



Paper & Paperboard Interlaboratory Testing Program

Summary Report #270S - May 2014

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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:

Collaborative Testing Services, Inc.
21331 Gentry Drive
Sterling, Virginia 20166 USA
+1-571-434-1925
FAX #: +1-571-434-1937
paper@cts-interlab.com

(Toll-free fax within the U.S.: 1-866-fax-2cts)
Office Hours: 8:00 a.m. - 4:30 p.m. ET

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.

Instrument Manufacturer Contacts

If your results have been flagged with an "X" and you suspect that the problem is with your instrument (and not your testing procedure), CTS urges you to contact the appropriate instrument manufacturer. CTS has asked manufacturers to supply a contact person who is familiar with the Paper, Paperboard & Corrugated Fiberboard Interlaboratory Program. The listed service contact should be able to work with you on evaluating your results and determining possible causes of the problem.

Technidyne Corp., Hagerty Div.

George Hagerty
287 Dix Ave. P.O. Box 4741
Queensbury, NY 12804
Phone: (518) 793-2834
FAX #: (518) 792-1796

Technidyne Corporation

Jeff Hobbs / Mike Lankins
100 Quality Avenue
New Albany, IN 47150-2272 USA
Phone: (812) 948-2884
FAX #: (812) 945-6847

Thwing Albert Instrument Co.

Raymond McCart, Service Contact
David Zarrilli, Sales Contact
10960 Dutton Road
Philadelphia, PA 19154
Phone: (215) 637-0100
FAX #: (215) 632-8370

Testing Machines Inc.

Michael Foran, Technical Support Engineer
2910 Expressway Drive South
Islandia, NY 11722
Phone: (631) 439-5400
FAX #: (631) 439-5420

Huygen Corporation

Richard Wade
P.O. Box 316
Waconda, IL 60084
Phone: (815) 455-2200
FAX #: (815) 455-2300

Gurley Precision Instruments

Martin Gordinier, Product Manager
P.O. Box 88
Troy, NY 12181-0088
Phone: (800) 759-1844
FAX #: (518) 274-0336

Lorentzen & Wettre USA Inc.

Bill Crai, Technical Manager
1055 Windward Ridge Pkwy
Suite 160
Alpharetta, GA 30005
Phone: (770) 442-8015
FAX #: (770) 442-6792

Valmet Inc.

Eeva Nettamo, Product Mgr Paper Testing
3100 Medlock Bridge Road - Suite 260
Norcross, GA 30071
Phone: (404) 448-0849
FAX #: (404) 242-8386

Custom Scientific Instruments

DEK-TRON Scientific
Segundo Vargas, Chief Design Engineer
244 East Third Street

Emmerson Apparatus

170 Anderson Street
Portland, ME 04101
Phone: (207) 774-5254

Plainfield, NJ 07060
Phone: (908) 668-1777
FAX #: (908) 668-4794

FAX#: (207) 774-5304

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

WebCode	Data Flag	Sample SA07			Sample SA08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
27EWZ9		21.18	-0.86	-0.31	28.22	-1.14	-0.39
2J24VN		22.58	0.55	0.19	28.69	-0.67	-0.23
9643MV		19.38	-2.65	-0.95	27.90	-1.46	-0.50
9ZZ3TB		19.55	-2.49	-0.89	27.15	-2.21	-0.76
A2E987		20.80	-1.24	-0.44	27.60	-1.76	-0.60
A76UN8		20.49	-1.54	-0.55	27.09	-2.27	-0.78
APJ7HH		23.54	1.51	0.54	31.77	2.41	0.82
ATHHCX		19.99	-2.04	-0.73	26.68	-2.68	-0.92
B4ZEYF	*	17.70	-4.34	-1.55	27.50	-1.86	-0.64
BXQ462		19.60	-2.44	-0.87	29.00	-0.36	-0.12
C93HAU		23.89	1.85	0.66	32.08	2.72	0.93
DGX6TJ		20.13	-1.90	-0.68	27.08	-2.28	-0.78
E922E9		20.40	-1.64	-0.58	27.90	-1.46	-0.50
EDAZQE		27.71	5.68	2.02	35.12	5.76	1.97
FDL9ZQ		21.47	-0.56	-0.20	29.36	0.00	0.00
G663V8		23.85	1.81	0.65	31.34	1.98	0.68
MM7XVR	*	15.91	-6.13	-2.18	21.54	-7.82	-2.68
QRAXJE		21.01	-1.03	-0.37	28.19	-1.17	-0.40
QVBATF		23.57	1.53	0.55	30.17	0.81	0.28
TG6MAU		21.60	-0.43	-0.15	29.21	-0.15	-0.05
TJ86BP	*	28.80	6.76	2.41	37.31	7.95	2.72
U9RTUR		21.81	-0.23	-0.08	28.77	-0.59	-0.20
WFYC42		24.64	2.60	0.93	31.76	2.40	0.82
WM3NAT		25.18	3.14	1.12	30.31	0.95	0.32
XCU73Z		22.85	0.81	0.29	30.05	0.69	0.24
ZBCTDU		24.10	2.06	0.74	30.65	1.29	0.44
ZD3W72		23.22	1.18	0.42	30.36	0.99	0.34

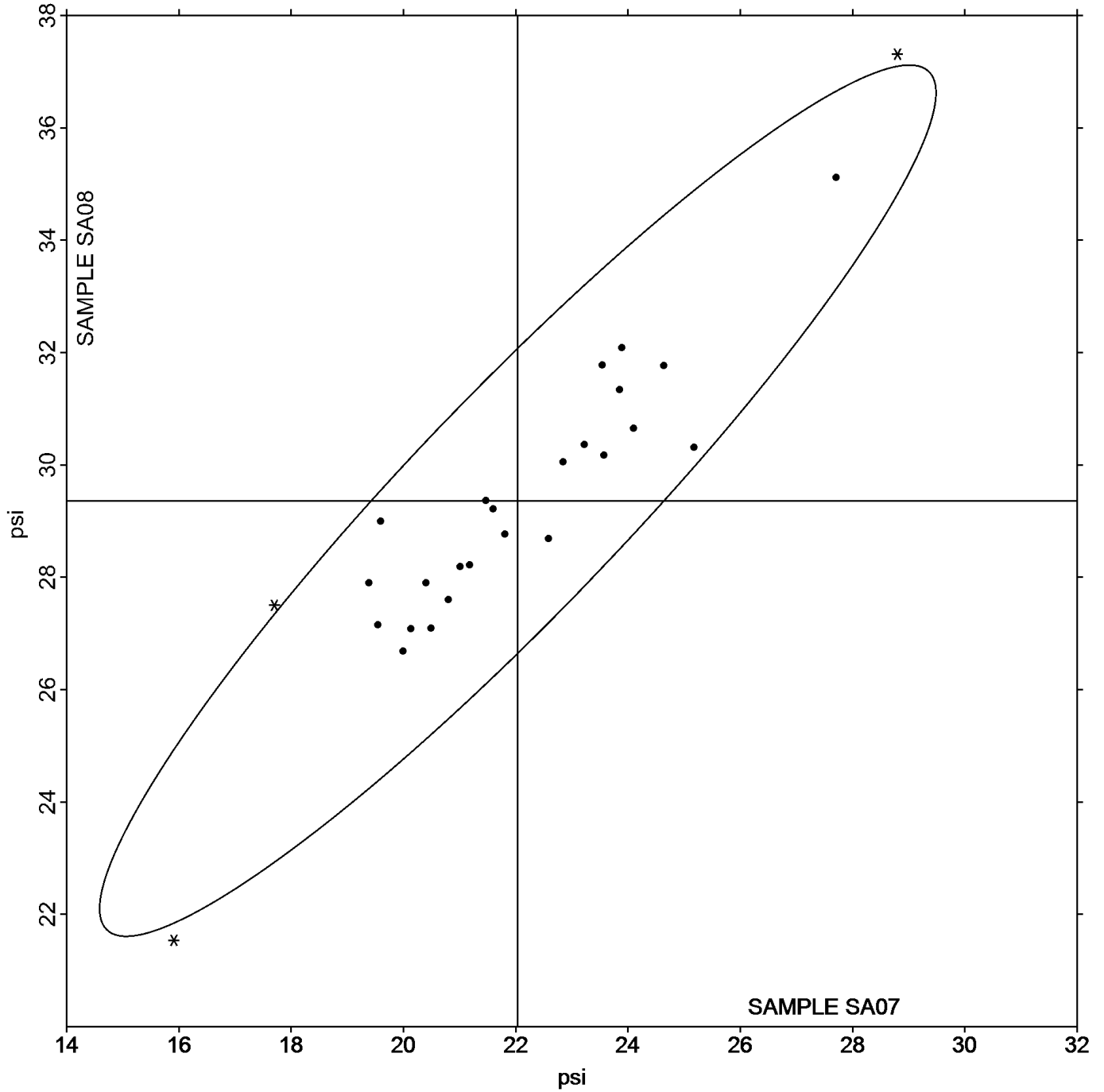
		Summary Statistics	
	Sample SA07		Sample SA08
Grand Means	22.036 psi		29.363 psi
SD Btwn Labs	2.807 psi		2.922 psi
Statistics based on 27 of 27 reporting participants			

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

Grand Mean Sample SA07 = 22.036 psi

Grand Mean Sample SA08 = 29.363 psi

ANALYSIS 305



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

WebCode	Data Flag	Sample SB07			Sample SB08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JYT9D		48.44	-0.80	-0.23	64.54	-2.31	-0.64
2NTC2F		46.60	-2.64	-0.76	67.10	0.25	0.07
3U2QRR		50.20	0.96	0.28	65.70	-1.15	-0.32
4B4HX9		48.20	-1.04	-0.30	69.90	3.05	0.84
6ZYRUC		49.40	0.16	0.05	67.80	0.95	0.26
7Q89XV		53.00	3.76	1.08	72.50	5.65	1.56
APJ7HH		48.15	-1.10	-0.32	68.88	2.03	0.56
BN3AQJ		52.90	3.66	1.05	73.50	6.65	1.83
EGV88A		48.11	-1.13	-0.33	64.38	-2.47	-0.68
ENP8AL		48.33	-0.92	-0.26	68.26	1.41	0.39
EPNHG6		46.80	-2.44	-0.70	64.50	-2.35	-0.65
FMD3LH		45.17	-4.08	-1.18	62.99	-3.86	-1.07
G2PKL3		47.76	-1.48	-0.43	64.73	-2.13	-0.59
GJQCLJ		43.90	-5.34	-1.54	61.02	-5.84	-1.61
HW9MME		44.91	-4.33	-1.25	63.21	-3.64	-1.01
JE8W7B		47.38	-1.86	-0.54	66.17	-0.69	-0.19
JKZ22Z		48.00	-1.25	-0.36	68.35	1.50	0.41
JRF8RY		46.40	-2.84	-0.82	64.45	-2.40	-0.66
K3ENAU		57.57	8.33	2.40	75.32	8.47	2.34
KHK2FQ		47.80	-1.44	-0.42	64.30	-2.55	-0.70
P64ZKU	X	47.62	-1.62	-0.47	54.52	-12.33	-3.40
QL8LRM		49.11	-0.13	-0.04	66.93	0.08	0.02
QRAXJE		53.42	4.18	1.21	69.77	2.92	0.80
RR74TZ		54.22	4.98	1.43	68.06	1.21	0.33
TYL4N4		45.50	-3.75	-1.08	64.08	-2.78	-0.77
VECBNT		49.05	-0.20	-0.06	65.75	-1.11	-0.31
W4M7QD		58.30	9.06	2.61	74.10	7.25	2.00
WZNZL4		49.72	0.48	0.14	62.34	-4.52	-1.25
Z69RCZ		50.26	1.01	0.29	66.73	-0.12	-0.03
ZD3W72		49.47	0.23	0.07	63.41	-3.44	-0.95

Sample SB07		Summary Statistics	Sample SB08	
Grand Means	49.244 psi		66.854 psi	
SD Btwn Labs	3.468 psi		3.625 psi	
Statistics based on 29 of 30 reporting participants				

Comments on assigned Data Flags for Test #310

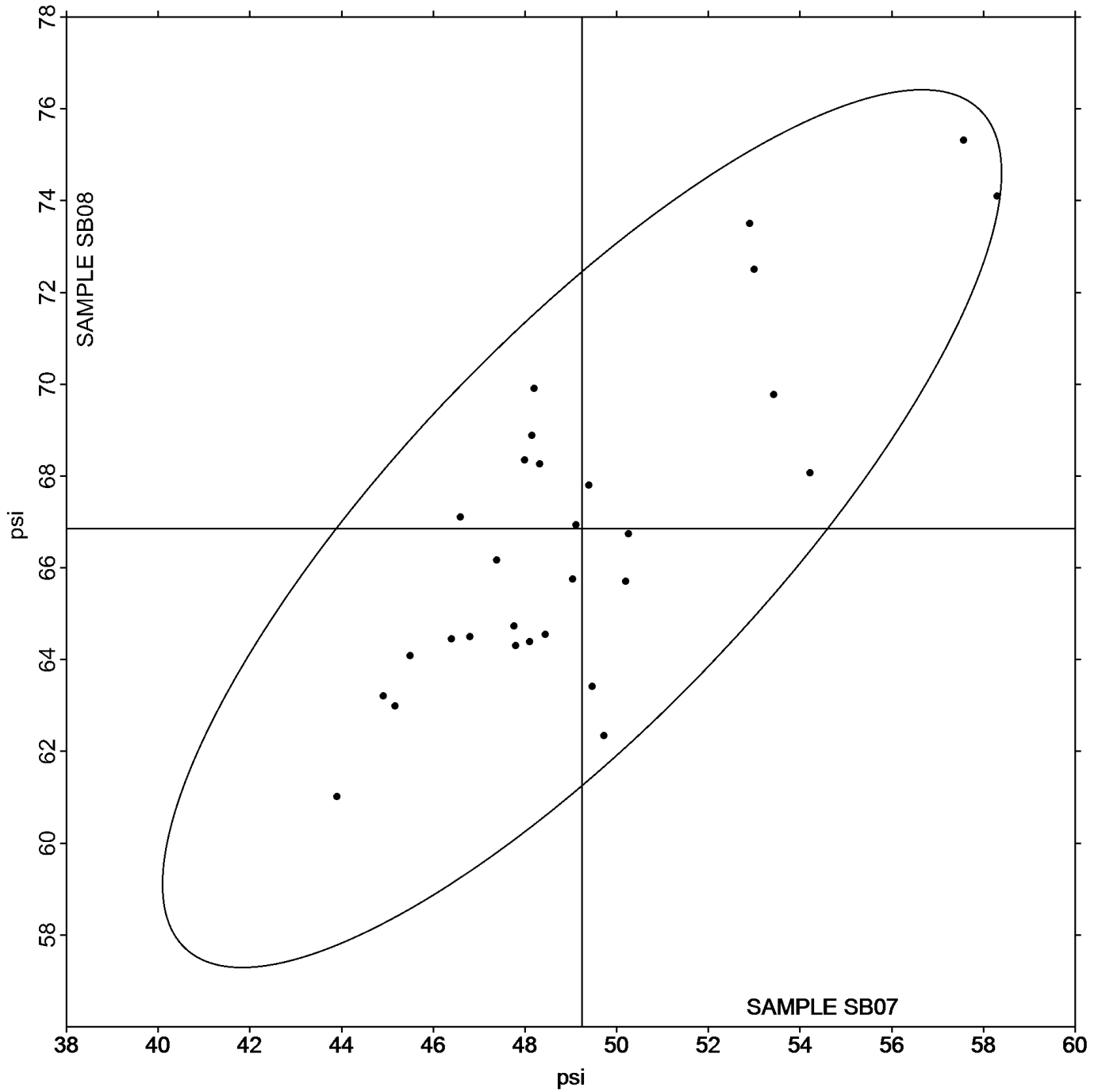
P64ZKU (X) - Inconsistent in testing between samples, data for Sample SB08 are low. Inconsistent within the determinations for Sample SB08.

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

Grand Mean Sample **SB07** = 49.244 psi

Grand Mean Sample **SB08** = 66.854 psi

ANALYSIS 310



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

WebCode	Data Flag	Sample SK07			Sample SK08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22HCU4		24.16	-0.79	-0.57	24.00	-1.03	-0.71
2JYT9D		26.95	2.01	1.45	27.46	2.44	1.67
4A7H82	X	35.67	10.73	7.75	35.24	10.22	7.02
APJ7HH		23.71	-1.24	-0.89	23.76	-1.26	-0.87
G663V8		25.32	0.38	0.27	25.10	0.08	0.05
KW8JW2		26.41	1.47	1.06	26.36	1.34	0.92
M6QGJ	X	36.34	11.40	8.23	36.30	11.28	7.75
P7T4E2		24.86	-0.08	-0.06	24.99	-0.03	-0.02
TG6MAU		23.20	-1.74	-1.26	23.50	-1.52	-1.05

		Summary Statistics			
		Sample SK07		Sample SK08	
Grand Means		24.944 Grams		25.024 Grams	
SD Btwn Labs		1.385 Grams		1.455 Grams	
Statistics based on 7 of 9 reporting participants					

Comments on assigned Data Flags for Test #311

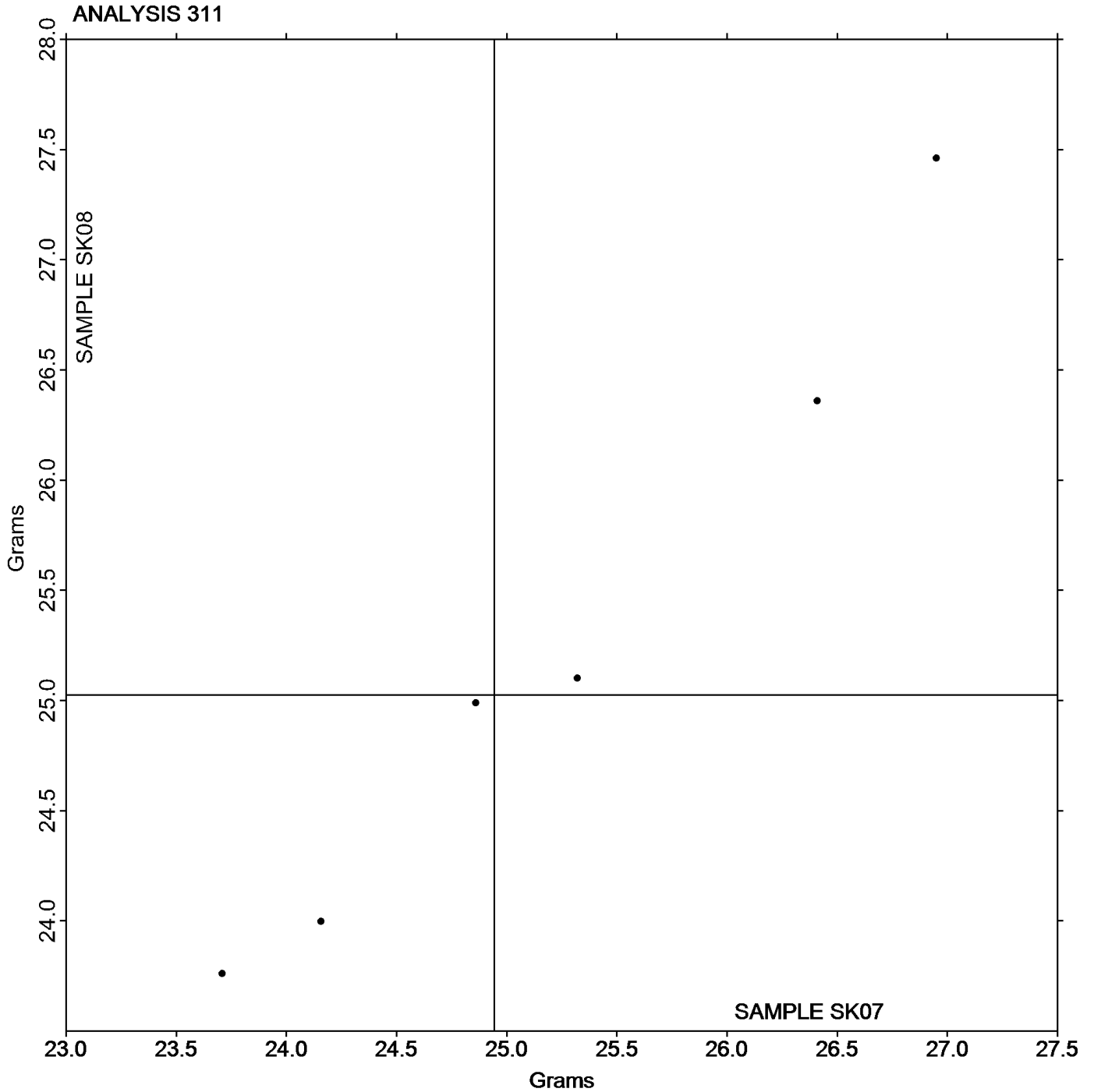
4A7H82 (X) - Data for both samples are high.

