Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3061 S - May 2020

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The CTS Paper & Paperboard Interlaboratory Program

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

About CTS

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

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Key for Web Summary Reports (Page 1 of 2)

WebCode — Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Paper Report published on the CTS Website. The WebCode for each analysis can be found on the datasheets and in the Performance Analysis Report mailed to each participant.

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

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

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

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

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

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

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

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

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

Common Problems Highlighted in Footnotes

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

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

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

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

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

Paper & Paperboard Interlaboratory Testing Program

Analysis 305

Bursting Strength - Printing Papers

TAPPI Official Test Method T403

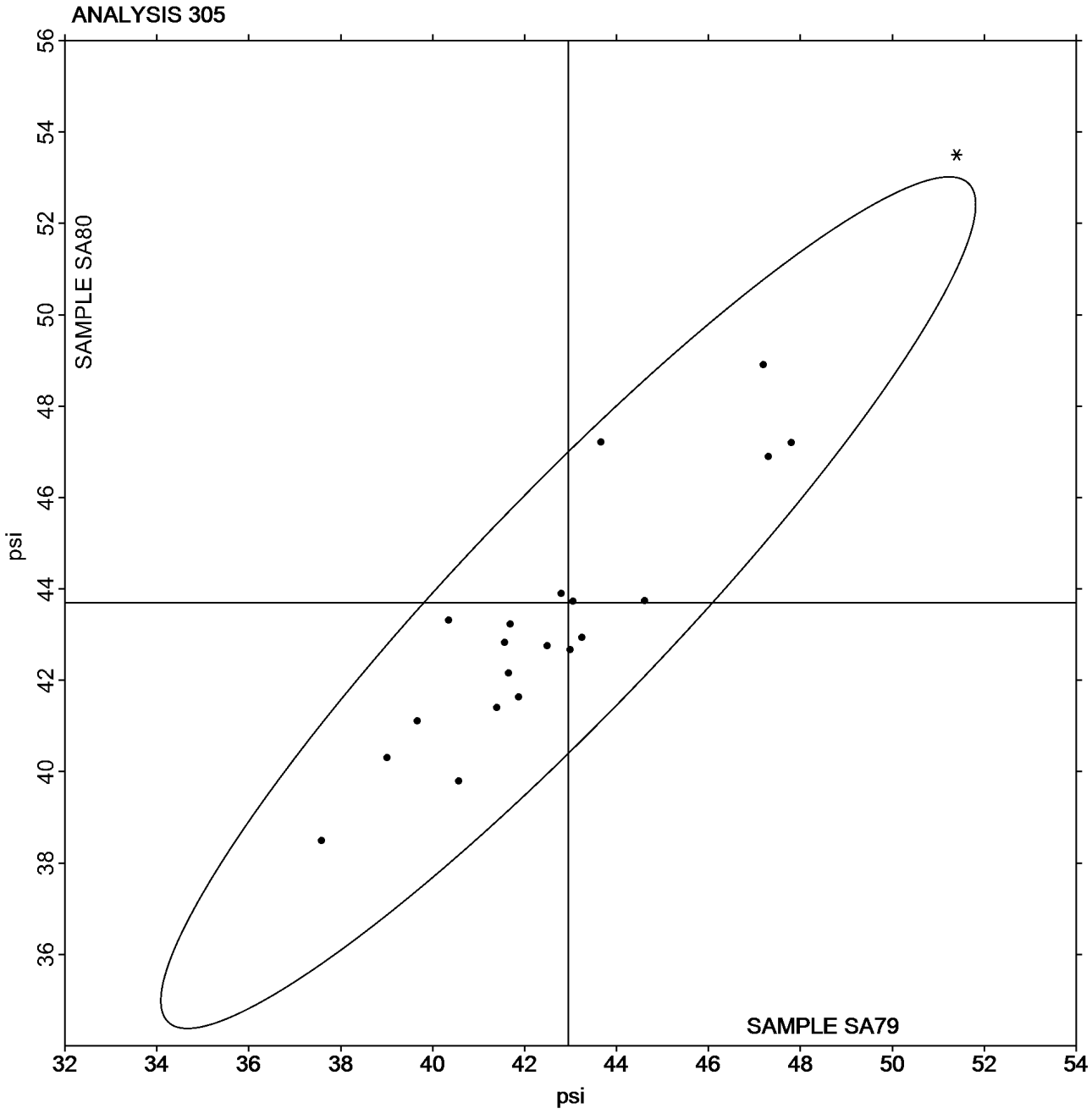
WebCode	Data Flag	Sample SA79 Lab Mean	Sample SA79 Diff from Grand Mean	Sample SA79 CPV	Sample SA80 Lab Mean	Sample SA80 Diff from Grand Mean	Sample SA80 CPV
3CHW7F		40.57	-2.38	-0.73	39.79	-3.91	-1.14
3YT6EJ		41.65	-1.30	-0.40	42.15	-1.55	-0.45
4NPAWE		47.20	4.25	1.31	48.90	5.20	1.52
8H7BRB		41.88	-1.07	-0.33	41.63	-2.07	-0.60
9YEJCB		42.99	0.04	0.01	42.67	-1.03	-0.30
A39Z2A		43.24	0.29	0.09	42.94	-0.76	-0.22
AQENMB		39.67	-3.28	-1.01	41.10	-2.60	-0.76
D7ERKX		39.02	-3.93	-1.21	40.31	-3.39	-0.99
DUHLQZ		41.57	-1.38	-0.42	42.83	-0.87	-0.25
GA8V3V		43.05	0.10	0.03	43.73	0.03	0.01
GTJHN3		47.31	4.36	1.34	46.90	3.20	0.94
KL66YR		47.80	4.85	1.49	47.20	3.50	1.02
LQEJGQ		37.58	-5.37	-1.65	38.49	-5.21	-1.52
NF8RLT		41.70	-1.25	-0.39	43.23	-0.47	-0.14
Q4NWJY		44.61	1.66	0.51	43.74	0.04	0.01
R9GCPK	*	51.40	8.45	2.60	53.50	9.80	2.86
UFNUVN		42.80	-0.15	-0.05	43.90	0.20	0.06
ULRWZN		42.50	-0.45	-0.14	42.75	-0.95	-0.28
UQ7BNV		43.66	0.71	0.22	47.21	3.51	1.03
V2YE6U		40.35	-2.60	-0.80	43.31	-0.39	-0.11
ZTFALK		41.40	-1.55	-0.48	41.40	-2.30	-0.67

Summary Statistics	Sample SA79	Sample SA80
Grand Means	42.95 psi	43.70 psi
Stnd Dev Btwn Labs	3.25 psi	3.42 psi

Statistics based on 21 of 21 reporting participants.

Grand Mean Sample SA79 = 42.950 psi

Grand Mean Sample SA80 = 43.699 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 310

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample SB79 Lab Mean	Sample SB79 Diff from Grand Mean	Sample SB79 CPV	Sample SB80 Lab Mean	Sample SB80 Diff from Grand Mean	Sample SB80 CPV
36FRAP		85.38	-4.99	-0.83	86.85	-5.48	-0.99
698Z9F		86.50	-3.88	-0.65	84.85	-7.48	-1.35
7FPLXD		91.19	0.81	0.13	91.31	-1.02	-0.18
7TA9ZK		96.70	6.32	1.05	90.40	-1.93	-0.35
BU96DB		94.80	4.42	0.74	96.60	4.27	0.77
CEERKZ		86.87	-3.51	-0.58	86.88	-5.45	-0.98
DU38G6		99.82	9.44	1.57	96.23	3.90	0.70
FNP797		84.40	-5.98	-0.99	87.20	-5.13	-0.92
FZJHM6		89.75	-0.63	-0.10	96.18	3.84	0.69
G8ZK47		93.50	3.12	0.52	95.60	3.27	0.59
GC7DX2		92.06	1.68	0.28	90.33	-2.00	-0.36
JBN4XZ		85.54	-4.84	-0.80	97.45	5.12	0.92
JTTBC3		81.60	-8.78	-1.46	84.40	-7.93	-1.43
KKTBDZ	X	99.76	9.38	1.56	119.13	26.80	4.82
L9YAFP		93.76	3.38	0.56	93.50	1.17	0.21
LCU4DQ		102.35	11.97	1.99	106.97	14.64	2.63
QGCY2Q		95.08	4.70	0.78	96.86	4.53	0.81
R3P7QP		87.66	-2.72	-0.45	92.21	-0.12	-0.02
UQ7BNV		92.62	2.24	0.37	96.00	3.66	0.66
WL2PNN		77.82	-12.56	-2.09	88.25	-4.08	-0.74
WWJ7GU		91.90	1.52	0.25	92.69	0.36	0.06
Y339CP		91.94	1.56	0.26	95.40	3.07	0.55
YCQ3TT		80.67	-9.71	-1.61	83.15	-9.18	-1.65
Z8928L		90.95	0.57	0.10	88.40	-3.93	-0.71
ZTFALK		96.20	5.82	0.97	98.30	5.97	1.07

Summary Statistics	Sample SB79	Sample SB80
Grand Means	90.38 psi	92.33 psi
Stnd Dev Btwn Labs	6.01 psi	5.56 psi

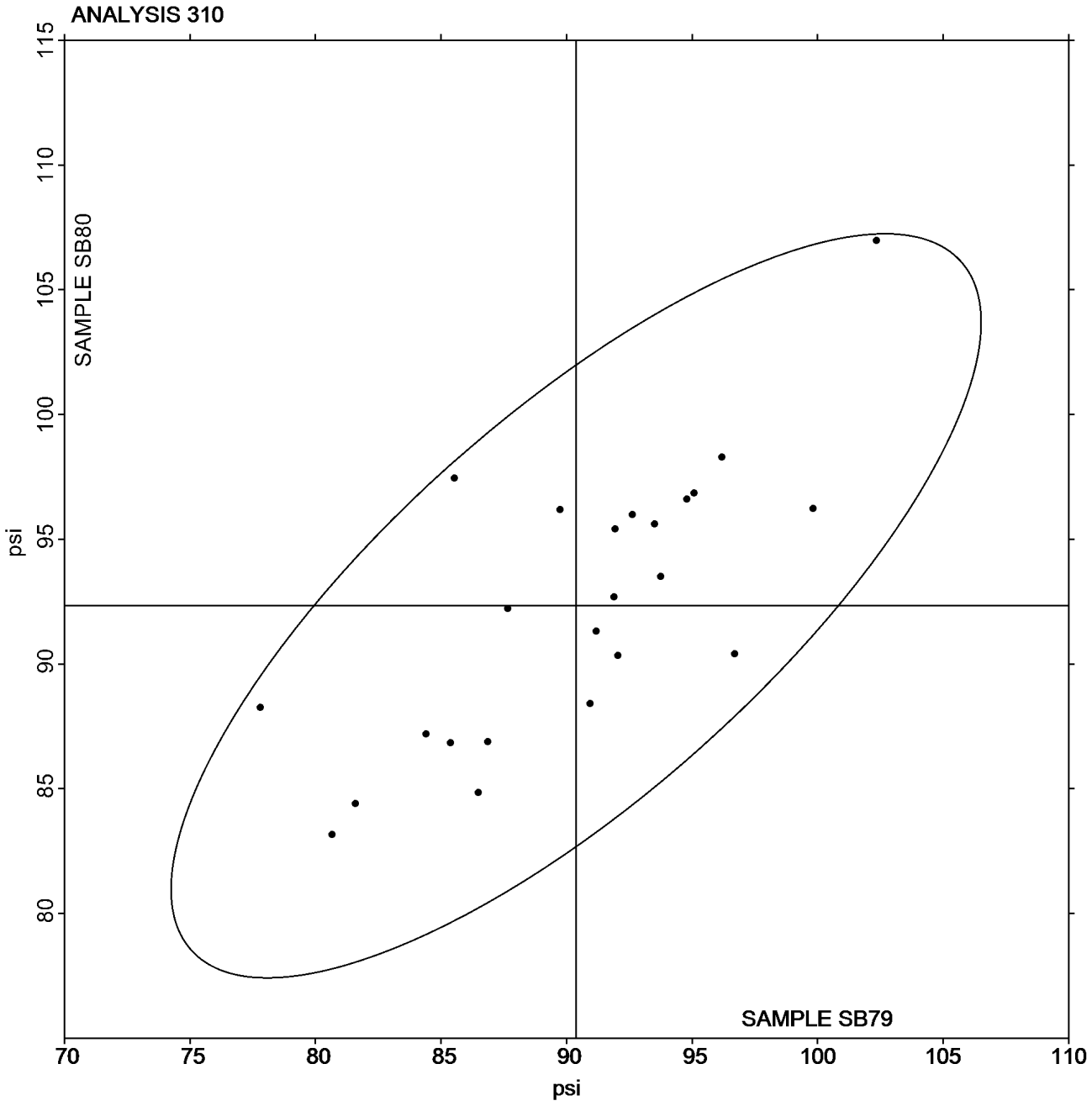
Statistics based on 24 of 25 reporting participants.

Comments on Assigned Data Flags for Test #310

KKTBDZ (X) - Data for sample SB80 are high.

Grand Mean Sample SB79 = 90.377 psi

Grand Mean Sample SB80 = 92.334 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 311

Tearing Strength - Newsprint

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SK79 Lab Mean	Sample SK79 Diff from Grand Mean	Sample SK79 CPV	Sample SK80 Lab Mean	Sample SK80 Diff from Grand Mean	Sample SK80 CPV
UFNUVN		16.70			18.90		
UQ7BNV		21.76			22.03		

Summary Statistics	Sample SK79	Sample SK80
Grand Means	Grams	Grams
Stnd Dev Btwn Labs	Grams	Grams

Statistics based on of 2 reporting participants.

Because the population of this test is extremely low, no analysis or graph could be created. This test has been discontinued going forward.

Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC79 Lab Mean	Sample SC79 Diff from Grand Mean	Sample SC79 CPV	Sample SC80 Lab Mean	Sample SC80 Diff from Grand Mean	Sample SC80 CPV
249D3J		63.54	1.04	0.25	67.74	2.54	0.62
2FKFPG		54.00	-8.50	-2.01	55.64	-9.56	-2.34
2GXCUL		55.98	-6.52	-1.54	59.84	-5.36	-1.31
2TB8FC		65.81	3.32	0.78	67.96	2.76	0.68
2Z928J	*	73.65	11.16	2.64	76.57	11.37	2.78
36FRAP		63.07	0.57	0.14	66.40	1.21	0.29
3CHW7F		61.18	-1.32	-0.31	65.62	0.42	0.10
3YT6EJ		62.80	0.30	0.07	65.20	0.00	0.00
4N6PPL	X	44.08	-18.42	-4.35	43.01	-22.19	-5.43
4ZJLBD		58.92	-3.58	-0.84	61.48	-3.72	-0.91
698Z9F		61.24	-1.26	-0.30	65.96	0.76	0.19
77Y4J6		56.81	-5.69	-1.34	61.53	-3.67	-0.90
7TA9ZK		69.20	6.70	1.58	70.00	4.80	1.18
8H7BRB		65.04	2.54	0.60	67.76	2.56	0.63
93RJ93		55.24	-7.26	-1.71	57.93	-7.27	-1.78
9VF9GB		63.40	0.90	0.21	65.70	0.50	0.12
9YEJCB		65.76	3.26	0.77	67.35	2.15	0.53
A39Z2A		69.87	7.37	1.74	71.13	5.93	1.45
AV6XXA		61.62	-0.88	-0.21	64.62	-0.58	-0.14
BU96DB		57.76	-4.74	-1.12	60.96	-4.24	-1.04
CEERKZ		65.30	2.81	0.66	69.80	4.60	1.13
CHANZE		61.40	-1.10	-0.26	62.20	-3.00	-0.73
DUHLQZ		58.57	-3.93	-0.93	60.44	-4.76	-1.16
DWQ2X7		60.12	-2.38	-0.56	63.61	-1.59	-0.39
F2X7NW		61.10	-1.40	-0.33	66.40	1.20	0.29
GC7DX2		64.06	1.56	0.37	64.88	-0.31	-0.08
GTJHN3		57.36	-5.14	-1.21	59.88	-5.32	-1.30
GZT722		65.68	3.18	0.75	66.70	1.50	0.37
KL66YR		63.70	1.20	0.28	66.35	1.15	0.28
L9YAFP		60.60	-1.90	-0.45	62.16	-3.04	-0.74
LMF8LQ		64.12	1.62	0.38	65.81	0.61	0.15
LQEJGQ	*	60.53	-1.97	-0.46	66.77	1.57	0.38
NF8RLT		64.40	1.90	0.45	66.92	1.72	0.42
Q4NWJY		65.91	3.42	0.81	67.22	2.02	0.49
QY9HVT		55.61	-6.89	-1.63	57.83	-7.37	-1.80
R9GCPK		62.20	-0.30	-0.07	64.10	-1.10	-0.27
TH23PH	X	269.07	206.58	48.79	256.32	191.12	46.78
TNNPKN		65.40	2.90	0.69	68.80	3.60	0.88
UHEV3X		68.16	5.66	1.34	69.54	4.34	1.06
UQ7BNV		62.97	0.47	0.11	64.64	-0.56	-0.14

Paper & Paperboard Interlaboratory Testing Program

Analysis 312

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SC79 Lab Mean	Sample SC79 Diff from Grand Mean	Sample SC79 CPV	Sample SC80 Lab Mean	Sample SC80 Diff from Grand Mean	Sample SC80 CPV
V2YE6U		65.82	3.33	0.79	67.15	1.95	0.48
Y339CP		61.47	-1.02	-0.24	65.08	-0.12	-0.03
YCQ3TT		68.47	5.98	1.41	72.09	6.90	1.69
YR2NCH		55.48	-7.02	-1.66	58.84	-6.36	-1.56
Z3HMLK		65.66	3.16	0.75	68.60	3.40	0.83
Z8928L		61.05	-1.45	-0.34	64.88	-0.32	-0.08
Z8TZ4J		62.25	-0.25	-0.06	63.87	-1.33	-0.33

Summary Statistics	Sample SC79	Sample SC80
Grand Means	62.50 Grams	65.20 Grams
Stnd Dev Btwn Labs	4.23 Grams	4.09 Grams

Statistics based on 45 of 47 reporting participants.

Comments on Assigned Data Flags for Test #312

TH23PH (X) - Extreme Data.

4N6PPL (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample SC79.

