Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #2901 S - September 2017

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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.

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Key for Web Summary Reports (Page 1 of 2)

WebCode — Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Paper Report published on the CTS Website. The WebCode for each analysis can be found on the datasheets and in the Performance Analysis Report mailed to each participant.

Lab Mean — The average of the values obtained for each sample by the participant.

Grand Mean — The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.

Difference from Grand Mean — The difference of the LAB MEAN from the GRAND MEAN.

Between-Lab Standard Deviation — An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).

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

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

Data Flag — DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

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.

Key for Web Summary Reports (Page 2 of 2)

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 SA47 Lab Mean	Sample SA47 Diff from Grand Mean	Sample SA47 CPV	Sample SA48 Lab Mean	Sample SA48 Diff from Grand Mean	Sample SA48 CPV
3B2LR4		38.78	-4.69	-1.55	39.29	-4.31	-1.28
4JRDT3		45.10	1.62	0.54	43.60	0.00	0.00
6LULGD		43.89	0.41	0.14	41.47	-2.14	-0.63
6PVRY4		47.33	3.85	1.27	47.04	3.44	1.02
7X3X47	X	465.72	422.24	139.29	461.08	417.48	123.89
7XFKJY		46.50	3.03	1.00	45.51	1.91	0.57
8XZGP8		42.54	-0.94	-0.31	42.83	-0.77	-0.23
9K8JYU		44.11	0.63	0.21	46.31	2.71	0.80
A4WVME		43.48	0.01	0.00	42.81	-0.79	-0.24
FRMBQE		47.17	3.69	1.22	47.51	3.91	1.16
GBC7EL		43.61	0.13	0.04	43.40	-0.20	-0.06
GJ4PVF		47.70	4.22	1.39	45.70	2.10	0.62
HCJQ3L		43.92	0.44	0.15	43.12	-0.48	-0.14
JX2D4K		46.30	2.82	0.93	45.51	1.91	0.57
KY9R97		46.50	3.02	1.00	49.00	5.40	1.60
M6MKBF		40.25	-3.23	-1.07	40.96	-2.64	-0.78
MNGFM4		45.60	2.12	0.70	46.20	2.60	0.77
MPEGVF		39.92	-3.56	-1.17	41.93	-1.67	-0.50
NKC67U		44.96	1.49	0.49	44.71	1.11	0.33
PZKFBR		42.90	-0.57	-0.19	44.18	0.58	0.17
TVD7PF		40.00	-3.48	-1.15	38.50	-5.10	-1.51
UGT22J		45.10	1.63	0.54	44.74	1.14	0.34
UYDUM2		41.61	-1.86	-0.61	41.85	-1.76	-0.52
V6F83B	*	43.00	-0.48	-0.16	47.80	4.20	1.25
WXTW98		41.45	-2.03	-0.67	42.77	-0.83	-0.25
YVE8ZE	*	35.17	-8.30	-2.74	33.32	-10.29	-3.05

Summary Statistics	Sample SA47	Sample SA48
Grand Means	43.48 psi	43.60 psi
Stnd Dev Btwn Labs	3.03 psi	3.37 psi

Statistics based on 25 of 26 reporting participants.

Comments on Assigned Data Flags for Test #305

7X3X47 (X) - Extreme Data.

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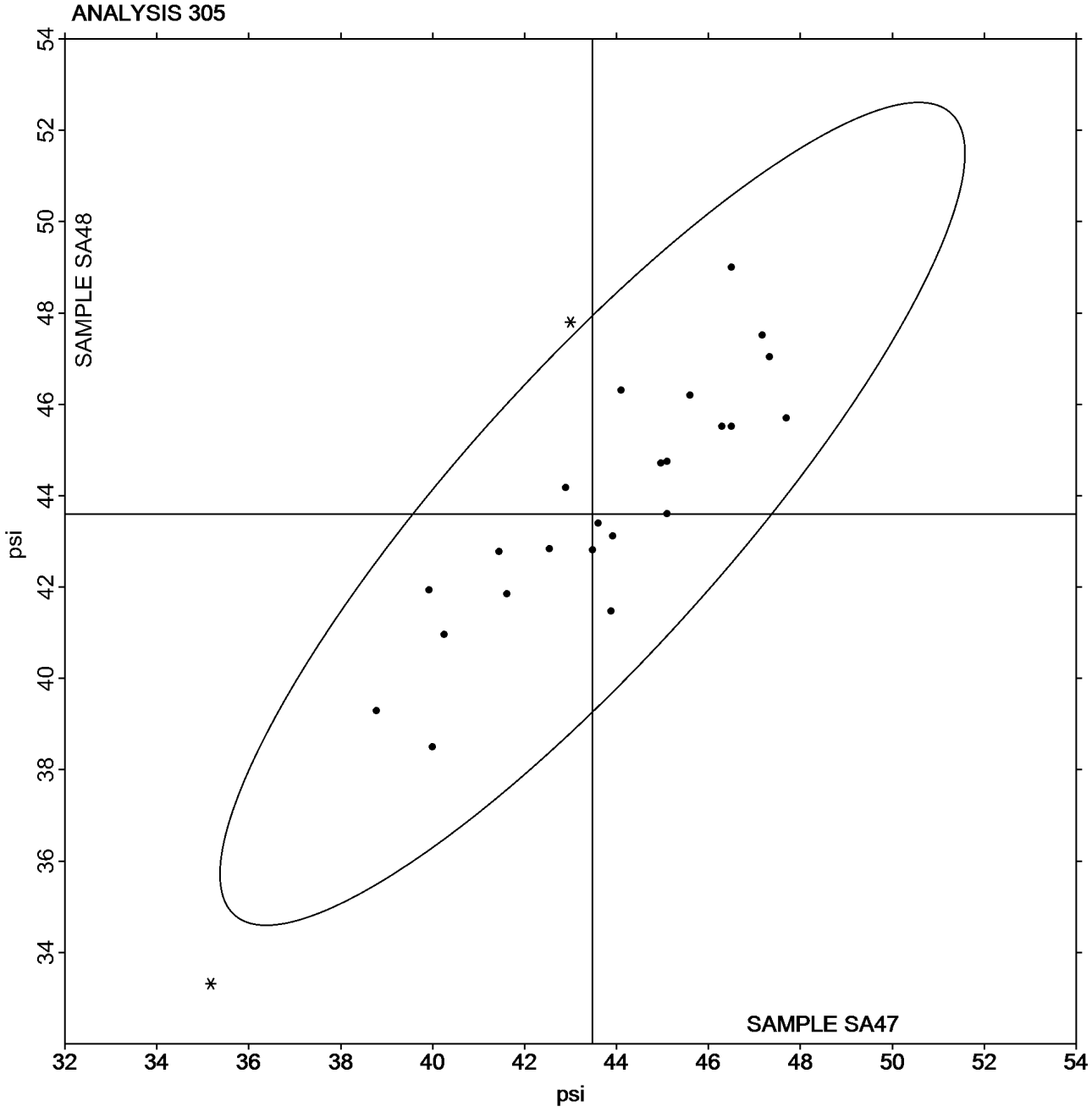
Paper & Paperboard Interlaboratory Testing Program

Analysis 305
Bursting Strength - Printing Papers
TAPPI Official Test Method T403

Grand Mean Sample SA47 = 43.476 psi

Grand Mean Sample SA48 = 43.602 psi



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Paper & Paperboard Interlaboratory Testing Program

Analysis 310

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample SB47 Lab Mean	Sample SB47 Diff from Grand Mean	Sample SB47 CPV	Sample SB48 Lab Mean	Sample SB48 Diff from Grand Mean	Sample SB48 CPV
34LMKK		85.72	-3.79	-0.91	89.47	-1.35	-0.33
3KAX8M		89.47	-0.04	-0.01	87.87	-2.95	-0.73
3TJFMY		93.66	4.16	1.00	99.93	9.11	2.26
3XAYJM		94.64	5.13	1.23	95.14	4.31	1.07
6KY4HW		90.52	1.01	0.24	90.45	-0.38	-0.09
6PVRY4		82.63	-6.88	-1.65	88.92	-1.91	-0.47
8Y72D9		93.72	4.21	1.01	91.98	1.15	0.29
A69UK9		99.90	10.39	2.49	98.30	7.47	1.85
A987F9		89.49	-0.02	0.00	88.36	-2.47	-0.61
CJJY3L		89.04	-0.47	-0.11	94.06	3.23	0.80
GQ8DTM		88.35	-1.16	-0.28	88.30	-2.53	-0.63
HCJQ3L		89.49	-0.02	0.00	90.24	-0.58	-0.14
HM28QM		90.05	0.54	0.13	89.25	-1.58	-0.39
JT7LVN		88.65	-0.86	-0.21	88.04	-2.79	-0.69
NCZVWF		92.10	2.59	0.62	94.80	3.97	0.99
NKC67U		90.38	0.88	0.21	89.94	-0.89	-0.22
P6X48H		82.90	-6.61	-1.58	83.30	-7.53	-1.87
PFGKWH		91.81	2.30	0.55	94.67	3.84	0.95
Q8LUWT		81.93	-7.58	-1.82	86.34	-4.48	-1.11
RBFBMT	X	57.00	-32.51	-7.79	57.20	-33.63	-8.33
RQ9369		90.21	0.70	0.17	94.91	4.09	1.01
TVD7PF		89.74	0.23	0.06	95.21	4.38	1.09
VH43KW		88.92	-0.59	-0.14	88.34	-2.49	-0.62
WK9A3F		87.50	-2.01	-0.48	89.80	-1.03	-0.25
X3ZM77		97.25	7.74	1.86	94.51	3.68	0.91
YEV9W3		87.08	-2.43	-0.58	87.20	-3.63	-0.90
YWU9ZV		84.10	-5.41	-1.30	87.20	-3.63	-0.90
ZPAMCA		87.47	-2.04	-0.49	85.76	-5.06	-1.26

Summary Statistics	Sample SB47	Sample SB48
Grand Means	89.51 psi	90.83 psi
Stnd Dev Btwn Labs	4.17 psi	4.03 psi

Statistics based on 27 of 28 reporting participants.

Comments on Assigned Data Flags for Test #310

RBFBMT (X) - Extreme Data.

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Paper & Paperboard Interlaboratory Testing Program

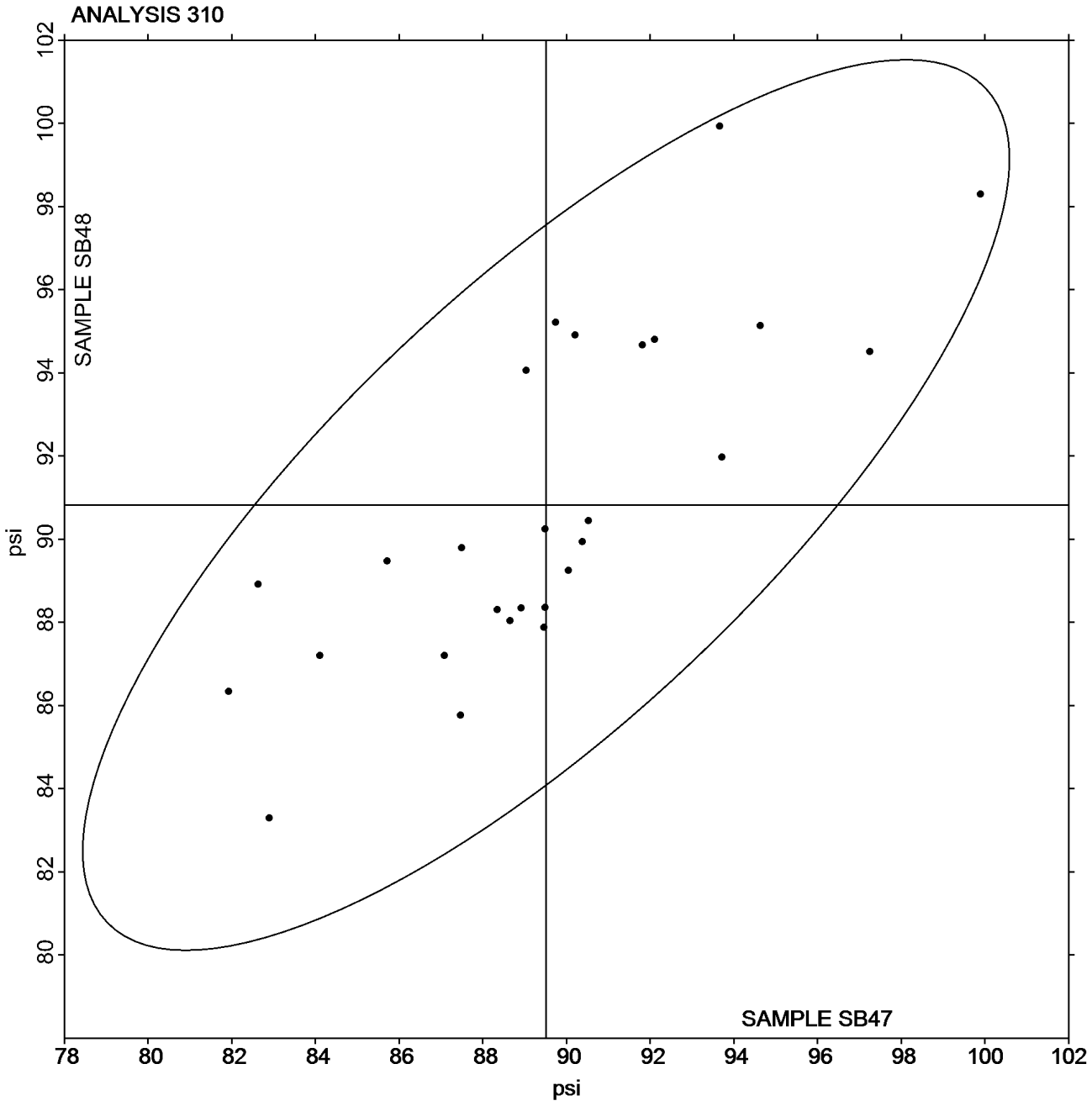
Analysis 310

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

Grand Mean Sample SB47 = 89.508 psi

Grand Mean Sample SB48 = 90.825 psi



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Paper & Paperboard Interlaboratory Testing Program

Analysis 311
Tearing Strength - Newsprint
TAPPI Official Test Method T414

WebCode	Data Flag	Sample SK47 Lab Mean	Sample SK47 Diff from Grand Mean	Sample SK47 CPV	Sample SK48 Lab Mean	Sample SK48 Diff from Grand Mean	Sample SK48 CPV
8QYA7Y		25.34	4.51	1.49	26.25	3.98	1.35
93NMKL		18.68	-2.15	-0.71	19.49	-2.78	-0.95
A4WVME	X	50.08	29.25	9.68	53.60	31.33	10.66
AJT84V		18.90	-1.93	-0.64	21.40	-0.87	-0.30
FRMBQE		18.75	-2.08	-0.69	20.63	-1.64	-0.56
NKC67U		19.27	-1.56	-0.51	20.16	-2.11	-0.72
QFBKFF		24.02	3.20	1.06	25.70	3.43	1.17

Summary Statistics	Sample SK47	Sample SK48
Grand Means	20.83 Grams	22.27 Grams
Stnd Dev Btwn Labs	3.02 Grams	2.94 Grams

Statistics based on 6 of 7 reporting participants.

Comments on Assigned Data Flags for Test #311

A4WVME (X) - Extreme Data.

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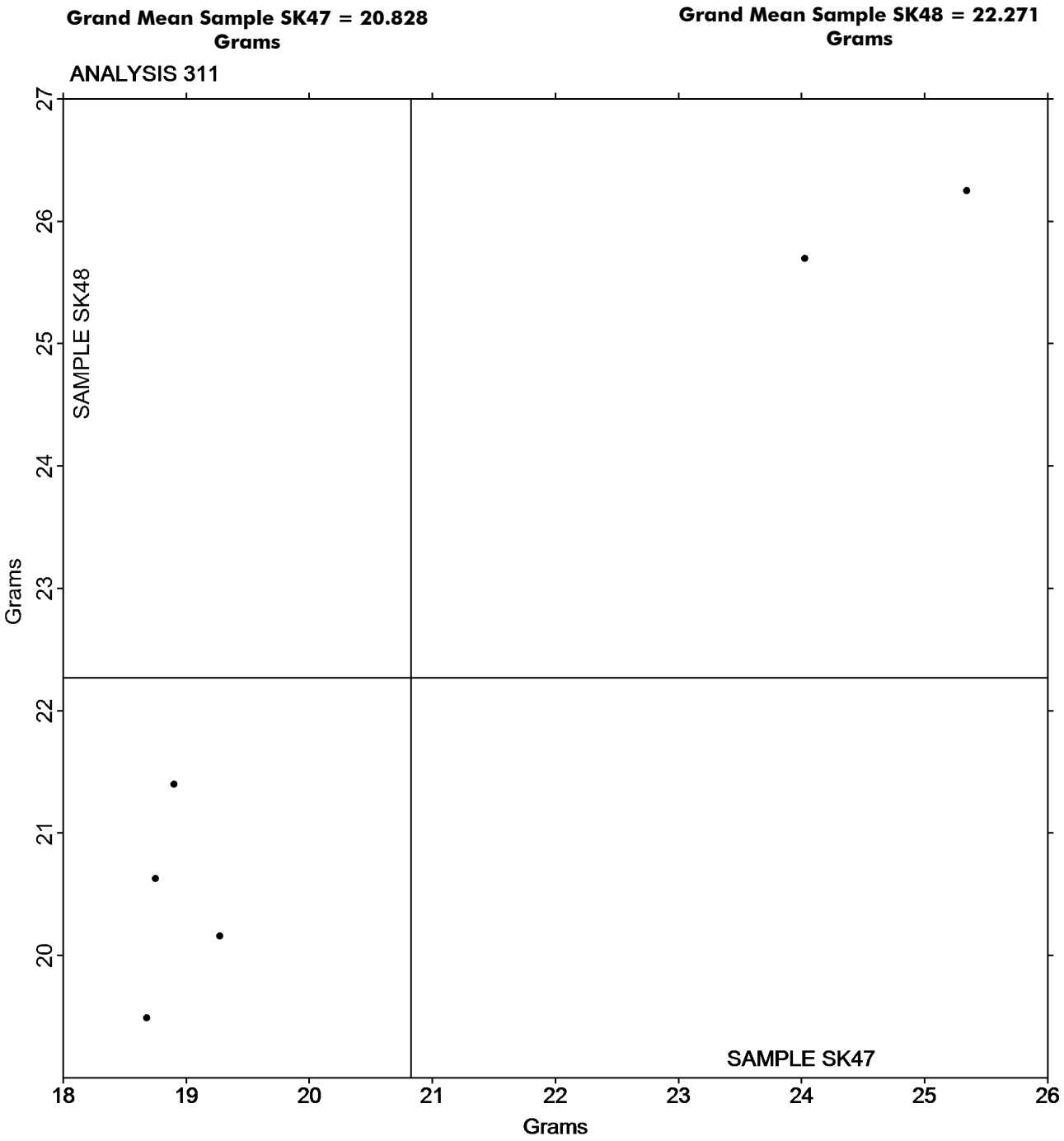
Analysis 311
Tearing Strength - Newsprint
TAPPI Official Test Method T414



