



## Paper & Paperboard Interlaboratory Testing Program

### Summary Report #246S - May 2010

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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.

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

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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

## Key for Web Summary Reports (Page 1 of 2)

<b>WebCode</b>	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.
<b>Lab Mean</b>	The average of the values obtained for each sample by the participant.
<b>Grand Mean</b>	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.
<b>Difference from Grand Mean</b>	The difference of the LAB MEAN from the GRAND MEAN.
<b>Between-Lab Standard Deviation</b>	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).
<b>Comparative Performance Value</b>	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.
<b>Inst Code</b>	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.
<b>Data Flag</b>	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	<b>CAUTION</b> - 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	<b>STOP</b> - 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	<b>PROCEED</b> - 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.

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### 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.

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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 SA57			Sample SA58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J49GE		28.50	1.29	0.84	32.45	0.74	0.32
2QJW9U		29.30	2.09	1.37	36.58	4.87	2.07
3M4JF8		27.19	-0.02	-0.01	31.84	0.14	0.06
3Y3FET		26.77	-0.44	-0.29	31.74	0.03	0.01
3YBQXP		26.88	-0.34	-0.22	30.78	-0.93	-0.39
44FC33		25.40	-1.81	-1.19	26.60	-5.11	-2.17
4BW39V		27.44	0.23	0.15	30.65	-1.06	-0.45
4QZPCP		27.15	-0.06	-0.04	32.81	1.10	0.47
7FJG4F		25.40	-1.81	-1.19	29.70	-2.01	-0.85
7MJGGT		26.28	-0.93	-0.61	30.78	-0.93	-0.39
8J8LUW		26.90	-0.31	-0.20	32.14	0.44	0.19
9RFFNP		25.40	-1.81	-1.19	30.65	-1.06	-0.45
B7NFXX		24.80	-2.41	-1.58	28.10	-3.61	-1.53
B8829Z		28.86	1.65	1.08	31.95	0.25	0.10
BU3QZT	*	26.70	-0.51	-0.33	36.15	4.44	1.89
CBZN48		27.76	0.55	0.36	34.45	2.74	1.17
EFA8TT		28.10	0.89	0.58	30.80	-0.91	-0.39
FYLG8X		28.96	1.75	1.15	31.45	-0.26	-0.11
GEYQU6		29.98	2.77	1.81	35.85	4.14	1.76
JHKGL7		27.91	0.70	0.46	31.91	0.20	0.09
KWLPBU		27.62	0.41	0.27	31.75	0.05	0.02
LX3R2X		27.10	-0.11	-0.07	33.70	1.99	0.85
M9FG8G		29.39	2.18	1.43	32.80	1.09	0.47
Q3GXJ3		29.20	1.99	1.30	34.60	2.89	1.23
RQW79X		25.20	-2.01	-1.32	30.20	-1.51	-0.64
TGQDUA		25.08	-2.13	-1.40	29.94	-1.77	-0.75
VTXP7Z		25.70	-1.51	-0.99	29.65	-2.06	-0.87
W4F7JL		26.05	-1.16	-0.76	28.50	-3.21	-1.36
WDD38G		28.02	0.81	0.53	31.74	0.04	0.02
X9XXZ2		29.29	2.08	1.36	34.72	3.01	1.28
Y2BK76		25.37	-1.84	-1.21	27.86	-3.85	-1.64
ZH8YJ6		24.70	-2.51	-1.64	29.60	-2.11	-0.90
ZHX8HA		28.14	0.93	0.61	32.65	0.94	0.40
ZKCGUU		28.65	1.44	0.94	32.90	1.19	0.51

Sample SA57		Summary Statistics	Sample SA58	
Grand Means	27.211 psi		31.705 psi	
SD Btw Labs	1.528 psi		2.350 psi	
Statistics based on 34 of 34 reporting participants				

**Notes for Analysis 305**

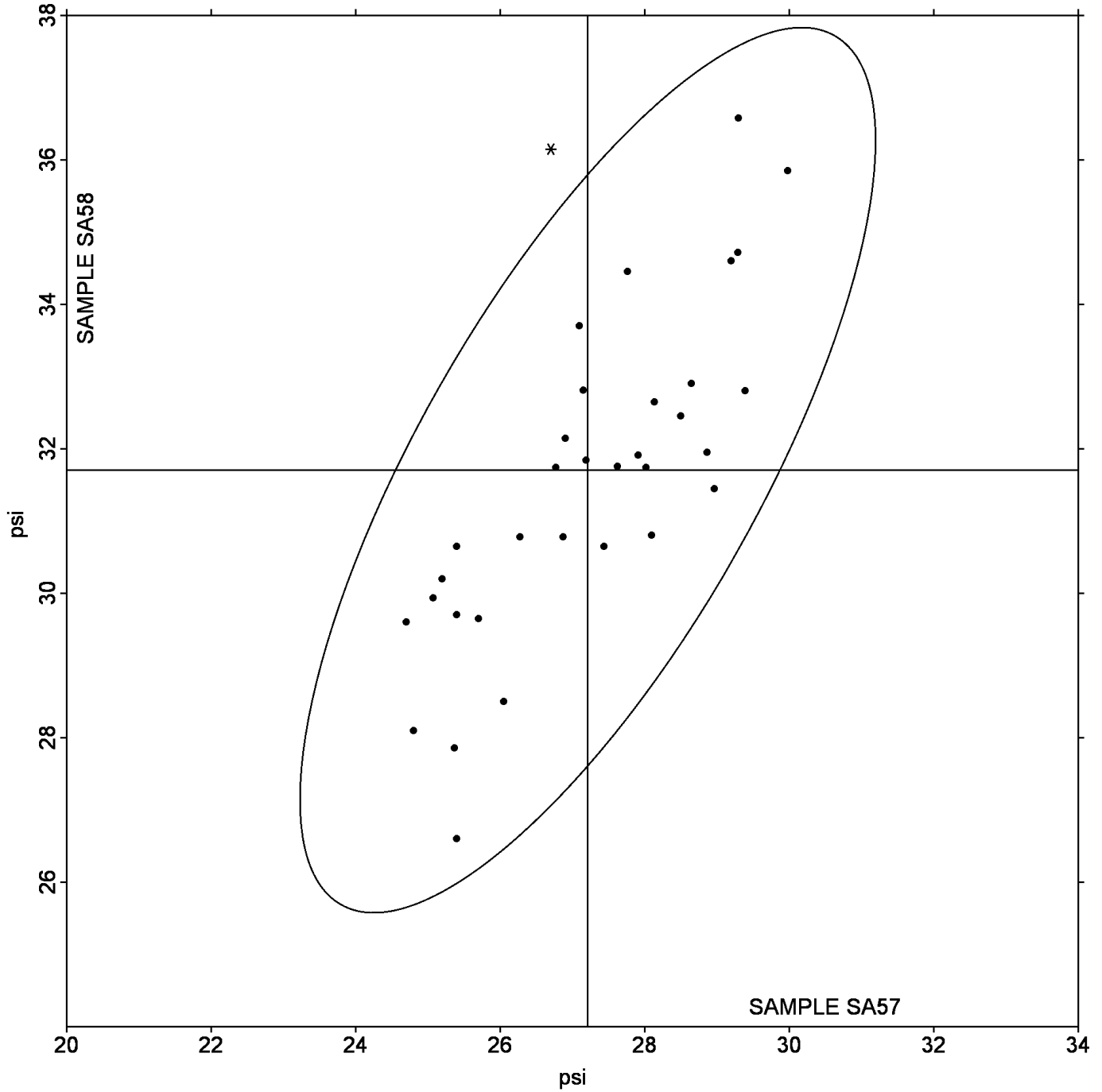
No Data Flags assigned for this analysis.

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

Grand Mean Sample SA57 = 27.211 psi

Grand Mean Sample SA58 = 31.705 psi

ANALYSIS 305



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

WebCode	Data Flag	Sample SB57			Sample SB58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
36CM4X		53.54	-2.86	-0.98	61.37	-5.90	-1.76
37UZAF		56.70	0.30	0.10	66.25	-1.02	-0.30
6X62NK		54.77	-1.63	-0.56	61.81	-5.46	-1.63
7FRRMC		56.00	-0.40	-0.14	63.30	-3.97	-1.18
7GNBE7		54.07	-2.33	-0.80	69.34	2.08	0.62
8FVQFD		55.72	-0.67	-0.23	65.78	-1.49	-0.45
CPLW8Z		58.09	1.69	0.58	68.59	1.32	0.39
ETELUP		51.85	-4.55	-1.56	65.30	-1.97	-0.59
HXMAJW		55.03	-1.37	-0.47	64.95	-2.32	-0.69
J28JB9		54.66	-1.74	-0.60	65.74	-1.53	-0.46
JFA6MA		53.58	-2.82	-0.97	67.16	-0.11	-0.03
JRBJVM		62.12	5.73	1.97	72.07	4.81	1.43
JYYKPD	X	71.20	14.80	5.08	82.40	15.13	4.52
LDE93V	X	77.30	20.90	7.18	85.40	18.13	5.41
LJELVW		60.00	3.60	1.24	70.45	3.18	0.95
M4LE8N		61.50	5.10	1.75	69.50	2.23	0.67
MLBBYH		60.80	4.40	1.51	72.60	5.33	1.59
NEYURN		56.60	0.21	0.07	68.62	1.36	0.41
NTGNZ8		60.26	3.87	1.33	68.57	1.31	0.39
PWZ2J9		54.55	-1.85	-0.63	63.88	-3.39	-1.01
R7GGEM		61.77	5.38	1.85	72.98	5.71	1.70
R7GMJM		55.85	-0.54	-0.19	67.33	0.06	0.02
RAAMPH		54.18	-2.22	-0.76	65.14	-2.12	-0.63
RN4U7L		52.00	-4.40	-1.51	61.03	-6.24	-1.86
UQT7JH		53.56	-2.83	-0.97	64.66	-2.61	-0.78
WHGTUN		55.62	-0.77	-0.27	65.86	-1.40	-0.42
XAAVX4		56.64	0.24	0.08	71.29	4.02	1.20
XMNKF8		53.70	-2.70	-0.93	67.40	0.13	0.04
Y3U86M		57.90	1.50	0.52	68.00	0.73	0.22
Y4VZHM		58.08	1.69	0.58	69.55	2.28	0.68
Z34PKY		56.31	-0.09	-0.03	72.23	4.96	1.48

Sample SB57		Summary Statistics	Sample SB58	
Grand Means	56.396 psi		67.267 psi	
SD Btwn Labs	2.912 psi		3.350 psi	
Statistics based on 29 of 31 reporting participants				

**Comments on assigned Data Flags for Test #310**

JYYKPD (X) - Extreme data.

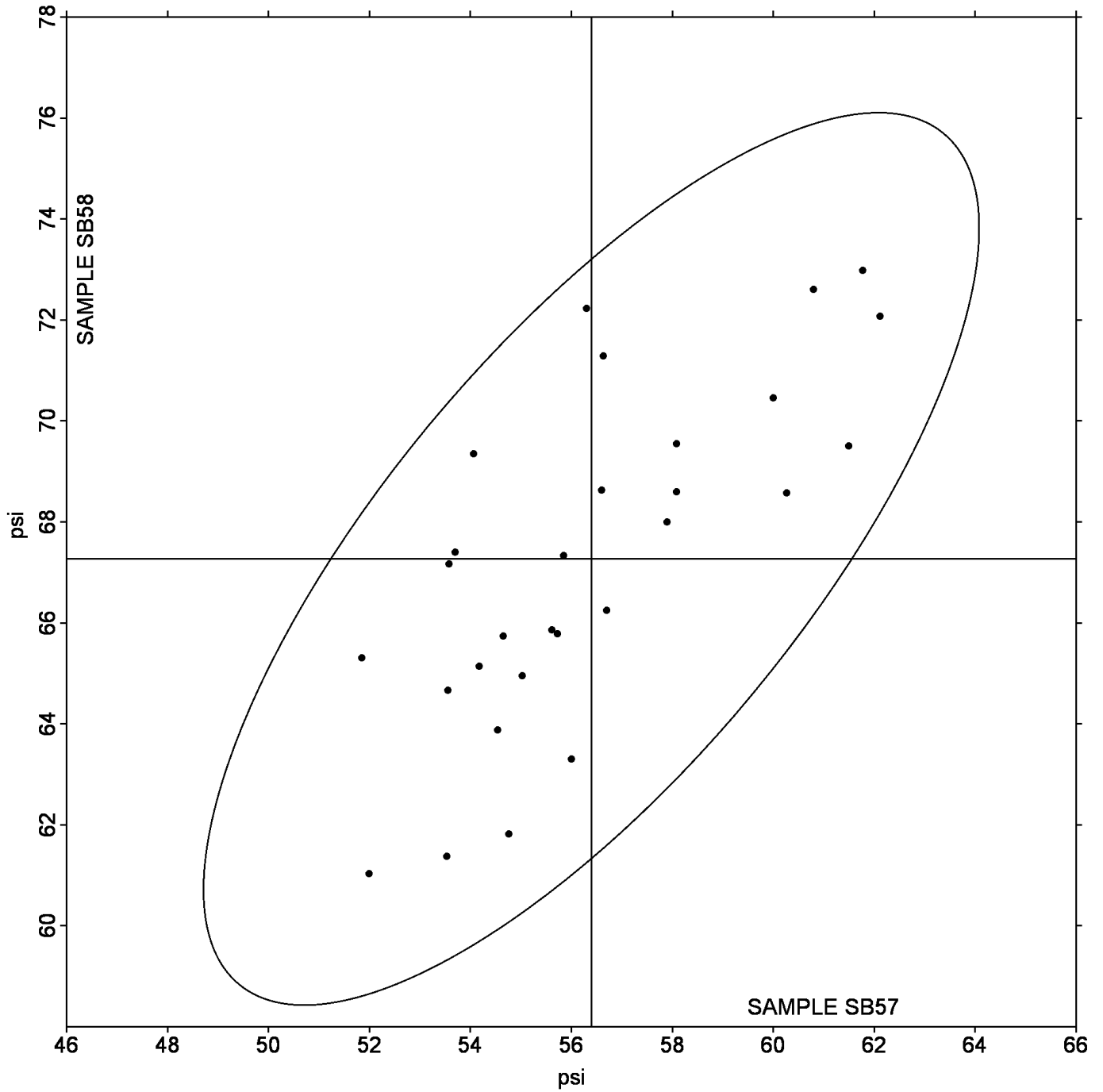
LDE93V (X) - Extreme data.

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

Grand Mean Sample **SB57** = 56.396 psi

Grand Mean Sample **SB58** = 67.267 psi

ANALYSIS 310



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

WebCode	Data Flag	Sample SK57			Sample SK58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2VN9Q3		22.02	1.73	0.93	22.12	2.00	1.08
3QUUFQ		21.40	1.11	0.60	20.40	0.28	0.15
3YYQ9X		19.65	-0.64	-0.34	20.14	0.02	0.01
4GJTUQ		17.11	-3.18	-1.71	17.04	-3.08	-1.66
7MCXAB		20.44	0.15	0.08	20.16	0.04	0.02
7THLWK		20.75	0.45	0.24	20.98	0.86	0.46
DWTWW		20.53	0.24	0.13	20.15	0.03	0.02
GUWH2E		23.30	3.01	1.62	22.50	2.38	1.29
GZ7UZZ		16.66	-3.63	-1.95	15.97	-4.15	-2.24
KZ8ZLD		18.19	-2.11	-1.13	17.92	-2.20	-1.19
MTBCCW		21.30	1.01	0.54	21.30	1.18	0.64
NN2B7K		20.42	0.13	0.07	20.64	0.52	0.28
QF7Z28		21.20	0.91	0.49	21.17	1.05	0.57
TGB6R2		22.20	1.91	1.03	21.80	1.68	0.91
XKEKBZ		19.20	-1.09	-0.59	19.50	-0.62	-0.33

Sample SK57		Summary Statistics	Sample SK58	
Grand Means	20.291 Grams		20.119 Grams	
SD Btwn Labs	1.859 Grams		1.852 Grams	
Statistics based on 15 of 15 reporting participants				

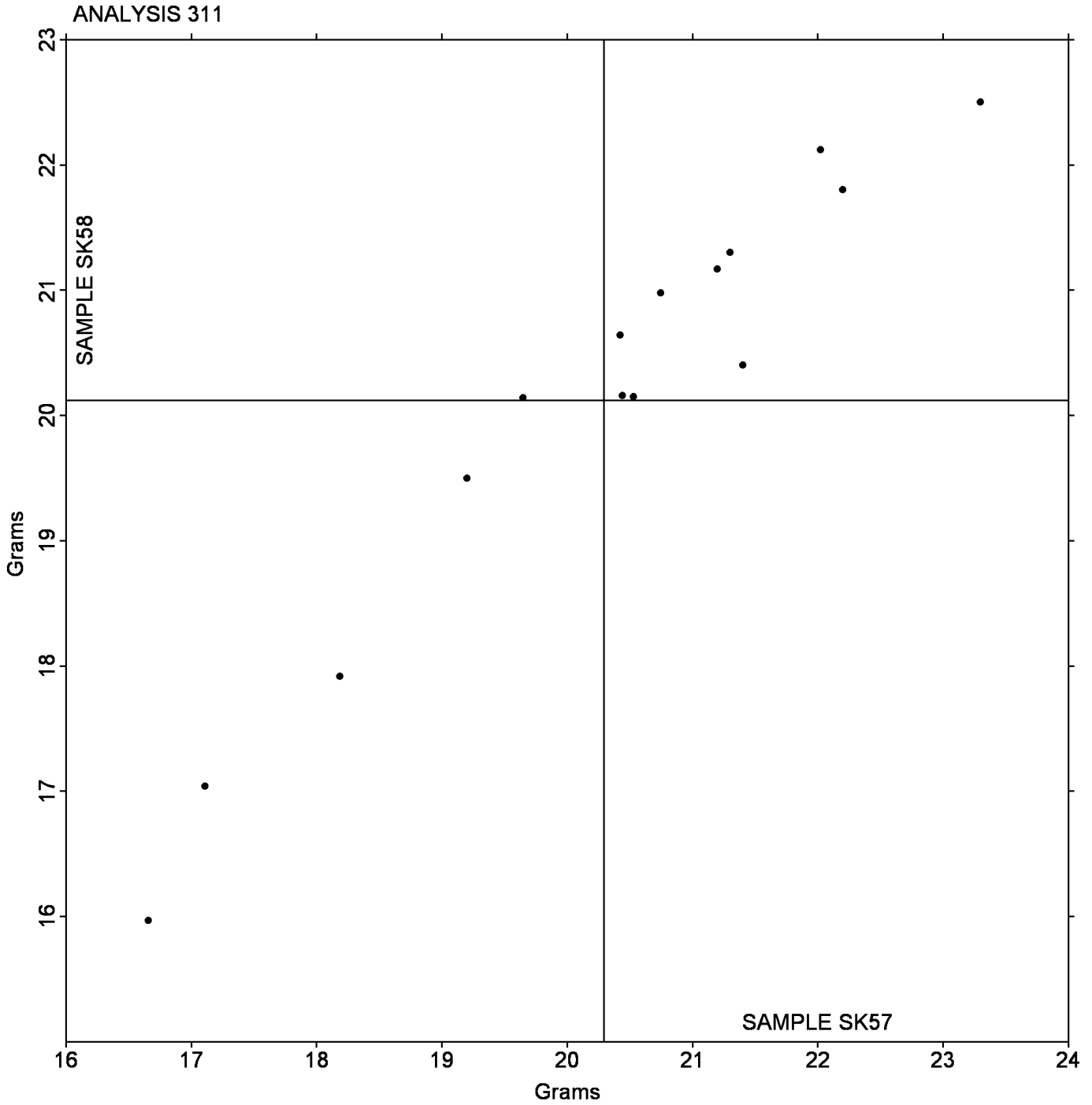
**Notes for Analysis 311**

No Data Flags assigned for this analysis.

