



Paper & Paperboard Interlaboratory Testing Program

Summary Report #242S - September 2009

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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:

Collaborative Testing Services, Inc.
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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 SA49			Sample SA50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2AC84Q		26.30	-0.99	-0.55	32.50	-1.09	-0.56
32A1PH		25.72	-1.57	-0.86	32.02	-1.57	-0.80
33JWQV		28.73	1.44	0.79	36.50	2.91	1.49
351K6E		27.38	0.08	0.05	34.41	0.82	0.42
3BLC2T		28.63	1.34	0.74	33.30	-0.29	-0.15
6AGWDL		27.10	-0.19	-0.11	33.60	0.01	0.01
6N5UNW		30.30	3.01	1.65	35.00	1.41	0.72
6U1XZU		25.20	-2.09	-1.15	32.80	-0.79	-0.40
7329HP		29.23	1.93	1.06	35.61	2.02	1.04
7Z6BHX		29.58	2.29	1.26	35.55	1.96	1.00
87MTMX		26.17	-1.13	-0.62	33.88	0.29	0.15
9LYSNF		27.25	-0.04	-0.02	35.74	2.15	1.10
AHW4TR	*	28.26	0.97	0.53	30.65	-2.94	-1.50
CFWXCJ		25.51	-1.79	-0.98	32.61	-0.98	-0.50
CJRAWG		27.63	0.34	0.18	33.69	0.11	0.05
DX1HZY		27.63	0.33	0.18	34.17	0.58	0.30
EGX4TV		27.44	0.15	0.08	33.97	0.38	0.20
FZTYWG		24.62	-2.67	-1.47	31.06	-2.53	-1.29
G1J3ZH		23.95	-3.34	-1.84	31.20	-2.39	-1.22
G4N39A		29.35	2.06	1.13	36.20	2.61	1.34
GXVY5L		28.34	1.05	0.58	35.97	2.38	1.22
H64F7W		25.40	-1.89	-1.04	33.60	0.01	0.01
HZA7CJ		26.59	-0.70	-0.39	30.45	-3.14	-1.61
LVQ7YE		24.40	-2.89	-1.59	30.70	-2.89	-1.48
M2JVJY		28.61	1.32	0.72	31.82	-1.77	-0.90
MTMHM		27.25	-0.04	-0.02	35.25	1.66	0.85
MUZ2E8		28.36	1.06	0.58	34.16	0.57	0.29
MWQQX	X	37.20	9.91	5.44	42.70	9.11	4.67
MZCEGM		29.01	1.72	0.94	34.90	1.31	0.67
NJCC98		28.20	0.91	0.50	34.79	1.20	0.62
PJ2AC6		28.56	1.26	0.69	33.50	-0.08	-0.04
PJWML9		29.32	2.03	1.11	36.24	2.65	1.36
Q7188A		26.85	-0.44	-0.24	34.70	1.11	0.57
QPSBBQ		23.20	-4.09	-2.25	29.05	-4.54	-2.32
QTFNU9		28.00	0.71	0.39	32.90	-0.69	-0.35
RWV9R8		28.18	0.89	0.49	35.05	1.46	0.75
TH6YAF		28.15	0.86	0.47	32.65	-0.94	-0.48
VQD7YV		28.40	1.11	0.61	33.10	-0.49	-0.25
WMXLX6		22.90	-4.39	-2.41	30.20	-3.39	-1.73
YLEWTA		25.33	-1.96	-1.08	31.29	-2.29	-1.17
YWCLM5		27.23	-0.06	-0.04	33.59	0.00	0.00
ZCVZD2		27.93	0.64	0.35	34.77	1.18	0.61
ZHG3SM		30.17	2.87	1.58	37.49	3.90	2.00

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

	Sample SA49	Summary Statistics	Sample SA50
Grand Means	27.294 psi		33.586 psi
SD Btwn Labs	1.820 psi		1.953 psi
Statistics based on 42 of 43 reporting participants			

Comments on assigned Data Flags for Test #305

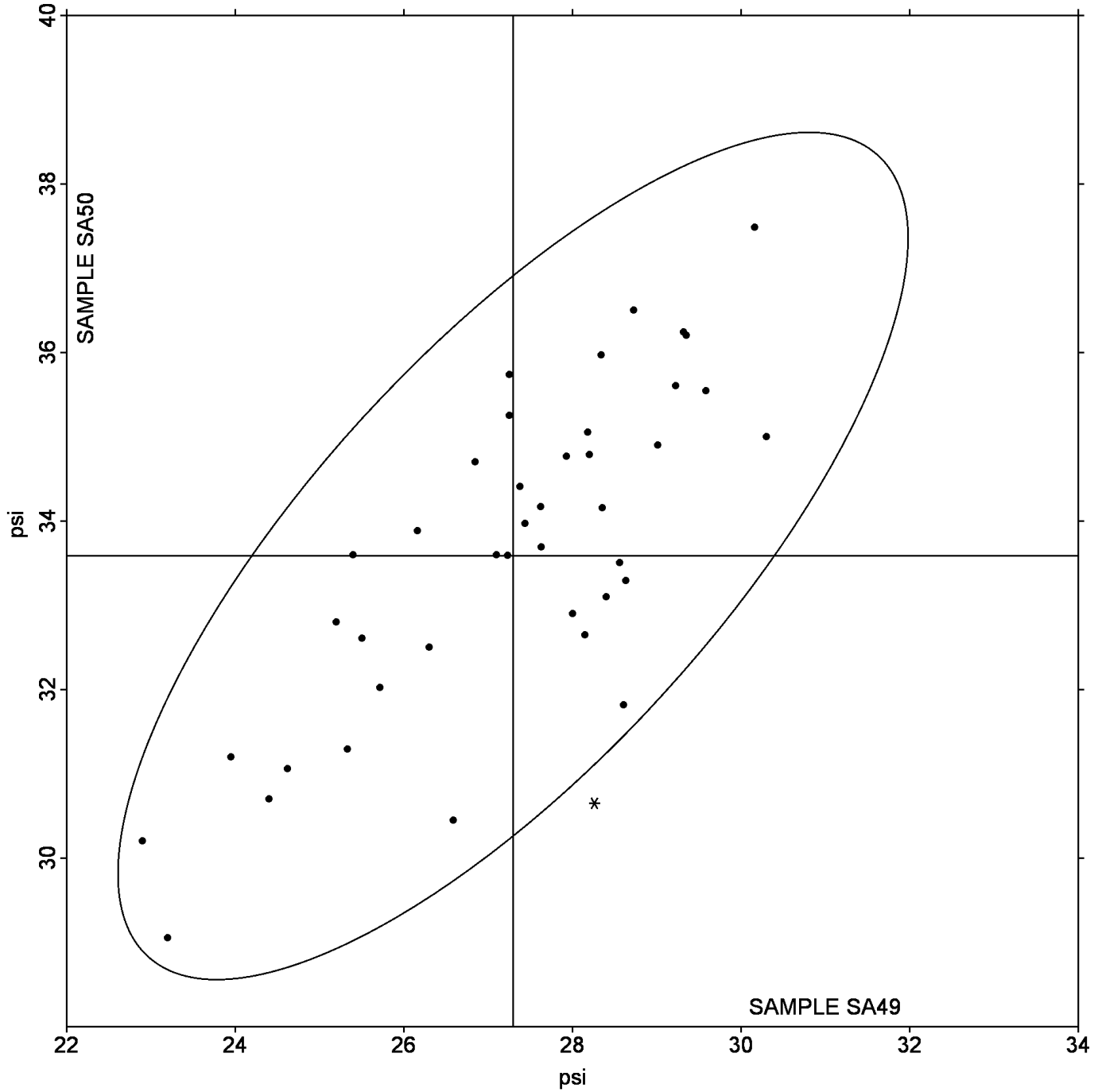
MWQQXG (X) - Extreme data.

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

Grand Mean Sample SA49 = 27.294 psi

Grand Mean Sample SA50 = 33.586 psi

ANALYSIS 305



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

WebCode	Data Flag	Sample SB49			Sample SB50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1286FE		65.66	-1.01	-0.27	53.72	0.22	0.06
4M3BCV		62.42	-4.25	-1.12	52.77	-0.74	-0.20
5AES4R		67.87	1.20	0.32	52.77	-0.74	-0.20
661HLK		66.36	-0.32	-0.08	54.27	0.77	0.20
7CLJVV		67.08	0.41	0.11	57.13	3.62	0.97
AB4M2N		67.78	1.11	0.29	54.91	1.40	0.37
BDX4DF		66.15	-0.52	-0.14	54.42	0.91	0.24
CHJHWT	*	71.50	4.83	1.27	52.30	-1.21	-0.32
DPQ7TT		69.31	2.64	0.70	54.00	0.49	0.13
EJWPU8		69.02	2.35	0.62	53.98	0.48	0.13
ETXKRC		70.53	3.85	1.02	55.93	2.42	0.65
F6HWKE		60.33	-6.34	-1.67	47.24	-6.27	-1.67
H5JWT1		68.53	1.86	0.49	52.96	-0.54	-0.15
MTH7GE		63.59	-3.09	-0.81	54.32	0.81	0.22
NVB6LF	*	75.46	8.79	2.32	63.67	10.17	2.71
PGDYD1	X	88.20	21.53	5.67	74.80	21.29	5.68
QCTAFG	M	No data reported for this sample			50.20	-3.31	-0.88
RVUD7B		68.30	1.63	0.43	54.55	1.04	0.28
TH3VT4		59.44	-7.23	-1.91	49.20	-4.31	-1.15
TZLQCD		63.80	-2.87	-0.76	47.70	-5.81	-1.55
TZX47V		64.90	-1.77	-0.47	50.30	-3.21	-0.86
UPMCNR		69.17	2.50	0.66	56.52	3.01	0.80
URUC5R		63.43	-3.24	-0.85	49.88	-3.63	-0.97
WD4R7T		65.76	-0.91	-0.24	53.06	-0.45	-0.12
WMBFR8		74.78	8.11	2.14	62.95	9.44	2.52
X86BP6		62.80	-3.87	-1.02	50.00	-3.51	-0.94
XWT1C9		65.30	-1.37	-0.36	51.70	-1.81	-0.48
YR4FTJ		64.57	-2.10	-0.55	53.33	-0.18	-0.05
ZGKKXC		66.30	-0.37	-0.10	51.10	-2.41	-0.64

	Sample SB49	Summary Statistics	Sample SB50
Grand Means	66.672 psi		53.507 psi
SD Btw Labs	3.795 psi		3.750 psi
Statistics based on 27 of 29 reporting participants			

Comments on assigned Data Flags for Test #310

PGDYD1 (X) - Extreme data.

QCTAFG (M) - No data for Sample SB49.

TAPPI-CTS Interlaboratory Testing Program

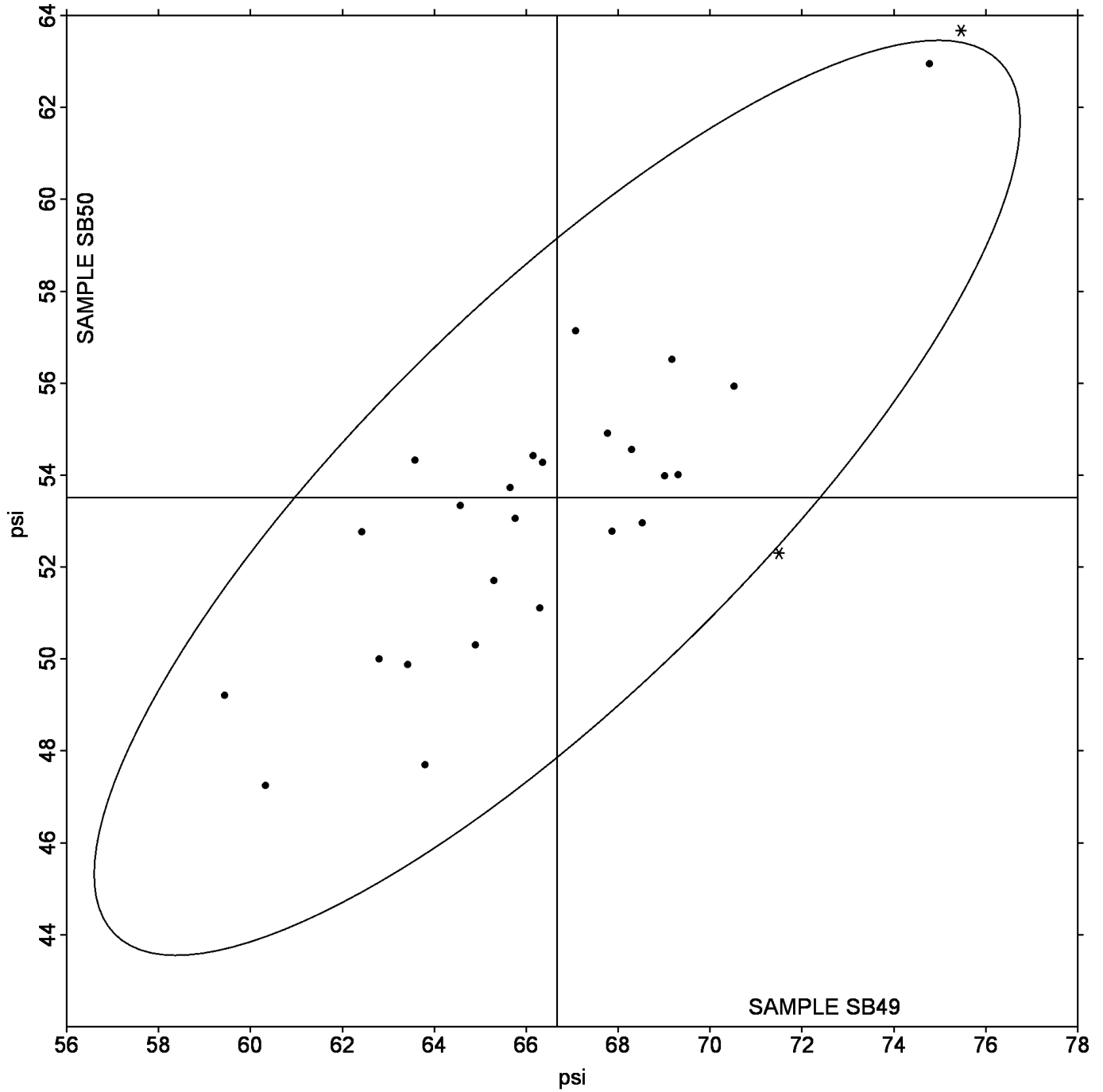
Analysis 310

Bursting Strength - Packaging Papers

Grand Mean Sample **SB49** = 66.672 psi

Grand Mean Sample **SB50** = 53.507 psi

ANALYSIS 310



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

WebCode	Data Flag	Sample SK49			Sample SK50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
17GFX9		20.96	0.01	0.00	20.54	-0.05	-0.03
56XM7F		22.10	1.15	0.82	22.00	1.42	1.02
66BXNR		21.62	0.67	0.48	21.86	1.28	0.92
7EFSBX		22.70	1.75	1.25	22.60	2.02	1.45
9PQ9EM		21.00	0.05	0.04	21.50	0.92	0.66
A4SRST		23.20	2.25	1.61	21.60	1.02	0.73
AUW7GZ		20.10	-0.85	-0.61	20.02	-0.56	-0.41
BSU9FX		20.72	-0.23	-0.16	20.09	-0.49	-0.36
EC9CR5		20.94	-0.01	-0.01	20.40	-0.18	-0.13
EVXX44		20.50	-0.45	-0.32	19.35	-1.23	-0.88
HWMAC1		20.50	-0.45	-0.32	20.31	-0.27	-0.20
KHJ7L5		21.37	0.42	0.30	21.13	0.55	0.40
N6NHRM	X	28.21	7.26	5.18	27.88	7.29	5.25
PFRKFX		18.35	-2.60	-1.85	18.04	-2.55	-1.83
REME3E		22.05	1.10	0.79	21.15	0.57	0.41
TD5CH5		18.15	-2.80	-2.00	17.51	-3.07	-2.21
U5NRPM		19.48	-1.47	-1.05	19.82	-0.76	-0.55
Z5KZBL		22.42	1.47	1.05	22.01	1.43	1.03

		Summary Statistics	
	Sample SK49		Sample SK50
Grand Means	20.950 Grams		20.585 Grams
SD Btwn Labs	1.400 Grams		1.390 Grams
Statistics based on 17 of 18 reporting participants			

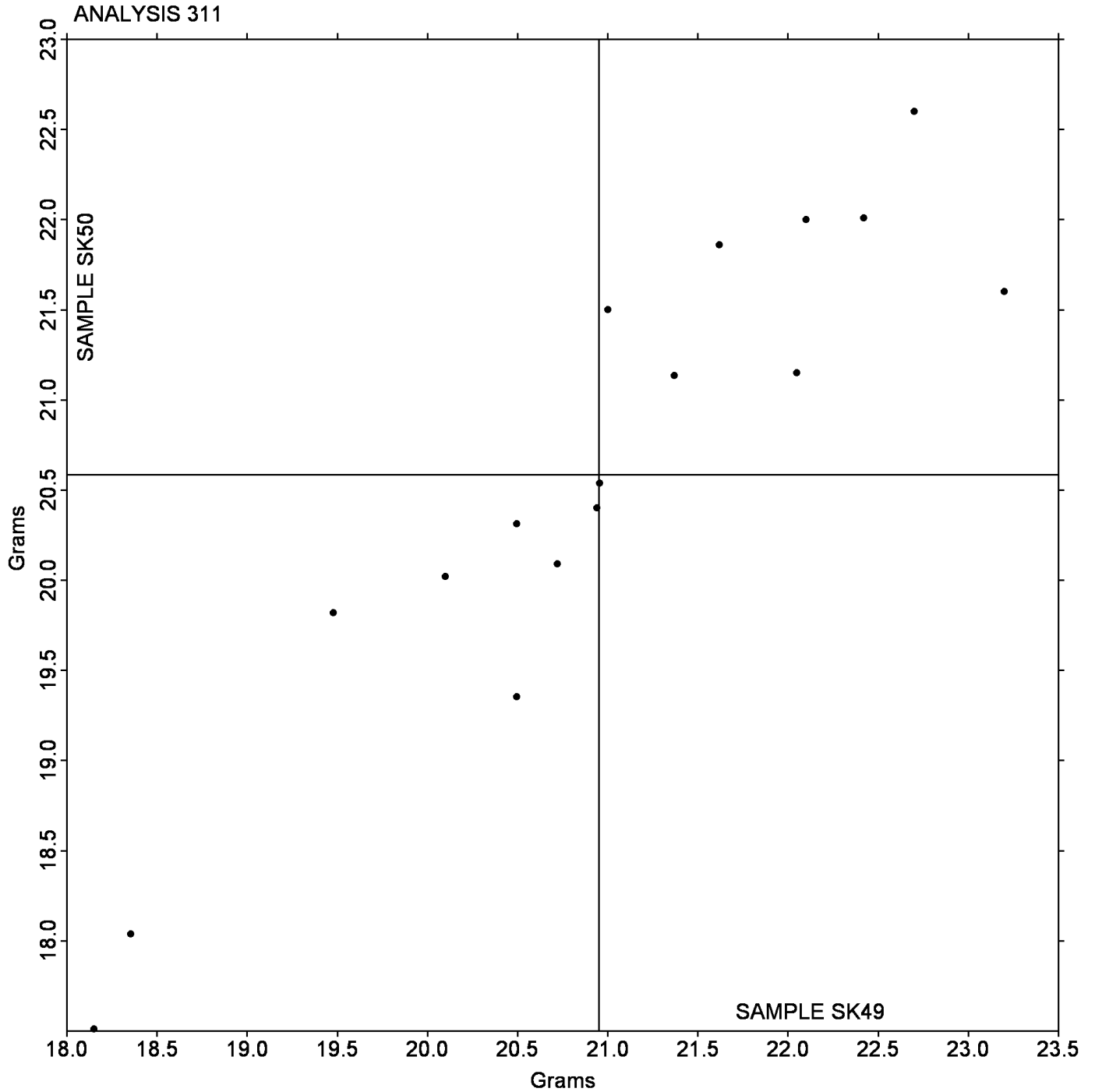
Comments on assigned Data Flags for Test #311

N6NHRM (X) - Extreme data.

