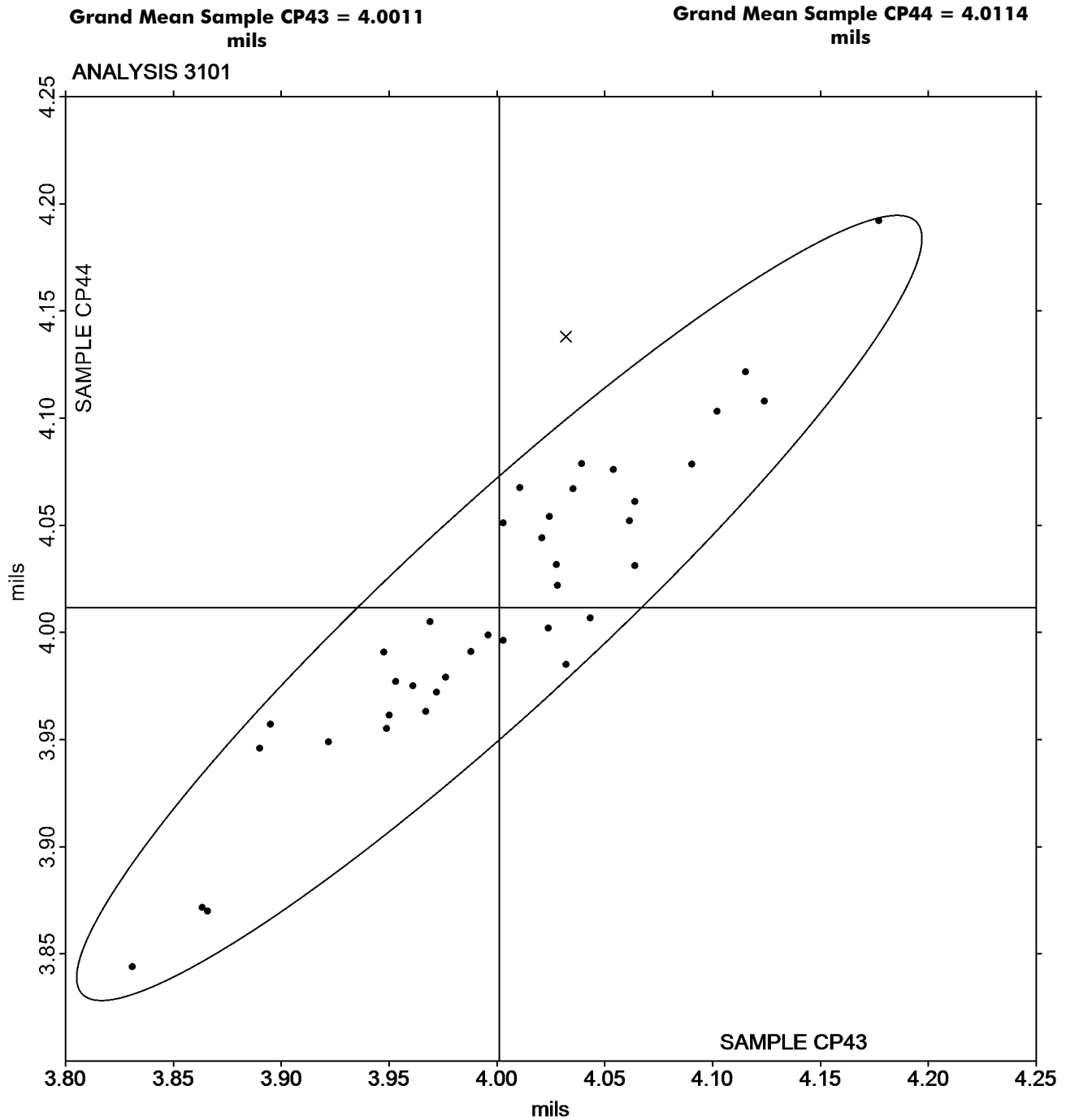DYVYM6 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample CP44.

Analysis Notes:

NY4H2K - Data appear to be reported as micrometers, not mils as indicated on data entry form. CTS will not correct the Units going forward.

Grand Mean Sample CP43 = 4.0011 mils

Grand Mean Sample CP44 = 4.0114 mils

ANALYSIS 3101

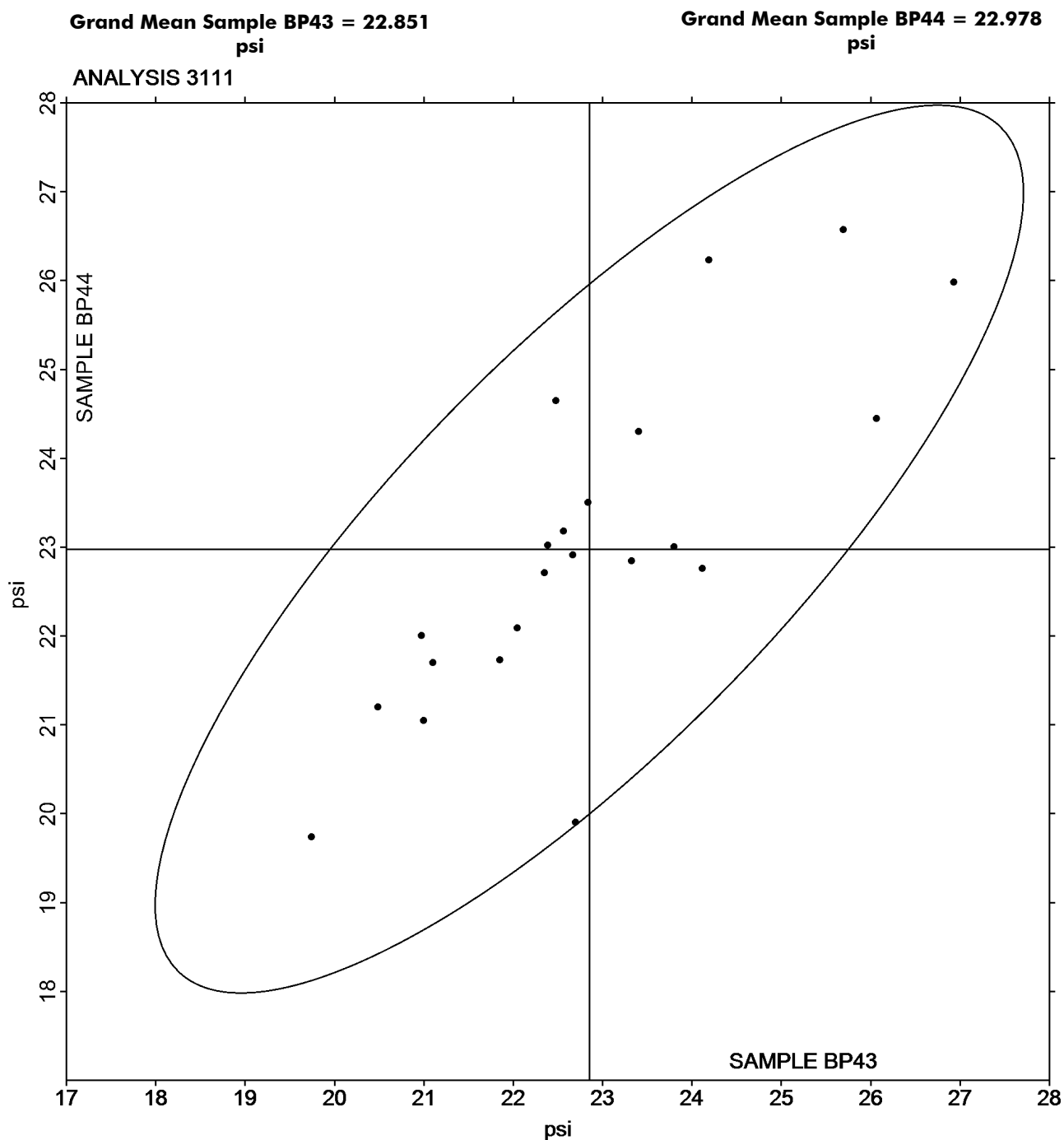
SAMPLE CP44

mils

SAMPLE CP43

mils

Paper & Paperboard Interlaboratory Testing Program
Analysis 3111
Bursting Strength - Printing Papers
TAPPI Official Test Method T403

WebCode	Data Flag	Sample BP43 Lab Mean	Sample BP43 Diff from Grand Mean	Sample BP43 CPV	Sample BP44 Lab Mean	Sample BP44 Diff from Grand Mean	Sample BP44 CPV
3B6UDC		22.67	-0.19	-0.10	22.91	-0.07	-0.04
4E4PC7		22.39	-0.46	-0.26	23.02	0.04	0.02
73H66E		22.05	-0.81	-0.45	22.09	-0.89	-0.48
7WWCTE		22.35	-0.50	-0.28	22.71	-0.27	-0.15
7ZXFK2		20.49	-2.36	-1.32	21.20	-1.78	-0.96
8LTG9N		22.70	-0.15	-0.08	19.90	-3.08	-1.67
AV8C2L		26.07	3.22	1.79	24.45	1.47	0.80
BUCUZJ		25.69	2.84	1.58	26.57	3.59	1.95
C4UQHW		22.48	-0.37	-0.21	24.65	1.67	0.91
CHTYYB		19.74	-3.11	-1.73	19.74	-3.24	-1.76
DZREXF		21.00	-1.85	-1.03	21.05	-1.93	-1.05
GY4AQD		23.32	0.47	0.26	22.84	-0.13	-0.07
JC6KDQ		24.12	1.27	0.71	22.76	-0.22	-0.12
KJGYVL	X	32.30	9.45	5.27	33.40	10.42	5.65
KMFE7V		23.80	0.95	0.53	23.00	0.02	0.01
L9D6YZ		23.41	0.56	0.31	24.30	1.32	0.72
M372M8		24.19	1.34	0.75	26.23	3.25	1.76
M7KYR9		21.10	-1.75	-0.98	21.70	-1.28	-0.69
MJQRL7		26.93	4.08	2.27	25.98	3.00	1.63
NTD9RL		22.57	-0.28	-0.16	23.18	0.20	0.11
NY4H2K		21.85	-1.00	-0.56	21.73	-1.25	-0.68
WGTNMG		20.97	-1.88	-1.05	22.00	-0.98	-0.53
YALYY9		22.84	-0.01	-0.01	23.50	0.52	0.28

Summary Statistics	Sample BP43	Sample BP44
Grand Means	22.85 psi	22.98 psi
Stnd Dev Btwn Labs	1.79 psi	1.84 psi

Statistics based on 22 of 23 reporting participants.

Comments on Assigned Data Flags for Test #3111

KJGYVL (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

Grand Mean Sample BP43 = 22.851 psi

Grand Mean Sample BP44 = 22.978 psi

WebCode	Data Flag	Sample RP43			Sample RP44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
34LTTT		61.94	1.23	0.23	61.53	0.39	0.07
3B6UDC		67.68	6.97	1.29	63.84	2.70	0.47
4E4PC7		66.00	5.29	0.98	67.80	6.66	1.16
6J9NKA		57.28	-3.43	-0.64	58.46	-2.68	-0.47
73H66E		56.92	-3.78	-0.70	57.90	-3.24	-0.56
7CP6F2		61.20	0.49	0.09	61.60	0.46	0.08
83D88N		62.20	1.49	0.28	59.28	-1.86	-0.32
8HU7CP		55.60	-5.11	-0.95	53.70	-7.44	-1.29
8LTG9N		56.80	-3.91	-0.72	57.10	-4.04	-0.70
8QJQHM		62.00	1.29	0.24	63.22	2.08	0.36
93W9R6	X	110.22	49.51	9.18	116.82	55.68	9.69
AV8C2L		57.90	-2.81	-0.52	59.20	-1.94	-0.34
CHTYYB		58.82	-1.89	-0.35	63.80	2.66	0.46
DZREXF	*	71.62	10.91	2.02	68.56	7.42	1.29
E6FEQ2		61.68	0.97	0.18	60.52	-0.61	-0.11
EBKD2R		60.05	-0.66	-0.12	61.77	0.63	0.11
EFYQ6Z		56.95	-3.76	-0.70	57.47	-3.67	-0.64
GY4AQD		60.43	-0.28	-0.05	58.86	-2.28	-0.40
JC6KDQ		51.97	-8.74	-1.62	52.54	-8.60	-1.50
JHPKT4		55.66	-5.05	-0.94	55.58	-5.56	-0.97
KMFE7V		71.80	11.09	2.06	74.20	13.06	2.27
L9D6YZ		68.26	7.55	1.40	68.08	6.94	1.21
M372M8		51.72	-8.99	-1.67	54.82	-6.32	-1.10
M7KYR9		63.53	2.82	0.52	63.16	2.02	0.35
M82VK9		55.22	-5.49	-1.02	54.20	-6.94	-1.21
MJQRL7		56.45	-4.26	-0.79	55.30	-5.84	-1.02
NTD9RL		60.00	-0.71	-0.13	60.15	-0.99	-0.17
PGDYLN		54.67	-6.04	-1.12	53.48	-7.66	-1.33
Q3R4LH		68.87	8.16	1.51	71.51	10.37	1.81
QYBEKU		63.38	2.67	0.50	63.32	2.18	0.38
TJALQN		63.70	2.99	0.56	68.00	6.86	1.19
VF4X3C		67.62	6.91	1.28	71.98	10.84	1.89
VM3KUC		52.75	-7.96	-1.47	53.57	-7.57	-1.32
VVU37Z	X	3.29	-57.42	-10.64	3.24	-57.90	-10.08
WGTNMG		59.12	-1.59	-0.29	60.01	-1.12	-0.20
Z2TQCW		64.20	3.49	0.65	64.15	3.01	0.52

Summary Statistics	Sample RP43	Sample RP44
Grand Means	60.71 Grams	61.14 Grams
Stnd Dev Btwn Labs	5.39 Grams	5.74 Grams
		Statistics based on 34 of 36 reporting participants.

