Collaborative Testing Services, Inc.

Paper & Paperboard Interlaboratory Testing Program

Summary Report #277S - July 2015

Analysis	Analysis Name
305	Bursting Strength - Printing Papers
310	Bursting Strength - Packaging Papers
311	Tearing Strength - Newsprint
312	Tearing Strength - Printing Papers
314	Tearing Strength - Packaging Papers
320	Tensile Breaking Strength - Newsprint
321	Tensile Energy Absorption - Newsprint
322	Elongation to Break - Newsprint
325	Tensile Breaking Strength - Printing Papers
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330	Tensile Breaking Strength - Packaging Papers
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332	Elongation to Break - Packaging Papers
334	Folding Endurance (MIT) - Double Folds
336	Bending Resistance, Gurley Type
338	Bending Resistance, Taber Type - 0 to 10 Units
339	Bending Resistance, Taber Type - 10 to 100 Taber Units
340	Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard
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The CTS Paper & Paperboard Interlaboratory Fiberboard Program

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

About CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of industrial sectors: rubber, plastics, fasteners and metals, CKPG, paper, color, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 80 countries, currently participate in CTS programs.

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

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Key for Web Summary Reports (Page 1 of 2)

WebCode Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Paper Report published on the CTS web site. The WebCode for each analysis can be found in the Performance Analysis Report mailed to each participant. In addition, the WebCodes can be found on the data sheets.

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

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

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

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

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

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

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

DATA FLAG	STATISTICALLY INCLUDED/EXCLUDED	ACTION REQUIRED
*	INCLUDED	CAUTION -review testing procedure and monitor future results. Results fall outside 95% ellipse but within a 99% ellipse that is calculated but not drawn.
X	EXCLUDED	STOP - immediate review of data and/or testing procedure is required. Results fall outside the 99% ellipse. See specific notes following each table for more information on why the data is excluded.
M	EXCLUDED	PROCEED - lab was unable to report data for at least one sample.

Graph - For each laboratory, the LAB MEAN for the first sample (x-axis) is plotted against the LAB MEAN for the second sample (y-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the GRAND MEANS for each sample. When 20 or more laboratories are in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained on the previous page.

Common Problems Highlighted in Footnotes

1. ***Extreme data*** - The laboratory's results for one or both samples are so inconsistent with those of the other participants that the lab mean(s) fall outside the plot. The participant is advised to immediately review his data and/or testing procedure.

2. ***Systematic bias*** - The laboratory's results are either consistently high or low for both samples when compared to the other participants (the plotted point falls near the top or bottom of the ellipse). This indicates that the participant is performing the test with a constant bias. Causes of systematic errors include improper calibration, the particular make/model of equipment or a modification to the testing procedure.

3. ***Inconsistency in testing between samples/sample sets*** - The laboratory's results indicate that there are differences in the way the two samples tested (the plotted point falls to the side of the ellipse). This type of error may be attributed to the analyst deviating from the procedure when testing one of the samples or a material interaction occurrence with the instrument or room conditions. The inconsistency is reflected in the CPVs for the two samples, such as a +1.5 CPV for sample A and a -2.2 CPV for sample B. CTS also will specify if the laboratory's data for one sample are high/low compared to the other participants. If this inconsistency is slight, the lab's plotted point will be an * that falls on the edge of the ellipse.

4. ***Inconsistency in testing within a sample*** - The laboratory's within-lab standard deviation for a specified sample is high when compared to the other participants, often causing the lab's plotted point to fall outside of the ellipse.

Labs flagged with an * are not typically included in the footnotes of a data table. These labs may locate their position in the control ellipse and use the definitions above to help identify the type of testing error. An * should serve as a caution flag, a "yellow light", to a lab. If this error is repeated in future rounds, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm. Interlaboratory tests conducted at regular intervals permit a lab to recognize trends in testing.

TAPPI-CTS Interlaboratory Testing Program
Analysis 305
Bursting Strength - Printing Papers

WebCode	Data Flag	Sample SA21 Lab Mean	Sample SA21 Diff from Grand Mean	Sample SA21 CPV	Sample SA22 Lab Mean	Sample SA22 Diff from Grand Mean	Sample SA22 CPV
29ANRC		26.59	-0.08	-0.03	28.96	-0.76	-0.32
2EVPVW		23.55	-3.12	-1.09	28.45	-1.27	-0.54
3J4J6Y	*	30.41	3.74	1.30	35.25	5.53	2.35
4J32NE		26.77	0.10	0.04	28.68	-1.03	-0.44
72ECLX		22.85	-3.82	-1.33	28.85	-0.87	-0.37
9JRQXC		25.08	-1.58	-0.55	28.30	-1.41	-0.60
A2MJJB		24.84	-1.83	-0.64	28.96	-0.75	-0.32
BNUC2Z		26.12	-0.54	-0.19	30.72	1.00	0.42
C2EB8T		24.75	-1.92	-0.67	28.49	-1.23	-0.52
DN4362		23.48	-3.18	-1.11	27.72	-2.00	-0.85
FL97LK		21.50	-5.17	-1.80	25.55	-4.17	-1.77
J3MWXF		26.22	-0.44	-0.15	29.22	-0.50	-0.21
JDZ6DT		26.43	-0.23	-0.08	29.11	-0.61	-0.26
JG3YGP		22.10	-4.56	-1.59	25.22	-4.49	-1.91
JWHXLQ		25.73	-0.94	-0.33	28.85	-0.87	-0.37
K4CLFY		28.75	2.08	0.73	32.65	2.93	1.24
MLKBZB		31.70	5.03	1.75	32.35	2.63	1.12
N4GDYQ		29.97	3.30	1.15	31.51	1.79	0.76
NJUTXF		31.80	5.13	1.79	31.90	2.18	0.93
PK33PD	*	32.81	6.15	2.14	35.92	6.20	2.63
Q2MBZF		26.97	0.30	0.10	30.36	0.64	0.27
QQP7EU		28.73	2.07	0.72	30.46	0.74	0.31
QTVXZG		25.54	-1.13	-0.39	28.27	-1.45	-0.61
UDN44N		27.79	1.12	0.39	30.34	0.63	0.27
VUQ8XE		27.80	1.13	0.39	30.43	0.71	0.30
VXR4RE		28.40	1.73	0.60	29.70	-0.02	-0.01
W3G3HF		26.30	-0.36	-0.13	29.17	-0.55	-0.23
WRGKYZ		23.89	-2.78	-0.97	27.15	-2.57	-1.09
WTVNVC		26.44	-0.23	-0.08	29.27	-0.45	-0.19

Summary Statistics

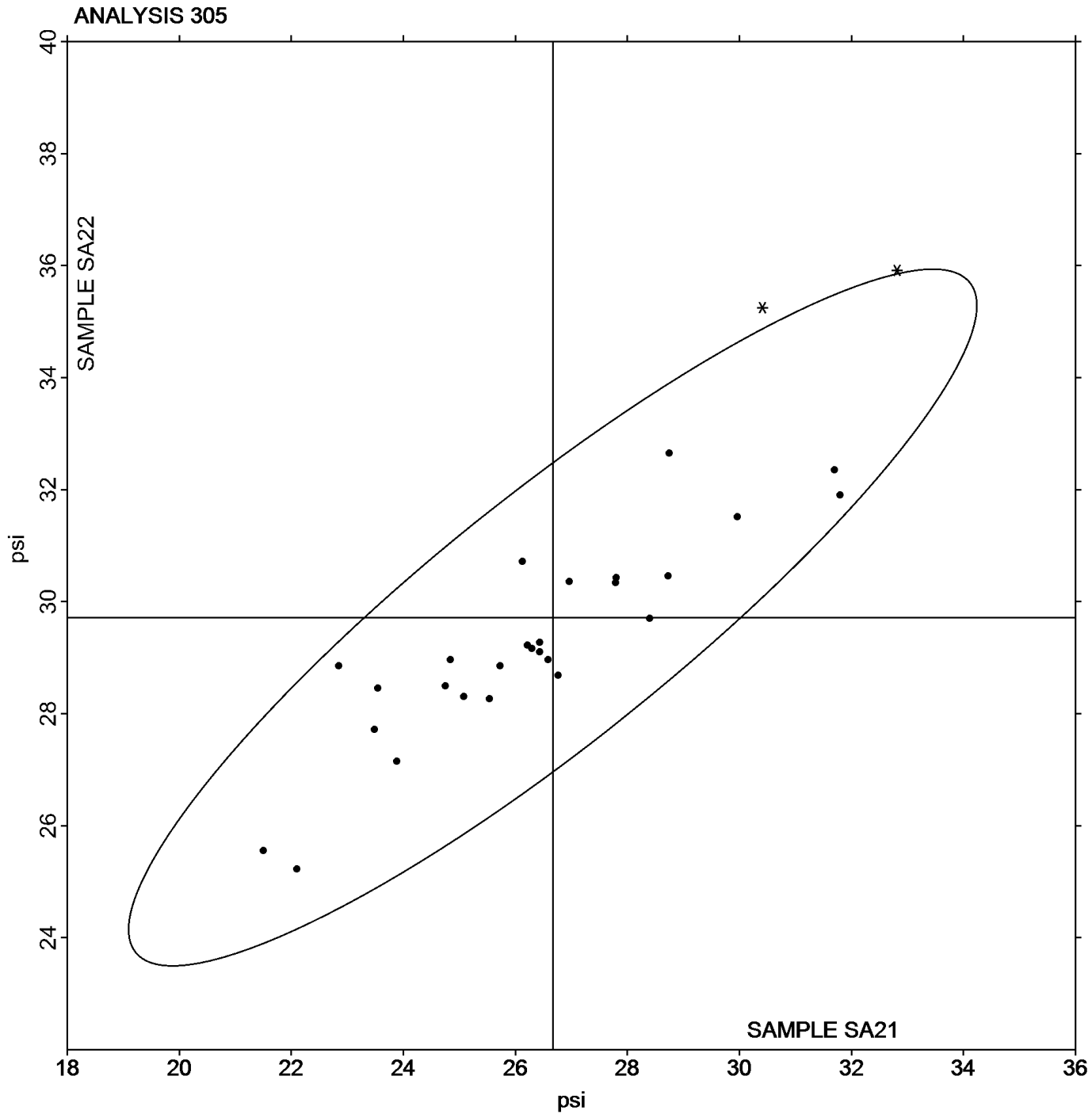
	Sample SA21	Sample SA22
Grand Means	26.666 psi	29.717 psi
SD Btwn Labs	2.870 psi	2.358 psi

Statistics based on 29 of 29 reporting participants

TAPPI-CTS Interlaboratory Testing Program
Analysis 305
Bursting Strength - Printing Papers

Grand Mean Sample **SA21** = 26.666 psi

Grand Mean Sample **SA22** = 29.717 psi



TAPPI-CTS Interlaboratory Testing Program
Analysis 310
Bursting Strength - Packaging Papers

WebCode	Data Flag	Sample SB21 Lab Mean	Sample SB21 Diff from Grand Mean	Sample SB21 CPV	Sample SB22 Lab Mean	Sample SB22 Diff from Grand Mean	Sample SB22 CPV
29ANRC		86.73	10.38	1.81	98.12	7.30	1.50
4EN9PA		73.33	-3.03	-0.53	87.81	-3.02	-0.62
4T9QHD		70.82	-5.53	-0.96	86.99	-3.83	-0.79
6U4J23		80.29	3.93	0.68	92.91	2.08	0.43
7PLQF3		78.90	2.54	0.44	94.90	4.07	0.84
ANZAW6		70.35	-6.01	-1.05	81.04	-9.78	-2.01
B2JBR3		73.48	-2.87	-0.50	88.57	-2.25	-0.46
CW3CRT		85.57	9.22	1.60	97.99	7.16	1.47
DHZ7CN		78.66	2.30	0.40	91.44	0.61	0.13
EM9YQK		69.81	-6.55	-1.14	89.60	-1.23	-0.25
F7GLRH		68.20	-8.16	-1.42	84.50	-6.33	-1.30
GXXLNQ		73.64	-2.72	-0.47	90.34	-0.48	-0.10
JEKPKK		80.33	3.97	0.69	98.60	7.77	1.60
KDERMU		87.70	11.34	1.97	98.50	7.67	1.58
LC47DK		78.90	2.54	0.44	97.35	6.52	1.34
MXJ9NA		72.80	-3.56	-0.62	87.15	-3.68	-0.76
MYT9TG		84.22	7.86	1.37	95.14	4.31	0.89
PK33PD		80.66	4.31	0.75	92.29	1.47	0.30
Q2MBZF		73.74	-2.62	-0.46	90.47	-0.35	-0.07
T6FW7A		69.65	-6.71	-1.17	86.37	-4.46	-0.92
UDN44N		71.71	-4.65	-0.81	90.90	0.07	0.01
Y82R8H		69.65	-6.71	-1.17	84.65	-6.18	-1.27
YVAZPY		75.30	-1.06	-0.18	89.20	-1.63	-0.33
ZEL36J		75.36	-0.99	-0.17	87.44	-3.38	-0.70
ZZ4AJX		79.11	2.75	0.48	88.37	-2.46	-0.51

Summary Statistics

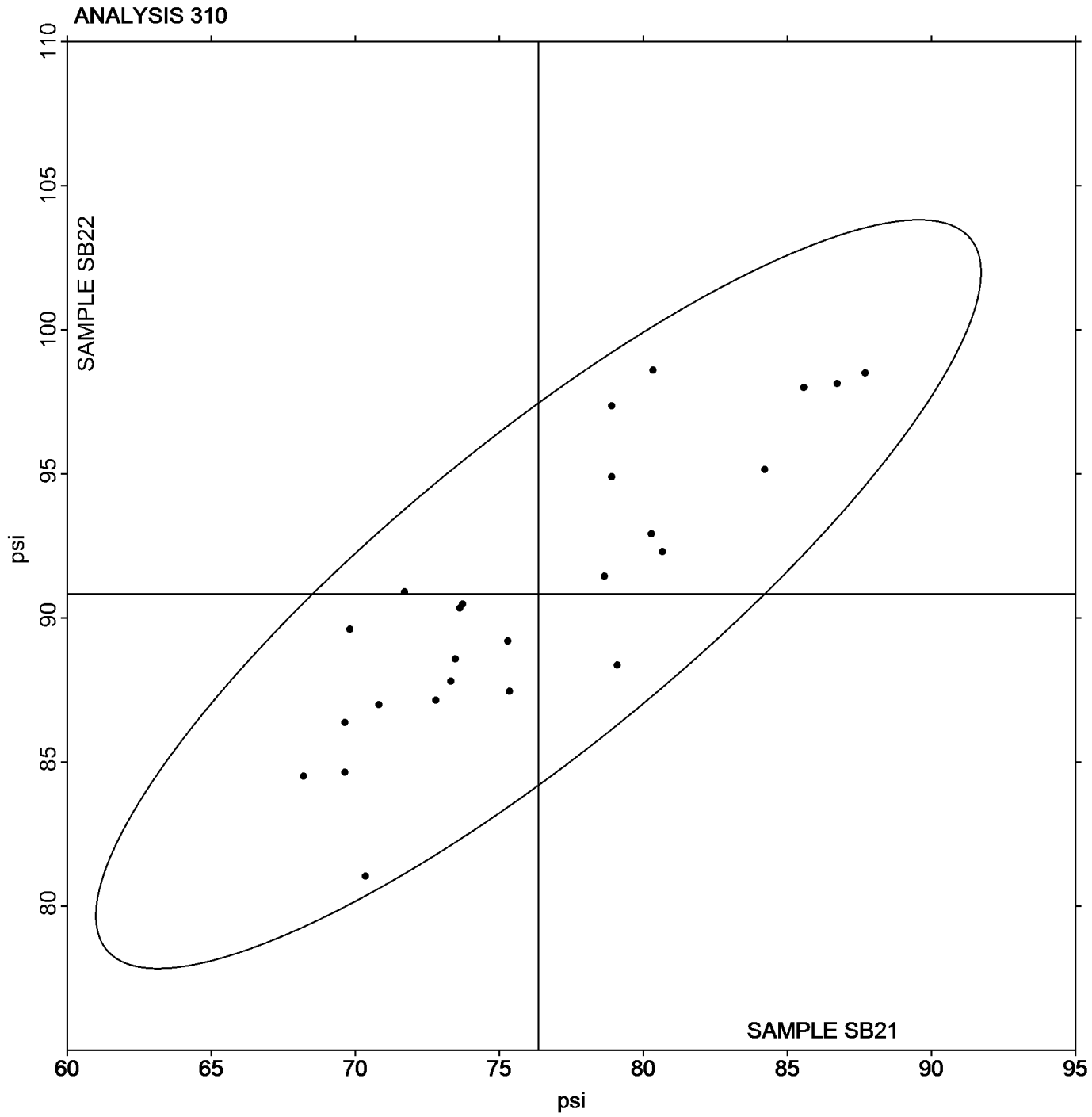
	Sample SB21	Sample SB22
Grand Means	76.356 psi	90.826 psi
SD Btwn Labs	5.748 psi	4.859 psi

Statistics based on 25 of 25 reporting participants

TAPPI-CTS Interlaboratory Testing Program
Analysis 310
Bursting Strength - Packaging Papers

Grand Mean Sample **SB21** = 76.356 psi

Grand Mean Sample **SB22** = 90.826 psi



TAPPI-CTS Interlaboratory Testing Program
Analysis 311
Tearing Strength - Newsprint

WebCode	Data Flag	Sample SK21 Lab Mean	Sample SK21 Diff from Grand Mean	Sample SK21 CPV	Sample SK22 Lab Mean	Sample SK22 Diff from Grand Mean	Sample SK22 CPV
8VMFHR	X	32.47	5.87	5.40	31.90	5.61	6.27
ETWJWK	X	32.88	6.28	5.77	32.41	6.12	6.84
EY3FDZ		26.99	0.40	0.36	26.36	0.08	0.09
HT6XRJ		27.64	1.05	0.96	27.35	1.07	1.19
N4GDYQ		27.66	1.07	0.98	27.03	0.75	0.83
Q2MBZF		25.89	-0.70	-0.65	25.78	-0.50	-0.56
Q3HWQL		26.53	-0.06	-0.06	26.33	0.05	0.05
W3G3HF		24.85	-1.74	-1.60	24.85	-1.43	-1.60

Summary Statistics

	Sample SK21	Sample SK22
Grand Means	26.593 Grams	26.283 Grams
SD Btwn Labs	1.089 Grams	0.896 Grams

Statistics based on 6 of 8 reporting participants

Comments on assigned Data Flags for Test #311

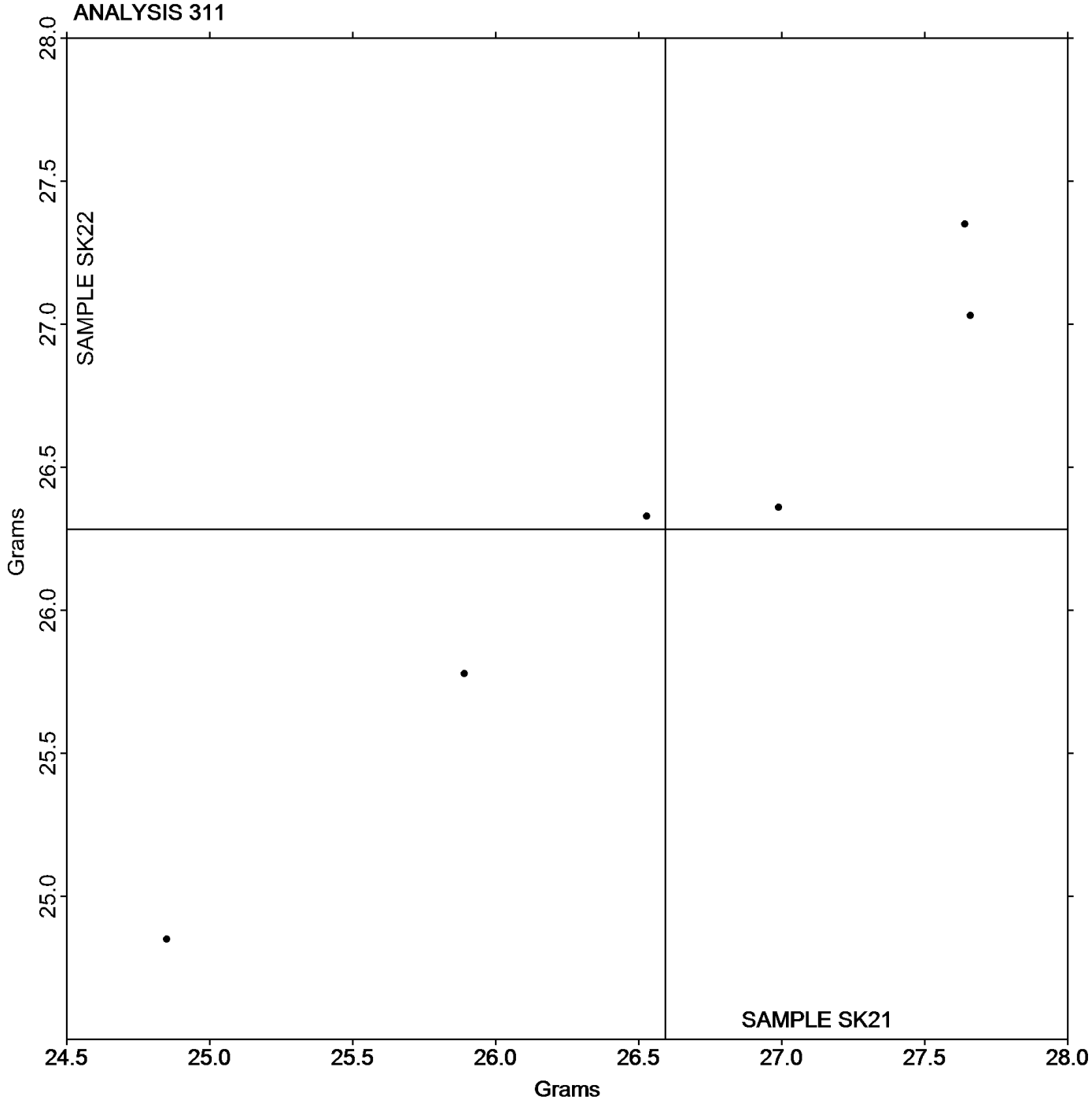
8VMFHR (X) - Extreme data.

