Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3081 S - September 2020

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334	Folding Endurance (MIT) - Double Folds
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The CTS Paper & Paperboard Interlaboratory Program

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

About CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of 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.

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 SA83 Lab Mean	Sample SA83 Diff from Grand Mean	Sample SA83 CPV	Sample SA84 Lab Mean	Sample SA84 Diff from Grand Mean	Sample SA84 CPV
28878A	*	21.30	-1.42	-1.08	24.91	2.23	1.76
4QYNHM		23.71	0.99	0.75	22.63	-0.05	-0.04
6QXBBK		24.50	1.78	1.35	23.00	0.32	0.26
78XNJL		22.15	-0.57	-0.44	21.75	-0.93	-0.73
ABPQ2H		22.61	-0.11	-0.08	22.95	0.27	0.21
BR6Q3X		22.34	-0.39	-0.29	22.66	-0.02	-0.02
E3VGCV		22.11	-0.61	-0.47	21.51	-1.17	-0.92
KFMW3Q		22.39	-0.33	-0.25	22.47	-0.21	-0.17
KL98X8	*	25.05	2.32	1.77	26.17	3.50	2.76
KZP8LK		24.50	1.78	1.35	23.80	1.12	0.89
NBHKG2	X	30.70	7.98	6.06	27.80	5.12	4.04
NEVAXP		22.07	-0.65	-0.49	21.60	-1.08	-0.85
R4L4BD		21.04	-1.68	-1.28	21.12	-1.55	-1.22
T7Q7JU		21.18	-1.54	-1.17	21.47	-1.21	-0.95
UCNZ9E		24.46	1.74	1.32	23.13	0.45	0.36
VTDQKM		22.30	-0.42	-0.32	22.33	-0.34	-0.27
WDBLRF		23.40	0.68	0.51	23.90	1.23	0.97
XWJ3D7		21.26	-1.46	-1.11	21.20	-1.47	-1.16
Y6W87Q		20.50	-2.22	-1.69	21.80	-0.88	-0.69
ZCBF8R		24.21	1.48	1.13	23.44	0.76	0.60
ZG3N9D		23.34	0.61	0.47	21.78	-0.89	-0.70
ZXQ3M6		22.76	0.03	0.03	22.58	-0.10	-0.08

Summary Statistics	Sample SA83	Sample SA84
Grand Means	22.72 psi	22.68 psi
Stnd Dev Btwn Labs	1.32 psi	1.27 psi

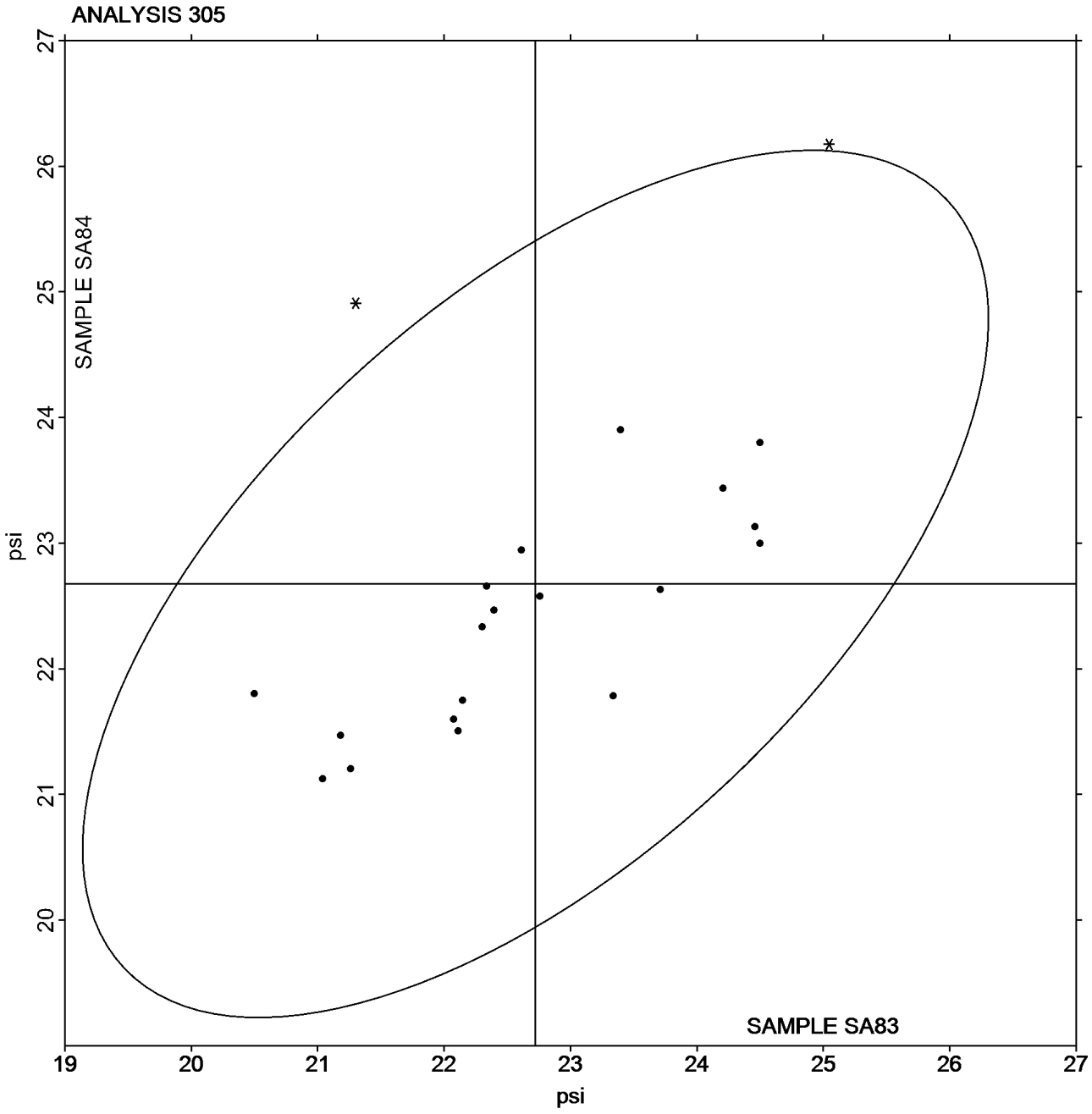
Statistics based on 21 of 22 reporting participants.

Comments on Assigned Data Flags for Test #305

NBHKG2 (X) - Extreme Data.

Grand Mean Sample SA83 = 22.722 psi

Grand Mean Sample SA84 = 22.676 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 310

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample SB83 Lab Mean	Sample SB83 Diff from Grand Mean	Sample SB83 CPV	Sample SB84 Lab Mean	Sample SB84 Diff from Grand Mean	Sample SB84 CPV
2Y24A4		102.35	10.10	1.77	98.77	8.30	1.72
3GTRUJ		83.06	-9.18	-1.61	83.63	-6.84	-1.42
7BX2XY		92.80	0.55	0.10	87.71	-2.77	-0.57
8PCLVW		95.04	2.80	0.49	90.79	0.31	0.06
8ZWVLC		95.80	3.55	0.62	96.50	6.03	1.25
9YE7V4		86.92	-5.32	-0.93	85.73	-4.75	-0.98
A6ZDXA		85.20	-7.05	-1.24	81.60	-8.87	-1.84
DM3KHC		86.39	-5.85	-1.03	87.27	-3.21	-0.66
DPEZCD		92.80	0.55	0.10	91.50	1.03	0.21
EZAUJ8	X	107.65	15.40	2.71	92.17	1.70	0.35
FQYTX8		99.95	7.70	1.35	93.25	2.77	0.57
GG4CJM		86.85	-5.40	-0.95	87.50	-2.97	-0.62
GPZ6U2		87.69	-4.56	-0.80	85.01	-5.46	-1.13
HXTGPV		98.70	6.45	1.13	97.70	7.23	1.50
LEN4Q6		93.62	1.38	0.24	90.56	0.09	0.02
RM2DCD		92.91	0.67	0.12	91.26	0.79	0.16
T6F6WV		94.06	1.81	0.32	90.40	-0.07	-0.01
TA3WZH		94.34	2.09	0.37	90.26	-0.21	-0.04
UJBQUA		88.60	-3.65	-0.64	91.75	1.28	0.26
W487AN		85.00	-7.25	-1.27	87.00	-3.47	-0.72
WDBLRF		91.69	-0.55	-0.10	91.10	0.63	0.13
ZCBF8R		91.80	-0.45	-0.08	90.52	0.05	0.01
ZCQYRP		103.83	11.58	2.03	100.62	10.15	2.10

Summary Statistics	Sample SB83	Sample SB84
Grand Means	92.25 psi	90.47 psi
Stnd Dev Btwn Labs	5.69 psi	4.82 psi

Statistics based on 22 of 23 reporting participants.

Comments on Assigned Data Flags for Test #310

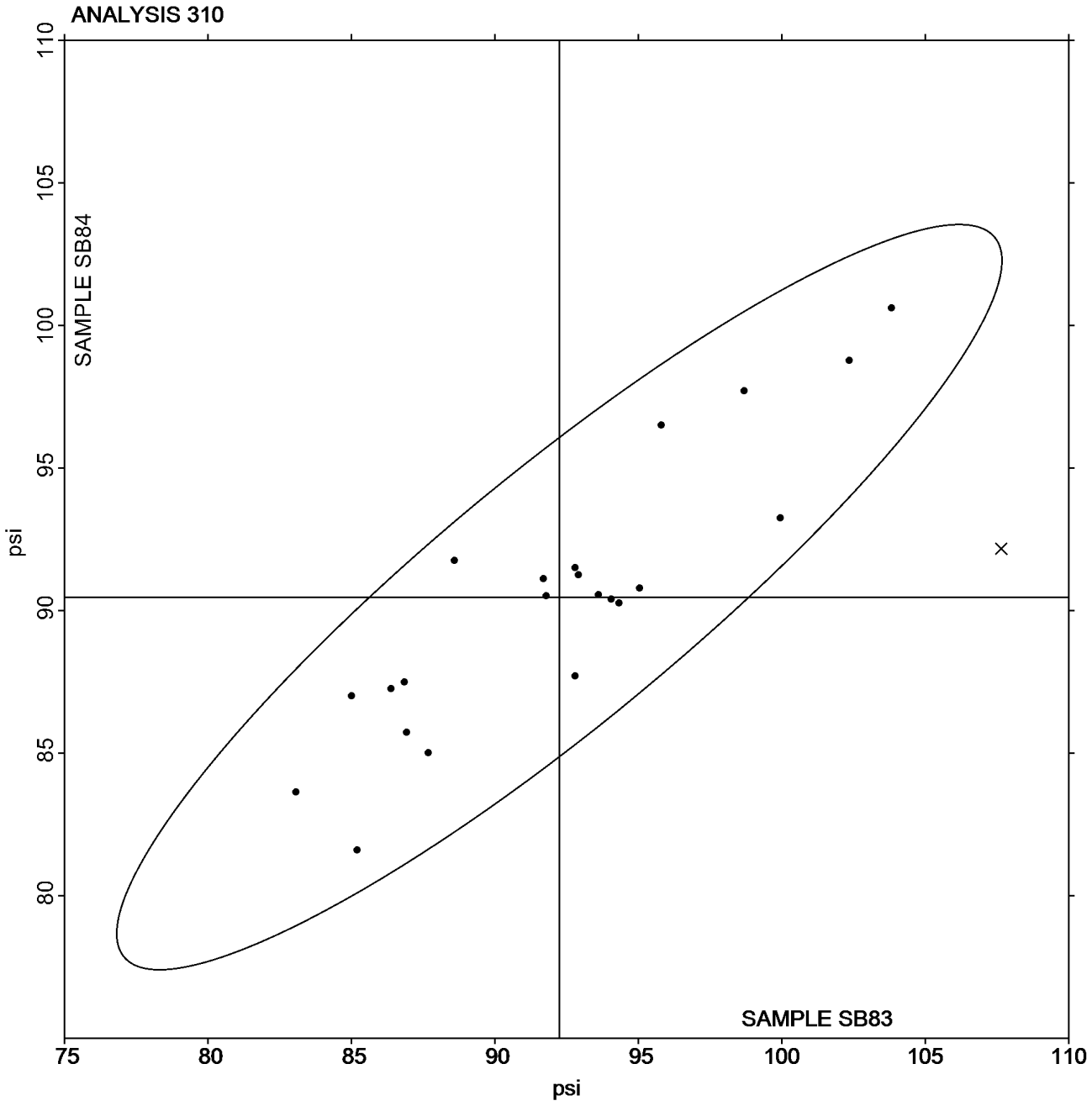
EZAUJ8 (X) - Data for sample SB83 are high. Inconsistent within the determinations of sample SB84.

Analysis Notes:

HXTGPV - Data appears to be transposed between Analysis 310 (Bursting Strength) and Analysis 314 (Tearing Strength). Dat switched by CTS.

Grand Mean Sample SB83 = 92.246 psi

Grand Mean Sample SB84 = 90.473 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC83 Lab Mean	Sample SC83 Diff from Grand Mean	Sample SC83 CPV	Sample SC84 Lab Mean	Sample SC84 Diff from Grand Mean	Sample SC84 CPV
28878A	X	42.40	-5.80	-1.44	64.45	16.62	4.35
3GTRUJ		51.75	3.55	0.88	52.26	4.43	1.16
43T68N		48.20	0.00	0.00	47.60	-0.23	-0.06
4QYNHM		45.83	-2.37	-0.59	44.15	-3.69	-0.96
6QXBBK		49.40	1.20	0.30	47.95	0.12	0.03
6UXM7K		47.36	-0.84	-0.21	49.46	1.63	0.43
78XNJL		50.91	2.71	0.67	50.12	2.29	0.60
7BX2XY		49.14	0.94	0.23	48.24	0.41	0.11
8XR3WJ	X	68.43	20.23	5.02	67.85	20.02	5.24
8Y36HH		48.00	-0.20	-0.05	48.60	0.77	0.20
8ZWVLC		43.40	-4.80	-1.19	41.16	-6.67	-1.75
A84DTZ		40.02	-8.18	-2.03	40.01	-7.82	-2.05
ABPQ2H		50.33	2.13	0.53	50.89	3.06	0.80
BR6Q3X	X	68.99	20.79	5.16	67.85	20.01	5.24
BY7YPD		43.96	-4.24	-1.05	43.32	-4.51	-1.18
CRYU8T		54.48	6.28	1.56	55.38	7.55	1.97
D8EAVA	*	57.82	9.62	2.39	53.74	5.91	1.55
DM3KHC	X	104.39	56.19	13.95	102.92	55.09	14.41
E3VGCV		51.40	3.20	0.79	51.80	3.97	1.04
FQYTX8		46.38	-1.82	-0.45	46.04	-1.79	-0.47
GG4CJM		50.01	1.81	0.45	50.44	2.61	0.68
HXTGPV		56.60	8.40	2.09	57.20	9.37	2.45
J6N292		49.02	0.82	0.20	49.64	1.81	0.47
JJ46QQ		42.30	-5.90	-1.46	43.60	-4.23	-1.11
JJ7PM7		50.60	2.40	0.60	50.20	2.37	0.62
KL98X8		42.36	-5.84	-1.45	44.64	-3.19	-0.84
LA9V36		41.42	-6.78	-1.68	42.31	-5.52	-1.44
NBHKG2		46.70	-1.50	-0.37	46.60	-1.23	-0.32
NEVAXP		49.12	0.92	0.23	49.20	1.37	0.36
P26XYK		51.24	3.04	0.75	46.99	-0.84	-0.22
PEUWQM	*	58.20	10.00	2.48	53.80	5.97	1.56
R4L4BD		49.98	1.78	0.44	49.32	1.49	0.39
T7Q7JU		48.38	0.18	0.05	48.24	0.41	0.11
T9CXLJ		45.60	-2.60	-0.65	46.44	-1.39	-0.36
TA3WZH		47.52	-0.68	-0.17	44.41	-3.42	-0.90
TLY3UF		45.31	-2.89	-0.72	45.41	-2.42	-0.63
UJBQUA		45.48	-2.72	-0.67	46.21	-1.62	-0.42
VLWRFN	X	5.31	-42.89	-10.65	5.44	-42.39	-11.09
WDBLRF		48.13	-0.07	-0.02	46.82	-1.02	-0.27
XAXVAR		48.68	0.48	0.12	47.60	-0.23	-0.06

Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC83 Lab Mean	Sample SC83 Diff from Grand Mean	Sample SC83 CPV	Sample SC84 Lab Mean	Sample SC84 Diff from Grand Mean	Sample SC84 CPV
XCHP68		42.89	-5.31	-1.32	41.28	-6.55	-1.71
YLLGTT		49.84	1.64	0.41	50.98	3.15	0.82
YUUYHD		47.58	-0.62	-0.15	48.80	0.97	0.25
ZCBF8R		46.39	-1.81	-0.45	45.64	-2.19	-0.57
ZG3N9D		49.22	1.02	0.25	49.33	1.50	0.39
ZUUD9J		45.20	-3.00	-0.74	43.44	-4.39	-1.15
ZXQ3M6		48.20	0.00	0.00	49.68	1.85	0.48

Summary Statistics	Sample SC83	Sample SC84
Grand Means	48.20 Grams	47.83 Grams
Stnd Dev Btwn Labs	4.03 Grams	3.82 Grams

Statistics based on 42 of 47 reporting participants.

Comments on Assigned Data Flags for Test #312

8XR3WJ (X) - Data for both samples are high. Possible Systematic Error.

DM3KHC (X) - Extreme Data.

BR6Q3X (X) - Data for both samples are high. Possible Systematic Error.

28878A (X) - Data for sample SC84 are high.