M6QGJ (X) - Data for both samples are high.

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

Grand Mean Sample **SK07** = 24.944 Grams

Grand Mean Sample **SK08** = 25.024 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 SC07			Sample SC08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2HMJ8K		48.99	0.10	0.04	66.08	-3.32	-0.86
2J24VN		49.45	0.56	0.20	72.58	3.18	0.82
3QDLNL		49.29	0.40	0.15	72.47	3.07	0.79
4FWWUM		48.77	-0.12	-0.04	71.76	2.36	0.61
7Q89XV	X	49.20	0.31	0.11	68.80	-0.60	-0.16
8C2CET	*	44.00	-4.89	-1.79	59.20	-10.20	-2.64
9643MV		52.10	3.21	1.18	74.68	5.28	1.37
979WZ7		49.97	1.08	0.40	73.55	4.14	1.07
9MF2EB		46.76	-2.13	-0.78	69.90	0.50	0.13
9QY2MY		45.34	-3.55	-1.30	66.52	-2.88	-0.75
A2E987		51.88	2.99	1.10	69.64	0.24	0.06
A387AK	X	58.65	9.76	3.58	68.57	-0.83	-0.22
A76UN8		46.73	-2.16	-0.79	70.56	1.16	0.30
APJ7HH		45.90	-2.99	-1.10	68.86	-0.54	-0.14
ATHHCX		49.10	0.21	0.08	64.10	-5.30	-1.37
B4ZEYF		47.29	-1.60	-0.59	68.88	-0.52	-0.14
BEEFC2		49.70	0.81	0.30	70.20	0.80	0.21
BN3WWH		44.29	-4.60	-1.69	64.78	-4.62	-1.20
C93HAU	*	55.30	6.41	2.35	72.20	2.80	0.72
DGX6TJ		52.56	3.67	1.35	76.74	7.34	1.90
EDAZQE		51.97	3.08	1.13	67.77	-1.64	-0.42
ENCDW7		52.30	3.41	1.25	77.08	7.68	1.99
ENP8AL		48.64	-0.25	-0.09	71.05	1.65	0.43
EPNHG6		50.00	1.11	0.41	73.82	4.42	1.14
FDL9ZQ		50.68	1.79	0.66	73.97	4.57	1.18
FMD3LH		49.82	0.93	0.34	73.94	4.54	1.18
G2PKL3		44.60	-4.29	-1.57	62.96	-6.44	-1.67
GJQCLJ		50.12	1.23	0.45	67.50	-1.91	-0.49
GWFARM		51.30	2.41	0.89	70.30	0.90	0.23
HJN4RP		48.50	-0.39	-0.14	61.86	-7.54	-1.95
J87VR3		50.58	1.69	0.62	67.98	-1.42	-0.37
JE8W7B		48.16	-0.73	-0.27	67.61	-1.79	-0.46
JRF8RY		55.17	6.28	2.31	77.00	7.60	1.97
K2W4WA		48.94	0.05	0.02	67.95	-1.45	-0.38
KRQ4H3		48.72	-0.17	-0.06	68.92	-0.48	-0.13
KXF7FU		51.50	2.61	0.96	70.40	1.00	0.26
LL2HVV	X	61.83	12.94	4.75	83.24	13.84	3.58
MM7XVR		45.73	-3.15	-1.16	70.03	0.62	0.16
NMK8CD		49.60	0.71	0.26	71.44	2.04	0.53
P64ZKU		48.35	-0.54	-0.20	69.88	0.48	0.12
PKCDVK		48.72	-0.17	-0.06	67.60	-1.80	-0.47
QRAXJE		50.74	1.85	0.68	68.90	-0.50	-0.13
QVBATF		46.87	-2.02	-0.74	68.71	-0.69	-0.18

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

WebCode	Data Flag	Sample SC07			Sample SC08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
RQFYZT		44.36	-4.53	-1.66	63.90	-5.50	-1.43
TYL4N4		50.59	1.70	0.62	74.12	4.72	1.22
U4YMFP		48.40	-0.49	-0.18	65.40	-4.00	-1.04
VECBNT		50.69	1.80	0.66	73.80	4.39	1.14
W3DZTR	X	74.00	25.11	9.22	67.20	-2.20	-0.57
WD99BU		47.30	-1.59	-0.58	68.30	-1.10	-0.29
WFYC42	X	53.50	4.61	1.69	64.28	-5.12	-1.33
WM3NAT		52.14	3.25	1.19	72.56	3.16	0.82
WUUX3G		43.83	-5.06	-1.86	66.18	-3.22	-0.83
XCU73Z		46.55	-2.34	-0.86	68.51	-0.89	-0.23
YFBR8T		46.10	-2.79	-1.02	63.40	-6.00	-1.56
YHU6QV		43.58	-5.31	-1.95	67.08	-2.32	-0.60
Z69RCZ		48.76	-0.13	-0.05	67.30	-2.10	-0.54
ZBCTDU		50.64	1.75	0.64	71.20	1.80	0.47
ZD3W72		49.72	0.83	0.31	67.22	-2.18	-0.57

Summary Statistics		
	Sample SC07	Sample SC08
Grand Means	48.889 Grams	69.403 Grams
SD Btwn Labs	2.724 Grams	3.860 Grams
Statistics based on 53 of 58 reporting participants		

Comments on assigned Data Flags for Test #312

- A387AK (X) - Data for Sample SC07 are high. Inconsistent in testing within determinations for both samples.
- LL2HVV (X) - Data for both samples are high. Inconsistent in testing within determinations for Sample SC08.
- W3DZTR (X) - Extreme data for Sample SC07.
- WFYC42 (X) - Inconsistent in testing between samples.

Analysis Notes:

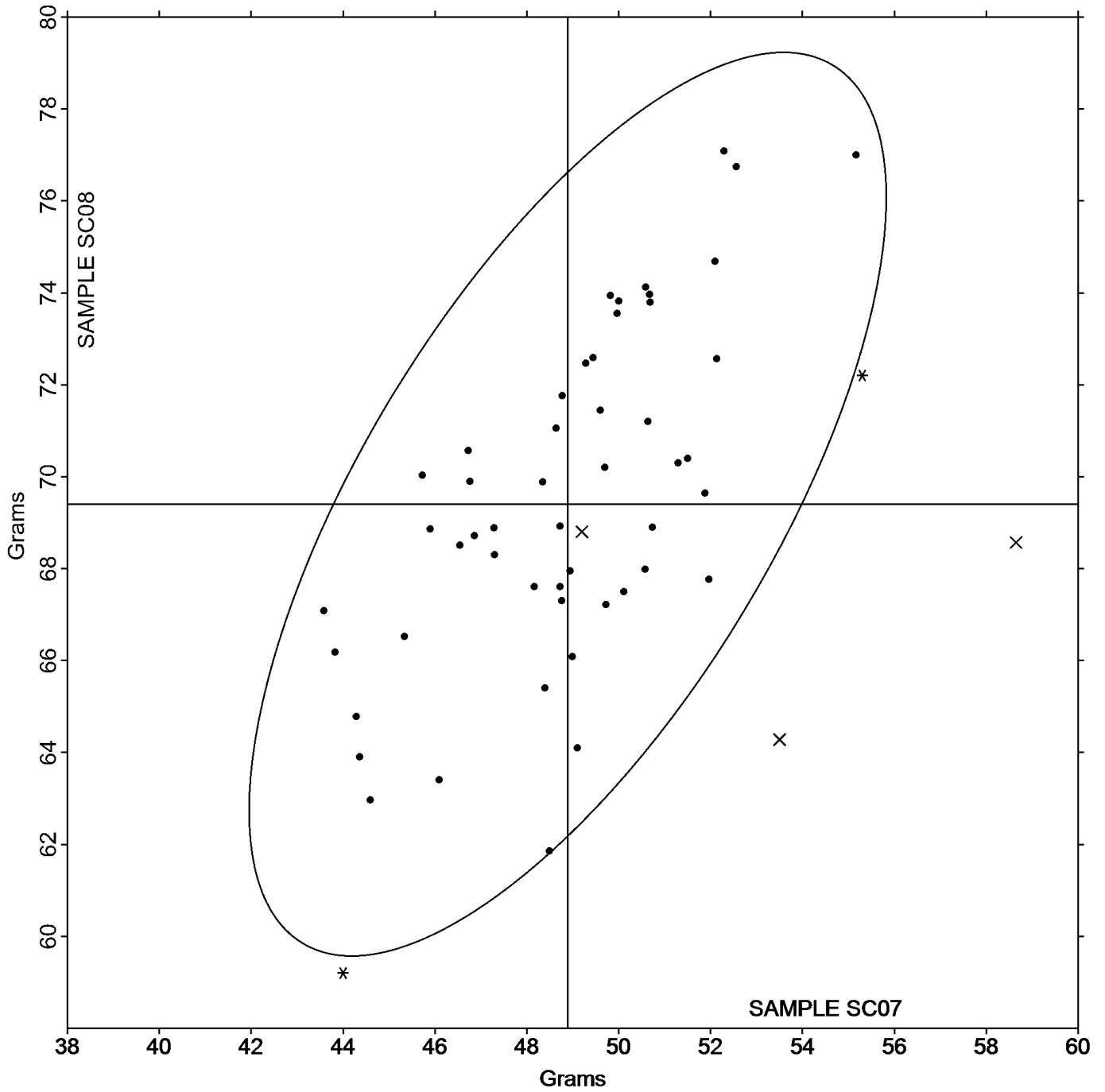
7Q89XV - Data appear to be off by a factor of .5; data converted by CTS (x2).

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

Grand Mean Sample **SC07** = 48.889 Grams

Grand Mean Sample **SC08** = 69.403 Grams

ANALYSIS 312



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

WebCode	Data Flag	Sample SD07			Sample SD08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22HCU4		170.3	-14.1	-0.84	142.9	-6.6	-0.49
27EWZ9		186.4	2.1	0.12	154.0	4.5	0.33
2JYT9D		180.8	-3.5	-0.21	144.6	-4.9	-0.36
2NTC2F		167.2	-17.1	-1.03	142.6	-7.0	-0.52
3U2QRR		178.0	-6.3	-0.38	133.6	-15.9	-1.18
6ZYRUC		167.2	-17.1	-1.03	139.6	-9.9	-0.74
7LGMEA		187.4	3.1	0.18	154.5	5.0	0.37
7Q89XV	X	176.0	-8.3	-0.50	139.2	-10.3	-0.77
7QNF3D		177.2	-7.2	-0.43	144.7	-4.9	-0.36
7YH346		182.2	-2.1	-0.13	150.1	0.6	0.04
9CYW8U		184.1	-0.3	-0.02	142.3	-7.2	-0.54
9PLGWA		200.4	16.0	0.96	162.1	12.5	0.93
9ZZ3TB	*	230.4	46.1	2.76	181.2	31.7	2.35
APJ7HH		177.1	-7.2	-0.43	139.2	-10.4	-0.77
B4ZEYF		171.6	-12.7	-0.76	140.1	-9.4	-0.70
BVMA4B		222.7	38.4	2.30	179.1	29.6	2.20
BXQ462	X	184.2	-0.1	-0.01	169.0	19.5	1.45
DNDVDP		166.4	-17.9	-1.08	140.4	-9.1	-0.68
EGV88A		212.0	27.7	1.66	179.8	30.3	2.25
FLGETR		174.3	-10.1	-0.60	145.4	-4.1	-0.31
FU9P4M		181.5	-2.8	-0.17	143.7	-5.8	-0.43
HA2746	X	164.2	-20.2	-1.21	134.4	-15.1	-1.12
HPVZPR		208.0	23.6	1.42	171.8	22.2	1.65
HULHZW	X	101.9	-82.5	-4.94	73.8	-75.8	-5.63
HW9MME	X	190.0	5.7	0.34	145.4	-4.1	-0.31
JKZ22Z		172.0	-12.3	-0.74	142.5	-7.0	-0.52
KHK2FQ		183.4	-0.9	-0.06	142.4	-7.1	-0.53
LTJETV		188.4	4.1	0.24	144.4	-5.2	-0.38
M8UE3Q		183.3	-1.1	-0.06	151.8	2.3	0.17
PCH93J		195.8	11.4	0.69	158.2	8.6	0.64
QGW7A7		188.6	4.2	0.25	149.2	-0.3	-0.02
QL8LRM		163.2	-21.1	-1.27	131.2	-18.3	-1.36
RWZRYQ		182.2	-2.1	-0.13	152.5	3.0	0.22
TJ86BP		213.6	29.3	1.75	174.0	24.5	1.82
TLGDVN		201.1	16.7	1.00	155.6	6.0	0.45
TV4CK9		169.4	-14.9	-0.89	135.4	-14.1	-1.05
V4BVV4		174.0	-10.4	-0.62	145.5	-4.0	-0.30
W4M7QD		169.4	-14.9	-0.89	129.0	-20.6	-1.53
WGDT6L		161.2	-23.1	-1.39	138.4	-11.1	-0.83
WZNZL4		186.1	1.8	0.11	154.4	4.9	0.36
Y9C84C	X	165.4	-18.9	-1.13	137.4	-12.1	-0.90
Z3HP6Q		179.4	-5.0	-0.30	146.9	-2.6	-0.20

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

	Sample SD07	Summary Statistics	Sample SD08
Grand Means	184.34 Grams		149.53 Grams
SD Btwn Labs	16.69 Grams		13.46 Grams
Statistics based on 36 of 42 reporting participants			

Comments on assigned Data Flags for Test #314

BXQ462 (X) - Inconsistent in testing between samples.

HULHZW (X) - Data for both samples are low. Inconsistent in testing within determinations for Sample SD07.

Analysis Notes:

7Q89XV - Data appear to be off by a factor of .25; data converted by CTS (x4).

HA2746 - Data appear to be off by a factor of .25; data converted by CTS (x4).

HW9MME - Data appear to be off by a factor of .25; data converted by CTS (x4).

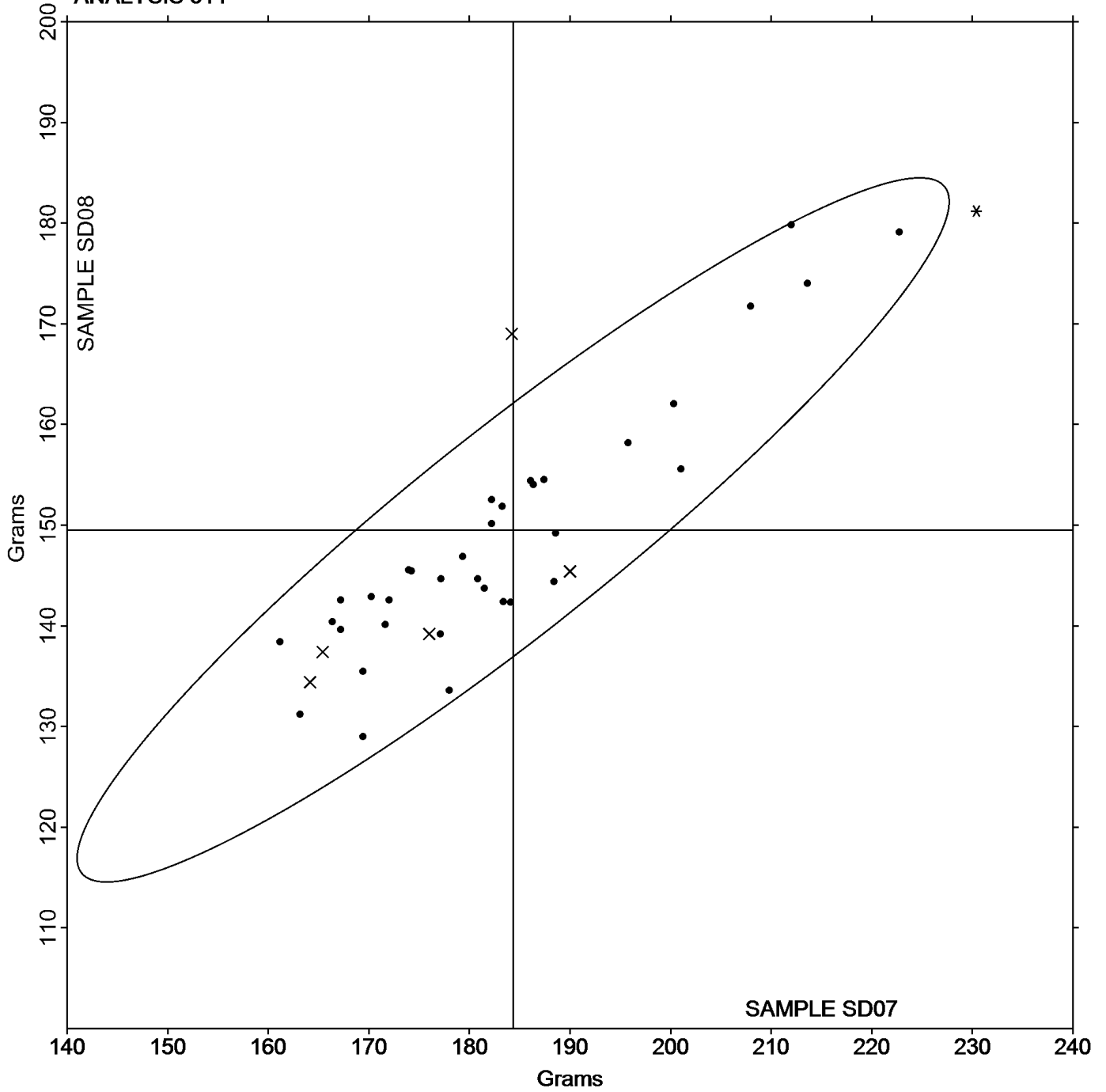
Y9C84C - Data appear to be off by a factor of .25; data converted by CTS (x4).

