Collaborative Testing Services, Inc.

Paper & Paperboard Interlaboratory Testing Program

Summary Report #286S - January 2017

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310	Bursting Strength - Packaging Papers
311	Tearing Strength - Newsprint
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320	Tensile Breaking Strength - Newsprint
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322	Elongation to Break - Newsprint
325	Tensile Breaking Strength - Printing Papers
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330	Tensile Breaking Strength - Packaging Papers
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332	Elongation to Break - Packaging Papers
334	Folding Endurance (MIT) - Double Folds
336	Bending Resistance, Gurley Type
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339	Bending Resistance, Taber Type - 10 to 100 Taber Units
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The CTS Paper & Paperboard Interlaboratory Fiberboard 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 industrial sectors: rubber, plastics, fasteners and metals, CKPG, paper, color, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 80 countries, currently participate in CTS programs.

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

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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 web site. The WebCode for each analysis can be found in the Performance Analysis Report mailed to each participant. In addition, the WebCodes can be found on the data sheets.

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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 305

Bursting Strength - Printing Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample SA39 Lab Mean	Sample SA39 Diff from Grand Mean	Sample SA39 CPV	Sample SA40 Lab Mean	Sample SA40 Diff from Grand Mean	Sample SA40 CPV
2MFBBY		37.52	4.07	1.41	28.28	1.72	0.79
64ZXDT		35.49	2.04	0.71	27.53	0.97	0.44
6CNTBM		32.43	-1.02	-0.35	27.46	0.89	0.41
74CW4V		31.55	-1.90	-0.66	25.35	-1.21	-0.56
87DG7L		36.00	2.55	0.88	28.70	2.14	0.98
C2PZT6		33.59	0.15	0.05	27.62	1.05	0.48
C9NV3G		32.80	-0.65	-0.22	27.20	0.64	0.29
CGG2ZP		35.98	2.53	0.88	26.65	0.09	0.04
CPDXMR		33.58	0.14	0.05	25.57	-1.00	-0.46
DLAKET		31.77	-1.68	-0.58	25.02	-1.55	-0.71
DWP7CE		31.20	-2.25	-0.78	24.65	-1.91	-0.88
FNN2MN		31.23	-2.22	-0.77	25.27	-1.30	-0.60
FVRH64		32.10	-1.35	-0.47	24.50	-2.06	-0.95
FYA36H		31.42	-2.03	-0.70	26.12	-0.44	-0.20
KCJEJ8		34.03	0.59	0.20	28.13	1.57	0.72
LR4LUB	X	41.09	7.64	2.65	36.86	10.30	4.73
MZCDWD		32.34	-1.10	-0.38	24.31	-2.26	-1.04
N26QWB		31.03	-2.41	-0.84	24.47	-2.10	-0.96
NFP73W		32.28	-1.17	-0.40	25.61	-0.95	-0.44
NTXUDE		35.88	2.44	0.84	28.46	1.90	0.87
R6ZGX8		34.01	0.57	0.20	27.92	1.36	0.62
RQE4F7		31.25	-2.20	-0.76	24.45	-2.11	-0.97
UU782A		27.67	-5.77	-2.00	22.03	-4.53	-2.08
YYLL3Q		38.79	5.34	1.85	30.16	3.60	1.65
ZG2E7K		39.80	6.35	2.20	31.65	5.09	2.34
ZNXA4J		36.70	3.25	1.13	29.10	2.54	1.17
ZU2DUH		29.15	-4.30	-1.49	24.45	-2.11	-0.97

Summary Statistics

	Sample SA39	Sample SA40
Grand Means	33.446 psi	26.563 psi
SD Btwn Labs	2.889 psi	2.177 psi

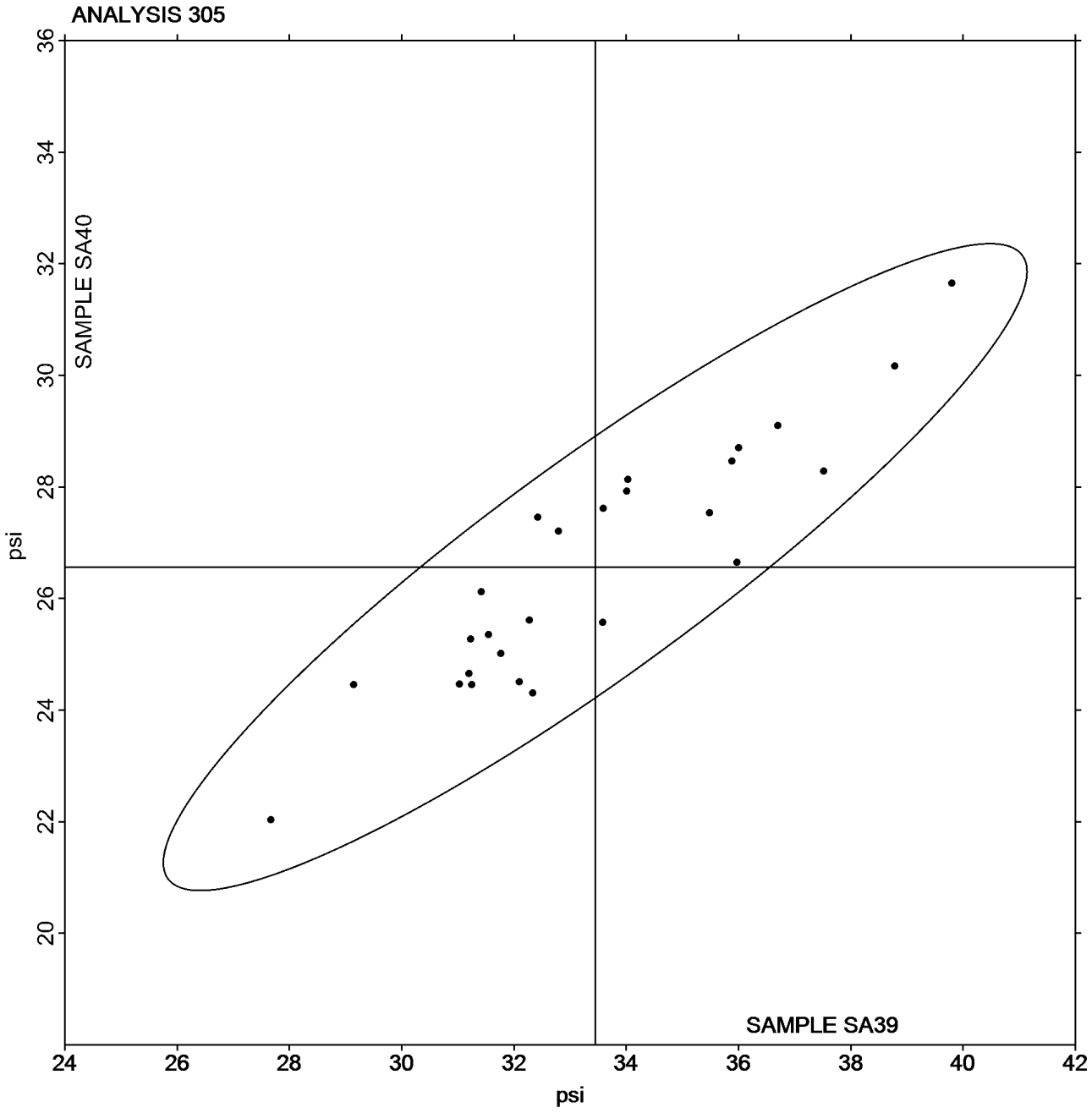
Statistics based on 26 of 27 reporting participants

Comments on Assigned Data Flags for Test #305

LR4LUB (X) - Data for both samples are high.

Grand Mean Sample **SA39** = 33.446 psi

Grand Mean Sample **SA40** = 26.563 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 310

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample SB39 Lab Mean	Sample SB39 Diff from Grand Mean	Sample SB39 CPV	Sample SB40 Lab Mean	Sample SB40 Diff from Grand Mean	Sample SB40 CPV
64ZXDT		87.57	-2.86	-0.47	58.69	0.21	0.03
74PMUQ		102.60	12.17	2.00	57.40	-1.08	-0.18
7DJTRY		86.55	-3.88	-0.64	55.55	-2.93	-0.49
99ZF2V		88.39	-2.04	-0.34	56.94	-1.54	-0.26
AFEJNN		94.40	3.97	0.65	56.30	-2.18	-0.36
ATMAMP		92.61	2.17	0.36	64.33	5.84	0.97
BV2VKA		96.00	5.57	0.91	60.20	1.72	0.29
DBAYAE		78.70	-11.73	-1.93	51.32	-7.16	-1.19
DWP7CE		86.29	-4.14	-0.68	62.06	3.58	0.60
FBL3NC		92.03	1.60	0.26	60.80	2.32	0.39
FZZ7XP		84.79	-5.64	-0.93	58.35	-0.13	-0.02
GZCW92		85.60	-4.83	-0.79	56.80	-1.68	-0.28
H4TAD2		98.43	7.99	1.31	67.12	8.63	1.44
HEQMK9		100.37	9.94	1.63	65.27	6.79	1.13
JZRZU7		88.88	-1.55	-0.25	62.15	3.67	0.61
KG9QJA		94.56	4.13	0.68	66.79	8.31	1.38
KT9H6H		90.50	0.07	0.01	55.50	-2.98	-0.50
KYQKZ7		97.76	7.32	1.20	58.31	-0.18	-0.03
MYMA47		87.90	-2.53	-0.42	56.36	-2.12	-0.35
PW7PC9		80.28	-10.15	-1.67	49.99	-8.49	-1.41
QMYPL2		91.84	1.41	0.23	55.26	-3.22	-0.54
RCD3RQ		89.45	-0.98	-0.16	63.90	5.42	0.90
RDTPGD	*	79.80	-10.63	-1.74	39.90	-18.58	-3.10
RXEJ6D		92.14	1.71	0.28	58.78	0.30	0.05
RXY6X4		95.24	4.81	0.79	66.01	7.53	1.25
TMAXD6		93.71	3.28	0.54	51.27	-7.21	-1.20
WUDBNW		84.29	-6.14	-1.01	66.72	8.24	1.37
WZ7NWU		85.25	-5.18	-0.85	53.26	-5.22	-0.87
YYLL3Q		96.60	6.17	1.01	60.65	2.17	0.36

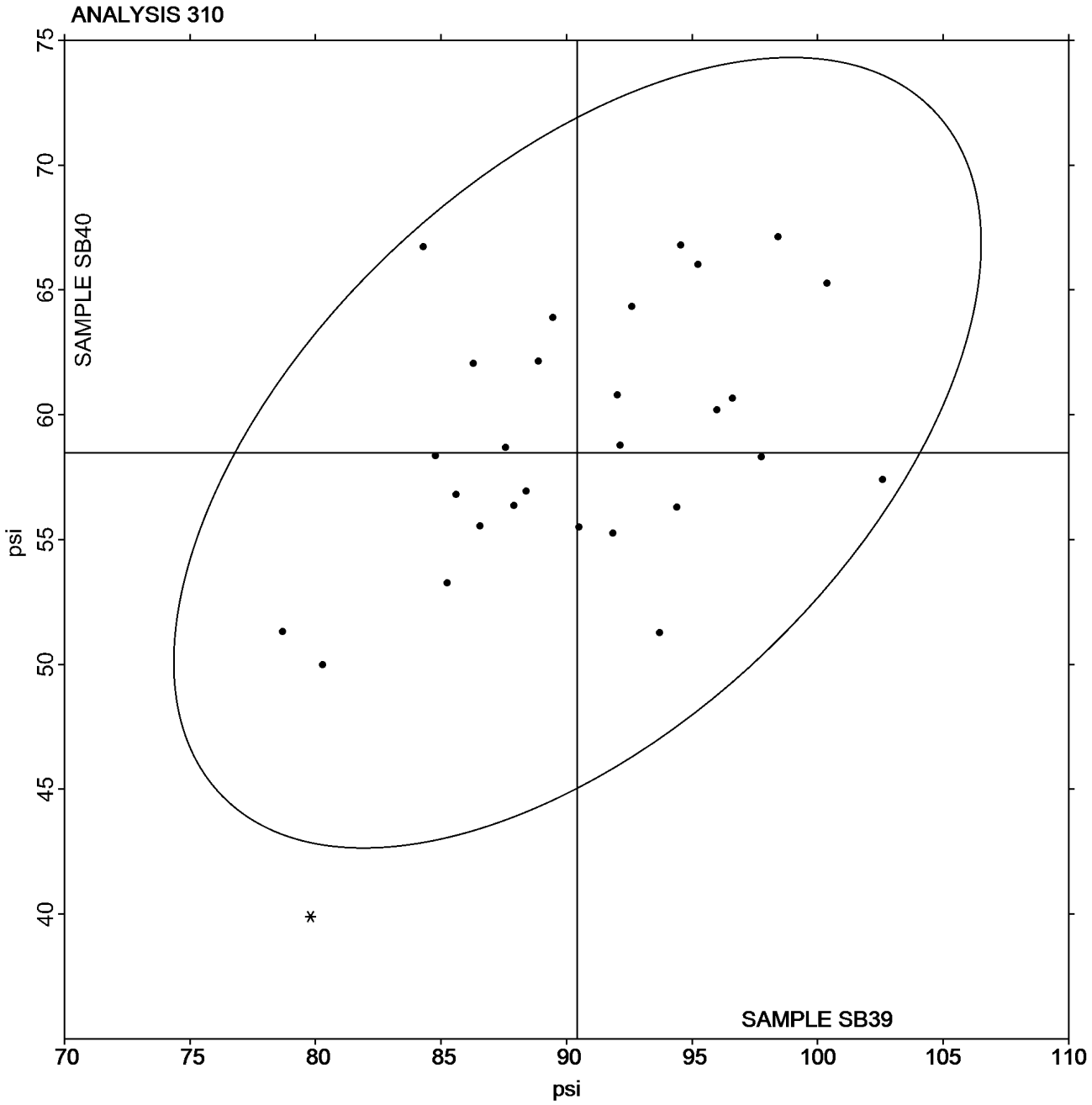
Summary Statistics

	Sample SB39	Sample SB40
Grand Means	90.432 psi	58.482 psi
SD Btwn Labs	6.095 psi	6.002 psi

Statistics based on 29 of 29 reporting participants

Grand Mean Sample **SB39** = 90.432 psi

Grand Mean Sample **SB40** = 58.482 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 311
Tearing Strength - Newsprint
TAPPI Official Test Method T414

WebCode	Data Flag	Sample SK39 Lab Mean	Sample SK39 Diff from Grand Mean	Sample SK39 CPV	Sample SK40 Lab Mean	Sample SK40 Diff from Grand Mean	Sample SK40 CPV
3924ZY		33.40	5.08	1.39	33.23	4.57	1.24
64ZXDT		25.24	-3.08	-0.84	25.91	-2.75	-0.75
8GWVAN		26.34	-1.98	-0.54	26.86	-1.80	-0.49
DYXQA9		27.44	-0.88	-0.24	26.89	-1.77	-0.48
FRNE4L		32.40	4.08	1.11	33.48	4.82	1.31
LR4LUB		25.08	-3.24	-0.88	25.59	-3.07	-0.84

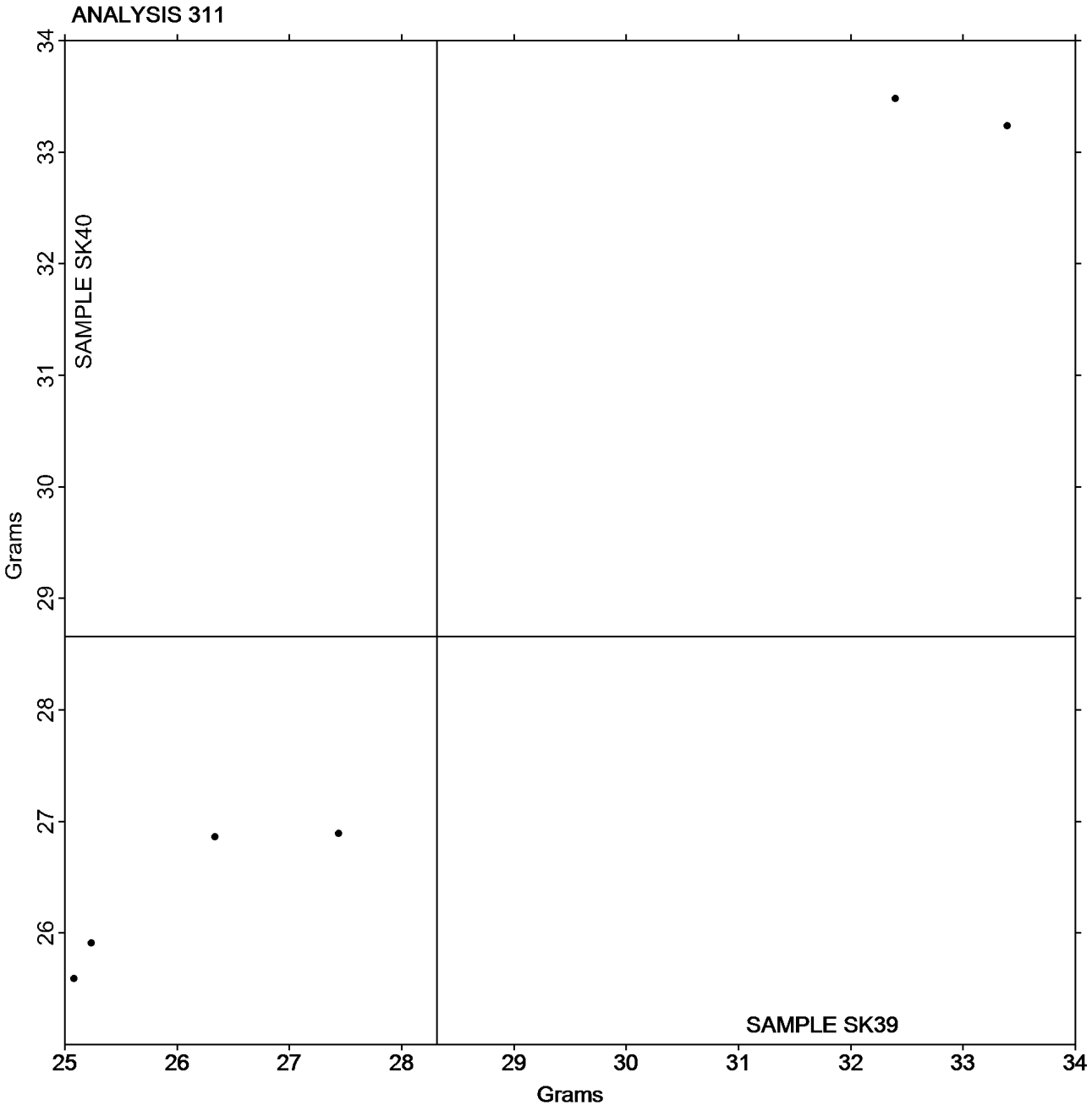
Summary Statistics

	Sample SK39	Sample SK40
Grand Means	28.315 Grams	28.660 Grams
SD Btwn Labs	3.663 Grams	3.673 Grams