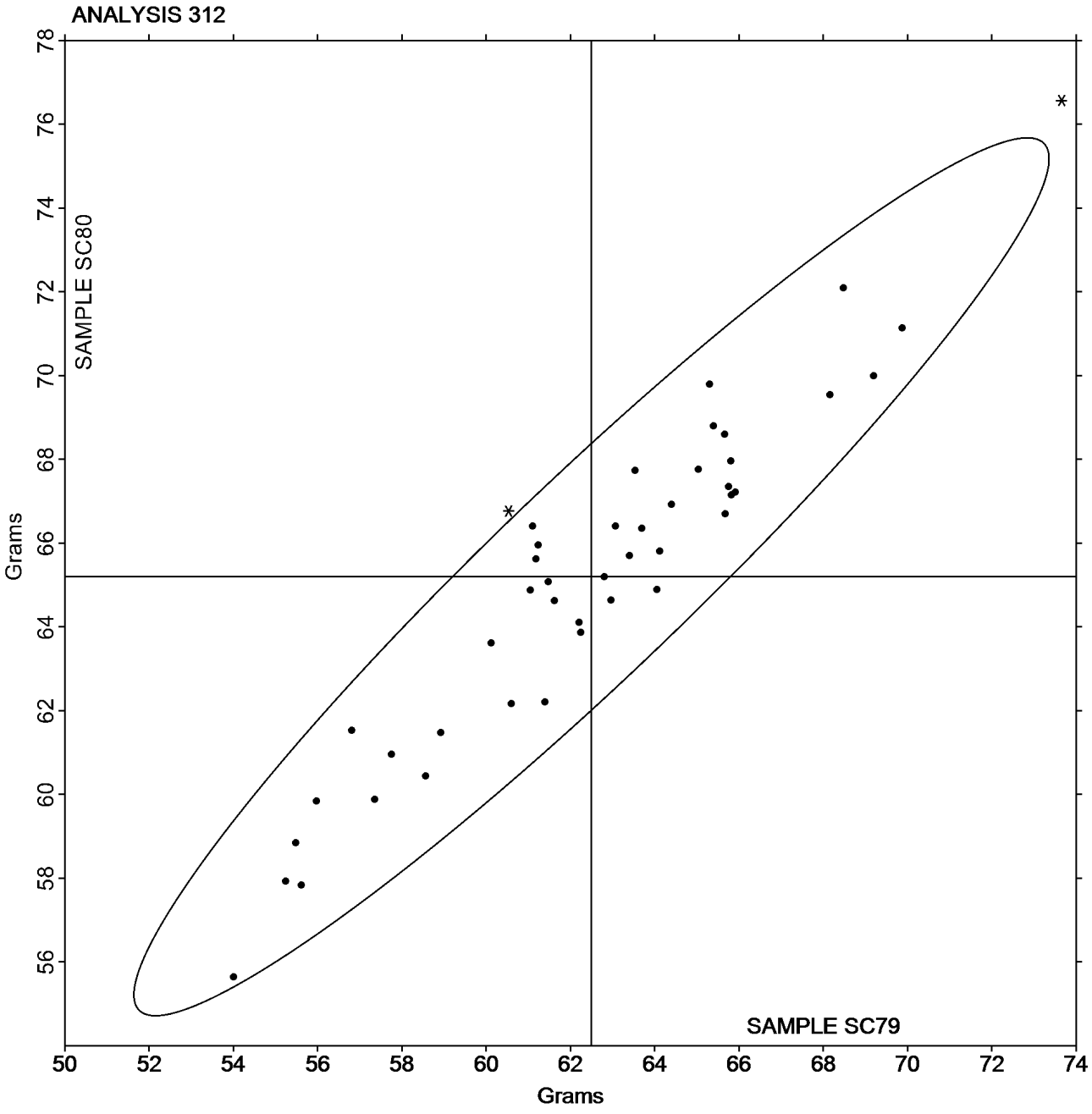
Analysis Notes:

2Z928J - Data appear to be reported as mN, not gf as indicated on data entry form. CTS will not correct the Units going forward.

698Z9F - Data appear to be reported as gf, not mN as indicated on data entry form. CTS will not correct the Units going forward.

Grand Mean Sample SC79 = 62.495 Grams

Grand Mean Sample SC80 = 65.199 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD79 Lab Mean	Sample SD79 Diff from Grand Mean	Sample SD79 CPV	Sample SD80 Lab Mean	Sample SD80 Diff from Grand Mean	Sample SD80 CPV
2B7Z2B		179.2	16.3	1.00	223.3	16.8	0.68
344BVQ		143.4	-19.6	-1.20	168.5	-38.0	-1.54
3GRCDH		167.6	4.6	0.28	224.2	17.7	0.72
4G8WXF		163.2	0.2	0.01	204.0	-2.5	-0.10
4K7ETL		185.8	22.8	1.40	240.9	34.4	1.40
6FQY6F		160.9	-2.1	-0.13	206.1	-0.4	-0.02
78A3DE		168.5	5.6	0.34	221.0	14.5	0.59
7FPLXD		167.4	4.5	0.27	216.4	9.9	0.40
7TA9ZK		199.2	36.2	2.23	258.4	51.9	2.11
88PQ9E		169.4	6.4	0.40	220.0	13.5	0.55
8YWDDK		148.9	-14.1	-0.87	184.0	-22.5	-0.91
A7NFPG		189.5	26.6	1.63	218.4	11.9	0.48
CEERKZ		179.3	16.4	1.01	233.5	27.1	1.10
DQJCED		154.4	-8.6	-0.53	194.0	-12.5	-0.51
DU38G6	*	119.9	-43.1	-2.65	146.1	-60.4	-2.45
E9E6YB		159.4	-3.6	-0.22	205.6	-0.9	-0.04
FB27H4		173.5	10.6	0.65	217.3	10.8	0.44
FZJHM6		175.8	12.8	0.79	227.5	21.0	0.85
G8ZK47		125.1	-37.9	-2.33	160.8	-45.7	-1.85
GF6PU2	*	178.9	15.9	0.98	192.0	-14.5	-0.59
H9QYAV		170.2	7.2	0.45	218.2	11.7	0.48
JBN4XZ	*	182.2	19.2	1.18	263.3	56.8	2.31
JW8482		178.4	15.5	0.95	223.1	16.6	0.67
KGURGT		176.6	13.6	0.84	229.3	22.9	0.93
KKTBDZ		155.7	-7.3	-0.45	195.4	-11.1	-0.45
MFR4QT		151.8	-11.1	-0.68	209.7	3.2	0.13
NZTEAM	X	282.3	119.4	7.34	392.6	186.1	7.55
PTRP43		139.4	-23.5	-1.45	173.9	-32.6	-1.32
R3P7QP		170.1	7.1	0.44	224.4	17.9	0.73
R9GCPK		161.0	-2.0	-0.12	206.3	-0.2	-0.01
UAYCJX		167.8	4.8	0.30	188.2	-18.3	-0.74
ULRWZN		157.3	-5.6	-0.35	172.0	-34.5	-1.40
UQ7BNV		164.8	1.9	0.12	210.2	3.7	0.15
WL2PNN		157.4	-5.5	-0.34	202.5	-4.0	-0.16
WWJ7GU		155.6	-7.4	-0.45	201.4	-5.1	-0.21
X6WA8U		168.0	5.0	0.31	218.4	11.9	0.48
X74WGR		172.6	9.7	0.60	201.6	-4.9	-0.20
Y8X3AQ		166.0	3.0	0.18	223.7	17.2	0.70
YX9A6L		139.2	-23.8	-1.46	163.2	-43.3	-1.76
Z6P6KF		155.1	-7.9	-0.48	198.4	-8.1	-0.33

Paper & Paperboard Interlaboratory Testing Program

Analysis 314

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample SD79 Lab Mean	Sample SD79 Diff from Grand Mean	Sample SD79 CPV	Sample SD80 Lab Mean	Sample SD80 Diff from Grand Mean	Sample SD80 CPV
ZFJHHR		151.0	-11.9	-0.73	212.2	5.7	0.23
ZHVXCT		144.6	-18.3	-1.13	190.5	-16.0	-0.65
ZTFALK		150.0	-13.0	-0.80	184.5	-22.0	-0.89

Summary Statistics	Sample SD79	Sample SD80
Grand Means	162.95 Grams	206.47 Grams
Stnd Dev Btwn Labs	16.27 Grams	24.64 Grams

Statistics based on 42 of 43 reporting participants.

Comments on Assigned Data Flags for Test #314

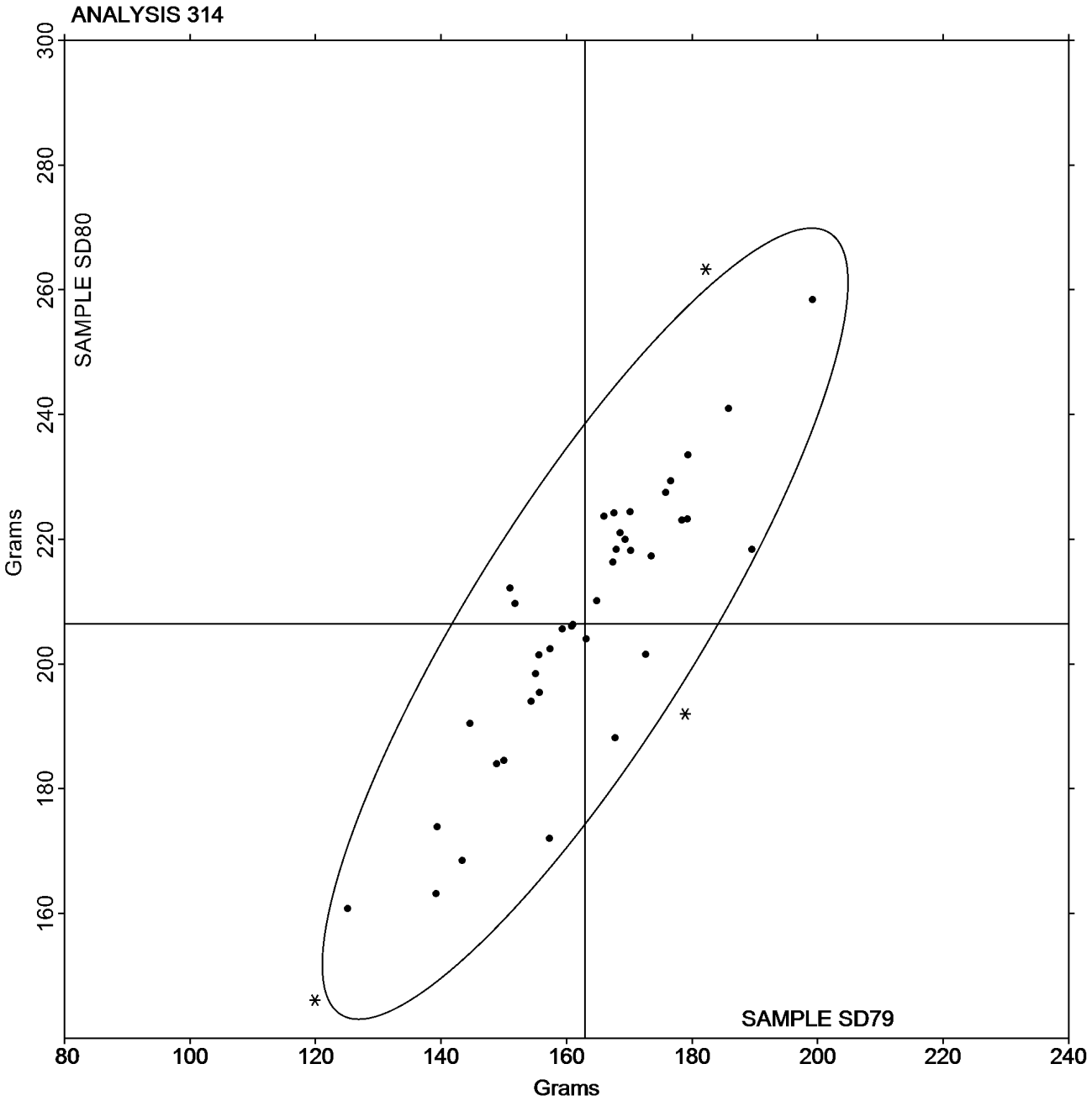
NZTEAM (X) - Extreme Data.

Analysis Notes:

ULRWZN - One determination removed from the Lab Mean of Sample SD79 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample SD79 = 162.95 Grams

Grand Mean Sample SD80 = 206.47 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 320

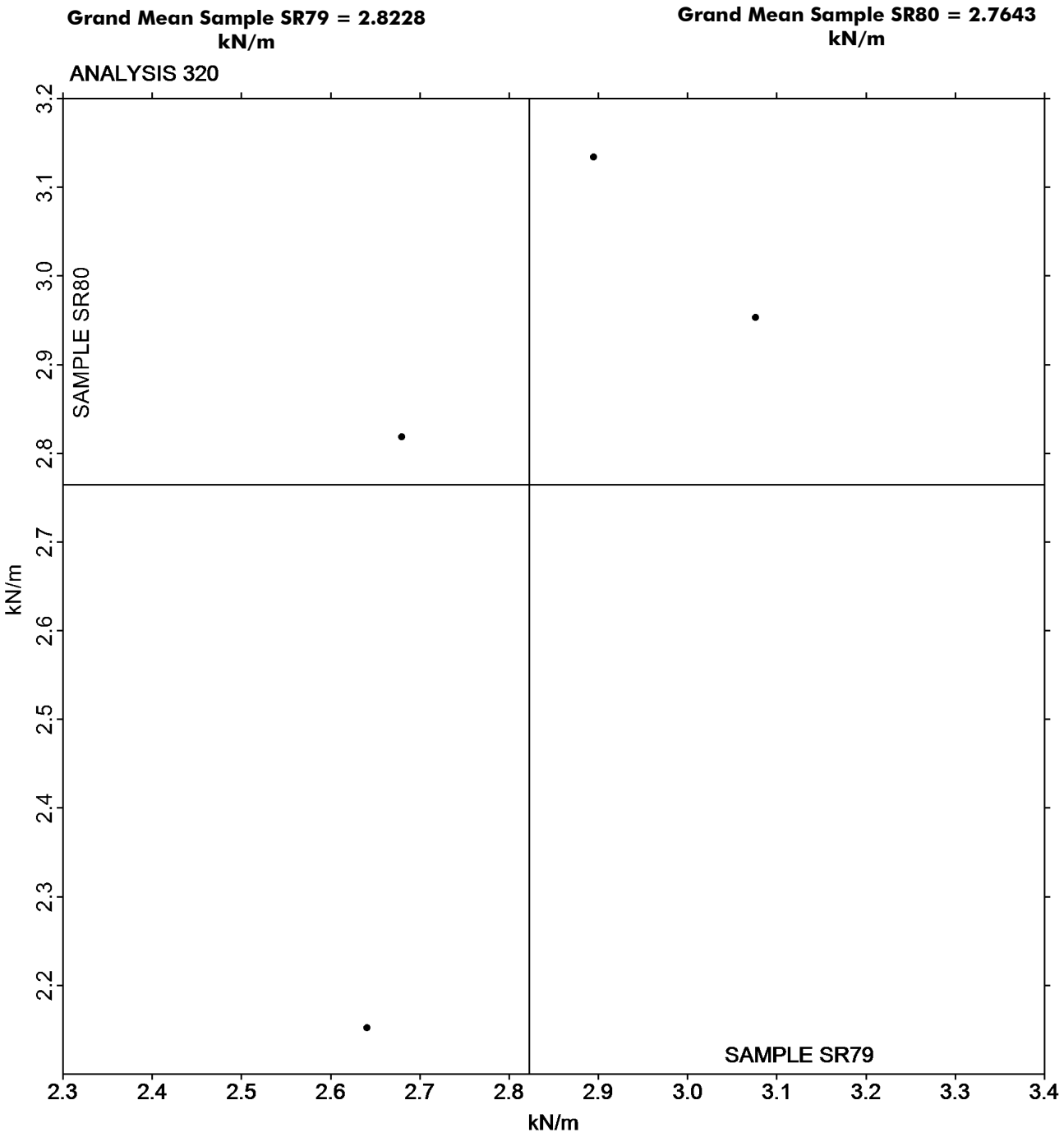
Tensile Breaking Strength - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR79 Lab Mean	Sample SR79 Diff from Grand Mean	Sample SR79 CPV	Sample SR80 Lab Mean	Sample SR80 Diff from Grand Mean	Sample SR80 CPV
93RJ93		3.076	0.253	1.25	2.953	0.189	0.44
E9E6YB		2.641	-0.182	-0.90	2.152	-0.612	-1.43
GA8V3V		2.680	-0.143	-0.71	2.818	0.054	0.13
UFNUVN		2.894	0.072	0.35	3.134	0.369	0.86

Summary Statistics	Sample SR79	Sample SR80
Grand Means	2.82 kN/m	2.76 kN/m
Stnd Dev Btwn Labs	0.20 kN/m	0.43 kN/m

Statistics based on 4 of 4 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 321

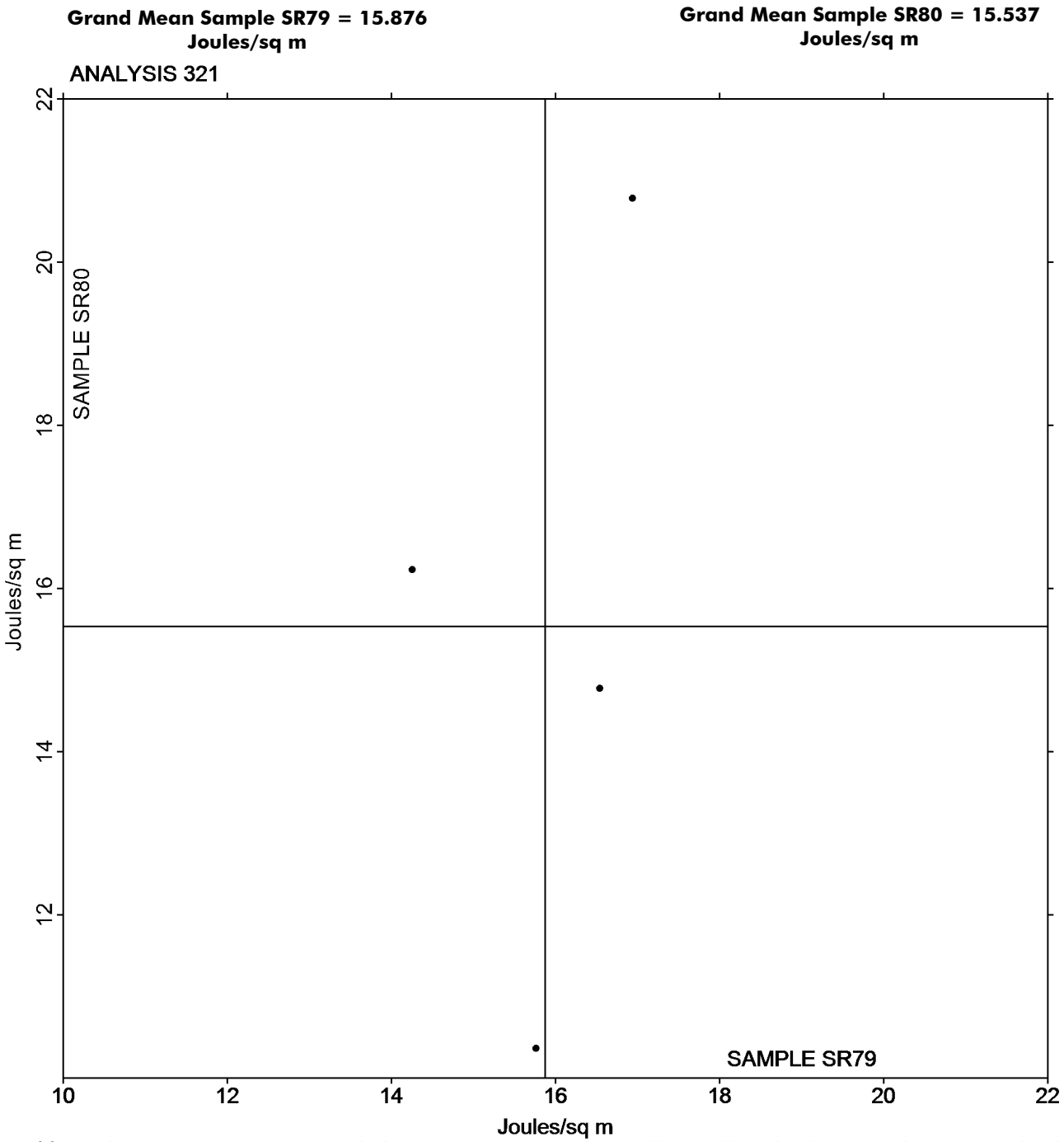
Tensile Energy Absorption - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR79 Lab Mean	Sample SR79 Diff from Grand Mean	Sample SR79 CPV	Sample SR80 Lab Mean	Sample SR80 Diff from Grand Mean	Sample SR80 CPV
93RJ93		16.54	0.67	0.56	14.78	-0.76	-0.18
E9E6YB		15.76	-0.11	-0.10	10.36	-5.18	-1.20
GA8V3V		14.26	-1.62	-1.37	16.23	0.69	0.16
UFNUVN		16.94	1.07	0.90	20.78	5.24	1.22