Comments on Assigned Data Flags for Test #3113

VVU37Z (X) - Extreme Data.

93W9R6 (X) - Extreme Data.

Analysis Notes:

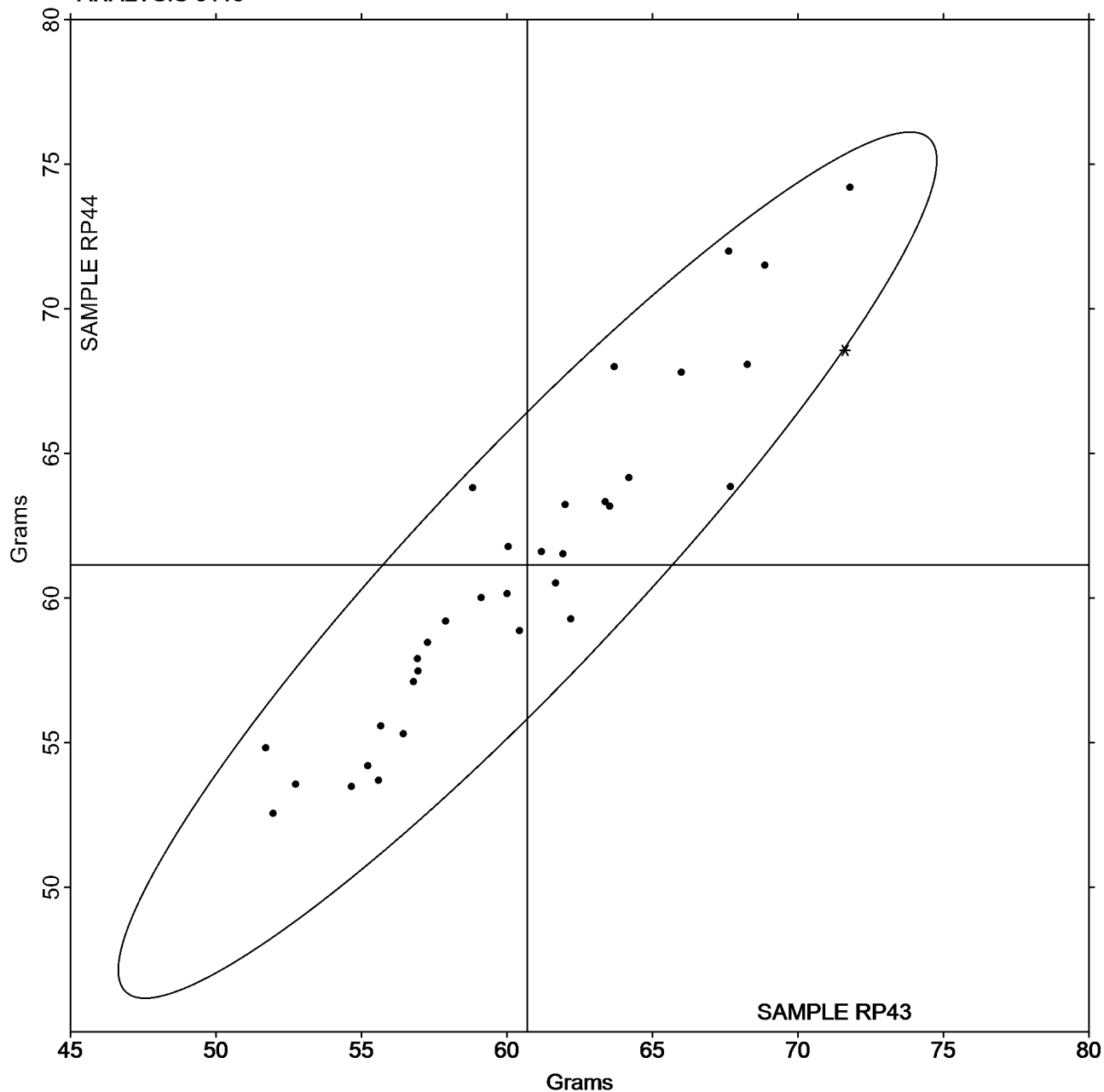JC6KDQ - Data appear to be reported as gf, not mN as indicated on data entry form. CTS will not correct the Units going forward.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3113
Tearing Strength - Printing Papers
TAPPI Official Test Method T414

Report #4371, July 2025

Grand Mean Sample RP43 = 60.705 Grams

Grand Mean Sample RP44 = 61.137 Grams

ANALYSIS 3113

SAMPLE RP44

Grams

SAMPLE RP43

Grams

		Sample NP43				Sample NP44		
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV		Lab Mean	Diff from Grand Mean	CPV
3B6UDC		3.522	-0.037	-0.14		3.547	-0.054	-0.25
3ZMBV2		3.562	0.003	0.01		3.566	-0.034	-0.16
4E4PC7	*	3.849	0.290	1.09		3.577	-0.023	-0.10
6J9NKA		3.323	-0.237	-0.89		3.427	-0.173	-0.80
6LHVN3		3.517	-0.043	-0.16		3.705	0.105	0.48
73H66E		3.206	-0.354	-1.33		3.332	-0.268	-1.23
7CP6F2		3.282	-0.278	-1.05		3.325	-0.275	-1.26
83D88N		2.967	-0.593	-2.23		3.068	-0.532	-2.45
8HU7CP		3.475	-0.085	-0.32		3.554	-0.046	-0.21
8LTG9N		3.374	-0.186	-0.70		3.324	-0.276	-1.27
93W9R6		4.062	0.502	1.89		4.000	0.399	1.84
AV8C2L		3.891	0.332	1.25		3.732	0.132	0.61
BEGRX7		3.518	-0.042	-0.16		3.545	-0.055	-0.25
CHTYYB		3.459	-0.101	-0.38		3.484	-0.117	-0.54
CTFXR2	X	3.954	0.394	1.48		4.270	0.670	3.08
DZREXF		3.416	-0.144	-0.54		3.623	0.023	0.11
EFYQ6Z		3.645	0.085	0.32		3.539	-0.061	-0.28
GY4AQD		3.650	0.090	0.34		3.554	-0.046	-0.21
GZCJLW		3.444	-0.116	-0.43		3.558	-0.042	-0.19
JHPKT4	X	3.093	-0.467	-1.76		2.533	-1.068	-4.91
M372M8		3.719	0.159	0.60		3.914	0.314	1.44
M7KYR9		3.268	-0.292	-1.10		3.455	-0.145	-0.67
M82VK9		3.550	-0.010	-0.04		3.743	0.143	0.66
MJQRL7		3.610	0.050	0.19		3.634	0.034	0.15
NBXYQL		3.523	-0.037	-0.14		3.734	0.134	0.61
NTD9RL		3.514	-0.046	-0.17		3.529	-0.072	-0.33
PGDYLN		3.948	0.388	1.46		3.863	0.263	1.21
Q3R4LH		3.152	-0.408	-1.53		3.289	-0.311	-1.43
QYBEKU		4.019	0.459	1.73		3.989	0.389	1.79
RUG2ZH		3.543	-0.017	-0.06		3.571	-0.030	-0.14
TJALQN		3.331	-0.229	-0.86		3.476	-0.125	-0.57
VF4X3C		3.958	0.398	1.50		3.830	0.230	1.06
VM3KUC		3.600	0.040	0.15		3.610	0.010	0.04
VVU37Z		4.052	0.493	1.85		4.052	0.452	2.08
WGTNMG		3.523	-0.036	-0.14		3.659	0.059	0.27

Paper & Paperboard Interlaboratory Testing Program
Analysis 3115
Tensile Breaking Strength - Printing Papers
TAPPI Official Test Method T494

Report #4371, July 2025

Summary Statistics	Sample NP43	Sample NP44
Grand Means	3.56 kN/m	3.60 kN/m
Stnd Dev Btwn Labs	0.27 kN/m	0.22 kN/m
		Statistics based on 33 of 35 reporting participants.

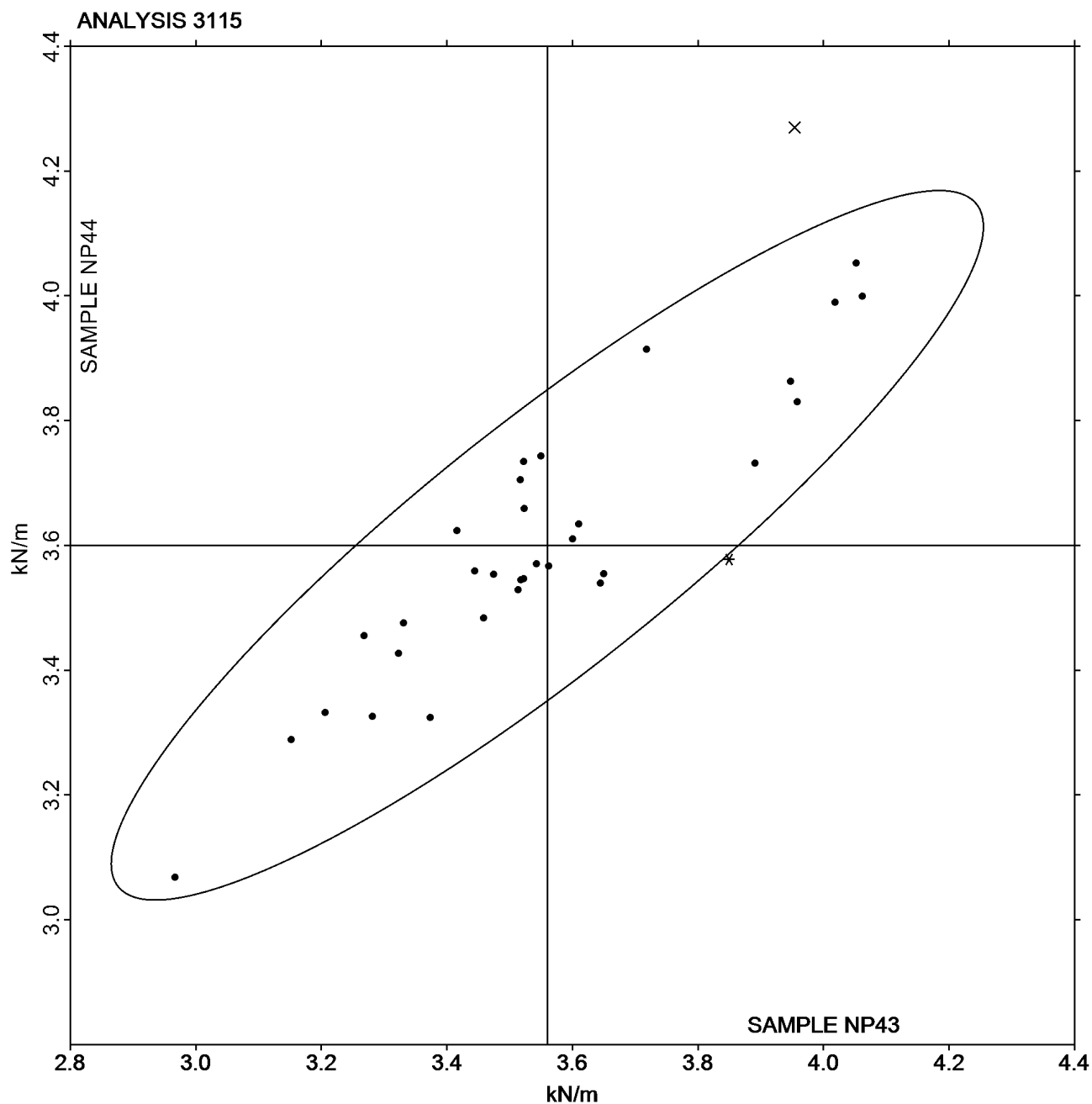**Comments on Assigned Data Flags for Test #3115**

CTFXR2 (X) - Data for sample NP44 are high.

JHPKT4 (X) - Data for sample NP44 are low.