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

Grand Mean Sample **SK49** = 20.950 Grams

Grand Mean Sample **SK50** = 20.585 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 SC49			Sample SC50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2GY7NB	X	112.90	63.70	21.38	140.50	80.52	22.72
2H5LUB		46.40	-2.80	-0.94	56.00	-3.98	-1.12
2QQKUX		48.63	-0.57	-0.19	62.73	2.75	0.78
2VETPB	*	58.32	9.12	3.06	70.33	10.35	2.92
3322LT	X	50.06	0.86	0.29	78.04	18.06	5.10
3A186D		45.00	-4.20	-1.41	53.70	-6.28	-1.77
3EB6LG		46.13	-3.07	-1.03	54.85	-5.13	-1.45
3SAB2F		53.90	4.70	1.58	65.30	5.32	1.50
3U6CD4		48.96	-0.24	-0.08	58.94	-1.04	-0.29
4PUPET		46.80	-2.40	-0.80	59.00	-0.98	-0.28
4TZF5C		49.71	0.52	0.17	59.96	-0.02	-0.01
4WE2MY	*	57.72	8.52	2.86	69.02	9.04	2.55
61LY95	X	89.28	40.08	13.46	101.12	41.14	11.61
6CBDVE		45.91	-3.29	-1.10	54.45	-5.53	-1.56
6DX1AV	X	53.04	3.84	1.29	66.88	6.90	1.95
6HJMFQ		47.43	-1.77	-0.59	57.89	-2.09	-0.59
6ZBWLL	X	110.10	60.90	20.44	142.26	82.28	23.22
8D44WS		51.79	2.59	0.87	62.15	2.17	0.61
8ZMJ4B		49.20	0.00	0.00	59.00	-0.98	-0.28
977N6C		47.32	-1.88	-0.63	56.90	-3.08	-0.87
9LR8JE		52.75	3.55	1.19	65.00	5.02	1.42
AMASKA		54.14	4.94	1.66	65.40	5.42	1.53
B8Y7G3		51.12	1.92	0.65	63.97	3.99	1.13
BMLMCL		51.44	2.24	0.75	59.81	-0.17	-0.05
C2PXJL		50.10	0.90	0.30	60.10	0.12	0.03
CEBUBR		46.10	-3.10	-1.04	56.84	-3.14	-0.89
CJS2ZQ		51.00	1.80	0.61	61.93	1.95	0.55
CNBXWG	*	56.14	6.94	2.33	64.87	4.89	1.38
D27Q43		47.40	-1.80	-0.60	59.00	-0.98	-0.28
DR6792		48.84	-0.35	-0.12	61.13	1.15	0.32
DXVSPZ	X	45.64	-3.56	-1.19	55.14	-4.84	-1.37
DYQE3T		49.19	-0.01	0.00	61.57	1.59	0.45
EDXTWV		51.66	2.46	0.83	61.11	1.13	0.32
ELK1TD		50.30	1.11	0.37	60.94	0.96	0.27
ETDR4G		49.42	0.22	0.07	60.40	0.42	0.12
EWVLP2		51.04	1.84	0.62	60.46	0.48	0.13
EZ99YC		51.20	2.00	0.67	62.60	2.62	0.74
FGB4WJ		47.48	-1.72	-0.58	57.88	-2.10	-0.59
G6VBN2		46.64	-2.55	-0.86	57.60	-2.38	-0.67
GG8LST		53.28	4.08	1.37	65.81	5.83	1.65
GM62GU		48.72	-0.48	-0.16	57.96	-2.02	-0.57
GN5DMF		47.74	-1.45	-0.49	61.08	1.10	0.31
GV7M6E		51.64	2.44	0.82	62.24	2.26	0.64

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

WebCode	Data Flag	Sample SC49			Sample SC50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
H11FZE	X	49.43	0.23	0.08	60.65	0.67	0.19
H9YGVR		49.60	0.40	0.14	62.00	2.02	0.57
HSNYG1		49.46	0.26	0.09	59.95	-0.03	-0.01
JQ35NH		46.20	-3.00	-1.01	57.12	-2.86	-0.81
K16629		51.44	2.24	0.75	64.96	4.98	1.40
K1REZX		49.74	0.54	0.18	62.03	2.05	0.58
K2VK6L		47.41	-1.79	-0.60	58.69	-1.29	-0.36
KPVH6R		47.21	-1.98	-0.67	60.27	0.28	0.08
LLDQUG		47.78	-1.42	-0.48	55.82	-4.16	-1.17
M1MS14		46.50	-2.70	-0.90	56.00	-3.98	-1.12
M1N6NG		47.50	-1.70	-0.57	57.80	-2.18	-0.62
M62BCJ		45.80	-3.40	-1.14	55.40	-4.58	-1.29
N3KPRW		49.48	0.28	0.10	62.43	2.45	0.69
N67VCJ		48.80	-0.40	-0.13	61.70	1.72	0.48
N7U5MD		53.02	3.83	1.29	63.10	3.12	0.88
NAX8T8		48.77	-0.42	-0.14	59.83	-0.16	-0.04
NKDSS5		46.18	-3.02	-1.01	59.52	-0.46	-0.13
NSWK3V		49.00	-0.20	-0.07	59.06	-0.92	-0.26
NZYYBL		45.84	-3.36	-1.13	56.44	-3.54	-1.00
Q9XDC9		45.30	-3.90	-1.31	54.98	-5.00	-1.41
R5BMBX		49.44	0.24	0.08	58.81	-1.17	-0.33
SD7K9C		53.93	4.73	1.59	65.71	5.73	1.62
TEQCY7		48.68	-0.52	-0.17	59.27	-0.71	-0.20
TG9GE6		47.79	-1.41	-0.47	57.84	-2.14	-0.60
TKF7VE		46.00	-3.20	-1.07	57.30	-2.68	-0.76
TX9JNK		50.10	0.90	0.30	60.60	0.62	0.17
U99LR7		47.78	-1.41	-0.47	58.25	-1.74	-0.49
U9NUV1		46.20	-3.00	-1.01	56.70	-3.28	-0.93
UKU4M5		45.84	-3.36	-1.13	56.44	-3.54	-1.00
URTA6T		45.90	-3.30	-1.11	55.30	-4.68	-1.32
VQKR3W		50.00	0.80	0.27	60.40	0.42	0.12
WPGMSS	X	49.12	-0.08	-0.03	54.20	-5.78	-1.63
WVYNNQ		53.64	4.44	1.49	65.02	5.04	1.42
WXMZN	X	47.92	-1.28	-0.43	63.42	3.44	0.97
XBY7PL		44.26	-4.94	-1.66	53.20	-6.78	-1.91
XT61VM		50.78	1.58	0.53	60.04	0.06	0.02
YFDN8B	X	51.62	2.42	0.81	69.14	9.15	2.58
YHWA1X		45.65	-3.55	-1.19	55.55	-4.43	-1.25
ZU2LA5		50.50	1.30	0.44	63.26	3.28	0.92

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

	Sample SC49	Summary Statistics	Sample SC50
Grand Means	49.196 Grams		59.982 Grams
SD Btwn Labs	2.979 Grams		3.544 Grams
Statistics based on 72 of 82 reporting participants			

Comments on assigned Data Flags for Test #312

2GY7NB (X) - Extreme data.

3322LT (X) - Extreme data for sample SC50.

61LY95 (X) - Extreme data.

6DX1AV (X) - Data appear to be off by a factor of 1/2; data converted by CTS (x2).

6ZBWLL (X) - Extreme data.

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

H11FZE (X) - Data appear to be off by a factor of 2; data converted by CTS (/2).

WPGMSS (X) - Inconsistent in testing between samples.

WXMZNW (X) - Inconsistent in testing between samples.

YFDN8B (X) - Inconsistent in testing between samples.

TAPPI-CTS Interlaboratory Testing Program

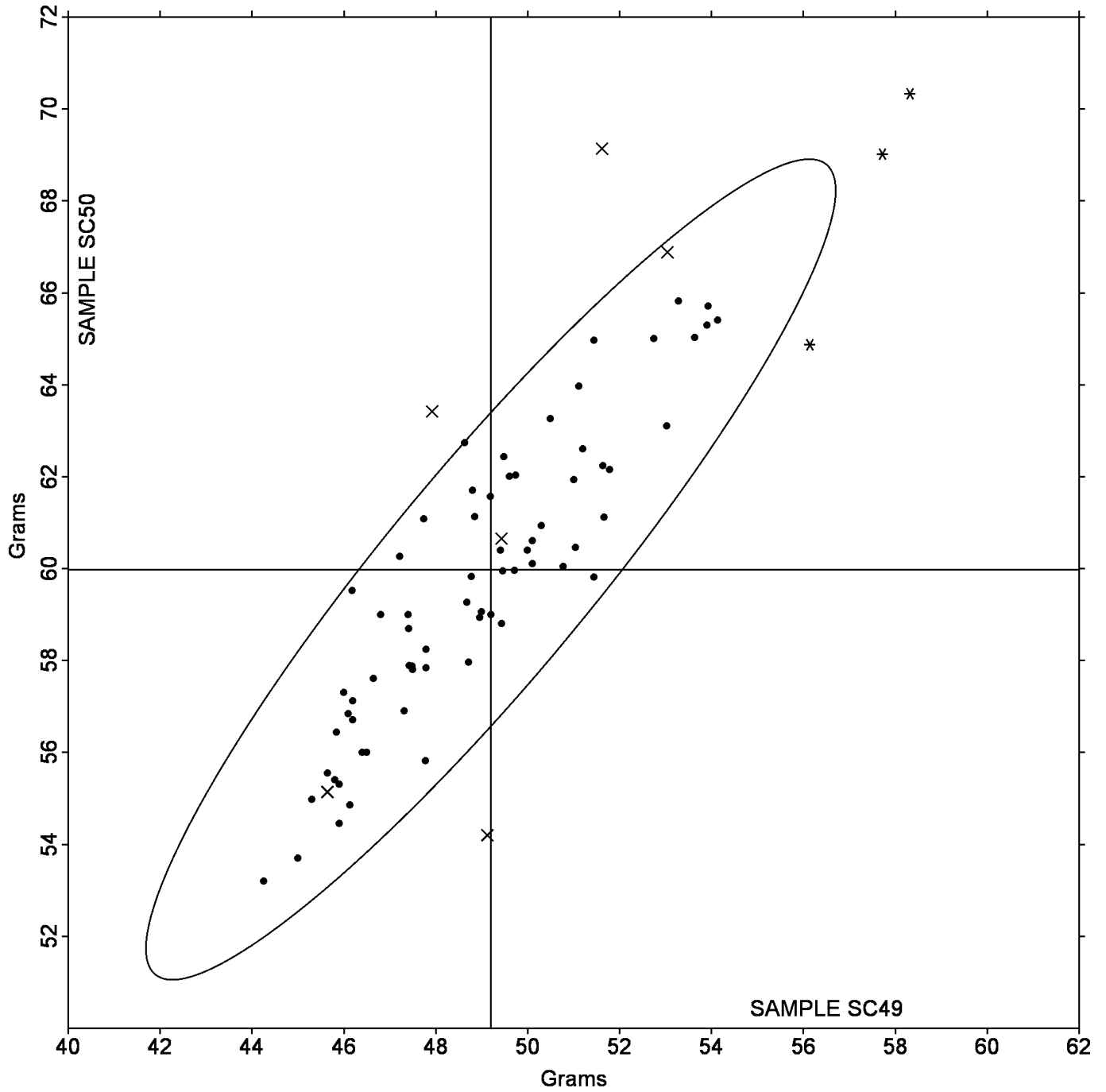
Analysis 312

Tearing Strength - Printing Papers

Grand Mean Sample **SC49** = 49.196 Grams

Grand Mean Sample **SC50** = 59.982 Grams

ANALYSIS 312



TAPPI-CTS Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

WebCode	Data Flag	Sample SD49			Sample SD50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1K97E3	*	250.3	39.1	2.71	204.4	6.2	0.87
1MYU71		199.6	-11.6	-0.81	200.2	2.0	0.28
3QYLQQ		226.6	15.4	1.07	203.1	4.9	0.68
46NK83		203.5	-7.7	-0.54	197.7	-0.4	-0.06
4ZGMGJ	X	220.8	9.6	0.66	228.4	30.2	4.22
5PNKXF		201.8	-9.5	-0.66	193.7	-4.5	-0.63
7UCB2G		208.1	-3.1	-0.22	203.5	5.3	0.74
8AHHQX		213.3	2.1	0.14	203.9	5.7	0.80
8KNKVV		211.0	-0.2	-0.02	194.4	-3.8	-0.53
9494EZ		211.0	-0.3	-0.02	203.5	5.3	0.74
9524CB		207.7	-3.5	-0.24	187.7	-10.4	-1.46
A74B6N		219.4	8.1	0.56	197.1	-1.1	-0.15
AD6VD5		231.0	19.7	1.37	204.6	6.5	0.90
ADBNE7		220.8	9.6	0.66	197.1	-1.1	-0.15
AHAFPA	X	203.6	-7.6	-0.53	188.0	-10.2	-1.43
BSPKP1		202.8	-8.4	-0.58	204.8	6.6	0.92
DPHCNZ		209.4	-1.9	-0.13	207.2	9.0	1.26
EFPJTE		222.8	11.6	0.80	200.8	2.6	0.36
EXLXZ7		210.6	-0.6	-0.04	192.6	-5.6	-0.78
FULZN7		190.3	-20.9	-1.45	194.4	-3.8	-0.54
GX8522		211.6	0.4	0.03	200.2	2.0	0.28
H1MT1Z	X	220.2	8.9	0.62	210.9	12.7	1.78
HAD3WN		204.7	-6.6	-0.46	204.6	6.5	0.90
HNRULN		201.2	-10.1	-0.70	196.2	-2.0	-0.28
KCNZZ3		217.7	6.5	0.45	208.3	10.1	1.41
LGRRZL		215.6	4.4	0.30	213.4	15.2	2.12
LJ82C6		209.6	-1.6	-0.11	198.4	0.2	0.03
LK13AG	X	52.7	-158.5	-10.98	41.8	-156.4	-21.85
LN22TM		218.3	7.1	0.49	197.8	-0.4	-0.05
MTRFY1		220.4	9.2	0.63	203.4	5.2	0.72
PV4ZTE		206.5	-4.7	-0.33	190.9	-7.3	-1.02
RK31CS		199.2	-12.0	-0.83	185.4	-12.8	-1.79
SACQMX		224.3	13.0	0.90	194.7	-3.5	-0.48
TE4JX4		217.1	5.9	0.41	197.1	-1.1	-0.15
U6DL1M		208.1	-3.1	-0.22	197.2	-0.9	-0.13
V6K9R2		217.3	6.1	0.42	198.0	-0.2	-0.03
X48728		180.4	-30.8	-2.13	188.0	-10.2	-1.42
X7G8ES		218.2	6.9	0.48	194.1	-4.1	-0.57
XEECKV		216.6	5.4	0.37	193.6	-4.6	-0.65
XRYU9L	*	178.0	-33.2	-2.30	182.0	-16.2	-2.26
Y7NQCG	*	249.6	38.4	2.66	210.0	11.8	1.65
YZB15G		197.8	-13.5	-0.93	204.9	6.7	0.93
ZFEU9W		197.4	-13.9	-0.96	182.5	-15.7	-2.19

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

WebCode	Data Flag	Sample SD49			Sample SD50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
ZJVV39		199.9	-11.3	-0.78	196.2	-2.0	-0.28

		Summary Statistics			
		Sample SD49		Sample SD50	
Grand Means		211.23 Grams		198.19 Grams	
SD Btwn Labs		14.44 Grams		7.16 Grams	
Statistics based on 40 of 44 reporting participants					

Comments on assigned Data Flags for Test #314

4ZGMGJ (X) - Inconsistent in testing between samples, data for Sample SD50 are high.

AHAFPA (X) - Data appear to be off by a factor of 1/8; data converted by CTS (x8).

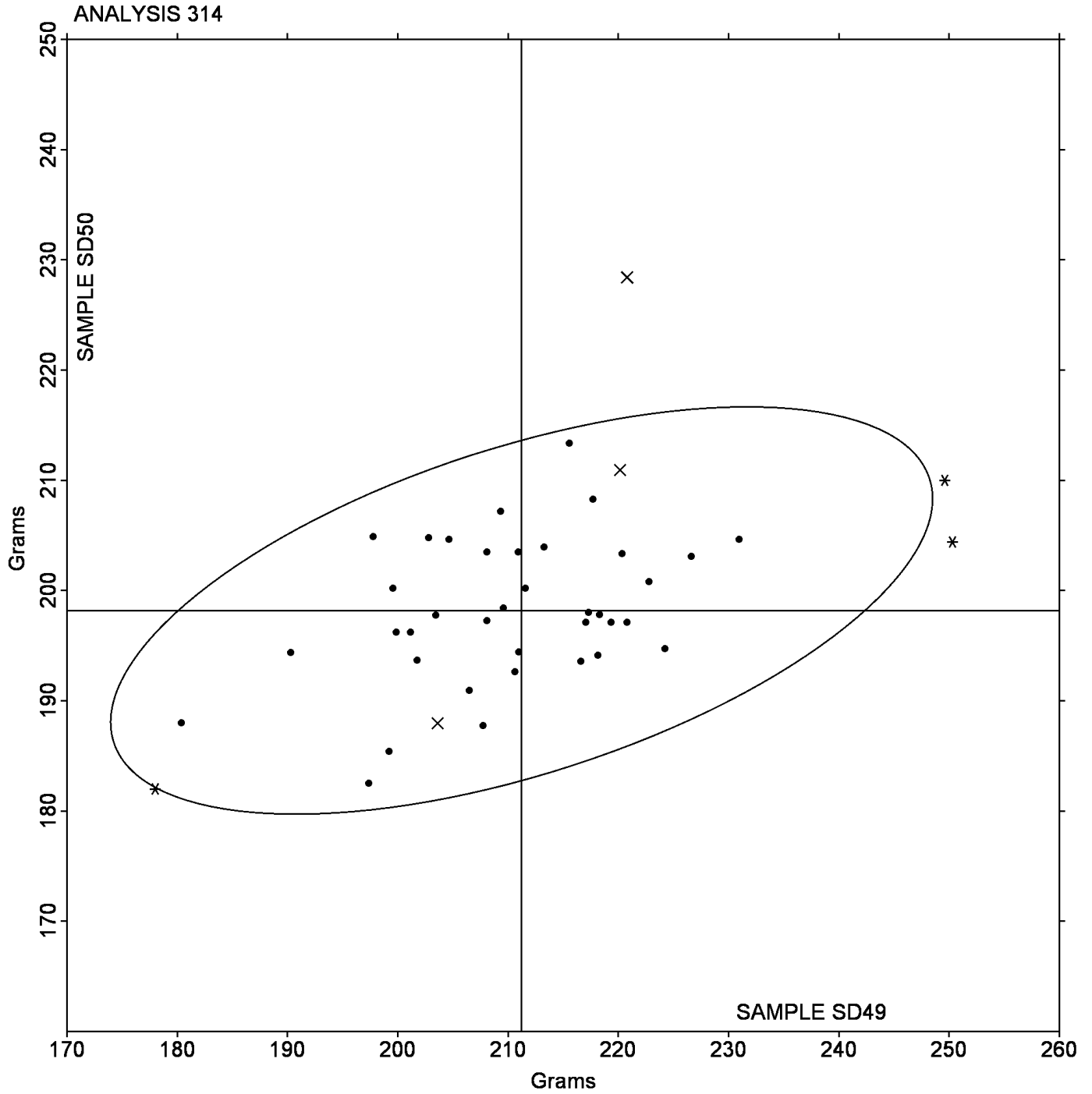
H1MT1Z (X) - Data appear to be off by a factor of 1/4; data converted by CTS (x4).

LK13AG (X) - Extreme data.