Summary Statistics	Sample SR79	Sample SR80
Grand Means	15.88 Joules/sq m	15.54 Joules/sq m
Stnd Dev Btwn Labs	1.19 Joules/sq m	4.30 Joules/sq m

Statistics based on 4 of 4 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 322

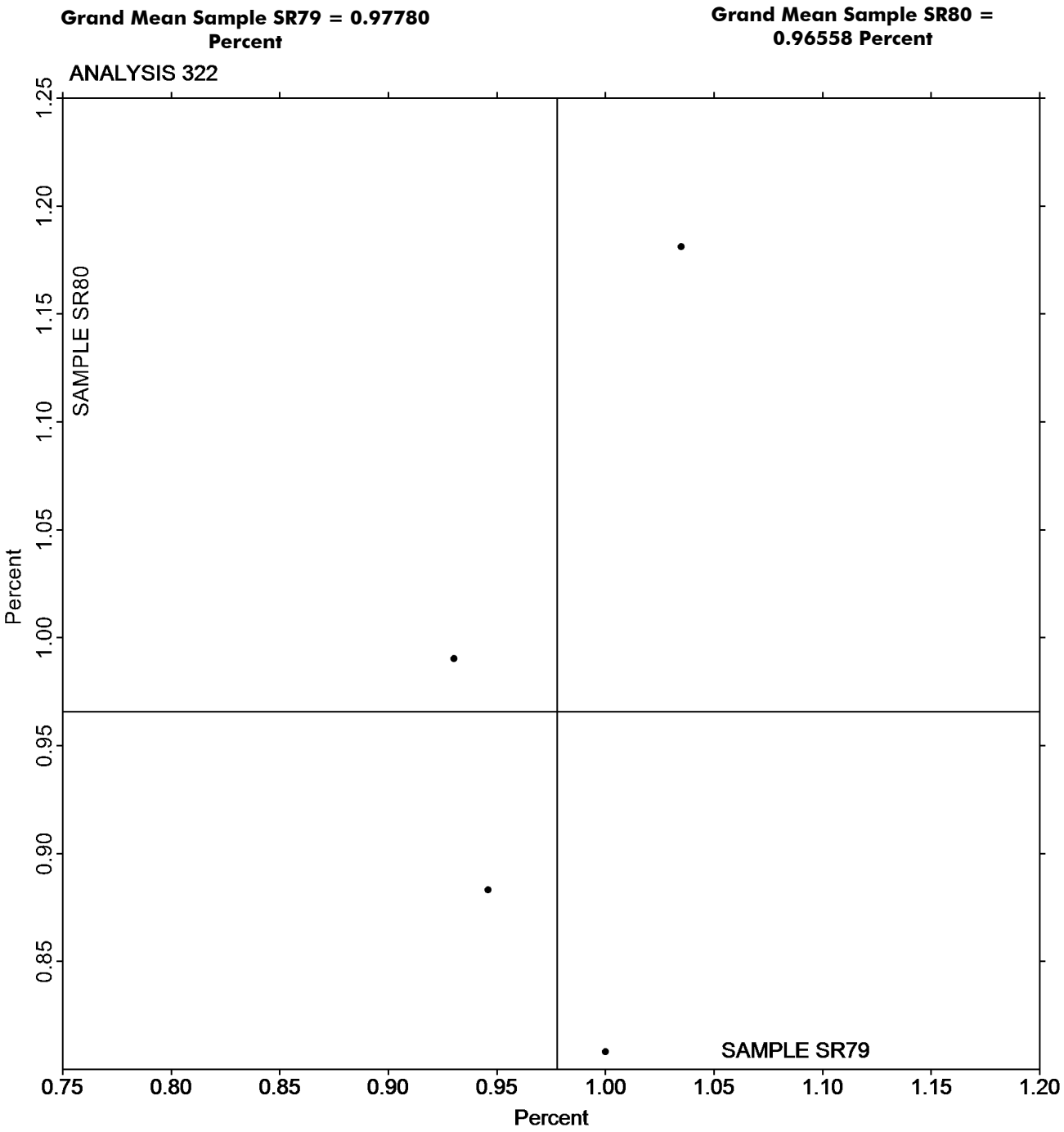
Elongation to Break - Newsprint

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SR79 Lab Mean	Sample SR79 Diff from Grand Mean	Sample SR79 CPV	Sample SR80 Lab Mean	Sample SR80 Diff from Grand Mean	Sample SR80 CPV
93RJ93		0.9460	-0.0318	-0.66	0.8830	-0.0826	-0.51
E9E6YB		1.0000	0.0222	0.46	0.8080	-0.1576	-0.97
GA8V3V		0.9302	-0.0476	-0.98	0.9903	0.0247	0.15
UFNUVN		1.0350	0.0572	1.18	1.1810	0.2154	1.33

Summary Statistics	Sample SR79	Sample SR80
Grand Means	0.98 Percent	0.97 Percent
Stnd Dev Btwn Labs	0.05 Percent	0.16 Percent

Statistics based on 4 of 4 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF79 Lab Mean	Sample SF79 Diff from Grand Mean	Sample SF79 CPV	Sample SF80 Lab Mean	Sample SF80 Diff from Grand Mean	Sample SF80 CPV	Instr Code
249D3J		6.912	0.065	0.18	7.154	0.253	0.82	XX
2FKFPG		7.404	0.556	1.55	7.538	0.637	2.06	LH
2GXCUL		6.544	-0.303	-0.85	6.616	-0.285	-0.92	TF
2Z928J	X	0.571	-6.277	-17.52	0.553	-6.348	-20.53	LA
36FRAP		6.730	-0.117	-0.33	6.998	0.097	0.31	LH
3CHW7F		6.625	-0.222	-0.62	6.699	-0.203	-0.66	TB
3YT6EJ		6.586	-0.262	-0.73	6.442	-0.459	-1.49	IN
4N6PPL	*	6.836	-0.011	-0.03	7.451	0.549	1.78	TP
4ZJLBD		6.809	-0.038	-0.11	6.930	0.029	0.09	TO
6RHQLD		6.279	-0.568	-1.59	6.479	-0.423	-1.37	RE
77Y4J6		6.943	0.096	0.27	6.673	-0.229	-0.74	FP
8H7BRB		6.839	-0.008	-0.02	6.843	-0.058	-0.19	LX
9VF9GB		7.224	0.377	1.05	7.348	0.447	1.45	TC
9YEJCB		6.748	-0.099	-0.28	7.067	0.166	0.54	LH
A39Z2A		6.663	-0.184	-0.51	6.796	-0.105	-0.34	TP
BU96DB		6.998	0.151	0.42	7.087	0.186	0.60	TO
CHANZE	X	21.424	14.577	40.69	21.150	14.248	46.07	FP
D7ERKX		6.977	0.130	0.36	7.230	0.329	1.06	LH
DUHLQZ		6.974	0.127	0.35	6.908	0.006	0.02	LA
DWQ2X7	*	7.658	0.811	2.26	7.122	0.221	0.72	VM
F2X7NW		6.761	-0.086	-0.24	6.603	-0.299	-0.97	TO
G7KDKA		6.569	-0.278	-0.78	6.674	-0.227	-0.73	CS
GC7DX2		6.313	-0.534	-1.49	6.654	-0.247	-0.80	LI
GTJHN3		7.446	0.599	1.67	7.091	0.190	0.61	TJ
GZT722		6.211	-0.636	-1.78	6.247	-0.654	-2.12	ID
J8A7TY		7.029	0.182	0.51	7.091	0.190	0.61	TV
KGURGT		6.477	-0.370	-1.03	6.456	-0.445	-1.44	LI
KL66YR		6.570	-0.278	-0.77	6.856	-0.045	-0.15	LH
LMF8LQ		7.070	0.223	0.62	6.832	-0.069	-0.22	LI
LQEJGQ		7.349	0.501	1.40	7.239	0.337	1.09	LX
NF8RLT		6.765	-0.083	-0.23	6.714	-0.187	-0.61	TF
Q4NWJY		7.343	0.496	1.38	6.949	0.048	0.15	LF
QY9HVT		7.185	0.338	0.94	7.391	0.490	1.58	LI
TH23PH		7.613	0.765	2.14	7.477	0.576	1.86	TJ
UHEV3X		6.343	-0.504	-1.41	6.641	-0.260	-0.84	TO
UQ7BNV		6.703	-0.144	-0.40	6.747	-0.155	-0.50	LH
V2YE6U		7.090	0.243	0.68	7.079	0.178	0.57	LI
VGEBQH		6.432	-0.416	-1.16	6.663	-0.238	-0.77	LA
VXZ49U		7.039	0.192	0.53	7.129	0.228	0.74	FP
XPXNHD		6.508	-0.339	-0.95	6.662	-0.239	-0.77	IM

Paper & Paperboard Interlaboratory Testing Program

Analysis 325

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF79 Lab Mean	Sample SF79 Diff from Grand Mean	Sample SF79 CPV	Sample SF80 Lab Mean	Sample SF80 Diff from Grand Mean	Sample SF80 CPV	Instr Code
YR2NCH		6.534	-0.314	-0.88	6.667	-0.234	-0.76	TB
YX9A6L		6.707	-0.140	-0.39	6.537	-0.364	-1.18	IM
Z8928L		7.087	0.239	0.67	7.045	0.144	0.46	TF
Z8TZ4J		6.694	-0.153	-0.43	7.026	0.125	0.40	LE

Summary Statistics	Sample SF79	Sample SF80
Grand Means	6.85 kN/m	6.90 kN/m
Stnd Dev Btwn Labs	0.36 kN/m	0.31 kN/m

Statistics based on 42 of 44 reporting participants.

Comments on Assigned Data Flags for Test #325

2Z928J (X) - Extreme Data.

CHANZE (X) - Extreme Data.

Analysis Notes:

249D3J - Data appear to be reported as lb/in, not kN/m as indicated on data entry form. CTS will not correct the Units going forward.

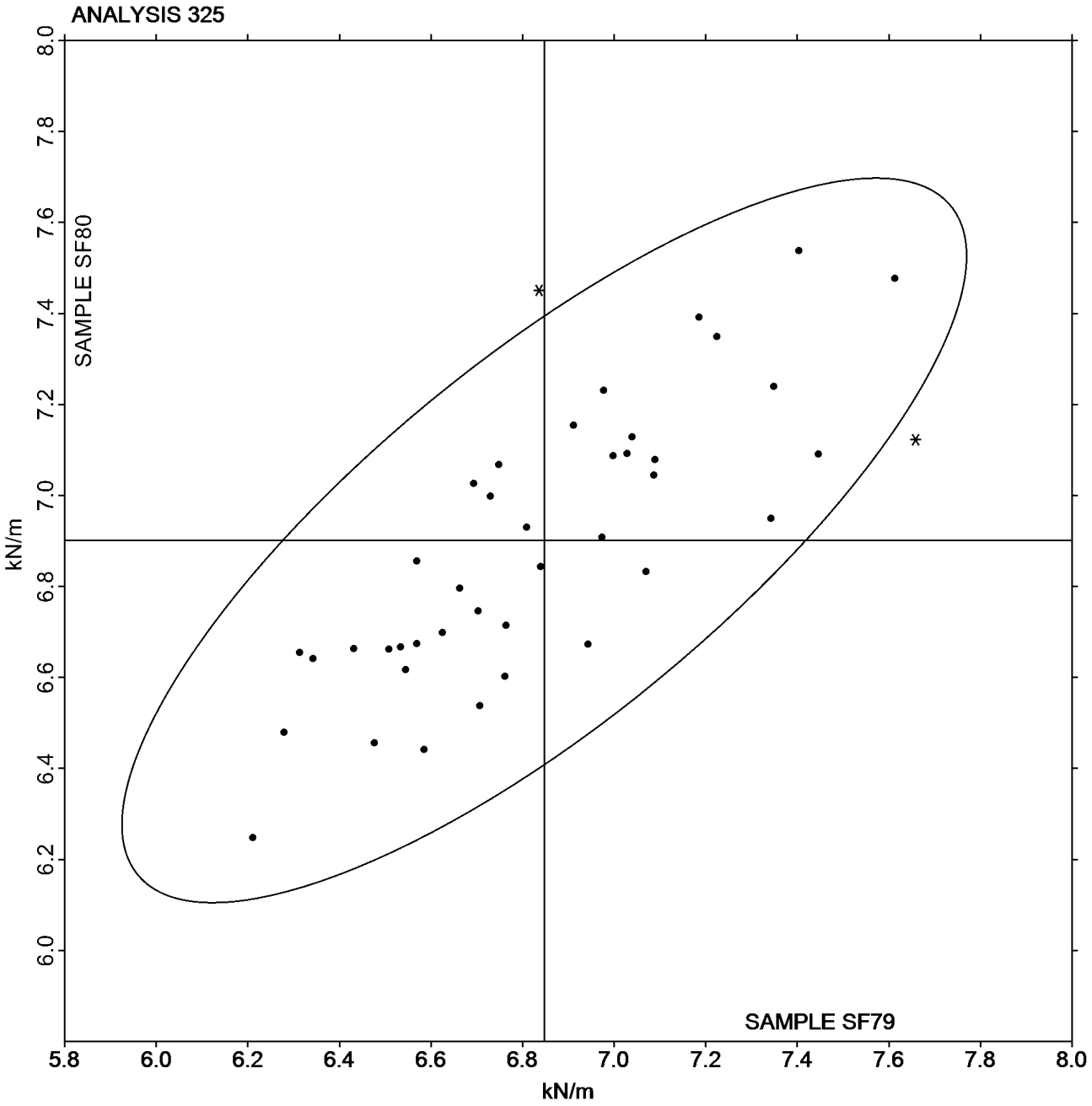
DUHLQZ - One determination removed from the Lab Mean of Sample SF80 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

CS	Chatillon CS1100 Series Force Tester	FP	Frank PTI Universal Tester TS
ID	Instron 4200 Series	IM	Instron 5500 Series
IN	Instron 3340 series	LA	L & W Tensile - Autoline 300
LE	L & W Tensile Tester 066	LF	L & W Tensile/Fracture Toughness Tester SE 064
LH	L & W Alwetron TH1 (Horizontal) SE 060/065F	LI	L & W Tensile Tester SE 062
LX	L & W (model not specified)	RE	Regmed
TB	Thwing-Albert EJA/1000	TC	Thwing-Albert Electro-Hydraulic, Model 30LT
TF	Thwing-Albert EJA Vantage-1	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TV	Thwing-Albert Vantage NX	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab		

Grand Mean Sample SF79 = 6.8474 kN/m

Grand Mean Sample SF80 = 6.9012 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF79 Lab Mean	Sample SF79 Diff from Grand Mean	Sample SF79 CPV	Sample SF80 Lab Mean	Sample SF80 Diff from Grand Mean	Sample SF80 CPV	Instr Code
249D3J		94.58	-1.68	-0.13	95.1	-5.5	-0.44	XX
2FKFPG		78.41	-17.85	-1.40	81.5	-19.1	-1.51	LH
2Z928J		115.28	19.01	1.49	116.1	15.5	1.23	LA
36FRAP		94.72	-1.55	-0.12	100.6	0.0	0.00	LH
3CHW7F		100.35	4.08	0.32	107.2	6.6	0.52	TB
4N6PPL		94.76	-1.51	-0.12	110.7	10.0	0.79	TP
4ZJLBD		98.80	2.53	0.20	106.0	5.3	0.42	TO
6RHQLD		84.57	-11.70	-0.92	92.1	-8.5	-0.67	RE
77Y4J6		117.95	21.68	1.70	121.1	20.5	1.62	FP
8H7BRB		92.74	-3.53	-0.28	96.5	-4.1	-0.32	LX
9YEJCB		92.82	-3.44	-0.27	101.5	0.9	0.07	LH
A39Z2A		91.22	-5.05	-0.40	92.6	-8.0	-0.63	TP
BU96DB		110.48	14.21	1.12	115.6	15.0	1.18	TO
D7ERKX		98.33	2.06	0.16	103.4	2.8	0.22	LH
DUHLQZ		64.11	-32.16	-2.53	71.5	-29.1	-2.30	LA
F2X7NW		102.91	6.64	0.52	102.1	1.5	0.12	TO
G7KDKA	X	2,220.85	2,124.59	166.98	2,177.3	2,076.7	164.09	CS
GC7DX2		85.52	-10.75	-0.84	89.3	-11.3	-0.89	LI
GZT722		91.19	-5.08	-0.40	93.3	-7.3	-0.58	ID
J8A7TY		110.49	14.22	1.12	115.6	15.0	1.19	TV
KGURGT		91.10	-5.17	-0.41	91.6	-9.0	-0.71	LI
KL66YR		82.35	-13.91	-1.09	92.7	-7.9	-0.62	LH
LMF8LQ		88.28	-7.98	-0.63	85.4	-15.2	-1.20	LI
LQEJGQ		95.63	-0.64	-0.05	100.0	-0.6	-0.05	LX
NF8RLT		108.56	12.29	0.97	106.1	5.5	0.43	TF
Q4NWJY		107.82	11.55	0.91	102.0	1.4	0.11	LF
QY9HVT		75.29	-20.98	-1.65	82.4	-18.2	-1.44	LX
TH23PH		125.95	29.68	2.33	133.4	32.8	2.59	TJ
UHEV3X		92.09	-4.18	-0.33	105.1	4.5	0.35	TO
UQ7BNV		92.36	-3.91	-0.31	94.4	-6.2	-0.49	LH
V2YE6U		98.21	1.94	0.15	100.3	-0.3	-0.02	LI
VGEBQH		102.10	5.84	0.46	114.9	14.3	1.13	LA
VXZ49U		113.70	17.43	1.37	115.0	14.4	1.14	FP
XPXNHD		88.07	-8.20	-0.64	92.0	-8.6	-0.68	IM
YX9A6L	X	4.67	-91.59	-7.20	4.5	-96.1	-7.59	IM
Z8928L		92.35	-3.92	-0.31	93.6	-7.0	-0.55	TF

Paper & Paperboard Interlaboratory Testing Program

Analysis 327

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

Summary Statistics	Sample SF79	Sample SF80
Grand Means	96.27 Joules/sq m	100.60 Joules/sq m
Stnd Dev Btwn Labs	12.72 Joules/sq m	12.66 Joules/sq m

Statistics based on 34 of 36 reporting participants.