Grand Mean Sample NP43 = 3.5598 kN/m

Grand Mean Sample NP44 = 3.6003 kN/m

| | | Sample NP43 | | | | Sample NP44 | | |
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV		Lab Mean	Diff from Grand Mean	CPV
3B6UDC		43.86	3.60	0.74		41.84	0.44	0.08
3ZMBV2		44.57	4.30	0.88		43.87	2.47	0.44
4E4PC7	*	29.11	-11.16	-2.29		26.28	-15.12	-2.73
6LHVN3		43.31	3.04	0.62		47.12	5.72	1.03
73H66E		32.67	-7.60	-1.56		36.63	-4.77	-0.86
8HU7CP		36.03	-4.24	-0.87		34.68	-6.72	-1.21
8LTG9N		35.05	-5.22	-1.07		37.07	-4.34	-0.78
93W9R6		45.71	5.44	1.12		45.15	3.75	0.68
BEGRX7		35.81	-4.46	-0.91		39.18	-2.22	-0.40
CHTYYB		46.62	6.35	1.30		46.60	5.20	0.94
CTFXR2		43.16	2.89	0.59		50.94	9.54	1.72
DZREXF		41.33	1.06	0.22		43.43	2.03	0.37
EFYQ6Z		38.24	-2.03	-0.42		37.30	-4.10	-0.74
GY4AQD		43.31	3.04	0.62		40.31	-1.09	-0.20
GZCJLW		39.08	-1.19	-0.24		38.57	-2.83	-0.51
M372M8		47.59	7.32	1.50		51.40	10.00	1.80
M7KYR9		36.59	-3.68	-0.76		39.93	-1.47	-0.27
M82VK9		34.22	-6.05	-1.24		38.70	-2.70	-0.49
MJQRL7		36.20	-4.07	-0.84		36.05	-5.35	-0.97
PGDYLN		40.05	-0.22	-0.04		41.93	0.53	0.10
Q3R4LH		38.53	-1.74	-0.36		38.38	-3.02	-0.55
QYBEKU		43.43	3.16	0.65		42.44	1.04	0.19
TJALQN		45.62	5.35	1.10		51.01	9.60	1.73
VF4X3C		47.18	6.91	1.42		43.18	1.78	0.32
VM3KUC		39.21	-1.06	-0.22		42.88	1.48	0.27
WGTNMG		40.48	0.21	0.04		41.61	0.21	0.04

Summary Statistics	Sample NP43	Sample NP44
Grand Means	40.27 Joules/sq m	41.40 Joules/sq m
Stnd Dev Btwn Labs	4.87 Joules/sq m	5.54 Joules/sq m

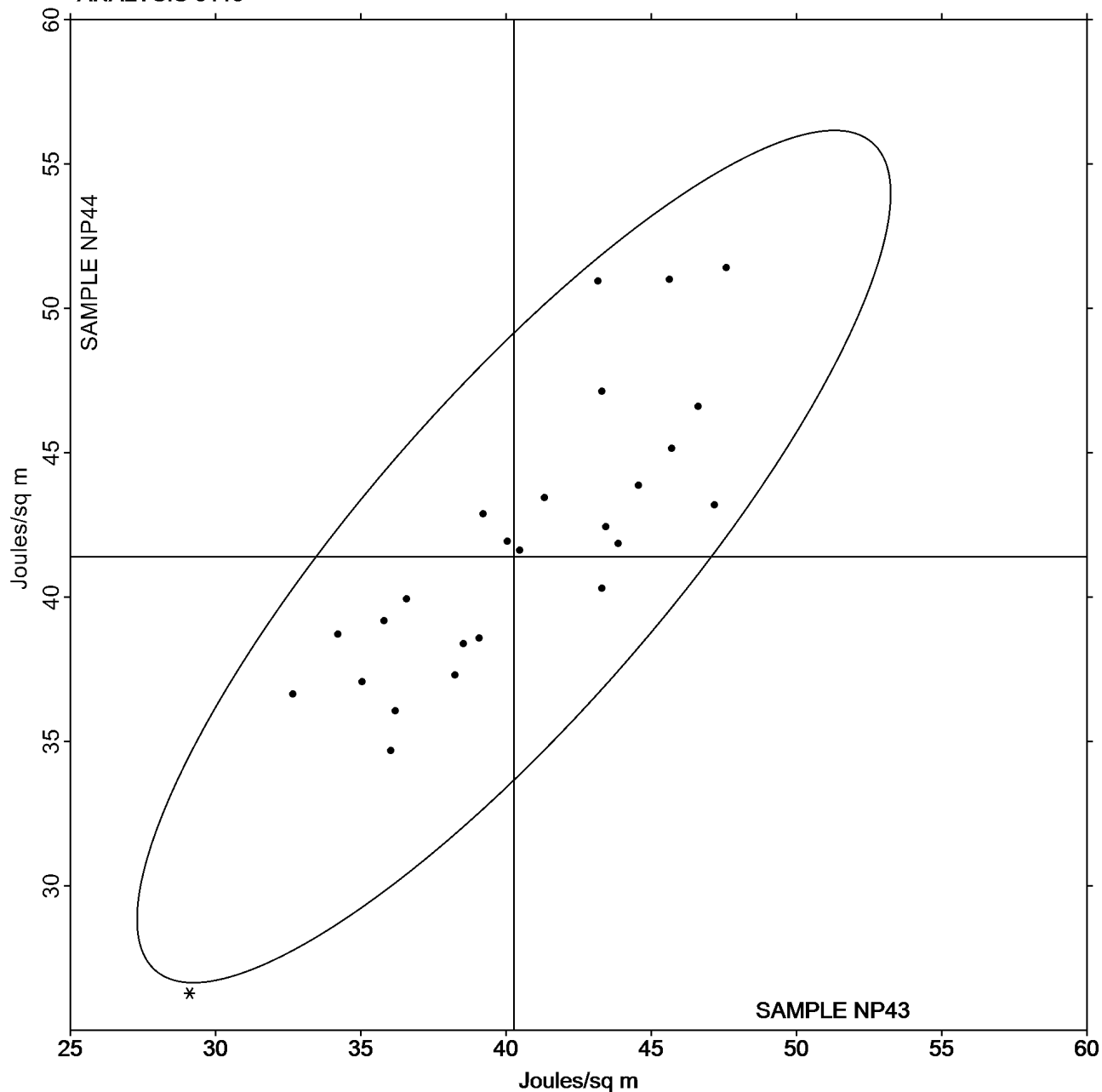Statistics based on 26 of 26 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3116
Tensile Energy Absorption - Printing Papers
TAPPI Official Test Method T494

Report #4371, July 2025

Grand Mean Sample NP43 = 40.268 Joules/sq m

Grand Mean Sample NP44 = 41.404 Joules/sq m

ANALYSIS 3116

Paper & Paperboard Interlaboratory Testing Program
Analysis 3117
Elongation to Break - Printing Papers
TAPPI Official Test Method T494

Report #4371, July 2025

WebCode	Data Flag	Sample NP43			Sample NP44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
3B6UDC		1.826	0.079	0.36	1.739	-0.016	-0.08
3ZMBV2		1.905	0.158	0.71	1.883	0.128	0.66
4E4PC7		2.037	0.290	1.31	1.984	0.229	1.17
6J9NKA		1.532	-0.215	-0.97	1.556	-0.199	-1.02
6LHVN3		1.872	0.125	0.56	1.662	-0.093	-0.48
73H66E		1.497	-0.250	-1.13	1.610	-0.145	-0.74
7CP6F2		1.849	0.102	0.46	1.826	0.071	0.36
8HU7CP		1.511	-0.236	-1.07	1.491	-0.264	-1.35
8LTG9N		1.582	-0.165	-0.75	1.679	-0.076	-0.39
93W9R6		1.940	0.193	0.87	1.914	0.159	0.82
BEGRX7	X	2.717	0.970	4.38	2.930	1.175	6.02
CHTYYB		2.140	0.393	1.77	2.165	0.410	2.10
CTFXR2		1.552	-0.195	-0.88	1.683	-0.072	-0.37
DZREXF		1.802	0.055	0.25	1.791	0.036	0.18
EFYQ6Z		1.558	-0.189	-0.85	1.561	-0.194	-0.99
GY4AQD		1.762	0.015	0.07	1.710	-0.045	-0.23
GZCJLW		1.686	-0.061	-0.28	1.634	-0.121	-0.62
JHPKT4	X	1.280	-0.467	-2.11	0.929	-0.826	-4.23
M372M8	*	2.164	0.417	1.88	2.247	0.492	2.52
M7KYR9		1.642	-0.105	-0.47	1.687	-0.068	-0.35
M82VK9		1.485	-0.262	-1.18	1.578	-0.177	-0.91
MJQRL7		1.632	-0.115	-0.52	1.621	-0.134	-0.69
PGDYLN		1.512	-0.235	-1.06	1.601	-0.154	-0.79
Q3R4LH		2.130	0.383	1.73	1.920	0.165	0.85
QYBEKU		1.535	-0.212	-0.96	1.584	-0.171	-0.88
TJALQN		2.116	0.369	1.67	2.159	0.404	2.07
VF4X3C		1.804	0.057	0.26	1.762	0.007	0.04
VM3KUC		1.650	-0.097	-0.44	1.750	-0.005	-0.03
VVU37Z		1.520	-0.227	-1.03	1.660	-0.095	-0.49
WGTNMG		1.680	-0.067	-0.30	1.681	-0.074	-0.38

Summary Statistics	Sample NP43	Sample NP44
Grand Means	1.75 Percent	1.75 Percent
Stnd Dev Btwn Labs	0.22 Percent	0.20 Percent

Statistics based on 28 of 30 reporting participants.

Comments on Assigned Data Flags for Test #3117

BEGRX7 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

JHPKT4 (X) - Data for sample NP44 are low. Inconsistent within the determinations of both samples.

Grand Mean Sample NP43 = 1.7472 Percent

Grand Mean Sample NP44 = 1.7549 Percent

ANALYSIS 3117

SAMPLE NP44

Percent

SAMPLE NP43

Percent

WebCode	Data Flag	Sample PP43 Lab Mean	Diff from Grand Mean	CPV	Sample PP44 Lab Mean	Diff from Grand Mean	CPV
3B6UDC		35.51	0.39	0.21	37.50	2.37	1.34
3ZMBV2		32.36	-2.76	-1.48	34.40	-0.73	-0.41
4E4PC7		32.67	-2.45	-1.31	32.51	-2.62	-1.48
6J9NKA		34.82	-0.30	-0.16	35.09	-0.04	-0.02
73H66E		33.76	-1.36	-0.73	33.83	-1.30	-0.73
7ZXFK2		34.30	-0.82	-0.44	35.73	0.60	0.34
8LTG9N		34.90	-0.22	-0.12	35.83	0.70	0.40
AV8C2L		34.44	-0.68	-0.36	34.41	-0.72	-0.41
BUCUZJ		35.73	0.61	0.33	34.37	-0.76	-0.43
C4UQHW		35.81	0.69	0.37	35.40	0.27	0.15
CHTYYB		37.28	2.16	1.16	36.76	1.63	0.92
DYVYM6		34.54	-0.58	-0.31	34.11	-1.02	-0.57
DZREXF		36.00	0.88	0.47	34.63	-0.50	-0.28
E8K7HF		37.75	2.63	1.41	38.85	3.72	2.10
HKYD8C		33.71	-1.41	-0.75	33.52	-1.61	-0.91
JC6KDQ		34.87	-0.24	-0.13	34.84	-0.29	-0.16
JHPKT4		35.82	0.70	0.38	36.26	1.13	0.64
KMFE7V		36.70	1.58	0.85	35.40	0.27	0.15
L9D6YZ		33.88	-1.24	-0.66	33.22	-1.91	-1.08
M372M8	X	24.19	-10.93	-5.85	26.23	-8.90	-5.03
MJQRL7		33.13	-1.99	-1.06	34.19	-0.94	-0.53
N6PFQ8		33.03	-2.09	-1.12	32.75	-2.38	-1.34
NPDWWL	X	26.96	-8.15	-4.37	26.95	-8.17	-4.62
Q3R4LH	*	40.33	5.21	2.79	39.21	4.08	2.31
QJZXDR		36.61	1.49	0.80	36.63	1.50	0.85
R2C2A4		38.86	3.74	2.00	37.17	2.04	1.15
TJALQN		34.38	-0.74	-0.40	33.79	-1.34	-0.76
VF4X3C		33.42	-1.70	-0.91	33.93	-1.19	-0.67
VM3KUC		32.45	-2.67	-1.43	32.19	-2.94	-1.66
VVU37Z		34.16	-0.96	-0.51	34.24	-0.88	-0.50
XUVGRY		37.07	1.95	1.05	38.20	3.07	1.74
YALYY9		35.74	0.62	0.33	34.87	-0.26	-0.15
Z2TQCW		34.63	-0.49	-0.26	35.11	-0.02	-0.01

Summary Statistics	Sample PP43	Sample PP44
Grand Means	35.12 sec/100 cc	35.13 sec/100 cc
Stnd Dev Btwn Labs	1.87 sec/100 cc	1.77 sec/100 cc

Statistics based on 31 of 33 reporting participants.

Comments on Assigned Data Flags for Test #3121

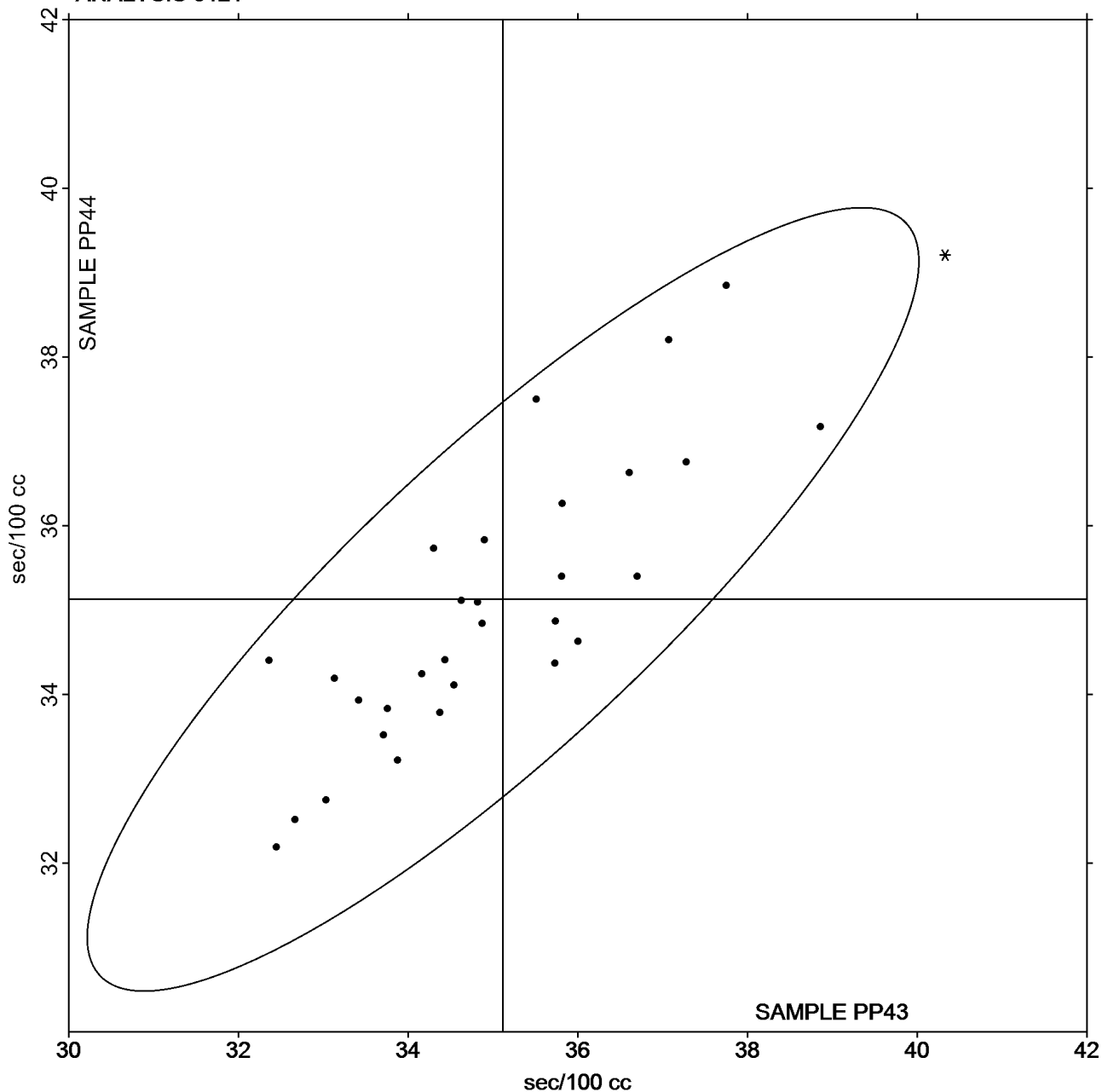M372M8 (X) - Data for both samples are low. Possible Systematic Error.

