Collaborative Testing Services, Inc.

Paper & Paperboard Interlaboratory Testing Program

Summary Report #282S - May 2016

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310	Bursting Strength - Packaging Papers
311	Tearing Strength - Newsprint
312	Tearing Strength - Printing Papers
314	Tearing Strength - Packaging Papers
320	Tensile Breaking Strength - Newsprint
321	Tensile Energy Absorption - Newsprint
322	Elongation to Break - Newsprint
325	Tensile Breaking Strength - Printing Papers
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330	Tensile Breaking Strength - Packaging Papers
331	Tensile Energy Absorption - Packaging Papers
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334	Folding Endurance (MIT) - Double Folds
336	Bending Resistance, Gurley Type
338	Bending Resistance, Taber Type - 0 to 10 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 SA31 Lab Mean	Sample SA31 Diff from Grand Mean	Sample SA31 CPV	Sample SA32 Lab Mean	Sample SA32 Diff from Grand Mean	Sample SA32 CPV
27HBVQ		25.90	-3.52	-1.29	41.85	-1.63	-0.52
384H63		26.59	-2.83	-1.04	40.23	-3.26	-1.03
44TNDM		35.39	5.97	2.19	48.30	4.82	1.52
4R27A3		27.57	-1.85	-0.68	41.48	-2.00	-0.63
6BR2YV		25.73	-3.69	-1.36	37.62	-5.86	-1.85
6VUHXQ		26.45	-2.97	-1.09	38.30	-5.18	-1.64
6ZKR8P		32.95	3.53	1.30	49.60	6.12	1.94
727ZGZ		32.05	2.63	0.97	49.40	5.92	1.87
7NUPQP		27.83	-1.59	-0.58	40.90	-2.58	-0.82
942PDQ		26.66	-2.76	-1.01	41.63	-1.85	-0.59
94W7PM		29.53	0.11	0.04	44.43	0.94	0.30
AJUKNV		27.07	-2.35	-0.86	40.97	-2.51	-0.79
AR492U		31.66	2.24	0.82	46.57	3.08	0.98
BF4X7R		27.60	-1.82	-0.67	39.37	-4.12	-1.30
DART9P		32.21	2.79	1.03	47.41	3.93	1.24
EEVKQE		27.20	-2.22	-0.82	43.30	-0.18	-0.06
EJRGZL		29.54	0.12	0.05	45.47	1.99	0.63
EPJNHU		29.40	-0.02	-0.01	42.20	-1.28	-0.41
FA2HML		31.44	2.02	0.74	41.59	-1.89	-0.60
FTTWYH	*	36.40	6.98	2.56	47.25	3.77	1.19
FZVDWQ		31.00	1.58	0.58	47.30	3.82	1.21
GWLDNG		25.80	-3.62	-1.33	40.10	-3.38	-1.07
HPNGQQ		30.31	0.89	0.33	44.47	0.99	0.31
JV396A		30.70	1.28	0.47	46.20	2.72	0.86
NYYPV8		29.01	-0.41	-0.15	43.46	-0.02	-0.01
Q4UYR4		27.12	-2.30	-0.85	44.64	1.16	0.37
QPHT47		29.41	-0.01	0.00	43.12	-0.37	-0.12
RKN9L9		28.23	-1.19	-0.44	41.95	-1.53	-0.48
UJFJY2		31.37	1.95	0.72	43.24	-0.24	-0.08
WEFKP8		30.97	1.55	0.57	44.12	0.64	0.20
Z7XDE9		28.90	-0.52	-0.19	41.45	-2.03	-0.64

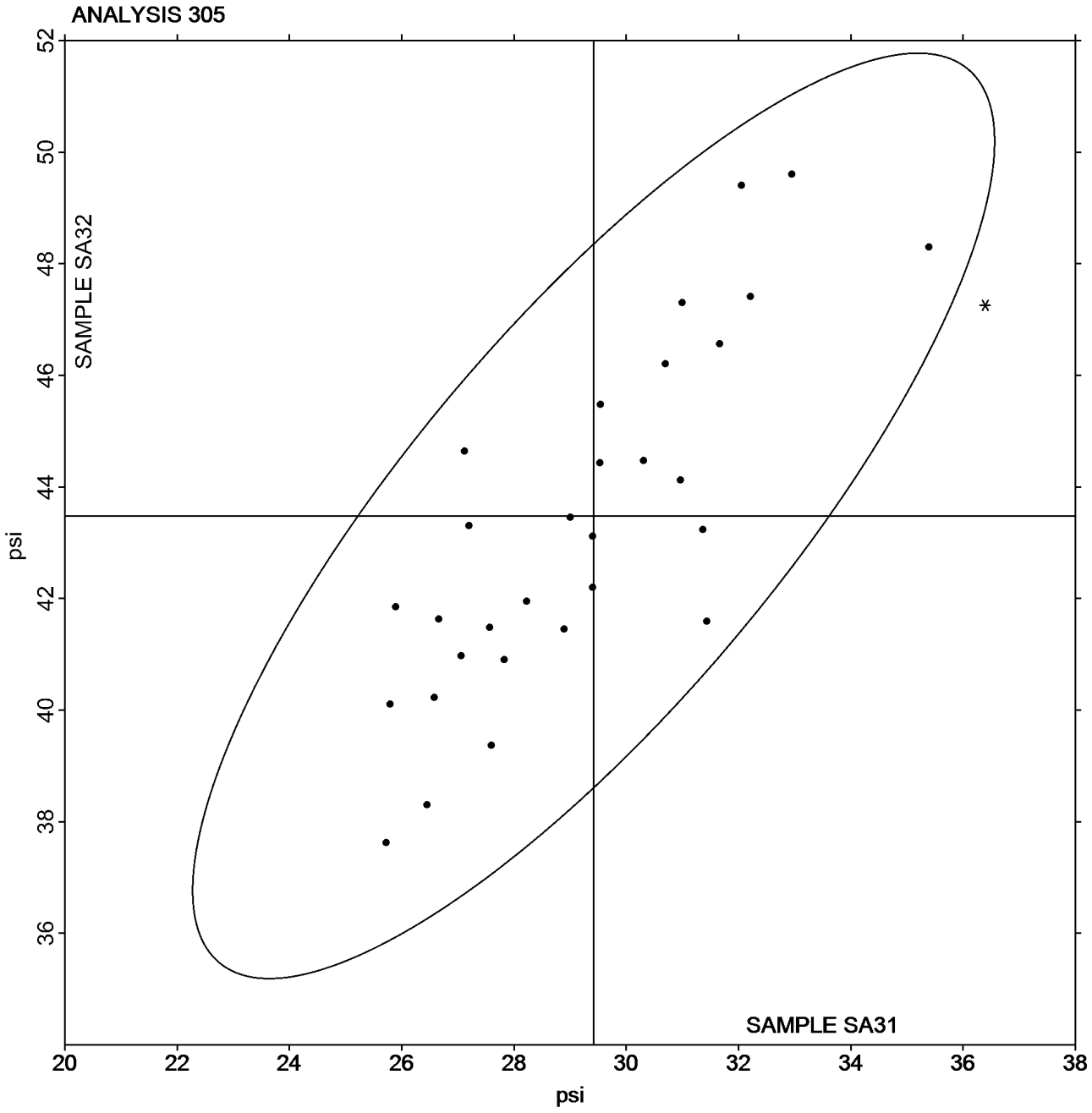
Summary Statistics

	Sample SA31	Sample SA32
Grand Means	29.418 psi	43.481 psi
SD Btwn Labs	2.721 psi	3.160 psi

Statistics based on 31 of 31 reporting participants

Grand Mean Sample **SA31** = 29.418 psi

Grand Mean Sample **SA32** = 43.481 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 310

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample SB31 Lab Mean	Sample SB31 Diff from Grand Mean	Sample SB31 CPV	Sample SB32 Lab Mean	Sample SB32 Diff from Grand Mean	Sample SB32 CPV
27HBVQ		91.72	1.06	0.22	83.20	-4.42	-0.91
2UQNPV	*	103.89	13.23	2.70	100.16	12.54	2.57
2XRPPT		85.55	-5.11	-1.04	81.40	-6.22	-1.28
3CN4PL		85.28	-5.38	-1.10	87.31	-0.31	-0.06
64DTXU		98.37	7.71	1.57	95.80	8.18	1.68
7MY7PN		89.42	-1.24	-0.25	85.24	-2.38	-0.49
AHRFLK		89.80	-0.86	-0.18	87.00	-0.62	-0.13
B7UYAN	X	3,124.14	3,033.48	619.78	2,386.76	2,299.14	472.13
FFRRWJ		99.30	8.64	1.77	88.73	1.11	0.23
FKH27H		96.00	5.34	1.09	96.10	8.48	1.74
FTTWYH		87.09	-3.57	-0.73	88.25	0.63	0.13
GF7D7L		86.90	-3.76	-0.77	84.78	-2.84	-0.58
GYJX3P		95.02	4.36	0.89	94.16	6.53	1.34
MGUNV8		89.10	-1.56	-0.32	84.30	-3.32	-0.68
N8PB27		89.75	-0.91	-0.19	83.43	-4.20	-0.86
NYE9F6		84.20	-6.46	-1.32	89.70	2.08	0.43
NYYPV8		88.41	-2.26	-0.46	87.92	0.29	0.06
QCUQLE		87.24	-3.42	-0.70	82.14	-5.49	-1.13
TZPB27		84.04	-6.63	-1.35	84.15	-3.47	-0.71
UF2H43		95.90	5.24	1.07	87.40	-0.22	-0.05
V6ZEDD		88.33	-2.33	-0.48	81.26	-6.36	-1.31
W9TXU3		93.26	2.60	0.53	89.37	1.75	0.36
WDH2BZ		91.22	0.56	0.11	90.32	2.69	0.55
WEFKP8		90.33	-0.33	-0.07	86.66	-0.96	-0.20
XWTJAW		87.49	-3.17	-0.65	82.93	-4.69	-0.96
Z63VC8		93.92	3.25	0.66	94.04	6.42	1.32
Z7N62R		89.20	-1.46	-0.30	84.58	-3.04	-0.63
ZTNNMY		87.14	-3.52	-0.72	85.53	-2.09	-0.43

Summary Statistics

	Sample SB31	Sample SB32
Grand Means	90.661 psi	87.624 psi
SD Btwn Labs	4.894 psi	4.870 psi

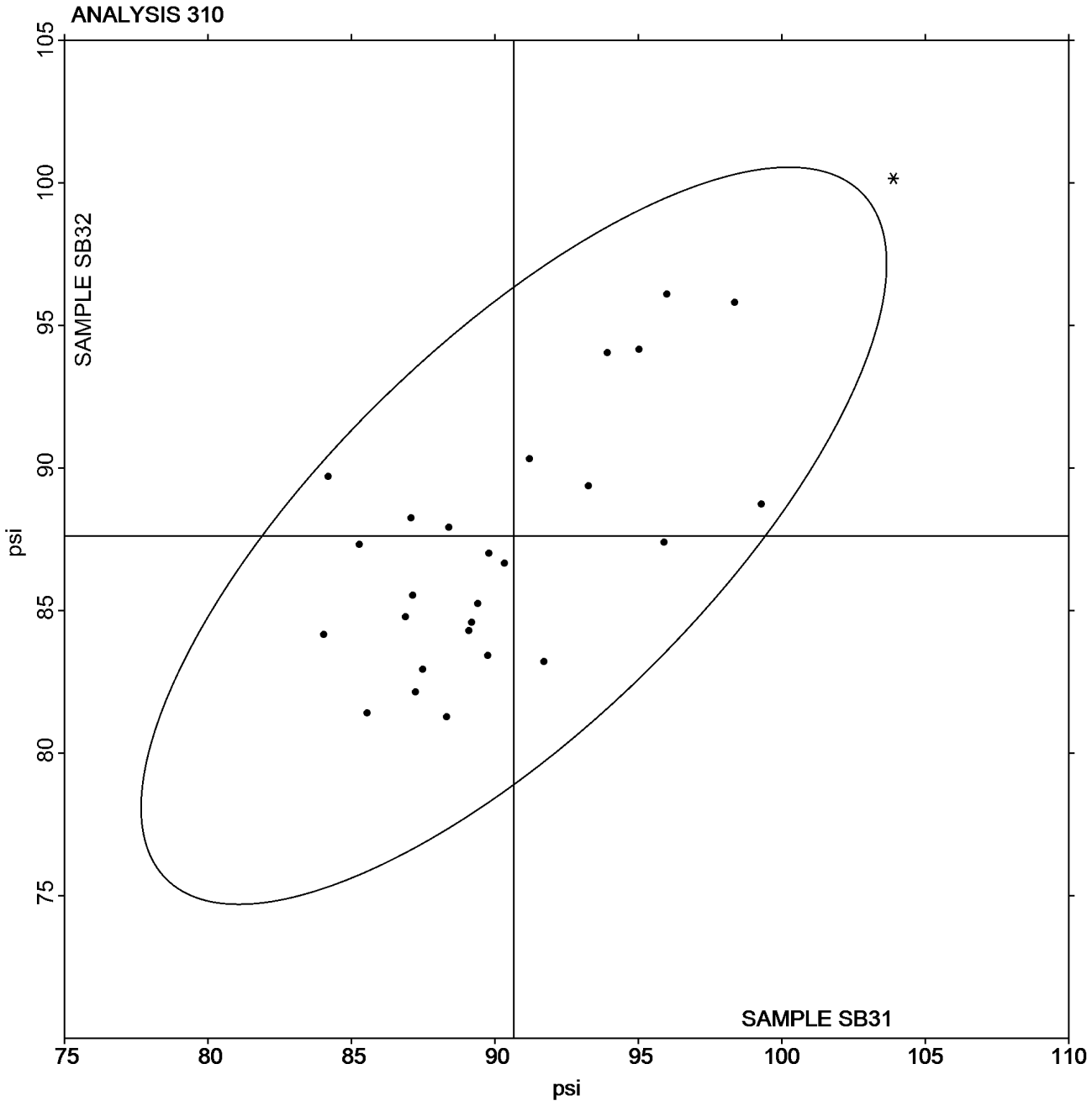
Statistics based on 27 of 28 reporting participants

Comments on Assigned Data Flags for Test #310

B7UYAN (X) - Extreme data.

Grand Mean Sample **SB31** = 90.661 psi

Grand Mean Sample **SB32** = 87.624 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 311
Tearing Strength - Newsprint
TAPPI Official Test Method T414

WebCode	Data Flag	Sample SK31 Lab Mean	Sample SK31 Diff from Grand Mean	Sample SK31 CPV	Sample SK32 Lab Mean	Sample SK32 Diff from Grand Mean	Sample SK32 CPV
36WZ77	X	33.17	6.14	16.88	33.95	8.04	12.02
8DTLZ2	X	33.70	6.67	18.34	34.50	8.59	12.85
DART9P		26.89	-0.14	-0.38	25.31	-0.60	-0.90
HWA8DL		27.57	0.54	1.49	26.86	0.95	1.42
NYYPV8		26.80	-0.23	-0.63	25.65	-0.26	-0.39
ZTT6KX		26.85	-0.18	-0.49	25.82	-0.09	-0.13

Summary Statistics

	Sample SK31	Sample SK32
Grand Means	27.027 Grams	25.909 Grams
SD Btwn Labs	0.364 Grams	0.668 Grams

Statistics based on 4 of 6 reporting participants

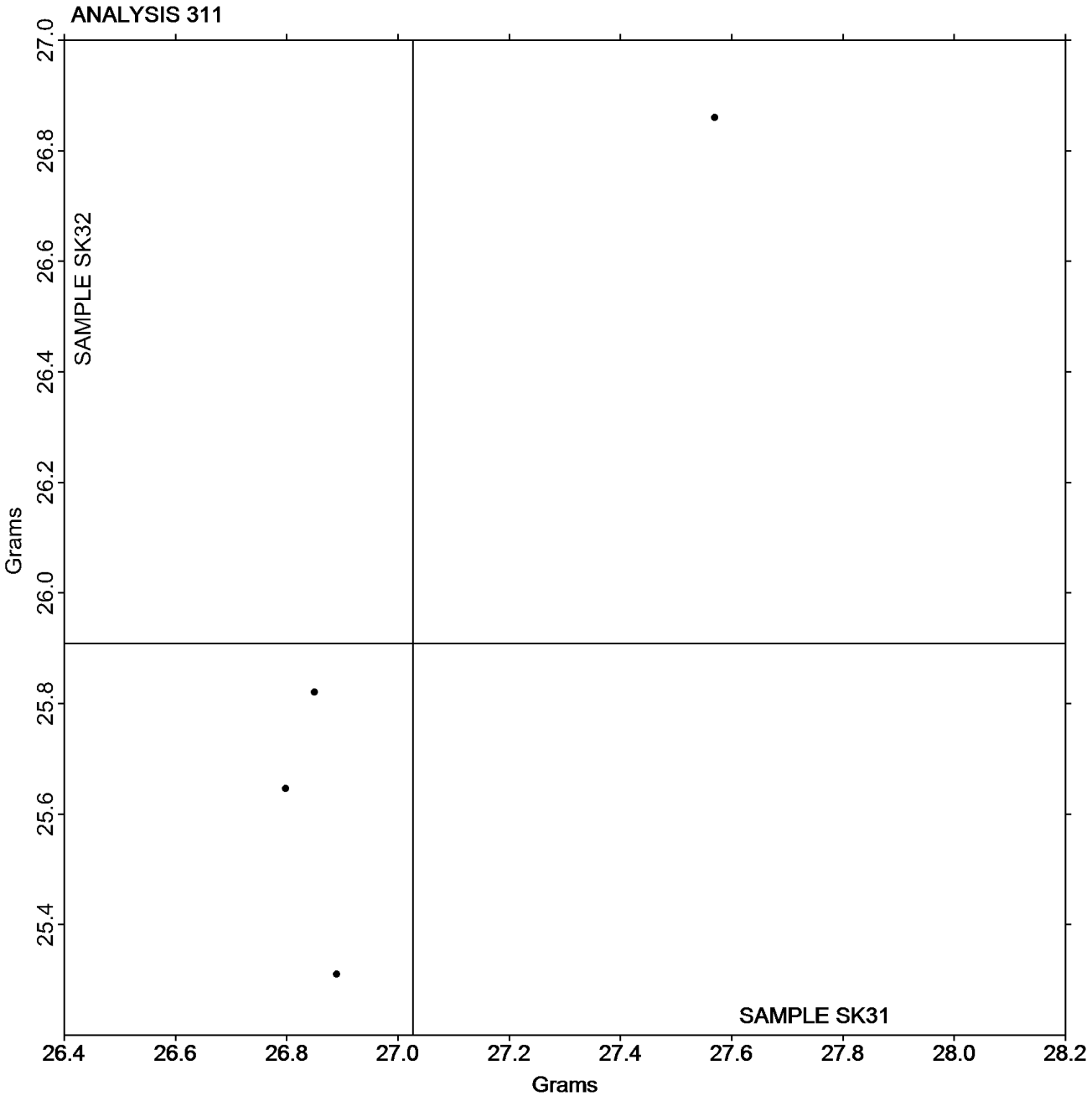
Comments on Assigned Data Flags for Test #311

8DTLZ2 (X) - Extreme data.

36WZ77 (X) - Extreme data.