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC47 Lab Mean	Sample SC47 Diff from Grand Mean	Sample SC47 CPV	Sample SC48 Lab Mean	Sample SC48 Diff from Grand Mean	Sample SC48 CPV
34LMKK	*	70.90	7.32	2.41	71.00	5.12	1.71
3B2LR4		64.58	1.00	0.33	67.46	1.58	0.53
3KAX8M		64.45	0.86	0.28	67.68	1.80	0.60
4D4JZB	X	76.53	12.95	4.26	77.04	11.16	3.72
4JRDT3		63.34	-0.24	-0.08	66.64	0.76	0.25
6LULGD		62.70	-0.88	-0.29	65.65	-0.23	-0.08
6PVRY4		65.01	1.43	0.47	67.90	2.02	0.67
747VVJ		65.00	1.42	0.47	67.90	2.02	0.67
7X3X47		62.20	-1.38	-0.45	64.40	-1.48	-0.49
7XFKJY		66.46	2.88	0.95	66.90	1.02	0.34
8XZGP8		65.68	2.09	0.69	68.32	2.44	0.81
9JTVYM		69.70	6.12	2.01	70.67	4.79	1.60
9K8JYU		60.52	-3.06	-1.01	61.66	-4.22	-1.41
A987F9		64.56	0.98	0.32	66.32	0.44	0.15
B7HYXW		57.60	-5.98	-1.97	60.08	-5.80	-1.93
BBU7UV		61.51	-2.07	-0.68	63.97	-1.91	-0.64
BXRFG4		64.62	1.04	0.34	68.22	2.34	0.78
BZEBZP		65.34	1.76	0.58	66.64	0.76	0.25
EBL7LQ		61.30	-2.28	-0.75	65.80	-0.08	-0.03
G8EMGU		58.72	-4.86	-1.60	61.78	-4.10	-1.37
GBC7EL		70.28	6.70	2.20	71.39	5.51	1.84
GQ8DTM		62.64	-0.94	-0.31	66.41	0.53	0.18
H48R9B		57.11	-6.47	-2.13	58.56	-7.32	-2.44
HCJQ3L		61.34	-2.25	-0.74	61.97	-3.91	-1.30
HM28QM		61.75	-1.83	-0.60	66.32	0.44	0.15
HZBYJM		60.64	-2.94	-0.97	62.96	-2.92	-0.97
JX2D4K		63.30	-0.28	-0.09	65.10	-0.78	-0.26
KY9R97		61.56	-2.02	-0.67	64.26	-1.62	-0.54
M6MKBF		60.83	-2.75	-0.91	63.59	-2.29	-0.76
MNGFM4		66.85	3.27	1.07	69.40	3.52	1.17
MPEGVF		61.46	-2.12	-0.70	63.54	-2.34	-0.78
NKC67U		63.00	-0.58	-0.19	65.55	-0.33	-0.11
NULC9N		58.04	-5.54	-1.82	60.00	-5.88	-1.96
PZKFBR		62.12	-1.46	-0.48	65.83	-0.05	-0.02
Q8LUWT		64.51	0.92	0.30	65.12	-0.76	-0.25
RBFBMT		66.00	2.42	0.79	69.60	3.72	1.24
RDKXZW		64.76	1.18	0.39	65.54	-0.34	-0.11
T33JUA		61.82	-1.76	-0.58	63.34	-2.54	-0.85
UP9KHX	X	54.44	-9.14	-3.01	63.82	-2.06	-0.69
UYDUM2		65.48	1.89	0.62	70.10	4.22	1.41
VH43KW		61.90	-1.68	-0.55	63.64	-2.24	-0.75
VKQYV9		68.00	4.42	1.45	70.40	4.52	1.51
WXTW98		64.92	1.34	0.44	67.98	2.10	0.70

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Paper & Paperboard Interlaboratory Testing Program

Analysis 312
Tearing Strength - Printing Papers
TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC47 Lab Mean	Sample SC47 Diff from Grand Mean	Sample SC47 CPV	Sample SC48 Lab Mean	Sample SC48 Diff from Grand Mean	Sample SC48 CPV
X3ZM77		66.90	3.32	1.09	68.11	2.23	0.74
XRMH2W		63.27	-0.32	-0.10	67.60	1.72	0.57
YEV9W3		62.60	-0.98	-0.32	64.71	-1.17	-0.39
YVE8ZE		63.92	0.34	0.11	67.49	1.61	0.53
ZGCXV6		62.18	-1.40	-0.46	62.22	-3.66	-1.22
ZPAMCA		67.03	3.44	1.13	66.60	0.72	0.24

Summary Statistics	Sample SC47	Sample SC48
Grand Means	63.58 Grams	65.88 Grams
Stnd Dev Btwn Labs	3.04 Grams	3.00 Grams

Statistics based on 47 of 49 reporting participants.

Comments on Assigned Data Flags for Test #312

UP9KHX (X) - Data for sample SC47 are low. Inconsistent within the determinations of sample SC47.

4D4JZB (X) - Data for both samples are high. Possible Systematic Error.

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Paper & Paperboard Interlaboratory Testing Program

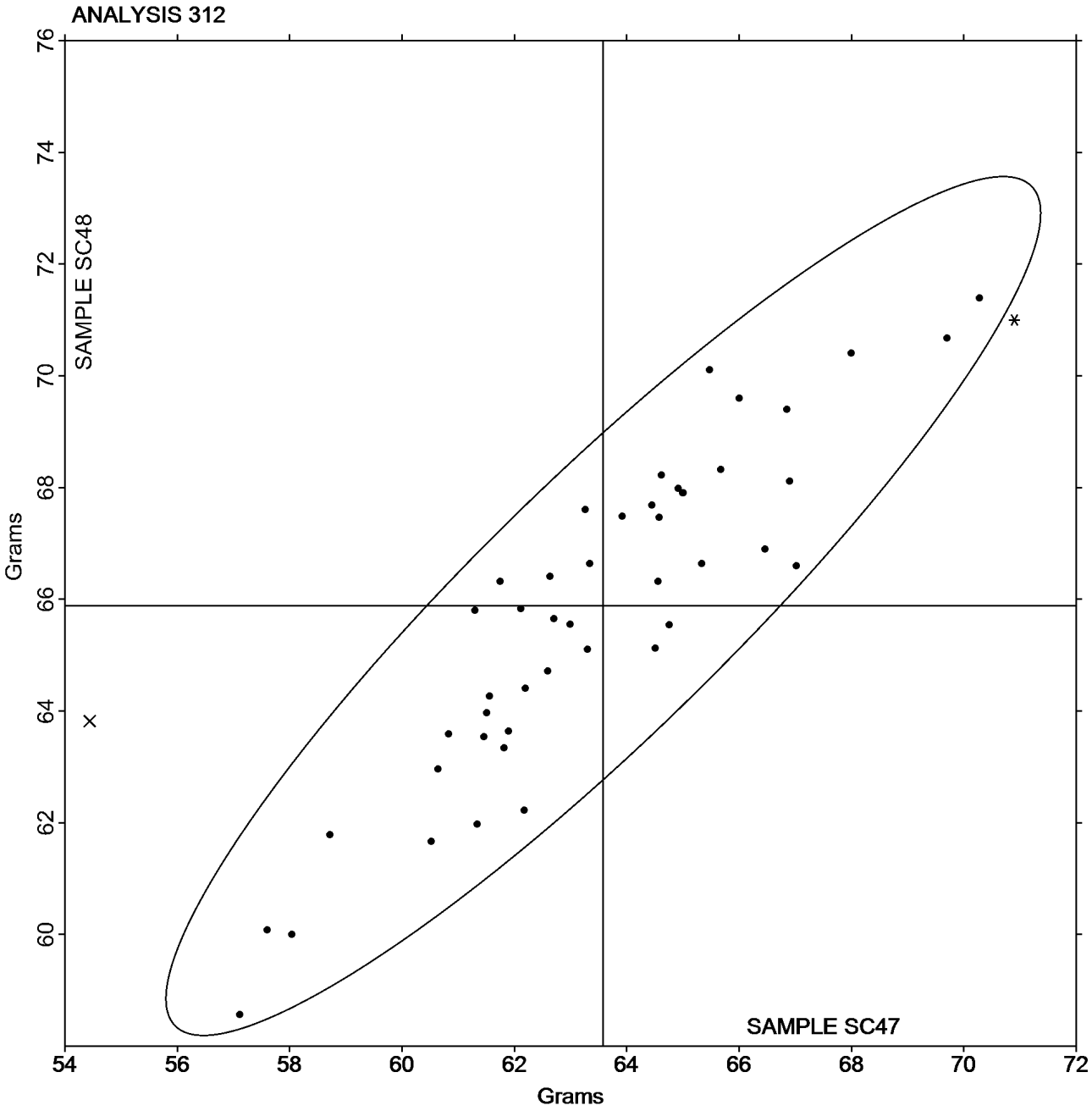
Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

Grand Mean Sample SC47 = 63.583 Grams

Grand Mean Sample SC48 = 65.879 Grams



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Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD47 Lab Mean	Sample SD47 Diff from Grand Mean	Sample SD47 CPV	Sample SD48 Lab Mean	Sample SD48 Diff from Grand Mean	Sample SD48 CPV
2A9D7E		183.1	5.6	0.26	186.8	7.9	0.37
2H7YE3		168.3	-9.2	-0.42	167.1	-11.8	-0.56
3XAYJM		190.4	13.0	0.59	196.5	17.6	0.83
6BUYPF		161.2	-16.3	-0.74	163.2	-15.7	-0.74
6KY4HW		184.6	7.1	0.33	176.5	-2.4	-0.11
8Y72D9		189.7	12.2	0.56	194.6	15.7	0.74
B8VLDQ		170.6	-6.9	-0.31	167.1	-11.8	-0.56
BBU8Y2		198.8	21.3	0.97	198.6	19.7	0.93
C4PRNK		171.2	-6.2	-0.28	177.5	-1.4	-0.07
CJ6QV7		164.4	-13.1	-0.59	168.5	-10.4	-0.49
CJJY3L	*	232.4	54.9	2.50	220.5	41.5	1.96
D7AWX3		201.8	24.3	1.11	208.8	29.9	1.41
DFFQ9V		161.2	-16.3	-0.74	168.0	-10.9	-0.51
F37RFE		184.5	7.0	0.32	185.2	6.3	0.30
GJ4PVF		168.8	-8.7	-0.40	169.1	-9.8	-0.46
GXADCP		171.6	-5.9	-0.27	182.2	3.3	0.16
JT7LVN	X	741.8	564.3	25.68	725.7	546.7	25.78
K2QEGJ		176.1	-1.4	-0.06	183.4	4.5	0.21
KY9R97		173.5	-4.0	-0.18	171.1	-7.8	-0.37
LTKMXG		176.6	-0.9	-0.04	177.4	-1.5	-0.07
MF7WQY	*	123.4	-54.1	-2.46	118.4	-60.5	-2.85
NCZVWF		178.0	0.5	0.02	168.8	-10.1	-0.48
NKC67U		178.5	1.0	0.05	180.1	1.1	0.05
NYG746		175.9	-1.6	-0.07	181.6	2.7	0.13
P6X48H		189.5	12.0	0.55	193.6	14.7	0.69
PFGKWH		135.8	-41.7	-1.90	147.5	-31.4	-1.48
PMEADM		177.9	0.4	0.02	188.9	10.0	0.47
RBFBMT		162.4	-15.1	-0.69	164.8	-14.1	-0.67
RCA2T8		187.4	9.9	0.45	185.8	6.9	0.32
RQ9369		187.6	10.1	0.46	187.1	8.2	0.39
TVD7PF		188.8	11.3	0.51	196.0	17.1	0.81
VW6XG4	X	251.9	74.4	3.39	212.4	33.5	1.58
WK9A3F		210.8	33.3	1.52	198.8	19.9	0.94
WW499Z		191.4	13.9	0.63	190.0	11.0	0.52
WWHTYP	*	120.3	-57.2	-2.60	122.1	-56.9	-2.68
YKG4X7		207.2	29.7	1.35	211.5	32.5	1.53
YWU9ZV	X	23.7	-153.8	-7.00	24.1	-154.8	-7.30
YWWX9Y		168.3	-9.2	-0.42	165.1	-13.8	-0.65

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Paper & Paperboard Interlaboratory Testing Program

Analysis 314
Tearing Strength - Packaging Papers
TAPPI Official Test Method T414

Summary Statistics	Sample SD47	Sample SD48
Grand Means	177.49 Grams	178.91 Grams
Stnd Dev Btwn Labs	21.97 Grams	21.21 Grams

Statistics based on 35 of 38 reporting participants.

Comments on Assigned Data Flags for Test #314

VW6XG4 (X) - Data for sample SD47 are high. Inconsistent within the determinations of sample SD47.

JT7LVN (X) - Extreme Data.

YWU9ZV (X) - Extreme Data.

Analysis Notes:

BBU8Y2 - Data appear to be off by a factor of .25; data converted by CTS (x4).

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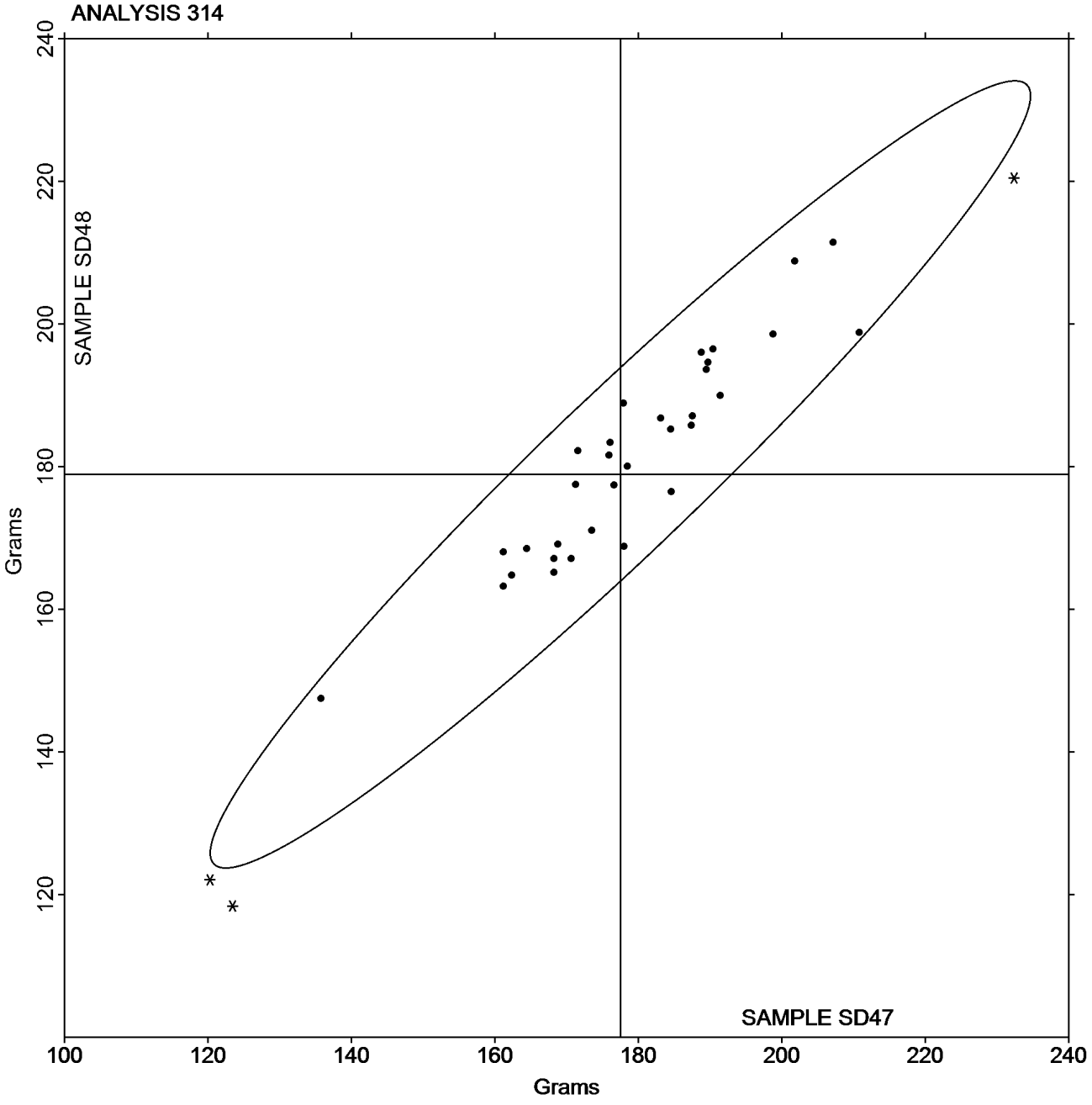
Paper & Paperboard Interlaboratory Testing Program

Analysis 314
Tearing Strength - Packaging Papers
TAPPI Official Test Method T414

Grand Mean Sample SD47 = 177.49 Grams

Grand Mean Sample SD48 = 178.91 Grams



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Paper & Paperboard Interlaboratory Testing Program

Analysis 320

Tensile Breaking Strength - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR47 Lab Mean	Sample SR47 Diff from Grand Mean	Sample SR47 CPV	Sample SR48 Lab Mean	Sample SR48 Diff from Grand Mean	Sample SR48 CPV
2CJ3N7		2.449	0.236	2.13	2.475	0.330	2.57
8QYA7Y		2.257	0.044	0.40	2.136	-0.009	-0.07
93NMKL		2.112	-0.101	-0.92	2.070	-0.075	-0.58
A4WVME		2.169	-0.044	-0.40	2.049	-0.095	-0.74
A69UK9		2.263	0.050	0.45	2.175	0.031	0.24
AJT84V		2.132	-0.081	-0.74	2.092	-0.053	-0.41
FRMBQE		2.307	0.093	0.84	2.179	0.034	0.27
HCJQ3L		2.193	-0.020	-0.18	2.114	-0.031	-0.24
JX2D4K		2.324	0.110	1.00	2.253	0.108	0.84
QFBKFF		2.081	-0.132	-1.20	2.154	0.009	0.07
QXTQKJ		2.088	-0.126	-1.14	1.955	-0.190	-1.48
UGT22J		2.185	-0.028	-0.25	2.084	-0.060	-0.47

Summary Statistics	Sample SR47	Sample SR48
Grand Means	2.21 kN/m	2.14 kN/m
Stnd Dev Btwn Labs	0.11 kN/m	0.13 kN/m

Statistics based on 12 of 12 reporting participants.

