Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #4411 - March 2026

Analysis	Analysis Name
3101	Thickness (Caliper), Printing papers
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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 industries including color, rubber, plastics, fasteners and metals, containerboard, paper, agriculture, hemp, 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 100 countries, currently participate in the 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 3101

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample CP51 Lab Mean	Sample CP51 Diff from Grand Mean	Sample CP51 CPV	Sample CP52 Lab Mean	Sample CP52 Diff from Grand Mean	Sample CP52 CPV
32FTQW		4.015	0.018	0.21	3.942	-0.048	-0.57
3DXDAT		4.016	0.019	0.22	4.009	0.019	0.22
3JK3U4_AL		3.928	-0.069	-0.78	3.917	-0.073	-0.87
4ENXGP		4.074	0.077	0.88	4.065	0.074	0.88
4W46PZ		3.895	-0.102	-1.16	3.889	-0.101	-1.20
6TKCEX		3.973	-0.023	-0.27	3.983	-0.007	-0.09
797CKN		3.953	-0.044	-0.50	3.892	-0.098	-1.17
7VGFJP		3.982	-0.015	-0.17	3.976	-0.014	-0.17
8ZAYXT		4.042	0.045	0.52	4.065	0.075	0.88
8ZBW9N		4.125	0.128	1.46	4.096	0.106	1.25
9AVKJG		3.973	-0.024	-0.27	4.005	0.015	0.17
AYPZTU		4.008	0.011	0.13	4.014	0.024	0.28
BZZ68H_AL		4.079	0.082	0.94	4.061	0.071	0.84
C2777L		4.087	0.091	1.04	4.069	0.079	0.93
C2PPDE		4.009	0.012	0.14	4.001	0.011	0.13
CTENRD		3.931	-0.066	-0.75	3.920	-0.070	-0.83
EKRJVV		4.080	0.083	0.95	4.037	0.047	0.55
EW94GD		3.998	0.001	0.01	4.045	0.055	0.65
GKQ4XN		3.983	-0.014	-0.16	4.006	0.015	0.18
HMRQQJ		4.061	0.065	0.74	4.044	0.054	0.63
HY6RMD		4.047	0.051	0.58	4.091	0.100	1.19
J66PB8		3.871	-0.126	-1.44	3.899	-0.091	-1.08
L796UH	*	3.758	-0.239	-2.73	3.752	-0.238	-2.83
LUXU68		4.054	0.057	0.65	4.022	0.032	0.37
RR8G6C		4.045	0.048	0.55	4.051	0.061	0.72
U8VELW		3.951	-0.046	-0.52	3.988	-0.002	-0.03
UFPGN9		4.095	0.098	1.12	4.081	0.091	1.07
UUBWQ8		4.056	0.060	0.68	4.072	0.082	0.97
VAXVVC		4.148	0.151	1.73	4.088	0.098	1.16
VLAYGA		3.983	-0.014	-0.16	3.947	-0.044	-0.52
W7RPTC		3.925	-0.072	-0.82	3.898	-0.093	-1.10
W8N769		3.998	0.001	0.01	4.026	0.036	0.42
WC6B44		3.831	-0.165	-1.89	3.844	-0.146	-1.73
X39VR6		4.027	0.030	0.35	4.001	0.010	0.12
XHZTUZ		3.989	-0.008	-0.09	3.984	-0.006	-0.08
YTGY7U		3.797	-0.200	-2.28	3.798	-0.192	-2.28
ZC9824_AL		4.090	0.093	1.07	4.068	0.078	0.92

Summary Statistics	Sample CP51	Sample CP52
Grand Means	4.00 mils	3.99 mils
Stnd Dev Btwn Labs	0.09 mils	0.08 mils

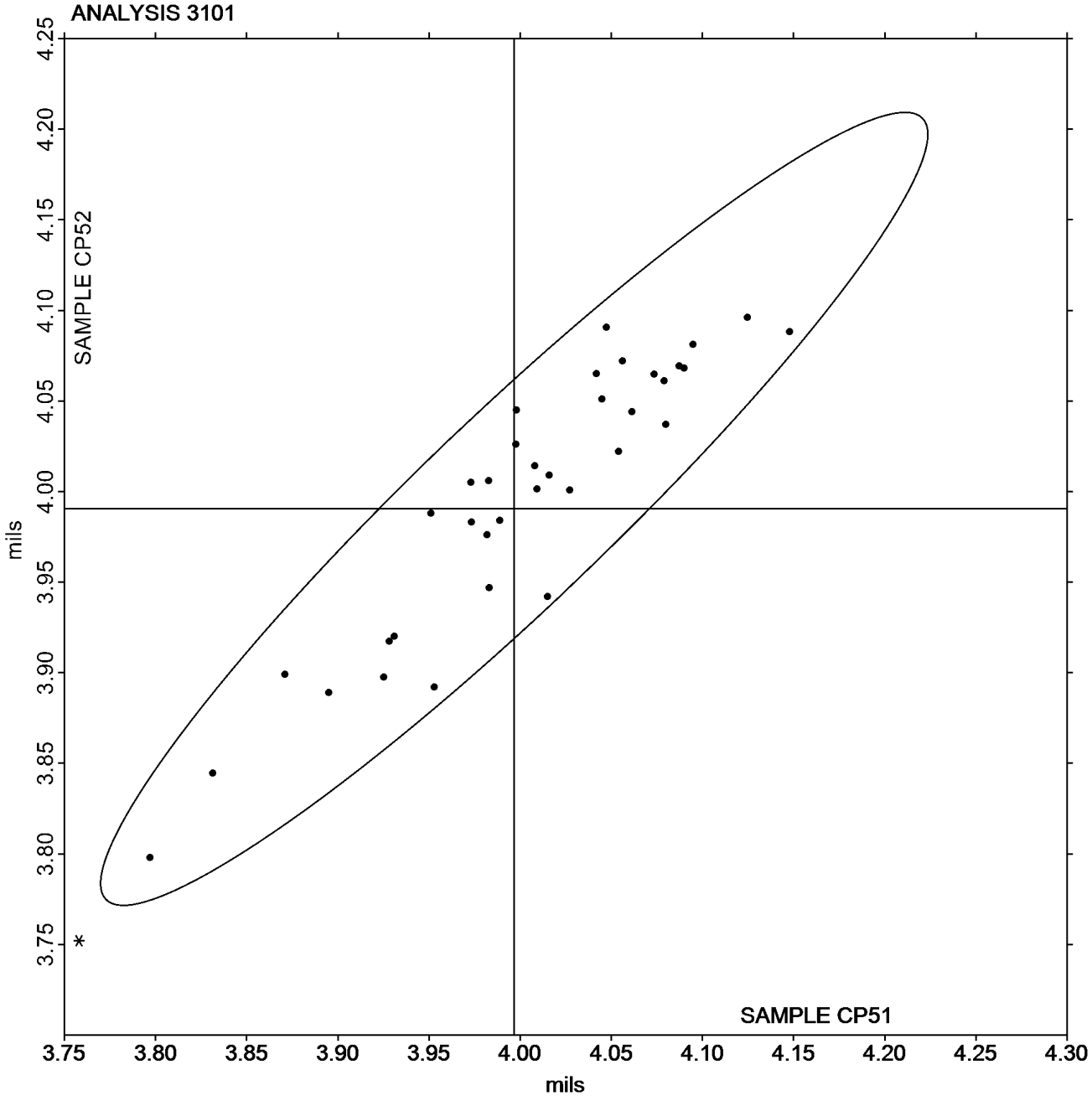
Statistics based on 37 of 37 reporting participants.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LB	L & W Autoline 600	LC	L & W Autoline 400
LW	L & W	MS	Messmer
PP	Technidyne Profile/Plus	TA	Thwing-Albert
TM	TMI		

Grand Mean Sample CP51 = 3.9967 mils

Grand Mean Sample CP52 = 3.9904 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 3111

Bursting Strength - Printing Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample BP51 Lab Mean	Sample BP51 Diff from Grand Mean	Sample BP51 CPV	Sample BP52 Lab Mean	Sample BP52 Diff from Grand Mean	Sample BP52 CPV
32FTQW	*	18.10	-4.33	-2.88	18.15	-4.15	-2.77
3DXDAT		21.03	-1.40	-0.93	19.75	-2.55	-1.70
3H39UT		22.67	0.23	0.16	23.71	1.42	0.95
3JK3U4_AL		24.19	1.76	1.17	23.51	1.22	0.81
4ENXGP		23.51	1.08	0.72	23.09	0.79	0.53
6EYZZ3		24.93	2.50	1.67	25.00	2.70	1.80
6M9NE2		23.51	1.08	0.72	24.04	1.75	1.16
6TKCEX		21.83	-0.60	-0.40	21.62	-0.68	-0.45
8ZBW9N		22.60	0.17	0.11	21.54	-0.76	-0.51
9AVKJG		22.64	0.21	0.14	21.76	-0.54	-0.36
AYPZTU		20.90	-1.53	-1.02	21.60	-0.70	-0.46
C2777L		21.64	-0.79	-0.53	22.21	-0.09	-0.06
C2PPDE		22.69	0.26	0.17	22.36	0.06	0.04
CFM2LH		22.42	-0.01	-0.01	22.40	0.10	0.07
E7V6XM		23.82	1.39	0.92	22.25	-0.04	-0.03
EKRJVV		20.40	-2.03	-1.35	20.69	-1.61	-1.07
EW94GD		22.64	0.21	0.14	23.50	1.20	0.80
LUXU68		22.25	-0.18	-0.12	22.25	-0.05	-0.03
M9U93F		23.20	0.77	0.51	23.00	0.70	0.47
NBVT67		23.50	1.07	0.71	22.48	0.18	0.12
RR8G6C		24.45	2.02	1.34	24.35	2.05	1.37
UUBWQ8		21.61	-0.82	-0.55	21.52	-0.77	-0.52
VAXVVC		21.36	-1.07	-0.71	22.03	-0.26	-0.18
XHZTUZ	X	31.30	8.87	5.90	34.00	11.70	7.81

Summary Statistics	Sample BP51	Sample BP52
Grand Means	22.43 psi	22.30 psi
Stnd Dev Btwn Labs	1.50 psi	1.50 psi

Statistics based on 23 of 24 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Comments on Assigned Data Flags for Test #3111

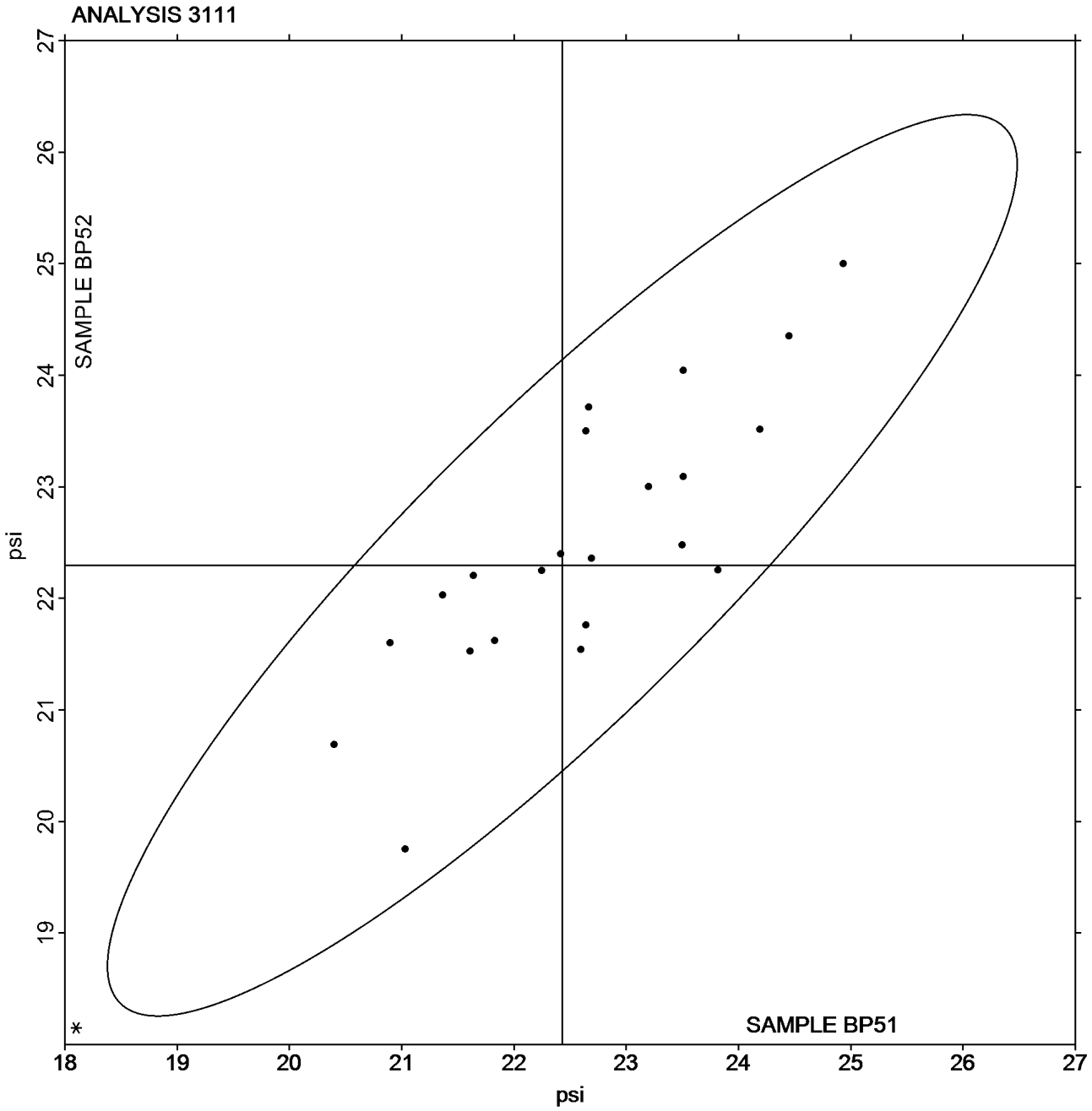
XHZTUZ (X) - Extreme Data.