Statistics based on 6 of 6 reporting participants

Grand Mean Sample **SK39** = 28.315 Grams

Grand Mean Sample **SK40** = 28.660 Grams



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 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC39 Lab Mean	Sample SC39 Diff from Grand Mean	Sample SC39 CPV	Sample SC40 Lab Mean	Sample SC40 Diff from Grand Mean	Sample SC40 CPV
2MFBBY		44.40	-3.85	-1.01	55.16	-7.10	-1.88
3JXBVJ		46.18	-2.07	-0.54	59.78	-2.48	-0.65
3NTYCQ		53.33	5.08	1.33	66.81	4.55	1.20
64ZXDT		47.98	-0.27	-0.07	63.83	1.58	0.42
6CNTBM		53.87	5.62	1.48	63.82	1.57	0.41
7YHXVR		42.50	-5.75	-1.51	56.74	-5.52	-1.46
87DG7L		51.10	2.85	0.75	65.41	3.15	0.83
99ZF2V		47.99	-0.26	-0.07	62.62	0.36	0.10
C9NV3G		48.16	-0.09	-0.02	61.88	-0.38	-0.10
CGG2ZP		49.00	0.75	0.20	66.30	4.04	1.07
DBAYAE		43.64	-4.61	-1.21	58.21	-4.05	-1.07
DLAKET	*	52.40	4.15	1.09	60.80	-1.46	-0.39
F84BNN		47.59	-0.66	-0.17	64.52	2.26	0.60
FNN2MN		49.50	1.26	0.33	65.67	3.41	0.90
FVRH64		49.80	1.55	0.41	66.32	4.06	1.07
G8VNNL		50.04	1.79	0.47	65.04	2.78	0.73
GUVUDC		40.96	-7.29	-1.91	54.15	-8.11	-2.14
GZCW92		41.30	-6.95	-1.82	57.79	-4.47	-1.18
KG9QJA		45.96	-2.29	-0.60	61.34	-0.92	-0.24
KQ26HA		42.50	-5.75	-1.51	56.80	-5.46	-1.44
KV9TWB	X	111.08	62.83	16.50	146.44	84.18	22.26
LA6672		50.80	2.55	0.67	67.20	4.94	1.31
LRPV7Z		48.88	0.63	0.17	60.48	-1.78	-0.47
MLZAMY		46.60	-1.65	-0.43	60.20	-2.06	-0.54
MYMA47		49.36	1.12	0.29	63.60	1.34	0.36
MZCDWD		46.43	-1.82	-0.48	60.17	-2.09	-0.55
N26QWB		53.78	5.53	1.45	66.18	3.92	1.04
NFP73W		48.36	0.11	0.03	59.56	-2.70	-0.71
NTXUDE		48.89	0.64	0.17	63.30	1.04	0.28
PC67B2		39.10	-9.15	-2.40	54.64	-7.62	-2.01
PTTUR6		56.31	8.06	2.12	68.11	5.85	1.55
PW7PC9		51.04	2.79	0.73	65.92	3.66	0.97
QMYPL2		51.51	3.26	0.86	66.88	4.63	1.22
R6ZGX8		49.60	1.35	0.36	63.49	1.23	0.33
RCD3RQ		42.85	-5.40	-1.42	56.39	-5.87	-1.55
RDTPGD		46.00	-2.25	-0.59	60.80	-1.46	-0.39
RXEJ6D		54.46	6.21	1.63	70.81	8.55	2.26
TXTCG8		50.76	2.51	0.66	62.84	0.58	0.15
U3W6ZN		50.62	2.37	0.62	61.48	-0.78	-0.21
UTRNFQ		50.04	1.79	0.47	64.10	1.84	0.49

Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC39 Lab Mean	Sample SC39 Diff from Grand Mean	Sample SC39 CPV	Sample SC40 Lab Mean	Sample SC40 Diff from Grand Mean	Sample SC40 CPV
UU782A	X	49.88	1.64	0.43	68.02	5.76	1.52
VFKZZ2		48.60	0.35	0.09	63.98	1.72	0.45
WQFRLX		49.71	1.46	0.38	62.28	0.02	0.01
WW3FG4		46.76	-1.49	-0.39	60.89	-1.37	-0.36
WZ7NWU		49.99	1.74	0.46	65.13	2.87	0.76
YRMP7T		44.16	-4.09	-1.07	59.97	-2.29	-0.60
YXRP62		43.89	-4.36	-1.14	59.42	-2.84	-0.75
YYLL3Q		52.84	4.60	1.21	66.11	3.86	1.02
ZG2E7K		44.04	-4.21	-1.10	58.08	-4.18	-1.10
ZU2DUH		50.66	2.41	0.63	64.80	2.54	0.67
ZY3P63		49.82	1.57	0.41	60.78	-1.48	-0.39
ZZCUEK	X	57.00	8.75	2.30	71.40	9.14	2.42

Summary Statistics

	Sample SC39	Sample SC40
Grand Means	48.246 Grams	62.257 Grams
SD Btwn Labs	3.809 Grams	3.782 Grams

Statistics based on 49 of 52 reporting participants

Comments on Assigned Data Flags for Test #312

ZZCUEK (X) - Data appear to be off by a factor of 2; data converted by CTS (x.5).

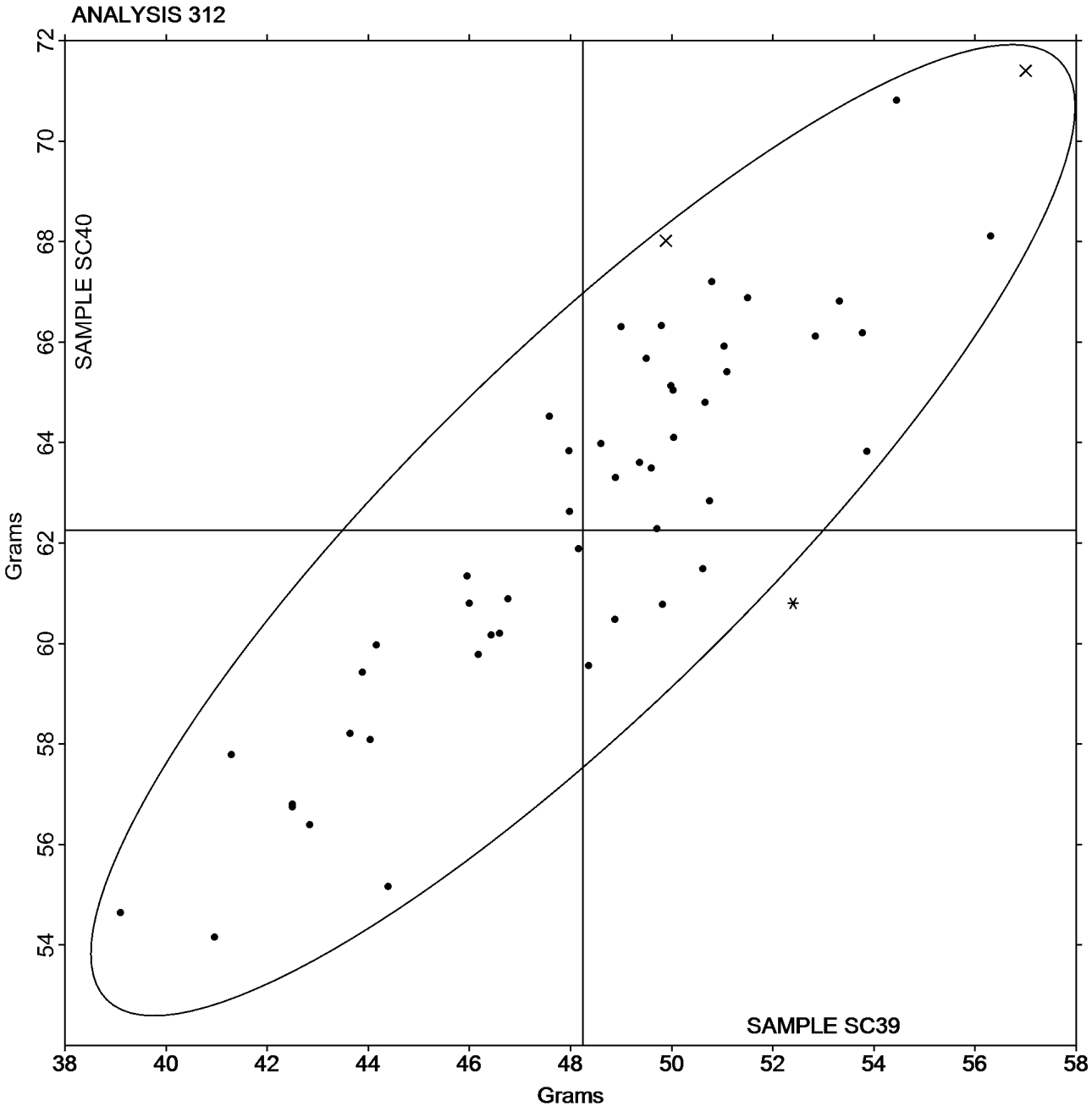
KV9TWB (X) - Extreme Data.

UU782A (X) - Data appear to be off by a factor of 2; data converted by CTS (x.5).

TXTCG8 - One determination removed from the Lab Mean of Sample SC39 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample **SC39** = 48.246 Grams

Grand Mean Sample **SC40** = 62.257 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD39 Lab Mean	Sample SD39 Diff from Grand Mean	Sample SD39 CPV	Sample SD40 Lab Mean	Sample SD40 Diff from Grand Mean	Sample SD40 CPV
2BQBKW		177.7	0.1	0.01	180.6	3.9	0.28
2M64EX		173.5	-4.1	-0.32	165.2	-11.5	-0.83
2RXBTZ		196.9	19.3	1.52	210.0	33.3	2.39
64ZXDT		178.7	1.2	0.09	169.5	-7.2	-0.52
74CW4V		175.2	-2.4	-0.19	173.6	-3.1	-0.22
74PMUQ		183.8	6.3	0.49	178.9	2.1	0.15
7DJTRY		187.2	9.6	0.76	191.8	15.1	1.08
9CZWNK		191.5	13.9	1.10	186.6	9.9	0.71
ATMAMP		178.4	0.8	0.06	183.0	6.3	0.45
BV2VKA		173.6	-4.0	-0.31	178.8	2.1	0.15
C9NV3G		173.2	-4.4	-0.35	169.8	-6.9	-0.49
D3UM7A		179.7	2.1	0.16	180.2	3.5	0.25
D4QTFT		171.8	-5.8	-0.45	170.8	-6.0	-0.43
DWP7CE		157.2	-20.4	-1.61	165.6	-11.1	-0.80
FBL3NC		194.4	16.8	1.33	194.4	17.7	1.27
FZZ7XP	X	169.2	-8.4	-0.66	163.4	-13.3	-0.96
GANLXD	X	159.3	-18.3	-1.44	154.7	-22.1	-1.58
GFTHLK	X	192.6	15.0	1.19	195.8	19.1	1.37
GTFR74		159.9	-17.7	-1.40	154.5	-22.2	-1.60
HEQMK9		184.1	6.5	0.51	183.6	6.8	0.49
JKXY8D		171.5	-6.1	-0.48	181.7	4.9	0.35
JZRZU7		186.5	8.9	0.70	178.9	2.1	0.15
KT9H6H		194.5	16.9	1.34	198.7	22.0	1.58
KYQKZ7		178.8	1.2	0.10	180.0	3.3	0.23
MRJ7E9		202.1	24.6	1.94	196.8	20.1	1.44
MVPNGA		164.6	-12.9	-1.02	162.9	-13.8	-0.99
PJ39M7	X	221.9	44.3	3.50	203.2	26.5	1.90
PX3FU4		168.0	-9.6	-0.76	156.4	-20.3	-1.46
RD8DH4		178.6	1.0	0.08	166.3	-10.4	-0.75
RDTPGD		159.6	-18.0	-1.42	157.2	-19.5	-1.40
RQE4F7		181.4	3.8	0.30	188.9	12.2	0.87
RXY6X4		153.3	-24.3	-1.92	159.5	-17.3	-1.24
TMAXD6	*	162.4	-15.2	-1.20	179.6	2.9	0.21
U29YTR		175.0	-2.6	-0.20	172.4	-4.4	-0.31
VULTBB		198.8	21.2	1.68	192.0	15.3	1.10
WUDBNW		180.5	2.9	0.23	181.8	5.1	0.36
XHFMA9		163.7	-13.8	-1.09	148.8	-27.9	-2.00
XHGM62		163.5	-14.1	-1.11	161.4	-15.4	-1.10
YZGWPY		195.7	18.1	1.43	185.5	8.7	0.63

Summary Statistics

	Sample SD39	Sample SD40
Grand Means	177.58 Grams	176.73 Grams
SD Btwn Labs	12.67 Grams	13.94 Grams

Statistics based on 35 of 39 reporting participants

Comments on Assigned Data Flags for Test #314

GANLXD (X) - Data appear to be off by a factor of .25; data converted by CTS (x4).

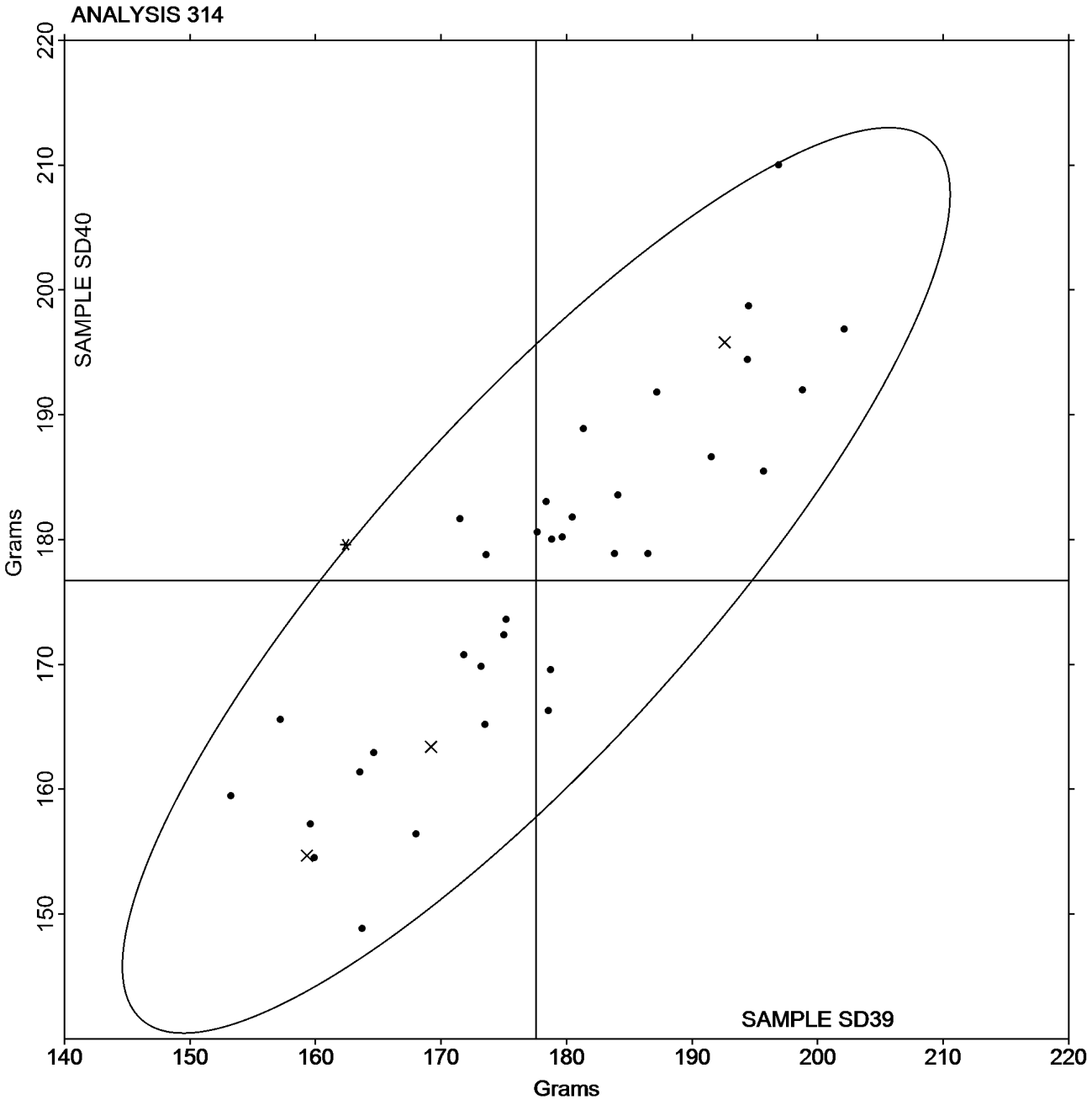
PJ39M7 (X) - Data for sample SD39 are high.

GFTHLK (X) - Data appear to be off by a factor of .25; data converted by CTS (x4).

FZZ7XP (X) - Data appear to be off by a factor of .25; data converted by CTS (x4).

Grand Mean Sample **SD39** = 177.58 Grams

Grand Mean Sample **SD40** = 176.73 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 320

Tensile Breaking Strength - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR39 Lab Mean	Sample SR39 Diff from Grand Mean	Sample SR39 CPV	Sample SR40 Lab Mean	Sample SR40 Diff from Grand Mean	Sample SR40 CPV
3924ZY		2.680	0.057	0.27	3.014	0.101	0.48
7LQ34D		2.493	-0.129	-0.60	2.848	-0.065	-0.31
8GWVAN		2.544	-0.078	-0.37	2.914	0.001	0.00
AFEJNN		2.479	-0.144	-0.67	3.001	0.088	0.41
B4EMB9		3.068	0.446	2.09	3.447	0.534	2.52
CGG2ZP		3.008	0.386	1.81	2.684	-0.229	-1.08
CPDXMR		2.466	-0.156	-0.73	2.738	-0.175	-0.82
DYXQA9		2.620	-0.002	-0.01	2.660	-0.253	-1.19
FRNE4L		2.558	-0.064	-0.30	2.946	0.033	0.16
KCJEJ8		2.549	-0.074	-0.35	3.022	0.109	0.51
LR4LUB		2.646	0.024	0.11	2.936	0.023	0.11
TJQBWX		2.356	-0.266	-1.25	2.746	-0.167	-0.79

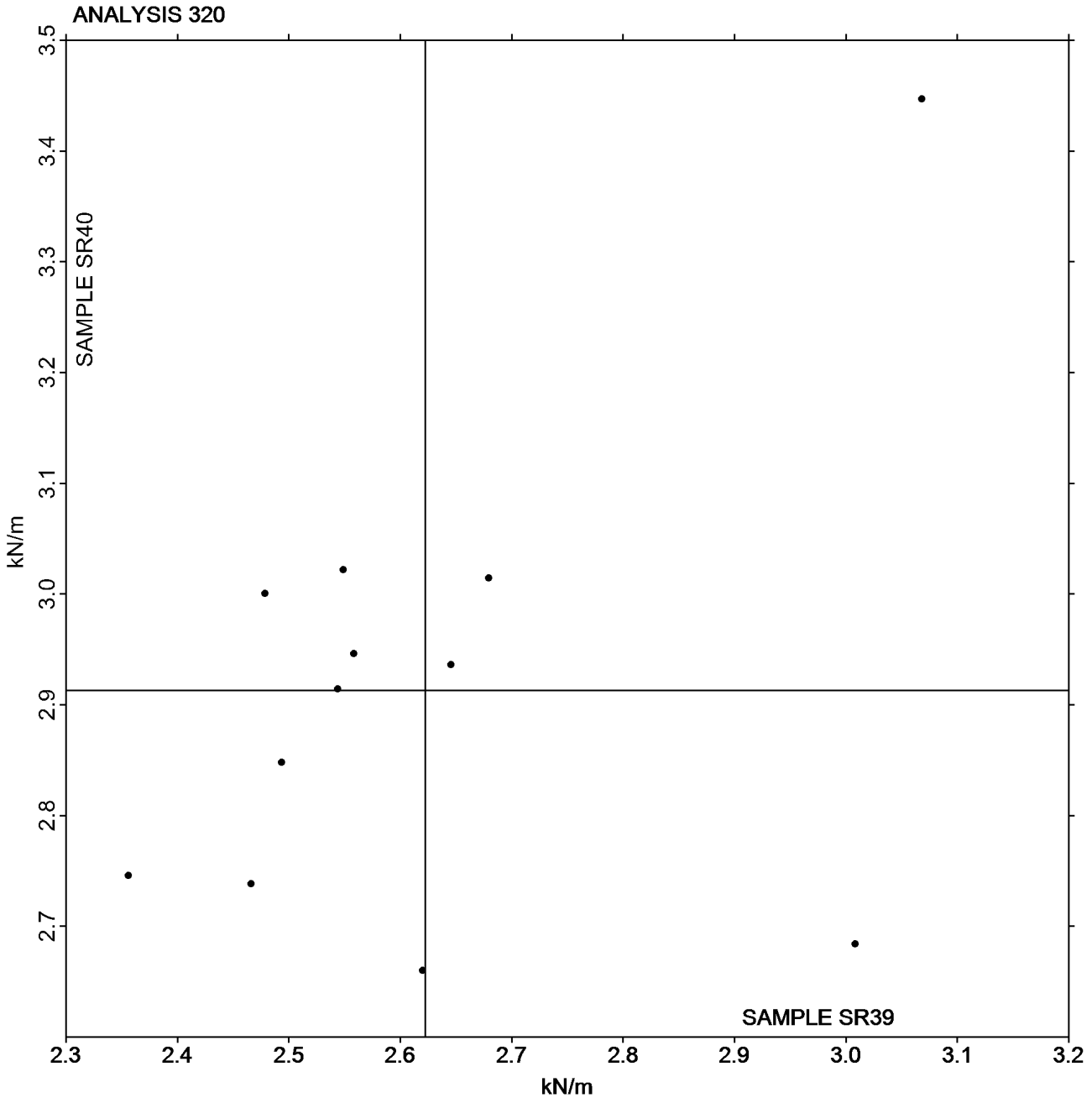
Summary Statistics

	Sample SR39	Sample SR40
Grand Means	2.6223 kN/m	2.9130 kN/m
SD Btwn Labs	0.2131 kN/m	0.2123 kN/m