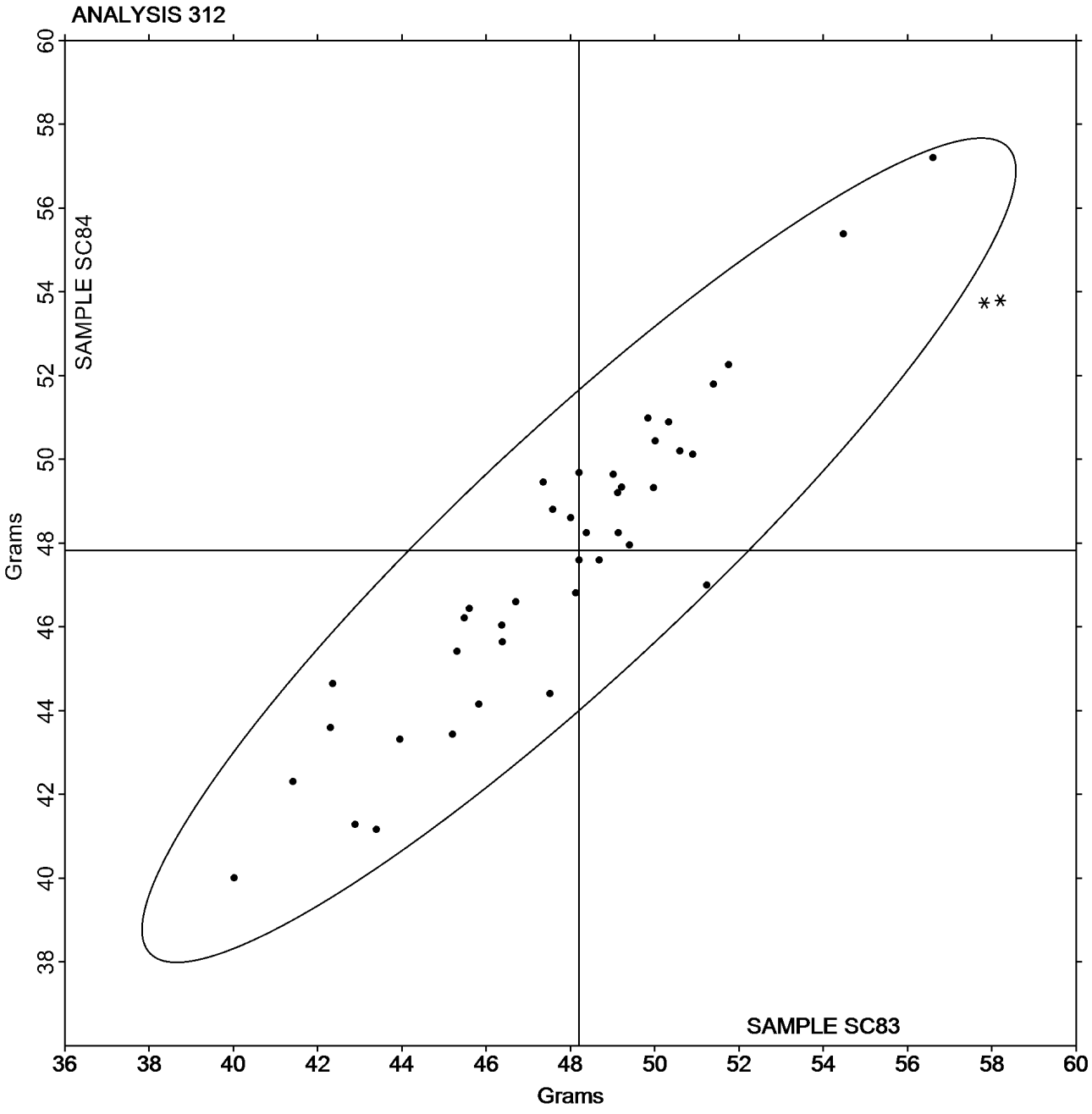
VLWRFN (X) - Extreme Data.

Analysis Notes:

3GTRUJ - Data appear to be reported as mN, not gf as indicated on data entry form. CTS will not correct the Units going forward.

Grand Mean Sample SC83 = 48.199 Grams

Grand Mean Sample SC84 = 47.832 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD83 Lab Mean	Sample SD83 Diff from Grand Mean	Sample SD83 CPV	Sample SD84 Lab Mean	Sample SD84 Diff from Grand Mean	Sample SD84 CPV
2BA3YP	X	193.2	26.4	1.58	170.3	3.0	0.18
3ZAQ4M		168.6	1.8	0.11	159.2	-8.0	-0.48
4CGZ6H		157.6	-9.2	-0.55	154.4	-12.9	-0.77
4E4MX7		170.0	3.2	0.19	174.8	7.5	0.45
4KDV8M		132.4	-34.4	-2.06	131.6	-35.7	-2.12
6UB2R9		145.1	-21.7	-1.30	145.8	-21.5	-1.28
7PFTM6		199.4	32.6	1.95	199.5	32.3	1.92
7RJG4F		158.2	-8.5	-0.51	163.0	-4.2	-0.25
8GHEJJ		178.9	12.1	0.73	173.0	5.7	0.34
8PCLVW		174.1	7.3	0.44	177.2	9.9	0.59
9YE7V4	*	151.6	-15.2	-0.91	164.2	-3.1	-0.18
AE3V9C		193.0	26.2	1.57	191.0	23.8	1.41
BUENFF		157.9	-8.8	-0.53	167.4	0.1	0.00
CLVMUB		179.9	13.1	0.79	176.1	8.8	0.52
CPWVWZ	*	125.0	-41.8	-2.50	123.6	-43.7	-2.59
CXCEFZ		167.6	0.9	0.05	166.7	-0.6	-0.03
DM3KHC		175.8	9.0	0.54	177.9	10.6	0.63
DPEZCD		168.1	1.3	0.08	176.1	8.8	0.52
DULRXW		160.1	-6.7	-0.40	159.9	-7.3	-0.44
EZAUJ8		158.2	-8.5	-0.51	165.9	-1.4	-0.08
GPZ6U2		162.4	-4.4	-0.27	164.6	-2.7	-0.16
GRQ72B		176.4	9.6	0.58	181.1	13.8	0.82
HEY4U3		190.4	23.6	1.42	190.4	23.2	1.38
HXTGPV		154.8	-12.0	-0.72	152.4	-14.9	-0.88
JF7EQ7		170.9	4.1	0.24	165.3	-2.0	-0.12
KWUB67		177.5	10.7	0.64	174.6	7.4	0.44
KXZT43		145.9	-20.9	-1.25	144.2	-23.1	-1.37
L62AA2	X	9.7	-157.1	-9.41	9.0	-158.3	-9.40
LEN4Q6		161.2	-5.5	-0.33	164.7	-2.6	-0.15
LP8M3N		189.8	23.0	1.38	188.3	21.0	1.25
NBHKG2		168.4	1.6	0.10	167.0	-0.3	-0.02
NXQ3JM		179.4	12.7	0.76	183.0	15.7	0.93
PMKHVL		179.1	12.3	0.74	178.4	11.2	0.66
PPRVGT		144.8	-22.0	-1.32	142.9	-24.4	-1.45
PVJZBX		166.1	-0.7	-0.04	167.1	-0.2	-0.01
PZBAKV		141.8	-25.0	-1.50	141.4	-25.9	-1.54
RM2DCD		170.9	4.1	0.25	167.4	0.1	0.01
T6F6WV	X	202.9	36.1	2.16	177.5	10.2	0.60
VDJY4T		162.7	-4.1	-0.24	163.8	-3.5	-0.21
WDBLRF		166.4	-0.3	-0.02	166.6	-0.7	-0.04

Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD83 Lab Mean	Sample SD83 Diff from Grand Mean	Sample SD83 CPV	Sample SD84 Lab Mean	Sample SD84 Diff from Grand Mean	Sample SD84 CPV
WPR6BC		196.0	29.2	1.75	200.0	32.7	1.94
YLYTPC		178.1	11.3	0.68	173.2	6.0	0.35

Summary Statistics	Sample SD83	Sample SD84
Grand Means	166.78 Grams	167.28 Grams
Stnd Dev Btwn Labs	16.69 Grams	16.83 Grams

Statistics based on 39 of 42 reporting participants.

Comments on Assigned Data Flags for Test #314

T6F6WV (X) - Inconsistent in testing between samples.

2BA3YP (X) - Inconsistent in testing between samples.

L62AA2 (X) - Extreme Data.

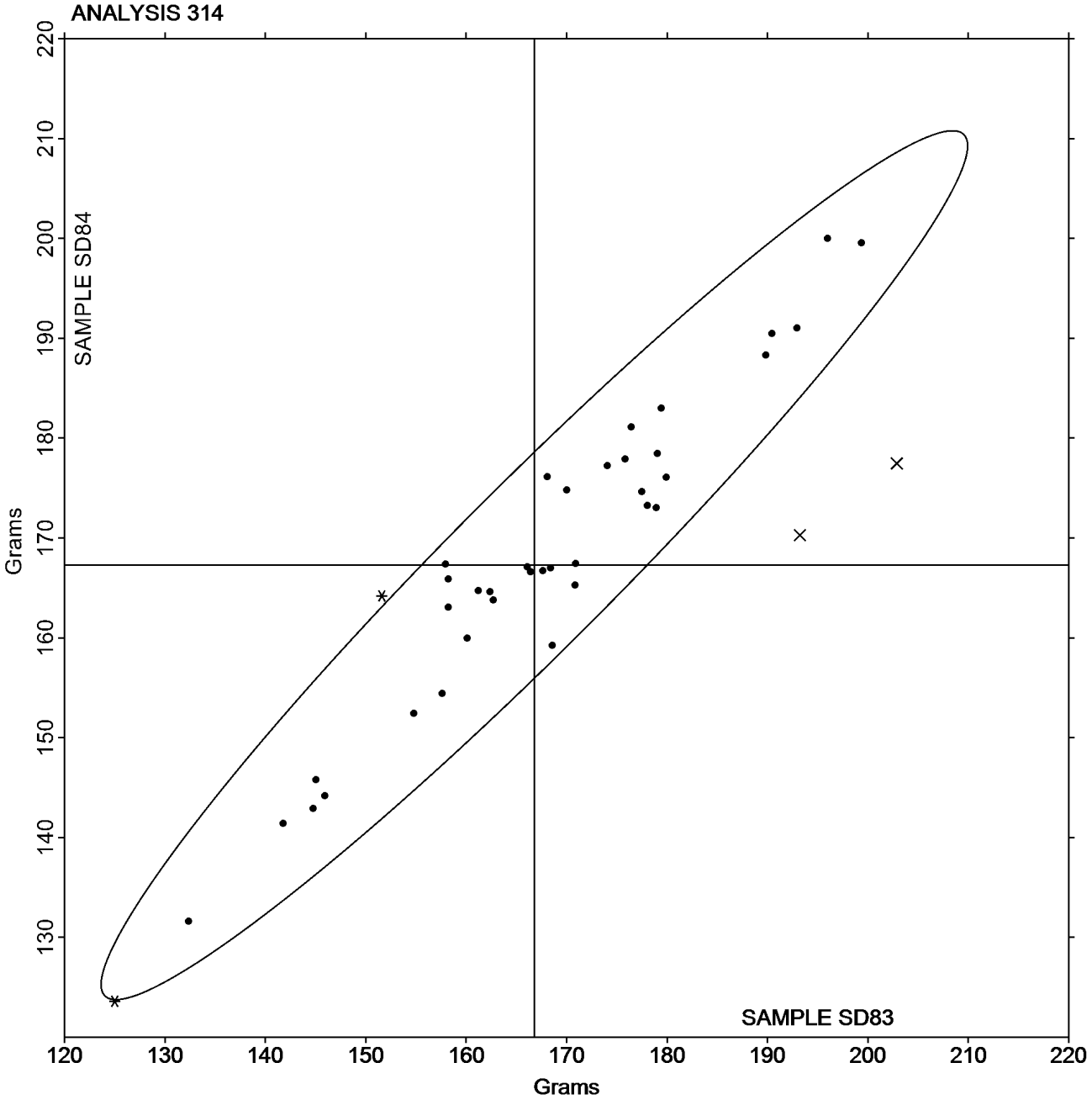
Analysis Notes:

HXTGPV - Data appears to be transposed between Analysis 310 (Bursting Strength) and Analysis 314 (Tearing Strength). Dat switched by CTS.

YLYTPC - Data appear to be off by a factor of 4; data converted by CTS (x4). CTS will not correct the data going forward.

Grand Mean Sample SD83 = 166.78 Grams

Grand Mean Sample SD84 = 167.28 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 320

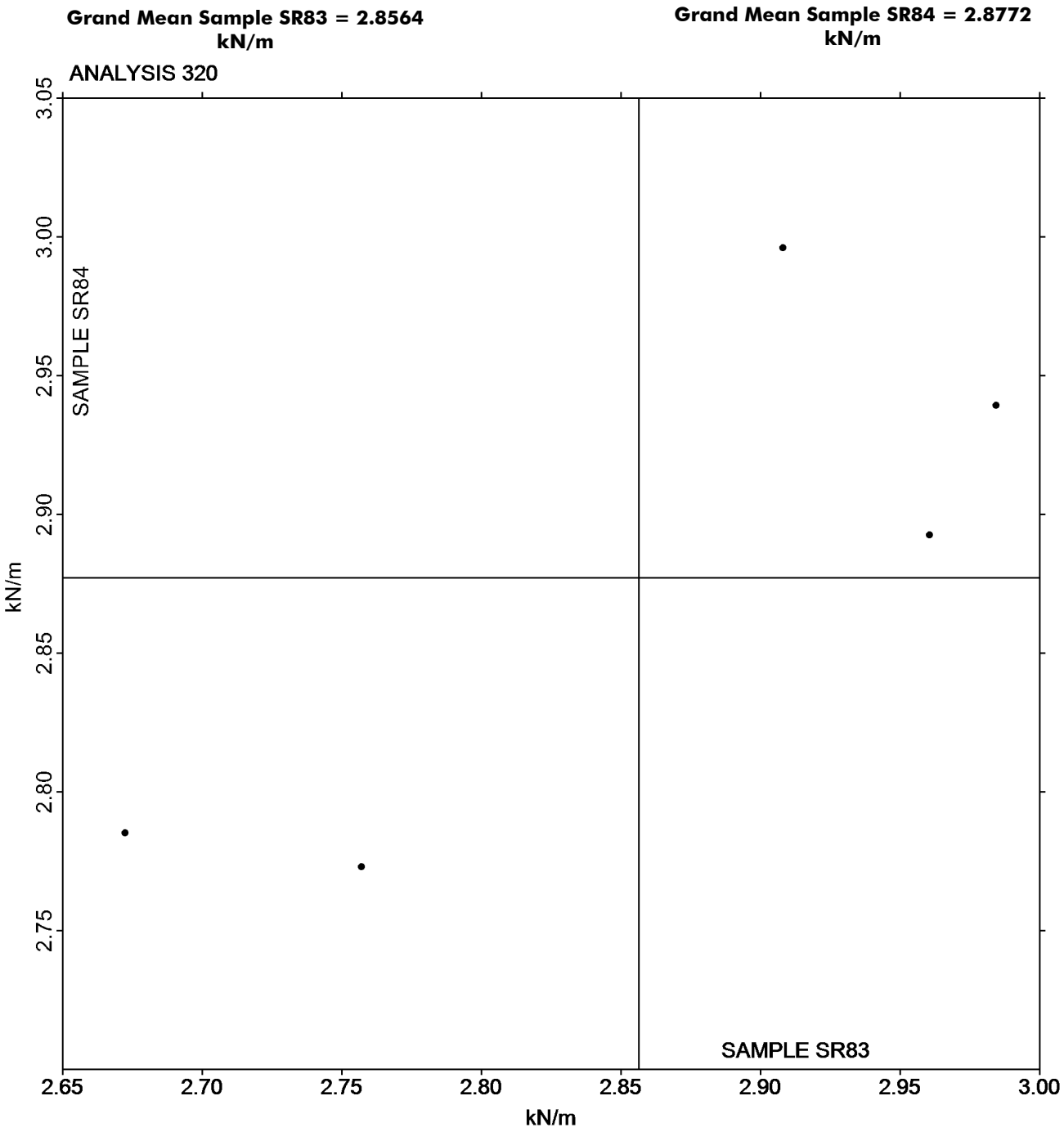
Tensile Breaking Strength - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR83 Lab Mean	Sample SR83 Diff from Grand Mean	Sample SR83 CPV	Sample SR84 Lab Mean	Sample SR84 Diff from Grand Mean	Sample SR84 CPV
28878A		2.961	0.104	0.77	2.893	0.015	0.16
6UB2R9		2.984	0.128	0.94	2.939	0.062	0.64
A84DTZ		2.908	0.052	0.38	2.996	0.119	1.23
UCNZ9E		2.672	-0.184	-1.36	2.785	-0.092	-0.95
ZCBF8R		2.757	-0.099	-0.73	2.773	-0.104	-1.08

Summary Statistics	Sample SR83	Sample SR84
Grand Means	2.86 kN/m	2.88 kN/m
Stnd Dev Btwn Labs	0.14 kN/m	0.10 kN/m

Statistics based on 5 of 5 reporting participants.