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

Grand Mean Sample **SD07** = 184.34 Grams

Grand Mean Sample **SD08** = 149.53 Grams

ANALYSIS 314



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

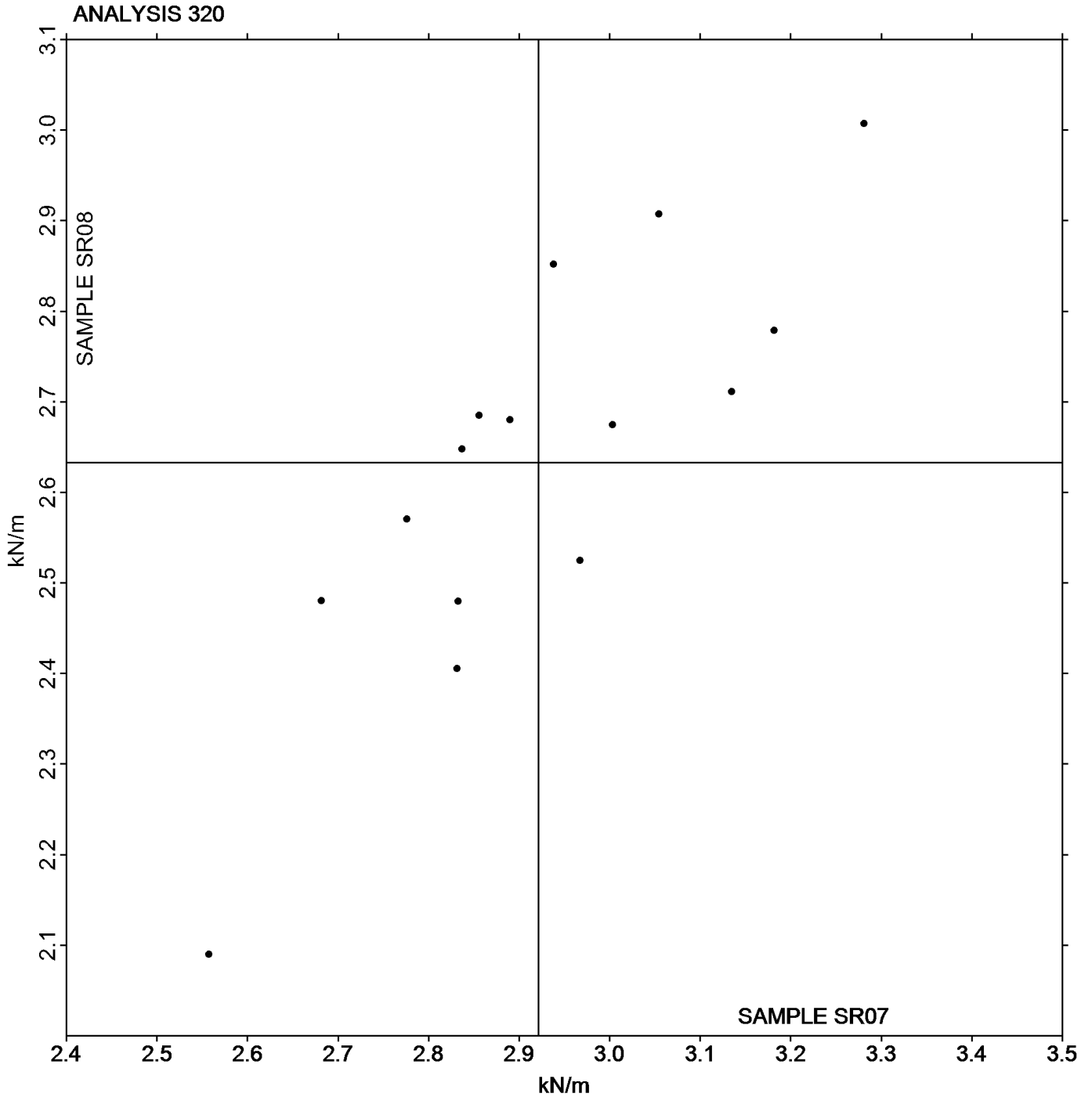
WebCode	Data Flag	Sample SR07			Sample SR08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22HCU4		3.182	0.260	1.37	2.779	0.146	0.65
2JYT9D		3.054	0.133	0.70	2.907	0.274	1.22
3NAEGB		2.831	-0.090	-0.47	2.405	-0.228	-1.01
4A7H82		2.776	-0.145	-0.76	2.570	-0.063	-0.28
BEEFC2		2.890	-0.032	-0.17	2.680	0.047	0.21
BN3AQJ		2.833	-0.089	-0.47	2.480	-0.153	-0.68
C93HAU		3.135	0.213	1.12	2.711	0.078	0.35
G663V8		3.003	0.082	0.43	2.675	0.042	0.19
KW8JW2		2.557	-0.364	-1.91	2.090	-0.543	-2.42
M6QGJ		2.837	-0.085	-0.44	2.648	0.015	0.07
P7T4E2		2.938	0.016	0.09	2.852	0.219	0.98
TG6MAU		2.967	0.046	0.24	2.525	-0.108	-0.48
TRHGCU		3.281	0.359	1.89	3.007	0.374	1.67
Y9Q78G		2.856	-0.065	-0.34	2.685	0.052	0.23
ZD3W72		2.682	-0.240	-1.26	2.480	-0.153	-0.68

		Summary Statistics			
		Sample SR07		Sample SR08	
Grand Means		2.9215 kN/m		2.6329 kN/m	
SD Btwn Labs		0.1907 kN/m		0.2246 kN/m	
Statistics based on 15 of 15 reporting participants					

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

Grand Mean Sample **SR07** = 2.9215 kN/m

Grand Mean Sample **SR08** = 2.6329 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 SR07			Sample SR08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22HCU4		25.63	3.66	1.14	16.65	0.27	0.12
2JYT9D		22.51	0.55	0.17	18.26	1.88	0.83
3NAEGB		25.26	3.30	1.03	16.40	0.03	0.01
4A7H82		18.42	-3.54	-1.11	14.10	-2.28	-1.00
BEEFC2		22.51	0.54	0.17	17.57	1.19	0.52
BN3AQJ		16.74	-5.22	-1.63	11.99	-4.39	-1.93
G663V8		23.26	1.29	0.40	17.22	0.84	0.37
M6QGJ		18.23	-3.74	-1.17	14.05	-2.33	-1.02
P7T4E2		23.33	1.37	0.43	19.35	2.97	1.30
TG6MAU		26.00	4.03	1.26	17.54	1.16	0.51
TRHGCU		24.09	2.12	0.66	18.33	1.96	0.86
Y9Q78G		22.12	0.16	0.05	18.16	1.78	0.78
ZD3W72		17.45	-4.51	-1.41	13.29	-3.09	-1.36

Summary Statistics		
	Sample SR07	Sample SR08
Grand Means	21.965 Joules/sq m	16.377 Joules/sq m
SD Btwn Labs	3.206 Joules/sq m	2.280 Joules/sq m
Statistics based on 13 of 13 reporting participants		

TAPPI-CTS Interlaboratory Testing Program

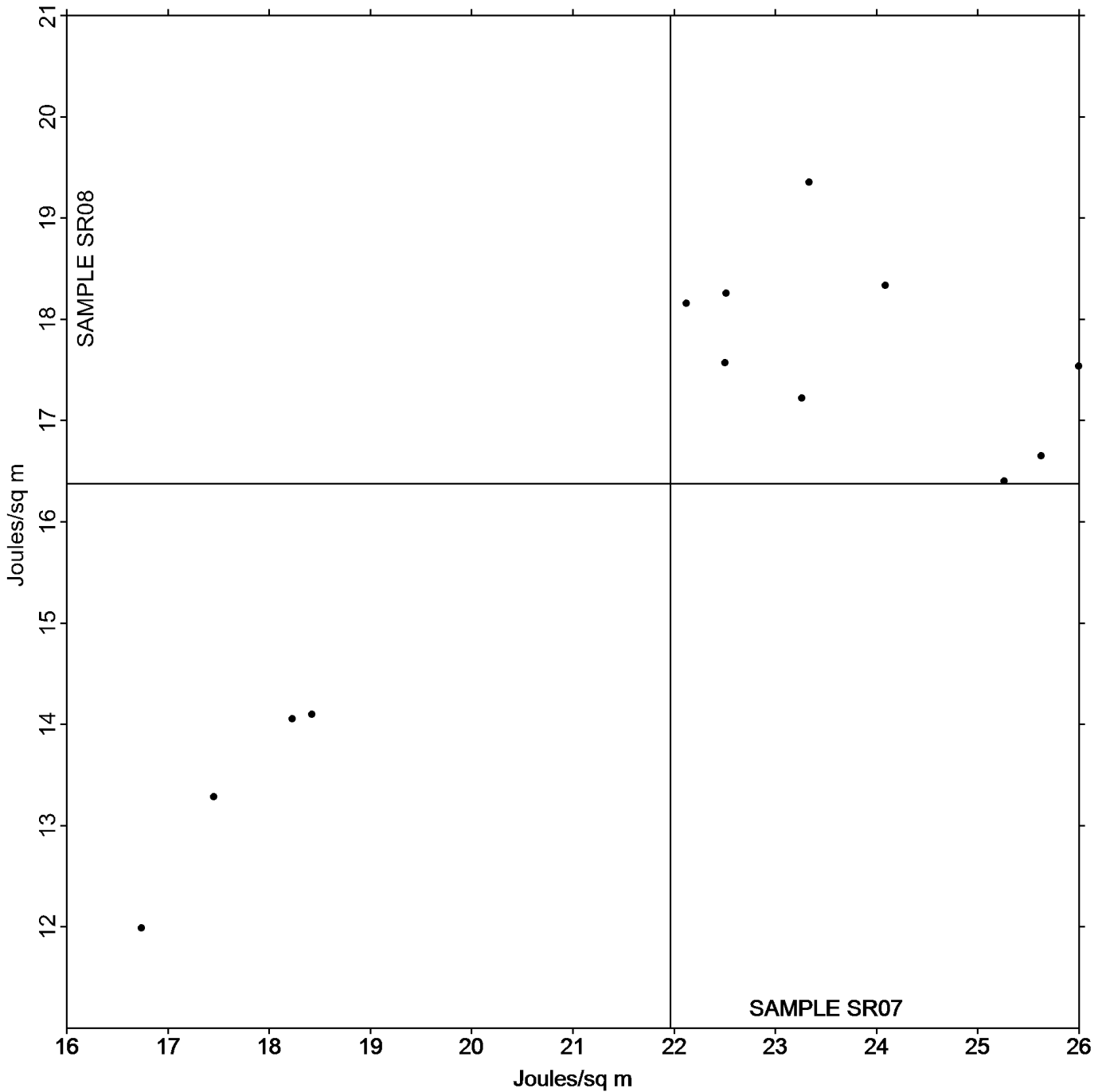
Analysis 321

Tensile Energy Absorption - Newsprint

Grand Mean Sample **SR07** = 21.965 Joules/sq m

Grand Mean Sample **SR08** = 16.377 Joules/sq m

ANALYSIS 321



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

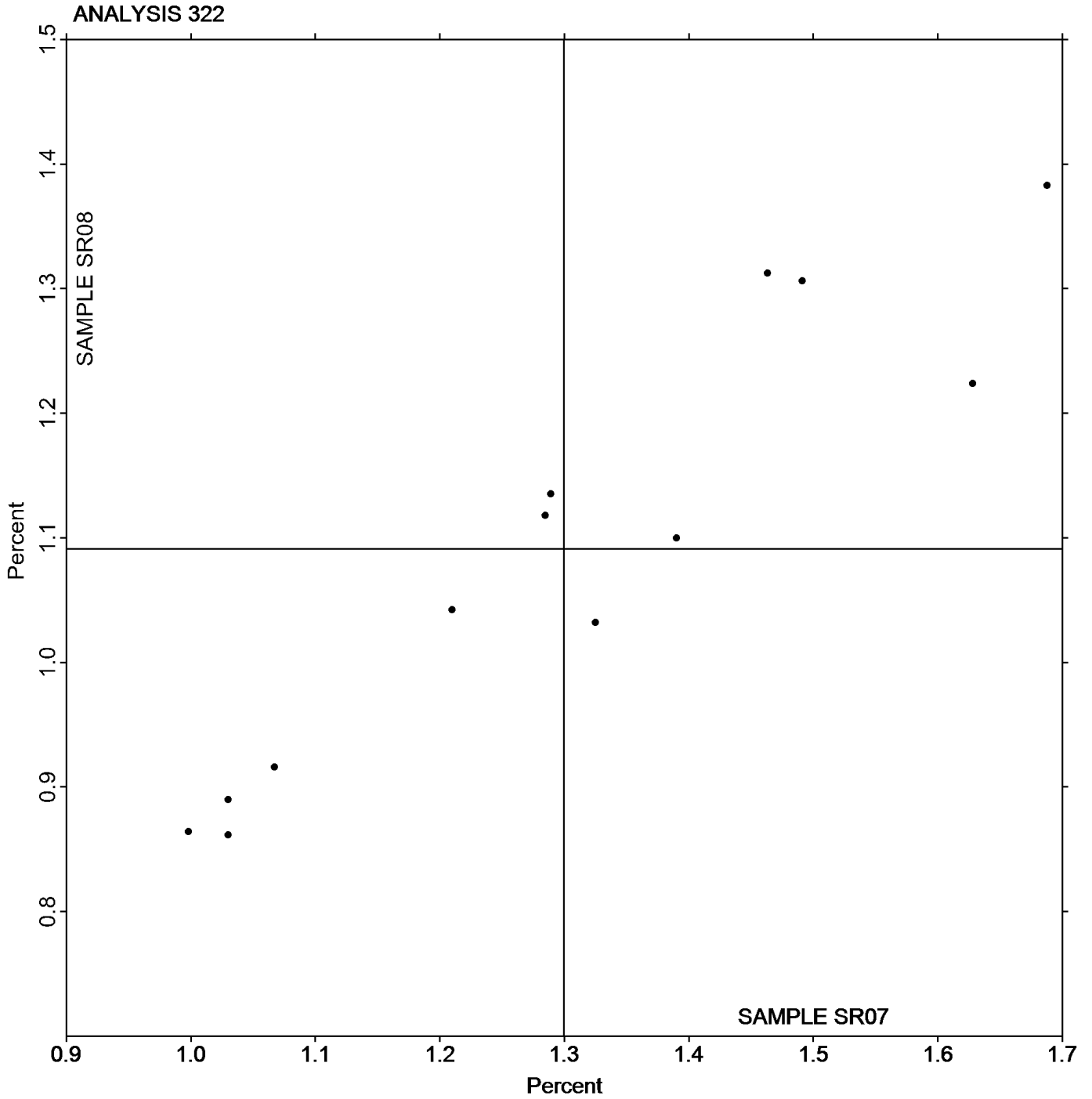
WebCode	Data Flag	Sample SR07			Sample SR08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22HCU4		1.325	0.025	0.11	1.032	-0.059	-0.33
2JYT9D		0.998	-0.302	-1.32	0.864	-0.227	-1.27
3NAEGB		1.628	0.328	1.43	1.224	0.133	0.74
BEEFC2		1.285	-0.015	-0.06	1.118	0.027	0.15
BN3AQJ		1.030	-0.270	-1.18	0.862	-0.229	-1.29
C93HAU		1.390	0.090	0.40	1.100	0.009	0.05
G663V8		1.491	0.191	0.84	1.306	0.215	1.20
M6QGUA		1.030	-0.270	-1.18	0.890	-0.201	-1.13
P7T4E2		1.289	-0.011	-0.05	1.135	0.044	0.25
TG6MAU		1.688	0.388	1.69	1.383	0.292	1.64
TRHGCU		1.210	-0.090	-0.39	1.042	-0.049	-0.28
Y9Q78G		1.463	0.164	0.71	1.313	0.221	1.24
ZD3W72		1.067	-0.233	-1.02	0.916	-0.175	-0.98

		Summary Statistics			
		Sample SR07		Sample SR08	
Grand Means		1.2995	Percent	1.0911	Percent
SD Btwn Labs		0.2290	Percent	0.1784	Percent
Statistics based on 13 of 13 reporting participants					

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

Grand Mean Sample **SR07** = 1.2995 Percent

Grand Mean Sample **SR08** = 1.0911 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 SF07			Sample SF08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2HMJ8K		4.750	-0.013	-0.05	4.036	-0.101	-0.42	TP
2J24VN		4.757	-0.006	-0.02	3.975	-0.162	-0.67	LH
3QDLNL		4.339	-0.424	-1.54	4.023	-0.114	-0.47	IM
4FWWUM		4.691	-0.072	-0.26	3.933	-0.204	-0.84	LI
6PEH84		4.802	0.039	0.14	4.065	-0.072	-0.30	LA
9643MV		4.347	-0.416	-1.51	3.689	-0.448	-1.85	ID
979WZ7		4.308	-0.455	-1.65	3.685	-0.452	-1.87	SP
9MF2EB		4.770	0.007	0.03	4.003	-0.133	-0.55	TI
9QY2MY		4.869	0.106	0.38	4.243	0.106	0.44	LF
9VTWTD		5.243	0.480	1.74	4.368	0.231	0.96	TB
A2E987		4.579	-0.184	-0.67	3.946	-0.191	-0.79	TB
A76UN8		5.075	0.312	1.13	4.410	0.273	1.13	LH
APJ7HH		4.926	0.163	0.59	4.362	0.225	0.93	LH
CVJ8RB	*	5.553	0.790	2.87	4.810	0.674	2.79	TJ
DGX6TJ		4.416	-0.347	-1.26	3.833	-0.304	-1.26	IM
ECFYLV	*	4.644	-0.119	-0.43	4.347	0.210	0.87	TP
EDAZQE		4.460	-0.303	-1.10	3.938	-0.199	-0.82	LA
ENCDW7		4.385	-0.378	-1.37	3.976	-0.160	-0.66	LH
ENP8AL		4.514	-0.249	-0.90	3.941	-0.196	-0.81	XX
EPNHG6		4.451	-0.312	-1.13	3.925	-0.211	-0.87	TP
FDL9ZQ		4.930	0.167	0.60	4.347	0.210	0.87	LH
FMD3LH		4.913	0.150	0.54	4.120	-0.017	-0.07	LI
G2PKL3		4.912	0.149	0.54	4.384	0.247	1.02	TA
GJQCLJ		4.753	-0.010	-0.04	4.097	-0.040	-0.17	LH
GWFARM		4.792	0.029	0.11	4.034	-0.103	-0.43	TC
HJN4RP		4.524	-0.239	-0.87	4.008	-0.129	-0.53	TF
HJNCCP		4.448	-0.315	-1.14	3.886	-0.251	-1.04	RE
J87VR3		4.978	0.215	0.78	4.363	0.227	0.94	MR
K2W4WA		4.785	0.022	0.08	4.236	0.099	0.41	LE
KRQ4H3		4.656	-0.107	-0.39	4.076	-0.060	-0.25	BU
KXF7FU		5.083	0.320	1.16	4.242	0.105	0.44	LH
MM7XVR		5.167	0.404	1.47	4.537	0.400	1.66	LX
NMK8CD		4.656	-0.107	-0.39	4.025	-0.111	-0.46	LH
PKCDVK		5.045	0.282	1.02	4.414	0.278	1.15	TB
QL8LRM		4.771	0.008	0.03	4.107	-0.029	-0.12	IM
QRAXJE		4.435	-0.328	-1.19	3.996	-0.140	-0.58	DL
QVBATF		4.463	-0.300	-1.09	3.947	-0.190	-0.78	XX
RQFYZT		5.237	0.474	1.72	4.617	0.481	1.99	LH
RR74TZ		4.769	0.006	0.02	3.929	-0.207	-0.86	TB
TYL4N4		4.573	-0.190	-0.69	3.838	-0.299	-1.24	LI
UN2AQF		5.079	0.315	1.14	4.548	0.411	1.70	XX
VWPVKW		4.842	0.079	0.29	4.284	0.148	0.61	TB
WD99BU		4.950	0.187	0.68	4.333	0.197	0.82	TO

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

WebCode	Data Flag	Sample SF07			Sample SF08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
WFYC42	X	4.753	-0.010	-0.04	4.646	0.510	2.11	TJ
WM3NAT		4.786	0.023	0.08	4.092	-0.045	-0.18	TO
WUUX3G		5.198	0.435	1.58	4.386	0.249	1.03	LI
XCU73Z		4.660	-0.104	-0.38	4.277	0.141	0.58	LH
YHU6QV	X	4.880	0.117	0.42	4.749	0.612	2.54	TJ
Z69RCZ		4.688	-0.075	-0.27	3.986	-0.151	-0.63	XX
ZBCTDU		4.898	0.135	0.49	4.130	-0.006	-0.03	LH
ZD3W72		4.518	-0.245	-0.89	3.945	-0.192	-0.79	LH

		Summary Statistics			
		Sample SF07		Sample SF08	
Grand Means		4.7631 kN/m		4.1365 kN/m	
SD Btwn Labs		0.2756 kN/m		0.2415 kN/m	
Statistics based on 49 of 51 reporting participants					

Comments on assigned Data Flags for Test #325

WFYC42 (X) - Inconsistent in testing between samples and within the determinations for Sample SF07.