Analysis Notes:

3JK3U4_AL - One determination removed from the Lab Mean of Sample BP51 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample BP51 = 22.430 psi

Grand Mean Sample BP52 = 22.296 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 3113

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample RP51 Lab Mean	Sample RP51 Diff from Grand Mean	Sample RP51 CPV	Sample RP52 Lab Mean	Sample RP52 Diff from Grand Mean	Sample RP52 CPV
32FTQW		58.18	-0.27	-0.05	62.52	4.08	0.62
3DXDAT		56.80	-1.65	-0.28	57.70	-0.74	-0.11
3H39UT		54.83	-3.62	-0.61	54.13	-4.31	-0.65
3JK3U4_AL	*	50.45	-8.00	-1.36	44.51	-13.93	-2.11
4W46PZ	X	65.93	7.48	1.27	51.04	-7.40	-1.12
6TKCEX		53.27	-5.18	-0.88	53.55	-4.89	-0.74
7VGFJP		53.18	-5.27	-0.89	51.84	-6.60	-1.00
8ZAYXT		52.76	-5.69	-0.96	55.06	-3.38	-0.51
8ZBW9N		56.43	-2.02	-0.34	56.59	-1.84	-0.28
9AVKJG		56.81	-1.64	-0.28	57.84	-0.60	-0.09
AB3ZPM		62.06	3.61	0.61	60.29	1.85	0.28
AYPZTU		59.86	1.41	0.24	61.72	3.28	0.50
BZZ68H_AL		45.90	-12.55	-2.13	46.50	-11.94	-1.81
C2777L		56.66	-1.79	-0.30	57.83	-0.61	-0.09
C2PPDE		59.78	1.33	0.22	60.15	1.71	0.26
E7V6XM		60.82	2.37	0.40	61.12	2.68	0.41
EKRJVV		72.77	14.32	2.43	73.80	15.36	2.33
EW94GD		62.80	4.35	0.74	62.40	3.96	0.60
GKQ4XN		54.56	-3.89	-0.66	56.53	-1.90	-0.29
HMRQQJ		57.10	-1.35	-0.23	55.03	-3.41	-0.52
HY6RMD	M	No data reported for this sample			62.92	4.48	0.68
L796UH	X	2.75	-55.70	-9.45	2.74	-55.70	-8.44
L84QLN		62.30	3.85	0.65	64.42	5.98	0.91
LUXU68		62.00	3.55	0.60	63.40	4.96	0.75
M9U93F		67.00	8.55	1.45	66.80	8.36	1.27
MRN4E4		57.28	-1.17	-0.20	56.42	-2.02	-0.31
NJLE9J		50.68	-7.77	-1.32	48.94	-9.50	-1.44
NYJA7J		58.20	-0.25	-0.04	57.88	-0.56	-0.08
RR8G6C	*	75.40	16.95	2.87	78.40	19.96	3.02
T6RFB6		62.87	4.42	0.75	59.82	1.38	0.21
UFPGN9		55.50	-2.95	-0.50	55.40	-3.04	-0.46
UUBWQ8		58.02	-0.43	-0.07	58.37	-0.07	-0.01
VAXVVC		59.77	1.32	0.22	57.29	-1.15	-0.17
W6HLH9		52.03	-6.42	-1.09	51.58	-6.86	-1.04
X39VR6		61.94	3.49	0.59	59.40	0.96	0.15
Y99W74		62.26	3.81	0.65	61.40	2.96	0.45
ZC9824_AL		57.04	-1.41	-0.24	58.25	-0.19	-0.03

Summary Statistics	Sample RP51	Sample RP52
Grand Means	58.45 Grams	58.44 Grams
Stnd Dev Btwn Labs	5.90 Grams	6.60 Grams

Statistics based on 34 of 37 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Comments on Assigned Data Flags for Test #3113

L796UH (X) - Extreme Data.

4W46PZ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample RP51.

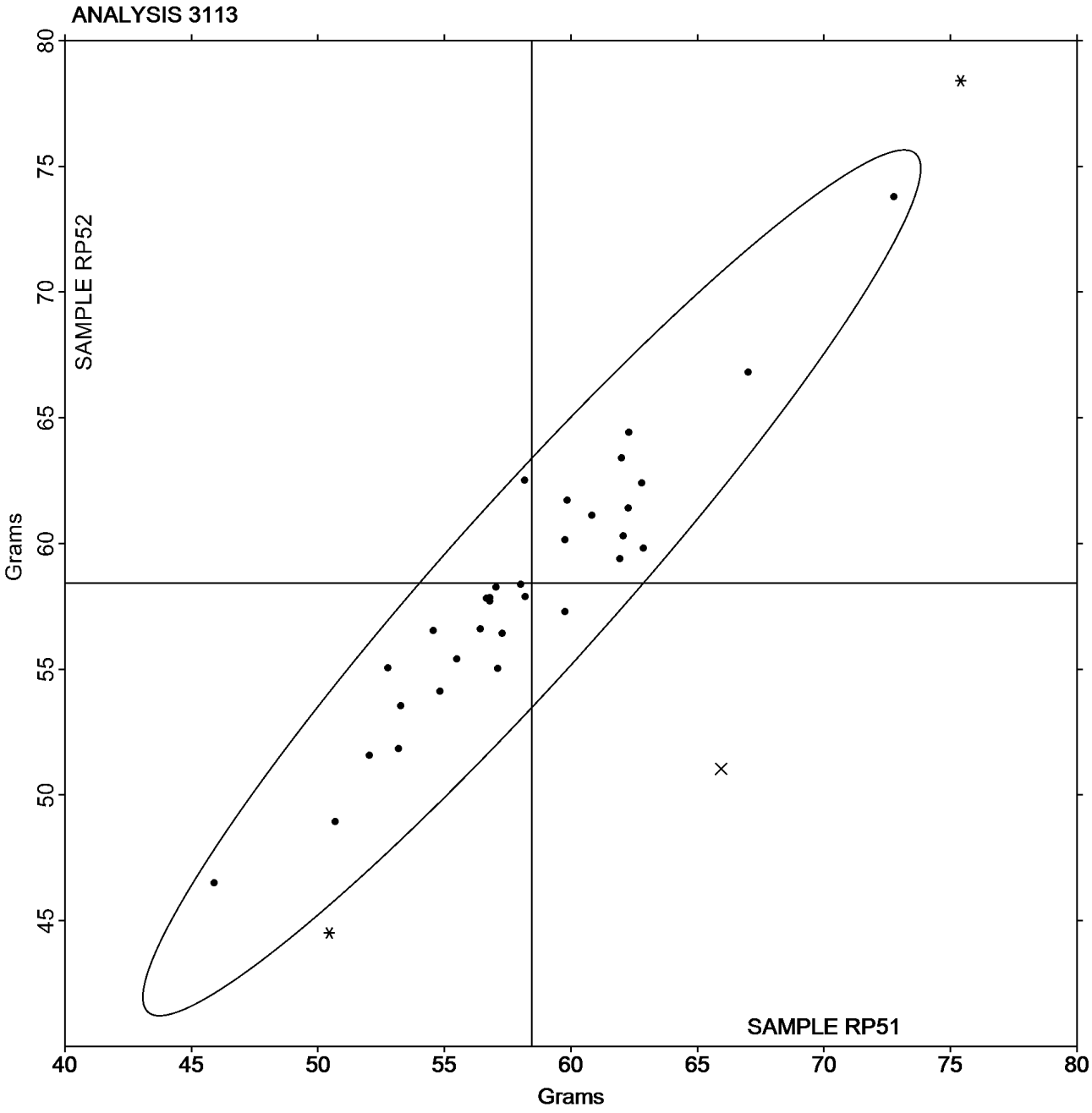
HY6RMD (M) - Participant did not submit data for sample RP51.

Analysis Notes:

L84QLN - 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 RP51 = 58.450 Grams

Grand Mean Sample RP52 = 58.437 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP51 Lab Mean	Sample NP51 Diff from Grand Mean	Sample NP51 CPV	Sample NP52 Lab Mean	Sample NP52 Diff from Grand Mean	Sample NP52 CPV
2MPCNU		3.614	-0.070	-0.24	3.668	0.041	0.15
32FTQW		4.072	0.389	1.33	3.756	0.129	0.46
3DXDAT		3.526	-0.157	-0.54	3.664	0.037	0.13
3JK3U4_AL		3.387	-0.297	-1.01	3.471	-0.156	-0.55
6TKCEX		3.575	-0.109	-0.37	3.538	-0.089	-0.31
797CKN		4.156	0.473	1.61	4.200	0.573	2.02
7VGFJP		3.409	-0.275	-0.94	3.474	-0.153	-0.54
8ZAYXT		3.413	-0.270	-0.92	3.339	-0.287	-1.02
8ZBW9N		3.520	-0.163	-0.56	3.498	-0.129	-0.46
AYPZTU		3.524	-0.160	-0.55	3.338	-0.289	-1.02
BZZ68H_AL		3.458	-0.226	-0.77	3.550	-0.077	-0.27
C2777L		3.856	0.173	0.59	3.672	0.045	0.16
C2PPDE		3.429	-0.254	-0.87	3.367	-0.260	-0.92
E7V6XM		3.478	-0.206	-0.70	3.403	-0.224	-0.79
EKRJVV		3.483	-0.200	-0.68	3.311	-0.316	-1.12
EW94GD		4.227	0.544	1.86	3.958	0.331	1.17
GKQ4XN	X	3.803	0.119	0.41	4.255	0.628	2.22
HMRQQJ		3.588	-0.095	-0.33	3.604	-0.023	-0.08
HY6RMD		3.690	0.006	0.02	3.678	0.051	0.18
K3TD7B		3.294	-0.389	-1.33	3.140	-0.487	-1.72
L796UH		4.158	0.474	1.62	4.136	0.510	1.80
LUXU68		3.528	-0.155	-0.53	3.504	-0.123	-0.43
NJLE9J		4.101	0.417	1.43	4.108	0.481	1.70
NYJA7J		3.404	-0.279	-0.95	3.329	-0.298	-1.05
Q6E8A6		3.764	0.081	0.28	3.743	0.116	0.41
RR8G6C		3.321	-0.362	-1.24	3.296	-0.331	-1.17
UFPGN9		3.937	0.254	0.87	3.942	0.315	1.11
UUBWQ8		3.635	-0.049	-0.17	3.647	0.020	0.07
VAXVVC		3.486	-0.197	-0.67	3.330	-0.297	-1.05
VV2GX4		3.999	0.316	1.08	3.772	0.145	0.51
W6HLH9		3.956	0.273	0.93	3.857	0.230	0.81
ZC9824_AL		4.199	0.516	1.76	4.142	0.515	1.82

Summary Statistics	Sample NP51	Sample NP52
Grand Means	3.68 kN/m	3.63 kN/m
Stnd Dev Btwn Labs	0.29 kN/m	0.28 kN/m

Statistics based on 31 of 32 reporting participants.

Key to Instrument Codes Reported by Participants

IN	Instron 3340 series	IO	Instron 5900 Series
LA	L & W Tensile - Autoline 300	LB	L & W Tensile - Autoline 400
LE	L & W Tensile Tester 066	LF	L & W Tensile/Fracture Toughness Tester SE 064
LI	L & W Tensile Tester SE 062	LJ	L & W Tensile Tester SE 063
LX	L & W (model not specified)	TB	Thwing-Albert EJA/1000
TF	Thwing-Albert EJA Vantage-1	TO	Thwing-Albert QC-1000
TQ	Thwing-Albert QC 3A	TR	Testometric 220D
TT	Tinius Olsen H10KT	TV	Thwing-Albert Vantage NX
VM	Valmet PaperLab (was Kajaani/Robotest)		

Comments on Assigned Data Flags for Test #3115

GKQ4XN (X) - Inconsistent in testing between samples.

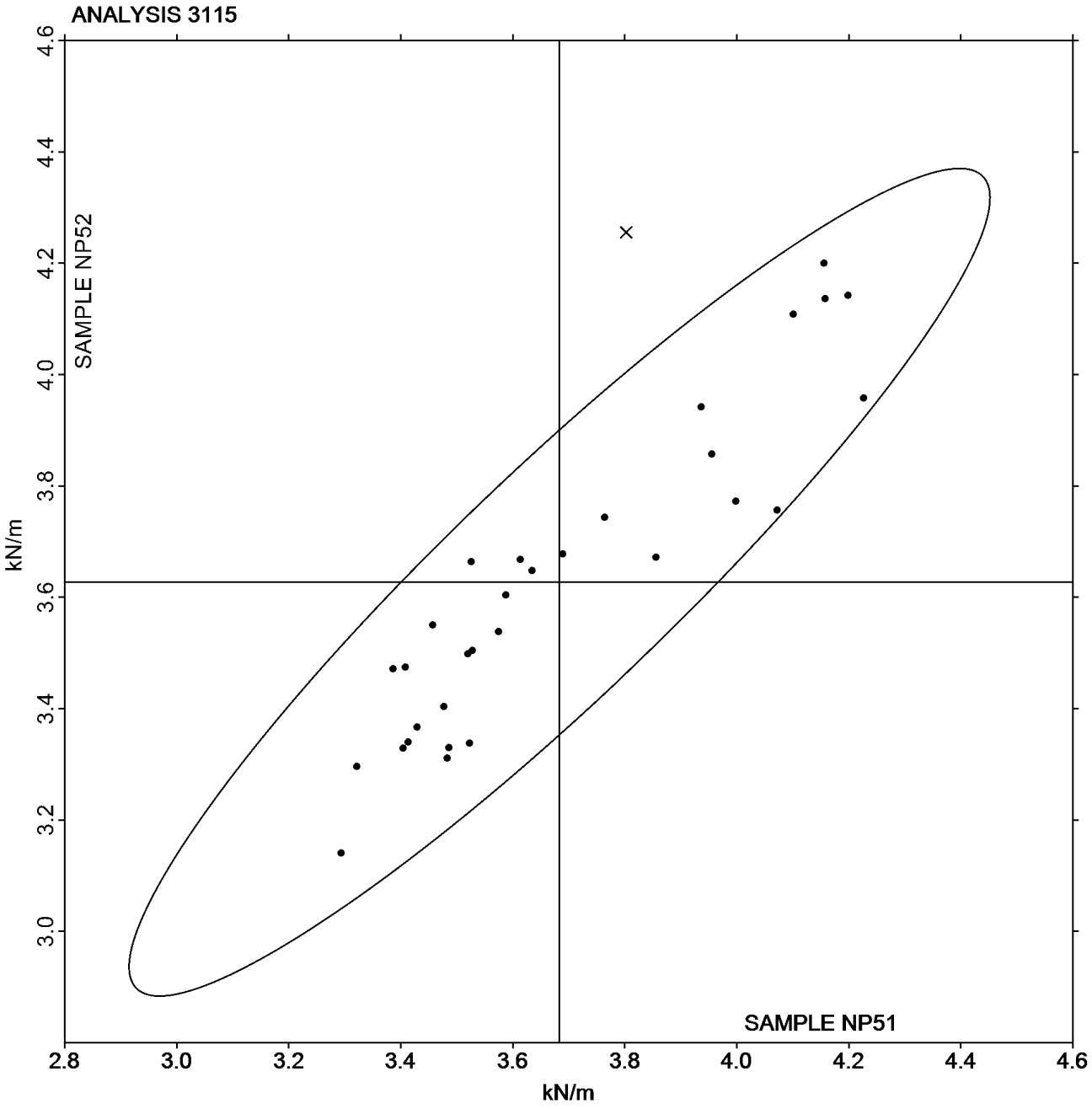
Analysis Notes:

3JK3U4_AL - Data appear to be reported as lb/15 mm, not lb/inch as indicated on data entry form. CTS will not correct the Units going forward.

BZZ68H_AL - Data appear to be reported as lb/15 mm, not lb/inch as indicated on data entry form. CTS will not correct the Units going forward.