Comments on Assigned Data Flags for Test #327

G7KDKA (X) - Extreme Data.

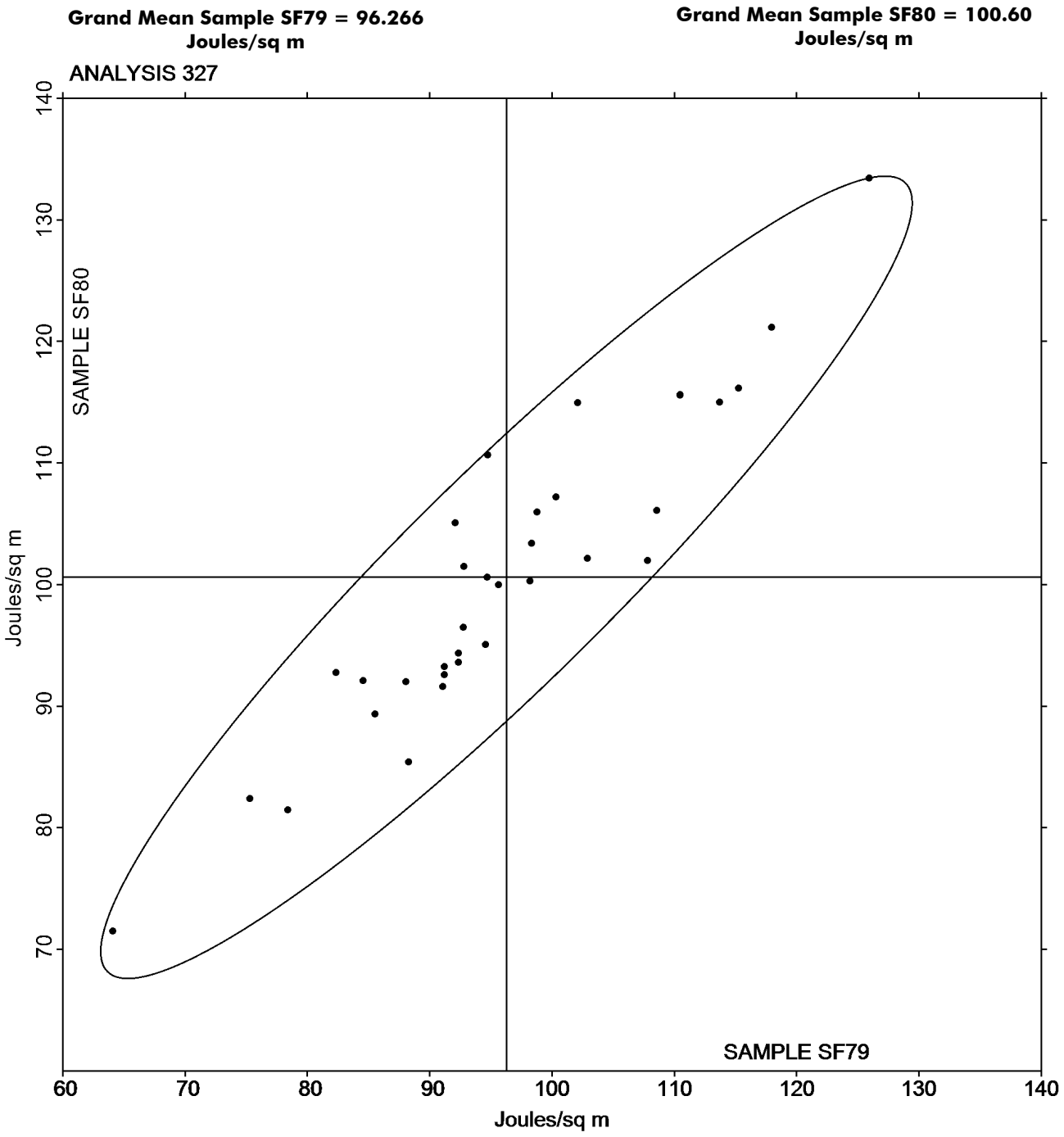
YX9A6L (X) - Extreme Data.

Analysis Notes:

249D3J - Data appear to be reported as ft-lb/sq ft, not J/sq m as indicated on data entry form. CTS will not correct the Units going forward.

Key to Instrument Codes Reported by Participants

CS	Chatillon CS1100 Series Force Tester	FP	Frank PTI Universal Tester TS
ID	Instron 4200 Series	IM	Instron 5500 Series
LA	L & W Tensile - Autoline 300	LF	L & W Tensile/Fracture Toughness Tester SE 064
LH	L & W Alwetron TH1 (Horizontal) SE 060/065F	LI	L & W Tensile Tester SE 062
LX	L & W (model not specified)	RE	Regmed
TB	Thwing-Albert EJA/1000	TF	Thwing-Albert EJA Vantage-1
TJ	Thwing-Albert QC II-XS	TO	Thwing-Albert QC-1000
TP	TMI Monitor/Tensile 100 (84-21-01)	TV	Thwing-Albert Vantage NX
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

Analysis 328

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SF79 Lab Mean	Sample SF79 Diff from Grand Mean	Sample SF79 CPV	Sample SF80 Lab Mean	Sample SF80 Diff from Grand Mean	Sample SF80 CPV	Instr Code
249D3J		2.090	-0.085	-0.33	2.213	-0.045	-0.16	XX
2FKFPG		1.648	-0.527	-2.06	1.673	-0.585	-2.13	LH
2GXCUL		2.060	-0.115	-0.45	2.070	-0.188	-0.68	TF
2Z928J	X	4.494	2.319	9.05	4.656	2.398	8.72	LA
36FRAP		2.123	-0.052	-0.20	2.169	-0.089	-0.32	LH
3CHW7F		2.380	0.205	0.80	2.512	0.254	0.92	TB
3YT6EJ		2.230	0.055	0.22	2.291	0.033	0.12	IN
4N6PPL		2.537	0.362	1.41	2.539	0.281	1.02	TP
4ZJLBD		2.060	-0.115	-0.45	2.190	-0.068	-0.25	TO
6RHQLD		2.182	0.008	0.03	2.246	-0.013	-0.05	RE
77Y4J6	*	2.628	0.453	1.77	2.888	0.630	2.29	FP
8H7BRB		2.074	-0.101	-0.39	2.150	-0.108	-0.39	LX
9YEJCB		2.090	-0.085	-0.33	2.175	-0.083	-0.30	LH
A39Z2A	*	2.204	0.029	0.11	2.552	0.294	1.07	TP
BU96DB		2.582	0.407	1.59	2.602	0.344	1.25	TO
D7ERKX		2.136	-0.039	-0.15	2.159	-0.099	-0.36	LH
DUHLQZ		1.777	-0.398	-1.55	1.942	-0.316	-1.15	LA
DWQ2X7		1.880	-0.295	-1.15	1.950	-0.308	-1.12	VM
F2X7NW		2.318	0.143	0.56	2.351	0.093	0.34	TX
G7KDKA		2.567	0.392	1.53	2.617	0.359	1.30	CS
GC7DX2		2.049	-0.126	-0.49	2.044	-0.214	-0.78	LI
GZT722		2.240	0.066	0.26	2.283	0.025	0.09	ID
J8A7TY		2.607	0.432	1.69	2.704	0.446	1.62	TV
KGURGT		2.161	-0.014	-0.05	2.177	-0.081	-0.29	LI
KL66YR		1.922	-0.253	-0.99	2.061	-0.197	-0.72	LH
LMF8LQ		1.932	-0.243	-0.95	1.947	-0.311	-1.13	LI
LQEJGQ		1.992	-0.183	-0.71	2.115	-0.143	-0.52	LX
NF8RLT		2.482	0.308	1.20	2.578	0.320	1.16	TF
Q4NWJY		2.242	0.067	0.26	2.245	-0.013	-0.05	LF
QY9HVT		1.662	-0.513	-2.00	1.759	-0.499	-1.81	LI
TH23PH		2.586	0.411	1.61	2.777	0.519	1.89	TJ
UHEV3X		2.284	0.109	0.43	2.537	0.279	1.01	TO
UQ7BNV		2.106	-0.069	-0.27	2.166	-0.092	-0.33	LH
V2YE6U		1.942	-0.233	-0.91	1.979	-0.279	-1.01	LI
VGEBQH		2.001	-0.174	-0.68	2.245	-0.013	-0.05	LA
VXZ49U		2.523	0.348	1.36	2.500	0.242	0.88	FP
XPXNHD		2.093	-0.082	-0.32	2.144	-0.114	-0.42	IM
YR2NCH	X	2.172	-0.003	-0.01	10.198	7.940	28.87	TF
YX9A6L		2.129	-0.046	-0.18	2.107	-0.151	-0.55	IM
Z8928L		2.117	-0.058	-0.22	2.150	-0.108	-0.39	TF

Summary Statistics	Sample SF79	Sample SF80
Grand Means	2.17 Percent	2.26 Percent
Stnd Dev Btwn Labs	0.26 Percent	0.27 Percent

Statistics based on 38 of 40 reporting participants.

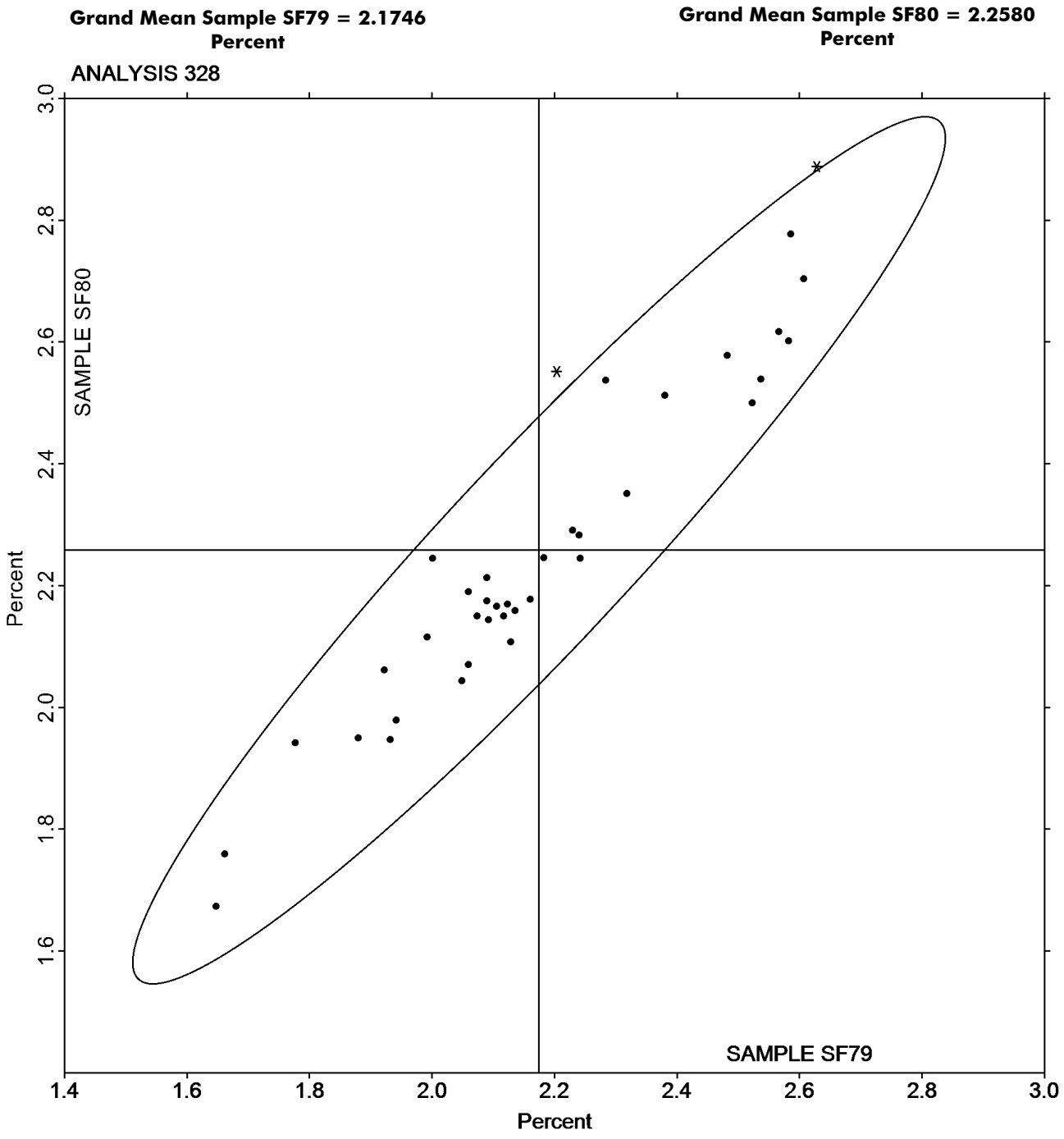
Comments on Assigned Data Flags for Test #328

YR2NCH (X) - Extreme Data for Sample SF80.

2Z928J (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

CS	Chatillon CS1100 Series Force Tester	FP	Frank PTI Universal Tester TS
ID	Instron 4200 Series	IM	Instron 5500 Series
IN	Instron 3340 Series	LA	L & W Tensile - Autoline 300
LF	L & W Tensile/Fracture Toughness Tester SE 064	LH	L & W Alwetron TH1 (Horizontal) SE 060/065F
LI	L & W Tensile Tester SE 062	LX	L & W (model not specified)
RE	Regmed	TB	Thwing-Albert EJA/1000
TF	Thwing-Albert EJA Vantage-1	TJ	Thwing-Albert QC II-XS
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TV	Thwing-Albert Vantage NX	TX	Thwing-Albert (model not specified)
VM	Valmet PaperLab (was Kajaani/Robotest)	XX	Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE79 Lab Mean	Sample SE79 Diff from Grand Mean	Sample SE79 CPV	Sample SE80 Lab Mean	Sample SE80 Diff from Grand Mean	Sample SE80 CPV	Instr Code
2WPAVG		10.74	-0.44	-0.50	10.74	-0.46	-0.53	TH
344BVQ		12.07	0.90	1.02	12.02	0.82	0.94	IR
3GRCDH		10.64	-0.53	-0.61	10.58	-0.62	-0.70	LW
4G8WXF		10.93	-0.24	-0.28	11.18	-0.02	-0.02	LE
6FQY6F		11.52	0.35	0.40	11.46	0.26	0.30	TO
78A3DE		10.67	-0.51	-0.58	10.60	-0.60	-0.68	TK
7FPLXD		10.64	-0.53	-0.61	10.64	-0.56	-0.64	IM
7TA9ZK		10.62	-0.56	-0.64	10.92	-0.28	-0.32	IF
88PQ9E	X	7.73	-3.45	-3.93	7.88	-3.31	-3.78	IM
8ERV64		11.75	0.58	0.66	11.74	0.54	0.62	LE
8TREZA		12.56	1.38	1.58	12.56	1.36	1.55	TH
8YWDDK	X	0.26	-10.91	-12.44	0.27	-10.92	-12.48	IN
A7NFPG		11.78	0.61	0.70	11.89	0.69	0.79	ID
C4DA37	*	9.16	-2.01	-2.29	9.74	-1.46	-1.66	TT
CEERKZ		10.45	-0.73	-0.83	10.64	-0.56	-0.63	LE
CF8N89		10.58	-0.59	-0.68	10.56	-0.63	-0.72	IM
DQJCED		12.06	0.89	1.01	12.09	0.90	1.02	LX
DU38G6	X	90.11	78.94	90.00	90.70	79.50	90.81	TP
EYC3ED		11.88	0.71	0.81	12.09	0.89	1.02	IR
FZJHM6		11.03	-0.15	-0.17	10.97	-0.23	-0.26	LH
GF6PU2		12.62	1.45	1.65	12.54	1.34	1.54	LA
H9QYAV		9.92	-1.25	-1.43	10.23	-0.96	-1.10	LH
JBN4XZ		12.91	1.74	1.98	12.64	1.44	1.65	LA
JTTBC3	*	12.89	1.72	1.96	13.27	2.07	2.36	IK
JW8482		10.58	-0.59	-0.68	10.37	-0.83	-0.95	LE
KG9J2X		13.22	2.05	2.33	13.37	2.17	2.48	LA
KGURGT		10.11	-1.06	-1.21	10.37	-0.82	-0.94	LW
KKTBDZ		10.40	-0.77	-0.88	10.41	-0.78	-0.90	LA
KQJKMX		11.32	0.15	0.17	11.17	-0.02	-0.03	TH
L9YAFP		11.93	0.75	0.86	11.72	0.52	0.59	IF
LCU4DQ		10.60	-0.57	-0.65	10.41	-0.79	-0.90	TB
M2B9BW		10.78	-0.39	-0.44	10.52	-0.68	-0.78	IM
P8R92U		11.72	0.55	0.62	11.95	0.76	0.87	LI
PTRP43	*	10.82	-0.35	-0.40	10.15	-1.04	-1.19	IF
QGCY2Q		11.16	-0.02	-0.02	11.44	0.24	0.28	TB
R9GCPK		11.08	-0.10	-0.11	10.81	-0.39	-0.44	TA
RKRQQY		12.16	0.98	1.12	12.28	1.09	1.24	DM
RQ9L7T		12.40	1.22	1.40	12.17	0.97	1.11	TX
UAYCJX		10.44	-0.73	-0.83	10.54	-0.65	-0.75	IM
UQ7BNV		11.13	-0.04	-0.05	11.16	-0.03	-0.04	LH

Paper & Paperboard Interlaboratory Testing Program

Analysis 330

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE79 Lab Mean	Sample SE79 Diff from Grand Mean	Sample SE79 CPV	Sample SE80 Lab Mean	Sample SE80 Diff from Grand Mean	Sample SE80 CPV	Instr Code
VGEBQH		10.12	-1.05	-1.20	10.22	-0.97	-1.11	LA
WL2PNN		11.43	0.25	0.29	11.50	0.30	0.34	LE
WWJ7GU		10.49	-0.68	-0.78	10.40	-0.80	-0.91	ID
X2W7DL	X	14.84	3.67	4.18	14.27	3.07	3.51	CE
X74WGR		10.75	-0.42	-0.48	10.50	-0.70	-0.80	IF
YCQ3TT	*	10.66	-0.51	-0.58	11.43	0.23	0.27	LW
YX9A6L		10.96	-0.21	-0.24	10.69	-0.51	-0.58	IM
Z3HMLK		10.32	-0.85	-0.97	10.37	-0.82	-0.94	XX
Z6P6KF		10.90	-0.28	-0.32	10.88	-0.32	-0.36	LW
Z8928L		10.19	-0.98	-1.12	10.19	-1.00	-1.15	TO
ZFJHHR	X	13.60	2.42	2.76	10.00	-1.19	-1.36	IN
ZHVXCT	X	9.45	-1.73	-1.97	10.60	-0.59	-0.68	IN
ZTFALK		11.98	0.81	0.93	12.19	0.99	1.13	TH
ZUNL4L		11.24	0.07	0.08	11.11	-0.09	-0.10	TB

Summary Statistics	Sample SE79	Sample SE80
Grand Means	11.17 kN/m	11.20 kN/m
Stnd Dev Btwn Labs	0.88 kN/m	0.88 kN/m

Statistics based on 48 of 54 reporting participants.