YHU6QV (X) - Inconsistent in testing between samples and within the determinations for Sample SF08.

Instrument Code List

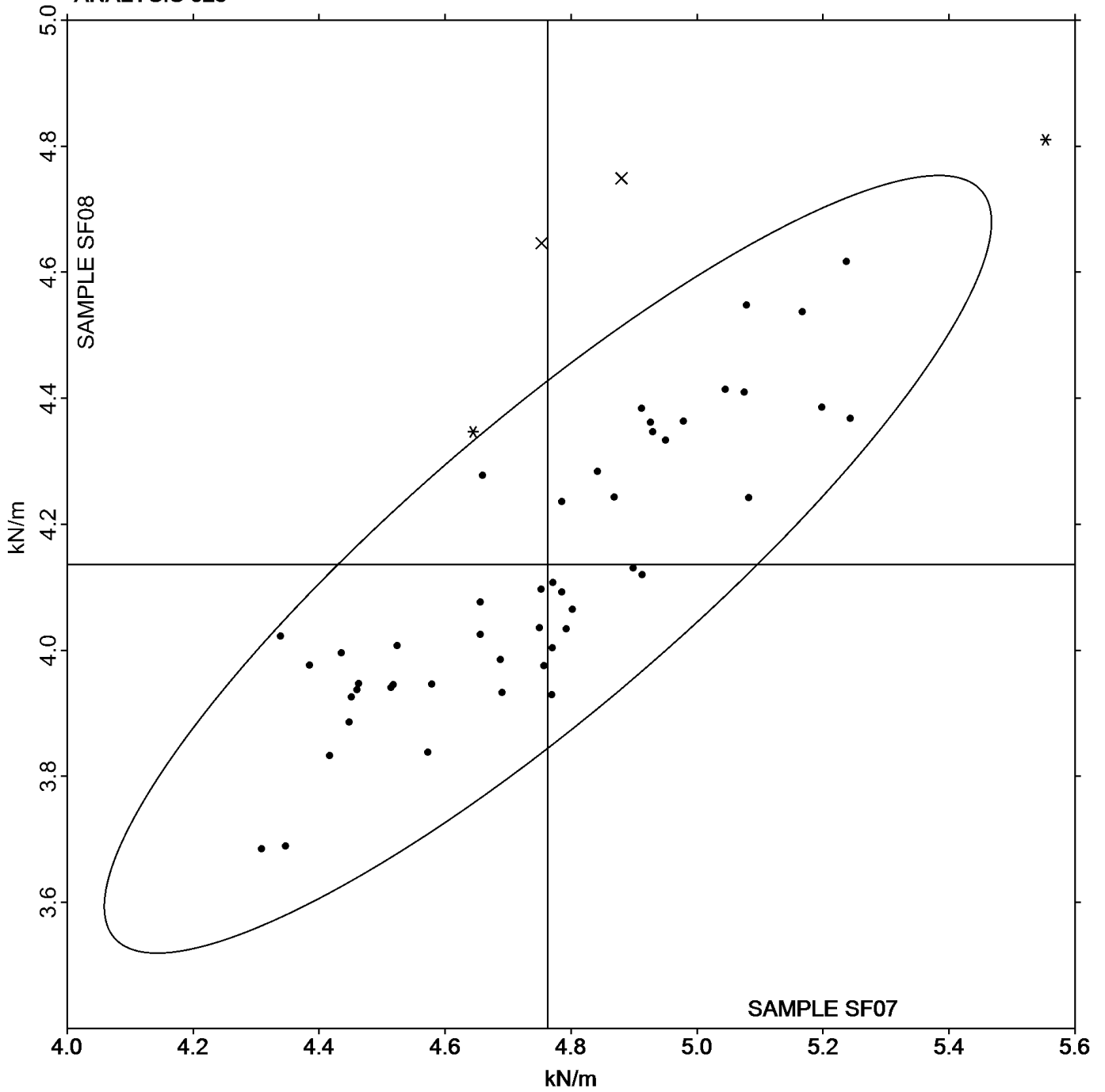
- | | |
|---|--|
| (BU) - Buchel | (DL) - EMIC DL500 Universal Testing Machines |
| (ID) - Instron 4201/4202 | (IM) - Instron 5500 Series |
| (LA) - L & W Tensile - Autoline 300 | (LE) - L & W Tensile Tester 066 |
| (LF) - L & W Tensile/Fracture Toughness Tester SE 064 | (LH) - L & W Alwetron TH1 (Horizontal) SE 060/065F |
| (LI) - L & W Tensile Tester SE 062 | (LX) - L & W (model not specified) |
| (MR) - MTS Alliance RT series | (RE) - Regmed |
| (SP) - Schopper Type Tensile Tester (TMI) | (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 **SF07** = 4.7631 kN/m

Grand Mean Sample **SF08** = 4.1365 kN/m

ANALYSIS 325



TAPPI-CTS Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

WebCode	Data Flag	Sample SF07			Sample SF08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2J24VN		66.45	-0.65	-0.13	35.74	-0.59	-0.21	LH
3QDLNL		63.05	-4.05	-0.80	39.48	3.15	1.10	IM
4FWWUM		68.57	1.48	0.29	34.97	-1.36	-0.48	LI
9643MV		65.67	-1.42	-0.28	34.69	-1.64	-0.57	ID
9MF2EB		68.15	1.06	0.21	35.03	-1.30	-0.46	TI
9QY2MY		60.45	-6.65	-1.31	32.82	-3.51	-1.23	LW
9VTWTD		73.43	6.33	1.24	35.05	-1.28	-0.45	TB
A2E987	X	116.13	49.03	9.63	59.30	22.97	8.05	TB
A76UN8		72.59	5.49	1.08	39.13	2.80	0.98	LH
APJ7HH		59.77	-7.33	-1.44	33.59	-2.74	-0.96	LH
CVJ8RB	X	23.29	-43.80	-8.60	15.73	-20.60	-7.22	TJ
DGX6TJ		71.76	4.66	0.92	37.61	1.28	0.45	IM
ENCDW7	*	52.75	-14.35	-2.82	32.18	-4.15	-1.45	LH
ENP8AL		62.03	-5.06	-0.99	32.20	-4.13	-1.45	XX
EPNHG6	X	46.61	-20.48	-4.02	26.34	-9.99	-3.50	TP
FDL9ZQ		70.25	3.15	0.62	39.72	3.39	1.19	LH
FMD3LH		68.97	1.88	0.37	35.08	-1.25	-0.44	LI
GJQCLJ		70.20	3.10	0.61	37.96	1.63	0.57	LH
HJNCCP		62.26	-4.84	-0.95	35.08	-1.25	-0.44	RE
J87VR3		66.02	-1.07	-0.21	36.95	0.62	0.22	MR
KRQ4H3		68.42	1.32	0.26	37.42	1.09	0.38	BU
MM7XVR		70.96	3.86	0.76	35.47	-0.86	-0.30	LX
NMK8CD		68.05	0.95	0.19	35.51	-0.82	-0.29	LH
PKCDVK		70.67	3.57	0.70	41.46	5.13	1.80	TB
QL8LRM		69.50	2.40	0.47	36.08	-0.25	-0.09	IM
QRAXJE		67.33	0.23	0.05	38.78	2.46	0.86	DL
QVBATF		62.79	-4.31	-0.85	38.74	2.41	0.85	XX
RQFYZT		72.52	5.42	1.06	42.62	6.29	2.20	LH
RR74TZ		75.54	8.44	1.66	38.12	1.79	0.63	TB
TYL4N4		65.66	-1.44	-0.28	33.47	-2.86	-1.00	LI
VWPVKW		68.29	1.19	0.23	36.51	0.18	0.06	TB
WD99BU		65.17	-1.93	-0.38	35.29	-1.04	-0.36	TO
WM3NAT		77.41	10.31	2.02	41.72	5.39	1.89	TF
WUUX3G		63.43	-3.66	-0.72	30.57	-5.76	-2.02	LI
XCU73Z		59.67	-7.43	-1.46	38.13	1.80	0.63	LH
Z69RCZ		70.32	3.23	0.63	37.34	1.01	0.35	XX
ZBCTDU		69.34	2.24	0.44	34.62	-1.71	-0.60	LH
ZD3W72		60.98	-6.12	-1.20	32.41	-3.92	-1.37	LH

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

	Summary Statistics	
	Sample SF07	Sample SF08
Grand Means	67.097 Joules/sq m	36.329 Joules/sq m
SD Btwn Labs	5.092 Joules/sq m	2.854 Joules/sq m
Statistics based on 35 of 38 reporting participants		

Comments on assigned Data Flags for Test #327

A2E987 (X) - Extreme data.

CVJ8RB (X) - Extreme data.

EPNHG6 (X) - Data for both samples are low.

Analysis Notes:

J87VR3 - Data appear to be reported as inch-lb/ sq inch, not J/sq m as indicated on datasheet. Units corrected by CTS.

RR74TZ - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on datasheet. Units corrected by CTS.

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

Instrument Code List

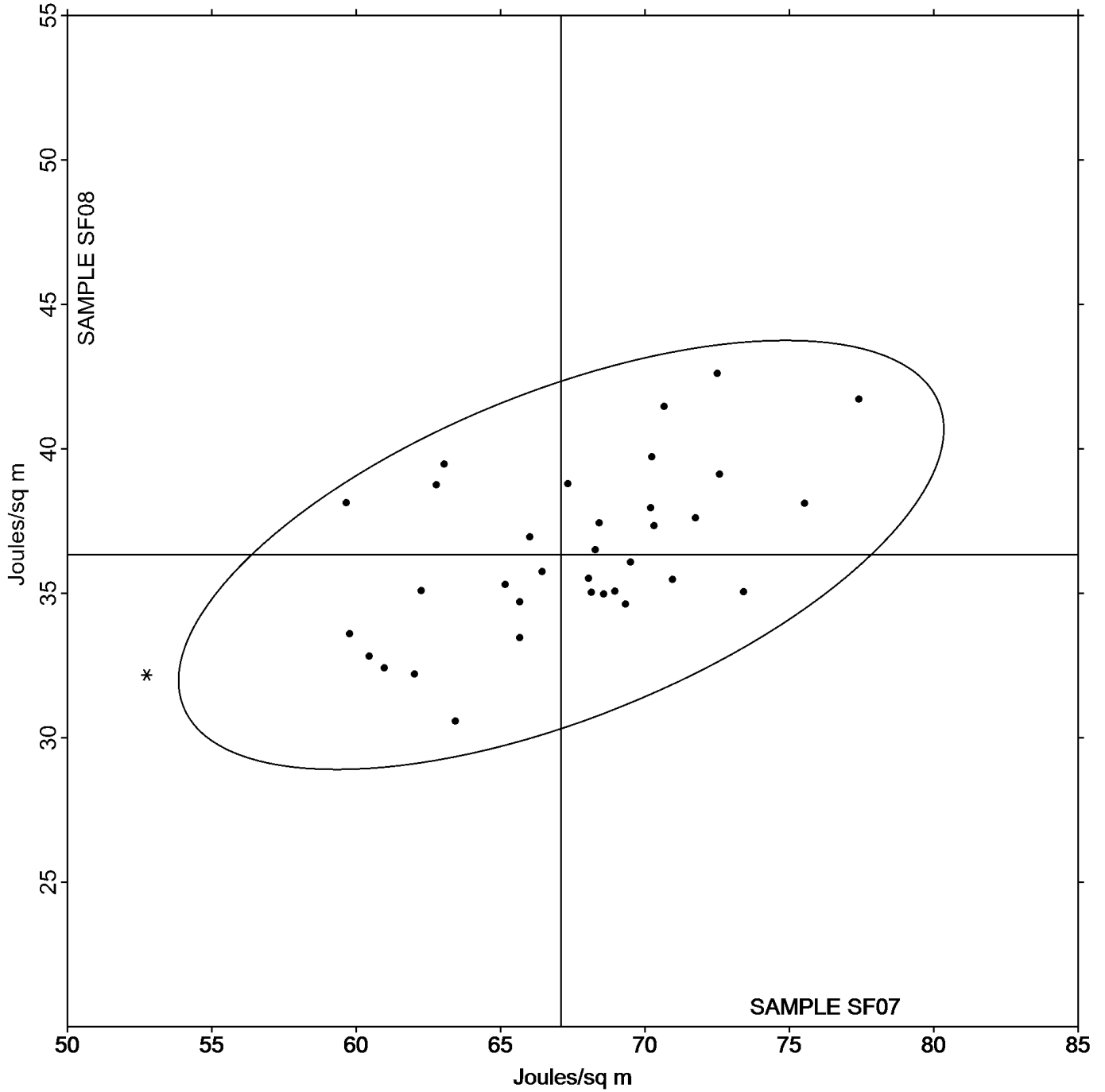
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|--|---|
| (BU) - Buchel
(ID) - Instron 4201
(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LW) - L & W Tensile Tester SE 064
(MR) - MTS Alliance RT series
(TB) - Thwing-Albert EJA/1000
(TI) - Thwing-Albert QC II
(TO) - Thwing-Albert QC-1000
(XX) - Instrument make/model not specified by lab | (DL) - EMIC DL500 Universal Testing Machines
(IM) - Instron 5500 Series
(LI) - L & W Tensile Tester SE 062
(LX) - L & W (model not specified)
(RE) - Regmed
(TF) - Thwing-Albert EJA Vantage-1
(TJ) - Thwing-Albert QC II-XS
(TP) - TMI Monitor/Tensile 100 (84-21-01) |
|--|---|

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

Grand Mean Sample **SF07** = 67.097 Joules/sq m

Grand Mean Sample **SF08** = 36.329 Joules/sq m

ANALYSIS 327



TAPPI-CTS Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

WebCode	Data Flag	Sample SF07			Sample SF08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2J24VN		2.057	-0.057	-0.32	1.351	-0.036	-0.27	LH
3QDLNL		2.306	0.193	1.10	1.657	0.270	2.01	XX
4FWWUM		2.180	0.066	0.38	1.359	-0.028	-0.21	LI
9643MV		2.224	0.110	0.63	1.416	0.029	0.22	ID
9MF2EB		2.154	0.040	0.23	1.363	-0.024	-0.18	TI
9QY2MY		1.849	-0.265	-1.51	1.225	-0.162	-1.21	LX
9VTWTD	X	54.339	52.225	297.59	35.274	33.887	252.13	TB
A2E987	X	3.877	1.763	10.05	2.439	1.052	7.83	TB
A76UN8		2.092	-0.022	-0.12	1.347	-0.040	-0.30	LH
APJ7HH		1.818	-0.296	-1.68	1.213	-0.174	-1.29	LH
CVJ8RB	X	3.947	1.833	10.45	2.012	0.625	4.65	TJ
DGX6TJ		2.424	0.311	1.77	1.516	0.129	0.96	IM
ENCDW7		1.719	-0.395	-2.25	1.191	-0.196	-1.46	LH
ENP8AL		1.991	-0.123	-0.70	1.261	-0.126	-0.94	XX
EPNHG6		2.190	0.076	0.44	1.430	0.043	0.32	TP
FDL9ZQ		2.093	-0.021	-0.12	1.401	0.014	0.10	LH
FMD3LH		2.073	-0.041	-0.23	1.313	-0.074	-0.55	LI
GJQCLJ		2.173	0.059	0.34	1.412	0.025	0.19	LH
HJN4RP		2.180	0.066	0.38	1.510	0.123	0.92	TF
HJNCCP		2.250	0.136	0.77	1.510	0.123	0.91	RE
J87VR3		2.036	-0.078	-0.44	1.351	-0.036	-0.27	MR
KRQ4H3		2.226	0.112	0.64	1.461	0.074	0.55	BU
MM7XVR		2.051	-0.063	-0.36	1.240	-0.147	-1.09	LX
NMK8CD		2.105	-0.009	-0.05	1.352	-0.035	-0.26	LH
PKCDVK		2.081	-0.033	-0.19	1.449	0.062	0.46	TB
QL8LRM		2.177	0.063	0.36	1.375	-0.012	-0.09	IM
QRAXJE	*	2.534	0.420	2.40	1.758	0.371	2.76	DL
QVBATF		2.111	-0.003	-0.01	1.498	0.111	0.83	XX
RQFYZT		2.052	-0.062	-0.35	1.412	0.025	0.19	LH
RR74TZ		2.387	0.273	1.56	1.521	0.134	1.00	TB
TYL4N4		2.113	-0.001	0.00	1.333	-0.054	-0.40	LI
VWPVKW		2.111	-0.003	-0.01	1.353	-0.034	-0.25	TB
WD99BU		1.898	-0.216	-1.23	1.215	-0.172	-1.28	TG
WM3NAT		2.396	0.283	1.61	1.567	0.180	1.34	TO
WUUX3G		1.821	-0.293	-1.67	1.119	-0.268	-1.99	LI
XCU73Z		1.912	-0.202	-1.15	1.381	-0.006	-0.04	LH
YHU6QV	X	2.441	0.327	1.87	1.237	-0.150	-1.12	TJ
Z69RCZ		2.210	0.096	0.55	1.533	0.146	1.09	XX
ZBCTDU		2.101	-0.013	-0.07	1.271	-0.116	-0.86	LH
ZD3W72		1.992	-0.122	-0.69	1.269	-0.118	-0.88	LH

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

	Sample SF07	Summary Statistics	Sample SF08
Grand Means	2.1135 Percent		1.3870 Percent
SD Btwn Labs	0.1755 Percent		0.1344 Percent
Statistics based on 36 of 40 reporting participants			

Comments on assigned Data Flags for Test #328

9VTWTD (X) - Extreme data.

A2E987 (X) - Extreme data.

CVJ8RB (X) - Extreme data.

YHU6QV (X) - Inconsistent in testing between samples.