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

Grand Mean Sample **SK57** = 20.291 Grams

Grand Mean Sample **SK58** = 20.119 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 SC57			Sample SC58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2BVFG6		54.11	5.75	1.50	71.05	8.37	1.67
2DCVJR	X	50.65	2.29	0.60	67.65	4.97	0.99
2DP7X6		46.20	-2.16	-0.56	59.50	-3.18	-0.64
2DYCZ8		49.00	0.63	0.16	64.99	2.30	0.46
2PCCW2		50.68	2.32	0.60	65.50	2.82	0.56
3U6VDP		48.40	0.03	0.01	64.46	1.77	0.35
4WYTQG		52.82	4.46	1.16	64.85	2.17	0.43
78FLTG		46.04	-2.32	-0.61	57.98	-4.70	-0.94
7G3QJ7		50.30	1.94	0.50	66.40	3.72	0.74
7H87AE		52.59	4.22	1.10	69.75	7.07	1.41
8678FK		50.40	2.04	0.53	62.40	-0.28	-0.06
899TE7		48.66	0.30	0.08	62.36	-0.32	-0.06
8D9FVR	X	43.63	-4.74	-1.23	66.47	3.78	0.76
8VPZGX		49.90	1.54	0.40	64.40	1.72	0.34
9HCFX3		44.48	-3.88	-1.01	57.42	-5.26	-1.05
9U6YC9		48.40	0.04	0.01	61.00	-1.68	-0.34
A44ZD7		47.79	-0.57	-0.15	63.75	1.07	0.21
A8FQWL	*	47.40	-0.96	-0.25	66.90	4.22	0.84
B4NJXM		49.12	0.76	0.20	67.02	4.34	0.87
BJMWME		42.05	-6.31	-1.64	52.42	-10.26	-2.05
BLKDNM		53.58	5.22	1.36	67.79	5.11	1.02
BY7XNW		54.86	6.50	1.69	68.27	5.59	1.12
CCQLD2		42.84	-5.53	-1.44	57.27	-5.42	-1.08
CKRQX6		47.89	-0.47	-0.12	63.39	0.71	0.14
CNPK77		47.01	-1.36	-0.35	59.77	-2.92	-0.58
CXB LM3		49.05	0.69	0.18	65.04	2.36	0.47
CYVAGG		51.60	3.24	0.84	67.00	4.32	0.86
D26ZKC		53.24	4.88	1.27	68.38	5.70	1.14
D2VWED		54.96	6.60	1.72	67.87	5.19	1.04
D4333Z		50.37	2.01	0.52	64.93	2.25	0.45
DLRNTH		42.57	-5.79	-1.51	53.12	-9.56	-1.91
DUAZA3		46.62	-1.75	-0.46	62.12	-0.56	-0.11
E7Z3F3		44.86	-3.50	-0.91	62.60	-0.08	-0.02
ECFWZY		48.77	0.41	0.11	64.01	1.32	0.26
FN9QWT		46.77	-1.59	-0.41	60.55	-2.13	-0.43
G9FC8D		46.60	-1.76	-0.46	62.14	-0.54	-0.11
GLWUK4		48.59	0.22	0.06	63.95	1.26	0.25
H2EBQJ		47.80	-0.56	-0.15	63.82	1.14	0.23
J7CEN3		45.00	-3.36	-0.88	60.40	-2.28	-0.46
JFHJBD		45.24	-3.12	-0.81	57.26	-5.42	-1.08
JVLTPD		43.85	-4.51	-1.18	55.28	-7.40	-1.48
JWWH4H		45.91	-2.45	-0.64	57.35	-5.34	-1.07
K4W6QG		51.59	3.23	0.84	67.28	4.60	0.92

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

WebCode	Data Flag	Sample SC57			Sample SC58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
KLP8W7		44.38	-3.98	-1.04	55.94	-6.74	-1.35
KMBMPT		50.94	2.58	0.67	66.66	3.98	0.79
KNR68Y	*	38.60	-9.77	-2.54	49.11	-13.58	-2.71
LQNQZ4	*	57.42	9.06	2.36	71.04	8.36	1.67
LTBKJP		47.23	-1.13	-0.29	61.29	-1.40	-0.28
M6HQAHA		43.10	-5.26	-1.37	54.60	-8.08	-1.62
MMDKCU		45.02	-3.34	-0.87	57.25	-5.43	-1.09
N7BYU8		44.48	-3.88	-1.01	57.58	-5.10	-1.02
NGRQGV		48.16	-0.20	-0.05	61.38	-1.30	-0.26
P8BP37		44.80	-3.56	-0.93	57.30	-5.38	-1.08
PXURM3		57.28	8.92	2.32	72.48	9.80	1.96
PZAD6M		46.80	-1.56	-0.41	61.40	-1.28	-0.26
QB7YQC		45.18	-3.18	-0.83	58.91	-3.77	-0.75
QKLVAW	*	43.88	-4.48	-1.17	52.82	-9.86	-1.97
QL24D7		49.30	0.94	0.24	65.38	2.70	0.54
QMLQC2		49.07	0.70	0.18	65.72	3.04	0.61
QV326U	X	45.96	-2.40	-0.63	111.28	48.60	9.71
RDQVYQ		48.70	0.34	0.09	62.22	-0.46	-0.09
RYA3BJ		51.03	2.66	0.69	66.62	3.94	0.79
RZAWJ3		48.32	-0.04	-0.01	63.64	0.96	0.19
UFYMC3		45.00	-3.36	-0.88	59.28	-3.40	-0.68
UMBX9A		52.06	3.69	0.96	66.50	3.81	0.76
UMPKG4		41.40	-6.96	-1.81	56.30	-6.38	-1.28
UNCPLA		51.45	3.09	0.80	66.72	4.04	0.81
V746BY		55.43	7.07	1.84	72.98	10.30	2.06
VP37H4		51.40	3.04	0.79	68.72	6.04	1.21
W99CTH		47.58	-0.78	-0.20	64.27	1.59	0.32
YDEHU7		47.90	-0.46	-0.12	63.00	0.32	0.06
Z2VNRC		51.34	2.98	0.77	65.71	3.03	0.60
Z6QFKG		45.34	-3.02	-0.79	59.14	-3.54	-0.71
ZRC6FT	*	55.81	7.45	1.94	68.47	5.79	1.16
ZTUJ89		45.90	-2.46	-0.64	58.30	-4.38	-0.88
ZWKJTX		48.42	0.06	0.01	63.42	0.74	0.15

Sample SC57		Summary Statistics	Sample SC58	
Grand Means	48.365 Grams		62.683 Grams	
SD Btwn Labs	3.841 Grams		5.004 Grams	
Statistics based on 73 of 76 reporting participants				

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

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**Comments on assigned Data Flags for Test #312**

2DCVJR (X) - Data appear to be off by a factor of 2; data converted by CTS (/2).

8D9FVR (X) - Inconsistent in testing between samples.

QV326U (X) - Extreme data for Sample SC58.

**Analysis Notes:**

H2EBQJ - One determination removed from the Lab Mean of Sample SC58 per Grubb's Test at 1% risk (TAPPI 1205).

# TAPPI-CTS Interlaboratory Testing Program

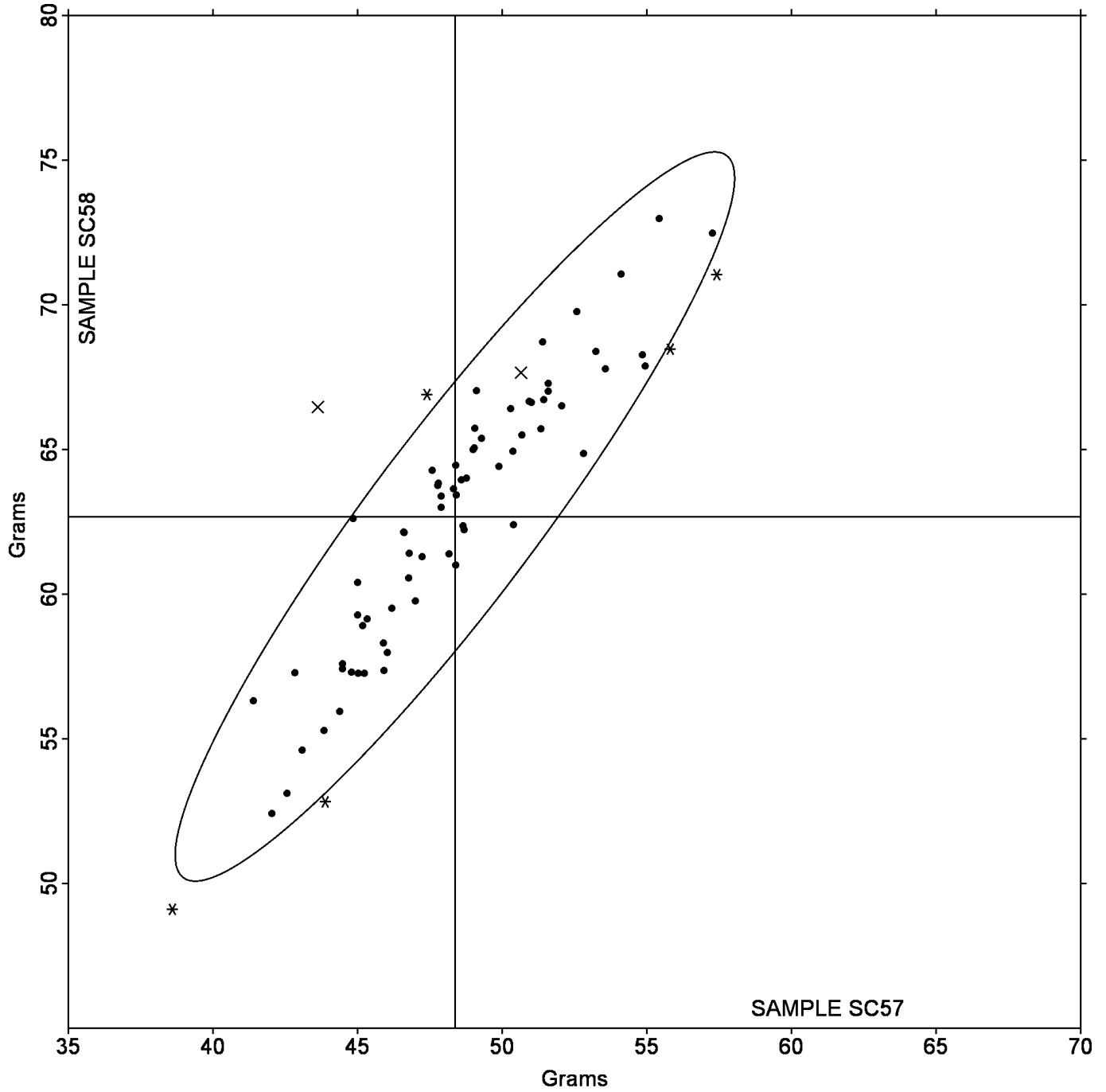
## Analysis 312

### Tearing Strength - Printing Papers

Grand Mean Sample **SC57** = 48.365 Grams

Grand Mean Sample **SC58** = 62.683 Grams

#### ANALYSIS 312



## TAPPI-CTS Interlaboratory Testing Program

## Analysis 314

## Tearing Strength - Packaging Papers

WebCode	Data Flag	Sample SD57			Sample SD58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XK98D		156.2	-10.4	-0.95	180.9	-0.6	-0.05
3DUD3G		166.3	-0.3	-0.03	183.1	1.7	0.15
44VQAC	*	172.7	6.1	0.56	200.8	19.3	1.74
6BLV3C		184.1	17.5	1.60	200.5	19.0	1.72
6L7WB8		165.4	-1.2	-0.11	180.4	-1.1	-0.10
8GPGJ7		169.8	3.2	0.29	190.4	8.9	0.81
8PBMWC	X	168.1	1.5	0.14	176.4	-5.0	-0.45
99J6KM		182.6	16.0	1.46	191.0	9.5	0.86
9AQLAR		152.0	-14.6	-1.34	167.6	-13.9	-1.25
9XW3VL		178.4	11.8	1.08	188.1	6.7	0.60
BQX6NM		159.6	-7.0	-0.64	173.2	-8.3	-0.75
CV73F8	*	140.2	-26.4	-2.42	150.2	-31.3	-2.83
E6YB32		164.1	-2.5	-0.23	175.3	-6.2	-0.56
EHBFBH		179.4	12.8	1.17	200.0	18.6	1.68
EZQVPX		168.1	1.5	0.14	186.6	5.2	0.47
FA74LQ		172.1	5.5	0.50	177.3	-4.1	-0.37
FK4J9P		150.6	-16.0	-1.47	166.0	-15.5	-1.40
G2ZK4U		159.1	-7.6	-0.69	178.0	-3.4	-0.31
G4HZ3Z		167.0	0.4	0.04	184.2	2.7	0.25
G9KN6V		161.7	-4.9	-0.45	182.8	1.3	0.12
H4PPH4		161.2	-5.4	-0.49	173.6	-7.9	-0.71
HNTBHB		173.2	6.6	0.60	187.1	5.7	0.51
J3JDXZ		164.2	-2.4	-0.22	177.0	-4.5	-0.41
K2QQ8H	X	133.1	-33.5	-3.07	150.8	-30.7	-2.77
KVFQJR		187.8	21.2	1.94	197.0	15.5	1.40
LTHW3M		164.1	-2.5	-0.23	183.1	1.7	0.15
M26G7X	X	160.8	-5.8	-0.53	202.8	21.3	1.93
MNP3RT	*	169.9	3.3	0.30	168.9	-12.6	-1.14
MRNMD3		163.0	-3.6	-0.33	179.2	-2.3	-0.21
NHWAA		160.0	-6.6	-0.60	181.6	0.1	0.01
NPHD48	*	193.2	26.6	2.44	199.6	18.1	1.64
NRACJ6		158.6	-8.0	-0.73	175.8	-5.7	-0.51
QNH2EV	X	167.1	0.5	0.04	182.6	1.1	0.10
R9AAMC		164.0	-2.6	-0.24	179.8	-1.7	-0.15
UURGEH		155.2	-11.4	-1.04	170.2	-11.3	-1.02
VAKN2V		170.4	3.8	0.35	182.5	1.0	0.09
VN7VF9		160.9	-5.7	-0.52	177.0	-4.5	-0.40
WDK9NJ		172.6	6.0	0.55	191.3	9.8	0.89
WQXQW		162.7	-3.9	-0.36	173.0	-8.4	-0.76
WZFUML		154.2	-12.4	-1.14	167.8	-13.7	-1.23
YJZMAN	X	214.4	47.8	4.37	222.9	41.5	3.75
Z2PCTU		179.8	13.2	1.21	193.4	11.9	1.08
ZP8CNF	X	169.7	3.1	0.28	182.5	1.1	0.10

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

	Sample SD57	Summary Statistics	Sample SD58
Grand Means	166.60 Grams		181.47 Grams
SD Btwn Labs	10.92 Grams		11.07 Grams
Statistics based on 37 of 43 reporting participants			

**Comments on assigned Data Flags for Test #314**

8PBMWC (X) - Data appear to be off by a factor of 1/4; data converted by CTS (x4).

K2QQ8H (X) - Systematic error (data for both samples are low).

M26G7X (X) - Inconsistent in testing between samples.

QNH2EV (X) - Data appear to be off by a factor of 1/4; data converted by CTS (x4).

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

ZP8CNF (X) - Data appear to be off by a factor of 1/2; data converted by CTS (x2).

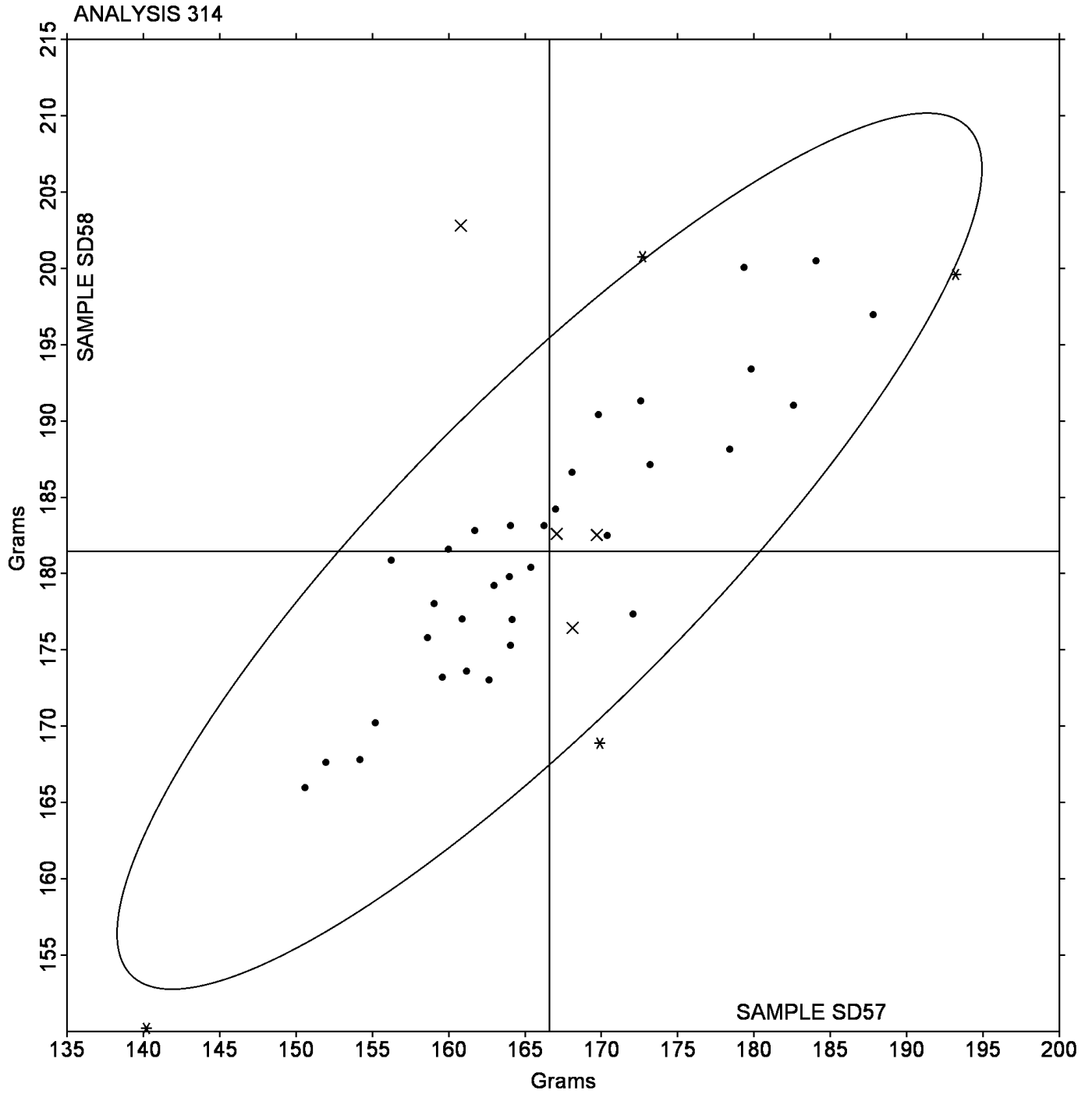
# TAPPI-CTS Interlaboratory Testing Program

## Analysis 314

### Tearing Strength - Packaging Papers

Grand Mean Sample **SD57** = 166.60 Grams

Grand Mean Sample **SD58** = 181.47 Grams



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

WebCode	Data Flag	Sample SR57			Sample SR58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22FEMH		1.912	-0.017	-0.16	1.922	-0.035	-0.57
2EFCFG		1.936	0.007	0.07	1.975	0.018	0.29
7RLAVQ		1.950	0.022	0.20	2.021	0.064	1.04
83W8BD	X	1.119	-0.810	-7.56	0.998	-0.960	-15.52
8CMLBQ		2.126	0.197	1.84	2.031	0.074	1.20
8KZPDV		1.933	0.005	0.04	2.003	0.045	0.73
8TX6GH		1.949	0.021	0.19	1.942	-0.016	-0.25
C6VPTH		1.953	0.024	0.23	1.900	-0.057	-0.93
G9Y6CG		1.843	-0.086	-0.80	2.012	0.055	0.89
JDLFGC		1.971	0.042	0.39	1.969	0.012	0.19
MW9837		1.844	-0.085	-0.79	1.908	-0.050	-0.80
NJZAQV		1.721	-0.208	-1.94	1.808	-0.149	-2.41
Q68X6Q		2.064	0.136	1.27	2.008	0.051	0.83
R7BE92	X	2.252	0.323	3.02	2.279	0.322	5.20
THJG86	X	2.334	0.405	3.78	2.326	0.368	5.96
XNDV62		1.779	-0.149	-1.39	1.916	-0.041	-0.66
YRHYLT		2.020	0.091	0.85	1.986	0.028	0.46

Sample SR57		Summary Statistics	Sample SR58	
Grand Means	1.9287 kN/m		1.9572 kN/m	
SD Btwn Labs	0.1071 kN/m		0.0618 kN/m	
Statistics based on 14 of 17 reporting participants				

**Comments on assigned Data Flags for Test #320**

83W8BD (X) - Extreme data.