Grand Mean Sample **SK31** = 27.027 Grams

Grand Mean Sample **SK32** = 25.909 Grams



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 SC31 Lab Mean	Sample SC31 Diff from Grand Mean	Sample SC31 CPV	Sample SC32 Lab Mean	Sample SC32 Diff from Grand Mean	Sample SC32 CPV
2PNYJW		52.16	2.60	0.68	63.76	0.10	0.03
2XRPPT		45.45	-4.11	-1.08	59.76	-3.90	-1.01
384H63		55.27	5.71	1.50	71.84	8.18	2.11
44TNDM		50.80	1.24	0.33	63.20	-0.46	-0.12
4R27A3		48.31	-1.25	-0.33	62.54	-1.12	-0.29
63HCLX		51.84	2.28	0.60	66.72	3.06	0.79
64DTXU	*	56.00	6.44	1.69	74.00	10.34	2.67
6BR2YV		45.48	-4.08	-1.07	59.44	-4.22	-1.09
6ZKR8P		43.36	-6.20	-1.63	58.44	-5.22	-1.35
727ZGZ		50.78	1.22	0.32	66.46	2.80	0.72
7MY7PN		48.40	-1.16	-0.30	63.52	-0.14	-0.04
7NUPQP		49.49	-0.07	-0.02	64.92	1.26	0.33
83VKMW		56.15	6.60	1.73	66.80	3.15	0.81
942PDQ		49.87	0.31	0.08	66.50	2.84	0.73
94W7PM		49.24	-0.31	-0.08	64.81	1.16	0.30
96EDXQ		51.66	2.10	0.55	64.36	0.70	0.18
9AHR9L		43.80	-5.76	-1.51	58.40	-5.26	-1.36
AJUKNV		51.96	2.40	0.63	65.88	2.22	0.57
ANZDHR		49.69	0.13	0.03	65.80	2.14	0.55
AR492U	X	44.02	-5.54	-1.45	71.80	8.14	2.10
BF4X7R		57.12	7.57	1.99	66.41	2.76	0.71
BZCZ4X		45.20	-4.36	-1.14	61.30	-2.36	-0.61
DNMJ4E		43.05	-6.51	-1.71	55.22	-8.44	-2.18
E4AGJE		52.68	3.12	0.82	62.94	-0.72	-0.18
EEVKQE		51.12	1.56	0.41	65.76	2.10	0.54
FBWXYH	X	72.21	22.65	5.94	90.49	26.83	6.93
FFRRWJ		44.32	-5.24	-1.37	58.94	-4.72	-1.22
FKH27H	X	50.40	0.84	0.22	64.20	0.54	0.14
FTTWYH		51.81	2.26	0.59	64.42	0.77	0.20
FTZBUE	*	59.90	10.34	2.71	70.90	7.24	1.87
FZVDWQ		47.58	-1.98	-0.52	64.44	0.78	0.20
G7VCKK		42.40	-7.16	-1.88	56.80	-6.86	-1.77
GF7D7L		50.71	1.15	0.30	64.25	0.60	0.15
GWLDNG		44.60	-4.96	-1.30	62.60	-1.06	-0.27
HPNGQQ		51.57	2.01	0.53	68.61	4.95	1.28
J7AGWF	X	54.42	4.86	1.27	70.02	6.36	1.64
JHP6GE		48.82	-0.74	-0.19	61.92	-1.74	-0.45
LWE2KG		44.90	-4.66	-1.22	59.50	-4.16	-1.07
MCLFFJ		50.32	0.76	0.20	66.59	2.93	0.76
MGUNV8		45.85	-3.71	-0.97	61.82	-1.84	-0.47

Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC31 Lab Mean	Sample SC31 Diff from Grand Mean	Sample SC31 CPV	Sample SC32 Lab Mean	Sample SC32 Diff from Grand Mean	Sample SC32 CPV
N8PB27		50.76	1.20	0.32	63.84	0.18	0.05
N9CF8B		48.34	-1.22	-0.32	60.72	-2.94	-0.76
NLLPYE		53.95	4.39	1.15	65.72	2.07	0.53
NYYPV8		48.16	-1.40	-0.37	63.59	-0.07	-0.02
PYTUP8		50.84	1.28	0.34	62.36	-1.30	-0.33
Q4UYR4		50.88	1.32	0.35	66.16	2.50	0.65
QCUQLE		47.46	-2.10	-0.55	61.67	-1.98	-0.51
QPHT47		49.80	0.24	0.06	61.40	-2.26	-0.58
QYABHE		48.60	-0.96	-0.25	65.10	1.44	0.37
RKN9L9		50.69	1.13	0.30	61.64	-2.02	-0.52
TAKMN9		49.77	0.21	0.06	65.56	1.90	0.49
TZPB27		50.98	1.42	0.37	66.25	2.60	0.67
VDXXZ3	*	51.40	1.84	0.48	71.40	7.74	2.00
WEFKP8		48.51	-1.05	-0.28	61.10	-2.55	-0.66
X2TXUZ		44.21	-5.35	-1.40	54.73	-8.93	-2.31
XCAHEW		45.30	-4.26	-1.12	59.70	-3.96	-1.02
YEUUQ8		48.96	-0.60	-0.16	62.08	-1.58	-0.41
YXNP3V		55.80	6.24	1.64	64.80	1.14	0.30

Summary Statistics

	Sample SC31	Sample SC32
Grand Means	49.557 Grams	63.655 Grams
SD Btwn Labs	3.811 Grams	3.870 Grams

Statistics based on 54 of 58 reporting participants

Comments on Assigned Data Flags for Test #312

AR492U (X) - Inconsistent in testing between samples.

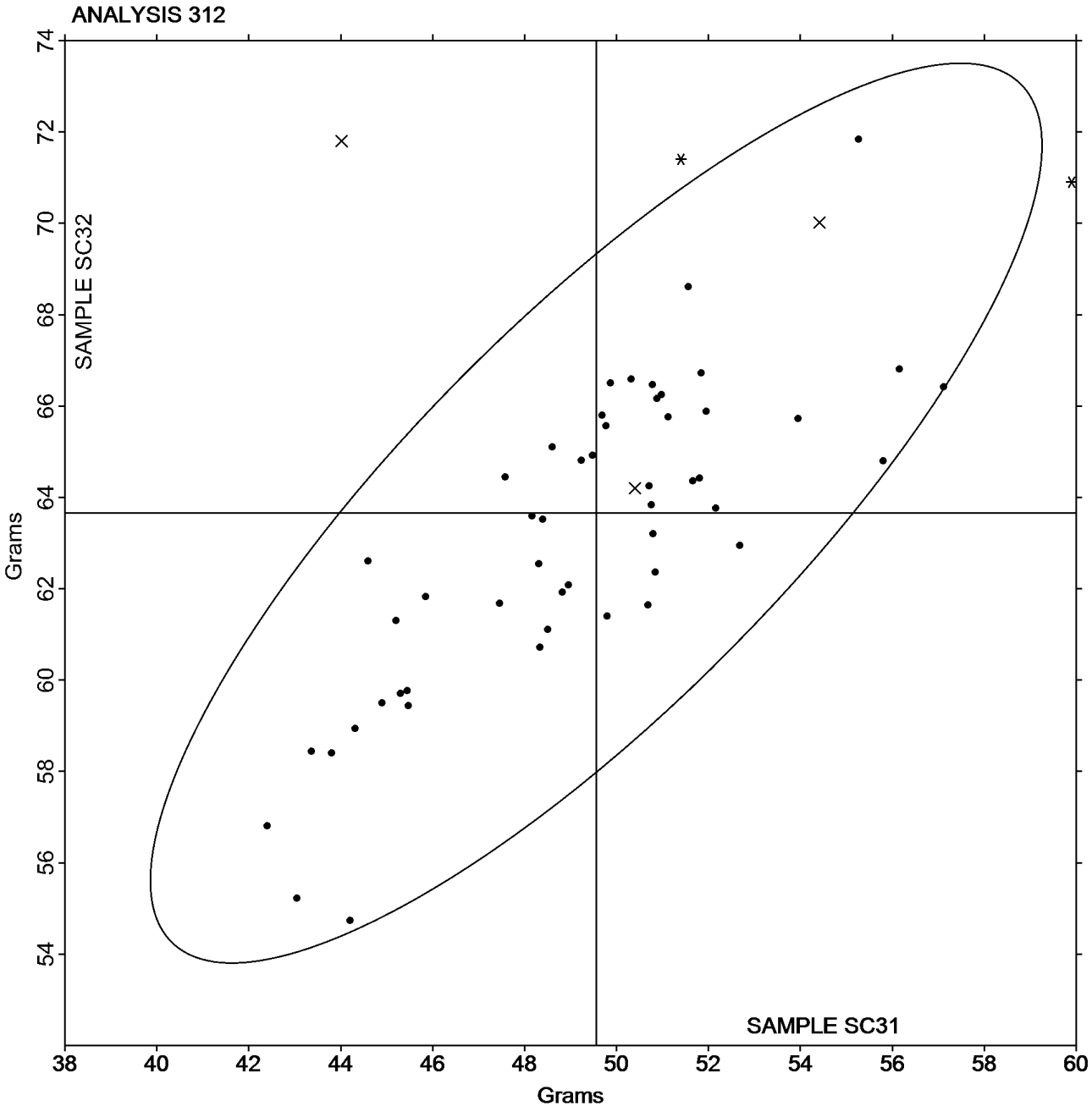
J7AGWF (X) - Data appear to be off by a factor of 2. Corrected by CTS (x.5).

FBWXYH (X) - Extreme data.

FKH27H (X) - Data appear to be off by a factor of 2. Corrected by CTS (x.5).

Grand Mean Sample **SC31** = 49.557 Grams

Grand Mean Sample **SC32** = 63.655 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD31 Lab Mean	Sample SD31 Diff from Grand Mean	Sample SD31 CPV	Sample SD32 Lab Mean	Sample SD32 Diff from Grand Mean	Sample SD32 CPV
27HBVQ		178.4	-23.8	-1.14	133.2	-12.5	-0.79
2VRTR7		213.4	11.2	0.54	156.5	10.8	0.69
3CN4PL		179.6	-22.6	-1.08	140.0	-5.7	-0.36
3E3VBW		191.0	-11.2	-0.54	133.3	-12.3	-0.79
64AJPU		195.2	-7.0	-0.34	143.7	-2.0	-0.13
8Q9F4Q		218.3	16.1	0.77	148.9	3.2	0.20
8QE23Z		209.9	7.7	0.37	147.7	2.0	0.13
8U8QYQ		199.2	-3.1	-0.15	150.3	4.6	0.30
9MNK3J		220.0	17.8	0.85	163.1	17.4	1.11
9R6LAW		191.6	-10.7	-0.51	135.8	-9.8	-0.63
AHRFLK		185.6	-16.6	-0.80	132.0	-13.7	-0.87
B7UYAN		215.4	13.2	0.63	164.6	18.9	1.20
BJ492R		196.4	-5.8	-0.28	141.5	-4.2	-0.27
CH8TPV		219.2	17.0	0.82	158.2	12.5	0.80
CHPYNL	*	156.1	-46.2	-2.21	105.2	-40.4	-2.58
CQFKUJ		195.0	-7.3	-0.35	145.1	-0.5	-0.03
CQK4HM		244.9	42.7	2.04	170.9	25.2	1.61
DD6ZKH		193.1	-9.1	-0.44	138.6	-7.1	-0.45
ENQXCF		197.4	-4.8	-0.23	146.2	0.5	0.03
EPJNHU		205.2	3.0	0.14	152.0	6.3	0.40
FBWXYH		209.7	7.4	0.36	152.2	6.5	0.42
FKH27H	X	187.6	-14.6	-0.70	136.0	-9.7	-0.62
FZVDWQ		202.0	-0.3	-0.01	146.0	0.4	0.02
HPRYNP	*	235.3	33.0	1.58	151.6	5.9	0.38
K3QPKD		160.5	-41.8	-2.00	115.9	-29.7	-1.89
KYQEPD		231.2	29.0	1.39	171.2	25.5	1.63
LTAY9D		180.7	-21.5	-1.03	135.2	-10.4	-0.66
MRC9F4		212.6	10.4	0.50	149.5	3.9	0.25
NX3AJB		245.8	43.6	2.09	166.8	21.1	1.34
NYYPV8		205.4	3.2	0.15	153.3	7.6	0.49
UF2H43		190.5	-11.7	-0.56	126.0	-19.7	-1.25
V4WFRW		180.4	-21.8	-1.05	131.6	-14.1	-0.90
V6ZEDD		191.6	-10.6	-0.51	137.2	-8.5	-0.54
W2VWZ4		179.5	-22.7	-1.09	135.1	-10.6	-0.67
W9TXU3		199.5	-2.7	-0.13	151.5	5.9	0.37
WDH2BZ	*	180.4	-21.8	-1.05	113.5	-32.2	-2.05
WV8HQ3	X	521.1	318.8	15.28	398.8	253.2	16.13
X29UMZ	X	191.6	-10.6	-0.51	142.7	-3.0	-0.19
XD49KB		210.3	8.0	0.38	150.1	4.5	0.28
XU6GEW	*	250.5	48.3	2.31	187.3	41.6	2.65

Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD31 Lab Mean	Sample SD31 Diff from Grand Mean	Sample SD31 CPV	Sample SD32 Lab Mean	Sample SD32 Diff from Grand Mean	Sample SD32 CPV
XWTJAW		202.8	0.6	0.03	151.2	5.5	0.35
Z63VC8		203.6	1.4	0.07	149.1	3.5	0.22
Z7N62R		205.9	3.7	0.18	143.6	-2.1	-0.13
Z7XDE9		208.2	5.9	0.28	147.7	2.0	0.13

Summary Statistics

	Sample SD31	Sample SD32
Grand Means	202.22 Grams	145.67 Grams
SD Btwn Labs	20.86 Grams	15.70 Grams

Statistics based on 41 of 44 reporting participants

Comments on Assigned Data Flags for Test #314

WV8HQ3 (X) - Extreme data.

X29UMZ (X) - Data appear to be off by a factor of .25. Corrected by CTS (x4).

FKH27H (X) - Data appear to be off by a factor of .25. Corrected by CTS (x4).

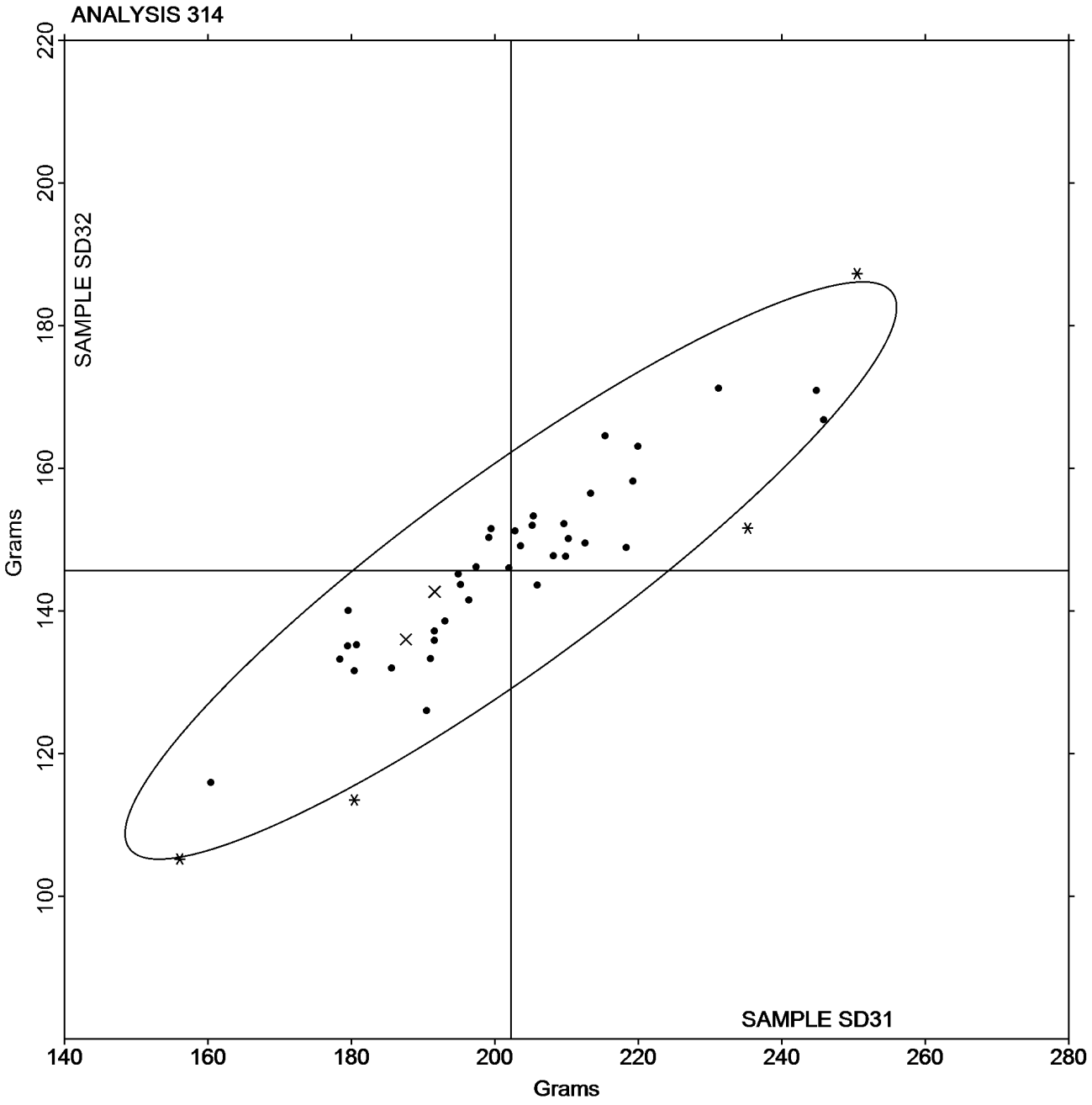
Analysis Notes:

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

XD49KB - Data appear to be transposed between samples. Switched by CTS.