Statistics based on 12 of 12 reporting participants

Grand Mean Sample **SR39** = 2.6223 kN/m

Grand Mean Sample **SR40** = 2.9130 kN/m



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 321

Tensile Energy Absorption - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR39 Lab Mean	Sample SR39 Diff from Grand Mean	Sample SR39 CPV	Sample SR40 Lab Mean	Sample SR40 Diff from Grand Mean	Sample SR40 CPV
3924ZY		17.85	0.11	0.05	22.58	-0.41	-0.15
7LQ34D		21.88	4.14	1.84	28.72	5.73	2.07
8GWVAN		18.24	0.50	0.22	25.38	2.38	0.86
AFEJNN		16.06	-1.67	-0.74	24.22	1.22	0.44
B4EMB9		20.38	2.65	1.18	24.87	1.87	0.68
CGG2ZP		16.13	-1.61	-0.72	20.33	-2.66	-0.96
CPDXMR		18.46	0.72	0.32	20.63	-2.36	-0.85
FRNE4L		16.17	-1.57	-0.70	21.92	-1.08	-0.39
KCJEJ8		14.19	-3.54	-1.58	20.14	-2.85	-1.03
LR4LUB		18.00	0.26	0.12	21.15	-1.84	-0.67

Summary Statistics

	Sample SR39	Sample SR40
Grand Means	17.736 Joules/sq m	22.994 Joules/sq m
SD Btwn Labs	2.247 Joules/sq m	2.769 Joules/sq m

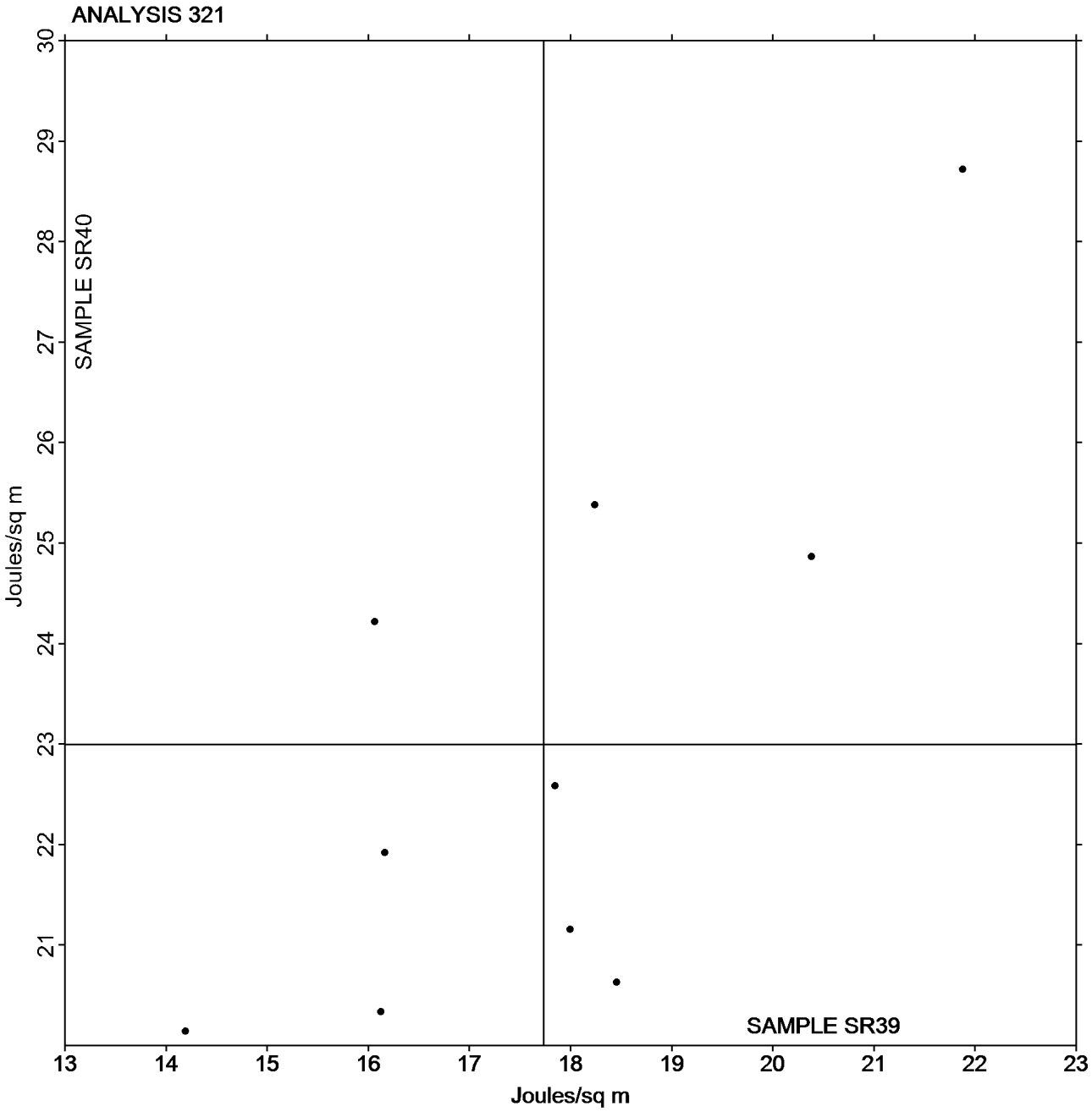
Statistics based on 10 of 10 reporting participants

Analysis Notes:

CGG2ZP - One determination removed from the Lab Mean of Sample SR40 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample **SR39** = 17.736 Joules/sq m

Grand Mean Sample **SR40** = 22.994 Joules/sq m



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 322
Elongation to Break - Newsprint
TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR39 Lab Mean	Sample SR39 Diff from Grand Mean	Sample SR39 CPV	Sample SR40 Lab Mean	Sample SR40 Diff from Grand Mean	Sample SR40 CPV
3924ZY		1.135	-0.105	-0.52	1.239	-0.130	-0.49
7LQ34D		1.613	0.373	1.84	1.968	0.599	2.27
8GWVAN		1.197	-0.043	-0.21	1.404	0.035	0.13
AFEJNN		1.089	-0.151	-0.74	1.325	-0.044	-0.17
B4EMB9		1.081	-0.159	-0.79	1.143	-0.226	-0.86
CGG2ZP		1.340	0.100	0.49	1.220	-0.149	-0.57
CPDXMR		1.258	0.018	0.09	1.277	-0.092	-0.35
KCJEJ8		0.906	-0.334	-1.65	1.058	-0.311	-1.18
LR4LUB		1.362	0.122	0.60	1.440	0.071	0.27
TJQBWX		1.420	0.180	0.89	1.620	0.251	0.95

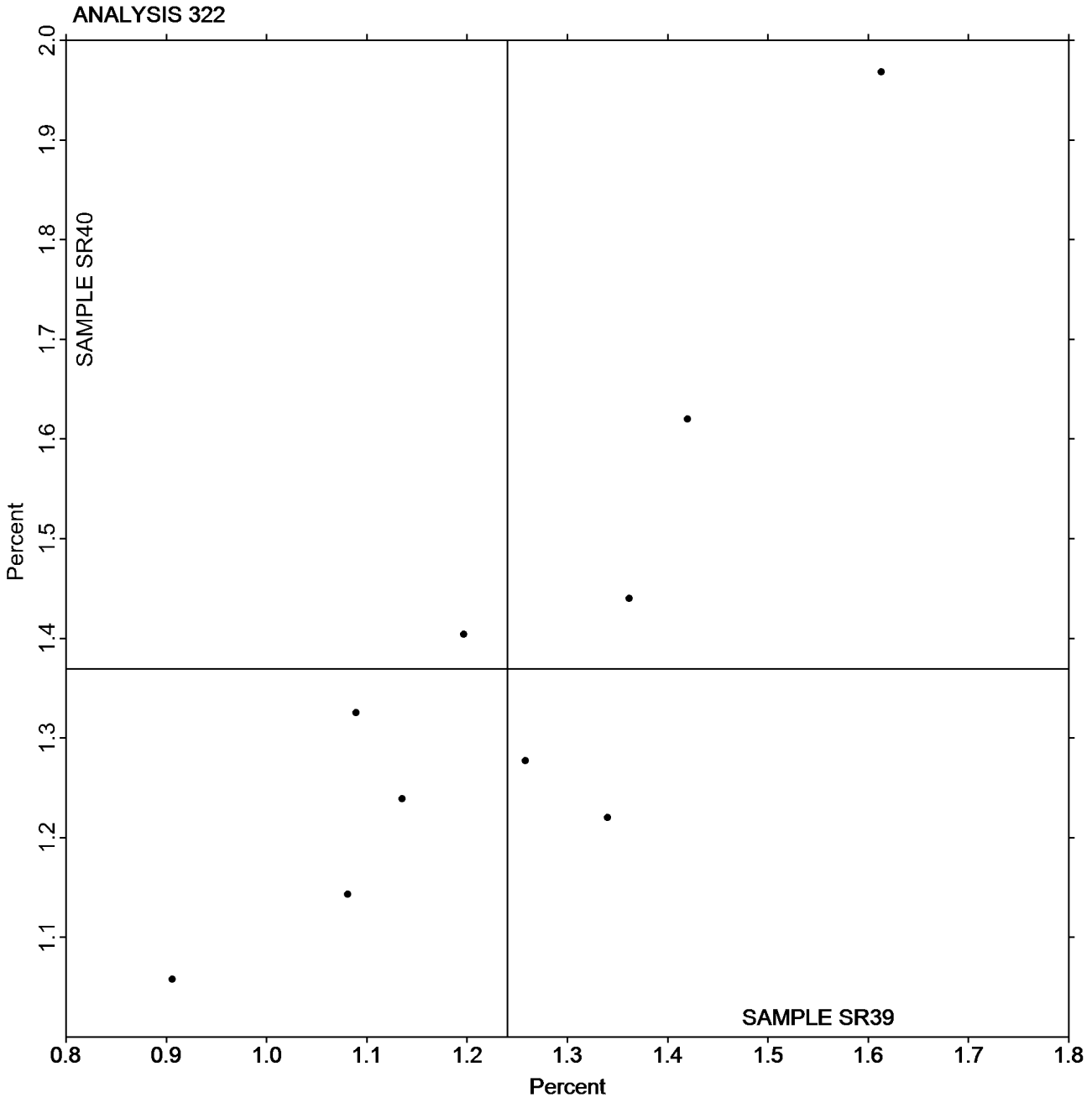
Summary Statistics

	Sample SR39	Sample SR40
Grand Means	1.2402 Percent	1.3695 Percent
SD Btwn Labs	0.2025 Percent	0.2636 Percent

Statistics based on 10 of 10 reporting participants

Grand Mean Sample **SR39** = 1.2402 Percent

Grand Mean Sample **SR40** = 1.3695 Percent



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

		Sample SF39			Sample SF40			
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	Instr Code
2B8YUJ		4.767	-0.117	-0.35	6.881	0.039	0.09	TP
2MFBBY	X	5.306	0.423	1.27	6.380	-0.462	-1.09	TJ
3JXBVJ		4.883	-0.001	0.00	7.136	0.294	0.70	TO
3NTYCQ	X	4.452	-0.432	-1.30	4.982	-1.860	-4.40	XX
64ZXDT		4.855	-0.028	-0.09	6.910	0.068	0.16	LH
6CNTBM	X	4.474	-0.409	-1.23	5.008	-1.834	-4.33	LA
7YHXVR		5.489	0.605	1.82	7.703	0.861	2.03	TB
87DG7L		4.543	-0.341	-1.03	6.534	-0.308	-0.73	LH
99ZF2V		4.877	-0.007	-0.02	6.789	-0.053	-0.13	LH
C2PZT6		4.222	-0.661	-1.99	5.886	-0.956	-2.26	XX
DBAYAE		5.063	0.179	0.54	6.991	0.149	0.35	TA
F84BNN		4.764	-0.120	-0.36	7.032	0.190	0.45	LI
FNN2MN		5.036	0.153	0.46	6.984	0.142	0.34	LH
FVRH64		4.908	0.024	0.07	6.706	-0.136	-0.32	LX
FYA36H		5.184	0.300	0.90	7.317	0.475	1.12	LI
G8VNNL		4.349	-0.535	-1.61	6.119	-0.723	-1.71	CB
GUVUDC	X	3.857	-1.027	-3.09	7.678	0.836	1.98	TJ
JKB3N6		4.674	-0.210	-0.63	6.595	-0.247	-0.58	TS
K4Q2NE		5.162	0.278	0.84	7.131	0.289	0.68	LI
K6XE7F		4.384	-0.499	-1.50	6.364	-0.478	-1.13	RE
KQ26HA		5.104	0.220	0.66	7.116	0.274	0.65	TO
KV9TWB		5.440	0.556	1.67	7.292	0.450	1.06	TJ
L8Z9AX		4.789	-0.094	-0.28	6.697	-0.145	-0.34	IN
LRPV7Z		4.916	0.032	0.10	6.960	0.118	0.28	MR
MLZAMY		4.909	0.026	0.08	7.141	0.299	0.71	LH
MZCDWD		4.782	-0.101	-0.30	6.644	-0.198	-0.47	IM
N26QWB		4.233	-0.650	-1.96	5.968	-0.874	-2.07	ID
NFP73W		4.777	-0.107	-0.32	6.657	-0.185	-0.44	TB
NTXUDE		4.839	-0.045	-0.14	6.667	-0.175	-0.41	LH
PC67B2		5.256	0.372	1.12	7.140	0.298	0.70	LA
PTTUR6		5.417	0.533	1.60	7.394	0.552	1.30	LA
QMYPL2		4.572	-0.312	-0.94	6.521	-0.321	-0.76	LI
R6ZGX8		5.358	0.474	1.43	7.337	0.495	1.17	LI
RCD3RQ		5.207	0.324	0.97	7.198	0.356	0.84	TX
RXEJ6D		4.684	-0.199	-0.60	6.465	-0.377	-0.89	DL
TMAXD6		4.697	-0.187	-0.56	6.785	-0.057	-0.14	IM
TXTCG8		4.755	-0.129	-0.39	6.656	-0.186	-0.44	LE
U3W6ZN		4.563	-0.320	-0.96	6.485	-0.357	-0.84	TB
UU782A		5.003	0.120	0.36	7.051	0.209	0.49	LX
V6LTVP		4.828	-0.055	-0.17	6.888	0.046	0.11	LA

Paper & Paperboard Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF39 Lab Mean	Sample SF39 Diff from Grand Mean	Sample SF39 CPV	Sample SF40 Lab Mean	Sample SF40 Diff from Grand Mean	Sample SF40 CPV	Instr Code
VFKZZ2		4.198	-0.686	-2.06	5.844	-0.998	-2.36	IM
WQFRLX		5.113	0.230	0.69	7.069	0.227	0.54	XX
WUDBNW		4.929	0.045	0.14	6.848	0.006	0.01	TB
WW3FG4	*	5.387	0.503	1.51	7.067	0.225	0.53	TC
WZ7NWU		4.800	-0.084	-0.25	6.854	0.012	0.03	LI
YRMP7T	X	5.436	0.552	1.66	6.964	0.122	0.29	LH
YXRP62		4.905	0.022	0.07	6.819	-0.023	-0.06	LF
ZG2E7K		4.791	-0.092	-0.28	6.968	0.126	0.30	TO
ZQ8EJT		5.308	0.425	1.28	7.338	0.496	1.17	TN
ZU2DUH		5.389	0.505	1.52	7.646	0.804	1.90	TO
ZY3P63		4.537	-0.346	-1.04	6.139	-0.703	-1.66	TF

Summary Statistics

	Sample SF39	Sample SF40
Grand Means	4.8837 kN/m	6.8420 kN/m
SD Btwn Labs	0.3326 kN/m	0.4231 kN/m

Statistics based on 46 of 51 reporting participants

Comments on Assigned Data Flags for Test #325

2MFBBY (X) - Inconsistent in testing between samples.

GUVUDC (X) - Data for sample SF39 are low.

YRMP7T (X) - Inconsistent in testing between samples.

6CNTBM (X) - Data for sample SF40 are low.

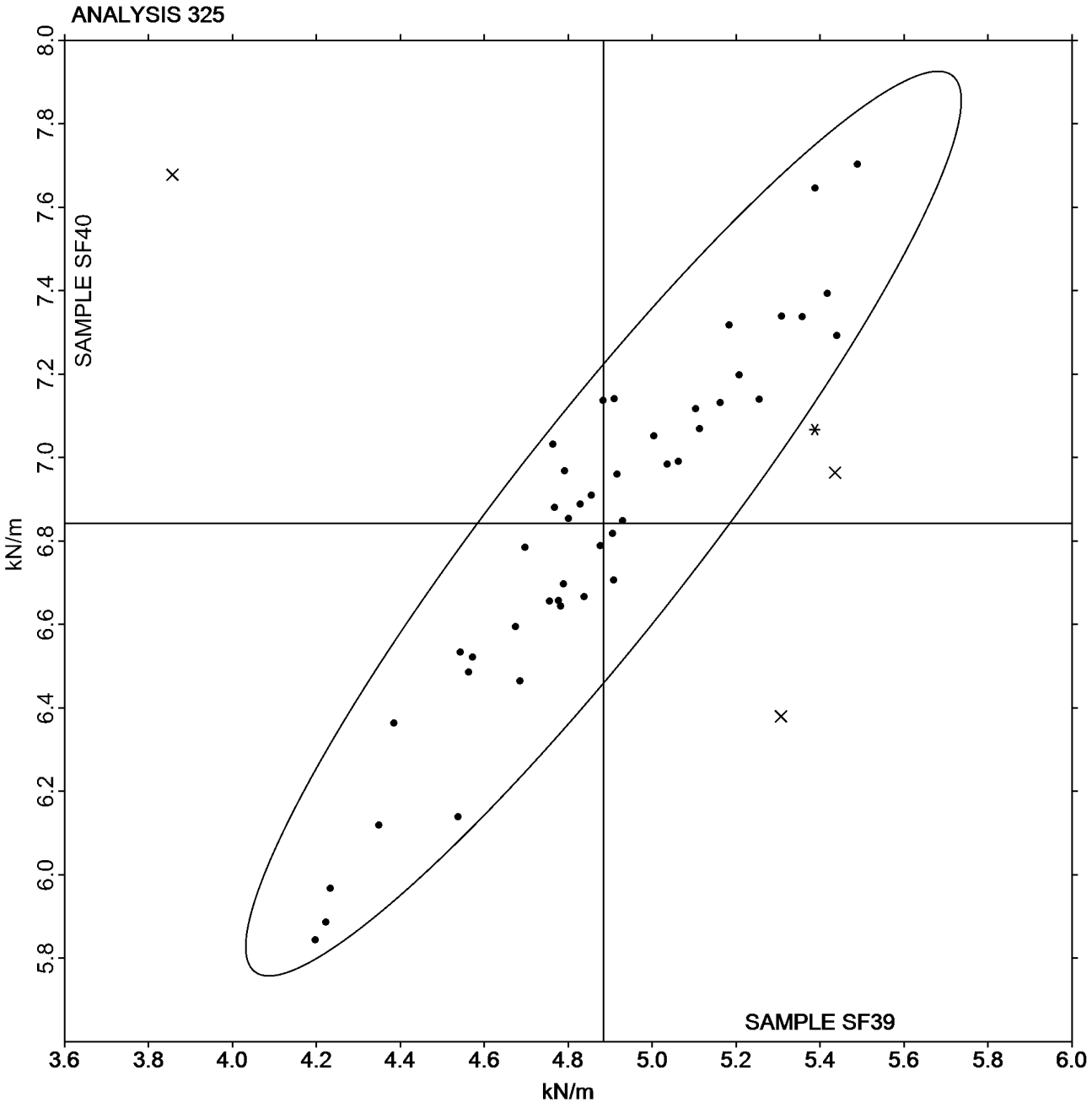
3NTYCQ (X) - Data for sample SF40 are low.