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

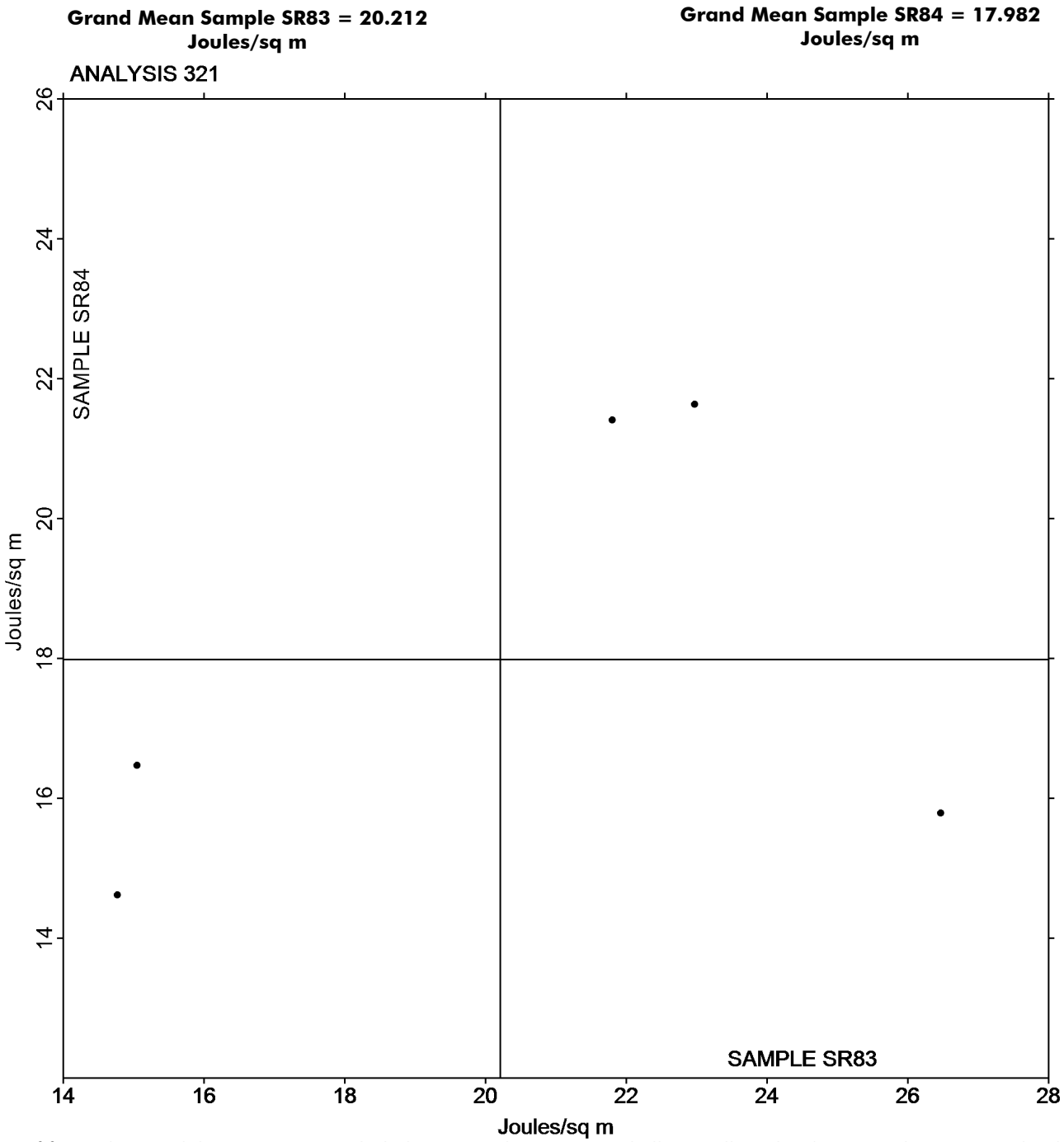
Tensile Energy Absorption - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR83 Lab Mean	Sample SR83 Diff from Grand Mean	Sample SR83 CPV	Sample SR84 Lab Mean	Sample SR84 Diff from Grand Mean	Sample SR84 CPV
28878A		22.97	2.76	0.54	21.63	3.65	1.11
6UB2R9		21.80	1.59	0.31	21.41	3.43	1.04
A84DTZ		15.05	-5.16	-1.01	16.47	-1.52	-0.46
UCNZ9E		26.47	6.26	1.22	15.79	-2.19	-0.67
ZCBF8R		14.77	-5.44	-1.06	14.62	-3.36	-1.02

Summary Statistics	Sample SR83	Sample SR84
Grand Means	20.21 Joules/sq m	17.98 Joules/sq m
Stnd Dev Btwn Labs	5.14 Joules/sq m	3.30 Joules/sq m

Statistics based on 5 of 5 reporting participants.



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

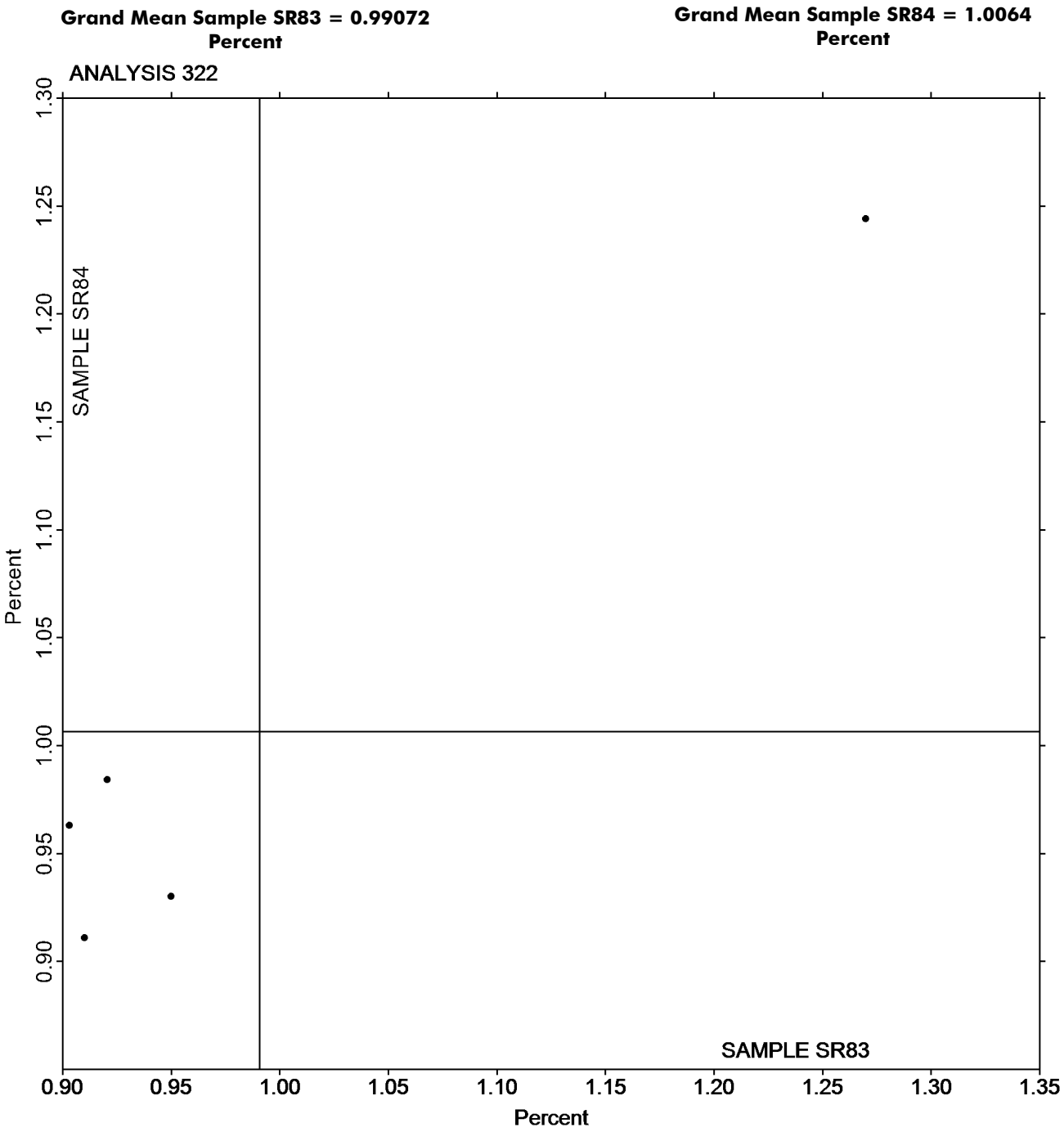
Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample SR83 Lab Mean	Sample SR83 Diff from Grand Mean	Sample SR83 CPV	Sample SR84 Lab Mean	Sample SR84 Diff from Grand Mean	Sample SR84 CPV
28878A		0.9500	-0.0407	-0.26	0.930	-0.076	-0.56
6UB2R9		1.2700	0.2793	1.78	1.244	0.238	1.75
A84DTZ		0.9030	-0.0877	-0.56	0.963	-0.043	-0.32
UCNZ9E		0.9206	-0.0701	-0.45	0.984	-0.022	-0.16
ZCBF8R		0.9100	-0.0807	-0.51	0.911	-0.095	-0.70

Summary Statistics	Sample SR83	Sample SR84
Grand Means	0.99 Percent	1.01 Percent
Stnd Dev Btwn Labs	0.16 Percent	0.14 Percent

Statistics based on 5 of 5 reporting participants.



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 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF83 Lab Mean	Sample SF83 Diff from Grand Mean	Sample SF83 CPV	Sample SF84 Lab Mean	Sample SF84 Diff from Grand Mean	Sample SF84 CPV	Instr Code
43T68N		4.413	0.170	0.71	4.433	0.159	0.64	TC
4KDV8M		4.058	-0.185	-0.78	4.140	-0.133	-0.54	IM
4QYNHM		4.376	0.133	0.56	4.368	0.094	0.38	LA
6MTQHE		4.481	0.238	1.00	4.497	0.224	0.90	XX
6QXBBK		4.269	0.026	0.11	4.302	0.029	0.12	LH
6TJ66Z		4.220	-0.024	-0.10	4.322	0.049	0.20	TV
6UXM7K	X	4.685	0.441	1.86	4.431	0.158	0.64	VM
78XNJL	X	6.201	1.958	8.23	43.274	39.001	157.20	TP
7BX2XY		3.967	-0.276	-1.16	3.937	-0.336	-1.35	LI
84EUY7		4.427	0.184	0.77	4.471	0.198	0.80	FP
8RZXU3		4.203	-0.040	-0.17	4.301	0.028	0.11	LA
8XR3WJ		4.404	0.161	0.68	4.408	0.135	0.54	LB
8Y36HH		4.063	-0.180	-0.76	4.053	-0.220	-0.89	TO
8ZWVLC		4.350	0.107	0.45	4.210	-0.063	-0.25	TO
ABPQ2H		4.326	0.083	0.35	4.200	-0.073	-0.29	LH
BR6Q3X		4.469	0.226	0.95	4.535	0.262	1.06	LX
BY7YPD		4.291	0.047	0.20	4.317	0.044	0.18	TO
CRYU8T		4.784	0.541	2.27	4.885	0.611	2.46	LH
DULRXW		4.153	-0.090	-0.38	4.127	-0.147	-0.59	LI
E3VGCV		3.859	-0.384	-1.62	3.997	-0.276	-1.11	DL
FC2JE8		4.080	-0.163	-0.68	4.094	-0.179	-0.72	CS
FQYTX8		4.200	-0.043	-0.18	4.240	-0.033	-0.13	LH
J6N292		4.119	-0.124	-0.52	4.159	-0.114	-0.46	TO
JJ46QQ		4.027	-0.216	-0.91	4.027	-0.246	-0.99	TF
KFMW3Q		4.527	0.284	1.19	4.677	0.403	1.63	LH
KL98X8	*	4.446	0.203	0.85	4.721	0.448	1.81	TJ
LA9V36		4.349	0.105	0.44	4.435	0.161	0.65	LI
NEVAXP		4.657	0.414	1.74	4.543	0.270	1.09	LI
PEUWQM		4.465	0.222	0.93	4.380	0.107	0.43	FP
R4L4BD		4.092	-0.151	-0.63	4.240	-0.033	-0.13	TF
T7Q7JU		3.996	-0.247	-1.04	3.992	-0.281	-1.13	TB
TLY3UF		4.305	0.062	0.26	4.305	0.032	0.13	LI
TTJ72H		3.873	-0.370	-1.56	3.901	-0.372	-1.50	RE
UJBQUA		4.120	-0.123	-0.52	4.137	-0.136	-0.55	TF
VLWRFN		4.416	0.173	0.73	4.465	0.192	0.77	LA
VTDQKM		4.185	-0.058	-0.25	4.222	-0.051	-0.21	LH
WDBLRF		4.285	0.042	0.17	4.282	0.009	0.04	LH
XAXVAR		3.913	-0.330	-1.39	4.015	-0.258	-1.04	LE
XCHP68		4.067	-0.176	-0.74	4.022	-0.251	-1.01	TB
Y6W87Q		4.004	-0.239	-1.01	3.975	-0.298	-1.20	IX

Paper & Paperboard Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF83 Lab Mean	Sample SF83 Diff from Grand Mean	Sample SF83 CPV	Sample SF84 Lab Mean	Sample SF84 Diff from Grand Mean	Sample SF84 CPV	Instr Code
YLLGTT		3.785	-0.458	-1.93	3.782	-0.492	-1.98	ID
ZCBF8R		4.099	-0.144	-0.61	4.173	-0.100	-0.40	LH
ZG3N9D		4.332	0.089	0.37	4.499	0.226	0.91	LF
ZUUD9J	*	4.860	0.617	2.60	4.828	0.555	2.24	XX
ZXQ3M6		4.139	-0.104	-0.44	4.130	-0.143	-0.58	LX

Summary Statistics	Sample SF83	Sample SF84
Grand Means	4.24 kN/m	4.27 kN/m
Stnd Dev Btwn Labs	0.24 kN/m	0.25 kN/m

Statistics based on 43 of 45 reporting participants.

Comments on Assigned Data Flags for Test #325

78XNJL (X) - Extreme Data.

6UXM7K (X) - Inconsistent in testing between samples.

Analysis Notes:

8XR3WJ - Data appear to be reported as lb/inch, not kN/m as indicated on data entry form. CTS will not correct the Units going forward.

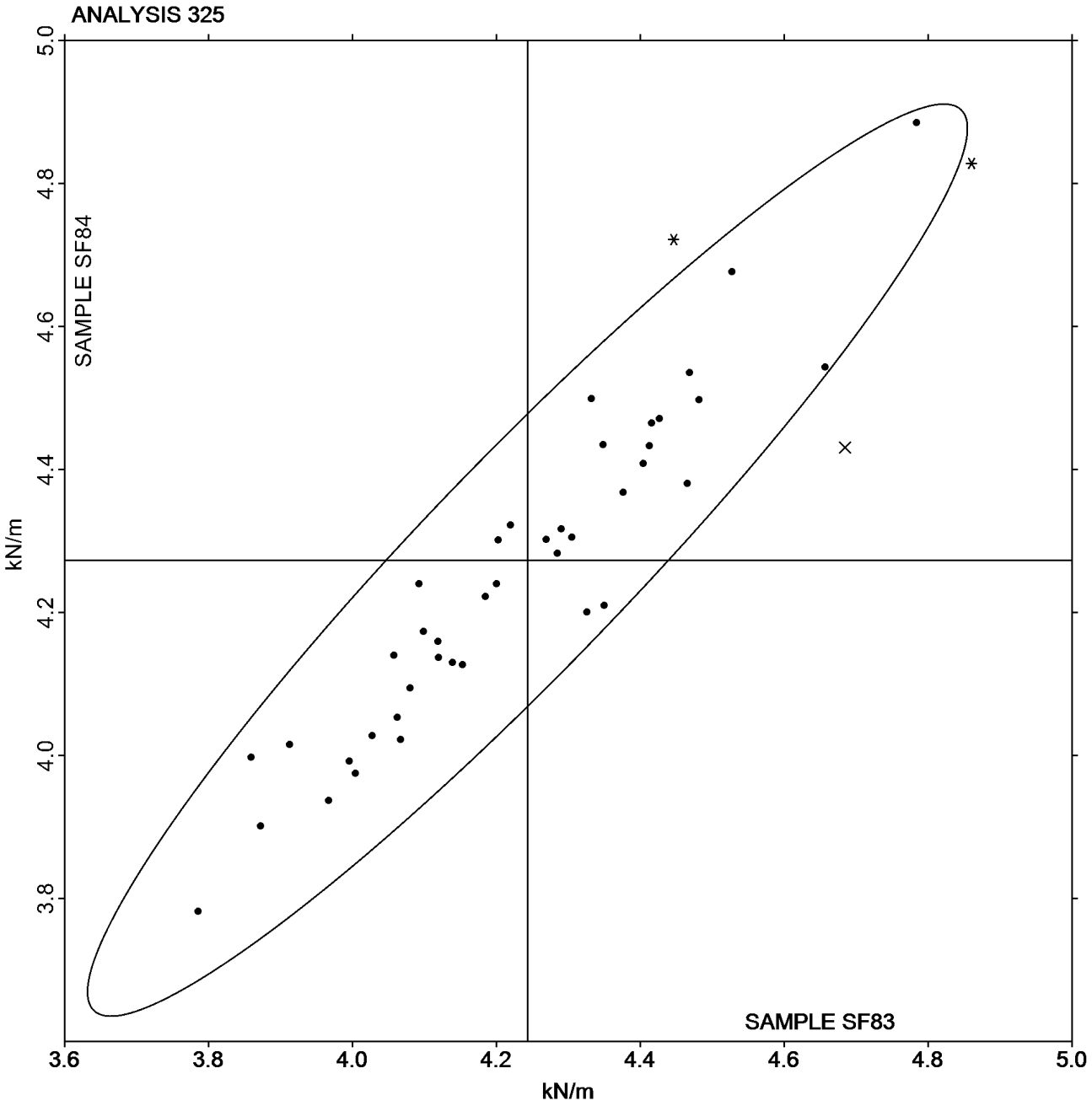
VTDQKM - One determination removed from the Lab Mean of Sample SF84 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

CS	Chatillon CS1100 Series Force Tester	DL	EMIC DL500 Universal Testing Machines
FP	Frank PTI Universal Tester TS	ID	Instron 4200 Series
IM	Instron 5500 Series	IX	Instron (model not specified)
LA	L & W Tensile - Autoline 300	LB	L & W Tensile - Autoline 400
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
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TV	Thwing-Albert Vantage NX	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab		

Grand Mean Sample SF83 = 4.2432 kN/m

Grand Mean Sample SF84 = 4.2732 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF83 Lab Mean	Sample SF83 Diff from Grand Mean	Sample SF83 CPV	Sample SF84 Lab Mean	Sample SF84 Diff from Grand Mean	Sample SF84 CPV	Instr Code
4KDV8M		43.75	-1.47	-0.36	45.43	0.14	0.03	IM
4QYNHM	*	35.38	-9.85	-2.39	32.56	-12.74	-2.95	LA
6QXBBK		43.68	-1.54	-0.38	43.01	-2.29	-0.53	LH
6TJ66Z		46.34	1.11	0.27	48.72	3.42	0.79	TV
78XNJL	X	71.63	26.41	6.42	88.14	42.85	9.94	TP
7BX2XY		41.24	-3.99	-0.97	39.54	-5.76	-1.34	LI
84EUY7		51.24	6.02	1.46	52.02	6.72	1.56	FP
8RZXU3		49.52	4.30	1.04	49.87	4.57	1.06	LA
8XR3WJ		50.63	5.40	1.31	51.12	5.82	1.35	LB
8Y36HH		43.75	-1.48	-0.36	43.80	-1.49	-0.35	TO
8ZWVLC		49.77	4.54	1.10	46.41	1.11	0.26	TO
ABPQ2H		48.67	3.45	0.84	44.80	-0.50	-0.12	LH
BR6Q3X		45.63	0.41	0.10	47.37	2.08	0.48	LX
BY7YPD		42.91	-2.32	-0.56	44.66	-0.64	-0.15	TO
CRYU8T		45.23	0.00	0.00	46.51	1.22	0.28	LH
DULRXW		43.72	-1.50	-0.36	42.89	-2.40	-0.56	LI
E3VGCV		41.52	-3.71	-0.90	43.71	-1.59	-0.37	DL
FC2JE8		46.97	1.75	0.43	46.36	1.07	0.25	XX
FQYTX8		46.59	1.37	0.33	45.85	0.55	0.13	LH
J6N292		48.45	3.23	0.78	48.31	3.01	0.70	TO
KFMW3Q		48.46	3.23	0.79	49.57	4.28	0.99	LH
LA9V36		38.83	-6.39	-1.55	41.11	-4.18	-0.97	LX
NEVAXP		51.83	6.61	1.60	49.89	4.59	1.07	LI
R4L4BD		45.01	-0.22	-0.05	48.70	3.41	0.79	TF
T7Q7JU		43.61	-1.62	-0.39	44.83	-0.46	-0.11	TB
TLY3UF		40.31	-4.91	-1.19	40.53	-4.77	-1.11	LI
TTJ72H		41.15	-4.07	-0.99	40.45	-4.85	-1.13	RE
UJBQUA		44.32	-0.91	-0.22	44.09	-1.21	-0.28	TF
VLWRFN		48.60	3.37	0.82	51.85	6.56	1.52	LA
WDBLRF		44.33	-0.90	-0.22	42.00	-3.30	-0.76	LH
Y6W87Q		49.59	4.36	1.06	48.00	2.70	0.63	IX
YLLGTT		38.72	-6.50	-1.58	37.70	-7.59	-1.76	ID
ZCBF8R		39.02	-6.20	-1.51	42.79	-2.50	-0.58	LH
ZG3N9D		48.04	2.82	0.68	51.46	6.16	1.43	LF
ZUUD9J		51.71	6.48	1.57	47.05	1.76	0.41	XX
ZXQ3M6		44.36	-0.86	-0.21	42.39	-2.90	-0.67	LX

Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

Summary Statistics	Sample SF83	Sample SF84
Grand Means	45.22 Joules/sq m	45.30 Joules/sq m
Stnd Dev Btwn Labs	4.12 Joules/sq m	4.31 Joules/sq m

Statistics based on 35 of 36 reporting participants.