Grand Mean Sample **SD31** = 202.22 Grams

Grand Mean Sample **SD32** = 145.67 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 320

Tensile Breaking Strength - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR31 Lab Mean	Sample SR31 Diff from Grand Mean	Sample SR31 CPV	Sample SR32 Lab Mean	Sample SR32 Diff from Grand Mean	Sample SR32 CPV
36WZ77		2.951	0.007	0.04	2.654	-0.114	-0.57
8DTLZ2		2.980	0.036	0.19	2.766	-0.002	-0.01
DART9P		3.042	0.098	0.53	2.851	0.083	0.41
EJRGZL		2.815	-0.129	-0.70	2.644	-0.124	-0.62
FA2HML		2.940	-0.005	-0.02	2.813	0.045	0.22
FBWXYH		2.825	-0.119	-0.65	2.592	-0.176	-0.87
GWLDNG		3.162	0.218	1.18	2.968	0.199	0.99
HWA8DL		2.827	-0.117	-0.64	2.669	-0.099	-0.49
NYE9F6		2.806	-0.138	-0.75	2.604	-0.164	-0.81
P4ZUY4		3.395	0.451	2.45	3.289	0.521	2.58
WEFKP8		2.756	-0.188	-1.02	2.590	-0.178	-0.88
ZTT6KX		2.830	-0.114	-0.62	2.781	0.012	0.06

Summary Statistics

	Sample SR31	Sample SR32
Grand Means	2.9442 kN/m	2.7684 kN/m
SD Btwn Labs	0.1843 kN/m	0.2018 kN/m

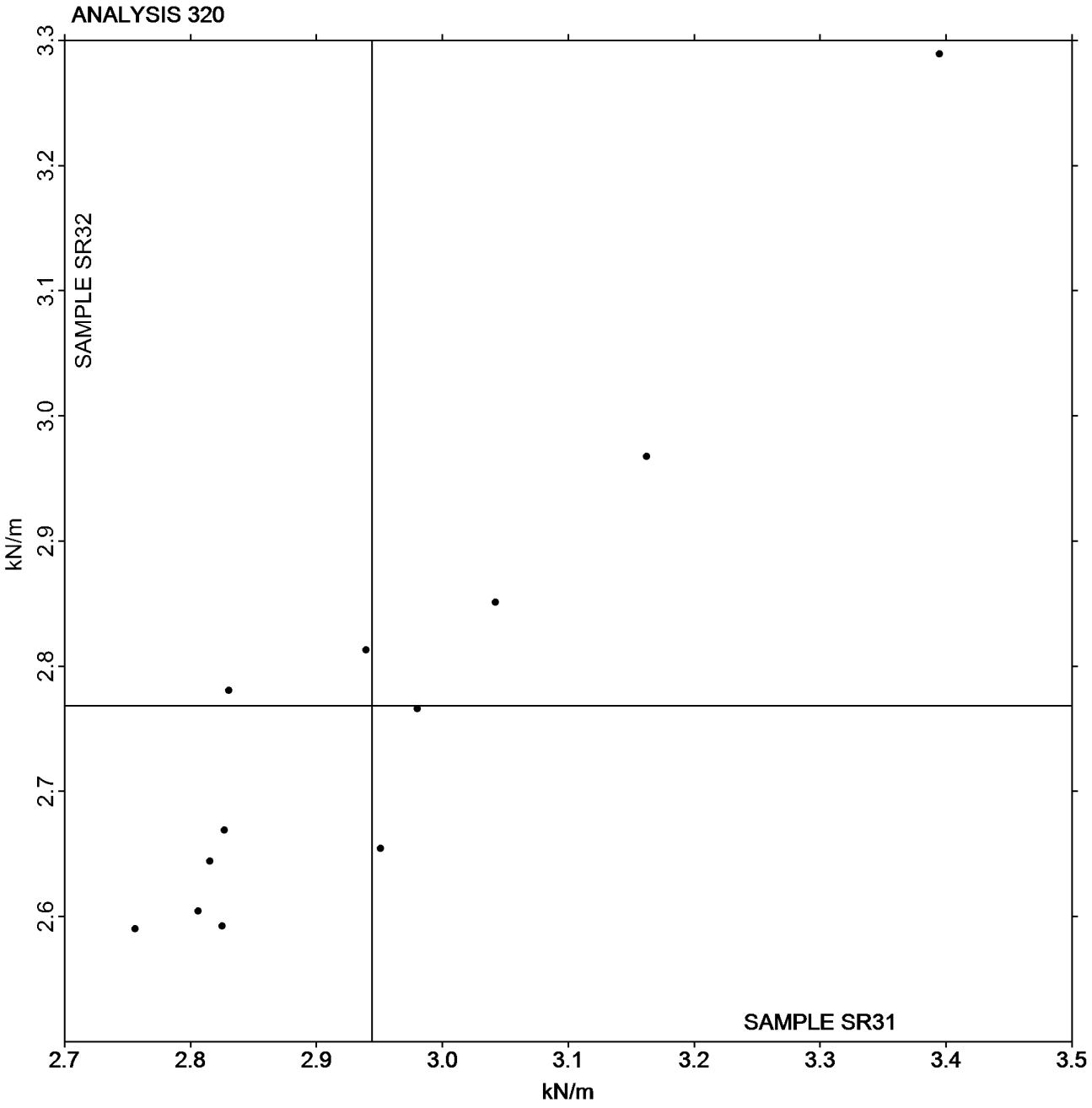
Statistics based on 12 of 12 reporting participants

Analysis Notes:

36WZ77 - One determination removed from the Lab Mean of Sample SR32 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample **SR31** = 2.9442 kN/m

Grand Mean Sample **SR32** = 2.7684 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 SR31 Lab Mean	Sample SR31 Diff from Grand Mean	Sample SR31 CPV	Sample SR32 Lab Mean	Sample SR32 Diff from Grand Mean	Sample SR32 CPV
36WZ77		19.92	-3.72	-1.60	16.56	-3.03	-1.60
8DTLZ2		22.26	-1.39	-0.60	17.74	-1.86	-0.98
DART9P		25.49	1.85	0.79	20.68	1.08	0.57
EJRGZL		23.26	-0.38	-0.16	19.97	0.38	0.20
FA2HML		27.84	4.19	1.80	22.33	2.73	1.44
FBWXYH		25.44	1.80	0.77	18.36	-1.24	-0.65
GWLDNG		25.13	1.49	0.64	20.71	1.11	0.58
HWA8DL		23.31	-0.34	-0.14	20.17	0.57	0.30
NYE9F6		23.20	-0.45	-0.19	20.95	1.35	0.71
P4ZUY4		23.97	0.33	0.14	21.19	1.59	0.84
WEFKP8		20.26	-3.38	-1.45	16.92	-2.68	-1.41

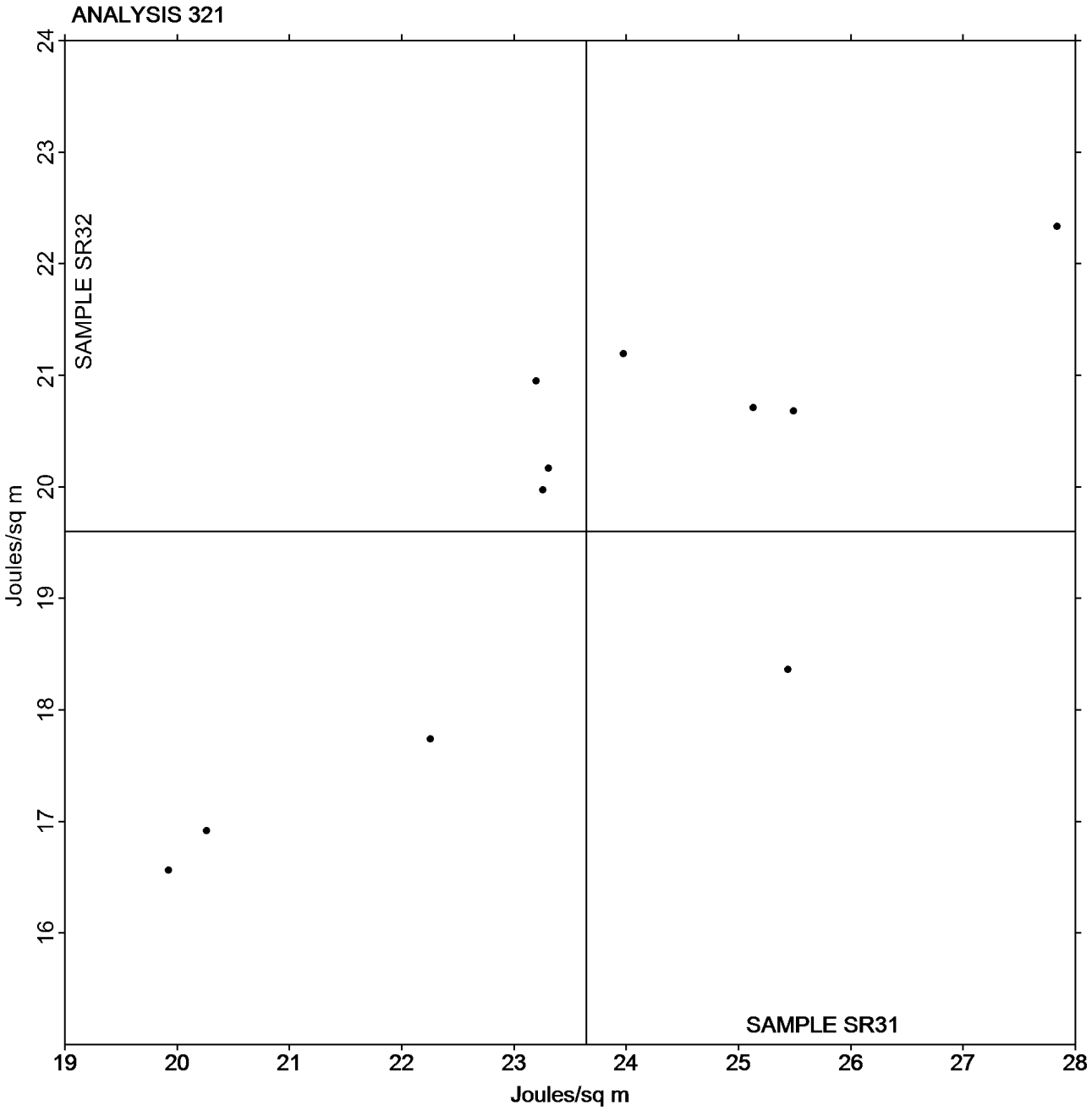
Summary Statistics

	Sample SR31	Sample SR32
Grand Means	23.644 Joules/sq m	19.598 Joules/sq m
SD Btwn Labs	2.328 Joules/sq m	1.900 Joules/sq m

Statistics based on 11 of 11 reporting participants

Grand Mean Sample **SR31** = 23.644 Joules/sq m

Grand Mean Sample **SR32** = 19.598 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 SR31 Lab Mean	Sample SR31 Diff from Grand Mean	Sample SR31 CPV	Sample SR32 Lab Mean	Sample SR32 Diff from Grand Mean	Sample SR32 CPV
8DTLZ2		1.250	-0.097	-0.66	1.083	-0.128	-0.90
DART9P		1.609	0.262	1.78	1.428	0.217	1.53
EJRGZL		1.376	0.029	0.19	1.269	0.058	0.41
FA2HML		1.532	0.185	1.26	1.331	0.120	0.85
FBWXYH		1.246	-0.101	-0.69	1.015	-0.196	-1.38
GWLDNG		1.438	0.091	0.62	1.301	0.090	0.64
HWA8DL		1.331	-0.016	-0.11	1.248	0.037	0.26
NYE9F6		1.344	-0.003	-0.02	1.302	0.092	0.65
P4ZUY4		1.137	-0.210	-1.43	1.038	-0.173	-1.22
WEFKP8		1.209	-0.138	-0.94	1.094	-0.117	-0.82

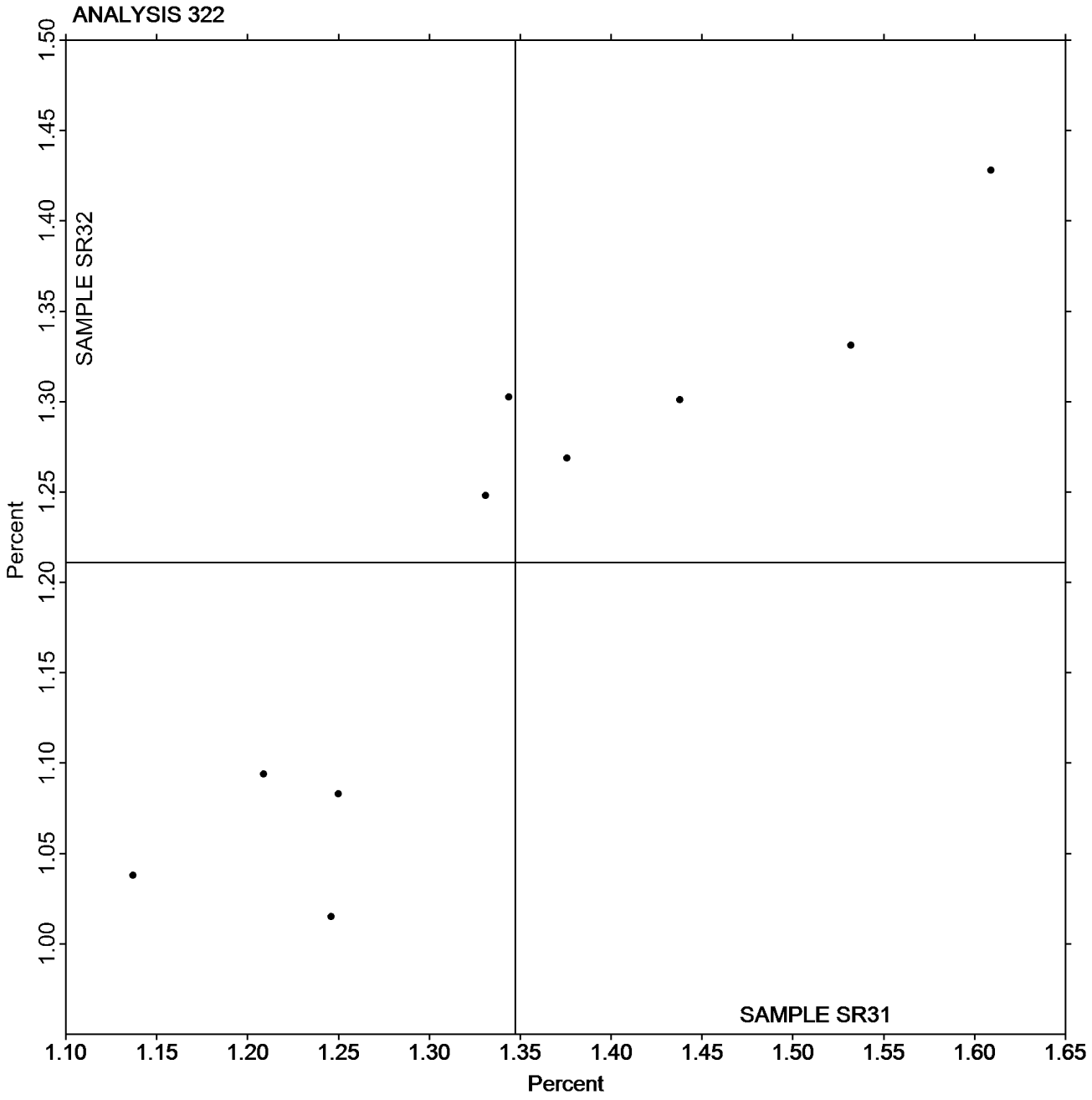
Summary Statistics

	Sample SR31	Sample SR32
Grand Means	1.3472 Percent	1.2109 Percent
SD Btwn Labs	0.1472 Percent	0.1418 Percent

Statistics based on 10 of 10 reporting participants

Grand Mean Sample **SR31** = 1.3472 Percent

Grand Mean Sample **SR32** = 1.2109 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 SF31 Lab Mean	Sample SF31 Diff from Grand Mean	Sample SF31 CPV	Sample SF32 Lab Mean	Sample SF32 Diff from Grand Mean	Sample SF32 CPV	Instr Code
384H63		4.432	-0.377	-1.14	6.170	-0.514	-1.26	LH
3DZ3KV		4.398	-0.411	-1.24	6.208	-0.476	-1.17	RE
43EYDV		4.713	-0.096	-0.29	6.626	-0.058	-0.14	LH
44TNDM	*	5.513	0.703	2.13	7.096	0.413	1.01	LH
4R27A3		4.714	-0.095	-0.29	6.459	-0.225	-0.55	IM
63HCLX		4.718	-0.091	-0.28	6.502	-0.182	-0.45	LH
64DTXU		4.487	-0.322	-0.98	6.316	-0.368	-0.90	DL
6BR2YV		5.141	0.332	1.01	7.071	0.387	0.95	LX
6ZKR8P		4.869	0.059	0.18	6.860	0.176	0.43	TO
727ZGZ		4.808	-0.001	0.00	6.671	-0.013	-0.03	LH
7MY7PN		4.861	0.052	0.16	6.888	0.204	0.50	LH
7NUPQP		4.651	-0.158	-0.48	6.301	-0.383	-0.94	LI
83VKMW		4.271	-0.539	-1.63	5.914	-0.770	-1.89	XX
8HE8KK		5.103	0.294	0.89	6.995	0.311	0.76	XX
942PDQ		5.115	0.306	0.93	6.919	0.235	0.58	LH
94W7PM		4.692	-0.117	-0.35	6.695	0.011	0.03	LH
9AHR9L		5.295	0.486	1.47	7.208	0.524	1.29	LH
AJUKNV		4.305	-0.505	-1.53	6.080	-0.604	-1.48	ID
ANZDHR		4.248	-0.561	-1.70	6.006	-0.678	-1.66	CB
AR492U		5.424	0.615	1.86	7.495	0.812	1.99	TJ
BF4X7R		4.353	-0.456	-1.38	6.191	-0.493	-1.21	LA
BZCZ4X		4.766	-0.043	-0.13	6.756	0.073	0.18	LF
DE2FWE		4.613	-0.196	-0.59	6.110	-0.574	-1.41	LA
DMR23D		4.599	-0.210	-0.64	6.559	-0.125	-0.31	TP
DNMJ4E		5.154	0.345	1.04	7.171	0.488	1.20	LA
E4AGJE		4.361	-0.448	-1.36	6.283	-0.401	-0.98	TB
EEVKQE		4.793	-0.016	-0.05	6.727	0.043	0.11	LX
GYJX3P		5.144	0.335	1.01	7.033	0.349	0.86	TB
H6U8JA		5.206	0.397	1.20	6.879	0.195	0.48	XX
HPNGQQ		4.964	0.155	0.47	6.782	0.099	0.24	LH
J7AGWF		5.422	0.613	1.86	7.133	0.449	1.10	TJ
JHP6GE		4.655	-0.154	-0.47	6.602	-0.082	-0.20	TI
LWE2KG		4.940	0.130	0.40	7.029	0.345	0.85	TO
MCLFFJ		5.008	0.199	0.60	7.088	0.404	0.99	TJ
MGUNV8		4.983	0.174	0.53	6.868	0.184	0.45	TX
N9CF8B		5.287	0.478	1.45	7.291	0.608	1.49	TB
NLLPYE	*	4.051	-0.758	-2.30	6.029	-0.655	-1.61	IM
NYYPV8		4.862	0.053	0.16	6.925	0.241	0.59	LH
PYTUP8		4.779	-0.030	-0.09	6.512	-0.172	-0.42	TF
Q4UYR4		4.596	-0.213	-0.65	6.256	-0.428	-1.05	TF

Paper & Paperboard Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF31 Lab Mean	Sample SF31 Diff from Grand Mean	Sample SF31 CPV	Sample SF32 Lab Mean	Sample SF32 Diff from Grand Mean	Sample SF32 CPV	Instr Code
QCUQLE		4.731	-0.079	-0.24	6.623	-0.061	-0.15	XX
QYABHE	*	4.831	0.022	0.07	6.185	-0.499	-1.22	TC
RKN9L9		4.654	-0.155	-0.47	6.624	-0.059	-0.15	TB
TAKMN9		4.681	-0.128	-0.39	6.553	-0.131	-0.32	LI
TZPB27		5.001	0.192	0.58	6.884	0.200	0.49	LI
UJFJY2		4.627	-0.182	-0.55	6.393	-0.291	-0.71	XX
V6ZEDD		4.812	0.003	0.01	6.819	0.136	0.33	IM
WEFKP8		4.515	-0.294	-0.89	6.347	-0.337	-0.83	LH
X2TXUZ	*	5.286	0.477	1.45	7.701	1.017	2.50	TP
XCAHEW		4.799	-0.010	-0.03	6.773	0.089	0.22	XX
YEUUQ8		4.683	-0.126	-0.38	6.651	-0.033	-0.08	LE
YXNP3V		5.163	0.354	1.07	7.305	0.621	1.52	XX

Summary Statistics

	Sample SF31	Sample SF32
Grand Means	4.8092 kN/m	6.6839 kN/m
SD Btwn Labs	0.3302 kN/m	0.4075 kN/m