NPDWWL (X) - Data for both samples are low. Possible Systematic Error.

CTS

Grand Mean Sample PP43 = 35.118 sec/100 cc

Grand Mean Sample PP44 = 35.127 sec/100 cc

ANALYSIS 3121

SAMPLE PP44

sec/100 cc

SAMPLE PP43

sec/100 cc

WebCode	Data Flag	Sample PP43			Sample PP44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
8HU7CP		86.50	0.38	0.05	87.30	-0.69	-0.13
KMFE7V		92.90	6.78	0.97	93.70	5.71	1.06
Z2TQCW		78.97	-7.15	-1.03	82.98	-5.01	-0.93

Summary Statistics	Sample PP43	Sample PP44
Grand Means	86.12 Sheffield Units	87.99 Sheffield Units
Stnd Dev Btwn Labs	6.97 Sheffield Units	5.39 Sheffield Units

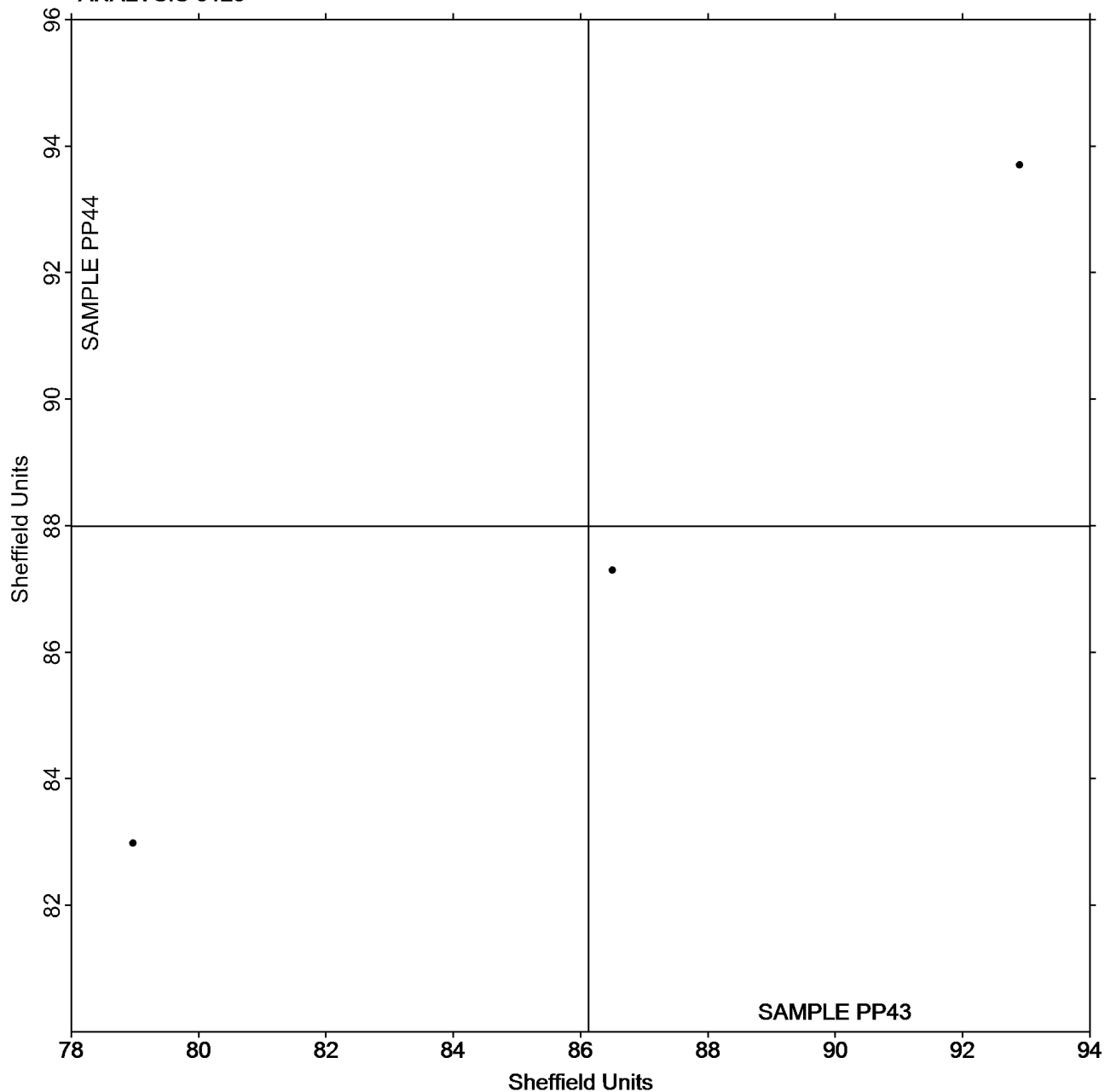Statistics based on 3 of 3 reporting participants.

Grand Mean Sample PP43 = 86.123 Sheffield Units

Grand Mean Sample PP44 = 87.993 Sheffield Units

ANALYSIS 3123

Sheffield Units

SAMPLE PP44

SAMPLE PP43

Sheffield Units

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

WebCode	Data Flag	Sample PH43 Lab Mean	Sample PH43 Diff from Grand Mean	Sample PH43 CPV	Sample PH44 Lab Mean	Sample PH44 Diff from Grand Mean	Sample PH44 CPV
3B6UDC		4.036	-0.080	-0.31	4.026	-0.120	-0.52
BLWBFK		3.733	-0.383	-1.50	4.157	0.011	0.05
CTFXR2		4.082	-0.034	-0.13	4.115	-0.031	-0.14
DZREXF		4.347	0.231	0.90	4.288	0.142	0.61
E6FEQ2		4.267	0.151	0.59	4.226	0.080	0.34
GZCJLW		3.971	-0.145	-0.57	3.944	-0.202	-0.87
HKYD8C		4.046	-0.070	-0.27	4.086	-0.060	-0.26
L9D6YZ		4.369	0.253	0.99	4.411	0.265	1.14
M7KYR9		4.367	0.251	0.98	4.324	0.178	0.77
NA2FPJ		4.388	0.272	1.06	4.413	0.267	1.15
VWBYYY		3.671	-0.445	-1.74	3.620	-0.526	-2.27

Summary Statistics	Sample PH43	Sample PH44
Grand Means	4.12 Microns	4.15 Microns
Stnd Dev Btwn Labs	0.26 Microns	0.23 Microns

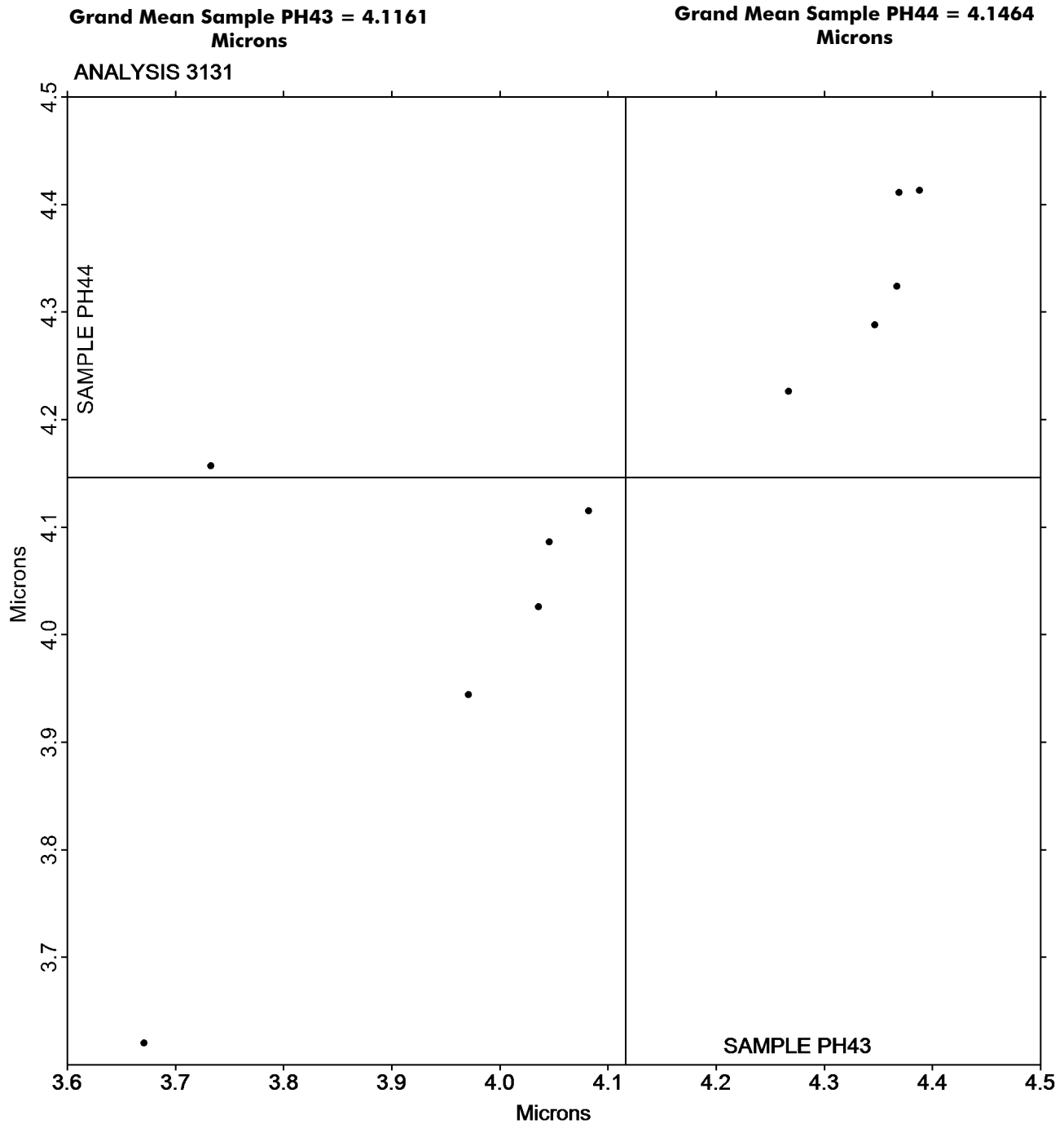Statistics based on 11 of 11 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3131
Roughness - Print Surf Method - 2.5 to 6.0 Microns
TAPPI Official Test Method T555

Report #4371, July 2025

Grand Mean Sample PH43 = 4.1161 Microns

Grand Mean Sample PH44 = 4.1464 Microns

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

WebCode	Data Flag	Sample SR43			Sample SR44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2VYB3F		177.7	-18.5	-1.21	181.5	-12.7	-0.85
37CVYG		207.6	11.4	0.74	200.0	5.8	0.39
3B6UDC		161.5	-34.7	-2.27	157.0	-37.2	-2.50
3ZMBV2		205.6	9.4	0.61	197.3	3.1	0.21
4E4PC7	*	226.9	30.6	2.00	207.9	13.7	0.92
6J9NKA		204.4	8.2	0.53	197.5	3.3	0.22
7ZXFK2		178.3	-17.9	-1.17	176.4	-17.8	-1.20
8HU7CP		184.3	-11.9	-0.78	186.7	-7.5	-0.50
8LTG9N		184.2	-12.0	-0.78	177.9	-16.3	-1.09
8QJQHM		194.4	-1.8	-0.12	191.8	-2.4	-0.16
93W9R6		182.3	-14.0	-0.91	181.5	-12.7	-0.85
AV8C2L		192.9	-3.4	-0.22	199.9	5.7	0.38
CBV8T3		177.6	-18.6	-1.21	176.9	-17.3	-1.16
CHTYYB		185.6	-10.6	-0.69	187.0	-7.3	-0.49
CTFXR2		188.7	-7.5	-0.49	196.0	1.8	0.12
DYVYM6		212.5	16.3	1.06	208.6	14.4	0.97
DZREXF		194.5	-1.8	-0.11	195.9	1.7	0.12
GZCJLW		191.4	-4.8	-0.32	199.1	4.9	0.33
HKYD8C		229.0	32.8	2.14	225.7	31.5	2.12
JC6KDQ		169.7	-26.5	-1.73	167.0	-27.2	-1.83
JHPKT4		196.5	0.3	0.02	184.2	-10.0	-0.67
KMFE7V		224.6	28.4	1.85	224.4	30.2	2.03
KMKW4U		212.4	16.2	1.05	205.0	10.8	0.72
L9D6YZ		197.5	1.3	0.08	198.0	3.8	0.26
LY7THW		208.0	11.8	0.77	198.2	4.0	0.27
M7KYR9		193.1	-3.1	-0.21	194.6	0.4	0.03
MJQRL7		213.4	17.1	1.12	217.4	23.2	1.56
NPDWWL		201.0	4.8	0.31	203.0	8.8	0.59
NVKMYR		203.5	7.3	0.47	196.2	2.0	0.13
Q3R4LH		186.6	-9.6	-0.63	181.8	-12.4	-0.83
R2C2A4		184.8	-11.4	-0.75	187.9	-6.3	-0.42
RPX8WP		222.0	25.8	1.68	220.7	26.5	1.79
TJALQN		192.1	-4.1	-0.27	195.5	1.3	0.09
VF4X3C		175.9	-20.3	-1.33	167.4	-26.8	-1.80
VKYRZD		204.9	8.7	0.57	203.9	9.7	0.65
VVU37Z		194.6	-1.6	-0.11	192.4	-1.8	-0.12
VWBYYY		200.0	3.8	0.25	204.3	10.1	0.68
Y6PC87		183.6	-12.6	-0.82	183.7	-10.5	-0.71
YALYY9		201.8	5.6	0.36	206.5	12.3	0.83
Z2TQCW		197.3	1.0	0.07	188.4	-5.8	-0.39