Comments on Assigned Data Flags for Test #327

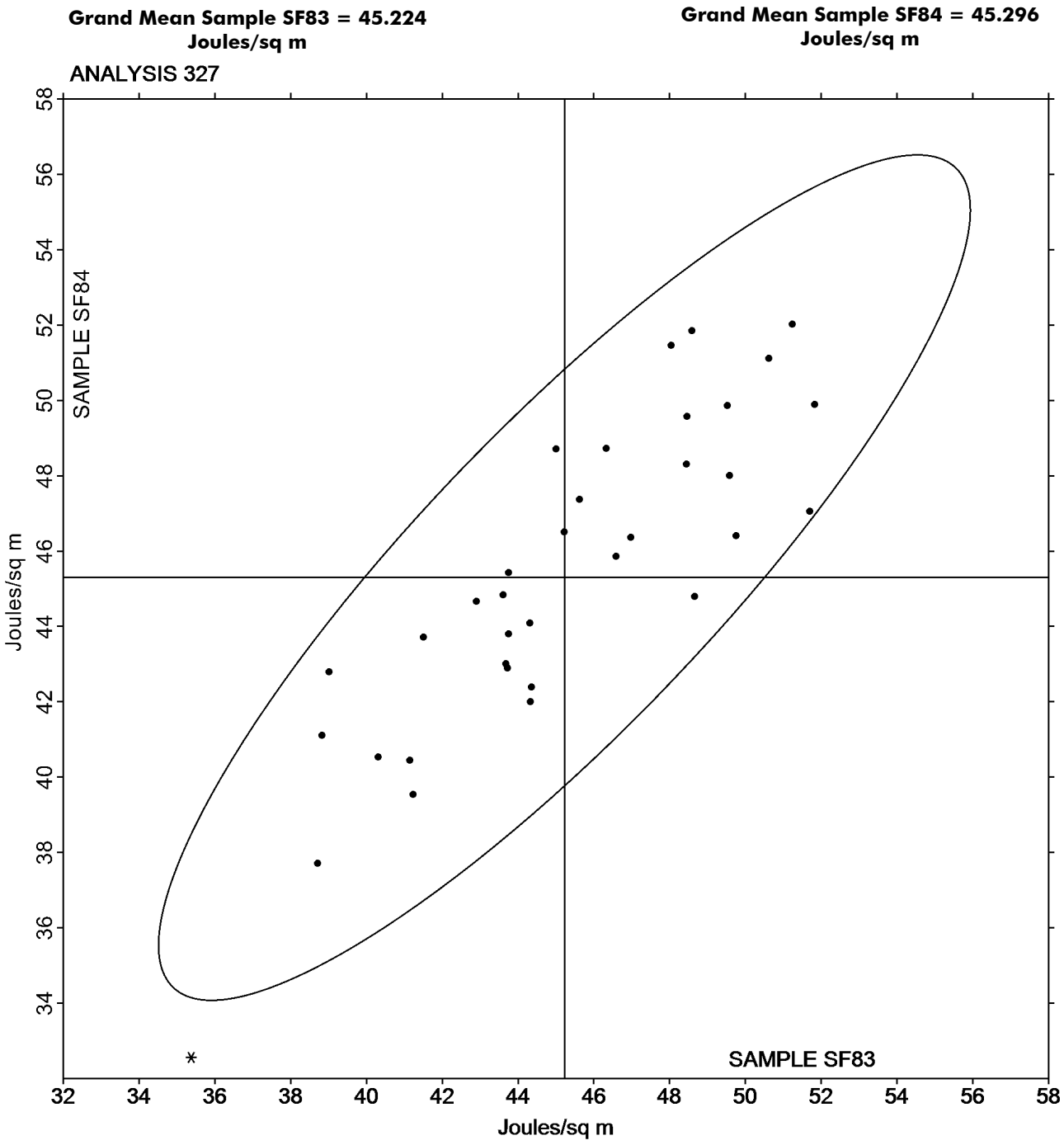
78XNJL (X) - Extreme Data.

Analysis Notes:

4KDV8M - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on data entry form. CTS will not correct the Units going forward.

Key to Instrument Codes Reported by Participants

DL	EMIC DL500 Universal Testing Machines	FP	Frank PTI Universal Tester TS
ID	Instron 4200 Series	IM	Instron 5500 Series
IX	Instron (model not specified)	LA	L & W Tensile - Autoline 300
LB	L & W Tensile - Autoline 400	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	TF	Thwing-Albert EJA Vantage-1
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TV	Thwing-Albert Vantage NX	XX	Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF83 Lab Mean	Sample SF83 Diff from Grand Mean	Sample SF83 CPV	Sample SF84 Lab Mean	Sample SF84 Diff from Grand Mean	Sample SF84 CPV	Instr Code
4KDV8M		1.613	-0.067	-0.44	1.647	-0.018	-0.11	IM
4QYNHM		1.589	-0.091	-0.59	1.486	-0.179	-1.13	LA
6QXBBK		1.579	-0.101	-0.66	1.543	-0.122	-0.77	LH
6TJ66Z		1.924	0.244	1.59	1.974	0.310	1.96	TV
6UXM7K		1.850	0.170	1.11	1.740	0.075	0.48	VM
78XNJL	X	2.196	0.516	3.36	2.000	0.335	2.12	TP
7BX2XY		1.575	-0.105	-0.68	1.526	-0.139	-0.88	LI
84EUY7		1.798	0.118	0.77	1.828	0.163	1.03	FP
8RZXU3		1.533	-0.147	-0.96	1.515	-0.150	-0.95	LA
8XR3WJ		1.590	-0.090	-0.59	1.603	-0.062	-0.39	LB
8Y36HH		1.654	-0.026	-0.17	1.672	0.007	0.05	TX
8ZWVLC		1.896	0.216	1.40	1.780	0.115	0.73	TO
ABPQ2H		1.723	0.043	0.28	1.642	-0.023	-0.14	LH
BR6Q3X		1.576	-0.104	-0.68	1.620	-0.045	-0.28	LX
BY7YPD		1.436	-0.244	-1.59	1.466	-0.199	-1.26	TO
CRYU8T		1.475	-0.205	-1.33	1.485	-0.180	-1.14	LH
DULRXW		1.611	-0.069	-0.45	1.593	-0.072	-0.45	LI
E3VGCV		1.822	0.142	0.92	1.856	0.191	1.21	DL
FC2JE8		1.853	0.173	1.13	1.835	0.170	1.08	CS
FQYTX8		1.750	0.070	0.45	1.800	0.135	0.86	LH
J6N292	*	2.107	0.427	2.78	2.092	0.427	2.71	TO
JJ46QQ		1.590	-0.090	-0.59	1.530	-0.135	-0.85	TF
KFMW3Q		1.634	-0.046	-0.30	1.621	-0.044	-0.28	LH
LA9V36		1.424	-0.256	-1.66	1.470	-0.195	-1.23	LI
NEVAXP		1.608	-0.072	-0.47	1.582	-0.083	-0.52	LI
R4L4BD		1.848	0.168	1.09	1.903	0.238	1.51	TF
T7Q7JU		1.750	0.070	0.45	1.776	0.111	0.70	TB
TLY3UF	X	1.768	0.088	0.57	1.478	-0.187	-1.18	LI
TTJ72H		1.716	0.036	0.23	1.673	0.008	0.05	RE
UJBQUA		1.740	0.060	0.39	1.722	0.057	0.36	TF
VLWRFN	X	2.943	1.263	8.21	3.205	1.540	9.75	LA
WDBLRF		1.615	-0.065	-0.42	1.588	-0.077	-0.49	LH
XCHP68		1.628	-0.052	-0.34	1.482	-0.183	-1.16	TF
Y6W87Q		1.961	0.281	1.83	1.913	0.248	1.57	IX
YLLGTT		1.580	-0.100	-0.65	1.557	-0.108	-0.68	ID
ZCBF8R		1.490	-0.190	-1.24	1.553	-0.112	-0.71	LH
ZG3N9D		1.698	0.018	0.12	1.748	0.083	0.53	LF
ZUUD9J		1.627	-0.053	-0.34	1.556	-0.109	-0.69	XX
ZXQ3M6		1.618	-0.062	-0.40	1.555	-0.110	-0.70	LX

Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

Summary Statistics	Sample SF83	Sample SF84
Grand Means	1.68 Percent	1.66 Percent
Stnd Dev Btwn Labs	0.15 Percent	0.16 Percent

Statistics based on 36 of 39 reporting participants.

Comments on Assigned Data Flags for Test #328

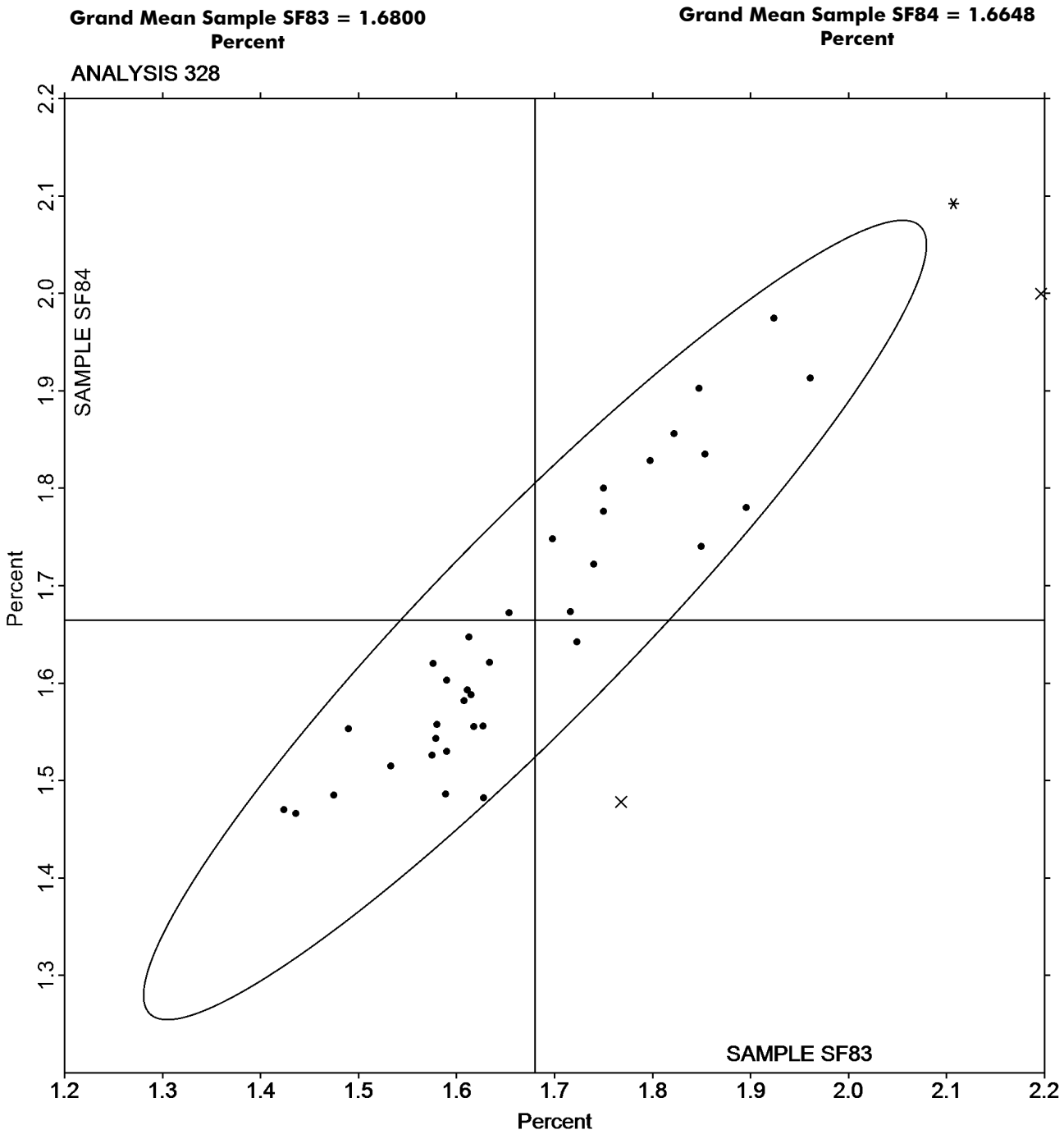
78XNJL (X) - Data for sample SF83 are high. Inconsistent within the determinations of sample SF83.

TLY3UF (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample SF83.

VLWRFN (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

CS	Chatillon CS1100 Series Force Tester	DL	EMIC DL500 Universal Testing Machines
FP	Frank PTI Universal Tester TS	ID	Instron 4200 Series
IM	Instron 5500 Series	IX	Instron (model not specified)
LA	L & W Tensile - Autoline 300	LB	L & W Tensile - Autoline 400
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
TF	Thwing-Albert EJA Vantage-1	TO	Thwing-Albert QC-1000
TP	TMI Monitor/Tensile 100 (84-21-01)	TV	Thwing-Albert Vantage NX
TX	Thwing-Albert (model not specified)	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab		



WebCode	Data Flag	Sample SE83 Lab Mean	Sample SE83 Diff from Grand Mean	Sample SE83 CPV	Sample SE84 Lab Mean	Sample SE84 Diff from Grand Mean	Sample SE84 CPV	Instr Code
2BA3YP		12.52	-0.84	-0.86	13.54	-0.92	-0.88	LE
3GTRUJ		14.42	1.06	1.08	15.34	0.88	0.83	LW
3YW4L9		13.38	0.03	0.03	15.09	0.62	0.59	LI
3ZAQ4M		13.44	0.08	0.08	15.13	0.67	0.64	LH
4CGZ6H	X	9.40	-3.96	-4.02	10.18	-4.28	-4.07	IN
4E4MX7	*	16.11	2.75	2.80	16.89	2.43	2.31	LX
4KDV8M		13.43	0.07	0.07	14.07	-0.39	-0.37	IM
4VRXK9		13.51	0.15	0.15	13.52	-0.95	-0.90	LA
6YNWGH		12.99	-0.36	-0.37	13.78	-0.68	-0.65	IM
78V3M7		13.95	0.59	0.60	15.22	0.76	0.72	TH
7PFTM6		14.22	0.87	0.88	15.06	0.59	0.56	ID
7RJG4F		11.71	-1.65	-1.67	13.18	-1.29	-1.22	IM
8RZXU3		13.98	0.63	0.64	14.97	0.50	0.48	LA
9CYLY4		13.78	0.42	0.43	14.89	0.42	0.40	CE
9NT2N6		14.65	1.29	1.32	16.32	1.86	1.77	DM
9YE7V4		14.08	0.72	0.73	15.85	1.38	1.31	ID
AE3V9C		12.41	-0.94	-0.96	12.98	-1.49	-1.42	IN
BUENFF		12.49	-0.86	-0.88	13.74	-0.72	-0.69	TK
CLVMUB		13.94	0.59	0.60	16.23	1.76	1.68	IF
CXCEFZ		12.13	-1.23	-1.25	12.92	-1.55	-1.47	IF
D8EAVA		11.47	-1.89	-1.92	12.92	-1.54	-1.47	XX
DM3KHC		13.12	-0.24	-0.24	14.01	-0.45	-0.43	LE
DULRXW		13.12	-0.24	-0.24	14.13	-0.33	-0.32	LW
EX48AA		13.15	-0.21	-0.21	14.20	-0.27	-0.25	IM
EZAUJ8		13.17	-0.19	-0.19	13.61	-0.85	-0.81	LA
GPZ6U2		12.60	-0.76	-0.77	13.39	-1.08	-1.02	LE
GRQ72B		13.06	-0.30	-0.30	14.48	0.02	0.01	LE
HXTGPV		14.35	1.00	1.01	15.23	0.77	0.73	IF
JYKXJ4	*	10.55	-2.81	-2.85	11.40	-3.06	-2.91	LE
KWUB67		12.99	-0.37	-0.37	14.27	-0.20	-0.19	LW
KXZT43		14.11	0.75	0.76	15.58	1.12	1.06	LW
L62AA2		14.04	0.69	0.70	14.99	0.53	0.50	IN
LEN4Q6		13.62	0.26	0.27	14.17	-0.30	-0.28	IM
LQE6ZJ		12.43	-0.93	-0.94	13.42	-1.04	-0.99	TT
NBHKG2		13.40	0.05	0.05	13.72	-0.74	-0.71	TA
PPRVGT		12.70	-0.66	-0.67	13.75	-0.72	-0.68	IM
PVJZBX		12.71	-0.65	-0.66	13.88	-0.59	-0.56	IR
PYGLZF		12.98	-0.38	-0.39	14.27	-0.19	-0.18	TH
RM2DCD	X	142.00	128.64	130.83	153.90	139.44	132.54	TP
T6F6WV		13.48	0.12	0.13	14.94	0.47	0.45	LH

Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE83 Lab Mean	Sample SE83 Diff from Grand Mean	Sample SE83 CPV	Sample SE84 Lab Mean	Sample SE84 Diff from Grand Mean	Sample SE84 CPV	Instr Code
TA3WZH		14.59	1.23	1.25	15.69	1.23	1.17	IF
UJBQUA		13.15	-0.21	-0.21	14.06	-0.40	-0.38	TO
UZCXMG		15.44	2.08	2.12	15.83	1.37	1.30	LA
VDJY4T	*	15.06	1.70	1.73	15.13	0.66	0.63	TO
W487AN		13.13	-0.22	-0.23	15.25	0.79	0.75	IK
WDBLRF		13.36	0.00	0.00	15.10	0.64	0.60	LH
WKVGWQ		12.98	-0.38	-0.38	14.25	-0.22	-0.21	IR
WVW6NM		13.25	-0.11	-0.11	15.12	0.65	0.62	TB
ZCQYRP		12.77	-0.59	-0.60	13.70	-0.76	-0.72	TB
ZZEDMB		13.22	-0.14	-0.14	15.10	0.64	0.60	LE

Summary Statistics	Sample SE83	Sample SE84
Grand Means	13.36 kN/m	14.46 kN/m
Stnd Dev Btwn Labs	0.98 kN/m	1.05 kN/m

Statistics based on 48 of 50 reporting participants.