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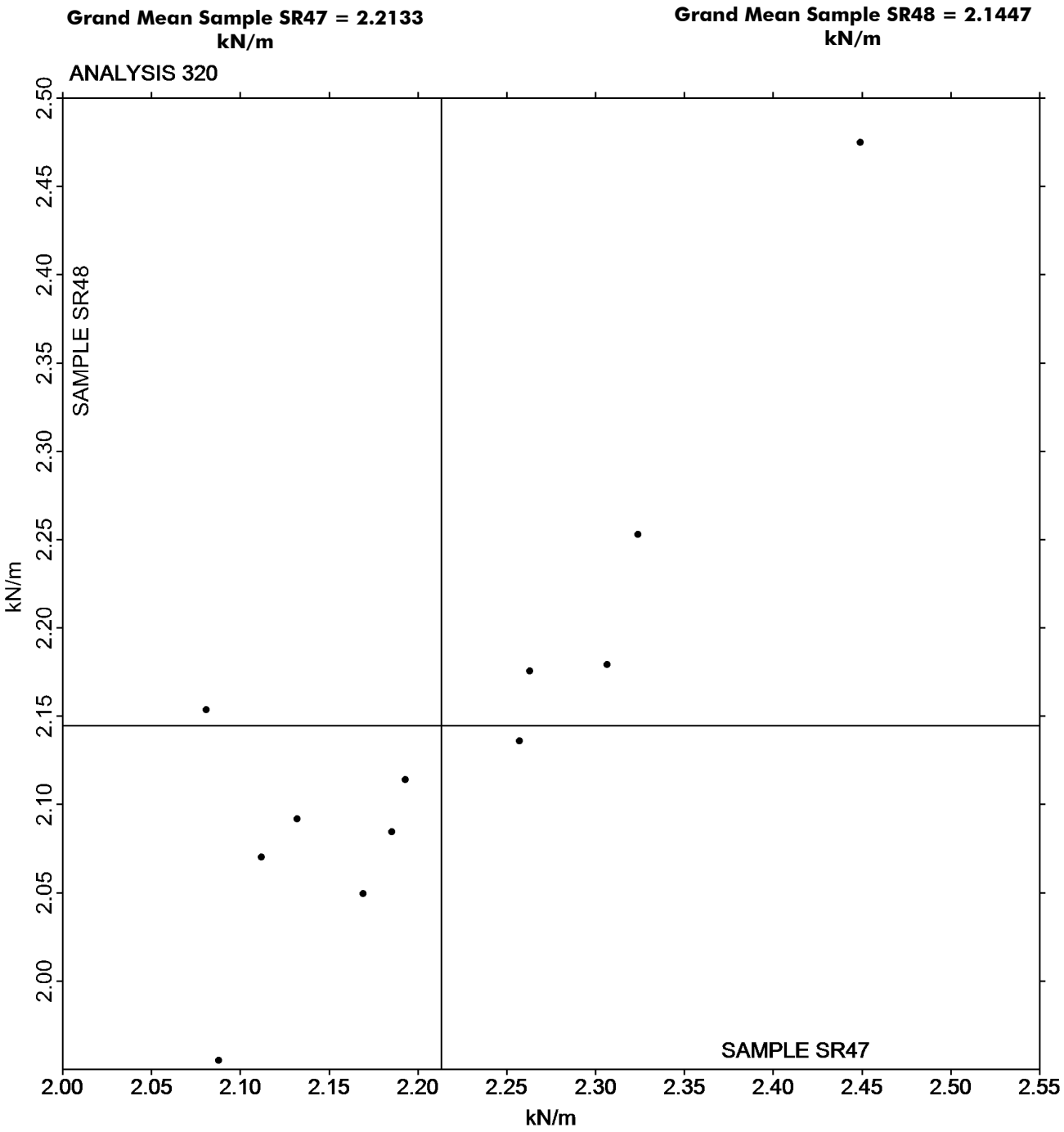
Paper & Paperboard Interlaboratory Testing Program

Analysis 320
Tensile Breaking Strength - Newsprint
TAPPI Official Test Method T494



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 321

Tensile Energy Absorption - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR47 Lab Mean	Sample SR47 Diff from Grand Mean	Sample SR47 CPV	Sample SR48 Lab Mean	Sample SR48 Diff from Grand Mean	Sample SR48 CPV
2CJ3N7		17.36	1.81	0.82	15.90	1.66	1.15
8QYA7Y		13.04	-2.51	-1.14	11.96	-2.28	-1.58
93NMKL		13.54	-2.01	-0.91	13.66	-0.58	-0.40
A4WVME		18.10	2.55	1.16	15.76	1.52	1.05
A69UK9		16.04	0.49	0.22	14.69	0.45	0.31
FRMBQE		15.88	0.33	0.15	13.99	-0.25	-0.17
HCJQ3L		14.52	-1.04	-0.47	13.02	-1.22	-0.84
JX2D4K		17.38	1.83	0.83	15.88	1.64	1.14
QFBKFF		11.46	-4.10	-1.86	12.49	-1.75	-1.21
QXTQKJ		18.14	2.59	1.18	15.73	1.49	1.03
UGT22J		15.63	0.07	0.03	13.55	-0.69	-0.48

Summary Statistics	Sample SR47	Sample SR48
Grand Means	15.55 Joules/sq m	14.24 Joules/sq m
Stnd Dev Btwn Labs	2.20 Joules/sq m	1.44 Joules/sq m

Statistics based on 11 of 11 reporting participants.

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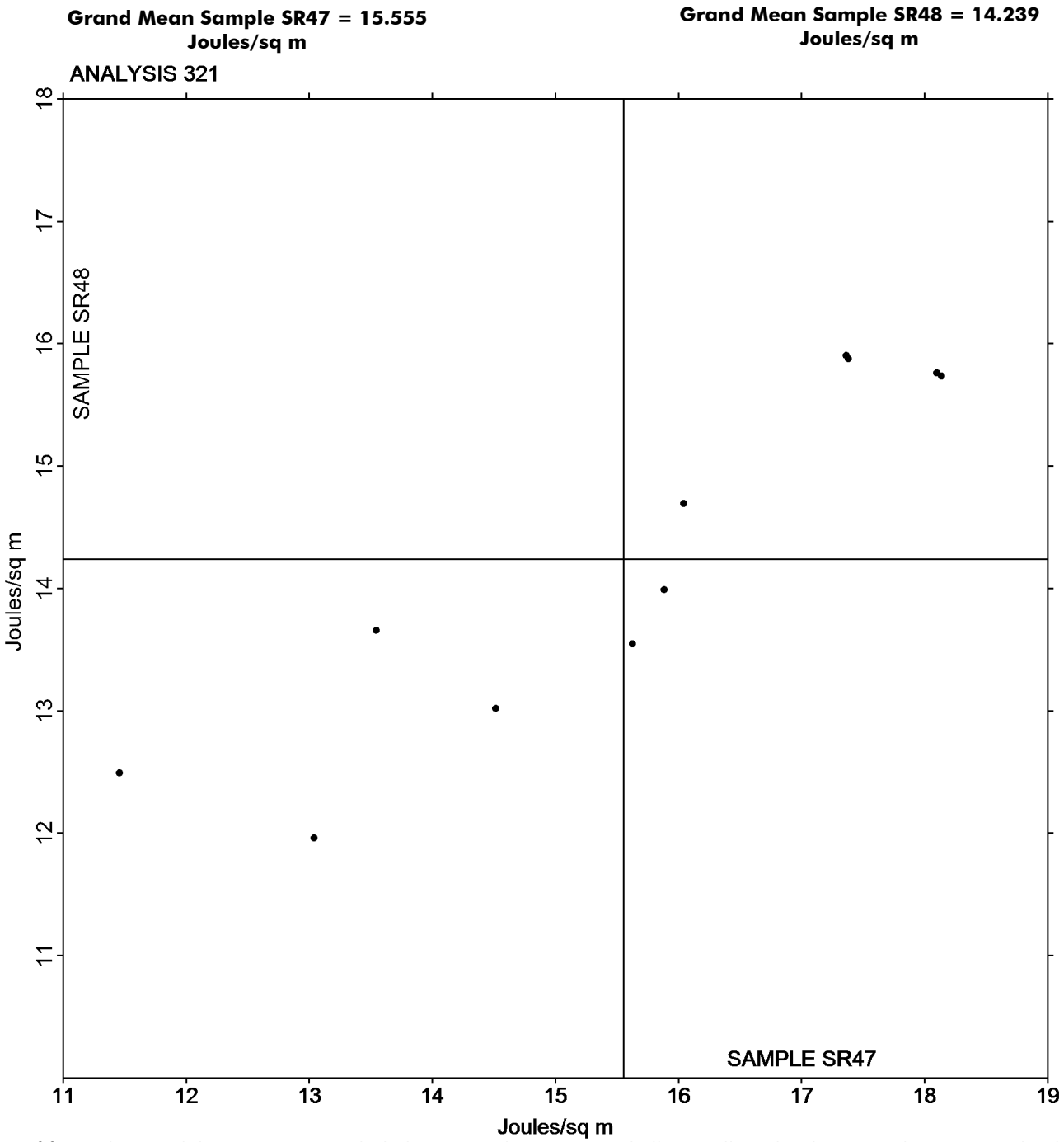
Paper & Paperboard Interlaboratory Testing Program

Analysis 321
Tensile Energy Absorption - Newsprint
TAPPI Official Test Method T494



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 322
Elongation to Break - Newsprint
TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR47 Lab Mean	Sample SR47 Diff from Grand Mean	Sample SR47 CPV	Sample SR48 Lab Mean	Sample SR48 Diff from Grand Mean	Sample SR48 CPV
2CJ3N7		1.123	-0.137	-0.61	1.044	-0.141	-0.85
8QYA7Y		0.998	-0.262	-1.17	0.982	-0.203	-1.23
93NMKL		1.075	-0.185	-0.83	1.105	-0.080	-0.48
A4WVME		1.358	0.098	0.44	1.242	0.057	0.35
A69UK9		1.203	-0.057	-0.26	1.157	-0.028	-0.17
FRMBQE		1.395	0.135	0.60	1.327	0.142	0.87
HCJQ3L		1.090	-0.170	-0.76	1.031	-0.154	-0.93
JX2D4K		1.425	0.165	0.74	1.362	0.177	1.08
QXTQKJ		1.748	0.488	2.18	1.487	0.302	1.84
UGT22J		1.186	-0.074	-0.33	1.109	-0.076	-0.46

Summary Statistics	Sample SR47	Sample SR48
Grand Means	1.26 Percent	1.18 Percent
Stnd Dev Btwn Labs	0.22 Percent	0.16 Percent

Statistics based on 10 of 10 reporting participants.

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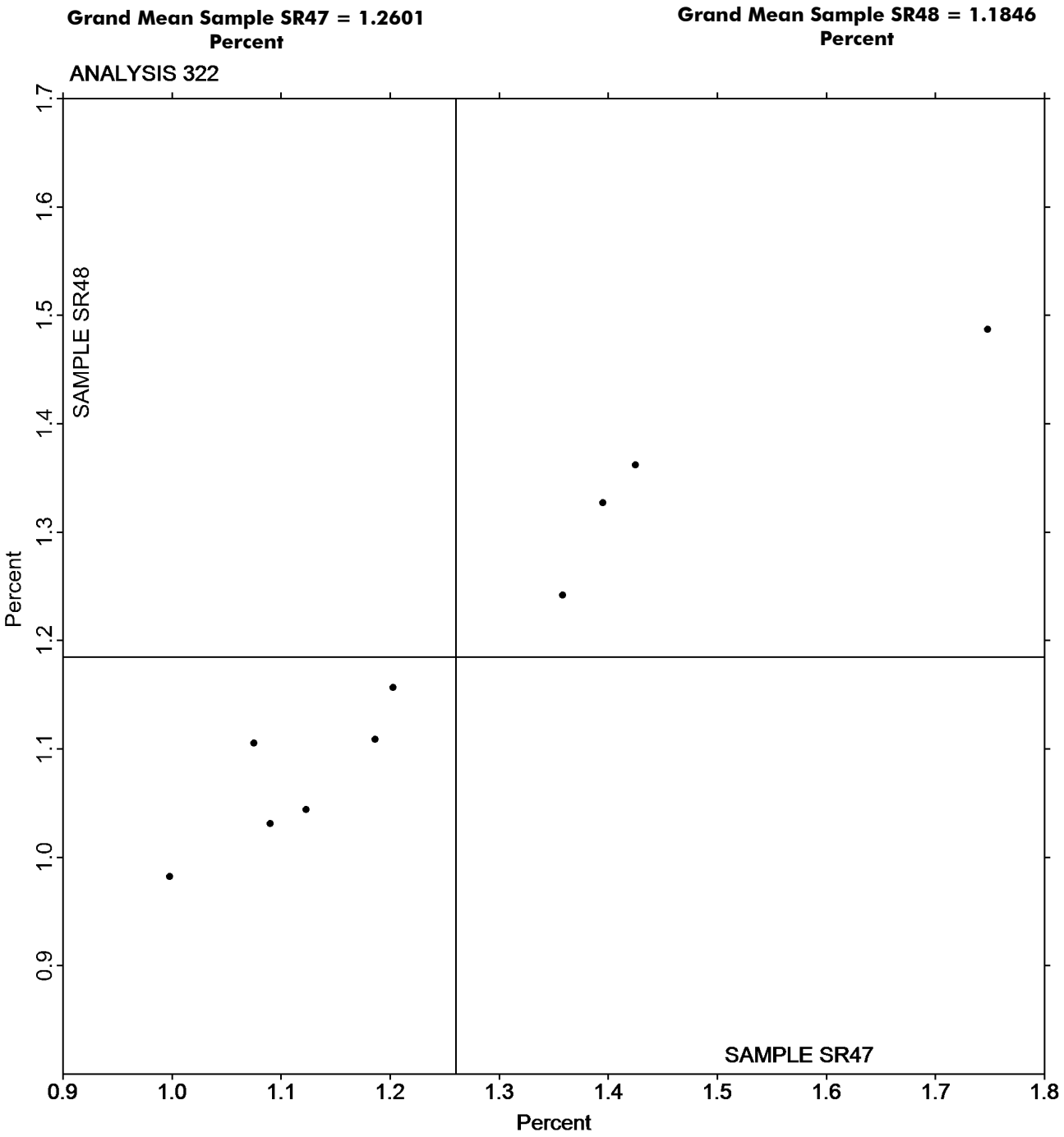

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF47 Lab Mean	Sample SF47 Diff from Grand Mean	Sample SF47 CPV	Sample SF48 Lab Mean	Sample SF48 Diff from Grand Mean	Sample SF48 CPV	Instr Code
2YVXHV		6.868	0.139	0.43	6.804	0.013	0.04	LA
34LMKK		6.512	-0.218	-0.68	6.611	-0.180	-0.53	DL
3B2LR4		6.802	0.073	0.23	6.821	0.031	0.09	TF
3XAYJM		6.549	-0.181	-0.56	6.635	-0.156	-0.46	TB
4D4JZB	X	9.527	2.797	8.73	9.640	2.849	8.45	CB
4JRDT3		6.776	0.046	0.14	7.048	0.257	0.76	LX
6LULGD		7.255	0.525	1.64	7.213	0.422	1.25	LI
747VVJ		6.742	0.013	0.04	6.590	-0.200	-0.59	TO
7639HB		7.288	0.558	1.74	7.516	0.725	2.15	LI
78AL3X		6.300	-0.430	-1.34	6.271	-0.520	-1.54	RE
7X3X47		6.541	-0.189	-0.59	6.772	-0.019	-0.06	LH
7XFKJY		7.028	0.298	0.93	7.027	0.236	0.70	LH
8XZGP8		6.899	0.169	0.53	7.006	0.215	0.64	LH
9JTVYM		6.127	-0.602	-1.88	6.188	-0.602	-1.79	XX
9K8JYU	X	7.651	0.922	2.88	7.212	0.421	1.25	TJ
B7HYXW		6.385	-0.344	-1.07	6.486	-0.305	-0.90	TB
BBU7UV		6.861	0.131	0.41	6.961	0.170	0.51	LF
BXRFG4		6.841	0.111	0.35	6.722	-0.069	-0.20	LI
CQMWUX		6.456	-0.273	-0.85	6.304	-0.487	-1.44	TS
EBL7LQ		6.492	-0.238	-0.74	6.531	-0.260	-0.77	TC
GBC7EL	X	9.228	2.498	7.80	9.953	3.162	9.38	LH
H48R9B		7.177	0.448	1.40	6.939	0.148	0.44	TJ
HCJQ3L		6.712	-0.018	-0.05	6.977	0.186	0.55	LH
HM28QM		6.440	-0.290	-0.90	6.540	-0.251	-0.74	TF
HUZW8Q		6.802	0.072	0.23	6.749	-0.041	-0.12	LA
HZBYJM		6.837	0.107	0.33	6.776	-0.015	-0.05	TO
J7DG7D		7.122	0.393	1.23	7.326	0.535	1.59	TN
LCQ99M		6.947	0.218	0.68	6.984	0.193	0.57	XX
M6MKBF		6.604	-0.125	-0.39	6.450	-0.341	-1.01	IM
MNGFM4		6.570	-0.159	-0.50	6.321	-0.470	-1.39	LH
MPEGVF		6.529	-0.200	-0.62	6.960	0.169	0.50	TB
NKC67U		6.893	0.163	0.51	6.841	0.050	0.15	LH
NULC9N		6.440	-0.290	-0.90	6.858	0.067	0.20	TF
PZKFBR		7.247	0.517	1.61	7.166	0.375	1.11	LI
Q8LUWT		6.878	0.149	0.46	6.841	0.050	0.15	LH
RDKXZW		7.415	0.685	2.14	7.355	0.564	1.67	LA
T33JUA		6.701	-0.029	-0.09	6.702	-0.089	-0.26	LE
UP9KHX		6.590	-0.140	-0.44	6.897	0.106	0.31	VM
UYDUM2		6.074	-0.655	-2.04	6.253	-0.538	-1.60	LA
WXTW98		6.122	-0.608	-1.90	6.120	-0.670	-1.99	ID
XRMH2W		6.458	-0.272	-0.85	6.487	-0.304	-0.90	IM
YC6WBB		6.749	0.020	0.06	7.012	0.221	0.66	TP
YEV9W3		7.075	0.345	1.08	7.056	0.265	0.79	LI

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Paper & Paperboard Interlaboratory Testing Program

Analysis 325
Tensile Breaking Strength - Printing Papers
TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF47 Lab Mean	Sample SF47 Diff from Grand Mean	Sample SF47 CPV	Sample SF48 Lab Mean	Sample SF48 Diff from Grand Mean	Sample SF48 CPV	Instr Code
YVE8ZE		6.932	0.202	0.63	7.222	0.431	1.28	LX
ZGCXV6		6.915	0.185	0.58	7.220	0.429	1.27	TB
ZPAMCA		6.419	-0.311	-0.97	6.446	-0.345	-1.02	LI

Summary Statistics	Sample SF47	Sample SF48
Grand Means	6.73 kN/m	6.79 kN/m
Stnd Dev Btwn Labs	0.32 kN/m	0.34 kN/m

Statistics based on 43 of 46 reporting participants.

Comments on Assigned Data Flags for Test #325

GBC7EL (X) - Extreme Data.

9K8JYU (X) - Data for sample SF47 are high.

4D4JZB (X) - Extreme Data.