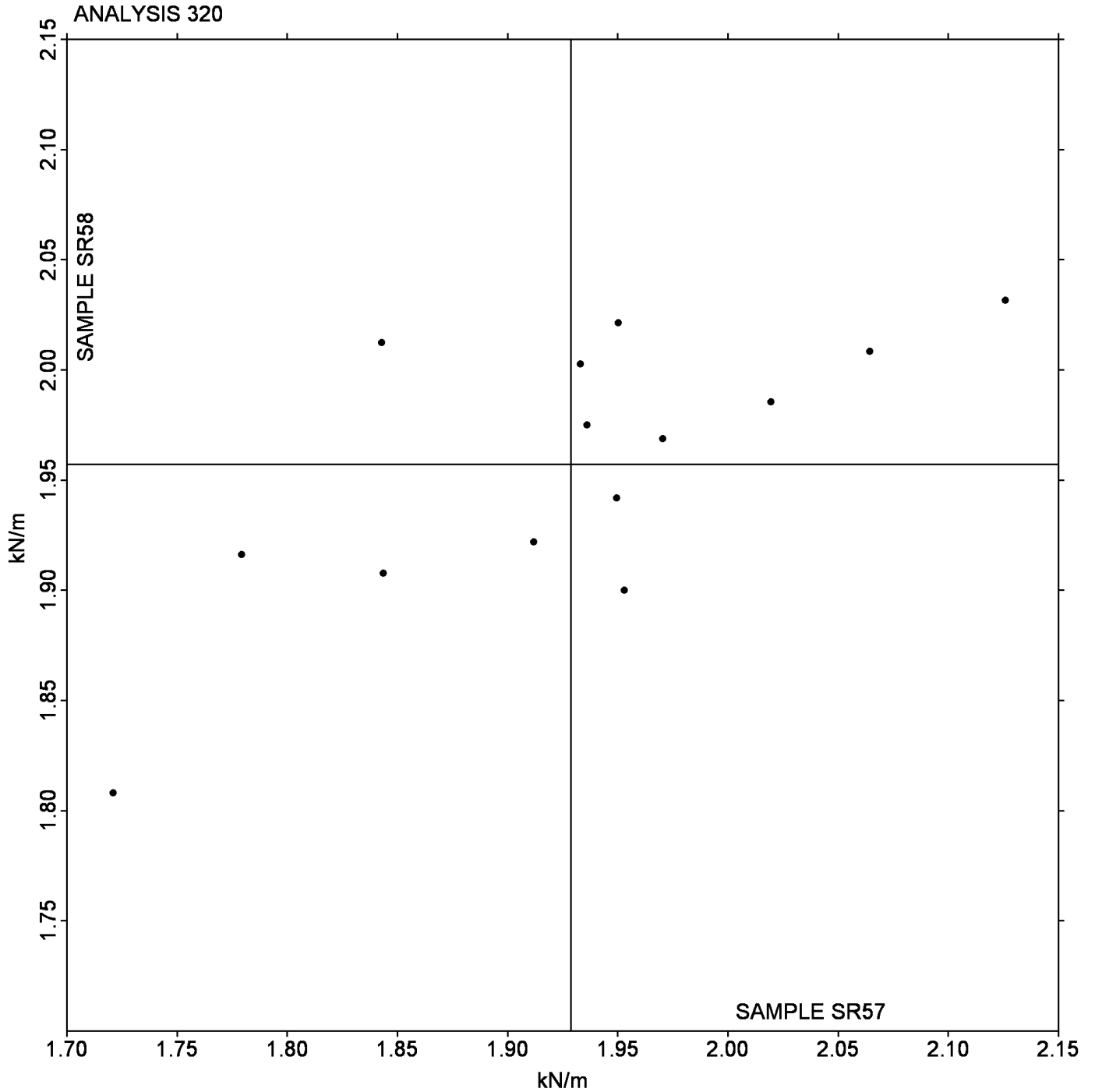
R7BE92 (X) - Extreme data.

THJG86 (X) - Extreme data.

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

Grand Mean Sample **SR57** = 1.9287 kN/m

Grand Mean Sample **SR58** = 1.9572 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 SR57			Sample SR58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
27K8MF		12.72	2.07	1.38	12.61	1.81	1.29
2R6C2G		10.28	-0.37	-0.25	10.14	-0.66	-0.47
2XA62E	X	15.66	5.02	3.35	14.54	3.73	2.66
6V8F3N		12.16	1.51	1.01	12.44	1.63	1.16
9GXTLF		10.37	-0.28	-0.19	10.12	-0.68	-0.49
9U8NXJ		12.40	1.75	1.17	11.76	0.95	0.68
EZD4XF		9.00	-1.64	-1.10	9.02	-1.79	-1.27
GBZC8F		11.53	0.88	0.59	11.45	0.65	0.46
JDCBE9	X	19.85	9.21	6.15	20.10	9.30	6.63
PR4GD4		12.54	1.89	1.26	12.00	1.19	0.85
QDFNEV		9.67	-0.98	-0.65	10.63	-0.18	-0.13
RT77D6		8.10	-2.55	-1.70	7.69	-3.11	-2.22
UV8WW3		9.81	-0.84	-0.56	11.67	0.87	0.62
YAR3UZ		9.30	-1.34	-0.90	10.19	-0.61	-0.44
YUU3X4		10.54	-0.11	-0.07	10.74	-0.07	-0.05

Sample SR57		Summary Statistics	Sample SR58	
Grand Means	10.647 Joules/sq m		10.804 Joules/sq m	
SD Btwn Labs	1.497 Joules/sq m		1.403 Joules/sq m	
Statistics based on 13 of 15 reporting participants				

**Comments on assigned Data Flags for Test #321**

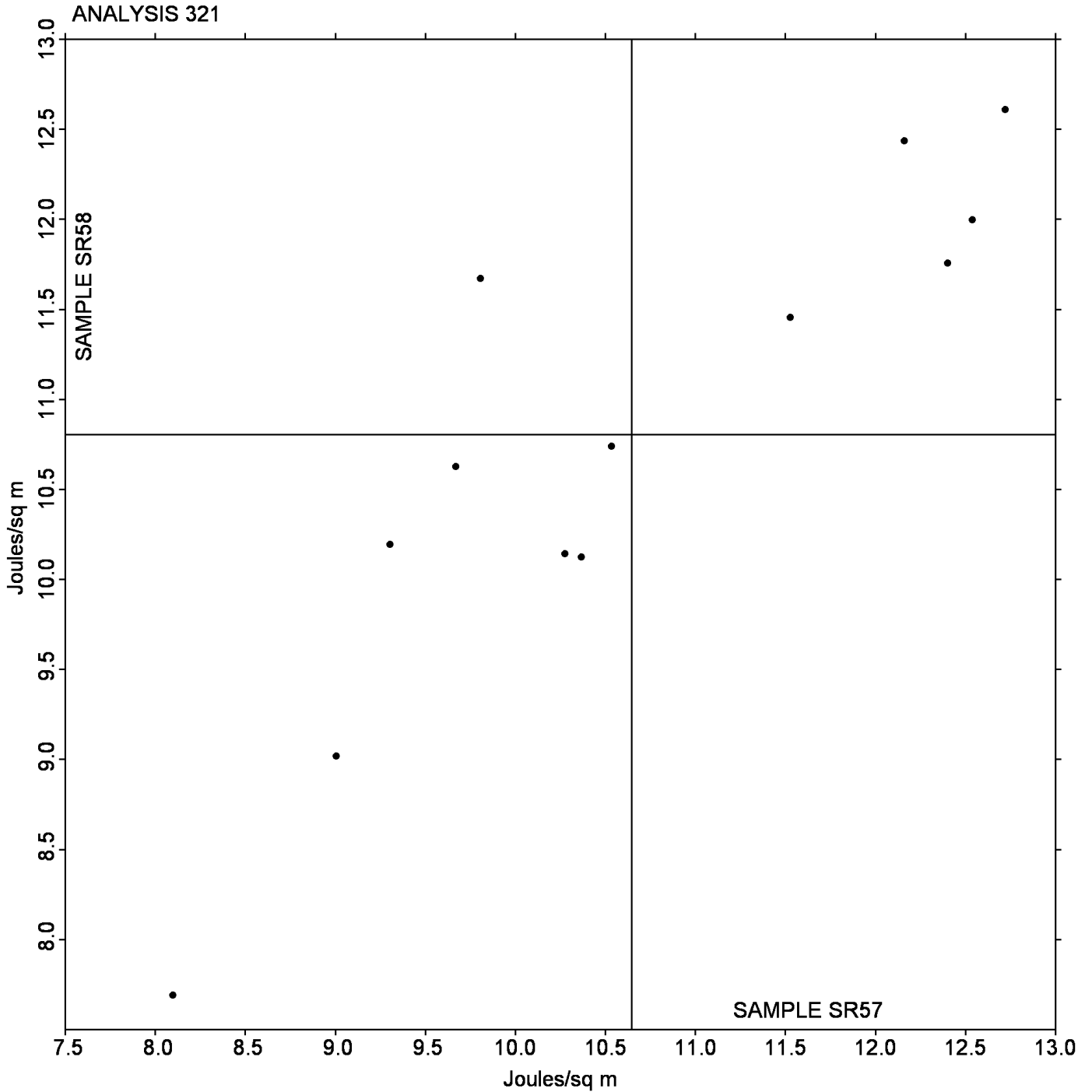
2XA62E (X) - Systematic error (data for both samples are high).

JDCBE9 (X) - Extreme data.

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

Grand Mean Sample **SR57** = 10.647 Joules/sq m

Grand Mean Sample **SR58** = 10.804 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 SR57			Sample SR58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2LJEHV		0.9403	-0.0561	-0.44	1.0364	0.0405	0.33
3928TL		0.9200	-0.0763	-0.60	0.9027	-0.0932	-0.76
4KVV6Z		0.9270	-0.0693	-0.54	0.9440	-0.0519	-0.42
8TWDD9		1.1240	0.1277	1.00	1.1080	0.1121	0.91
9LRTQQ		0.8670	-0.1293	-1.01	0.8890	-0.1069	-0.87
DU4NMU		0.8720	-0.1243	-0.97	0.8700	-0.1259	-1.02
GHUWAB	X	1.8510	0.8547	6.67	1.8790	0.8831	7.17
GVA2X6		1.1300	0.1337	1.04	1.1700	0.1741	1.41
PBRZ64		0.8590	-0.1373	-1.07	0.8640	-0.1319	-1.07
TJV6R4		1.0100	0.0137	0.11	0.9500	-0.0459	-0.37
U2F7EW		1.1590	0.1627	1.27	1.1310	0.1351	1.10
UMXG49		1.0940	0.0977	0.76	1.1150	0.1191	0.97
WGFYZW		0.9010	-0.0953	-0.74	0.8850	-0.1109	-0.90
Y93GMG		1.2423	0.2460	1.92	1.1901	0.1942	1.58
ZVBJ4H		0.9030	-0.0933	-0.73	0.8870	-0.1089	-0.88

		Summary Statistics			
		Sample SR57		Sample SR58	
Grand Means		0.99633	Percent	0.99587	Percent
SD Btwn Labs		0.12815	Percent	0.12310	Percent
Statistics based on 14 of 15 reporting participants					

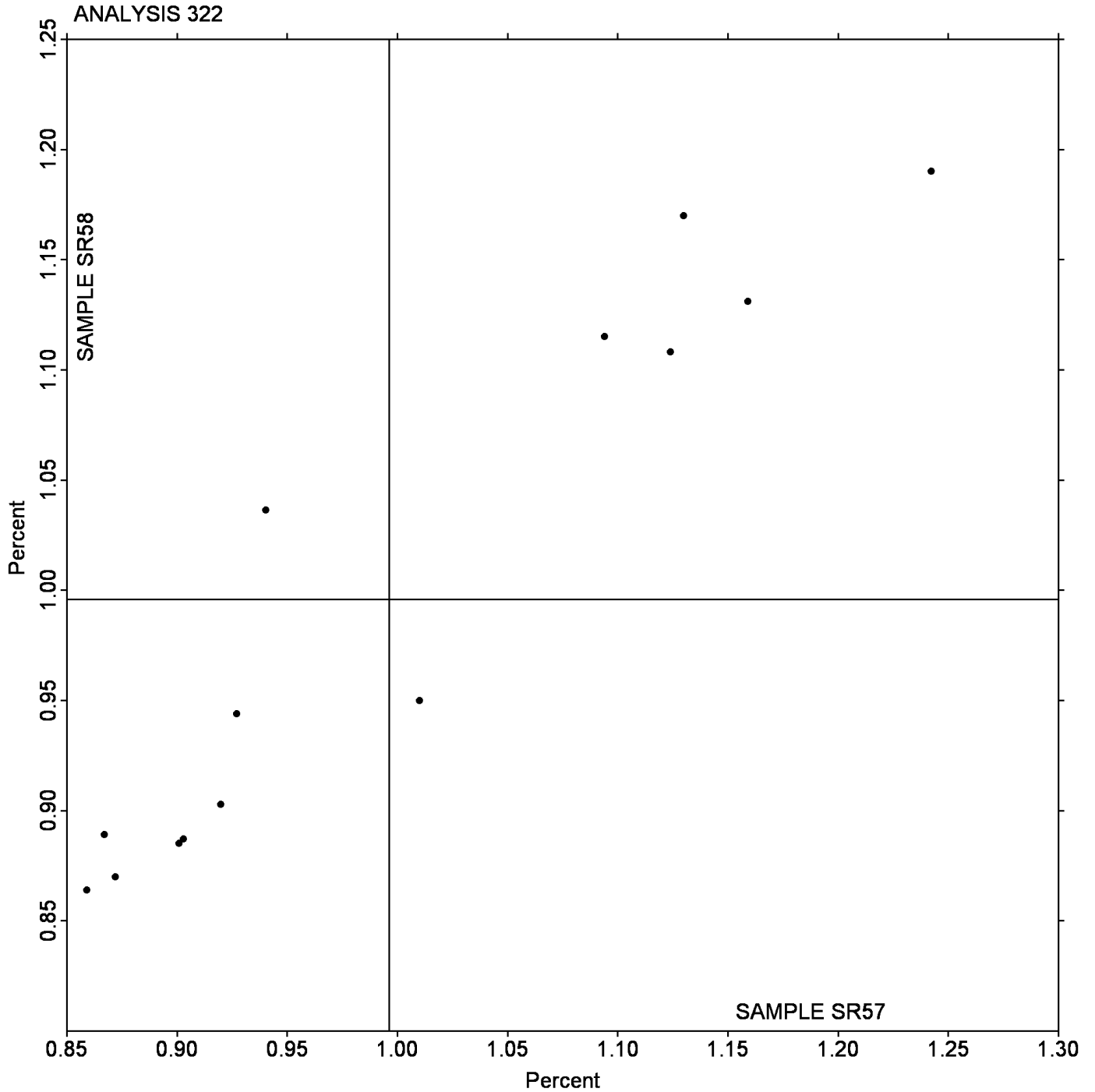
**Comments on assigned Data Flags for Test #322**

GHUWAB (X) - Extreme data.

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

Grand Mean Sample **SR57** = 0.99633 Percent

Grand Mean Sample **SR58** = 0.99587 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 SF57			Sample SF58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2KfV7F		4.869	0.167	0.66	5.723	0.131	0.42	TO
3XRGGY		4.792	0.091	0.36	5.848	0.255	0.82	TI
4E6BFY		4.965	0.264	1.04	5.824	0.232	0.75	LX
69F4JC		4.609	-0.092	-0.36	5.451	-0.141	-0.46	SP
6E8B3K		4.517	-0.185	-0.73	5.250	-0.342	-1.10	TO
6HVDE6		4.714	0.013	0.05	5.696	0.104	0.33	LI
6NP7QX		4.800	0.099	0.39	5.673	0.081	0.26	LH
6PUY3J		4.973	0.272	1.07	6.006	0.414	1.33	TB
7QACV3		4.679	-0.022	-0.09	5.636	0.043	0.14	VM
7WMEGP		4.668	-0.033	-0.13	5.439	-0.153	-0.49	TB
8LV2EQ		4.644	-0.057	-0.23	5.439	-0.154	-0.50	TJ
8ZJ4Z4		4.853	0.152	0.60	5.697	0.105	0.34	LH
9C3A46		4.921	0.220	0.86	5.693	0.100	0.32	LH
9VETCE		4.270	-0.431	-1.69	5.246	-0.347	-1.12	MN
A8NTJR		4.590	-0.111	-0.44	5.445	-0.147	-0.47	LH
AQACT7		5.059	0.358	1.41	6.153	0.561	1.81	LX
AXJR9T	X	5.599	0.897	3.52	6.685	1.093	3.52	TJ
B7G72C		4.636	-0.066	-0.26	5.711	0.118	0.38	TI
BBKVTZ		4.527	-0.174	-0.68	5.383	-0.210	-0.68	TO
BBQWYL		5.026	0.325	1.28	6.093	0.500	1.61	LH
BHJE6G		4.633	-0.069	-0.27	5.440	-0.152	-0.49	TO
CMTXR4		4.835	0.134	0.53	5.584	-0.008	-0.03	LH
CYTFMP	X	4.326	-0.376	-1.48	4.718	-0.875	-2.82	TP
DA82DP		4.970	0.268	1.05	6.110	0.518	1.67	IA
DMDGDK		4.354	-0.347	-1.36	5.203	-0.389	-1.25	TX
DV7CBX		4.904	0.203	0.80	5.859	0.267	0.86	LI
E2M8RR		5.045	0.344	1.35	5.860	0.267	0.86	TO
E8EEAZ		4.537	-0.164	-0.64	5.557	-0.035	-0.11	LH
EMJ8AA		4.387	-0.314	-1.23	5.238	-0.354	-1.14	TF
FJ2YY3		5.234	0.533	2.09	6.275	0.683	2.20	TB
FPQMN7		4.629	-0.072	-0.28	5.385	-0.208	-0.67	TB
FQKB2W		4.877	0.175	0.69	5.786	0.193	0.62	LH
FVJWHJ		4.778	0.077	0.30	5.556	-0.037	-0.12	LA
G3WV7N		4.894	0.192	0.75	5.779	0.187	0.60	LH
HKMHW6		4.360	-0.341	-1.34	5.212	-0.380	-1.22	ID
JJFGTC		4.773	0.071	0.28	5.877	0.285	0.92	TC
JWG4Q8		4.502	-0.199	-0.78	5.275	-0.317	-1.02	IM
K9URAW		4.404	-0.298	-1.17	5.234	-0.358	-1.15	LH
KRK33X		4.479	-0.222	-0.87	5.183	-0.409	-1.32	LH
L39DXH		5.184	0.483	1.90	6.175	0.582	1.87	LH
LC4ECZ		4.575	-0.127	-0.50	5.330	-0.262	-0.84	LH
M7P4J6		4.641	-0.060	-0.24	5.457	-0.135	-0.44	LH
MK8UGL		4.682	-0.019	-0.08	5.474	-0.118	-0.38	LH

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

WebCode	Data Flag	Sample SF57			Sample SF58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
MLHRU3		4.896	0.195	0.76	5.729	0.137	0.44	LH
MREAGV		5.035	0.334	1.31	6.123	0.531	1.71	LH
MYAGRN	*	4.375	-0.326	-1.28	5.530	-0.063	-0.20	TP
N9N27G		4.366	-0.335	-1.32	5.291	-0.301	-0.97	VM
NMGBEA		4.478	-0.224	-0.88	5.159	-0.434	-1.40	IK
NNX99U	X	4.584	-0.117	-0.46	4.986	-0.607	-1.95	XX
NXQUT7		4.269	-0.432	-1.70	5.322	-0.271	-0.87	TF
PAPRRR		4.282	-0.420	-1.65	5.152	-0.440	-1.42	IX
PBX3BN		4.233	-0.468	-1.84	5.088	-0.505	-1.63	DL
PNRD3U		4.480	-0.221	-0.87	5.273	-0.319	-1.03	LH
PPATTA		4.543	-0.158	-0.62	5.439	-0.154	-0.50	TB
R2DXUL		4.635	-0.066	-0.26	5.552	-0.040	-0.13	LI
RLRYKT	*	4.960	0.258	1.01	5.562	-0.030	-0.10	TJ
T6M6CK		4.388	-0.314	-1.23	5.235	-0.357	-1.15	ID
TJYUXZ		4.688	-0.014	-0.05	5.505	-0.088	-0.28	TA
U2RW6P		5.077	0.376	1.48	6.035	0.443	1.43	XX
U2X772		5.131	0.430	1.69	5.995	0.402	1.30	LH
U7NLQ2		4.756	0.055	0.21	5.625	0.033	0.10	TJ
U9WREN		4.763	0.062	0.24	5.564	-0.029	-0.09	IM
VY7GNT		5.194	0.493	1.93	6.329	0.736	2.37	LH
WFYYGU		4.875	0.174	0.68	5.830	0.238	0.77	TO
X8L8NB		4.687	-0.015	-0.06	5.683	0.091	0.29	IM
XWE2B3		4.682	-0.020	-0.08	5.597	0.004	0.01	KA
XY6TFY		4.632	-0.069	-0.27	5.725	0.133	0.43	MR
Y2XW4R		4.687	-0.014	-0.06	5.399	-0.193	-0.62	LH
YCRBXA		4.240	-0.461	-1.81	5.031	-0.561	-1.81	XX
Z69GCC		4.850	0.149	0.59	5.669	0.076	0.24	IK

	Sample SF57	Summary Statistics	Sample SF58
Grand Means	4.7014 kN/m		5.5925 kN/m
SD Btwn Labs	0.2546 kN/m		0.3105 kN/m
Statistics based on 67 of 70 reporting participants			

### Comments on assigned Data Flags for Test #325

AXJR9T (X) - Systematic error (data for both samples are high).