Paper & Paperboard Interlaboratory Testing Program
Analysis 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

Report #4371, July 2025

		Sample SR43			Sample SR44		
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
Z4C3RD		202.8	6.6	0.43	197.0	2.8	0.19

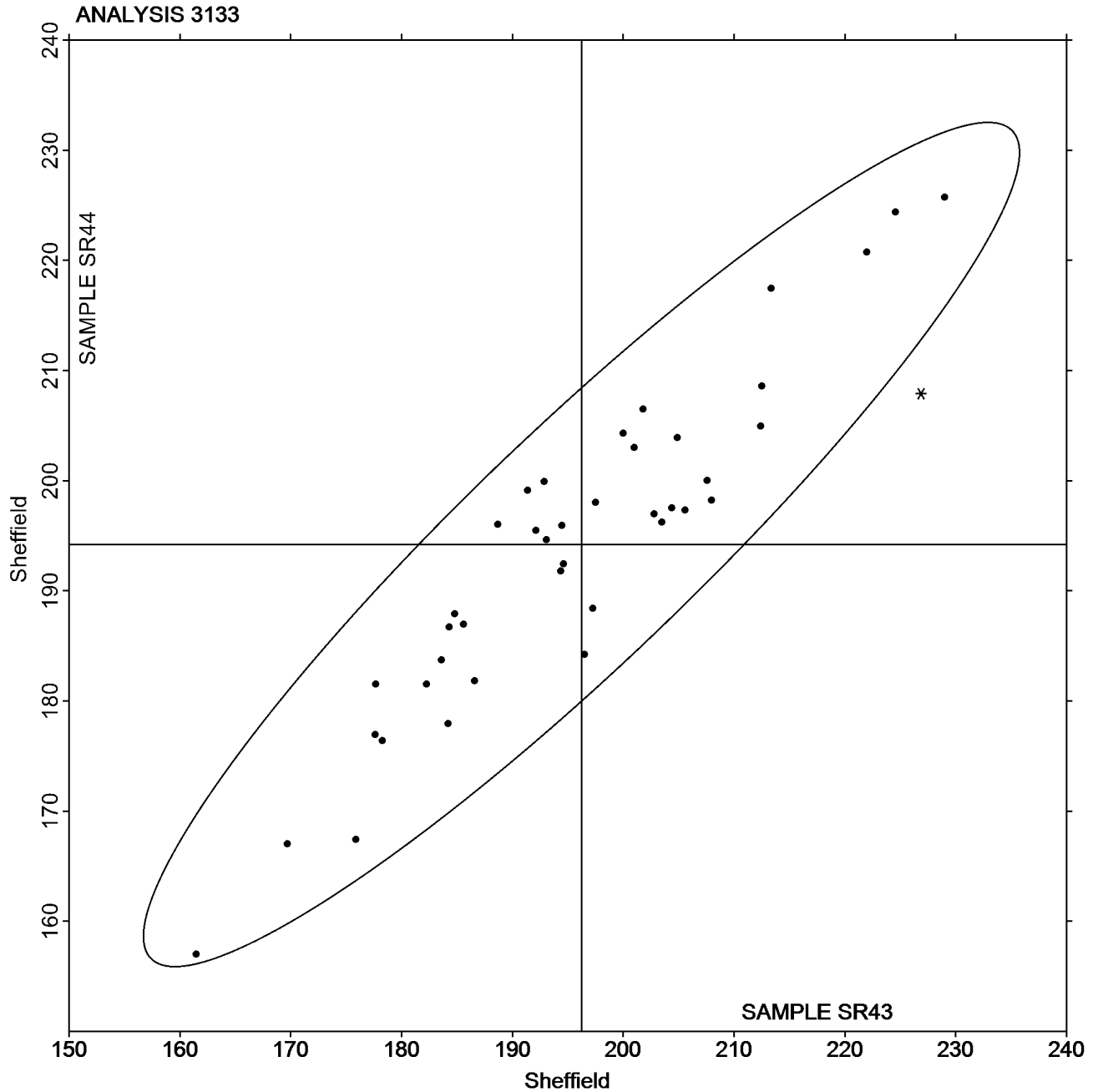| Summary Statistics	Sample SR43	Sample SR44
Grand Means	196.23 Sheffield	194.20 Sheffield
Stnd Dev Btwn Labs	15.33 Sheffield	14.87 Sheffield

Statistics based on 41 of 41 reporting participants.

Grand Mean Sample SR43 = 196.23 Sheffield

Grand Mean Sample SR44 = 194.20 Sheffield

ANALYSIS 3133

SAMPLE SR44

Sheffield

SAMPLE SR43

Sheffield

WebCode	Data Flag	Sample GM43			Sample GM44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6ALRGN		75.35	-0.02	-0.06	103.5	-0.3	-0.64
6J9NKA		75.12	-0.25	-0.67	103.7	-0.2	-0.31
6LHVN3		75.08	-0.29	-0.79	103.2	-0.7	-1.27
6R6L8D		75.31	-0.06	-0.16	103.6	-0.3	-0.56
7CP6F2		75.66	0.29	0.78	103.8	-0.1	-0.13
8HU7CP		75.29	-0.08	-0.21	103.7	-0.2	-0.35
8LTG9N		75.26	-0.11	-0.29	103.7	-0.2	-0.34
BEGRX7		75.50	0.13	0.35	104.4	0.5	1.00
E6FEQ2		75.65	0.28	0.76	103.4	-0.4	-0.85
JC6KDQ	*	74.32	-1.05	-2.81	103.0	-0.9	-1.70
JHPKT4		74.82	-0.55	-1.48	103.6	-0.3	-0.50
LVP4JT		75.65	0.28	0.76	103.9	0.0	-0.02
MJQRL7		75.83	0.46	1.23	104.7	0.9	1.68
NTD9RL		75.40	0.03	0.07	104.0	0.1	0.22
NY4H2K		75.85	0.48	1.29	104.9	1.0	1.96
RGNHJQ		75.30	-0.07	-0.19	103.8	-0.1	-0.11
U334VA		75.09	-0.28	-0.74	103.6	-0.3	-0.50
UWRVQY		75.60	0.23	0.62	104.5	0.6	1.22
V7F7DY		75.48	0.11	0.30	103.6	-0.2	-0.46
VM3KUC	X	77.73	2.36	6.35	103.8	-0.1	-0.17
Z2TQCW		75.83	0.46	1.24	104.7	0.9	1.67

Summary Statistics	Sample GM43	Sample GM44
Grand Means	75.37 g/sq m	103.86 g/sq m
Stnd Dev Btwn Labs	0.37 g/sq m	0.52 g/sq m

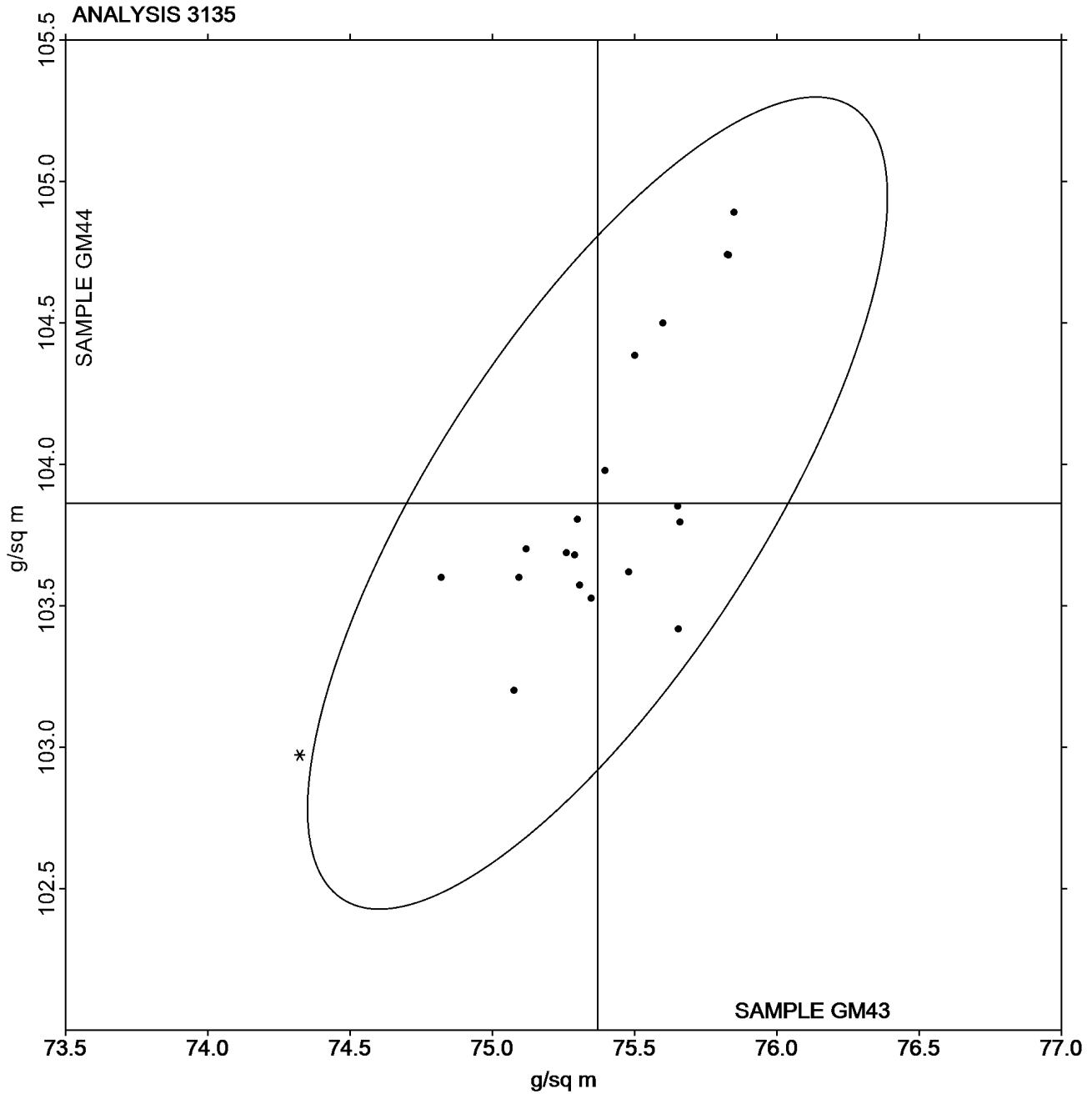Statistics based on 20 of 21 reporting participants.

Comments on Assigned Data Flags for Test #3135

VM3KUC (X) - Extreme Data for sample GM43 are very high.

Grand Mean Sample GM43 = 75.369 g/sq m

Grand Mean Sample GM44 = 103.86 g/sq m

Analysis 3141
Opacity (89% Reflectance Backing) - Fine Papers
TAPPI Official Test Method T425

WebCode	Data Flag	Sample VR43			Sample VR44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4E4PC7		89.64	-0.30	-0.72	89.96	-0.05	-0.10
6J9NKA		89.30	-0.64	-1.52	89.64	-0.37	-0.75
8HU7CP		89.80	-0.14	-0.34	89.91	-0.10	-0.21
8LTG9N		89.74	-0.20	-0.48	89.91	-0.10	-0.21
8QJQHM		90.89	0.95	2.23	90.94	0.93	1.88
AV8C2L		90.32	0.38	0.89	90.30	0.29	0.58
CHTYYB		89.67	-0.28	-0.66	89.75	-0.27	-0.54
DZREXF		90.00	0.06	0.14	90.48	0.46	0.94
JC6KDQ		90.10	0.15	0.37	89.73	-0.29	-0.58
JHPKT4		89.75	-0.19	-0.46	89.58	-0.43	-0.87
KMFE7V		89.18	-0.76	-1.80	89.33	-0.68	-1.38
LVP4JT		89.97	0.02	0.06	89.32	-0.69	-1.40
M7KYR9		90.41	0.46	1.09	89.99	-0.03	-0.05
M82VK9		90.04	0.10	0.23	90.59	0.58	1.17
MJQRL7		90.51	0.57	1.34	89.94	-0.07	-0.15
NPDWWL		89.64	-0.30	-0.72	89.33	-0.68	-1.38
Q3R4LH		90.39	0.45	1.06	90.59	0.58	1.17
QYBEKU		89.89	-0.05	-0.12	90.81	0.79	1.61
Z2TQCW		89.70	-0.24	-0.58	90.14	0.13	0.26

Summary Statistics	Sample VR43	Sample VR44
Grand Means	89.94 Percent	90.01 Percent
Stnd Dev Btwn Labs	0.42 Percent	0.49 Percent

Statistics based on 19 of 19 reporting participants.