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
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	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab		

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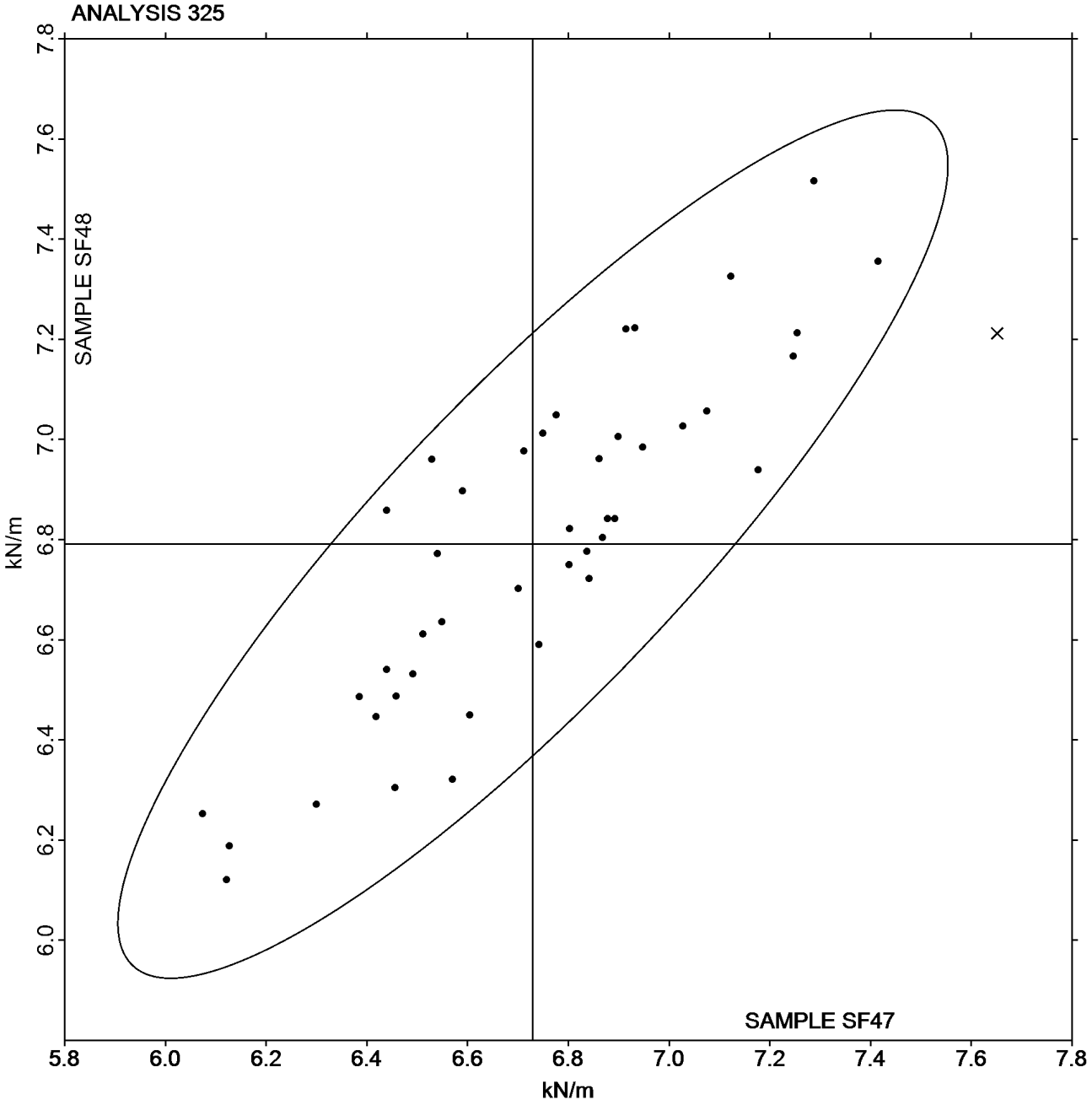
Paper & Paperboard Interlaboratory Testing Program

Analysis 325
Tensile Breaking Strength - Printing Papers
TAPPI Official Test Method T494

Grand Mean Sample SF47 = 6.7296 kN/m

Grand Mean Sample SF48 = 6.7908 kN/m



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Paper & Paperboard Interlaboratory Testing Program

Report #2901S

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF47 Lab Mean	Sample SF47 Diff from Grand Mean	Sample SF47 CPV	Sample SF48 Lab Mean	Sample SF48 Diff from Grand Mean	Sample SF48 CPV	Instr Code
2YVXHV		98.05	3.07	0.31	97.36	0.33	0.03	LA
34LMKK		94.12	-0.86	-0.09	96.98	-0.05	-0.01	DL
3B2LR4		110.29	15.32	1.56	107.60	10.57	1.11	TF
3XAYJM		94.11	-0.87	-0.09	96.35	-0.68	-0.07	TB
4JRDT3		87.84	-7.14	-0.73	99.22	2.20	0.23	LX
6LULGD		105.59	10.61	1.08	107.04	10.01	1.05	LI
747VVJ		89.73	-5.25	-0.54	89.22	-7.81	-0.82	TO
7639HB		106.47	11.49	1.17	112.80	15.77	1.65	LI
78AL3X		90.89	-4.09	-0.42	96.13	-0.90	-0.09	RE
7XFKJY		98.13	3.16	0.32	98.41	1.38	0.14	LH
8XZGP8		97.97	2.99	0.31	100.25	3.22	0.34	LH
9JTVYM		73.55	-21.42	-2.19	76.85	-20.18	-2.11	XX
BBU7UV		78.79	-16.19	-1.65	80.76	-16.27	-1.70	LW
BXRFG4		89.20	-5.78	-0.59	91.69	-5.33	-0.56	LI
GBC7EL	X	110.70	15.72	1.61	141.97	44.94	4.71	LH
H48R9B		116.02	21.04	2.15	109.72	12.69	1.33	TJ
HCJQ3L		91.94	-3.04	-0.31	96.96	-0.07	-0.01	LH
HM28QM		101.59	6.61	0.68	107.73	10.70	1.12	TF
HUZW8Q		90.21	-4.77	-0.49	93.11	-3.92	-0.41	LA
HZBYJM		94.86	-0.12	-0.01	91.50	-5.52	-0.58	TO
J7DG7D		99.66	4.68	0.48	102.60	5.58	0.58	LX
M6MKBF		98.87	3.89	0.40	97.26	0.24	0.02	IM
MNGFM4		92.07	-2.90	-0.30	84.81	-12.22	-1.28	LH
MPEGVF		97.37	2.39	0.24	108.37	11.34	1.19	TB
NKC67U		94.97	-0.01	0.00	91.44	-5.59	-0.59	LH
PZKFBR		98.59	3.61	0.37	97.78	0.75	0.08	LI
Q8LUWT		99.19	4.21	0.43	99.00	1.97	0.21	LH
RDKXZW		103.62	8.64	0.88	109.93	12.90	1.35	LA
UYDUM2	*	65.32	-29.66	-3.03	73.57	-23.46	-2.46	LA
WXTW98		94.27	-0.71	-0.07	96.79	-0.24	-0.02	ID
XRMH2W		105.44	10.46	1.07	110.39	13.37	1.40	IM
YEV9W3		94.50	-0.48	-0.05	92.07	-4.96	-0.52	LI
YVE8ZE		92.15	-2.82	-0.29	100.20	3.17	0.33	LX
ZGCXV6	X	34.06	-60.91	-6.22	35.89	-61.14	-6.40	TB
ZPAMCA		88.90	-6.07	-0.62	88.04	-8.99	-0.94	LI

Summary Statistics	Sample SF47	Sample SF48
Grand Means	94.98 Joules/sq m	97.03 Joules/sq m
Stnd Dev Btwn Labs	9.79 Joules/sq m	9.55 Joules/sq m

Statistics based on 33 of 35 reporting participants.

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Comments on Assigned Data Flags for Test #327

GBC7EL (X) - Data for sample SF48 are high. Inconsistent within the determinations of both samples.

ZGCXV6 (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	TB	Thwing-Albert EJA/1000
TF	Thwing-Albert EJA Vantage-1	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	XX	Instrument make/model not specified by lab

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Paper & Paperboard Interlaboratory Testing Program

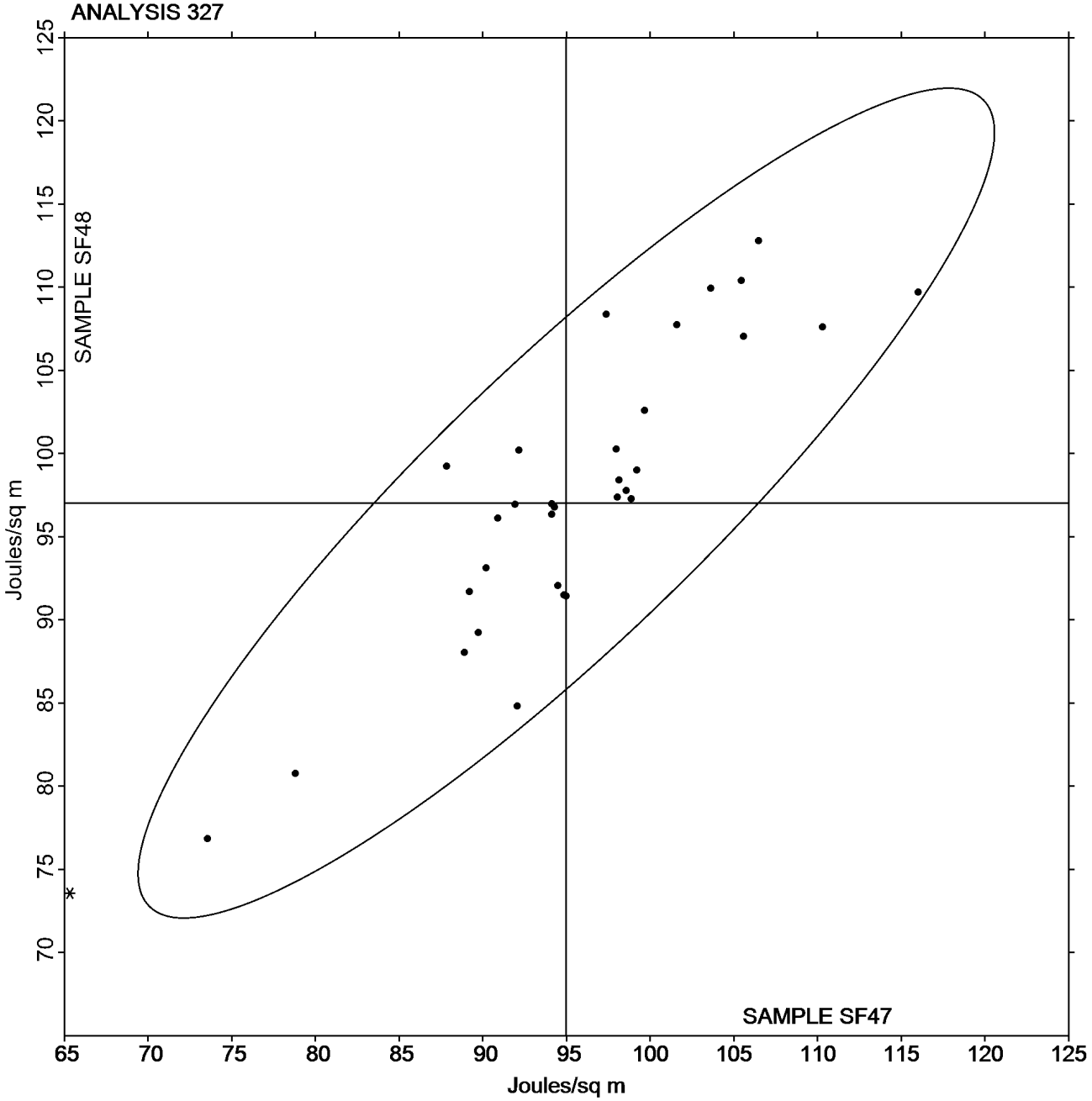
Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

Grand Mean Sample SF47 = 94.978 Joules/sq m

Grand Mean Sample SF48 = 97.028 Joules/sq m



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Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF47 Lab Mean	Sample SF47 Diff from Grand Mean	Sample SF47 CPV	Sample SF48 Lab Mean	Sample SF48 Diff from Grand Mean	Sample SF48 CPV	Instr Code
2YVXHV		1.966	-0.215	-1.03	1.975	-0.237	-1.11	XX
34LMKK		2.235	0.054	0.26	2.261	0.049	0.23	DL
3B2LR4		2.558	0.377	1.82	2.489	0.277	1.30	TF
3XAYJM		2.248	0.067	0.32	2.186	-0.026	-0.12	TB
4JRDT3		1.978	-0.203	-0.98	2.132	-0.080	-0.38	LX
6LULGD		2.221	0.040	0.19	2.258	0.046	0.21	LI
747VVJ		2.063	-0.118	-0.57	2.086	-0.126	-0.59	TG
7639HB		2.245	0.064	0.31	2.301	0.089	0.42	LI
78AL3X		2.303	0.123	0.59	2.402	0.190	0.89	RE
7XFKJY		2.116	-0.065	-0.31	2.126	-0.087	-0.41	LH
8XZGP8		2.177	-0.004	-0.02	2.183	-0.029	-0.14	LH
9JTVYM		2.351	0.170	0.82	2.365	0.153	0.72	XX
B7HYXW		2.158	-0.023	-0.11	2.221	0.009	0.04	TF
BBU7UV		1.807	-0.374	-1.80	1.813	-0.399	-1.87	LX
BXRFG4		2.038	-0.143	-0.69	2.129	-0.083	-0.39	LI
CQMWUX	X	3.000	0.819	3.94	2.800	0.588	2.75	TS
GBC7EL	X	1.839	-0.342	-1.65	2.177	-0.035	-0.17	LH
H48R9B		2.527	0.346	1.66	2.551	0.339	1.59	TJ
HCJQ3L		2.089	-0.092	-0.44	2.118	-0.094	-0.44	LH
HM28QM		2.580	0.399	1.92	2.687	0.475	2.22	TF
HUZW8Q		1.766	-0.415	-2.00	1.830	-0.382	-1.79	LA
HZBYJM		2.149	-0.032	-0.15	2.054	-0.158	-0.74	TO
J7DG7D		2.444	0.263	1.27	2.410	0.198	0.93	LX
LCQ99M	X	0.192	-1.989	-9.57	0.188	-2.024	-9.48	XX
M6MKBF		2.309	0.128	0.62	2.314	0.101	0.47	IM
MNGFM4		2.136	-0.045	-0.22	2.042	-0.170	-0.80	LH
MPEGVF		2.344	0.163	0.78	2.444	0.231	1.08	TB
NKC67U		2.145	-0.036	-0.17	2.089	-0.123	-0.58	LH
NULC9N		2.230	0.049	0.24	2.350	0.138	0.64	TF
PZKFBR		1.920	-0.261	-1.26	1.908	-0.304	-1.42	LI
Q8LUWT		2.177	-0.004	-0.02	2.192	-0.020	-0.09	LH
RDKXZW		1.920	-0.261	-1.26	2.069	-0.143	-0.67	LA
UP9KHX		2.260	0.079	0.38	2.250	0.038	0.18	VM
UYDUM2		1.939	-0.242	-1.16	2.111	-0.101	-0.47	LA
WXTW98		2.323	0.142	0.68	2.386	0.174	0.81	ID
XRMH2W		2.623	0.442	2.13	2.734	0.522	2.44	XX
YEV9W3		2.037	-0.144	-0.69	1.986	-0.226	-1.06	LI
YVE8ZE		2.032	-0.149	-0.72	2.127	-0.085	-0.40	LX
ZGCXV6	X	7.194	5.013	24.13	8.011	5.798	27.14	TB
ZPAMCA		2.097	-0.084	-0.40	2.063	-0.149	-0.70	LI

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Analysis 328
Elongation to Break - Printing Papers
TAPPI Official Test Method T494

Summary Statistics	Sample SF47	Sample SF48
Grand Means	2.18 Percent	2.21 Percent
Stnd Dev Btwn Labs	0.21 Percent	0.21 Percent

Statistics based on 36 of 40 reporting participants.

Comments on Assigned Data Flags for Test #328

GBC7EL (X) - Inconsistent in testing between samples.

ZGCXV6 (X) - Extreme Data.

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

LCQ99M (X) - Extreme Data.

Analysis Notes:

H48R9B - One determination removed from the Lab Mean of Sample SF47 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	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	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	TS	Tinius Olsen 1000
VM	Valmet PaperLab (was Kajaani/Robotest)	XX	Instrument make/model not specified by lab

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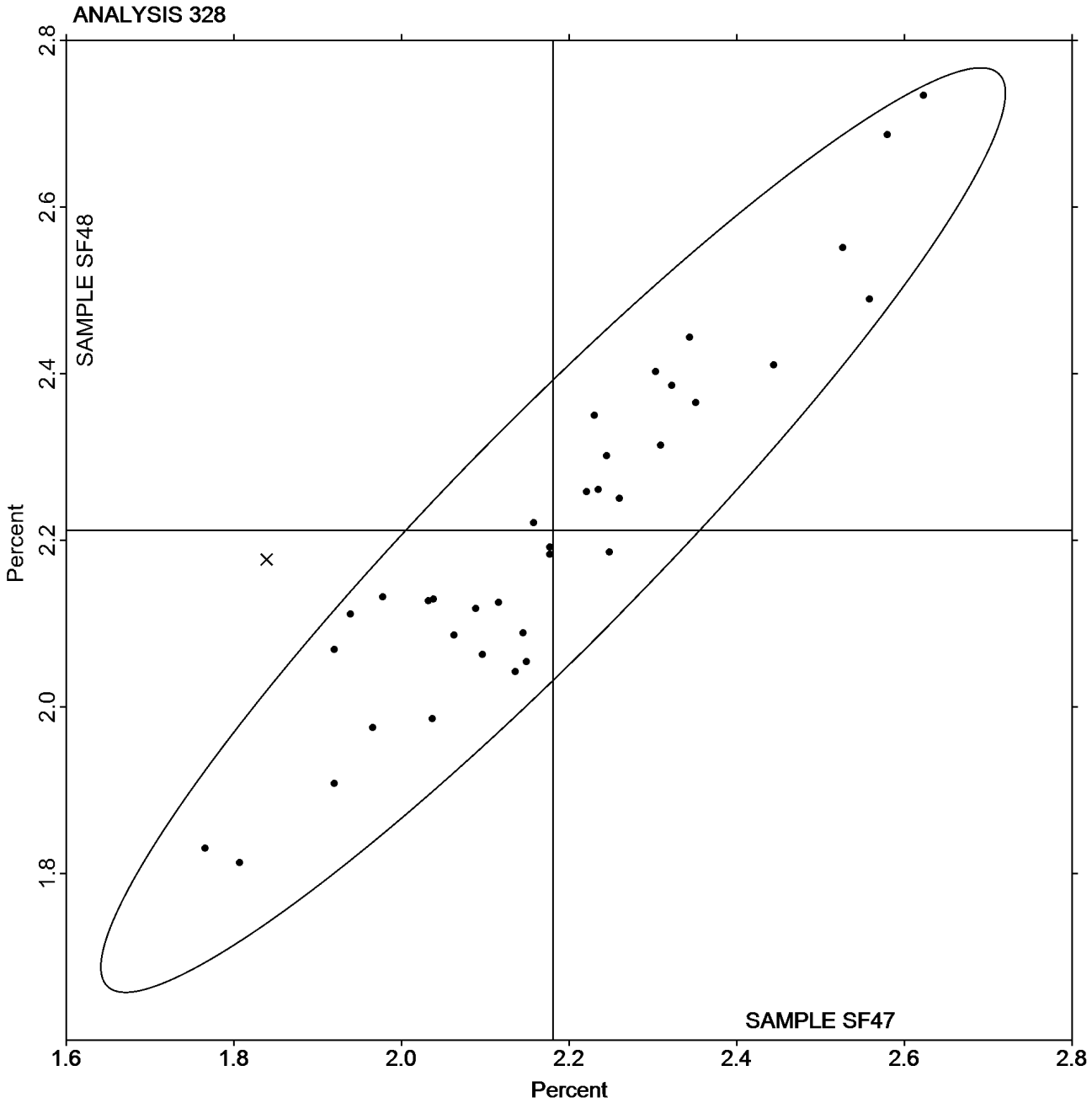
Grand Mean Sample SF47 = 2.1809 Percent