CYTFMP (X) - Inconsistent in testing between samples, data for Sample SF58 are low.

NNX99U (X) - Inconsistent in testing between samples.

### Analysis Notes:

6PUY3J - Data appear to be reported as kN/m, not kg/15mm as indicated on datasheet. Unit changed by CTS.

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

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**Instrument Code List**

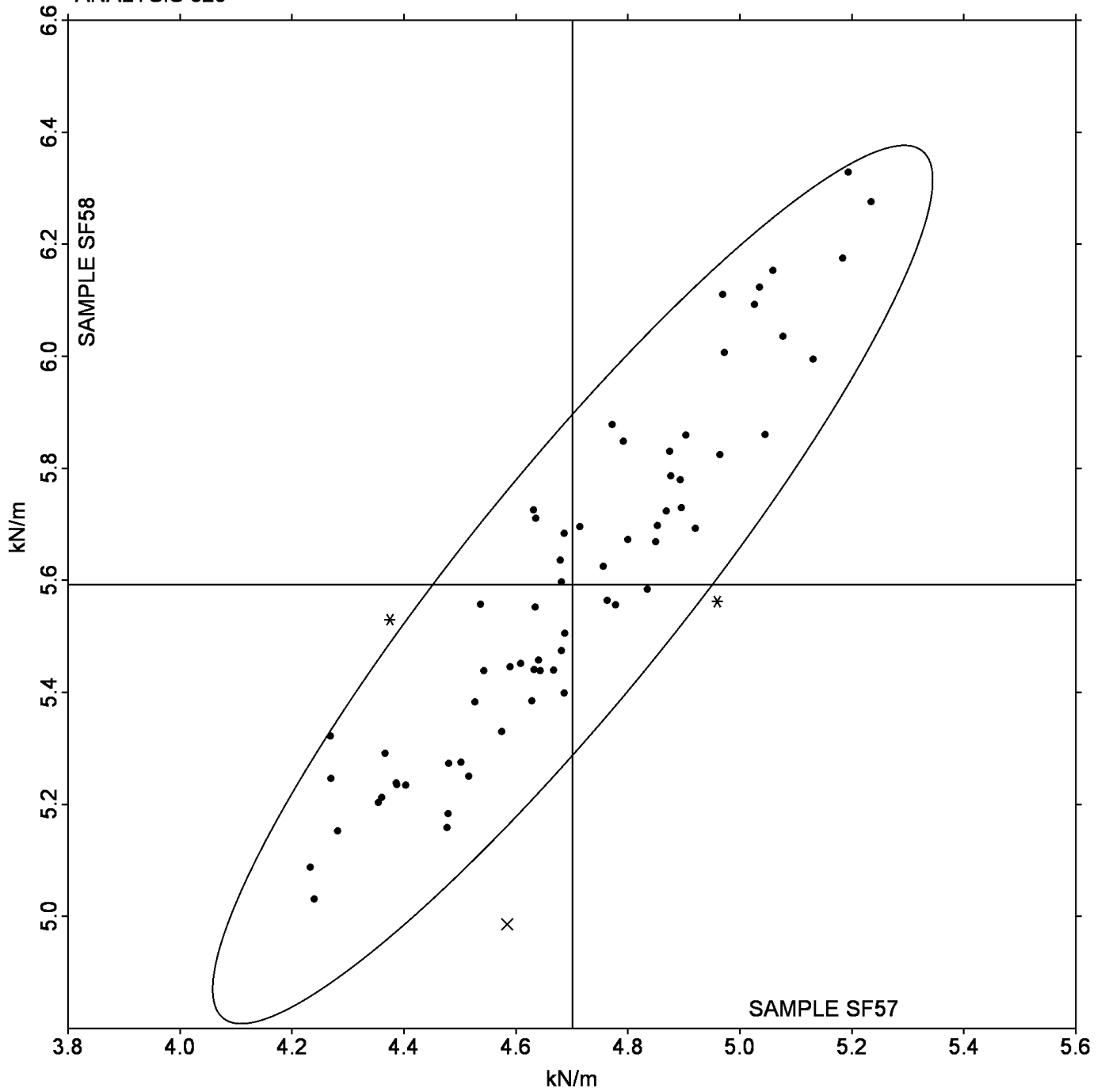
(DL) - EMIC DL500 Universal Testing Machines	(IA) - Instron 1011
(ID) - Instron 4201/4202	(IK) - Instron 4400 Series
(IM) - Instron 5500 Series	(IX) - Instron (model not specified)
(KA) - Zwick Model 1425	(LA) - L & W Tensile - Autoline 300
(LH) - L & W Alwetron TH1 (Horizontal) SE 060/065F	(LI) - L & W Tensile Tester SE 062
(LX) - L & W (model not specified)	(MN) - Minebea
(MR) - MTS Alliance RT series	(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)
(TX) - Thwing-Albert (model not specified)	(VM) - Valmet PaperLab (was Kajaani/Robotest)
(XX) - Instrument make/model not specified by lab	

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

Grand Mean Sample SF57 = 4.7014 kN/m

Grand Mean Sample SF58 = 5.5925 kN/m

ANALYSIS 325



## TAPPI-CTS Interlaboratory Testing Program

## Analysis 327

## Tensile Energy Absorption - Printing Papers

WebCode	Data Flag	Sample SF57			Sample SF58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2GGJBF		64.82	4.45	0.89	72.57	4.46	0.95	TO
4ACFL7		57.00	-3.38	-0.67	64.30	-3.81	-0.81	LH
4F4M4E		58.52	-1.85	-0.37	64.02	-4.09	-0.87	LH
4NZRHV		56.92	-3.46	-0.69	60.94	-7.16	-1.52	LA
4TY76K		55.51	-4.86	-0.97	69.40	1.29	0.27	TB
6EA6WC		65.71	5.33	1.06	66.66	-1.45	-0.31	XX
6KAK9D		66.57	6.19	1.23	73.38	5.27	1.12	LH
7EE66X		58.84	-1.53	-0.31	68.50	0.39	0.08	XX
87T96A		55.92	-4.46	-0.89	65.41	-2.70	-0.57	LH
89LK99		55.45	-4.92	-0.98	65.03	-3.08	-0.65	LH
8ARJZA		57.44	-2.94	-0.58	63.76	-4.35	-0.92	LH
8C6EEU		61.57	1.19	0.24	65.85	-2.26	-0.48	LH
8JXNQ7		65.41	5.03	1.00	72.99	4.88	1.04	ID
94NHMR		61.95	1.58	0.31	66.40	-1.71	-0.36	LI
9A66UP		56.53	-3.84	-0.77	68.72	0.61	0.13	TA
9LAR2F	X	38.12	-22.26	-4.43	41.13	-26.98	-5.73	XX
ACM9ZF		67.26	6.88	1.37	74.96	6.85	1.45	IM
AJWVHV		68.45	8.07	1.61	77.93	9.82	2.08	VM
B2XYVJ		51.23	-9.14	-1.82	56.46	-11.64	-2.47	LH
B36D77		66.30	5.93	1.18	76.15	8.04	1.71	XX
B3GV7C		63.92	3.55	0.71	71.80	3.69	0.78	TI
BWJ9HX		59.66	-0.72	-0.14	67.28	-0.83	-0.18	IM
CHWHW2		59.29	-1.08	-0.22	67.94	-0.17	-0.04	LI
D8ZLUC		59.96	-0.41	-0.08	71.32	3.21	0.68	LI
DY23HW		61.84	1.46	0.29	67.02	-1.09	-0.23	XX
GD7MGB		62.46	2.09	0.42	70.81	2.70	0.57	TO
H8ND4Z		61.35	0.98	0.19	69.00	0.89	0.19	IM
HW3CBJ		62.46	2.08	0.41	70.91	2.80	0.59	LX
J34UD3		61.33	0.96	0.19	69.32	1.22	0.26	TB
JADMRD		59.66	-0.72	-0.14	70.63	2.52	0.53	MR
KWQPJF		59.29	-1.08	-0.22	67.51	-0.60	-0.13	LH
L2ZBXR		64.69	4.32	0.86	66.94	-1.17	-0.25	LX
L3WLZL	X	67.42	7.05	1.40	85.52	17.41	3.69	VM
L42GBC		61.81	1.43	0.29	70.36	2.26	0.48	TB
MM8MZD		62.27	1.90	0.38	70.97	2.86	0.61	KA
NQHP98		68.00	7.63	1.52	73.54	5.43	1.15	TB
NTKAWL		59.90	-0.48	-0.09	71.40	3.29	0.70	LI
RNBAZK		59.30	-1.08	-0.22	66.90	-1.21	-0.26	DL
RRE3ZB		52.58	-7.79	-1.55	60.38	-7.73	-1.64	TJ
T34CYQ		50.39	-9.99	-1.99	57.38	-10.73	-2.28	XX
TP92N6		68.30	7.92	1.58	69.81	1.70	0.36	IK
U4VUFH		65.17	4.80	0.96	73.06	4.95	1.05	LH
UTYQB2		63.69	3.31	0.66	70.87	2.76	0.59	LH

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

WebCode	Data Flag	Sample SF57			Sample SF58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
V3JB4C		60.65	0.27	0.05	64.68	-3.43	-0.73	LH
VJA8NF	*	45.34	-15.03	-2.99	57.73	-10.38	-2.20	TP
VJUWZA		58.54	-1.84	-0.37	66.81	-1.29	-0.27	LH
WQVE3R		51.50	-8.87	-1.77	61.48	-6.62	-1.41	LH
XCNWLP		65.69	5.32	1.06	70.02	1.91	0.40	LH
Z8AHCA		60.55	0.18	0.03	71.80	3.69	0.78	LI
ZEHTNM		57.02	-3.35	-0.67	68.11	0.00	0.00	ID

Sample SF57		Summary Statistics	Sample SF58	
Grand Means	60.376 Joules/sq m		68.109 Joules/sq m	
SD Btwn Labs	5.021 Joules/sq m		4.713 Joules/sq m	
Statistics based on 48 of 50 reporting participants				

### Comments on assigned Data Flags for Test #327

9LAR2F (X) - Extreme data.

L3WLZL (X) - Inconsistent in testing between samples, data for Sample SF58 are high.

### Analysis Notes:

J34UD3 - Data appear to be reported as kg-m/sq m, not J/sq m as indicated on datasheet. Unit changed by CTS.

L2ZBXR - Data appear to be reported as ft-lb/sq ft, not in-lb/sq in as indicated on datasheet. Unit changed by CTS.

L42GBC - Data appear to be reported as ft-lb/sq ft, not in-lb/sq in as indicated on datasheet. Unit changed by CTS.

U4VUFH - Data appear to be reported as ft-lb/sq ft, not in-lb/sq in as indicated on datasheet. Unit changed by CTS.

### Instrument Code List

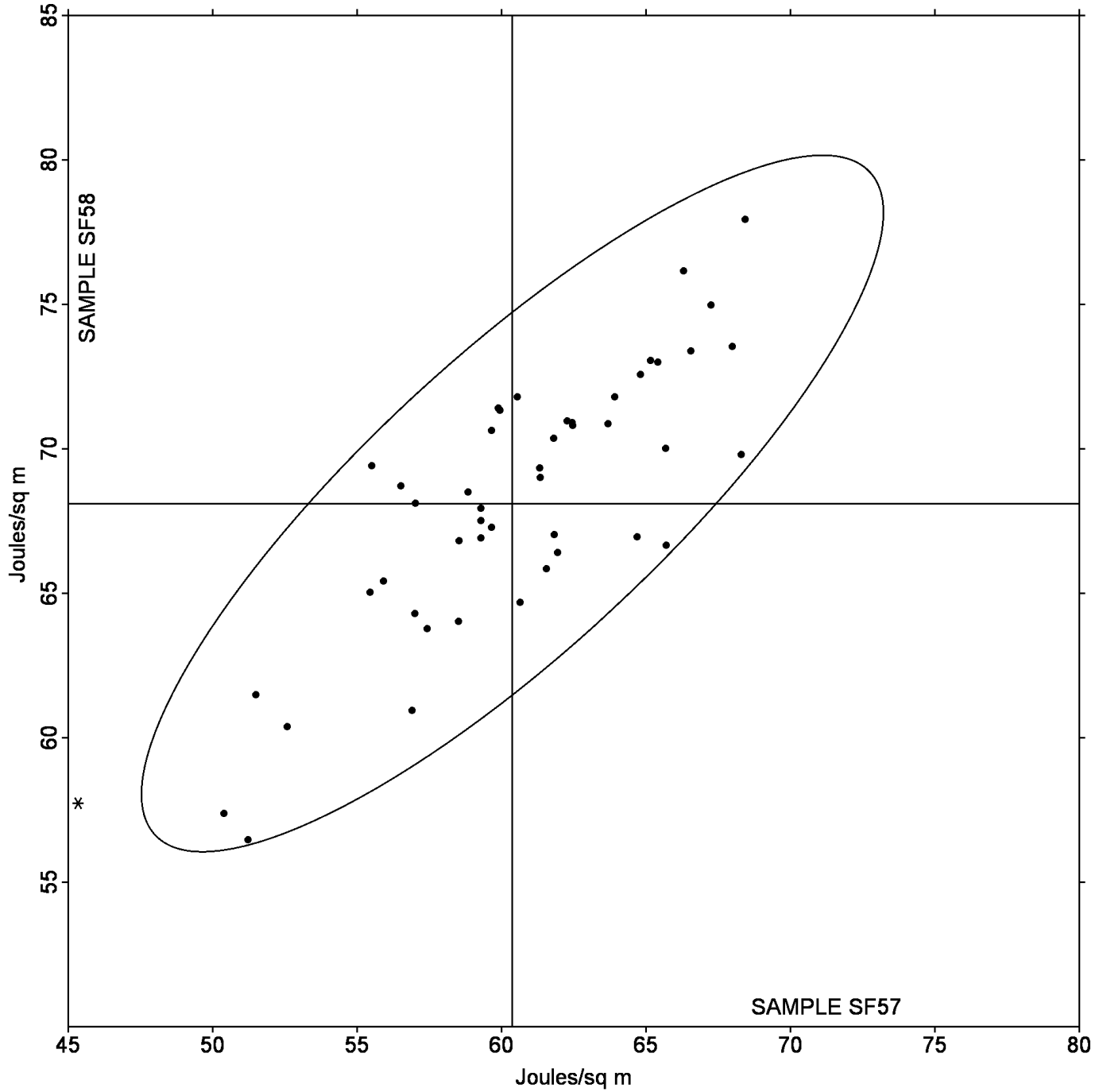
(DL) - EMIC DL500 Universal Testing Machines	(ID) - Instron 4201
(IK) - Instron 4400 Series	(IM) - Instron 5500 Series
(KA) - Zwick Model 1425	(LA) - L & W Tensile - Autoline 300
(LH) - L & W Alwetron TH1 (Horizontal) SE 060	(LI) - L & W Tensile Tester SE 062
(LX) - L & W (model not specified)	(MR) - MTS Alliance RT series
(TA) - Thwing-Albert	(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)
(VM) - Valmet PaperLab (was Kajaani/Robotest)	(XX) - Instrument make/model not specified by lab

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

Grand Mean Sample **SF57** = 60.376 Joules/sq m

Grand Mean Sample **SF58** = 68.109 Joules/sq m

ANALYSIS 327



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

WebCode	Data Flag	Sample SF57			Sample SF58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2RLKXY		1.750	-0.233	-1.19	1.640	-0.280	-1.60	TJ
34UMW2		1.816	-0.167	-0.85	1.792	-0.128	-0.73	LH
3AHBR8		1.770	-0.213	-1.09	1.730	-0.190	-1.09	LH
3TNP29		1.931	-0.052	-0.27	1.910	-0.010	-0.06	LI
4323X9		2.191	0.208	1.06	2.081	0.161	0.92	ID
4HWA84		1.980	-0.003	-0.02	1.940	0.020	0.11	IM
4RWZDJ		1.974	-0.009	-0.05	1.999	0.079	0.45	ID
4VQXQ4	X	2.390	0.407	2.07	2.640	0.720	4.11	VM
6YC6RP	*	1.474	-0.509	-2.59	1.403	-0.517	-2.95	LH
7GJVZ7		1.952	-0.031	-0.16	1.810	-0.110	-0.63	LX
7JNNRJ		2.163	0.180	0.92	2.139	0.219	1.25	TO
7NNNJF		2.176	0.193	0.98	2.034	0.114	0.65	LH
8M744A		1.960	-0.023	-0.12	1.869	-0.051	-0.29	LH
8TCQQJ		2.068	0.085	0.43	2.017	0.097	0.55	TO
8YMRX9		1.997	0.014	0.07	1.840	-0.080	-0.46	LH
986TPP		2.089	0.106	0.54	2.007	0.087	0.50	TB
9AWR6L		1.926	-0.057	-0.29	1.805	-0.115	-0.66	LH
9CXRXE		2.253	0.270	1.38	2.183	0.263	1.50	TI
9JJQUT		2.113	0.130	0.66	1.961	0.041	0.23	IK
AZNLJJ	*	1.990	0.007	0.04	2.090	0.170	0.97	TF
BENMAR		1.925	-0.058	-0.30	1.925	0.005	0.03	IA
BNE46M	*	2.521	0.538	2.74	2.312	0.392	2.24	IK
C6A37T	X	14.100	12.117	61.76	14.100	12.180	69.58	VM
D9LFBZ		1.861	-0.122	-0.62	1.851	-0.069	-0.39	LI
DWPLRN		1.853	-0.130	-0.66	1.844	-0.076	-0.43	XX
ELGZL3		1.886	-0.097	-0.49	1.860	-0.060	-0.34	LH
F8U8A2		2.152	0.169	0.86	2.120	0.200	1.14	XX
FCLAN9	X	4.690	2.707	13.80	5.500	3.580	20.45	XX
FL6UFK		1.995	0.012	0.06	1.848	-0.072	-0.41	LI
G3BLRD	X	1.287	-0.696	-3.55	1.244	-0.676	-3.86	TJ
G8J26H		1.938	-0.045	-0.23	1.822	-0.098	-0.56	LH
JPCCK6P		2.212	0.229	1.17	2.068	0.148	0.85	XX
JVZ73N		1.937	-0.046	-0.23	1.786	-0.134	-0.77	LH
JYVFZX		1.910	-0.073	-0.37	1.810	-0.110	-0.63	LH
K9NC9P		1.810	-0.173	-0.88	1.830	-0.090	-0.51	LI
M2VDZ2		2.396	0.413	2.10	2.261	0.341	1.95	TO
MXD6PT		1.941	-0.042	-0.21	1.906	-0.014	-0.08	TB
PFGN99		1.900	-0.083	-0.43	1.936	0.016	0.09	TX
PG348C		1.908	-0.075	-0.38	1.885	-0.035	-0.20	LX
PGWYFT		1.751	-0.232	-1.18	1.710	-0.210	-1.20	XX
PYQ3PW		2.018	0.035	0.18	1.980	0.060	0.34	TB
Q4WWX4		2.191	0.207	1.06	2.073	0.153	0.88	TB
QJJR29		1.919	-0.064	-0.33	1.867	-0.053	-0.30	LH

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

WebCode	Data Flag	Sample SF57			Sample SF58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
QNY7VV		2.008	0.025	0.13	1.935	0.015	0.09	LH
QUXU48		1.822	-0.161	-0.82	1.870	-0.050	-0.29	LA
RLFZ4V	X	45.802	43.819	223.33	48.305	46.385	264.99	TB
T9Y3HU		2.036	0.053	0.27	2.052	0.132	0.75	RE
UAW622		1.978	-0.005	-0.03	1.935	0.015	0.09	MR
UUV3CW		2.322	0.339	1.73	2.244	0.324	1.85	IM
V2WM86		2.026	0.043	0.22	1.969	0.049	0.28	KA
VC3TKD		1.960	-0.023	-0.12	1.860	-0.060	-0.34	IM
VT2K6T		1.537	-0.446	-2.27	1.518	-0.402	-2.30	LH
W2Z3BN		1.762	-0.221	-1.13	1.659	-0.261	-1.49	TP
WVJ8VT		1.856	-0.127	-0.65	1.902	-0.018	-0.10	LI
XJXHCE		2.187	0.204	1.04	2.099	0.179	1.02	DL
XU3F9G		1.738	-0.245	-1.25	1.766	-0.154	-0.88	LH
YPWG3G	X	3.167	1.184	6.03	3.090	1.170	6.68	TO
Z9VP97		2.290	0.307	1.56	2.088	0.168	0.96	XX

Sample SF57		Summary Statistics	Sample SF58	
Grand Means	1.9830 Percent		1.9200	Percent
SD Btwn Labs	0.1962 Percent		0.1750	Percent
Statistics based on 52 of 58 reporting participants				

**Comments on assigned Data Flags for Test #328**

- 4VQXQ4 (X) - Inconsistent in testing between samples, data for Sample SF58 are high.
- C6A37T (X) - Extreme data.
- FCLAN9 (X) - Extreme data.
- G3BLRD (X) - Systematic error (data for both samples are low).
- RLFZ4V (X) - Extreme data.
- YPWG3G (X) - Extreme data.