Comments on Assigned Data Flags for Test #330

X2W7DL (X) - Data for both samples are high. Possible Systematic Error.

DU38G6 (X) - Extreme Data.

88PQ9E (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

ZFJHHR (X) - Data for sample SE79 are high. Inconsistent within the determinations of both samples.

ZHVXCT (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample SE80.

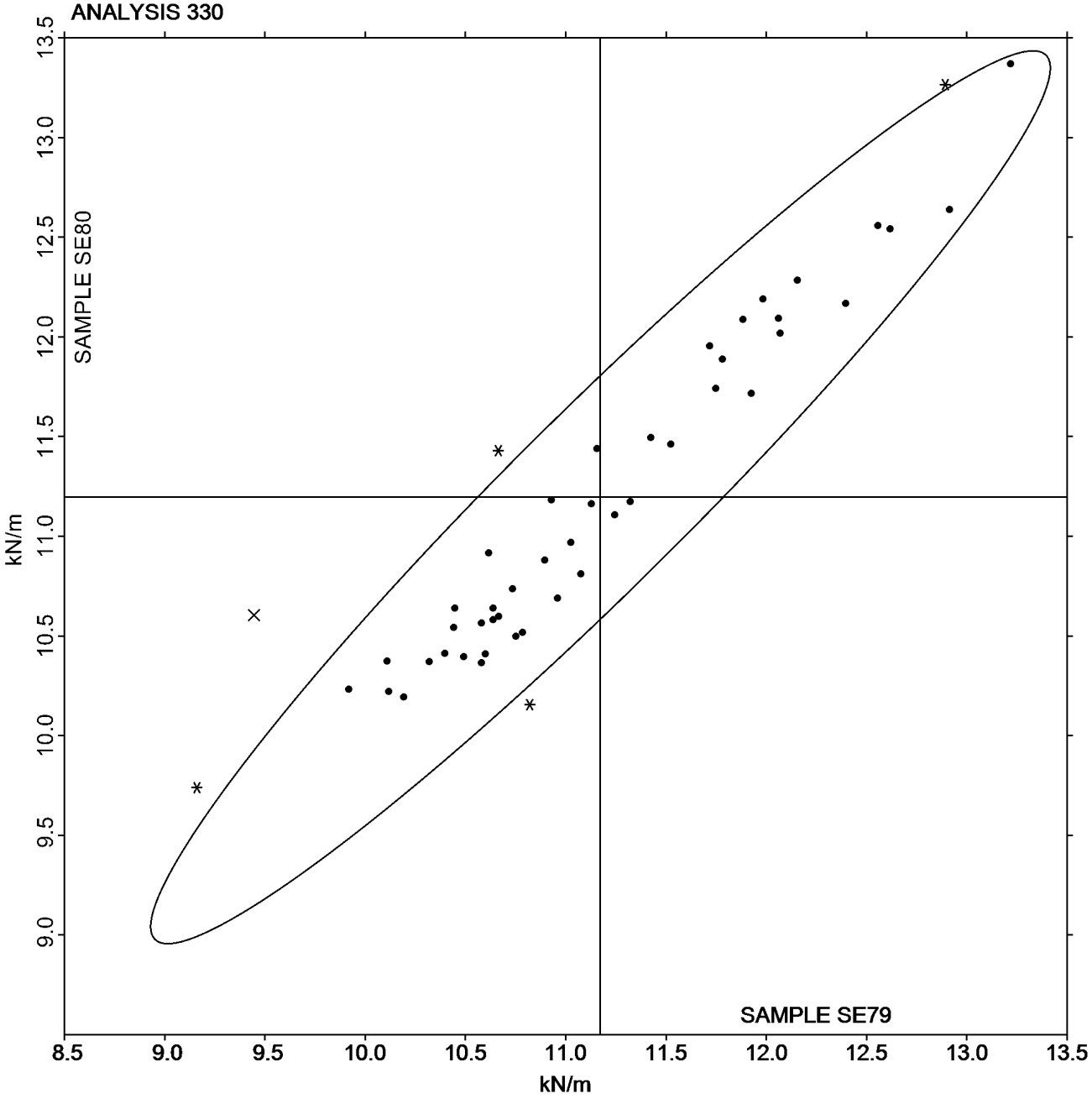
8YWDDK (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

CE	Chatillon Model ET1100	DM	IDM MTC-100 Tensile Tester
ID	Instron 4200 Series	IF	Instron 3340 Series
IK	Instron 4400 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	IR	Instron 5900 Series
LA	L & W Autoline	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LI	LLoyds Instruments
LW	L & W Tensile Tester SE062	LX	L & W (model not specified)
TA	Thwing-Albert Tensile Tester	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TK	Thwing-Albert Model 37-4
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TT	Tinius Olsen Model MHT	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		

Grand Mean Sample SE79 = 11.173 kN/m

Grand Mean Sample SE80 = 11.196 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE79 Lab Mean	Sample SE79 Diff from Grand Mean	Sample SE79 CPV	Sample SE80 Lab Mean	Sample SE80 Diff from Grand Mean	Sample SE80 CPV	Instr Code
2WPAVG		198.6	14.2	0.63	206.9	20.7	1.10	TH
3GRCDH		177.5	-6.9	-0.31	171.9	-14.3	-0.76	LW
4G8WXF		165.0	-19.5	-0.87	174.4	-11.8	-0.63	LE
6FQY6F		196.1	11.7	0.52	194.4	8.2	0.43	TO
78A3DE		203.0	18.6	0.83	196.0	9.8	0.52	TK
7FPLXD		193.6	9.1	0.41	195.7	9.5	0.51	IM
7TA9ZK		147.1	-37.3	-1.67	150.3	-36.0	-1.92	IN
88PQ9E	X	83.3	-101.2	-4.51	83.1	-103.2	-5.50	IM
8ERV64		201.5	17.0	0.76	195.7	9.5	0.50	LE
8YWDDK		153.2	-31.3	-1.40	152.6	-33.6	-1.79	IN
C4DA37		142.3	-42.2	-1.88	165.2	-21.1	-1.12	TT
CEERKZ		167.0	-17.5	-0.78	173.7	-12.5	-0.67	LE
CF8N89		175.6	-8.8	-0.39	179.3	-6.9	-0.37	IM
DQJCED		210.7	26.2	1.17	202.9	16.7	0.89	LX
DU38G6		162.8	-21.7	-0.97	159.5	-26.7	-1.42	TP
FZJHM6		178.7	-5.7	-0.26	178.5	-7.8	-0.41	LH
GF6PU2		197.0	12.5	0.56	191.3	5.1	0.27	LA
H9QYAV		147.7	-36.8	-1.64	164.4	-21.8	-1.16	LH
JBN4XZ		189.8	5.3	0.24	185.3	-0.9	-0.05	LA
JTTBC3		181.1	-3.3	-0.15	197.5	11.2	0.60	XX
JW8482		177.5	-7.0	-0.31	168.7	-17.5	-0.93	LE
KG9J2X		169.3	-15.1	-0.67	172.5	-13.8	-0.73	LA
KGURGT		165.1	-19.3	-0.86	175.1	-11.2	-0.60	LW
KKTBDZ		207.2	22.8	1.02	206.6	20.4	1.09	LA
KQJKMX		228.2	43.8	1.95	223.3	37.1	1.98	TH
L9YAFP	*	189.3	4.8	0.22	214.9	28.7	1.53	IF
LCU4DQ		183.5	-0.9	-0.04	179.7	-6.5	-0.35	TB
M2B9BW		187.5	3.0	0.14	175.4	-10.8	-0.58	IM
PTRP43	X	112.6	-71.8	-3.21	105.6	-80.7	-4.30	IF
QGCY2Q		181.9	-2.5	-0.11	188.8	2.6	0.14	TB
RKRQQY	*	234.3	49.8	2.22	234.7	48.5	2.58	DM
RQ9L7T		212.1	27.7	1.23	207.4	21.2	1.13	XX
UAYCJX	X	67.8	-116.6	-5.20	66.4	-119.8	-6.38	IM
UQ7BNV		186.8	2.3	0.10	185.1	-1.1	-0.06	LH
VGEBQH		187.6	3.2	0.14	190.0	3.8	0.20	LA
WL2PNN		175.6	-8.9	-0.40	176.7	-9.5	-0.51	LE
WWJ7GU		182.5	-1.9	-0.09	186.6	0.4	0.02	ID
YCQ3TT	*	140.9	-43.6	-1.94	166.6	-19.7	-1.05	LW
YX9A6L	X	9.9	-174.5	-7.79	9.3	-176.9	-9.43	IM
Z3HMLK		188.2	3.7	0.17	190.3	4.1	0.22	XX

Paper & Paperboard Interlaboratory Testing Program

Analysis 331

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE79 Lab Mean	Sample SE79 Diff from Grand Mean	Sample SE79 CPV	Sample SE80 Lab Mean	Sample SE80 Diff from Grand Mean	Sample SE80 CPV	Instr Code
Z6P6KF		176.4	-8.0	-0.36	175.9	-10.3	-0.55	LW
Z8928L		179.4	-5.1	-0.23	180.1	-6.1	-0.33	TO
ZFJHHR	X	217.3	32.8	1.46	150.4	-35.8	-1.91	IN
ZHVXCT	X	150.9	-33.5	-1.50	205.6	19.3	1.03	IN
ZTFALK		224.5	40.0	1.78	214.7	28.5	1.52	TH
ZUNL4L		212.1	27.6	1.23	200.5	14.3	0.76	TB

Summary Statistics	Sample SE79	Sample SE80
Grand Means	184.45 Joules/sq m	186.23 Joules/sq m
Stnd Dev Btwn Labs	22.42 Joules/sq m	18.77 Joules/sq m

Statistics based on 40 of 46 reporting participants.

Comments on Assigned Data Flags for Test #331

YX9A6L (X) - Extreme Data.

88PQ9E (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample SE80.

ZFJHHR (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

ZHVXCT (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

UAYCJX (X) - Extreme Data.

PTRP43 (X) - Data for both samples are low. Possible Systematic Error.

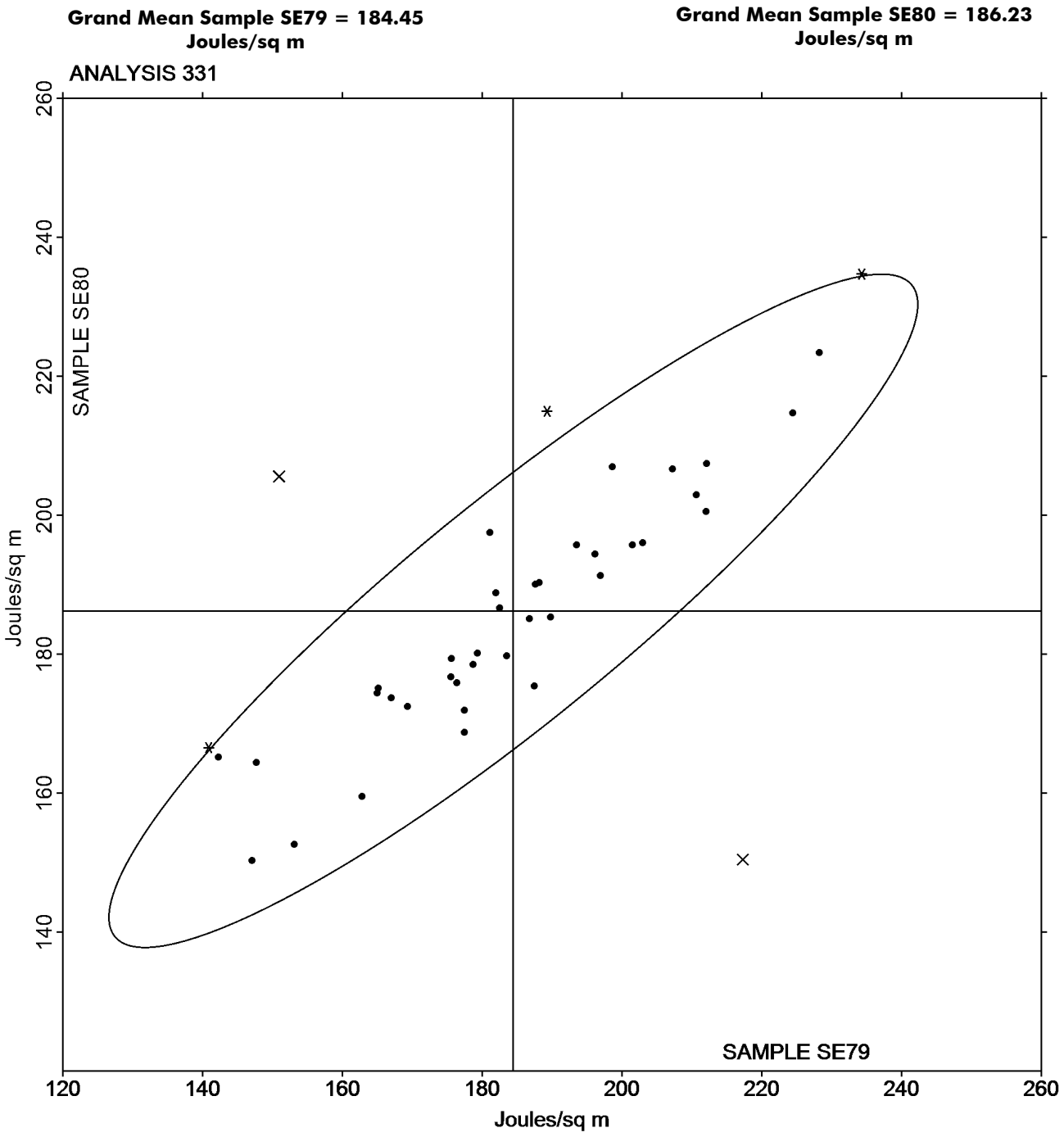
Analysis Notes:

4G8WXF - One determination removed from the Lab Mean of Sample SE79 per Grubb's Test at 1% risk (TAPPI 1205).

DU38G6 - Data appear to be reported as J/sq m, not kg m/sq m as indicated on data entry form. CTS will not correct the Units going forward.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 series
IF	Instron 3340 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	LA	L & W Autoline
LE	L & W Tensile Tester 066	LH	L & W Alwetron TH1 (Horizontal) SE 060
LW	L & W Tensile Tester SE062	LX	L & W (model not specified)
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TK	Thwing-Albert Model 37-4	TO	Thwing-Albert QC-1000
TP	TMI Monitor/Tensile 100 (84-21-01)	TT	Tinius Olsen Model MHT
XX	Instrument make/model not specified by lab		



WebCode	Data Flag	Sample SE79 Lab Mean	Sample SE79 Diff from Grand Mean	Sample SE79 CPV	Sample SE80 Lab Mean	Sample SE80 Diff from Grand Mean	Sample SE80 CPV	Instr Code
2WPAVG		2.820	0.361	0.83	2.920	0.457	1.14	TH
344BVQ		2.390	-0.069	-0.16	2.330	-0.133	-0.33	IR
3GRCDH		2.467	0.008	0.02	2.424	-0.039	-0.10	LW
4G8WXF		2.238	-0.221	-0.51	2.289	-0.174	-0.43	LE
6FQY6F		2.633	0.174	0.40	2.663	0.200	0.50	TO
78A3DE		2.843	0.384	0.89	2.765	0.302	0.75	TK
7FPLXD		2.754	0.296	0.68	2.772	0.309	0.77	IM
7TA9ZK		2.011	-0.448	-1.03	2.126	-0.337	-0.84	IN
88PQ9E		1.792	-0.667	-1.54	1.731	-0.732	-1.82	IM
8ERV64		2.545	0.086	0.20	2.475	0.012	0.03	LE
8YWDDK		1.708	-0.751	-1.73	1.711	-0.751	-1.87	IN
A7NFPG		2.569	0.110	0.25	2.586	0.123	0.31	ID
C4DA37	*	2.433	-0.026	-0.06	2.680	0.217	0.54	TT
CEERKZ		2.377	-0.082	-0.19	2.402	-0.061	-0.15	LE
CF8N89		2.457	-0.002	0.00	2.500	0.037	0.09	IM
DQJCED		2.516	0.057	0.13	2.370	-0.093	-0.23	LX
DU38G6		3.359	0.900	2.08	3.325	0.862	2.14	TP
EYC3ED		2.340	-0.119	-0.27	2.340	-0.123	-0.31	IR
FZJHM6		2.381	-0.078	-0.18	2.377	-0.086	-0.21	LH
GF6PU2		2.270	-0.189	-0.44	2.213	-0.250	-0.62	LA
H9QYAV		2.201	-0.258	-0.59	2.386	-0.077	-0.19	LH
JBN4XZ		2.105	-0.354	-0.82	2.074	-0.389	-0.97	LA
JTTBC3		2.134	-0.325	-0.75	2.242	-0.221	-0.55	XX
JW8482		2.468	0.009	0.02	2.402	-0.061	-0.15	LE
KG9J2X		2.944	0.485	1.12	2.940	0.477	1.19	XX
KGURGT		2.409	-0.050	-0.11	2.488	0.025	0.06	LW
KKTBDZ		2.905	0.446	1.03	2.901	0.438	1.09	LA
KQJKMX		3.230	0.771	1.78	3.220	0.757	1.88	TH
L9YAFP	X	2.601	0.142	0.33	2.965	0.502	1.25	IF
LCU4DQ		2.560	0.101	0.23	2.555	0.093	0.23	TB
M2B9BW		2.831	0.372	0.86	2.745	0.282	0.70	IM
PTRP43	*	1.281	-1.178	-2.72	1.423	-1.039	-2.58	IF
QGCY2Q		2.946	0.487	1.12	2.990	0.528	1.31	TB
R9GCPK		2.591	0.132	0.31	2.462	-0.001	0.00	TB
RKRQQY		2.794	0.335	0.77	2.787	0.324	0.81	DM
RQ9L7T		2.766	0.307	0.71	2.729	0.266	0.66	XX
UAYCJX	*	1.213	-1.246	-2.87	1.219	-1.244	-3.09	IM
UQ7BNV		2.536	0.077	0.18	2.495	0.032	0.08	LH
VGEBQH		2.332	-0.127	-0.29	2.345	-0.118	-0.29	LA
WL2PNN		2.274	-0.185	-0.43	2.269	-0.194	-0.48	LE

Paper & Paperboard Interlaboratory Testing Program

Analysis 332

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample SE79 Lab Mean	Sample SE79 Diff from Grand Mean	Sample SE79 CPV	Sample SE80 Lab Mean	Sample SE80 Diff from Grand Mean	Sample SE80 CPV	Instr Code
WWJ7GU		2.598	0.139	0.32	2.540	0.077	0.19	ID
YCQ3TT		2.033	-0.426	-0.98	2.229	-0.234	-0.58	LW
YX9A6L		2.751	0.292	0.67	2.589	0.126	0.31	IM
Z3HMLK		2.773	0.314	0.73	2.764	0.301	0.75	XX
Z6P6KF		2.405	-0.054	-0.12	2.411	-0.052	-0.13	LW
Z8928L		2.700	0.241	0.56	2.694	0.231	0.57	TO
ZFJHHR	X	2.408	-0.050	-0.12	1.836	-0.627	-1.56	IN
ZHVXCT	*	1.674	-0.785	-1.81	1.953	-0.510	-1.27	IN
ZTFALK		2.845	0.386	0.89	2.676	0.213	0.53	TH
ZUNL4L		2.813	0.354	0.82	2.685	0.222	0.55	TB

Summary Statistics	Sample SE79	Sample SE80
Grand Means	2.46 Percent	2.46 Percent
Stnd Dev Btwn Labs	0.43 Percent	0.40 Percent

Statistics based on 48 of 50 reporting participants.