Key to Instrument Codes Reported by Participants

CB	Chatillon DFIS 50 (Digital Gauge)/TCD 200	DL	EMIC DL500 Universal Testing Machines
ID	Instron 4201/4202	IM	Instron 5500 Series
IN	Instron 3340 series	LA	L & W Tensile - Autoline 300
LE	L & W Tensile Tester 066	LF	L & W Tensile/Fracture Toughness Tester SE 064
LH	L & W Alwetron TH1 (Horizontal) SE 060/065F	LI	L & W Tensile Tester SE 062
LX	L & W (model not specified)	MR	MTS Alliance RT series
RE	Regmed	TA	Testometric AX
TB	Thwing-Albert EJA/1000	TC	Thwing-Albert Electro-Hydraulic, Model 30LT
TF	Thwing-Albert EJA Vantage-1	TJ	Thwing-Albert QC II-XS
TN	Testometric M100-1CT	TO	Thwing-Albert QC-1000
TP	TMI Monitor/Tensile 100 (84-21-01)	TS	Tinius Olsen 1000
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab

Grand Mean Sample **SF39** = 4.8837 kN/m

Grand Mean Sample **SF40** = 6.8420 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF39 Lab Mean	Sample SF39 Diff from Grand Mean	Sample SF39 CPV	Sample SF40 Lab Mean	Sample SF40 Diff from Grand Mean	Sample SF40 CPV	Instr Code
3JXBVJ		62.61	-4.93	-0.62	104.64	10.83	0.81	TO
3NTYCQ		55.49	-12.05	-1.53	61.66	-32.15	-2.40	XX
64ZXDT		65.45	-2.08	-0.26	92.05	-1.76	-0.13	LH
6CNTBM	*	47.25	-20.28	-2.57	52.87	-40.93	-3.06	LA
7YHXVR		63.79	-3.75	-0.48	97.94	4.14	0.31	TB
87DG7L		55.94	-11.60	-1.47	86.85	-6.96	-0.52	LH
99ZF2V		72.73	5.20	0.66	96.66	2.85	0.21	LH
C2PZT6		57.98	-9.55	-1.21	82.38	-11.43	-0.85	XX
F84BNN		64.48	-3.05	-0.39	94.74	0.93	0.07	LI
FNN2MN		75.64	8.10	1.03	98.66	4.85	0.36	LH
FVRH64		73.63	6.09	0.77	91.90	-1.91	-0.14	LX
FYA36H		72.58	5.05	0.64	100.62	6.81	0.51	LI
K4Q2NE		77.71	10.18	1.29	103.07	9.26	0.69	LI
K6XE7F		67.41	-0.13	-0.02	96.54	2.73	0.20	RE
KQ26HA		67.52	-0.01	0.00	94.22	0.41	0.03	TO
KV9TWB		84.56	17.02	2.16	112.34	18.54	1.38	TJ
LRPV7Z		67.58	0.05	0.01	95.00	1.20	0.09	MR
MZCDWD		70.63	3.09	0.39	102.53	8.72	0.65	IM
N26QWB		72.34	4.81	0.61	97.00	3.20	0.24	ID
NFP73W		72.68	5.14	0.65	102.27	8.47	0.63	TB
NTXUDE		72.01	4.47	0.57	97.88	4.07	0.30	LH
PC67B2		68.31	0.78	0.10	97.29	3.48	0.26	LA
PTTUR6		76.52	8.99	1.14	104.28	10.47	0.78	LA
QMYPL2		62.87	-4.66	-0.59	89.86	-3.95	-0.29	LI
R6ZGX8		79.96	12.42	1.57	106.30	12.50	0.93	LI
RCD3RQ		63.69	-3.85	-0.49	96.20	2.40	0.18	TA
RXEJ6D		71.18	3.64	0.46	100.14	6.34	0.47	DL
TMAXD6		66.37	-1.16	-0.15	99.73	5.93	0.44	IM
UU782A		69.15	1.62	0.20	98.03	4.22	0.32	LX
VFKZZ2		56.79	-10.75	-1.36	75.58	-18.23	-1.36	IM
WQFRLX		63.89	-3.64	-0.46	88.34	-5.47	-0.41	XX
WZ7NWU		67.82	0.28	0.04	96.78	2.97	0.22	LI
YRMP7T		62.24	-5.29	-0.67	70.31	-23.50	-1.76	LH
YXRP62		54.29	-13.24	-1.68	72.27	-21.54	-1.61	LW
ZG2E7K		76.33	8.79	1.11	121.13	27.32	2.04	TO
ZQ8EJT		71.81	4.28	0.54	99.01	5.20	0.39	LX

Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

Summary Statistics

	Sample SF39	Sample SF40
Grand Means	67.534 Joules/sq m	93.807 Joules/sq m
SD Btwn Labs	7.891 Joules/sq m	13.389 Joules/sq m

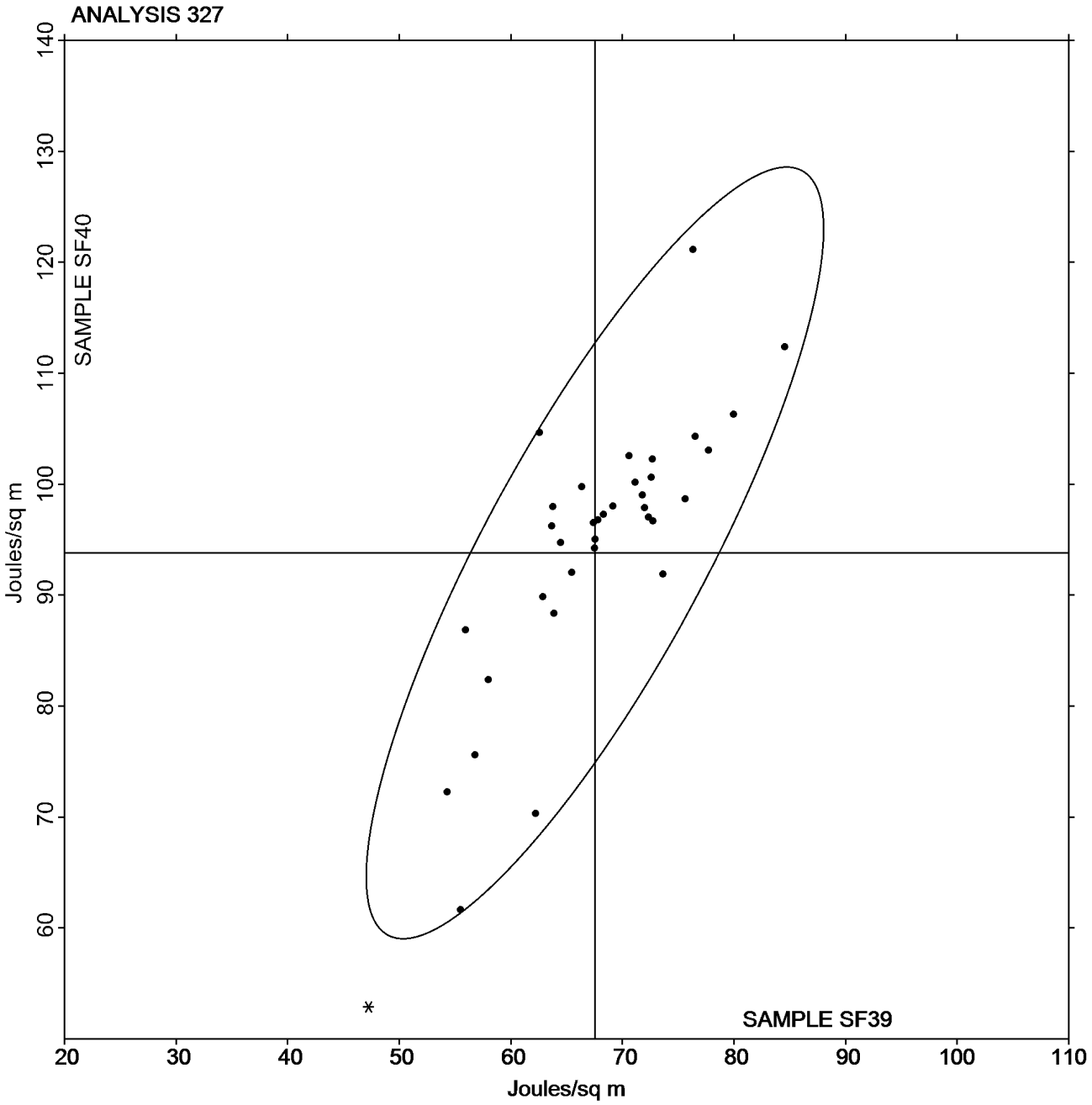
Statistics based on 36 of 36 reporting participants

Key to Instrument Codes Reported by Participants

DL	EMIC DL500 Universal Testing Machines	ID	Instron 4201
IM	Instron 5500 Series	LA	L & W Tensile - Autoline 300
LH	L & W Alwetron TH1 (Horizontal) SE 060	LI	L & W Tensile Tester SE 062
LW	L & W Tensile Tester SE 064	LX	L & W (model not specified)
MR	MTS Alliance RT series	RE	Regmed
TA	Thwing-Albert	TB	Thwing-Albert EJA/1000
TJ	Thwing-Albert QC II-XS	TO	Thwing-Albert QC-1000
XX	Instrument make/model not specified by lab		

Grand Mean Sample **SF39** = 67.534 Joules/sq m

Grand Mean Sample **SF40** = 93.807 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF39 Lab Mean	Sample SF39 Diff from Grand Mean	Sample SF39 CPV	Sample SF40 Lab Mean	Sample SF40 Diff from Grand Mean	Sample SF40 CPV	Instr Code
3JXBVJ		1.923	-0.168	-0.83	2.252	0.081	0.42	TO
3NTYCQ		2.356	0.265	1.31	2.346	0.175	0.91	XX
64ZXDT		2.013	-0.078	-0.38	2.041	-0.130	-0.67	LH
6CNTBM		1.864	-0.226	-1.12	1.854	-0.317	-1.65	LA
7YHXVR		1.799	-0.292	-1.44	1.983	-0.188	-0.98	TB
87DG7L		1.811	-0.280	-1.38	2.023	-0.148	-0.77	LH
99ZF2V		2.186	0.095	0.47	2.166	-0.005	-0.02	LH
C2PZT6		2.028	-0.063	-0.31	2.125	-0.045	-0.24	XX
F84BNN		2.040	-0.051	-0.25	2.103	-0.068	-0.35	LI
FNN2MN		2.197	0.106	0.52	2.150	-0.021	-0.11	LH
FVRH64		2.196	0.105	0.52	2.112	-0.059	-0.30	LX
FYA36H		1.970	-0.121	-0.60	1.945	-0.226	-1.17	LI
GUVUDC		1.630	-0.461	-2.27	1.830	-0.341	-1.77	LH
JKB3N6	*	2.232	0.141	0.70	2.546	0.375	1.95	TS
K4Q2NE		2.229	0.138	0.68	2.221	0.050	0.26	LI
K6XE7F		2.335	0.244	1.21	2.392	0.222	1.15	RE
KQ26HA		1.931	-0.160	-0.79	1.989	-0.182	-0.94	TG
KV9TWB		2.323	0.232	1.15	2.390	0.219	1.14	TJ
L8Z9AX		2.252	0.161	0.80	2.286	0.115	0.60	IN
LRPV7Z		2.065	-0.026	-0.13	2.120	-0.051	-0.26	MR
MZCDWD		2.230	0.139	0.69	2.384	0.213	1.11	IM
N26QWB		2.502	0.412	2.03	2.463	0.292	1.52	ID
NFP73W		2.290	0.199	0.98	2.389	0.218	1.13	TB
NTXUDE		2.194	0.103	0.51	2.234	0.063	0.33	LH
PC67B2		1.870	-0.221	-1.09	1.885	-0.286	-1.48	XX
PTTUR6		1.877	-0.214	-1.06	1.953	-0.218	-1.13	LA
QMYPL2		2.026	-0.065	-0.32	2.089	-0.082	-0.42	LI
R6ZGX8		2.204	0.113	0.56	2.217	0.046	0.24	LI
RCD3RQ		1.969	-0.122	-0.60	2.203	0.032	0.17	TX
RXEJ6D		2.391	0.300	1.48	2.514	0.343	1.78	DL
TMAXD6		2.107	0.016	0.08	2.260	0.089	0.46	IM
U3W6ZN		2.120	0.029	0.14	2.290	0.119	0.62	TF
UU782A		2.071	-0.020	-0.10	2.138	-0.033	-0.17	LX
VFKZZ2		2.089	-0.002	-0.01	2.113	-0.057	-0.30	XX
WQFRLX		2.480	0.389	1.92	2.400	0.229	1.19	XX
WUDBNW		2.000	-0.091	-0.45	2.156	-0.014	-0.07	TB
WZ7NWU		2.101	0.010	0.05	2.160	-0.011	-0.06	LI
YRMP7T	X	1.673	-0.418	-2.06	1.497	-0.674	-3.50	LH
YXRP62		1.688	-0.403	-1.99	1.695	-0.476	-2.47	LX
ZG2E7K	X	2.698	0.607	3.00	3.023	0.852	4.43	TO

Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF39 Lab Mean	Sample SF39 Diff from Grand Mean	Sample SF39 CPV	Sample SF40 Lab Mean	Sample SF40 Diff from Grand Mean	Sample SF40 CPV	Instr Code
ZQ8EJT	*	1.915	-0.176	-0.87	2.300	0.129	0.67	LX
ZY3P63		2.130	0.039	0.19	2.110	-0.061	-0.32	TF

Summary Statistics

	Sample SF39	Sample SF40
Grand Means	2.0909 Percent	2.1707 Percent
SD Btwn Labs	0.2026 Percent	0.1924 Percent

Statistics based on 40 of 42 reporting participants

Comments on Assigned Data Flags for Test #328

YRMP7T (X) - Data for sample SF40 are low.

ZG2E7K (X) - Data for both samples are high. Possible Systematic Error.

Analysis Notes:

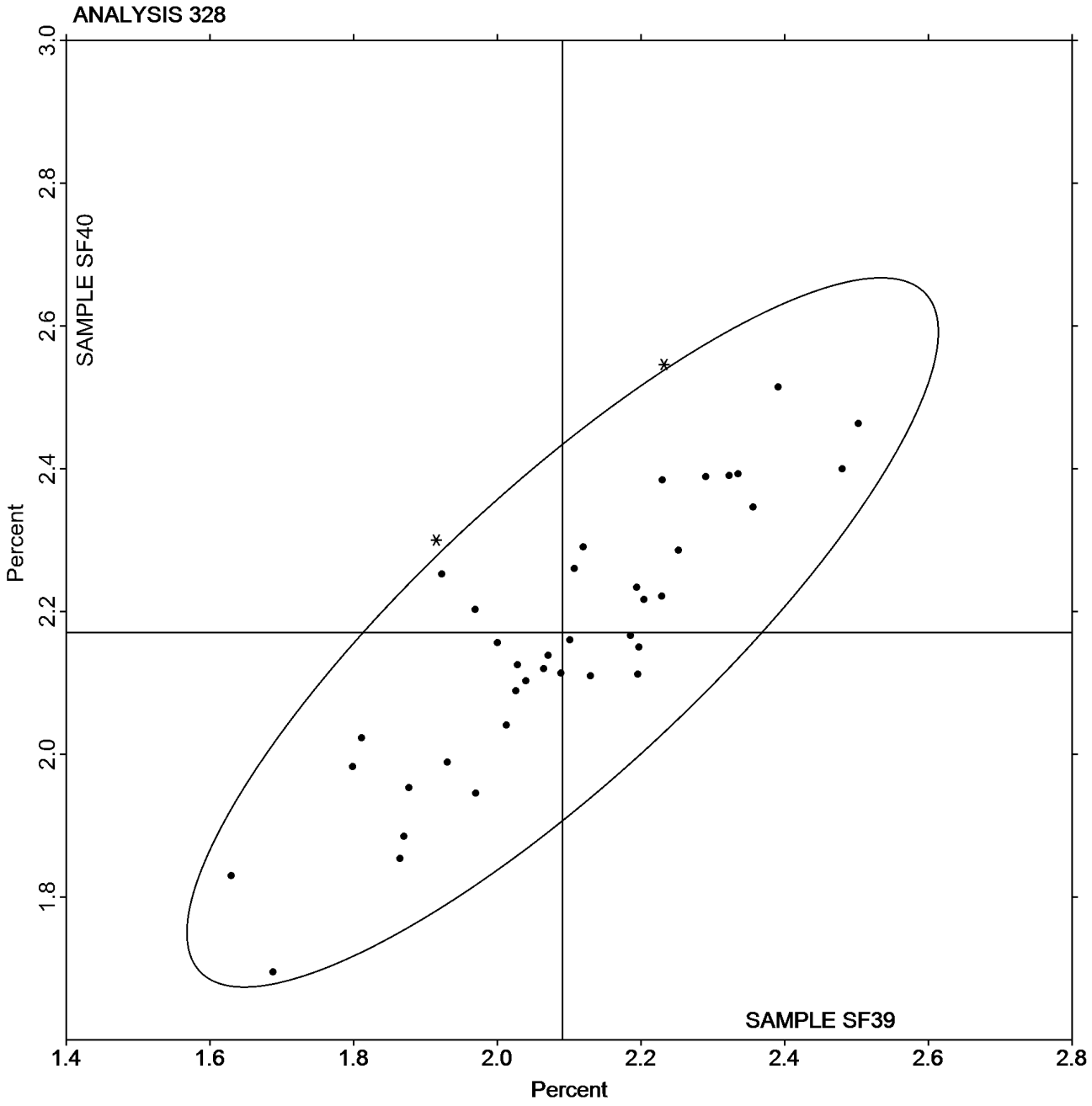
7YHXVR - One determination removed from the Lab Mean of Sample SF39 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

DL	EMIC DL500 Universal Testing Machines	ID	Instron 4201
IM	Instron 5500	IN	Instron 3340 Series
LA	L & W Tensile - Autoline 300	LH	L & W Alwetron TH1 (Horizontal) SE 060
LI	L & W Tensile Tester SE 062	LX	L & W (model not specified)
MR	MTS Alliance RT series	RE	Regmed
TB	Thwing-Albert EJA/1000	TF	Thwing-Albert EJA Vantage-1
TG	Thwing-Albert QC	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	TS	Tinius Olsen 1000
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab

Grand Mean Sample **SF39** = 2.0909 Percent

Grand Mean Sample **SF40** = 2.1707 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE39 Lab Mean	Sample SE39 Diff from Grand Mean	Sample SE39 CPV	Sample SE40 Lab Mean	Sample SE40 Diff from Grand Mean	Sample SE40 CPV	Instr Code
27FVGY		10.206	0.999	1.35	11.46	1.38	1.90	LI
2BQBKW		8.689	-0.519	-0.70	9.41	-0.68	-0.94	XX
2M64EX		9.606	0.398	0.54	10.84	0.75	1.04	TO
2RXBTZ		10.083	0.876	1.18	10.88	0.79	1.09	TP
2YU6QX		8.757	-0.450	-0.61	9.61	-0.47	-0.65	IM
34KA9N		9.173	-0.034	-0.05	9.97	-0.12	-0.17	XX
3JGN9G		8.438	-0.769	-1.04	9.70	-0.39	-0.54	IM
64ZXDT		9.055	-0.153	-0.21	10.17	0.08	0.12	LH
74CW4V		9.168	-0.039	-0.05	10.04	-0.04	-0.06	TK
74PMUQ	X	8.737	-0.470	-0.64	7.56	-2.53	-3.50	LE
8RDHJP		8.497	-0.710	-0.96	9.31	-0.78	-1.07	LW
9CZWNK		9.496	0.289	0.39	10.05	-0.04	-0.06	TA
A78NPP		8.611	-0.596	-0.81	9.36	-0.73	-1.00	IM
ATMAMP		9.227	0.020	0.03	9.79	-0.30	-0.41	LH
BPDD6D		9.403	0.195	0.26	10.97	0.88	1.21	TH
BV2VKA		9.656	0.449	0.61	11.23	1.14	1.57	IK
C9NV3G	X	12.885	3.678	4.97	14.88	4.79	6.61	TA
D3UM7A	*	7.371	-1.836	-2.48	8.67	-1.42	-1.96	IN
DB74DA	X	15.093	5.885	7.96	15.83	5.74	7.93	LA
DWP7CE		10.418	1.211	1.64	11.52	1.43	1.97	TH
DX37KN		8.791	-0.416	-0.56	9.74	-0.35	-0.48	TO
EMJT3J		10.597	1.390	1.88	10.99	0.90	1.25	LA
FBL3NC		10.938	1.731	2.34	11.53	1.44	1.99	LA
FZZ7XP		7.980	-1.227	-1.66	9.13	-0.96	-1.32	ID
GTFR74		9.039	-0.168	-0.23	9.90	-0.19	-0.26	LW
JKXY8D		8.799	-0.408	-0.55	9.83	-0.26	-0.35	ID
KG9QJA		9.387	0.179	0.24	9.86	-0.23	-0.32	IF
MVPNGA		9.240	0.033	0.04	10.27	0.18	0.25	TP
MYMA47		8.611	-0.596	-0.81	9.47	-0.62	-0.86	LE
PJ39M7		9.066	-0.141	-0.19	9.84	-0.25	-0.35	LE
PX3FU4		9.461	0.253	0.34	10.47	0.38	0.53	TH
R6BL64	X	8.364	-0.843	-1.14	32.83	22.74	31.41	LA
RCD3RQ		9.443	0.236	0.32	10.36	0.27	0.37	TO
RD8DH4		8.650	-0.558	-0.75	9.08	-1.00	-1.39	IF
RDTPGD	X	5.901	-3.306	-4.47	7.79	-2.29	-3.17	IF
RHYXTU		8.639	-0.568	-0.77	9.25	-0.84	-1.15	ID
RXY6X4		9.680	0.473	0.64	10.73	0.64	0.89	IK
T4VEL9		8.213	-0.995	-1.34	9.17	-0.92	-1.27	TH
U29YTR		9.330	0.123	0.17	10.60	0.51	0.70	TO
UTRNFQ		8.493	-0.714	-0.97	9.31	-0.77	-1.07	XX

Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE39 Lab Mean	Sample SE39 Diff from Grand Mean	Sample SE39 CPV	Sample SE40 Lab Mean	Sample SE40 Diff from Grand Mean	Sample SE40 CPV	Instr Code
VEAPWQ		9.229	0.022	0.03	10.06	-0.03	-0.04	TB
VULTBB		9.690	0.483	0.65	10.69	0.60	0.83	LH
WNQTGV	*	10.593	1.386	1.87	10.64	0.55	0.76	LA
WUDBNW		9.128	-0.079	-0.11	9.86	-0.22	-0.31	XX
XHGM62		9.412	0.205	0.28	10.22	0.13	0.18	LE
YYLL3Q		10.083	0.876	1.18	10.49	0.40	0.55	TR
YZGWPY		8.359	-0.848	-1.15	9.25	-0.83	-1.15	LE

Summary Statistics

	Sample SE39	Sample SE40
Grand Means	9.2073 kN/m	10.088 kN/m
SD Btwn Labs	0.7396 kN/m	0.724 kN/m

Statistics based on 42 of 47 reporting participants

Comments on Assigned Data Flags for Test #330

74PMUQ (X) - Data for sample SE40 are low. Inconsistent within the determinations of sample SE40.

C9NV3G (X) - Extreme Data.

R6BL64 (X) - Extreme Data for Sample SE40.

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

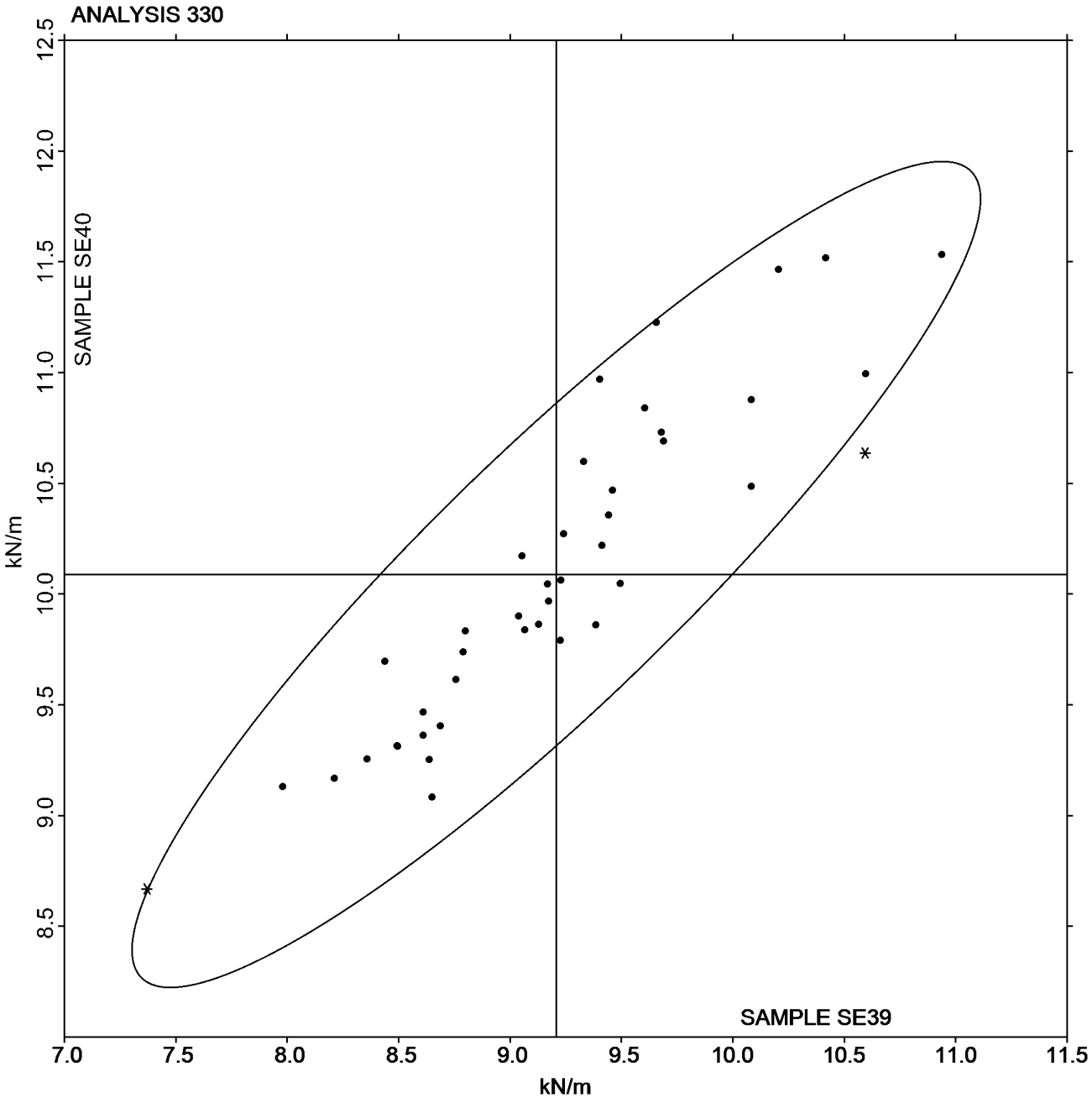
DB74DA (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ID	Instron 4201	IF	Instron 3340 Series
IK	Instron 4400 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	LA	L & W Autoline
LE	L & W Tensile Tester 066	LH	L & W Alwetron TH1 (Horizontal) SE 060
LI	LLoyds Instruments	LW	L & W Tensile Tester SE062
TA	Thwing-Albert Tensile Tester	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TK	Thwing-Albert Model 37-4
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TR	TMI Horizontal Tensile Tester	XX	Instrument make/model not specified by lab

Grand Mean Sample **SE39** = 9.2073 kN/m

Grand Mean Sample **SE40** = 10.088 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE39 Lab Mean	Sample SE39 Diff from Grand Mean	Sample SE39 CPV	Sample SE40 Lab Mean	Sample SE40 Diff from Grand Mean	Sample SE40 CPV	Instr Code
2BQBKW		95.9	-7.2	-0.72	108.6	-16.5	-1.12	XX
2M64EX		102.7	-0.4	-0.04	135.7	10.7	0.73	TO
2RXBTZ	X	59.6	-43.5	-4.31	77.2	-47.9	-3.26	TP
2YU6QX		98.1	-5.0	-0.49	122.3	-2.7	-0.19	IM
34KA9N		100.0	-3.2	-0.31	127.7	2.7	0.18	XX
3JGN9G		100.3	-2.9	-0.28	122.2	-2.8	-0.19	IM
64ZXDT		94.4	-8.7	-0.87	118.6	-6.4	-0.44	LH
74PMUQ	X	1,144.5	1,041.3	103.15	807.5	682.5	46.44	LE
8RDHJP		95.5	-7.6	-0.76	117.5	-7.5	-0.51	LW
9CZWNK		100.3	-2.8	-0.27	104.7	-20.3	-1.38	TA
A78NPP		99.8	-3.3	-0.33	112.5	-12.6	-0.85	IM
ATMAMP		102.2	-1.0	-0.09	119.2	-5.8	-0.40	LH
BV2VKA		106.4	3.2	0.32	140.5	15.4	1.05	XX
D3UM7A	*	77.6	-25.5	-2.53	105.1	-20.0	-1.36	IN
DB74DA		102.4	-0.7	-0.07	136.8	11.8	0.80	LA
DWP7CE		116.5	13.4	1.33	149.9	24.8	1.69	TH
DX37KN		110.0	6.9	0.69	129.9	4.8	0.33	TO
EMJT3J		100.8	-2.3	-0.23	107.7	-17.3	-1.18	LA
FBL3NC		102.5	-0.7	-0.06	116.7	-8.3	-0.57	LA
FZZ7XP		116.3	13.2	1.31	154.5	29.4	2.00	ID
GTFR74		94.0	-9.2	-0.91	113.2	-11.8	-0.81	LW
KG9QJA		115.5	12.3	1.22	120.0	-5.0	-0.34	IF
MYMA47		93.3	-9.8	-0.97	110.6	-14.5	-0.98	LE
PJ39M7		105.5	2.4	0.24	126.0	0.9	0.06	LE
PX3FU4		100.4	-2.7	-0.27	133.8	8.8	0.60	TH
R6BL64		105.0	1.9	0.18	110.7	-14.3	-0.98	LA
RCD3RQ		103.9	0.8	0.08	134.3	9.2	0.63	TO
RDTPGD	*	132.1	29.0	2.87	154.2	29.2	1.99	IN
RHYXTU		94.6	-8.6	-0.85	101.2	-23.8	-1.62	ID
RXY6X4		121.5	18.3	1.82	155.8	30.8	2.09	IK
T4VEL9		106.7	3.6	0.36	121.6	-3.5	-0.24	TH
U29YTR		98.2	-4.9	-0.48	137.1	12.1	0.82	TO
UTRNFQ		104.3	1.2	0.11	128.7	3.7	0.25	XX
VEAPWQ		108.4	5.3	0.52	134.6	9.5	0.65	TB
WNQTGV		116.4	13.3	1.32	122.9	-2.2	-0.15	LA
XHGM62		90.0	-13.2	-1.30	117.4	-7.7	-0.52	LE
YYLL3Q		111.0	7.9	0.78	138.2	13.1	0.89	TR
YZGWPY		90.1	-13.1	-1.29	111.3	-13.8	-0.94	LE

Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

Summary Statistics

	Sample SE39	Sample SE40
Grand Means	103.12 Joules/sq m	125.05 Joules/sq m
SD Btwn Labs	10.10 Joules/sq m	14.69 Joules/sq m

Statistics based on 36 of 38 reporting participants

Comments on Assigned Data Flags for Test #331

74PMUQ (X) - Extreme Data.

2RXBTZ (X) - Data for both samples are low.

34KA9N - Data appear to be reported as J/sq m, not inch-lb/sq inch as indicated on datasheet. Units corrected by CTS.

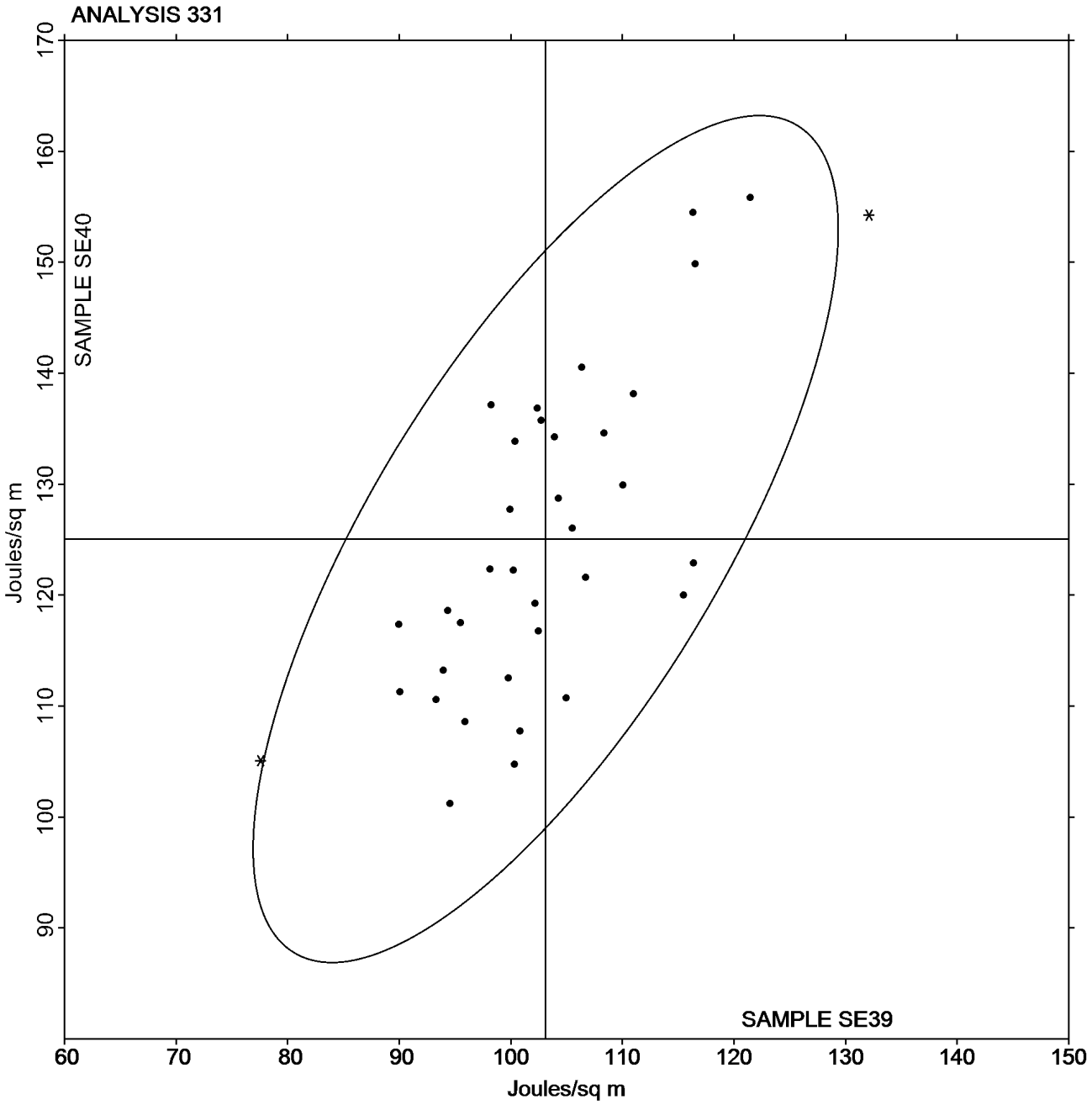
9CZWNK - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on datasheet. Units corrected by CTS.

Key to Instrument Codes Reported by Participants

ID	Instron 4201	IF	Instron 3340 Series
IK	Instron 4400 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	LA	L & W Autoline
LE	L & W Tensile Tester 066	LH	L & W Alwetron TH1 (Horizontal) SE 060
LW	L & W Tensile Tester SE062	TA	Thwing-Albert Tensile Tester
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TR	TMI Horizontal Tensile Tester	XX	Instrument make/model not specified by lab

Grand Mean Sample **SE39** = 103.12 Joules/sq m

Grand Mean Sample **SE40** = 125.05 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE39 Lab Mean	Sample SE39 Diff from Grand Mean	Sample SE39 CPV	Sample SE40 Lab Mean	Sample SE40 Diff from Grand Mean	Sample SE40 CPV	Instr Code
2BQBKW		1.679	-0.094	-0.43	1.685	-0.189	-0.74	XX
2M64EX		1.742	-0.031	-0.14	1.986	0.112	0.44	TO
2RXBTZ		2.106	0.333	1.52	2.217	0.343	1.35	TP
2YU6QX		1.732	-0.041	-0.19	1.871	-0.003	-0.01	IM
34KA9N		2.110	0.337	1.54	2.330	0.456	1.79	XX
3JGN9G		1.904	0.131	0.60	2.006	0.132	0.52	IM
64ZXDT		1.599	-0.174	-0.80	1.714	-0.160	-0.63	LH
74PMUQ	X	1.657	-0.116	-0.53	1.212	-0.662	-2.60	LE
8RDHJP		1.694	-0.079	-0.36	1.814	-0.060	-0.24	LW
9CZWNK	*	1.743	-0.030	-0.14	1.546	-0.328	-1.29	TA
A78NPP		2.024	0.251	1.15	2.009	0.135	0.53	IM
ATMAMP		1.695	-0.078	-0.36	1.775	-0.099	-0.39	LH
BV2VKA		1.375	-0.398	-1.82	1.528	-0.346	-1.36	XX
C9NV3G		1.614	-0.159	-0.73	1.830	-0.044	-0.17	TA
D3UM7A		1.770	-0.003	-0.02	1.960	0.086	0.34	IN
DB74DA		1.366	-0.407	-1.87	1.382	-0.492	-1.93	XX
DWP7CE		1.862	0.089	0.41	1.930	0.056	0.22	TH
DX37KN		2.070	0.297	1.36	2.120	0.246	0.97	TO
EMJT3J		1.680	-0.093	-0.43	1.646	-0.228	-0.89	XX
FBL3NC		1.468	-0.305	-1.40	1.497	-0.377	-1.48	LA
FZZ7XP	*	2.307	0.534	2.44	2.637	0.763	2.99	ID
GTFR74		1.614	-0.159	-0.73	1.696	-0.178	-0.70	LW
JKXY8D		1.672	-0.101	-0.46	1.760	-0.114	-0.45	ID
KG9QJA		2.076	0.303	1.39	2.002	0.128	0.50	IF
MYMA47	X	2.952	1.179	5.40	3.068	1.194	4.69	LE
PJ39M7		1.778	0.005	0.02	1.873	-0.001	0.00	LE
PX3FU4		1.819	0.046	0.21	1.947	0.073	0.29	TH
R6BL64		1.592	-0.181	-0.83	1.527	-0.347	-1.36	LA
RCD3RQ		1.769	-0.004	-0.02	1.986	0.112	0.44	TO
RDTPGD		1.650	-0.123	-0.57	1.795	-0.079	-0.31	IN
RHYXTU		1.810	0.037	0.17	1.766	-0.108	-0.42	ID
RXY6X4		2.009	0.236	1.08	2.245	0.371	1.45	IK
T4VEL9		2.226	0.453	2.07	2.254	0.380	1.49	TH
U29YTR		1.655	-0.118	-0.54	1.857	-0.017	-0.07	TO
UTRNFQ		1.919	0.146	0.67	2.061	0.187	0.73	XX
VEAPWQ		1.850	0.077	0.35	2.010	0.136	0.53	TB
WNQTGV		1.645	-0.128	-0.59	1.626	-0.248	-0.97	LA
WUDBNW		1.670	-0.103	-0.47	1.758	-0.116	-0.45	XX
XHGM62		1.477	-0.296	-1.36	1.691	-0.183	-0.72	LE
YYLL3Q		1.767	-0.006	-0.03	2.015	0.141	0.55	TR

Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE39 Lab Mean	Sample SE39 Diff from Grand Mean	Sample SE39 CPV	Sample SE40 Lab Mean	Sample SE40 Diff from Grand Mean	Sample SE40 CPV	Instr Code
YZGWPY		1.622	-0.151	-0.69	1.732	-0.142	-0.56	LE

Summary Statistics

	Sample SE39	Sample SE40
Grand Means	1.7734 Percent	1.8739 Percent
SD Btwn Labs	0.2183 Percent	0.2548 Percent

Statistics based on 39 of 41 reporting participants

Comments on Assigned Data Flags for Test #332

74PMUQ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample SE40.