Grand Mean Sample NP51 = 3.6834 kN/m

Grand Mean Sample NP52 = 3.6269 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3116

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP51 Lab Mean	Sample NP51 Diff from Grand Mean	Sample NP51 CPV	Sample NP52 Lab Mean	Sample NP52 Diff from Grand Mean	Sample NP52 CPV
32FTQW	X	3.06	-37.51	-10.93	2.77	-36.46	-11.38
3DXDAT		44.59	4.01	1.17	46.62	7.39	2.31
3JK3U4_AL	X	16.04	-24.53	-7.15	16.44	-22.79	-7.11
6TKCEX		38.92	-1.66	-0.48	38.65	-0.58	-0.18
8ZBW9N		37.49	-3.08	-0.90	37.16	-2.07	-0.65
AYPZTU		39.10	-1.48	-0.43	38.85	-0.38	-0.12
C2777L		47.29	6.72	1.96	43.67	4.44	1.39
E7V6XM		42.00	1.42	0.41	39.81	0.58	0.18
EKRJVV		40.63	0.05	0.02	38.53	-0.70	-0.22
EW94GD		40.34	-0.23	-0.07	36.66	-2.57	-0.80
GKQ4XN		34.86	-5.71	-1.66	37.70	-1.53	-0.48
HMRQQJ		37.76	-2.82	-0.82	36.51	-2.72	-0.85
HY6RMD		39.55	-1.03	-0.30	36.78	-2.45	-0.76
K3TD7B		39.47	-1.11	-0.32	36.30	-2.92	-0.91
NJLE9J		33.97	-6.60	-1.92	33.32	-5.91	-1.84
Q6E8A6		46.88	6.31	1.84	43.61	4.38	1.37
RR8G6C		38.43	-2.15	-0.63	36.47	-2.75	-0.86
UFPGN9		41.62	1.05	0.30	38.59	-0.64	-0.20
UUBWQ8		39.51	-1.07	-0.31	42.85	3.62	1.13
VAXVVC		40.16	-0.41	-0.12	38.42	-0.81	-0.25
VV2GX4		44.00	3.43	1.00	41.49	2.26	0.71
W6HLH9		41.41	0.84	0.24	38.90	-0.32	-0.10
ZC9824_AL		44.10	3.52	1.03	42.90	3.67	1.15

Summary Statistics	Sample NP51	Sample NP52
Grand Means	40.57 Joules/sq m	39.23 Joules/sq m
Stnd Dev Btwn Labs	3.43 Joules/sq m	3.20 Joules/sq m

Statistics based on 21 of 23 reporting participants.

Key to Instrument Codes Reported by Participants

IO	Instron 5900 Series	LA	L & W Tensile - Autoline 300
LB	L & W Tensile - Autoline 400	LE	L & W Tensile Tester 066
LF	L & W Tensile/Fracture Toughness Tester SE 064	LI	L & W Tensile Tester SE 062
LJ	L & W Tensile Tester SE 063	LX	L & W (model not specified)
TB	Thwing-Albert EJA/1000	TF	Thwing-Albert EJA Vantage-1
TO	Thwing-Albert QC-1000	TQ	Thwing-Albert QC 3A
TT	Tinius Olsen H10KT	TV	Thwing-Albert Vantage NX

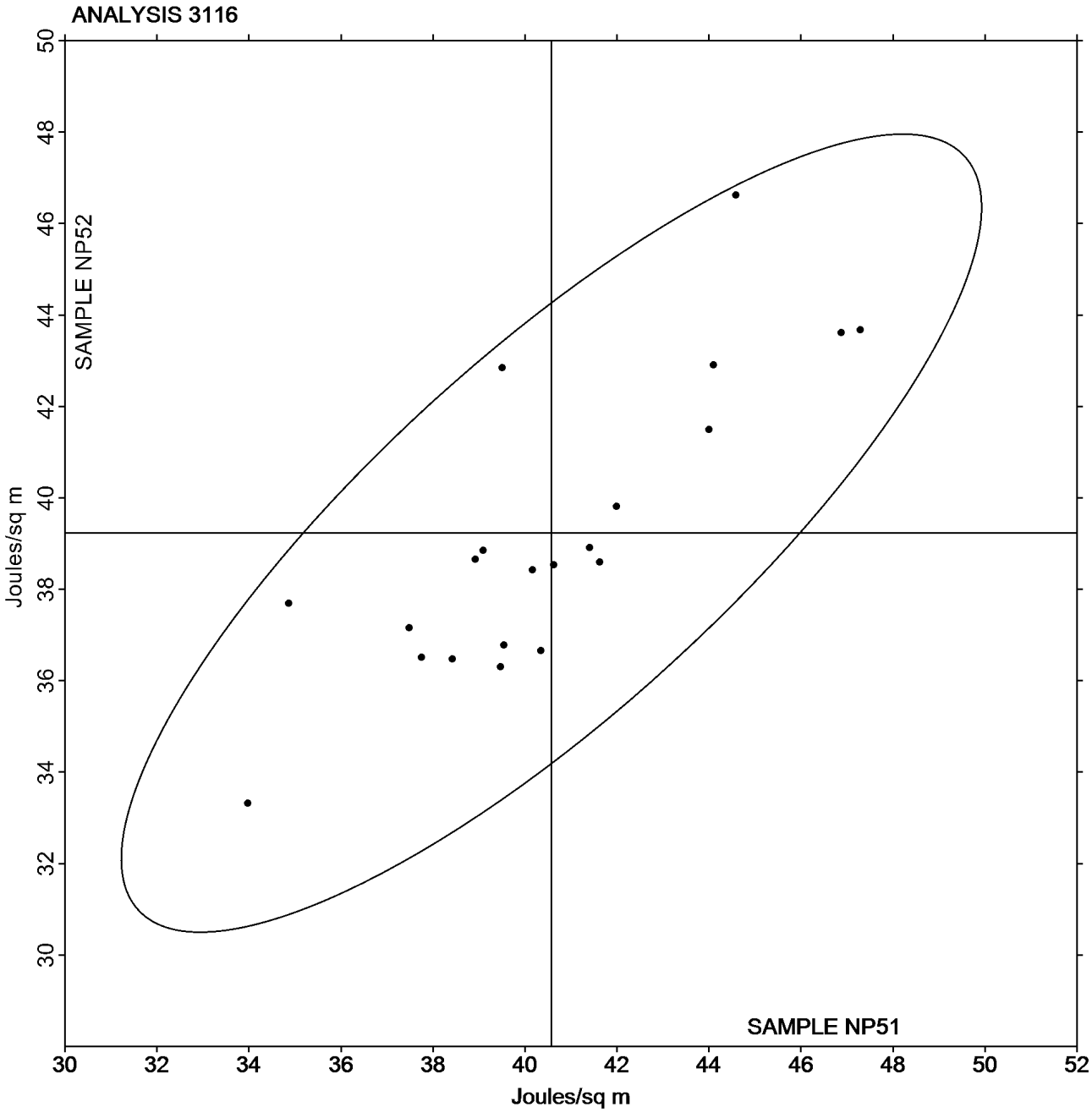
Comments on Assigned Data Flags for Test #3116

3JK3U4_AL (X) - Extreme Data.

32FTQW (X) - Extreme Data.

Grand Mean Sample NP51 = 40.575 Joules/sq m

Grand Mean Sample NP52 = 39.227 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3117

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP51 Lab Mean	Sample NP51 Diff from Grand Mean	Sample NP51 CPV	Sample NP52 Lab Mean	Sample NP52 Diff from Grand Mean	Sample NP52 CPV
32FTQW		1.597	-0.044	-0.24	1.593	-0.029	-0.16
3DXDAT		1.951	0.310	1.71	1.962	0.340	1.87
3JK3U4_AL		1.217	-0.424	-2.34	1.216	-0.406	-2.24
6TKCEX		1.668	0.027	0.15	1.647	0.025	0.14
7VGFJP		1.676	0.035	0.19	1.780	0.158	0.87
8ZAYXT		1.568	-0.073	-0.40	1.645	0.023	0.13
8ZBW9N		1.551	-0.090	-0.50	1.547	-0.075	-0.41
AYPZTU		1.616	-0.025	-0.14	1.663	0.041	0.22
C2777L		1.778	0.137	0.75	1.744	0.122	0.67
E7V6XM		1.772	0.131	0.72	1.726	0.104	0.57
EKRJVV		1.745	0.104	0.57	1.765	0.143	0.79
EW94GD	X	2.518	0.877	4.83	2.449	0.827	4.56
GKQ4XN		1.625	-0.016	-0.09	1.601	-0.021	-0.12
HMRQQJ		1.577	-0.064	-0.35	1.538	-0.084	-0.46
HY6RMD		1.823	0.182	1.00	1.730	0.108	0.59
K3TD7B		1.936	0.295	1.62	1.846	0.224	1.23
L796UH	*	1.260	-0.381	-2.10	1.160	-0.462	-2.55
LUXU68		1.733	0.092	0.50	1.684	0.062	0.34
NJLE9J		1.318	-0.323	-1.78	1.292	-0.330	-1.82
Q6E8A6		1.900	0.258	1.42	1.790	0.168	0.93
RR8G6C		1.714	0.073	0.40	1.660	0.038	0.21
UFPGN9		1.664	0.023	0.12	1.629	0.007	0.04
UUBWQ8		1.598	-0.043	-0.24	1.678	0.056	0.31
VAXVVC		1.715	0.074	0.41	1.697	0.075	0.41
VV2GX4		1.557	-0.084	-0.46	1.552	-0.070	-0.39
W6HLH9		1.561	-0.080	-0.44	1.519	-0.103	-0.57
ZC9824_AL		1.555	-0.086	-0.48	1.514	-0.108	-0.60

Summary Statistics	Sample NP51	Sample NP52
Grand Means	1.64 Percent	1.62 Percent
Stnd Dev Btwn Labs	0.18 Percent	0.18 Percent

Statistics based on 26 of 27 reporting participants.

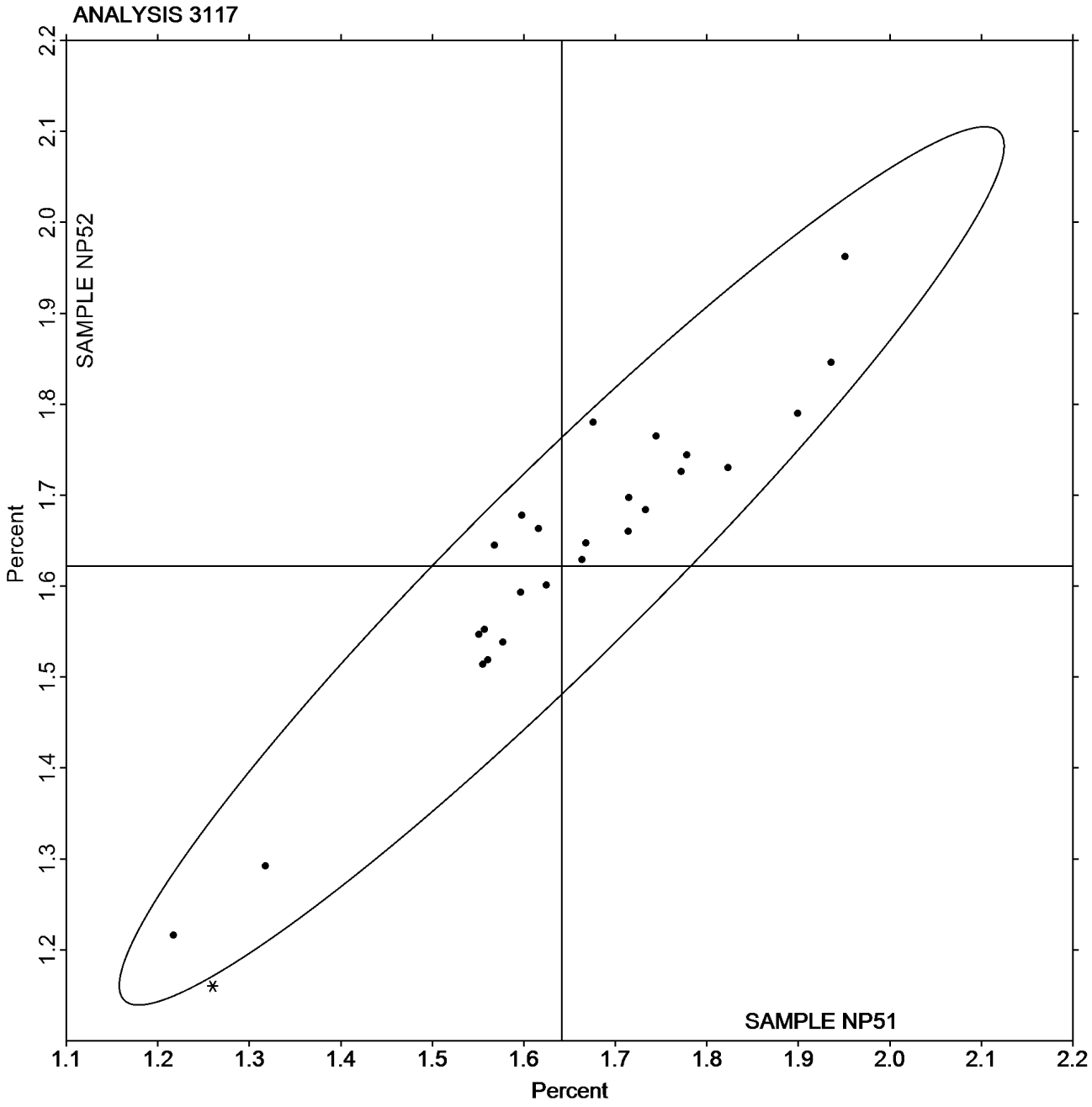
Key to Instrument Codes Reported by Participants			
IN	Instron 3340 Series	IO	Instron 5900 Series
LA	L & W Tensile - Autoline 300	LB	L & W Tensile - Autoline 400
LE	L & W Tensile Tester 066	LF	L & W Tensile/Fracture Toughness Tester SE 064
LI	L & W Tensile Tester SE 062	LJ	L & W Tensile Tester SE 063
LX	L & W (model not specified)	TB	Thwing-Albert EJA/1000
TF	Thwing-Albert EJA Vantage-1	TO	Thwing-Albert QC-1000
TQ	Thwing-Albert QC 3A	TT	Tinius Olsen H10KT
TV	Thwing-Albert Vantage NX	VM	Valmet PaperLab (was Kajaani/Robotest)

Comments on Assigned Data Flags for Test #3117

EW94GD (X) - Data for both samples are high. Possible Systematic Error.