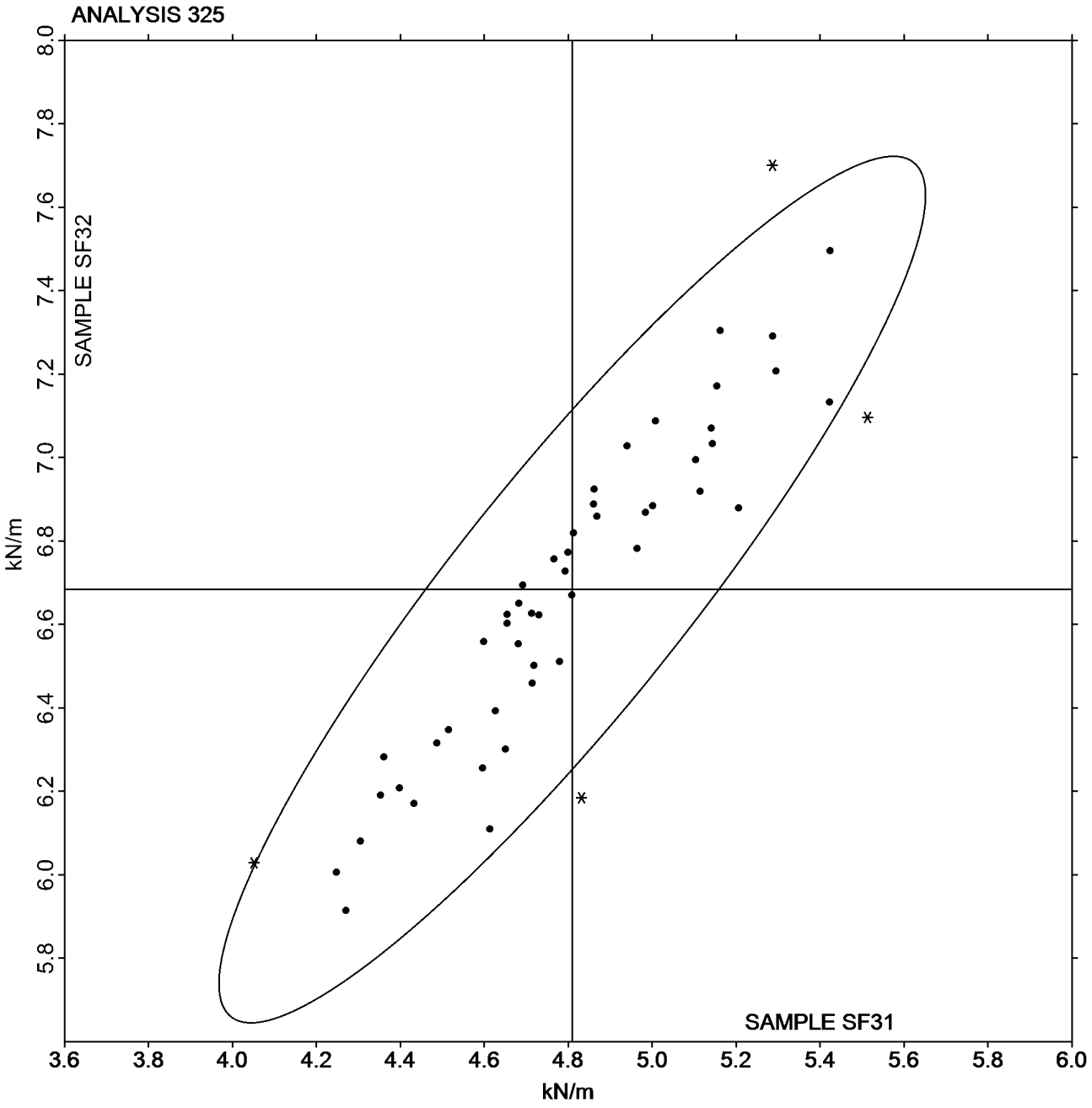
Statistics based on 52 of 52 reporting participants

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
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)
RE	Regmed	TB	Thwing-Albert EJA/1000
TC	Thwing-Albert Electro-Hydraulic, Model 30LT	TF	Thwing-Albert EJA Vantage-1
TI	Thwing-Albert QC II	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab

Grand Mean Sample **SF31** = 4.8092 kN/m

Grand Mean Sample **SF32** = 6.6839 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF31 Lab Mean	Sample SF31 Diff from Grand Mean	Sample SF31 CPV	Sample SF32 Lab Mean	Sample SF32 Diff from Grand Mean	Sample SF32 CPV	Instr Code
384H63		71.00	3.55	0.52	90.10	-3.39	-0.39	LH
3DZ3KV		62.36	-5.09	-0.75	89.17	-4.33	-0.49	RE
43EYDV		64.58	-2.87	-0.42	90.31	-3.18	-0.36	LH
4R27A3		77.87	10.42	1.54	107.11	13.62	1.56	IM
63HCLX		60.11	-7.34	-1.08	84.89	-8.60	-0.98	LH
64DTXU		69.36	1.91	0.28	97.58	4.09	0.47	DL
6BR2YV		67.94	0.49	0.07	92.10	-1.39	-0.16	LX
6ZKR8P		79.54	12.09	1.79	112.81	19.31	2.21	TO
727ZGZ		68.27	0.82	0.12	92.76	-0.74	-0.08	LH
7MY7PN		67.32	-0.13	-0.02	102.19	8.69	0.99	LH
7NUPQP		64.01	-3.44	-0.51	81.69	-11.81	-1.35	LI
83VKMW		55.95	-11.50	-1.70	76.17	-17.33	-1.98	XX
942PDQ		76.03	8.58	1.27	100.10	6.61	0.76	LH
94W7PM		59.69	-7.76	-1.15	82.55	-10.95	-1.25	LH
9AHR9L		72.73	5.28	0.78	95.59	2.10	0.24	LH
AJUKNV		65.74	-1.71	-0.25	98.04	4.54	0.52	ID
BF4X7R	*	49.69	-17.76	-2.62	75.06	-18.44	-2.11	LA
BZCZ4X		58.84	-8.61	-1.27	81.43	-12.06	-1.38	LW
DNMJ4E		70.47	3.02	0.45	103.40	9.90	1.13	LA
EEVKQE		69.98	2.53	0.37	96.29	2.80	0.32	LX
H6U8JA		73.43	5.98	0.88	99.60	6.11	0.70	LX
HPNGQQ		67.96	0.51	0.08	94.70	1.20	0.14	LH
J7AGWF		83.99	16.54	2.44	110.23	16.73	1.91	TJ
JHP6GE		63.05	-4.40	-0.65	95.15	1.66	0.19	TI
LWE2KG		62.78	-4.67	-0.69	92.96	-0.54	-0.06	TO
MGUNV8		66.55	-0.90	-0.13	93.44	-0.05	-0.01	TA
N9CF8B	X	31.68	-35.77	-5.28	33.64	-59.85	-6.84	TB
NLLPYE	X	52.34	-15.11	-2.23	91.70	-1.79	-0.21	IM
NYYPV8		66.09	-1.37	-0.20	92.02	-1.48	-0.17	LH
Q4UYR4		74.36	6.91	1.02	97.49	4.00	0.46	TF
QCUQLE		67.04	-0.42	-0.06	89.82	-3.68	-0.42	XX
RKN9L9		70.12	2.67	0.39	104.15	10.65	1.22	TB
TAKMN9		65.20	-2.25	-0.33	86.76	-6.74	-0.77	LI
TZPB27		73.57	6.11	0.90	94.22	0.72	0.08	LI
UJFJY2		63.71	-3.74	-0.55	88.37	-5.13	-0.59	XX
V6ZEDD		68.34	0.89	0.13	97.94	4.44	0.51	IM
WEFKP8		63.11	-4.35	-0.64	86.15	-7.34	-0.84	LH
X2TXUZ	X	1.13	-66.32	-9.80	1.16	-92.33	-10.56	TP

Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

Summary Statistics

	Sample SF31	Sample SF32
Grand Means	67.450 Joules/sq m	93.496 Joules/sq m
SD Btwn Labs	6.769 Joules/sq m	8.745 Joules/sq m

Statistics based on 35 of 38 reporting participants

Comments on Assigned Data Flags for Test #327

NLLPYE (X) - Inconsistent in testing between samples.

X2TXUZ (X) - Extreme data.

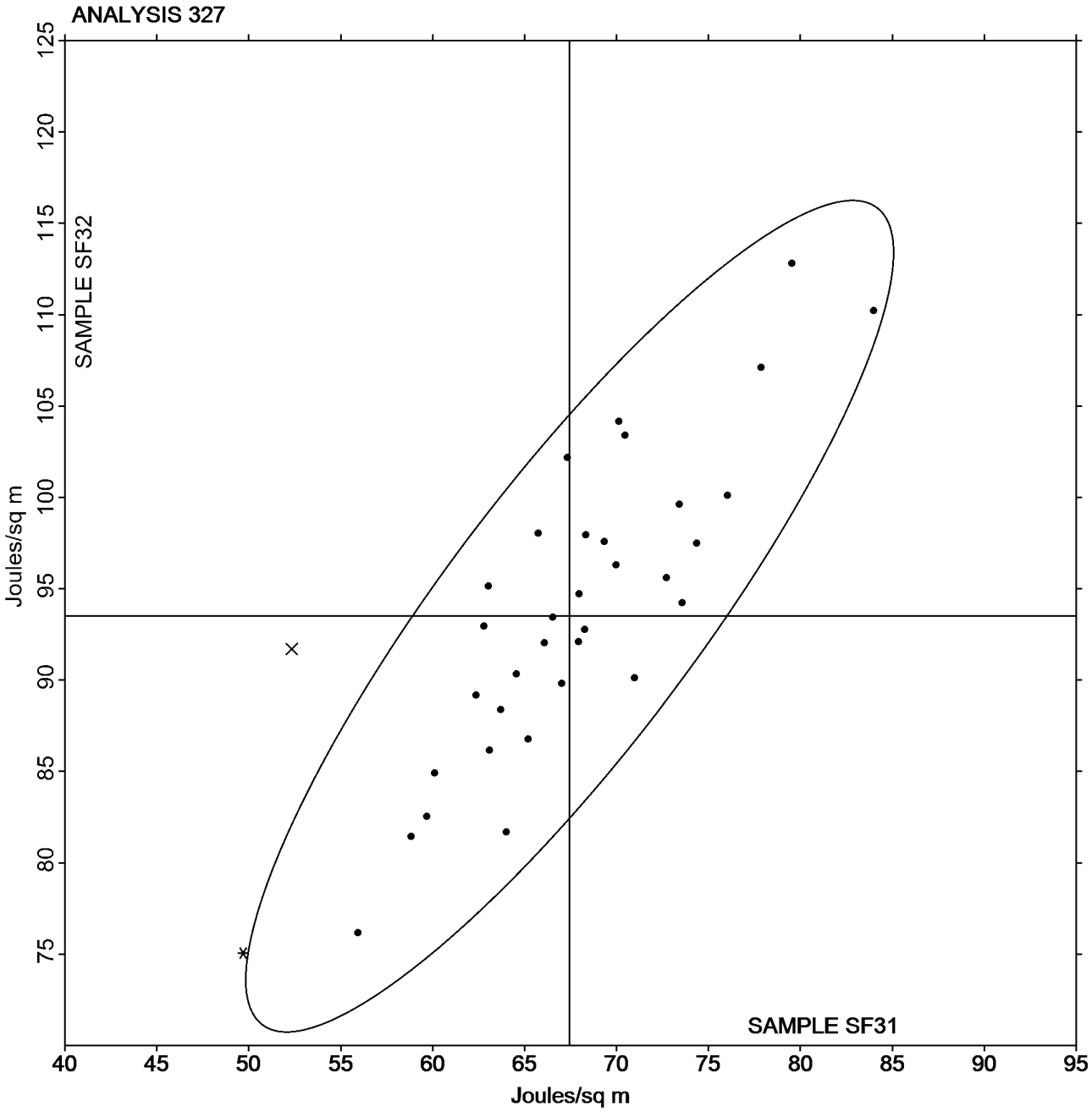
N9CF8B (X) - Extreme data.

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)
RE	Regmed	TA	Thwing-Albert
TB	Thwing-Albert EJA/1000	TF	Thwing-Albert EJA Vantage-1
TI	Thwing-Albert QC II	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
XX	Instrument make/model not specified by lab		

Grand Mean Sample **SF31** = 67.450 Joules/sq m

Grand Mean Sample **SF32** = 93.496 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF31 Lab Mean	Sample SF31 Diff from Grand Mean	Sample SF31 CPV	Sample SF32 Lab Mean	Sample SF32 Diff from Grand Mean	Sample SF32 CPV	Instr Code
384H63		2.386	0.241	1.15	2.238	0.031	0.14	LH
3DZ3KV		2.227	0.082	0.39	2.282	0.075	0.34	RE
43EYDV		2.088	-0.057	-0.27	2.119	-0.088	-0.41	LH
4R27A3		2.463	0.318	1.53	2.543	0.336	1.55	IM
63HCLX		1.833	-0.312	-1.50	1.930	-0.277	-1.28	LH
64DTXU		2.430	0.285	1.37	2.514	0.307	1.41	DL
6BR2YV		2.002	-0.143	-0.69	2.035	-0.172	-0.80	LX
6ZKR8P	*	2.749	0.604	2.90	2.870	0.663	3.06	TO
727ZGZ		2.101	-0.044	-0.21	2.125	-0.082	-0.38	LH
7MY7PN		2.052	-0.093	-0.45	2.256	0.049	0.22	LH
7NUPQP		2.041	-0.104	-0.50	1.976	-0.231	-1.07	LI
83VKMW		2.520	0.375	1.80	2.505	0.298	1.37	XX
942PDQ		2.171	0.026	0.12	2.195	-0.012	-0.06	LH
94W7PM		1.794	-0.351	-1.68	1.768	-0.439	-2.03	LH
9AHR9L		2.034	-0.111	-0.53	2.024	-0.183	-0.85	LH
AJUKNV		2.252	0.106	0.51	2.441	0.233	1.08	ID
BF4X7R		2.014	-0.131	-0.63	2.162	-0.045	-0.21	LA
BZCZ4X		1.876	-0.269	-1.29	1.915	-0.292	-1.35	LX
DNMJ4E		1.869	-0.276	-1.33	2.011	-0.196	-0.91	XX
E4AGJE		1.960	-0.185	-0.89	2.150	-0.057	-0.26	TF
EEVKQE		2.143	-0.002	-0.01	2.169	-0.038	-0.18	LX
GYJX3P		2.171	0.026	0.12	2.130	-0.077	-0.36	TB
H6U8JA	X	1.994	-0.151	-0.73	2.558	0.351	1.62	LX
HPNGQQ		2.026	-0.119	-0.57	2.119	-0.088	-0.41	LH
J7AGWF		2.394	0.249	1.19	2.453	0.246	1.13	TJ
JHP6GE		2.024	-0.121	-0.58	2.227	0.020	0.09	TI
LWE2KG		1.849	-0.296	-1.42	1.984	-0.223	-1.03	TG
MCLFFJ	X	1.270	-0.875	-4.20	2.080	-0.127	-0.59	LH
MGUNV8		2.116	-0.029	-0.14	2.234	0.027	0.12	TX
N9CF8B	X	5.239	3.094	14.84	7.456	5.248	24.21	TB
NLLPYE	*	2.068	-0.077	-0.37	2.465	0.258	1.19	XX
NYYPV8		2.086	-0.059	-0.28	2.076	-0.131	-0.61	LH
PYTUP8		2.420	0.275	1.32	2.360	0.153	0.70	TF
Q4UYR4		2.382	0.236	1.13	2.374	0.166	0.77	TF
QCUQLE		2.143	-0.002	-0.01	2.162	-0.045	-0.21	XX
RKN9L9		2.310	0.165	0.79	2.506	0.298	1.38	TB
TAKMN9		2.124	-0.021	-0.10	2.086	-0.121	-0.56	LI
TZPB27		2.174	0.029	0.14	2.077	-0.130	-0.60	LI
UJFJY2		2.055	-0.090	-0.43	2.122	-0.085	-0.39	XX
V6ZEDD		2.114	-0.031	-0.15	2.209	0.002	0.01	IM

Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF31 Lab Mean	Sample SF31 Diff from Grand Mean	Sample SF31 CPV	Sample SF32 Lab Mean	Sample SF32 Diff from Grand Mean	Sample SF32 CPV	Instr Code
WEFKP8		2.060	-0.085	-0.41	2.071	-0.136	-0.63	LH
X2TXUZ	X	3.515	1.370	6.57	5.813	3.606	16.63	TP

Summary Statistics

	Sample SF31	Sample SF32
Grand Means	2.1453 Percent	2.2074 Percent
SD Btwn Labs	0.2085 Percent	0.2168 Percent

Statistics based on 38 of 42 reporting participants

Comments on Assigned Data Flags for Test #328

MCLFFJ (X) - Inconsistent in testing between samples. Data for sample SF31 are low.

X2TXUZ (X) - Extreme data.

N9CF8B (X) - Extreme data.

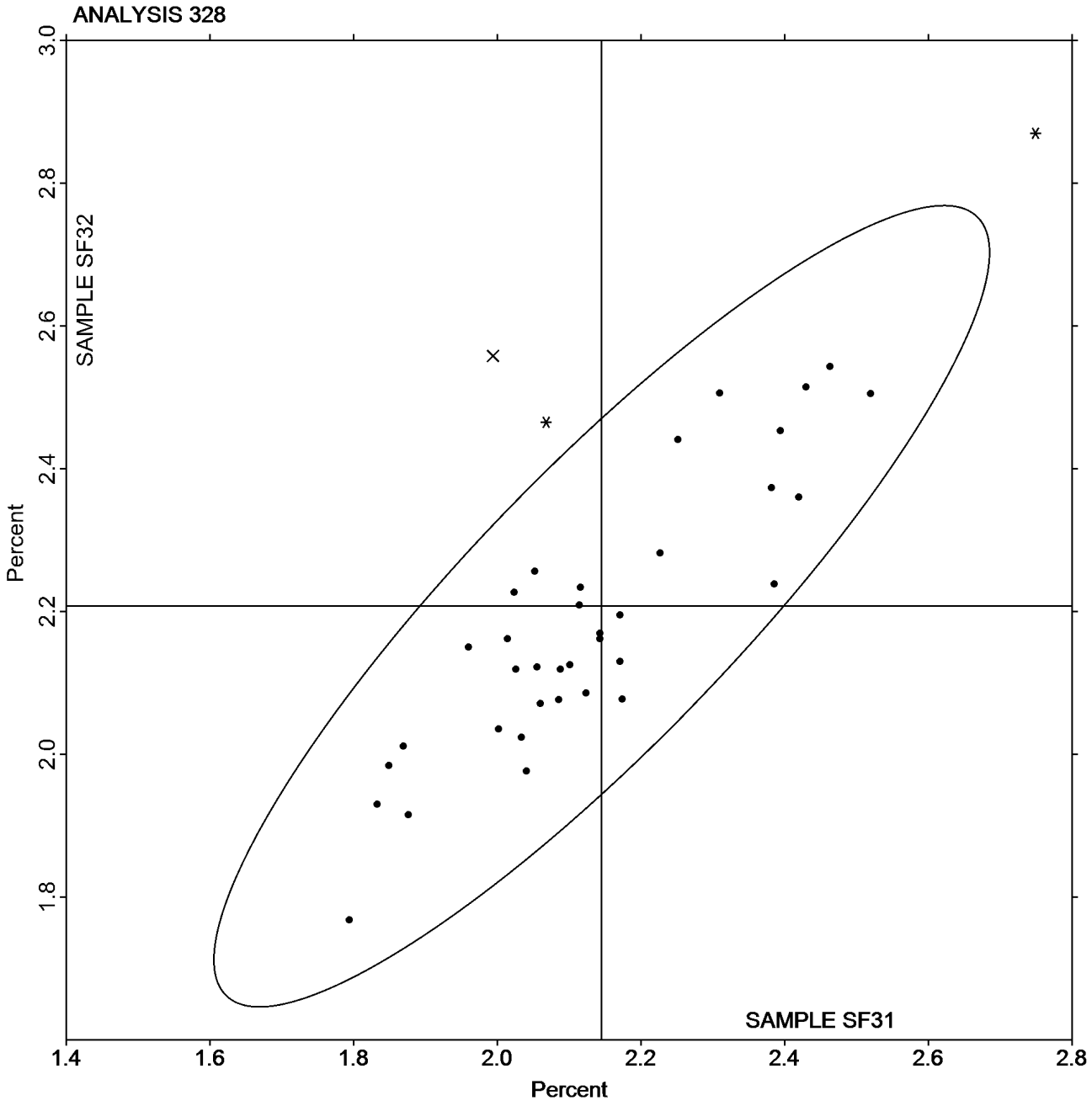
H6U8JA (X) - Inconsistent in testing between samples.