ETWJWK (X) - Extreme data.

TAPPI-CTS Interlaboratory Testing Program
Analysis 311
Tearing Strength - Newsprint

Grand Mean Sample **SK21** = 26.593 Grams

Grand Mean Sample **SK22** = 26.283 Grams



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 312
Tearing Strength - Printing Papers

WebCode	Data Flag	Sample SC21 Lab Mean	Sample SC21 Diff from Grand Mean	Sample SC21 CPV	Sample SC22 Lab Mean	Sample SC22 Diff from Grand Mean	Sample SC22 CPV
29ANRC		79.20	11.44	2.28	56.00	6.66	2.01
3JL8PE		66.47	-1.29	-0.26	47.55	-1.79	-0.54
3ZUCZX		64.39	-3.37	-0.67	44.53	-4.81	-1.45
4J32NE		78.92	11.16	2.22	55.10	5.76	1.74
4T9QHD		66.62	-1.14	-0.23	48.90	-0.44	-0.13
6DPMB9		58.71	-9.05	-1.80	47.71	-1.63	-0.49
6QHZWY	X	67.04	-0.72	-0.14	49.16	-0.18	-0.05
6U4J23		63.18	-4.58	-0.91	44.75	-4.59	-1.39
72ECLX		72.01	4.25	0.85	51.57	2.23	0.67
8743P8		68.91	1.15	0.23	50.52	1.18	0.36
8C7HR2		66.44	-1.32	-0.26	47.32	-2.02	-0.61
8UQ72V	*	56.92	-10.84	-2.16	48.60	-0.74	-0.22
9JRQXC		68.42	0.66	0.13	49.45	0.11	0.03
9LWED3	X	63.30	-4.46	-0.89	46.00	-3.34	-1.01
A2MJJB		71.70	3.94	0.79	51.78	2.44	0.74
A6LUEB		65.40	-2.36	-0.47	46.97	-2.37	-0.72
ANZAW6		64.80	-2.96	-0.59	46.20	-3.14	-0.95
B2JBR3		72.35	4.59	0.91	52.80	3.46	1.05
BJJBVV		59.24	-8.52	-1.70	42.36	-6.98	-2.11
C2EB8T		67.98	0.22	0.04	53.30	3.96	1.20
CK8476	X	111.60	43.84	8.73	68.20	18.86	5.70
CXHR6U	X	46.45	-21.31	-4.24	52.60	3.26	0.99
D7KDLT		70.92	3.16	0.63	50.88	1.54	0.47
DN4362	*	63.02	-4.73	-0.94	53.36	4.03	1.22
EXQLXZ		76.66	8.90	1.77	52.62	3.28	0.99
GXXLNQ		68.29	0.53	0.11	48.01	-1.33	-0.40
HQZACU		71.20	3.44	0.69	52.40	3.06	0.93
J3MWXF		71.74	3.98	0.79	49.55	0.21	0.06
JDZ6DT		66.60	-1.16	-0.23	46.30	-3.04	-0.92
JG3YGP		65.20	-2.56	-0.51	45.60	-3.74	-1.13
JWHXLQ		69.03	1.28	0.25	48.42	-0.91	-0.28
K4CLFY		68.80	1.04	0.21	49.84	0.50	0.15
KDERMU	X	65.00	-2.76	-0.55	47.20	-2.14	-0.65
KFQJMN		66.22	-1.54	-0.31	48.37	-0.97	-0.29
LC47DK		61.25	-6.51	-1.30	44.09	-5.25	-1.59
MLKBZB		62.52	-5.24	-1.04	44.24	-5.10	-1.54
MXJ9NA		65.04	-2.72	-0.54	44.80	-4.54	-1.37
PM9J6V		66.78	-0.98	-0.19	49.22	-0.12	-0.04
Q2MBZF		67.21	-0.55	-0.11	47.73	-1.61	-0.49
Q8F9WJ		73.24	5.48	1.09	50.26	0.92	0.28
QDYJZM	*	58.98	-8.78	-1.75	51.08	1.74	0.53
QQP7EU		66.41	-1.35	-0.27	46.04	-3.30	-1.00
QTVXZG		71.59	3.84	0.76	49.72	0.38	0.12

TAPPI-CTS Interlaboratory Testing Program
Analysis 312
Tearing Strength - Printing Papers

WebCode	Data Flag	Sample SC21 Lab Mean	Sample SC21 Diff from Grand Mean	Sample SC21 CPV	Sample SC22 Lab Mean	Sample SC22 Diff from Grand Mean	Sample SC22 CPV
T6FW7A		76.24	8.49	1.69	54.12	4.78	1.44
UDN44N		64.62	-3.14	-0.62	46.49	-2.85	-0.86
UGALLA		76.40	8.64	1.72	55.00	5.66	1.71
UUFWTV		65.40	-2.36	-0.47	50.50	1.16	0.35
UV73B8		67.26	-0.50	-0.10	54.32	4.98	1.51
VC7JNJ		61.80	-5.96	-1.19	48.18	-1.16	-0.35
VUQ8XE		71.00	3.24	0.65	47.40	-1.94	-0.59
VXR4RE		68.42	0.66	0.13	47.78	-1.56	-0.47
WRGKYZ		69.60	1.84	0.37	52.00	2.66	0.80
WTVNVC		69.54	1.79	0.36	49.84	0.51	0.15
ZEL36J		63.72	-4.03	-0.80	47.97	-1.37	-0.41
ZWHTZC		71.48	3.72	0.74	55.38	6.04	1.83

Summary Statistics

	Sample SC21	Sample SC22
Grand Means	67.757 Grams	49.338 Grams
SD Btwn Labs	5.021 Grams	3.309 Grams

Statistics based on 50 of 55 reporting participants

Comments on assigned Data Flags for Test #312

6QHZWY (X) - Data appear to be off by a factor of .5; data converted by CTS (x2).

9LWED3 (X) - Data appear to be off by a factor of .5; data converted by CTS (x2).

CK8476 (X) - Extreme data.

CXHR6U (X) - Data for Sample SC21 are low.

KDERMU (X) - Data appear to be off by a factor of .5; data converted by CTS (x2).

Analysis Notes:

72ECLX - Data appears to be transposed between samples. Data Switched by CTS.

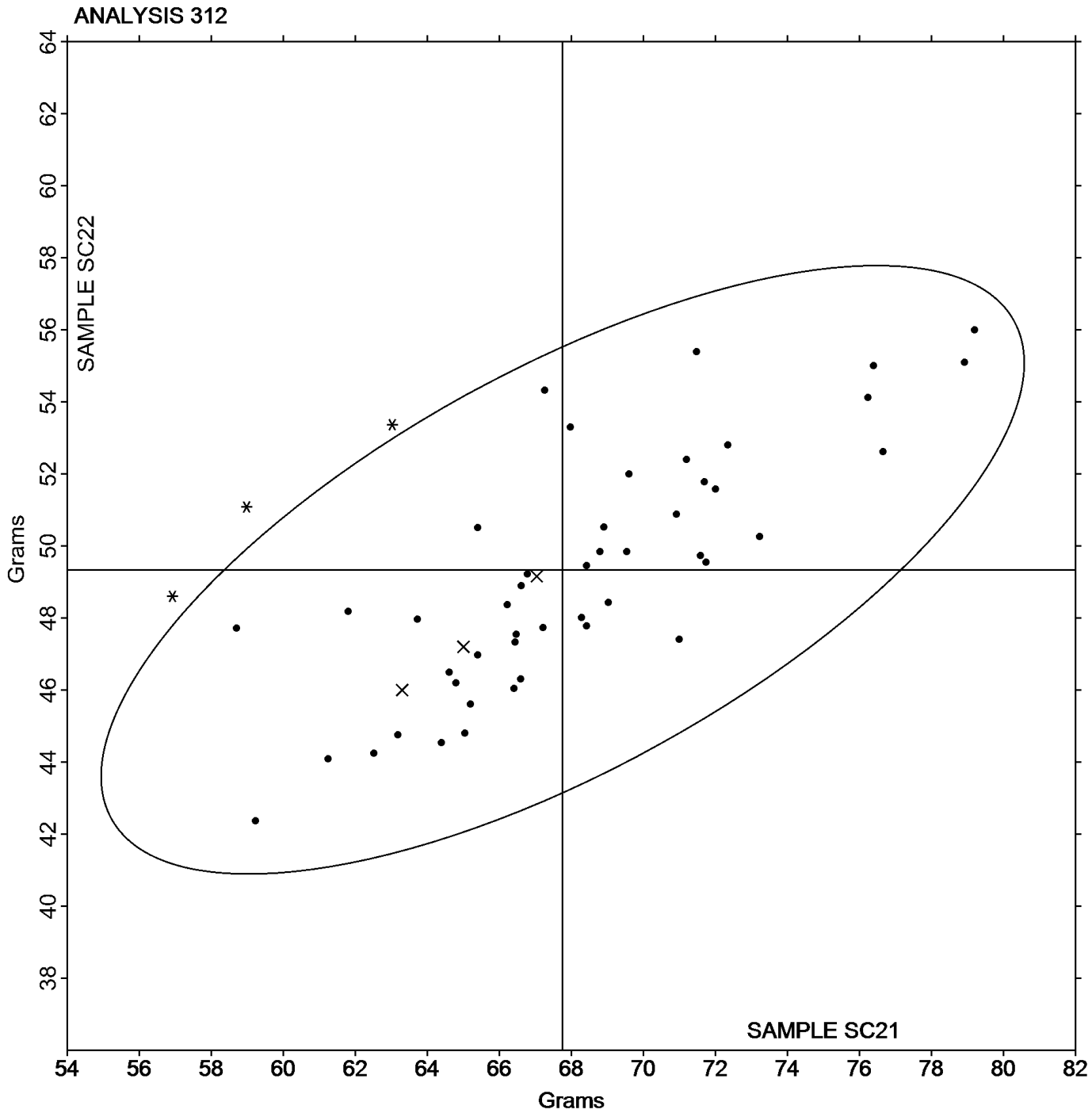
TAPPI-CTS Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

Grand Mean Sample **SC21** = 67.757 Grams

Grand Mean Sample **SC22** = 49.338 Grams



TAPPI-CTS Interlaboratory Testing Program
Analysis 314
Tearing Strength - Packaging Papers

WebCode	Data Flag	Sample SD21 Lab Mean	Sample SD21 Diff from Grand Mean	Sample SD21 CPV	Sample SD22 Lab Mean	Sample SD22 Diff from Grand Mean	Sample SD22 CPV
26PUTQ		86.92	-0.82	-0.19	86.00	-1.73	-0.39
2EVPVW		87.60	-0.14	-0.03	89.60	1.87	0.42
2J9EBY		77.94	-9.80	-2.23	78.35	-9.38	-2.10
3J4J6Y		84.20	-3.54	-0.81	87.60	-0.13	-0.03
3YK6X6	*	100.70	12.96	2.95	91.51	3.78	0.85
47WTZ6	X	66.28	-21.46	-4.89	72.40	-15.33	-3.43
4EN9PA		83.93	-3.81	-0.87	85.05	-2.68	-0.60
A4MWV3		91.24	3.51	0.80	86.81	-0.92	-0.21
C6WDEX	X	84.84	-2.90	-0.66	88.84	1.11	0.25
CW3CRT	X	112.80	25.06	5.71	88.60	0.87	0.20
DHZ7CN		93.36	5.62	1.28	93.51	5.78	1.29
EM9YQK		82.60	-5.14	-1.17	79.60	-8.13	-1.82
F6L3PG		89.84	2.10	0.48	91.97	4.24	0.95
F7GLRH		89.20	1.46	0.33	92.16	4.43	0.99
FKDMKJ	X	37.07	-50.67	-11.54	36.58	-51.14	-11.44
FL97LK		89.80	2.06	0.47	95.00	7.27	1.63
HVQGWN	X	87.33	-0.41	-0.09	81.25	-6.48	-1.45
HZJJZN		86.70	-1.04	-0.24	86.76	-0.97	-0.22
KDERMU	X	84.80	-2.94	-0.67	84.00	-3.73	-0.83
MKQRWN		96.57	8.83	2.01	92.56	4.83	1.08
MNXXKA		90.28	2.54	0.58	90.58	2.85	0.64
MYEKUB		87.01	-0.73	-0.17	83.80	-3.93	-0.88
Q2MBZF		87.31	-0.43	-0.10	88.92	1.19	0.27
Q3HWQL		83.40	-4.34	-0.99	86.24	-1.49	-0.33
RKYDJ7		88.08	0.34	0.08	93.46	5.73	1.28
TGTA8A		90.80	3.06	0.70	95.20	7.47	1.67
UP6QCP		85.26	-2.48	-0.56	84.06	-3.67	-0.82
VCCLL4		88.51	0.77	0.18	86.93	-0.80	-0.18
VXR4RE		82.48	-5.26	-1.20	83.52	-4.21	-0.94
W3LA2B		85.43	-2.31	-0.53	86.37	-1.36	-0.30
XYDEVD		85.41	-2.33	-0.53	83.28	-4.45	-1.00
XZVFN8		83.20	-4.54	-1.03	84.00	-3.73	-0.83
Y82R8H		87.80	0.06	0.01	91.80	4.07	0.91
YVAZPY		90.00	2.26	0.52	80.80	-6.93	-1.55
ZZ4AJX		87.74	0.00	0.00	88.03	0.30	0.07
ZZ4J43		88.80	1.06	0.24	88.38	0.65	0.15

Summary Statistics

	Sample SD21	Sample SD22
Grand Means	87.737 Grams	87.728 Grams
SD Btwn Labs	4.392 Grams	4.470 Grams

Statistics based on 30 of 36 reporting participants

TAPPI-CTS Interlaboratory Testing Program
Analysis 314
Tearing Strength - Packaging Papers

Comments on assigned Data Flags for Test #314

47WTZ6 (X) - Data for both samples are low.

C6WDEX (X) - Data appear to be off by a factor of .25; data converted by CTS (x4).

CW3CRT (X) - Data for Sample SD21 are high. Inconsistent in testing within determinations for Sample SD21.

FKDMKJ (X) - Extreme data.

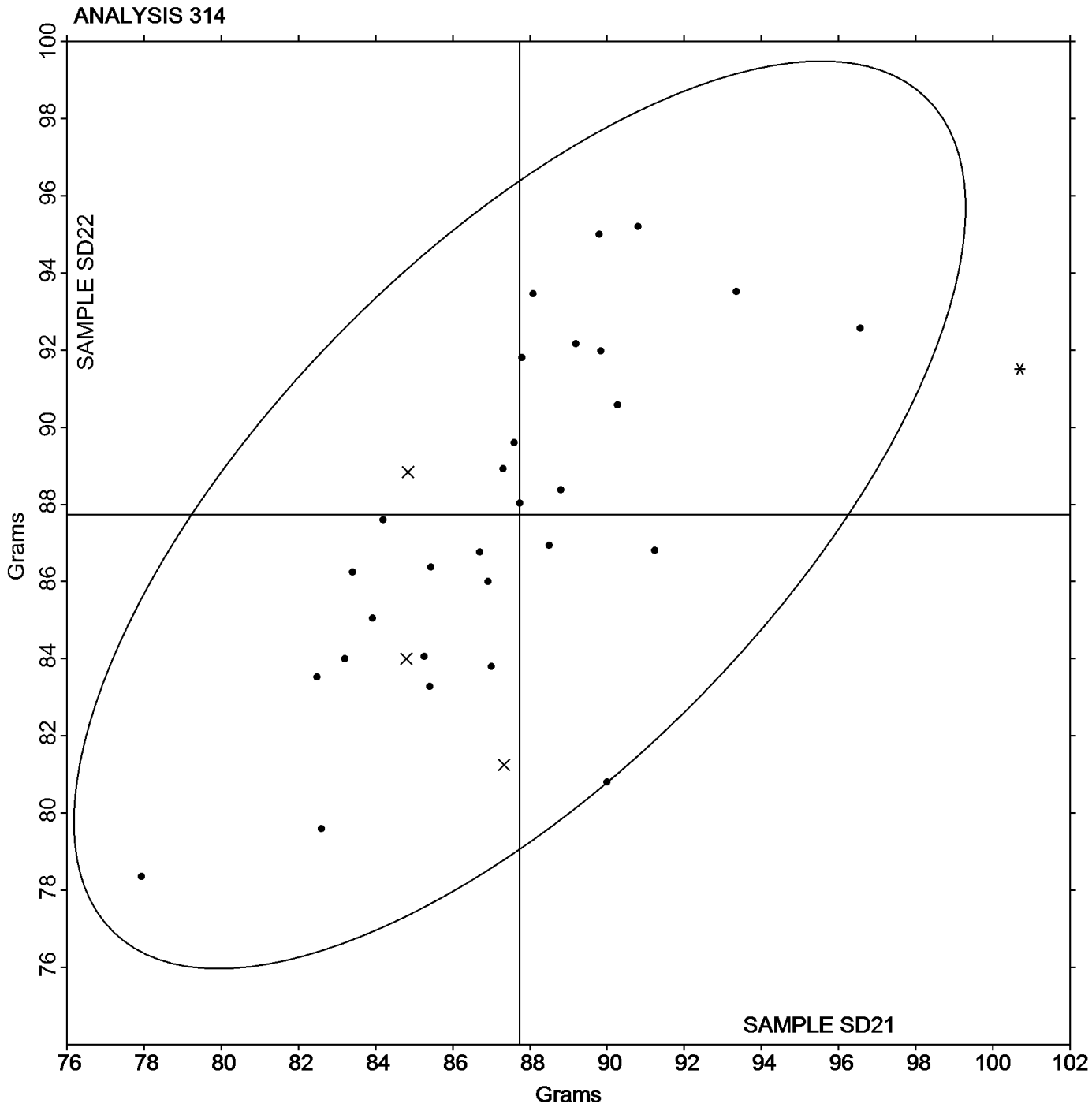
HVQGWN (X) - Data appear to be off by a factor of .5; data converted by CTS (x2).