Grand Mean Sample NP51 = 1.6413 Percent

Grand Mean Sample NP52 = 1.6222 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 3121
Air Resistance - Gurley Oil Type
TAPPI Official Test Method T460

WebCode	Data Flag	Sample PP51 Lab Mean	Sample PP51 Diff from Grand Mean	Sample PP51 CPV	Sample PP52 Lab Mean	Sample PP52 Diff from Grand Mean	Sample PP52 CPV
3DXDAT		10.865	0.982	1.16	10.247	0.499	0.53
3H39UT		10.724	0.841	0.99	9.665	-0.083	-0.09
3JK3U4_AL		10.716	0.833	0.98	10.917	1.169	1.25
4W46PZ		9.300	-0.583	-0.69	10.140	0.392	0.42
6M9NE2		9.320	-0.563	-0.66	9.000	-0.748	-0.80
7VGFJP		9.939	0.056	0.07	10.663	0.915	0.98
8ZAYXT		10.585	0.702	0.83	10.033	0.285	0.31
8ZBW9N		10.383	0.500	0.59	9.767	0.019	0.02
9AVKJG		10.475	0.592	0.70	9.762	0.014	0.01
BZZ68H_AL		8.580	-1.303	-1.54	9.140	-0.608	-0.65
C2777L		9.290	-0.593	-0.70	8.960	-0.788	-0.85
CFM2LH		9.654	-0.229	-0.27	9.100	-0.648	-0.70
CFQLAL		9.380	-0.503	-0.59	9.360	-0.388	-0.42
CTENRD		10.146	0.263	0.31	8.677	-1.071	-1.15
E7V6XM		10.200	0.317	0.37	10.340	0.592	0.63
EKRJVV		10.250	0.367	0.43	9.804	0.056	0.06
EW94GD		9.219	-0.664	-0.78	10.368	0.620	0.66
GFBXYU		9.847	-0.036	-0.04	9.467	-0.281	-0.30
HY6RMD	*	12.586	2.703	3.19	12.267	2.519	2.70
L796UH		9.150	-0.733	-0.87	9.746	-0.002	0.00
M9U93F		9.900	0.017	0.02	9.400	-0.348	-0.37
NBVT67		9.290	-0.593	-0.70	9.410	-0.338	-0.36
PYXCTB		8.800	-1.083	-1.28	8.310	-1.438	-1.54
Q6E8A6		9.853	-0.030	-0.04	8.501	-1.247	-1.34
RR8G6C		8.990	-0.893	-1.05	9.670	-0.078	-0.08
T6RFB6		10.660	0.777	0.92	11.660	1.912	2.05
UFPGN9		10.199	0.316	0.37	10.192	0.444	0.48
UUAYGC		8.320	-1.563	-1.85	7.760	-1.988	-2.13
VVZKM9		9.583	-0.300	-0.35	9.730	-0.018	-0.02
ZC9824_AL		10.279	0.396	0.47	10.398	0.650	0.70

Summary Statistics	Sample PP51	Sample PP52
Grand Means	9.88 sec/100 cc	9.75 sec/100 cc
Stnd Dev Btwn Labs	0.85 sec/100 cc	0.93 sec/100 cc

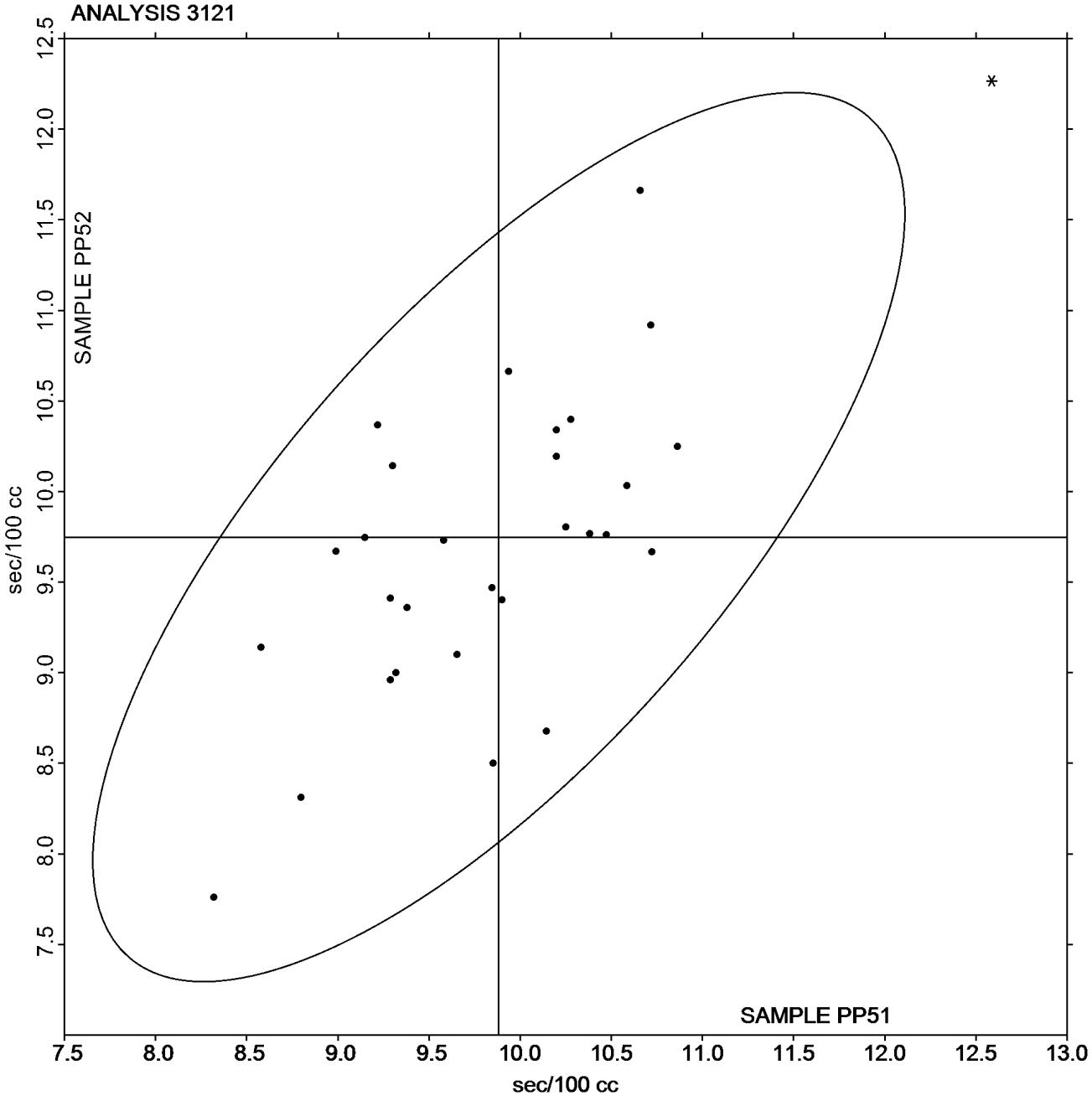
Statistics based on 30 of 30 reporting participants.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision Model #4320
GL	Gurley #4110	GS	Gurley-Hill S-P-S Tester #4190
HG	Technidyne - Hagerty Model #1	LA	L & W Autoline
LP	L & W Densometer, Air Permeance	LR	L & W Air Permeance
PP	Technidyne Profile/Plus	TL	Gurley Densometer #4110, Oil Flotation
WG	W & LE Gurley Tester	XX	Instrument make/model not specified by lab

Grand Mean Sample PP51 = 9.8828 sec/100 cc

Grand Mean Sample PP52 = 9.7485 sec/100 cc



Paper & Paperboard Interlaboratory Testing Program

Analysis 3131

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

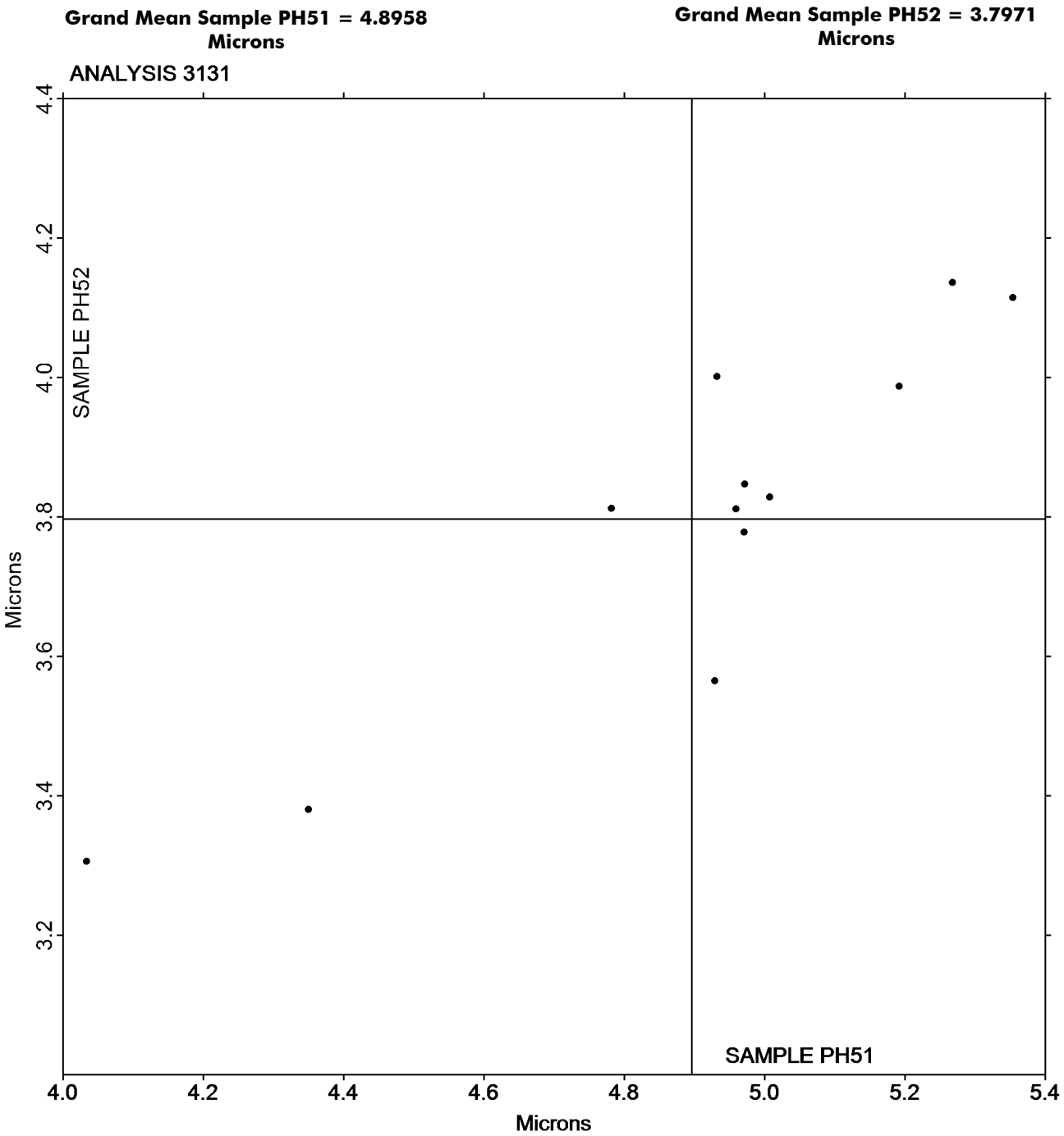
WebCode	Data Flag	Sample PH51 Lab Mean	Sample PH51 Diff from Grand Mean	Sample PH51 CPV	Sample PH52 Lab Mean	Sample PH52 Diff from Grand Mean	Sample PH52 CPV
3H39UT		5.354	0.458	1.23	4.114	0.317	1.20
66DWVN		5.007	0.111	0.30	3.828	0.031	0.12
AYPZTU		5.268	0.372	1.00	4.136	0.339	1.28
E7V6XM		4.782	-0.114	-0.31	3.812	0.015	0.06
EKRJVV		5.192	0.296	0.80	3.987	0.190	0.72
FCGHAU		4.034	-0.862	-2.32	3.306	-0.491	-1.86
GFBXYU		4.971	0.075	0.20	3.778	-0.019	-0.07
M9UBRK		4.972	0.076	0.20	3.847	0.050	0.19
VLAYGA		4.929	0.033	0.09	3.565	-0.232	-0.88
W8N769		4.959	0.063	0.17	3.811	0.014	0.05
X39VR6		4.932	0.036	0.10	4.001	0.204	0.77
XLZ4PZ		4.350	-0.546	-1.47	3.380	-0.417	-1.58

Summary Statistics	Sample PH51	Sample PH52
Grand Means	4.90 Microns	3.80 Microns
Stnd Dev Btwn Labs	0.37 Microns	0.26 Microns

Statistics based on 12 of 12 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

WebCode	Data Flag	Sample SR51 Lab Mean	Sample SR51 Diff from Grand Mean	Sample SR51 CPV	Sample SR52 Lab Mean	Sample SR52 Diff from Grand Mean	Sample SR52 CPV
3DXDAT		185.2	-8.1	-0.57	179.7	-13.2	-0.98
3H39UT		193.7	0.4	0.03	189.8	-3.1	-0.23
3JK3U4_AL		175.3	-18.0	-1.26	171.4	-21.6	-1.60
4W46PZ		198.0	4.7	0.33	195.8	2.9	0.22
66DWVN		192.4	-0.9	-0.06	188.3	-4.6	-0.34
797CKN		197.5	4.2	0.29	194.2	1.2	0.09
7VGFJP		178.1	-15.2	-1.06	182.8	-10.1	-0.75
8ZAYXT		197.8	4.5	0.31	197.1	4.2	0.31
9AVKJG		169.4	-23.9	-1.67	168.2	-24.7	-1.83
9FHB3R		212.8	19.5	1.36	208.4	15.5	1.15
AYPZTU		202.6	9.3	0.65	195.3	2.3	0.17
BZZ68H_AL		204.9	11.6	0.81	199.5	6.6	0.49
C2777L	X	287.2	93.9	6.55	290.8	97.9	7.26
CFM2LH		200.2	6.9	0.48	195.6	2.7	0.20
CFQLAL		201.7	8.4	0.58	199.6	6.7	0.50
CTENRD	*	220.9	27.6	1.92	200.1	7.2	0.53
E7V6XM		168.0	-25.3	-1.77	164.0	-28.9	-2.15
EKRJVV		196.5	3.2	0.22	197.1	4.1	0.31
EW94GD		203.4	10.1	0.70	206.6	13.7	1.01
FCGHAU		202.8	9.5	0.66	206.2	13.3	0.99
GFBXYU		199.2	5.8	0.41	201.9	9.0	0.67
GKQ4XN	X	433.1	239.8	16.73	432.3	239.4	17.77
HY6RMD	*	153.1	-40.2	-2.81	164.9	-28.0	-2.08
JHCFCF	*	231.2	37.8	2.64	230.1	37.2	2.76
L796UH	*	194.4	1.1	0.08	173.7	-19.2	-1.43
L84QLN		201.2	7.9	0.55	192.2	-0.7	-0.05
M8YQZE		200.8	7.5	0.53	200.9	8.0	0.59
M9U93F		176.7	-16.6	-1.16	175.8	-17.1	-1.27
NBVT67		183.1	-10.2	-0.71	194.4	1.5	0.11
NXNNEE		203.0	9.7	0.67	208.1	15.2	1.13
Q6E8A6		197.2	3.9	0.27	198.2	5.3	0.39
RR8G6C		178.3	-15.1	-1.05	190.4	-2.5	-0.19
TAN6RC		182.1	-11.2	-0.78	193.2	0.3	0.02
UFPGN9		196.7	3.3	0.23	194.9	1.9	0.14
UQQ4F6		194.4	1.1	0.08	203.8	10.9	0.81
VLAYGA		192.6	-0.7	-0.05	189.2	-3.7	-0.28
W8N769		184.5	-8.8	-0.61	192.2	-0.7	-0.05
XHZTUZ		198.1	4.8	0.33	206.3	13.4	0.99
XLZ4PZ		184.7	-8.6	-0.60	180.6	-12.3	-0.91
YEKHGV		192.0	-1.3	-0.09	205.1	12.2	0.90

Paper & Paperboard Interlaboratory Testing Program

Analysis 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample SR51 Lab Mean	Sample SR51 Diff from Grand Mean	Sample SR51 CPV	Sample SR52 Lab Mean	Sample SR52 Diff from Grand Mean	Sample SR52 CPV
ZC9824_AL		194.9	1.6	0.11	188.3	-4.6	-0.34

Summary Statistics	Sample SR51	Sample SR52
Grand Means	193.32 Sheffield	192.92 Sheffield
Stnd Dev Btwn Labs	14.34 Sheffield	13.47 Sheffield