Grand Mean Sample SF48 = 2.2123 Percent



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Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE47 Lab Mean	Sample SE47 Diff from Grand Mean	Sample SE47 CPV	Sample SE48 Lab Mean	Sample SE48 Diff from Grand Mean	Sample SE48 CPV	Instr Code
23RMY3		10.332	0.487	0.76	9.075	0.198	0.39	TB
2A9D7E		9.771	-0.074	-0.12	8.897	0.020	0.04	LE
2H7YE3		9.785	-0.060	-0.09	8.823	-0.054	-0.11	LW
343WBZ	X	14.967	5.122	7.99	14.917	6.040	11.83	LA
3KAX8M		9.697	-0.148	-0.23	8.536	-0.341	-0.67	LE
3XAYJM		9.332	-0.513	-0.80	8.648	-0.229	-0.45	TB
67ZYD7		10.033	0.188	0.29	9.342	0.465	0.91	LA
6BUYPF		10.887	1.042	1.63	9.774	0.897	1.76	LH
6PVRY4		10.312	0.467	0.73	8.828	-0.048	-0.09	TR
8Y72D9		9.286	-0.559	-0.87	8.684	-0.193	-0.38	IK
B8VLDQ		10.785	0.940	1.47	9.487	0.610	1.20	TO
BZEBZP		9.198	-0.647	-1.01	8.107	-0.770	-1.51	XX
C4PRNK		9.963	0.118	0.18	9.048	0.171	0.34	LH
CJ6QV7		10.739	0.895	1.40	9.537	0.660	1.29	TO
CJJY3L		10.548	0.703	1.10	9.800	0.923	1.81	LA
DFFQ9V		10.992	1.148	1.79	9.709	0.832	1.63	TH
DGPVKX	X	8.072	-1.773	-2.77	6.907	-1.970	-3.86	ID
EG9UJG		9.816	-0.029	-0.05	8.841	-0.036	-0.07	LW
F4FRFF		9.272	-0.573	-0.89	8.883	0.006	0.01	LA
FD6FFN		9.737	-0.108	-0.17	8.371	-0.506	-0.99	TO
GXADCP		9.072	-0.773	-1.21	8.338	-0.539	-1.06	IF
HM28QM		9.735	-0.109	-0.17	8.697	-0.180	-0.35	TO
HQ6VEP		10.047	0.202	0.32	8.727	-0.150	-0.29	TT
K2QEGJ		9.828	-0.017	-0.03	8.718	-0.159	-0.31	LE
K9U3EQ	*	8.113	-1.731	-2.70	7.838	-1.039	-2.03	IM
KY9R97		9.654	-0.191	-0.30	8.549	-0.328	-0.64	TA
KYNCVN		9.054	-0.791	-1.23	8.387	-0.490	-0.96	TH
LTKMXG		9.313	-0.532	-0.83	8.254	-0.623	-1.22	TR
M2MDPH		9.985	0.141	0.22	8.705	-0.172	-0.34	TX
MXRDVG		9.549	-0.295	-0.46	8.663	-0.214	-0.42	TH
NCZVWF		10.689	0.844	1.32	9.552	0.675	1.32	IK
NKC67U		10.210	0.365	0.57	8.984	0.107	0.21	LH
NZT3DF		9.950	0.106	0.16	8.939	0.062	0.12	LI
P6X48H		9.299	-0.546	-0.85	8.446	-0.430	-0.84	LE
PFGKWH	X	6.662	-3.183	-4.97	6.067	-2.810	-5.50	TP
PMEADM		8.313	-1.531	-2.39	7.672	-1.205	-2.36	IN
RBFBMT	*	10.549	0.705	1.10	9.888	1.011	1.98	IF
RCA2T8		9.007	-0.838	-1.31	8.271	-0.606	-1.19	LE
RQ9369		9.658	-0.187	-0.29	9.022	0.145	0.28	LH
TVD7PF		10.456	0.612	0.95	9.199	0.322	0.63	TH
VH43KW		9.755	-0.090	-0.14	8.826	-0.050	-0.10	IF
VMX2W7		9.779	-0.066	-0.10	8.613	-0.264	-0.52	IM
VW6XG4	X	9.811	-0.034	-0.05	7.916	-0.960	-1.88	TK

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Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE47 Lab Mean	Sample SE47 Diff from Grand Mean	Sample SE47 CPV	Sample SE48 Lab Mean	Sample SE48 Diff from Grand Mean	Sample SE48 CPV	Instr Code
WW499Z		10.683	0.839	1.31	9.481	0.605	1.18	TA
WXCJ64		9.079	-0.766	-1.20	8.565	-0.312	-0.61	IM
YCQLGC		10.051	0.206	0.32	9.057	0.180	0.35	XX
YKG4X7		10.257	0.412	0.64	9.485	0.608	1.19	ID
YWU9ZV		10.304	0.460	0.72	9.248	0.372	0.73	XX
YWWX9Y		10.139	0.294	0.46	8.944	0.067	0.13	XX

Summary Statistics	Sample SE47	Sample SE48
Grand Means	9.84 kN/m	8.88 kN/m
Stnd Dev Btwn Labs	0.64 kN/m	0.51 kN/m

Statistics based on 45 of 49 reporting participants.

Comments on Assigned Data Flags for Test #330

VW6XG4 (X) - Inconsistent in testing between samples.

343WBZ (X) - Extreme Data.

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

DGPVKX (X) - Data for both samples are low. Inconsistent within the determinations of sample SE47.

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	TT	Tinius Olsen Model MHT
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab

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Tensile Breaking Strength - Packaging Papers

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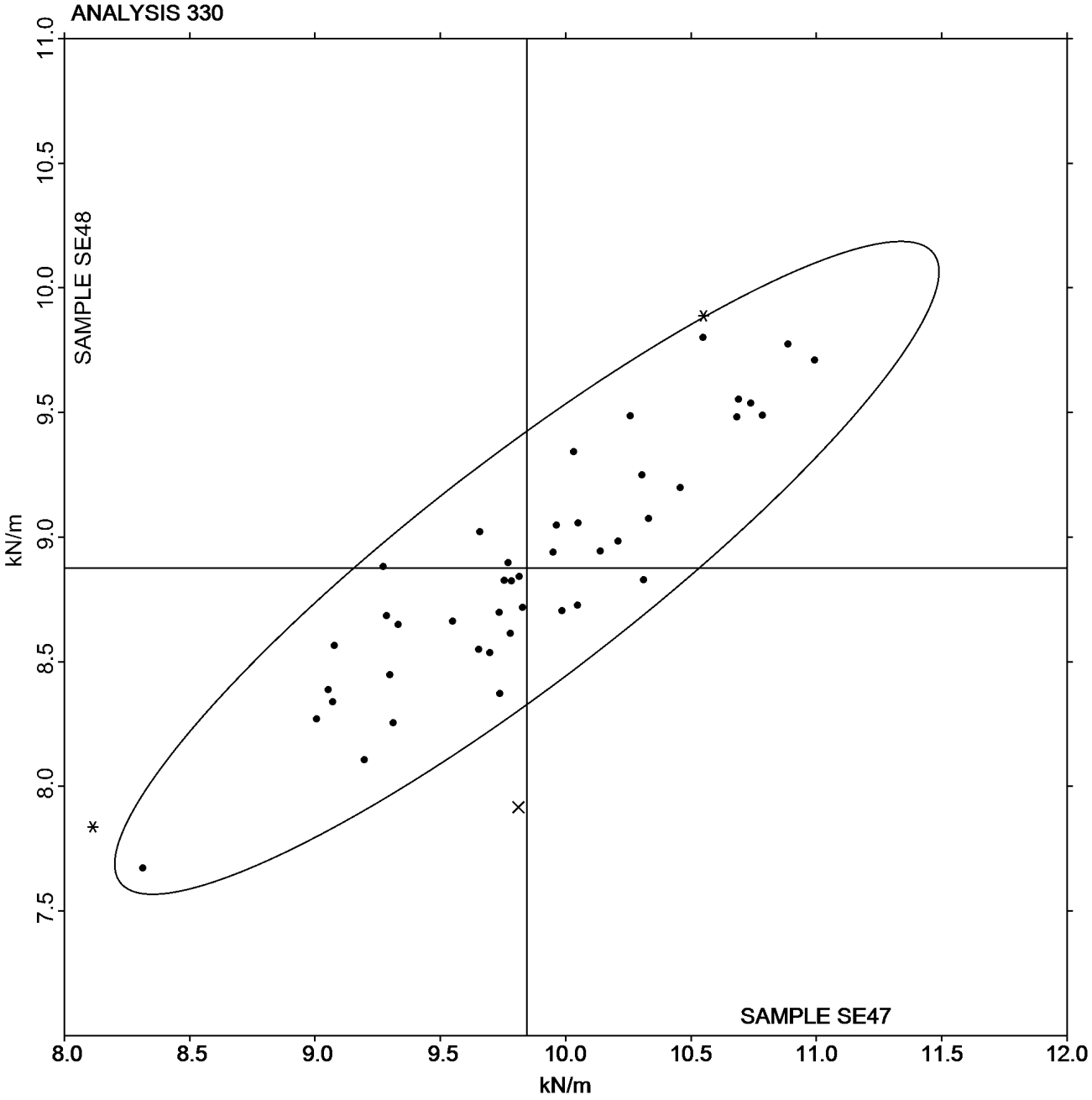
Grand Mean Sample SE47 = 9.8448 kN/m

Grand Mean Sample SE48 = 8.8769 kN/m



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Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE47 Lab Mean	Sample SE47 Diff from Grand Mean	Sample SE47 CPV	Sample SE48 Lab Mean	Sample SE48 Diff from Grand Mean	Sample SE48 CPV	Instr Code
23RMY3		132.1	9.3	0.69	94.86	2.45	0.26	TB
2A9D7E		124.5	1.7	0.13	92.59	0.18	0.02	LE
2H7YE3		117.0	-5.9	-0.44	85.38	-7.03	-0.73	LW
343WBZ		115.5	-7.3	-0.55	101.16	8.76	0.91	LA
3KAX8M		117.4	-5.4	-0.40	77.18	-15.23	-1.59	LE
3XAYJM		109.0	-13.8	-1.03	82.18	-10.23	-1.07	XX
67ZYD7		121.1	-1.7	-0.13	100.54	8.13	0.85	LA
6BUYPF		135.0	12.1	0.90	98.96	6.56	0.68	LH
6PVRY4		128.5	5.7	0.43	93.45	1.05	0.11	TR
8Y72D9		144.4	21.6	1.61	116.97	24.56	2.57	IK
B8VLDQ		132.2	9.4	0.70	91.24	-1.17	-0.12	TO
BZEBZP		126.0	3.1	0.23	90.64	-1.76	-0.18	XX
C4PRNK		108.0	-14.9	-1.11	77.90	-14.50	-1.51	LH
CJ6QV7		143.2	20.4	1.52	103.56	11.15	1.16	TO
CJJY3L		118.2	-4.6	-0.34	97.37	4.96	0.52	LA
DFFQ9V	X	979.1	856.3	63.86	741.21	648.80	67.76	TH
DGPVKX	X	81.6	-41.2	-3.07	54.29	-38.12	-3.98	ID
EG9UJG		109.4	-13.4	-1.00	83.75	-8.65	-0.90	LW
F4FRFF		108.4	-14.4	-1.08	99.88	7.47	0.78	LA
FD6FFN		134.8	12.0	0.90	87.27	-5.13	-0.54	TO
HM28QM		121.4	-1.4	-0.10	87.56	-4.84	-0.51	TO
HQ6VEP		146.4	23.6	1.76	112.15	19.74	2.06	TT
K2QEGJ		115.0	-7.8	-0.58	81.80	-10.61	-1.11	LE
K9U3EQ		92.1	-30.7	-2.29	84.34	-8.07	-0.84	IM
LTKMXG		122.4	-0.4	-0.03	84.16	-8.25	-0.86	TR
M2MDPH		140.6	17.8	1.33	94.16	1.75	0.18	XX
MXRDVG		140.0	17.1	1.28	113.60	21.19	2.21	TH
NCZVWF		121.2	-1.6	-0.12	93.95	1.54	0.16	XX
NKC67U		123.8	1.0	0.07	95.98	3.57	0.37	LH
P6X48H		110.3	-12.5	-0.94	85.42	-6.99	-0.73	LE
PFGKWH	X	2,031.5	1,908.7	142.34	1,463.18	1,370.78	143.16	TP
PMEADM		120.0	-2.9	-0.21	96.14	3.74	0.39	IN
RBFBMT		98.1	-24.7	-1.84	85.82	-6.58	-0.69	IN
RCA2T8		105.8	-17.0	-1.27	81.57	-10.84	-1.13	LE
RQ9369		120.6	-2.2	-0.17	90.67	-1.73	-0.18	LH
TVD7PF		149.8	27.0	2.01	104.96	12.55	1.31	TH
VH43KW		127.3	4.5	0.34	97.76	5.35	0.56	IF
VMX2W7		127.3	4.5	0.33	91.15	-1.26	-0.13	IM
VW6XG4		110.3	-12.5	-0.93	78.73	-13.67	-1.43	TK
WW499Z		135.1	12.3	0.92	96.57	4.16	0.43	TA
WXCJ64		105.7	-17.1	-1.28	87.05	-5.35	-0.56	IM
YWU9ZV		130.5	7.7	0.57	95.01	2.60	0.27	XX
YWWX9Y		124.4	1.6	0.12	82.81	-9.60	-1.00	XX

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Paper & Paperboard Interlaboratory Testing Program

Analysis 331
Tensile Energy Absorption - Packaging Papers
TAPPI Official Test Method T494

Summary Statistics	Sample SE47	Sample SE48
Grand Means	122.82 Joules/sq m	92.41 Joules/sq m
Stnd Dev Btwn Labs	13.41 Joules/sq m	9.57 Joules/sq m

Statistics based on 40 of 43 reporting participants.

Comments on Assigned Data Flags for Test #331

PFGKWH (X) - Extreme Data.

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

DFFQ9V (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	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
TT	Tinius Olsen Model MHT	XX	Instrument make/model not specified by lab

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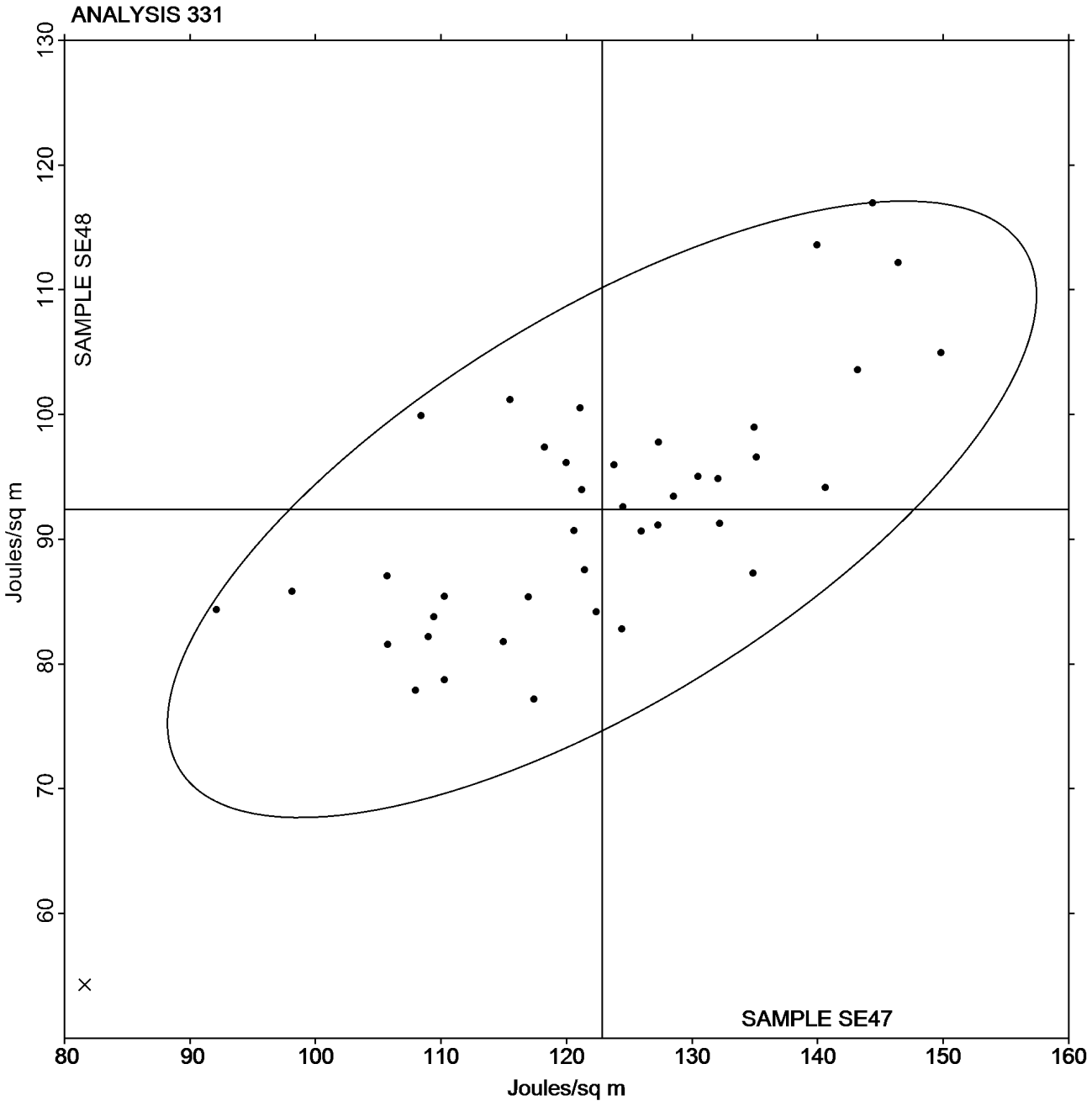
Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

Grand Mean Sample SE47 = 122.82 Joules/sq m

Grand Mean Sample SE48 = 92.406 Joules/sq m



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Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE47 Lab Mean	Sample SE47 Diff from Grand Mean	Sample SE47 CPV	Sample SE48 Lab Mean	Sample SE48 Diff from Grand Mean	Sample SE48 CPV	Instr Code
23RMY3		1.909	0.036	0.14	1.639	-0.007	-0.03	TB
2A9D7E		1.859	-0.014	-0.06	1.595	-0.051	-0.24	LE
2H7YE3		1.751	-0.122	-0.49	1.504	-0.142	-0.66	LW
343WBZ		1.406	-0.467	-1.87	1.341	-0.305	-1.41	XX
3KAX8M		1.739	-0.134	-0.54	1.390	-0.256	-1.18	LE
3XAYJM		1.750	-0.124	-0.49	1.533	-0.113	-0.52	TB
67ZYD7		1.681	-0.192	-0.77	1.593	-0.053	-0.25	LA
6BUYPF		1.804	-0.069	-0.28	1.547	-0.099	-0.46	LH
6PVRY4		1.898	0.024	0.10	1.689	0.042	0.20	TR
8Y72D9		2.313	0.439	1.76	2.102	0.456	2.10	IK
B8VLDQ		1.829	-0.044	-0.18	1.567	-0.079	-0.37	TO
BZEBZP		2.043	0.170	0.68	1.760	0.114	0.53	XX
C4PRNK		1.600	-0.273	-1.09	1.345	-0.301	-1.39	LH
CJ6QV7		2.155	0.282	1.13	1.870	0.224	1.03	TO
CJJY3L		1.598	-0.275	-1.10	1.517	-0.129	-0.60	LA
DFFQ9V	X	13.290	11.417	45.67	12.277	10.631	49.06	TH
DGPVKX		1.670	-0.203	-0.81	1.403	-0.243	-1.12	ID
EG9UJG		1.637	-0.236	-0.95	1.467	-0.179	-0.83	LW
F4FRFF		1.424	-0.449	-1.80	1.435	-0.211	-0.97	LA
FD6FFN	*	2.260	0.387	1.55	1.780	0.134	0.62	TO
HM28QM		1.920	0.047	0.19	1.643	-0.003	-0.01	TO
HQ6VEP	X	2.732	0.859	3.43	2.571	0.925	4.27	TT
K2QEGJ		1.685	-0.188	-0.75	1.433	-0.213	-0.98	LE
K9U3EQ		1.753	-0.120	-0.48	1.727	0.081	0.37	IM
KY9R97		1.933	0.060	0.24	1.642	-0.004	-0.02	TA
LTKMXG		1.965	0.092	0.37	1.624	-0.022	-0.10	TR
M2MDPH		2.246	0.373	1.49	1.837	0.191	0.88	XX
MXRDVG	*	2.417	0.544	2.17	2.267	0.621	2.87	TH
NCZVWF		1.930	0.057	0.23	1.760	0.114	0.53	XX
NKC67U		1.847	-0.026	-0.11	1.524	-0.122	-0.56	LH
P6X48H		1.722	-0.151	-0.61	1.544	-0.102	-0.47	LE
PFGKWH		2.337	0.464	1.85	2.122	0.476	2.20	TP
PMEADM		2.280	0.407	1.63	1.960	0.314	1.45	IN
RBFBMT		1.428	-0.446	-1.78	1.355	-0.291	-1.34	IN
RCA2T8		1.709	-0.164	-0.66	1.511	-0.135	-0.62	LE
RQ9369		1.797	-0.076	-0.31	1.537	-0.109	-0.50	LH
TVD7PF		2.140	0.267	1.07	1.930	0.284	1.31	TH
VH43KW		2.120	0.247	0.99	1.916	0.270	1.25	IF
VMX2W7		2.169	0.296	1.18	1.895	0.249	1.15	IM
VW6XG4		1.739	-0.134	-0.54	1.558	-0.088	-0.41	TK
WW499Z		1.842	-0.031	-0.13	1.595	-0.051	-0.24	TA
WXCJ64		1.747	-0.126	-0.51	1.553	-0.093	-0.43	IM
YKG4X7		1.774	-0.099	-0.40	1.653	0.007	0.03	ID

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Paper & Paperboard Interlaboratory Testing Program

Analysis 332
Elongation to Break - Packaging Papers
TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE47 Lab Mean	Sample SE47 Diff from Grand Mean	Sample SE47 CPV	Sample SE48 Lab Mean	Sample SE48 Diff from Grand Mean	Sample SE48 CPV	Instr Code
YWU9ZV		1.940	0.067	0.27	1.670	0.024	0.11	XX
YWWX9Y		1.795	-0.078	-0.31	1.451	-0.195	-0.90	XX

Summary Statistics	Sample SE47	Sample SE48
Grand Means	1.87 Percent	1.65 Percent
Stnd Dev Btwn Labs	0.25 Percent	0.22 Percent

Statistics based on 43 of 45 reporting participants.