Key to Instrument Codes Reported by Participants

DL	EMIC DL500 Universal Testing Machines	ID	Instron 4201
IM	Instron 5500	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)	RE	Regmed
TB	Thwing-Albert EJA/1000	TF	Thwing-Albert EJA Vantage-1
TG	Thwing-Albert QC	TI	Thwing-Albert QC II
TJ	Thwing-Albert QC II-XS	TO	Thwing-Albert QC-1000
TP	TMI Monitor/Tensile 100 (84-21-01)	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		

Grand Mean Sample **SF31** = 2.1453 Percent

Grand Mean Sample **SF32** = 2.2074 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE31 Lab Mean	Sample SE31 Diff from Grand Mean	Sample SE31 CPV	Sample SE32 Lab Mean	Sample SE32 Diff from Grand Mean	Sample SE32 CPV	Instr Code
236BYY		8.147	-1.018	-1.46	10.36	-1.11	-1.27	TH
27HBVQ		10.055	0.890	1.27	12.83	1.36	1.57	TH
2UQNPV		9.652	0.487	0.70	11.87	0.41	0.47	XX
2VRTR7		9.205	0.040	0.06	11.11	-0.36	-0.41	IM
34AHEW		8.384	-0.781	-1.12	11.12	-0.35	-0.40	LI
3E3VBW		9.679	0.514	0.74	12.09	0.62	0.71	TO
64AJPU		8.847	-0.318	-0.45	10.74	-0.73	-0.84	SA
6PNP4V		8.861	-0.303	-0.43	11.35	-0.12	-0.14	TO
6QYNZP		9.683	0.518	0.74	12.24	0.77	0.88	TX
8Q9F4Q		9.594	0.429	0.61	11.80	0.33	0.38	TP
8QE23Z		8.563	-0.602	-0.86	10.62	-0.85	-0.98	TK
8U8QYQ		8.876	-0.289	-0.41	11.00	-0.47	-0.54	ID
96EDXQ		8.620	-0.545	-0.78	10.53	-0.94	-1.08	XX
9MNK3J		9.410	0.245	0.35	11.50	0.03	0.04	TA
9R6LAW	X	9.112	-0.053	-0.08	11.68	0.21	0.24	LE
AET6QK		9.336	0.172	0.25	11.82	0.36	0.41	TB
AHRFLK	*	8.506	-0.659	-0.94	11.54	0.07	0.08	IK
BJ492R		9.254	0.089	0.13	11.15	-0.32	-0.36	LH
CH8TPV		8.666	-0.499	-0.71	10.77	-0.70	-0.80	XX
CQFKUJ		9.715	0.550	0.79	11.75	0.28	0.32	TO
DD6ZKH		10.111	0.946	1.35	12.69	1.22	1.40	LA
EPJNHU		9.326	0.161	0.23	11.65	0.18	0.20	TK
FBWZNM		8.539	-0.626	-0.90	10.47	-1.00	-1.15	LA
FFRRWJ		9.142	-0.023	-0.03	11.63	0.16	0.18	IF
FKH27H		9.437	0.272	0.39	11.33	-0.13	-0.15	IF
FTTWYH		9.700	0.536	0.77	12.05	0.58	0.67	TR
FZVDWQ		8.572	-0.593	-0.85	11.00	-0.47	-0.54	TB
GF7D7L		8.478	-0.687	-0.98	10.67	-0.80	-0.91	LE
HPRYNP		8.581	-0.584	-0.83	10.52	-0.95	-1.09	LE
KLHVRJ		8.893	-0.272	-0.39	10.89	-0.58	-0.66	LW
KYQEPD		9.701	0.537	0.77	12.64	1.17	1.34	LH
LTAY9D		9.338	0.173	0.25	11.41	-0.06	-0.06	IF
MGUNV8		8.742	-0.422	-0.60	11.14	-0.33	-0.38	TO
MRC9F4		8.026	-1.139	-1.63	9.86	-1.61	-1.85	IN
NDQF43		8.501	-0.663	-0.95	10.45	-1.02	-1.17	ID
NX3AJB	X	15.160	5.995	8.58	18.12	6.65	7.64	LE
NYYPV8		8.982	-0.183	-0.26	11.33	-0.14	-0.16	LH
UAQXT3		9.649	0.485	0.69	12.75	1.28	1.47	TA
V32WQV		8.240	-0.925	-1.32	10.79	-0.67	-0.77	IM
V4WFRW		10.235	1.070	1.53	13.01	1.54	1.77	TH

Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE31 Lab Mean	Sample SE31 Diff from Grand Mean	Sample SE31 CPV	Sample SE32 Lab Mean	Sample SE32 Diff from Grand Mean	Sample SE32 CPV	Instr Code
W2VWZ4		9.387	0.222	0.32	11.72	0.25	0.28	LW
W9TXU3		8.447	-0.718	-1.03	10.59	-0.87	-1.00	IK
X7K6D9		10.786	1.621	2.32	13.33	1.86	2.13	LA
XD49KB		10.070	0.906	1.30	12.41	0.94	1.08	TP
XGWXF2	X	67.389	58.224	83.29	76.14	64.67	74.25	XX
XU6GEW		9.020	-0.145	-0.21	11.40	-0.07	-0.08	TP
XWTJAW		8.955	-0.210	-0.30	11.03	-0.44	-0.51	ID
YRJG8Z		8.371	-0.794	-1.14	10.82	-0.65	-0.75	IM
Z63VC8		9.077	-0.088	-0.13	11.22	-0.25	-0.29	LH
Z7N62R	*	11.387	2.222	3.18	14.06	2.59	2.97	LA

Summary Statistics

	Sample SE31	Sample SE32
Grand Means	9.1648 kN/m	11.469 kN/m
SD Btwn Labs	0.6991 kN/m	0.871 kN/m

Statistics based on 47 of 50 reporting participants

Comments on Assigned Data Flags for Test #330

9R6LAW (X) - Data appears to be transposed between Analysis #330 and Analysis #331. Data switched by CTS.

NX3AJB (X) - Extreme data.

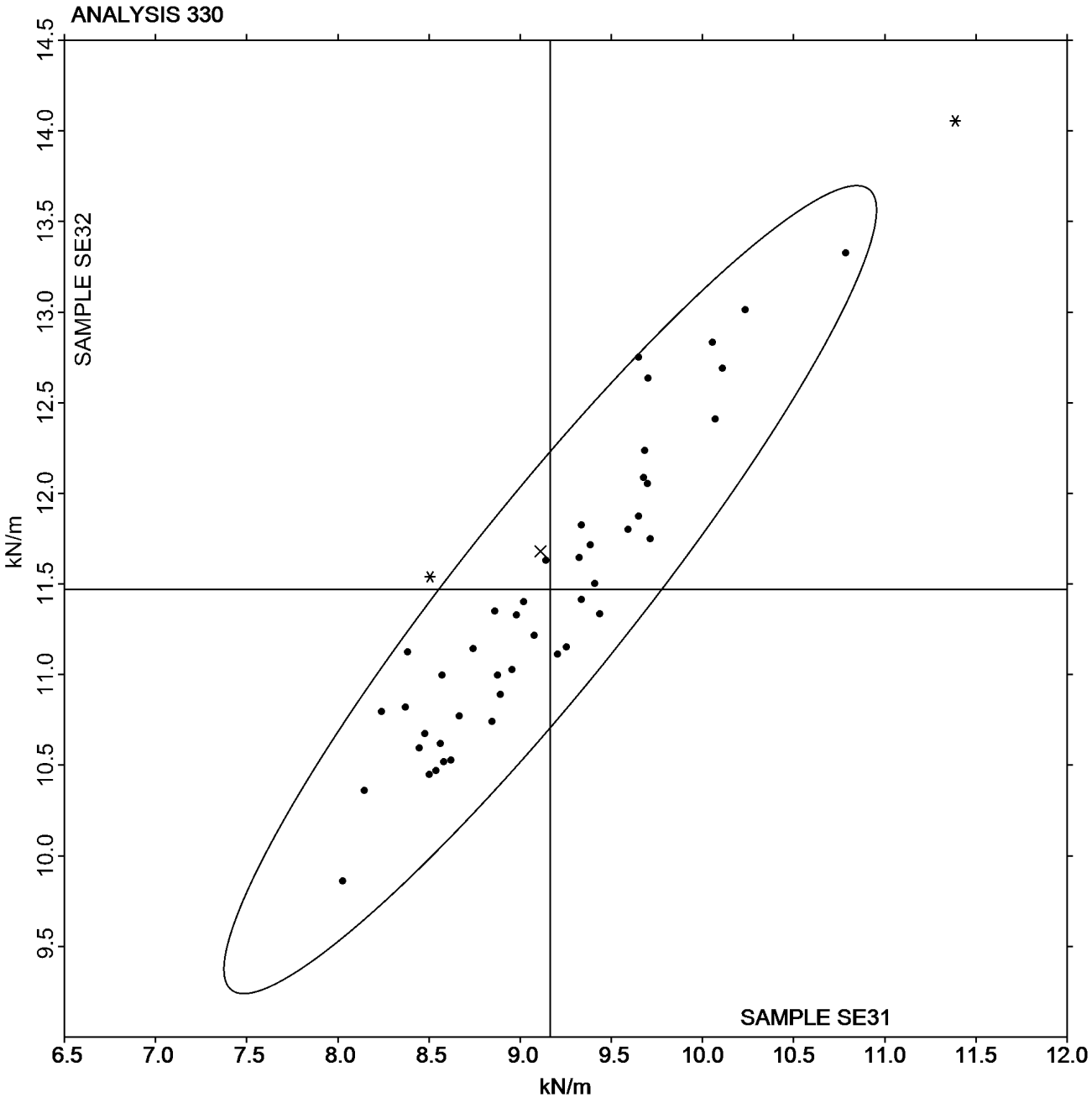
XGWXF2 (X) - Extreme data.

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
SA	Shimadzu Autograph AG 2000 A	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
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab

Grand Mean Sample **SE31** = 9.1648 kN/m

Grand Mean Sample **SE32** = 11.469 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE31 Lab Mean	Sample SE31 Diff from Grand Mean	Sample SE31 CPV	Sample SE32 Lab Mean	Sample SE32 Diff from Grand Mean	Sample SE32 CPV	Instr Code
236BYY		106.6	-4.8	-0.38	181.2	-2.5	-0.12	TH
27HBVQ		115.8	4.4	0.35	198.5	14.8	0.71	TH
2UQNPV		134.1	22.7	1.81	212.9	29.2	1.40	XX
2VRTR7		108.9	-2.5	-0.20	161.7	-22.0	-1.06	IM
3E3VBW		112.3	0.9	0.07	198.9	15.2	0.73	TO
64AJPU		102.4	-9.0	-0.72	167.7	-16.0	-0.77	SA
6PNP4V		111.9	0.5	0.04	194.2	10.5	0.51	TO
6QYNZP		125.9	14.5	1.16	221.1	37.4	1.79	XX
8QE23Z		112.8	1.4	0.12	189.2	5.5	0.26	TK
96EDXQ		115.1	3.7	0.29	180.2	-3.5	-0.17	XX
9MNK3J		124.2	12.8	1.02	184.2	0.5	0.02	TA
9R6LAW	X	96.2	-15.2	-1.21	170.8	-12.9	-0.62	LE
AET6QK		121.7	10.3	0.82	218.0	34.3	1.65	TB
AHRFLK	*	96.0	-15.4	-1.23	191.5	7.8	0.38	XX
BJ492R		97.7	-13.6	-1.09	159.8	-23.9	-1.15	LH
CH8TPV		102.3	-9.1	-0.72	169.2	-14.5	-0.69	XX
CQFKUJ		131.9	20.5	1.63	197.7	14.0	0.67	TO
DD6ZKH		121.2	9.8	0.78	194.3	10.6	0.51	LA
FBWZNM		118.0	6.6	0.53	175.6	-8.1	-0.39	LA
FFRRWJ		115.8	4.5	0.35	186.6	2.9	0.14	IF
FKH27H		102.8	-8.6	-0.68	148.2	-35.5	-1.71	IN
FTTWYH		114.7	3.3	0.26	192.2	8.5	0.41	TR
GF7D7L		103.6	-7.8	-0.62	169.1	-14.6	-0.70	LE
HPRYNP		101.3	-10.1	-0.81	162.9	-20.8	-1.00	LE
KLHVRJ		97.6	-13.8	-1.10	165.6	-18.1	-0.87	LW
KYQEPD		112.1	0.7	0.06	199.2	15.5	0.74	LH
MGUNV8		106.4	-5.0	-0.40	190.0	6.3	0.30	TO
MRC9F4		95.6	-15.8	-1.26	141.3	-42.4	-2.03	IN
NDQF43		96.1	-15.2	-1.21	146.4	-37.3	-1.79	ID
NX3AJB	X	196.1	84.7	6.75	291.0	107.3	5.15	LE
NYYPV8		102.8	-8.6	-0.68	173.6	-10.1	-0.48	LH
V32WQV		102.1	-9.3	-0.74	177.0	-6.7	-0.32	IM
V4WFRW		123.7	12.3	0.98	205.6	21.9	1.05	TH
W2VWZ4		95.6	-15.8	-1.26	171.8	-11.9	-0.57	LW
W9TXU3		130.6	19.2	1.53	214.0	30.3	1.45	IK
X7K6D9		110.4	-1.0	-0.08	182.5	-1.2	-0.06	LA
XD49KB	X	65.9	-45.5	-3.63	100.4	-83.3	-4.00	TP
XGWXF2	X	7.7	-103.7	-8.26	11.7	-172.0	-8.25	XX
XU6GEW		103.5	-7.9	-0.63	183.7	0.0	0.00	TP
XWTJAW	*	149.8	38.5	3.06	234.3	50.6	2.43	ID

Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE31 Lab Mean	Sample SE31 Diff from Grand Mean	Sample SE31 CPV	Sample SE32 Lab Mean	Sample SE32 Diff from Grand Mean	Sample SE32 CPV	Instr Code
YRJG8Z		95.1	-16.3	-1.30	166.5	-17.2	-0.83	IM
Z63VC8		107.0	-4.4	-0.35	170.7	-13.0	-0.62	LH
Z7N62R		118.8	7.5	0.59	187.4	3.7	0.18	LA

Summary Statistics

	Sample SE31	Sample SE32
Grand Means	111.39 Joules/sq m	183.70 Joules/sq m
SD Btwn Labs	12.55 Joules/sq m	20.84 Joules/sq m

Statistics based on 39 of 43 reporting participants

Comments on Assigned Data Flags for Test #331

XD49KB (X) - Data for both samples are low.

9R6LAW (X) - Data appears to be transposed between Analysis #331 and Analysis #330. Data switched by CTS.

NX3AJB (X) - Extreme data.

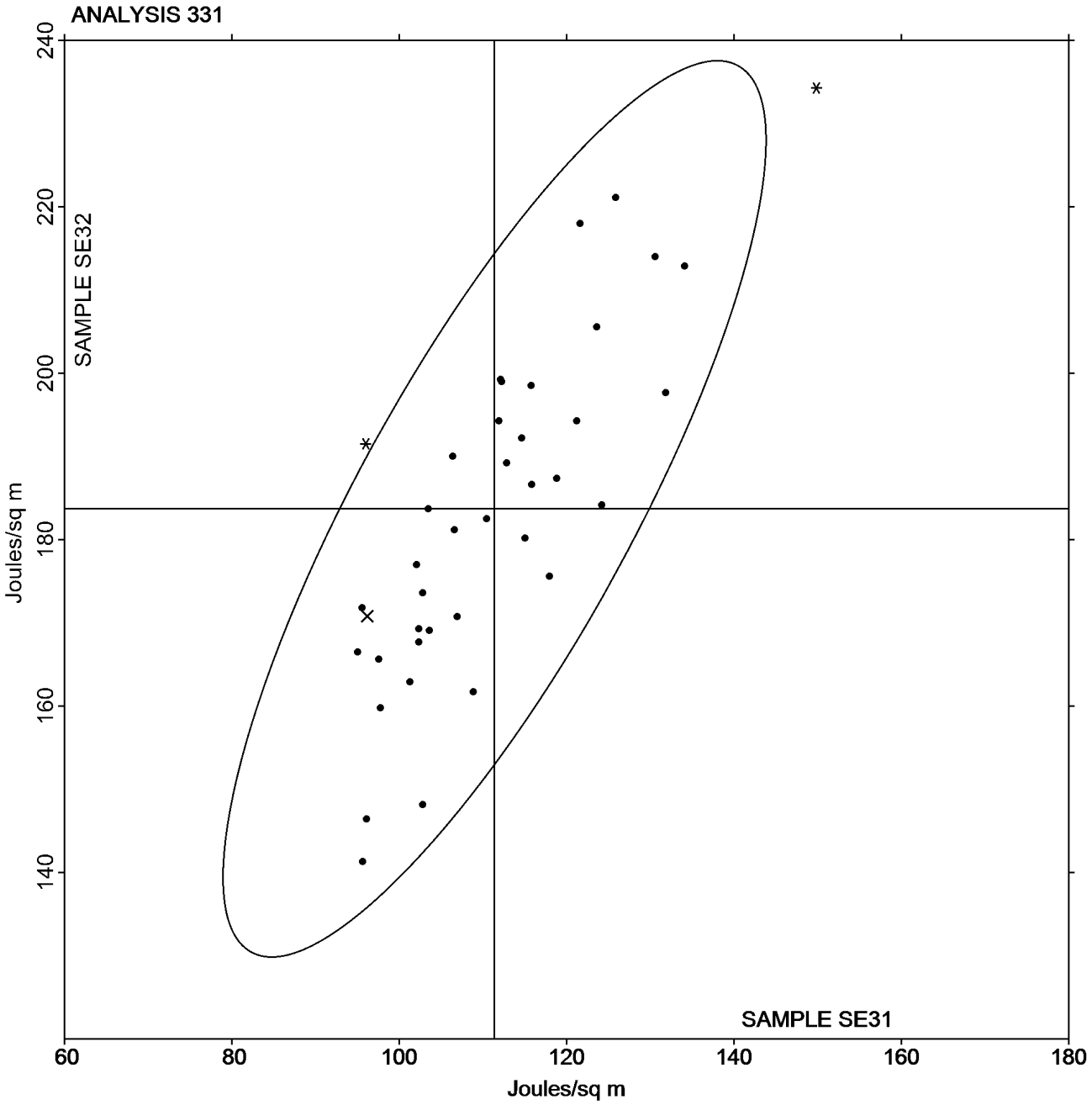
XGWXF2 (X) - Extreme data.

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
LW	L & W Tensile Tester SE062	SA	Shimadzu Autograph AG 2000 A
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 **SE31** = 111.39 Joules/sq m

Grand Mean Sample **SE32** = 183.70 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE31 Lab Mean	Sample SE31 Diff from Grand Mean	Sample SE31 CPV	Sample SE32 Lab Mean	Sample SE32 Diff from Grand Mean	Sample SE32 CPV	Instr Code
236BYY		2.217	0.330	1.59	2.791	0.369	1.58	TH
27HBVQ		1.778	-0.109	-0.53	2.322	-0.100	-0.43	TH
2UQNPV		2.181	0.293	1.41	2.772	0.350	1.50	XX
2VRTR7		1.806	-0.081	-0.39	2.195	-0.227	-0.97	IM
3E3VBW		1.744	-0.143	-0.69	2.414	-0.008	-0.03	TO
64AJPU		1.828	-0.059	-0.29	2.481	0.059	0.25	SA
6PNP4V		2.100	0.213	1.02	2.730	0.308	1.32	TO
6QYNZP		2.059	0.172	0.83	2.837	0.415	1.78	XX
8QE23Z		2.039	0.152	0.73	2.684	0.262	1.12	TK
8U8QYQ		1.870	-0.017	-0.08	2.322	-0.100	-0.43	ID
96EDXQ		2.058	0.171	0.82	2.591	0.169	0.72	XX
9MNK3J		2.074	0.187	0.90	2.487	0.065	0.28	TA
9R6LAW		1.613	-0.274	-1.32	2.194	-0.228	-0.98	LE
AET6QK		2.041	0.154	0.74	2.801	0.379	1.62	TB
AHRFLK	*	1.370	-0.517	-2.49	2.120	-0.302	-1.29	XX
BJ492R		1.614	-0.273	-1.32	2.150	-0.272	-1.16	LH
CH8TPV		1.797	-0.090	-0.43	2.338	-0.084	-0.36	XX
CQFKUJ		2.137	0.250	1.20	2.618	0.196	0.84	TO
DD6ZKH		1.763	-0.124	-0.60	2.239	-0.183	-0.78	LA
FBWZNM		1.738	-0.149	-0.72	2.123	-0.299	-1.28	LA
FFRRWJ		2.007	0.120	0.58	2.534	0.112	0.48	IF
FKH27H		1.688	-0.199	-0.96	1.999	-0.422	-1.81	IN
FTTWYH		1.857	-0.030	-0.15	2.453	0.031	0.13	XX
FZVDWQ		1.816	-0.071	-0.34	2.308	-0.114	-0.49	TB
GF7D7L	X	3.301	1.414	6.80	4.225	1.803	7.72	LE
HPRYNP		1.787	-0.100	-0.48	2.310	-0.112	-0.48	LE
KLHVRJ		1.663	-0.224	-1.08	2.249	-0.173	-0.74	LW
KYQEPD		1.749	-0.138	-0.67	2.356	-0.066	-0.28	LH
MGUNV8		1.934	0.047	0.22	2.629	0.207	0.89	TO
MRC9F4		1.990	0.103	0.49	2.320	-0.102	-0.44	IN
NDQF43		1.870	-0.017	-0.08	2.330	-0.092	-0.39	ID
NX3AJB		1.951	0.064	0.31	2.386	-0.036	-0.15	LE
NYYPV8		1.715	-0.172	-0.83	2.269	-0.153	-0.65	LH
V32WQV		1.949	0.062	0.30	2.516	0.094	0.40	IM
V4WFRW		1.977	0.090	0.43	2.575	0.153	0.66	TH
W2VWZ4		1.586	-0.301	-1.45	2.218	-0.204	-0.87	LW
W9TXU3	X	2.696	0.809	3.89	3.421	0.999	4.28	IK
X7K6D9		1.800	-0.087	-0.42	2.330	-0.092	-0.39	XX
XD49KB		2.128	0.241	1.16	2.385	-0.037	-0.16	TP
XGWXF2	*	2.397	0.510	2.45	2.725	0.303	1.30	XX

Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE31 Lab Mean	Sample SE31 Diff from Grand Mean	Sample SE31 CPV	Sample SE32 Lab Mean	Sample SE32 Diff from Grand Mean	Sample SE32 CPV	Instr Code
XU6GEW		2.190	0.303	1.46	2.860	0.438	1.87	TP
XWTJAW	X	3.112	1.224	5.89	3.419	0.997	4.27	ID
YRJG8Z		2.018	0.131	0.63	2.577	0.155	0.66	IM
Z63VC8		1.780	-0.107	-0.52	2.260	-0.162	-0.69	LH
Z7N62R		1.590	-0.297	-1.43	1.921	-0.501	-2.14	LA

Summary Statistics

	Sample SE31	Sample SE32
Grand Means	1.8874 Percent	2.4219 Percent
SD Btwn Labs	0.2079 Percent	0.2337 Percent

Statistics based on 42 of 45 reporting participants

Comments on Assigned Data Flags for Test #332

GF7D7L (X) - Extreme data.