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

TAPPI-CTS Interlaboratory Testing Program
Analysis 314
Tearing Strength - Packaging Papers

Grand Mean Sample **SD21** = 87.737 Grams

Grand Mean Sample **SD22** = 87.728 Grams



TAPPI-CTS Interlaboratory Testing Program
Analysis 320
Tensile Breaking Strength - Newsprint

WebCode	Data Flag	Sample SR21 Lab Mean	Sample SR21 Diff from Grand Mean	Sample SR21 CPV	Sample SR22 Lab Mean	Sample SR22 Diff from Grand Mean	Sample SR22 CPV
7PLQF3		2.600	-0.060	-0.56	2.498	-0.069	-0.51
8VMFHR		2.559	-0.101	-0.94	2.564	-0.003	-0.02
BNUC2Z		2.687	0.027	0.25	2.486	-0.081	-0.59
ETWJWK		2.696	0.036	0.33	2.718	0.151	1.11
EY3FDZ		2.650	-0.010	-0.09	2.535	-0.032	-0.24
HT6XRJ		2.652	-0.008	-0.07	2.421	-0.146	-1.08
N4GDYQ		2.768	0.108	1.01	2.607	0.040	0.30
Q3HWQL		2.659	-0.001	-0.01	2.602	0.035	0.26
UDN44N		2.653	-0.007	-0.06	2.423	-0.144	-1.06
VJT7KA		2.808	0.148	1.38	2.883	0.316	2.32
VUQ8XE		2.806	0.147	1.36	2.637	0.070	0.52
W3G3HF		2.640	-0.020	-0.18	2.617	0.050	0.37
ZJUR2X		2.400	-0.260	-2.41	2.380	-0.187	-1.38

Summary Statistics

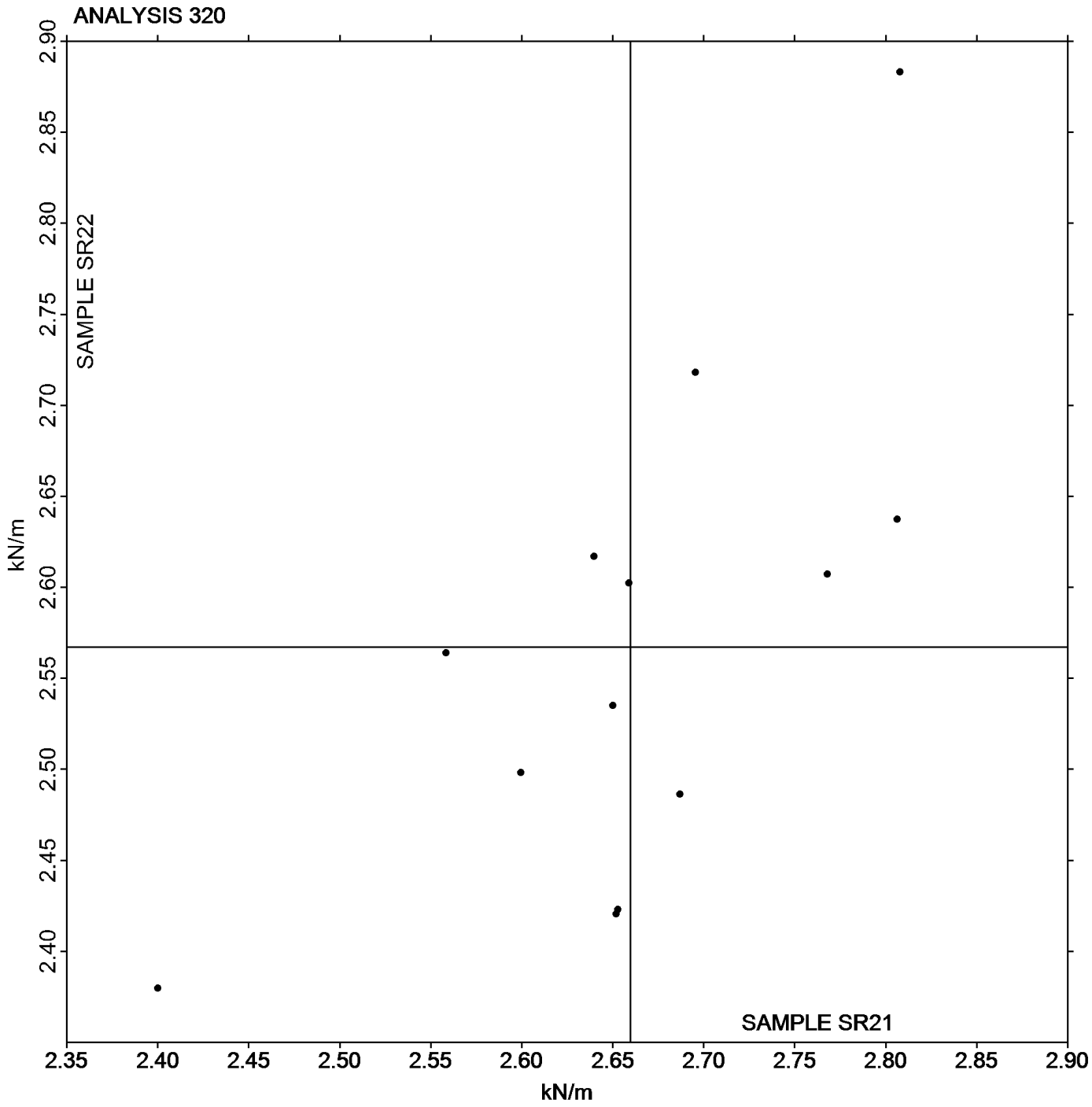
	Sample SR21	Sample SR22
Grand Means	2.6598 kN/m	2.5670 kN/m
SD Btwn Labs	0.1077 kN/m	0.1362 kN/m

Statistics based on 13 of 13 reporting participants

TAPPI-CTS Interlaboratory Testing Program
Analysis 320
Tensile Breaking Strength - Newsprint

Grand Mean Sample **SR21** = 2.6598 kN/m

Grand Mean Sample **SR22** = 2.5670 kN/m



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 321
Tensile Energy Absorption - Newsprint

WebCode	Data Flag	Sample SR21 Lab Mean	Sample SR21 Diff from Grand Mean	Sample SR21 CPV	Sample SR22 Lab Mean	Sample SR22 Diff from Grand Mean	Sample SR22 CPV
7PLQF3		16.71	-0.67	-0.45	20.00	0.71	0.35
8VMFHR		14.34	-3.03	-2.04	17.69	-1.60	-0.78
BNUC2Z		18.45	1.07	0.72	17.62	-1.66	-0.81
ETWJWK		16.27	-1.11	-0.75	18.90	-0.38	-0.19
EY3FDZ		17.79	0.41	0.28	20.08	0.79	0.39
N4GDYQ		18.73	1.35	0.91	18.94	-0.35	-0.17
Q3HWQL		16.13	-1.25	-0.84	17.94	-1.34	-0.65
UDN44N		16.66	-0.71	-0.48	15.77	-3.52	-1.71
VJT7KA		18.46	1.09	0.73	23.87	4.58	2.24
VUQ8XE		19.61	2.24	1.51	20.10	0.81	0.40
W3G3HF		18.64	1.26	0.85	21.20	1.92	0.94
ZJUR2X		16.74	-0.64	-0.43	19.31	0.02	0.01

Summary Statistics

	Sample SR21	Sample SR22
Grand Means	17.377 Joules/sq m	19.285 Joules/sq m
SD Btwn Labs	1.486 Joules/sq m	2.050 Joules/sq m

Statistics based on 12 of 12 reporting participants

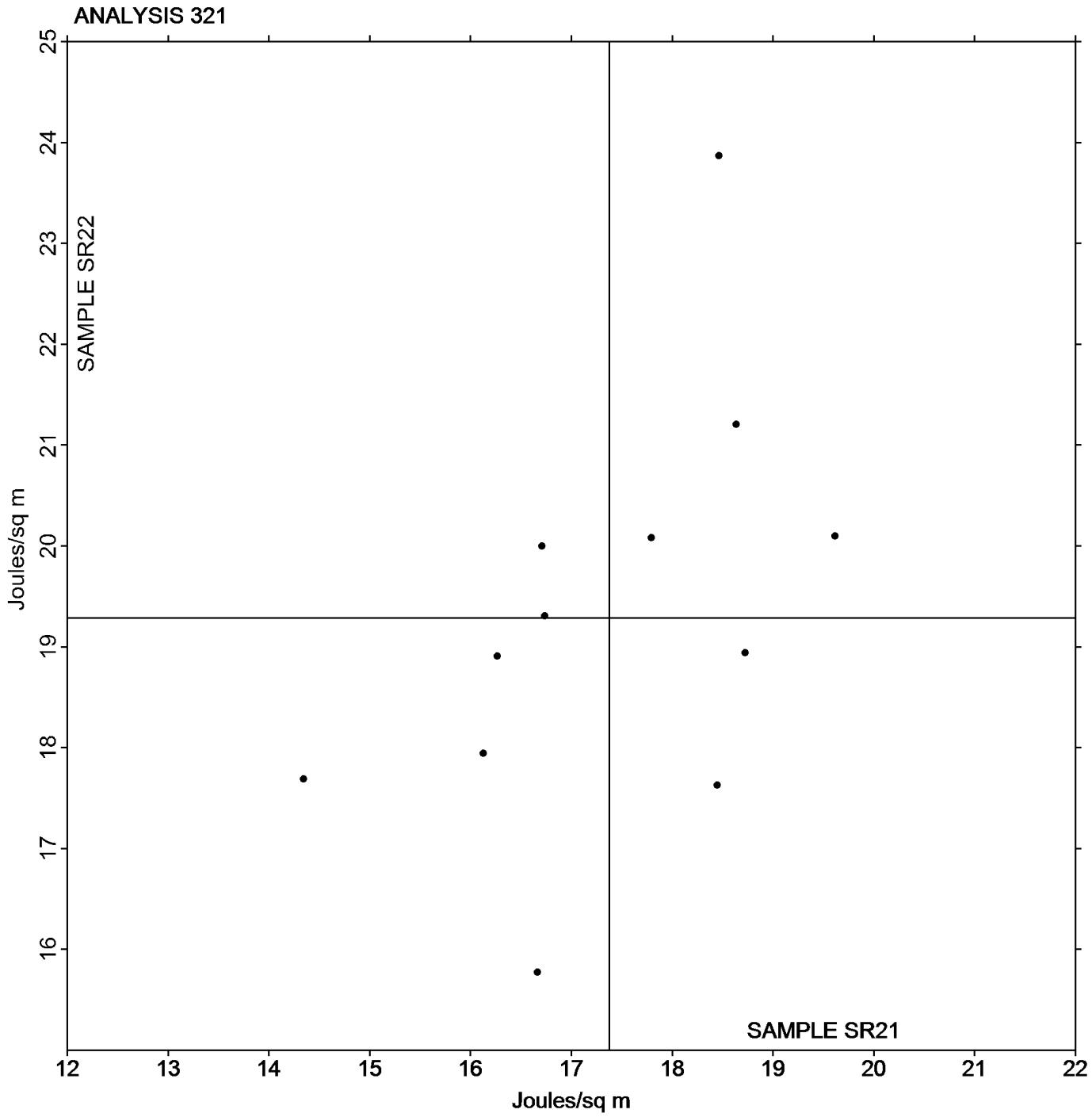
TAPPI-CTS Interlaboratory Testing Program

Analysis 321

Tensile Energy Absorption - Newsprint

Grand Mean Sample **SR21** = 17.377 Joules/sq m

Grand Mean Sample **SR22** = 19.285 Joules/sq m



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 322
Elongation to Break - Newsprint

WebCode	Data Flag	Sample SR21 Lab Mean	Sample SR21 Diff from Grand Mean	Sample SR21 CPV	Sample SR22 Lab Mean	Sample SR22 Diff from Grand Mean	Sample SR22 CPV
7PLQF3		1.083	-0.081	-0.56	1.307	0.020	0.14
BNUC2Z		1.162	-0.002	-0.01	1.191	-0.096	-0.67
ETWJWK		1.028	-0.136	-0.94	1.174	-0.113	-0.78
EY3FDZ		1.121	-0.043	-0.30	1.280	-0.007	-0.05
N4GDYQ		1.350	0.186	1.28	1.428	0.141	0.97
Q3HWQL		1.033	-0.131	-0.90	1.150	-0.137	-0.95
UDN44N		1.053	-0.111	-0.77	1.083	-0.204	-1.41
VJT7KA		1.026	-0.138	-0.95	1.270	-0.017	-0.12
VUQ8XE		1.220	0.056	0.38	1.270	-0.017	-0.12
W3G3HF		1.457	0.293	2.02	1.581	0.294	2.03
ZJUR2X		1.273	0.109	0.75	1.425	0.138	0.95

Summary Statistics

	Sample SR21	Sample SR22
Grand Means	1.1642 Percent	1.2872 Percent
SD Btwn Labs	0.1452 Percent	0.1445 Percent

Statistics based on 11 of 11 reporting participants

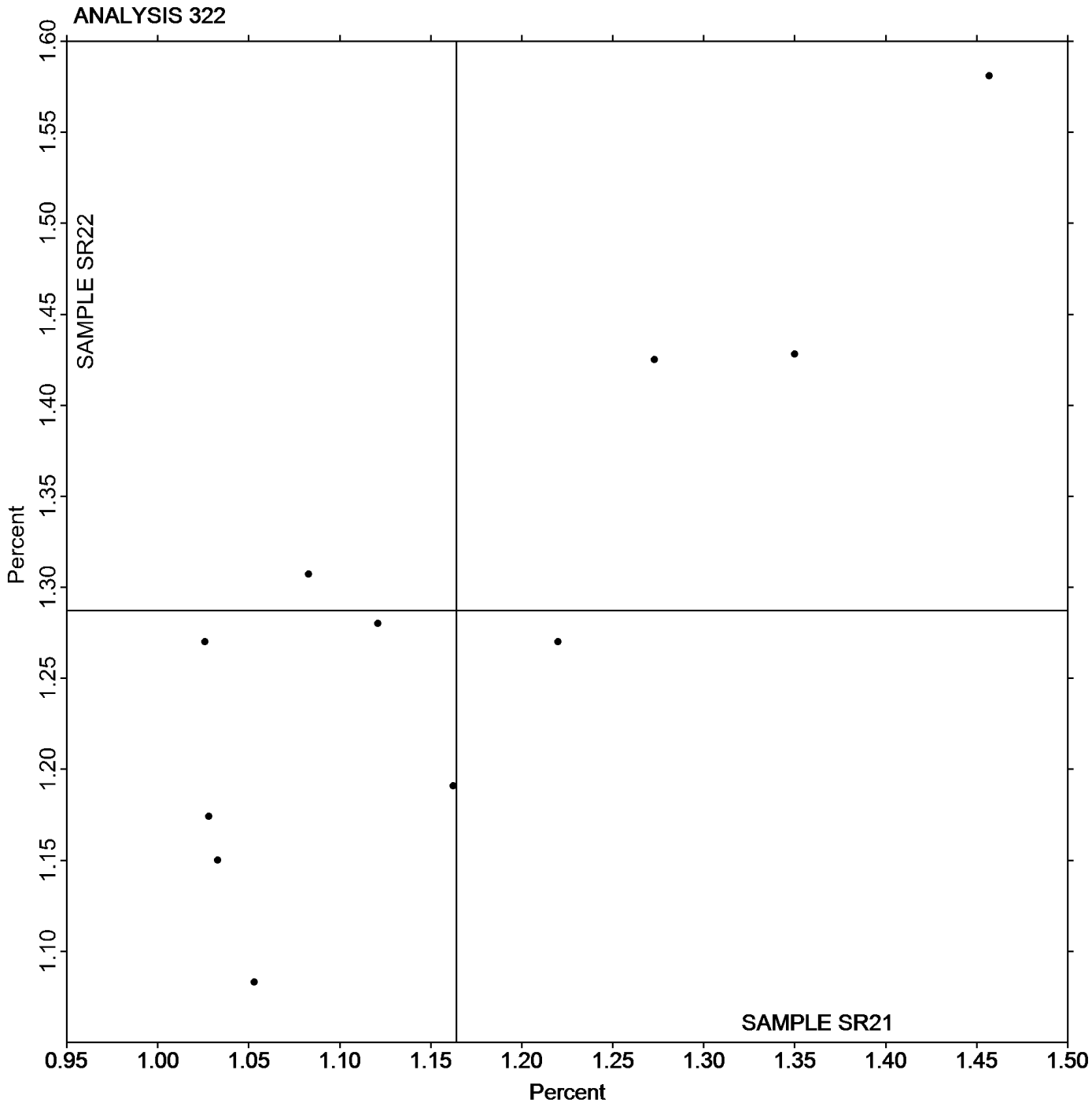
TAPPI-CTS Interlaboratory Testing Program

Analysis 322

Elongation to Break - Newsprint

Grand Mean Sample **SR21** = 1.1642 Percent

Grand Mean Sample **SR22** = 1.2872 Percent



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

TAPPI-CTS Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

WebCode	Data Flag	Sample SF21 Lab Mean	Sample SF21 Diff from Grand Mean	Sample SF21 CPV	Sample SF22 Lab Mean	Sample SF22 Diff from Grand Mean	Sample SF22 CPV	Instr Code
29ANRC		5.539	-0.008	-0.03	4.692	-0.087	-0.32	DL
36768P		5.722	0.174	0.57	4.900	0.122	0.44	XX
3ZUCZX		5.842	0.295	0.96	4.745	-0.034	-0.12	LF
4J32NE	*	4.764	-0.783	-2.56	4.353	-0.426	-1.55	LH
4T9QHD		5.630	0.082	0.27	4.846	0.067	0.24	LH
67QXU4		5.448	-0.099	-0.32	4.349	-0.430	-1.56	LH
6DPMB9	*	6.063	0.516	1.68	5.458	0.680	2.48	TP
6QHZWY		5.650	0.102	0.33	4.814	0.036	0.13	TI
72ECLX		5.800	0.253	0.83	4.988	0.209	0.76	TO
8743P8		4.997	-0.550	-1.80	4.164	-0.615	-2.24	IM
8C7HR2		6.045	0.497	1.62	5.071	0.293	1.07	TB
8UQ72V		5.328	-0.219	-0.71	4.518	-0.261	-0.95	TB
8XDJBY		6.124	0.577	1.88	5.246	0.467	1.70	TJ
9JRQXC		5.459	-0.088	-0.29	4.564	-0.215	-0.78	IM
9LWED3		5.913	0.365	1.19	5.005	0.226	0.82	TO
9RGLQZ		5.077	-0.470	-1.54	4.394	-0.384	-1.40	RE
A2MJJB		4.931	-0.616	-2.01	4.323	-0.456	-1.66	ID
A6LUEB	*	5.546	-0.001	0.00	5.182	0.403	1.47	TJ
ANZAW6	*	5.491	-0.057	-0.19	5.193	0.414	1.51	TA
AQ3AW3		5.586	0.038	0.12	4.831	0.052	0.19	TB
BJJBVV		6.215	0.668	2.18	5.224	0.446	1.62	LH
C2EB8T		5.389	-0.159	-0.52	4.638	-0.141	-0.51	TB
CXHR6U		5.622	0.075	0.24	4.832	0.054	0.20	XX
D7KDLT		5.381	-0.166	-0.54	4.724	-0.055	-0.20	LX
DN4362		5.025	-0.522	-1.70	4.535	-0.243	-0.89	LA
EM9YQK		5.606	0.059	0.19	4.778	0.000	0.00	IM
EQ28QK		5.263	-0.285	-0.93	4.657	-0.122	-0.44	LA
EXQLXZ		5.521	-0.026	-0.09	4.587	-0.192	-0.70	LH
FQ7RDM		5.687	0.140	0.46	4.802	0.023	0.09	LI
FRE27K		5.663	0.116	0.38	4.797	0.019	0.07	XX
J3MWXF		5.796	0.249	0.81	4.944	0.166	0.60	LH
JG3YGP		6.005	0.458	1.49	5.294	0.515	1.88	LX
JWHXLQ		5.882	0.335	1.09	4.968	0.189	0.69	LH
K4CLFY		5.475	-0.073	-0.24	4.864	0.086	0.31	LH
KFQJMN		5.281	-0.266	-0.87	4.748	-0.031	-0.11	CB
LC47DK		5.729	0.181	0.59	4.606	-0.173	-0.63	TP
MLKBZB		5.651	0.104	0.34	4.804	0.025	0.09	TO
PM9J6V		5.604	0.057	0.19	4.766	-0.013	-0.05	LE
Q2MBZF		5.502	-0.046	-0.15	4.923	0.145	0.53	LH
Q8F9WJ		5.402	-0.145	-0.47	4.718	-0.061	-0.22	LI
QDYJZM		5.361	-0.186	-0.61	4.714	-0.065	-0.24	TF
QQP7EU	X	6.404	0.857	2.80	5.045	0.267	0.97	TJ
QTVXZG		5.341	-0.206	-0.67	4.551	-0.228	-0.83	LI

TAPPI-CTS Interlaboratory Testing Program
Analysis 325
Tensile Breaking Strength - Printing Papers

WebCode	Data Flag	Sample SF21 Lab Mean	Sample SF21 Diff from Grand Mean	Sample SF21 CPV	Sample SF22 Lab Mean	Sample SF22 Diff from Grand Mean	Sample SF22 CPV	Instr Code
T6FW7A		5.167	-0.380	-1.24	4.506	-0.273	-0.99	LI
TRQ9UA		6.044	0.497	1.62	5.373	0.595	2.17	TB
UDN44N		5.420	-0.127	-0.42	4.624	-0.155	-0.56	LH
UKTPA7		5.511	-0.036	-0.12	4.560	-0.218	-0.80	TP
UUFWTV		5.354	-0.193	-0.63	4.531	-0.248	-0.90	TC
UV73B8		5.751	0.203	0.66	4.777	-0.002	-0.01	MR
VC7JNJ		5.622	0.075	0.25	4.786	0.007	0.03	XX
WRGKYZ		5.257	-0.290	-0.95	4.468	-0.311	-1.13	LH
WTVNVC		5.655	0.108	0.35	4.808	0.029	0.11	LH
ZEL36J		5.409	-0.138	-0.45	4.760	-0.018	-0.07	XX
ZWHTZC		5.460	-0.087	-0.28	4.961	0.183	0.67	LA

Summary Statistics

	Sample SF21	Sample SF22
Grand Means	5.5473 kN/m	4.7785 kN/m
SD Btwn Labs	0.3065 kN/m	0.2745 kN/m

Statistics based on 53 of 54 reporting participants

Comments on assigned Data Flags for Test #325

QQP7EU (X) - Inconsistent in testing between samples, data for Sample SF21 are high.