Statistics based on 39 of 41 reporting participants.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	HM	Technidyne - Hagerty Model #538
LA	L & W Roughness Sheffield - Autoline	LB	L & W - Autoline 600
LC	L & W Autoline 400	LW	L & W Roughness Tester
PG	Precision Gage Smoothcheck	PP	Technidyne Profile/Plus
SH	Sheffield (Bendix Precisionaire)	ST	Sheffield Smoothness Tester
VM	Valmet PaperLab (was Kajaani\Robotest)	XX	Instrument make/model not specified by lab

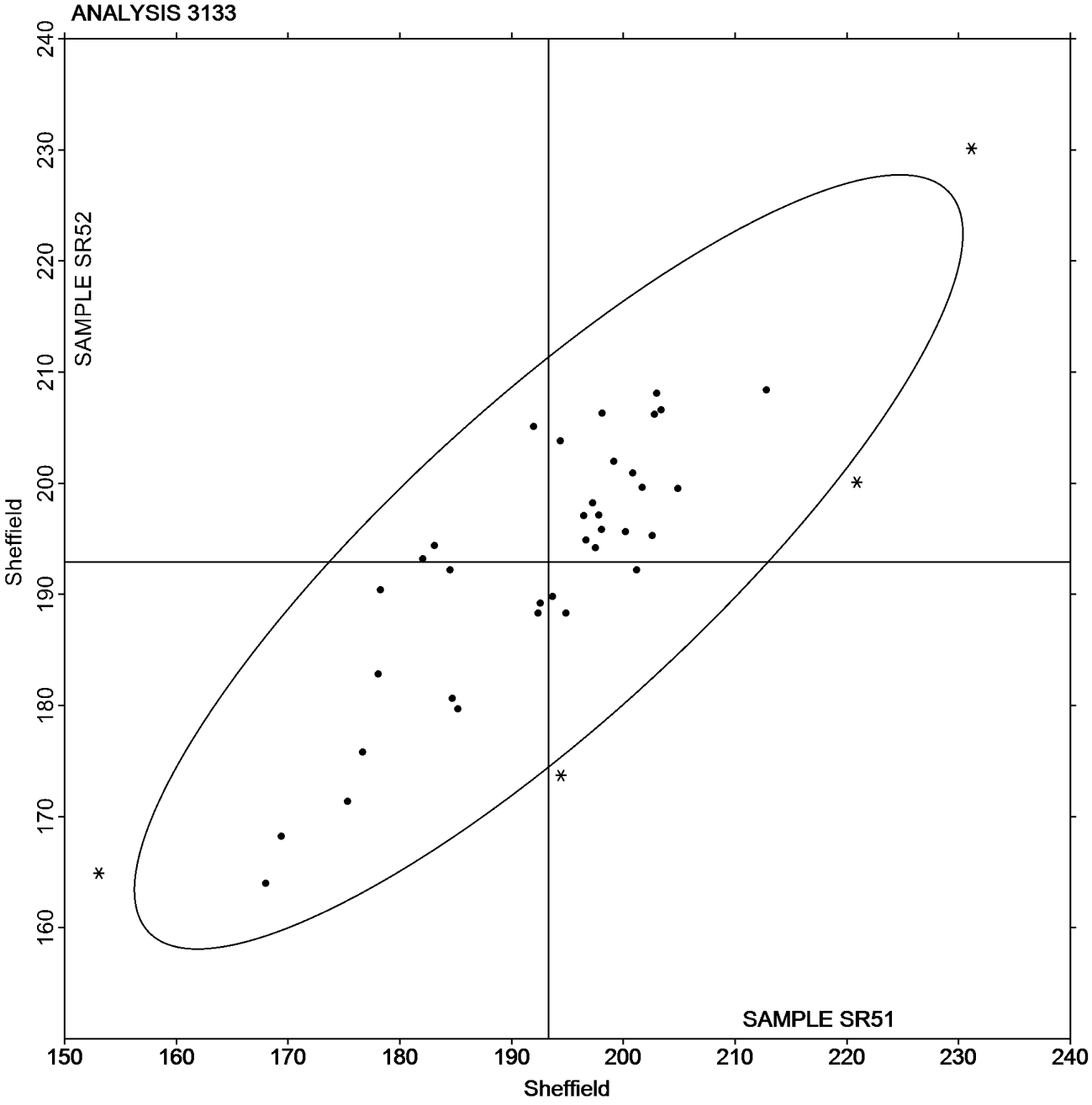
Comments on Assigned Data Flags for Test #3133

GKQ4XN (X) - Extreme Data.

C2777L (X) - Extreme Data.

Grand Mean Sample SR51 = 193.32
Sheffield

Grand Mean Sample SR52 = 192.92
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 3135
Grammage (Mass per Unit Area)
TAPPI Official Test Method T410

WebCode	Data Flag	Sample GM51 Lab Mean	Sample GM51 Diff from Grand Mean	Sample GM51 CPV	Sample GM52 Lab Mean	Sample GM52 Diff from Grand Mean	Sample GM52 CPV
2GDNNX		102.0	0.1	0.22	86.89	0.03	0.06
4ENXGP		100.7	-1.2	-1.98	86.93	0.06	0.14
4W46PZ		101.4	-0.5	-0.86	85.97	-0.90	-2.02
6TKCEX		101.5	-0.5	-0.72	86.78	-0.09	-0.19
7VGFJP		103.5	1.6	2.58	87.66	0.79	1.78
8ZAYXT		102.5	0.6	1.02	87.02	0.15	0.35
9AVKJG		101.5	-0.4	-0.57	87.41	0.54	1.22
B7QEEV		101.5	-0.4	-0.69	86.29	-0.57	-1.29
C2777L		101.5	-0.4	-0.67	86.57	-0.30	-0.67
C2PPDE		101.8	-0.1	-0.23	87.13	0.27	0.60
GHGFXP		102.2	0.2	0.40	87.56	0.69	1.56
GMU29G		102.2	0.3	0.45	86.96	0.09	0.21
K3TD7B		102.5	0.6	0.89	86.62	-0.25	-0.56
LUXU68		101.5	-0.4	-0.67	86.73	-0.13	-0.30
PAZDTA		101.9	0.0	0.05	86.72	-0.15	-0.34
Q24WGB		101.6	-0.3	-0.52	87.09	0.22	0.49
RR8G6C		102.6	0.7	1.17	87.45	0.58	1.30
W7RPTC		101.7	-0.2	-0.25	86.40	-0.47	-1.06
X39VR6		102.5	0.6	1.03	86.85	-0.02	-0.05
ZC9824		101.5	-0.4	-0.65	86.31	-0.56	-1.25

Summary Statistics	Sample GM51	Sample GM52
Grand Means	101.90 g/sq m	86.87 g/sq m
Stnd Dev Btwn Labs	0.63 g/sq m	0.45 g/sq m

Statistics based on 20 of 20 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Analysis Notes:

4W46PZ - Data appear to be off by a factor of 3.7597. CTS will not correct going forward.

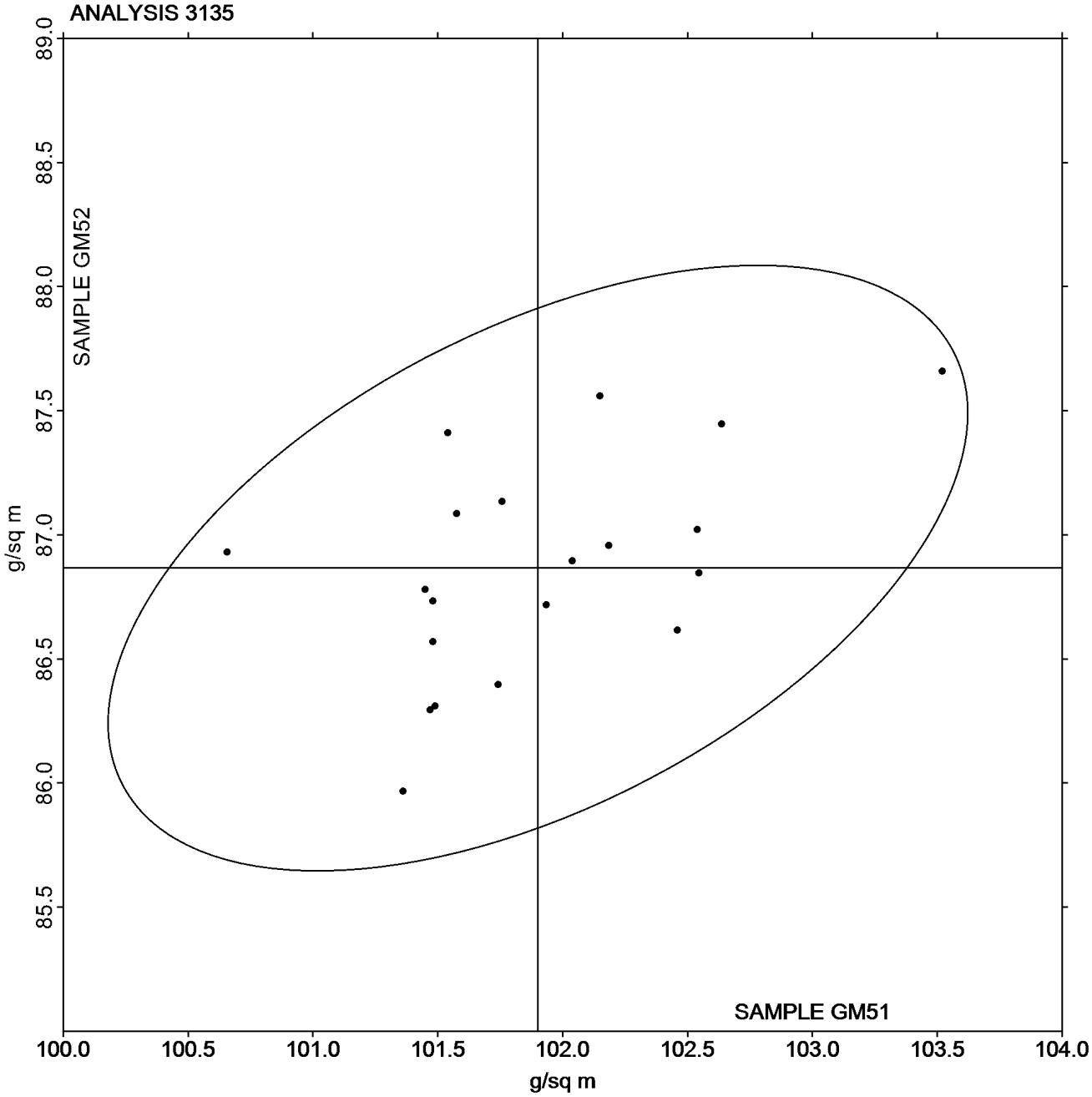
GMU29G - Data appears to be transposed between samples. CTS will not correct going forward.

K3TD7B - Data appears to be transposed between samples. CTS will not correct going forward.

W7RPTC - Data appear to be off by a factor of .01 (x100). CTS will not correct going forward.

Grand Mean Sample GM51 = 101.90 g/sq m

Grand Mean Sample GM52 = 86.866 g/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3141

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample VR51 Lab Mean	Sample VR51 Diff from Grand Mean	Sample VR51 CPV	Sample VR52 Lab Mean	Sample VR52 Diff from Grand Mean	Sample VR52 CPV
32FTQW		94.97	0.11	0.37	94.87	0.03	0.12
3DXDAT		94.74	-0.12	-0.42	94.84	0.00	0.00
4W46PZ		94.87	0.01	0.03	94.92	0.08	0.29
66DWVN		95.04	0.18	0.62	94.89	0.05	0.18
797CKN		94.78	-0.08	-0.28	94.76	-0.08	-0.27
7VGFJP		94.20	-0.66	-2.28	94.14	-0.70	-2.42
8ZAYXT	X	89.22	-5.64	-19.47	89.31	-5.53	-19.20
9AVKJG		94.66	-0.20	-0.68	94.82	-0.02	-0.05
AYPZTU		94.79	-0.07	-0.25	94.82	-0.02	-0.08
BZZ68H		94.84	-0.02	-0.07	94.78	-0.06	-0.20
CTENRD		94.56	-0.30	-1.04	94.56	-0.28	-0.96
EKRJVV		94.99	0.13	0.45	94.74	-0.10	-0.33
EW94GD		95.16	0.30	1.04	95.13	0.29	1.02
HY6RMD		94.78	-0.08	-0.28	94.97	0.13	0.47
L84QLN		95.33	0.47	1.62	95.25	0.41	1.43
M9U93F		94.26	-0.60	-2.07	94.15	-0.69	-2.38
NJLE9J		95.11	0.25	0.86	95.07	0.23	0.80
Q24WGB		95.11	0.25	0.86	95.19	0.35	1.22
RR8G6C		95.18	0.32	1.10	94.99	0.15	0.53
YTGY7U		94.80	-0.06	-0.21	94.83	-0.01	-0.03
ZC9824		95.05	0.19	0.65	95.03	0.19	0.67

Summary Statistics	Sample VR51	Sample VR52
Grand Means	94.86 Percent	94.84 Percent
Stnd Dev Btwn Labs	0.29 Percent	0.29 Percent

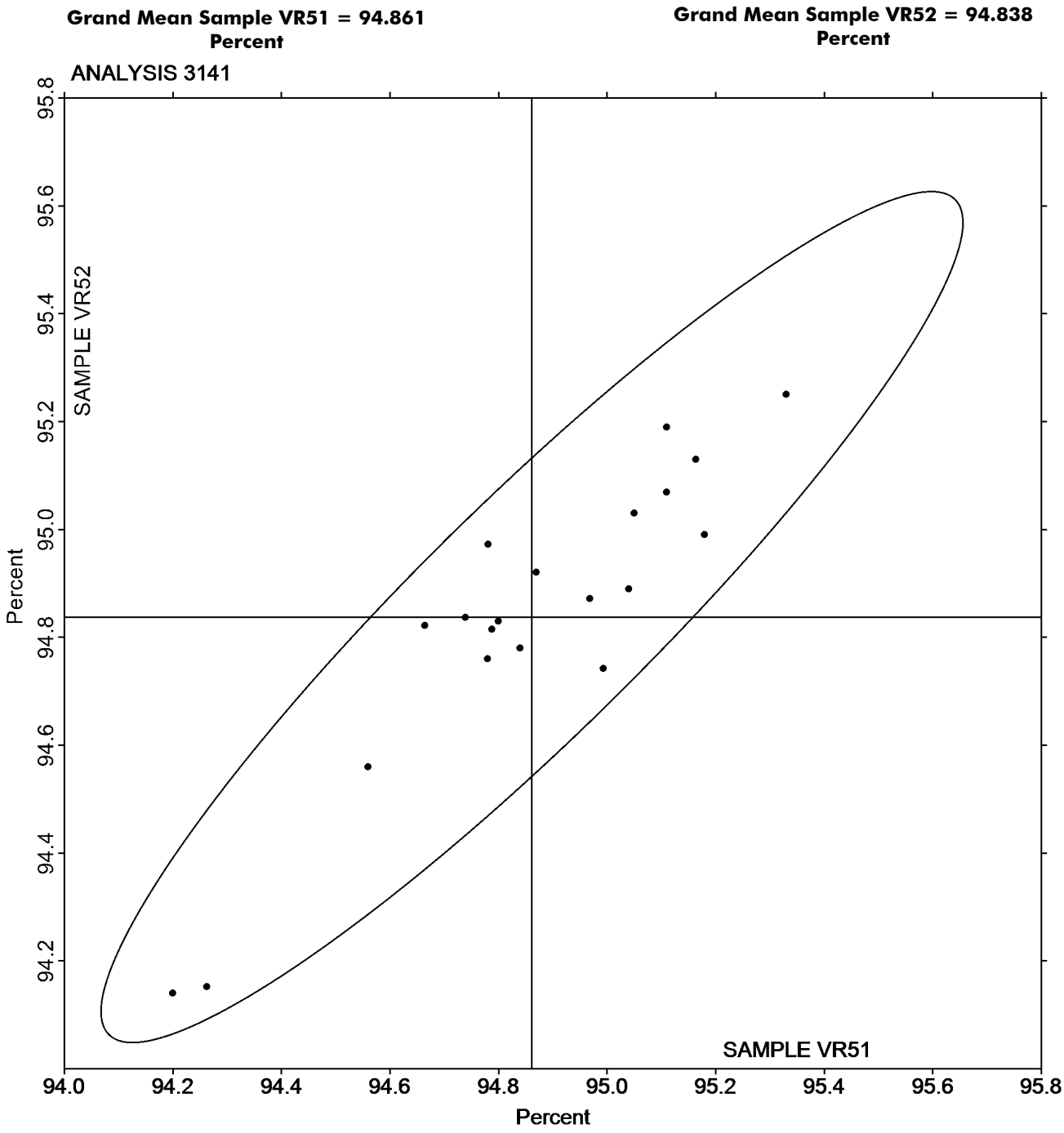
Statistics based on 20 of 21 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Comments on Assigned Data Flags for Test #3141