W9TXU3 (X) - Data for both samples are high. Possible Systematic Error.

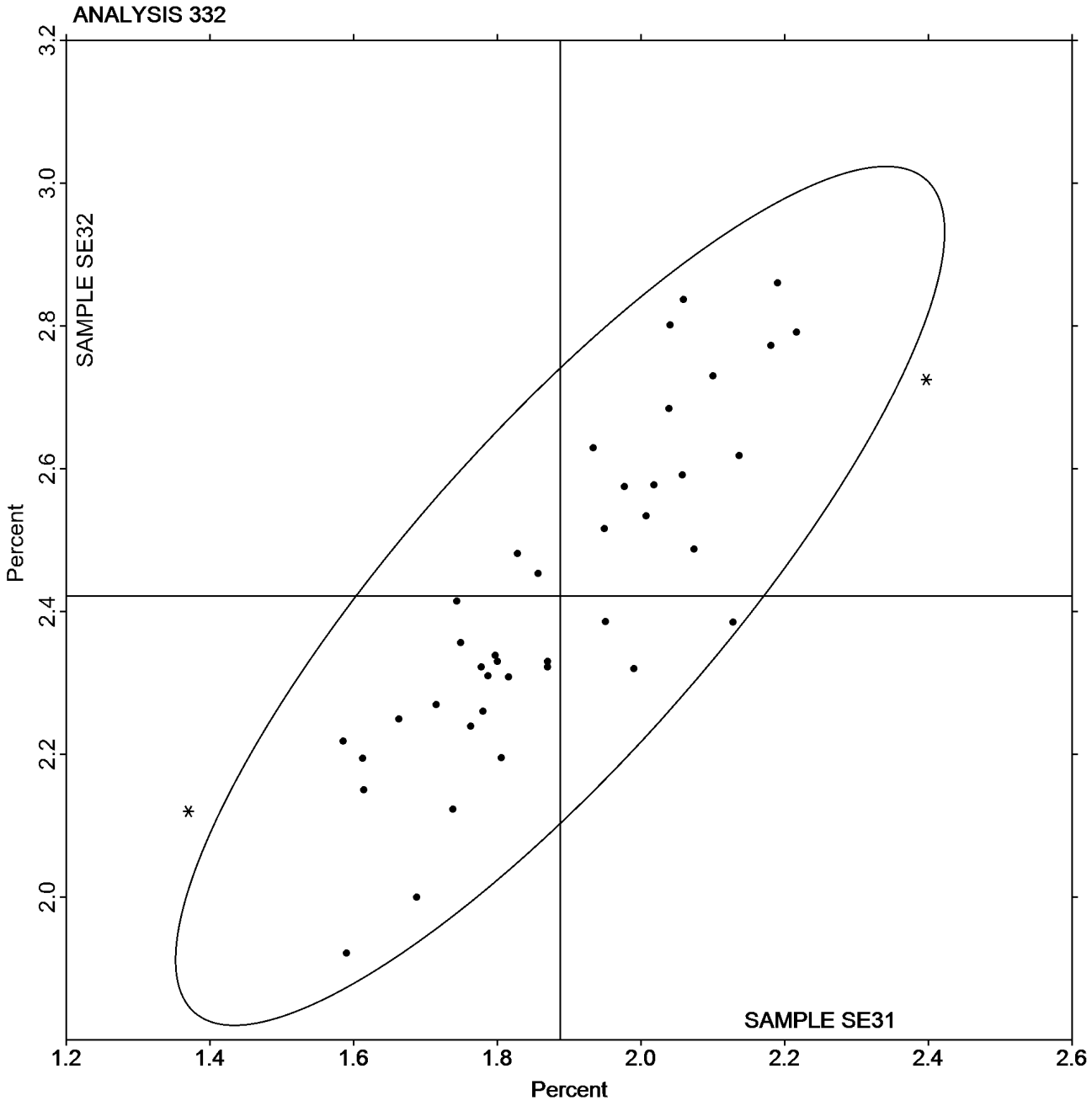
XWTJAW (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of bot samples.

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	SA	Shimadzu Autograph AG 2000 A
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)
XX	Instrument make/model not specified by lab		

Grand Mean Sample **SE31** = 1.8874 Percent

Grand Mean Sample **SE32** = 2.4219 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 334

Folding Endurance (MIT) - Double Folds

TAPPI Official Test Method T511

WebCode	Data Flag	Sample SG31 Lab Mean	Sample SG31 Diff from Grand Mean	Sample SG31 CPV	Sample SG32 Lab Mean	Sample SG32 Diff from Grand Mean	Sample SG32 CPV	Instr Code
236BYY		56.30	-33.09	-1.31	141.2	-53.4	-0.92	XX
4R27A3		107.10	17.71	0.70	247.7	53.1	0.92	MT
8Q9F4Q		66.90	-22.49	-0.89	106.2	-88.4	-1.53	MT
96EDXQ		112.80	23.41	0.93	259.9	65.3	1.13	MT
AJUKNV		95.30	5.91	0.23	234.9	40.3	0.70	MT
AR492U	*	101.40	12.01	0.48	81.3	-113.3	-1.96	XX
EPJNHU		125.30	35.91	1.42	209.3	14.7	0.25	MT
FZVDWQ		51.70	-37.69	-1.49	135.4	-59.2	-1.02	MT
JV396A		85.30	-4.09	-0.16	182.5	-12.1	-0.21	MT
KLHVRJ		58.10	-31.29	-1.24	143.1	-51.5	-0.89	MT
MCLFFJ		117.60	28.21	1.12	253.4	58.8	1.01	MT
PYTUP8		88.40	-0.99	-0.04	262.8	68.2	1.18	MT
RVVUC8		77.80	-11.59	-0.46	216.4	21.8	0.38	MT
TAKMN9		76.50	-12.89	-0.51	208.6	14.0	0.24	MT
YEUUQ8		133.50	44.11	1.75	246.5	51.9	0.90	MT
ZTT6KX		76.30	-13.09	-0.52	185.1	-9.5	-0.16	XX

Summary Statistics

	Sample SG31	Sample SG32
Grand Means	89.394 Double Folds	194.64 Double Folds
SD Btwn Labs	25.248 Double Folds	57.90 Double Folds

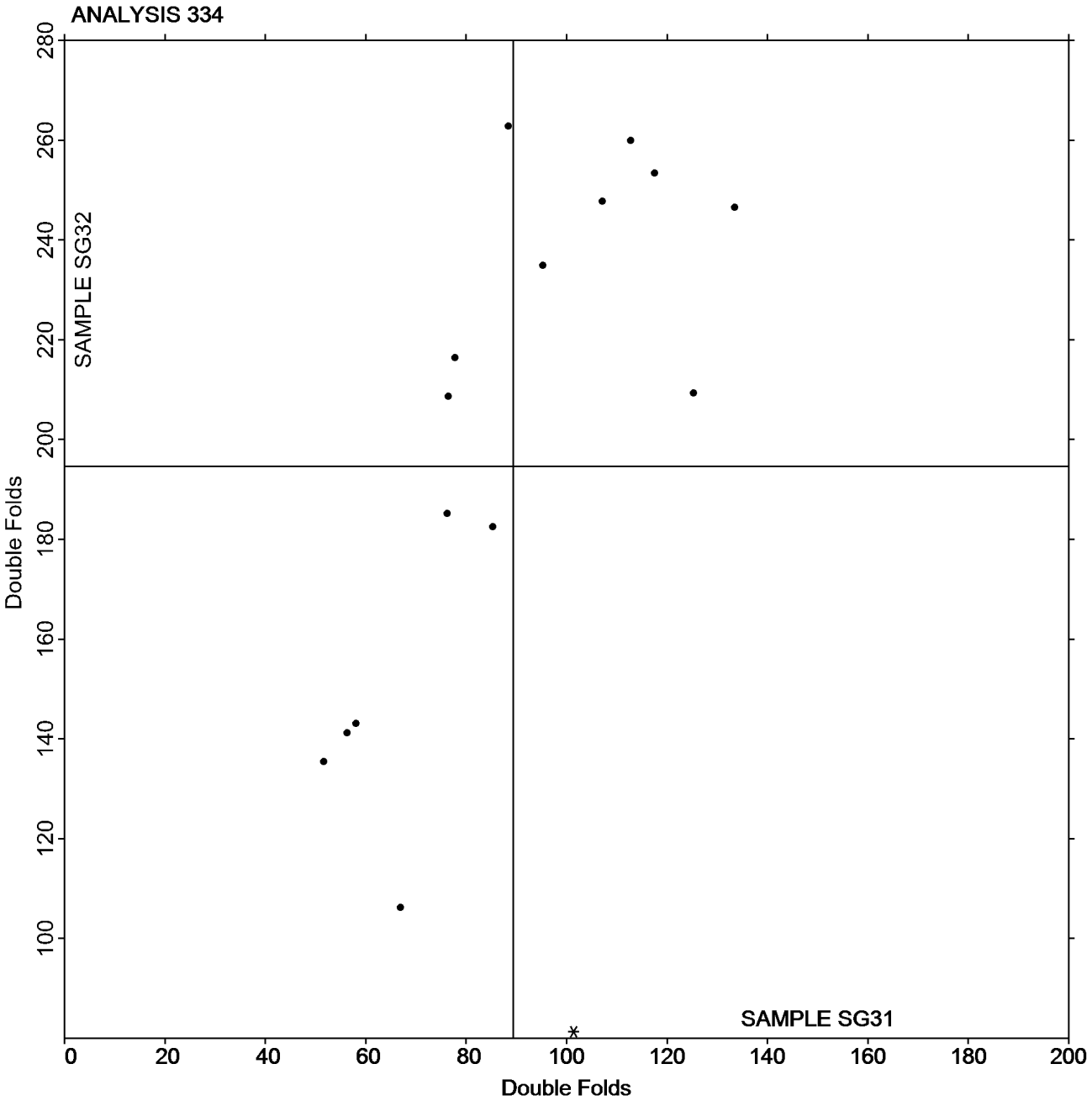
Statistics based on 16 of 16 reporting participants

Key to Instrument Codes Reported by Participants

MT	MIT - Tinius Olsen	XX	Instrument make/model not specified by lab

Grand Mean Sample **SG31** = 89.394 Double Folds

Grand Mean Sample **SG32** = 194.64 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 SH31 Lab Mean	Sample SH31 Diff from Grand Mean	Sample SH31 CPV	Sample SH32 Lab Mean	Sample SH32 Diff from Grand Mean	Sample SH32 CPV
2PNYJW		119.2	-7.2	-0.64	272.2	-18.0	-0.83
384H63		120.8	-5.7	-0.51	281.2	-9.0	-0.41
44TNDM		125.4	-1.0	-0.09	255.5	-34.7	-1.60
4R27A3		123.7	-2.8	-0.25	291.3	1.1	0.05
6ZKR8P		113.9	-12.6	-1.12	270.2	-20.0	-0.92
96EDXQ		135.6	9.2	0.82	327.2	37.0	1.70
9AHR9L		140.5	14.0	1.25	307.1	16.9	0.78
BF4X7R		137.3	10.9	0.97	320.8	30.6	1.41
EJRGZL		119.5	-6.9	-0.61	309.8	19.6	0.90
FFRRWJ		135.7	9.2	0.82	320.3	30.1	1.38
FTZBUE		141.3	14.9	1.33	308.5	18.3	0.84
FZVDWQ		118.1	-8.3	-0.74	274.1	-16.1	-0.74
GYJX3P		105.0	-21.4	-1.91	252.4	-37.8	-1.74
HPNGQQ		138.6	12.1	1.08	308.1	17.9	0.83
JHP6GE		126.8	0.3	0.03	298.0	7.8	0.36
MCLFFJ		119.9	-6.6	-0.58	289.8	-0.4	-0.02
Q4UYR4		115.1	-11.3	-1.01	278.3	-11.9	-0.55
QYABHE		118.9	-7.5	-0.67	268.1	-22.1	-1.02
VDXXZ3		125.1	-1.3	-0.12	286.9	-3.3	-0.15
Z7XDE9	X	185.5	59.1	5.26	324.0	33.8	1.56
ZTT6KX	*	148.5	22.0	1.96	284.0	-6.2	-0.28

Summary Statistics

	Sample SH31	Sample SH32
Grand Means	126.44 Gurley Units	290.20 Gurley Units
SD Btwn Labs	11.23 Gurley Units	21.73 Gurley Units

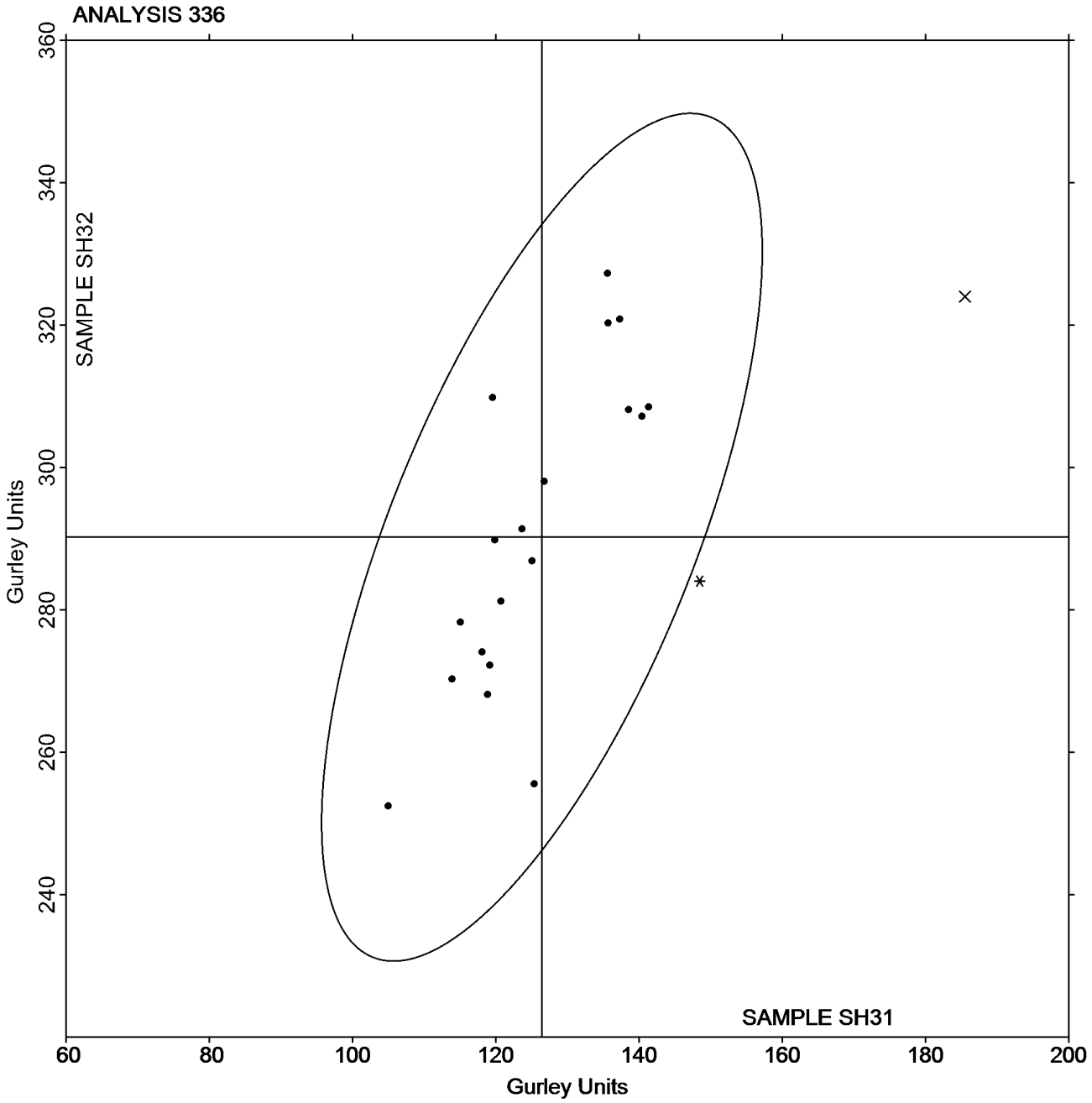
Statistics based on 20 of 21 reporting participants

Comments on Assigned Data Flags for Test #336

Z7XDE9 (X) - Data for Sample SH31 are high. Inconsistent within the determinations for Sample SH31.