Instrument Code List

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

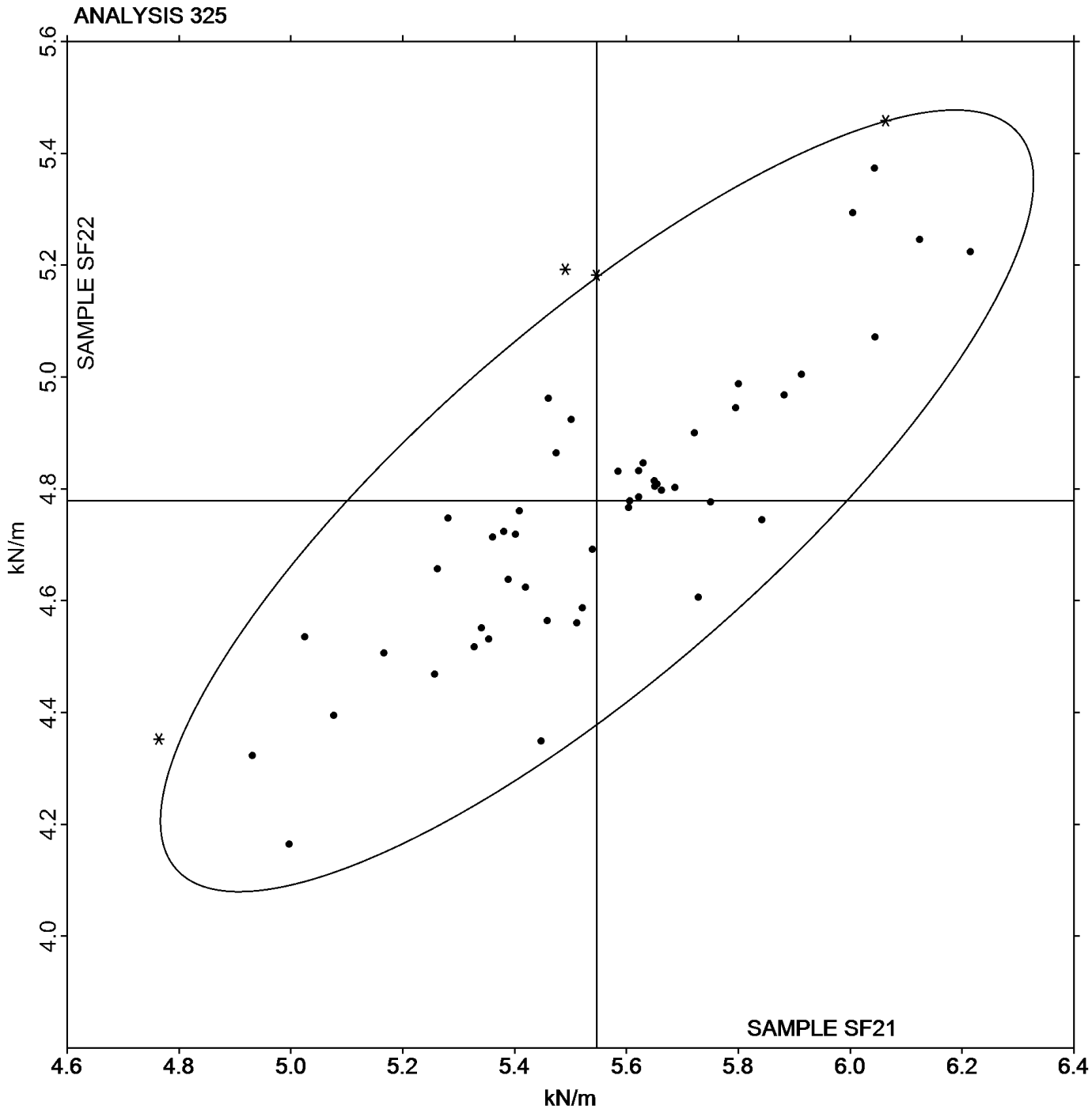
TAPPI-CTS Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

Grand Mean Sample **SF21** = 5.5473 kN/m

Grand Mean Sample **SF22** = 4.7785 kN/m



TAPPI-CTS Interlaboratory Testing Program
Analysis 327
Tensile Energy Absorption - Printing Papers

WebCode	Data Flag	Sample SF21 Lab Mean	Sample SF21 Diff from Grand Mean	Sample SF21 CPV	Sample SF22 Lab Mean	Sample SF22 Diff from Grand Mean	Sample SF22 CPV	Instr Code
29ANRC		91.13	10.47	1.35	74.02	7.22	1.22	DL
36768P		80.14	-0.52	-0.07	69.25	2.45	0.41	LX
3ZUCZX		74.01	-6.65	-0.86	56.84	-9.96	-1.69	LW
4J32NE	*	66.32	-14.34	-1.85	66.57	-0.24	-0.04	LH
4T9QHD		85.52	4.87	0.63	67.65	0.85	0.14	LH
67QXU4		77.50	-3.15	-0.41	56.90	-9.91	-1.68	LH
6DPMB9	X	31.20	-49.45	-6.39	31.67	-35.14	-5.96	TP
6QHZWY		82.75	2.09	0.27	67.72	0.91	0.15	TI
8743P8		75.07	-5.58	-0.72	59.89	-6.92	-1.17	IM
8C7HR2		90.98	10.32	1.33	77.10	10.30	1.75	TB
8XDJBY		98.64	17.99	2.32	76.15	9.34	1.58	TJ
9JRQXC		87.99	7.33	0.95	70.39	3.58	0.61	IM
9LWED3		78.08	-2.57	-0.33	63.45	-3.36	-0.57	TO
9RGLQZ		73.67	-6.99	-0.90	63.99	-2.82	-0.48	RE
A2MJJB		73.73	-6.93	-0.89	65.32	-1.48	-0.25	ID
BJJBVV		82.71	2.05	0.27	64.83	-1.98	-0.34	LH
C2EB8T		84.20	3.55	0.46	71.26	4.45	0.76	TB
CXHR6U		94.29	13.63	1.76	75.47	8.66	1.47	XX
D7KDLT		78.28	-2.37	-0.31	69.42	2.62	0.44	LX
DN4362		61.98	-18.67	-2.41	53.97	-12.84	-2.18	LA
EM9YQK		82.57	1.92	0.25	66.83	0.02	0.00	IM
EXQLXZ		76.68	-3.98	-0.51	61.63	-5.18	-0.88	LH
FQ7RDM		81.01	0.35	0.05	64.91	-1.89	-0.32	LI
J3MWXF		81.81	1.16	0.15	67.53	0.72	0.12	LH
JG3YGP		83.41	2.76	0.36	75.14	8.33	1.41	LX
JWHXLQ		85.21	4.55	0.59	67.68	0.87	0.15	LH
K4CLFY		76.28	-4.37	-0.56	66.83	0.02	0.00	LH
LC47DK	X	58.94	-21.71	-2.80	42.75	-24.06	-4.08	TP
MLKBZB		97.05	16.39	2.12	76.33	9.52	1.61	TO
Q2MBZF		79.99	-0.67	-0.09	71.25	4.45	0.75	LH
Q8F9WJ		75.15	-5.50	-0.71	64.32	-2.49	-0.42	LI
QTVXZG		75.70	-4.95	-0.64	64.83	-1.98	-0.34	LI
T6FW7A		73.26	-7.40	-0.96	63.22	-3.59	-0.61	LI
TRQ9UA		82.52	1.87	0.24	70.78	3.98	0.67	TB
UDN44N		74.13	-6.52	-0.84	60.34	-6.47	-1.10	LH
UV73B8		81.48	0.83	0.11	59.50	-7.31	-1.24	MR
WTVNVC		76.00	-4.65	-0.60	59.14	-7.67	-1.30	LH
ZEL36J		76.98	-3.68	-0.48	68.09	1.28	0.22	XX
ZWHTZC		88.03	7.38	0.95	73.33	6.52	1.11	LA

TAPPI-CTS Interlaboratory Testing Program
Analysis 327
Tensile Energy Absorption - Printing Papers

Summary Statistics

	Sample SF21	Sample SF22
Grand Means	80.655 Joules/sq m	66.807 Joules/sq m
SD Btwn Labs	7.740 Joules/sq m	5.896 Joules/sq m

Statistics based on 37 of 39 reporting participants

Comments on assigned Data Flags for Test #327

6DPMB9 (X) - Extreme data.

LC47DK (X) - Data for both samples are low.

Instrument Code List

(DL) - EMIC DL500 Universal Testing Machines
(ID) - Instron 4201
(IM) - Instron 5500 Series
(LA) - L & W Tensile - Autoline 300
(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LI) - L & W Tensile Tester SE 062
(LW) - L & W Tensile Tester SE 064
(LX) - L & W (model not specified)
(MR) - MTS Alliance RT series
(RE) - Regmed
(TB) - Thwing-Albert EJA/1000
(TI) - Thwing-Albert QC II
(TJ) - Thwing-Albert QC II-XS
(TO) - Thwing-Albert QC-1000
(TP) - TMI Monitor/Tensile 100 (84-21-01)
(XX) - Instrument make/model not specified by lab

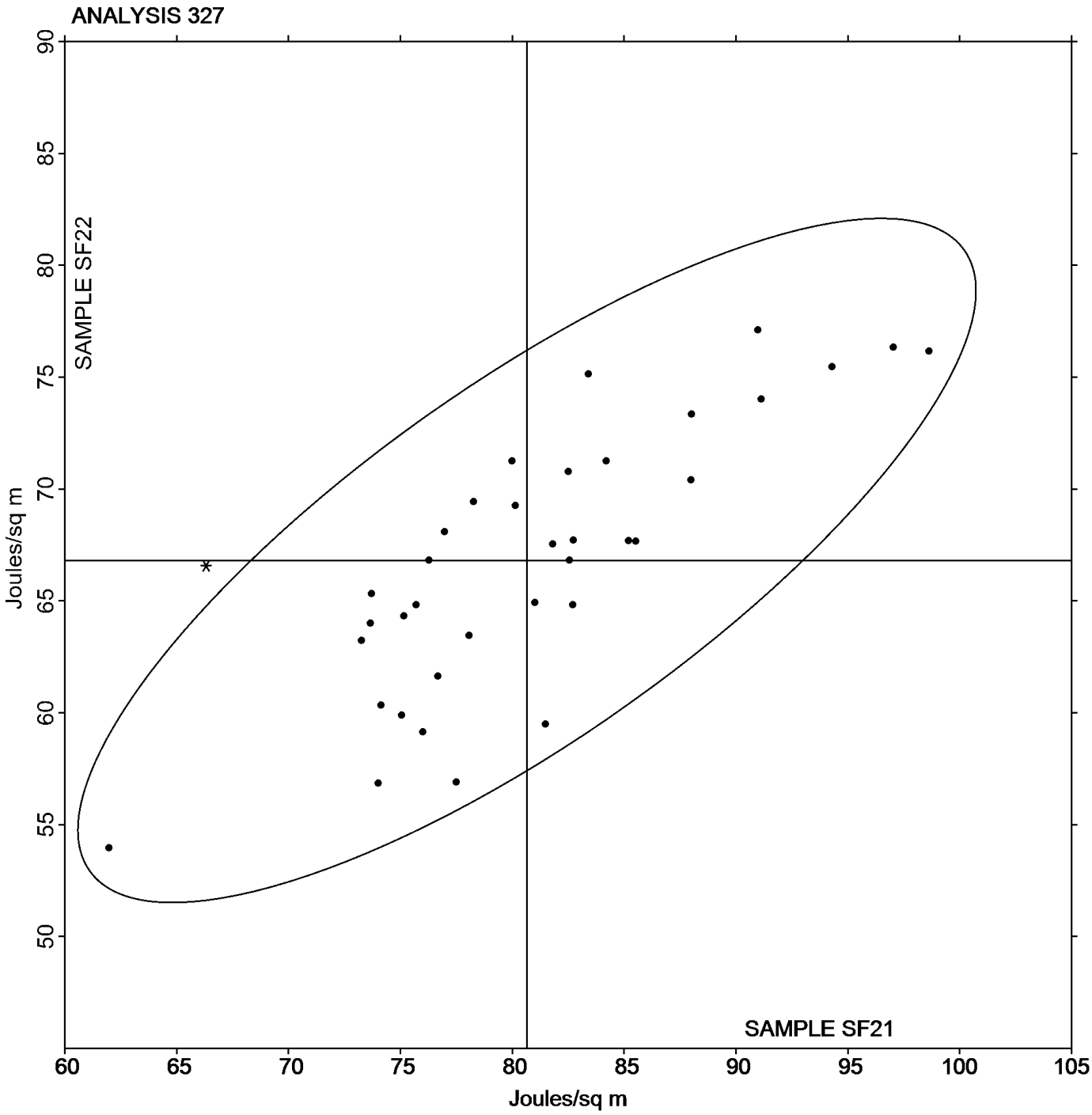
TAPPI-CTS Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

Grand Mean Sample **SF21** = 80.655 Joules/sq m

Grand Mean Sample **SF22** = 66.807 Joules/sq m



TAPPI-CTS Interlaboratory Testing Program
Analysis 328
Elongation to Break - Printing Papers

WebCode	Data Flag	Sample SF21 Lab Mean	Sample SF21 Diff from Grand Mean	Sample SF21 CPV	Sample SF22 Lab Mean	Sample SF22 Diff from Grand Mean	Sample SF22 CPV	Instr Code
29ANRC	*	2.654	0.475	2.88	2.580	0.487	2.91	DL
36768P	*	2.360	0.181	1.10	1.991	-0.102	-0.61	LX
3ZUCZX		1.928	-0.251	-1.52	1.813	-0.280	-1.68	LX
4J32NE	*	2.047	-0.132	-0.80	2.265	0.172	1.03	LH
4T9QHD		2.224	0.045	0.27	2.063	-0.030	-0.18	LH
67QXU4		2.137	-0.042	-0.25	1.979	-0.114	-0.68	LH
6DPMB9	X	4.843	2.664	16.17	4.669	2.576	15.41	TP
6QHZWY		2.208	0.029	0.18	2.113	0.020	0.12	TI
72ECLX	X	2.936	0.757	4.60	2.986	0.893	5.34	TO
8743P8		2.344	0.165	1.00	2.234	0.141	0.84	XX
8C7HR2		2.240	0.061	0.37	2.222	0.128	0.77	TB
8UQ72V		2.260	0.081	0.49	2.020	-0.073	-0.44	TF
8XDJBY		2.452	0.273	1.66	2.270	0.177	1.06	TJ
9JRQXC		2.425	0.246	1.49	2.317	0.223	1.34	IM
9LWED3		1.956	-0.223	-1.35	1.860	-0.233	-1.40	TG
9RGLQZ		2.228	0.049	0.30	2.207	0.114	0.68	RE
A2MJJB		2.203	0.024	0.14	2.239	0.146	0.87	ID
A6LUEB		2.390	0.211	1.28	2.160	0.067	0.40	LH
AQ3AW3		2.331	0.153	0.93	2.235	0.142	0.85	TB
BJJBVV		1.967	-0.212	-1.29	1.840	-0.253	-1.52	LH
C2EB8T		2.386	0.208	1.26	2.371	0.277	1.66	TB
CXHR6U		2.425	0.246	1.49	2.308	0.215	1.28	XX
D7KDLT		2.131	-0.048	-0.29	2.155	0.062	0.37	LX
DN4362		2.134	-0.045	-0.27	2.101	0.008	0.05	LA
EM9YQK		2.197	0.018	0.11	2.097	0.004	0.02	IM
EXQLXZ		1.978	-0.201	-1.22	1.930	-0.163	-0.98	LH
FQ7RDM		2.112	-0.067	-0.41	2.013	-0.080	-0.48	LI
J3MWXF		2.080	-0.099	-0.60	2.022	-0.071	-0.43	LH
JG3YGP		2.089	-0.090	-0.55	2.129	0.036	0.21	LX
JWHXLQ		2.133	-0.046	-0.28	2.002	-0.091	-0.55	LH
K4CLFY		2.064	-0.115	-0.70	2.042	-0.051	-0.31	LH
LC47DK		2.171	-0.008	-0.05	1.942	-0.151	-0.91	TP
MLKBZB	X	2.849	0.670	4.07	2.642	0.549	3.28	TO
Q2MBZF		2.063	-0.116	-0.70	2.113	0.020	0.12	LH
Q8F9WJ		2.057	-0.122	-0.74	2.019	-0.074	-0.44	LI
QDYJZM	X	2.090	-0.089	-0.54	2.390	0.297	1.77	TF
QTVXZG		2.090	-0.089	-0.54	2.108	0.015	0.09	LI
T6FW7A		2.093	-0.086	-0.52	2.081	-0.012	-0.07	LI
TRQ9UA	X	56.397	54.218	329.15	54.853	52.760	315.65	TB
UDN44N		2.019	-0.160	-0.97	1.929	-0.164	-0.98	LH
UV73B8		2.171	-0.008	-0.05	1.936	-0.158	-0.94	MR
WTVNVC		1.873	-0.306	-1.86	1.744	-0.349	-2.09	LH
ZEL36J		2.190	0.011	0.07	2.171	0.078	0.46	XX

TAPPI-CTS Interlaboratory Testing Program
Analysis 328
Elongation to Break - Printing Papers

WebCode	Data Flag	Sample SF21 Lab Mean	Sample SF21 Diff from Grand Mean	Sample SF21 CPV	Sample SF22 Lab Mean	Sample SF22 Diff from Grand Mean	Sample SF22 CPV	Instr Code
ZWHTZC		2.163	-0.016	-0.10	2.020	-0.073	-0.44	LA

Summary Statistics

	Sample SF21	Sample SF22
Grand Means	2.1788 Percent	2.0933 Percent
SD Btwn Labs	0.1647 Percent	0.1671 Percent

Statistics based on 39 of 44 reporting participants

Comments on assigned Data Flags for Test #328

6DPMB9 (X) - Extreme data.

72ECLX (X) - Systematic error (data for both samples are high).

MLKBZB (X) - Systematic error (data for both samples are high).

QDYJZM (X) - Inconsistent in testing between samples.

TRQ9UA (X) - Extreme data.