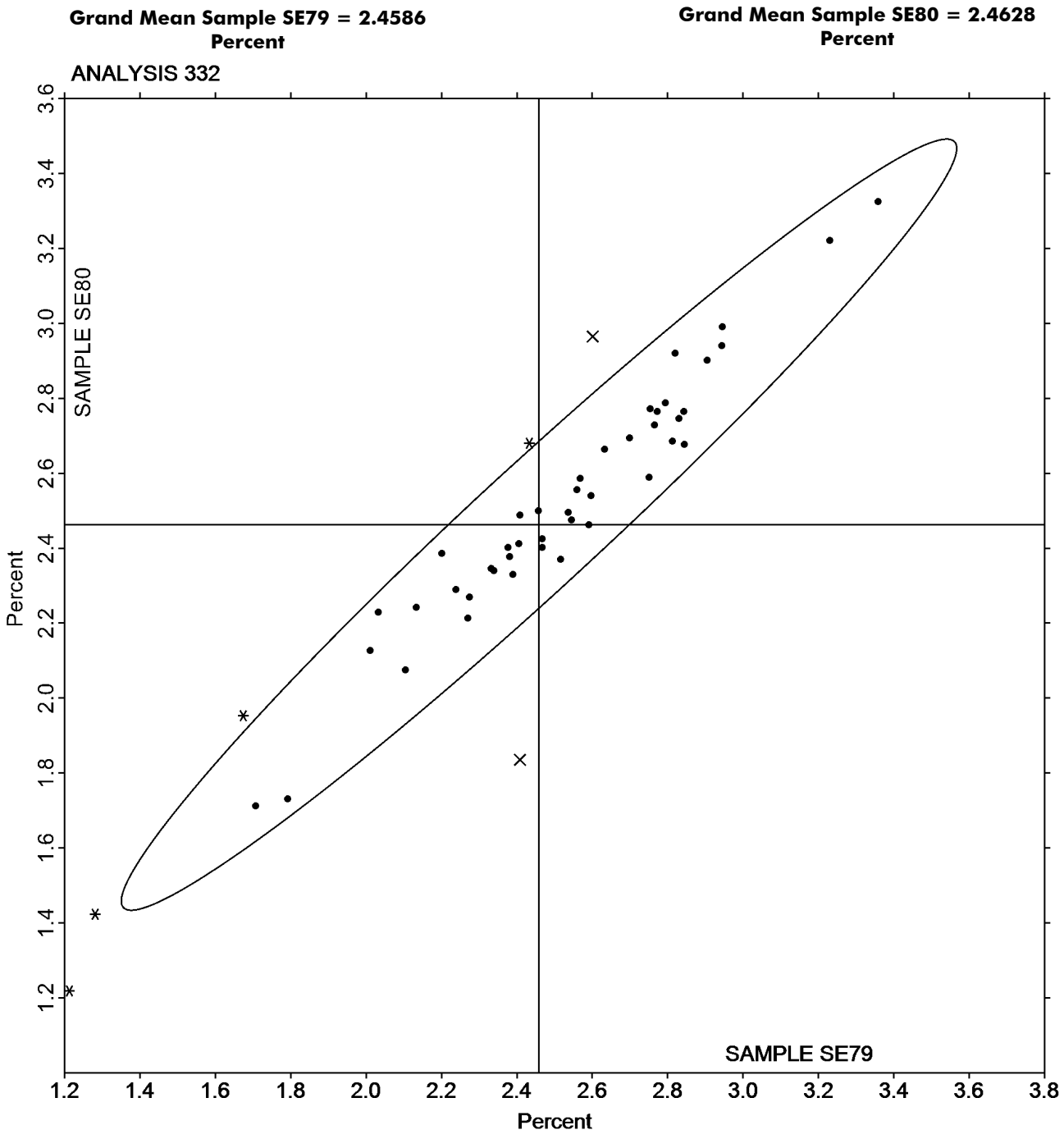
Comments on Assigned Data Flags for Test #332

L9YAFP (X) - Inconsistent in testing between samples.

ZFJHHR (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 Series
IF	Instron 3340 Series	IM	Instron 5500 Series
IN	Instron 3360 Series	IR	Instron 5900 Series
LA	L & W Autoline 300	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LW	L & W Tensile Tester SE062
LX	L & W (model not specified)	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TK	Thwing-Albert Model 37-4
TO	Thwing-Albert QC-1000	TP	TMI Monitor/Tensile 100 (84-21-01)
TT	Tinius Olsen Model MHT	XX	Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

Analysis 334

Folding Endurance (MIT) - Double Folds

TAPPI Official Test Method T511

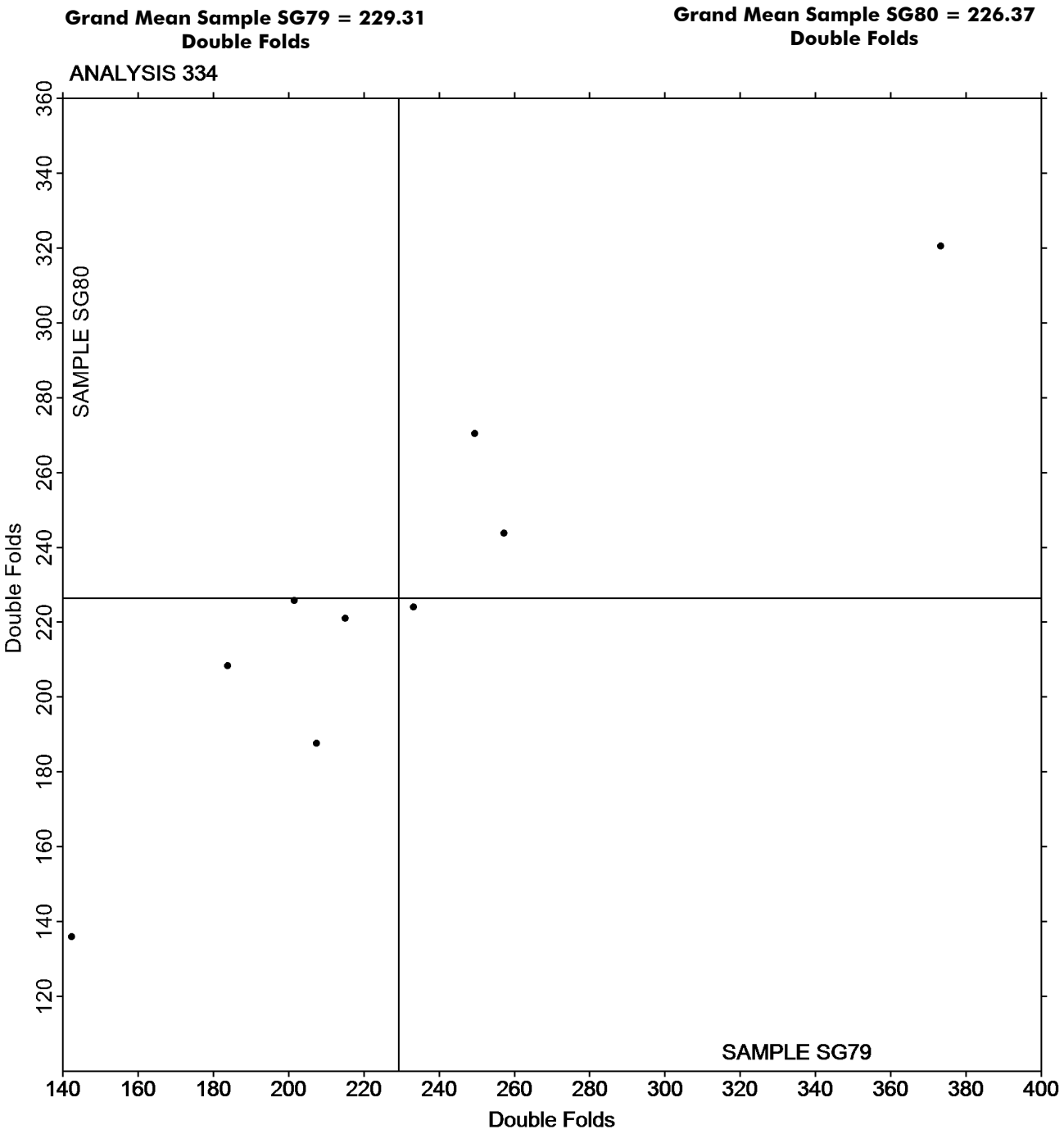
WebCode	Data Flag	Sample SG79 Lab Mean	Sample SG79 Diff from Grand Mean	Sample SG79 CPV	Sample SG80 Lab Mean	Sample SG80 Diff from Grand Mean	Sample SG80 CPV	Instr Code
2GXCUL		215.1	-14.2	-0.22	221.0	-5.4	-0.10	MT
7FPLXD		257.3	28.0	0.44	243.7	17.3	0.34	MT
DWQ2X7		142.4	-86.9	-1.35	135.9	-90.5	-1.76	MT
KGURGT		201.6	-27.7	-0.43	225.8	-0.6	-0.01	MT
KQJKMX		183.9	-45.4	-0.71	208.4	-18.0	-0.35	MT
LMF8LQ		233.2	3.9	0.06	224.0	-2.4	-0.05	MT
R9GCPK		207.5	-21.8	-0.34	187.6	-38.8	-0.75	MT
Z3HMLK		373.3	144.0	2.24	320.5	94.1	1.83	MT
Z8TZ4J		249.5	20.2	0.31	270.4	44.0	0.86	MT

Summary Statistics	Sample SG79	Sample SG80
Grand Means	229.31 Double Folds	226.37 Double Folds
Stnd Dev Btwn Labs	64.23 Double Folds	51.41 Double Folds

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

MT MIT - Tinius Olsen



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 336

Bending Resistance, Gurley Type

TAPPI Official Test Method T543

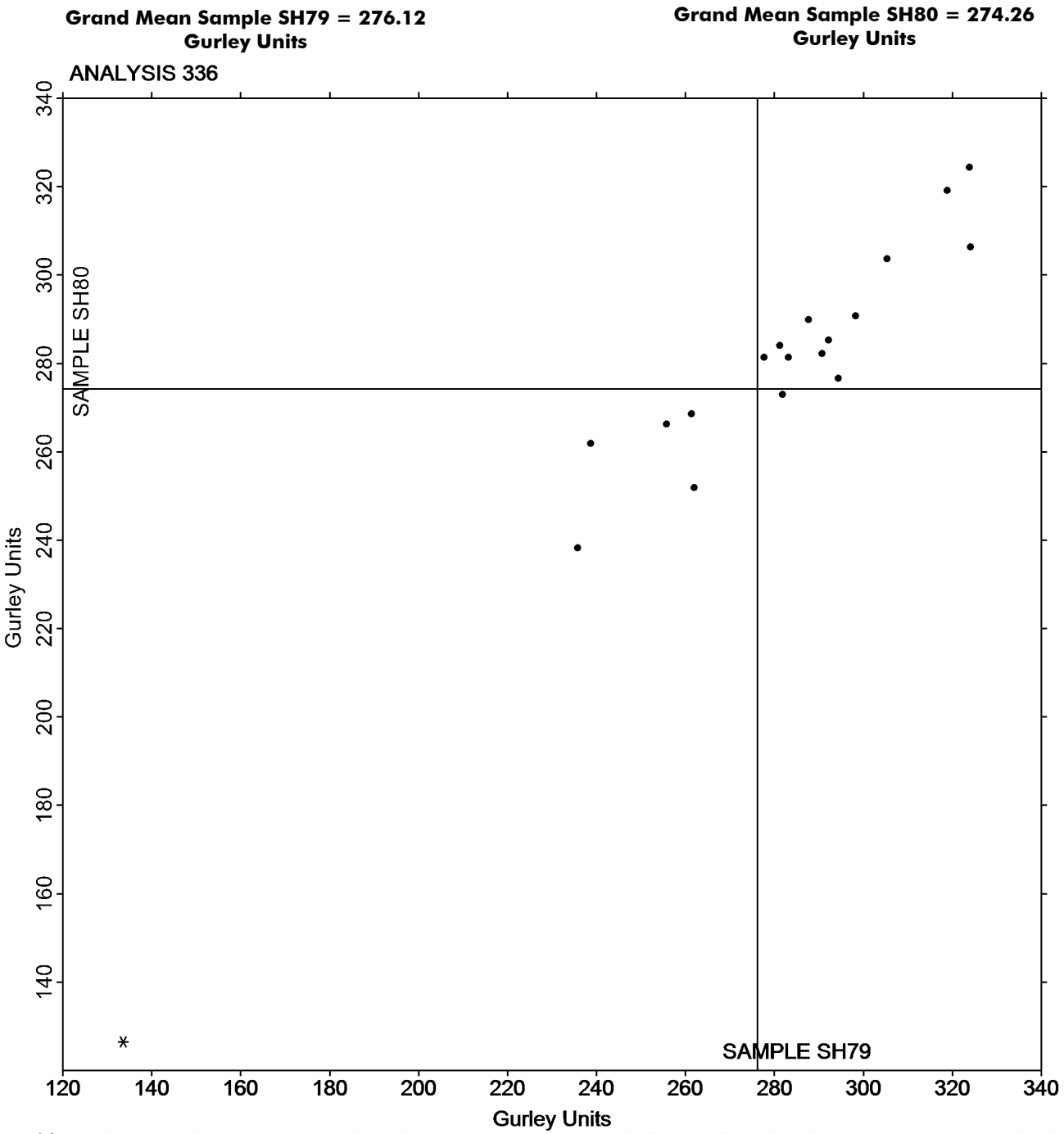
WebCode	Data Flag	Sample SH79 Lab Mean	Sample SH79 Diff from Grand Mean	Sample SH79 CPV	Sample SH80 Lab Mean	Sample SH80 Diff from Grand Mean	Sample SH80 CPV
2FKFPG		281.2	5.1	0.12	284.0	9.7	0.23
3CHW7F		283.1	7.0	0.16	281.4	7.1	0.17
4ZJLBD		277.7	1.6	0.04	281.3	7.1	0.17
7FPLXD	X	72.4	-203.8	-4.76	71.3	-203.0	-4.88
9VF9GB		305.3	29.2	0.68	303.6	29.3	0.70
9YEJCB		298.3	22.1	0.52	290.7	16.4	0.39
A39Z2A		238.7	-37.4	-0.87	261.8	-12.5	-0.30
BU96DB		281.8	5.7	0.13	272.9	-1.3	-0.03
CHANZE		262.0	-14.2	-0.33	251.9	-22.4	-0.54
DUHLQZ		318.9	42.7	1.00	319.1	44.8	1.08
DWQ2X7		323.8	47.7	1.11	324.3	50.0	1.20
GA8V3V		294.4	18.2	0.43	276.6	2.4	0.06
L9YAFP		324.1	48.0	1.12	306.4	32.1	0.77
LCU4DQ		235.8	-40.4	-0.94	238.2	-36.1	-0.87
NF8RLT		290.7	14.6	0.34	282.3	8.0	0.19
R9GCPK		255.8	-20.3	-0.47	266.3	-8.0	-0.19
TH23PH	*	133.6	-142.5	-3.33	126.5	-147.8	-3.55
TNNPKN		261.4	-14.8	-0.34	268.6	-5.7	-0.14
ULRWZN		287.7	11.6	0.27	289.9	15.6	0.38
Z3HMLK		292.2	16.0	0.37	285.3	11.0	0.26

Summary Statistics	Sample SH79	Sample SH80
Grand Means	276.12 Gurley Units	274.26 Gurley Units
Stnd Dev Btwn Labs	42.80 Gurley Units	41.64 Gurley Units

Statistics based on 19 of 20 reporting participants.