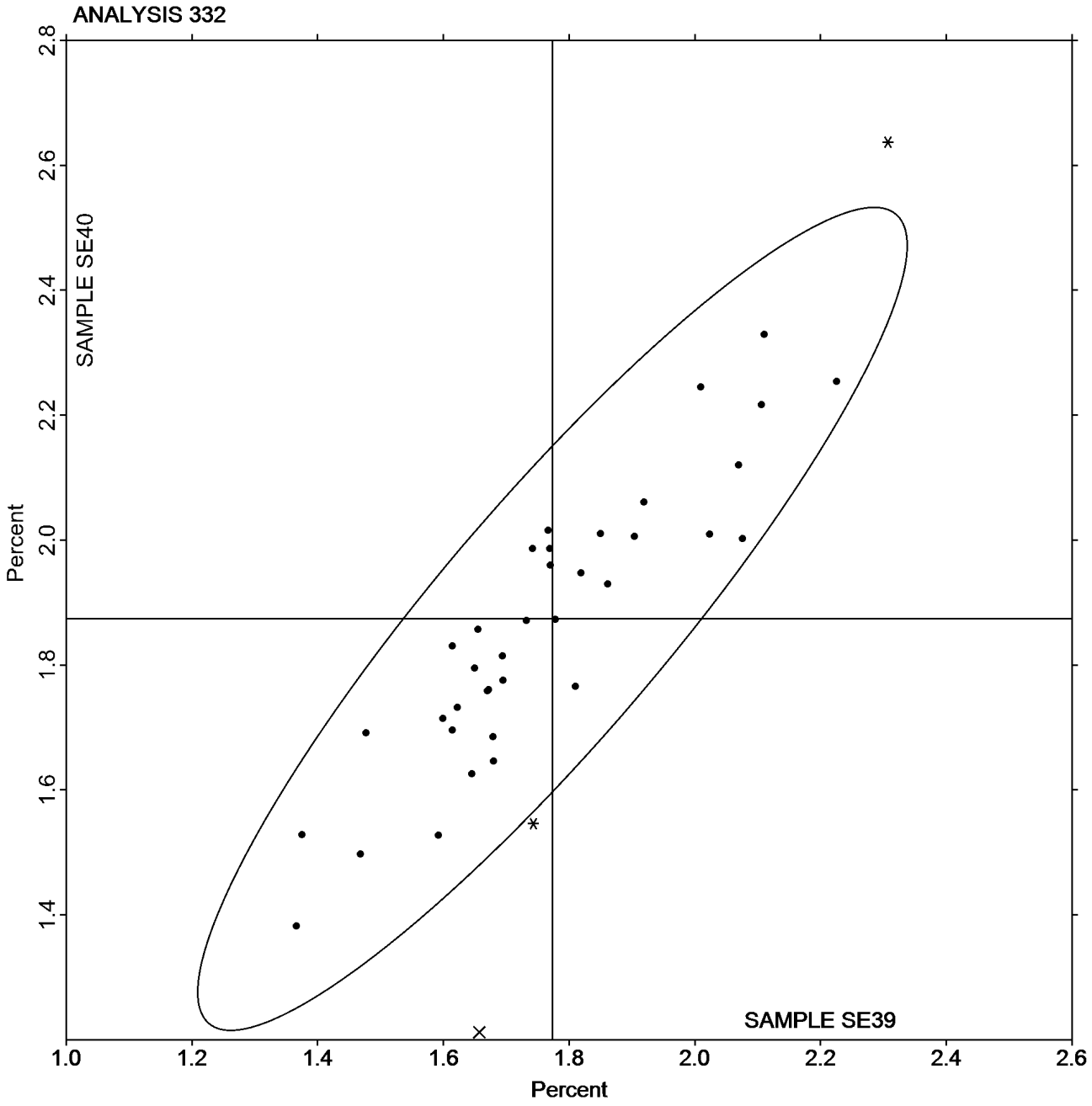
MYMA47 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample SE39.

Key to Instrument Codes Reported by Participants

ID	Instron 4201	IF	Instron 3340 Series
IK	Instron 4400 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	LA	L & W Autoline 300
LE	L & W Tensile Tester 066	LH	L & W Alwetron TH1 (Horizontal) SE 060
LW	L & W Tensile Tester SE062	TA	Thwing-Albert Tensile Tester
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TR	TMI Horizontal Tensile Tester	XX	Instrument make/model not specified by lab

Grand Mean Sample **SE39** = 1.7734 Percent

Grand Mean Sample **SE40** = 1.8739 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 334

Folding Endurance (MIT) - Double Folds

TAPPI Official Test Method T511

WebCode	Data Flag	Sample SG39 Lab Mean	Sample SG39 Diff from Grand Mean	Sample SG39 CPV	Sample SG40 Lab Mean	Sample SG40 Diff from Grand Mean	Sample SG40 CPV	Instr Code
2MFBBY		170.4	-87.7	-1.14	140.6	-70.9	-1.09	XX
74CW4V		330.7	72.6	0.94	217.1	5.6	0.09	MT
8RDHJP		164.3	-93.8	-1.22	158.6	-52.9	-0.82	MT
C9NV3G		158.1	-100.0	-1.30	173.3	-38.2	-0.59	MT
DYXQA9		232.7	-25.4	-0.33	207.2	-4.3	-0.07	XX
F84BNN		303.2	45.1	0.59	294.5	83.0	1.28	MT
GUVUDC		229.4	-28.7	-0.37	155.7	-55.8	-0.86	MT
MVPNGA		203.6	-54.5	-0.71	139.8	-71.7	-1.11	MT
MZCDWD		357.7	99.6	1.29	250.4	38.9	0.60	MT
N26QWB		243.0	-15.1	-0.20	270.5	59.0	0.91	MT
T4VEL9		232.9	-25.2	-0.33	157.7	-53.8	-0.83	MT
TXTCG8		437.9	179.8	2.34	336.5	125.0	1.93	MT
UTRNFQ		333.4	75.3	0.98	267.7	56.2	0.87	MT
V228F2		231.2	-26.9	-0.35	163.3	-48.2	-0.74	MT
ZNXA4J		226.8	-31.3	-0.41	157.8	-53.7	-0.83	MT
ZY3P63		273.8	15.7	0.20	293.2	81.7	1.26	MT

Summary Statistics

	Sample SG39	Sample SG40
Grand Means	258.07 Double Folds	211.49 Double Folds
SD Btwn Labs	77.01 Double Folds	64.82 Double Folds

Statistics based on 16 of 16 reporting participants

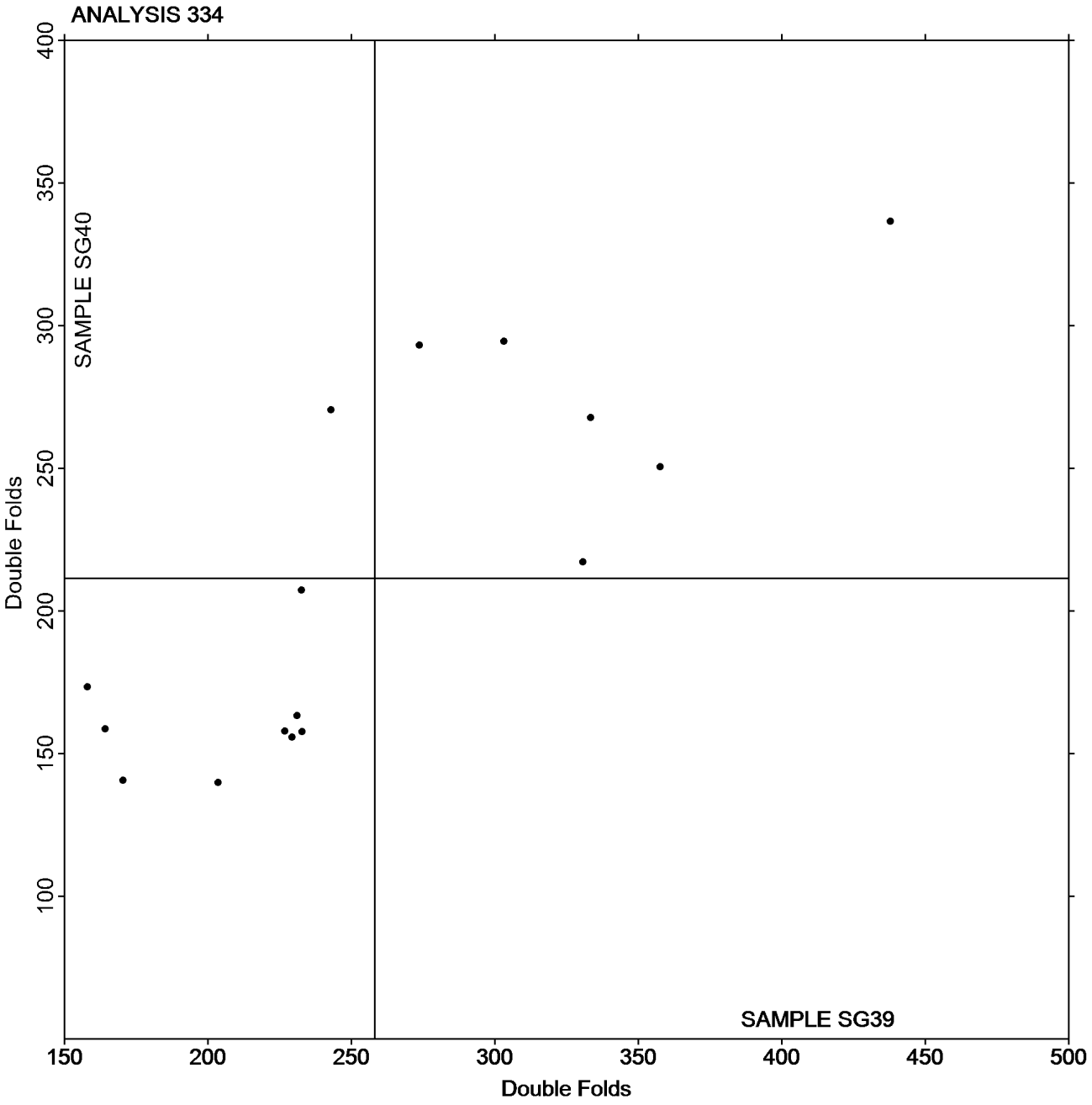
Key to Instrument Codes Reported by Participants

MT MIT - Tinius Olsen

XX Instrument make/model not specified by lab

Grand Mean Sample **SG39** = 258.07 Double Folds

Grand Mean Sample **SG40** = 211.49 Double Folds



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 336

Bending Resistance, Gurley Type

TAPPI Official Test Method T543

WebCode	Data Flag	Sample SH39 Lab Mean	Sample SH39 Diff from Grand Mean	Sample SH39 CPV	Sample SH40 Lab Mean	Sample SH40 Diff from Grand Mean	Sample SH40 CPV
3JXBVJ		335.5	-13.3	-0.55	278.0	-12.9	-0.50
6CNTBM		396.2	47.4	1.96	324.7	33.8	1.31
7DJTRY		380.0	31.2	1.29	320.0	29.1	1.13
C9NV3G		331.1	-17.7	-0.73	265.8	-25.1	-0.97
CPDXMR		361.8	13.0	0.54	286.3	-4.7	-0.18
DYXQA9		343.6	-5.2	-0.22	283.6	-7.3	-0.28
FVRH64	X	15.5	-333.3	-13.77	19.9	-271.0	-10.50
GUVUDC		345.4	-3.5	-0.14	300.9	10.0	0.39
KG9QJA		392.9	44.1	1.82	339.7	48.8	1.89
LA6672		330.2	-18.7	-0.77	283.0	-7.9	-0.30
LRPV7Z		316.5	-32.3	-1.34	258.7	-32.2	-1.25
MLZAMY		375.7	26.9	1.11	324.9	34.0	1.32
MZCDWD		325.4	-23.5	-0.97	291.6	0.7	0.03
NFP73W		336.9	-11.9	-0.49	295.1	4.2	0.16
NTXUDE	X	202.7	-146.1	-6.04	186.3	-104.6	-4.05
RQE4F7	X	570.2	221.3	9.14	327.4	36.5	1.41
UTRNFQ		360.9	12.1	0.50	302.3	11.4	0.44
WUDBNW		318.6	-30.3	-1.25	242.0	-48.9	-1.90
WW3FG4		347.9	-0.9	-0.04	300.5	9.6	0.37
ZG2E7K		333.8	-15.0	-0.62	259.6	-31.3	-1.21
ZU2DUH		346.3	-2.5	-0.10	279.7	-11.2	-0.43

Summary Statistics

	Sample SH39	Sample SH40
Grand Means	348.83 Gurley Units	290.91 Gurley Units
SD Btwn Labs	24.21 Gurley Units	25.82 Gurley Units

Statistics based on 18 of 21 reporting participants

Comments on Assigned Data Flags for Test #336

RQE4F7 (X) - Extreme Data for Sample SH39.

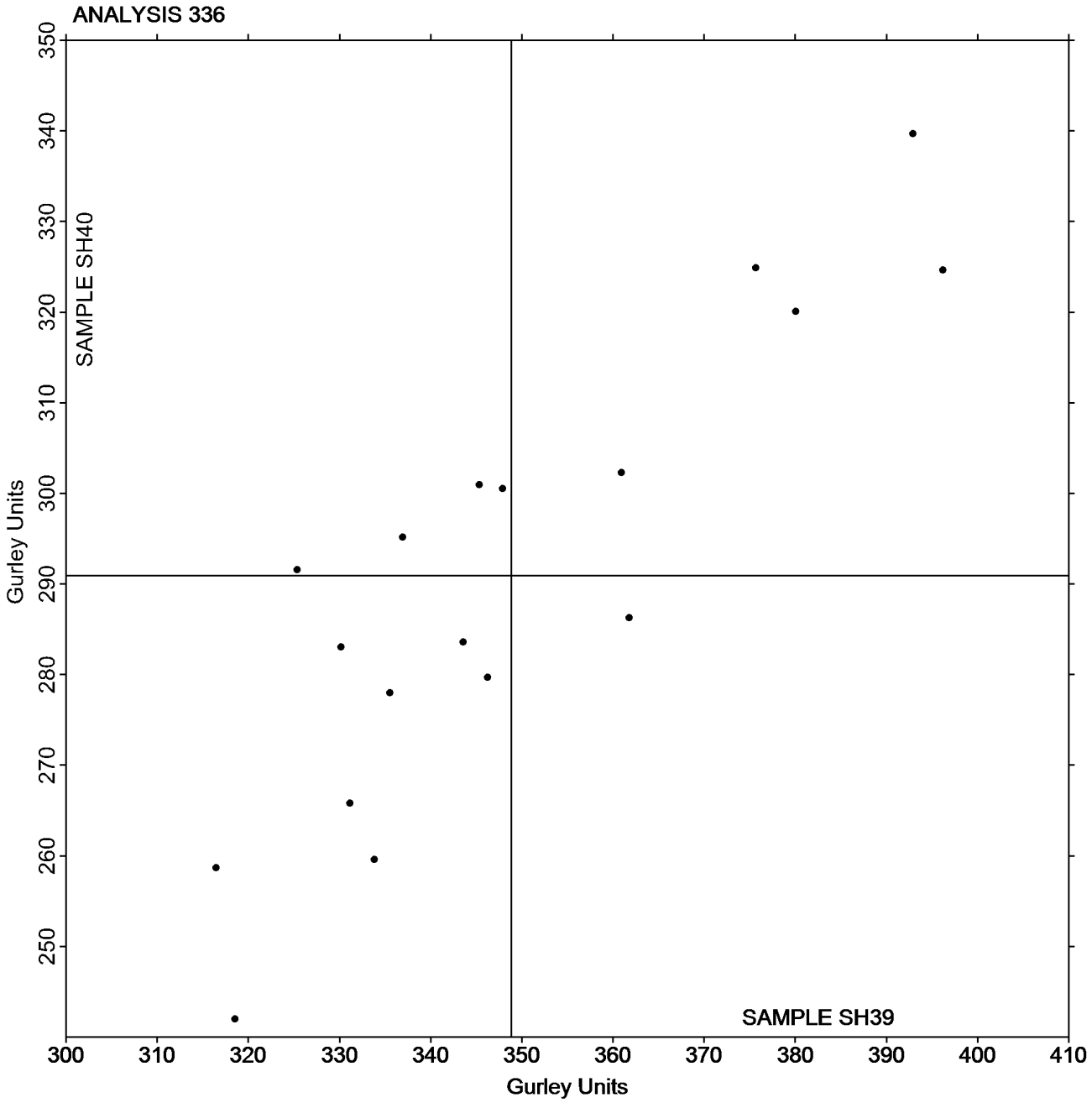
NTXUDE (X) - Extreme Data.

FVRH64 (X) - Extreme Data.

MLZAMY - Data appear to be transposed between samples. Switched by CTS.