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

Grand Mean Sample **SD49** = 211.23 Grams

Grand Mean Sample **SD50** = 198.19 Grams



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

WebCode	Data Flag	Sample SR49			Sample SR50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1GVWR9		1.882	-0.048	-0.42	1.967	0.019	0.15
6WKNMF		1.939	0.009	0.08	1.893	-0.055	-0.44
7GSEVX		1.831	-0.100	-0.87	1.874	-0.074	-0.59
81DXJH		1.890	-0.040	-0.35	1.979	0.030	0.24
AQWWLZ		1.974	0.044	0.38	1.952	0.003	0.02
ASAU3A		1.916	-0.014	-0.12	1.909	-0.040	-0.31
AZ6N8W		2.011	0.081	0.71	1.972	0.024	0.19
CYH3F4		2.076	0.145	1.27	2.109	0.161	1.27
FP6EE7		2.121	0.190	1.66	2.130	0.181	1.43
PQTG8L		1.831	-0.099	-0.87	1.893	-0.055	-0.44
QDKYNX		2.217	0.286	2.50	2.229	0.280	2.22
TXGZ4C		1.882	-0.048	-0.42	1.904	-0.044	-0.35
U8TPJU		2.018	0.088	0.77	2.040	0.091	0.72
VJFE54		1.895	-0.036	-0.31	1.924	-0.024	-0.19
VMWE4R		1.873	-0.057	-0.50	1.880	-0.069	-0.54
W3LWK8	*	1.717	-0.213	-1.86	1.606	-0.343	-2.71
WFKD49		1.884	-0.046	-0.40	1.939	-0.009	-0.08
WRVTRF		1.896	-0.034	-0.30	1.905	-0.044	-0.34
Y4J2V6		1.813	-0.117	-1.02	1.846	-0.103	-0.81
Z9TWRA		1.939	0.009	0.08	2.020	0.071	0.56

		Summary Statistics	
	Sample SR49		Sample SR50
Grand Means	1.9302 kN/m		1.9485 kN/m
SD Btwn Labs	0.1145 kN/m		0.1263 kN/m
Statistics based on 20 of 20 reporting participants			

Analysis Notes:

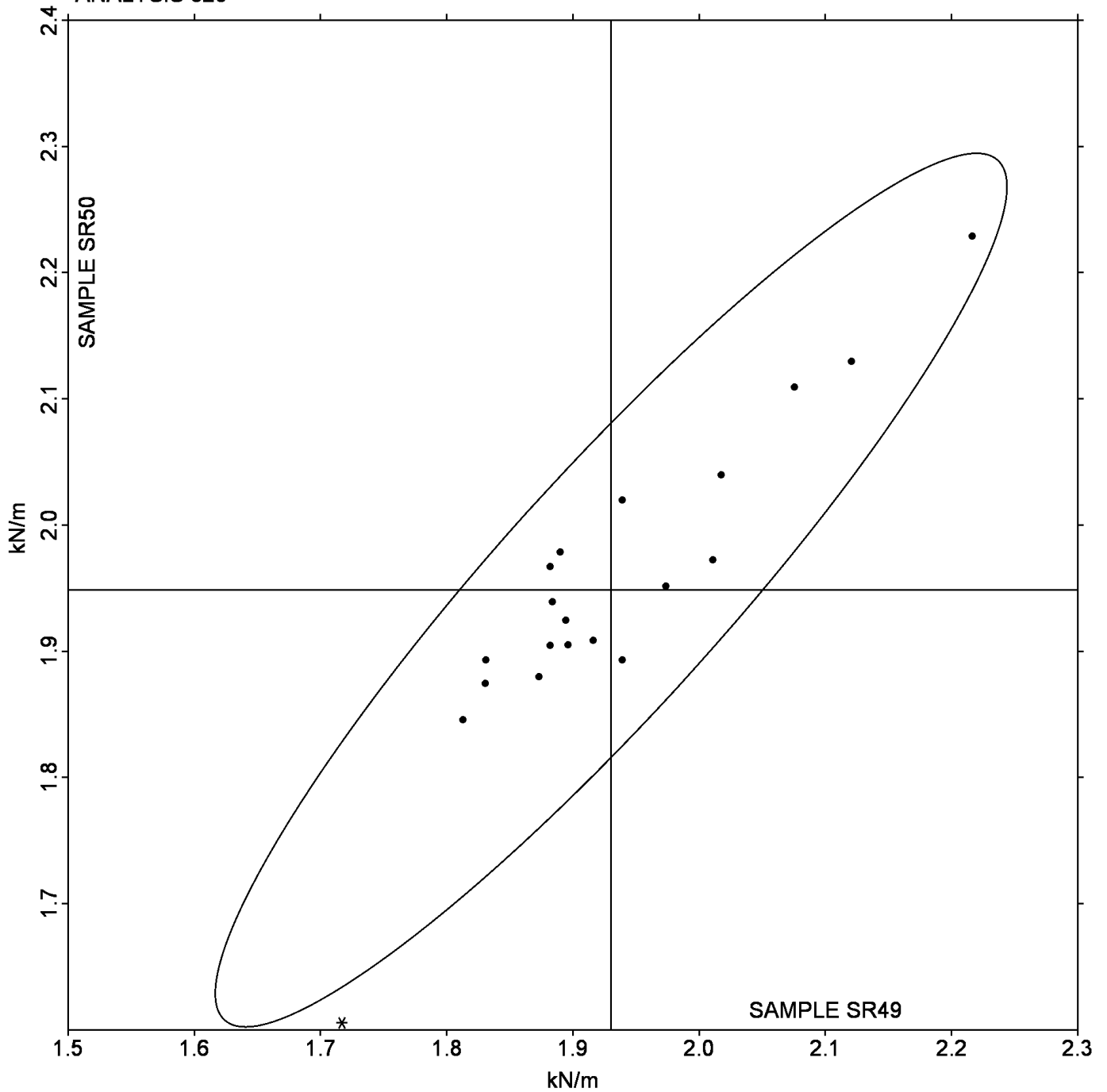
CYH3F4 - Data appear to be off by a factor of 10; data converted by CTS (/10).

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

Grand Mean Sample **SR49** = 1.9302 kN/m

Grand Mean Sample **SR50** = 1.9485 kN/m

ANALYSIS 320



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

WebCode	Data Flag	Sample SR49			Sample SR50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1EW8X7		13.78	3.04	1.87	12.56	1.70	1.39
24B1G9		12.35	1.61	0.99	11.92	1.05	0.86
2HJNFK		10.33	-0.40	-0.25	10.26	-0.61	-0.50
2N28VS		9.08	-1.66	-1.02	9.74	-1.13	-0.93
2XS3EP		8.67	-2.07	-1.27	9.71	-1.15	-0.94
3WXCQ7		10.15	-0.59	-0.36	10.49	-0.38	-0.31
78SRUE		10.87	0.13	0.08	10.40	-0.46	-0.38
93Z2RF		8.76	-1.98	-1.22	9.75	-1.12	-0.92
A8Q768		10.03	-0.70	-0.43	9.96	-0.90	-0.74
D5MXWN		12.17	1.44	0.89	12.18	1.32	1.08
D74XGR	X	8.04	-2.69	-1.66	13.05	2.18	1.79
F1JA5R		8.71	-2.02	-1.24	9.71	-1.15	-0.95
NPKDAH		9.92	-0.82	-0.50	10.08	-0.79	-0.65
PECQPH	*	13.92	3.19	1.96	14.14	3.28	2.69
PSJSCL		10.13	-0.60	-0.37	11.23	0.36	0.30
RDKUR7		11.33	0.59	0.36	11.40	0.54	0.44
RNGQL4		10.09	-0.64	-0.39	10.09	-0.78	-0.64
VFG394		10.50	-0.24	-0.15	10.53	-0.33	-0.27
Y5QZSP		12.45	1.71	1.05	11.42	0.55	0.45

		Summary Statistics	
	Sample SR49		Sample SR50
Grand Means	10.734 Joules/sq m		10.864 Joules/sq m
SD Btwn Labs	1.625 Joules/sq m		1.218 Joules/sq m
Statistics based on 18 of 19 reporting participants			

Comments on assigned Data Flags for Test #321

D74XGR (X) - Inconsistent in testing between samples.

Analysis Notes:

VFG394 - Data appear to be reported as ft-lb/sq in, not in-lb/sq in as indicated on datasheet.

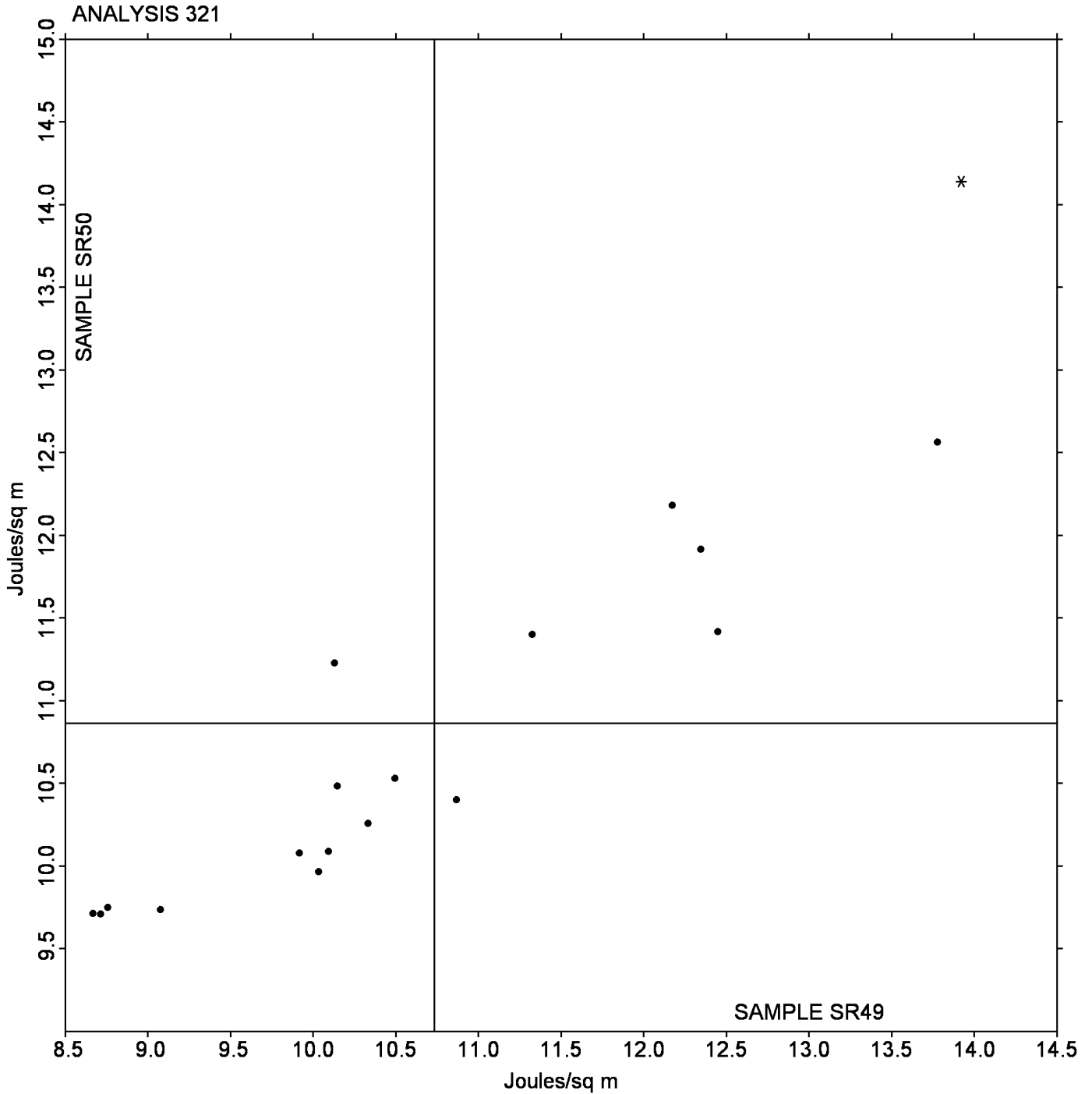
TAPPI-CTS Interlaboratory Testing Program

Analysis 321

Tensile Energy Absorption - Newsprint

Grand Mean Sample **SR49** = 10.734 Joules/sq m

Grand Mean Sample **SR50** = 10.864 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 SR49			Sample SR50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2GFT68		1.1700	0.1970	1.36	1.1700	0.1988	1.13
45Z7WR		0.8490	-0.1240	-0.85	0.8330	-0.1382	-0.78
9JNBDH		0.7830	-0.1900	-1.31	0.8300	-0.1412	-0.80
AJJAU4		1.1555	0.1825	1.26	1.0637	0.0925	0.52
D8FCBS	*	0.8680	-0.1050	-0.72	0.5930	-0.3782	-2.14
EQ98S7	X	6.1350	5.1620	35.53	6.4750	5.5038	31.19
F4BFH3		0.9125	-0.0605	-0.42	0.9054	-0.0658	-0.37
FMXBLW		1.1353	0.1623	1.12	1.2059	0.2347	1.33
KVC6KT		1.2000	0.2270	1.56	1.1950	0.2238	1.27
LW FYRC		0.9581	-0.0149	-0.10	0.9558	-0.0154	-0.09
MX7UR1		0.8820	-0.0910	-0.63	0.8530	-0.1182	-0.67
RSV47W		0.9190	-0.0540	-0.37	0.8866	-0.0846	-0.48
SRJLSX		0.9290	-0.0440	-0.30	1.1750	0.2038	1.16
UNZNVZ		0.9050	-0.0681	-0.47	0.9073	-0.0639	-0.36
US5B52		0.7930	-0.1800	-1.24	0.7720	-0.1992	-1.13
WYG9N5		0.9800	0.0070	0.05	0.9710	-0.0002	0.00
X97231		0.9220	-0.0510	-0.35	0.9070	-0.0642	-0.36
XQ6735		1.2650	0.2920	2.01	1.2650	0.2938	1.67
YM8YZ8		1.0350	0.0620	0.43	1.0900	0.1188	0.67
ZP3V67		0.8260	-0.1470	-1.01	0.8740	-0.0972	-0.55

Sample SR49		Summary Statistics	Sample SR50	
Grand Means	0.97302 Percent		0.97119 Percent	
SD Btwn Labs	0.14528 Percent		0.17643 Percent	
Statistics based on 19 of 20 reporting participants				

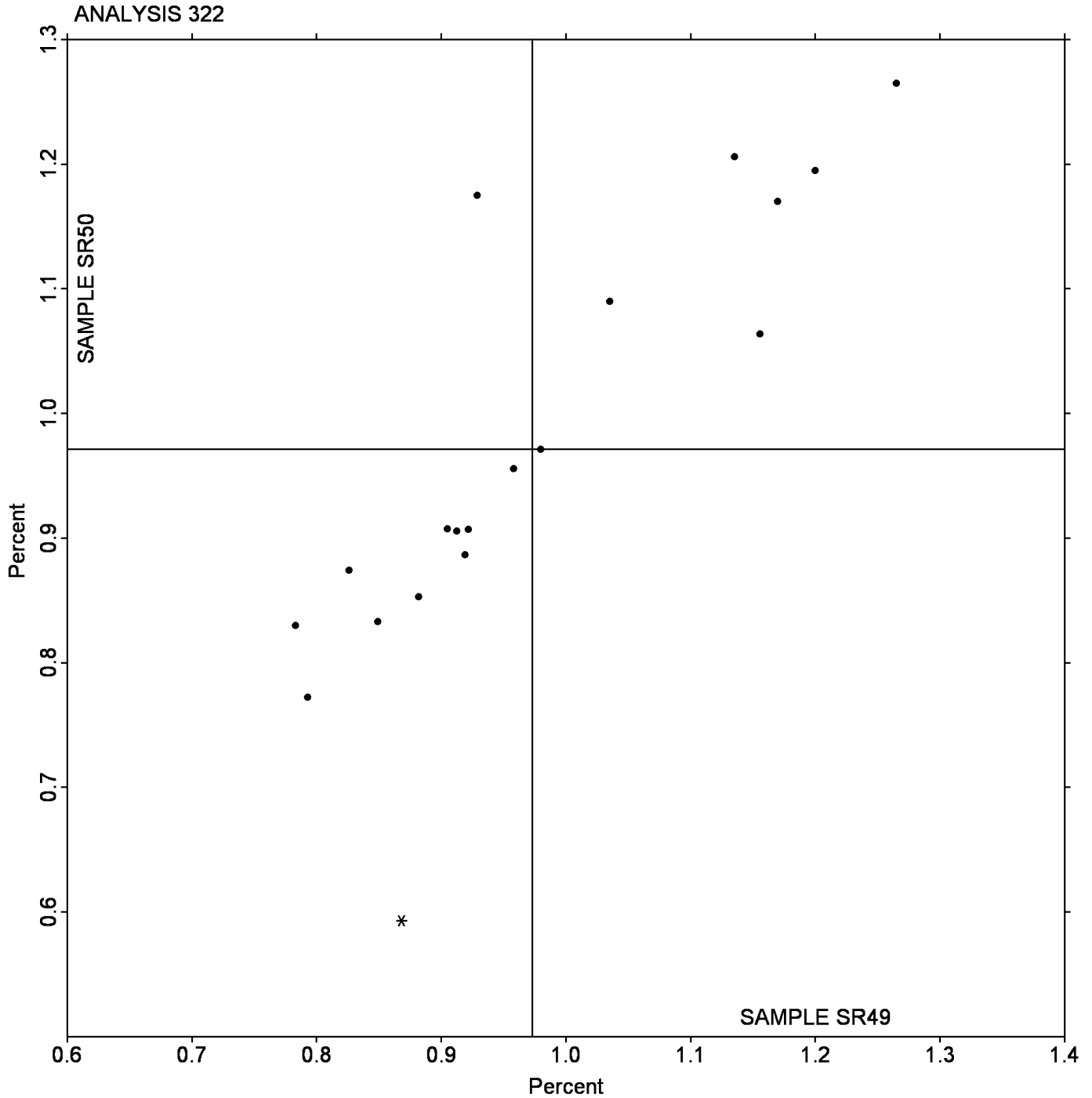
Comments on assigned Data Flags for Test #322

EQ98S7 (X) - Extreme data.

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

Grand Mean Sample **SR49** = 0.97302 Percent

Grand Mean Sample **SR50** = 0.97119 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 SF49			Sample SF50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
1GULXH		4.837	0.164	0.72	5.721	0.127	0.53	TO
1LSFXD		4.920	0.247	1.09	5.826	0.231	0.96	LH
26QDKY		4.473	-0.200	-0.88	5.347	-0.247	-1.02	MR
27MQJC		4.660	-0.012	-0.05	5.688	0.093	0.39	LH
2E69YB		4.658	-0.015	-0.06	5.642	0.047	0.20	IM
2ESFAJ		4.890	0.217	0.96	5.896	0.302	1.25	LX
2FESY3		4.651	-0.022	-0.10	5.398	-0.197	-0.82	SP
2SFDKU		4.801	0.128	0.57	5.590	-0.005	-0.02	TJ
2VA9N1		4.978	0.305	1.35	6.059	0.464	1.92	LH
2ZK3CZ		4.459	-0.214	-0.94	5.467	-0.128	-0.53	LH
3BCVQG		5.165	0.492	2.17	5.904	0.309	1.28	XX
3HXD2A		4.508	-0.165	-0.73	5.362	-0.232	-0.96	TO
3K4V4M		4.634	-0.039	-0.17	5.245	-0.349	-1.45	TI
3LVJB3	X	5.401	0.728	3.21	6.446	0.852	3.53	LH
3RCMPB		4.840	0.167	0.74	5.830	0.236	0.98	TO
3TRGQ5		4.655	-0.018	-0.08	5.383	-0.211	-0.87	XX
4TRQNS		4.541	-0.132	-0.58	5.592	-0.003	-0.01	TF
5PJ17S	*	4.019	-0.654	-2.88	4.989	-0.605	-2.51	ID
5WP9YZ		4.737	0.064	0.28	5.754	0.160	0.66	KA
5WTAHD		4.478	-0.195	-0.86	5.229	-0.365	-1.51	ID
612LN8	X	4.195	-0.478	-2.11	4.396	-1.198	-4.97	IN
64LK6X		4.672	0.000	0.00	5.798	0.203	0.84	TP
6UWYNS		4.577	-0.096	-0.42	5.480	-0.115	-0.47	TO
8LBNCN		4.350	-0.323	-1.42	5.134	-0.461	-1.91	XX
9B52T2		4.620	-0.052	-0.23	5.612	0.017	0.07	LH
9GSWNE		4.268	-0.404	-1.78	5.253	-0.342	-1.42	LH
APNDFW		4.726	0.053	0.23	5.397	-0.198	-0.82	LH
BX8TSC		4.774	0.101	0.45	5.882	0.287	1.19	LH
CE1VBF		4.592	-0.081	-0.36	5.576	-0.018	-0.08	VM
D3DCZU		4.887	0.214	0.94	5.676	0.082	0.34	LH
D5LCFV		4.455	-0.218	-0.96	5.501	-0.094	-0.39	LH
DY6RKX	X	4.942	0.269	1.19	5.951	0.357	1.48	TB
E1Q11P		5.183	0.510	2.25	6.051	0.456	1.89	TJ
ED4B5D		4.485	-0.188	-0.83	5.349	-0.245	-1.02	TO
ENFFJG		4.723	0.050	0.22	5.562	-0.032	-0.13	TP
F2PUYS		4.969	0.296	1.30	5.655	0.061	0.25	TA
FZX911		4.596	-0.077	-0.34	5.544	-0.050	-0.21	TB
G5F37L		4.717	0.044	0.19	5.624	0.029	0.12	LH
GQRDM		4.555	-0.118	-0.52	5.495	-0.099	-0.41	TI
GTV247		4.909	0.236	1.04	5.841	0.246	1.02	LI
HCWW43		4.354	-0.319	-1.40	5.345	-0.249	-1.03	RE
JPCC71	X	4.279	-0.394	-1.74	4.772	-0.822	-3.41	IX
JRUXEP		5.018	0.345	1.52	5.862	0.268	1.11	LH