Analysis Notes:

CHTYYB - One determination removed from the Lab Mean of Sample VR43 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample VR43 = 89.944 Percent

Grand Mean Sample VR44 = 90.012 Percent

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

WebCode	Data Flag	Sample VP43			Sample VP44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
73H66E		92.57	0.00	-0.71	92.68	-0.01	-0.71
VM3KUC		92.57	0.00	0.71	92.70	0.01	0.71

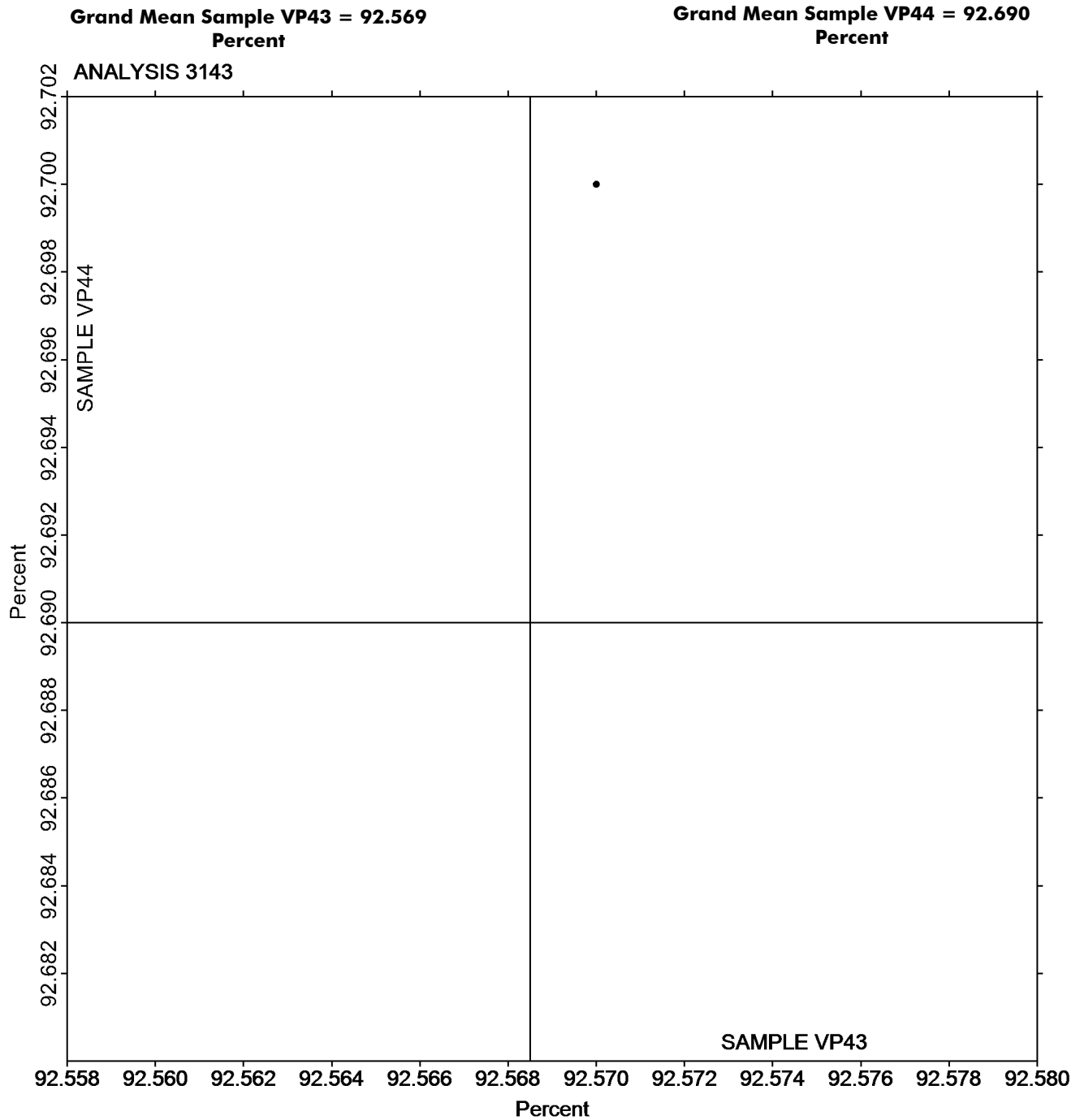| Summary Statistics	Sample VP43	Sample VP44
Grand Means	92.57 Percent	92.69 Percent
Stnd Dev Btwn Labs	0.00 Percent	0.01 Percent

Statistics based on 2 of 2 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3143
Opacity (Paper Backing) - Fine Papers and Newsprint
TAPPI Official Test Method T519

Report #4371, July 2025

Grand Mean Sample VP43 = 92.569 Percent

Grand Mean Sample VP44 = 92.690 Percent

ANALYSIS 3143

SAMPLE VP44

Percent

SAMPLE VP43

Percent

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

WebCode	Data Flag	Sample BF43			Sample BF44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
8LTG9N		100.09	1.54	1.17	98.99	0.74	0.55
93W9R6		95.72	-2.84	-2.15	95.08	-3.17	-2.35
AV8C2L		98.10	-0.45	-0.34	98.58	0.33	0.25
DZREXF		99.74	1.18	0.90	99.35	1.10	0.82
JC6KDQ		98.94	0.38	0.29	99.51	1.26	0.93
KJGYVL		97.68	-0.87	-0.66	98.06	-0.19	-0.14
LVP4JT		98.14	-0.41	-0.31	97.50	-0.74	-0.55
M82VK9		97.96	-0.59	-0.45	97.33	-0.92	-0.68
Q3R4LH		99.72	1.17	0.89	99.32	1.07	0.80
QYBEKU		99.44	0.89	0.67	98.75	0.51	0.38

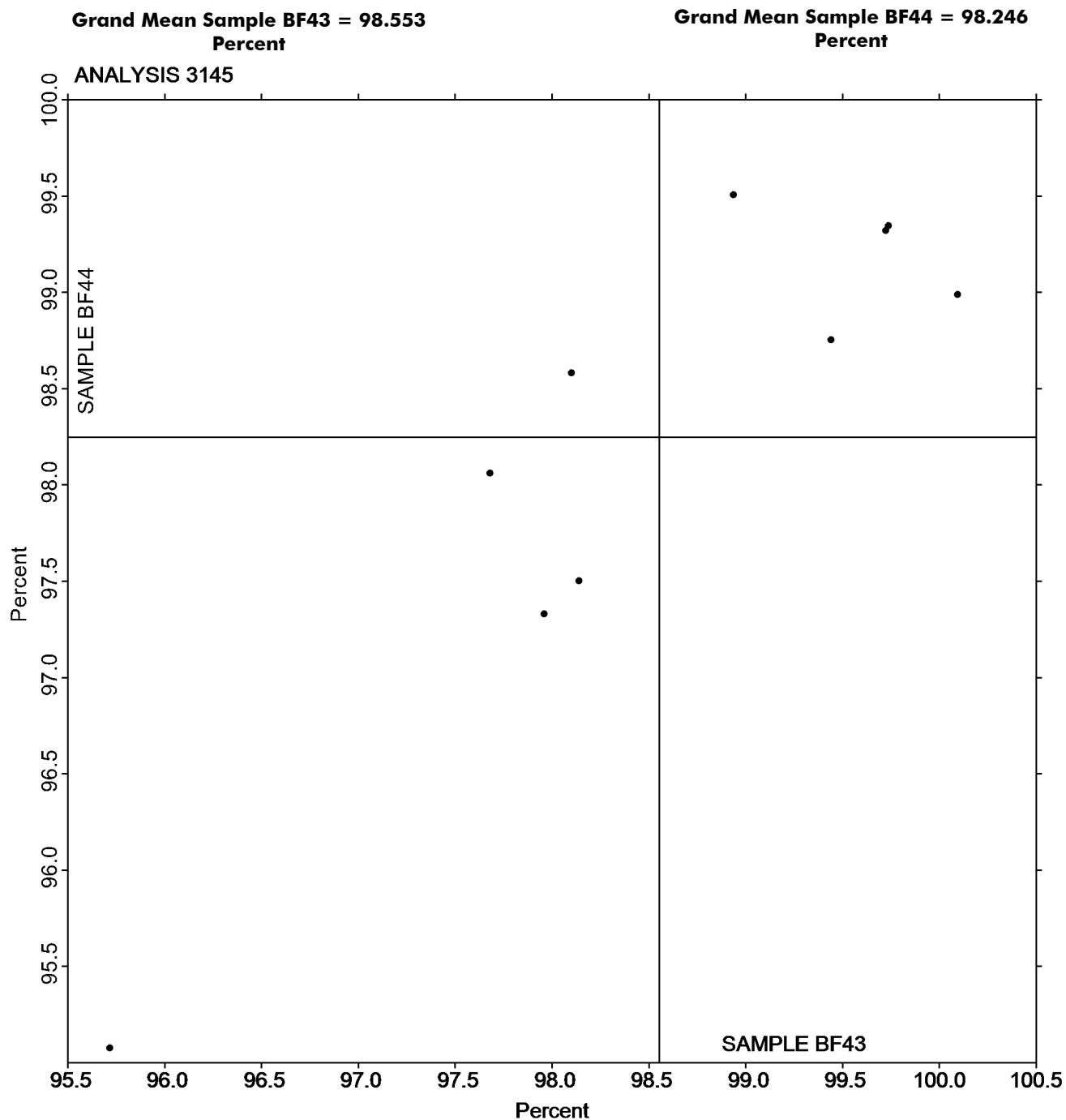| Summary Statistics	Sample BF43	Sample BF44
Grand Means	98.55 Percent	98.25 Percent
Stnd Dev Btwn Labs	1.32 Percent	1.35 Percent

Statistics based on 10 of 10 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3145
Directional Brightness of Fluorescent Samples
TAPPI Official Test Method T452

Report #4371, July 2025

Grand Mean Sample BF43 = 98.553 Percent

Grand Mean Sample BF44 = 98.246 Percent

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

WebCode	Data Flag	Sample BF43			Sample BF44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
8LTG9N		8.426	0.531	1.13	8.288	0.372	0.87
AV8C2L		8.040	0.145	0.31	8.180	0.264	0.62
DZREXF		8.424	0.529	1.12	8.346	0.430	1.00
JC6KDQ		7.850	-0.045	-0.10	7.950	0.034	0.08
KJGYVL		7.520	-0.375	-0.79	7.660	-0.256	-0.60
M82VK9		7.170	-0.725	-1.54	7.194	-0.722	-1.68
Q3R4LH		8.256	0.361	0.77	8.242	0.326	0.76
QYBEKU		7.474	-0.421	-0.89	7.466	-0.450	-1.05

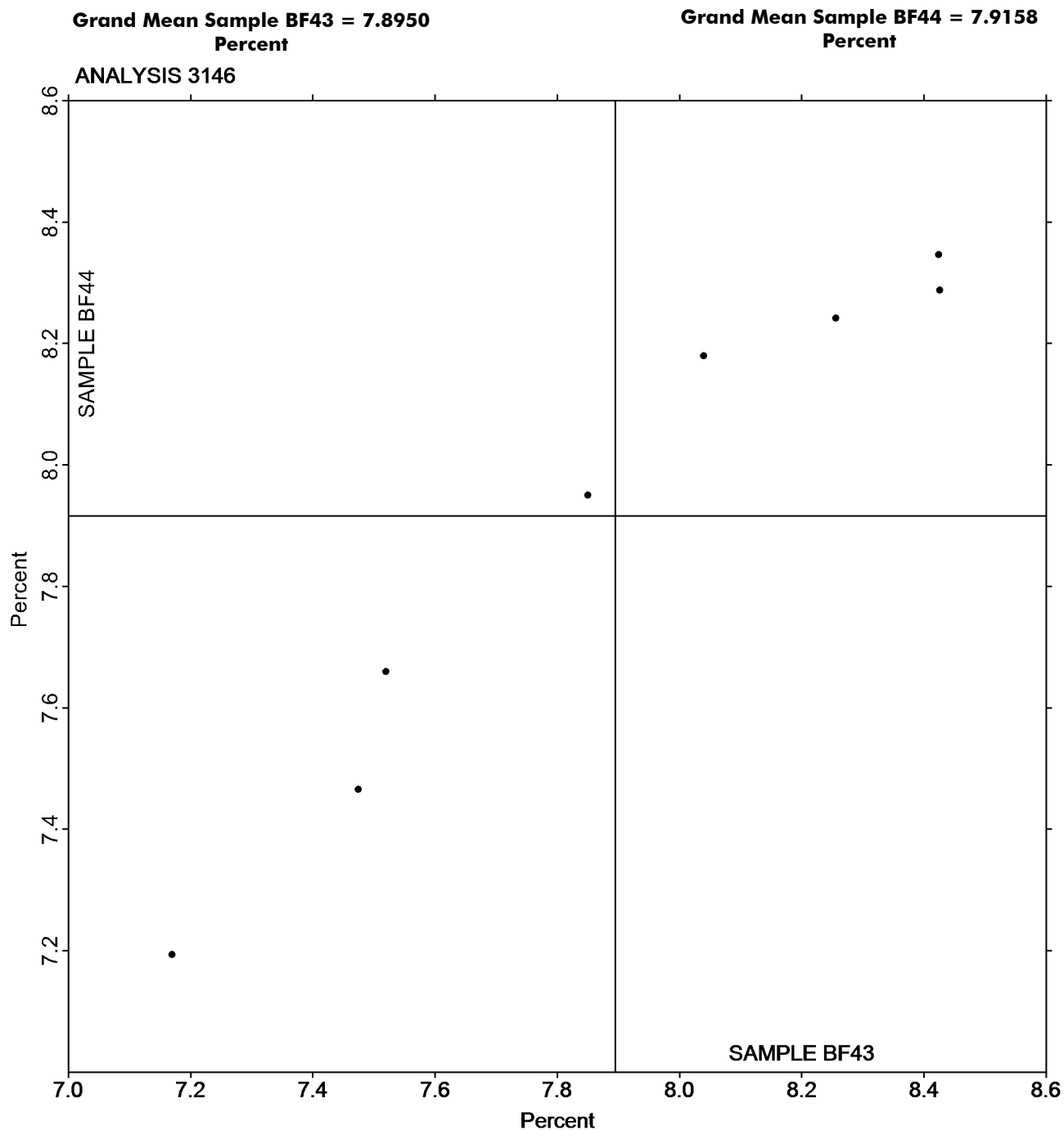| Summary Statistics	Sample BF43	Sample BF44
Grand Means	7.90 Percent	7.92 Percent
Stnd Dev Btwn Labs	0.47 Percent	0.43 Percent