8ZAYXT (X) - Extreme Data.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3145

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample BF51 Lab Mean	Sample BF51 Diff from Grand Mean	Sample BF51 CPV	Sample BF52 Lab Mean	Sample BF52 Diff from Grand Mean	Sample BF52 CPV
32FTQW		86.59	-0.54	-0.79	86.73	-0.51	-0.89
3JK3U4_AL		87.90	0.77	1.12	87.75	0.51	0.89
66DWVN		88.31	1.18	1.72	88.04	0.80	1.39
9AVKJG		86.46	-0.67	-0.98	86.64	-0.60	-1.05
EKRJVV		86.95	-0.18	-0.26	87.00	-0.24	-0.42
GKQ4XN		87.37	0.24	0.34	87.31	0.07	0.12
HY6RMD		86.55	-0.58	-0.84	87.57	0.33	0.57
NJLE9J		86.30	-0.83	-1.21	86.32	-0.92	-1.61
Q24WGB		87.77	0.64	0.93	87.88	0.65	1.12
XHZTUZ		87.10	-0.03	-0.04	87.16	-0.08	-0.14

Summary Statistics	Sample BF51	Sample BF52
Grand Means	87.13 Percent	87.24 Percent
Stnd Dev Btwn Labs	0.69 Percent	0.57 Percent

Statistics based on 10 of 10 reporting participants.

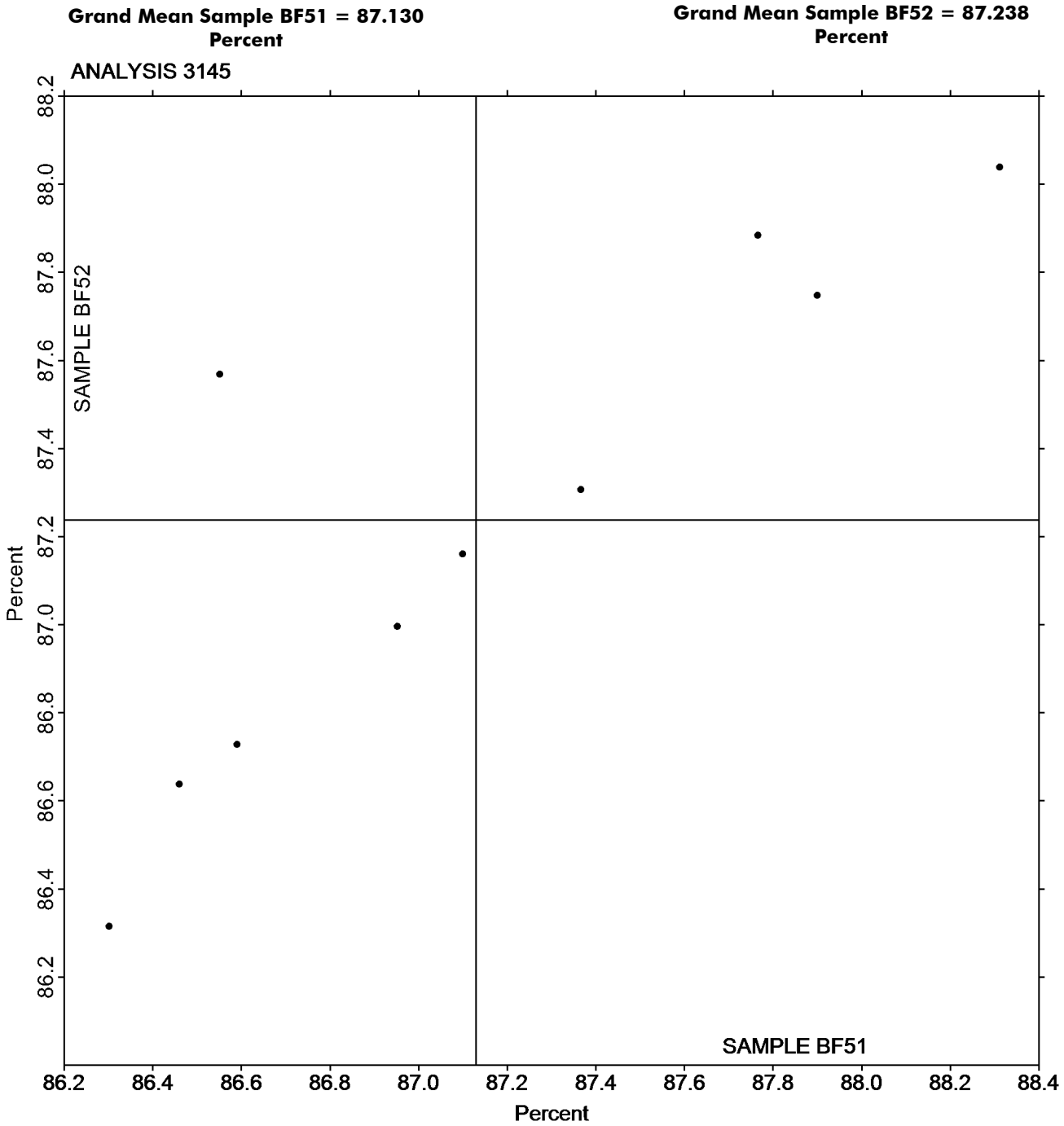
Key to Instrument Codes Reported by Participants

PP	Technidyne Profile/Plus	TC	Technidyne Color Touch Series
TD	Technidyne Color Touch X-45	TE	Technidyne TEST/Plus TAPPI Brightness
TS	Technidyne Brightimeter Micro S-5	TT	Technidyne Brightimeter Micro S4-M
XX	Instrument make/model not specified by lab		

Analysis Notes:

GKQ4XN - Data appears to be transposed between Analysis 3145 (Directional Brightness) and Analysis 3146 (Fluorescent Component). CTS will not correct going forward.

NJLE9J - One determination removed from the Lab Mean of Sample BF52 per Grubb's Test at 1% risk (TAPPI 1205).



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 3146

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample BF51 Lab Mean	Sample BF51 Diff from Grand Mean	Sample BF51 CPV	Sample BF52 Lab Mean	Sample BF52 Diff from Grand Mean	Sample BF52 CPV
32FTQW		4.382	-0.180	-0.96	4.434	-0.153	-0.71
3JK3U4_AL		4.496	-0.066	-0.35	4.652	0.065	0.30
66DWVN		4.880	0.318	1.70	4.920	0.333	1.55
9AVKJG		4.636	0.074	0.40	4.734	0.147	0.68
EKRJVV		4.840	0.278	1.49	4.806	0.219	1.02
GKQ4XN		4.378	-0.184	-0.98	4.236	-0.351	-1.64
HY6RMD		4.430	-0.132	-0.70	4.464	-0.123	-0.57
NJLE9J		4.474	-0.088	-0.47	4.438	-0.149	-0.69
XHZTUZ		4.540	-0.022	-0.12	4.600	0.013	0.06

Summary Statistics	Sample BF51	Sample BF52
Grand Means	4.56 Percent	4.59 Percent
Stnd Dev Btwn Labs	0.19 Percent	0.21 Percent

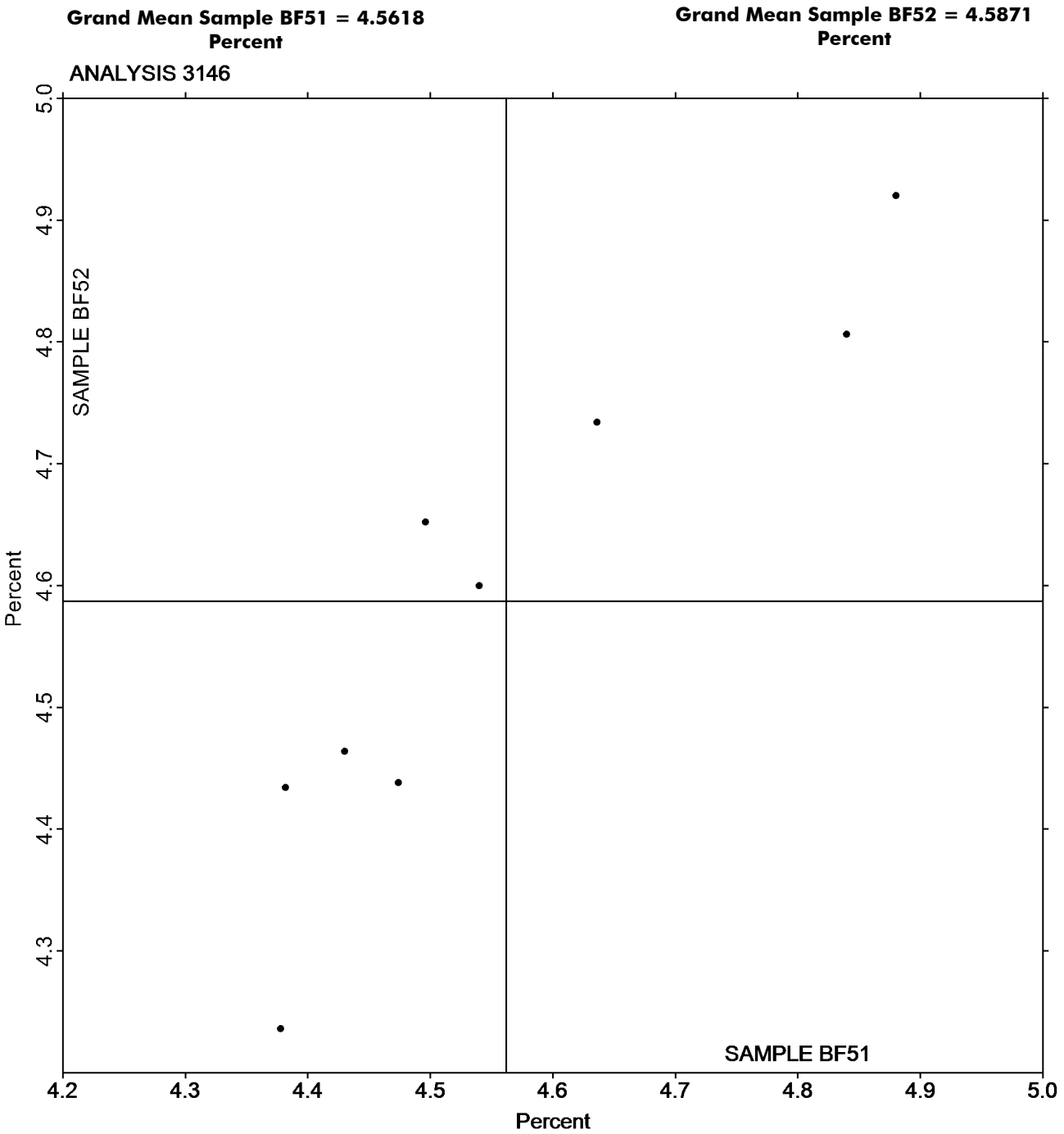
Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

LX	L & W (model not specified)	PP	Technidyne Profile/Plus
TD	Technidyne Color Touch X-45	TE	Technidyne TEST/Plus TAPPI Brightness
TS	Technidyne Brightimeter Micro S-5	XX	Instrument make/model not specified by lab

Analysis Notes:

GKQ4XN - Data appears to be transposed between Analysis 3145 (Directional Brightness) and Analysis 3146 (Fluorescent Component). CTS will not correct going forward.