Instrument Code List

(BU) - Buchel

(ID) - Instron 4201

(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

(DL) - EMIC DL500 Universal Testing Machines

(IM) - Instron 5500

(LI) - L & W Tensile Tester SE 062

(MR) - MTS Alliance RT series

(TB) - Thwing-Albert EJA/1000

(TG) - Thwing-Albert QC

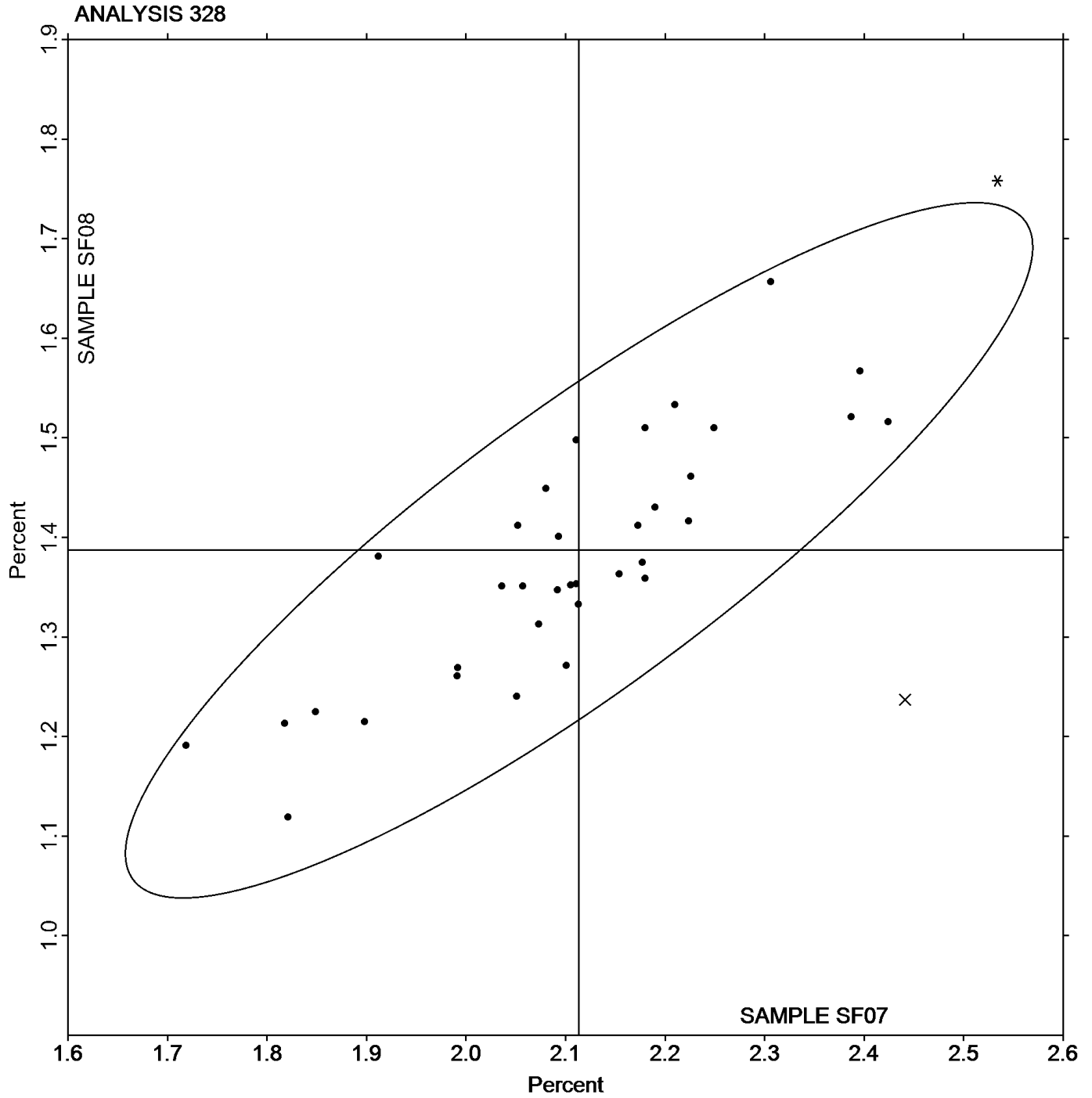
(TJ) - Thwing-Albert QC II-XS

(TP) - TMI Monitor/Tensile 100 (84-21-01)

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

Grand Mean Sample **SF07** = 2.1135 Percent

Grand Mean Sample **SF08** = 1.3870 Percent



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

WebCode	Data Flag	Sample SE07			Sample SE08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
27EWZ9		8.695	-0.199	-0.33	11.18	0.37	0.53	TK
29KRVR		9.770	0.877	1.46	11.68	0.87	1.26	TA
2JYT9D	X	9.408	0.514	0.86	10.05	-0.77	-1.11	LA
2NTC2F		7.976	-0.918	-1.53	10.12	-0.69	-1.01	IK
2UJMFK		8.466	-0.428	-0.71	10.26	-0.56	-0.81	IM
3U2QRR		8.634	-0.260	-0.43	10.65	-0.16	-0.24	LW
6KYRLL		8.747	-0.147	-0.24	10.21	-0.60	-0.88	LA
6ZYRUC		9.264	0.370	0.62	11.37	0.55	0.80	IK
7LGMEA		7.967	-0.927	-1.55	9.87	-0.95	-1.38	SA
7Q89XV		9.229	0.335	0.56	10.85	0.03	0.05	IF
7QNF3D		8.890	-0.003	-0.01	10.57	-0.25	-0.36	LH
7YH346		8.791	-0.102	-0.17	10.35	-0.47	-0.68	IF
8HNP9A		9.156	0.262	0.44	10.90	0.08	0.12	TB
9CYW8U		10.396	1.502	2.51	12.33	1.52	2.20	LA
9ZZ3TB		9.611	0.718	1.20	11.77	0.95	1.38	TH
APJ7HH		9.707	0.813	1.36	11.36	0.54	0.79	LH
AWDDXH		8.437	-0.457	-0.76	10.16	-0.66	-0.96	LW
B4ZEYF		8.641	-0.253	-0.42	10.68	-0.14	-0.20	TB
BXQ462		8.786	-0.108	-0.18	10.30	-0.51	-0.74	TO
CX89QR		9.404	0.511	0.85	11.45	0.64	0.93	TO
DNDVDP		8.600	-0.294	-0.49	10.80	-0.02	-0.02	SP
EGV88A		8.190	-0.704	-1.17	10.38	-0.44	-0.63	TP
EPNHG6		8.793	-0.101	-0.17	10.75	-0.07	-0.10	TO
FLGETR		10.249	1.355	2.26	12.42	1.60	2.32	TP
FU9P4M		8.025	-0.869	-1.45	10.42	-0.40	-0.58	TB
HA2746		9.292	0.398	0.66	11.54	0.72	1.05	TO
HPVZPR		8.531	-0.362	-0.60	10.48	-0.34	-0.49	ID
JKZ22Z		8.940	0.046	0.08	11.11	0.29	0.42	LH
LTJETV		8.433	-0.461	-0.77	9.70	-1.11	-1.62	TK
M8UE3Q		8.492	-0.402	-0.67	10.19	-0.62	-0.91	XX
NA2WVV		8.647	-0.247	-0.41	10.28	-0.54	-0.78	LE
P64ZKU		8.161	-0.733	-1.22	9.91	-0.90	-1.31	IK
PCH93J		9.389	0.495	0.83	11.35	0.53	0.77	TP
QGW7A7		9.104	0.210	0.35	10.93	0.12	0.17	LA
RWZRYQ		8.201	-0.693	-1.16	10.68	-0.13	-0.20	TH
TJ86BP		9.941	1.047	1.75	12.15	1.34	1.94	TH
TLGDVN		8.413	-0.481	-0.80	10.02	-0.79	-1.15	LW
V4BVV4		8.843	-0.051	-0.09	10.60	-0.22	-0.32	IM
VECBNT		8.296	-0.598	-1.00	10.55	-0.26	-0.38	LE
W4M7QD		8.931	0.038	0.06	10.31	-0.50	-0.73	TK
WGDT6L		9.142	0.248	0.41	10.86	0.04	0.06	LW
Z3HP6Q		9.463	0.570	0.95	11.96	1.15	1.66	TO

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

	Summary Statistics	
	Sample SE07	Sample SE08
Grand Means	8.8937 kN/m	10.816 kN/m
SD Btwn Labs	0.5996 kN/m	0.689 kN/m
Statistics based on 41 of 42 reporting participants		

Comments on assigned Data Flags for Test #330

2JYT9D (X) - Inconsistent in testing between samples.

Analysis Notes:

2JYT9D - Data appear to be reported as lb/inch, not kN/m as indicated on datasheet. Units corrected by CTS.

W4M7QD - Data appear to be reported as lb/inch, not kN/m as indicated on datasheet. Units corrected by CTS.

Instrument Code List

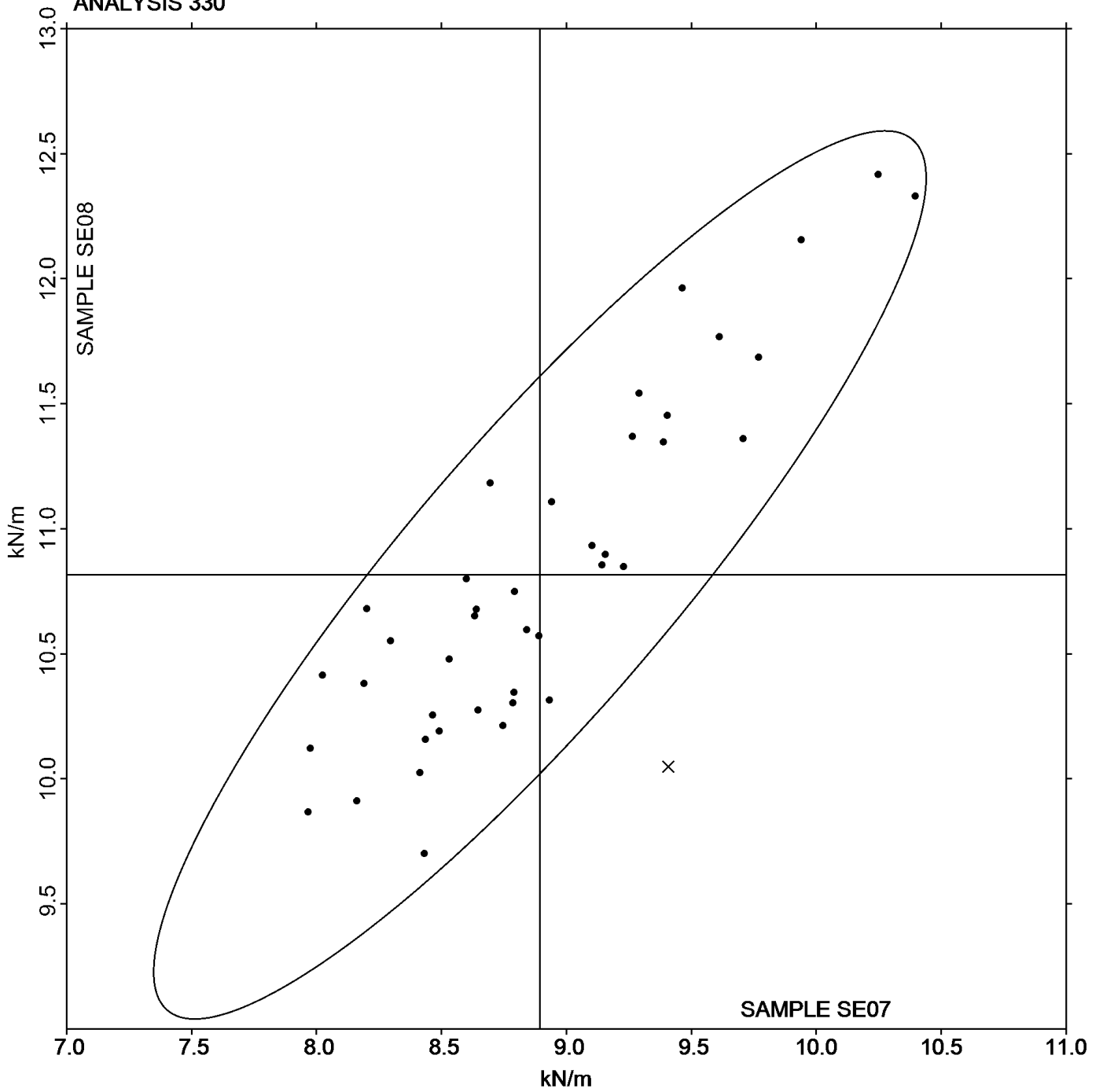
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|--|--|
| (ID) - Instron 4201
(IK) - Instron 4400 Series
(LA) - L & W Autoline
(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(SA) - Shimadzu Autograph AG 2000 A
(TA) - Thwing-Albert Tensile Tester
(TH) - Thwing-Albert QC-3A
(TO) - Thwing-Albert QC-1000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

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

Grand Mean Sample **SE07** = 8.8937 kN/m

Grand Mean Sample **SE08** = 10.816 kN/m

ANALYSIS 330



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

WebCode	Data Flag	Sample SE07			Sample SE08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JYT9D	M	92.89	9.95	1.02	No data reported for this sample			LA
2NTC2F		89.49	6.55	0.67	187.2	18.8	1.18	IK
2UJMFK		80.15	-2.79	-0.29	154.4	-14.0	-0.88	IM
3U2QRR		75.30	-7.64	-0.78	159.8	-8.6	-0.54	LW
6KYRLL		92.45	9.51	0.97	169.3	0.9	0.06	LA
6ZYRUC		82.92	-0.02	0.00	177.1	8.7	0.55	XX
7LGMEA		65.22	-17.72	-1.82	153.2	-15.2	-0.95	SA
7Q89XV		88.80	5.86	0.60	161.3	-7.1	-0.45	IN
7QNF3D		74.03	-8.91	-0.91	158.4	-10.0	-0.63	LH
8HNP9A		98.80	15.86	1.63	184.6	16.2	1.02	TB
9CYW8U		90.36	7.42	0.76	175.3	6.9	0.43	LA
9ZZ3TB		90.23	7.29	0.75	198.2	29.8	1.87	TH
APJ7HH		86.33	3.39	0.35	157.4	-11.0	-0.69	LH
BXQ462		94.13	11.19	1.15	167.0	-1.4	-0.09	TO
CX89QR		83.62	0.68	0.07	177.0	8.6	0.54	XX
EGV88A		73.10	-9.84	-1.01	165.7	-2.7	-0.17	TP
EPNHG6		80.27	-2.67	-0.27	172.1	3.7	0.23	TO
FLGETR	X	29.41	-53.53	-5.49	41.2	-127.2	-7.99	TP
FU9P4M		66.45	-16.49	-1.69	157.1	-11.3	-0.71	TB
HA2746		85.21	2.27	0.23	186.1	17.7	1.11	TO
JKZ22Z		80.70	-2.24	-0.23	174.0	5.6	0.35	LH
LTJETV		83.20	0.26	0.03	140.1	-28.3	-1.77	TK
M8UE3Q		70.82	-12.12	-1.24	149.3	-19.1	-1.20	XX
NA2WVV		77.48	-5.46	-0.56	156.2	-12.2	-0.77	LE
P64ZKU		86.59	3.65	0.37	173.6	5.2	0.33	IK
QGW7A7		92.86	9.92	1.02	169.6	1.2	0.07	LA
RWZRYQ		65.53	-17.41	-1.78	152.9	-15.4	-0.97	TH
TJ86BP		102.68	19.74	2.02	197.2	28.8	1.81	TH
TLGDVN		73.26	-9.68	-0.99	151.1	-17.3	-1.09	LW
V4BVV4		88.51	5.57	0.57	168.4	0.0	0.00	IM
WGDT6L		76.56	-6.38	-0.65	152.2	-16.2	-1.02	LW
Z3HP6Q		93.12	10.18	1.04	206.1	37.7	2.37	TO

Sample SE07		Summary Statistics	Sample SE08	
Grand Means	82.940 Joules/sq m		168.39 Joules/sq m	
SD Btwn Labs	9.757 Joules/sq m		15.93 Joules/sq m	
Statistics based on 30 of 32 reporting participants				

Comments on assigned Data Flags for Test #331

2JYT9D (M) - No data for Sample SE08.

FLGETR (X) - Extreme data.

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

Analysis Notes:

BXQ462 - Data appear to be reported as ft-lb/sq ft, not inch-lb/sq inch as indicated on datasheet. Units corrected by CTS.

EGV88A - Data appear to be reported as J/sq m, not kg-m/sq m as indicated on datasheet. Units corrected by CTS.

HA2746 - 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

(IK) - Instron 4400 Series

(IM) - Instron 5500 Series

(IN) - Instron 3360 Series

(LA) - L & W Autoline

(LE) - L & W Tensile Tester 066

(LH) - L & W Alwetron TH1 (Horizontal) SE 060

(LW) - L & W Tensile Tester SE062

(SA) - Shimadzu Autograph AG 2000 A

(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)

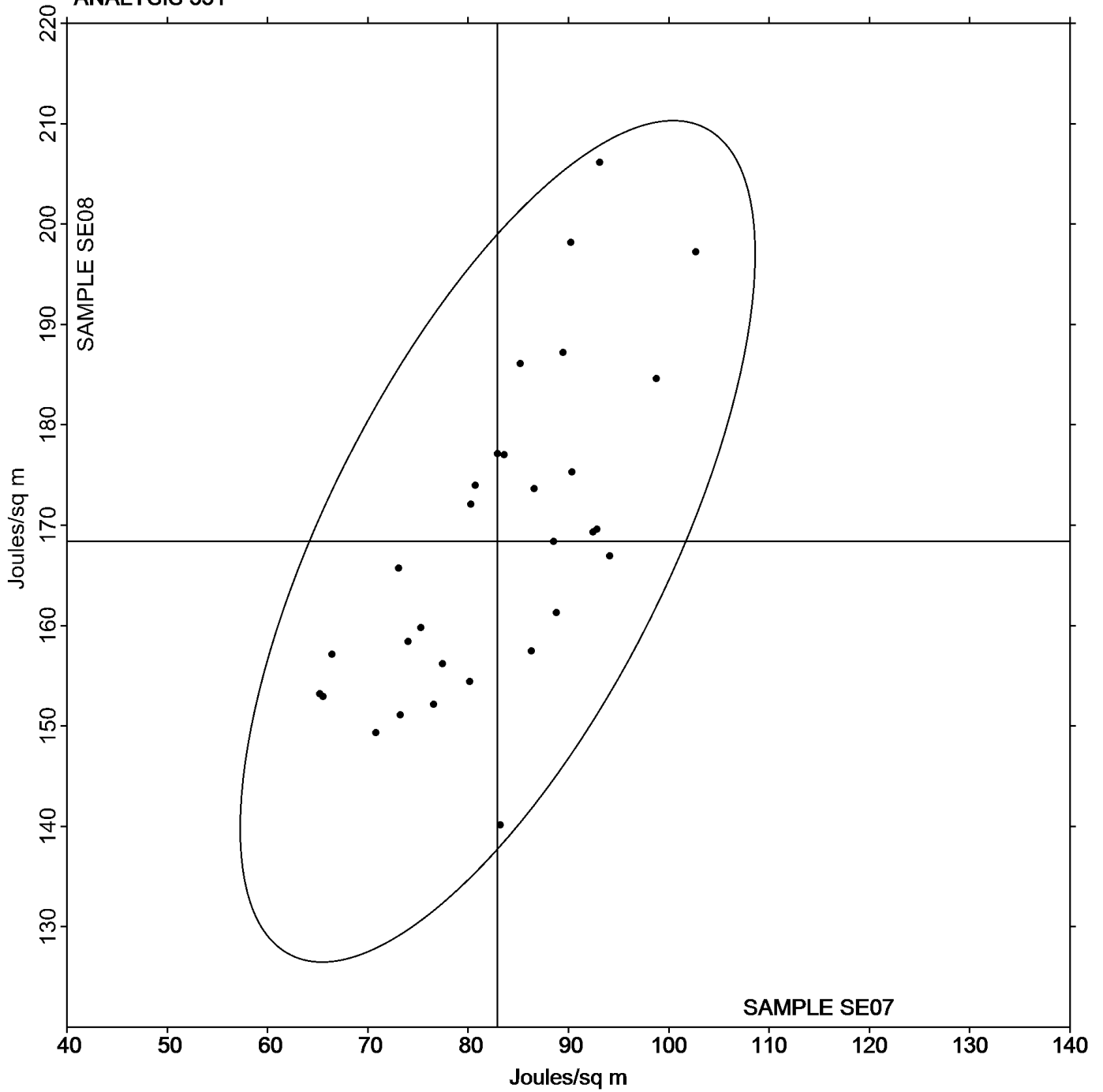
(XX) - Instrument make/model not specified by lab

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

Grand Mean Sample **SE07** = 82.940 Joules/sq m

Grand Mean Sample **SE08** = 168.39 Joules/sq m

ANALYSIS 331



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

WebCode	Data Flag	Sample SE07			Sample			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JYT9D	M	1.315	-0.185	-1.07	No data reported for this sample			LA
2NTC2F		1.807	0.307	1.78	2.850	0.500	2.23	IK
2UJMFK		1.727	0.227	1.31	2.490	0.140	0.62	IM
3U2QRR		1.382	-0.118	-0.68	2.189	-0.161	-0.72	LW
6KYRLL		1.369	-0.131	-0.76	2.069	-0.281	-1.26	LA
6ZYRUC		1.350	-0.150	-0.87	2.213	-0.137	-0.61	XX
7LGMEA		1.322	-0.178	-1.03	2.315	-0.035	-0.16	SA
7Q89XV		1.572	0.072	0.42	2.283	-0.068	-0.30	IN
7QNF3D		1.319	-0.181	-1.05	2.240	-0.110	-0.49	LH
8HNP9A		1.690	0.190	1.10	2.600	0.250	1.11	TB
9CYW8U		1.336	-0.164	-0.95	2.067	-0.283	-1.26	LA
9ZZ3TB		1.558	0.058	0.33	2.545	0.195	0.87	TH
APJ7HH		1.383	-0.117	-0.68	2.051	-0.299	-1.34	LH
AWDDXH		1.386	-0.114	-0.66	2.221	-0.129	-0.58	LW
B4ZEYF		1.358	-0.142	-0.82	2.227	-0.123	-0.55	TB
BXQ462	X	2.601	1.101	6.37	3.325	0.975	4.35	TO
CX89QR		1.740	0.240	1.39	2.470	0.120	0.53	XX
EGV88A		1.840	0.340	1.97	2.820	0.470	2.09	TP
EPNHG6		1.476	-0.024	-0.14	2.403	0.053	0.23	TO
FLGETR	X	3.947	2.447	14.17	7.763	5.413	24.15	TP
FU9P4M		1.301	-0.199	-1.15	2.247	-0.103	-0.46	TB
HA2746		1.508	0.008	0.04	2.421	0.071	0.31	TO
HPVZPR		1.414	-0.086	-0.50	2.266	-0.084	-0.38	XX
JKZ22Z		1.420	-0.080	-0.46	2.320	-0.030	-0.14	XX
LTJETV		1.560	0.059	0.34	2.167	-0.184	-0.82	TK
M8UE3Q		1.312	-0.188	-1.09	2.167	-0.183	-0.82	XX
NA2WVV		1.444	-0.056	-0.33	2.224	-0.126	-0.56	LE
P64ZKU		1.815	0.315	1.82	2.806	0.456	2.03	IK
QGW7A7		1.504	0.004	0.02	2.232	-0.118	-0.53	LA
RWZRYQ		1.390	-0.110	-0.64	2.250	-0.100	-0.45	TH
TJ86BP		1.725	0.225	1.30	2.506	0.156	0.69	TH
TLGDVN		1.349	-0.151	-0.88	2.222	-0.128	-0.57	LW
V4BVV4		1.676	0.176	1.02	2.579	0.229	1.02	IM
WGDT6L		1.319	-0.181	-1.05	2.083	-0.267	-1.19	LW
Z3HP6Q		1.656	0.156	0.90	2.672	0.322	1.43	TO

Sample SE07		Summary Statistics	Sample SE08	
Grand Means	1.5002 Percent		2.3505	Percent
SD Btwn Labs	0.1727 Percent		0.2242	Percent
Statistics based on 32 of 35 reporting participants				

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

Comments on assigned Data Flags for Test #332

2JYT9D (M) - No data for Sample SE08.