Comments on Assigned Data Flags for Test #330

RM2DCD (X) - Extreme Data.

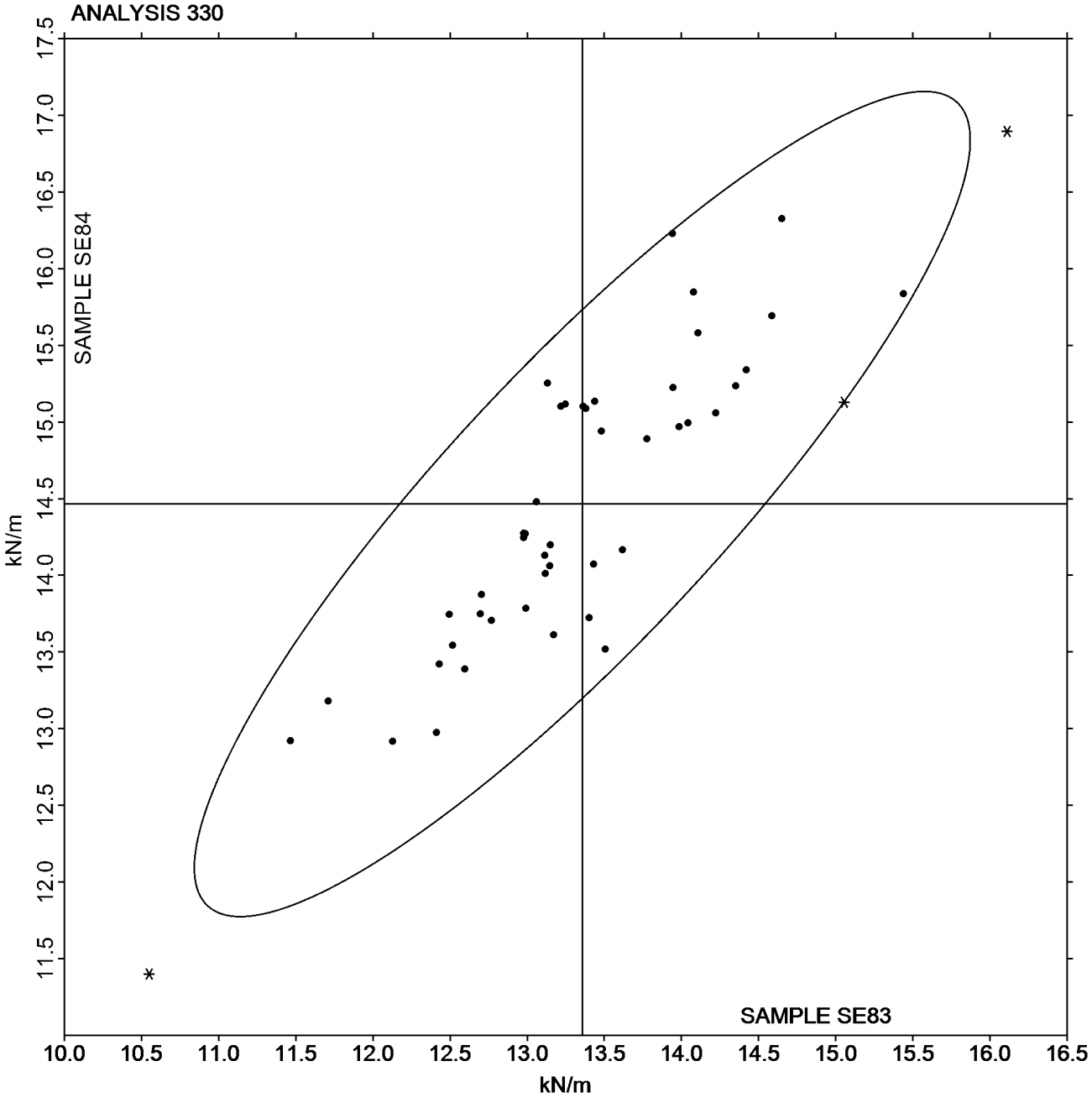
4CGZ6H (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample SE84.

Key to Instrument Codes Reported by Participants

CE	Chatillon Model ET1100	DM	IDM MTC-100 Tensile Tester
ID	Instron 4200 Series	IF	Instron 3340 Series
IK	Instron 4400 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	IR	Instron 5900 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	LX	L & W (model not specified)
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)
TT	Tinius Olsen Model MHT	XX	Instrument make/model not specified by lab

Grand Mean Sample SE83 = 13.357 kN/m

Grand Mean Sample SE84 = 14.465 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE83 Lab Mean	Sample SE83 Diff from Grand Mean	Sample SE83 CPV	Sample SE84 Lab Mean	Sample SE84 Diff from Grand Mean	Sample SE84 CPV	Instr Code
2BA3YP		208.3	-13.2	-0.33	198.6	-15.0	-0.39	LE
3GTRUJ		217.9	-3.5	-0.09	194.4	-19.3	-0.50	LW
3ZAQ4M		211.8	-9.7	-0.24	217.6	4.0	0.10	LH
4CGZ6H		140.1	-81.3	-2.02	143.4	-70.3	-1.82	IN
4E4MX7	*	244.5	23.1	0.57	183.3	-30.3	-0.79	LX
4KDV8M		249.1	27.7	0.69	230.3	16.6	0.43	IM
4VRXK9		224.7	3.2	0.08	227.6	14.0	0.36	LA
6YNWGH		224.1	2.7	0.07	202.8	-10.9	-0.28	IM
78V3M7		309.1	87.6	2.18	298.8	85.1	2.20	TH
7RJG4F	*	102.8	-118.6	-2.95	110.0	-103.6	-2.68	IM
8RZXU3		238.5	17.1	0.43	218.7	5.1	0.13	LA
9NT2N6		274.2	52.7	1.31	276.7	63.0	1.63	DM
9YE7V4		279.3	57.9	1.44	300.7	87.0	2.25	ID
AE3V9C		255.6	34.2	0.85	234.7	21.0	0.54	IN
BUENFF		231.4	10.0	0.25	226.4	12.8	0.33	TK
CLVMUB		190.8	-30.6	-0.76	200.9	-12.7	-0.33	IF
D8EAVA		183.8	-37.6	-0.94	192.6	-21.0	-0.54	XX
DM3KHC		221.9	0.5	0.01	194.6	-19.1	-0.49	LE
DULRXW		224.7	3.3	0.08	202.9	-10.7	-0.28	LW
EX48AA		236.5	15.1	0.38	223.7	10.0	0.26	IM
EZAUJ8		255.5	34.1	0.85	229.7	16.1	0.42	LA
GPZ6U2		222.0	0.5	0.01	212.0	-1.6	-0.04	LE
GRQ72B		207.3	-14.1	-0.35	208.8	-4.9	-0.13	LE
HXTGPV		228.0	6.5	0.16	220.4	6.7	0.17	IN
JYKXJ4	*	116.2	-105.3	-2.62	114.3	-99.3	-2.57	LE
KWUB67		209.9	-11.5	-0.29	203.2	-10.4	-0.27	LW
KXZT43		220.6	-0.8	-0.02	206.8	-6.8	-0.18	LW
L62AA2		183.6	-37.8	-0.94	172.3	-41.4	-1.07	IN
LEN4Q6		270.8	49.4	1.23	239.5	25.9	0.67	IM
LQE6ZJ		209.5	-11.9	-0.30	195.4	-18.3	-0.47	TT
PPRVGT		200.2	-21.2	-0.53	186.8	-26.8	-0.69	IM
RM2DCD		263.2	41.8	1.04	269.9	56.2	1.46	TP
T6F6WV		214.9	-6.5	-0.16	219.0	5.3	0.14	LH
UJBQUA		237.0	15.6	0.39	226.2	12.6	0.33	TO
UZCXMG		225.3	3.9	0.10	202.5	-11.1	-0.29	LA
VDJY4T	*	277.5	56.1	1.40	217.7	4.0	0.10	TO
W487AN		179.9	-41.5	-1.03	218.1	4.4	0.11	XX
WDBLRF		210.4	-11.0	-0.27	216.2	2.5	0.07	LH
WVW6NM		234.5	13.0	0.32	267.8	54.1	1.40	TB
ZCQYRP		221.8	0.4	0.01	208.8	-4.8	-0.12	TB

Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE83 Lab Mean	Sample SE83 Diff from Grand Mean	Sample SE83 CPV	Sample SE84 Lab Mean	Sample SE84 Diff from Grand Mean	Sample SE84 CPV	Instr Code
ZZEDMB		221.4	0.0	0.00	245.4	31.7	0.82	LE

Summary Statistics	Sample SE83	Sample SE84
Grand Means	221.43 Joules/sq m	213.65 Joules/sq m
Stnd Dev Btwn Labs	40.17 Joules/sq m	38.62 Joules/sq m

Statistics based on 41 of 41 reporting participants.

Analysis Notes:

4KDV8M - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on data entry form. CTS will not correct the Units going forward.

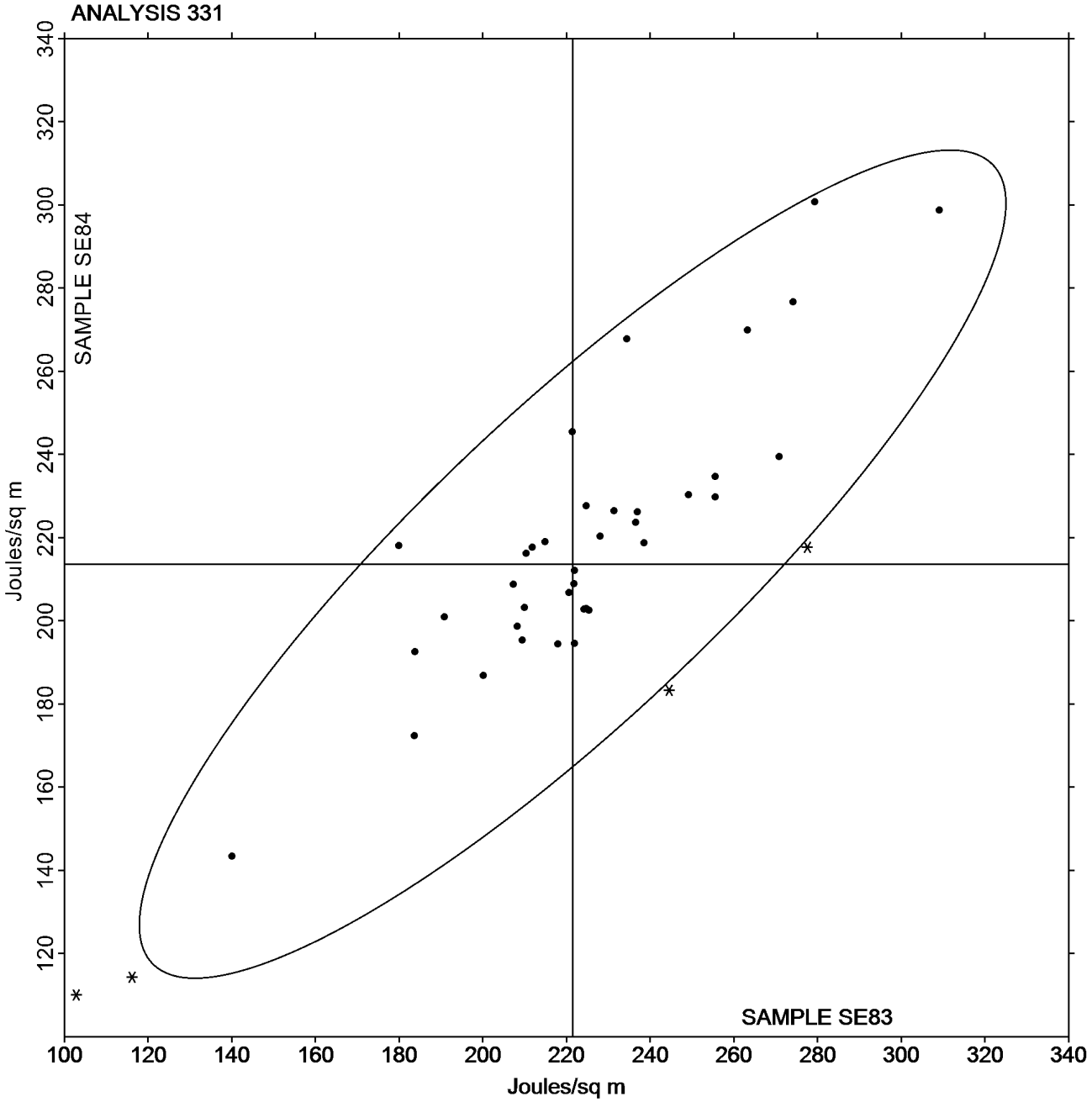
RM2DCD - Data appear to be reported as J/sq m, not kg-m/sq m as indicated on data entry form. CTS will not correct the Units going forward.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 series
IF	Instron 3340 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	LX	L & W (model not specified)
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)	TT	Tinius Olsen Model MHT
XX	Instrument make/model not specified by lab		

Grand Mean Sample SE83 = 221.43 Joules/sq m

Grand Mean Sample SE84 = 213.65 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE83 Lab Mean	Sample SE83 Diff from Grand Mean	Sample SE83 CPV	Sample SE84 Lab Mean	Sample SE84 Diff from Grand Mean	Sample SE84 CPV	Instr Code
2BA3YP		2.464	-0.029	-0.06	2.168	-0.056	-0.14	LE
3GTRUJ		2.311	-0.182	-0.40	1.961	-0.263	-0.65	LW
3ZAQ4M		2.350	-0.143	-0.31	2.150	-0.074	-0.18	LH
4CGZ6H		1.543	-0.950	-2.08	1.491	-0.733	-1.82	IN
4E4MX7		2.161	-0.332	-0.72	1.679	-0.545	-1.36	LX
4KDV8M		2.693	0.200	0.44	2.374	0.150	0.37	IM
4VRXK9		2.370	-0.123	-0.27	2.411	0.187	0.47	LA
6YNWGH		2.546	0.053	0.12	2.184	-0.040	-0.10	IM
78V3M7		3.556	1.063	2.33	3.184	0.960	2.39	TH
7PFTM6		2.676	0.183	0.40	2.228	0.004	0.01	ID
7RJG4F		1.452	-1.041	-2.28	1.408	-0.816	-2.03	IM
8RZXU3		2.159	-0.334	-0.73	1.844	-0.380	-0.95	LA
9NT2N6		2.793	0.301	0.66	2.539	0.315	0.78	DM
9YE7V4		2.985	0.492	1.08	2.831	0.607	1.51	ID
AE3V9C		2.350	-0.142	-0.31	2.084	-0.140	-0.35	IN
BUENFF		2.773	0.280	0.61	2.479	0.255	0.63	TK
CLVMUB		1.651	-0.842	-1.84	1.500	-0.724	-1.80	IF
D8EAVA		2.411	-0.082	-0.18	2.246	0.022	0.06	XX
DM3KHC		2.483	-0.010	-0.02	2.066	-0.158	-0.39	LE
DULRXW		2.509	0.016	0.04	2.128	-0.096	-0.24	LW
EX48AA		2.900	0.407	0.89	2.588	0.364	0.91	IM
EZAUJ8		2.969	0.476	1.04	2.405	0.181	0.45	LA
GPZ6U2		2.343	-0.150	-0.33	2.057	-0.167	-0.42	LE
GRQ72B		2.338	-0.155	-0.34	2.117	-0.107	-0.27	LE
HXTGPV		2.383	-0.110	-0.24	2.116	-0.108	-0.27	IN
JYKXJ4		1.585	-0.908	-1.98	1.441	-0.783	-1.95	LE
KWUB67		2.404	-0.089	-0.19	2.120	-0.104	-0.26	LW
KXZT43		2.308	-0.185	-0.40	1.981	-0.243	-0.61	LW
L62AA2		1.680	-0.813	-1.78	1.656	-0.568	-1.41	IN
LEN4Q6		2.969	0.476	1.04	2.552	0.328	0.82	IM
LQE6ZJ		2.561	0.068	0.15	2.188	-0.036	-0.09	TT
NBHKG2		2.600	0.107	0.23	2.140	-0.084	-0.21	TB
PPRVGT		2.482	-0.011	-0.02	2.157	-0.067	-0.17	IM
PVJZBX		2.730	0.237	0.52	2.490	0.266	0.66	IR
RM2DCD	*	3.627	1.134	2.48	3.295	1.071	2.67	TP
T6F6WV		2.330	-0.163	-0.36	2.114	-0.110	-0.27	LH
UJBQUA		2.777	0.284	0.62	2.484	0.260	0.65	TO
UZCXMG		3.169	0.676	1.48	2.818	0.594	1.48	LA
VDJY4T		2.851	0.358	0.78	2.291	0.067	0.17	TO
W487AN		2.091	-0.402	-0.88	2.131	-0.093	-0.23	XX

Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE83 Lab Mean	Sample SE83 Diff from Grand Mean	Sample SE83 CPV	Sample SE84 Lab Mean	Sample SE84 Diff from Grand Mean	Sample SE84 CPV	Instr Code
WDBLRF		2.307	-0.186	-0.41	2.191	-0.033	-0.08	LH
WKVGWQ		2.770	0.277	0.61	2.470	0.246	0.61	IR
WVW6NM		2.683	0.190	0.42	2.649	0.425	1.06	TB
ZCQYRP		2.574	0.082	0.18	2.261	0.037	0.09	TB
ZZEDMB		2.499	0.006	0.01	2.417	0.193	0.48	LE

Summary Statistics	Sample SE83	Sample SE84
Grand Means	2.49 Percent	2.22 Percent
Stnd Dev Btwn Labs	0.46 Percent	0.40 Percent

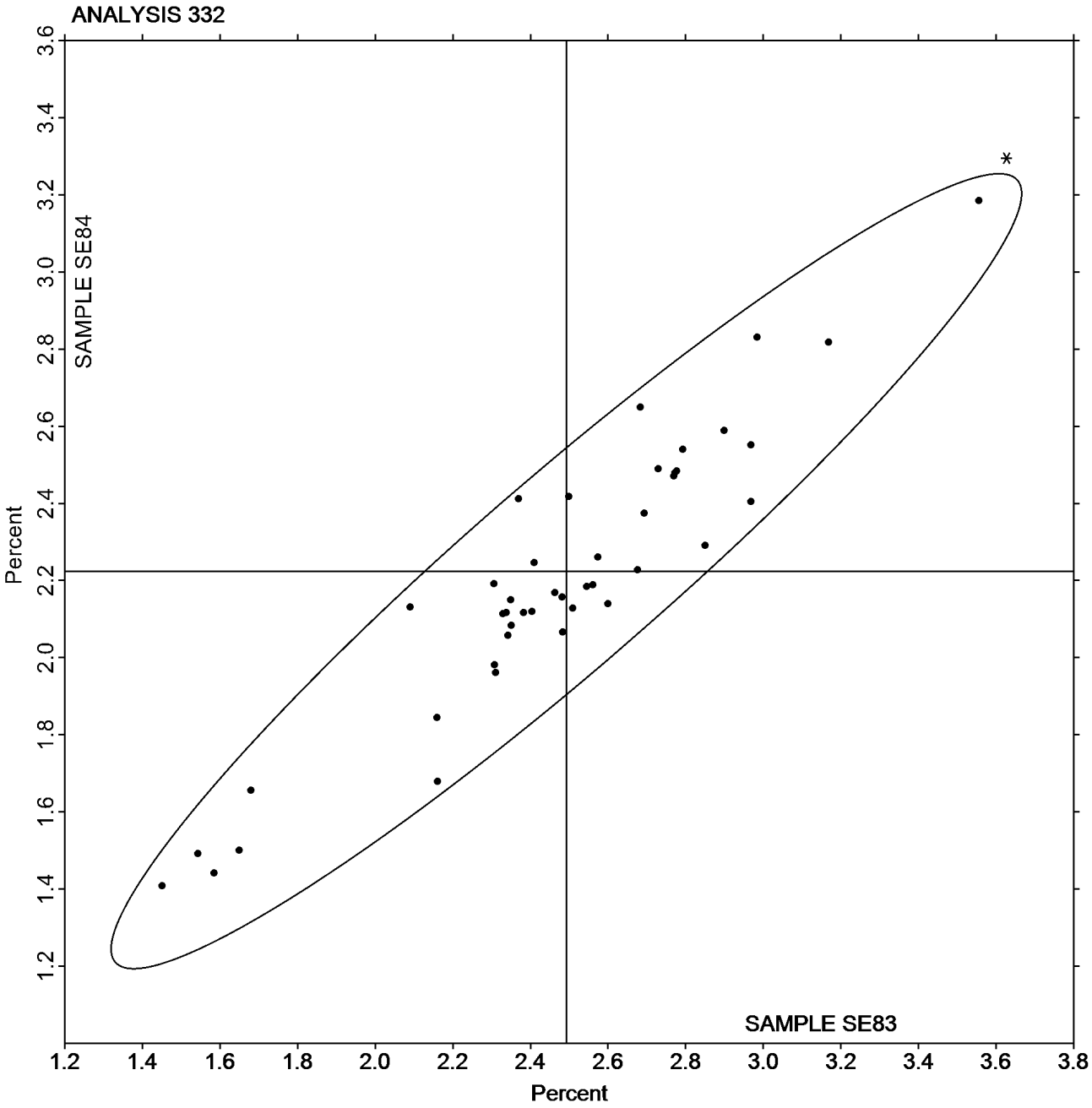
Statistics based on 45 of 45 reporting participants.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 Series
IF	Instron 3340 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	IR	Instron 5900 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
LX	L & W (model not specified)	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)
TT	Tinius Olsen Model MHT	XX	Instrument make/model not specified by lab

Grand Mean Sample SE83 = 2.4925 Percent

Grand Mean Sample SE84 = 2.2241 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 334

Folding Endurance (MIT) - Double Folds

TAPPI Official Test Method T511

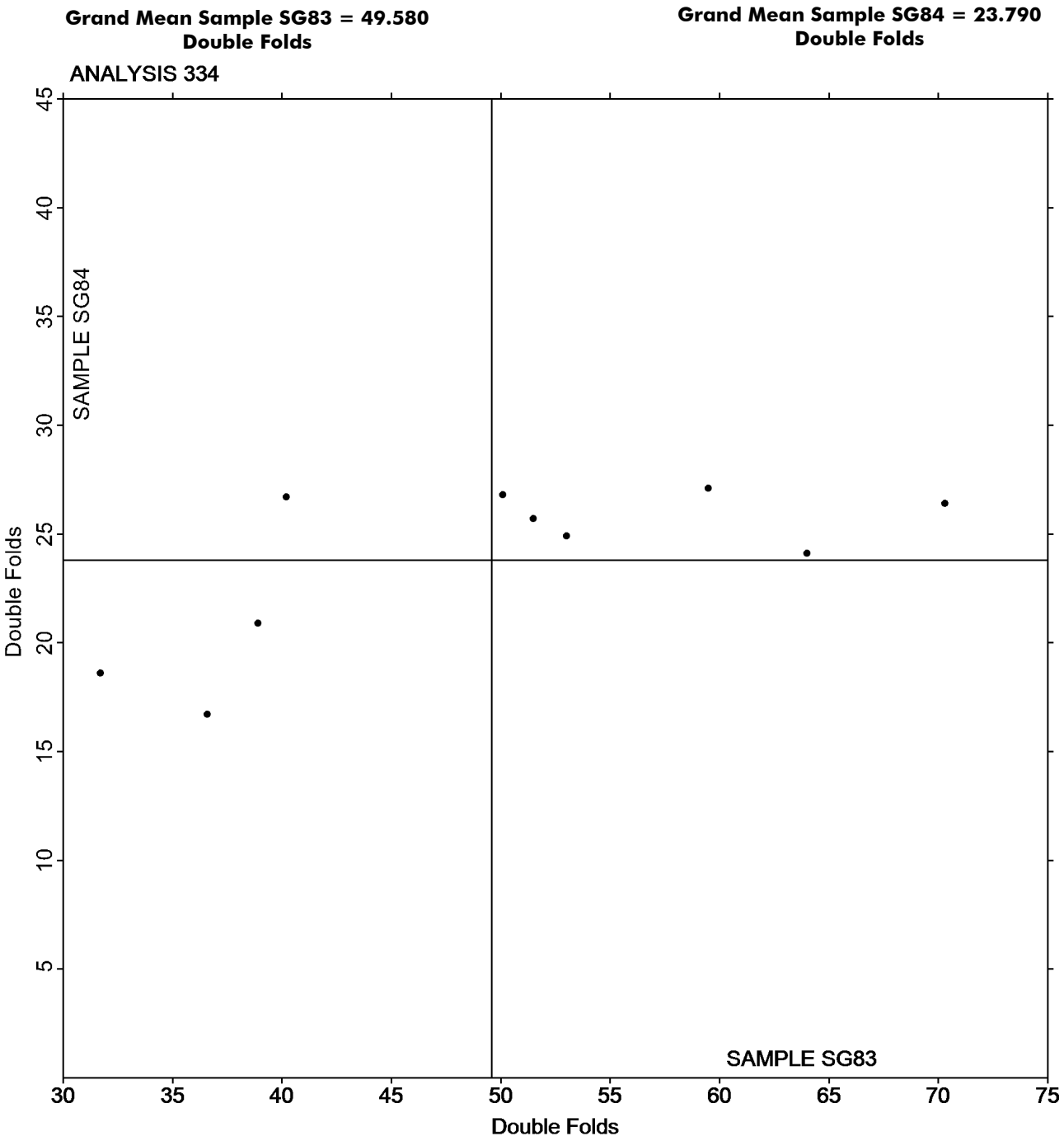
WebCode	Data Flag	Sample SG83 Lab Mean	Sample SG83 Diff from Grand Mean	Sample SG83 CPV	Sample SG84 Lab Mean	Sample SG84 Diff from Grand Mean	Sample SG84 CPV	Instr Code
6UXM7K		40.20	-9.38	-0.74	26.70	2.91	0.78	MT
78V3M7		50.10	0.52	0.04	26.80	3.01	0.81	MT
D8EAVA		53.00	3.42	0.27	24.90	1.11	0.30	MT
DULRXW		38.90	-10.68	-0.84	20.90	-2.89	-0.77	MT
JJ46QQ		70.30	20.72	1.64	26.40	2.61	0.70	MT
LEN4Q6		64.00	14.42	1.14	24.10	0.31	0.08	MT
NBHKG2		31.70	-17.88	-1.41	18.60	-5.19	-1.39	MT
TLY3UF		51.50	1.92	0.15	25.70	1.91	0.51	MT
XAXVAR		59.50	9.92	0.78	27.10	3.31	0.89	MT
Y6W87Q		36.60	-12.98	-1.03	16.70	-7.09	-1.90	MT

Summary Statistics	Sample SG83	Sample SG84
Grand Means	49.58 Double Folds	23.79 Double Folds
Stnd Dev Btwn Labs	12.66 Double Folds	3.74 Double Folds

Statistics based on 10 of 10 reporting participants.

Key to Instrument Codes Reported by Participants

MT MIT - Tinius Olsen



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 SH83 Lab Mean	Sample SH83 Diff from Grand Mean	Sample SH83 CPV	Sample SH84 Lab Mean	Sample SH84 Diff from Grand Mean	Sample SH84 CPV
43T68N		141.4	1.4	0.04	141.5	2.0	0.08
4QYNHM		155.4	15.4	0.49	157.1	17.6	0.71
6UXM7K		130.0	-10.0	-0.31	155.3	15.8	0.64
78XNJL		117.8	-22.2	-0.70	146.2	6.7	0.27
8ZWVLC		141.9	1.9	0.06	134.3	-5.2	-0.21
ABPQ2H		157.6	17.6	0.56	147.9	8.3	0.34
BY7YPD		137.3	-2.7	-0.08	139.4	-0.1	0.00
CRYU8T		123.2	-16.8	-0.53	156.3	16.8	0.68
D8EAVA		159.1	19.1	0.60	163.4	23.9	0.97
JJ7PM7		136.8	-3.2	-0.10	125.6	-13.9	-0.56
LEN4Q6		139.9	-0.1	0.00	129.9	-9.6	-0.39
NBHKG2		144.0	4.0	0.13	139.0	-0.5	-0.02
R4L4BD		142.7	2.8	0.09	138.3	-1.2	-0.05
T7Q7JU		156.5	16.5	0.52	151.4	11.9	0.48
TA3WZH	*	54.9	-85.1	-2.68	56.6	-82.9	-3.35
UCNZ9E		127.7	-12.3	-0.39	131.0	-8.5	-0.34
VTDQKM	*	226.5	86.5	2.72	174.2	34.7	1.40
Y6W87Q	X	3.3	-136.7	-4.30	3.2	-136.3	-5.51
ZCQYRP		127.2	-12.8	-0.40	123.7	-15.8	-0.64

Summary Statistics	Sample SH83	Sample SH84
Grand Means	139.99 Gurley Units	139.50 Gurley Units
Stnd Dev Btwn Labs	31.76 Gurley Units	24.72 Gurley Units

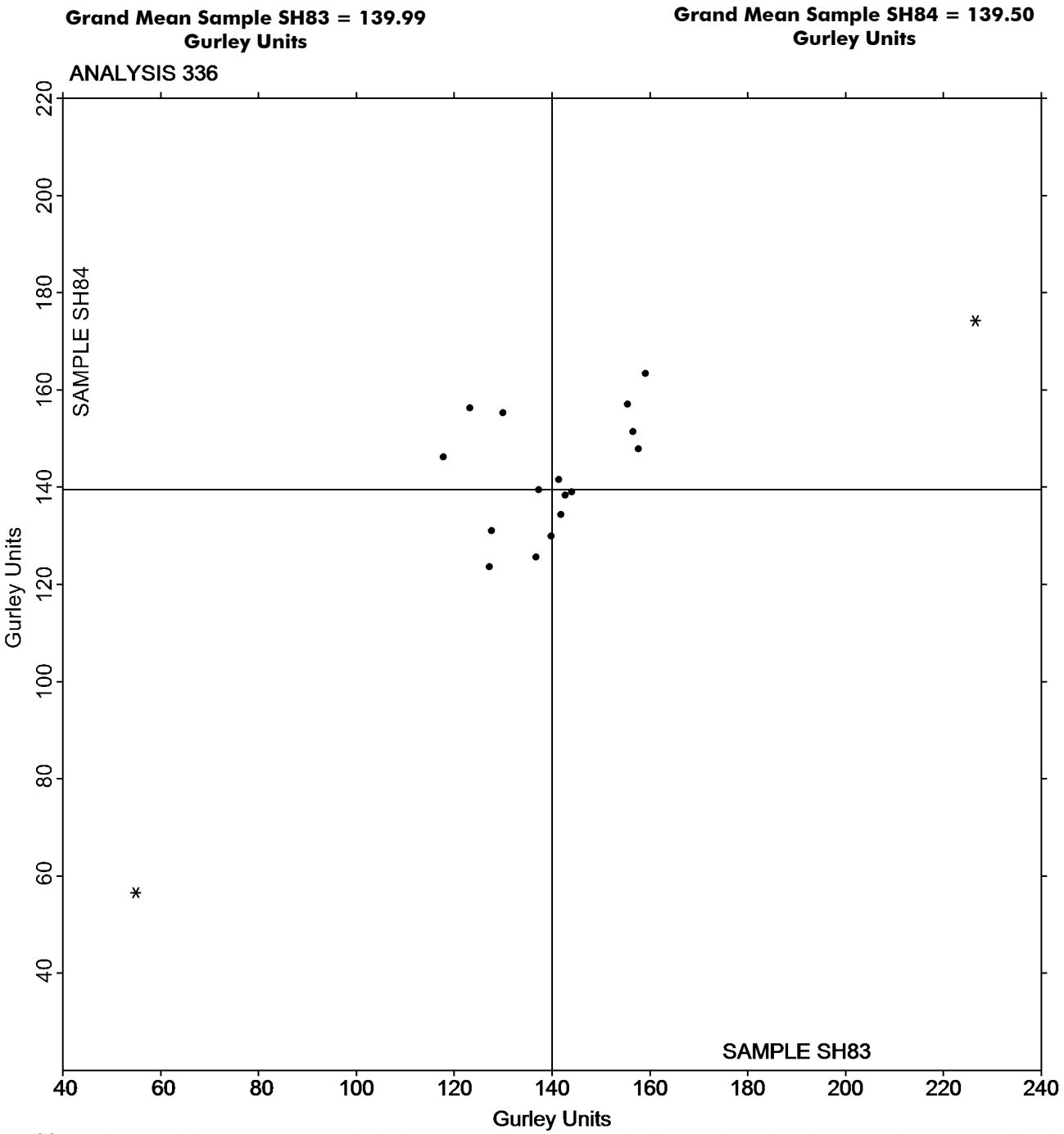
Statistics based on 18 of 19 reporting participants.

Comments on Assigned Data Flags for Test #336

Y6W87Q (X) - Data for both samples are low.

Analysis Notes:

D8EAVA - One determination removed from the Lab Mean of Sample SH83 per Grubb's Test at 1% risk (TAPPI 1205).