Instrument Code List

(DL) - EMIC DL500 Universal Testing Machines
(IM) - Instron 5500
(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LX) - L & W (model not specified)
(RE) - Regmed
(TF) - Thwing-Albert EJA Vantage-1
(TI) - Thwing-Albert QC II
(TO) - Thwing-Albert QC-1000
(XX) - Instrument make/model not specified by lab
(ID) - Instron 4201
(LA) - L & W Tensile - Autoline 300
(LI) - L & W Tensile Tester SE 062
(MR) - MTS Alliance RT series
(TB) - Thwing-Albert EJA/1000
(TG) - Thwing-Albert QC
(TJ) - Thwing-Albert QC II-XS
(TP) - TMI Monitor/Tensile 100 (84-21-01)

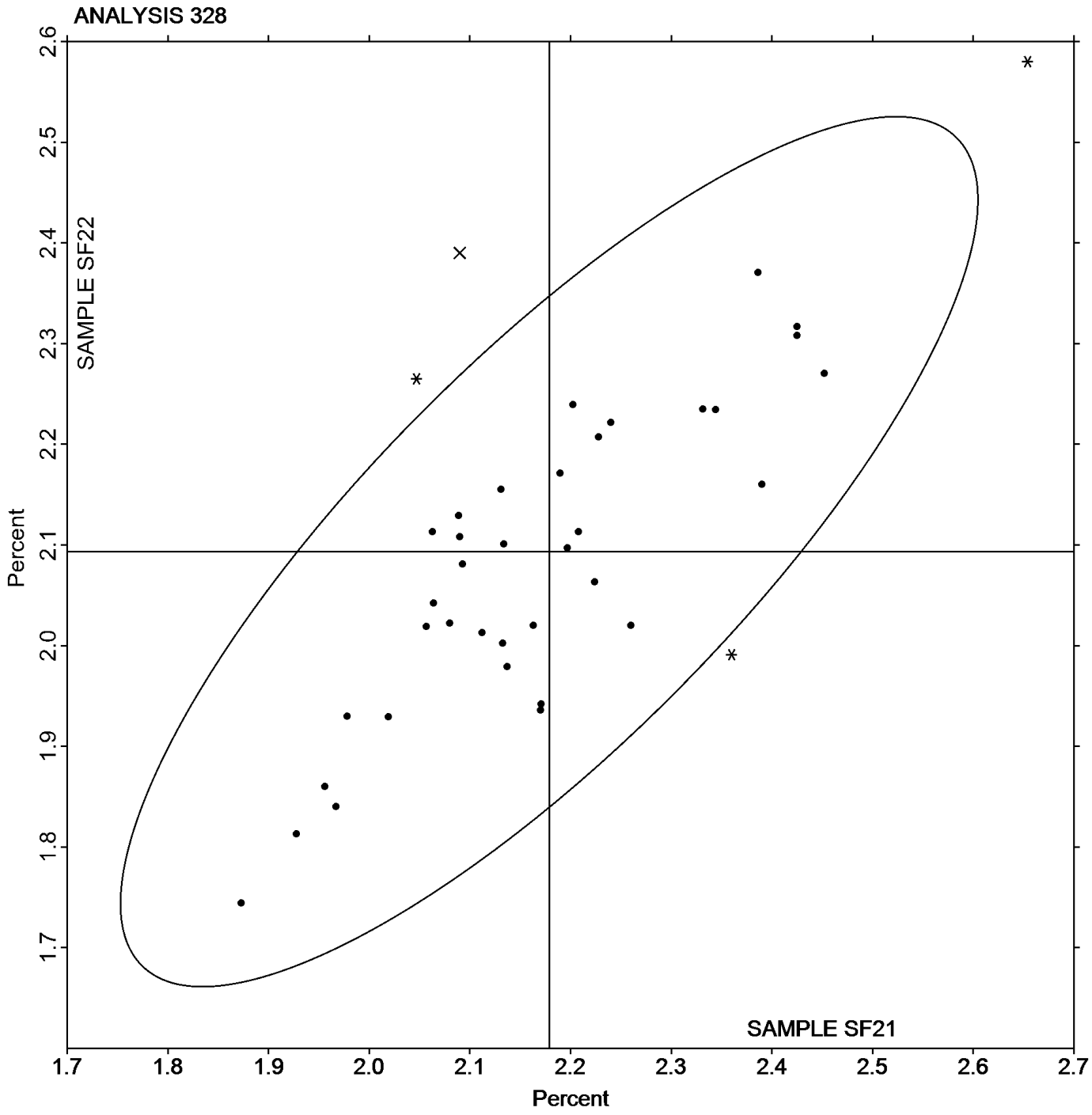
TAPPI-CTS Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

Grand Mean Sample **SF21** = 2.1788 Percent

Grand Mean Sample **SF22** = 2.0933 Percent



TAPPI-CTS Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

WebCode	Data Flag	Sample SE21 Lab Mean	Sample SE21 Diff from Grand Mean	Sample SE21 CPV	Sample SE22 Lab Mean	Sample SE22 Diff from Grand Mean	Sample SE22 CPV	Instr Code
26PUTQ		11.83	0.67	0.86	10.166	0.501	0.69	TA
2EVPVW	*	12.10	0.94	1.22	9.898	0.233	0.32	TK
3J4J6Y		10.94	-0.22	-0.29	9.343	-0.323	-0.44	TH
6U4J23		10.68	-0.48	-0.62	8.879	-0.786	-1.08	IF
A4MWV3		11.74	0.57	0.75	10.394	0.729	1.00	LA
B2JBR3		10.65	-0.51	-0.66	9.218	-0.447	-0.61	LE
B7CKTN	*	9.10	-2.06	-2.67	8.012	-1.653	-2.27	ID
BEQ9RW		11.69	0.53	0.69	10.441	0.776	1.06	TX
C9ETJJ		10.55	-0.61	-0.79	8.968	-0.697	-0.96	IM
CFUHXX		10.27	-0.90	-1.16	8.665	-1.000	-1.37	TH
CHLBFW	X	18.56	7.40	9.61	15.670	6.005	8.24	LE
CW3CRT		10.84	-0.32	-0.42	9.260	-0.405	-0.56	TP
DHZ7CN		12.82	1.66	2.15	11.352	1.686	2.31	LA
EAJ3M2		10.35	-0.81	-1.05	9.024	-0.641	-0.88	LW
F6L3PG		11.45	0.29	0.38	9.765	0.100	0.14	IM
F7GLRH		10.30	-0.86	-1.12	9.404	-0.261	-0.36	TK
FKDMKJ		10.72	-0.44	-0.57	9.807	0.142	0.19	IN
FL97LK		10.36	-0.80	-1.03	8.721	-0.945	-1.30	TH
G3QQHV		11.54	0.38	0.49	10.332	0.667	0.92	TO
GT6H4Y		10.56	-0.60	-0.78	9.028	-0.638	-0.87	LA
HZJJZN		11.07	-0.09	-0.12	9.372	-0.293	-0.40	SA
JEKPKK		11.88	0.72	0.94	10.447	0.782	1.07	XX
KDERMU		12.02	0.86	1.11	10.415	0.750	1.03	IF
LC47DK		11.75	0.59	0.77	10.058	0.392	0.54	TO
MKQRWN	X	7.85	-3.31	-4.30	7.354	-2.312	-3.17	TP
MNXXKA		10.68	-0.48	-0.62	9.131	-0.534	-0.73	LW
MYEKUB		10.44	-0.72	-0.94	8.959	-0.706	-0.97	TK
PK33PD		12.20	1.04	1.35	10.585	0.919	1.26	XX
Q2MBZF		11.27	0.11	0.15	9.691	0.026	0.04	LH
QJRK78	*	10.43	-0.73	-0.94	8.343	-1.323	-1.81	IM
RKYDJ7		10.49	-0.67	-0.87	9.239	-0.426	-0.58	XX
TGTA8A		11.56	0.40	0.52	9.964	0.299	0.41	LE
TRDJV4		13.06	1.90	2.46	11.423	1.758	2.41	LA
U2EDGF		10.95	-0.21	-0.27	9.439	-0.226	-0.31	LI
UP6QCP		11.12	-0.04	-0.05	9.481	-0.184	-0.25	LE
VCCLL4		12.06	0.90	1.16	10.602	0.937	1.28	TP
VXR4RE		11.10	-0.06	-0.08	9.638	-0.027	-0.04	TB
W3LA2B		11.31	0.15	0.19	9.716	0.051	0.07	TO
WAFC68		11.29	0.13	0.17	9.776	0.110	0.15	TA
WKLAXG		10.84	-0.33	-0.42	9.753	0.087	0.12	LH
WZ9XYZ		10.60	-0.56	-0.73	9.342	-0.323	-0.44	TB
XYDEVD		10.80	-0.37	-0.47	9.300	-0.365	-0.50	ID
XZVFN8		11.67	0.51	0.66	10.193	0.528	0.72	TO

TAPPI-CTS Interlaboratory Testing Program
Analysis 330
Tensile Breaking Strength - Packaging Papers

WebCode	Data Flag	Sample SE21 Lab Mean	Sample SE21 Diff from Grand Mean	Sample SE21 CPV	Sample SE22 Lab Mean	Sample SE22 Diff from Grand Mean	Sample SE22 CPV	Instr Code
YVAZPY		10.62	-0.54	-0.71	9.088	-0.578	-0.79	IK
ZZ4AJX		10.91	-0.25	-0.33	10.040	0.375	0.51	LH
ZZ4J43		12.47	1.31	1.70	10.604	0.938	1.29	LA

Summary Statistics

	Sample SE21	Sample SE22
Grand Means	11.161 kN/m	9.6654 kN/m
SD Btwn Labs	0.770 kN/m	0.7290 kN/m

Statistics based on 44 of 46 reporting participants

Comments on assigned Data Flags for Test #330

CHLBFW (X) - Extreme data.

MKQRWN (X) - Systematic error (data for both samples are low).

Analysis Notes:

F7GLRH - Data appear to be reported as lb/inch, not kN/m as indicated on datasheet. Units corrected by CTS.

Instrument Code List

(ID) - Instron 4201
(IF) - Instron 3340 Series
(IK) - Instron 4400 Series
(IM) - Instron 5500 Series
(IN) - Instron 3360 Series
(LA) - L & W Autoline
(LE) - L & W Tensile Tester 066
(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LI) - LLoyds Instruments
(LW) - L & W Tensile Tester SE062
(SA) - Shimadzu Autograph AG 2000 A
(TA) - Thwing-Albert Tensile Tester
(TB) - Thwing-Albert EJA/1000
(TH) - Thwing-Albert QC-3A
(TK) - Thwing-Albert Model 37-4
(TO) - Thwing-Albert QC-1000
(TP) - TMI Monitor/Tensile 100 (84-21-01)
(TX) - Thwing-Albert (model not specified)
(XX) - Instrument make/model not specified by lab

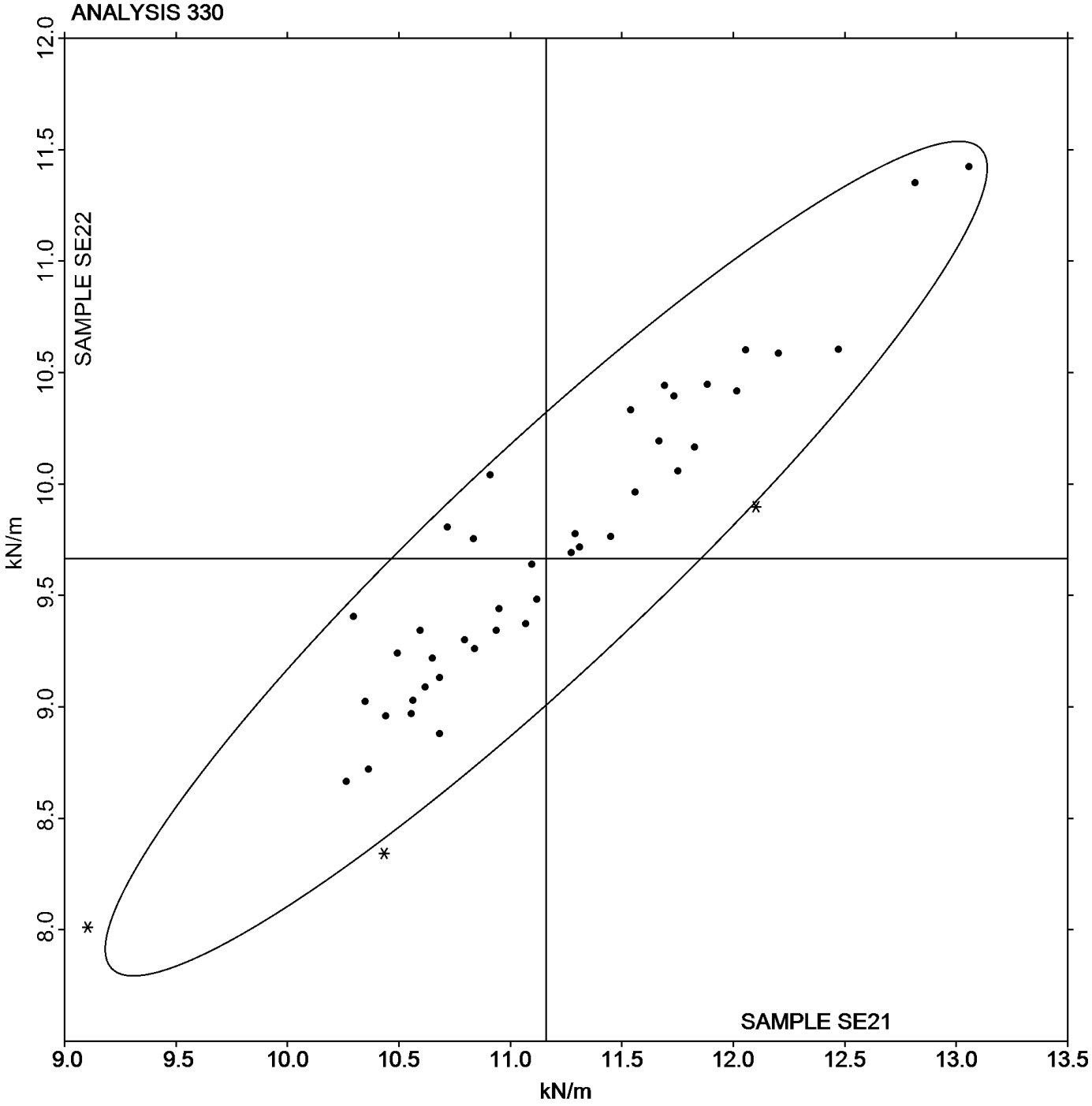
TAPPI-CTS Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

Grand Mean Sample **SE21** = 11.161 kN/m

Grand Mean Sample **SE22** = 9.6654 kN/m



TAPPI-CTS Interlaboratory Testing Program
Analysis 331
Tensile Energy Absorption - Packaging Papers

WebCode	Data Flag	Sample SE21 Lab Mean	Sample SE21 Diff from Grand Mean	Sample SE21 CPV	Sample SE22 Lab Mean	Sample SE22 Diff from Grand Mean	Sample SE22 CPV	Instr Code
26PUTQ		241.1	34.2	1.17	124.5	11.5	0.79	TA
3J4J6Y		256.9	50.1	1.72	135.6	22.5	1.55	TH
47WTZ6	X	61.4	-145.4	-4.99	52.4	-60.6	-4.16	XX
6U4J23		191.0	-15.9	-0.54	98.1	-15.0	-1.03	IF
A4MWV3		211.8	5.0	0.17	119.0	6.0	0.41	LA
B7CKTN		131.9	-75.0	-2.57	80.6	-32.5	-2.23	ID
BEQ9RW		234.6	27.7	0.95	137.1	24.0	1.65	XX
C9ETJJ		196.3	-10.6	-0.36	102.2	-10.9	-0.75	IM
CFUHXX		207.2	0.4	0.01	114.6	1.6	0.11	TH
CW3CRT		210.2	3.3	0.11	116.5	3.5	0.24	TP
DHZ7CN		226.3	19.5	0.67	128.7	15.7	1.08	LA
F6L3PG		208.9	2.0	0.07	108.5	-4.6	-0.31	IM
FKDMKJ	X	193.3	-13.5	-0.46	134.8	21.8	1.50	IN
FL97LK		234.1	27.3	0.93	126.3	13.2	0.91	TH
G3QQHV		217.7	10.9	0.37	127.8	14.8	1.02	XX
GT6H4Y		202.1	-4.8	-0.16	113.3	0.2	0.02	LA
HZJJZN		205.3	-1.6	-0.06	108.5	-4.6	-0.32	SA
JEKPKK		254.9	48.0	1.65	140.5	27.4	1.88	XX
KDERMU		220.3	13.5	0.46	115.3	2.3	0.16	IN
LC47DK		222.8	16.0	0.55	114.0	0.9	0.06	TO
MNXXKA		192.6	-14.3	-0.49	96.7	-16.3	-1.12	LW
MYEKUB		207.9	1.1	0.04	113.3	0.3	0.02	TK
PK33PD	X	363.3	156.4	5.36	201.4	88.4	6.07	XX
Q2MBZF		199.3	-7.6	-0.26	105.1	-7.9	-0.54	LH
QJRK78		178.7	-28.1	-0.96	88.0	-25.1	-1.72	IM
RKYDJ7		193.7	-13.1	-0.45	106.7	-6.3	-0.43	XX
TGTA8A		195.4	-11.5	-0.39	108.7	-4.3	-0.30	LE
TRDJV4		215.5	8.6	0.29	121.7	8.7	0.60	LA
UP6QCP		206.0	-0.9	-0.03	107.1	-6.0	-0.41	LE
VCCLL4	*	124.5	-82.4	-2.82	78.2	-34.8	-2.39	TP
W3LA2B		253.4	46.5	1.59	134.4	21.4	1.47	TO
WKLAXG		192.9	-13.9	-0.48	108.4	-4.6	-0.32	LH
WZ9XYZ		176.1	-30.7	-1.05	109.2	-3.8	-0.26	TB
XZVFN8		220.5	13.6	0.47	116.3	3.2	0.22	TO
YVAZPY		212.1	5.3	0.18	114.7	1.7	0.12	XX
ZZ4AJX		167.2	-39.7	-1.36	107.1	-6.0	-0.41	LH
ZZ4J43		224.0	17.2	0.59	116.8	3.7	0.26	LA

TAPPI-CTS Interlaboratory Testing Program
Analysis 331
Tensile Energy Absorption - Packaging Papers

Summary Statistics

	Sample SE21	Sample SE22
Grand Means	206.86 Joules/sq m	113.04 Joules/sq m
SD Btwn Labs	29.17 Joules/sq m	14.57 Joules/sq m

Statistics based on 34 of 37 reporting participants

Comments on assigned Data Flags for Test #331

47WTZ6 (X) - Data for both samples are low.

FKDMKJ (X) - Inconsistent in testing between samples.

PK33PD (X) - Extreme data.

Analysis Notes:

BEQ9RW - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on datasheet. Units corrected by CTS.

CW3CRT - Data appear to be reported as J/sq m, not kg-m/sq m as indicated on datasheet. Units corrected by CTS.

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

Instrument Code List

(ID) - Instron 4201
(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
(SA) - Shimadzu Autograph AG 2000 A
(TA) - Thwing-Albert Tensile Tester
(TB) - Thwing-Albert EJA/1000
(TH) - Thwing-Albert QC-3A
(TK) - Thwing-Albert Model 37-4
(TO) - Thwing-Albert QC-1000
(TP) - TMI Monitor/Tensile 100 (84-21-01)
(XX) - Instrument make/model not specified by lab

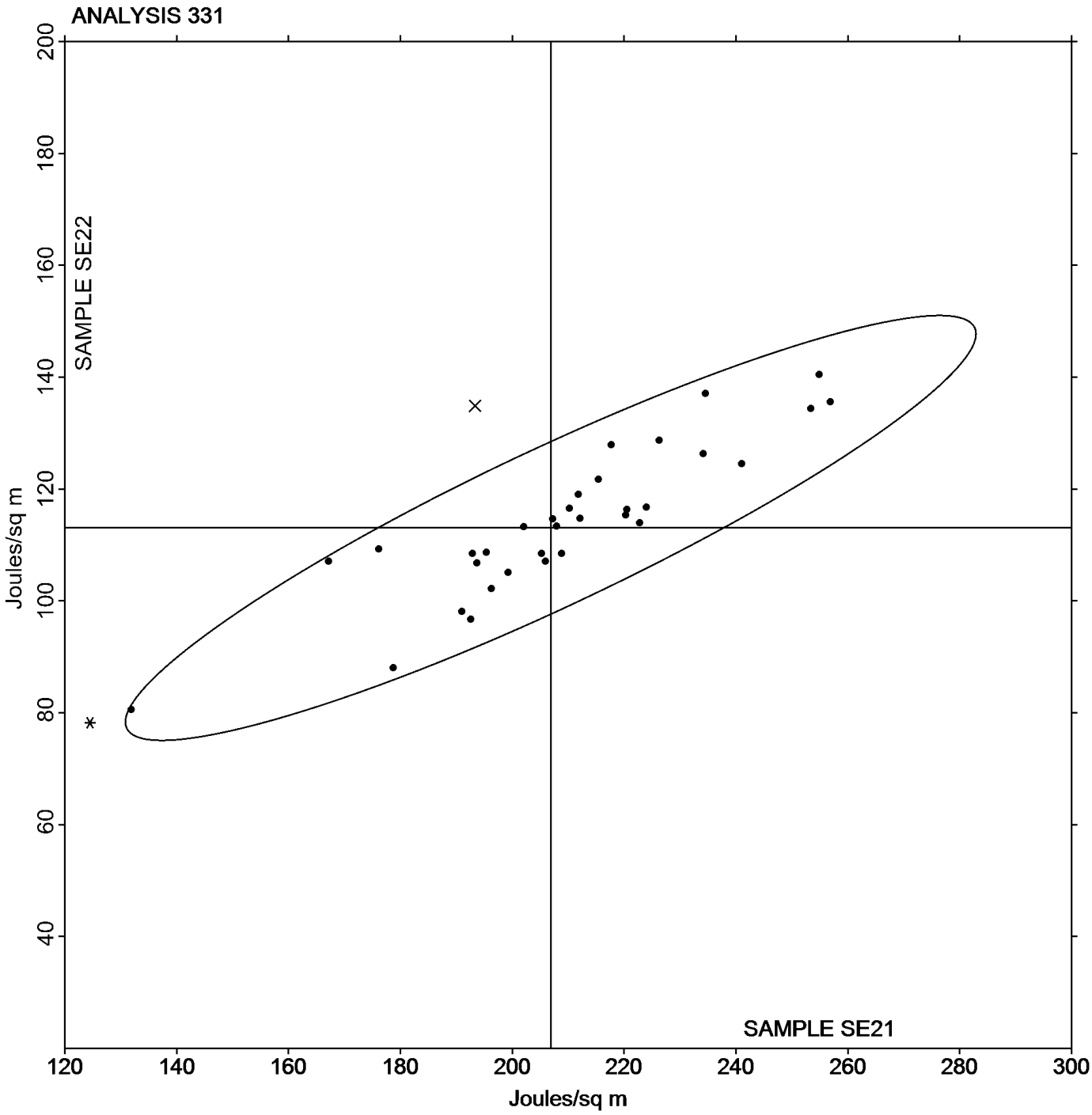
TAPPI-CTS Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

Grand Mean Sample **SE21** = 206.86 Joules/sq m

Grand Mean Sample **SE22** = 113.04 Joules/sq m



TAPPI-CTS Interlaboratory Testing Program
Analysis 332
Elongation to Break - Packaging Papers