BXQ462 (X) - Extreme data.

FLGETR (X) - Extreme data.

Instrument Code List

(IK) - Instron 4400 Series

(IN) - Instron 3360 Series

(LE) - L & W Tensile Tester 066

(LW) - L & W Tensile Tester SE062

(TB) - Thwing-Albert EJA/1000

(TK) - Thwing-Albert Model 37-4

(TP) - TMI Monitor/Tensile 100 (84-21-01)

(IM) - Instron 5500 Series

(LA) - L & W Autoline 300

(LH) - L & W Alwetron TH1 (Horizontal) SE 060

(SA) - Shimadzu Autograph AG 2000 A

(TH) - Thwing-Albert QC-3A

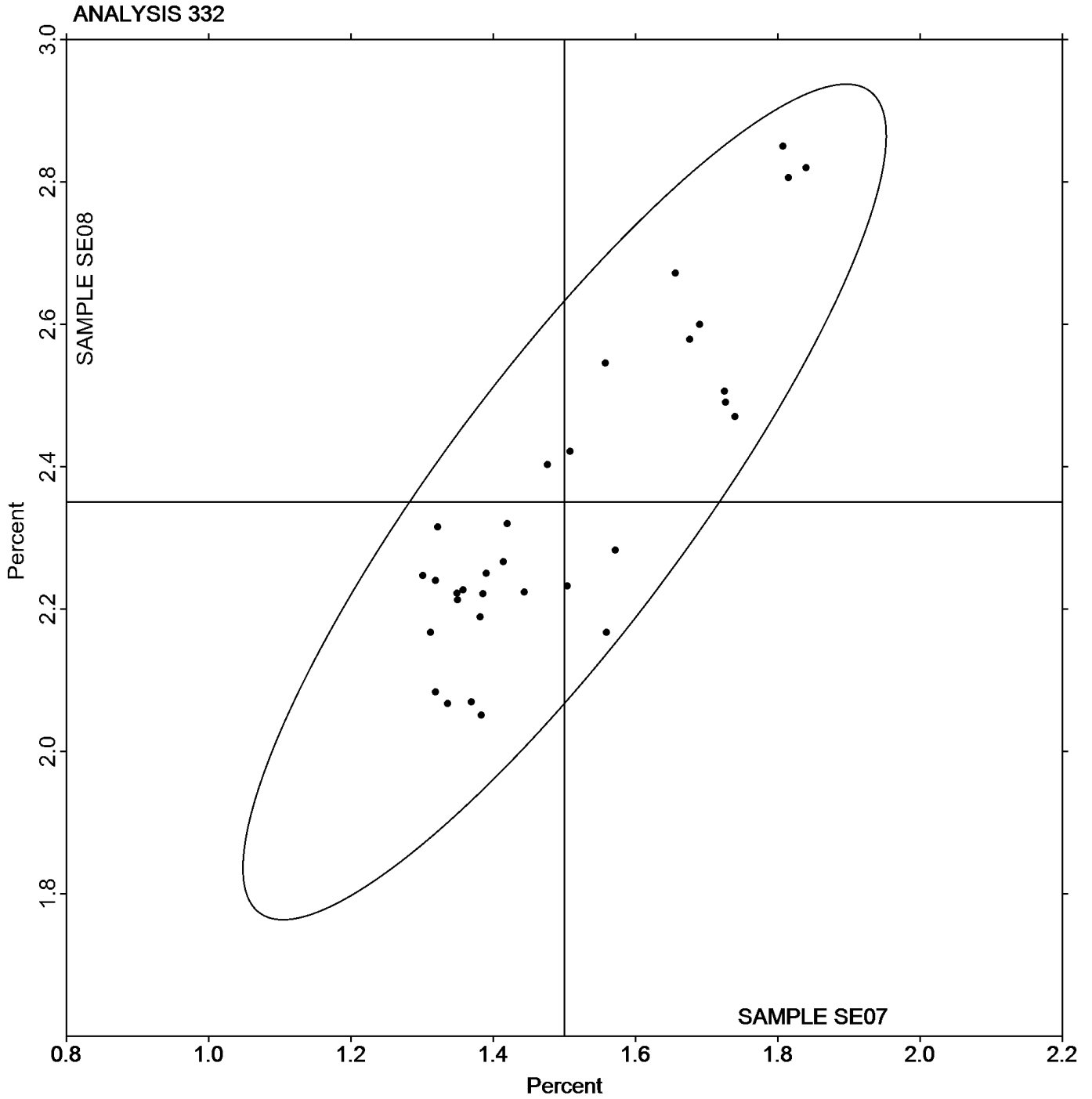
(TO) - Thwing-Albert QC-1000

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

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

Grand Mean Sample **SE07** = 1.5002 Percent

Grand Mean Sample **SE08** = 2.3505 Percent



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

WebCode	Data Flag	Sample SG07			Sample SG08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
27EWZ9		262.3	7.4	0.11	234.4	-57.3	-0.80	MT
3QDLNL		189.7	-65.2	-0.97	291.6	-0.1	0.00	MT
9643MV		316.3	61.4	0.91	357.4	65.7	0.92	MT
9CYW8U		242.4	-12.5	-0.19	298.1	6.4	0.09	XX
AWDDXH	X	32.2	-222.7	-3.31	41.2	-250.5	-3.52	MT
B4ZEYF		177.9	-77.0	-1.14	227.0	-64.7	-0.91	XX
DGX6TJ		275.1	20.2	0.30	407.8	116.1	1.63	MT
E922E9		192.3	-62.6	-0.93	200.7	-91.0	-1.28	MT
EDAZQE		275.9	21.0	0.31	291.2	-0.5	-0.01	MT
HJN4RP		180.8	-74.1	-1.10	351.1	59.4	0.83	MT
K2W4WA		323.9	69.0	1.03	361.5	69.8	0.98	MT
KRQ4H3		298.4	43.5	0.65	293.4	1.7	0.02	MT
PCH93J		188.3	-66.6	-0.99	172.4	-119.3	-1.68	MT
PVVTYM		375.2	120.3	1.79	365.8	74.1	1.04	XX
WFYC42		184.1	-70.8	-1.05	219.3	-72.4	-1.02	XX
WUUX3G		183.4	-71.5	-1.06	206.6	-85.1	-1.20	MT
YCRAHX		339.6	84.7	1.26	373.1	81.4	1.14	MT
YHU6QV		326.9	72.0	1.07	307.0	15.3	0.22	MT

		Summary Statistics	
	Sample SG07		Sample SG08
Grand Means	254.85 Double Folds		291.67 Double Folds
SD Btwn Labs	67.30 Double Folds		71.18 Double Folds
Statistics based on 17 of 18 reporting participants			

Comments on assigned Data Flags for Test #334

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

Instrument Code List

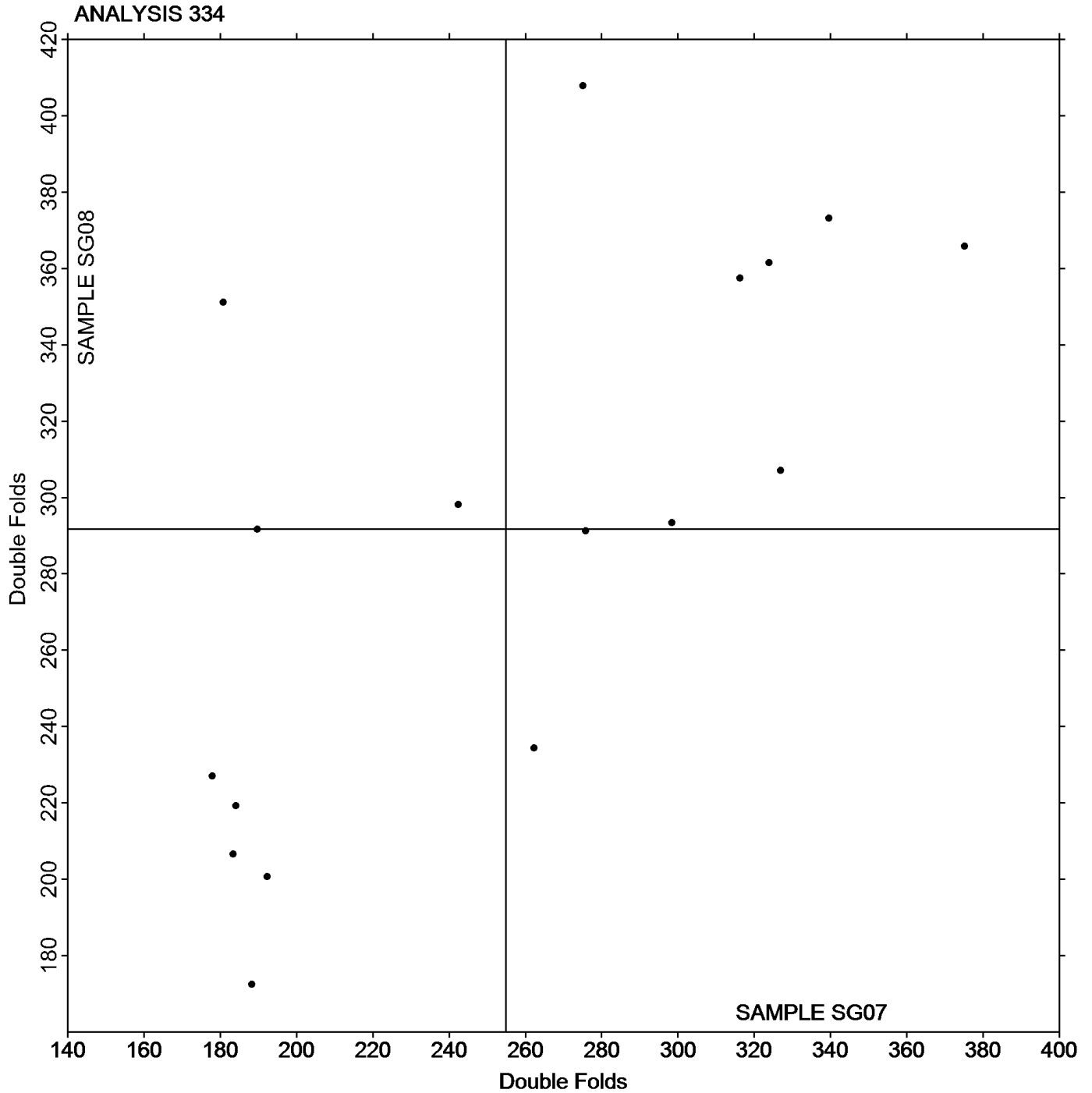
(MT) - MIT - Tinius Olsen

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

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

Grand Mean Sample **SG07** = 254.85 Double Folds

Grand Mean Sample **SG08** = 291.67 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 SH07			Sample SH08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
9MF2EB		242.7	18.3	1.34	634.9	70.0	1.41
A387AK	X	134.8	-89.6	-6.55	375.2	-189.7	-3.83
B4ZEYF		225.8	1.4	0.10	524.1	-40.8	-0.82
BN3WWH		240.0	15.7	1.14	650.5	85.6	1.73
BXQ462		235.1	10.7	0.78	631.8	66.9	1.35
DGX6TJ		216.0	-8.3	-0.61	528.9	-36.0	-0.73
EDAZQE		218.4	-5.9	-0.43	575.0	10.1	0.20
FDL9ZQ		245.5	21.2	1.55	625.0	60.1	1.21
GWFARM		220.5	-3.9	-0.28	538.1	-26.8	-0.54
J87VR3		202.2	-22.1	-1.62	517.3	-47.6	-0.96
KRQ4H3		244.6	20.3	1.48	613.1	48.2	0.97
KW8JW2		221.4	-3.0	-0.22	526.3	-38.6	-0.78
KXF7FU		221.9	-2.5	-0.18	538.1	-26.8	-0.54
P64ZKU		225.3	1.0	0.07	548.3	-16.5	-0.33
U4YMPF		209.3	-15.0	-1.10	530.6	-34.3	-0.69
VWPVKW		213.3	-11.0	-0.81	557.7	-7.1	-0.14
XCU73Z	X	219.6	-4.8	-0.35	373.2	-191.7	-3.87
YHU6QV		207.6	-16.8	-1.22	498.4	-66.5	-1.34

		Summary Statistics	
	Sample SH07		Sample SH08
Grand Means	224.37 Gurley Units		564.88 Gurley Units
SD Btwn Labs	13.69 Gurley Units		49.54 Gurley Units
Statistics based on 16 of 18 reporting participants			

Comments on assigned Data Flags for Test #336

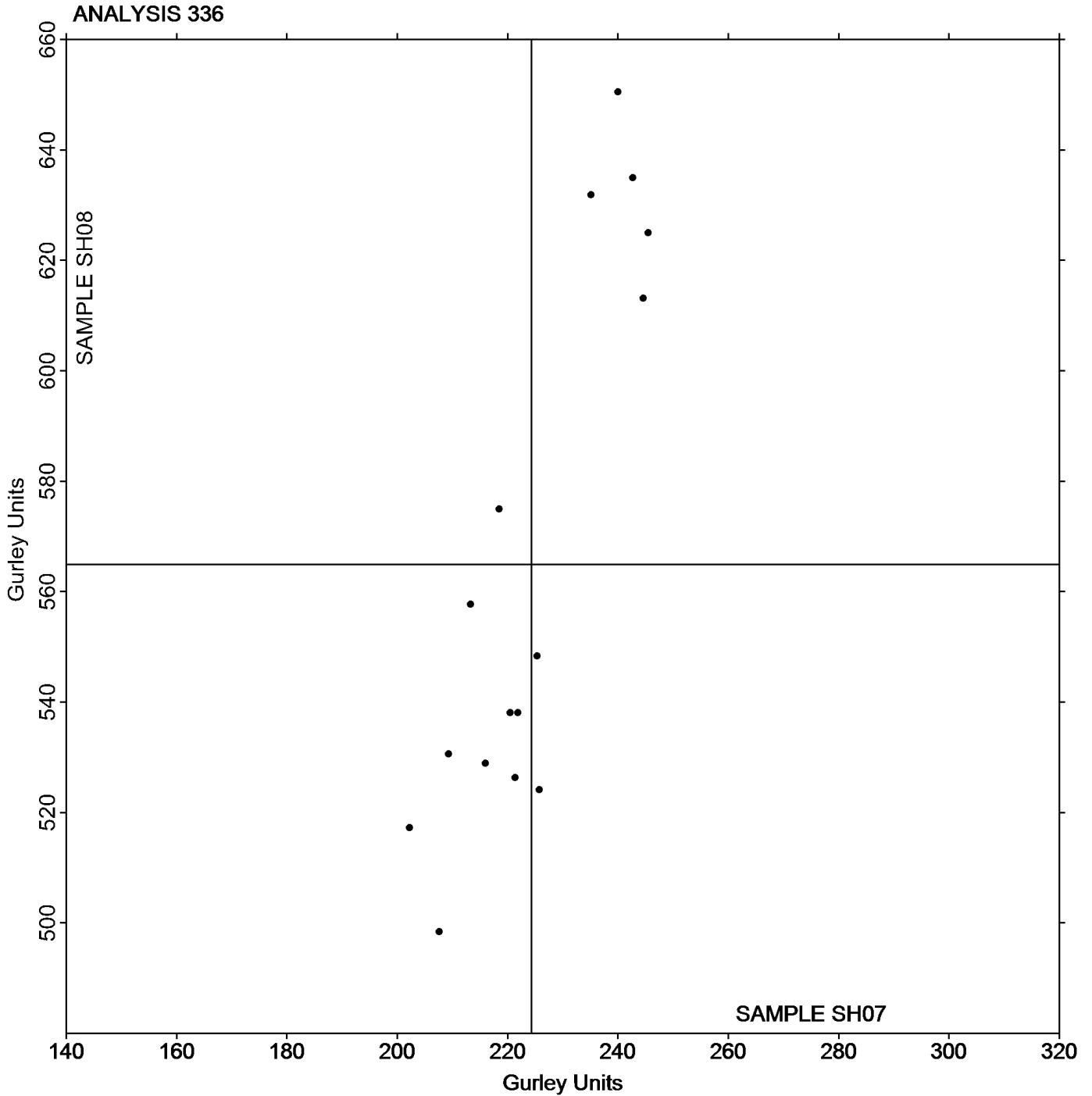
A387AK (X) - Extreme data.

XCU73Z (X) - Data for Sample SH08 are low.