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

WebCode	Data Flag	Sample SF49			Sample SF50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
JW6MYX		4.362	-0.311	-1.37	5.210	-0.384	-1.59	TJ
L9XD6D		4.707	0.034	0.15	5.636	0.041	0.17	TC
MDCP1F		4.622	-0.051	-0.22	5.762	0.167	0.69	LH
MFCW87		4.441	-0.232	-1.02	5.411	-0.183	-0.76	TJ
MR4AT2		4.721	0.048	0.21	5.697	0.102	0.42	LI
NRUWET		4.760	0.087	0.38	5.523	-0.072	-0.30	LH
PP36VZ		4.624	-0.048	-0.21	5.786	0.191	0.79	LH
Q94YGB		4.431	-0.242	-1.07	5.448	-0.146	-0.61	IM
QVDPFT		4.638	-0.035	-0.15	5.498	-0.096	-0.40	TO
SMVB3D		5.010	0.338	1.49	5.817	0.222	0.92	LX
SRGNN3		4.526	-0.147	-0.65	5.473	-0.122	-0.51	IM
T9HZ4F		4.649	-0.024	-0.11	5.468	-0.127	-0.52	LX
TEEE6P		4.887	0.214	0.95	5.946	0.351	1.45	LH
TKS34Z		4.661	-0.012	-0.05	5.456	-0.139	-0.57	TI
TT2W8N		4.624	-0.049	-0.22	5.477	-0.118	-0.49	TB
U5JFJ3		5.002	0.329	1.45	5.844	0.249	1.03	LH
UME5GS		4.888	0.215	0.95	6.087	0.492	2.04	XX
UZ9QE2		4.328	-0.345	-1.52	5.447	-0.148	-0.61	IK
V692QY		4.374	-0.299	-1.32	5.407	-0.188	-0.78	TF
VZABM2		4.449	-0.223	-0.98	5.592	-0.003	-0.01	IA
W55XEV		4.518	-0.155	-0.68	5.687	0.092	0.38	TB
X4UQ1N		4.685	0.012	0.05	5.754	0.159	0.66	LH
XDYXH8	X	5.325	0.652	2.88	6.522	0.927	3.84	LA
XQRWGI		4.411	-0.262	-1.15	5.212	-0.382	-1.58	TX
XV5FSY		4.653	-0.019	-0.09	5.268	-0.326	-1.35	LA
XVSNA3		4.984	0.312	1.37	5.975	0.380	1.58	LH
Y9B2BM		5.167	0.495	2.18	5.944	0.349	1.45	LH
YFY1U8		4.593	-0.080	-0.35	5.536	-0.059	-0.24	TB
YJ8M48		4.838	0.165	0.73	5.804	0.209	0.87	TJ
Z9FDWF		4.925	0.252	1.11	5.828	0.233	0.97	LI
ZA4ZWL		4.669	-0.003	-0.01	5.710	0.115	0.48	LH
ZVYC66		4.611	-0.062	-0.27	5.356	-0.238	-0.99	DL

Summary Statistics		
	Sample SF49	Sample SF50
Grand Means	4.6728 kN/m	5.5945 kN/m
SD Btwn Labs	0.2269 kN/m	0.2414 kN/m
Statistics based on 70 of 75 reporting participants		

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

Comments on assigned Data Flags for Test #325

3LVJB3 (X) - Systematic error (data for both samples are high).

612LN8 (X) - Inconsistent in testing between samples, data for Sample SF50 are low.

DY6RKX (X) - Data for Sample SF50 appears to be transposed between Analysis 325 and Analysis 328.
Data switched by CTS.

JPCC71 (X) - Inconsistent in testing between samples, data for Sample SF50 are low.

XDYXH8 (X) - Systematic error (data for both samples are high).

Analysis Notes:

TKS34Z - Data appear to be off by a factor of 1000; data converted by CTS (/1000).

W55XEV - Data appear to be reported as Kg/15mm, not Kg/inch as indicated on datasheet. Unit changed by CTS.

Instrument Code List

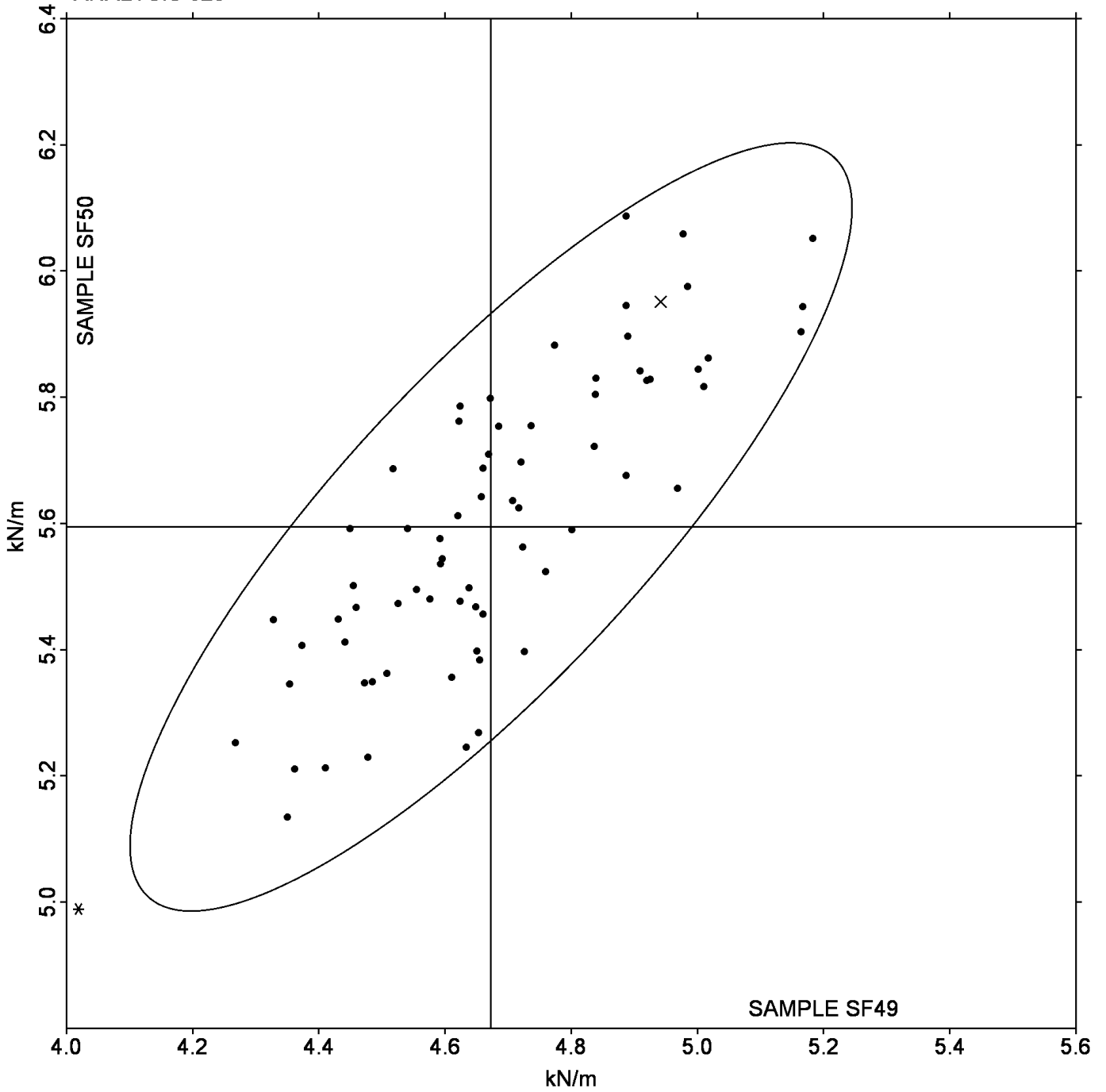
(DL) - EMIC DL500 Universal Testing Machines	(IA) - Instron 1011
(ID) - Instron 4201/4202	(IK) - Instron 4400 Series
(IM) - Instron 5500 Series	(IN) - Instron 3340 series
(IX) - Instron (model not specified)	(KA) - Zwick Model 1425
(LA) - L & W Tensile - Autoline 300	(LH) - L & W Alwetron TH1 (Horizontal) SE 060/065F
(LI) - L & W Tensile Tester SE 062	(LX) - L & W (model not specified)
(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)	(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 **SF49** = 4.6728 kN/m

Grand Mean Sample **SF50** = 5.5945 kN/m

ANALYSIS 325



TAPPI-CTS Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

WebCode	Data Flag	Sample SF49			Sample SF50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CZDGP		52.80	-8.47	-1.82	74.70	-4.04	-0.64	LH
2D17PM		58.83	-2.43	-0.52	80.44	1.70	0.27	LH
2LD6XD		64.74	3.47	0.74	78.64	-0.09	-0.01	XX
4DE2JT		63.52	2.25	0.48	80.66	1.93	0.30	XX
5ESD7V	X	22.20	-39.07	-8.39	24.07	-54.67	-8.64	LH
5M4AGQ		65.96	4.70	1.01	92.38	13.64	2.16	VM
5ZNJXF		60.10	-1.17	-0.25	72.23	-6.51	-1.03	LH
6THFR2		68.68	7.41	1.59	85.65	6.92	1.09	LH
7AX7WR		49.56	-11.71	-2.51	68.79	-9.95	-1.57	ID
7B3XJ7		63.67	2.40	0.52	80.21	1.47	0.23	LI
7LGNTR		54.25	-7.01	-1.51	74.09	-4.65	-0.73	LI
7X9TLG		63.06	1.80	0.39	82.18	3.44	0.54	LH
81SHW1		58.22	-3.05	-0.66	70.98	-7.75	-1.23	LH
8DKMD4		71.66	10.39	2.23	91.50	12.77	2.02	XX
8R7SC1		65.30	4.04	0.87	84.55	5.82	0.92	TB
9QQ4GR		56.39	-4.87	-1.05	72.71	-6.03	-0.95	MR
9V6BFC		57.77	-3.50	-0.75	72.20	-6.53	-1.03	LH
ABZBX4		61.58	0.32	0.07	74.09	-4.65	-0.73	LH
APGRL1		55.15	-6.12	-1.31	70.88	-7.85	-1.24	IM
B7KAWB		65.99	4.72	1.01	79.02	0.28	0.04	TA
BQMH45		60.51	-0.76	-0.16	78.91	0.17	0.03	XX
DGL5W1	X	51.77	-9.50	-2.04	43.76	-34.98	-5.53	IN
ENCAWT		59.28	-1.99	-0.43	81.74	3.00	0.47	LX
FSUU2M		68.46	7.19	1.54	91.61	12.87	2.03	IM
GDNSWD		69.35	8.08	1.74	91.18	12.45	1.97	IM
HUP16C		63.17	1.91	0.41	82.21	3.47	0.55	LH
K6NM8Z		61.52	0.25	0.05	78.58	-0.16	-0.02	ID
LV77T4		64.10	2.83	0.61	78.30	-0.44	-0.07	LI
M477H4		57.94	-3.33	-0.71	65.67	-13.06	-2.06	TI
N1WCRR		57.24	-4.03	-0.86	78.95	0.21	0.03	LH
N76EKZ		59.13	-2.13	-0.46	76.72	-2.02	-0.32	TO
N9HGLJ		65.98	4.71	1.01	78.46	-0.28	-0.04	LX
NA7ZE4		57.97	-3.30	-0.71	69.88	-8.86	-1.40	LA
NHAAP9		62.84	1.57	0.34	88.02	9.28	1.47	TF
NJ2FAT		60.12	-1.15	-0.25	71.92	-6.81	-1.08	TO
PCFQNY		60.33	-0.93	-0.20	77.82	-0.92	-0.15	LI
PMDRHJ	*	56.68	-4.59	-0.99	84.80	6.06	0.96	LA
PWNSYH		54.02	-7.25	-1.56	69.09	-9.65	-1.52	TJ
Q53LBS		66.84	5.58	1.20	80.15	1.42	0.22	IM
QECYK9		55.72	-5.55	-1.19	78.57	-0.17	-0.03	LH
QRA417		65.41	4.14	0.89	76.41	-2.32	-0.37	LH
QXA45W		59.28	-1.99	-0.43	74.79	-3.95	-0.62	LH
R62WZ8		63.30	2.03	0.44	78.64	-0.10	-0.02	LH

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

WebCode	Data Flag	Sample SF49			Sample SF50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
RX8BLZ	X	24.11	-37.16	-7.98	36.13	-42.61	-6.73	TB
TBARGL		64.21	2.95	0.63	82.14	3.40	0.54	LI
UHHR3X		60.05	-1.22	-0.26	79.37	0.63	0.10	LH
VFX7Q6		62.27	1.01	0.22	75.71	-3.03	-0.48	DL
VQZSRD	X	2.94	-58.32	-12.52	4.06	-74.68	-11.80	TP
XG3X56		62.49	1.22	0.26	84.96	6.22	0.98	LH
Z7ZRQ3		62.85	1.58	0.34	81.36	2.62	0.41	KA

Sample SF49		Summary Statistics	Sample SF50	
Grand Means	61.267 Joules/sq m		78.736 Joules/sq m	
SD Btw Labs	4.658 Joules/sq m		6.327 Joules/sq m	
Statistics based on 46 of 50 reporting participants				

Comments on assigned Data Flags for Test #327

- 5ESD7V (X) - Extreme data.
- DGL5W1 (X) - Extreme data for Sample SF50.
- RX8BLZ (X) - Extreme data.
- VQZSRD (X) - Extreme data.

Analysis Notes:

- GDNSWD - Data appear to be reported as ft-lb/sq ft, not in-lb/sq in as indicated on datasheet. Unit changed by CTS.
- NJ2FAT - Data appear to be off by a factor of 100; data converted by CTS (/100).
- PWNSYH - 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 |
| (IM) - Instron 5500 Series | (IN) - Instron 3340 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 |
| (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) | (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

WebCode	Data Flag	Sample SF49			Sample SF50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
1C5EUB		2.083	0.057	0.26	2.281	0.105	0.44	XX
1TWPZ7		2.179	0.153	0.69	2.334	0.158	0.66	TB
3578P1		1.922	-0.104	-0.47	2.011	-0.165	-0.69	LH
3B44BD		1.952	-0.074	-0.34	2.047	-0.129	-0.54	LH
3C7R59		2.174	0.148	0.67	2.356	0.180	0.76	TO
3F9335	*	2.653	0.627	2.84	2.789	0.613	2.58	TJ
4AJE64		1.929	-0.097	-0.44	2.115	-0.061	-0.26	LX
652B6L		1.906	-0.120	-0.55	2.155	-0.021	-0.09	LA
67GF94		1.830	-0.196	-0.89	1.915	-0.261	-1.10	LH
6MF2UJ	*	2.082	0.056	0.25	1.999	-0.177	-0.74	TI
72ZAPE		1.902	-0.124	-0.56	2.020	-0.156	-0.66	LI
81UF1V		1.662	-0.364	-1.65	1.921	-0.255	-1.07	LA
8DX6Z9		1.751	-0.275	-1.25	1.828	-0.348	-1.46	LH
99PEVL		2.178	0.152	0.69	2.372	0.196	0.82	IK
9GZZDC		2.222	0.196	0.89	2.432	0.256	1.08	RE
9TA5BD	X	1.790	-0.236	-1.07	2.300	0.124	0.52	XX
AQCLK1		1.949	-0.077	-0.35	2.063	-0.113	-0.48	LI
AX6XD8	*	2.588	0.562	2.55	2.713	0.537	2.26	XX
BB9SE9		1.863	-0.163	-0.74	1.912	-0.264	-1.11	LH
BGLFDL		1.690	-0.336	-1.53	1.910	-0.266	-1.12	LH
CP6U7W		1.625	-0.401	-1.82	1.788	-0.388	-1.63	TP
CSW5T2		2.195	0.169	0.76	2.315	0.139	0.58	XX
DSW1XA		1.934	-0.092	-0.42	2.057	-0.119	-0.50	LH
EU5R2S		1.998	-0.028	-0.13	2.079	-0.097	-0.41	LH
G37J75		2.143	0.117	0.53	2.203	0.027	0.11	TX
GDD1J9	*	2.410	0.384	1.74	2.730	0.554	2.33	TF
GLSGPJ		1.790	-0.236	-1.07	1.997	-0.179	-0.75	LH
H3YJCP	X	3.515	1.488	6.75	4.635	2.459	10.34	LH
J1L69D		1.870	-0.156	-0.71	1.950	-0.226	-0.95	LI
JVA53N		1.984	-0.042	-0.19	2.036	-0.140	-0.59	LX
K8VHF5		1.891	-0.135	-0.61	2.062	-0.114	-0.48	LH
KXWPEB		2.346	0.320	1.45	2.545	0.369	1.55	TB
LFVJUH		1.880	-0.146	-0.66	2.074	-0.102	-0.43	LH
M8PVCS		1.960	-0.066	-0.30	2.097	-0.079	-0.33	LI
MYUVFQ		1.909	-0.117	-0.53	2.094	-0.082	-0.34	LH
N3SV8K	X	2.262	0.236	1.07	2.262	0.086	0.36	TB
NDVBD9		1.930	-0.096	-0.44	2.074	-0.102	-0.43	MR
NZGLPE		2.023	-0.003	-0.02	2.143	-0.033	-0.14	KA
P832QN		1.820	-0.206	-0.94	1.920	-0.256	-1.08	IM
PASDPT	X	14.204	12.178	55.21	15.166	12.990	54.63	TO
PXUPW2		2.380	0.354	1.60	2.550	0.374	1.57	IM
RF86RC		1.960	-0.066	-0.30	1.956	-0.220	-0.93	LH
RUBH9H		1.910	-0.116	-0.53	2.090	-0.086	-0.36	TJ

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

WebCode	Data Flag	Sample SF49			Sample SF50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
SRD5JC		1.842	-0.185	-0.84	2.064	-0.112	-0.47	ID
SSAMQ8		1.839	-0.187	-0.85	2.026	-0.150	-0.63	LH
TEL5F1	*	2.310	0.284	1.29	2.650	0.474	1.99	VM
TGSVW9		2.330	0.304	1.38	2.510	0.334	1.40	IM
UD635M		1.918	-0.108	-0.49	2.126	-0.050	-0.21	XX
UEPQ7L		2.120	0.094	0.42	2.280	0.104	0.44	TF
UUGM5Y		2.208	0.182	0.82	2.352	0.176	0.74	XX
V4WXSX		1.914	-0.112	-0.51	2.042	-0.134	-0.56	LH
VXHW6T		2.300	0.274	1.24	2.480	0.304	1.28	TO
W1XDSN		2.079	0.053	0.24	2.258	0.082	0.35	ID
W6N556		2.093	0.066	0.30	2.205	0.029	0.12	DL
WAGFNH	X	2.117	0.090	0.41	1.840	-0.336	-1.41	IN
WDAA9Y		2.191	0.165	0.75	2.309	0.133	0.56	LH
WVD3XL		2.143	0.117	0.53	2.184	0.008	0.03	TB
XFHYCV		1.893	-0.133	-0.61	1.961	-0.215	-0.90	LH
Y8Y92Z	*	1.775	-0.251	-1.14	2.125	-0.051	-0.21	IA
ZCSUUT	X	1.076	-0.950	-4.31	1.160	-1.016	-4.27	TB

	Sample SF49	Summary Statistics	Sample SF50
Grand Means	2.0265 Percent		2.1760 Percent
SD Btwn Labs	0.2206 Percent		0.2378 Percent
Statistics based on 54 of 60 reporting participants			

Comments on assigned Data Flags for Test #328

9TA5BD (X) - Inconsistent in testing between samples.

H3YJCP (X) - Extreme data.

N3SV8K (X) - Data for Sample SF50 appear to be transposed between Analysis 328 and Analysis 325. Data switched by CTS.

PASDPT (X) - Extreme data.

WAGFNH (X) - Inconsistent in testing between samples and within the determinations for both samples.