Comments on Assigned Data Flags for Test #332

HQ6VEP (X) - Data for both samples are high. Possible Systematic Error.

DFFQ9V (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 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
TK	Thwing-Albert Model 37-4	TO	Thwing-Albert QC-1000
TP	TMI Monitor/Tensile 100 (84-21-01)	TR	TMI Horizontal Tensile Tester
TT	Tinius Olsen Model MHT	XX	Instrument make/model not specified by lab

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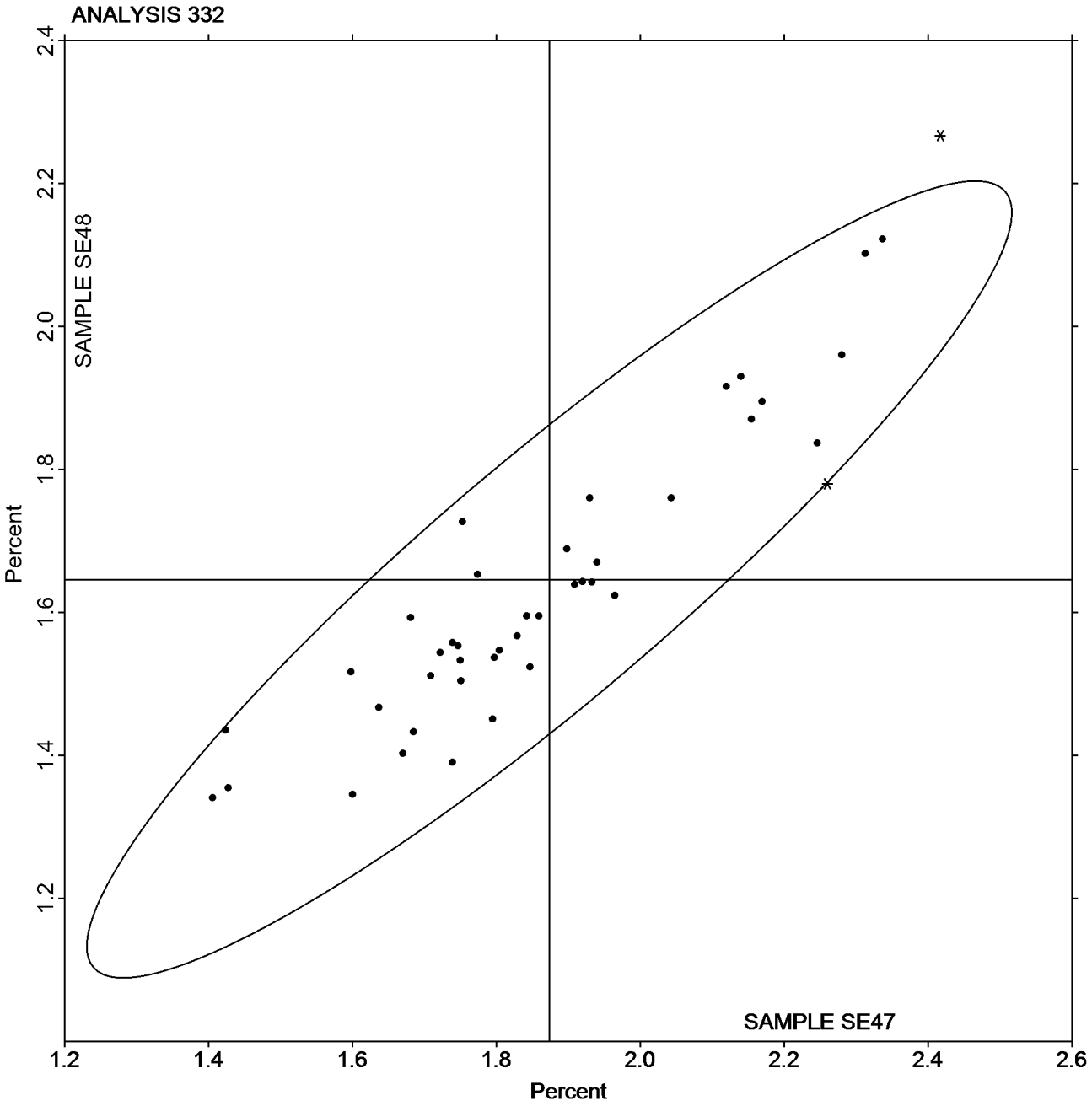
Grand Mean Sample SE47 = 1.8735 Percent

Grand Mean Sample SE48 = 1.6461 Percent



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Paper & Paperboard Interlaboratory Testing Program

Analysis 334
Folding Endurance (MIT) - Double Folds
TAPPI Official Test Method T511

WebCode	Data Flag	Sample SG47 Lab Mean	Sample SG47 Diff from Grand Mean	Sample SG47 CPV	Sample SG48 Lab Mean	Sample SG48 Diff from Grand Mean	Sample SG48 CPV	Instr Code
7VX23B		233.3	15.8	0.29	235.0	20.5	0.37	MT
9K8JYU		166.1	-51.4	-0.93	163.6	-50.9	-0.93	MT
AJT84V		192.8	-24.7	-0.45	141.0	-73.5	-1.34	XX
BXRFG4		267.4	49.9	0.91	315.6	101.1	1.84	MT
BZEBZP		278.4	60.9	1.11	256.6	42.1	0.77	MT
EG9UJG		115.5	-102.0	-1.85	145.2	-69.3	-1.26	MT
KY9R97		195.6	-21.9	-0.40	193.6	-20.9	-0.38	MT
M6MKBF		243.6	26.1	0.47	220.7	6.2	0.11	MT
MXRDVG		165.0	-52.5	-0.95	179.4	-35.1	-0.64	MT
NULC9N		208.2	-9.3	-0.17	197.9	-16.6	-0.30	MT
T33JUA		293.4	75.9	1.38	284.1	69.6	1.27	MT
UP9KHX		159.4	-58.1	-1.06	155.4	-59.1	-1.08	MT
V6F83B		294.7	77.2	1.40	259.8	45.3	0.82	MT
WXTW98		231.3	13.8	0.25	255.1	40.6	0.74	MT

Summary Statistics	Sample SG47	Sample SG48
Grand Means	217.48 Double Folds	214.50 Double Folds
Stnd Dev Btwn Labs	55.05 Double Folds	54.93 Double Folds

Statistics based on 14 of 14 reporting participants.

Key to Instrument Codes Reported by Participants

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

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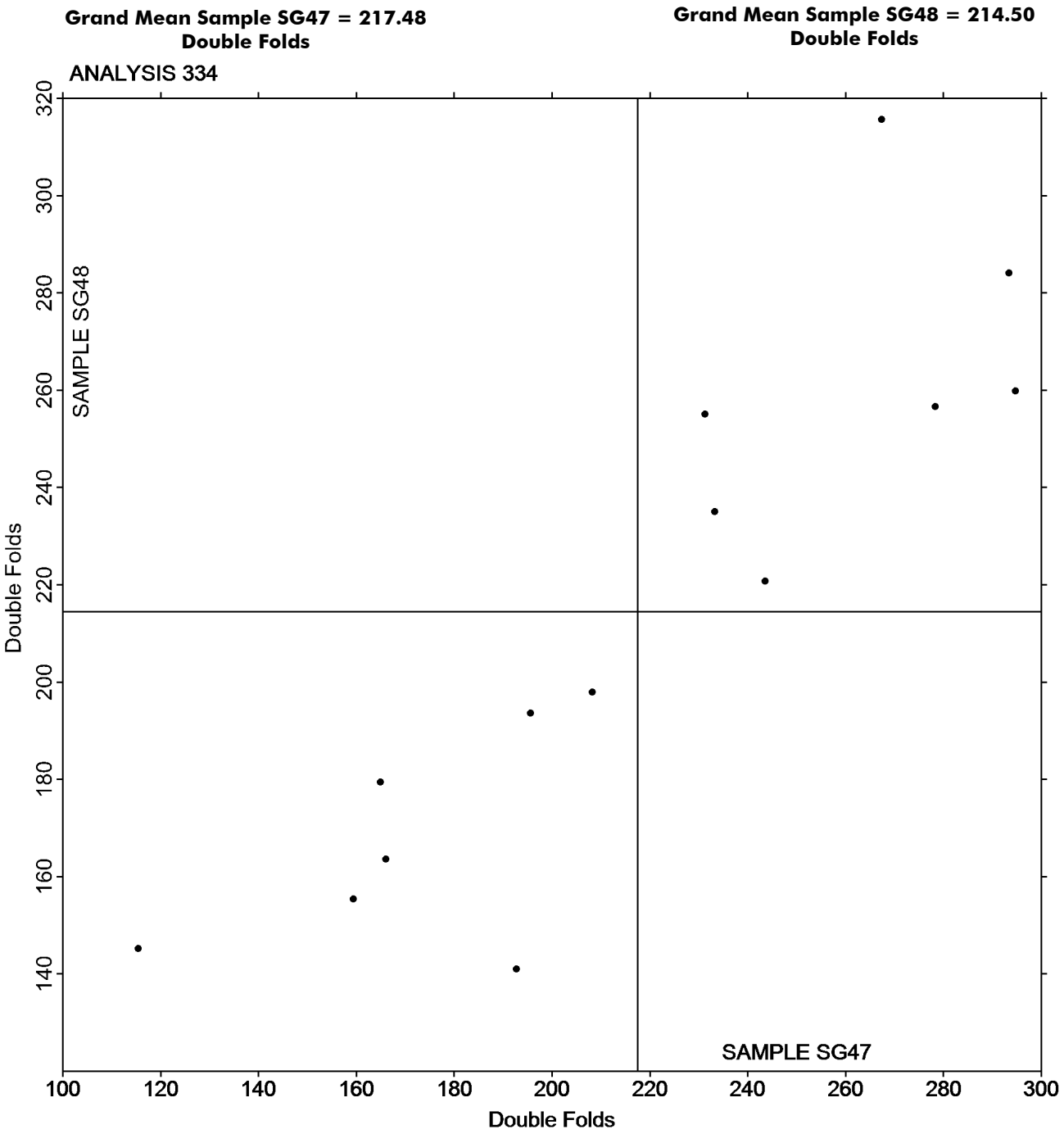
Paper & Paperboard Interlaboratory Testing Program

Analysis 334
Folding Endurance (MIT) - Double Folds
TAPPI Official Test Method T511



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 336
Bending Resistance, Gurley Type
TAPPI Official Test Method T543

WebCode	Data Flag	Sample SH47 Lab Mean	Sample SH47 Diff from Grand Mean	Sample SH47 CPV	Sample SH48 Lab Mean	Sample SH48 Diff from Grand Mean	Sample SH48 CPV
3B2LR4		196.7	-21.4	-0.90	177.6	-20.0	-1.16
3XAYJM		190.0	-28.1	-1.18	168.3	-29.3	-1.70
4JRDT3		194.0	-24.1	-1.01	182.6	-15.0	-0.87
7X3X47	X	328.8	110.7	4.65	274.8	77.2	4.47
7XFKJY		246.0	27.8	1.17	222.4	24.8	1.44
AJT84V		214.2	-3.9	-0.16	193.8	-3.8	-0.22
BZEBZP		230.7	12.5	0.53	210.0	12.4	0.72
EBL7LQ		219.1	1.0	0.04	195.6	-2.0	-0.12
GBC7EL		188.5	-29.7	-1.25	192.2	-5.4	-0.31
GJ4PVF		249.0	30.9	1.30	207.0	9.4	0.54
HZBYJM		206.8	-11.3	-0.47	183.5	-14.2	-0.82
KY9R97		196.7	-21.4	-0.90	186.5	-11.2	-0.65
M6MKBF		215.6	-2.6	-0.11	198.9	1.3	0.07
MPEGVF		214.7	-3.4	-0.14	201.8	4.2	0.24
UGT22J		227.6	9.4	0.40	201.4	3.7	0.21
UP9KHX		282.0	63.9	2.68	239.7	42.1	2.43
UYDUM2		228.5	10.4	0.44	209.1	11.4	0.66
VH43KW		219.8	1.6	0.07	207.6	9.9	0.57
VKQYV9		206.5	-11.6	-0.49	179.6	-18.1	-1.05

Summary Statistics	Sample SH47	Sample SH48
Grand Means	218.13 Gurley Units	197.64 Gurley Units
Stnd Dev Btwn Labs	23.80 Gurley Units	17.27 Gurley Units

Statistics based on 18 of 19 reporting participants.

Comments on Assigned Data Flags for Test #336

7X3X47 (X) - Data for both samples are high. Inconsistent within the determinations of sample SH47.

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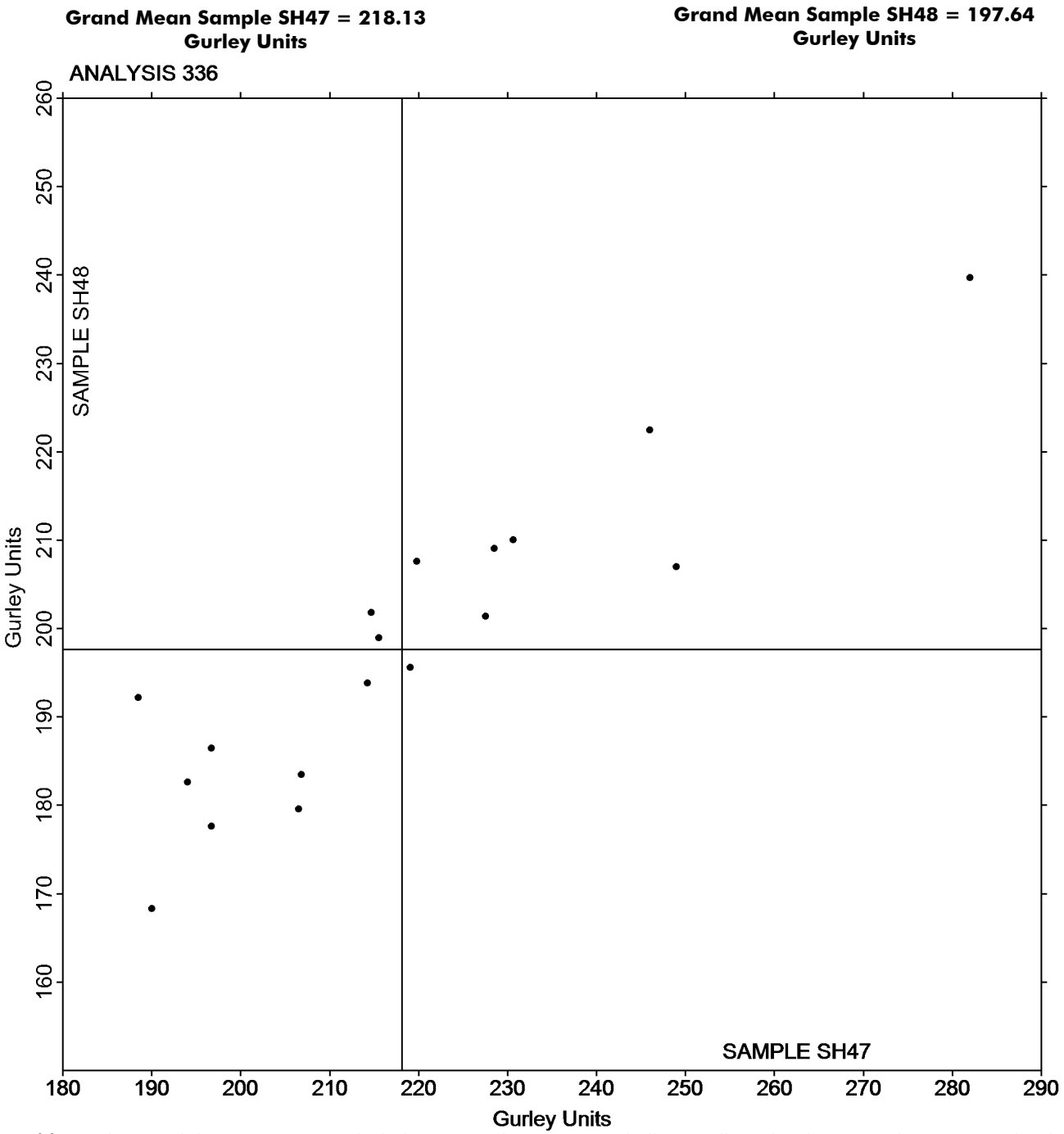

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 338

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

WebCode	Data Flag	Sample SJ47 Lab Mean	Sample SJ47 Diff from Grand Mean	Sample SJ47 CPV	Sample SJ48 Lab Mean	Sample SJ48 Diff from Grand Mean	Sample SJ48 CPV
2H7YE3		3.500	-0.812	-2.06	3.200	-0.959	-1.69
7XFKJY		4.478	0.166	0.42	4.305	0.146	0.26
9K8JYU		4.445	0.133	0.34	3.536	-0.623	-1.10
AJT84V		4.915	0.603	1.53	4.750	0.591	1.04
H48R9B		4.813	0.501	1.27	4.644	0.485	0.86
J7DG7D		4.531	0.219	0.55	3.810	-0.349	-0.62
LCQ99M		4.043	-0.269	-0.68	4.118	-0.041	-0.07
M6MKBF		4.178	-0.134	-0.34	4.104	-0.055	-0.10
MPEGVF		4.286	-0.026	-0.07	4.129	-0.030	-0.05
RBFBMT		4.730	0.418	1.06	5.450	1.291	2.28
VH43KW		3.909	-0.403	-1.02	3.986	-0.173	-0.30
WXTW98		4.127	-0.185	-0.47	3.833	-0.326	-0.58
YC6WBB		4.107	-0.205	-0.52	4.196	0.037	0.07

Summary Statistics	Sample SJ47	Sample SJ48
Grand Means	4.31 Taber Units	4.16 Taber Units
Stnd Dev Btwn Labs	0.39 Taber Units	0.57 Taber Units

Statistics based on 13 of 13 reporting participants.