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

Grand Mean Sample **SH07** = 224.37 Gurley Units

Grand Mean Sample **SH08** = 564.88 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 SJ07			Sample SJ08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
7Q89XV		3.230	0.095	0.48	7.050	0.187	0.37
8C2CET		3.250	0.115	0.58	6.323	-0.540	-1.07
9643MV		3.509	0.374	1.90	7.564	0.701	1.39
A2E987		3.165	0.030	0.15	7.106	0.242	0.48
CVJ8RB	X	1.893	-1.242	-6.30	4.344	-2.519	-4.99
DGX6TJ		3.064	-0.071	-0.36	6.834	-0.029	-0.06
ECFYLV		3.199	0.064	0.33	7.301	0.438	0.87
FDL9ZQ		3.240	0.105	0.53	6.775	-0.088	-0.17
J87VR3		2.772	-0.363	-1.84	6.171	-0.692	-1.37
P64ZKU		3.251	0.116	0.59	7.219	0.356	0.70
UN2AQF		2.987	-0.148	-0.75	7.434	0.571	1.13
WFYC42	X	3.088	-0.047	-0.24	3.903	-2.960	-5.86
WGDT6L		2.860	-0.275	-1.39	6.020	-0.843	-1.67
YCRAHX		3.090	-0.045	-0.23	6.564	-0.299	-0.59

Summary Statistics		
	Sample SJ07	Sample SJ08
Grand Means	3.1347 Taber Units	6.8634 Taber Units
SD Btwn Labs	0.1972 Taber Units	0.5053 Taber Units
Statistics based on 12 of 14 reporting participants		

Comments on assigned Data Flags for Test #338

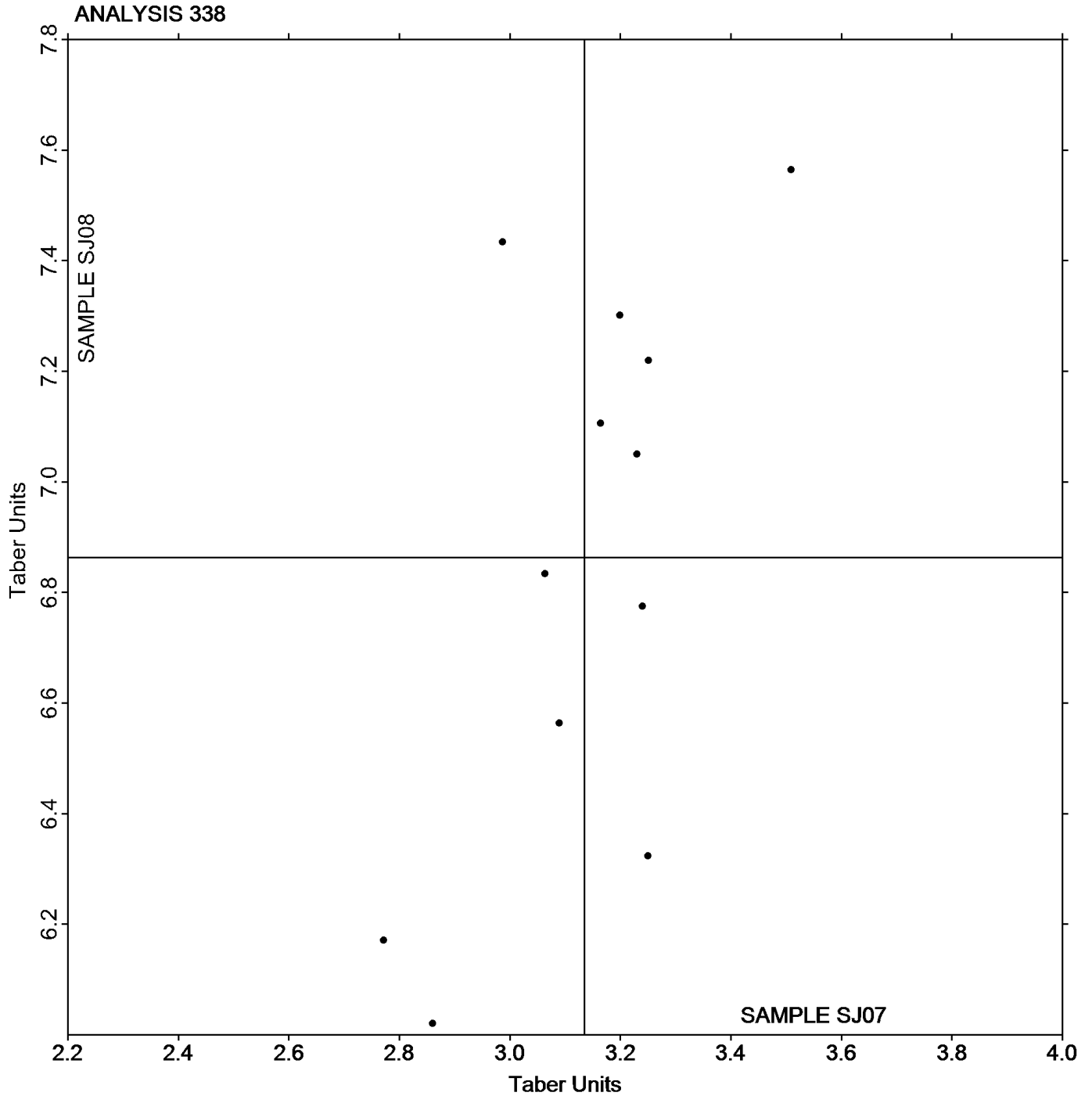
CVJ8RB (X) - Extreme data.

WFYC42 (X) - Data for Sample SJ08 are low.

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

Grand Mean Sample **SJ07** = 3.1347 Taber Units

Grand Mean Sample **SJ08** = 6.8634 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 SQ07			Sample SQ08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2HMJ8K		20.10	-2.45	-1.39	32.91	-3.52	-1.37
6KYRLL	*	24.94	2.39	1.35	33.76	-2.67	-1.04
8HNP9A		25.35	2.80	1.59	41.91	5.48	2.13
9CYW8U		22.56	0.01	0.00	38.19	1.76	0.68
AWDDXH		22.35	-0.20	-0.12	36.04	-0.39	-0.15
DGX6TJ		23.51	0.96	0.54	36.73	0.30	0.12
KRQ4H3		23.63	1.08	0.61	38.49	2.06	0.80
NA2WVV		22.39	-0.16	-0.09	35.59	-0.84	-0.33
QL8LRM		22.40	-0.15	-0.09	37.10	0.67	0.26
QRAXJE		20.51	-2.04	-1.16	35.27	-1.16	-0.45
TG6MAU		23.37	0.82	0.46	38.11	1.68	0.65
WD99BU		22.80	0.25	0.14	37.15	0.72	0.28
WGDT6L		19.30	-3.25	-1.85	32.35	-4.08	-1.58

		Summary Statistics	
	Sample SQ07		Sample SQ08
Grand Means	22.555 Taber Units		36.431 Taber Units
SD Btwn Labs	1.760 Taber Units		2.576 Taber Units
Statistics based on 13 of 13 reporting participants			

Analysis Notes:

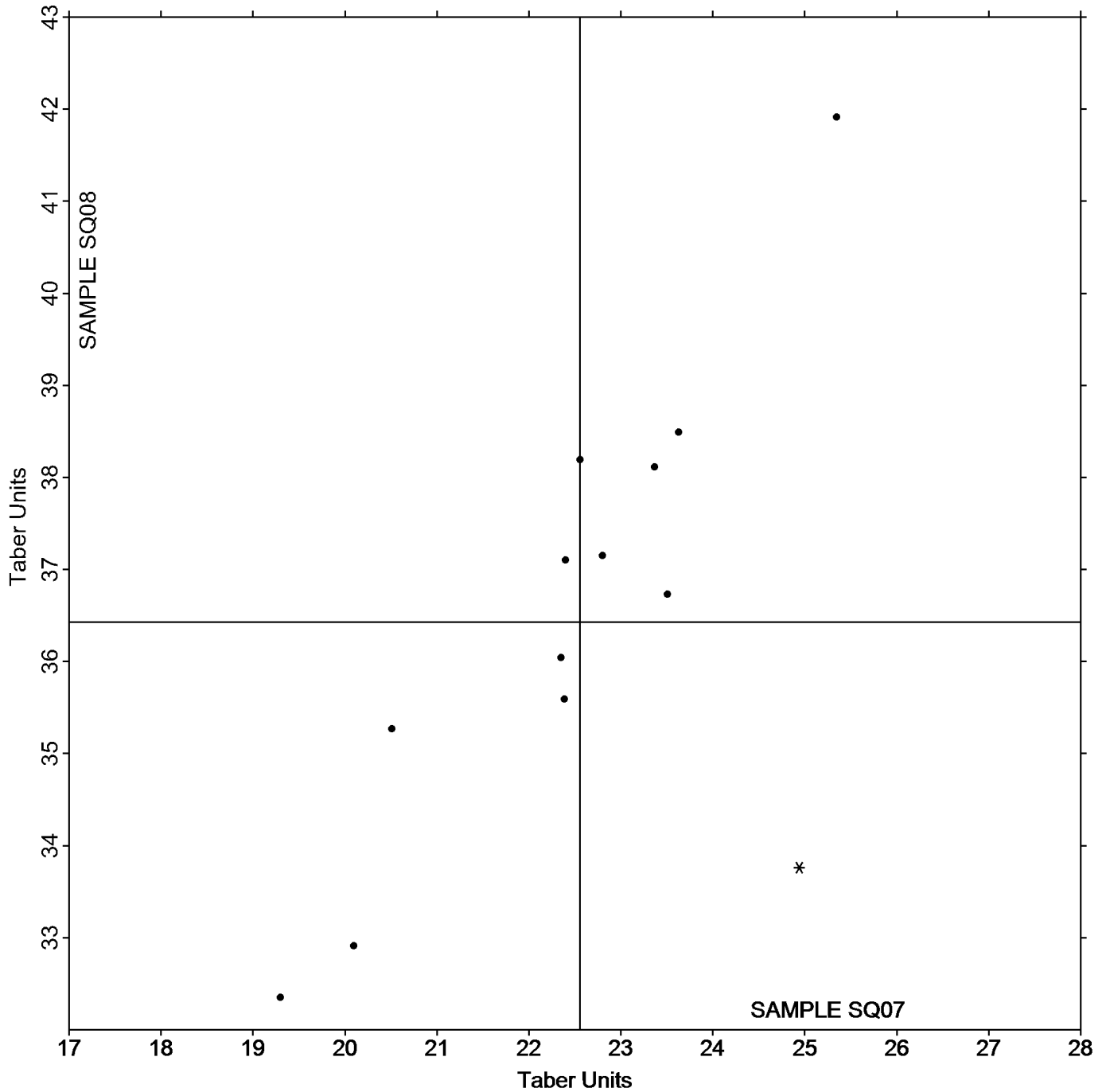
8HNP9A - Data appear to be reported as g-cm, not mN-m as indicated on datasheet. Units corrected by CTS.

TAPPI-CTS Interlaboratory Testing Program
Analysis 339
Bending Resistance, Taber Type - 10 to 100 Taber Units

Grand Mean Sample **SQ07** = 22.555 Taber Units

Grand Mean Sample **SQ08** = 36.431 Taber Units

ANALYSIS 339



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 ST07			Sample ST08		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22HCU4		253.9	0.2	0.01	247.5	-3.2	-0.33
29KRVR		251.3	-2.5	-0.19	244.0	-6.7	-0.69
7LGMEA		236.7	-17.0	-1.30	238.6	-12.1	-1.25
7YH346		265.1	11.4	0.87	263.2	12.5	1.29
88AXHE		241.7	-12.0	-0.91	244.0	-6.7	-0.69
A7NDVY		249.0	-4.7	-0.36	250.6	-0.1	-0.01
BVMA4B		247.5	-6.2	-0.47	252.0	1.3	0.14
ECWK36	X	90.3	-163.4	-12.43	108.1	-142.6	-14.68
EGV88A		241.5	-12.2	-0.93	239.4	-11.2	-1.16
HPVZPR		284.8	31.0	2.36	270.8	20.1	2.07
KHK2FQ		261.0	7.3	0.55	248.3	-2.4	-0.24
TV4CK9		258.3	4.6	0.35	247.4	-3.3	-0.34
WGDT6L		242.5	-11.2	-0.85	249.0	-1.7	-0.17
Y9C84C		265.1	11.3	0.86	264.1	13.4	1.38

Summary Statistics		
	Sample ST07	Sample ST08
Grand Means	253.71 Taber Units	250.67 Taber Units
SD Btwn Labs	13.14 Taber Units	9.72 Taber Units
Statistics based on 13 of 14 reporting participants		

Comments on assigned Data Flags for Test #340

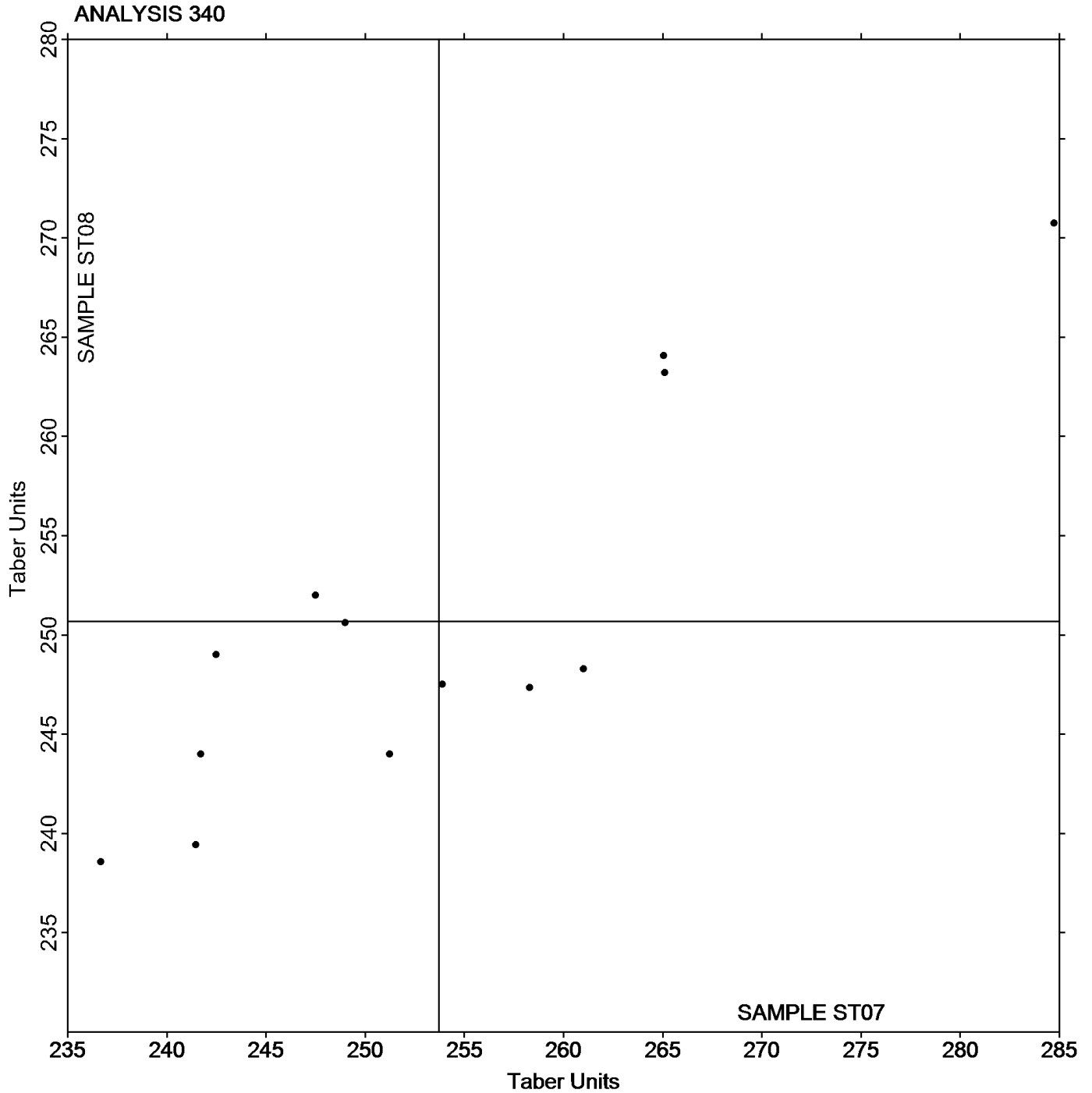
ECWK36 (X) - Extreme data.

TAPPI-CTS Interlaboratory Testing Program Analysis 340

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

Grand Mean Sample **ST07** = 253.71 Taber Units

Grand Mean Sample **ST08** = 250.67 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 SM07			Sample SM08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2HMJ8K		66.69	-0.76	-0.10	91.86	10.53	1.14	XX
4FWWUM		57.64	-9.81	-1.24	66.34	-14.99	-1.62	LW
8HNP9A		76.84	9.39	1.19	90.82	9.49	1.02	TA
9643MV		57.74	-9.71	-1.23	69.78	-11.55	-1.25	CD
9CYW8U		71.70	4.25	0.54	81.42	0.09	0.01	LW
9MVD43		65.72	-1.73	-0.22	83.00	1.67	0.18	DT
9PLGWA		70.76	3.31	0.42	89.84	8.51	0.92	TA
9VTWTD		74.64	7.19	0.91	88.41	7.07	0.76	TA
AWDDXH		62.78	-4.67	-0.59	73.38	-7.95	-0.86	LW
CX89QR		68.80	1.35	0.17	83.40	2.07	0.22	TA
DGX6TJ		60.83	-6.62	-0.84	71.13	-10.21	-1.10	TZ
ECWK36		79.08	11.63	1.47	90.44	9.11	0.98	CA
HULHZW		61.80	-5.65	-0.72	69.96	-11.37	-1.23	TL
NA2WVV		69.72	2.27	0.29	86.36	5.03	0.54	TA
P64ZKU		84.54	17.09	2.16	97.26	15.93	1.72	TL
RR74TZ		56.22	-11.23	-1.42	73.82	-7.51	-0.81	CD
TG6MAU		61.15	-6.30	-0.80	73.78	-7.56	-0.81	TZ
W3DZTR		67.46	0.01	0.00	82.98	1.65	0.18	XX

		Summary Statistics			
		Sample SM07		Sample SM08	
Grand Means		67.450 psi		81.332 psi	
SD Btwn Labs		7.899 psi		9.278 psi	
Statistics based on 18 of 18 reporting participants					

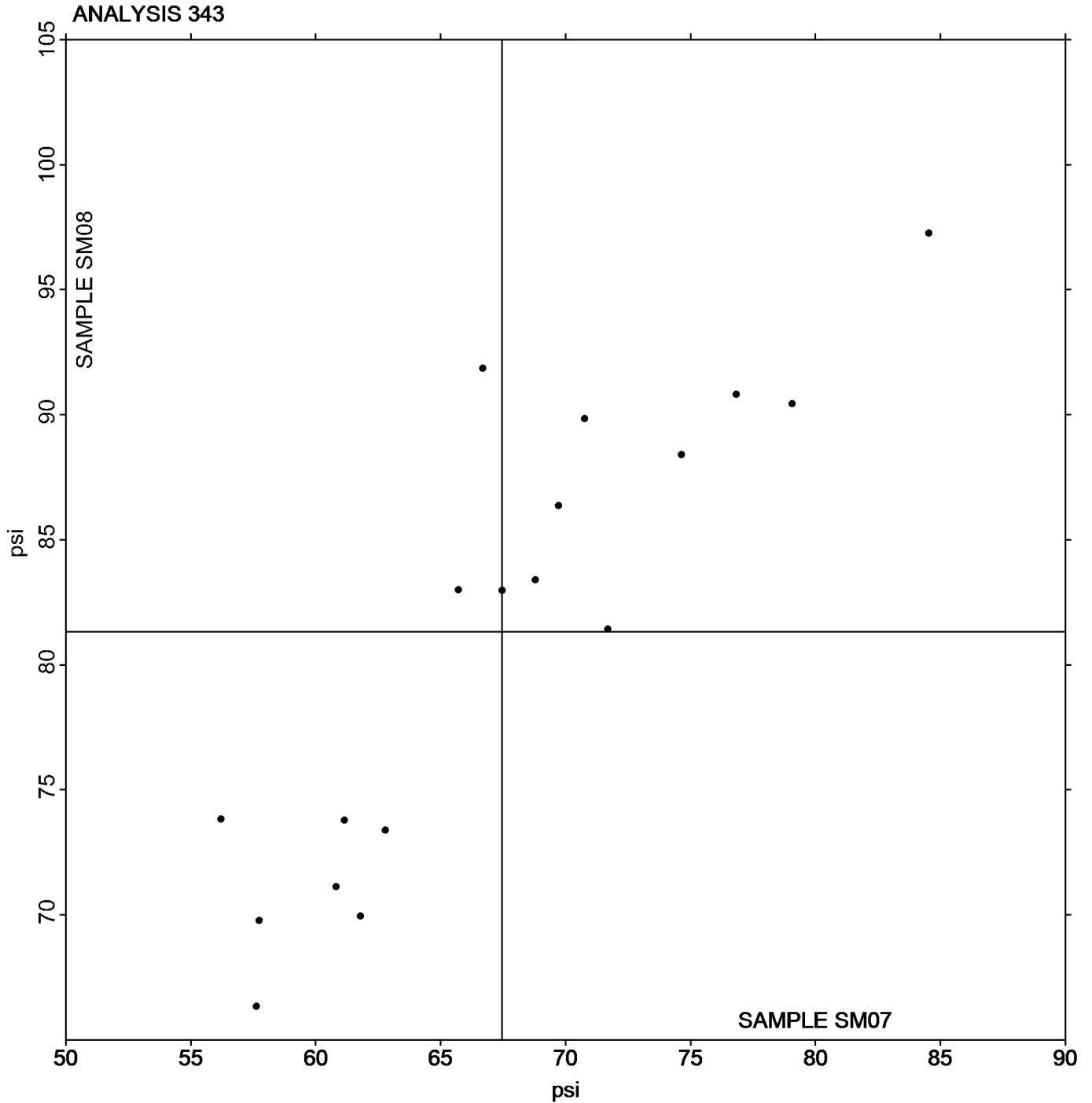
Instrument Code List

- | | |
|-------------------------------------|---|
| (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 **SM07** = 67.450 psi