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

Analysis Notes:

9TA5BD - One determination removed from the Lab Mean of Sample SF50 per Grubb's Test at 1% risk (TAPPI 1205).

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

Instrument Code List

(DL) - EMIC DL500 Universal Testing Machines	(IA) - Instron 1011
(ID) - Instron 4201	(IK) - Instron 4400 Series
(IM) - Instron 5500	(IN) - Instron 3340 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
(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

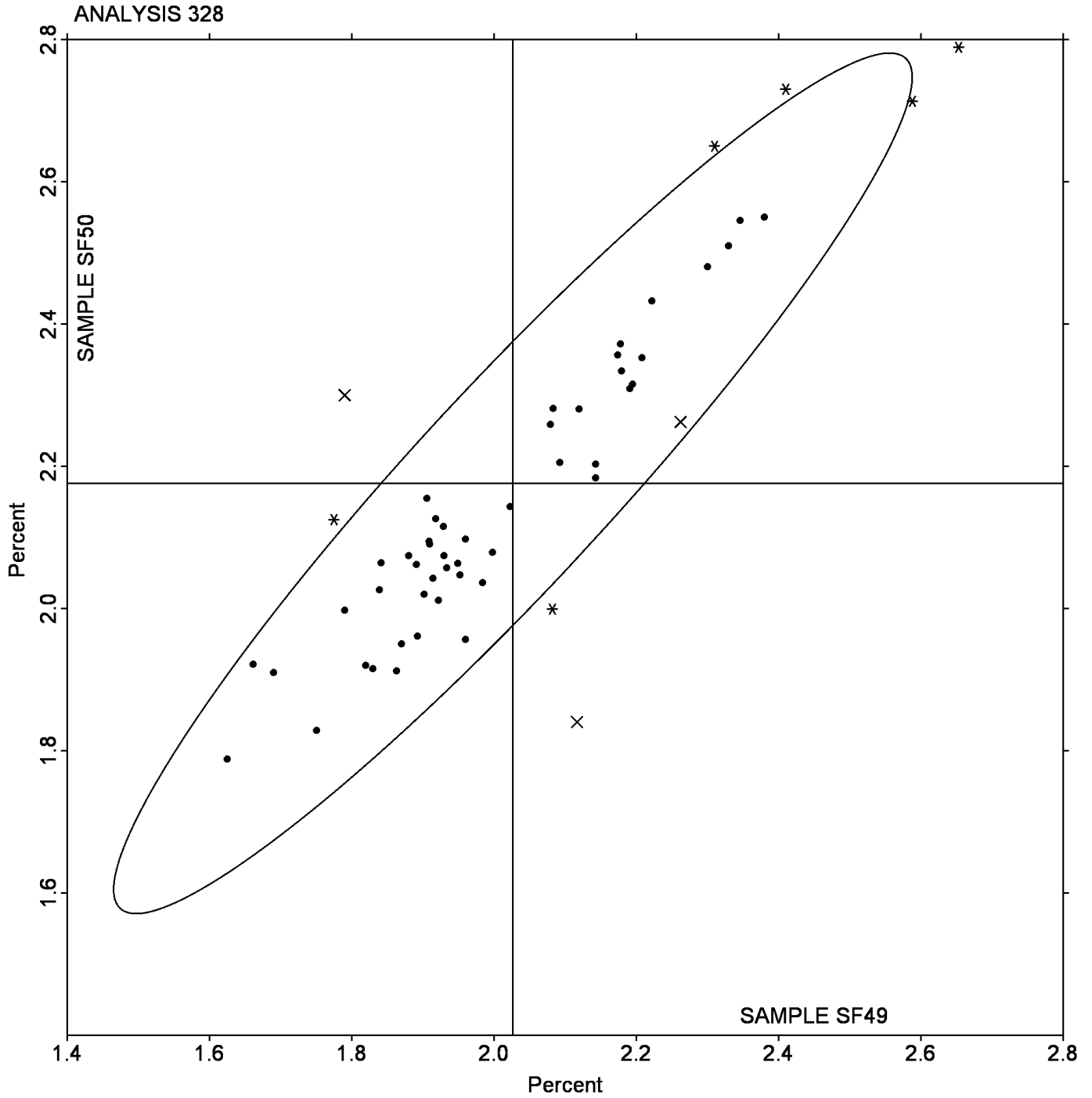
TAPPI-CTS Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

Grand Mean Sample **SF49** = 2.0265 Percent

Grand Mean Sample **SF50** = 2.1760 Percent



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

WebCode	Data Flag	Sample SE49			Sample SE50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
135RDZ		10.93	0.61	1.13	4.518	0.146	0.77	TO
2KMJMG		11.09	0.77	1.42	4.664	0.291	1.54	TO
32LWX3		9.30	-1.02	-1.90	4.007	-0.365	-1.93	SA
3SZQ6R		10.24	-0.08	-0.16	4.380	0.008	0.04	XX
4C3F1Q	X	7.99	-2.33	-4.32	3.850	-0.522	-2.76	ZU
4SWHEJ		10.42	0.10	0.18	4.427	0.055	0.29	LH
54L9P8		10.95	0.63	1.17	4.616	0.244	1.29	TP
6FZ78N		10.05	-0.28	-0.51	4.263	-0.110	-0.58	IN
6V6D26	*	9.44	-0.88	-1.64	4.334	-0.038	-0.20	TK
86GQ7Z		11.35	1.03	1.91	4.801	0.429	2.27	TK
8F9H13		10.56	0.23	0.44	4.590	0.218	1.15	TH
8RFJR4		10.57	0.25	0.46	4.466	0.093	0.49	LH
9L7MT9		10.96	0.64	1.20	4.438	0.065	0.34	TE
9LBK5B		10.19	-0.13	-0.25	4.290	-0.083	-0.44	IM
BVKGS7		11.14	0.82	1.53	4.693	0.320	1.69	LH
CU2US4		9.78	-0.54	-1.00	4.146	-0.227	-1.20	XX
F3UKL9		10.14	-0.18	-0.34	4.178	-0.195	-1.03	LW
G13RHC		9.76	-0.56	-1.05	4.114	-0.258	-1.37	LW
GF2QB2		10.63	0.31	0.57	4.289	-0.084	-0.44	XX
GKG2NA		10.57	0.25	0.47	4.449	0.077	0.41	IK
GT6BWZ	X	9.64	-0.68	-1.26	3.714	-0.658	-3.48	IF
HWPD7H		9.89	-0.43	-0.79	4.250	-0.122	-0.65	LH
HZ7XD1		10.04	-0.29	-0.53	4.045	-0.328	-1.73	SB
J7RJ29		10.56	0.24	0.45	4.616	0.244	1.29	TA
L4Y4NJ		10.06	-0.26	-0.49	4.296	-0.077	-0.40	IX
N25XPK		9.68	-0.64	-1.20	4.178	-0.194	-1.03	TE
N79WT3	X	11.91	1.59	2.96	4.820	0.447	2.36	LA
NL4HUS		10.56	0.24	0.45	4.322	-0.050	-0.26	ID
NMHY1Q		10.15	-0.17	-0.31	4.415	0.043	0.22	TP
P4ZEN7		11.44	1.12	2.07	4.656	0.284	1.50	TB
PNVGM2		9.37	-0.95	-1.76	4.128	-0.245	-1.29	LA
PQXSC5		9.79	-0.53	-0.99	4.357	-0.015	-0.08	TO
PTJDHZ		10.49	0.17	0.32	4.386	0.014	0.07	IM
Q8RXAX		10.44	0.12	0.22	4.311	-0.061	-0.32	TB
SDCJFF		10.33	0.01	0.02	4.563	0.191	1.01	SP
V5MJJD		10.57	0.25	0.47	4.369	-0.003	-0.02	TO
XE9UU5		10.12	-0.20	-0.36	4.291	-0.081	-0.43	ID
XLUWTU		10.13	-0.19	-0.35	4.417	0.045	0.24	LH
YVX5G7		9.60	-0.72	-1.33	4.209	-0.164	-0.86	IA
ZRBKR9		10.58	0.26	0.48	4.308	-0.064	-0.34	XX

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

	Sample SE49	Summary Statistics	Sample SE50
Grand Means	10.320 kN/m		4.3725 kN/m
SD Btwn Labs	0.538 kN/m		0.1892 kN/m
Statistics based on 37 of 40 reporting participants			

Comments on assigned Data Flags for Test #330

4C3F1Q (X) - Systematic error (data for both samples are low).

GT6BWZ (X) - Inconsistent in testing between samples, data for Sample SE50 are low.

N79WT3 (X) - Inconsistent in testing between samples, data for Sample SE49 are high.

Analysis Notes:

N79WT3 - Data appear to be reported as lb/in , not kN/m as indicated on datasheet. Unit changed by CTS.

Instrument Code List

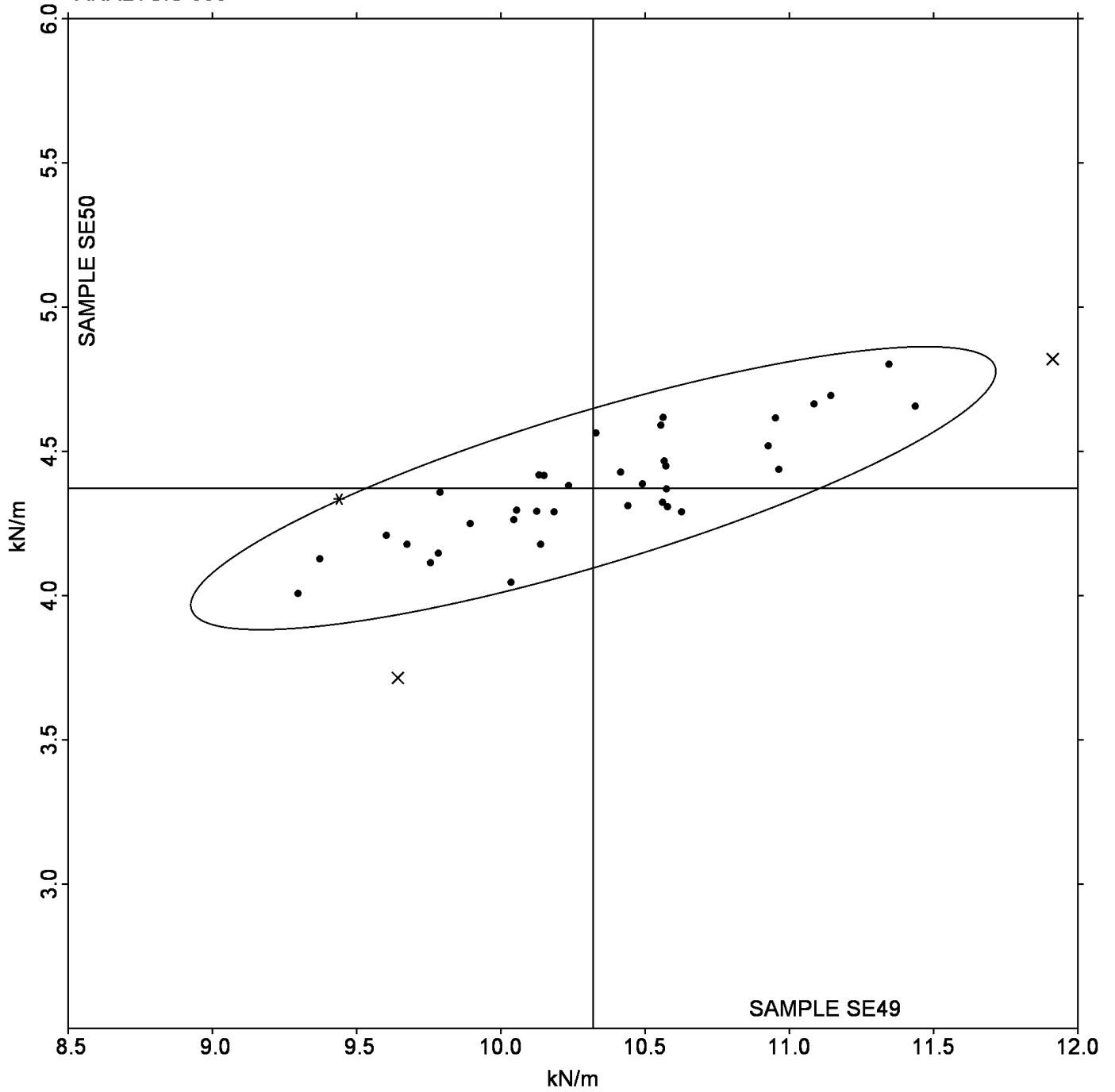
- | | |
|---|---|
| (IA) - Instron 1011 | (ID) - Instron 4201 |
| (IF) - Instron 3340 Series | (IK) - Instron 4400 Series |
| (IM) - Instron 5500 Series | (IN) - Instron 3360 Series |
| (IX) - Instron (model not specified) | (LA) - L & W Autoline |
| (LH) - L & W Alwetron TH1 (Horizontal) SE 060 | (LW) - L & W Tensile Tester SE062 |
| (SA) - Shimadzu Autograph AG 2000 A | (SB) - Shimadzu Autograph DSS 500 |
| (SP) - Schopper Type Tensile Tester (TMI) | (TA) - Thwing-Albert Tensile Tester |
| (TB) - Thwing-Albert EJA/1000 | (TE) - Thwing-Albert Intellect II |
| (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 | (ZU) - Zwick Universal Tensile Tester |

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

Grand Mean Sample **SE49** = 10.320 kN/m

Grand Mean Sample **SE50** = 4.3725 kN/m

ANALYSIS 330



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

WebCode	Data Flag	Sample SE49			Sample SE50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2GPJNS		129.9	-13.8	-0.88	167.0	-2.3	-0.17	IM
3J77CX		150.6	6.9	0.44	162.7	-6.7	-0.49	XX
8AY18A		148.9	5.2	0.33	175.0	5.6	0.41	TO
8QHQ5J		166.2	22.5	1.43	196.3	26.9	1.99	LA
BCKGUF		176.5	32.8	2.08	180.5	11.1	0.82	IK
C2TDT6		133.2	-10.4	-0.66	164.9	-4.5	-0.33	LH
CWUV47		157.8	14.1	0.90	159.7	-9.7	-0.72	TE
D1ZX4F		147.4	3.7	0.23	174.6	5.2	0.39	IN
DC7UYH		138.9	-4.8	-0.30	161.8	-7.5	-0.56	LW
DV2MM		169.4	25.8	1.64	169.0	-0.4	-0.03	TO
JH1QHB		129.0	-14.7	-0.93	157.1	-12.3	-0.91	LW
MAPC2A		168.0	24.4	1.55	185.7	16.3	1.21	TB
MC26BX		145.1	1.4	0.09	163.9	-5.5	-0.41	XX
N81125		128.9	-14.7	-0.94	166.1	-3.3	-0.25	LH
PD8WEP		169.8	26.1	1.66	161.9	-7.5	-0.56	TP
Q31JMG		140.8	-2.9	-0.18	194.4	25.0	1.85	IA
QFEKHL		147.6	4.0	0.25	180.0	10.6	0.78	TH
QFMQR4		140.0	-3.7	-0.24	193.2	23.8	1.77	TO
QJ3WPJ		132.6	-11.1	-0.70	172.6	3.2	0.24	TE
QRSBV3		118.9	-24.8	-1.57	169.3	-0.1	-0.01	XX
RKBVHL		137.0	-6.6	-0.42	170.6	1.2	0.09	LH
THPDSJ		126.0	-17.7	-1.12	158.1	-11.3	-0.84	SA
UJN4UB		128.4	-15.3	-0.97	164.8	-4.6	-0.34	IX
VBZT3G		135.2	-8.4	-0.54	136.5	-32.9	-2.44	IF
VP4Y7N		138.5	-5.1	-0.33	150.2	-19.2	-1.42	SB
XJ46UN		130.8	-12.9	-0.82	168.2	-1.2	-0.09	IM

		Summary Statistics	
	Sample SE49		Sample SE50
Grand Means	143.66 Joules/sq m		169.39 Joules/sq m
SD Btwn Labs	15.74 Joules/sq m		13.50 Joules/sq m
Statistics based on 26 of 26 reporting participants			

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

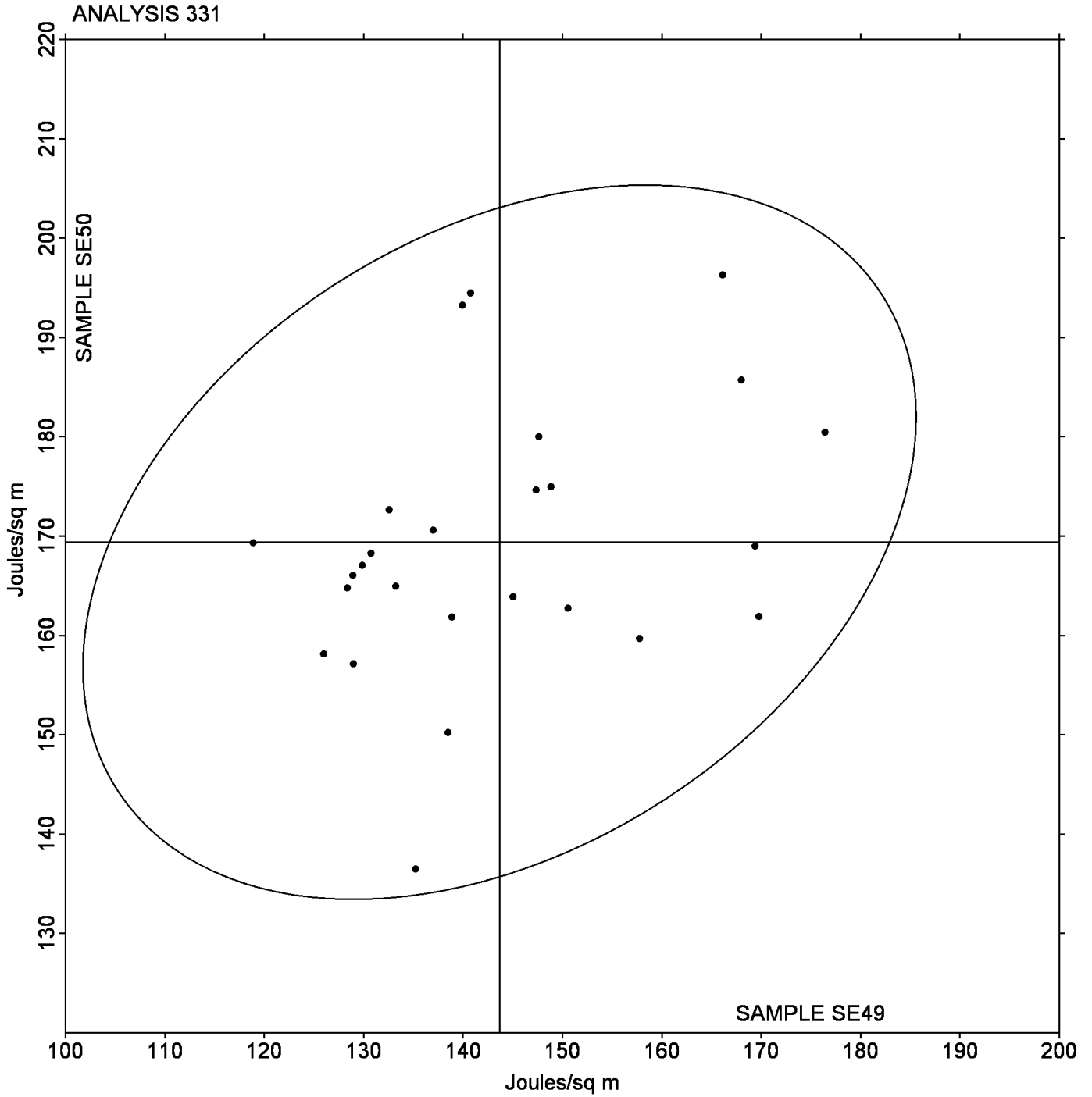
Instrument Code List

(IA) - Instron 1011	(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	(SA) - Shimadzu Autograph AG 2000 A
(SB) - Shimadzu Autograph DSS 500	(TB) - Thwing-Albert EJA/1000
(TE) - Thwing-Albert Intelect II	(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 **SE49** = 143.66 Joules/sq m