WebCode	Data Flag	Sample SE21 Lab Mean	Sample SE21 Diff from Grand Mean	Sample SE21 CPV	Sample SE22 Lab Mean	Sample SE22 Diff from Grand Mean	Sample SE22 CPV	Instr Code
26PUTQ		3.009	0.218	0.71	1.862	0.000	0.00	TA
3J4J6Y		3.510	0.719	2.35	2.255	0.393	1.79	TH
6U4J23		2.763	-0.028	-0.09	1.838	-0.024	-0.11	IF
A4MWV3		2.575	-0.216	-0.71	1.697	-0.165	-0.75	LA
B7CKTN		2.518	-0.273	-0.89	1.885	0.023	0.10	ID
BEQ9RW		3.054	0.263	0.86	2.135	0.273	1.24	XX
C9ETJJ		3.020	0.229	0.75	2.055	0.193	0.88	IM
CFUHXX		3.188	0.397	1.30	2.147	0.285	1.30	TH
CW3CRT		3.410	0.619	2.02	2.380	0.518	2.36	TP
DHZ7CN		2.472	-0.319	-1.04	1.766	-0.096	-0.44	LA
EAJ3M2		2.549	-0.242	-0.79	1.625	-0.237	-1.08	LW
F6L3PG		2.726	-0.065	-0.21	1.726	-0.136	-0.62	IM
FKDMKJ		2.940	0.149	0.49	2.200	0.338	1.54	IN
FL97LK		3.356	0.565	1.85	2.221	0.359	1.63	TH
G3QQHV		2.940	0.149	0.49	2.080	0.218	0.99	XX
GT6H4Y		2.381	-0.410	-1.34	1.613	-0.249	-1.14	LA
HZJJZN		2.787	-0.004	-0.01	1.832	-0.030	-0.14	SA
JEKPKK		3.225	0.434	1.42	2.130	0.268	1.22	XX
KDERMU		2.716	-0.075	-0.24	1.733	-0.129	-0.59	IN
LC47DK		2.826	0.035	0.11	1.805	-0.057	-0.26	TO
MNXXKA		2.653	-0.138	-0.45	1.645	-0.217	-0.99	LW
MYEKUB		2.972	0.181	0.59	1.984	0.122	0.56	TK
PK33PD		2.675	-0.116	-0.38	1.819	-0.043	-0.20	XX
Q2MBZF		2.595	-0.196	-0.64	1.637	-0.225	-1.03	LH
QJRK78		2.650	-0.141	-0.46	1.725	-0.137	-0.63	IM
RKYDJ7		2.705	-0.086	-0.28	1.760	-0.102	-0.47	XX
TGTA8A		2.482	-0.309	-1.01	1.686	-0.176	-0.80	LE
TRDJV4		2.399	-0.392	-1.28	1.636	-0.226	-1.03	XX
UP6QCP		2.747	-0.044	-0.14	1.743	-0.119	-0.54	LE
VCCLL4	X	0.228	-2.563	-8.37	0.162	-1.701	-7.75	TP
VXR4RE		2.845	0.054	0.18	1.841	-0.021	-0.10	TB
W3LA2B		3.392	0.601	1.96	2.237	0.375	1.71	TO
WKLAXG		2.610	-0.181	-0.59	1.670	-0.192	-0.88	LH
WZ9XYZ	*	2.554	-0.237	-0.77	1.976	0.113	0.52	TB
XYDEVD		2.659	-0.132	-0.43	1.781	-0.081	-0.37	ID
XZVFN8		2.733	-0.058	-0.19	1.738	-0.124	-0.57	TO
YVAZPY		2.580	-0.211	-0.69	1.610	-0.252	-1.15	XX
ZZ4AJX		2.261	-0.530	-1.73	1.640	-0.222	-1.01	LH
ZZ4J43		2.577	-0.214	-0.70	1.653	-0.209	-0.95	LA

TAPPI-CTS Interlaboratory Testing Program
Analysis 332
Elongation to Break - Packaging Papers

Summary Statistics

	Sample SE21	Sample SE22
Grand Means	2.7909 Percent	1.8623 Percent
SD Btwn Labs	0.3061 Percent	0.2195 Percent

Statistics based on 38 of 39 reporting participants

Comments on assigned Data Flags for Test #332

VCCLL4 (X) - Extreme data.

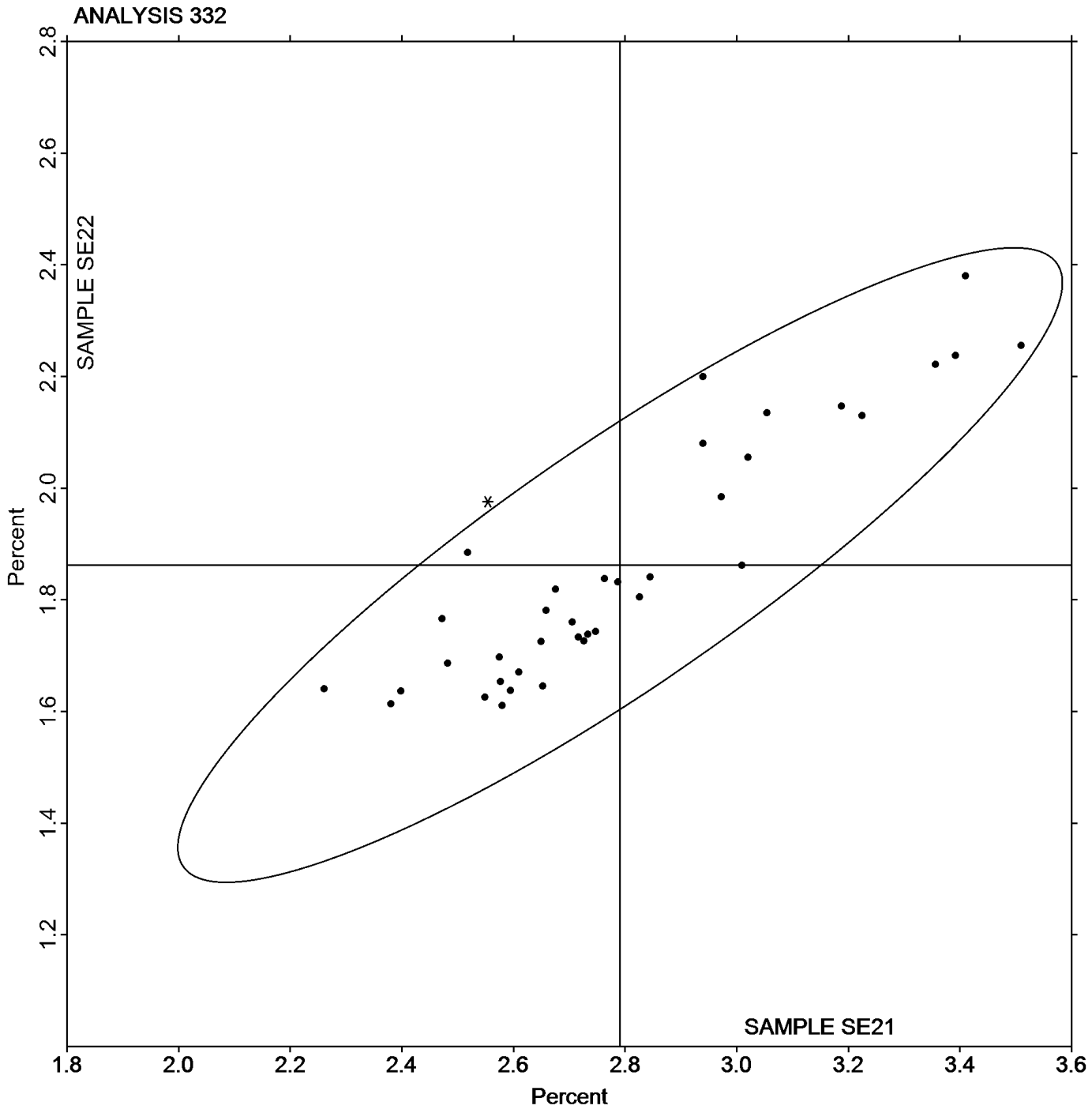
Instrument Code List

(ID) - Instron 4201
(IF) - Instron 3340 Series
(IM) - Instron 5500 Series
(IN) - Instron 3360 Series
(LA) - L & W Autoline 300
(LE) - L & W Tensile Tester 066
(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LW) - L & W Tensile Tester SE062
(SA) - Shimadzu Autograph AG 2000 A
(TA) - Thwing-Albert Tensile Tester
(TB) - Thwing-Albert EJA/1000
(TH) - Thwing-Albert QC-3A
(TK) - Thwing-Albert Model 37-4
(TO) - Thwing-Albert QC-1000
(TP) - TMI Monitor/Tensile 100 (84-21-01)
(XX) - Instrument make/model not specified by lab

TAPPI-CTS Interlaboratory Testing Program
Analysis 332
Elongation to Break - Packaging Papers

Grand Mean Sample **SE21** = 2.7909 Percent

Grand Mean Sample **SE22** = 1.8623 Percent



TAPPI-CTS Interlaboratory Testing Program
Analysis 334
Folding Endurance (MIT) - Double Folds

WebCode	Data Flag	Sample SG21 Lab Mean	Sample SG21 Diff from Grand Mean	Sample SG21 CPV	Sample SG22 Lab Mean	Sample SG22 Diff from Grand Mean	Sample SG22 CPV	Instr Code
2EVPVW		33.40	-13.54	-1.38	39.30	-10.66	-0.97	MT
8743P8		48.00	1.06	0.11	54.11	4.15	0.38	MT
9JRQXC		53.20	6.26	0.64	50.80	0.84	0.08	MT
A2MJJB		41.00	-5.94	-0.61	47.90	-2.06	-0.19	MT
A4MWV3		46.60	-0.34	-0.04	51.80	1.84	0.17	XX
A6LUEB		55.70	8.76	0.89	66.10	16.14	1.46	MT
EAJ3M2		39.50	-7.44	-0.76	35.70	-14.26	-1.29	MT
MKQRWN		21.60	-25.34	-2.58	29.80	-20.16	-1.83	MT
NJUTXF		49.50	2.56	0.26	51.20	1.24	0.11	MT
PM9J6V		54.40	7.46	0.76	54.20	4.24	0.38	MT
Q8F9WJ		58.60	11.66	1.19	57.70	7.74	0.70	MT
QDYJZM		48.50	1.56	0.16	72.80	22.84	2.07	MT
QG3ELB		57.30	10.36	1.05	58.40	8.44	0.76	MT
QQP7EU		40.40	-6.54	-0.67	42.80	-7.16	-0.65	XX
VXR4RE		48.80	1.86	0.19	45.80	-4.16	-0.38	MT
XC4BWB		54.60	7.66	0.78	41.00	-8.96	-0.81	XX

Summary Statistics

	Sample SG21	Sample SG22
Grand Means	46.944 Double Folds	49.963 Double Folds
SD Btwn Labs	9.819 Double Folds	11.047 Double Folds

Statistics based on 16 of 16 reporting participants

Instrument Code List

(MT) - MIT - Tinius Olsen

(XX) - Instrument make/model not specified by lab

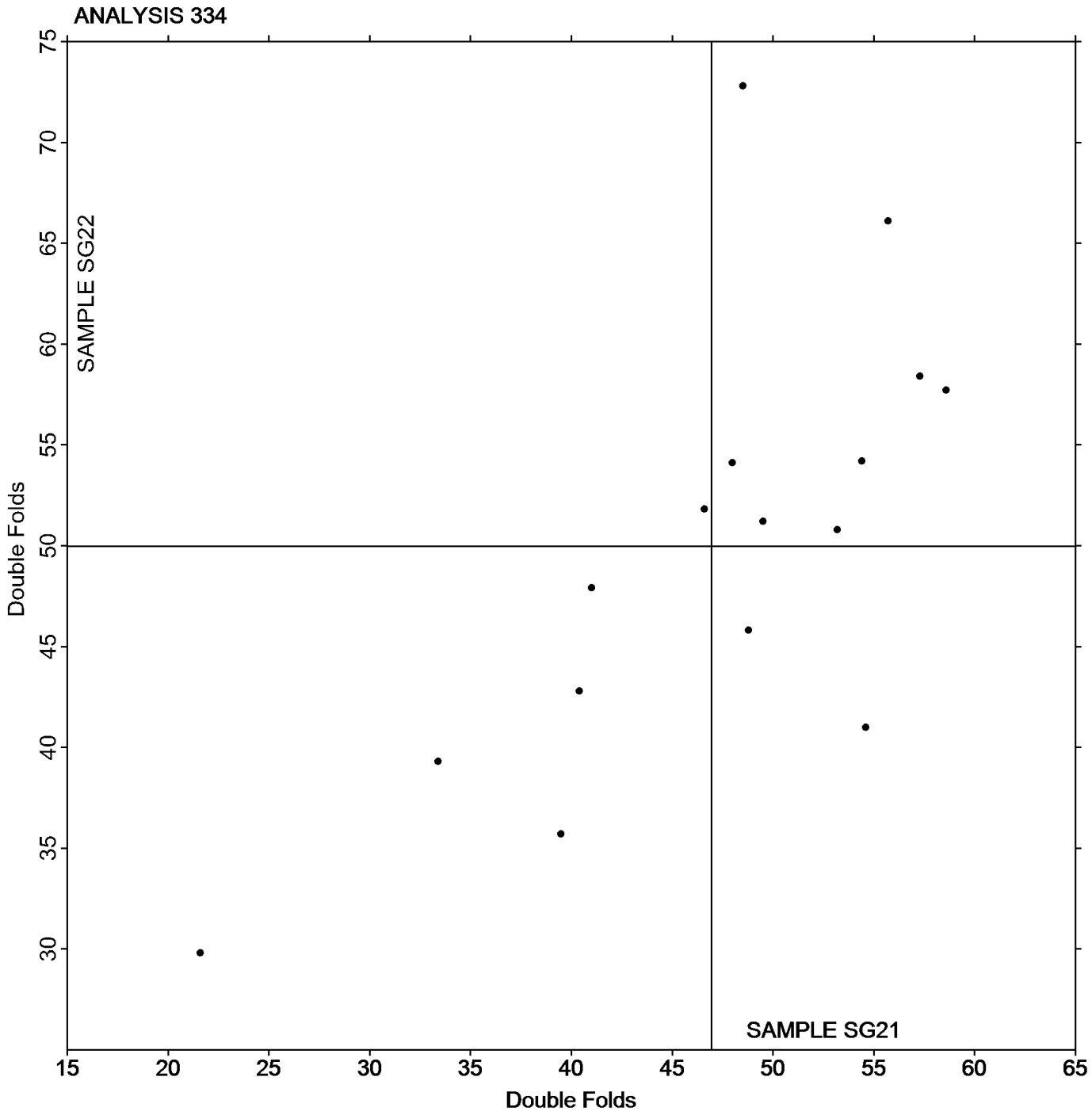
TAPPI-CTS Interlaboratory Testing Program

Analysis 334

Folding Endurance (MIT) - Double Folds

Grand Mean Sample **SG21** = 46.944 Double Folds

Grand Mean Sample **SG22** = 49.963 Double Folds



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 336
Bending Resistance, Gurley Type

WebCode	Data Flag	Sample SH21 Lab Mean	Sample SH21 Diff from Grand Mean	Sample SH21 CPV	Sample SH22 Lab Mean	Sample SH22 Diff from Grand Mean	Sample SH22 CPV
3JL8PE		346.6	7.8	0.33	125.0	0.3	0.02
4J32NE		280.8	-58.0	-2.44	107.4	-17.3	-1.60
6QHZWY		321.9	-16.9	-0.71	129.1	4.4	0.41
6U4J23	X	185.4	-153.5	-6.45	76.0	-48.7	-4.52
9JRQXC		340.0	1.2	0.05	120.5	-4.2	-0.39
A6LUEB		325.4	-13.5	-0.57	121.0	-3.7	-0.34
AQ3AW3	*	346.3	7.4	0.31	94.9	-29.8	-2.77
BJJBVV		394.7	55.9	2.35	133.4	8.7	0.80
DN4362		340.5	1.7	0.07	132.2	7.5	0.69
HT6XRJ		354.3	15.4	0.65	136.0	11.3	1.05
J3MWXF		339.6	0.8	0.03	126.5	1.8	0.17
MLKBZB		331.3	-7.5	-0.32	113.2	-11.5	-1.07
UGALLA		337.4	-1.4	-0.06	128.1	3.4	0.31
UUFWTV		316.5	-22.3	-0.94	125.6	0.9	0.08
UV73B8		321.9	-16.9	-0.71	132.0	7.3	0.67
VXR4RE		354.6	15.8	0.66	131.6	6.9	0.64
WRGKYZ		344.1	5.3	0.22	134.3	9.6	0.89
Y82R8H		364.0	25.2	1.06	129.4	4.7	0.43

Summary Statistics

	Sample SH21	Sample SH22
Grand Means	338.82 Gurley Units	124.74 Gurley Units
SD Btwn Labs	23.81 Gurley Units	10.78 Gurley Units

Statistics based on 17 of 18 reporting participants

Comments on assigned Data Flags for Test #336

6U4J23 (X) - Extreme data.

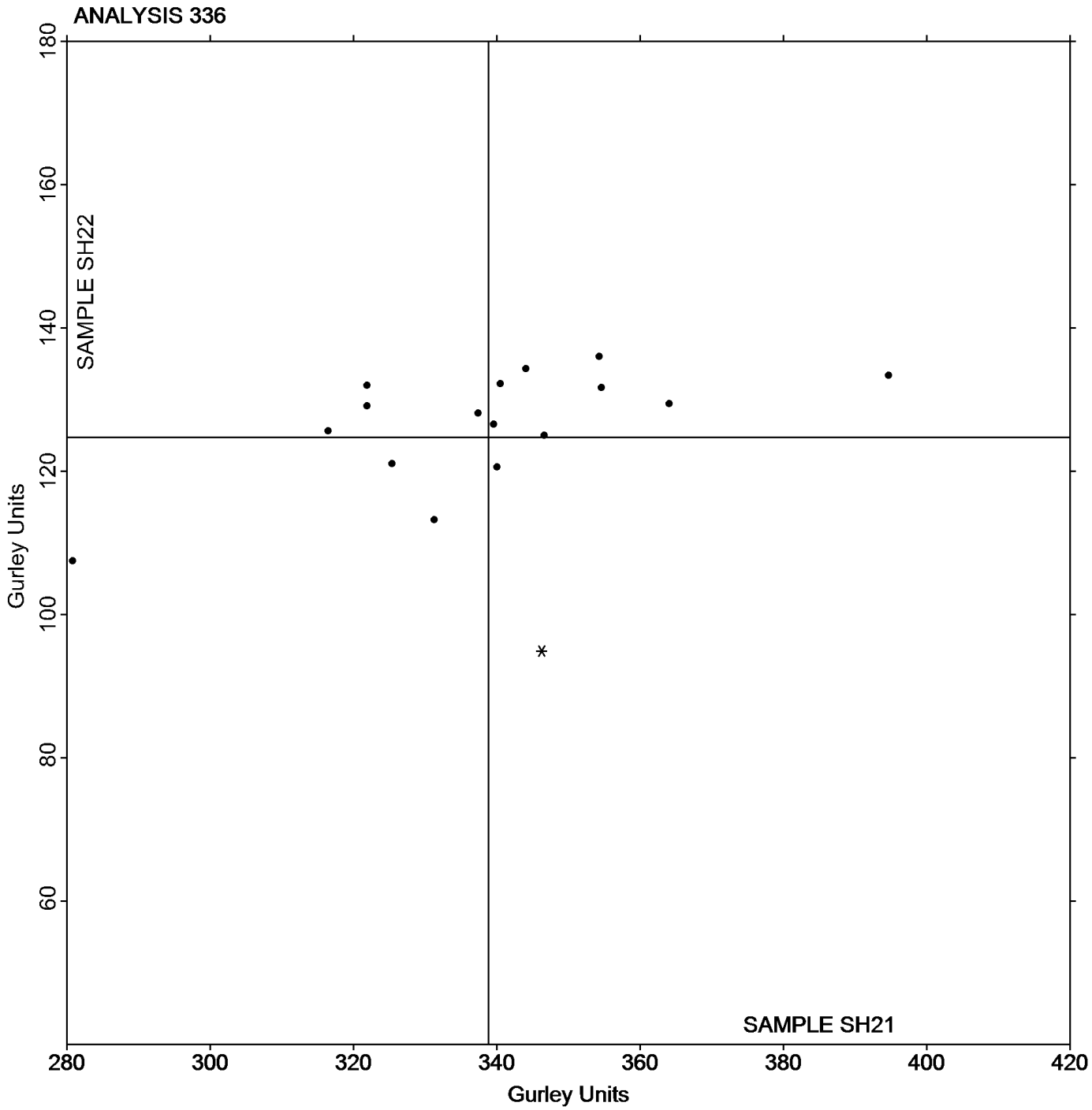
TAPPI-CTS Interlaboratory Testing Program

Analysis 336

Bending Resistance, Gurley Type

Grand Mean Sample **SH21** = 338.82 Gurley Units

Grand Mean Sample **SH22** = 124.74 Gurley Units



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 338
Bending Resistance, Taber Type - 0 to 10 Units