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

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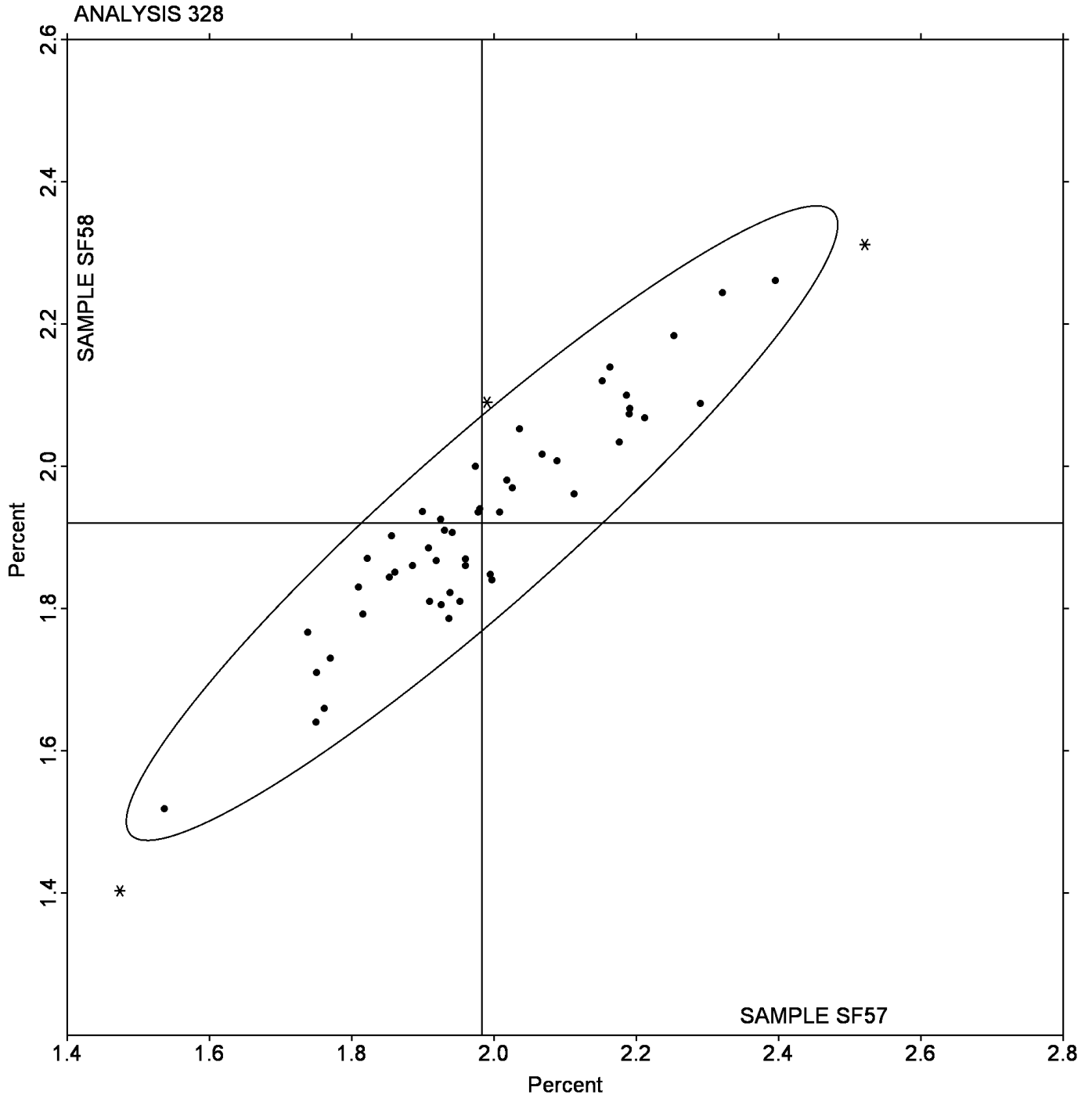
**Instrument Code List**

(DL) - EMIC DL500 Universal Testing Machines	(IA) - Instron 1011
(ID) - Instron 4201	(IK) - Instron 4400 Series
(IM) - Instron 5500	(KA) - Zwick Model 1425
(LA) - L & W Tensile - Autoline 300	(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LI) - L & W Tensile Tester SE 062	(LX) - L & W (model not specified)
(MR) - MTS Alliance RT series	(RE) - Regmed
(TB) - Thwing-Albert EJA/1000	(TF) - Thwing-Albert EJA Vantage-1
(TI) - Thwing-Albert QC II	(TJ) - Thwing-Albert QC II-XS
(TO) - Thwing-Albert QC-1000	(TP) - TMI Monitor/Tensile 100 (84-21-01)
(TX) - Thwing-Albert (model not specified)	(VM) - Valmet PaperLab (was Kajaani/Robotest)
(XX) - Instrument make/model not specified by lab	

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

Grand Mean Sample **SF57** = 1.9830 Percent

Grand Mean Sample **SF58** = 1.9200 Percent



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

WebCode	Data Flag	Sample SE57			Sample SE58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23JKEJ		8.538	-0.665	-1.38	7.920	-0.652	-1.37	IF
6KF9RW	X	8.333	-0.870	-1.80	8.382	-0.190	-0.40	TO
6Q7J2V		9.662	0.459	0.95	9.245	0.673	1.42	TO
7A66FZ		9.790	0.587	1.21	9.317	0.745	1.57	TO
7ZXAP2		9.234	0.032	0.07	8.503	-0.069	-0.14	LH
9YXV48		9.766	0.563	1.17	9.107	0.535	1.13	LA
AEP3PK		9.353	0.151	0.31	8.799	0.227	0.48	TB
AM4ZM6		8.820	-0.382	-0.79	8.214	-0.358	-0.75	LH
ANYBNY		9.034	-0.168	-0.35	8.096	-0.476	-1.00	TB
BW34ZD		9.653	0.451	0.93	8.917	0.345	0.73	TP
DJ8RJ6		8.846	-0.357	-0.74	8.453	-0.118	-0.25	SP
FCZVXB	X	7.761	-1.442	-2.98	7.845	-0.726	-1.53	IK
FVPCXK		9.494	0.291	0.60	8.949	0.377	0.79	TA
G8XEWM		10.381	1.179	2.44	9.661	1.089	2.29	TH
H89C3J		8.537	-0.665	-1.38	8.030	-0.542	-1.14	TK
HJDQQA		9.115	-0.087	-0.18	8.445	-0.127	-0.27	IN
J8CAQ8		9.143	-0.059	-0.12	8.582	0.011	0.02	ID
KPNGAU		9.665	0.463	0.96	8.780	0.208	0.44	TO
LXMGDR		9.223	0.021	0.04	8.560	-0.012	-0.02	LW
LXXAVA		9.410	0.208	0.43	8.750	0.178	0.38	TP
MEU4P8		8.626	-0.576	-1.19	7.758	-0.814	-1.71	SA
N3F2UF		10.208	1.006	2.08	9.473	0.901	1.90	TK
NBL3TL		9.131	-0.071	-0.15	8.378	-0.194	-0.41	IM
ND3HQU		9.840	0.638	1.32	9.028	0.456	0.96	TO
PCDGRP		8.484	-0.718	-1.49	7.986	-0.586	-1.23	TB
Q6THZP		8.772	-0.430	-0.89	8.453	-0.118	-0.25	XX
Q7XJD9		8.742	-0.460	-0.95	8.075	-0.497	-1.05	XX
QR68ZJ		8.929	-0.273	-0.57	8.408	-0.164	-0.34	LW
TQ2UJM		9.466	0.263	0.54	8.784	0.213	0.45	LH
VHXXE		8.687	-0.515	-1.07	8.129	-0.443	-0.93	IK
VN2JGQ		8.657	-0.546	-1.13	7.890	-0.682	-1.44	RE
WCGQ7M		9.397	0.195	0.40	8.711	0.139	0.29	ID
WPRZDK		8.785	-0.418	-0.86	8.320	-0.252	-0.53	IA
YV2FD8		9.023	-0.179	-0.37	8.301	-0.271	-0.57	IX
ZRL2KJ		9.407	0.204	0.42	9.036	0.464	0.98	IM
ZW698C		9.063	-0.139	-0.29	8.381	-0.190	-0.40	XX

**Sample SE57****Summary Statistics****Sample SE58**

Grand Means

9.2024 kN/m

8.5717 kN/m

SD Btwn Labs

0.4834 kN/m

0.4749 kN/m

Statistics based on 34 of 36 reporting participants

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

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**Comments on assigned Data Flags for Test #330**

6KF9RW (X) - Inconsistent in testing between samples.

FCZVXB (X) - Inconsistent in testing between samples, data for Sample SE57 are low.

**Analysis Notes:**

9YXV48 - Data appear to be reported as lb/in, not kN/m as indicated on datasheet. Unit changed by CTS.

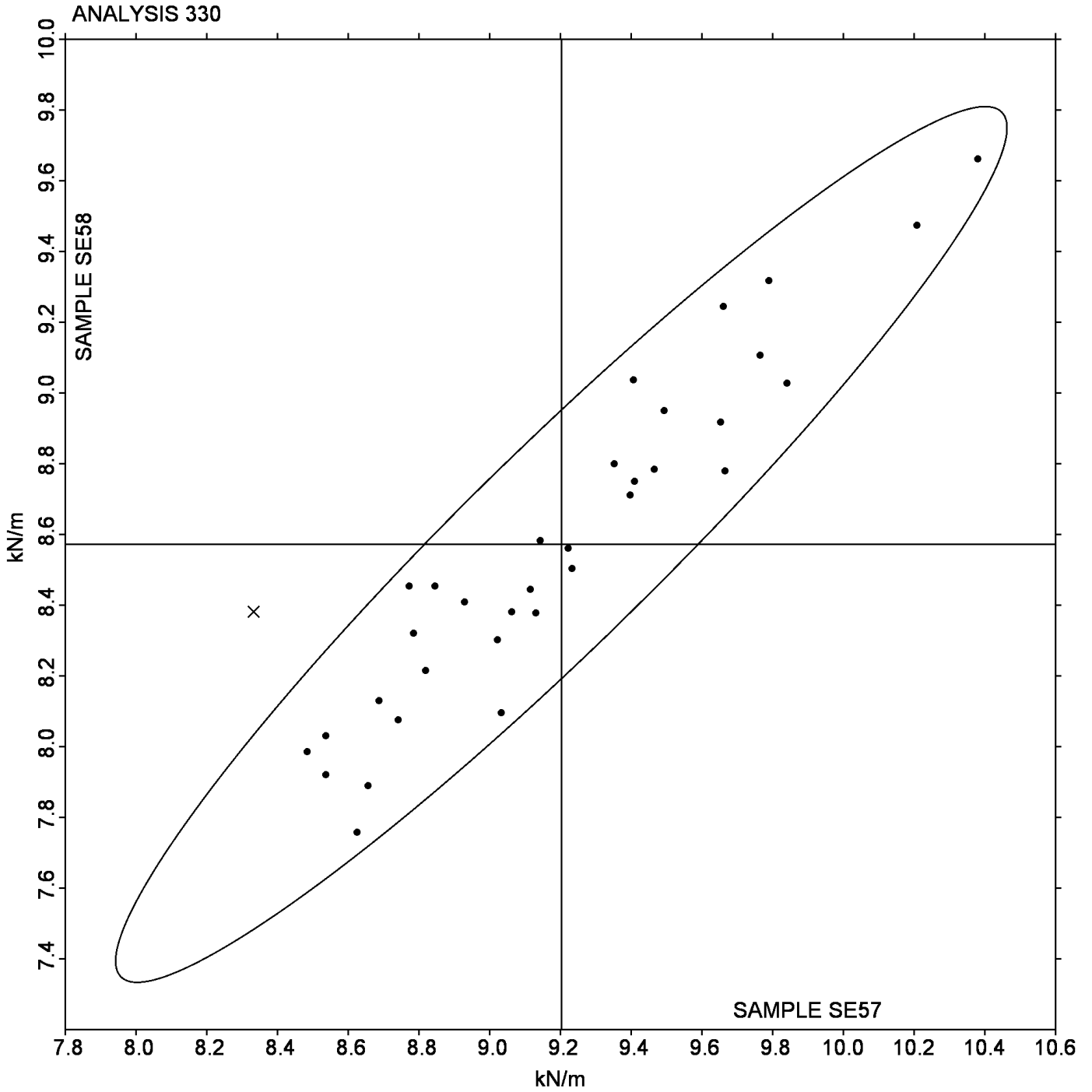
**Instrument Code List**

(IA) - Instron 1011	(ID) - Instron 4201
(IF) - Instron 3340 Series	(IK) - Instron 4400 Series
(IM) - Instron 5500 Series	(IN) - Instron 3360 Series
(IX) - Instron (model not specified)	(LA) - L & W Autoline
(LH) - L & W Alwetron TH1 (Horizontal) SE 060	(LW) - L & W Tensile Tester SE062
(RE) - Regmed	(SA) - Shimadzu Autograph AG 2000 A
(SP) - Schopper Type Tensile Tester (TMI)	(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 330  
Tensile Breaking Strength - Packaging Papers

Grand Mean Sample **SE57** = 9.2024 kN/m

Grand Mean Sample **SE58** = 8.5717 kN/m



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

WebCode	Data Flag	Sample SE57			Sample SE58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
43XCU8		150.6	23.7	2.27	139.7	17.2	1.54	IK
4LDYK7		116.8	-10.1	-0.97	112.4	-10.1	-0.91	LW
667RXW		117.1	-9.8	-0.94	111.5	-11.1	-0.99	XX
6GFR6A		126.4	-0.5	-0.05	117.6	-4.9	-0.44	LH
76GDK4		120.4	-6.5	-0.63	118.8	-3.7	-0.33	IM
7V3H6X		143.9	17.0	1.63	142.7	20.2	1.81	TH
9F2HJL		141.0	14.1	1.35	140.8	18.3	1.64	TB
C6RDRU		123.8	-3.1	-0.30	124.5	2.0	0.18	XX
CBRQDQ	X	97.8	-29.1	-2.80	124.8	2.3	0.20	TO
DGJ3D7		128.0	1.1	0.11	135.0	12.5	1.12	IM
HV729P		120.8	-6.1	-0.59	118.1	-4.4	-0.40	LH
JYHEDW		138.6	11.7	1.13	137.8	15.3	1.37	LA
MDRDQ		125.4	-1.5	-0.14	123.2	0.7	0.06	IA
MG8NTU		129.4	2.5	0.24	122.7	0.2	0.02	TO
MQ64ET		115.6	-11.3	-1.08	114.6	-7.9	-0.71	TB
NAB4WR		111.8	-15.1	-1.45	115.4	-7.1	-0.63	XX
PDWTWG		123.8	-3.1	-0.30	114.3	-8.2	-0.73	IX
PM76AQ		121.9	-5.0	-0.48	124.3	1.8	0.16	IA
QAWU9A		124.9	-2.0	-0.20	110.8	-11.7	-1.05	RE
RFZYVM		148.8	21.9	2.10	135.6	13.1	1.18	TO
UHM9AJ		117.7	-9.2	-0.88	119.0	-3.5	-0.31	LW
UYUULY	*	120.4	-6.5	-0.62	99.6	-22.9	-2.06	SA
V6CMB4		127.9	1.0	0.09	127.8	5.3	0.48	TO
XUYZVU		127.2	0.3	0.02	120.1	-2.4	-0.22	IN
YGKKZV		123.6	-3.3	-0.32	113.8	-8.7	-0.78	TP

Sample SE57		Summary Statistics	Sample SE58	
Grand Means	126.90 Joules/sq m		122.50 Joules/sq m	
SD Btwn Labs	10.42 Joules/sq m		11.13 Joules/sq m	
Statistics based on 24 of 25 reporting participants				

**Comments on assigned Data Flags for Test #331**

CBRQDQ (X) - Inconsistent in testing between samples, data for Sample SE57 are low.

**Analysis Notes:**

9F2HJL - Data appear to be reported as in-lb/sq in, not ft-lb/sq ft as indicated on datasheet. Unit changed by CTS.

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

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**Instrument Code List**

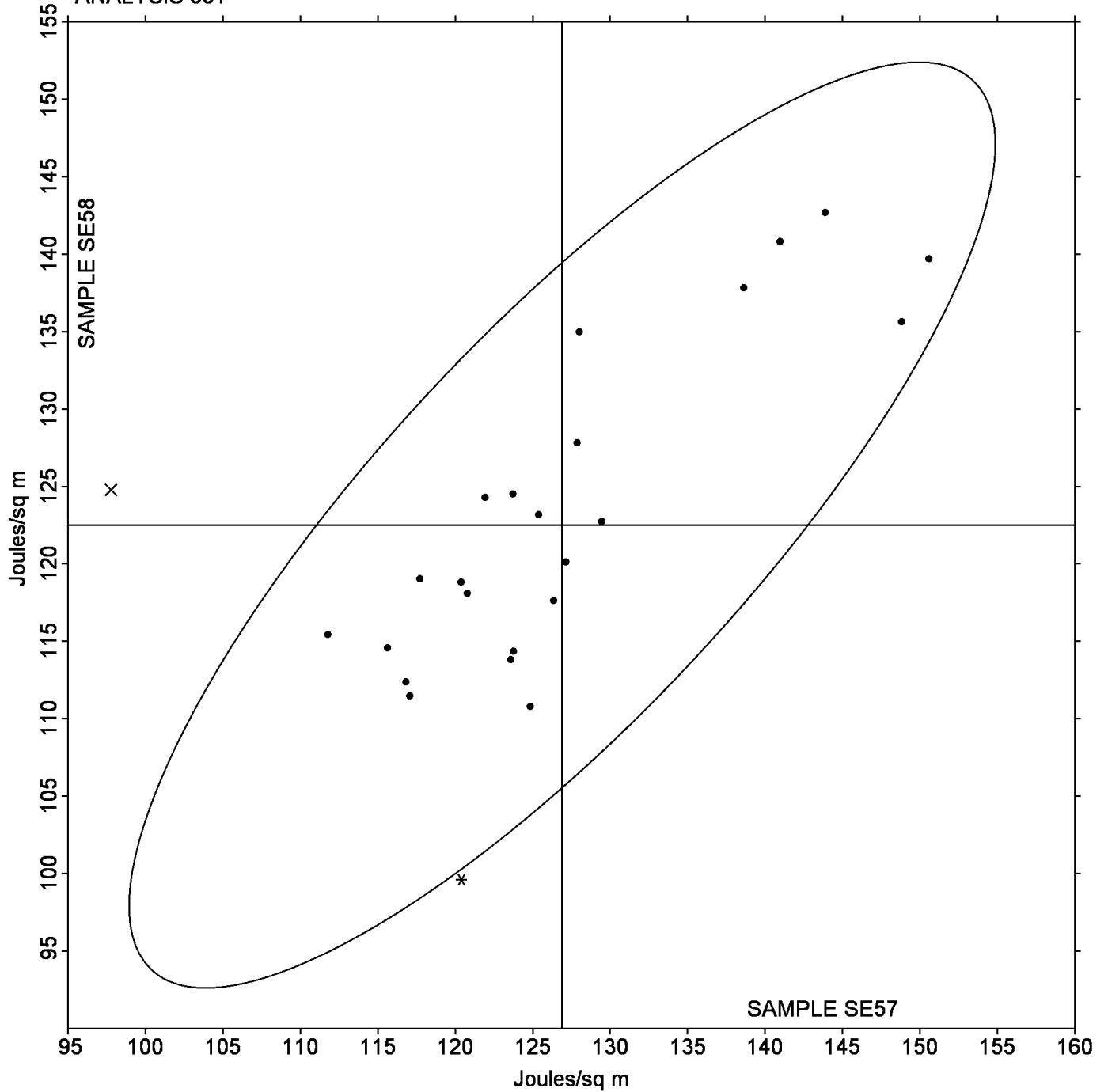
(IA) - Instron 1011	(IK) - Instron 4400 Series
(IM) - Instron 5500 Series	(IN) - Instron 3360 Series
(IX) - Instron (model not specified)	(LA) - L & W Autoline
(LH) - L & W Alwetron TH1 (Horizontal) SE 060	(LW) - L & W Tensile Tester SE062
(RE) - Regmed	(SA) - Shimadzu Autograph AG 2000 A
(TB) - Thwing-Albert EJA/1000	(TH) - Thwing-Albert QC-3A
(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 **SE57** = 126.90 Joules/sq m