Grand Mean Sample **SM08** = 81.332 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 345
Z-Direction Tensile, Recycled Paperboard

WebCode	Data Flag	Sample SZ07			Sample SZ08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
22HCU4		42.40	0.80	0.29	38.40	0.28	0.10	CA
2NTC2F		46.80	5.20	1.89	42.00	3.88	1.41	PG
7YH346		39.42	-2.18	-0.79	36.52	-1.60	-0.58	TZ
88AXHE		40.42	-1.18	-0.43	37.30	-0.82	-0.30	TL
A7NDVY		39.80	-1.80	-0.66	42.00	3.88	1.41	CA
BVMA4B		42.22	0.62	0.22	41.50	3.38	1.23	TL
EGV88A		37.65	-3.95	-1.44	34.23	-3.89	-1.41	LW
JM96XX	X	25.54	-16.06	-5.84	37.50	-0.62	-0.22	LW
K3ENAU		40.76	-0.84	-0.31	35.46	-2.66	-0.97	LW
KHK2FQ		36.60	-5.00	-1.82	34.00	-4.12	-1.50	CA
KNCV7J		41.66	0.06	0.02	35.88	-2.24	-0.81	TL
KRQ4H3		42.40	0.80	0.29	38.20	0.08	0.03	CA
QGW7A7		44.05	2.45	0.89	38.07	-0.04	-0.02	XX
TQBC4R		44.16	2.56	0.93	41.04	2.92	1.06	TL
TV4CK9		44.10	2.50	0.91	39.02	0.90	0.33	TZ

Summary Statistics		
	Sample SZ07	Sample SZ08
Grand Means	41.603 psi	38.116 psi
SD Btwn Labs	2.749 psi	2.751 psi
Statistics based on 14 of 15 reporting participants		

Comments on assigned Data Flags for Test #345

JM96XX (X) - Data for Sample SZ07 are low. Inconsistent in testing within determinations for Sample SZ08.

Instrument Code List

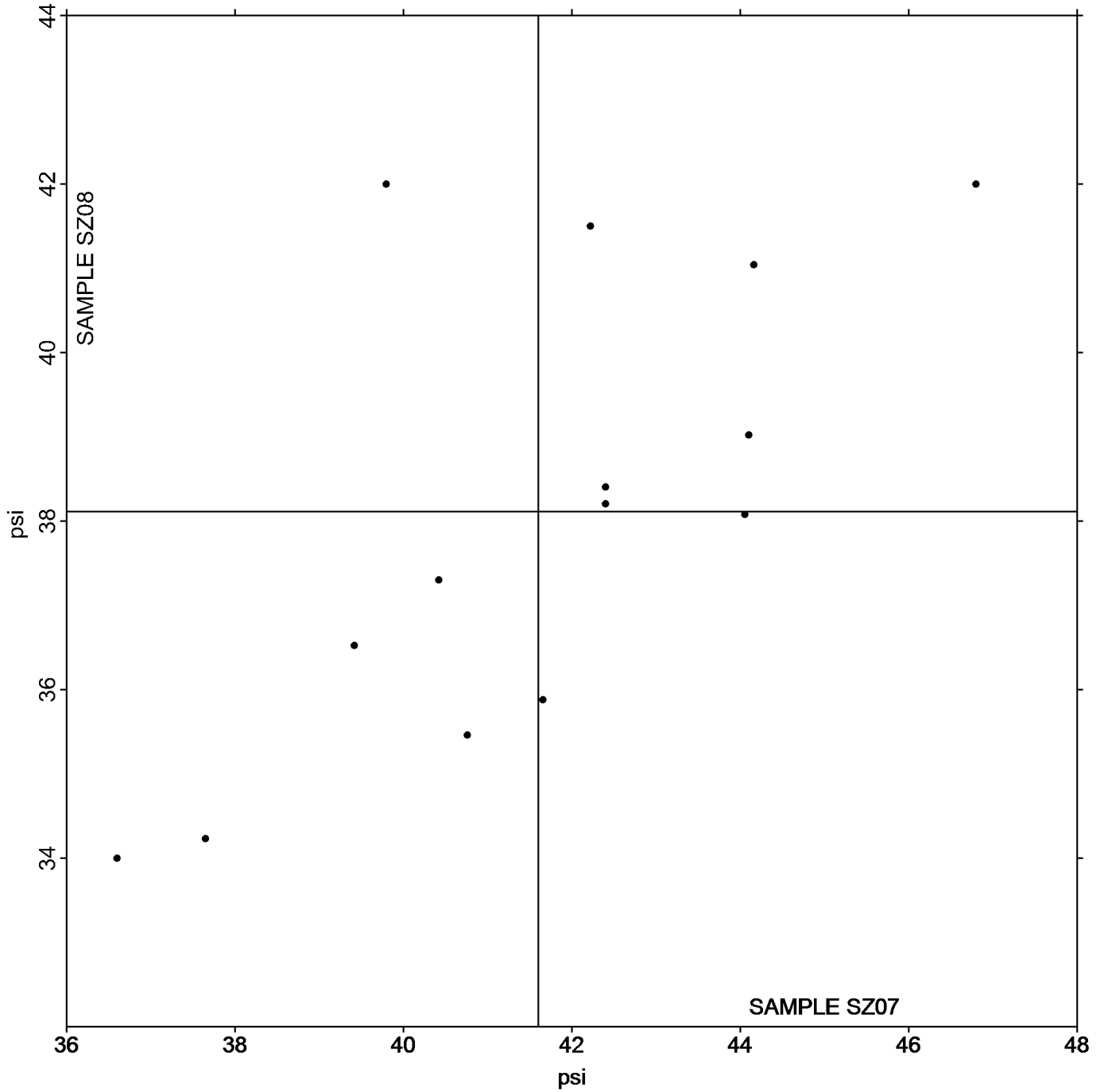
- | | |
|--------------------------------------|---|
| (CA) - CSI CS-163 | (LW) - L & W ZD Tensile Tester |
| (PG) - Perkins Model A Mullen Tester | (TL) - TMI Lab Master |
| (TZ) - TMI Monitor/ZDT Tester | (XX) - Instrument make/model not specified by lab |

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

Grand Mean Sample **SZ07** = 41.603 psi

Grand Mean Sample **SZ08** = 38.116 psi

ANALYSIS 345



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 SN07			Sample SN08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
8HNP9A		106.8	0.3	0.06	137.4	4.5	0.45	HZ
9643MV		103.0	-3.5	-0.58	132.4	-0.5	-0.05	HY
9CYW8U		109.0	2.5	0.43	141.2	8.3	0.83	XX
9PLGWA		111.8	5.3	0.90	134.2	1.3	0.13	HY
AWDDXH		103.4	-3.1	-0.51	128.8	-4.1	-0.40	HY
DGX6TJ		99.8	-6.7	-1.12	140.8	7.9	0.79	HY
FDL9ZQ		102.8	-3.7	-0.62	119.3	-13.6	-1.35	KR
HA2746		105.4	-1.1	-0.18	128.6	-4.3	-0.42	HY
KRQ4H3		109.6	3.1	0.53	142.2	9.3	0.93	XX
NA2WVV		112.0	5.5	0.93	146.2	13.3	1.33	HY
NMK8CD		114.0	7.5	1.27	131.2	-1.7	-0.17	HY
PKCDVK		101.0	-5.5	-0.92	127.0	-5.9	-0.58	HY
RQFYZT		97.3	-9.1	-1.54	128.5	-4.3	-0.43	HZ
TG6MAU		105.4	-1.1	-0.18	118.0	-14.9	-1.48	HY
TV4CK9	*	123.4	17.0	2.85	159.7	26.8	2.66	HZ
U9RTUR		110.4	3.9	0.66	137.0	4.1	0.41	HY
VWPVKW		103.5	-2.9	-0.49	120.2	-12.6	-1.25	HY
WM3NAT		101.6	-4.9	-0.82	127.4	-5.5	-0.54	HY
YHU6QV		103.4	-3.1	-0.51	123.8	-9.1	-0.90	HY
Z3HP6Q		105.6	-0.9	-0.15	133.4	0.5	0.05	HZ

Sample SN07		Summary Statistics	Sample SN08	
Grand Means	106.46 1000th ft-lbs		132.87 1000th ft-lbs	
SD Btwn Labs	5.95 1000th ft-lbs		10.06 1000th ft-lbs	
Statistics based on 20 of 20 reporting participants				

Instrument Code List

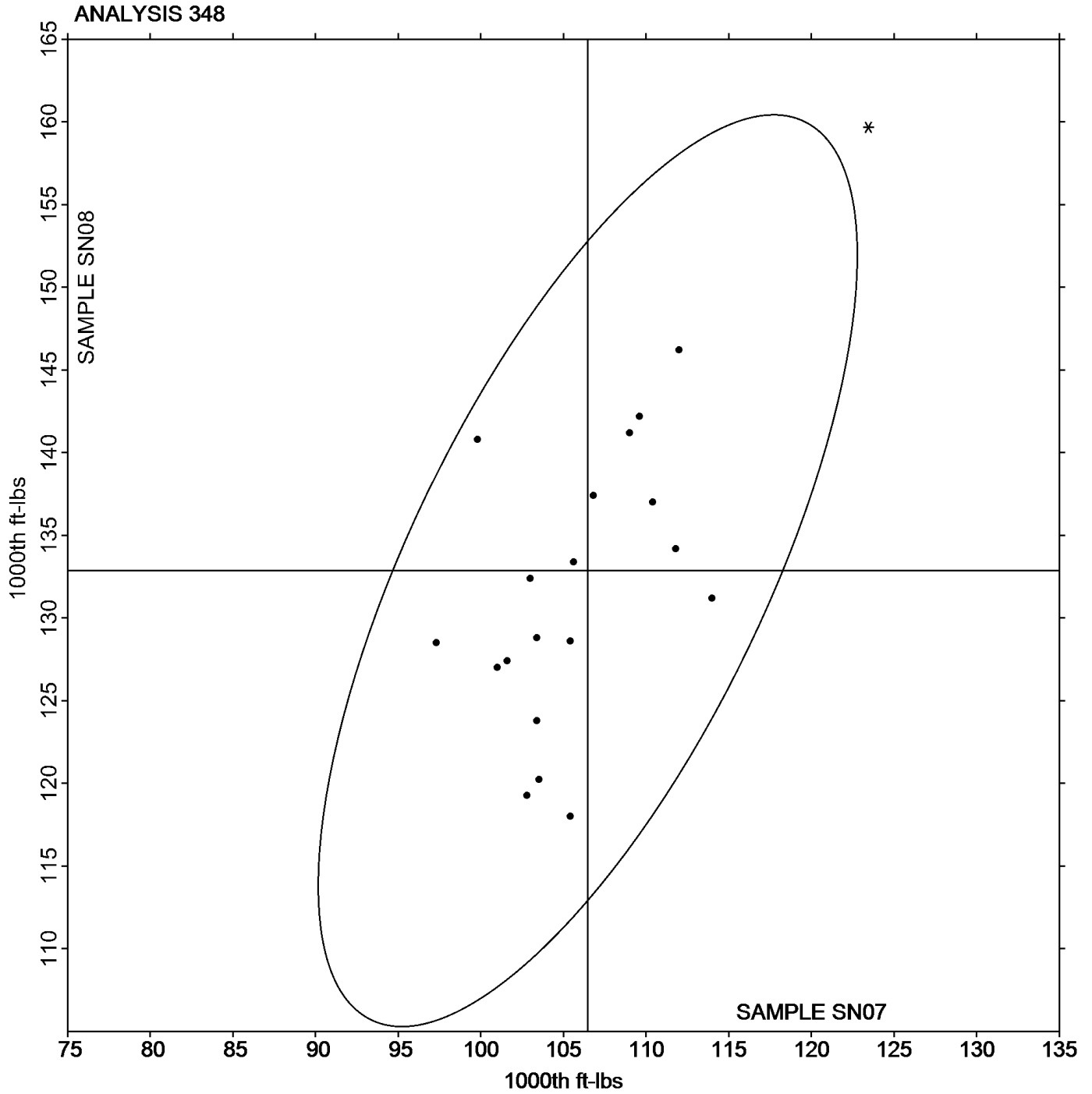
(HY) - Huygen Digitized Scott Internal Bond Tester
 (KR) - Kumagai Riki Kogyo Internal Bond Tester

(HZ) - Huygen Internal Bond Tester with AccuPress
 (XX) - Instrument make/model not specified by lab

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

Grand Mean Sample **SN07** = 106.46 1000th ft-lbs

Grand Mean Sample **SN08** = 132.87 1000th ft-lbs



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

WebCode	Data Flag	Sample SP07			Sample SP08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2NTC2F		101.20	9.97	0.95	127.6	14.9	0.87	TM
3U2QRR		84.76	-6.47	-0.62	109.0	-3.7	-0.21	SC
APJ7HH		79.40	-11.83	-1.13	94.9	-17.8	-1.04	TM
EGV88A		78.23	-13.00	-1.24	88.9	-23.8	-1.39	TM
K3ENAU		91.00	-0.23	-0.02	104.8	-7.9	-0.46	XX
K6YCAF		100.60	9.37	0.89	125.4	12.7	0.75	SC
KNCV7J	X	81.00	-10.23	-0.98	102.0	-10.7	-0.62	XX
QRAXJE		81.19	-10.04	-0.96	104.6	-8.0	-0.47	TM
VZ9JTV		113.80	22.57	2.16	152.8	40.1	2.35	XX
WFYC42		85.60	-5.63	-0.54	113.8	1.1	0.07	TM
WGDT6L		96.38	5.15	0.49	119.8	7.2	0.42	SC
YFBR8T		90.80	-0.43	-0.04	108.8	-3.9	-0.23	SC
ZD3W72		91.74	0.52	0.05	101.5	-11.2	-0.66	XX

		Summary Statistics	
	Sample SP07		Sample SP08
Grand Means	91.225 1000th ft-lbs		112.66 1000th ft-lbs
SD Btwn Labs	10.475 1000th ft-lbs		17.09 1000th ft-lbs
Statistics based on 12 of 13 reporting participants			

Analysis Notes:

KNCV7J - Data appear to be off by a factor of .001; data converted by CTS (x1000).

Instrument Code List

(SC) - Scott Internal Bond Tester (Manual)

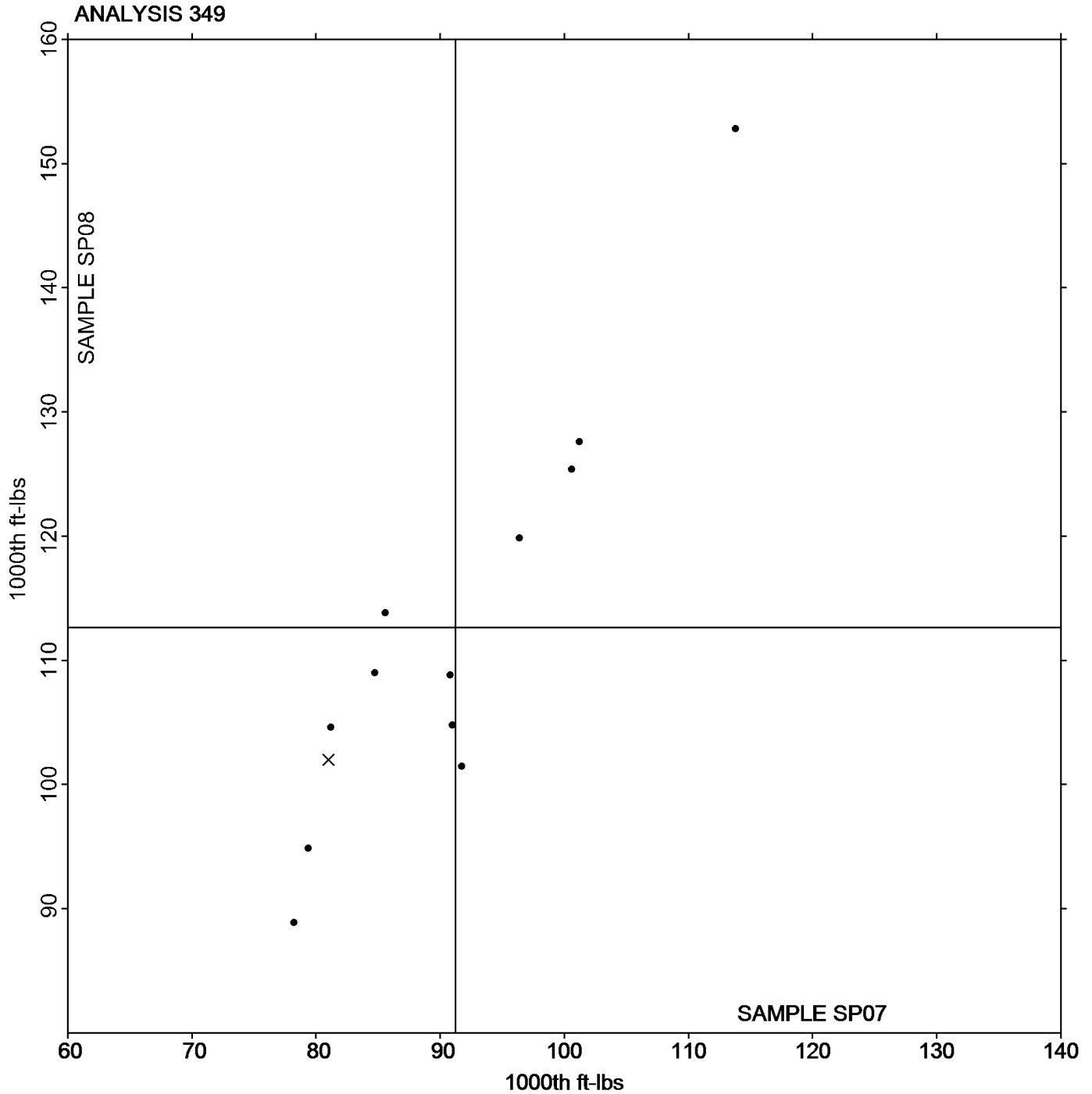
(TM) - TMI Monitor/Internal Bond Tester

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

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

Grand Mean Sample **SP07** = 91.225 1000th ft-lbs

Grand Mean Sample **SP08** = 112.66 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.