WebCode	Data Flag	Sample SJ21 Lab Mean	Sample SJ21 Diff from Grand Mean	Sample SJ21 CPV	Sample SJ22 Lab Mean	Sample SJ22 Diff from Grand Mean	Sample SJ22 CPV
36768P		4.778	0.259	0.47	7.240	0.272	0.32
6U4J23		4.686	0.168	0.31	7.570	0.602	0.70
8XDJBY		5.177	0.659	1.20	7.645	0.677	0.79
9JRQXC		4.571	0.053	0.10	7.054	0.086	0.10
A2MJJB		4.420	-0.098	-0.18	6.867	-0.101	-0.12
AQ3AW3		4.472	-0.047	-0.09	6.771	-0.198	-0.23
C2EB8T		4.594	0.075	0.14	7.199	0.230	0.27
CK8476		4.304	-0.214	-0.39	6.742	-0.226	-0.26
FRE27K		4.340	-0.178	-0.33	6.793	-0.175	-0.20
J3MWXF		4.738	0.220	0.40	7.152	0.184	0.21
KDERMU		5.630	1.112	2.03	8.590	1.622	1.89
QG3ELB		4.836	0.317	0.58	7.277	0.309	0.36
QQP7EU		4.563	0.045	0.08	7.653	0.685	0.80
TGTA8A		3.790	-0.728	-1.33	5.760	-1.208	-1.41
UKTPA7		4.789	0.271	0.49	7.406	0.438	0.51
UV73B8		3.139	-1.379	-2.52	4.781	-2.187	-2.55
ZWHTZC		3.986	-0.532	-0.97	5.958	-1.010	-1.18

Summary Statistics

	Sample SJ21	Sample SJ22
Grand Means	4.5183 Taber Units	6.9680 Taber Units
SD Btwn Labs	0.5479 Taber Units	0.8577 Taber Units

Statistics based on 17 of 17 reporting participants

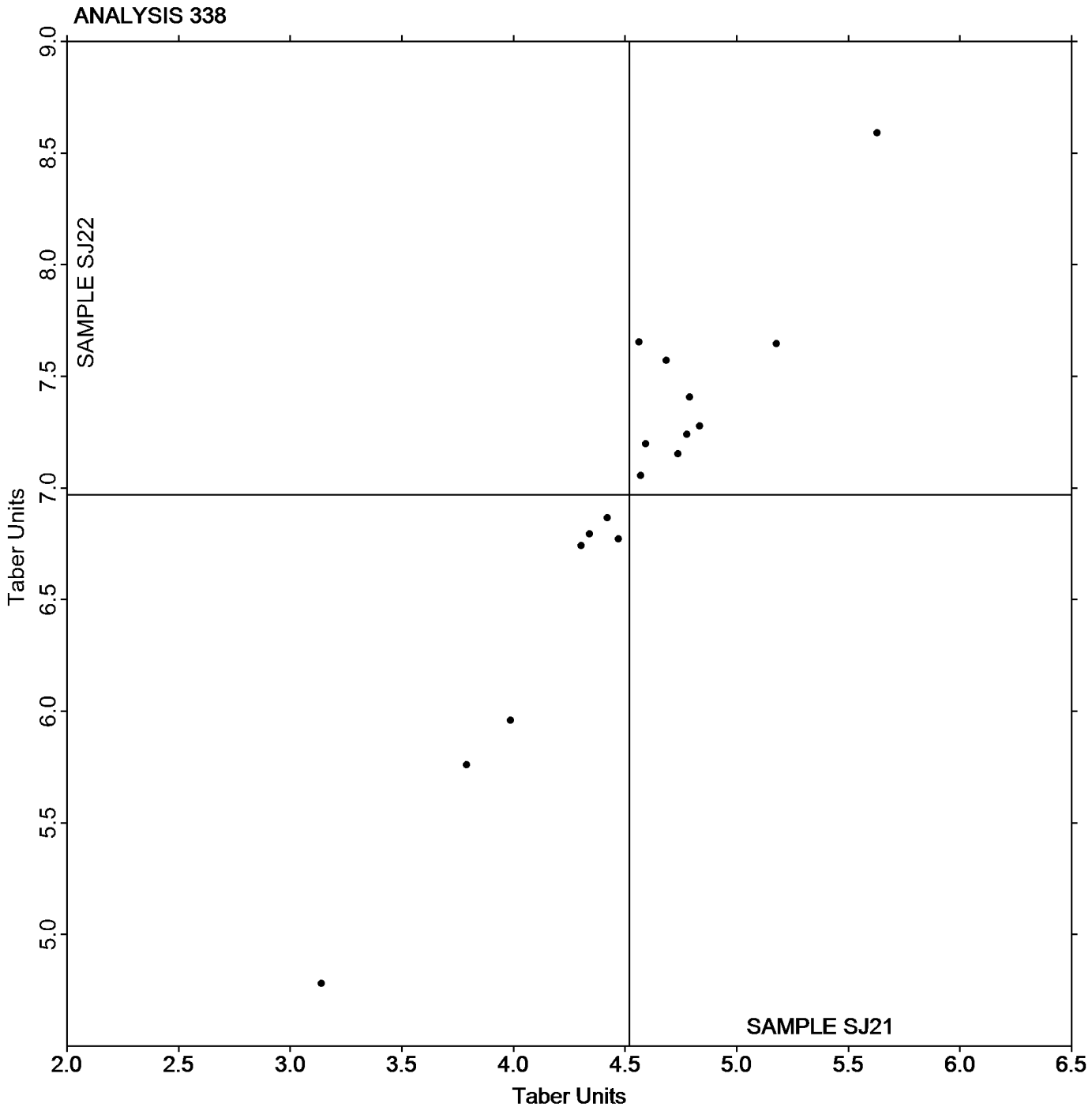
TAPPI-CTS Interlaboratory Testing Program

Analysis 338

Bending Resistance, Taber Type - 0 to 10 Units

Grand Mean Sample **SJ21** = 4.5183 Taber Units

Grand Mean Sample **SJ22** = 6.9680 Taber Units



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

TAPPI-CTS Interlaboratory Testing Program

Analysis 339

Bending Resistance, Taber Type - 10 to 100 Taber Units

WebCode	Data Flag	Sample SQ21 Lab Mean	Sample SQ21 Diff from Grand Mean	Sample SQ21 CPV	Sample SQ22 Lab Mean	Sample SQ22 Diff from Grand Mean	Sample SQ22 CPV
29ANRC		34.89	-1.31	-0.53	21.17	-1.55	-0.90
6DPMB9		31.67	-4.52	-1.82	20.63	-2.09	-1.22
9JRQXC		37.05	0.85	0.34	23.36	0.64	0.37
9LWED3		37.45	1.25	0.50	22.60	-0.12	-0.07
A4MWV3		37.12	0.92	0.37	21.93	-0.79	-0.46
CHLBFW		40.30	4.10	1.65	26.30	3.58	2.09
CXHR6U		31.67	-4.52	-1.82	20.63	-2.09	-1.22
EAJ3M2		35.88	-0.32	-0.13	21.78	-0.94	-0.55
EM9YQK		38.05	1.85	0.75	23.60	0.88	0.51
GT6H4Y		35.37	-0.83	-0.34	24.84	2.12	1.24
TGTA8A		38.95	2.75	1.11	24.65	1.93	1.12
W3G3HF		37.95	1.75	0.71	23.14	0.42	0.25
WZ9XYZ		35.70	-0.50	-0.20	22.50	-0.22	-0.13
Y82R8H		34.72	-1.48	-0.60	20.92	-1.80	-1.05

Summary Statistics

	Sample SQ21	Sample SQ22
Grand Means	36.198 Taber Units	22.717 Taber Units
SD Btwn Labs	2.479 Taber Units	1.718 Taber Units

Statistics based on 14 of 14 reporting participants

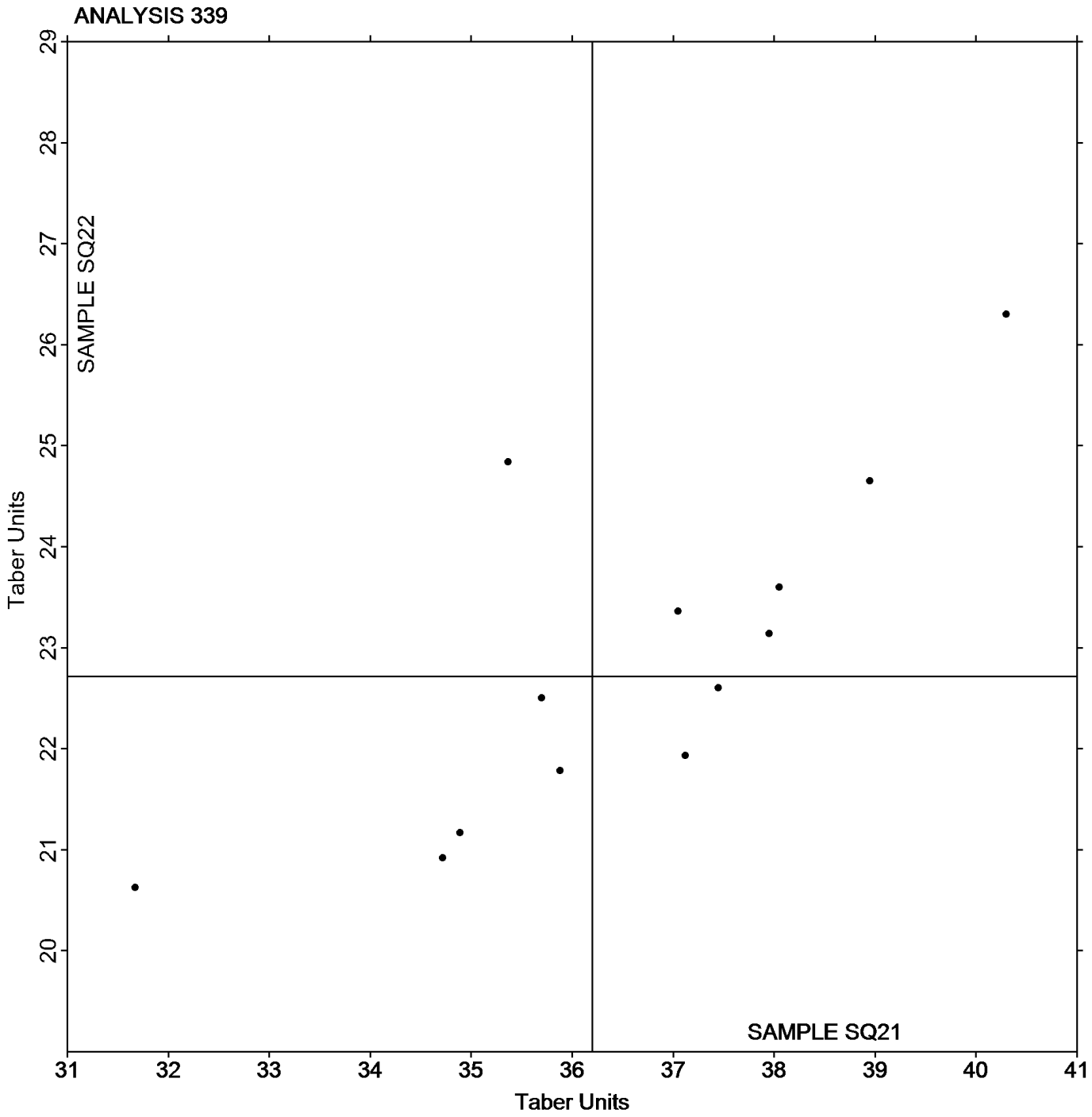
TAPPI-CTS Interlaboratory Testing Program

Analysis 339

Bending Resistance, Taber Type - 10 to 100 Taber Units

Grand Mean Sample **SQ21** = 36.198 Taber Units

Grand Mean Sample **SQ22** = 22.717 Taber Units



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

TAPPI-CTS Interlaboratory Testing Program

Analysis 340

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

WebCode	Data Flag	Sample ST21 Lab Mean	Sample ST21 Diff from Grand Mean	Sample ST21 CPV	Sample ST22 Lab Mean	Sample ST22 Diff from Grand Mean	Sample ST22 CPV
47WTZ6		247.7	5.4	0.39	306.9	19.7	1.48
4EN9PA		224.8	-17.5	-1.27	270.3	-16.9	-1.27
64KFW9		238.5	-3.8	-0.28	289.6	2.4	0.18
6LHVWY		258.5	16.2	1.18	316.1	28.9	2.17
C6WDEX		251.2	8.9	0.65	291.2	4.0	0.30
CFUHXX		214.4	-27.9	-2.03	274.0	-13.2	-0.99
CW3CRT		238.2	-4.1	-0.30	277.5	-9.7	-0.73
HVQGWN		255.8	13.5	0.98	277.4	-9.8	-0.74
HZJJZN		237.9	-4.4	-0.32	286.2	-1.0	-0.08
LGF9KA	X	90.8	-151.5	-11.03	114.5	-172.7	-12.96
TGTA8A		237.8	-4.6	-0.33	278.3	-8.9	-0.67
U7MWF9		232.2	-10.1	-0.73	279.1	-8.1	-0.61
WAFC68		251.5	9.2	0.67	291.5	4.3	0.32
XYDEVD		261.5	19.2	1.40	295.5	8.3	0.62

Summary Statistics

	Sample ST21	Sample ST22
Grand Means	242.31 Taber Units	287.19 Taber Units
SD Btwn Labs	13.73 Taber Units	13.32 Taber Units

Statistics based on 13 of 14 reporting participants

Comments on assigned Data Flags for Test #340

LGF9KA (X) - Extreme data.

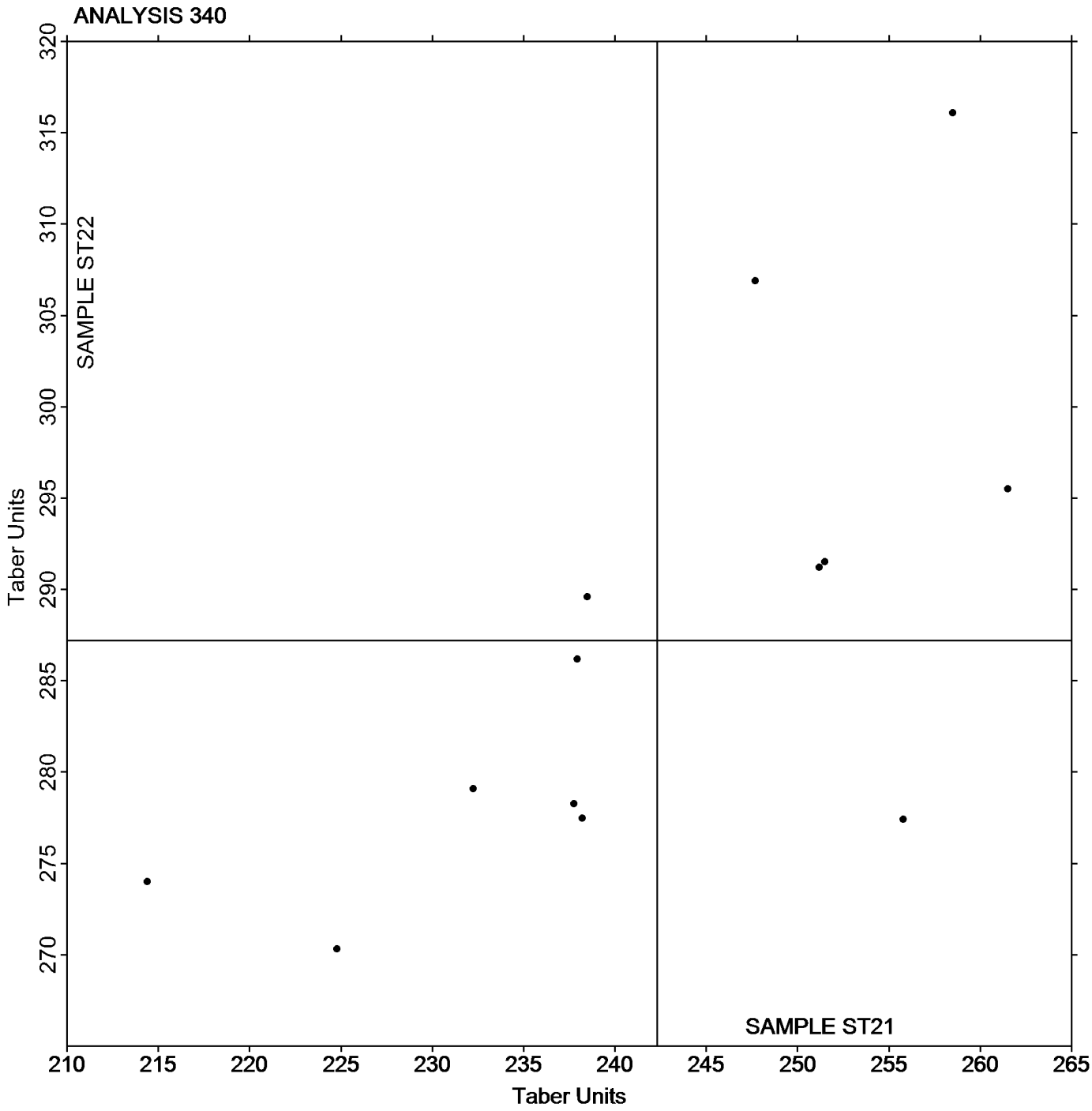
TAPPI-CTS Interlaboratory Testing Program

Analysis 340

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

Grand Mean Sample **ST21** = 242.31 Taber Units

Grand Mean Sample **ST22** = 287.19 Taber Units



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 343
Z-Direction Tensile

WebCode	Data Flag	Sample SM21 Lab Mean	Sample SM21 Diff from Grand Mean	Sample SM21 CPV	Sample SM22 Lab Mean	Sample SM22 Diff from Grand Mean	Sample SM22 CPV	Instr Code
3YK6X6		74.44	0.47	0.05	96.26	10.87	0.95	TA
6U4J23		89.78	15.81	1.83	103.52	18.13	1.58	TL
9JRQXC		64.98	-8.99	-1.04	74.64	-10.75	-0.94	TZ
A2MJJB		71.94	-2.03	-0.23	92.18	6.79	0.59	CD
A4MWV3		85.52	11.55	1.34	95.54	10.15	0.88	LW
CFUHXX	*	73.18	-0.79	-0.09	66.88	-18.51	-1.61	LW
CHLBFW		75.14	1.17	0.14	88.08	2.69	0.23	TA
CW3CRT		63.85	-10.12	-1.17	72.40	-12.99	-1.13	XX
CXHR6U		76.71	2.74	0.32	91.19	5.80	0.51	LW
EAJ3M2		74.48	0.51	0.06	88.46	3.07	0.27	LW
EXQJ9V		71.10	-2.87	-0.33	74.30	-11.09	-0.97	DT
G3QQHV		76.20	2.23	0.26	81.40	-3.99	-0.35	TA
HQZACU		81.44	7.47	0.87	95.96	10.57	0.92	LW
JEKPKK		64.18	-9.79	-1.13	79.30	-6.09	-0.53	DT
LGF9KA		86.96	12.99	1.50	101.24	15.85	1.38	CA
N3LR8K		69.50	-4.47	-0.52	78.30	-7.09	-0.62	DT
QTVXZG		59.55	-14.41	-1.67	68.08	-17.31	-1.51	LW
TRQ9UA		77.20	3.23	0.37	94.40	9.01	0.79	TA
W3G3HF		60.30	-13.66	-1.58	71.74	-13.65	-1.19	TZ
WZ9XYZ		82.86	8.89	1.03	93.90	8.51	0.74	TA

Summary Statistics

	Sample SM21	Sample SM22
Grand Means	73.965 psi	85.389 psi
SD Btwn Labs	8.640 psi	11.475 psi