Analysis Notes:

9K8JYU - Data appear to be off by a factor of 10; data converted by CTS (x0.1).

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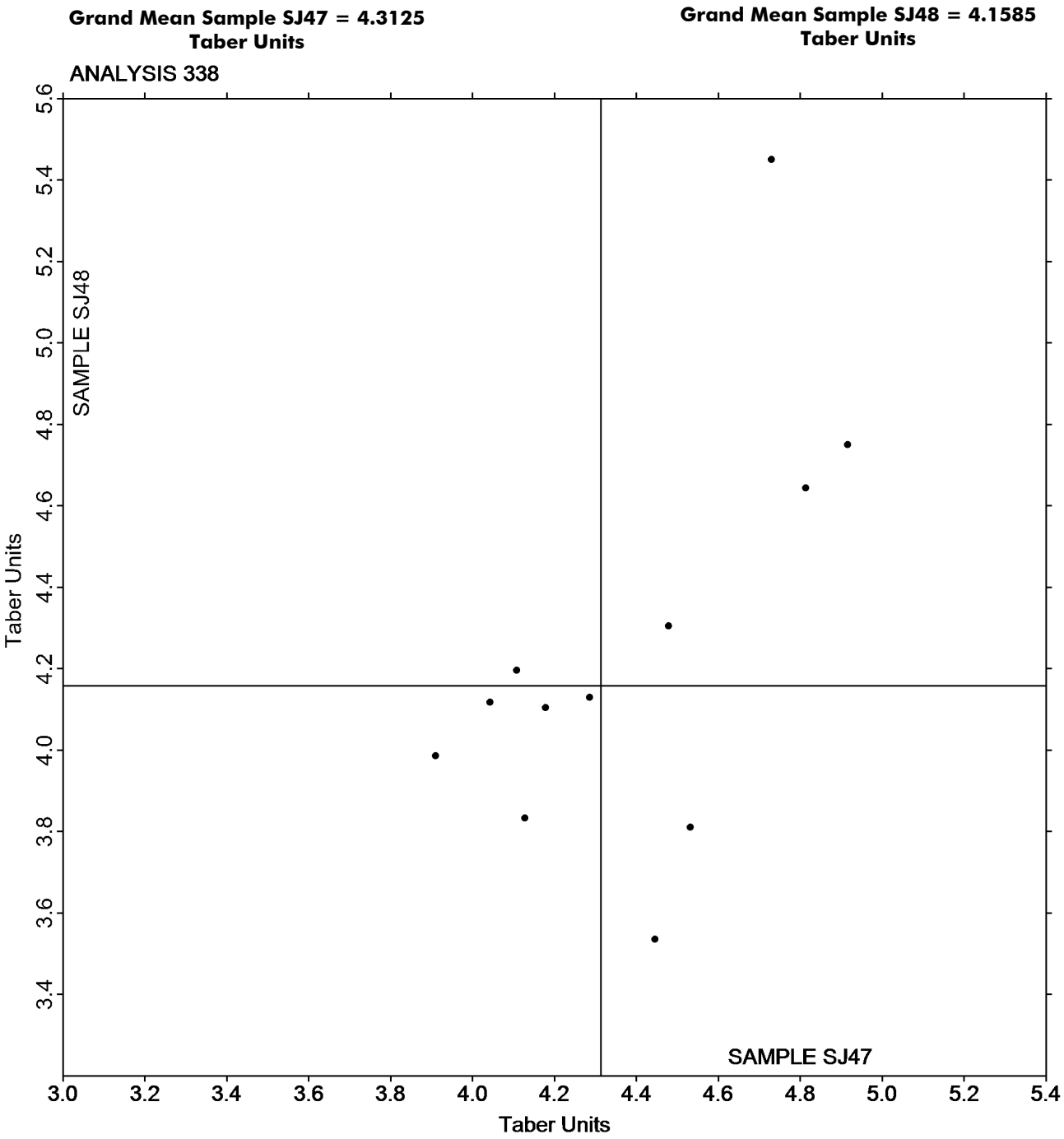
Paper & Paperboard Interlaboratory Testing Program

Analysis 338
Bending Resistance, Taber Type - 0 to 10 Units
TAPPI Official Test Method T566



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

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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 SQ47 Lab Mean	Sample SQ47 Diff from Grand Mean	Sample SQ47 CPV	Sample SQ48 Lab Mean	Sample SQ48 Diff from Grand Mean	Sample SQ48 CPV
23RMY3		17.70	-1.20	-0.60	20.50	-1.35	-0.64
2A9D7E		20.61	1.71	0.85	23.95	2.10	1.00
2H7YE3		17.25	-1.65	-0.82	20.60	-1.25	-0.59
34LMKK		15.83	-3.07	-1.53	18.46	-3.39	-1.61
3XAYJM		17.53	-1.37	-0.68	20.71	-1.14	-0.54
747VVJ		20.35	1.45	0.72	23.95	2.10	1.00
A4WVME	X	92.65	73.75	36.70	106.80	84.95	40.36
EG9UJG		18.92	0.02	0.01	22.48	0.63	0.30
F4FRFF		22.88	3.98	1.98	25.52	3.67	1.74
M6MKBF		18.99	0.09	0.04	21.28	-0.57	-0.27
UGT22J		18.96	0.05	0.03	21.03	-0.82	-0.39

Summary Statistics	Sample SQ47	Sample SQ48
Grand Means	18.90 Taber Units	21.85 Taber Units
Stnd Dev Btwn Labs	2.01 Taber Units	2.10 Taber Units

Statistics based on 10 of 11 reporting participants.

Comments on Assigned Data Flags for Test #339

A4WVME (X) - Extreme Data.

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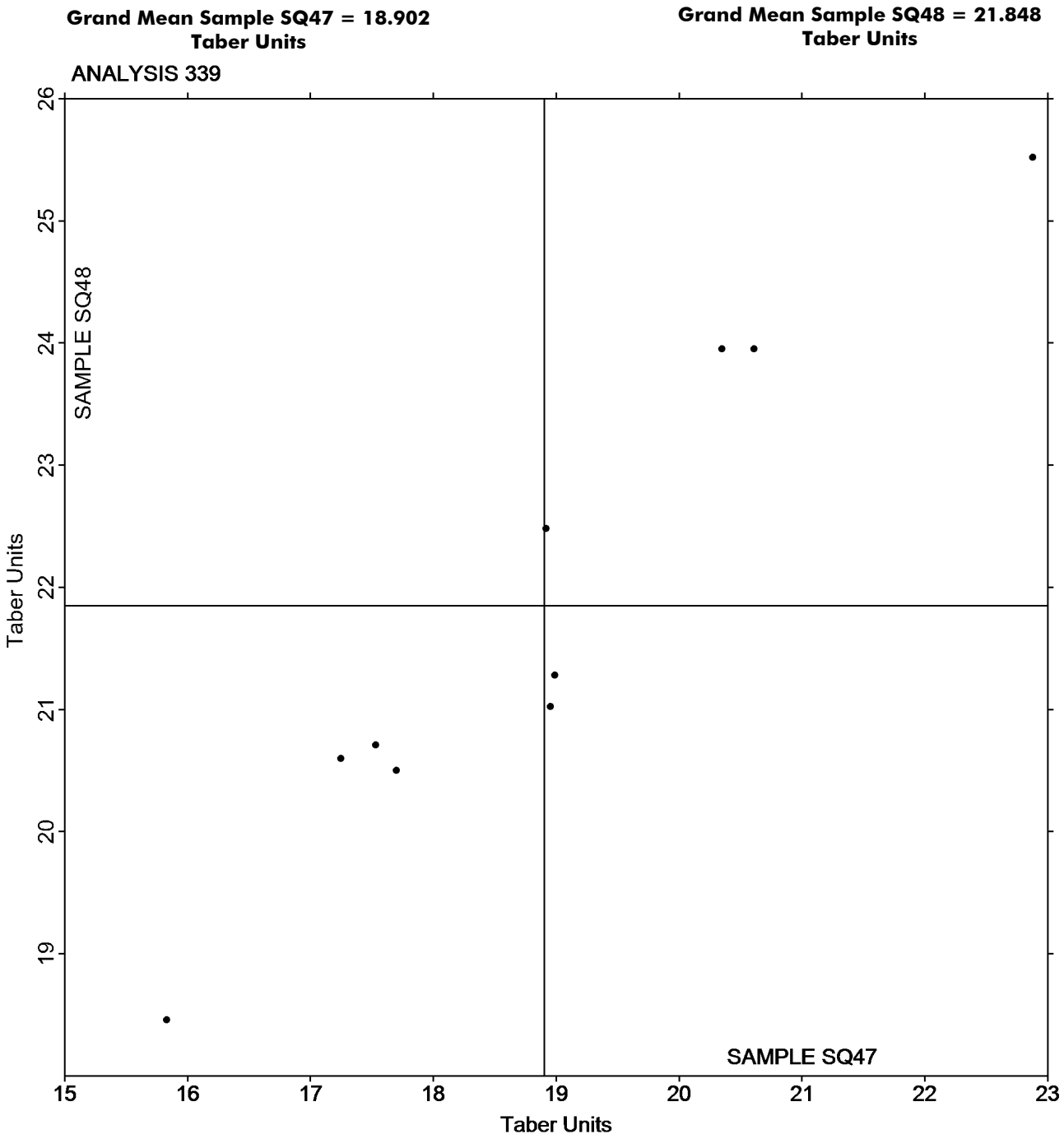
Paper & Paperboard Interlaboratory Testing Program

Analysis 339

Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 340

Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard

TAPPI Official Test Method T489

WebCode	Data Flag	Sample ST47 Lab Mean	Sample ST47 Diff from Grand Mean	Sample ST47 CPV	Sample ST48 Lab Mean	Sample ST48 Diff from Grand Mean	Sample ST48 CPV
2H7YE3		285.3	-2.0	-0.16	277.5	-0.7	-0.05
BBU8Y2		294.3	7.0	0.56	292.0	13.8	1.03
BZEBZP		275.8	-11.4	-0.91	275.8	-2.4	-0.18
CDX42G		291.1	3.8	0.30	283.7	5.5	0.41
EG9UJG		303.9	16.6	1.32	294.3	16.1	1.20
EJECJX		293.3	6.0	0.48	281.6	3.4	0.26
GXADCP		289.6	2.3	0.18	284.3	6.1	0.46
JT7LVN		271.0	-16.3	-1.30	256.5	-21.6	-1.62
KYNCVN		301.0	13.7	1.09	296.0	17.8	1.33
LN3CUK		278.3	-8.9	-0.71	262.4	-15.8	-1.18
LTKMXG		282.6	-4.7	-0.38	268.0	-10.1	-0.76
MXRDVG		299.5	12.2	0.97	281.1	2.9	0.22
NYG746		278.1	-9.2	-0.73	259.6	-18.6	-1.39
PFGKWH		273.3	-14.0	-1.11	265.6	-12.6	-0.94
UGT22J		284.4	-2.9	-0.23	278.2	0.0	0.00
WK9A3F		269.1	-18.2	-1.45	269.8	-8.4	-0.63
YCQLGC		313.4	26.1	2.08	302.7	24.5	1.83

Summary Statistics	Sample ST47	Sample ST48
Grand Means	287.29 Taber Units	278.18 Taber Units
Stnd Dev Btwn Labs	12.56 Taber Units	13.36 Taber Units

Statistics based on 17 of 17 reporting participants.

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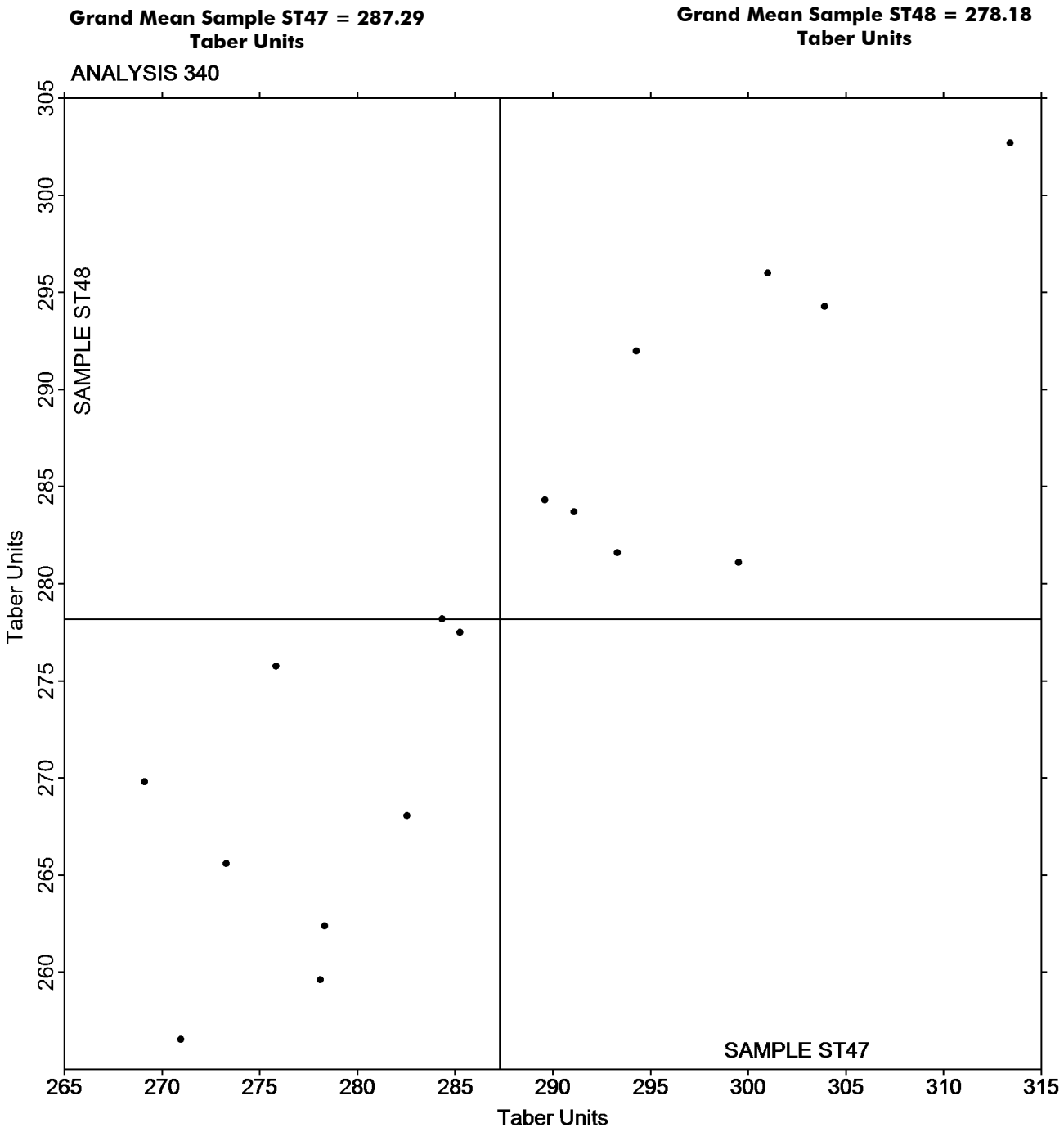
Paper & Paperboard Interlaboratory Testing Program

Analysis 340

Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard

TAPPI Official Test Method T489



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 343
Z-Direction Tensile
TAPPI Official Test Method T541

WebCode	Data Flag	Sample SM47 Lab Mean	Sample SM47 Diff from Grand Mean	Sample SM47 CPV	Sample SM48 Lab Mean	Sample SM48 Diff from Grand Mean	Sample SM48 CPV	Instr Code
23RMY3		97.26	14.41	1.86	106.16	12.38	1.09	TA
2A9D7E		79.38	-3.46	-0.45	93.50	-0.28	-0.02	TA
6LULGD		72.91	-9.93	-1.28	85.29	-8.49	-0.75	LW
9YAQG6		85.40	2.56	0.33	83.90	-9.88	-0.87	XX
A4WVME		69.84	-13.00	-1.67	76.59	-17.19	-1.51	TZ
ARLKX4		87.72	4.88	0.63	91.50	-2.28	-0.20	XX
D7AWX3		87.22	4.38	0.56	113.32	19.54	1.72	TA
EG9UJG		90.78	7.94	1.02	107.26	13.48	1.18	LW
FD6FFN		80.40	-2.44	-0.31	88.80	-4.98	-0.44	TA
M6MKBF		74.52	-8.32	-1.07	74.70	-19.08	-1.68	TZ
MXRDVG		79.24	-3.60	-0.46	94.12	0.34	0.03	LW
P9DVXB		93.92	11.08	1.43	109.20	15.42	1.35	CA
PFGKWH		77.13	-5.71	-0.74	93.55	-0.23	-0.02	LX
VH43KW		82.82	-0.03	0.00	94.10	0.32	0.03	TL
WXTW98		84.10	1.26	0.16	94.72	0.94	0.08	CD

Summary Statistics	Sample SM47	Sample SM48
Grand Means	82.84 psi	93.78 psi
Stnd Dev Btwn Labs	7.77 psi	11.39 psi

Statistics based on 15 of 15 reporting participants.