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 338

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

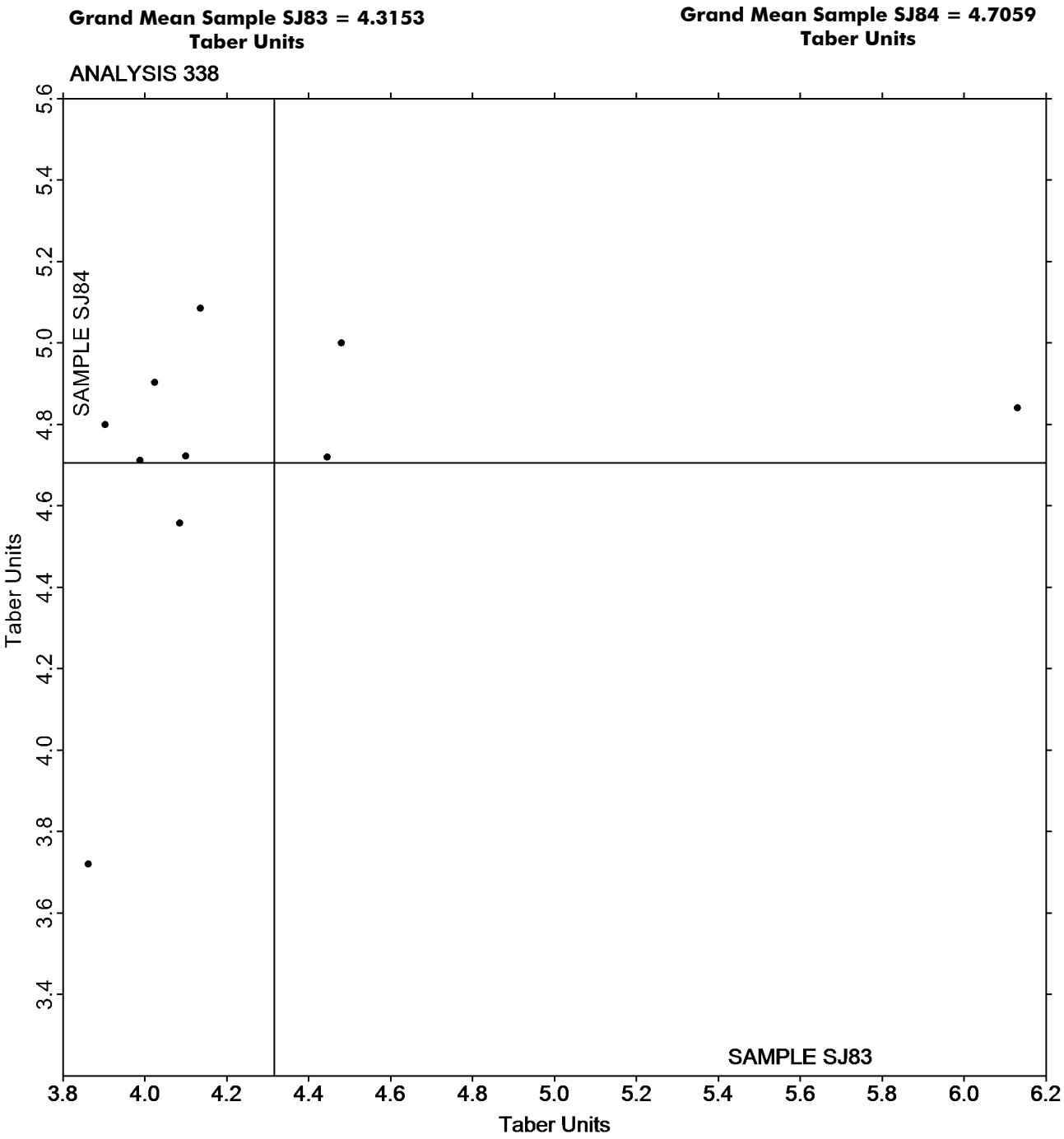
WebCode	Data Flag	Sample SJ83 Lab Mean	Sample SJ83 Diff from Grand Mean	Sample SJ83 CPV	Sample SJ84 Lab Mean	Sample SJ84 Diff from Grand Mean	Sample SJ84 CPV
6MTQHE		4.085	-0.230	-0.34	4.557	-0.149	-0.39
8XR3WJ		6.130	1.815	2.71	4.840	0.134	0.35
ABPQ2H		4.445	0.130	0.19	4.720	0.014	0.04
HXTGPV		4.480	0.165	0.25	5.000	0.294	0.78
J6N292		4.100	-0.215	-0.32	4.722	0.016	0.04
KL98X8		3.903	-0.412	-0.62	4.800	0.094	0.25
LEN4Q6		4.136	-0.179	-0.27	5.085	0.379	1.00
PEUWQM		4.024	-0.291	-0.44	4.903	0.197	0.52
T7Q7JU		3.988	-0.327	-0.49	4.712	0.006	0.01
TA3WZH		3.862	-0.453	-0.68	3.720	-0.986	-2.60

Summary Statistics	Sample SJ83	Sample SJ84
Grand Means	4.32 Taber Units	4.71 Taber Units
Stnd Dev Btwn Labs	0.67 Taber Units	0.38 Taber Units

Statistics based on 10 of 10 reporting participants.

Analysis Notes:

J6N292 - Data appear to be reported as g-cm, not mN-m as indicated on data entry form. CTS will not correct the Units going forward.



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

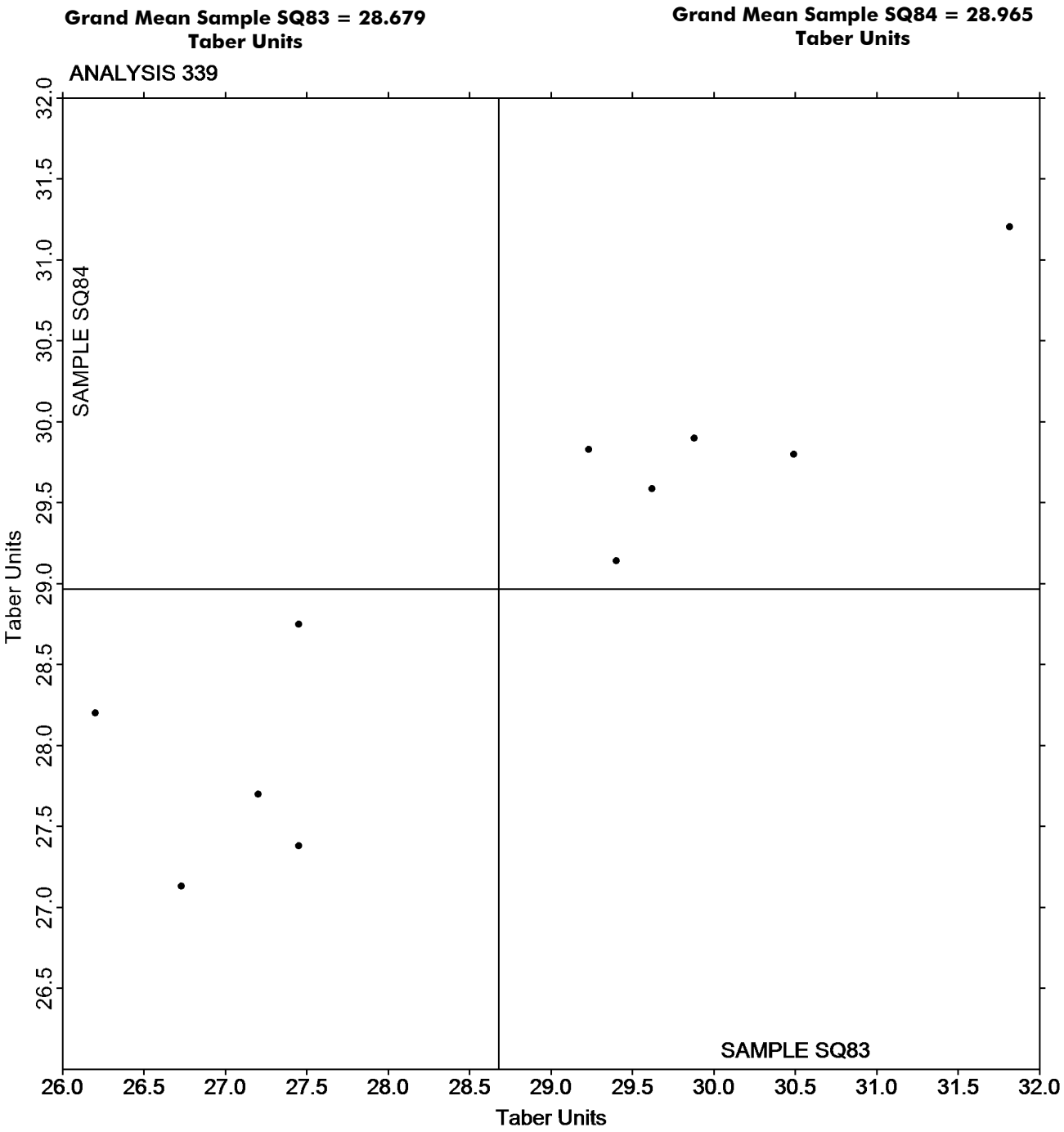
Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

WebCode	Data Flag	Sample SQ83 Lab Mean	Sample SQ83 Diff from Grand Mean	Sample SQ83 CPV	Sample SQ84 Lab Mean	Sample SQ84 Diff from Grand Mean	Sample SQ84 CPV
2Y24A4		27.45	-1.23	-0.69	27.38	-1.59	-1.26
4KDV8M		31.82	3.14	1.77	31.20	2.24	1.78
8Y36HH		27.20	-1.48	-0.83	27.70	-1.27	-1.00
DULRXW		29.23	0.55	0.31	29.83	0.86	0.69
E3VGCV		26.73	-1.95	-1.10	27.13	-1.84	-1.46
GRQ72B		26.20	-2.48	-1.40	28.20	-0.77	-0.61
KXZT43		27.45	-1.23	-0.69	28.75	-0.22	-0.17
PMKHVL		29.88	1.20	0.68	29.90	0.93	0.74
UCNZ9E		29.62	0.94	0.53	29.59	0.62	0.49
WVW6NM		29.40	0.72	0.41	29.14	0.17	0.14
ZZEDMB		30.49	1.81	1.02	29.80	0.83	0.66

Summary Statistics	Sample SQ83	Sample SQ84
Grand Means	28.68 Taber Units	28.97 Taber Units
Stnd Dev Btwn Labs	1.77 Taber Units	1.26 Taber Units

Statistics based on 11 of 11 reporting participants.



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

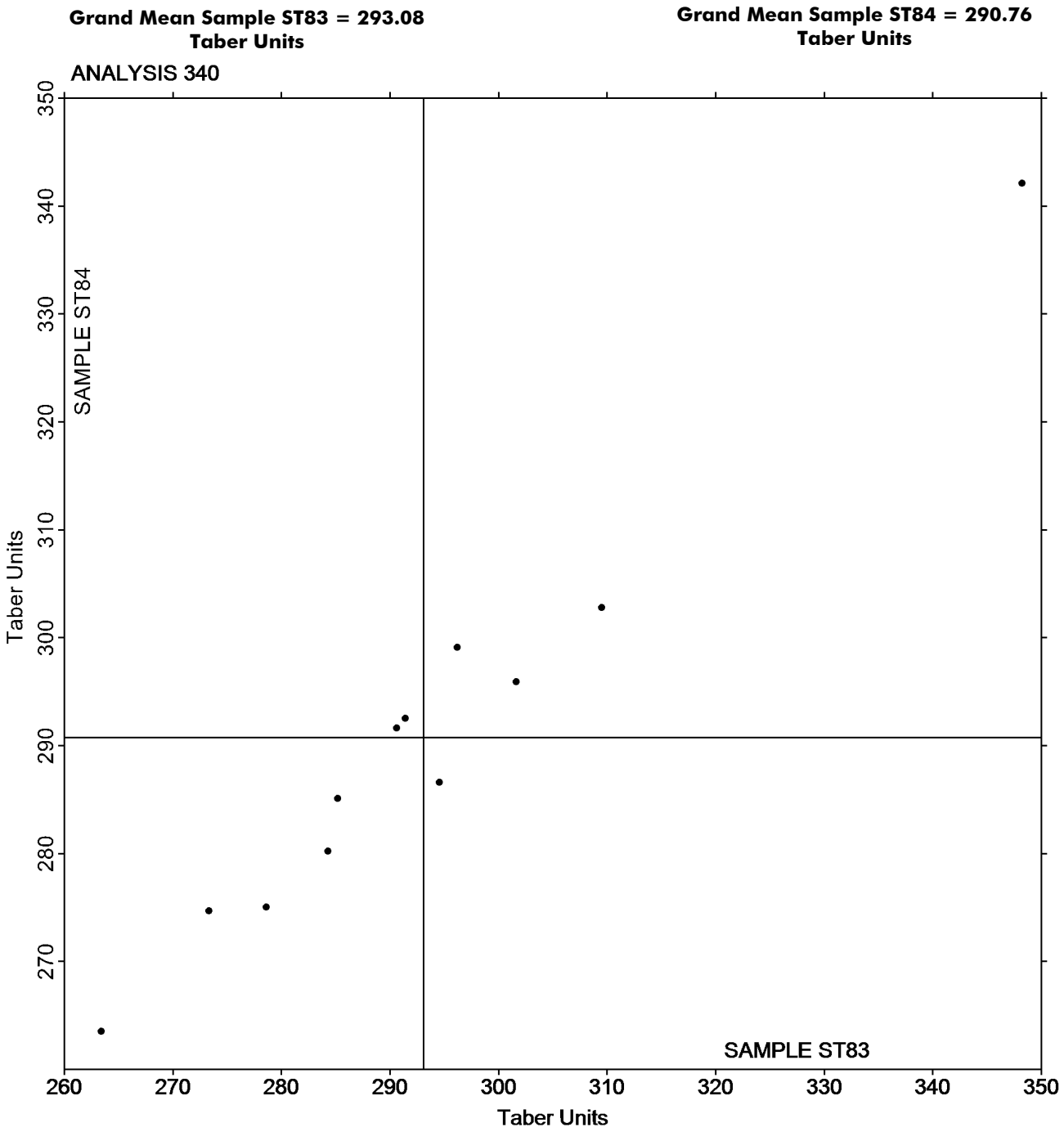
Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard

TAPPI Official Test Method T489

WebCode	Data Flag	Sample ST83 Lab Mean	Sample ST83 Diff from Grand Mean	Sample ST83 CPV	Sample ST84 Lab Mean	Sample ST84 Diff from Grand Mean	Sample ST84 CPV
78V3M7		285.2	-7.9	-0.37	285.1	-5.7	-0.29
8PCLVW		278.6	-14.5	-0.68	275.0	-15.7	-0.80
CPWVWZ		309.5	16.4	0.77	302.8	12.0	0.61
CXCEFZ		296.2	3.1	0.15	299.1	8.3	0.42
D8EAVA		273.3	-19.7	-0.92	274.7	-16.1	-0.81
DULRXW		301.6	8.5	0.40	295.9	5.1	0.26
KDAPEN		290.6	-2.5	-0.12	291.6	0.8	0.04
LLLZAZ		291.4	-1.7	-0.08	292.5	1.7	0.09
PYGLZF		348.3	55.2	2.58	342.1	51.3	2.60
RM2DCD		263.4	-29.7	-1.39	263.5	-27.3	-1.38
UCNZ9E		294.5	1.5	0.07	286.6	-4.2	-0.21
YLYTPC		284.3	-8.8	-0.41	280.2	-10.6	-0.53

Summary Statistics	Sample ST83	Sample ST84
Grand Means	293.08 Taber Units	290.76 Taber Units
Stnd Dev Btwn Labs	21.38 Taber Units	19.75 Taber Units

Statistics based on 12 of 12 reporting participants.



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

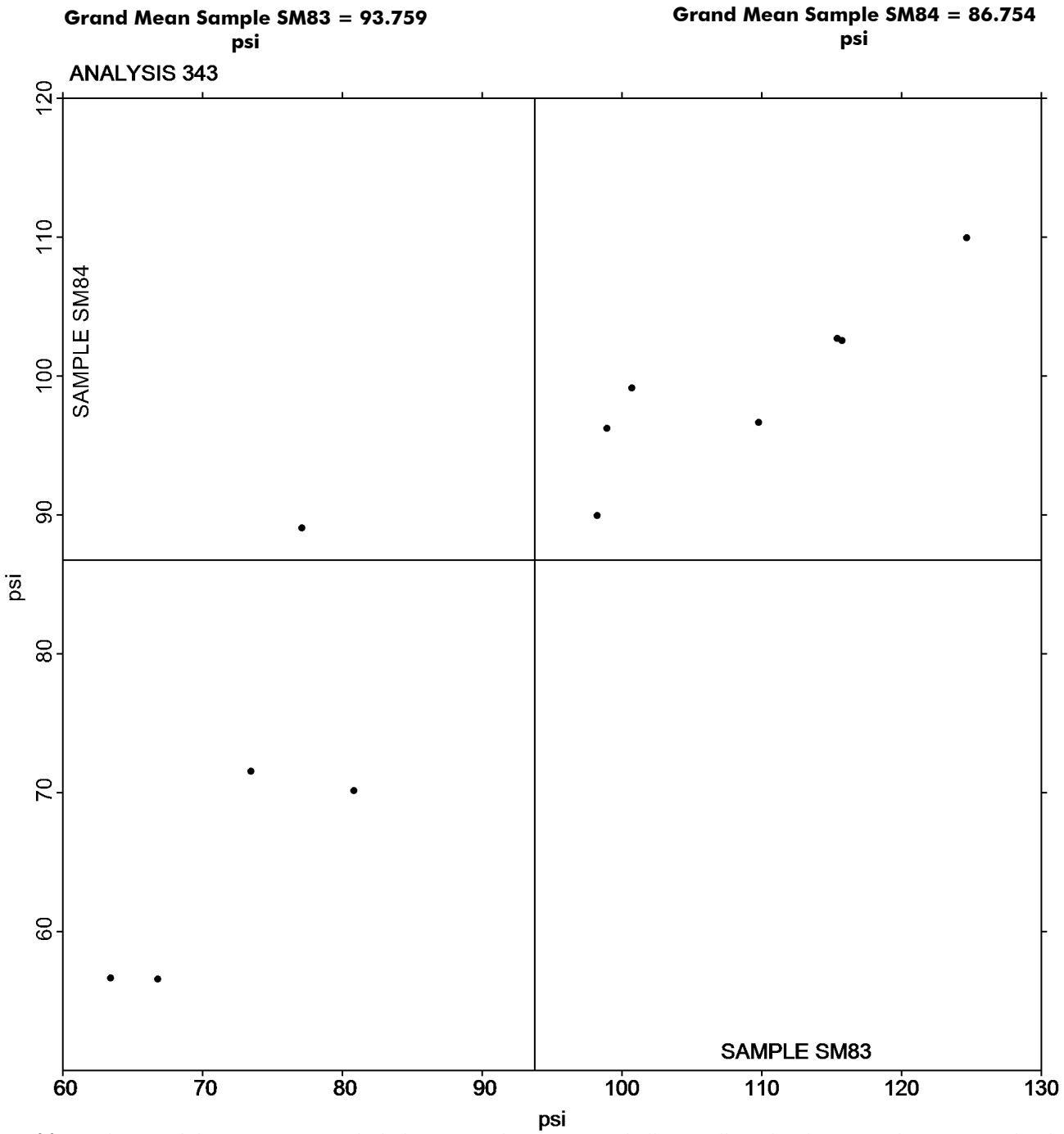
WebCode	Data Flag	Sample SM83 Lab Mean	Sample SM83 Diff from Grand Mean	Sample SM83 CPV	Sample SM84 Lab Mean	Sample SM84 Diff from Grand Mean	Sample SM84 CPV	Instr Code
78V3M7		66.80	-26.96	-1.30	56.56	-30.19	-1.64	LW
DULRXW		109.80	16.04	0.77	96.66	9.91	0.54	LW
JF4TUQ		124.66	30.90	1.48	109.96	23.21	1.26	DT
LEN4Q6		73.48	-20.28	-0.97	71.52	-15.23	-0.83	CD
NZT4JK		98.22	4.46	0.21	89.96	3.21	0.17	DX
PMKHVL		115.76	22.00	1.06	102.52	15.77	0.86	TA
RM2DCD		63.41	-30.35	-1.46	56.65	-30.10	-1.64	LW
TA3WZH		77.10	-16.66	-0.80	89.04	2.29	0.12	TL
WVW6NM		98.92	5.16	0.25	96.22	9.47	0.51	TA
Z9B9K9		115.42	21.66	1.04	102.68	15.93	0.87	DX
ZG3N9D		80.82	-12.94	-0.62	70.14	-16.61	-0.90	LW
ZZEDMB		100.72	6.96	0.33	99.14	12.39	0.67	TA

Summary Statistics	Sample SM83	Sample SM84
Grand Means	93.76 psi	86.75 psi
Stnd Dev Btwn Labs	20.81 psi	18.40 psi

Statistics based on 12 of 12 reporting participants.