Grand Mean Sample **SH31** = 126.44 Gurley Units

Grand Mean Sample **SH32** = 290.20 Gurley Units



Paper & Paperboard Interlaboratory Testing Program

Analysis 338

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

WebCode	Data Flag	Sample SJ31 Lab Mean	Sample SJ31 Diff from Grand Mean	Sample SJ31 CPV	Sample SJ32 Lab Mean	Sample SJ32 Diff from Grand Mean	Sample SJ32 CPV
4R27A3		1.998	0.115	0.29	4.500	0.758	0.65
8HE8KK		1.778	-0.105	-0.26	3.816	0.074	0.06
AJUKNV		2.164	0.281	0.70	4.415	0.673	0.58
AR492U		1.877	-0.006	-0.01	1.961	-1.781	-1.53
DMR23D		1.970	0.087	0.22	4.245	0.503	0.43
FFRRWJ		1.812	-0.071	-0.18	4.049	0.307	0.26
FKH27H		2.520	0.637	1.60	5.310	1.568	1.35
GYJX3P		1.736	-0.147	-0.37	3.758	0.015	0.01
H6U8JA		1.287	-0.596	-1.49	1.256	-2.486	-2.14
HPNGQQ		2.165	0.282	0.71	4.037	0.295	0.25
J7AGWF		2.151	0.268	0.67	4.549	0.807	0.69
RKN9L9		1.846	-0.037	-0.09	3.813	0.071	0.06
W2VWZ4		1.560	-0.323	-0.81	3.390	-0.352	-0.30
YXNP3V		0.980	-0.903	-2.26	1.970	-1.772	-1.52
ZTT6KX		2.395	0.512	1.28	5.065	1.323	1.14

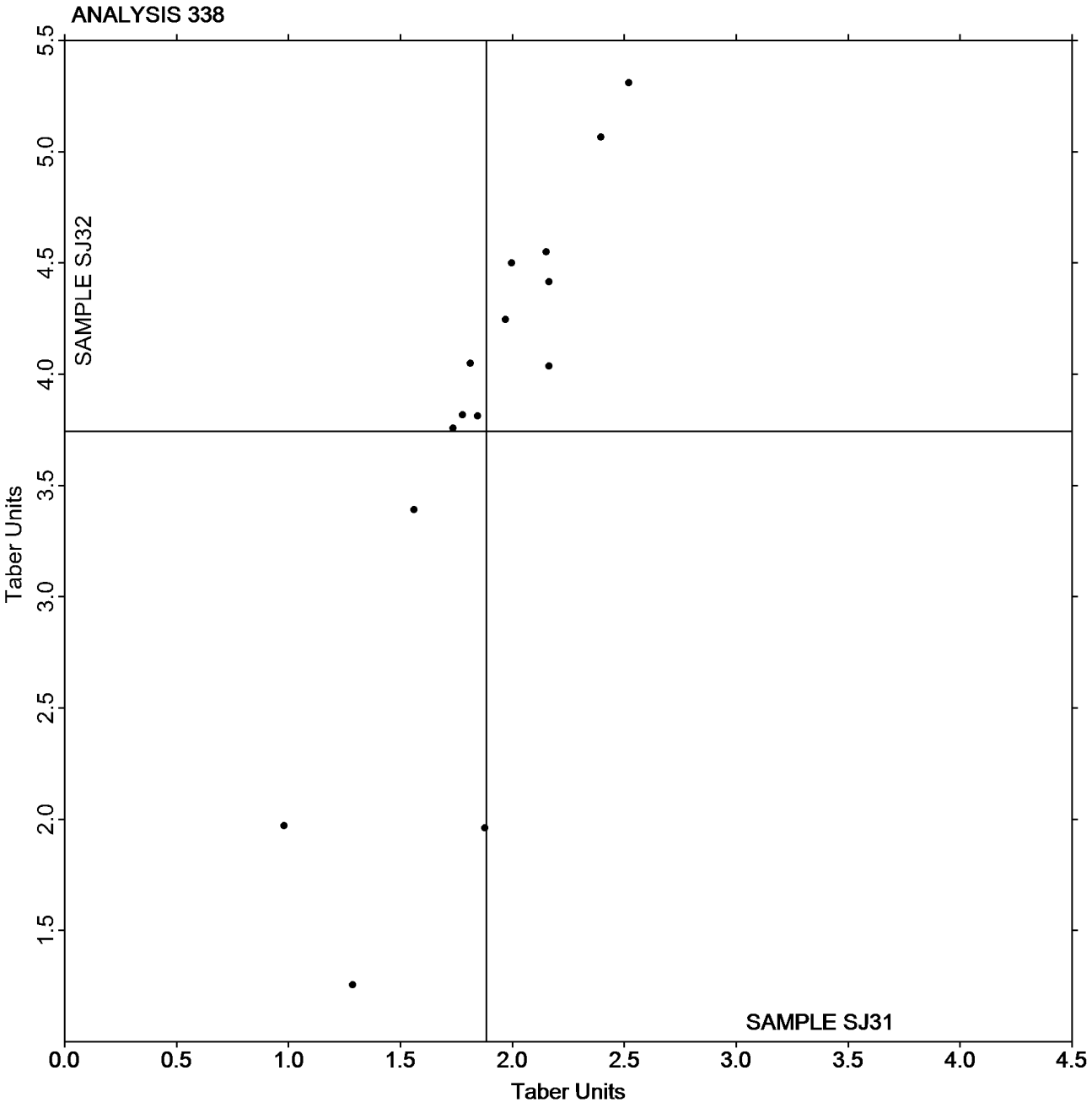
Summary Statistics

	Sample SJ31	Sample SJ32
Grand Means	1.8826 Taber Units	3.7422 Taber Units
SD Btwn Labs	0.3994 Taber Units	1.1634 Taber Units

Statistics based on 15 of 15 reporting participants

Grand Mean Sample **SJ31** = 1.8826 Taber Units

Grand Mean Sample **SJ32** = 3.7422 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 SQ31 Lab Mean	Sample SQ31 Diff from Grand Mean	Sample SQ31 CPV	Sample SQ32 Lab Mean	Sample SQ32 Diff from Grand Mean	Sample SQ32 CPV
4R27A3		70.39	6.08	1.15	35.86	0.70	0.19
64DTXU		56.81	-7.50	-1.42	29.58	-5.58	-1.53
AET6QK		60.17	-4.14	-0.79	30.50	-4.66	-1.28
EJRGZL		64.74	0.43	0.08	34.84	-0.33	-0.09
FA2HML		66.34	2.03	0.38	42.50	7.34	2.01
FBWZNM		69.10	4.79	0.91	40.16	5.00	1.37
KLHVRJ		69.54	5.23	0.99	35.61	0.45	0.12
LWE2KG		65.80	1.49	0.28	34.35	-0.81	-0.22
NX3AJB		66.70	2.39	0.45	37.20	2.04	0.56
V6ZEDD		67.40	3.09	0.58	34.90	-0.26	-0.07
W2VWZ4		61.15	-3.16	-0.60	32.40	-2.76	-0.76
X2TXUZ		53.63	-10.68	-2.02	34.06	-1.10	-0.30

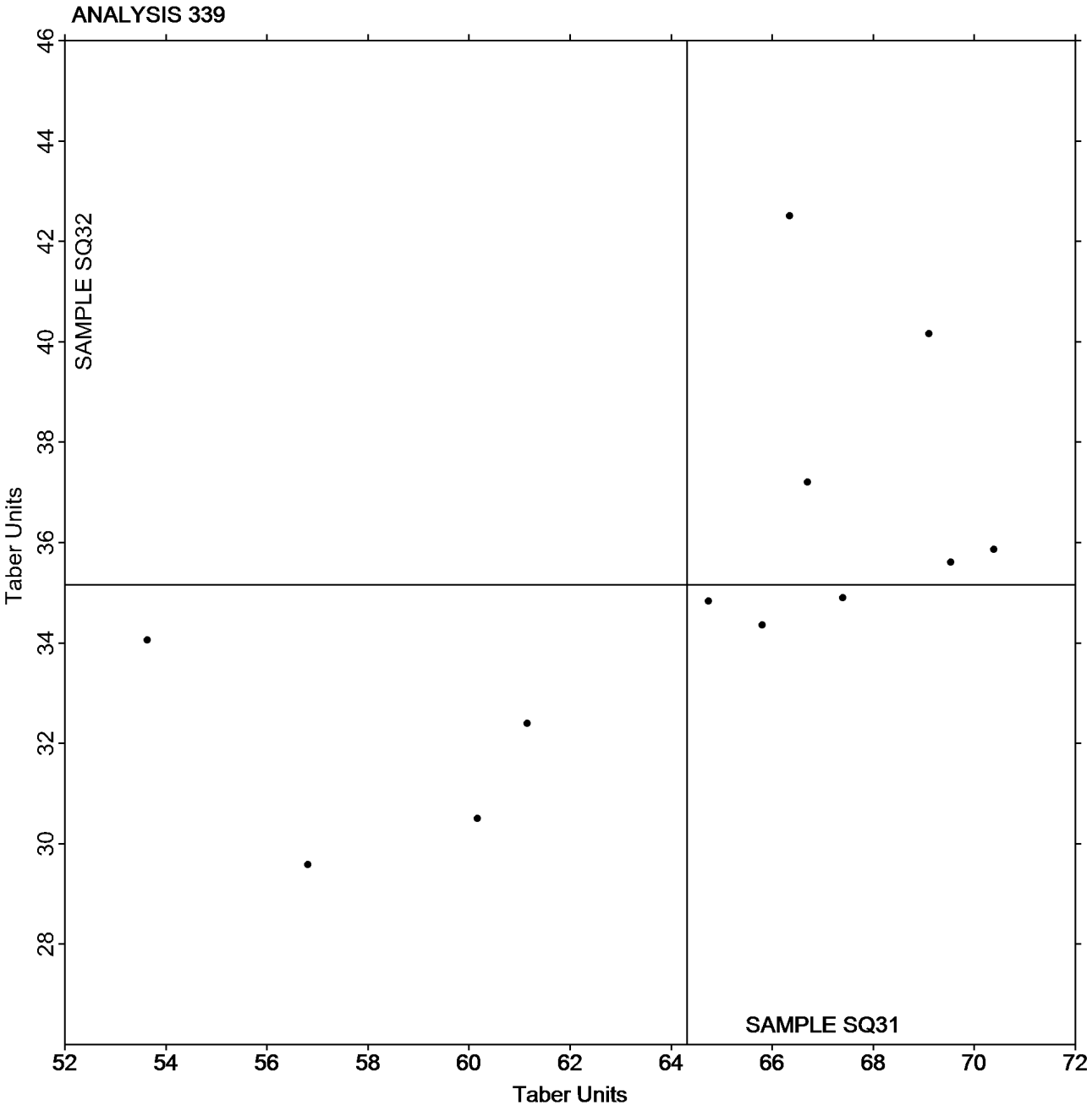
Summary Statistics

	Sample SQ31	Sample SQ32
Grand Means	64.314 Taber Units	35.163 Taber Units
SD Btwn Labs	5.279 Taber Units	3.647 Taber Units

Statistics based on 12 of 12 reporting participants

Grand Mean Sample **SQ31** = 64.314 Taber Units

Grand Mean Sample **SQ32** = 35.163 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 ST31 Lab Mean	Sample ST31 Diff from Grand Mean	Sample ST31 CPV	Sample ST32 Lab Mean	Sample ST32 Diff from Grand Mean	Sample ST32 CPV
236BYY		294.5	10.3	0.80	247.9	6.4	0.73
64AJPU		268.5	-15.7	-1.22	234.5	-7.1	-0.81
96EDXQ		275.6	-8.6	-0.67	231.4	-10.2	-1.17
EJRGZL		284.6	0.3	0.03	235.4	-6.1	-0.70
ENQXCF		287.4	3.1	0.24	241.0	-0.5	-0.06
HB8JLP	X	114.5	-169.7	-13.22	90.8	-150.7	-17.28
KLHVRJ		272.5	-11.7	-0.92	242.6	1.0	0.12
LTAY9D		304.5	20.3	1.58	254.3	12.8	1.46
UAQXT3		293.3	9.1	0.71	245.9	4.4	0.50
UF2H43		274.4	-9.8	-0.77	245.7	4.2	0.48
W2VWZ4		281.3	-3.0	-0.23	223.3	-18.3	-2.10
WDH2BZ		279.3	-4.9	-0.39	236.7	-4.8	-0.55
WKZAYW		308.5	24.3	1.89	254.2	12.7	1.45
WV8HQ3		264.9	-19.3	-1.51	246.3	4.8	0.55
X29UMZ		295.3	11.1	0.86	248.7	7.2	0.82
XU6GEW		279.2	-5.1	-0.39	235.1	-6.4	-0.73

Summary Statistics

	Sample ST31	Sample ST32
Grand Means	284.25 Taber Units	241.53 Taber Units
SD Btwn Labs	12.84 Taber Units	8.72 Taber Units

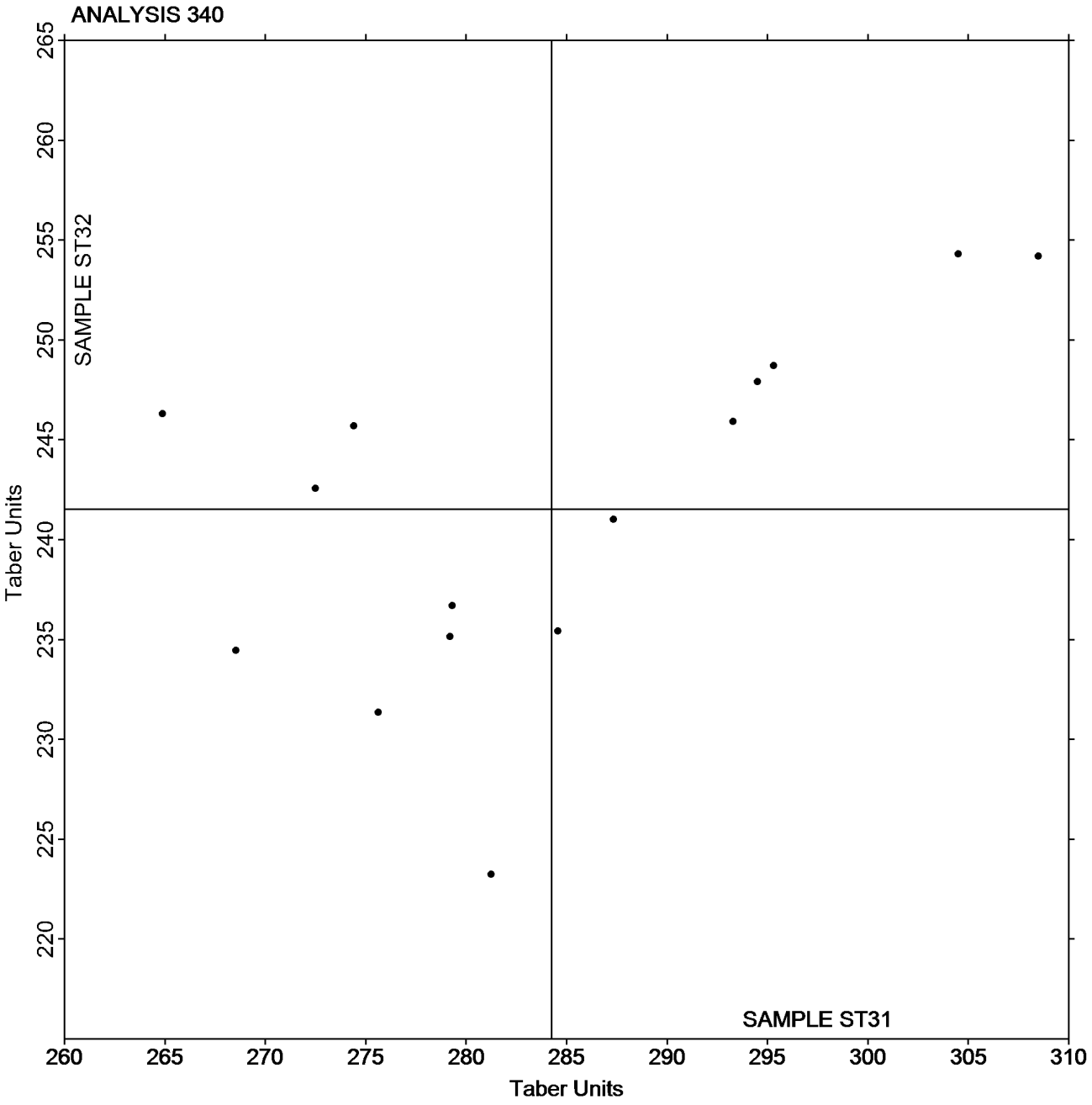
Statistics based on 15 of 16 reporting participants

Comments on Assigned Data Flags for Test #340

HB8JLP (X) - Extreme data.

Grand Mean Sample **ST31** = 284.25 Taber Units

Grand Mean Sample **ST32** = 241.53 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 SM31 Lab Mean	Sample SM31 Diff from Grand Mean	Sample SM31 CPV	Sample SM32 Lab Mean	Sample SM32 Diff from Grand Mean	Sample SM32 CPV	Instr Code
236BYY		90.04	-4.35	-0.41	61.54	-5.18	-0.81	LW
2UQNPV		89.80	-4.59	-0.43	56.62	-10.10	-1.58	DT
4R27A3		83.72	-10.67	-1.01	64.03	-2.69	-0.42	TZ
6PNP4V		90.20	-4.19	-0.39	63.80	-2.92	-0.46	TA
7NUPQP		87.14	-7.25	-0.68	59.18	-7.54	-1.18	LW
8E4QDP		83.24	-11.15	-1.05	66.02	-0.70	-0.11	XX
AET6QK		100.32	5.94	0.56	79.22	12.50	1.96	TA
AJUKNV		99.58	5.19	0.49	63.56	-3.16	-0.49	CD
CQK4HM		108.64	14.25	1.34	70.40	3.68	0.58	TA
FA2HML		89.31	-5.08	-0.48	66.35	-0.37	-0.06	TZ
FBWXYH		100.00	5.61	0.53	63.80	-2.92	-0.46	XX
FFRRWJ		101.90	7.51	0.71	78.24	11.53	1.80	TL
G7VCKK		103.60	9.21	0.87	68.20	1.48	0.23	LW
HB8JLP		119.00	24.61	2.32	78.08	11.36	1.78	CA
KLHVRJ		96.76	2.37	0.22	66.14	-0.58	-0.09	LW
NX3AJB		96.98	2.59	0.24	69.82	3.10	0.49	TA
PJCYAB		75.20	-19.19	-1.81	63.80	-2.92	-0.46	DT
XU6GEW		83.57	-10.82	-1.02	62.11	-4.61	-0.72	LX

Summary Statistics

	Sample SM31	Sample SM32
Grand Means	94.389 psi	66.717 psi
SD Btwn Labs	10.614 psi	6.391 psi

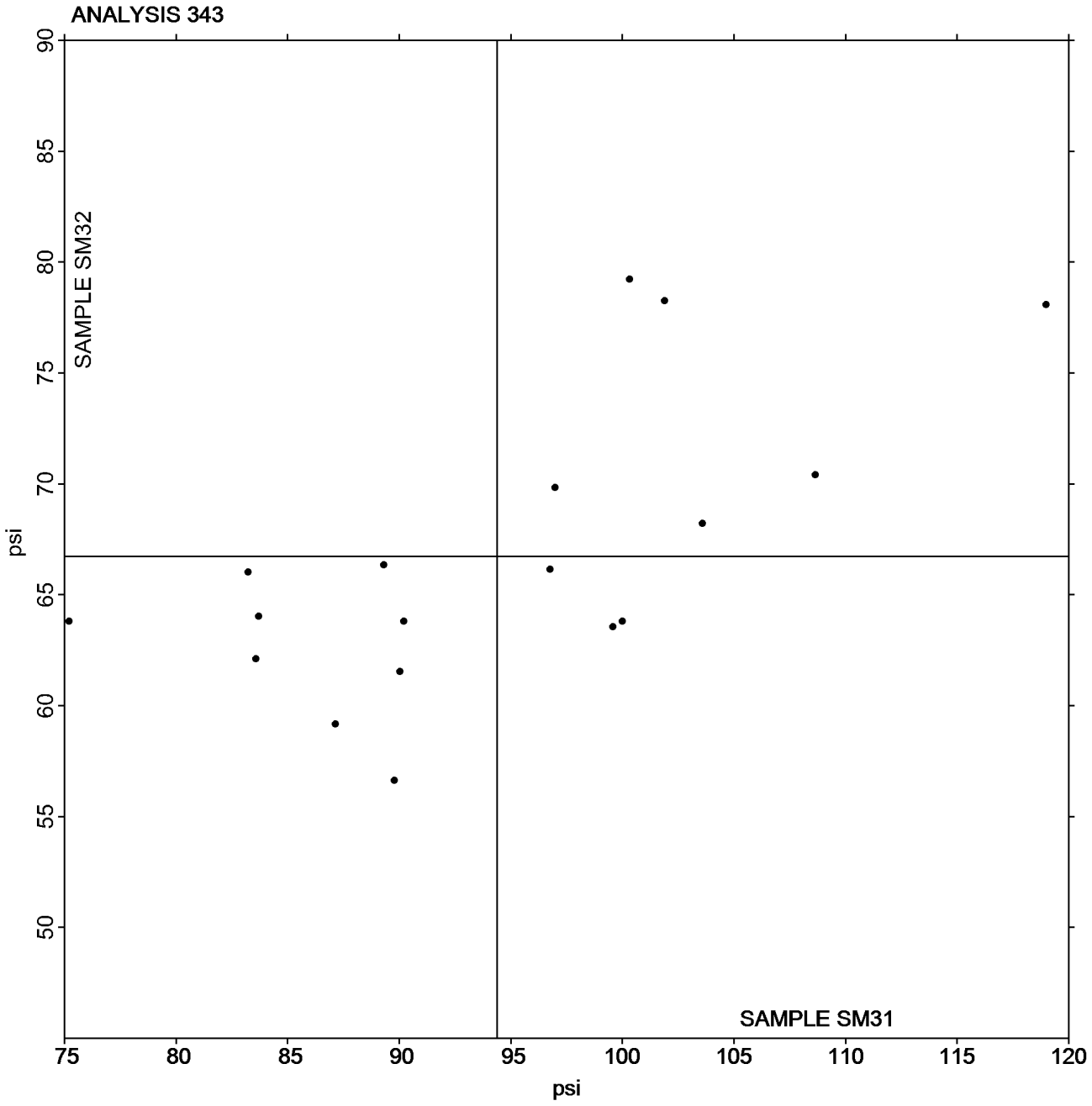
Statistics based on 18 of 18 reporting participants