Grand Mean Sample **SE58** = 122.50 Joules/sq m

ANALYSIS 331



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

WebCode	Data Flag	Sample SE57			Sample SE58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4AV7MZ		2.315	0.191	1.00	2.460	0.266	1.45	TH
6LMAA4	*	2.622	0.498	2.61	2.598	0.404	2.21	IK
6UT62N		2.083	-0.041	-0.21	2.183	-0.011	-0.06	TB
74YARJ		1.995	-0.129	-0.67	2.113	-0.081	-0.44	XX
AHUKAZ		2.297	0.173	0.91	2.435	0.241	1.32	IM
BANJR7		2.012	-0.112	-0.59	2.064	-0.130	-0.71	TO
BNTJAN		1.967	-0.157	-0.82	2.065	-0.129	-0.71	XX
BVHAKP		1.939	-0.185	-0.97	1.989	-0.205	-1.12	XX
DYREHN	X	1.801	-0.323	-1.69	2.219	0.025	0.14	TO
FNUCLC		2.486	0.362	1.90	2.571	0.377	2.06	IN
M668DR		1.890	-0.234	-1.22	2.020	-0.174	-0.95	XX
M89BCL		1.972	-0.152	-0.79	2.006	-0.188	-1.03	LW
N2Z2BQ		2.000	-0.124	-0.65	1.990	-0.204	-1.12	XX
P3QR8A		2.133	0.009	0.05	2.206	0.012	0.07	TO
Q7WJCA		2.288	0.164	0.86	2.242	0.048	0.26	RE
R3U484		1.925	-0.199	-1.04	2.032	-0.162	-0.89	LH
T4ZMZX		2.420	0.296	1.55	2.426	0.232	1.27	TH
TBH6AL		2.040	-0.084	-0.44	2.144	-0.050	-0.27	LA
U6Q7GC		1.900	-0.224	-1.17	2.010	-0.184	-1.01	XX
U7YPWZ		2.283	0.159	0.83	2.357	0.163	0.89	TP
UPXUJL		2.163	0.039	0.21	2.273	0.079	0.43	IA
W2C7PG		1.906	-0.218	-1.14	2.060	-0.134	-0.73	LW
W2H2A9		2.094	-0.030	-0.16	2.088	-0.106	-0.58	IX
WHJR2W	*	2.290	0.166	0.87	2.133	-0.061	-0.33	SA
WJP2NG		2.027	-0.097	-0.51	2.192	-0.002	-0.01	LH
WKLCPB		2.001	-0.123	-0.64	1.986	-0.208	-1.14	TB
XW4MFL		2.196	0.072	0.38	2.390	0.196	1.07	IM
YDBWZL		2.190	0.066	0.35	2.280	0.086	0.47	IA
YF369F		2.033	-0.091	-0.48	2.121	-0.073	-0.40	TB

		Summary Statistics	
	Sample SE57		Sample SE58
Grand Means	2.1238 Percent		2.1941 Percent
SD Btwn Labs	0.1910 Percent		0.1828 Percent
Statistics based on 28 of 29 reporting participants			

**Comments on assigned Data Flags for Test #332**

DYREHN (X) - Inconsistent in testing between samples.

**Analysis Notes:**

WHJR2W - One determination removed from the Lab Mean of Sample SE57 per Grubb's Test at 1% risk (TAPPI 1205).

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

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**Instrument Code List**

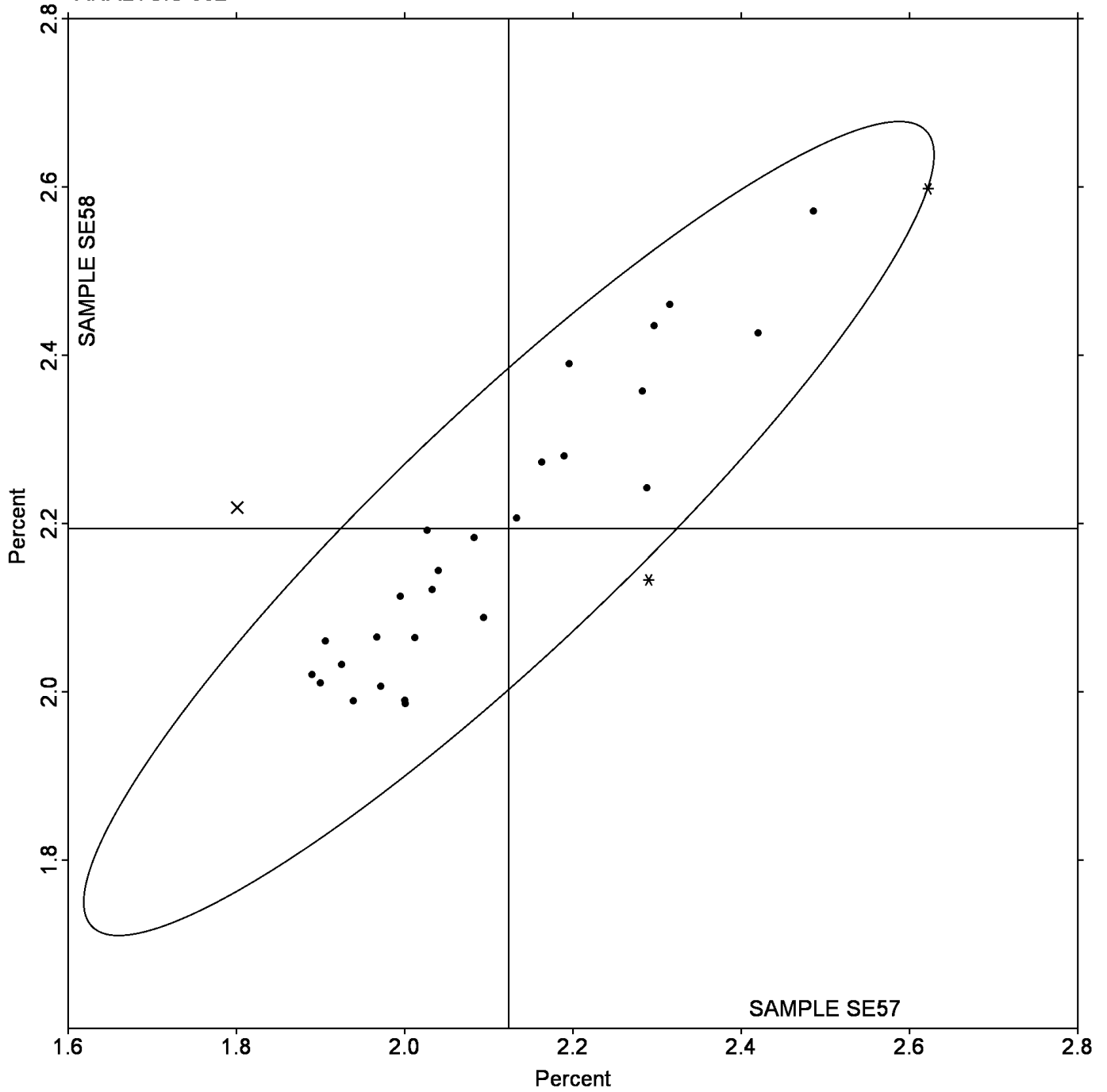
(IA) - Instron 1011	(IK) - Instron 4400 Series
(IM) - Instron 5500 Series	(IN) - Instron 3360 Series
(IX) - Instron (model not specified)	(LA) - L & W Autoline 300
(LH) - L & W Alwetron TH1 (Horizontal) SE 060	(LW) - L & W Tensile Tester SE062
(RE) - Regmed	(SA) - Shimadzu Autograph AG 2000 A
(TB) - Thwing-Albert EJA/1000	(TH) - Thwing-Albert QC-3A
(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 **SE57** = 2.1238 Percent

Grand Mean Sample **SE58** = 2.1941 Percent

ANALYSIS 332



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

WebCode	Data Flag	Sample SG57			Sample SG58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3DRRAG	X	53.20	-1.26	-0.15	155.00	67.48	3.47	MT
3N7LNV		42.30	-12.16	-1.40	74.20	-13.32	-0.68	MT
3P7GQZ		50.10	-4.36	-0.50	86.10	-1.42	-0.07	MT
7BK8QR		61.60	7.14	0.82	110.90	23.38	1.20	MT
7WL3M2		54.40	-0.06	-0.01	74.30	-13.22	-0.68	XX
9BT38G		67.50	13.04	1.50	84.50	-3.02	-0.16	MT
9YF3BM		51.50	-2.96	-0.34	83.40	-4.12	-0.21	MT
AT9MAE		52.10	-2.36	-0.27	69.40	-18.12	-0.93	MT
BZPRNK		58.20	3.74	0.43	94.30	6.78	0.35	MT
DZYKDJ		50.60	-3.86	-0.45	78.10	-9.42	-0.48	MT
FXAUGW		54.10	-0.36	-0.04	78.90	-8.62	-0.44	MT
FYT8GM		43.90	-10.56	-1.22	78.90	-8.62	-0.44	MT
HH7KVF		54.60	0.14	0.02	100.30	12.78	0.66	XX
HQ8Q2H		53.40	-1.06	-0.12	76.70	-10.82	-0.56	MT
PBBWN4		38.60	-15.86	-1.83	43.30	-44.22	-2.27	MT
T8RN88		70.70	16.24	1.87	128.90	41.38	2.13	MT
XETUN6		59.60	5.14	0.59	102.60	15.08	0.78	MT
XKRF7T		49.60	-4.86	-0.56	98.60	11.08	0.57	MT
XUPVTR	X	20.80	-33.66	-3.88	31.00	-56.52	-2.91	MT
Z3LMUP		67.50	13.04	1.50	111.90	24.38	1.25	MT

Sample SG57		Summary Statistics	Sample SG58	
Grand Means	54.461 Double Folds		87.517 Double Folds	
SD Btwn Labs	8.675 Double Folds		19.450 Double Folds	
Statistics based on 18 of 20 reporting participants				

**Comments on assigned Data Flags for Test #334**

3DRRAG (X) - Inconsistent in testing between samples, data for Sample SG58 are high.

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

**Instrument Code List**

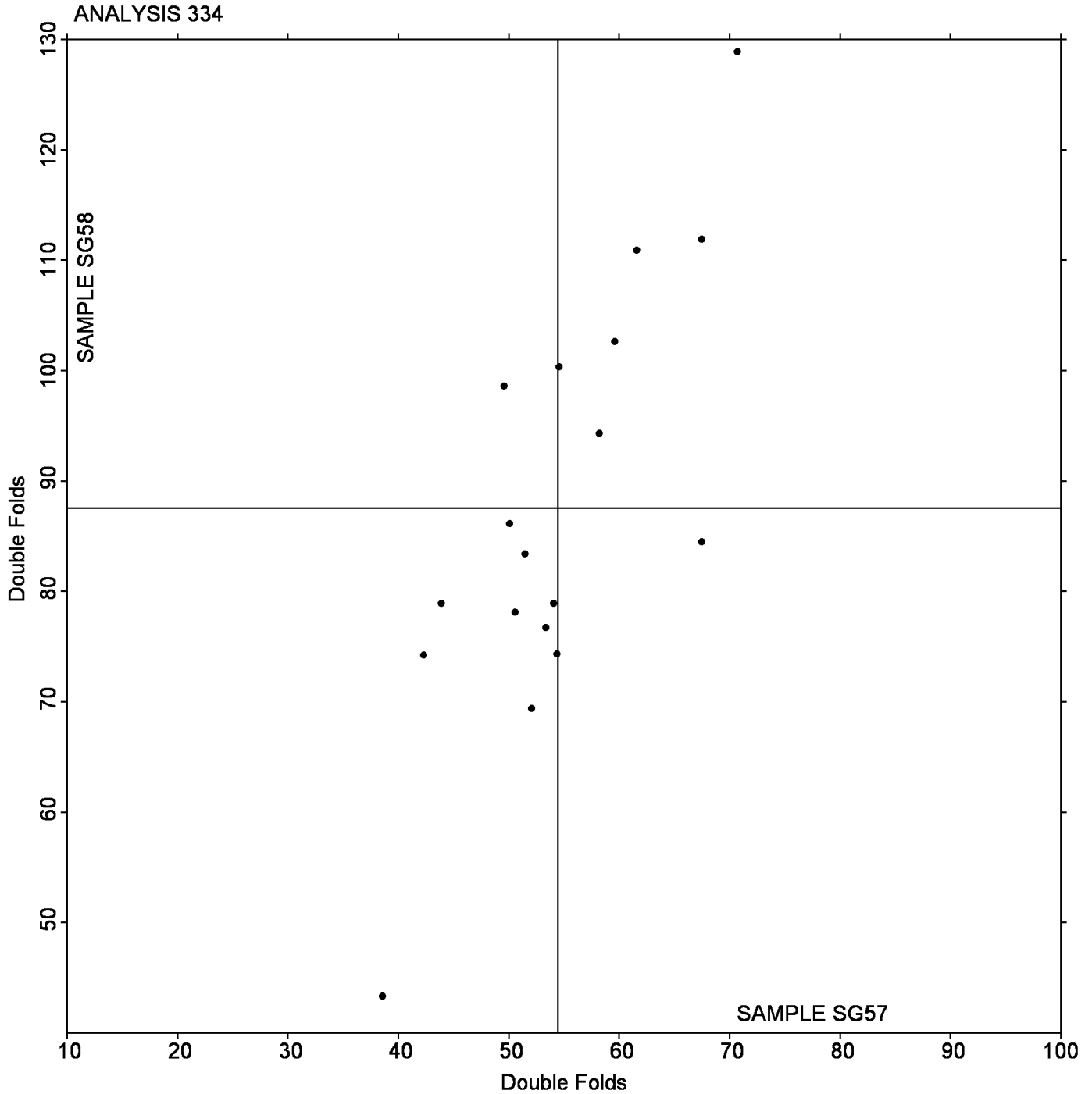
(MT) - MIT - Tinius Olsen

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

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

Grand Mean Sample **SG57** = 54.461 Double Folds

Grand Mean Sample **SG58** = 87.517 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 SH57			Sample SH58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4LWYPG		157.8	9.7	0.81	248.9	5.6	0.39
4TXPYU		143.0	-5.2	-0.43	257.4	14.1	0.98
6YXHG3	X	38.4	-109.7	-9.20	63.2	-180.1	-12.51
8LFM8G		145.6	-2.5	-0.21	244.7	1.4	0.10
8ZPPYB		150.7	2.5	0.21	251.1	7.9	0.55
FDW7Y6		145.8	-2.3	-0.20	249.8	6.5	0.45
FVTU49		145.9	-2.3	-0.19	241.0	-2.2	-0.16
HABADC		137.7	-10.4	-0.87	247.4	4.1	0.29
HM9E7J		164.7	16.6	1.39	260.5	17.2	1.20
J4KRJD		146.7	-1.4	-0.12	254.6	11.4	0.79
KGAT4J	X	69.5	-78.7	-6.59	119.9	-123.4	-8.58
L47U4D		155.0	6.8	0.57	256.6	13.4	0.93
LA2XFB		151.1	3.0	0.25	221.4	-21.9	-1.52
LVK32Z		143.0	-5.2	-0.43	236.2	-7.1	-0.49
ML46HF		156.5	8.4	0.70	229.8	-13.5	-0.94
MW7GZ4		164.8	16.7	1.40	259.2	15.9	1.10
PGMTJ6		133.2	-14.9	-1.25	232.9	-10.4	-0.72
RCKK3Z		131.0	-17.1	-1.44	226.4	-16.8	-1.17
TGJL9T		148.7	0.6	0.05	242.1	-1.1	-0.08
TXQRLN		164.5	16.4	1.37	265.3	22.0	1.53
V4RQYC		133.2	-14.9	-1.25	222.0	-21.3	-1.48
WCURRQ	X	283.1	135.0	11.32	448.5	205.2	14.26
WYJ6AX		167.1	19.0	1.59	246.3	3.0	0.21
X4436T		122.5	-25.6	-2.15	210.7	-32.6	-2.27
XEAUW2		150.5	2.4	0.20	247.7	4.4	0.31

Sample SH57		Summary Statistics	Sample SH58	
Grand Means	148.14 Gurley Units		243.27 Gurley Units	
SD Btwn Labs	11.93 Gurley Units		14.39 Gurley Units	
Statistics based on 22 of 25 reporting participants				

**Comments on assigned Data Flags for Test #336**

6YXHG3 (X) - Extreme data.

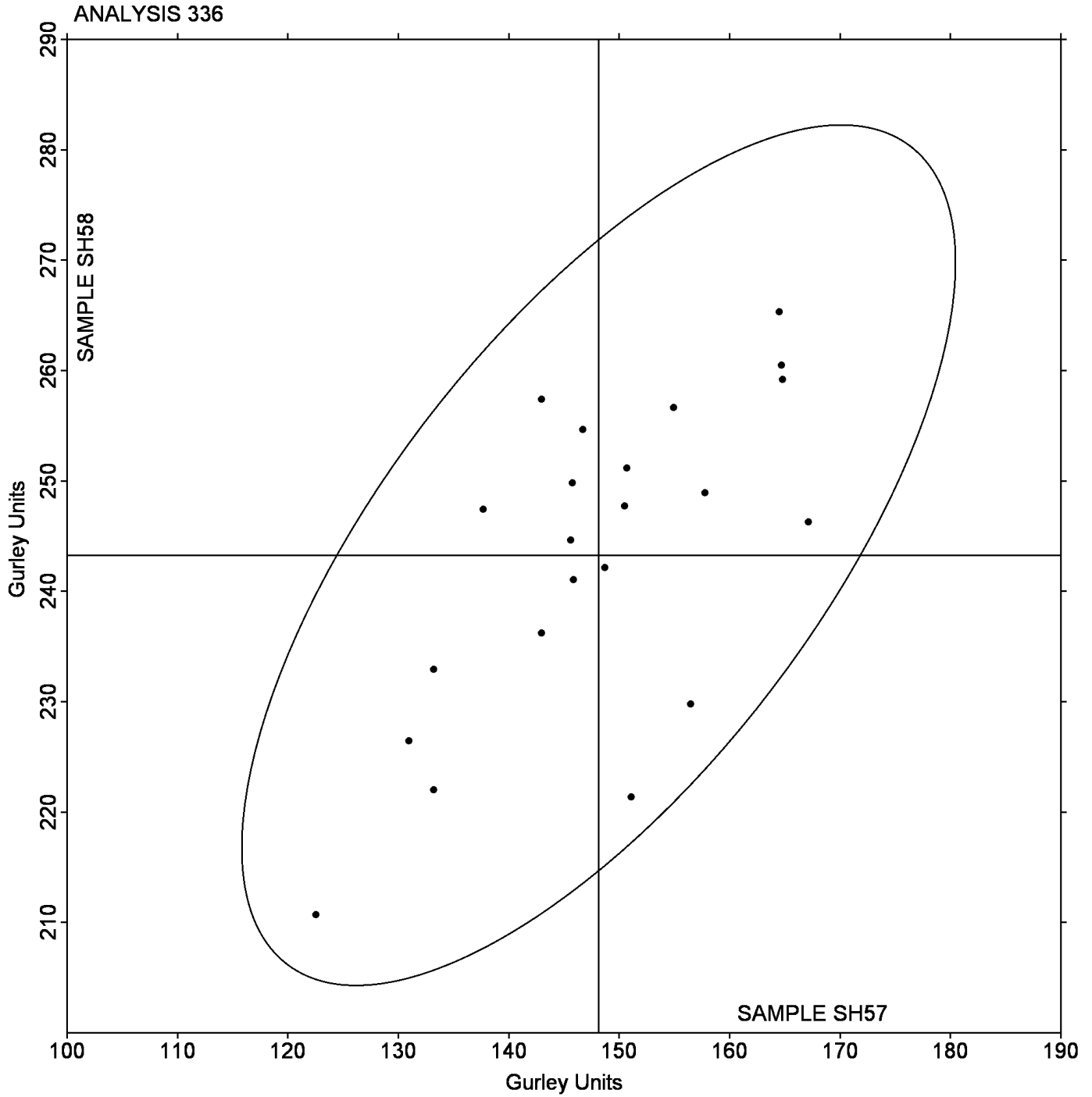
KGAT4J (X) - Extreme data.

WCURRQ (X) - Extreme data.