Grand Mean Sample **SH39** = 348.83 Gurley Units

Grand Mean Sample **SH40** = 290.91 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 338

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

WebCode	Data Flag	Sample SJ39 Lab Mean	Sample SJ39 Diff from Grand Mean	Sample SJ39 CPV	Sample SJ40 Lab Mean	Sample SJ40 Diff from Grand Mean	Sample SJ40 CPV
2B8YUJ		7.946	1.211	0.77	4.441	0.686	0.72
2MFBBY		4.921	-1.814	-1.15	2.087	-1.668	-1.76
34KA9N		6.373	-0.363	-0.23	3.422	-0.333	-0.35
DYXQA9		9.085	2.350	1.50	4.780	1.025	1.08
GTFR74		5.750	-0.985	-0.63	3.400	-0.355	-0.38
KG9QJA		7.673	0.938	0.60	4.229	0.474	0.50
KV9TWB		7.412	0.676	0.43	4.156	0.400	0.42
N26QWB		6.622	-0.114	-0.07	3.663	-0.092	-0.10
NFP73W		6.982	0.247	0.16	4.072	0.317	0.33
NTXUDE		3.095	-3.640	-2.32	1.850	-1.905	-2.01
RDTPGD		7.520	0.785	0.50	4.760	1.005	1.06
ZQ8EJT		7.445	0.710	0.45	4.205	0.450	0.47

Summary Statistics

	Sample SJ39	Sample SJ40
Grand Means	6.7352 Taber Units	3.7554 Taber Units
SD Btwn Labs	1.5714 Taber Units	0.9475 Taber Units

Statistics based on 12 of 12 reporting participants

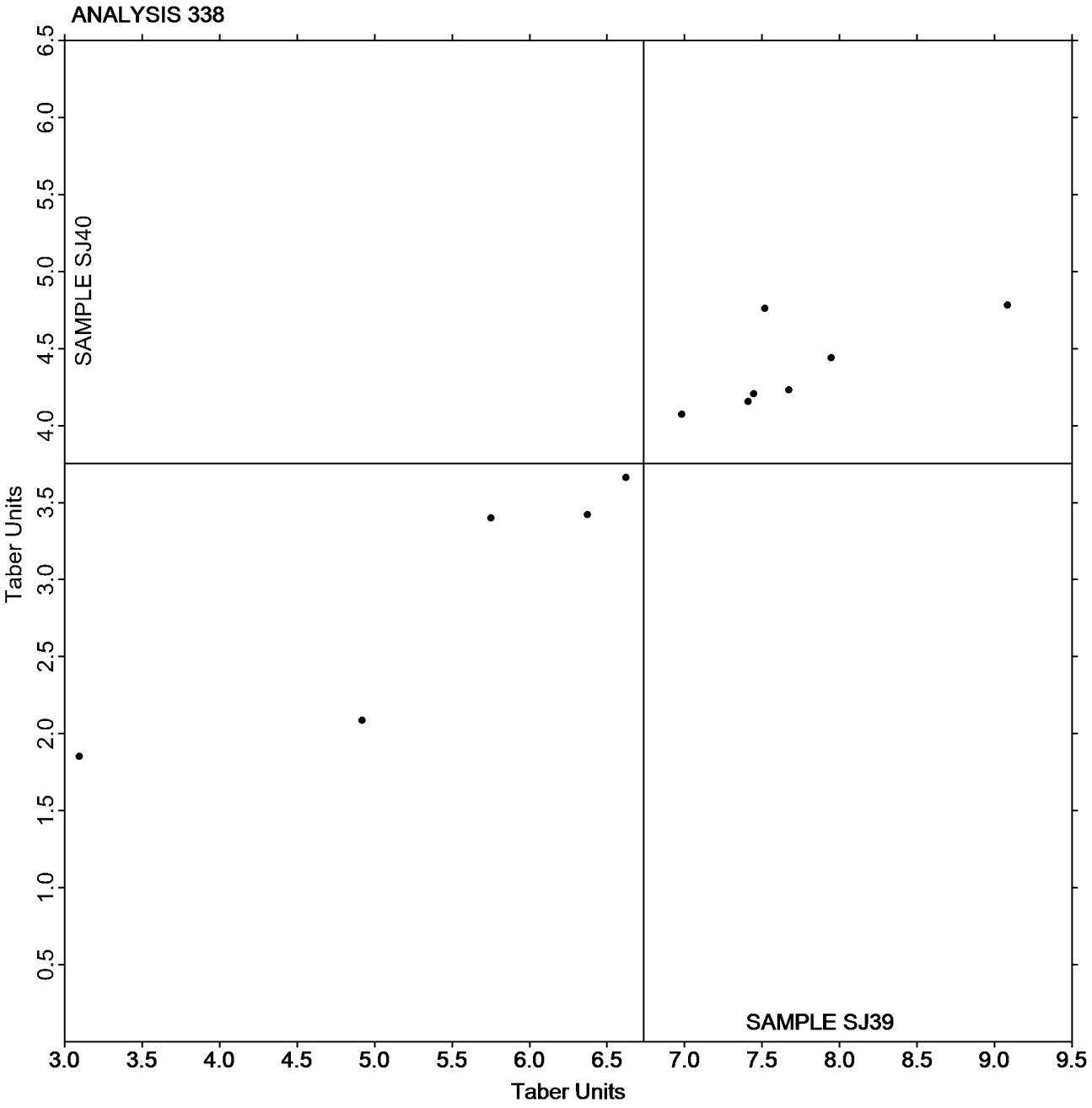
Analysis Notes:

34KA9N - One determination removed from the Lab Mean of Sample SJ40 per Grubb's Test at 1% risk (TAPPI 1205).

NFP73W - One determination removed from the Lab Mean of Sample SJ39 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample **SJ39** = 6.7352 Taber Units

Grand Mean Sample **SJ40** = 3.7554 Taber 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 339

Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

WebCode	Data Flag	Sample SQ39 Lab Mean	Sample SQ39 Diff from Grand Mean	Sample SQ39 CPV	Sample SQ40 Lab Mean	Sample SQ40 Diff from Grand Mean	Sample SQ40 CPV
7DJTRY		18.48	-1.74	-1.12	37.15	-0.66	-0.32
8RDHJP		20.37	0.15	0.09	38.81	1.00	0.49
CPDXMR		20.19	-0.04	-0.02	38.31	0.49	0.24
GTFR74		20.25	0.03	0.02	38.30	0.49	0.24
KCJEJ8	X	128.06	107.84	69.36	308.90	271.09	132.34
KQ26HA		20.50	0.28	0.18	37.60	-0.21	-0.10
PJ39M7		21.20	0.98	0.63	39.20	1.39	0.68
R6BL64		22.52	2.30	1.48	38.24	0.43	0.21
RXEJ6D		17.89	-2.33	-1.50	35.37	-2.44	-1.19
TMAXD6		20.55	0.33	0.21	39.80	1.99	0.97
VEAPWQ		23.01	2.79	1.79	41.31	3.50	1.71
WQFRLX		19.17	-1.05	-0.68	33.79	-4.02	-1.96
WUDBNW		18.55	-1.67	-1.08	35.88	-1.94	-0.95

Summary Statistics

	Sample SQ39	Sample SQ40
Grand Means	20.223 Taber Units	37.812 Taber Units
SD Btwn Labs	1.555 Taber Units	2.048 Taber Units

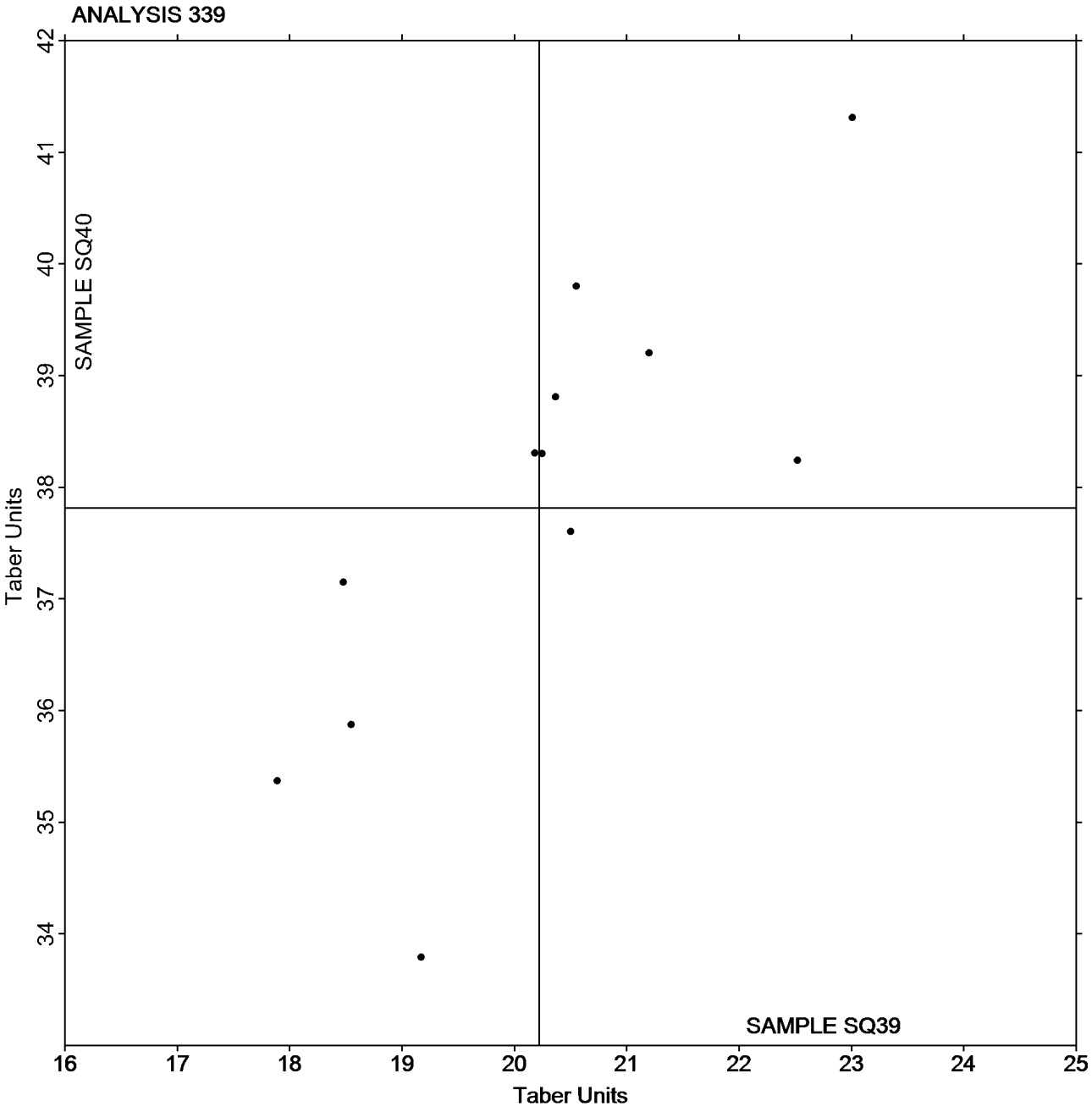
Statistics based on 12 of 13 reporting participants

Comments on Assigned Data Flags for Test #339

KCJEJ8 (X) - Extreme Data.

Grand Mean Sample **SQ39** = 20.223 Taber Units

Grand Mean Sample **SQ40** = 37.812 Taber 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 340

nding Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboc

TAPPI Official Test Method T489

WebCode	Data Flag	Sample ST39 Lab Mean	Sample ST39 Diff from Grand Mean	Sample ST39 CPV	Sample ST40 Lab Mean	Sample ST40 Diff from Grand Mean	Sample ST40 CPV
8RDHJP		303.4	7.1	0.73	289.4	2.0	0.10
BPDD6D		302.0	5.8	0.59	309.5	22.1	1.15
CPDXMR		288.4	-7.8	-0.80	279.4	-8.0	-0.42
GANLXD		295.6	-0.6	-0.06	319.3	31.9	1.67
GFTHLK		296.5	0.2	0.03	285.6	-1.8	-0.09
GTFR74		279.3	-17.0	-1.74	263.3	-24.1	-1.26
JZRZU7		293.3	-2.9	-0.30	282.8	-4.6	-0.24
KT9H6H		306.7	10.5	1.08	301.2	13.8	0.72
Q8LDVT		317.9	21.7	2.23	309.2	21.8	1.14
RD8DH4		297.0	0.8	0.08	286.5	-0.9	-0.05
T4VEL9		301.1	4.9	0.50	289.4	2.0	0.11
UTRNFQ		286.6	-9.7	-0.99	280.2	-7.2	-0.38
VWBZV8		287.7	-8.5	-0.88	244.4	-43.0	-2.24
ZZCUEK		291.8	-4.4	-0.46	283.3	-4.1	-0.21

Summary Statistics

	Sample ST39	Sample ST40
Grand Means	296.23 Taber Units	287.38 Taber Units
SD Btwn Labs	9.73 Taber Units	19.16 Taber Units

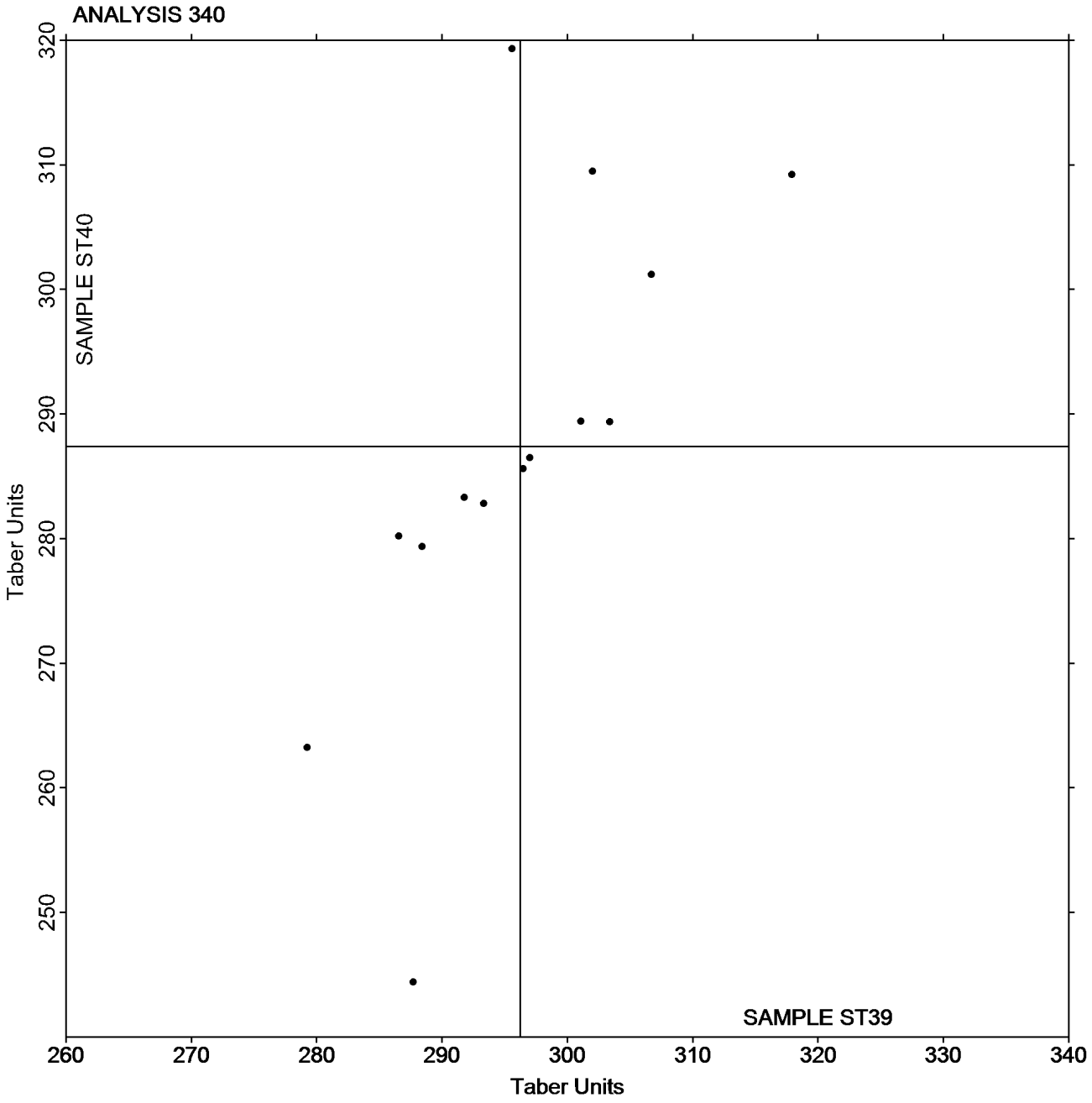
Statistics based on 14 of 14 reporting participants

Analysis Notes:

GANLXD - Data appear to be reported as g-cm, not mN-m as indicated on datasheet. Units corrected by CTS.

Grand Mean Sample **ST39** = 296.23 Taber Units

Grand Mean Sample **ST40** = 287.38 Taber 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 343
Z-Direction Tensile
TAPPI Official Test Method T541

WebCode	Data Flag	Sample SM39 Lab Mean	Sample SM39 Diff from Grand Mean	Sample SM39 CPV	Sample SM40 Lab Mean	Sample SM40 Diff from Grand Mean	Sample SM40 CPV	Instr Code
34KA9N		79.60	10.25	1.26	94.52	12.52	1.48	DT
8RDHJP		78.20	8.85	1.09	88.32	6.32	0.75	LW
DX37KN		62.60	-6.75	-0.83	76.00	-6.00	-0.71	TA
HCMCJJ		75.42	6.07	0.75	90.34	8.34	0.99	XX
KCJEJ8		62.63	-6.72	-0.83	71.36	-10.64	-1.26	TZ
KG9QJA		72.15	2.80	0.34	88.37	6.37	0.75	TL
MRJ7E9		77.40	8.05	0.99	83.80	1.80	0.21	TA
MZCDWD		62.38	-6.97	-0.86	78.09	-3.91	-0.46	TZ
N26QWB		54.30	-15.05	-1.85	72.54	-9.46	-1.12	CD
PJ39M7		69.00	-0.35	-0.04	79.20	-2.80	-0.33	TA
R6ZGX8		64.66	-4.69	-0.58	73.86	-8.14	-0.96	LW
RZ4PPB		83.76	14.41	1.77	96.24	14.24	1.68	XX
T4VEL9		63.96	-5.39	-0.66	70.12	-11.88	-1.41	LW
VEAPWQ		67.24	-2.11	-0.26	86.16	4.16	0.49	TA
WQFRLX		66.94	-2.41	-0.30	81.12	-0.89	-0.10	LW

Summary Statistics

	Sample SM39	Sample SM40
Grand Means	69.349 psi	82.003 psi
SD Btwn Labs	8.141 psi	8.452 psi

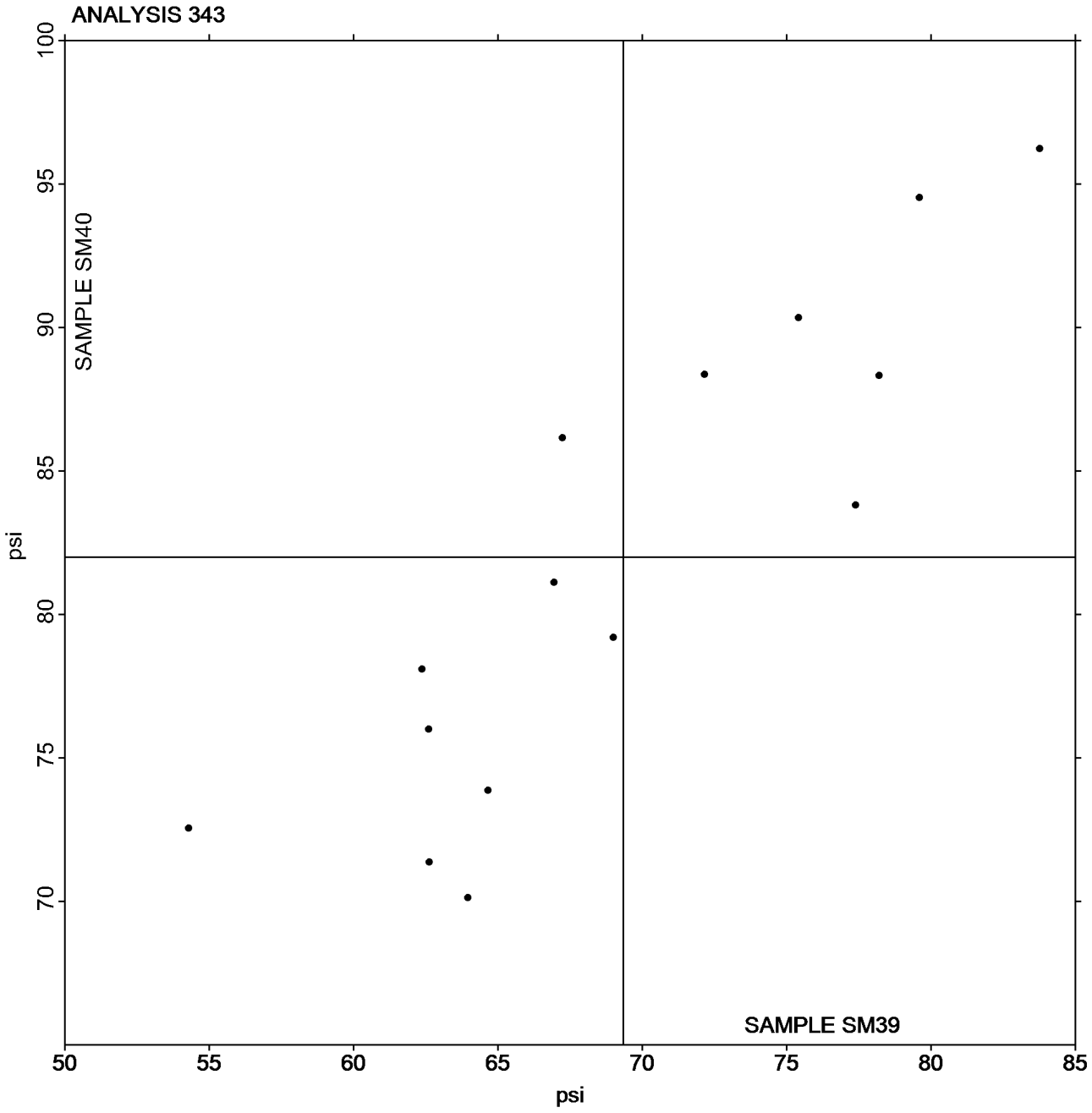
Statistics based on 15 of 15 reporting participants