Comments on Assigned Data Flags for Test #336

7FPLXD (X) - Data for both samples are low. Possible Systematic Error.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 338

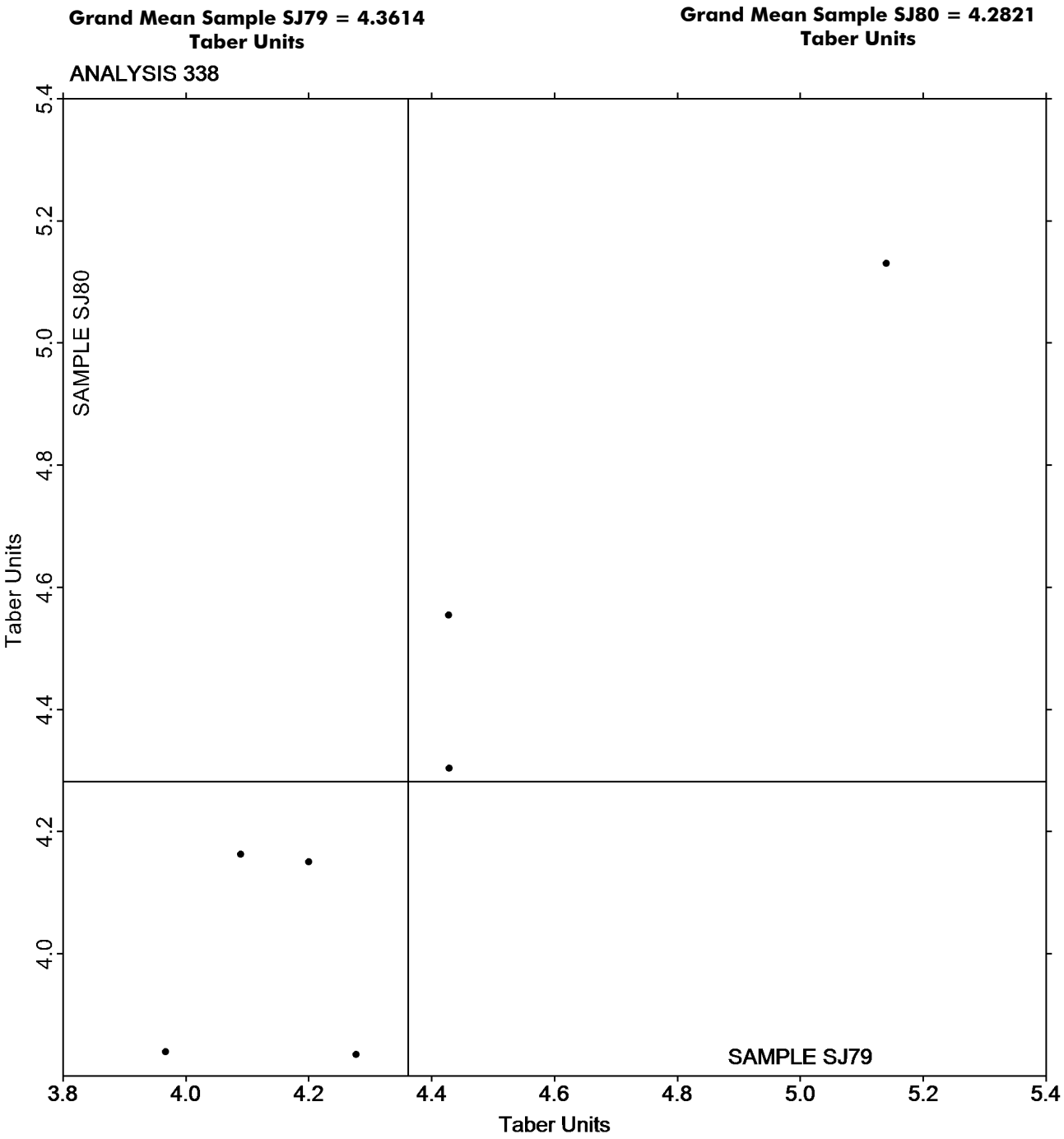
Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

WebCode	Data Flag	Sample SJ79 Lab Mean	Sample SJ79 Diff from Grand Mean	Sample SJ79 CPV	Sample SJ80 Lab Mean	Sample SJ80 Diff from Grand Mean	Sample SJ80 CPV
3CHW7F		4.089	-0.272	-0.71	4.163	-0.120	-0.27
7FPLXD		4.429	0.068	0.18	4.304	0.022	0.05
7TA9ZK		5.140	0.779	2.04	5.130	0.848	1.88
9YEJCB		4.200	-0.161	-0.42	4.150	-0.132	-0.29
GTJHN3		4.277	-0.084	-0.22	3.835	-0.447	-0.99
L9YAFP		4.428	0.067	0.17	4.554	0.272	0.60
UHEV3X		3.967	-0.394	-1.03	3.839	-0.443	-0.98

Summary Statistics	Sample SJ79	Sample SJ80
Grand Means	4.36 Taber Units	4.28 Taber Units
Stnd Dev Btwn Labs	0.38 Taber Units	0.45 Taber Units

Statistics based on 7 of 7 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 339

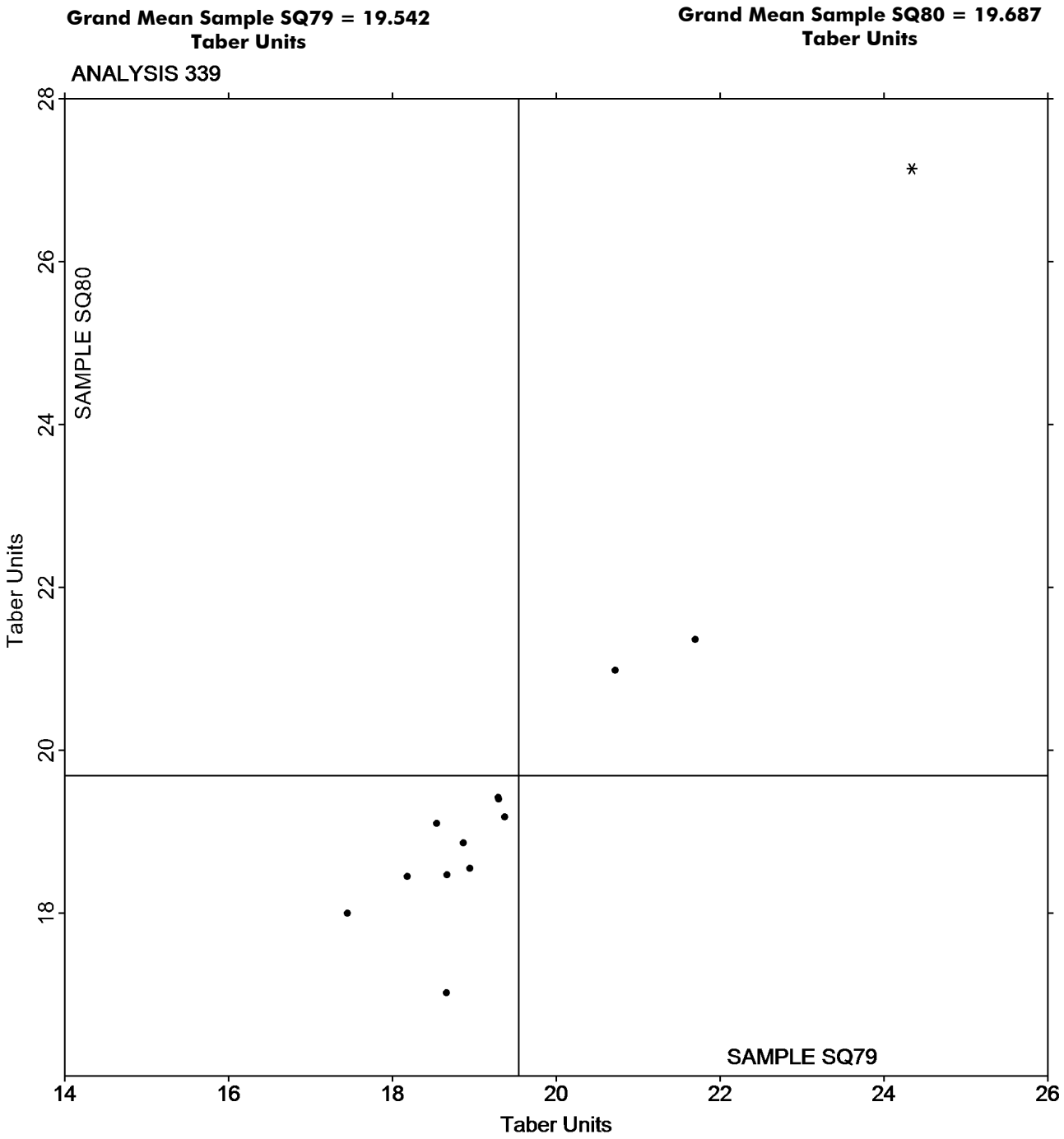
Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

WebCode	Data Flag	Sample SQ79 Lab Mean	Sample SQ79 Diff from Grand Mean	Sample SQ79 CPV	Sample SQ80 Lab Mean	Sample SQ80 Diff from Grand Mean	Sample SQ80 CPV
2B7Z2B		21.70	2.16	1.20	21.36	1.67	0.67
3YT6EJ		18.87	-0.67	-0.37	18.86	-0.83	-0.33
4G8WXF		19.30	-0.24	-0.13	19.40	-0.29	-0.11
4N6PPL		18.67	-0.87	-0.49	18.47	-1.22	-0.48
77Y4J6		18.54	-1.00	-0.56	19.10	-0.59	-0.23
8ERV64		20.72	1.18	0.66	20.98	1.29	0.51
F2X7NW		18.95	-0.59	-0.33	18.55	-1.14	-0.45
GA8V3V		19.29	-0.25	-0.14	19.42	-0.27	-0.11
KGURGT		19.37	-0.17	-0.10	19.18	-0.51	-0.20
QGCY2Q		18.19	-1.36	-0.75	18.45	-1.24	-0.49
YX9A6L		18.66	-0.88	-0.49	17.02	-2.67	-1.06
Z6P6KF		17.45	-2.09	-1.16	18.00	-1.69	-0.67
ZUNL4L	*	24.34	4.80	2.67	27.14	7.45	2.97

Summary Statistics	Sample SQ79	Sample SQ80
Grand Means	19.54 Taber Units	19.69 Taber Units
Stnd Dev Btwn Labs	1.80 Taber Units	2.51 Taber Units

Statistics based on 13 of 13 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 340

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

TAPPI Official Test Method T489

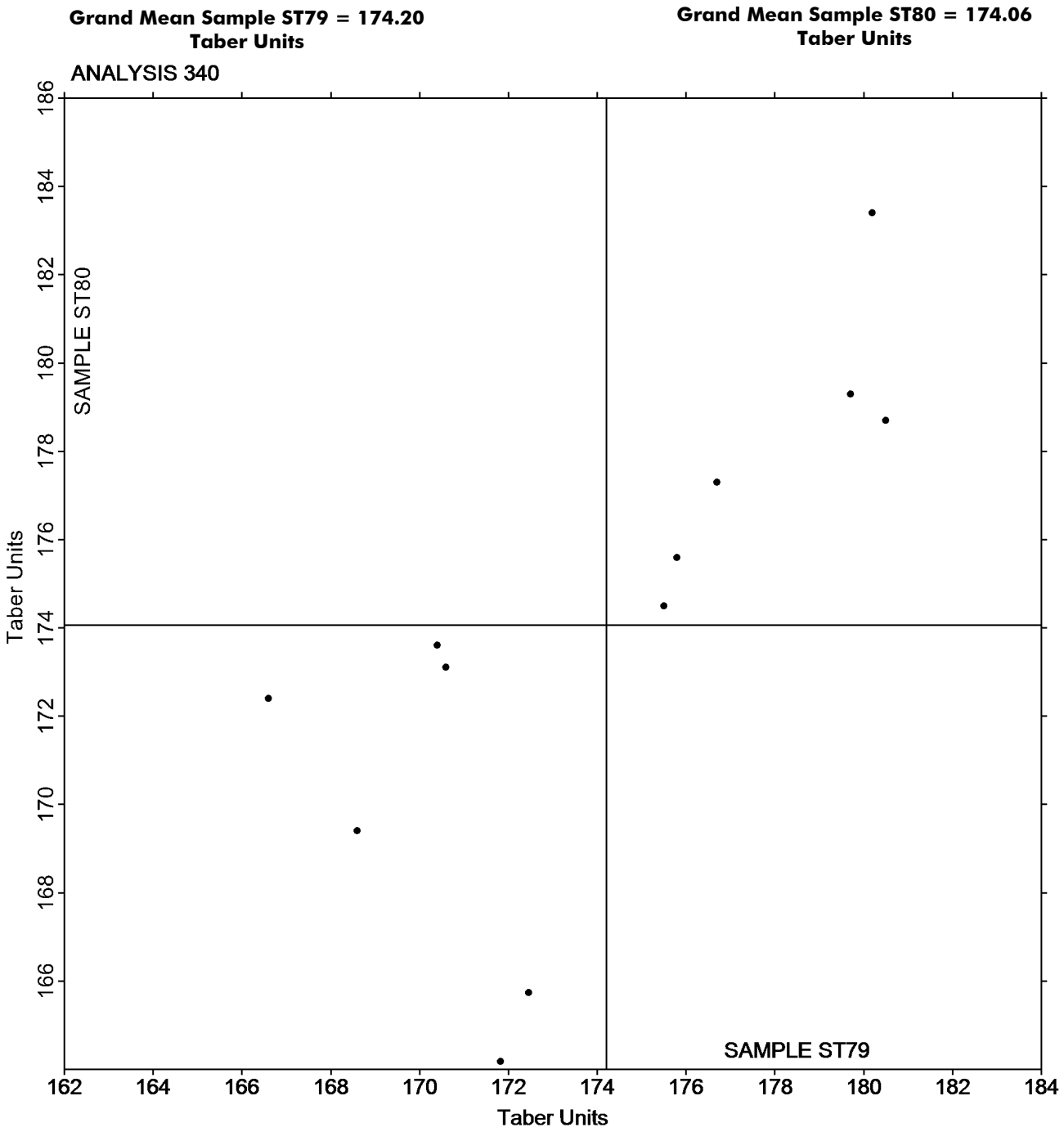
WebCode	Data Flag	Sample ST79 Lab Mean	Sample ST79 Diff from Grand Mean	Sample ST79 CPV	Sample ST80 Lab Mean	Sample ST80 Diff from Grand Mean	Sample ST80 CPV
6UQ34F		170.4	-3.8	-0.84	173.6	-0.5	-0.09
8TREZA	X	210.6	36.4	8.07	206.5	32.4	6.06
DNFGVA		176.7	2.5	0.55	177.3	3.2	0.60
DU38G6		171.8	-2.4	-0.53	164.2	-9.9	-1.85
G8ZK47		180.5	6.3	1.40	178.7	4.6	0.87
GA8V3V		175.8	1.6	0.35	175.6	1.5	0.29
JPPFTY		168.6	-5.6	-1.24	169.4	-4.7	-0.87
KGURGT		175.8	1.6	0.35	175.6	1.5	0.29
KQJKMX		170.6	-3.6	-0.80	173.1	-1.0	-0.18
NZTEAM		175.5	1.3	0.29	174.5	0.4	0.08
R3P7QP		180.2	6.0	1.33	183.4	9.3	1.74
X2W7DL		166.6	-7.6	-1.69	172.4	-1.7	-0.31
X74WGR		179.7	5.5	1.22	179.3	5.2	0.98
Z3HMLK		172.5	-1.7	-0.39	165.7	-8.3	-1.56

Summary Statistics	Sample ST79	Sample ST80
Grand Means	174.20 Taber Units	174.06 Taber Units
Stnd Dev Btwn Labs	4.51 Taber Units	5.36 Taber Units

Statistics based on 13 of 14 reporting participants.

Comments on Assigned Data Flags for Test #340

8TREZA (X) - Extreme Data.



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

Paper & Paperboard Interlaboratory Testing Program

Report #3061S, May 2020

Analysis 343
Z-Direction Tensile
TAPPI Official Test Method T541

WebCode	Data Flag	Sample SM79 Lab Mean	Sample SM79 Diff from Grand Mean	Sample SM79 CPV	Sample SM80 Lab Mean	Sample SM80 Diff from Grand Mean	Sample SM80 CPV	Instr Code
2B7Z2B		75.92	3.02	0.47	72.68	0.36	0.06	TA
2WPAVG		65.60	-7.30	-1.12	65.80	-6.52	-1.13	TA
77Y4J6		69.40	-3.50	-0.54	69.79	-2.53	-0.44	LW
7FPLXD		69.20	-3.70	-0.57	67.72	-4.60	-0.80	CD
8ERV64		69.90	-3.00	-0.46	70.46	-1.86	-0.32	TA
DU38G6	X	8,658.16	8,585.26	1,322.79	43.48	-28.84	-5.01	LW
FFBMP8		79.22	6.32	0.97	79.96	7.64	1.33	DX
KGURGT		69.26	-3.64	-0.56	68.40	-3.92	-0.68	LW
KQJKMX		79.16	6.26	0.96	77.70	5.38	0.93	LW
L9YAFP		84.48	11.58	1.78	82.16	9.84	1.71	TL
Q4NWJY		62.86	-10.04	-1.55	63.98	-8.34	-1.45	LW
T3K8AL		70.96	-1.94	-0.30	72.22	-0.10	-0.02	DX
ZUNL4L		78.82	5.92	0.91	77.02	4.70	0.82	TA

Summary Statistics	Sample SM79	Sample SM80
Grand Means	72.90 psi	72.32 psi
Stnd Dev Btwn Labs	6.49 psi	5.76 psi

Statistics based on 12 of 13 reporting participants.

Comments on Assigned Data Flags for Test #343

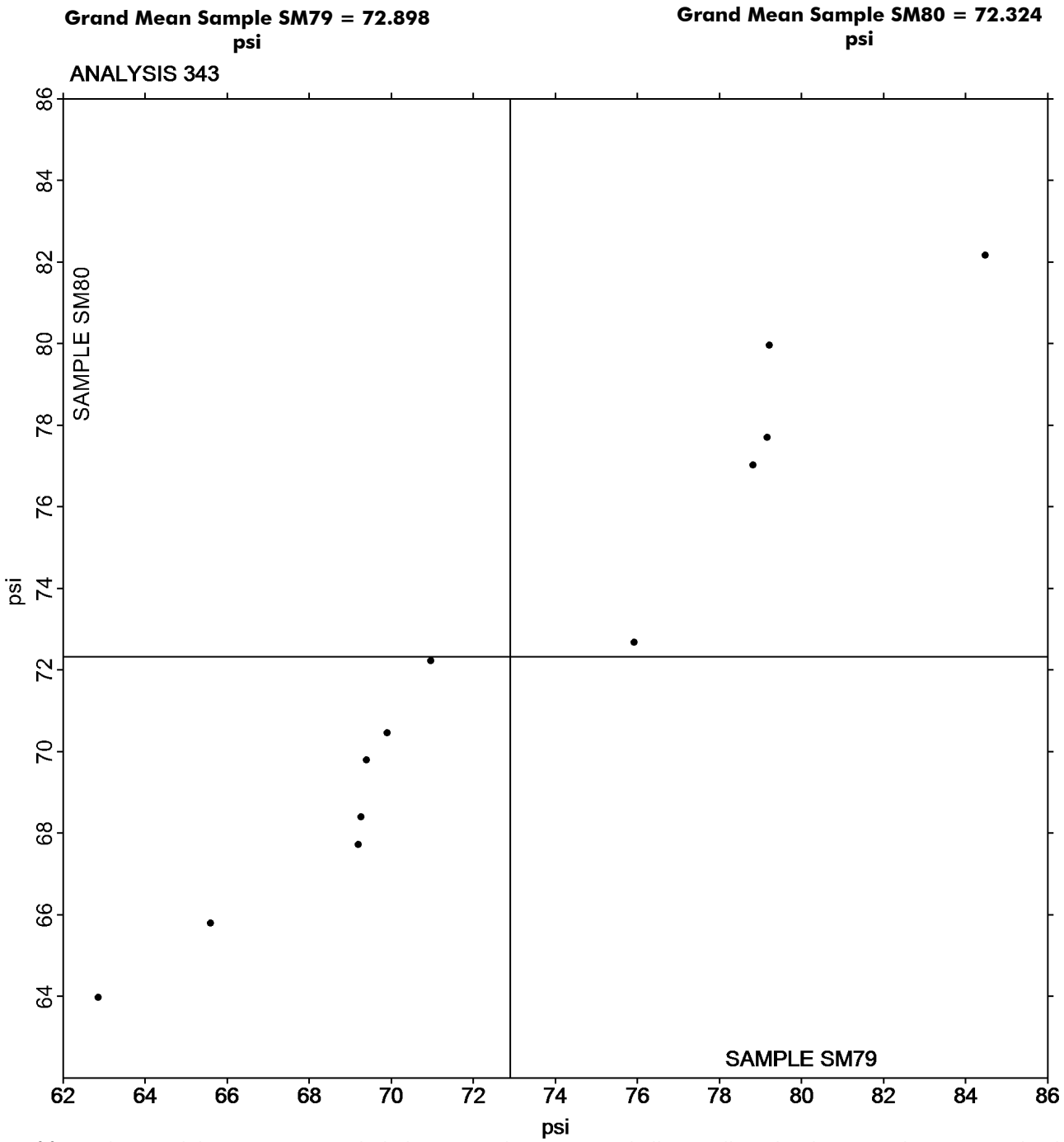
DU38G6 (X) - Extreme Data.