Key to Instrument Codes Reported by Participants

CA	CSI CS-163	CD	CSI CS-163D
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

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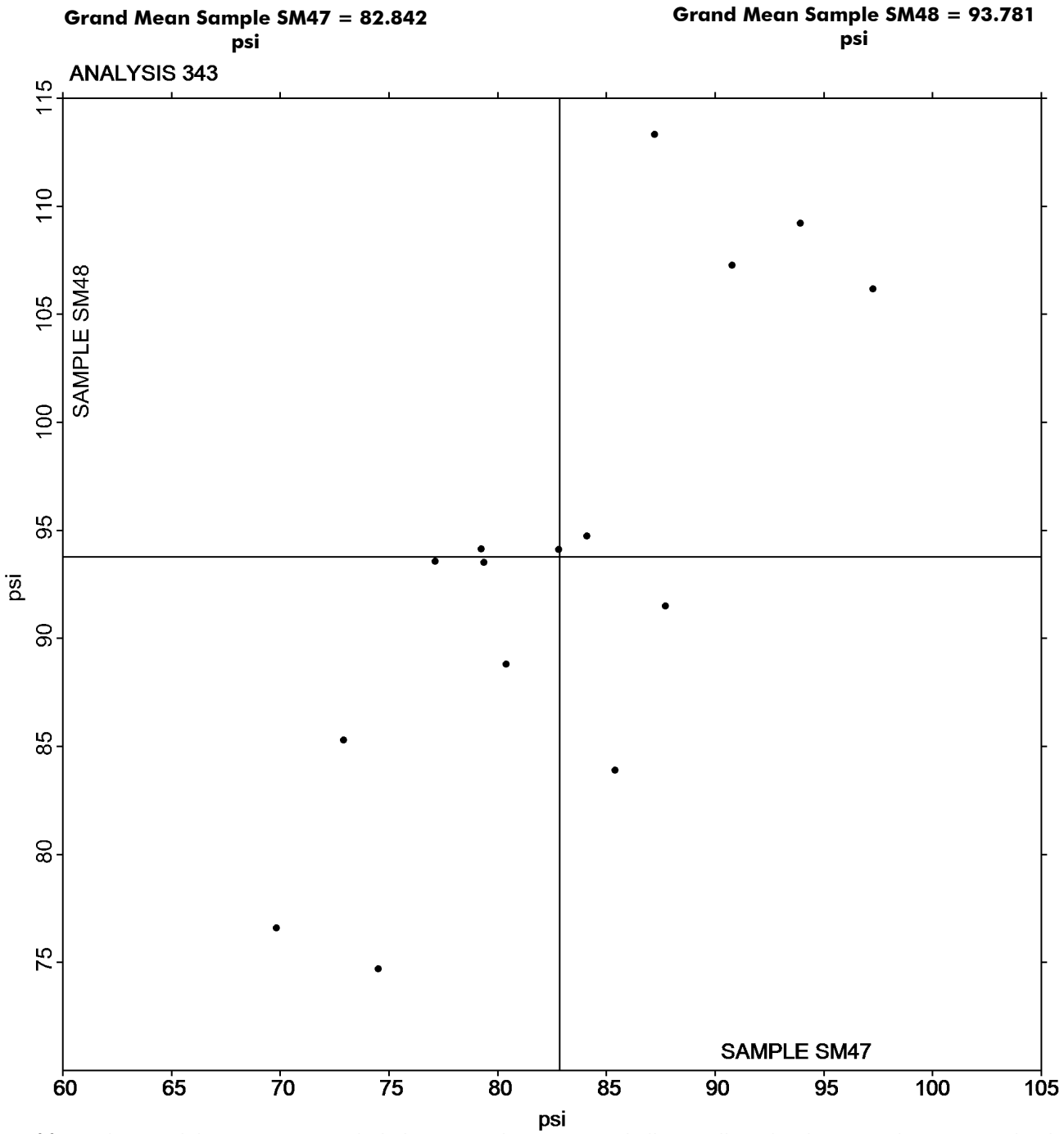

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample SZ47 Lab Mean	Sample SZ47 Diff from Grand Mean	Sample SZ47 CPV	Sample SZ48 Lab Mean	Sample SZ48 Diff from Grand Mean	Sample SZ48 CPV	Instr Code
3TJFMY		32.58	-2.69	-1.10	33.32	-1.66	-0.80	LW
67ZYD7		35.01	-0.26	-0.11	34.46	-0.52	-0.25	TA
8NUGDL		35.44	0.17	0.07	35.28	0.30	0.14	CD
8Y72D9		40.66	5.39	2.21	39.63	4.65	2.24	PG
ADND49		37.40	2.13	0.87	37.40	2.42	1.16	CA
BZEBZP		33.88	-1.39	-0.57	32.92	-2.06	-0.99	CA
CDX42G		33.60	-1.67	-0.69	34.16	-0.82	-0.40	TZ
D7UF4A		33.40	-1.87	-0.77	33.42	-1.56	-0.75	DP
EJECJX		36.20	0.93	0.38	38.20	3.22	1.55	CA
JT7LVN		35.24	-0.03	-0.01	34.92	-0.06	-0.03	TA
LN3CUK		34.30	-0.97	-0.40	35.20	0.22	0.10	TA
NYG746		36.20	0.93	0.38	33.88	-1.10	-0.53	CD
NZT3DF		40.98	5.70	2.34	37.96	2.98	1.43	CH
UGT22J		33.68	-1.59	-0.65	32.56	-2.42	-1.17	CA
WK9A3F		33.80	-1.47	-0.60	34.20	-0.78	-0.38	CA
XAPZC2		32.94	-2.33	-0.96	33.26	-1.72	-0.83	LW
YCQLGC		34.35	-0.92	-0.38	33.96	-1.02	-0.49	TZ

Summary Statistics	Sample SZ47	Sample SZ48
Grand Means	35.27 psi	34.98 psi
Stnd Dev Btwn Labs	2.44 psi	2.08 psi

Statistics based on 17 of 17 reporting participants.

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	TZ	TMI Monitor/ZDT Tester

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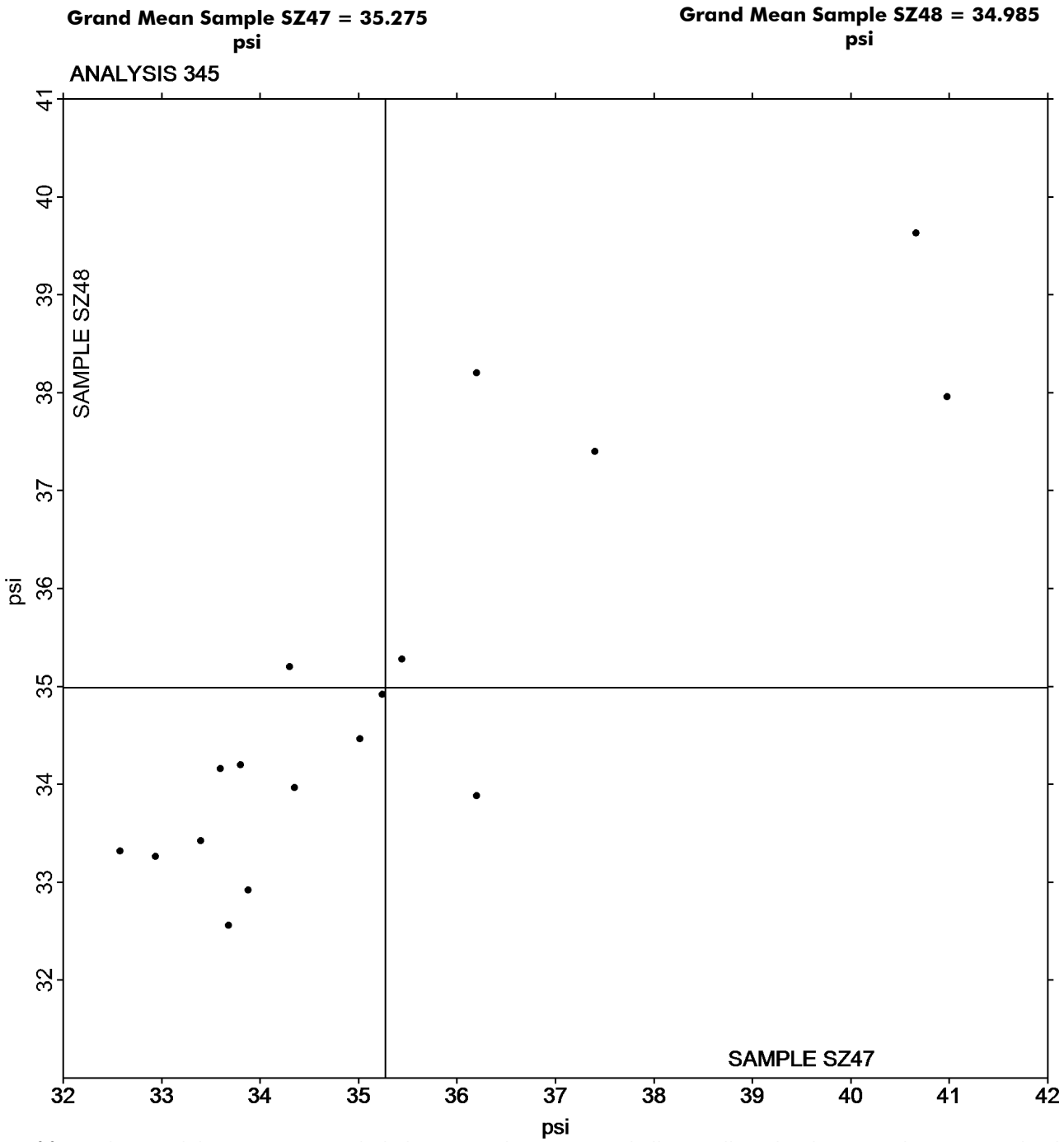
Paper & Paperboard Interlaboratory Testing Program

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



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 348

Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SN47 Lab Mean	Sample SN47 Diff from Grand Mean	Sample SN47 CPV	Sample SN48 Lab Mean	Sample SN48 Diff from Grand Mean	Sample SN48 CPV	Instr Code
23RMY3		105.8	-2.1	-0.36	162.6	12.2	1.23	HZ
2A9D7E		110.8	2.9	0.49	156.2	5.8	0.58	HY
3B2LR4		106.4	-1.5	-0.25	151.4	1.0	0.10	HY
3XAYJM		105.4	-2.5	-0.43	158.4	8.0	0.81	HY
4JRDT3		109.8	1.9	0.32	153.1	2.7	0.27	HY
78AL3X		118.0	10.1	1.71	151.5	1.1	0.11	HY
7XFKJY		101.7	-6.2	-1.05	140.4	-9.9	-1.00	KR
A4WVME		92.9	-15.0	-2.54	130.3	-20.1	-2.01	HY
B8VLDQ		106.6	-1.3	-0.22	150.0	-0.4	-0.04	HY
BZEBZP		113.6	5.7	0.97	132.6	-17.8	-1.78	HZ
CJ6QV7		105.2	-2.7	-0.46	137.6	-12.8	-1.28	HZ
D7AWX3		114.6	6.7	1.13	161.2	10.8	1.09	HY
EG9UJG		106.6	-1.3	-0.22	149.8	-0.6	-0.06	HY
JT7LVN		112.6	4.7	0.80	152.8	2.4	0.24	HZ
M6MKBF		102.8	-5.1	-0.87	152.2	1.8	0.18	HY
MXRDVG		113.4	5.5	0.93	150.8	0.4	0.04	HZ
UP9KHX	X	0.1	-107.8	-18.27	0.1	-150.2	-15.07	HY
WXTW98		108.2	0.3	0.05	165.4	15.0	1.51	HY

Summary Statistics	Sample SN47	Sample SN48
Grand Means	107.90 1000th ft-lbs	150.37 1000th ft-lbs
Stnd Dev Btwn Labs	5.90 1000th ft-lbs	9.97 1000th ft-lbs

Statistics based on 17 of 18 reporting participants.

Comments on Assigned Data Flags for Test #348

UP9KHX (X) - Extreme Data.

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

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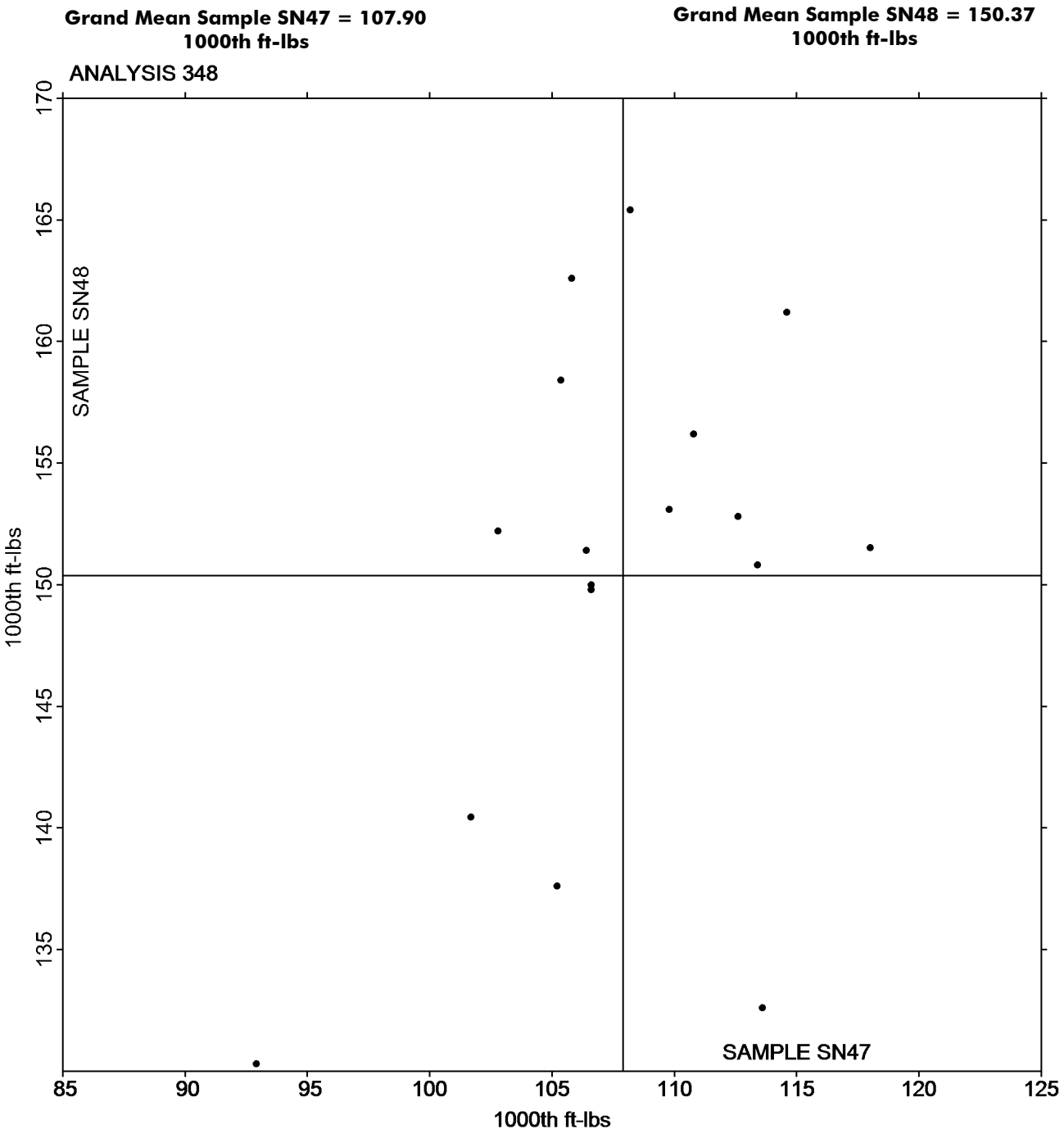
Paper & Paperboard Interlaboratory Testing Program

Analysis 348
Internal Bond Strength - Modified Scott Mechanics
TAPPI Provisional Test Method T569



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 349

Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SP47 Lab Mean	Sample SP47 Diff from Grand Mean	Sample SP47 CPV	Sample SP48 Lab Mean	Sample SP48 Diff from Grand Mean	Sample SP48 CPV	Instr Code
2H7YE3		100.24	1.05	0.10	95.04	1.47	0.17	XX
2YVXHV		108.40	9.21	0.86	100.00	6.43	0.73	SC
3TJFMY		102.20	3.01	0.28	101.60	8.03	0.91	XX
8HN3AV		98.60	-0.59	-0.05	94.20	0.63	0.07	SC
8Y72D9		99.80	0.61	0.06	90.80	-2.77	-0.32	TM
F37RFE		109.20	10.01	0.94	105.80	12.23	1.39	XX
HCJQ3L		95.55	-3.64	-0.34	87.08	-6.49	-0.74	XX
KGQXEB		111.60	12.41	1.16	106.60	13.03	1.48	TA
NKC67U		95.45	-3.73	-0.35	94.03	0.46	0.05	TM
NZT3DF		101.40	2.21	0.21	87.40	-6.17	-0.70	TM
PFGKWH		81.66	-17.53	-1.64	77.28	-16.29	-1.85	TM
YVE8ZE		75.33	-23.85	-2.23	81.60	-11.97	-1.36	TM
YWU9ZV		110.00	10.81	1.01	95.00	1.43	0.16	XX

Summary Statistics	Sample SP47	Sample SP48
Grand Means	99.19 1000th ft-lbs	93.57 1000th ft-lbs
Stnd Dev Btwn Labs	10.71 1000th ft-lbs	8.79 1000th ft-lbs

Statistics based on 13 of 13 reporting participants.

Key to Instrument Codes Reported by Participants

SC	Scott Internal Bond Tester (Manual)	TA	TA Huygen Internal Tester
TM	TMI Monitor/Internal Bond Tester	XX	Instrument make/model not specified by lab

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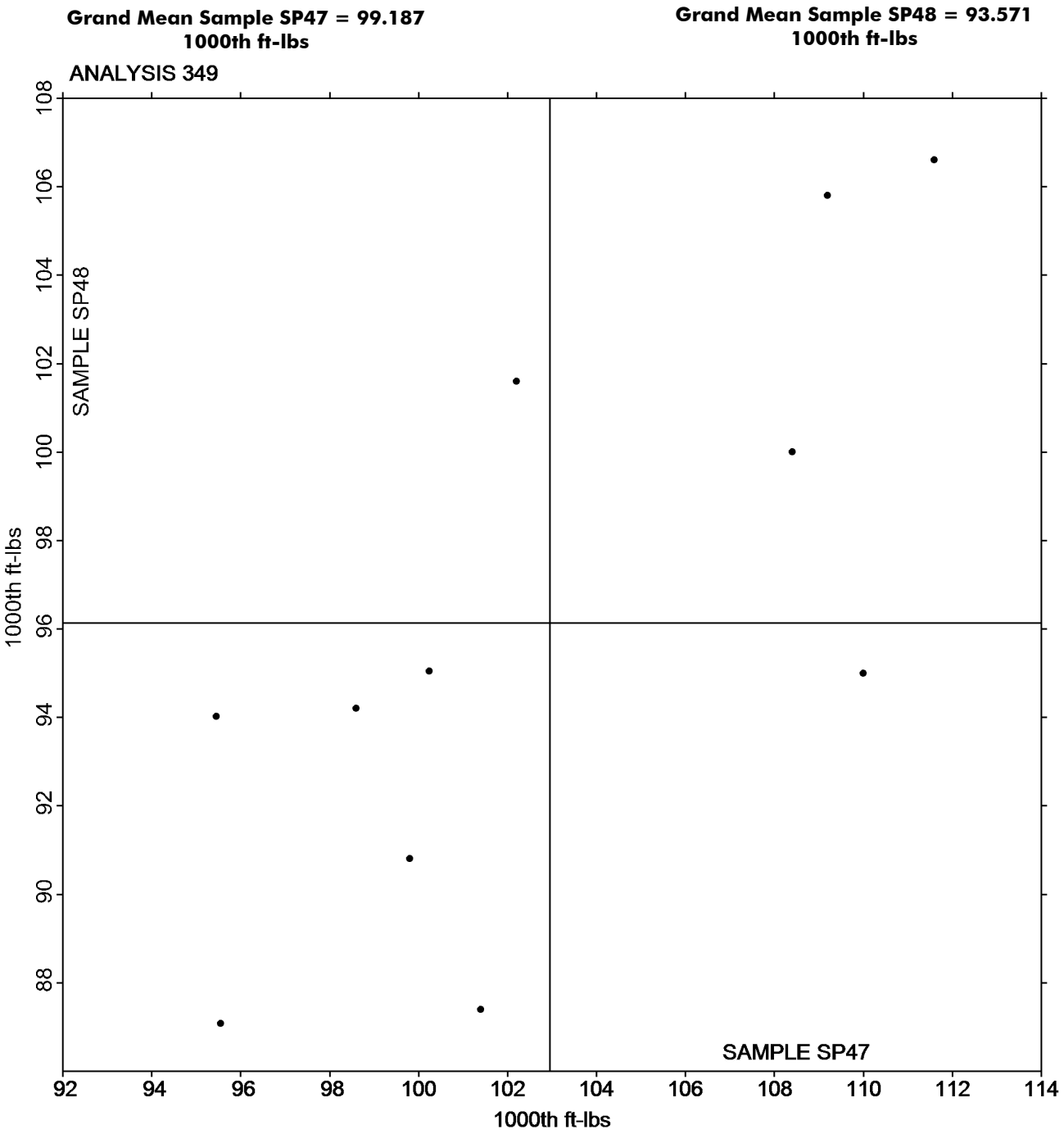
Paper & Paperboard Interlaboratory Testing Program

Analysis 349
Internal Bond Strength - Scott Bond Models
TAPPI Provisional Test Method T569



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

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