Statistics based on 8 of 8 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3146
Fluorescent Component of Directional Brightness
TAPPI Official Test Method T452

Report #4371, July 2025

Grand Mean Sample BF43 = 7.8950 Percent

Grand Mean Sample BF44 = 7.9158 Percent

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

		Sample TP43			Sample TP44		
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4E4PC7		1.835	-0.104	-0.54	1.726	-0.180	-0.83
AV8C2L		1.724	-0.215	-1.12	1.729	-0.177	-0.82
DZREXF		1.915	-0.025	-0.13	1.789	-0.117	-0.54
GY4AQD		2.060	0.121	0.63	2.120	0.214	0.99
KMFE7V		2.260	0.321	1.67	2.230	0.324	1.50
Q3R4LH		1.841	-0.098	-0.51	1.840	-0.066	-0.30
R2C2A4	X	190.865	188.926	982.37	18.615	16.709	77.48

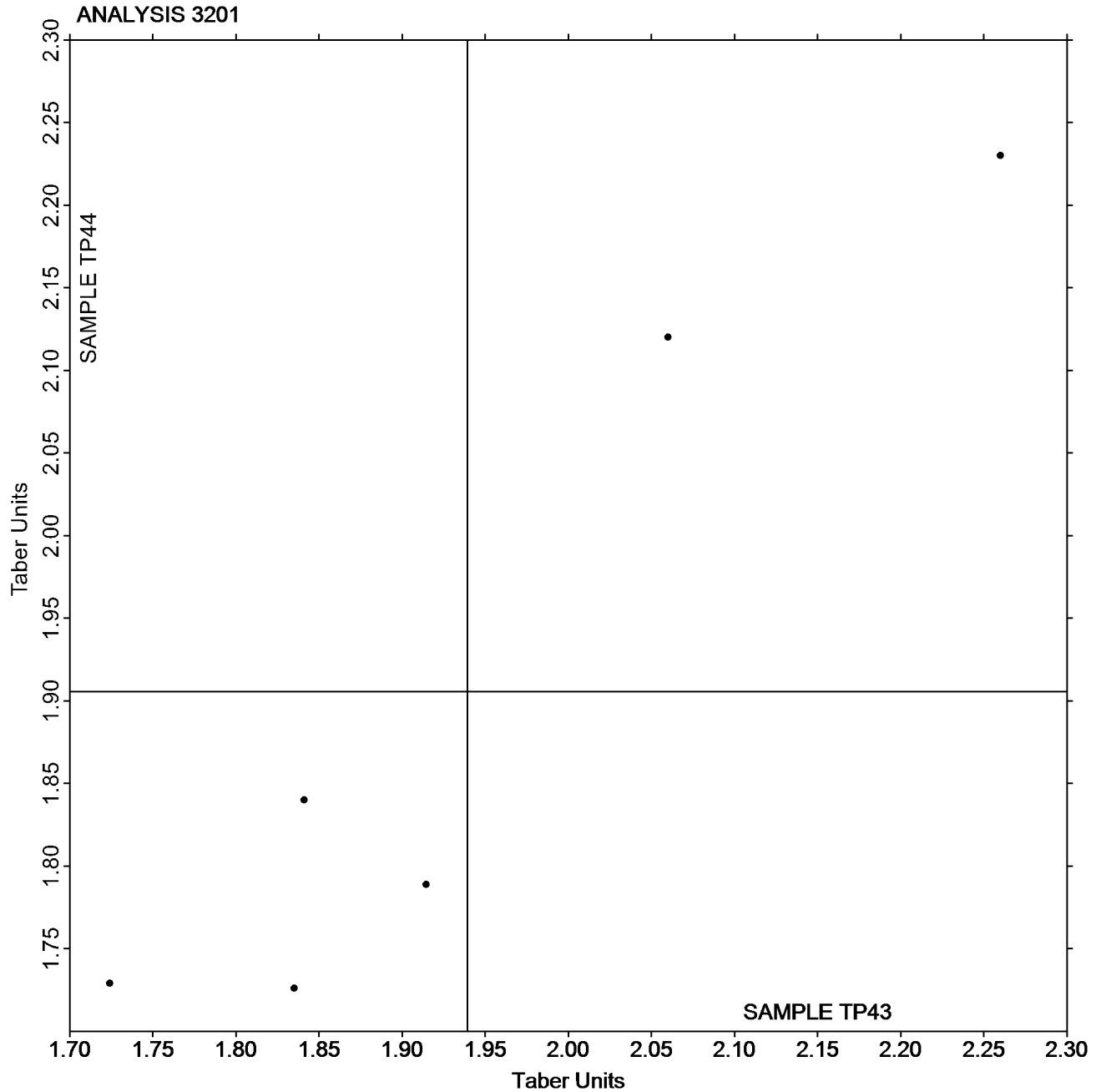| Summary Statistics	Sample TP43	Sample TP44
Grand Means	1.94 Taber Units	1.91 Taber Units
Stnd Dev Btwn Labs	0.19 Taber Units	0.22 Taber Units
	Statistics based on 6 of 7 reporting participants.	

Comments on Assigned Data Flags for Test #3201

R2C2A4 (X) - Extreme Data.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3201
Bending Resistance, Taber Type - 0 to 10 Units
TAPPI Official Test Method T566

Report #4371, July 2025

Grand Mean Sample TP43 = 1.9391 Taber Units

Grand Mean Sample TP44 = 1.9057 Taber Units

ANALYSIS 3201

SAMPLE TP44

Taber Units

SAMPLE TP43

Taber Units

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

		Sample TC43			Sample TC44		
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
3B6UDC		19.56	-0.63	-0.52	42.32	-0.13	-0.07
4E4PC7		19.70	-0.49	-0.40	41.38	-1.07	-0.60
7CP6F2		18.05	-2.14	-1.75	41.72	-0.73	-0.41
8LTG9N		19.63	-0.56	-0.46	40.29	-2.16	-1.22
BLWBFK		21.73	1.54	1.27	40.30	-2.15	-1.21
CTFXR2		20.50	0.31	0.25	43.82	1.37	0.77
GZCJLW		20.21	0.02	0.02	43.58	1.13	0.64
HKYD8C		19.10	-1.09	-0.89	41.05	-1.40	-0.79
KMKW4U		21.33	1.14	0.94	45.95	3.50	1.97
PDT6KG		20.00	-0.19	-0.15	42.29	-0.16	-0.09
Z4C3RD		22.27	2.08	1.71	44.22	1.77	1.00

Summary Statistics	Sample TC43	Sample TC44
Grand Means	20.19 Taber Units	42.45 Taber Units
Stnd Dev Btwn Labs	1.22 Taber Units	1.77 Taber Units

Statistics based on 11 of 11 reporting participants.

Analysis Notes:

GZCJLW - Data appear to be reported as g-cm, not mN-m as indicated on data entry form. CTS will not correct the Units going forward.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3203
Bending Resistance, Taber Type - 10 to 100 Taber Units
TAPPI Official Test Method T489

Report #4371, July 2025

Grand Mean Sample TC43 = 20.188 Taber Units

Grand Mean Sample TC44 = 42.447 Taber Units
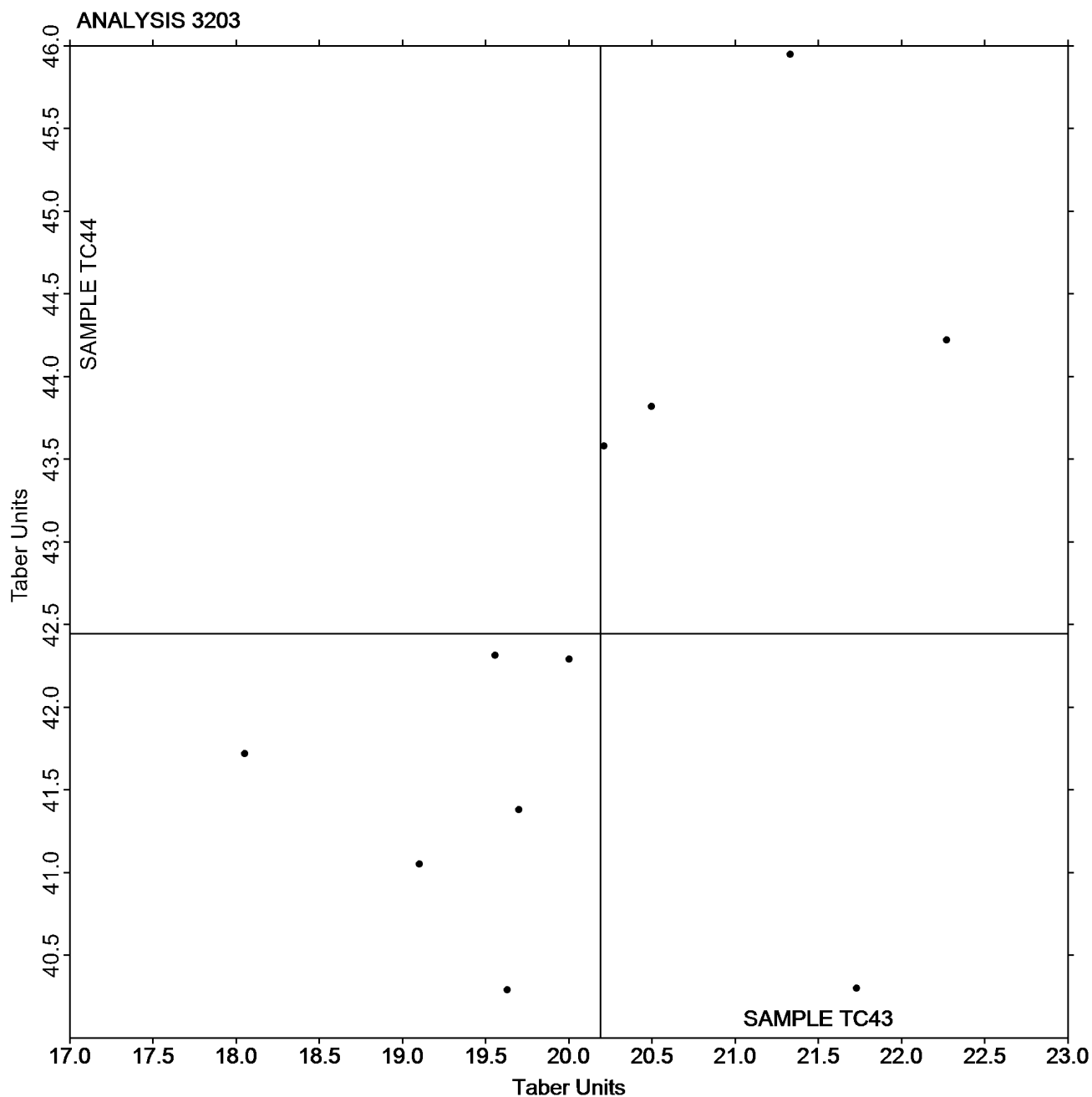
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Analysis 3205
Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard
TAPPI Official Test Method T489

WebCode	Data Flag	Sample TR43			Sample TR44		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
3B6UDC		180.0	5.3	0.78	177.6	2.3	0.28
8QJQHM		172.5	-2.2	-0.32	170.0	-5.4	-0.67
CBV8T3		162.1	-12.6	-1.83	158.2	-17.2	-2.16
CTFXR2		181.7	7.0	1.02	181.9	6.5	0.82
GZCJLW		167.8	-6.9	-1.00	179.0	3.7	0.46
L9D6YZ		175.0	0.3	0.04	176.8	1.5	0.18
LY7THW		180.0	5.3	0.77	179.3	3.9	0.49
NVKMYR	X	219.6	44.9	6.53	216.6	41.2	5.18
VKYRZD		171.3	-3.4	-0.49	170.9	-4.5	-0.56
ZR43GU		181.8	7.1	1.03	184.5	9.2	1.15

Summary Statistics	**Sample TR43**	**Sample TR44**
Grand Means	174.70 Taber Units	175.37 Taber Units
Stnd Dev Btwn Labs	6.88 Taber Units	7.96 Taber Units

Statistics based on 9 of 10 reporting participants.

Comments on Assigned Data Flags for Test #3205

NVKMYR (X) - Extreme Data.

Analysis Notes:

GZCJLW - Data appear to be reported as g-cm, not mN-m as indicated on data entry form. CTS will not correct the Units going forward.