Key to Instrument Codes Reported by Participants

CD	CSI CS-163D	DT	Dek-Tron DCS-163A ZDT Tester
DX	Dek-Tron XP2 Series	LW	L & W ZD Tensile Tester
TA	Thwing-Albert Tensile Tester	TL	TMI Lab Master



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

Paper & Paperboard Interlaboratory Testing Program

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

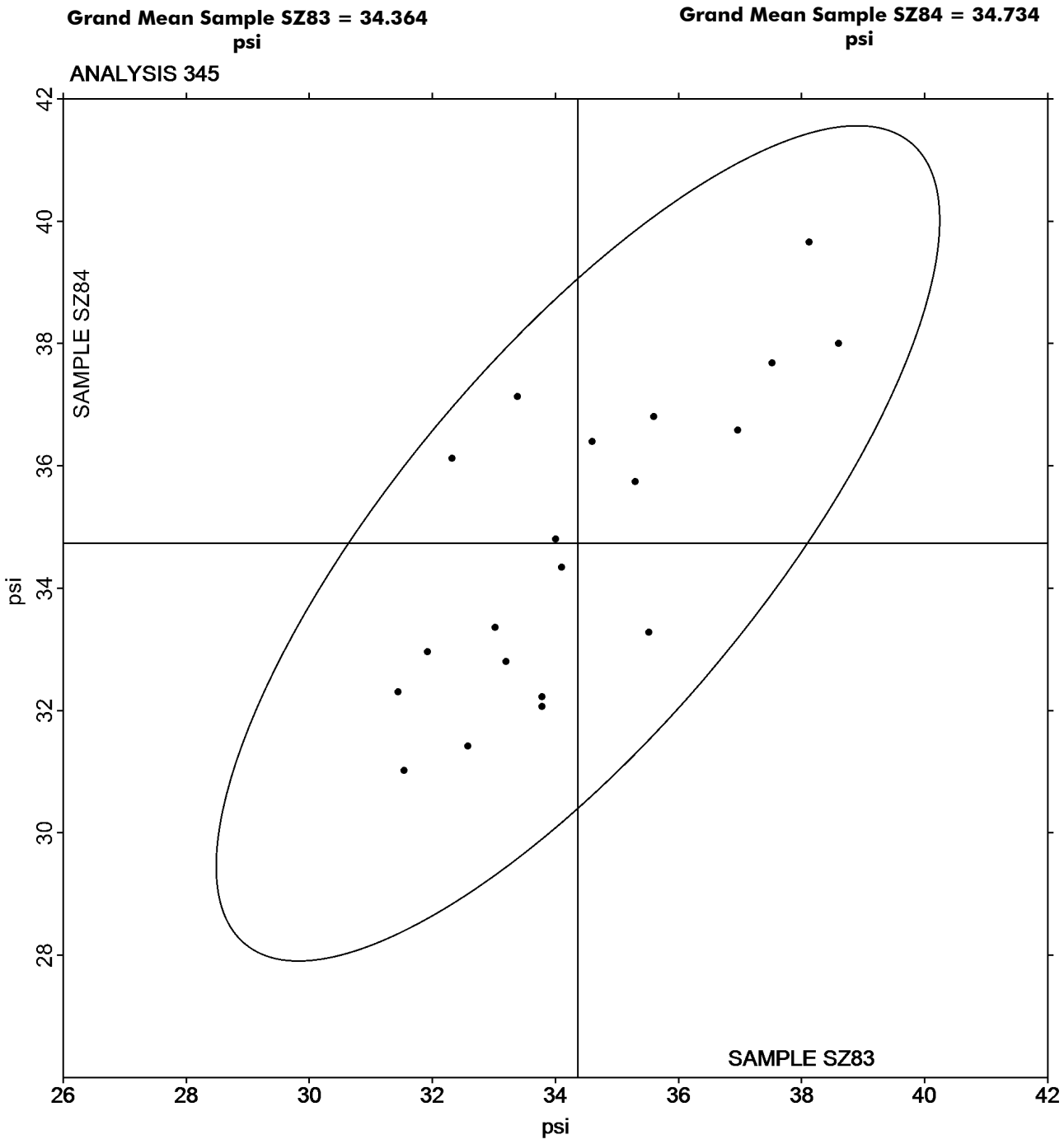
WebCode	Data Flag	Sample SZ83 Lab Mean	Sample SZ83 Diff from Grand Mean	Sample SZ83 CPV	Sample SZ84 Lab Mean	Sample SZ84 Diff from Grand Mean	Sample SZ84 CPV	Instr Code
2Y24A4		36.96	2.60	1.21	36.58	1.85	0.74	DP
3YW4L9		33.38	-0.98	-0.46	37.14	2.40	0.96	CH
4VRXK9		31.44	-2.92	-1.36	32.30	-2.43	-0.98	TA
7C822K		32.58	-1.78	-0.83	31.42	-3.31	-1.33	LW
8PCLVW		34.00	-0.36	-0.17	34.80	0.07	0.03	CA
9CYLY4		34.60	0.24	0.11	36.40	1.67	0.67	CH
9YE7V4		35.30	0.94	0.44	35.74	1.01	0.40	XX
CPWVWZ		33.78	-0.58	-0.27	32.06	-2.67	-1.07	CD
D8EAVA		31.92	-2.44	-1.14	32.96	-1.77	-0.71	CA
DULRXW		31.54	-2.82	-1.32	31.02	-3.71	-1.49	LW
EX48AA		33.20	-1.16	-0.54	32.80	-1.93	-0.78	CA
JF7EQ7		32.32	-2.04	-0.95	36.12	1.39	0.56	LW
K7EFD7		35.52	1.16	0.54	33.28	-1.45	-0.58	DP
KDAPEN		35.60	1.24	0.58	36.80	2.07	0.83	TA
KTQFL4		34.10	-0.26	-0.12	34.34	-0.39	-0.16	DP
LLLZAZ		33.78	-0.58	-0.27	32.22	-2.51	-1.01	TA
RPPPBJ		38.60	4.24	1.97	38.00	3.27	1.31	CA
UCNZ9E		33.02	-1.34	-0.63	33.36	-1.37	-0.55	CA
YHM48N		38.13	3.76	1.75	39.66	4.93	1.98	LW
YLYTPC		37.52	3.16	1.47	37.68	2.95	1.18	CD

Summary Statistics	Sample SZ83	Sample SZ84
Grand Means	34.36 psi	34.73 psi
Stnd Dev Btwn Labs	2.15 psi	2.49 psi

Statistics based on 20 of 20 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	TA	Thwing-Albert Tensile Tester
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

Analysis 348

Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SN83 Lab Mean	Sample SN83 Diff from Grand Mean	Sample SN83 CPV	Sample SN84 Lab Mean	Sample SN84 Diff from Grand Mean	Sample SN84 CPV	Instr Code
6UB2R9		106.8	-2.3	-0.30	125.2	-3.6	-0.48	HZ
6UXM7K		107.9	-1.2	-0.16	125.6	-3.2	-0.42	HY
78V3M7		95.8	-13.3	-1.75	115.2	-13.6	-1.80	HZ
8ZWVLC		107.6	-1.5	-0.19	124.8	-4.0	-0.53	HY
ABPQ2H		96.3	-12.8	-1.68	122.0	-6.8	-0.90	KR
CRYU8T		121.4	12.3	1.62	140.6	11.8	1.56	HZ
D8EAVA		113.2	4.1	0.54	128.2	-0.6	-0.08	HZ
DULRXW		112.0	2.9	0.38	131.2	2.4	0.31	HY
PMKHVL		113.2	4.1	0.54	139.0	10.2	1.35	HY
R4L4BD		105.6	-3.5	-0.46	126.0	-2.8	-0.37	HY
TTJ72H		117.6	8.6	1.13	138.5	9.6	1.28	HY
VDJY4T		110.8	1.7	0.23	124.4	-4.4	-0.59	HY
WVW6NM		104.2	-4.9	-0.64	122.8	-6.0	-0.80	HZ
ZCQYRP		102.0	-7.1	-0.93	123.8	-5.0	-0.67	HY
ZXQ3M6		109.0	-0.1	-0.01	133.7	4.9	0.64	HY
ZZEDMB		121.8	12.7	1.67	140.2	11.4	1.51	HY

Summary Statistics	Sample SN83	Sample SN84
Grand Means	109.07 1000th ft-lbs	128.83 1000th ft-lbs
Stnd Dev Btwn Labs	7.60 1000th ft-lbs	7.55 1000th ft-lbs

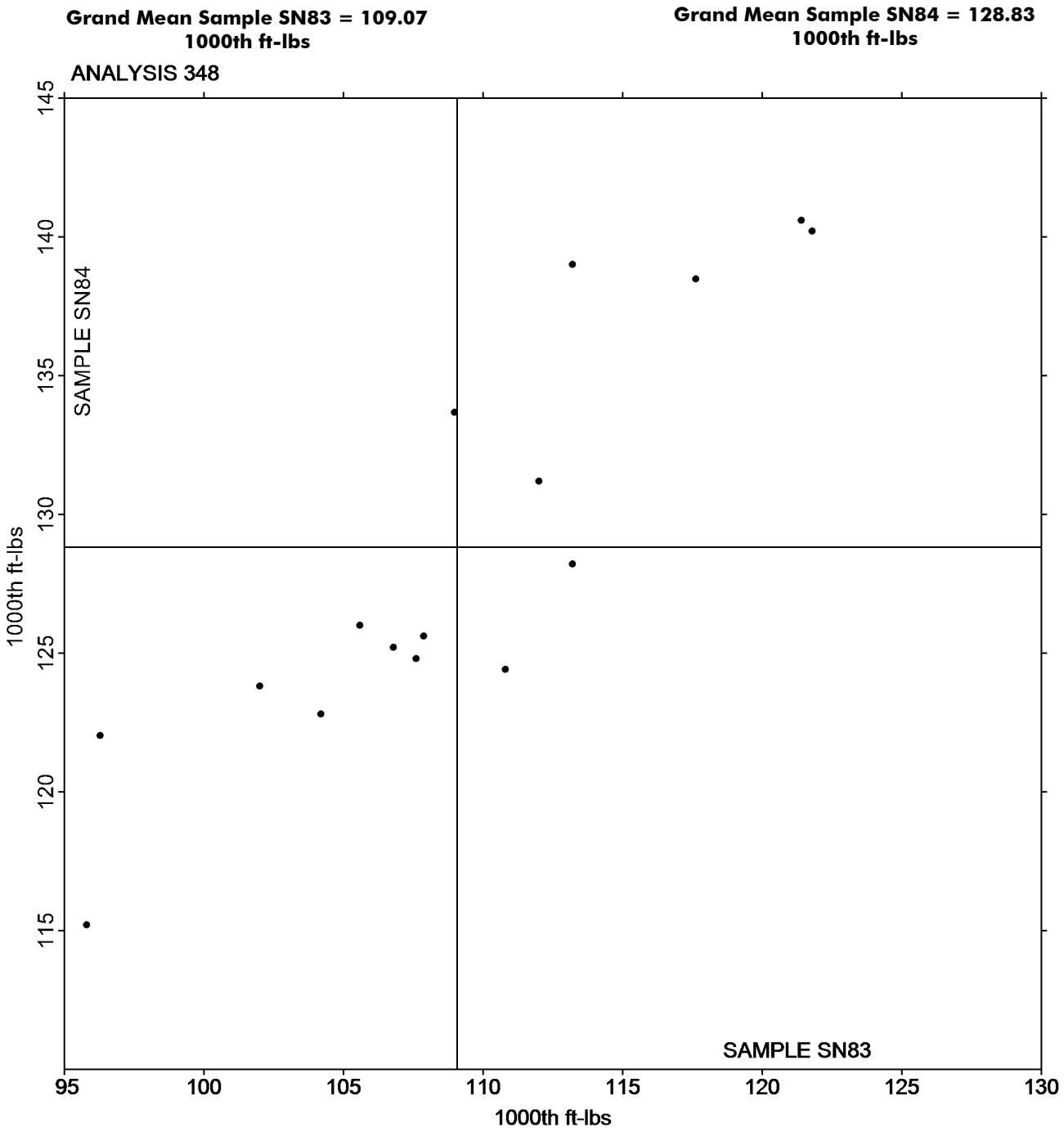
Statistics based on 16 of 16 reporting participants.

Key to Instrument Codes Reported by Participants

HY Huygen Digitized Scott Internal Bond Tester

HZ Huygen Internal Bond Tester with AccuPress

KR Kumagai Riki Kogyo Internal Bond Tester



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 349

Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SP83 Lab Mean	Sample SP83 Diff from Grand Mean	Sample SP83 CPV	Sample SP84 Lab Mean	Sample SP84 Diff from Grand Mean	Sample SP84 CPV	Instr Code
3YW4L9		92.40	-6.41	-0.86	110.4	-4.1	-0.30	TM
4VRXK9		100.66	1.86	0.25	82.7	-31.8	-2.32	SC
EZAUJ8		99.60	0.79	0.11	125.2	10.7	0.78	SC
GPZ6U2		112.00	13.19	1.77	120.4	5.9	0.43	SC
J6N292		88.80	-10.01	-1.35	113.6	-0.9	-0.06	SC
KXZT43		104.96	6.15	0.83	136.2	21.7	1.58	XX
PJ8REX		98.60	-0.21	-0.03	116.0	1.5	0.11	XX
RM2DCD		93.17	-5.64	-0.76	109.8	-4.6	-0.34	TM
T7Q7JU	M	105.40	6.59	0.89	No data reported for this sample			TM
VLWRFN		105.40	6.59	0.89	127.0	12.5	0.91	SC
WDBLRF		101.45	2.64	0.36	121.2	6.7	0.49	TM
XWJ3D7		102.33	3.52	0.47	109.5	-5.0	-0.36	TM
ZCBF8R		86.32	-12.49	-1.68	101.6	-12.8	-0.94	XX

Summary Statistics	Sample SP83	Sample SP84
Grand Means	98.81 1000th ft-lbs	114.46 1000th ft-lbs
Stnd Dev Btwn Labs	7.43 1000th ft-lbs	13.70 1000th ft-lbs

Statistics based on 12 of 13 reporting participants.

Comments on Assigned Data Flags for Test #349

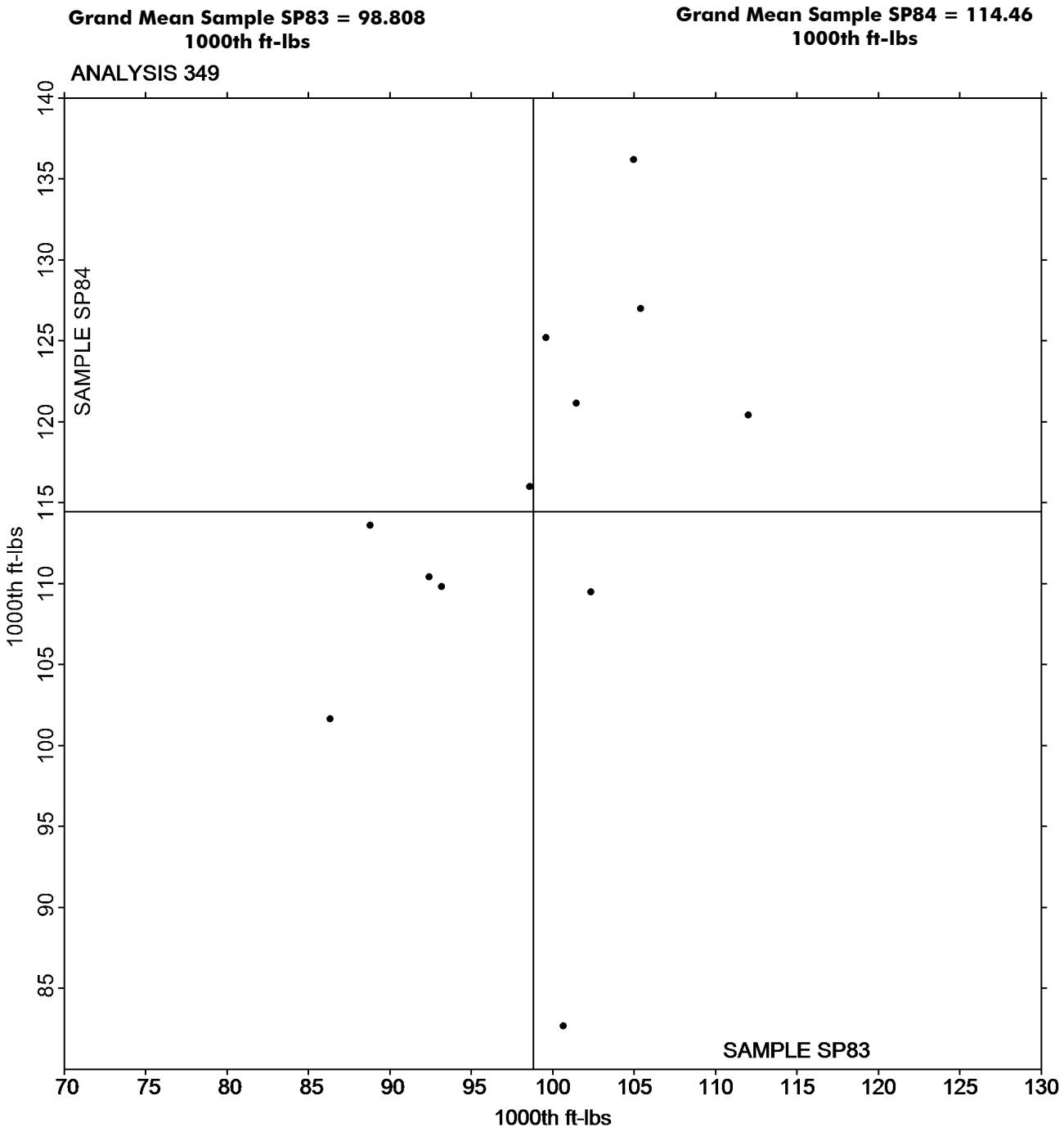
T7Q7JU (M) - Participant did not submit data for sample SP84.

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



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

-End of Report-