Key to Instrument Codes Reported by Participants

CD	CSI CS-163D	DT	Dek-Tron DCS-163A ZDT Tester
LW	L & W ZD Tensile Tester	TA	Thwing-Albert Tensile Tester
TL	TMI Lab Master	TZ	TMI Monitor/ZDT Tester
XX	Instrument make/model not specified by lab		

Grand Mean Sample **SM39** = 69.349 psi

Grand Mean Sample **SM40** = 82.003 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

Analysis 345
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

WebCode	Data Flag	Sample SZ39 Lab Mean	Sample SZ39 Diff from Grand Mean	Sample SZ39 CPV	Sample SZ40 Lab Mean	Sample SZ40 Diff from Grand Mean	Sample SZ40 CPV	Instr Code
27FVGY		38.62	2.38	0.79	37.34	1.42	0.43	CH
6WWV9R		34.14	-2.10	-0.70	32.72	-3.21	-0.98	LW
AMCDLM		39.40	3.16	1.05	38.80	2.87	0.88	CA
CPDXMR		32.26	-3.98	-1.32	30.38	-5.55	-1.70	CA
CW9ZMH		35.88	-0.36	-0.12	36.56	0.63	0.19	CD
GANLXD		37.80	1.56	0.52	37.40	1.47	0.45	CD
H4TAD2		32.78	-3.46	-1.15	32.72	-3.21	-0.98	LW
JZRZU7		33.14	-3.10	-1.03	33.22	-2.71	-0.83	TA
KT9H6H		35.00	-1.24	-0.41	34.60	-1.33	-0.41	CA
Q84RCV		34.64	-1.60	-0.53	34.56	-1.37	-0.42	LW
Q8LDVT		38.54	2.30	0.77	37.72	1.79	0.55	TA
RXY6X4		43.91	7.67	2.55	41.99	6.07	1.86	PG
UTRNFQ		34.56	-1.68	-0.56	32.56	-3.37	-1.03	CD
VWBZV8	*	35.20	-1.04	-0.35	41.60	5.67	1.74	CA
WNQTGV		35.95	-0.28	-0.09	35.84	-0.09	-0.03	TA
ZZCUEK		38.00	1.76	0.59	36.80	0.87	0.27	CA

Summary Statistics

	Sample SZ39	Sample SZ40
Grand Means	36.239 psi	35.926 psi
SD Btwn Labs	3.004 psi	3.260 psi

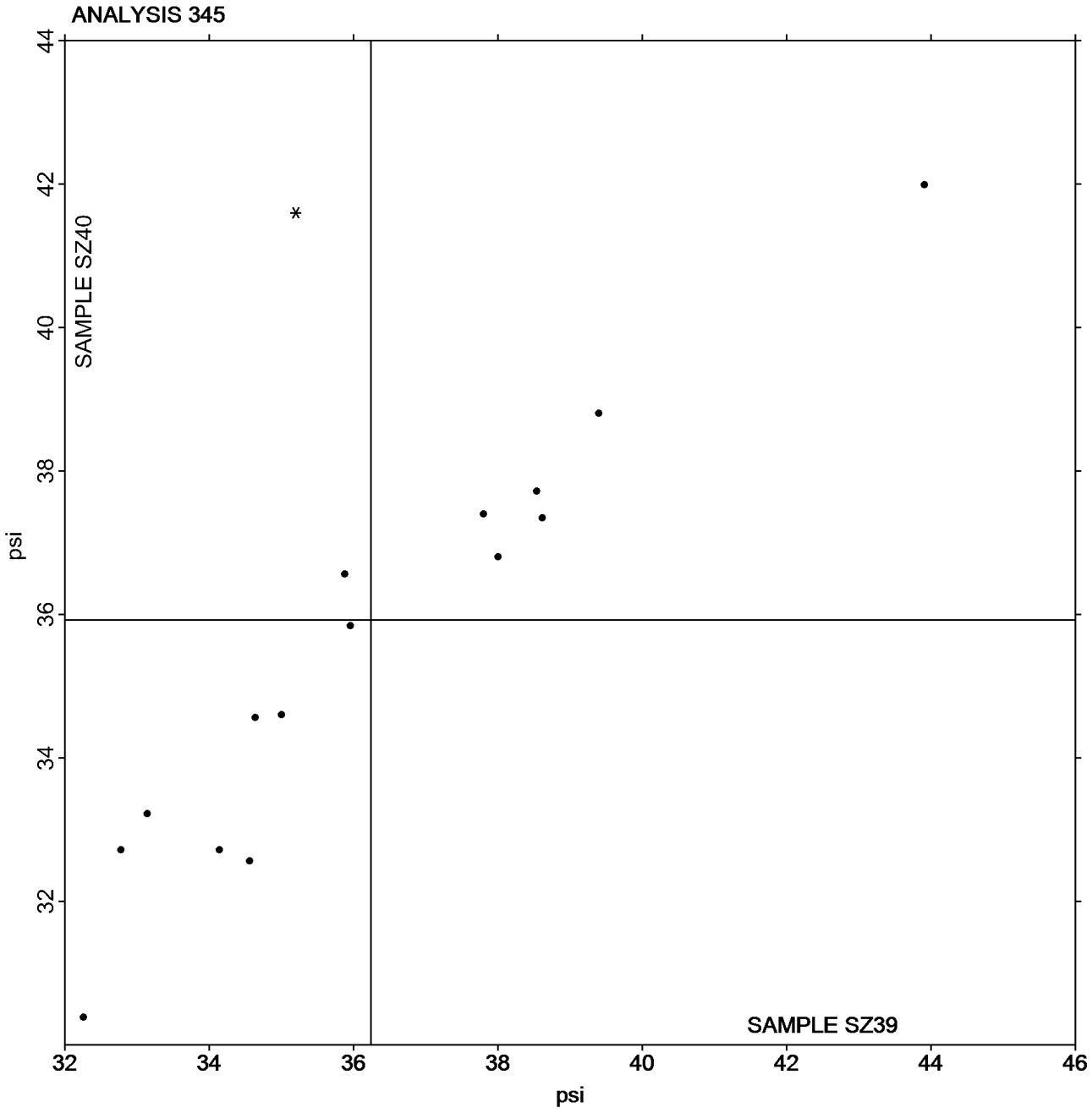
Statistics based on 16 of 16 reporting participants

Key to Instrument Codes Reported by Participants

CA	CSI CS-163	CD	CSI CS-163D
CH	Chatillon Ametek	LW	L & W ZD Tensile Tester
PG	Perkins Model A Mullen Tester	TA	Thwing-Albert Tensile Tester

Grand Mean Sample **SZ39** = 36.239 psi

Grand Mean Sample **SZ40** = 35.926 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

Analysis 348

Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SN39 Lab Mean	Sample SN39 Diff from Grand Mean	Sample SN39 CPV	Sample SN40 Lab Mean	Sample SN40 Diff from Grand Mean	Sample SN40 CPV	Instr Code
2M64EX		77.20	-3.75	-0.37	107.6	2.4	0.29	HZ
8RDHJP		79.80	-1.15	-0.11	109.6	4.4	0.54	HY
FVRH64		79.00	-1.95	-0.19	110.2	5.0	0.61	HY
GUVUDC		76.80	-4.15	-0.41	99.8	-5.4	-0.65	HY
JZRZU7		91.40	10.45	1.04	114.4	9.2	1.12	HZ
K6XE7F		84.38	3.43	0.34	113.9	8.8	1.06	HY
KCJEJ8		70.00	-10.95	-1.09	94.0	-11.2	-1.35	HY
MRJ7E9		94.80	13.85	1.38	115.2	10.0	1.21	HY
MZCDWD		84.80	3.85	0.38	99.8	-5.4	-0.65	HY
N26QWB		91.36	10.41	1.03	112.9	7.7	0.93	HY
NTXUDE		76.20	-4.75	-0.47	100.6	-4.6	-0.55	KR
PJ39M7		92.20	11.25	1.12	112.6	7.4	0.90	HY
T4VEL9		60.80	-20.15	-2.00	85.6	-19.6	-2.37	HZ
U29YTR		86.60	5.65	0.56	103.4	-1.8	-0.21	HY
UTRNFQ		79.80	-1.15	-0.11	112.0	6.8	0.83	HZ
VEAPWQ		92.20	11.25	1.12	105.0	-0.2	-0.02	HZ
WUDBNW		80.48	-0.47	-0.05	100.9	-4.2	-0.51	HY
ZG2E7K		82.00	1.05	0.10	107.4	2.2	0.27	HY
ZZCUEK		58.20	-22.75	-2.26	93.2	-12.0	-1.45	HY

Summary Statistics

	Sample SN39	Sample SN40
Grand Means	80.948 1000th ft-lbs	105.16 1000th ft-lbs
SD Btwn Labs	10.072 1000th ft-lbs	8.27 1000th ft-lbs

Statistics based on 19 of 19 reporting participants

Key to Instrument Codes Reported by Participants

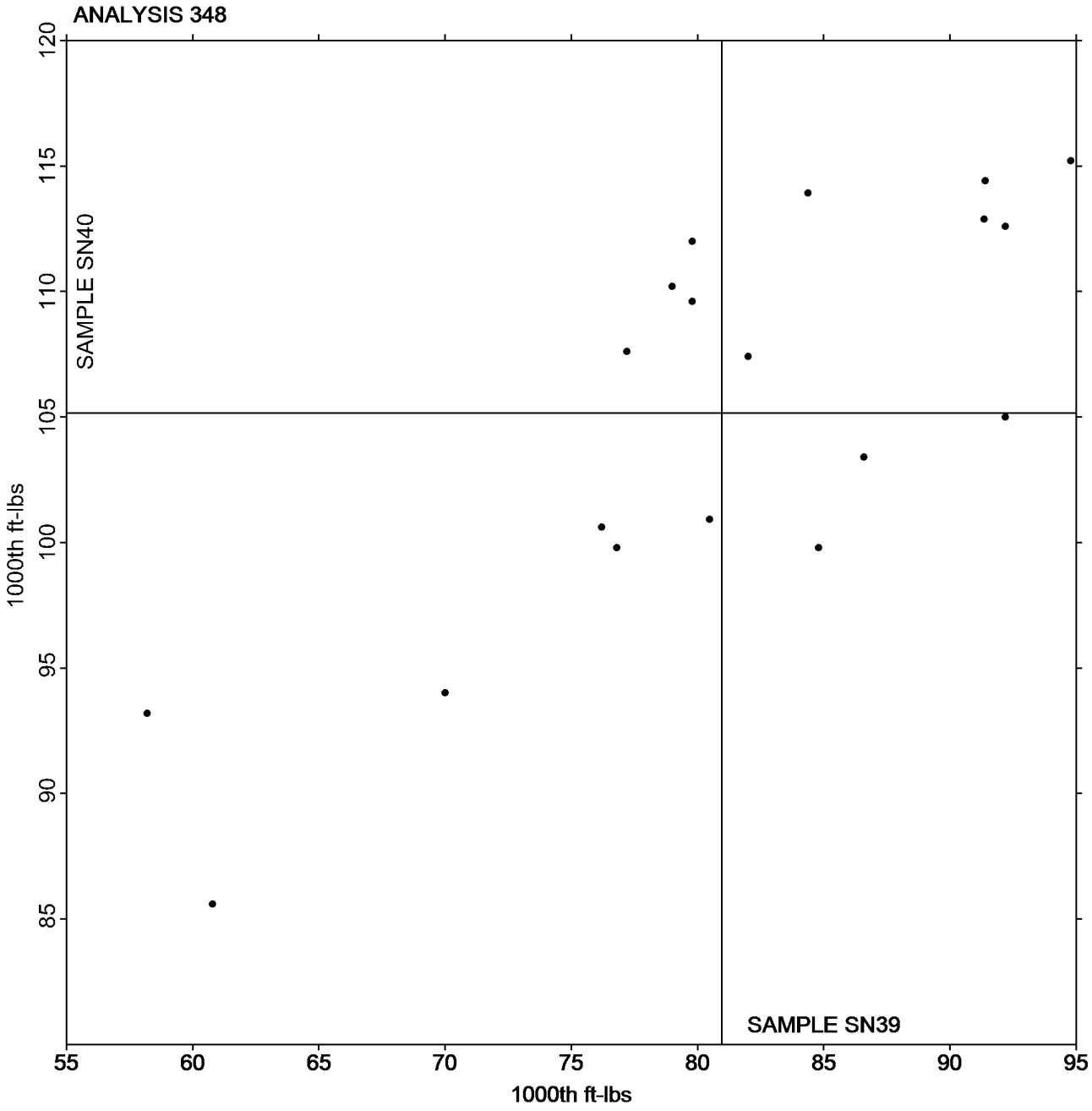
HY Huygen Digitized Scott Internal Bond Tester

HZ Huygen Internal Bond Tester with AccuPress

KR Kumagai Riki Kogyo Internal Bond Tester

Grand Mean Sample **SN39** = 80.948 1000th ft-lbs

Grand Mean Sample **SN40** = 105.16 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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 349

Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SP39 Lab Mean	Sample SP39 Diff from Grand Mean	Sample SP39 CPV	Sample SP40 Lab Mean	Sample SP40 Diff from Grand Mean	Sample SP40 CPV	Instr Code
27FVGY		61.40	-7.38	-0.76	87.60	-9.64	-1.05	TM
64ZXDT		73.39	4.61	0.48	100.20	2.97	0.32	TM
GTFR74		69.46	0.68	0.07	101.50	4.26	0.46	XX
H4TAD2		75.60	6.82	0.70	105.80	8.56	0.93	XX
N26NCD		68.40	-0.38	-0.04	94.80	-2.44	-0.27	SC
PC67B2		84.40	15.62	1.61	107.20	9.96	1.08	SC
RXY6X4		52.00	-16.78	-1.73	80.40	-16.84	-1.83	TM
ZAEPKP		65.60	-3.18	-0.33	100.40	3.16	0.34	SC

Summary Statistics

	Sample SP39	Sample SP40
Grand Means	68.782 1000th ft-lbs	97.238 1000th ft-lbs
SD Btwn Labs	9.699 1000th ft-lbs	9.195 1000th ft-lbs

Statistics based on 8 of 8 reporting participants

Key to Instrument Codes Reported by Participants

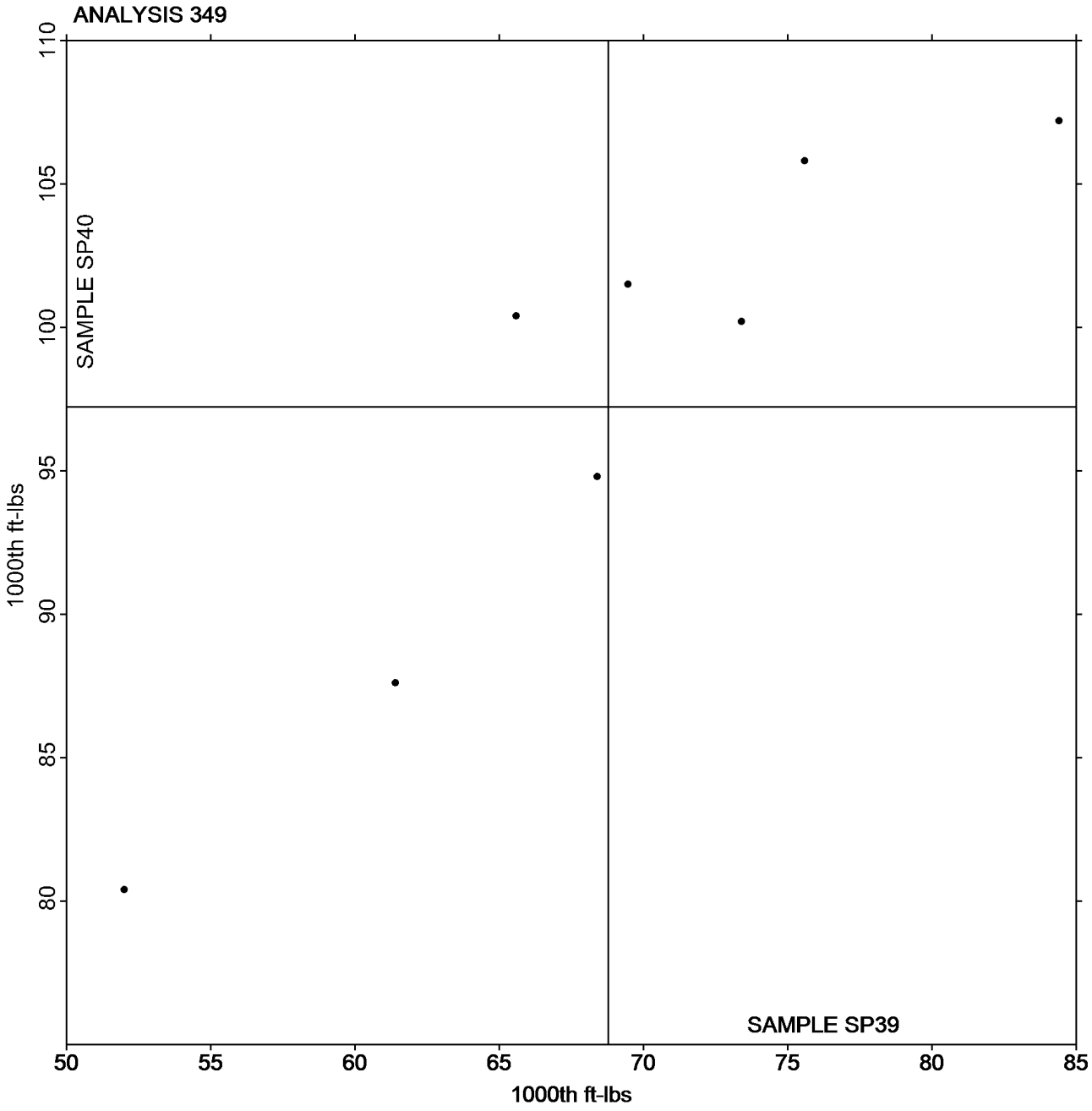
SC Scott Internal Bond Tester (Manual)

TM TMI Monitor/Internal Bond Tester

XX Instrument make/model not specified by lab

Grand Mean Sample **SP39** = 68.782 1000th ft-lbs

Grand Mean Sample **SP40** = 97.238 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.