Grand Mean Sample **SE50** = 169.39 Joules/sq m



TAPPI-CTS Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

WebCode	Data Flag	Sample SE49			Sample SE50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
17M2EA		2.183	0.044	0.17	4.880	-0.351	-1.00	IF
2SMXPV		2.594	0.455	1.71	5.312	0.081	0.23	IK
49VEHT		2.406	0.267	1.01	5.326	0.094	0.27	TB
56YDBQ		1.756	-0.383	-1.44	5.072	-0.160	-0.45	XX
6TU7BC		1.979	-0.160	-0.60	5.155	-0.077	-0.22	XX
89LSCB		2.033	-0.105	-0.40	4.756	-0.476	-1.35	SB
9NM4NL		2.333	0.194	0.73	5.504	0.272	0.77	IN
9RJASK		2.068	-0.071	-0.27	5.194	-0.038	-0.11	TB
9XWVEV		1.962	-0.177	-0.66	5.040	-0.192	-0.54	IX
BBJPJ1		2.186	0.047	0.18	5.345	0.113	0.32	SA
BP8NA3		2.156	0.017	0.07	5.008	-0.224	-0.64	TO
CTUJ87		2.220	0.081	0.31	4.790	-0.442	-1.26	TE
D1U3J4		2.058	-0.081	-0.30	5.059	-0.173	-0.49	XX
EES2X5		1.930	-0.209	-0.78	4.880	-0.352	-1.00	XX
EVHEL5		2.154	0.015	0.06	6.017	0.785	2.23	IA
F3HAVM	*	1.598	-0.541	-2.03	5.501	0.269	0.77	ZU
F691YU		2.126	-0.013	-0.05	5.454	0.222	0.63	TE
F9ZR8L		2.090	-0.049	-0.18	4.660	-0.572	-1.62	XX
HJC5CC		1.963	-0.176	-0.66	5.031	-0.201	-0.57	LW
L6NFMQ		2.283	0.144	0.54	5.392	0.160	0.46	TH
M2MABR		1.940	-0.199	-0.75	5.030	-0.202	-0.57	LH
PU4ZA1		2.024	-0.115	-0.43	5.283	0.051	0.15	LA
Q7FMH6		2.053	-0.086	-0.32	5.121	-0.111	-0.31	LW
RBX1A6		2.136	-0.003	-0.01	5.646	0.414	1.18	LH
T1KU1M		2.218	0.079	0.30	5.327	0.095	0.27	IM
URAPNW		2.060	-0.079	-0.30	5.060	-0.172	-0.49	XX
V9U5RH	*	2.962	0.823	3.09	5.768	0.536	1.52	TP
VR7Y1T		1.864	-0.275	-1.03	4.924	-0.308	-0.87	LH
X3G65X		1.973	-0.166	-0.62	5.072	-0.160	-0.45	IM
XJL6PC		2.686	0.547	2.06	5.353	0.121	0.35	TO
ZP76AR	*	2.303	0.164	0.62	6.218	0.986	2.80	TO

	Sample SE49	Summary Statistics	Sample SE50
Grand Means	2.1386 Percent		5.2315 Percent
SD Btw Labs	0.2660 Percent		0.3518 Percent
Statistics based on 31 of 31 reporting participants			

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

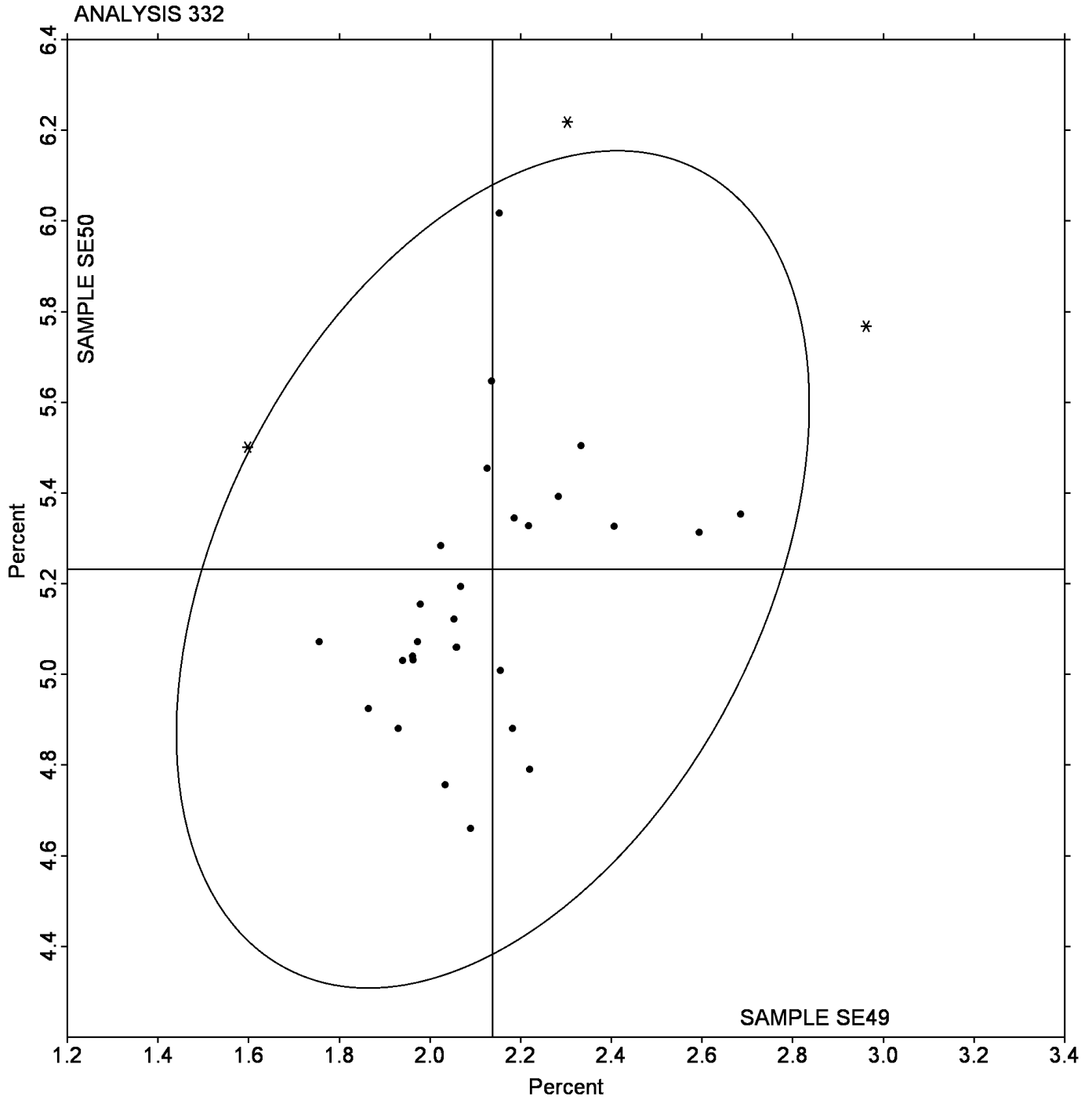
Instrument Code List

(IA) - Instron 1011	(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 300	(LH) - L & W Alwetron TH1 (Horizontal) SE 060
(LW) - L & W Tensile Tester SE062	(SA) - Shimadzu Autograph AG 2000 A
(SB) - Shimadzu Autograph DSS 500	(TB) - Thwing-Albert EJA/1000
(TE) - Thwing-Albert Intelect II	(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	(ZU) - Zwick Universal Tensile Tester

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

Grand Mean Sample **SE49** = 2.1386 Percent

Grand Mean Sample **SE50** = 5.2315 Percent



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

WebCode	Data Flag	Sample SG49			Sample SG50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
1A4HVN		64.20	9.62	0.95	70.70	4.92	0.33	MT
1WWHG4		53.80	-0.78	-0.08	81.00	15.22	1.03	MT
1XBC8H		68.10	13.52	1.33	101.50	35.72	2.42	MT
24C3TG		50.50	-4.08	-0.40	57.40	-8.38	-0.57	MT
2BJ8TY		63.70	9.12	0.90	64.30	-1.48	-0.10	MT
2LSQQP		61.20	6.62	0.65	77.00	11.22	0.76	MT
2MDRYR		41.00	-13.58	-1.34	54.00	-11.78	-0.80	MT
4K5257		55.10	0.52	0.05	44.00	-21.78	-1.48	MT
5GFZS6		46.60	-7.98	-0.79	62.90	-2.88	-0.20	MT
9XNDS5		42.10	-12.48	-1.23	41.80	-23.98	-1.63	MT
C16NZE		67.70	13.12	1.29	56.70	-9.08	-0.62	MT
FZMT9G		62.70	8.12	0.80	74.50	8.72	0.59	MT
GAJ1NC		46.00	-8.58	-0.85	58.20	-7.58	-0.51	XX
GDJ9SN		57.10	2.52	0.25	67.70	1.92	0.13	MT
GTEQL2		74.80	20.22	1.99	77.40	11.62	0.79	MT
MJANQH		53.70	-0.88	-0.09	68.90	3.12	0.21	MT
MYMFQ8		57.20	2.62	0.26	90.30	24.52	1.66	MT
Q7LEPK		55.30	0.72	0.07	60.90	-4.88	-0.33	MT
S85K1W		45.60	-8.98	-0.89	59.50	-6.28	-0.43	XX
SHZYEU		56.50	1.92	0.19	72.60	6.82	0.46	MT
TKXTEB		35.40	-19.18	-1.89	42.20	-23.58	-1.60	MT
W9QTCL		42.50	-12.08	-1.19	63.60	-2.18	-0.15	MT

		Summary Statistics	
	Sample SG49		Sample SG50
Grand Means	54.582 Double Folds		65.777 Double Folds
SD Btwn Labs	10.135 Double Folds		14.740 Double Folds
Statistics based on 22 of 22 reporting participants			

Instrument Code List

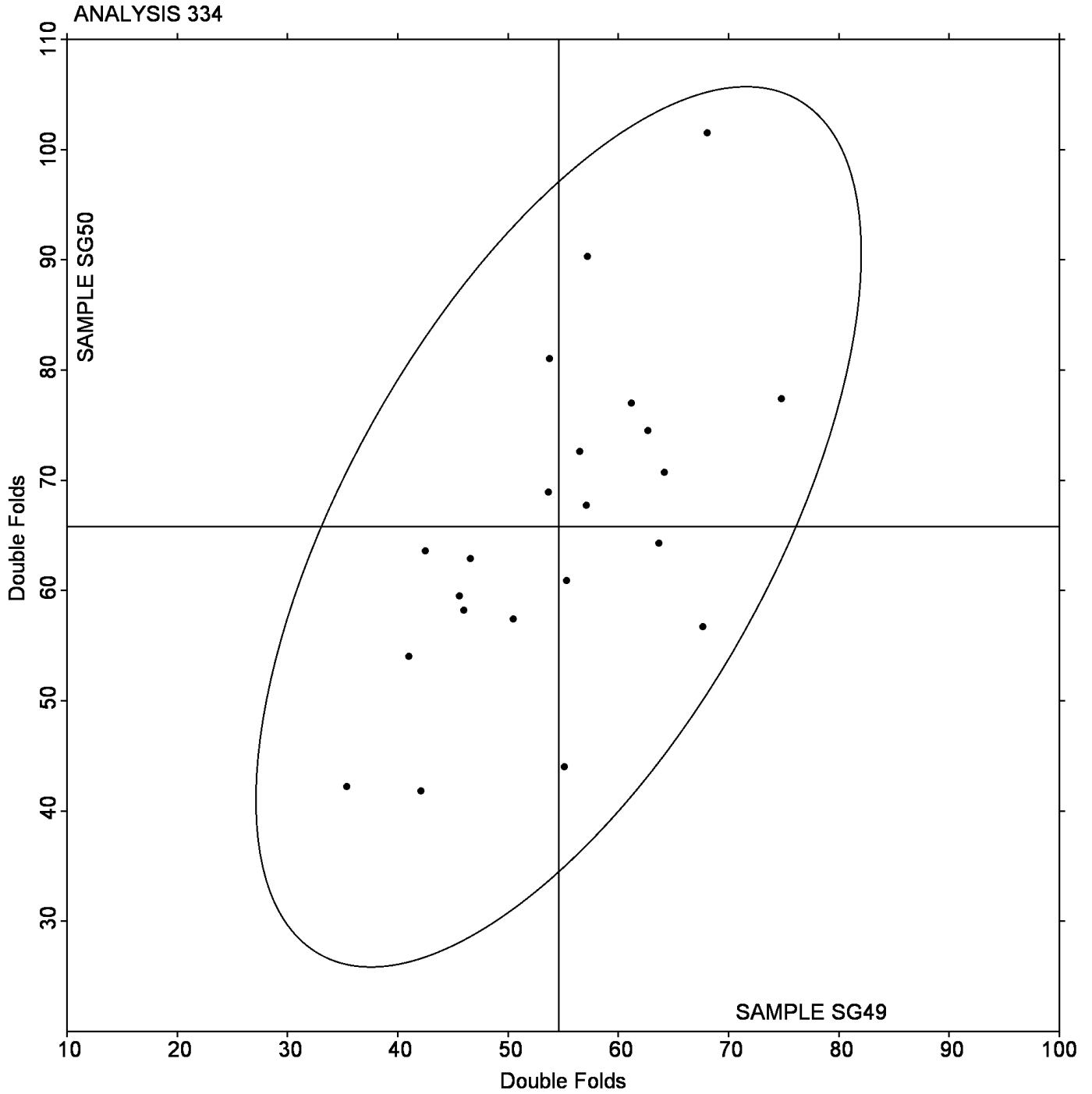
(MT) - MIT - Tinius Olsen

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

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

Grand Mean Sample **SG49** = 54.582 Double Folds

Grand Mean Sample **SG50** = 65.777 Double Folds



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

WebCode	Data Flag	Sample SH49			Sample SH50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1H44X8	X	222.9	76.6	7.60	316.3	54.7	3.70
1R4DNZ		153.6	7.3	0.73	251.6	-10.0	-0.68
6D4ESQ		149.5	3.2	0.32	249.7	-11.9	-0.80
8J6PX2		132.6	-13.7	-1.36	249.2	-12.4	-0.84
9NVYSE		145.1	-1.2	-0.12	257.8	-3.8	-0.26
B6E6MG		162.4	16.1	1.59	279.9	18.4	1.24
C35MQS		147.6	1.3	0.13	272.9	11.3	0.77
DNH81R		147.3	1.0	0.10	274.9	13.3	0.90
F69JVB		138.3	-8.0	-0.79	253.7	-7.8	-0.53
F6EEFP		147.9	1.6	0.15	253.6	-8.0	-0.54
G7KQSC		151.5	5.2	0.52	280.1	18.5	1.25
HF1LMA		149.6	3.3	0.33	275.6	14.0	0.95
HGPTD7		162.5	16.2	1.61	266.7	5.1	0.35
HUU9EQ	X	114.8	-31.5	-3.13	213.3	-48.2	-3.26
JZMZUE		131.0	-15.3	-1.52	246.0	-15.6	-1.06
K7NPAB		140.7	-5.5	-0.55	252.6	-8.9	-0.61
L5JPX3		154.3	8.0	0.79	277.1	15.5	1.05
MJ7C5Y		129.9	-16.4	-1.63	252.6	-8.9	-0.61
U2ZEPG		152.2	5.9	0.59	265.8	4.2	0.29
UZTB1U		140.3	-6.0	-0.59	263.1	1.5	0.10
V28UA3		141.2	-5.1	-0.50	256.0	-5.5	-0.38
VFESQP		147.0	0.7	0.07	254.2	-7.4	-0.50
VV7NJ7		143.1	-3.2	-0.31	259.1	-2.4	-0.17
W4G7M3		134.8	-11.5	-1.14	244.2	-17.4	-1.18
XBZDAS	*	170.1	23.8	2.36	302.8	41.2	2.79
Y3UNQU		138.7	-7.6	-0.76	238.7	-22.9	-1.55

Sample SH49		Summary Statistics	Sample SH50	
Grand Means	146.30 Gurley Units		261.59 Gurley Units	
SD Btwn Labs	10.09 Gurley Units		14.78 Gurley Units	
Statistics based on 24 of 26 reporting participants				

Comments on assigned Data Flags for Test #336

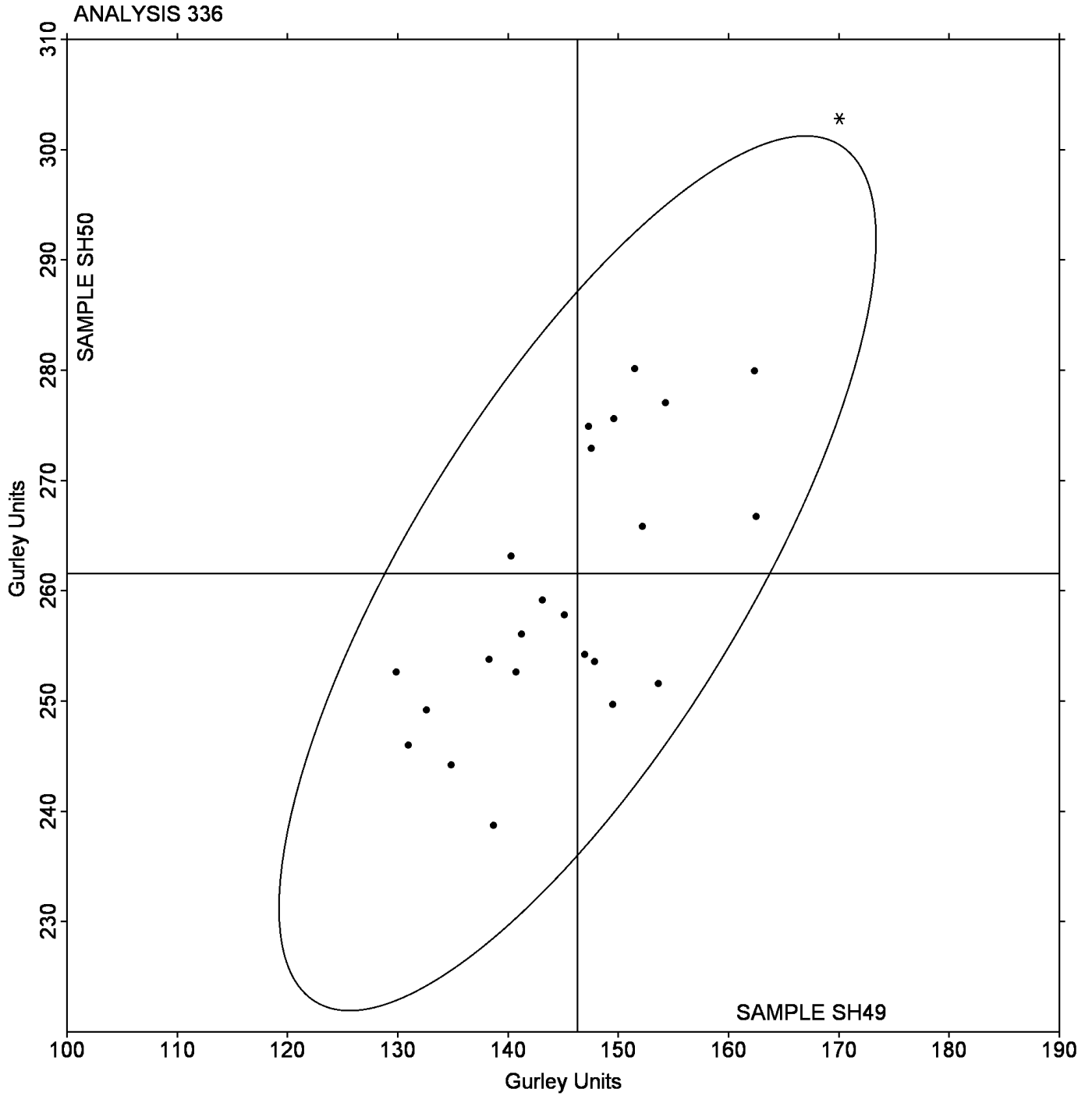
1H44X8 (X) - Extreme data.

HUU9EQ (X) - Systematic error (data for both samples are low).