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 3201

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

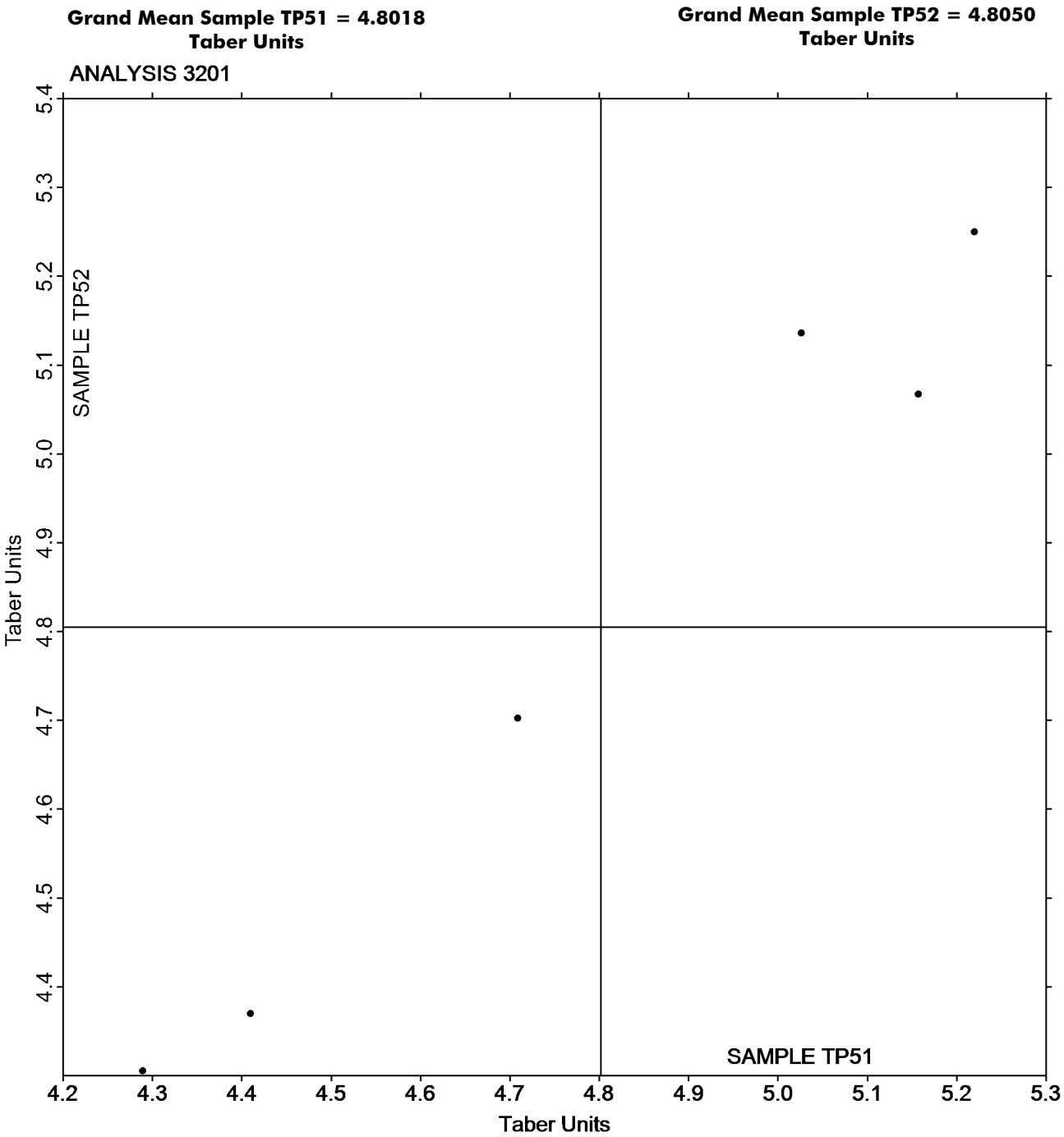
WebCode	Data Flag	Sample TP51 Lab Mean	Sample TP51 Diff from Grand Mean	Sample TP51 CPV	Sample TP52 Lab Mean	Sample TP52 Diff from Grand Mean	Sample TP52 CPV
797CKN		5.157	0.355	0.90	5.067	0.262	0.64
EKRJVV		4.709	-0.093	-0.24	4.702	-0.103	-0.25
EW94GD		5.026	0.224	0.57	5.136	0.331	0.81
HY6RMD		4.289	-0.513	-1.30	4.305	-0.500	-1.23
M9U93F		5.220	0.418	1.06	5.250	0.445	1.09
VAXVVC		4.410	-0.392	-0.99	4.370	-0.435	-1.07

Summary Statistics	Sample TP51	Sample TP52
Grand Means	4.80 Taber Units	4.81 Taber Units
Stnd Dev Btwn Labs	0.39 Taber Units	0.41 Taber Units

Statistics based on 6 of 6 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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 3203

Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

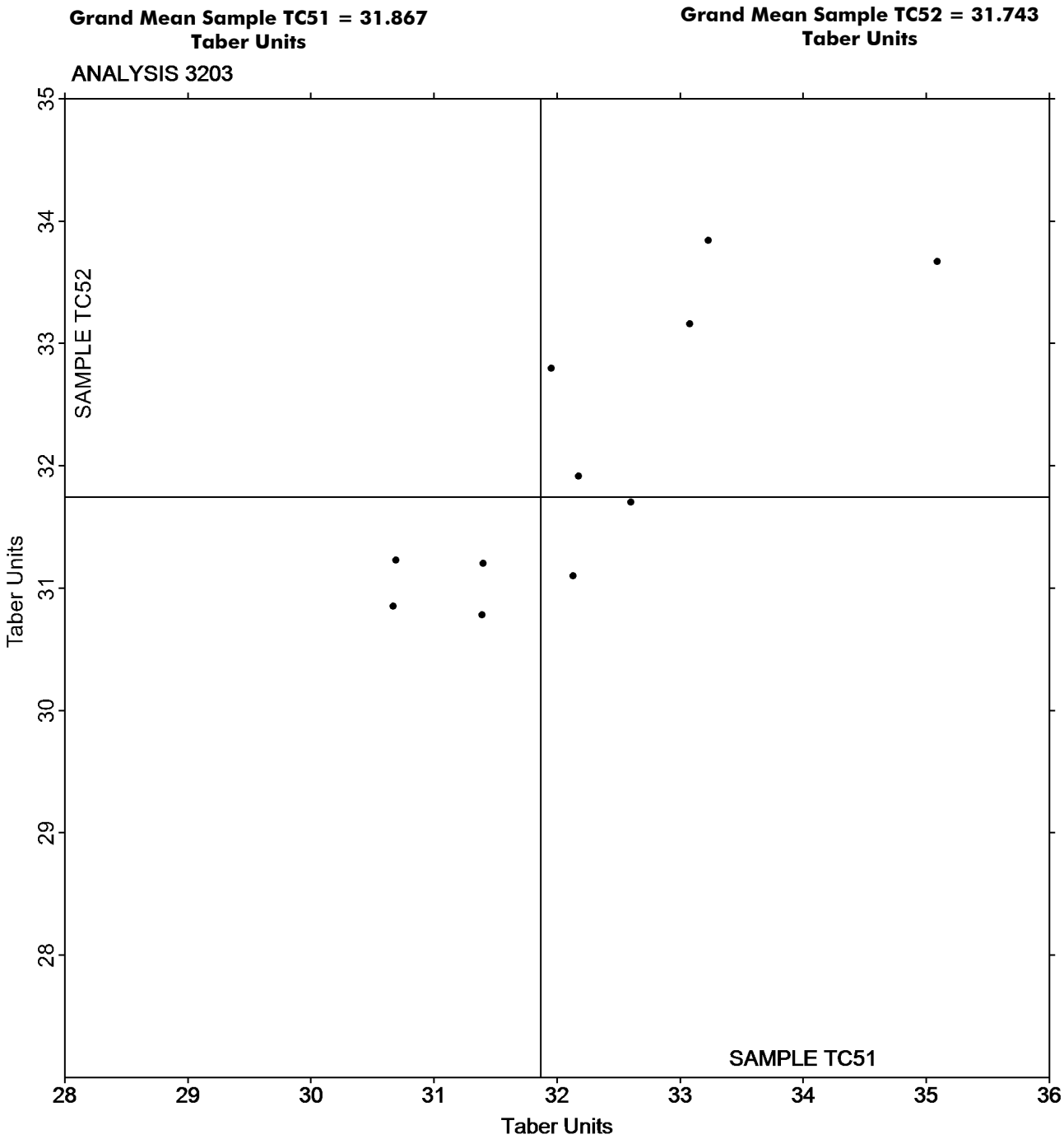
WebCode	Data Flag	Sample TC51 Lab Mean	Sample TC51 Diff from Grand Mean	Sample TC51 CPV	Sample TC52 Lab Mean	Sample TC52 Diff from Grand Mean	Sample TC52 CPV
32FTQW		28.00	-3.87	-2.24	28.67	-3.07	-2.11
3DTVCU		32.60	0.73	0.43	31.70	-0.04	-0.03
E7V6XM		32.18	0.31	0.18	31.92	0.17	0.12
EW94GD		32.13	0.26	0.15	31.10	-0.64	-0.44
GFBXYU		31.40	-0.47	-0.27	31.20	-0.54	-0.37
LUXU68		31.39	-0.48	-0.28	30.78	-0.96	-0.66
M8YQZE		35.09	3.22	1.87	33.67	1.93	1.32
M9UBRK		30.69	-1.18	-0.68	31.23	-0.51	-0.35
NXNNEE		33.23	1.36	0.79	33.84	2.10	1.44
RR8G6C		30.67	-1.20	-0.70	30.85	-0.89	-0.61
VLAYGA		33.08	1.21	0.70	33.16	1.42	0.97
W8N769		31.95	0.08	0.05	32.80	1.05	0.72

Summary Statistics	Sample TC51	Sample TC52
Grand Means	31.87 Taber Units	31.74 Taber Units
Stnd Dev Btwn Labs	1.72 Taber Units	1.46 Taber Units

Statistics based on 12 of 12 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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 3205

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

TAPPI Official Test Method T489

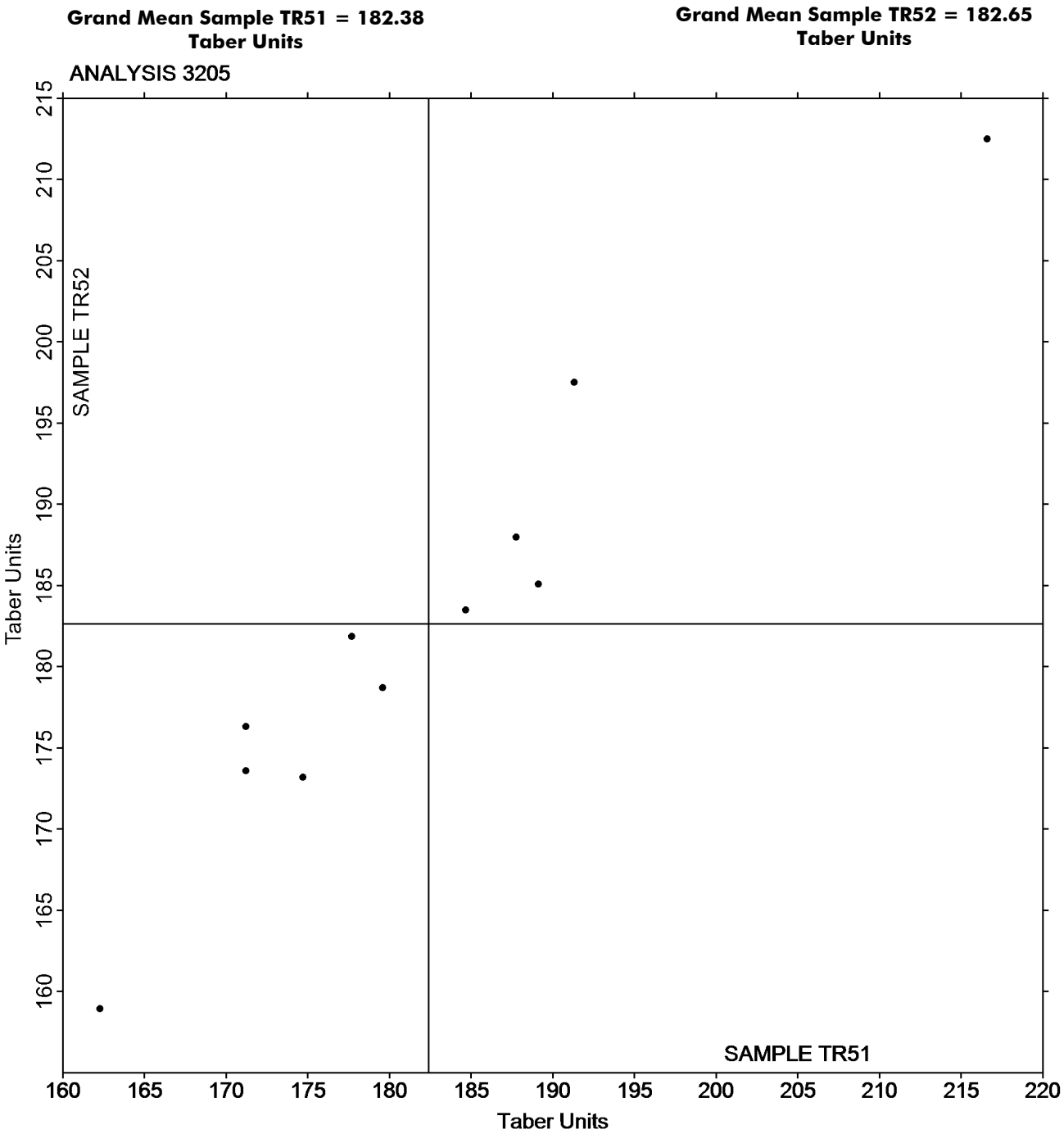
WebCode	Data Flag	Sample TR51 Lab Mean	Sample TR51 Diff from Grand Mean	Sample TR51 CPV	Sample TR52 Lab Mean	Sample TR52 Diff from Grand Mean	Sample TR52 CPV
3H39UT		179.6	-2.8	-0.19	178.7	-4.0	-0.28
9FHB3R		171.2	-11.2	-0.78	176.3	-6.4	-0.46
E7V6XM		184.7	2.3	0.16	183.5	0.8	0.06
FCGHAU		216.6	34.2	2.38	212.5	29.8	2.15
L84QLN		171.2	-11.2	-0.78	173.6	-9.1	-0.65
MN8JTN		187.8	5.4	0.37	188.0	5.3	0.38
Q7BNL2		162.3	-20.1	-1.40	158.9	-23.7	-1.70
TAN6RC		191.3	8.9	0.62	197.5	14.8	1.07
VLAYGA		177.7	-4.7	-0.33	181.9	-0.8	-0.06
W8N769		189.1	6.7	0.47	185.1	2.4	0.17
YEKHGV		174.7	-7.7	-0.53	173.2	-9.5	-0.68

Summary Statistics	Sample TR51	Sample TR52
Grand Means	182.38 Taber Units	182.65 Taber Units
Stnd Dev Btwn Labs	14.40 Taber Units	13.92 Taber Units

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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 3207
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