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

Grand Mean Sample **SH57** = 148.14 Gurley Units

Grand Mean Sample **SH58** = 243.27 Gurley Units



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

WebCode	Data Flag	Sample SJ57			Sample SJ58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
46EVK3		1.917	-0.308	-1.12	3.053	-0.390	-1.09
6MJKBY		2.538	0.313	1.14	4.019	0.576	1.61
B3HER9		2.232	0.007	0.03	3.426	-0.017	-0.05
CD8Y3W		2.183	-0.042	-0.15	3.347	-0.096	-0.27
CN4WZ4		2.620	0.395	1.44	3.845	0.402	1.13
DP4NVW		1.980	-0.245	-0.89	3.160	-0.283	-0.79
DTQ84Y		2.230	0.005	0.02	3.510	0.067	0.19
EZHXYF		2.176	-0.049	-0.18	3.527	0.084	0.24
FCM3HZ		2.262	0.037	0.14	3.434	-0.009	-0.03
NFVEE2		1.990	-0.234	-0.85	3.190	-0.253	-0.71
PYBWED	X	7.050	4.825	17.59	7.860	4.417	12.38
Q4XUNL		2.173	-0.052	-0.19	3.476	0.033	0.09
RL98GB		2.632	0.407	1.48	4.036	0.593	1.66
TA23YR		1.735	-0.490	-1.78	2.670	-0.773	-2.17
TNRPTR	*	2.620	0.395	1.44	3.573	0.130	0.36
ZW6ZBK		2.083	-0.142	-0.52	3.380	-0.063	-0.18

Sample SJ57		Summary Statistics	Sample SJ58	
Grand Means	2.2247 Taber Units		3.4430 Taber Units	
SD Btwn Labs	0.2744 Taber Units		0.3567 Taber Units	
Statistics based on 15 of 16 reporting participants				

**Comments on assigned Data Flags for Test #338**

PYBWED (X) - Extreme data.

**Analysis Notes:**

NFVEE2 - Data appear to be reported as mN-m, not g-cm as indicated on datasheet. Unit changed by CTS.

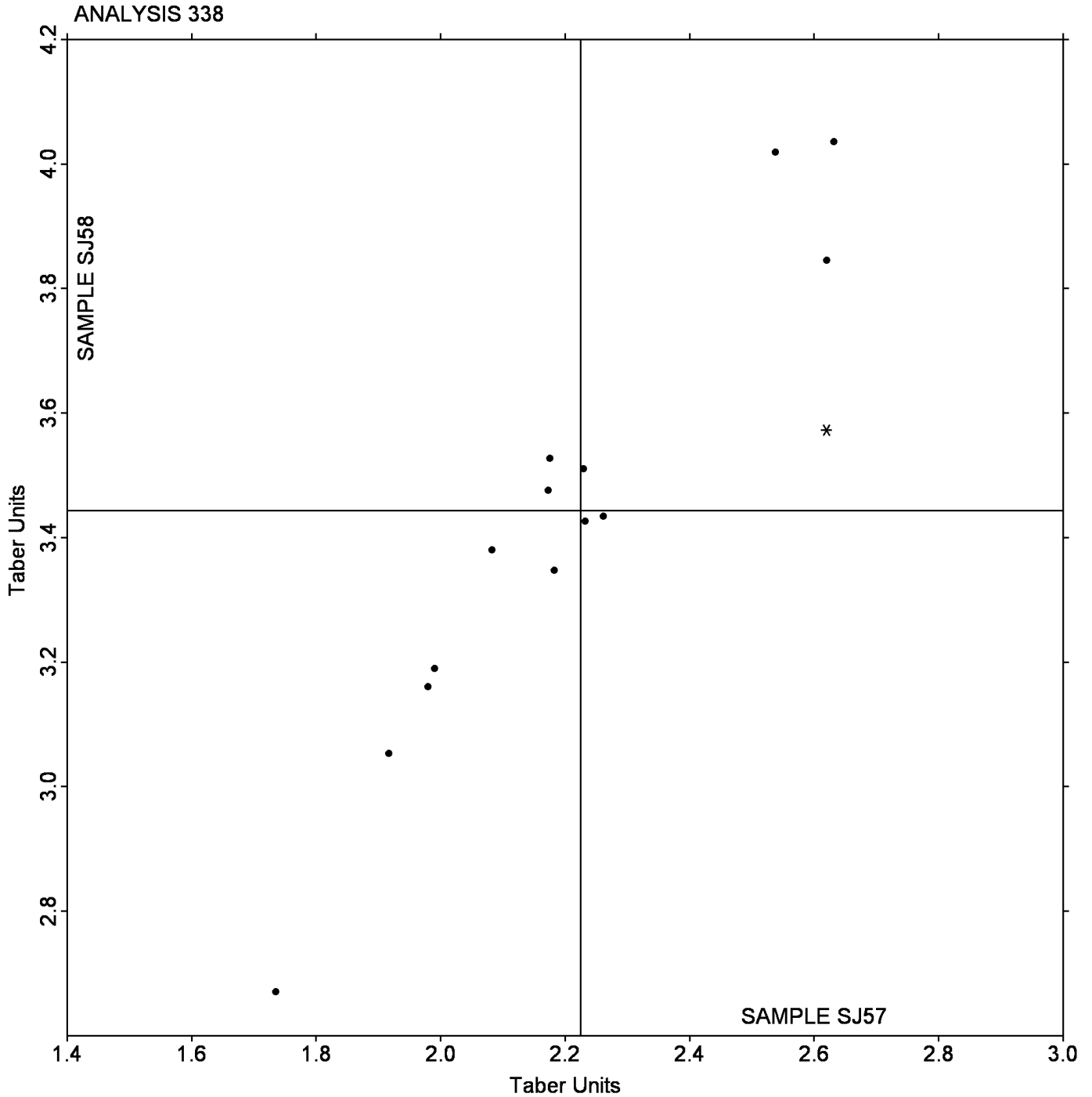
RL98GB - Data appear to be off by a factor of 10; data converted by CTS (/10).

TNRPTR - Data appear to be off by a factor of 10; data converted by CTS (/10).

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

Grand Mean Sample **SJ57** = 2.2247 Taber Units

Grand Mean Sample **SJ58** = 3.4430 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 SQ57			Sample SQ58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
42EJP3		8.040	-1.242	-1.43	18.31	-1.26	-1.59
492HAA		8.850	-0.432	-0.50	18.14	-1.43	-1.81
64AGW3		8.950	-0.332	-0.38	19.85	0.28	0.35
9UVN2N		9.240	-0.042	-0.05	20.26	0.69	0.87
EKXB2W		8.860	-0.422	-0.49	19.41	-0.16	-0.20
HE6X6R		8.390	-0.892	-1.03	19.51	-0.06	-0.08
HEHRH7		10.570	1.288	1.49	20.94	1.37	1.73
KCQW8N		10.050	0.768	0.89	19.90	0.33	0.41
ME37TC		10.720	1.438	1.66	19.86	0.29	0.36
MX3ZXN		8.785	-0.497	-0.57	19.56	-0.02	-0.02
WPCLYA		9.650	0.368	0.42	19.55	-0.02	-0.03
ZJF7TZ	X	2.391	-6.891	-7.95	5.48	-14.09	-17.77

		Summary Statistics	
	Sample SQ57		Sample SQ58
Grand Means	9.2823 Taber Units		19.571 Taber Units
SD Btwn Labs	0.8668 Taber Units		0.793 Taber Units
Statistics based on 11 of 12 reporting participants			

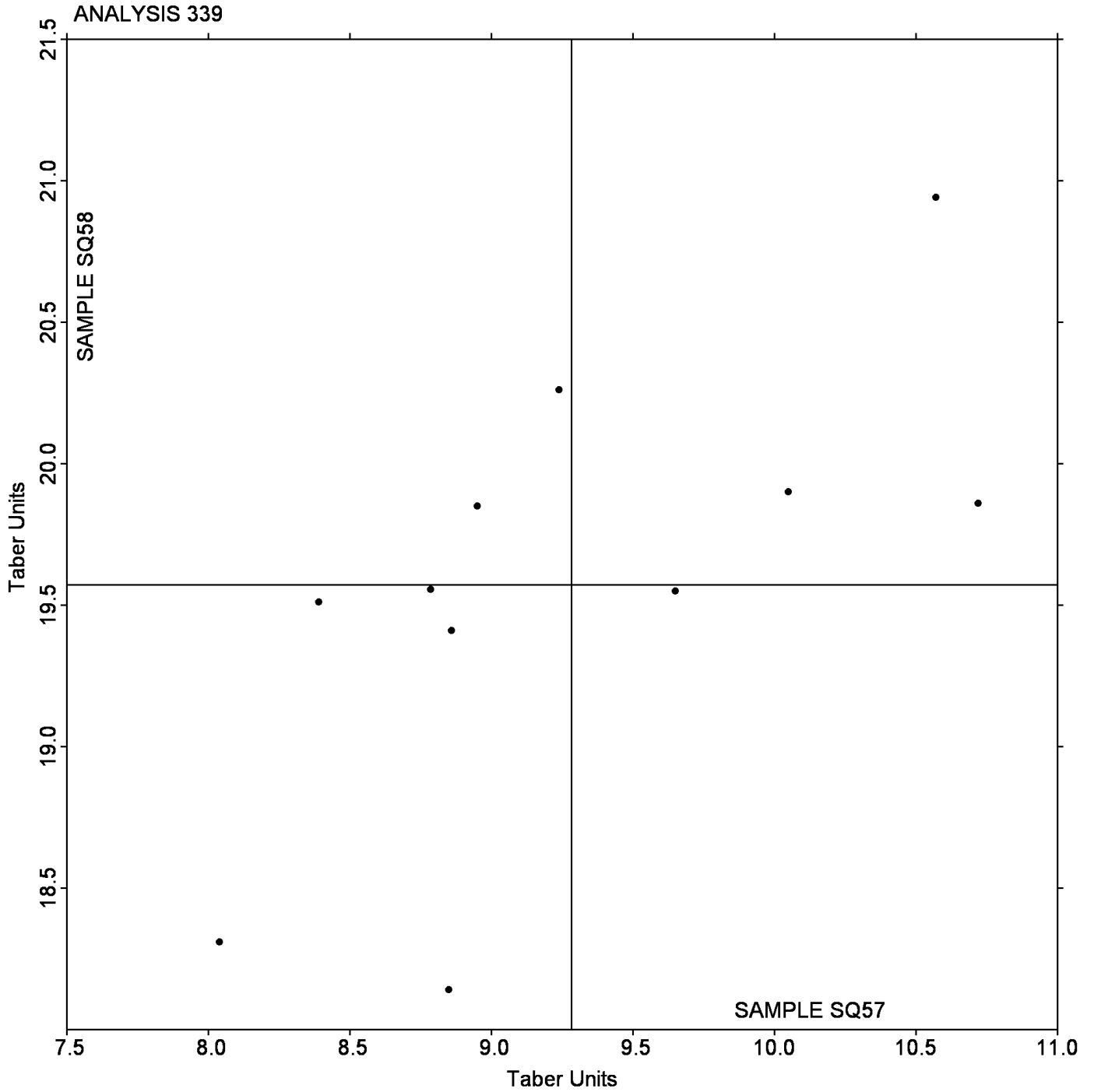
**Comments on assigned Data Flags for Test #339**

ZJF7TZ (X) - Extreme data.

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

Grand Mean Sample **SQ57** = 9.2823 Taber Units

Grand Mean Sample **SQ58** = 19.571 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 ST57			Sample ST58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
28EXQ9		242.5	-6.7	-1.24	207.5	-4.1	-0.60
8QVTPU		256.5	7.4	1.37	214.0	2.4	0.36
96KTPM		254.4	5.2	0.97	217.9	6.3	0.93
BGM33M		249.1	-0.1	-0.01	207.7	-3.9	-0.57
BHA6UX	X	87.7	-161.5	-30.07	90.3	-121.3	-17.84
BK6BDU		240.0	-9.1	-1.70	207.4	-4.1	-0.61
DKGJTL		248.5	-0.7	-0.13	213.4	1.8	0.27
DX6RG2		256.6	7.4	1.38	219.2	7.6	1.12
FFY2NA	X	282.4	33.2	6.18	228.4	16.8	2.47
FW7DYZ		251.9	2.7	0.51	214.0	2.4	0.36
KKW7B2		253.6	4.5	0.83	219.3	7.7	1.13
KXMZKA		252.3	3.1	0.58	203.2	-8.4	-1.23
M9UUKR		246.2	-3.0	-0.55	218.7	7.1	1.05
MCAB66		244.0	-5.2	-0.97	214.1	2.5	0.37
MW428Q	X	130.0	-119.2	-22.19	108.5	-103.1	-15.17
QP4XM9		251.0	1.8	0.34	210.3	-1.3	-0.19
R4CFH2		238.9	-10.3	-1.92	195.6	-15.9	-2.34
RWQZJQ		248.8	-0.4	-0.07	220.6	9.0	1.33
WRDWLX		245.9	-3.3	-0.62	203.2	-8.3	-1.23
X8CZRM		254.7	5.5	1.03	207.1	-4.5	-0.65
YWC7CA		250.3	1.1	0.20	215.0	3.4	0.51

Summary Statistics		
	Sample ST57	Sample ST58
Grand Means	249.17 Taber Units	211.56 Taber Units
SD Btwn Labs	5.37 Taber Units	6.80 Taber Units
Statistics based on 18 of 21 reporting participants		

**Comments on assigned Data Flags for Test #340**

BHA6UX (X) - Extreme data.

FFY2NA (X) - Extreme data for Sample ST57.

MW428Q (X) - Extreme data.

**Analysis Notes:**

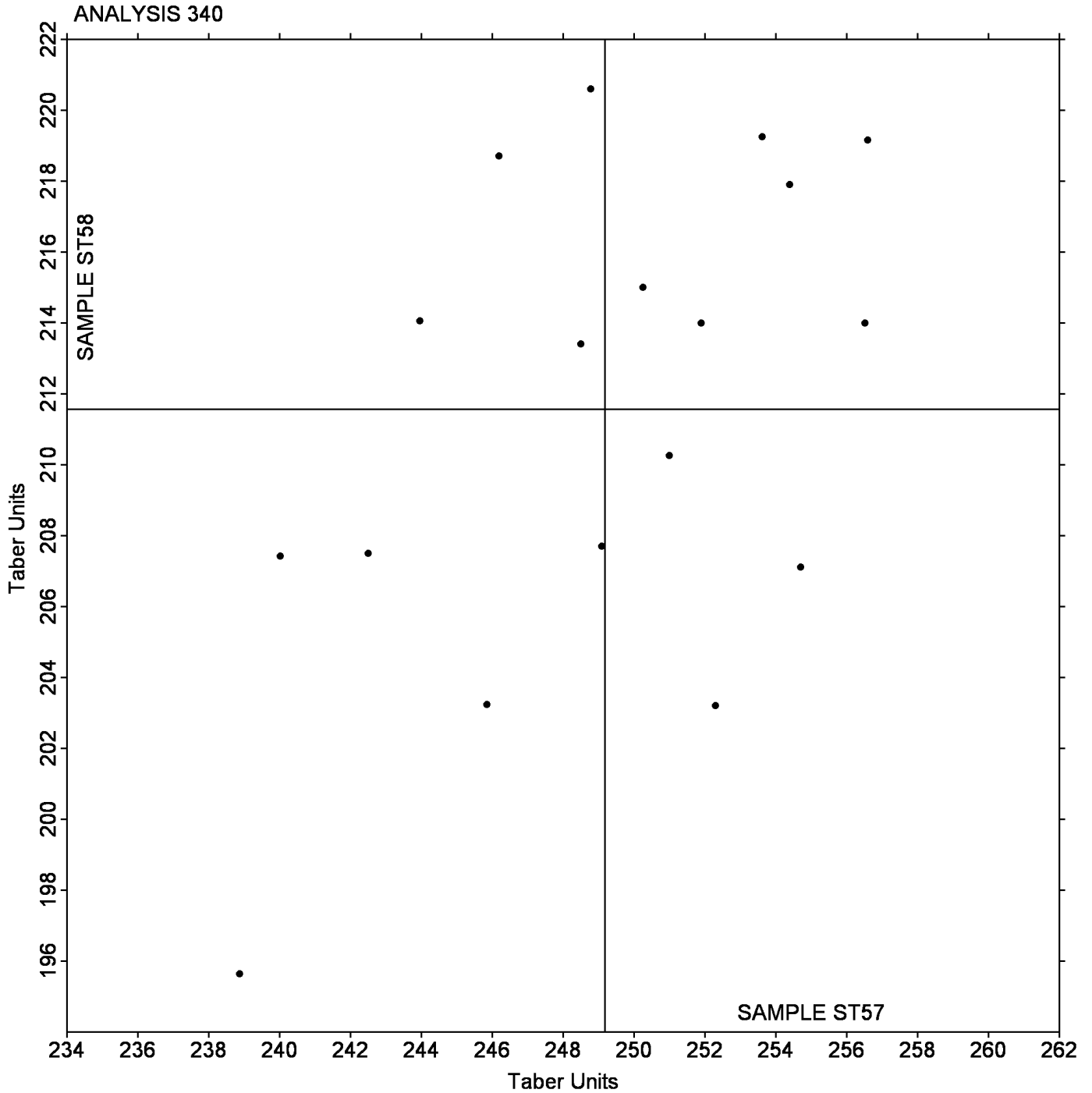
X8CZRM - One determination removed from the Lab Mean of Sample ST58 per Grubb's Test at 1% risk (TAPPI 1205).

TAPPI-CTS Interlaboratory Testing Program  
Analysis 340

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

Grand Mean Sample **ST57** = 249.17 Taber Units

Grand Mean Sample **ST58** = 211.56 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 SM57			Sample SM58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
38PCCA		65.16	-0.72	-0.09	79.16	-0.94	-0.08	LW
6X28E8		64.53	-1.35	-0.18	79.22	-0.87	-0.07	TA
F7PWBJ		55.23	-10.65	-1.39	67.97	-12.13	-0.99	LW
FHR3FJ		70.60	4.72	0.61	91.40	11.30	0.92	CA
FMZLHH		59.90	-5.98	-0.78	75.70	-4.39	-0.36	TZ
JAH37E		75.12	9.24	1.20	102.92	22.82	1.85	CD
K2M3V6		75.56	9.68	1.26	91.94	11.84	0.96	TL
M37BDJ		72.21	6.33	0.82	88.28	8.18	0.66	LW
N6JEBY		56.34	-9.54	-1.24	66.76	-13.34	-1.08	TZ
NZ79F8		54.40	-11.48	-1.50	58.80	-21.30	-1.73	CA
QZYJTL		67.62	1.74	0.23	75.54	-4.56	-0.37	CD
TVDR34		63.10	-2.78	-0.36	70.11	-9.98	-0.81	TZ
V68TA4	X	38.70	-27.18	-3.54	50.64	-29.46	-2.39	XX
WVD6P9		55.50	-10.38	-1.35	68.62	-11.48	-0.93	TZ
Z3QYT7		73.00	7.12	0.93	78.00	-2.10	-0.17	CA
Z8ZE7B		72.93	7.05	0.92	94.03	13.94	1.13	TA
Z9CX6M		72.88	7.00	0.91	93.08	12.98	1.05	DT

		Summary Statistics	
	Sample SM57		Sample SM58
Grand Means	65.881 psi		80.096 psi
SD Btwn Labs	7.675 psi		12.315 psi
Statistics based on 16 of 17 reporting participants			

**Comments on assigned Data Flags for Test #343**

V68TA4 (X) - Inconsistent in testing between samples, data for Sample SM57 are low.