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

Grand Mean Sample **SH49** = 146.30 Gurley Units

Grand Mean Sample **SH50** = 261.59 Gurley Units



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

WebCode	Data Flag	Sample SJ49			Sample SJ50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
1P437S		2.325	0.105	0.44	3.894	0.194	0.66
2P23XW		1.794	-0.426	-1.79	3.232	-0.468	-1.60
4FYCZK		2.222	0.002	0.01	3.822	0.121	0.41
57V7EE		2.227	0.007	0.03	3.734	0.034	0.11
5B3GXH		1.970	-0.250	-1.05	3.238	-0.462	-1.58
B6MNYT		2.149	-0.071	-0.30	3.712	0.012	0.04
B6RY4B		2.013	-0.207	-0.87	3.517	-0.183	-0.63
BRWZ99		2.014	-0.206	-0.86	3.403	-0.297	-1.01
E3Y LXH		2.570	0.350	1.47	4.060	0.360	1.23
FNLWS2		2.420	0.200	0.84	3.978	0.278	0.95
JXLVDD		2.000	-0.220	-0.92	3.620	-0.080	-0.27
MWQW3		2.200	-0.020	-0.09	3.606	-0.095	-0.32
P22BAY		2.267	0.047	0.20	3.757	0.057	0.19
PX9L8D		2.309	0.089	0.38	3.727	0.027	0.09
R2KZKB		2.060	-0.160	-0.67	3.420	-0.280	-0.96
RVKMT8	X	0.179	-2.041	-8.58	0.303	-3.397	-11.59
S9EJ7Y		2.658	0.438	1.84	4.026	0.326	1.11
UUQWH4	X	6.690	4.470	18.79	7.630	3.930	13.40
WGZM94		2.127	-0.093	-0.39	3.521	-0.179	-0.61
WJZYQB		2.632	0.412	1.73	4.341	0.641	2.18
YXMP6B	X	1.382	-0.838	-3.52	4.312	0.612	2.09

Sample SJ49		Summary Statistics	Sample SJ50	
Grand Means	2.2198 Taber Units		3.7004 Taber Units	
SD Btwn Labs	0.2379 Taber Units		0.2932 Taber Units	
Statistics based on 18 of 21 reporting participants				

Comments on assigned Data Flags for Test #338

RVKMT8 (X) - Extreme data.

UUQWH4 (X) - Extreme data.

YXMP6B (X) - Inconsistent in testing between samples, data for Sample SJ49 are low.

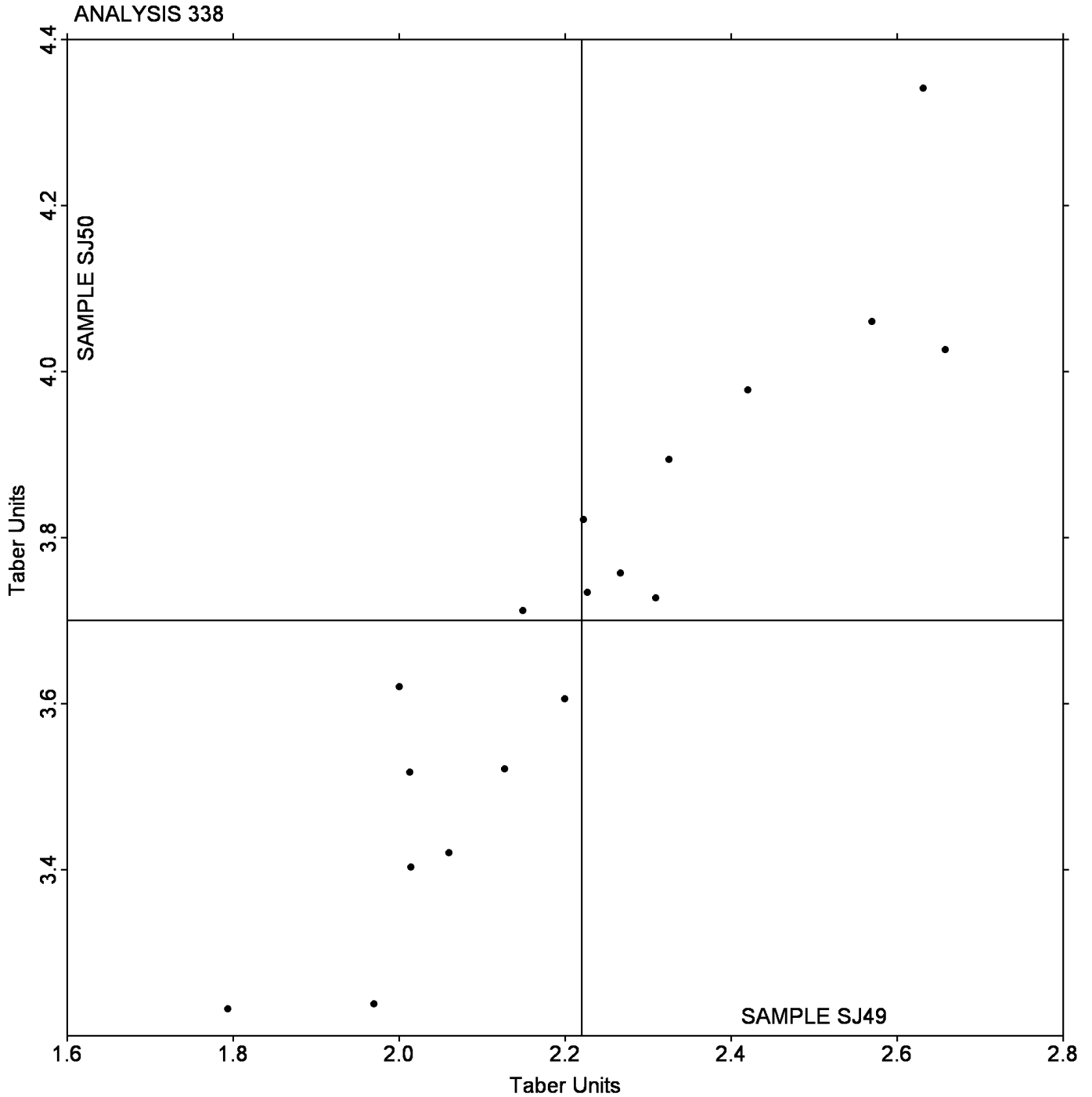
Analysis Notes:

WGZM94 - 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 **SJ49** = 2.2198 Taber Units

Grand Mean Sample **SJ50** = 3.7004 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 SQ49			Sample SQ50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
229DGZ		34.58	-0.38	-0.29	5.965	-2.799	-1.92
29UQZD		36.29	1.33	1.02	9.170	0.406	0.28
4RH1DY	X	32.45	-2.51	-1.91	16.650	7.886	5.41
AA119N		34.75	-0.21	-0.16	8.090	-0.674	-0.46
DD242E		34.64	-0.32	-0.24	11.800	3.036	2.08
DE6VJ2		34.45	-0.51	-0.39	8.950	0.186	0.13
FZYMLH		34.06	-0.90	-0.69	8.825	0.061	0.04
GXYGAB		37.46	2.50	1.91	9.380	0.616	0.42
P2RQF9		36.30	1.34	1.02	9.200	0.436	0.30
RXVJ55		33.80	-1.16	-0.88	8.000	-0.764	-0.52
WMTATM		33.24	-1.72	-1.31	8.260	-0.504	-0.35

		Summary Statistics	
	Sample SQ49		Sample SQ50
Grand Means	34.956 Taber Units		8.7640 Taber Units
SD Btwn Labs	1.312 Taber Units		1.4574 Taber Units
Statistics based on 10 of 11 reporting participants			

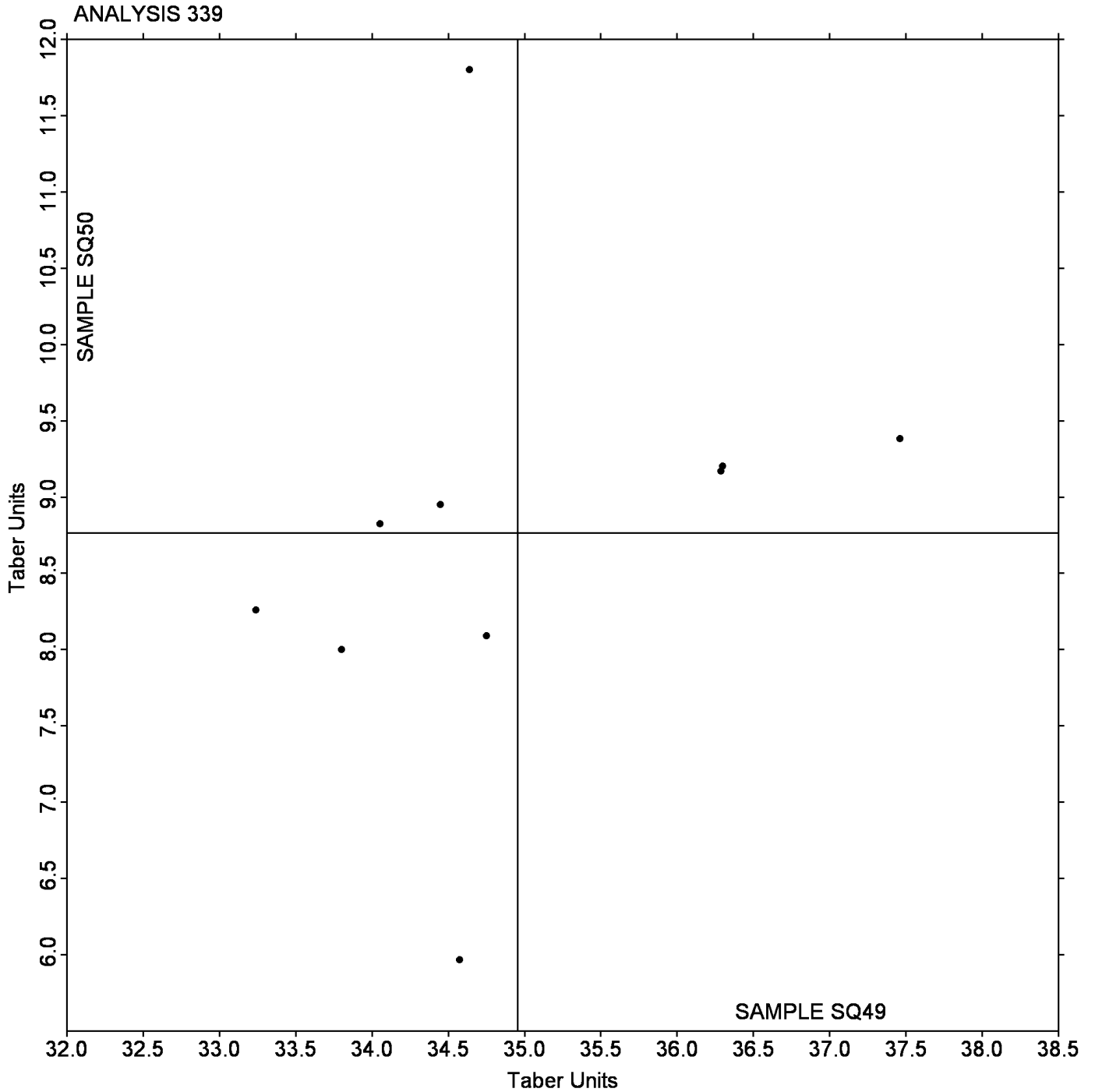
Comments on assigned Data Flags for Test #339

4RH1DY (X) - Extreme data for Sample SQ50.

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

Grand Mean Sample **SQ49** = 34.956 Taber Units

Grand Mean Sample **SQ50** = 8.7640 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 ST49			Sample ST50		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
3HSS33		203.2	-7.1	-0.68	249.3	-0.1	-0.01
4MSNQG		198.7	-11.6	-1.11	246.1	-3.3	-0.29
6FELGH		188.4	-21.9	-2.09	222.1	-27.3	-2.40
7VUD4U		210.5	0.2	0.02	243.8	-5.6	-0.49
AZUVR1		210.3	0.0	0.00	251.1	1.7	0.15
C38MXZ		202.7	-7.5	-0.72	239.5	-9.9	-0.87
ETJ4RP		206.0	-4.3	-0.41	248.8	-0.6	-0.05
EU79QW		212.7	2.5	0.24	255.3	6.0	0.53
FLXLTW		213.5	3.2	0.31	251.4	2.0	0.17
GBZUKL		203.0	-7.3	-0.69	243.3	-6.1	-0.54
GQ6RZ7		207.9	-2.4	-0.23	256.8	7.4	0.65
KMH9FD		230.3	20.0	1.92	274.3	24.9	2.19
N5LKUX	X	411.2	200.9	19.26	494.0	244.6	21.53
NAPHAP		208.4	-1.9	-0.18	242.7	-6.7	-0.59
NGP192		232.3	22.1	2.12	264.0	14.6	1.28
TSF3YS		209.0	-1.3	-0.12	236.7	-12.7	-1.12
VG4NSH		210.8	0.5	0.05	251.8	2.4	0.21
WK835L		215.8	5.6	0.53	251.2	1.8	0.16
XJ3WVJ		221.0	10.7	1.03	260.8	11.4	1.00

		Summary Statistics	
	Sample ST49		Sample ST50
Grand Means	210.25 Taber Units		249.37 Taber Units
SD Btwn Labs	10.43 Taber Units		11.36 Taber Units
Statistics based on 18 of 19 reporting participants			

Comments on assigned Data Flags for Test #340

N5LKUX (X) - Extreme data.

Analysis Notes:

EU79QW - Data appear to be reported as mN-m, not g-cm as indicated on datasheet. Unit changed by CTS.

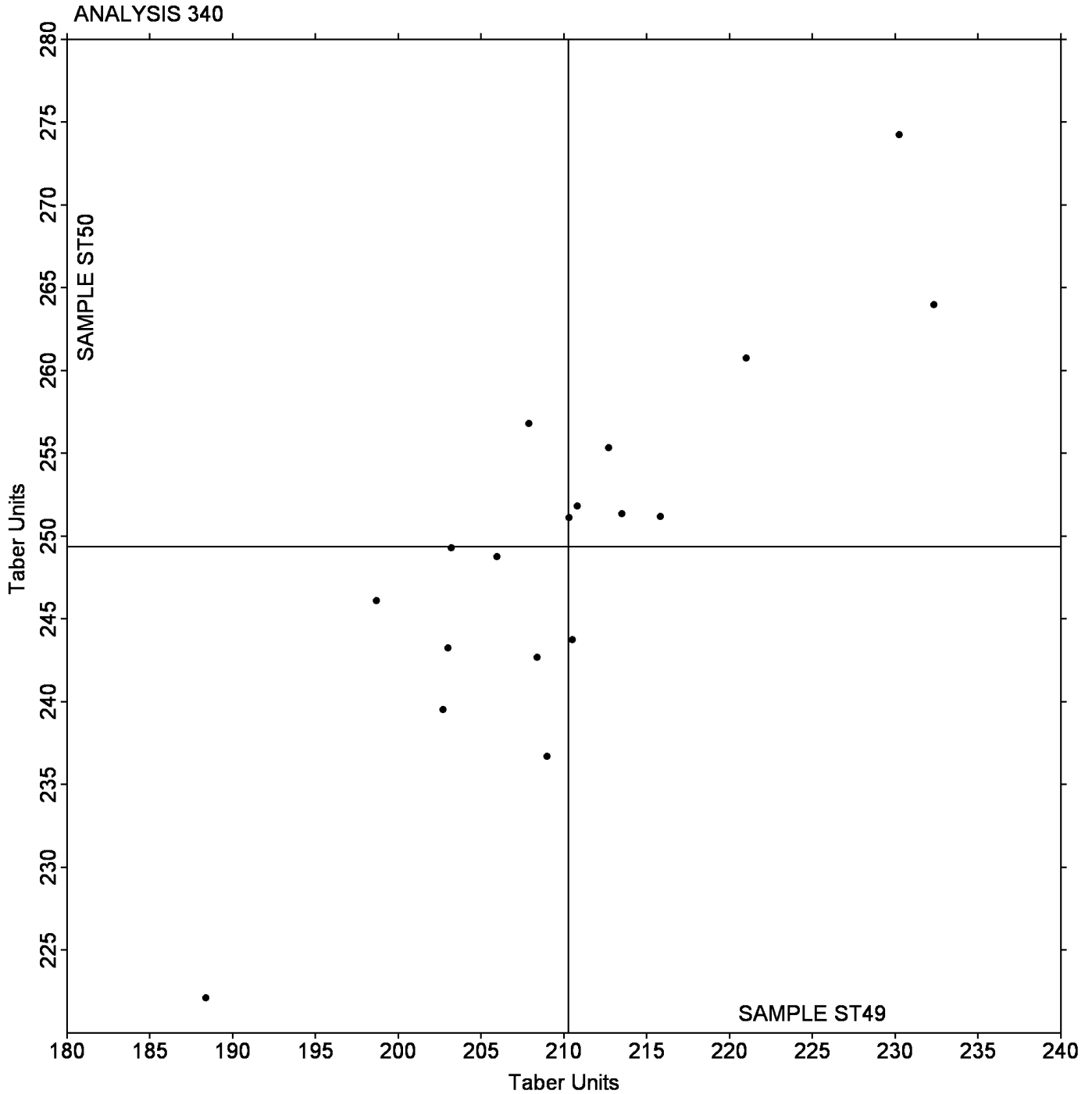
NGP192 - Data appear to be reported as mN-m, not g-cm as indicated on datasheet. Unit changed by CTS.

TAPPI-CTS Interlaboratory Testing Program Analysis 340

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

Grand Mean Sample **ST49** = 210.25 Taber Units

Grand Mean Sample **ST50** = 249.37 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 SM49			Sample SM50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
1GM69Q		70.04	3.56	0.73	70.24	7.87	1.51	CD
8UDGBU		55.87	-10.61	-2.18	51.34	-11.04	-2.12	TZ
9RAFMS		67.52	1.04	0.21	64.90	2.53	0.49	TL
9V8JFP		75.48	9.00	1.85	69.84	7.47	1.43	CD
C5QNL		62.80	-3.68	-0.76	58.70	-3.67	-0.71	LW
F51ECM		66.86	0.38	0.08	63.82	1.45	0.28	DT
FACVV4		63.68	-2.80	-0.57	57.94	-4.43	-0.85	XX
G25CAC		71.41	4.93	1.01	67.41	5.03	0.97	TA
G92CKY		68.76	2.28	0.47	61.88	-0.49	-0.09	DT
H7N6LA		64.00	-2.48	-0.51	59.20	-3.17	-0.61	TZ
HF14KF		61.70	-4.78	-0.98	62.07	-0.30	-0.06	TA
KM767L		70.70	4.22	0.87	67.44	5.07	0.97	CD
R5KU28		61.45	-5.02	-1.03	55.76	-6.62	-1.27	TZ
RR7Y1P		70.16	3.68	0.76	62.66	0.29	0.06	XX
RXZU9N		69.00	2.52	0.52	65.60	3.23	0.62	CA
Z75KS5		64.22	-2.25	-0.46	59.18	-3.20	-0.61	LW

		Summary Statistics			
		Sample SM49		Sample SM50	
Grand Means		66.478 psi		62.373 psi	
SD Btwn Labs		4.868 psi		5.209 psi	
Statistics based on 16 of 16 reporting participants					