Analysis Notes:

DU38G6 - Typo in Sample SM79, however, without typo data is then flagged for low data for both Samples.

Key to Instrument Codes Reported by Participants

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



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

Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample SZ79 Lab Mean	Sample SZ79 Diff from Grand Mean	Sample SZ79 CPV	Sample SZ80 Lab Mean	Sample SZ80 Diff from Grand Mean	Sample SZ80 CPV	Instr Code
3Q3EYJ		56.42	-6.39	-0.88	55.76	-7.98	-1.07	LW
6UQ34F		49.04	-13.77	-1.89	50.48	-13.26	-1.78	TA
7PUTCD		64.60	1.79	0.25	68.24	4.50	0.60	DP
DNFGVA		64.54	1.73	0.24	64.38	0.64	0.09	CA
G8ZK47		73.80	10.99	1.51	72.60	8.86	1.19	LW
GA8V3V		62.64	-0.17	-0.02	64.92	1.18	0.16	CA
GF6PU2		60.63	-2.18	-0.30	62.91	-0.84	-0.11	TA
HCQA7V		62.14	-0.67	-0.09	62.94	-0.80	-0.11	DP
JPPFTY		78.16	15.35	2.11	78.98	15.24	2.05	TA
KGURGT		52.36	-10.45	-1.44	52.62	-11.12	-1.50	LW
M2B9BW		54.40	-8.41	-1.16	55.40	-8.34	-1.12	CA
MFR4QT		71.70	8.89	1.22	71.04	7.30	0.98	LW
NZTEAM		62.96	0.15	0.02	63.54	-0.20	-0.03	CD
P8R92U		69.73	6.92	0.95	70.05	6.31	0.85	CH
PRHCPL		56.00	-6.81	-0.94	54.00	-9.74	-1.31	CA
QGCY2Q		63.62	0.81	0.11	71.86	8.12	1.09	DP
R3P7QP		69.60	6.79	0.93	65.20	1.46	0.20	CA
WWJ7GU		61.74	-1.07	-0.15	59.02	-4.72	-0.64	XX
X2W7DL		60.91	-1.90	-0.26	65.65	1.91	0.26	CH
Z3HMLK		61.20	-1.61	-0.22	65.28	1.54	0.21	CA

Summary Statistics	Sample SZ79	Sample SZ80
Grand Means	62.81 psi	63.74 psi
Stnd Dev Btwn Labs	7.28 psi	7.44 psi

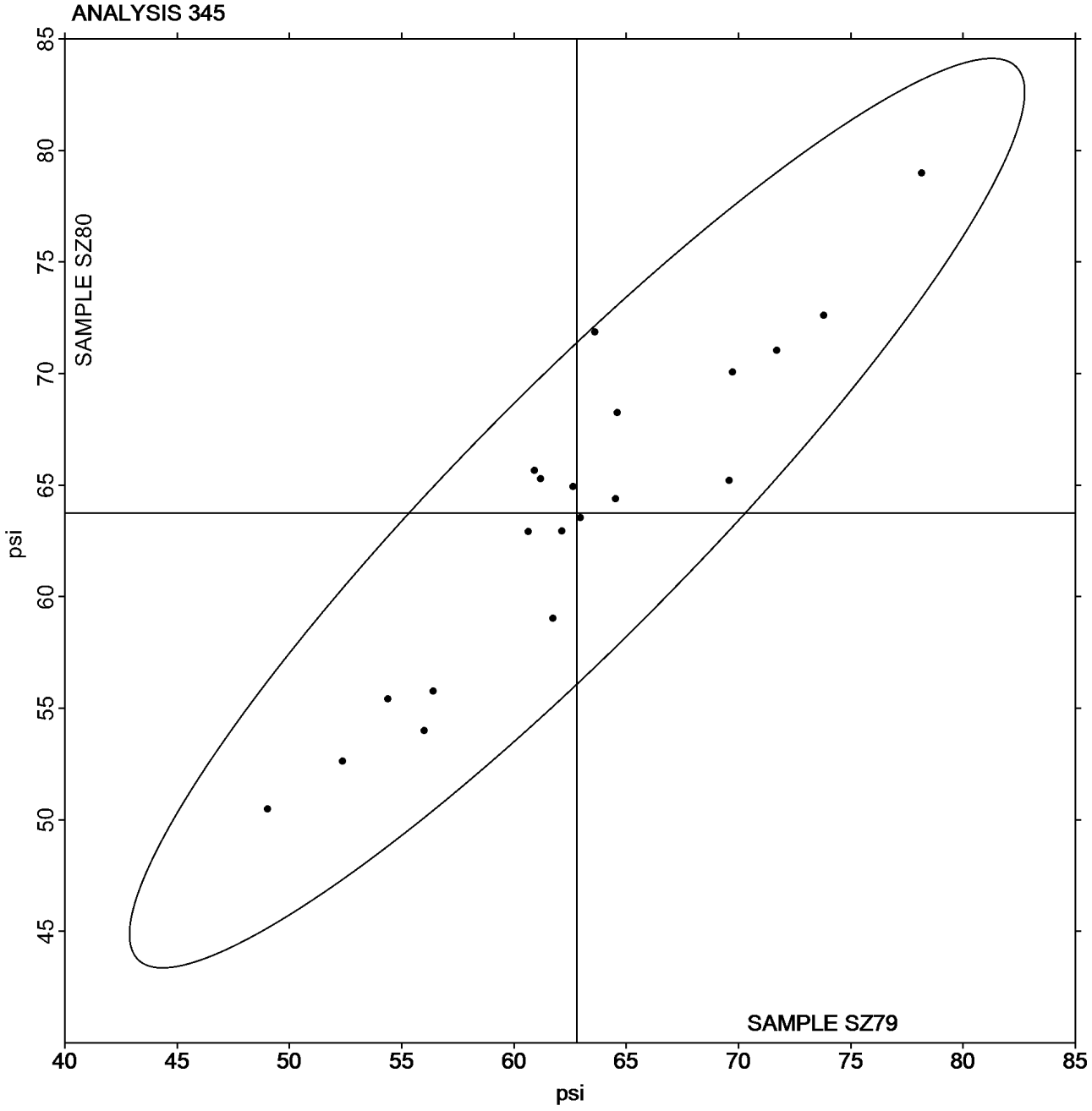
Statistics based on 20 of 20 reporting participants.

Key to Instrument Codes Reported by Participants

CA	CSI CS-163	CD	CSI CS-163D
CH	Chatillon Ametek	DP	Dek-Tron XP Series
LW	L & W ZD Tensile Tester	TA	Thwing-Albert Tensile Tester
XX	Instrument make/model not specified by lab		

Grand Mean Sample SZ79 = 62.810 psi

Grand Mean Sample SZ80 = 63.744 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 348

Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SN79 Lab Mean	Sample SN79 Diff from Grand Mean	Sample SN79 CPV	Sample SN80 Lab Mean	Sample SN80 Diff from Grand Mean	Sample SN80 CPV	Instr Code
2B7Z2B		164.4	-6.9	-0.35	155.0	-19.8	-0.80	HY
2FKFPG		217.6	46.3	2.32	222.6	47.8	1.93	HZ
6FQY6F		177.0	5.7	0.28	171.8	-3.0	-0.12	HY
6RHQLD		166.8	-4.5	-0.22	169.0	-5.8	-0.23	HY
8ERV64		196.4	25.1	1.26	199.6	24.8	1.00	HY
8H7BRB	*	185.8	14.5	0.72	223.1	48.3	1.95	HY
9YEJCB		154.1	-17.2	-0.86	150.4	-24.4	-0.98	KR
BU96DB		171.4	0.1	0.00	184.2	9.4	0.38	HY
DWQ2X7		173.4	2.1	0.10	184.0	9.2	0.37	HY
E9E6YB		174.6	3.3	0.16	166.0	-8.8	-0.35	HZ
KGURGT		167.4	-3.9	-0.20	167.8	-7.0	-0.28	HY
KQJKMX		136.4	-34.9	-1.75	140.8	-34.0	-1.37	HZ
LCU4DQ		168.2	-3.1	-0.16	167.8	-7.0	-0.28	HY
NF8RLT		151.8	-19.5	-0.98	156.2	-18.6	-0.75	HY
Z3HMLK		146.2	-25.1	-1.26	146.4	-28.4	-1.15	HZ
ZUNL4L		189.6	18.3	0.92	192.0	17.2	0.69	HZ

Summary Statistics	Sample SN79	Sample SN80
Grand Means	171.32 1000th ft-lbs	174.80 1000th ft-lbs
Stnd Dev Btwn Labs	19.97 1000th ft-lbs	24.79 1000th ft-lbs

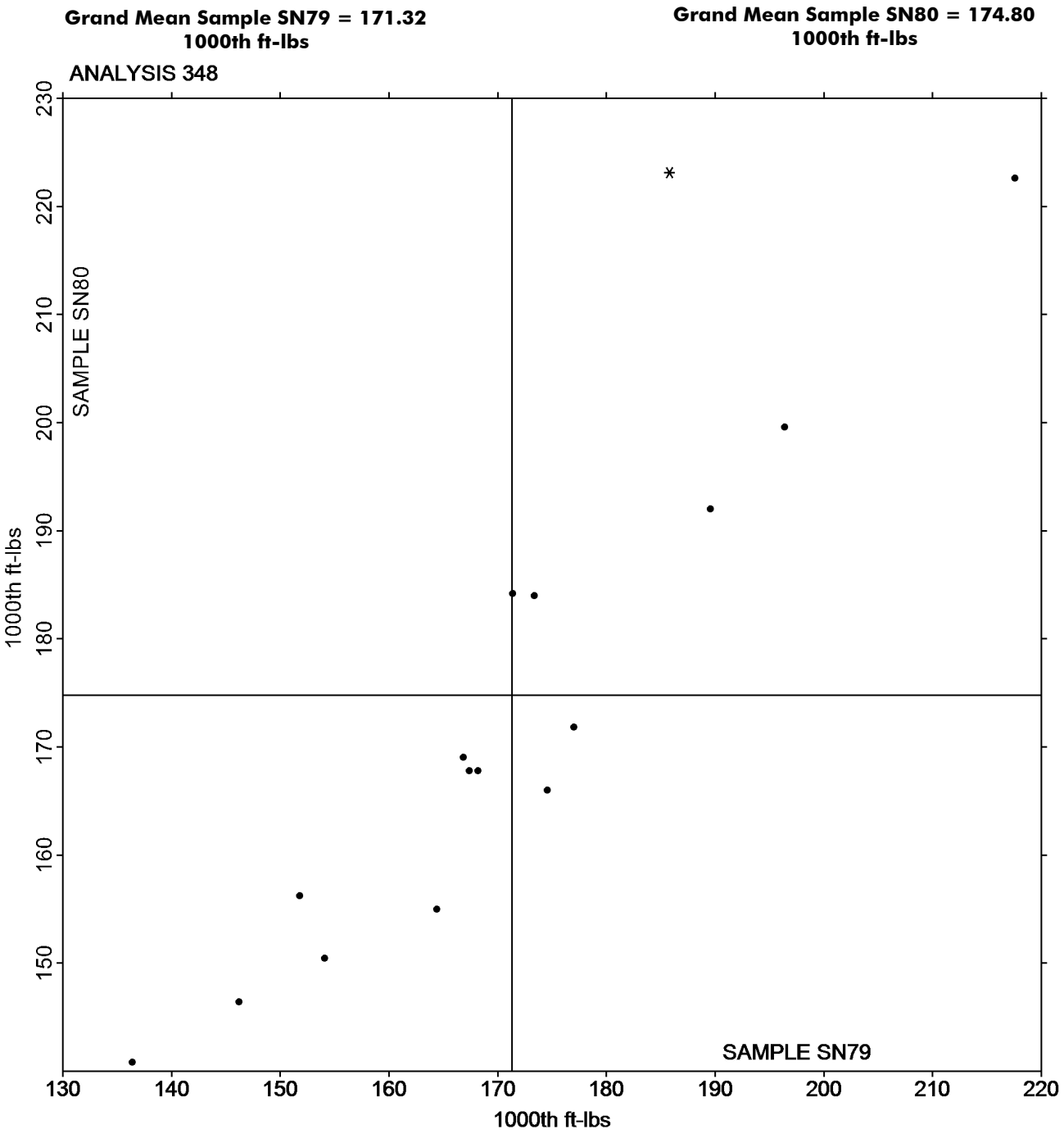
Statistics based on 16 of 16 reporting participants.

Key to Instrument Codes Reported by Participants

HY Huygen Digitized Scott Internal Bond Tester

HZ Huygen Internal Bond Tester with AccuPress

KR Kumagai Riki Kogyo Internal Bond Tester



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 349

Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SP79 Lab Mean	Sample SP79 Diff from Grand Mean	Sample SP79 CPV	Sample SP80 Lab Mean	Sample SP80 Diff from Grand Mean	Sample SP80 CPV	Instr Code
2Z928J		190.2	20.8	0.40	203.6	33.6	0.69	SC
3CHW7F	X	0.1	-169.3	-3.27	0.2	-169.8	-3.50	TM
946ULA		174.8	5.4	0.10	175.6	5.6	0.12	XX
AQENMB		121.6	-47.8	-0.92	127.4	-42.5	-0.88	TM
DU38G6		129.7	-39.7	-0.77	129.3	-40.6	-0.84	TM
GF6PU2		126.3	-43.1	-0.83	123.7	-46.3	-0.95	SC
KKTBDZ		287.1	117.7	2.27	288.2	118.2	2.44	SC
P8R92U		123.2	-46.2	-0.89	133.4	-36.6	-0.75	TM
UHEV3X		163.6	-5.8	-0.11	174.4	4.4	0.09	SC
UQ7BNV		143.7	-25.7	-0.50	144.9	-25.0	-0.52	TM
WL2PNN		232.0	62.6	1.21	198.0	28.0	0.58	SC
Z6P6KF		171.3	1.9	0.04	171.0	1.0	0.02	XX

Summary Statistics	Sample SP79	Sample SP80
Grand Means	169.41 1000th ft-lbs	169.96 1000th ft-lbs
Stnd Dev Btwn Labs	51.74 1000th ft-lbs	48.49 1000th ft-lbs

Statistics based on 11 of 12 reporting participants.

Comments on Assigned Data Flags for Test #349

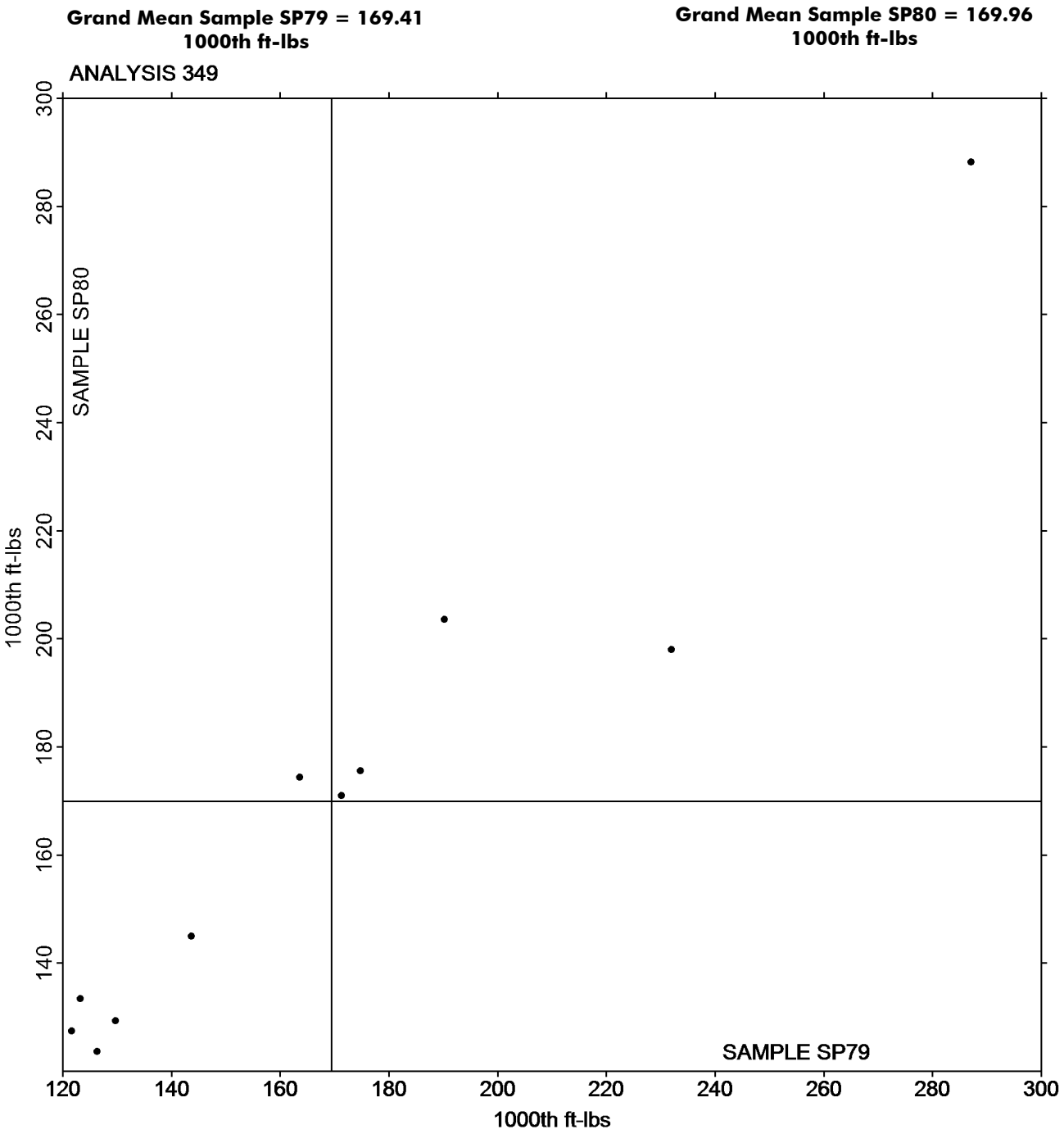
3CHW7F (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

SC Scott Internal Bond Tester (Manual)

TM TMI Monitor/Internal Bond Tester

XX Instrument make/model not specified by lab



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

-End of Report-