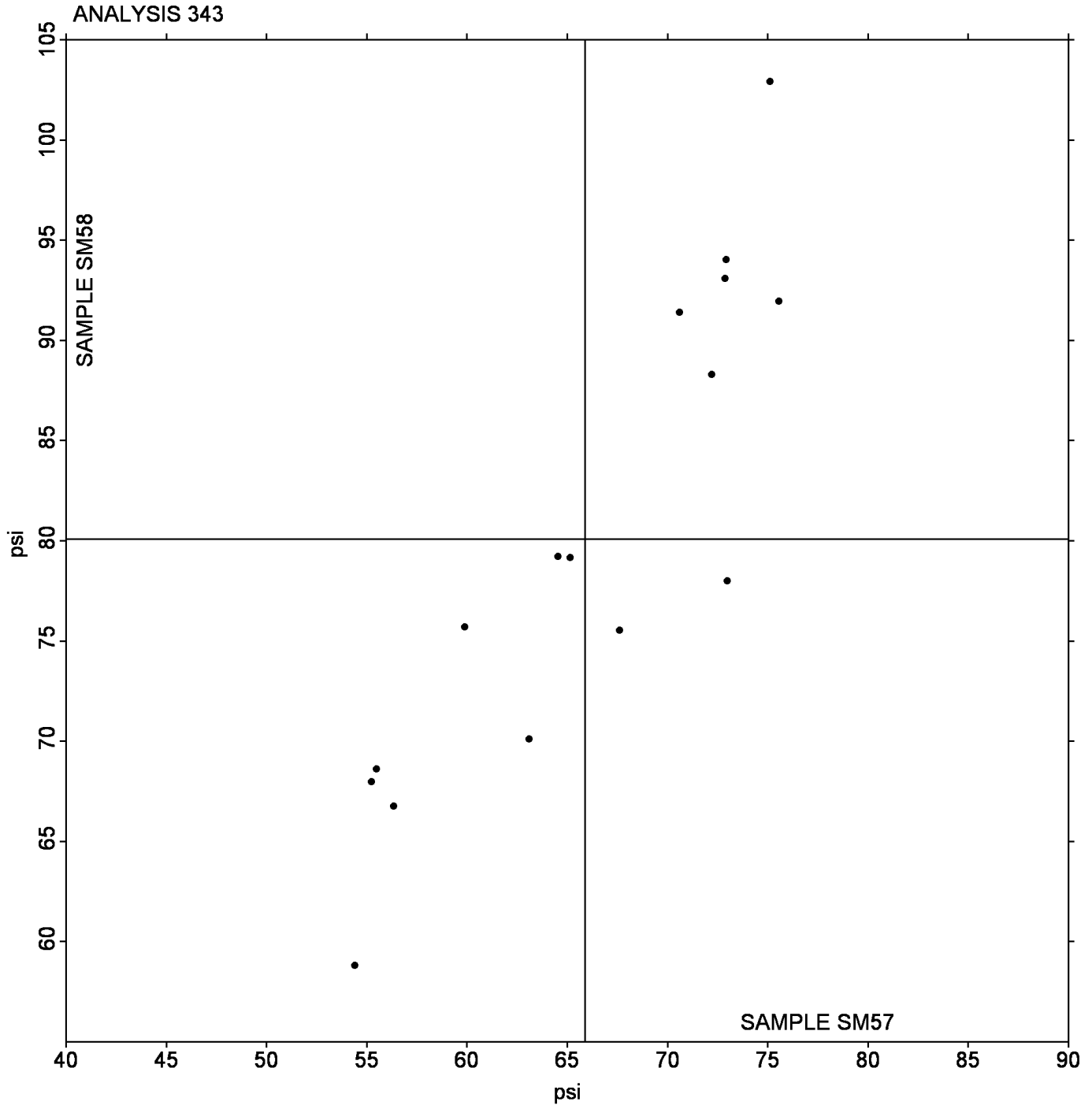
**Instrument Code List**

- |                                     |   |
|-------------------------------------|---|
| (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 **SM57** = 65.881 psi

Grand Mean Sample **SM58** = 80.096 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 SZ57			Sample SZ58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4RCG7Q		40.40	-2.39	-0.99	58.00	-1.44	-0.61	CA
66DMHN	X	49.43	6.64	2.74	51.02	-8.41	-3.59	LW
8A2P3D		45.06	2.27	0.94	57.44	-2.00	-0.85	TL
9H6GJ8	X	46.30	3.51	1.45	50.98	-8.46	-3.61	TL
DZDW8G		45.40	2.61	1.08	60.00	0.56	0.24	CA
E7H397		44.44	1.65	0.68	58.10	-1.34	-0.57	TL
E8WEHW		39.60	-3.19	-1.32	56.88	-2.56	-1.09	CA
GDQDE3		43.22	0.43	0.18	61.56	2.12	0.91	PG
J8KZNN		39.33	-3.46	-1.43	58.20	-1.23	-0.53	LW
KX4C2U		42.18	-0.61	-0.25	55.72	-3.72	-1.59	CA
LB6HDR		40.00	-2.79	-1.15	60.40	0.96	0.41	CA
M3G4TD		45.00	2.21	0.91	62.20	2.76	1.18	CA
QAEKM9		45.70	2.91	1.20	62.60	3.16	1.35	CD
RMFXXP		43.16	0.37	0.15	62.14	2.70	1.15	TZ
UX7B7L	X	37.40	-5.39	-2.23	45.06	-14.38	-6.13	TZ

Summary Statistics		
	Sample SZ57	Sample SZ58
Grand Means	42.791 psi	59.437 psi
SD Btw Labs	2.419 psi	2.343 psi
Statistics based on 12 of 15 reporting participants		

**Comments on assigned Data Flags for Test #345**

66DMHN (X) - Inconsistent in testing between samples, data for Sample SZ57 are high and data for Sample SZ58 are low.

9H6GJ8 (X) - Inconsistent in testing between samples, data for Sample SZ58 are low.

UX7B7L (X) - Extreme data for Sample SZ58.

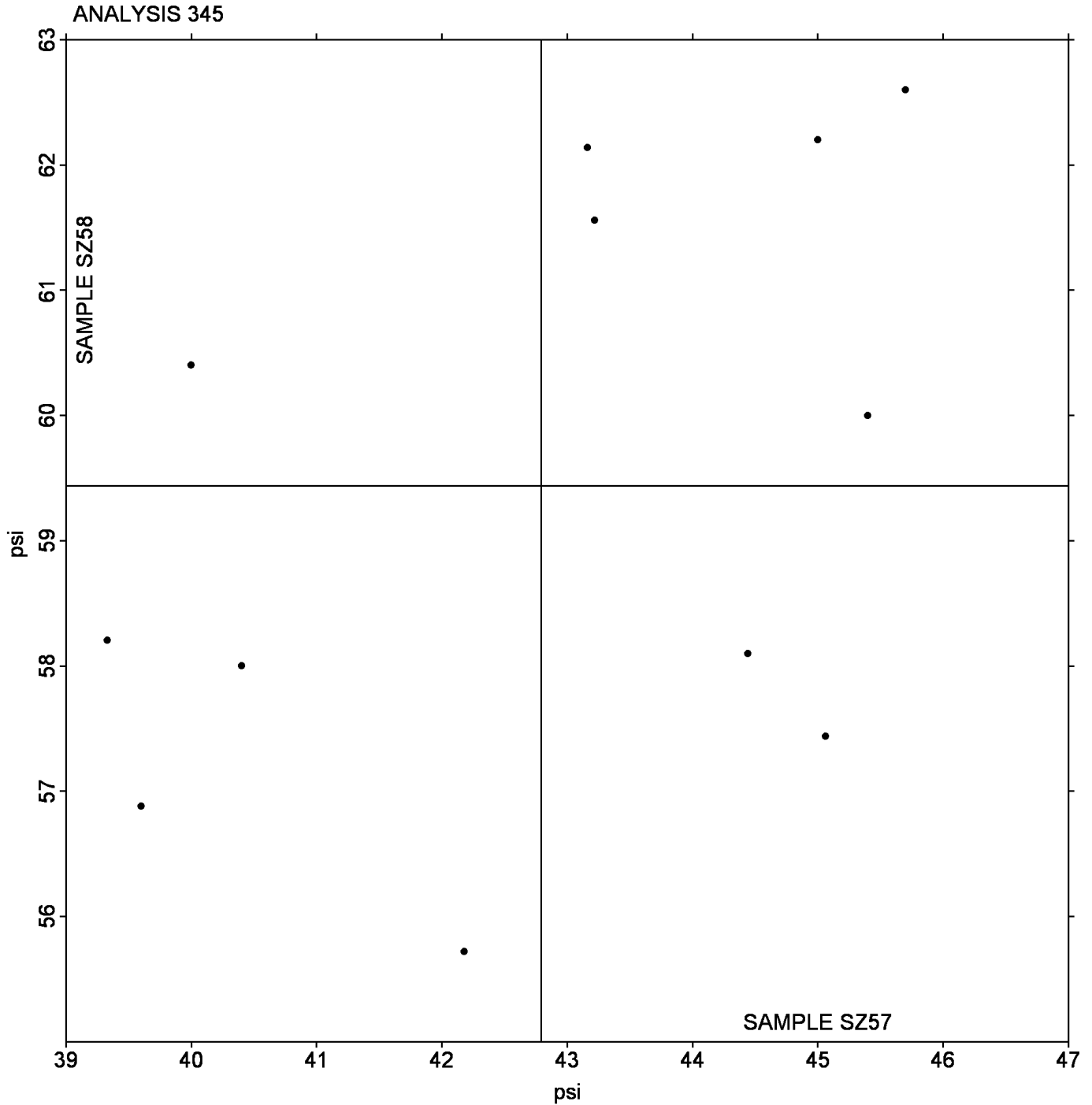
**Instrument Code List**

- |                                |                                      |
|--------------------------------|--------------------------------------|
| (CA) - CSI CS-163              | (CD) - CSI CS-163D                   |
| (LW) - L & W ZD Tensile Tester | (PG) - Perkins Model A Mullen Tester |
| (TL) - TMI Lab Master          | (TZ) - TMI Monitor/ZDT Tester        |

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

Grand Mean Sample **SZ57** = 42.791 psi

Grand Mean Sample **SZ58** = 59.437 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 SN57			Sample SN58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3H8XEJ		72.00	-5.73	-0.99	121.8	-6.6	-0.82	HZ
4LR88U		72.60	-5.13	-0.89	117.4	-11.0	-1.36	HY
6R6KJL		81.60	3.87	0.67	128.6	0.2	0.02	HY
6RWGZ9		72.40	-5.33	-0.92	119.2	-9.2	-1.14	HY
6VCEKV		75.44	-2.29	-0.40	120.8	-7.7	-0.94	HY
8VXMYW		76.60	-1.13	-0.20	132.2	3.8	0.47	HZ
9ZZTN2		73.20	-4.53	-0.78	128.0	-0.4	-0.05	XX
ANGPPG		77.24	-0.49	-0.08	120.8	-7.6	-0.94	HY
ED3267		78.36	0.63	0.11	126.6	-1.9	-0.23	HY
HJQ7VB		84.80	7.07	1.22	135.2	6.8	0.84	HZ
JPUJEE		77.60	-0.13	-0.02	126.8	-1.6	-0.20	XX
K2KM3R	X	61.76	-15.97	-2.76	100.4	-28.0	-3.46	HZ
KFM2H4		71.00	-6.73	-1.16	129.0	0.6	0.07	HY
L9ZNQT		83.16	5.43	0.94	138.2	9.8	1.21	HZ
LRXR6B	*	92.48	14.75	2.55	149.2	20.8	2.57	HY
NAFFKN		77.40	-0.33	-0.06	125.8	-2.6	-0.32	HY
NMG7A9		72.40	-5.33	-0.92	125.8	-2.6	-0.32	HY
QC8LRP		84.70	6.97	1.21	134.9	6.4	0.80	HY
U6HHG6		77.60	-0.13	-0.02	129.2	0.8	0.10	HY
WNFBXE		75.20	-2.53	-0.44	136.2	7.8	0.96	HY
X2MJFW		70.80	-6.93	-1.20	112.6	-15.8	-1.95	HY
XZ4QAT		76.00	-1.73	-0.30	132.6	4.2	0.52	HY
ZP6LLD		87.40	9.67	1.67	134.2	5.8	0.71	HY

		Summary Statistics	
	Sample SN57		Sample SN58
Grand Means	77.726 1000th ft-lbs		128.41 1000th ft-lbs
SD Btwn Labs	5.776 1000th ft-lbs		8.11 1000th ft-lbs
Statistics based on 22 of 23 reporting participants			

**Comments on assigned Data Flags for Test #348**

K2KM3R (X) - Systematic error (data for both samples are low).

**Analysis Notes:**

LRXR6B - One determination removed from the Lab Mean of Sample SN58 per Grubb's Test at 1% risk (TAPPI 1205).

**Instrument Code List**

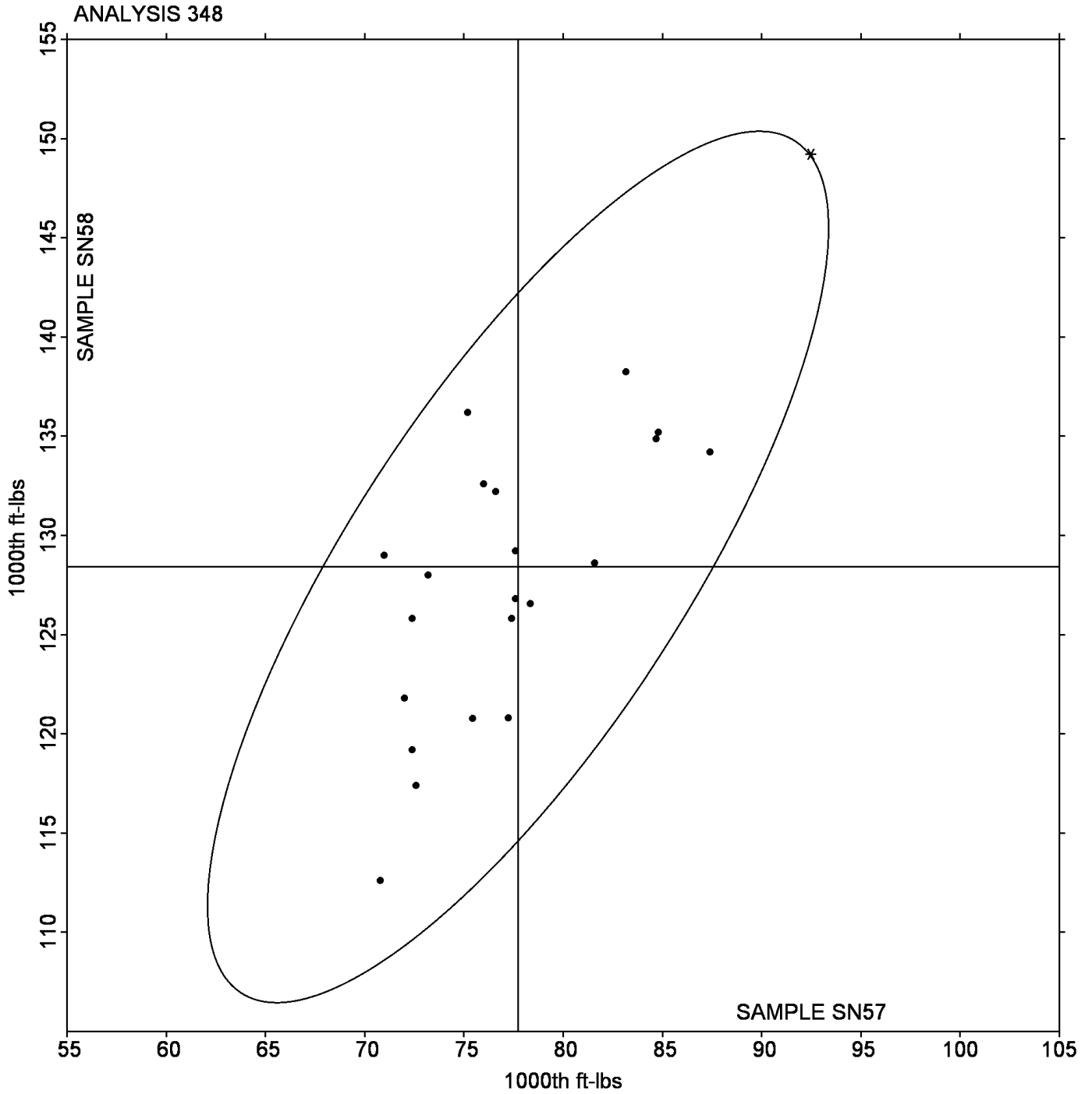
(HY) - Huygen Digitized Scott Internal Bond Tester  
 (XX) - Instrument make/model not specified by lab

(HZ) - Huygen Internal Bond Tester with AccuPress

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

Grand Mean Sample **SN57** = 77.726 1000th ft-lbs

Grand Mean Sample **SN58** = 128.41 1000th ft-lbs



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

WebCode	Data Flag	Sample SP57			Sample SP58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6Y9JUB		60.80	-3.79	-0.61	106.2	-2.6	-0.35	XX
AFGAZA		59.00	-5.59	-0.90	115.0	6.2	0.85	TM
CRVBYK		58.86	-5.72	-0.93	98.3	-10.4	-1.42	SC
D74BRH		61.20	-3.39	-0.55	101.4	-7.4	-1.00	SC
GKY8Y4		71.00	6.41	1.04	107.2	-1.6	-0.21	TM
MWQ7C		63.80	-0.79	-0.13	117.8	9.0	1.23	TM
PJUY8R		59.29	-5.30	-0.86	99.9	-8.8	-1.20	XX
RYUTB4		72.58	7.99	1.29	118.6	9.8	1.34	TM
RZQ4DY		62.60	-1.99	-0.32	102.8	-6.0	-0.81	TM
VRHRRY		59.10	-5.49	-0.89	108.3	-0.5	-0.06	TM
XURUZY		71.60	7.01	1.14	111.8	3.0	0.41	SC
XVVCWN		75.20	10.61	1.72	117.8	9.0	1.23	SC

Sample SP57		Summary Statistics	Sample SP58	
Grand Means	64.586 1000th ft-lbs		108.76 1000th ft-lbs	
SD Btwn Labs	6.174 1000th ft-lbs		7.35 1000th ft-lbs	
Statistics based on 12 of 12 reporting participants				

**Notes for Analysis 349**

No Data Flags assigned for this analysis.

**Instrument Code List**

(SC) - Scott Internal Bond Tester (Manual)

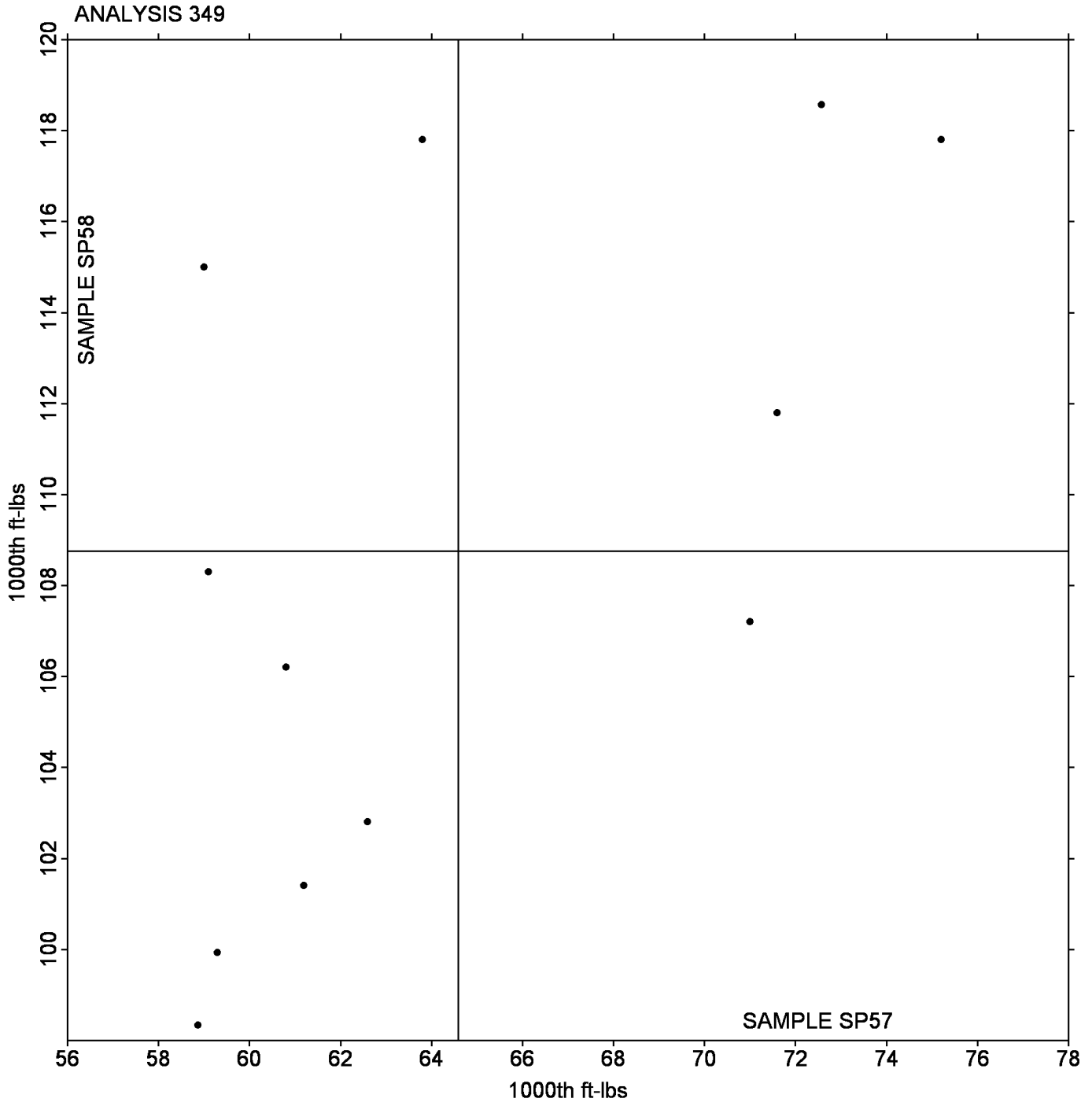
(TM) - TMI Monitor/Internal Bond Tester

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

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

Grand Mean Sample **SP57** = 64.586 1000th ft-lbs

Grand Mean Sample **SP58** = 108.76 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.