Instrument Code List

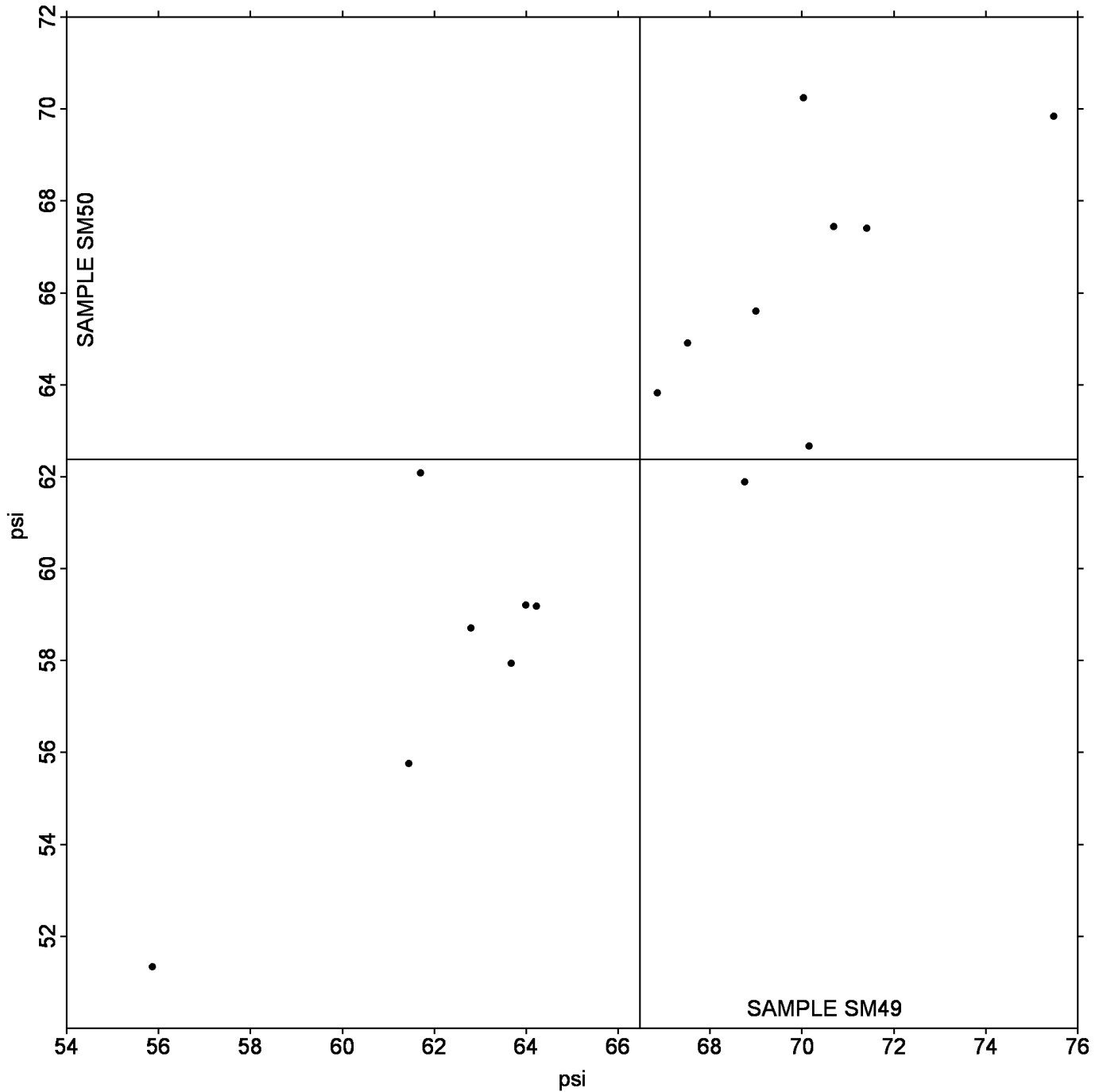
- | | |
|-------------------------------------|---|
| (CA) - CSI CS-163 | (CD) - CSI CS-163D |
| (DT) - Dek-Tron DCS-163A ZDT Tester | (LW) - L & W ZD Tensile Tester |
| (TA) - Thwing-Albert Tensile Tester | (TL) - TMI Lab Master |
| (TZ) - TMI Monitor/ZDT Tester | (XX) - Instrument make/model not specified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

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

Grand Mean Sample **SM49** = 66.478 psi

Grand Mean Sample **SM50** = 62.373 psi

ANALYSIS 343



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 SZ49			Sample SZ50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2F6T3M		49.48	-7.00	-1.20	36.20	-5.01	-1.83	LW
59Y748		43.00	-13.48	-2.30	39.08	-2.13	-0.78	TZ
6DBV8H		59.34	2.86	0.49	38.74	-2.47	-0.90	TL
8TXBM4		51.63	-4.85	-0.83	38.61	-2.60	-0.95	LW
F4R3GJ		52.19	-4.30	-0.73	43.12	1.91	0.70	LW
F6XX8W		63.10	6.62	1.13	45.20	3.99	1.46	CD
G4UP9H		59.85	3.37	0.58	45.54	4.33	1.58	PG
GBQPJ4		57.20	0.72	0.12	44.00	2.79	1.02	CA
H3PSYL	X	57.43	0.95	0.16	56.40	15.19	5.55	LW
JBWR51		64.00	7.52	1.28	42.40	1.19	0.44	CA
PJF6VM		60.96	4.48	0.76	43.12	1.91	0.70	TZ
QQ48GU		55.54	-0.95	-0.16	41.03	-0.18	-0.06	TZ
TJ51DS		55.80	-0.68	-0.12	43.00	1.79	0.65	CA
VXV7HJ		60.90	4.42	0.75	38.60	-2.61	-0.95	DP
W4LQRT		52.40	-4.08	-0.70	38.60	-2.61	-0.95	CA
WW2RUT		64.16	7.68	1.31	40.08	-1.13	-0.41	TL
XLAPTJ		54.20	-2.28	-0.39	42.00	0.79	0.29	CA

Sample SZ49		Summary Statistics	Sample SZ50	
Grand Means	56.484 psi		41.207 psi	
SD Btw Labs	5.859 psi		2.738 psi	
Statistics based on 16 of 17 reporting participants				

Comments on assigned Data Flags for Test #345

H3PSYL (X) - Extreme data for Sample SZ50.

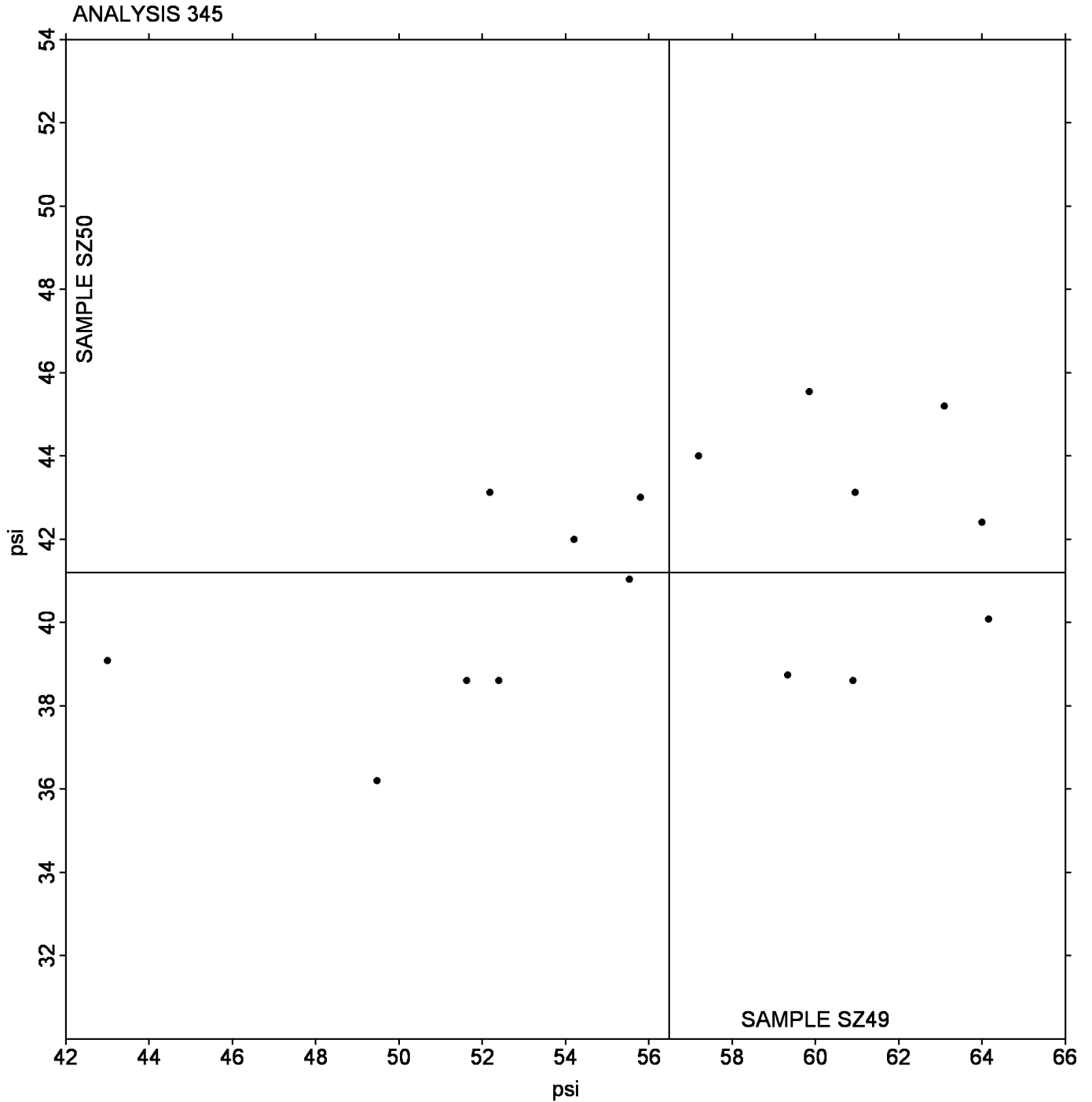
Instrument Code List

- | | |
|--------------------------------------|--------------------------------|
| (CA) - CSI CS-163 | (CD) - CSI CS-163D |
| (DP) - Dek-Tron XP Series | (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 **SZ49** = 56.484 psi

Grand Mean Sample **SZ50** = 41.207 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 SN49			Sample SN50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2GFS9P		76.60	-13.53	-1.68	89.40	-7.97	-1.26	HY
2SSM81		99.40	9.27	1.15	98.60	1.23	0.19	HZ
6FB3G8		87.60	-2.53	-0.31	94.60	-2.77	-0.44	HY
7FLHYE		82.60	-7.53	-0.93	83.76	-13.61	-2.16	KR
8JTBUL		95.00	4.87	0.60	107.00	9.63	1.53	HZ
91BQSA		88.89	-1.24	-0.15	93.84	-3.53	-0.56	HY
96TDUR		82.60	-7.53	-0.93	92.00	-5.37	-0.85	HY
A157DP		85.20	-4.93	-0.61	91.20	-6.17	-0.98	HY
B5WYW6		100.00	9.87	1.22	95.40	-1.97	-0.31	HY
C8486F		100.40	10.27	1.27	100.60	3.23	0.51	HY
CVHV7D		89.68	-0.45	-0.06	101.58	4.21	0.67	HY
DGTF4B		89.40	-0.73	-0.09	103.20	5.83	0.92	HY
DQRF7Q		98.60	8.46	1.05	102.50	5.13	0.81	HY
EX2P1J		86.40	-3.73	-0.46	99.20	1.83	0.29	HY
EYJXP7		88.80	-1.33	-0.16	97.00	-0.37	-0.06	XX
G47ZNW		93.20	3.07	0.38	103.40	6.03	0.95	HZ
G4TASG		86.80	-3.33	-0.41	101.80	4.43	0.70	HY
GFQQUZ		96.40	6.27	0.78	103.00	5.63	0.89	XX
HM1GBH		87.00	-3.13	-0.39	94.00	-3.37	-0.53	XX
PZYF52		70.04	-20.09	-2.49	85.48	-11.89	-1.88	HZ
RAESNH		96.40	6.27	0.78	96.20	-1.17	-0.19	HY
RN7615		103.80	13.67	1.69	107.80	10.43	1.65	HY
ULFLBY		88.20	-1.93	-0.24	98.00	0.63	0.10	HY
VBH8F4	X	101.20	11.07	1.37	122.00	24.63	3.90	HY

		Summary Statistics	
	Sample SN49		Sample SN50
Grand Means	90.131 1000th ft-lbs		97.372 1000th ft-lbs
SD Btw Labs	8.069 1000th ft-lbs		6.313 1000th ft-lbs
Statistics based on 23 of 24 reporting participants			

Comments on assigned Data Flags for Test #348

VBH8F4 (X) - Inconsistent in testing between samples, data for Sample SN50 are high.

Instrument Code List

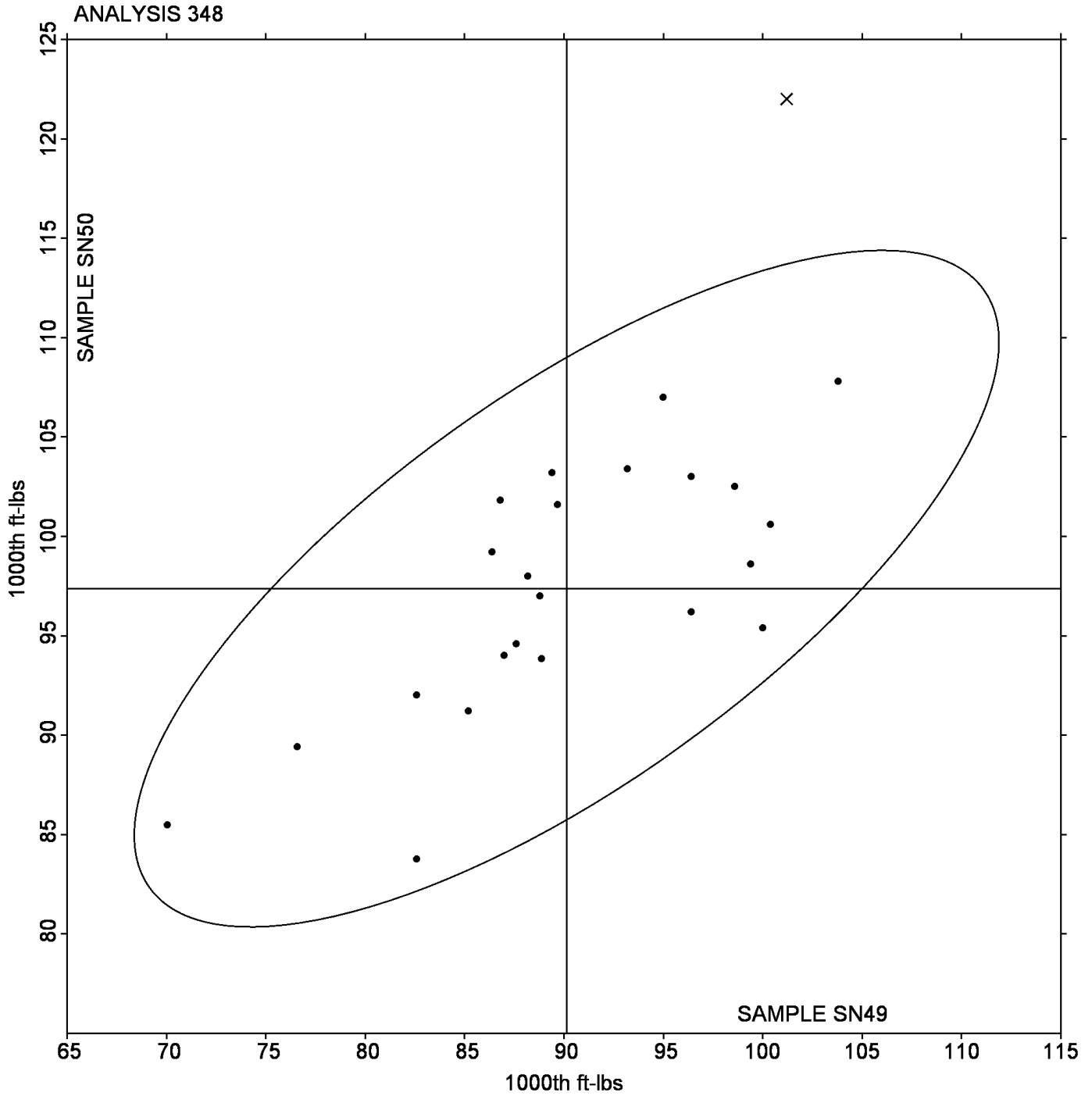
(HY) - Huygen Digitized Scott Internal Bond Tester
 (KR) - Kumagai Riki Kogyo Internal Bond Tester

(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 **SN49** = 90.131 1000th ft-lbs

Grand Mean Sample **SN50** = 97.372 1000th ft-lbs



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

WebCode	Data Flag	Sample SP49			Sample SP50			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
1MFYQZ		70.40	-8.94	-1.13	76.75	-8.11	-0.96	SC
2BLVKX		72.00	-7.34	-0.93	81.60	-3.26	-0.39	TM
353XKG		90.20	10.86	1.37	100.40	15.54	1.84	XX
4ST1AT		76.80	-2.54	-0.32	77.60	-7.26	-0.86	TM
95HB67		82.40	3.06	0.39	88.60	3.74	0.44	SC
A62V73		73.00	-6.34	-0.80	74.20	-10.66	-1.26	TM
HVBAF6		82.31	2.97	0.38	93.34	8.48	1.00	TM
MB5GUD		85.51	6.17	0.78	90.96	6.09	0.72	TM
MSBRF3		70.80	-8.54	-1.08	78.60	-6.26	-0.74	SC
PXJLSM		72.71	-6.63	-0.84	76.14	-8.73	-1.03	TM
Q1625N		74.90	-4.44	-0.56	80.61	-4.25	-0.50	XX
SA97H7		93.60	14.26	1.80	94.40	9.54	1.13	SC
ZYYLMK		86.80	7.46	0.94	90.00	5.14	0.61	SC

		Summary Statistics			
		Sample SP49		Sample SP50	
Grand Means		79.341	1000th ft-lbs	84.861	1000th ft-lbs
SD Btwn Labs		7.907	1000th ft-lbs	8.457	1000th ft-lbs
Statistics based on 13 of 13 reporting participants					

Instrument Code List

(SC) - Scott Internal Bond Tester (Manual)

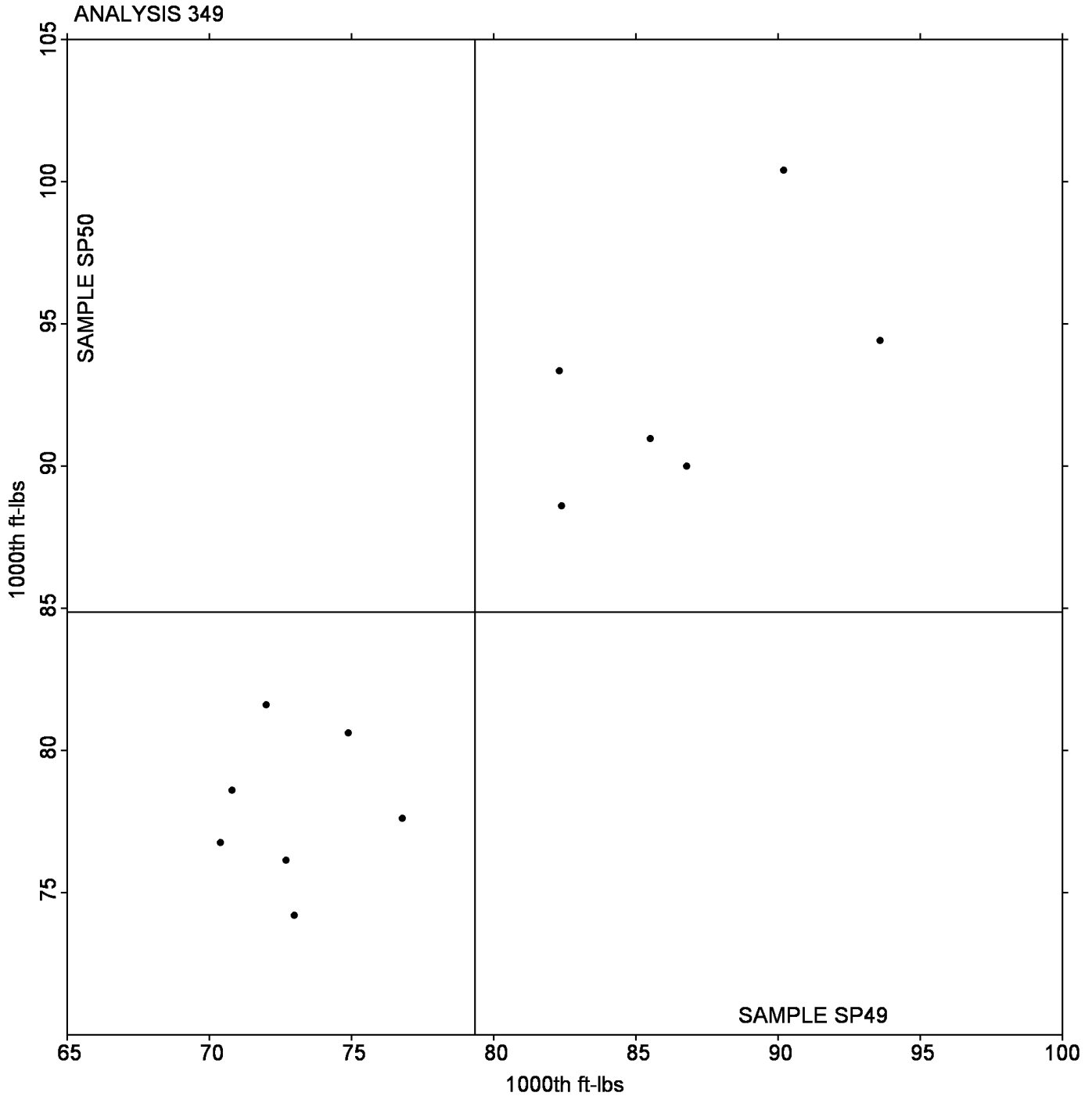
(TM) - TMI Monitor/Internal Bond Tester

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

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

Grand Mean Sample **SP49** = 79.341 1000th ft-lbs

Grand Mean Sample **SP50** = 84.861 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.