ZR43GU - Data appear to be reported as g-cm, not mN-m as indicated on data entry form. CTS will not correct the Units going forward.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3205
Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard
TAPPI Official Test Method T489

Report #4371, July 2025

Grand Mean Sample TR43 = 174.70 Taber Units

Grand Mean Sample TR44 = 175.37 Taber Units

ANALYSIS 3205

SAMPLE TR44

Taber Units

SAMPLE TR43

Taber Units

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

| WebCode | Data Flag | Sample ZR43 | | | Sample ZR44 | | |
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
7WWCTE		57.52	7.70	1.71	56.38	6.47	1.26
8QJQHM		49.82	0.00	0.00	50.43	0.51	0.10
C64Z99		51.56	1.74	0.39	51.46	1.55	0.30
DX6XJ2		51.52	1.70	0.38	51.42	1.51	0.29
EBJHEF		48.20	-1.62	-0.36	48.40	-1.51	-0.30
EUZQFF		48.76	-1.06	-0.23	44.78	-5.13	-1.00
GJBFJT		47.18	-2.64	-0.59	48.10	-1.81	-0.35
GZCJLW		53.94	4.12	0.92	52.66	2.75	0.54
JMN27X		50.02	0.20	0.04	49.72	-0.19	-0.04
L9D6YZ		50.48	0.66	0.15	51.80	1.89	0.37
NVKMYR		52.32	2.50	0.56	53.32	3.41	0.67
QJZXDR	*	36.74	-13.07	-2.90	34.28	-15.63	-3.05
VKYRZD		49.98	0.16	0.04	51.02	1.11	0.22
VWBYYY		50.00	0.18	0.04	53.60	3.69	0.72
XVRUGC		45.44	-4.38	-0.97	46.66	-3.26	-0.64
Y6PC87		53.60	3.78	0.84	54.60	4.69	0.92

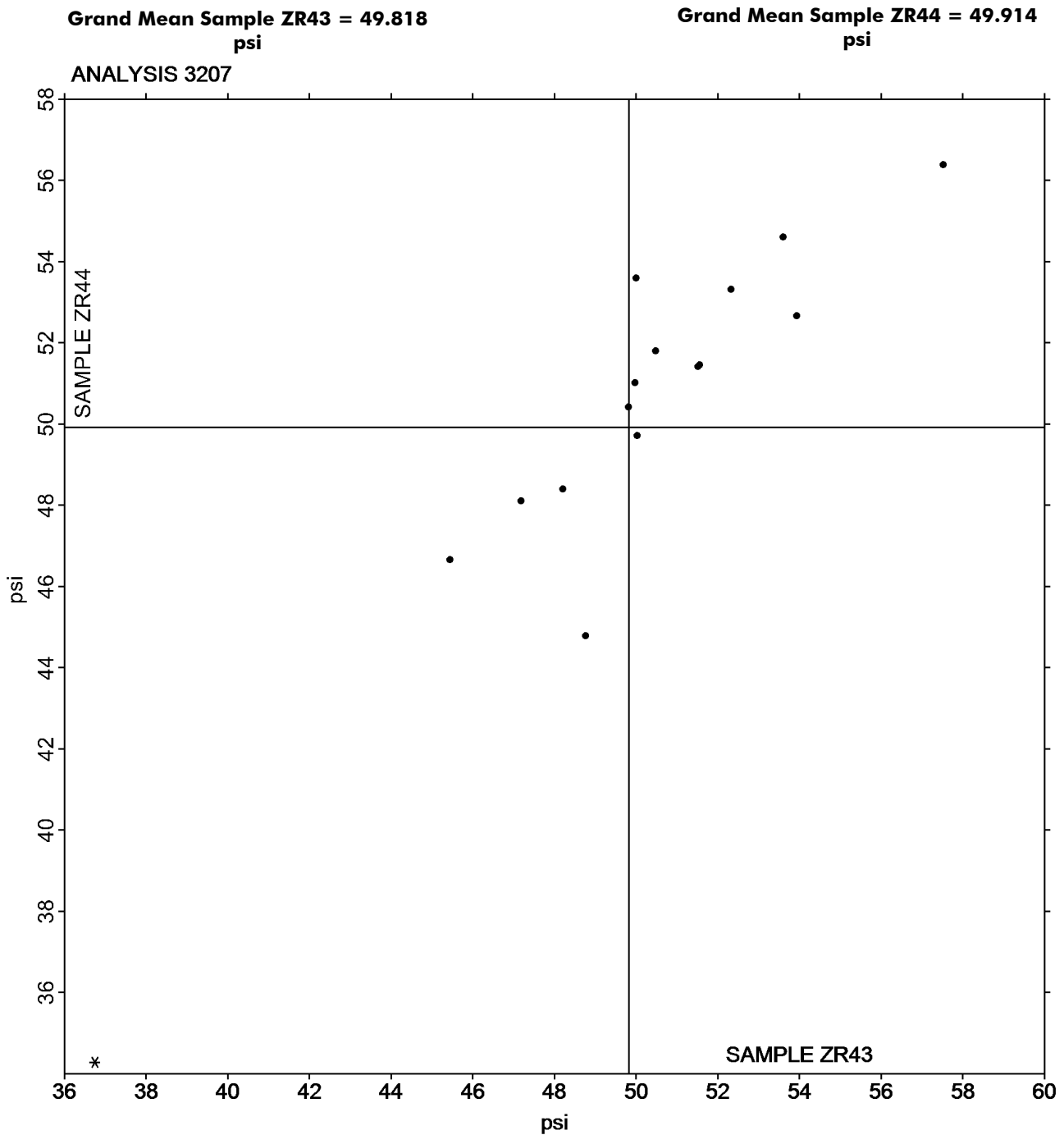| Summary Statistics	Sample ZR43	Sample ZR44
Grand Means	49.82 psi	49.91 psi
Stnd Dev Btwn Labs	4.50 psi	5.12 psi

Statistics based on 16 of 16 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3207
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

Report #4371, July 2025

Grand Mean Sample ZR43 = 49.818 psi

Grand Mean Sample ZR44 = 49.914 psi

ANALYSIS 3207

SAMPLE ZR44

psi

SAMPLE ZR43

psi

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

		Sample ZP43			Sample ZP44		
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BLWBFK		71.36	-6.80	-1.05	71.12	-13.00	-1.42
CBV8T3		73.16	-5.00	-0.77	73.60	-10.52	-1.15
GZCJLW		84.80	6.64	1.03	96.92	12.80	1.40
KMKW4U		78.40	0.24	0.04	87.92	3.80	0.41
LY7THW		89.04	10.88	1.68	90.86	6.74	0.74
PDT6KG		75.28	-2.88	-0.44	83.86	-0.26	-0.03
Z4C3RD		75.08	-3.08	-0.48	84.56	0.44	0.05

Summary Statistics	Sample ZP43	Sample ZP44
Grand Means	78.16 psi	84.12 psi
Stnd Dev Btwn Labs	6.47 psi	9.16 psi

Statistics based on 7 of 7 reporting participants.

Grand Mean Sample ZP43 = 78.160 psi

Grand Mean Sample ZP44 = 84.120 psi

ANALYSIS 3209

SAMPLE ZP44

psi

SAMPLE ZP43

psi

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

| WebCode | Data Flag | Sample SM43 | | | Sample SM44 | | |
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
CHTYYB		80.20	-1.79	-0.21	87.60	-1.69	-0.24
GY4AQD		75.80	-6.19	-0.72	83.80	-5.49	-0.79
GZCJLW		92.00	10.01	1.17	94.60	5.31	0.77
JC6KDQ		79.60	-2.39	-0.28	84.00	-5.29	-0.76
KJGYVL		94.40	12.41	1.45	100.60	11.31	1.63
KMKW4U		88.00	6.01	0.70	95.00	5.71	0.82
L9D6YZ		64.20	-17.79	-2.07	82.20	-7.09	-1.02
LY7THW		75.00	-6.99	-0.81	83.00	-6.29	-0.91
PDT6KG		84.00	2.01	0.23	87.80	-1.49	-0.22
TJALQN		76.40	-5.59	-0.65	86.40	-2.89	-0.42
VVU37Z		84.08	2.09	0.24	84.72	-4.57	-0.66
Z4C3RD		90.20	8.21	0.96	101.80	12.51	1.81

Summary Statistics	Sample SM43	Sample SM44
Grand Means	81.99 1000th ft-lbs	89.29 1000th ft-lbs
Stnd Dev Btwn Labs	8.58 1000th ft-lbs	6.92 1000th ft-lbs

Statistics based on 12 of 12 reporting participants.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3211
Internal Bond Strength - Modified Scott Mechanics
TAPPI Provisional Test Method T569

Report #4371, July 2025

Grand Mean Sample SM43 = 81.990
1000th ft-lbs

Grand Mean Sample SM44 = 89.293
1000th ft-lbs

ANALYSIS 3211

SAMPLE SM44

1000th ft-lbs

SAMPLE SM43

1000th ft-lbs

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

| WebCode | Data Flag | Sample SB43 | | | Sample SB44 | | |
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
7ZXFK2		64.20	-3.26	-0.82	73.60	-1.22	-0.27
CHTYYB		63.00	-4.46	-1.12	67.80	-7.02	-1.57
DZREXF	X	12.00	-55.46	-13.92	14.00	-60.82	-13.59
HKYD8C		70.54	3.08	0.77	81.10	6.28	1.40
Q3R4LH		71.80	4.34	1.09	74.80	-0.02	0.00
QJZXDR		70.80	3.34	0.84	77.80	2.98	0.67
YALYY9		64.40	-3.06	-0.77	73.80	-1.02	-0.23

Summary Statistics	Sample SB43	Sample SB44
Grand Means	67.46 1000th ft-lbs	74.82 1000th ft-lbs
Stnd Dev Btwn Labs	3.98 1000th ft-lbs	4.48 1000th ft-lbs

Statistics based on 6 of 7 reporting participants.

Comments on Assigned Data Flags for Test #3213
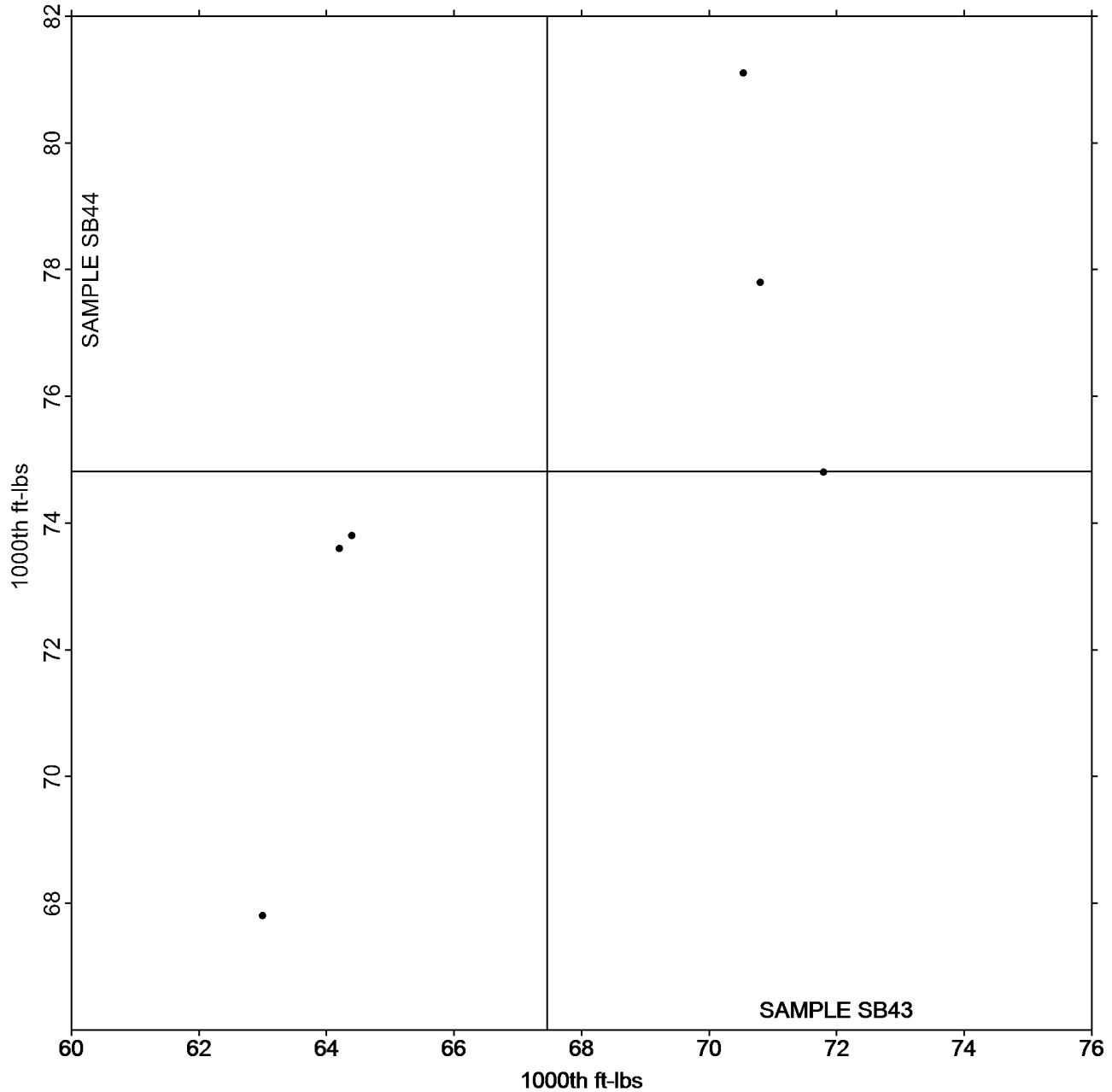
DZREXF (X) - Extreme Data.

Paper & Paperboard Interlaboratory Testing Program
Analysis 3213
Internal Bond Strength - Scott Bond Models
TAPPI Provisional Test Method T569

Report #4371, July 2025

Grand Mean Sample SB43 = 67.457
1000th ft-lbs

Grand Mean Sample SB44 = 74.817
1000th ft-lbs

ANALYSIS 3213

SAMPLE SB44

1000th ft-lbs

SAMPLE SB43

1000th ft-lbs

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-