Statistics based on 20 of 20 reporting participants

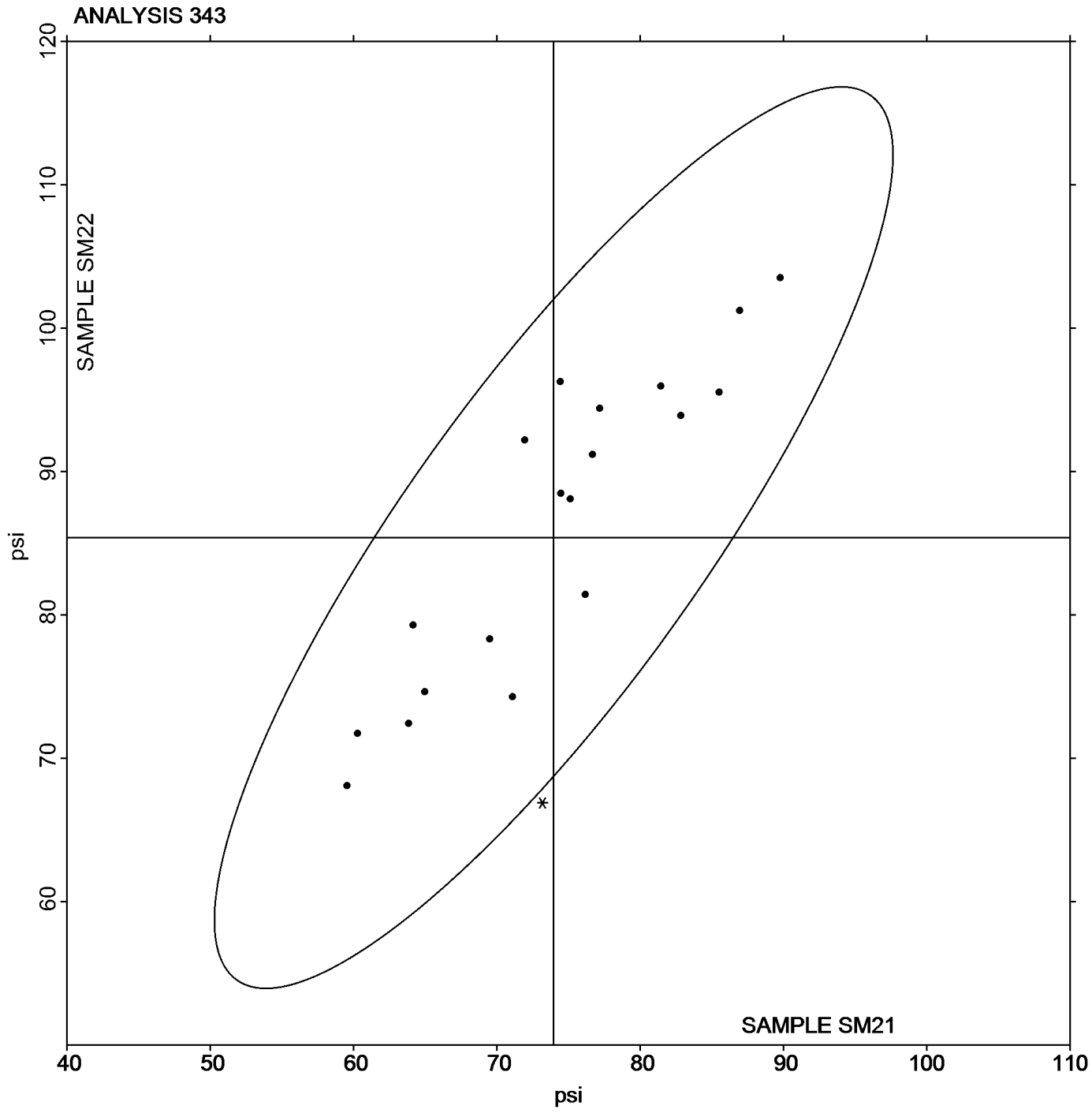
Instrument Code List

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

TAPPI-CTS Interlaboratory Testing Program
Analysis 343
Z-Direction Tensile

Grand Mean Sample **SM21** = 73.965 psi

Grand Mean Sample **SM22** = 85.389 psi



TAPPI-CTS Interlaboratory Testing Program
Analysis 345
Z-Direction Tensile, Recycled Paperboard

WebCode	Data Flag	Sample SZ21 Lab Mean	Sample SZ21 Diff from Grand Mean	Sample SZ21 CPV	Sample SZ22 Lab Mean	Sample SZ22 Diff from Grand Mean	Sample SZ22 CPV	Instr Code
2J9EBY		38.72	-1.30	-0.41	33.48	-1.47	-0.91	TL
4EN9PA		44.20	4.18	1.31	37.00	2.05	1.27	CA
64KFW9		40.80	0.78	0.24	36.80	1.85	1.14	CA
6LHVWY		37.26	-2.76	-0.86	34.86	-0.09	-0.06	TL
77R3VY		36.62	-3.40	-1.07	33.52	-1.43	-0.88	LW
BNUC2Z		36.66	-3.36	-1.05	33.44	-1.51	-0.93	CA
BWMMBV		41.04	1.02	0.32	33.44	-1.51	-0.93	TL
GE34KG		40.46	0.44	0.14	32.98	-1.97	-1.22	LW
HVQGWN		38.36	-1.66	-0.52	35.60	0.65	0.40	TL
MYT9TG	X	39.78	-0.24	-0.08	25.10	-9.85	-6.09	LW
Q3HWQL		36.84	-3.18	-1.00	34.44	-0.51	-0.32	CA
U2EDGF		46.22	6.20	1.94	36.83	1.88	1.16	CH
ZZ4J43		43.06	3.04	0.95	37.03	2.08	1.28	XX

Summary Statistics

	Sample SZ21	Sample SZ22
Grand Means	40.020 psi	34.951 psi
SD Btwn Labs	3.192 psi	1.618 psi

Statistics based on 12 of 13 reporting participants

Comments on assigned Data Flags for Test #345

MYT9TG (X) - Extreme data for Sample SZ22.

Instrument Code List

(CA) - CSI CS-163

(CH) - Chatillon Ametek

(LW) - L & W ZD Tensile Tester

(TL) - TMI Lab Master

(XX) - Instrument make/model not specified by lab

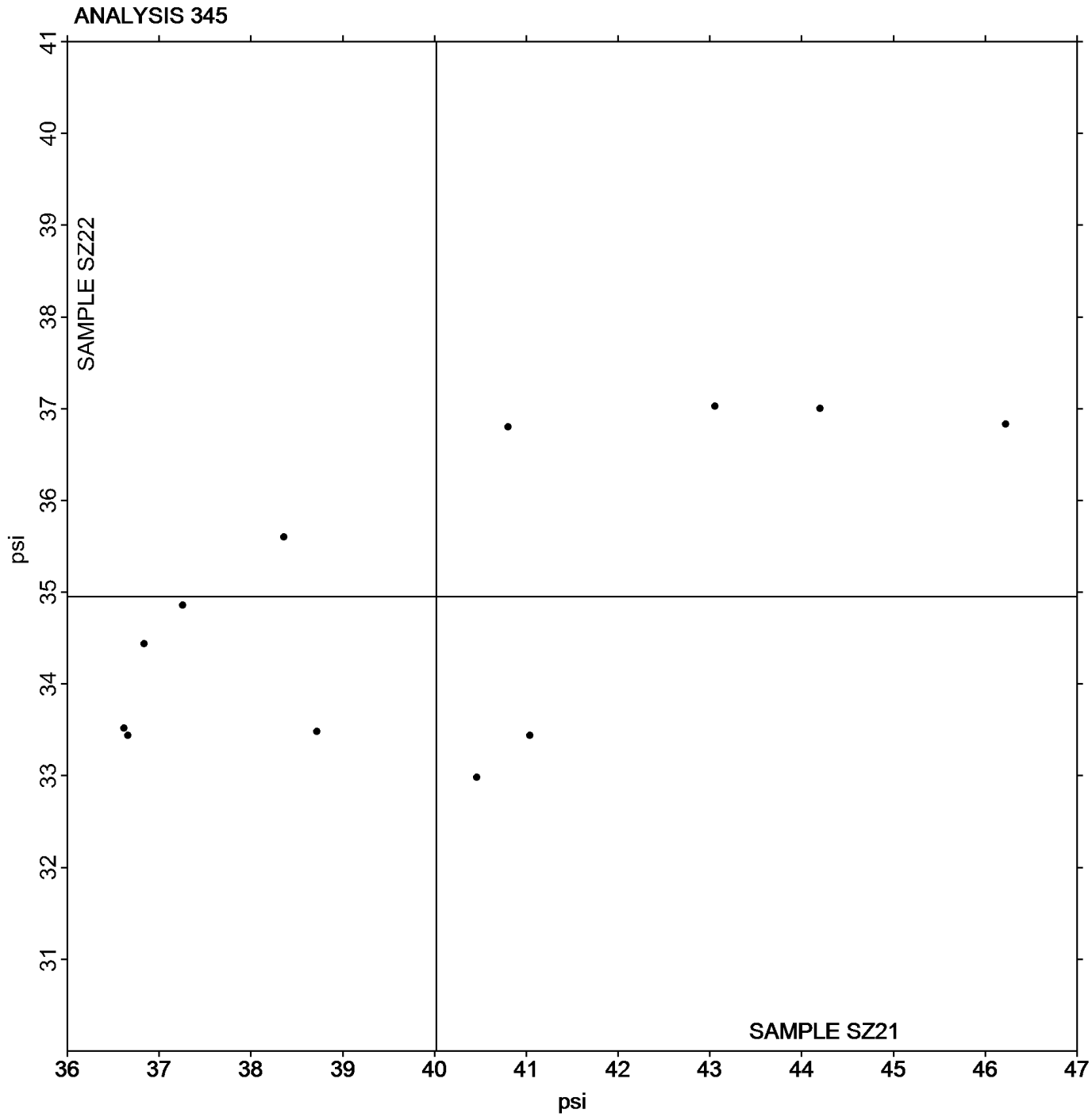
TAPPI-CTS Interlaboratory Testing Program

Analysis 345

Z-Direction Tensile, Recycled Paperboard

Grand Mean Sample **SZ21** = 40.020 psi

Grand Mean Sample **SZ22** = 34.951 psi



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

TAPPI-CTS Interlaboratory Testing Program
Analysis 348
Internal Bond Strength - Modified Scott Mechanics

WebCode	Data Flag	Sample SN21 Lab Mean	Sample SN21 Diff from Grand Mean	Sample SN21 CPV	Sample SN22 Lab Mean	Sample SN22 Diff from Grand Mean	Sample SN22 CPV	Instr Code
3YK6X6		82.00	5.16	0.80	108.20	10.26	1.38	HY
72ECLX		73.20	-3.64	-0.57	93.60	-4.34	-0.58	HY
9JRQXC		85.60	8.76	1.36	102.60	4.66	0.62	HY
9RGLQZ		78.80	1.96	0.30	100.50	2.56	0.34	HY
A2MJJB		76.20	-0.64	-0.10	100.80	2.86	0.38	HY
A4MWV3		86.20	9.36	1.45	108.80	10.86	1.46	XX
A6LUEB		69.80	-7.04	-1.09	93.80	-4.14	-0.55	HY
AQ3AW3		75.40	-1.44	-0.22	91.56	-6.38	-0.85	HY
BJJBVV		78.68	1.84	0.29	95.44	-2.50	-0.33	HZ
C83Y4J		69.20	-7.64	-1.19	88.20	-9.74	-1.31	XX
CFUHXX		69.60	-7.24	-1.12	81.60	-16.34	-2.19	HZ
CHLBFW		92.20	15.36	2.38	112.20	14.26	1.91	HY
D7KDLT		79.68	2.84	0.44	105.60	7.66	1.03	HY
EAJ3M2		72.60	-4.24	-0.66	97.80	-0.14	-0.02	HY
J3MWXF		75.84	-1.00	-0.16	95.08	-2.86	-0.38	KR
MLKBZB		74.80	-2.04	-0.32	95.40	-2.54	-0.34	HY
W3G3HF		67.80	-9.04	-1.40	92.00	-5.94	-0.80	HY
W3LA2B		75.20	-1.64	-0.25	97.00	-0.94	-0.13	HZ
WZ9XYZ		82.60	5.76	0.89	103.60	5.66	0.76	HZ
XZVFN8		71.40	-5.44	-0.84	95.00	-2.94	-0.39	HY

Summary Statistics

	Sample SN21	Sample SN22
Grand Means	76.840 1000th ft-lbs	97.939 1000th ft-lbs
SD Btwn Labs	6.442 1000th ft-lbs	7.462 1000th ft-lbs

Statistics based on 20 of 20 reporting participants

Instrument Code List

(HY) - Huygen Digitized Scott Internal Bond Tester

(HZ) - Huygen Internal Bond Tester with AccuPress

(KR) - Kumagai Riki Kogyo Internal Bond Tester

(XX) - Instrument make/model not specified by lab

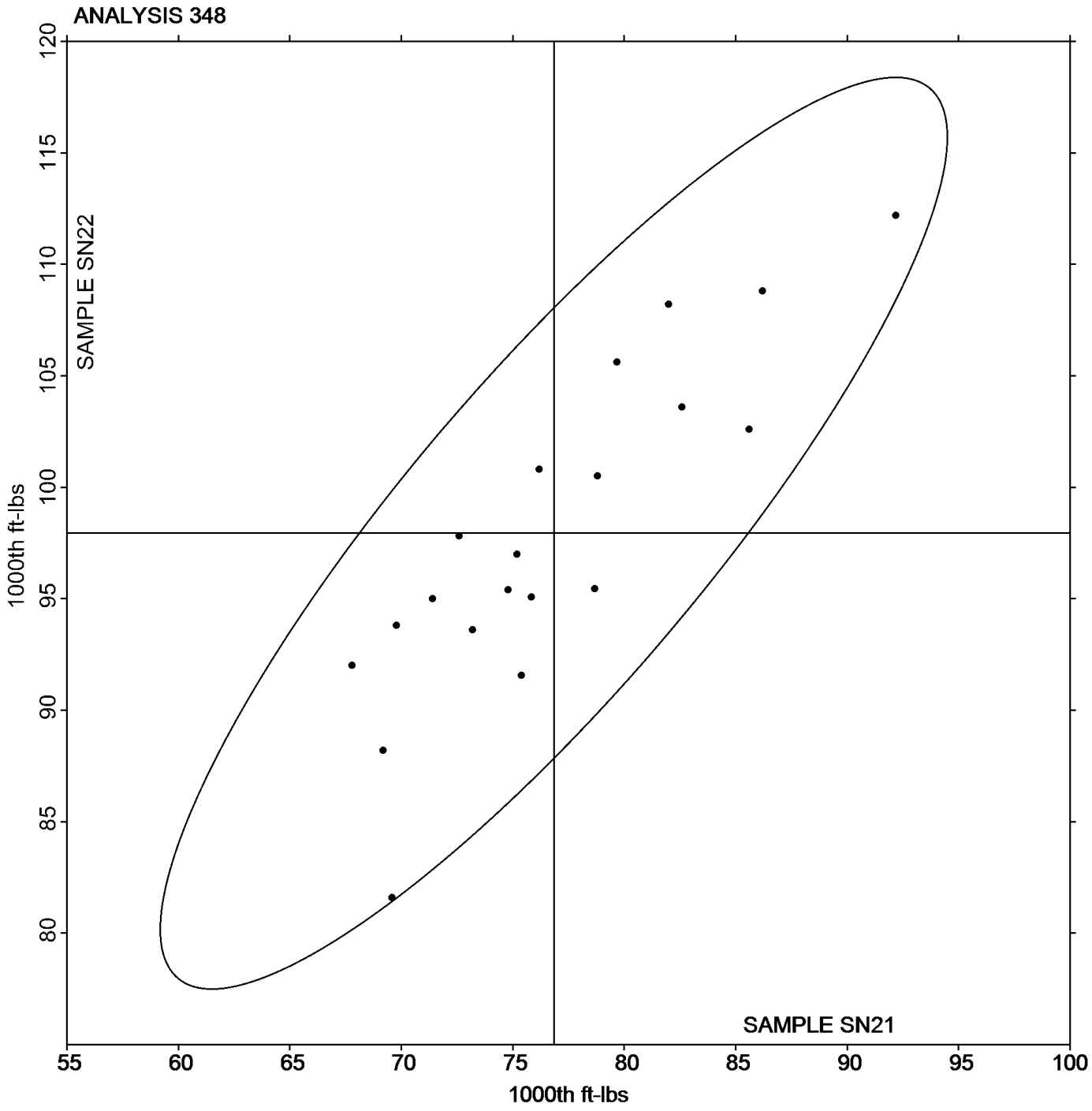
TAPPI-CTS Interlaboratory Testing Program

Analysis 348

Internal Bond Strength - Modified Scott Mechanics

Grand Mean Sample **SN21** = 76.840 1000th ft-lbs

Grand Mean Sample **SN22** = 97.939 1000th ft-lbs



TAPPI-CTS Interlaboratory Testing Program
Analysis 349
Internal Bond Strength - Scott Bond Models

WebCode	Data Flag	Sample SP21 Lab Mean	Sample SP21 Diff from Grand Mean	Sample SP21 CPV	Sample SP22 Lab Mean	Sample SP22 Diff from Grand Mean	Sample SP22 CPV	Instr Code
29ANRC		49.41	-18.64	-1.08	89.78	-5.21	-0.37	TM
CW3CRT		46.06	-21.99	-1.27	76.90	-18.09	-1.28	TM
MYT9TG		84.40	16.34	0.94	76.60	-18.39	-1.30	XX
Q2MBZF		59.79	-8.26	-0.48	89.43	-5.56	-0.39	TM
QQP7EU		67.00	-1.06	-0.06	101.40	6.41	0.45	TM
TGTA8A		74.08	6.02	0.35	118.48	23.49	1.66	SC
U2EDGF		101.60	33.54	1.94	111.60	16.61	1.18	TM
UDN44N		59.77	-8.29	-0.48	95.93	0.94	0.07	XX
XF6CW9		70.40	2.34	0.13	94.80	-0.19	-0.01	TM

Summary Statistics

	Sample SP21	Sample SP22
Grand Means	68.057 1000th ft-lbs	94.991 1000th ft-lbs
SD Btwn Labs	17.333 1000th ft-lbs	14.112 1000th ft-lbs

Statistics based on 9 of 9 reporting participants

Instrument Code List

(SC) - Scott Internal Bond Tester (Manual)

(TM) - TMI Monitor/Internal Bond Tester

(XX) - Instrument make/model not specified by lab

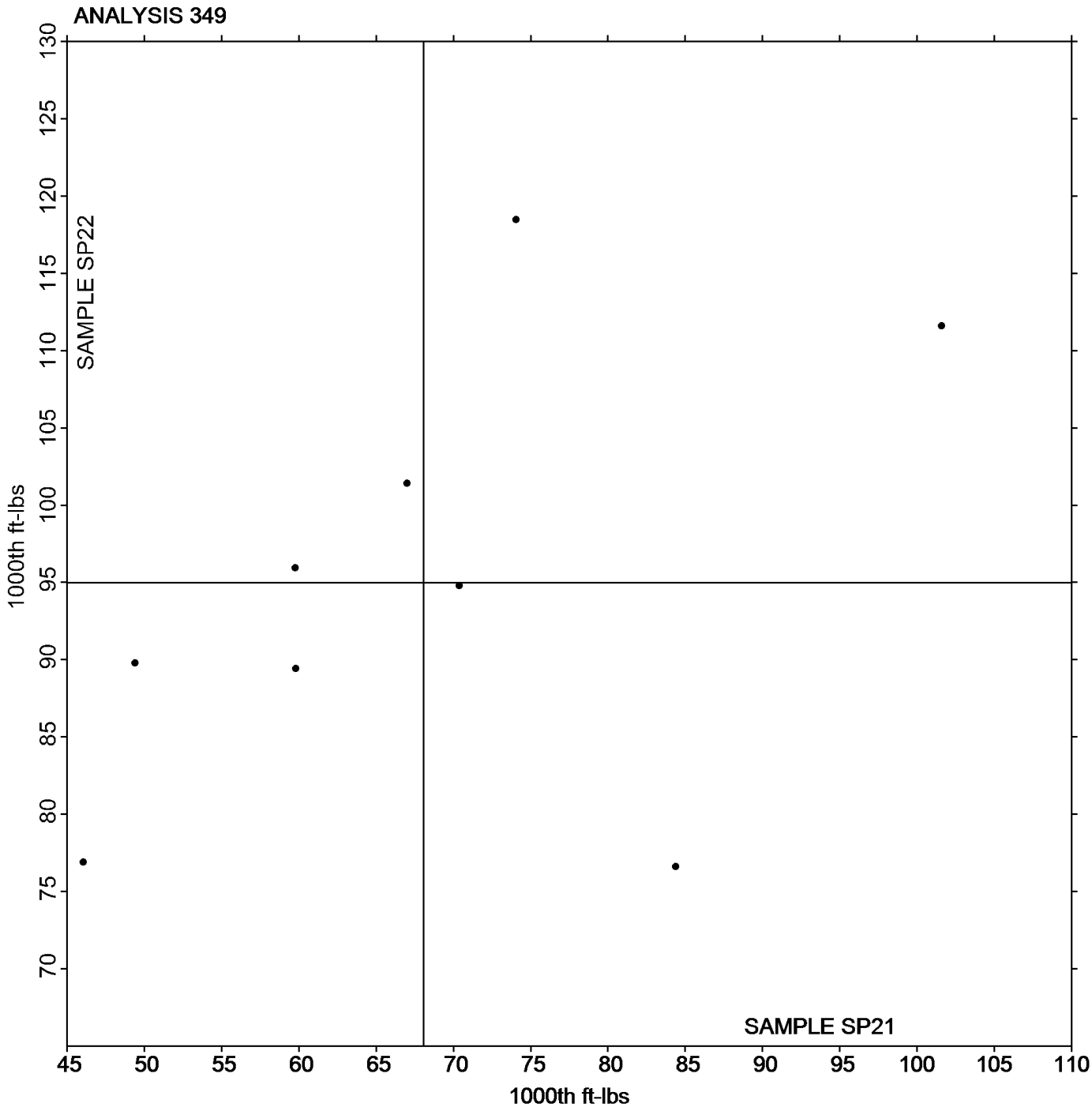
TAPPI-CTS Interlaboratory Testing Program

Analysis 349

Internal Bond Strength - Scott Bond Models

Grand Mean Sample **SP21** = 68.057 1000th ft-lbs

Grand Mean Sample **SP22** = 94.991 1000th ft-lbs



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