Key to Instrument Codes Reported by Participants

CA	CSI CS-163	CD	CSI CS-163D
DT	Dek-Tron DCS-163A ZDT Tester	LW	L & W ZD Tensile Tester
LX	L & W (model not specified)	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 **SM31** = 94.389 psi

Grand Mean Sample **SM32** = 66.717 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

		Sample SZ31			Sample SZ32			
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	Instr Code
2FYXG2		34.82	-1.37	-0.42	40.16	-1.29	-0.33	DP
34AHEW		33.84	-2.35	-0.72	35.83	-5.62	-1.44	CH
86XJXP	*	39.80	3.61	1.11	37.00	-4.45	-1.14	CA
96EDXQ		32.04	-4.15	-1.28	40.24	-1.21	-0.31	CA
DD6ZKH		35.90	-0.29	-0.09	43.34	1.89	0.49	TA
EJRGZL		33.54	-2.65	-0.82	41.18	-0.27	-0.07	CA
EN3UHK		39.30	3.11	0.96	45.04	3.59	0.92	TL
ENQXCF		33.78	-2.41	-0.74	38.10	-3.35	-0.86	TL
UF2H43		37.80	1.61	0.50	45.00	3.55	0.91	CA
UJ2Q9C		34.78	-1.41	-0.43	40.88	-0.57	-0.15	LW
VXWK64		34.56	-1.63	-0.50	39.74	-1.71	-0.44	LW
W9TXU3		43.25	7.06	2.17	49.33	7.88	2.02	PG
WDH2BZ		32.02	-4.17	-1.29	36.48	-4.97	-1.27	TL
WKZAYW		38.60	2.41	0.74	46.56	5.11	1.31	CD
WV8HQ3		38.82	2.63	0.81	42.86	1.41	0.36	TL
ZTNNMY	X	132.60	96.41	29.72	88.80	47.35	12.14	LW

Summary Statistics

	Sample SZ31	Sample SZ32
Grand Means	36.190 psi	41.449 psi
SD Btwn Labs	3.244 psi	3.900 psi

Statistics based on 15 of 16 reporting participants

Comments on Assigned Data Flags for Test #345

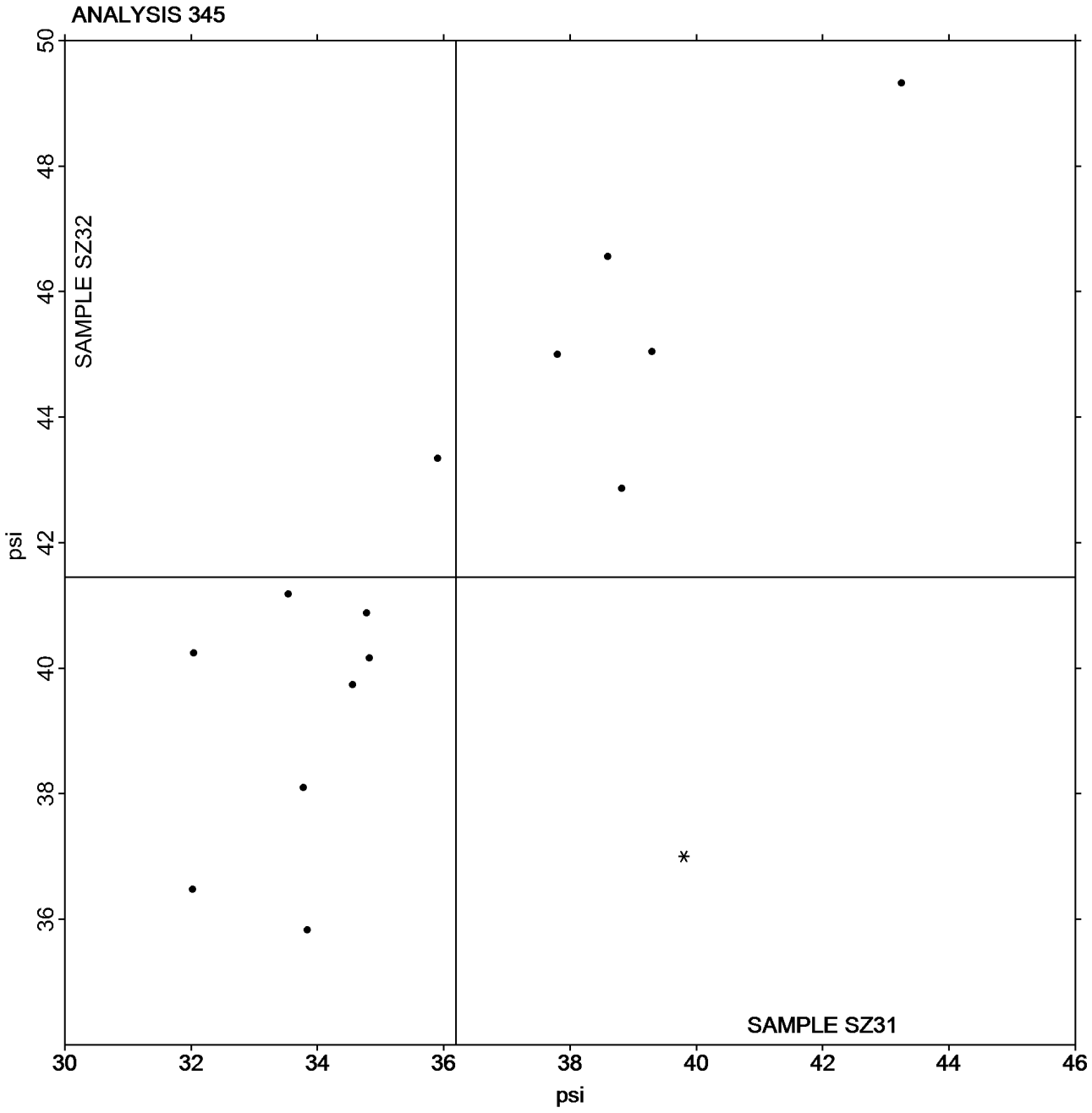
ZTNNMY (X) - Extreme data.

Key to Instrument Codes Reported by Participants

CA	CSI CS-163	CD	CSI CS-163D
CH	Chatillon Ametek	DP	Dek-Tron XP Series
LW	L & W ZD Tensile Tester	PG	Perkins Model A Mullen Tester
TA	Thwing-Albert Tensile Tester	TL	TMI Lab Master

Grand Mean Sample **SZ31** = 36.190 psi

Grand Mean Sample **SZ32** = 41.449 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 SN31 Lab Mean	Sample SN31 Diff from Grand Mean	Sample SN31 CPV	Sample SN32 Lab Mean	Sample SN32 Diff from Grand Mean	Sample SN32 CPV	Instr Code
236BYY	X	71.8	-82.5	-5.75	83.6	-18.0	-3.20	HZ
3DZ3KV		139.9	-14.4	-1.01	107.4	5.8	1.03	HY
3E3VBW		149.2	-5.1	-0.36	100.2	-1.4	-0.25	HY
4R27A3		163.8	9.5	0.66	99.4	-2.2	-0.39	HY
6LAHR3	*	189.0	34.7	2.41	94.2	-7.4	-1.31	XX
6ZKR8P		160.4	6.1	0.42	100.8	-0.8	-0.14	HY
96EDXQ		152.8	-1.5	-0.11	107.4	5.8	1.04	HZ
9AHR9L		166.8	12.5	0.87	102.8	1.2	0.21	HZ
AET6QK		169.5	15.1	1.06	101.0	-0.6	-0.10	HZ
AJUKNV		159.2	4.9	0.34	96.8	-4.8	-0.85	HY
CQFKUJ		141.4	-12.9	-0.90	102.2	0.6	0.11	HZ
CQK4HM		160.6	6.3	0.44	110.0	8.4	1.50	HY
EEVKQE		157.0	2.7	0.19	106.8	5.2	0.93	HY
FA2HML		130.5	-23.9	-1.66	94.4	-7.2	-1.28	HY
GYJX3P		142.6	-11.8	-0.82	98.6	-3.0	-0.54	HY
HPNGQQ		131.7	-22.6	-1.58	97.7	-3.9	-0.69	KR
KLHVRJ		151.5	-2.8	-0.19	103.6	2.1	0.37	HY
MCLFFJ		147.4	-6.9	-0.48	94.2	-7.4	-1.31	HY
NX3AJB		162.6	8.3	0.58	107.8	6.2	1.11	HY
Q4UYR4		141.6	-12.7	-0.89	94.0	-7.6	-1.35	HY
WDH2BZ		169.2	14.9	1.04	112.4	10.8	1.93	HZ

Summary Statistics

	Sample SN31	Sample SN32
Grand Means	154.33 1000th ft-lbs	101.58 1000th ft-lbs
SD Btwn Labs	14.36 1000th ft-lbs	5.62 1000th ft-lbs

Statistics based on 20 of 21 reporting participants

Comments on Assigned Data Flags for Test #348

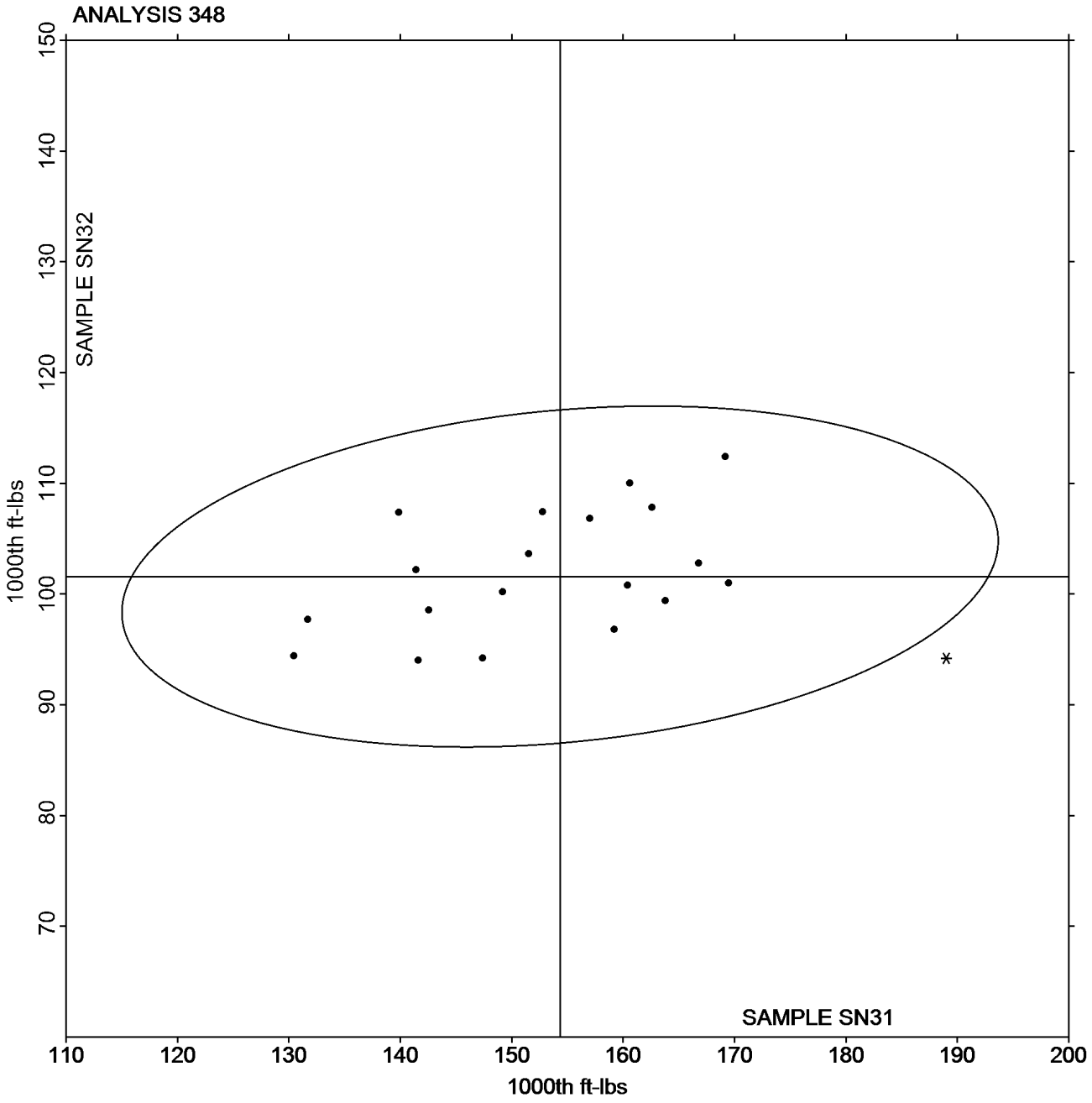
236BYY (X) - Data for both samples are low. Inconsistent in testing within the determinations for Sample SN32.

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	XX	Instrument make/model not specified by lab

Grand Mean Sample **SN31** = 154.33 1000th ft-lbs

Grand Mean Sample **SN32** = 101.58 1000th ft-lbs



Paper & Paperboard Interlaboratory Testing Program

Analysis 349

Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SP31 Lab Mean	Sample SP31 Diff from Grand Mean	Sample SP31 CPV	Sample SP32 Lab Mean	Sample SP32 Diff from Grand Mean	Sample SP32 CPV	Instr Code
2QQDUV	X	133.4	-9.3	-0.27	86.60	-11.84	-0.68	XX
2UQNPV	X	140.4	-2.3	-0.07	98.60	0.16	0.01	XX
34AHEW		138.4	-4.3	-0.13	95.20	-3.24	-0.19	TM
6VUHXQ		183.0	40.3	1.18	109.80	11.36	0.65	SC
CFY7PN		122.0	-20.7	-0.61	89.60	-8.84	-0.51	SC
DNMJ4E		154.0	11.3	0.33	100.80	2.36	0.13	SC
NYYPV8		122.8	-19.9	-0.58	93.78	-4.66	-0.27	TM
W2VWZ4		204.0	61.3	1.80	133.38	34.94	2.00	XX
W9TXU3		149.8	7.1	0.21	107.60	9.16	0.52	TM
WEFKP8		112.0	-30.7	-0.90	83.08	-15.36	-0.88	XX
XU6GEW		98.4	-44.3	-1.30	72.71	-25.73	-1.47	TM
ZTNNMY	X	39.2	-103.5	-3.03	41.30	-57.14	-3.27	XX

Summary Statistics

	Sample SP31	Sample SP32
Grand Means	142.72 1000th ft-lbs	98.439 1000th ft-lbs
SD Btwn Labs	34.11 1000th ft-lbs	17.491 1000th ft-lbs

Statistics based on 9 of 12 reporting participants

Comments on Assigned Data Flags for Test #349

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

2UQNPV (X) - Data appear to be off by a factor of .001; data converted by CTS (x1000).

2QQDUV (X) - Data appear to be off by a factor of .001; data converted by CTS (x1000).

Key to Instrument Codes Reported by Participants

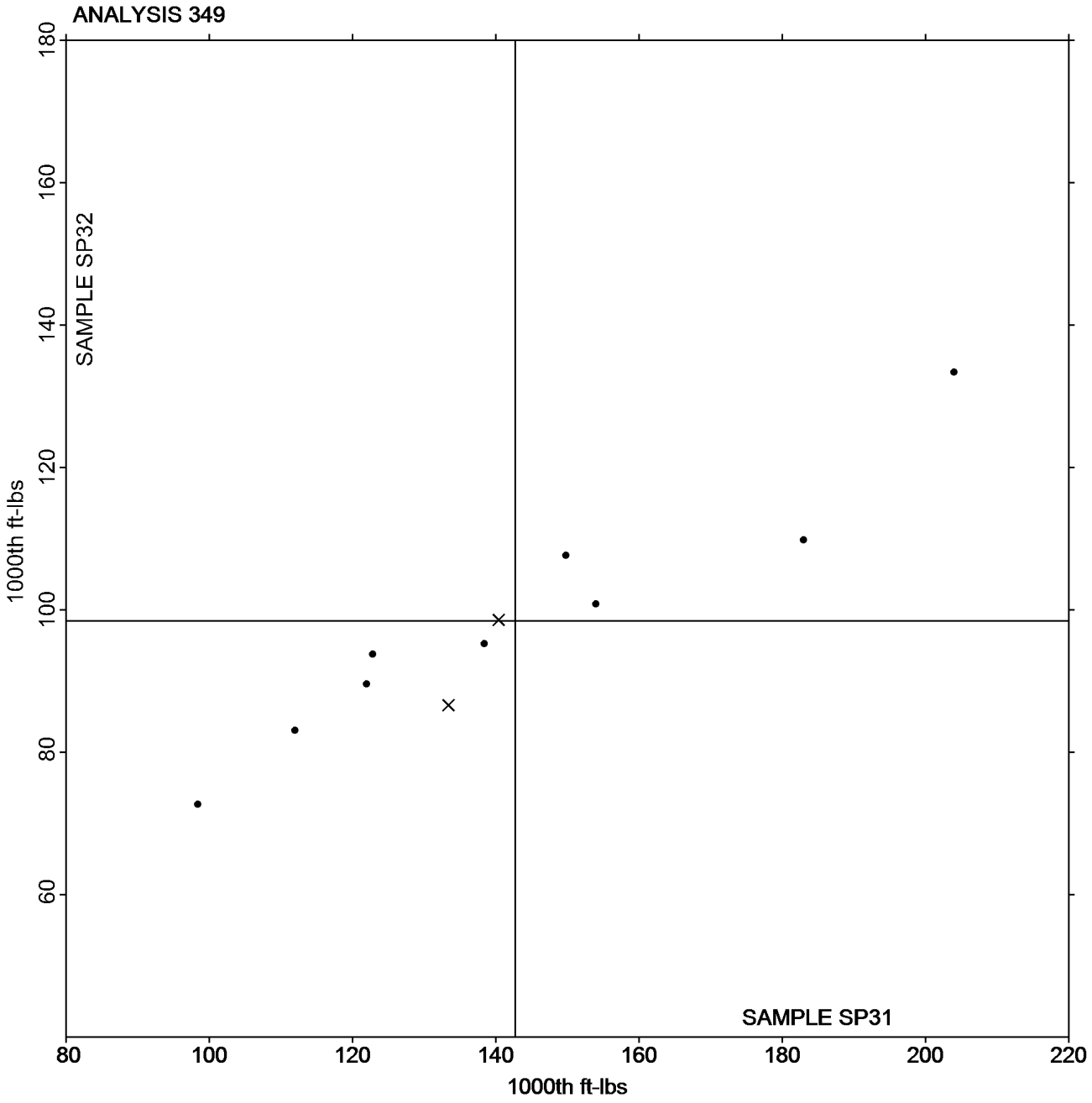
SC Scott Internal Bond Tester (Manual)

TM TMI Monitor/Internal Bond Tester

XX Instrument make/model not specified by lab

Grand Mean Sample **SP31** = 142.72 1000th ft-lbs

Grand Mean Sample **SP32** = 98.439 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.