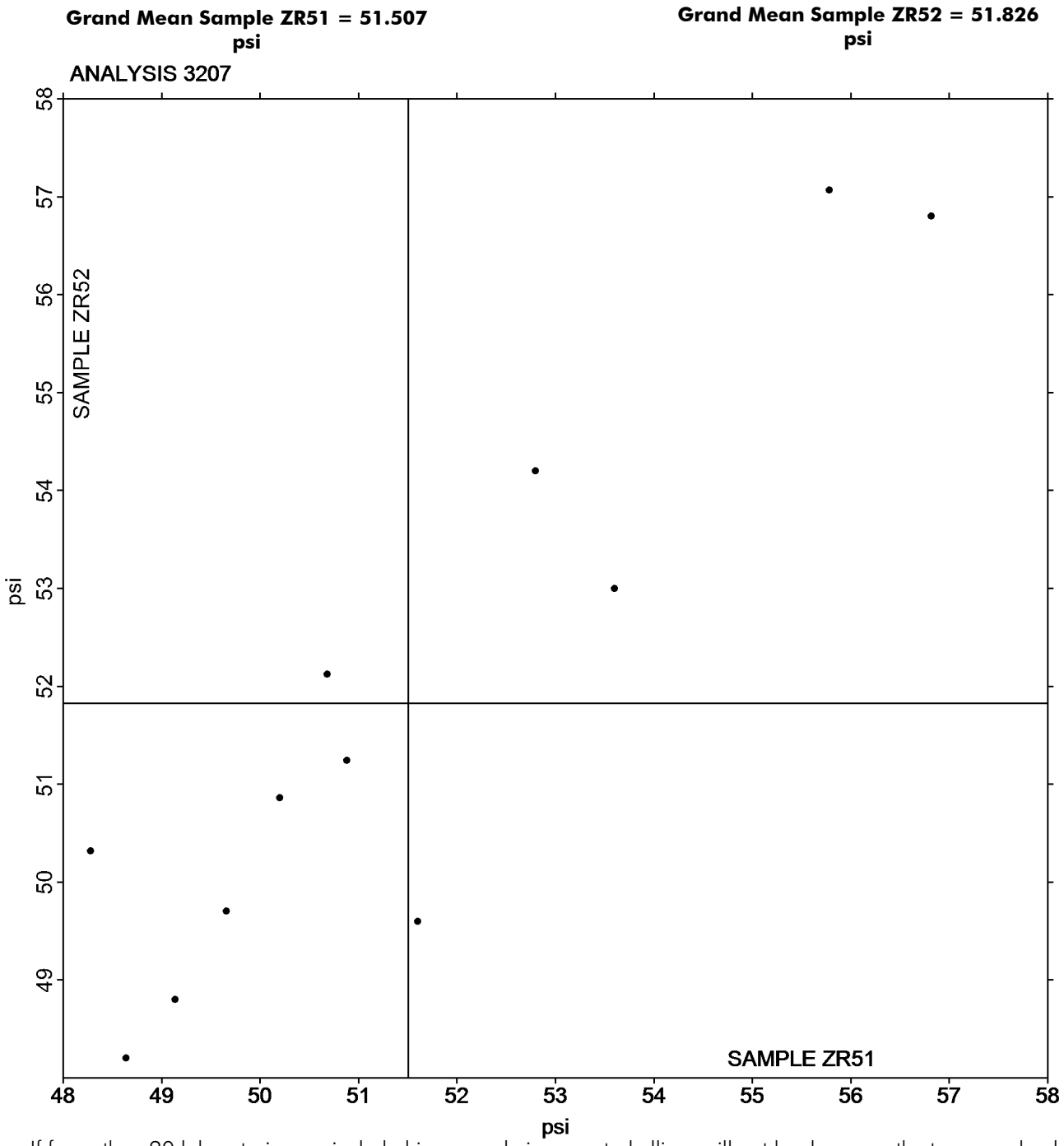
WebCode	Data Flag	Sample ZR51 Lab Mean	Sample ZR51 Diff from Grand Mean	Sample ZR51 CPV	Sample ZR52 Lab Mean	Sample ZR52 Diff from Grand Mean	Sample ZR52 CPV
24R9KX		50.20	-1.31	-0.48	50.86	-0.97	-0.33
2RGJ73		49.14	-2.37	-0.86	48.80	-3.03	-1.03
3H39UT		48.64	-2.87	-1.04	48.20	-3.63	-1.24
E7V6XM		50.88	-0.63	-0.23	51.24	-0.59	-0.20
FCGHAU		53.60	2.09	0.76	53.00	1.17	0.40
L84QLN		48.28	-3.23	-1.17	50.32	-1.51	-0.51
LGQPEE		50.68	-0.83	-0.30	52.12	0.29	0.10
P3G8UG		51.60	0.09	0.03	49.60	-2.23	-0.76
PYXCTB		55.78	4.28	1.56	57.07	5.24	1.79
VLAYGA		56.82	5.31	1.93	56.80	4.97	1.70
XLZ4PZ		52.80	1.29	0.47	54.20	2.37	0.81
YEKHGV		49.66	-1.85	-0.67	49.70	-2.13	-0.72

Summary Statistics	Sample ZR51	Sample ZR52
Grand Means	51.51 psi	51.83 psi
Stnd Dev Btwn Labs	2.75 psi	2.93 psi

Statistics based on 12 of 12 reporting participants.

Key to Instrument Codes Reported by Participants

CA	CSI CS-163	CD	CSI CS-163D
CH	Chatillon Ametek	LW	L & W ZD Tensile Tester
TA	Thwing-Albert Tensile 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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 3209
Z-Direction Tensile
TAPPI Official Test Method T541

WebCode	Data Flag	Sample ZP51 Lab Mean	Sample ZP51 Diff from Grand Mean	Sample ZP51 CPV	Sample ZP52 Lab Mean	Sample ZP52 Diff from Grand Mean	Sample ZP52 CPV
3DTVCU		76.16	-3.75	-0.36	79.08	-1.67	-0.17
9FHB3R		99.96	20.05	1.93	100.32	19.57	2.02
C2777L		69.01	-10.90	-1.05	70.92	-9.83	-1.01
M8YQZE		80.16	0.25	0.02	78.88	-1.87	-0.19
M9UBRK		68.36	-11.55	-1.11	71.06	-9.69	-1.00
NXNNEE		78.60	-1.31	-0.13	78.72	-2.03	-0.21
PVX2XB		78.40	-1.51	-0.14	77.40	-3.35	-0.35
TAN6RC		75.36	-4.55	-0.44	77.52	-3.23	-0.33
VLAYGA		93.14	13.23	1.27	92.84	12.09	1.25

Summary Statistics	Sample ZP51	Sample ZP52
Grand Means	79.91 psi	80.75 psi
Stnd Dev Btwn Labs	10.42 psi	9.69 psi

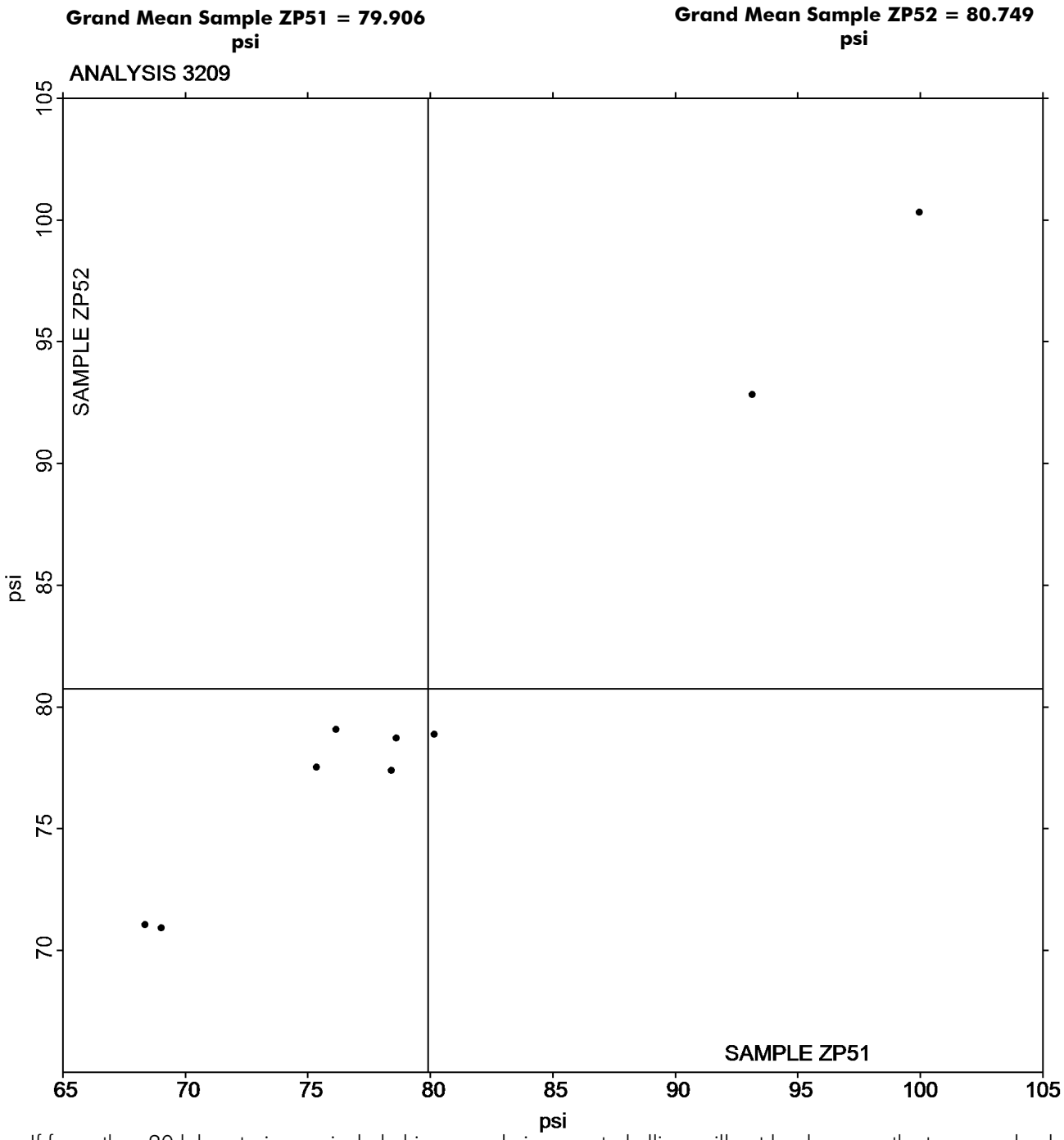
Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

CD CSI CS-163D

LW L & W ZD Tensile Tester

TA Thwing-Albert Tensile 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 3211

Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

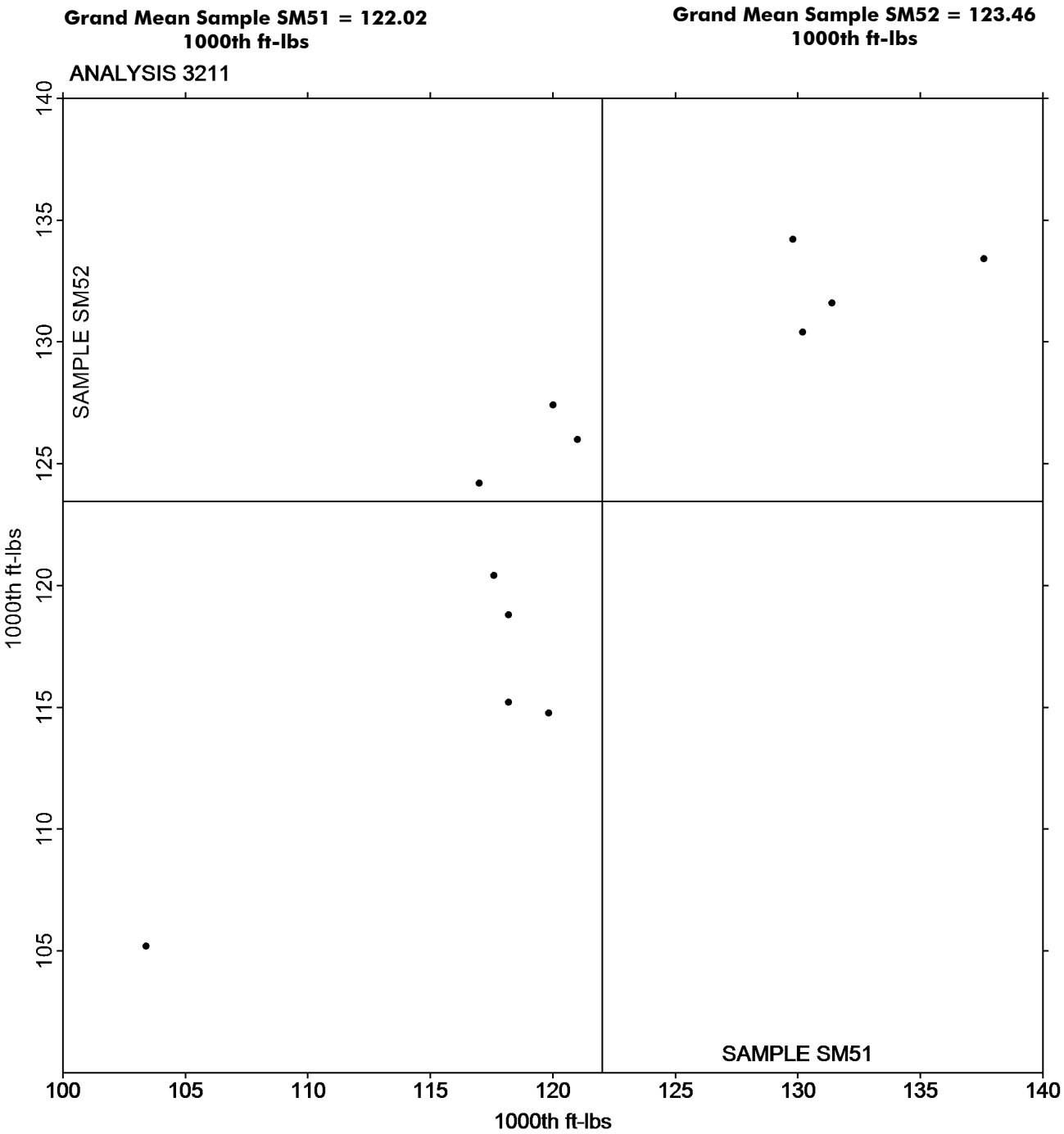
WebCode	Data Flag	Sample SM51 Lab Mean	Sample SM51 Diff from Grand Mean	Sample SM51 CPV	Sample SM52 Lab Mean	Sample SM52 Diff from Grand Mean	Sample SM52 CPV
3DTVCU		130.2	8.2	0.91	130.4	6.9	0.78
3DXDAT		121.0	-1.0	-0.11	126.0	2.5	0.29
3H39UT		120.0	-2.0	-0.22	127.4	3.9	0.45
9AVKJG		118.2	-3.8	-0.43	115.2	-8.3	-0.93
9FHB3R		103.4	-18.6	-2.07	105.2	-18.3	-2.07
L796UH		119.8	-2.2	-0.24	114.8	-8.7	-0.98
M8YQZE		129.8	7.8	0.87	134.2	10.7	1.21
NXNNEE		137.6	15.6	1.73	133.4	9.9	1.12
UFPGN9		118.2	-3.8	-0.43	118.8	-4.7	-0.53
VAXVVC		117.6	-4.4	-0.49	120.4	-3.1	-0.35
VLAYGA		117.0	-5.0	-0.56	124.2	0.7	0.08
XHZTUZ		131.4	9.4	1.04	131.6	8.1	0.92

Summary Statistics	Sample SM51	Sample SM52
Grand Means	122.02 1000th ft-lbs	123.46 1000th ft-lbs
Stnd Dev Btwn Labs	8.99 1000th ft-lbs	8.84 1000th ft-lbs

Statistics based on 12 of 12 reporting participants.

Key to Instrument Codes Reported by Participants

HX	Huygen Internal Scott Bond Tester	HY	Huygen Digitized Internal Scott Bond Tester
HZ	Huygen Internal Bond Tester with AccuPress	KR	Kumagai Riki Kogyo 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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 3213

Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SB51 Lab Mean	Sample SB51 Diff from Grand Mean	Sample SB51 CPV	Sample SB52 Lab Mean	Sample SB52 Diff from Grand Mean	Sample SB52 CPV
3DXDAT		124.6	9.5	0.65	119.2	4.2	0.27
BZZ68H		122.6	7.5	0.52	120.4	5.4	0.35
CFM2LH		126.4	11.3	0.78	135.8	20.8	1.33
EW94GD		115.2	0.1	0.01	111.2	-3.8	-0.24
GFBXYU		117.1	2.0	0.14	113.4	-1.5	-0.10
HY6RMD		87.4	-27.7	-1.90	108.6	-6.4	-0.40
N8TVUD		132.8	17.7	1.22	131.2	16.2	1.03
NBVT67		112.6	-2.5	-0.17	98.2	-16.8	-1.07
RL769E		90.2	-24.9	-1.71	85.4	-29.6	-1.88
UGZL2W		110.8	-4.3	-0.29	105.6	-9.4	-0.60
YTGY7U		126.2	11.1	0.76	135.6	20.6	1.31

Summary Statistics	Sample SB51	Sample SB52
Grand Means	115.08 1000th ft-lbs	114.96 1000th ft-lbs
Stnd Dev Btwn Labs	14.58 1000th ft-lbs	15.72 1000th ft-lbs

Statistics based on 11 of 11 reporting participants.

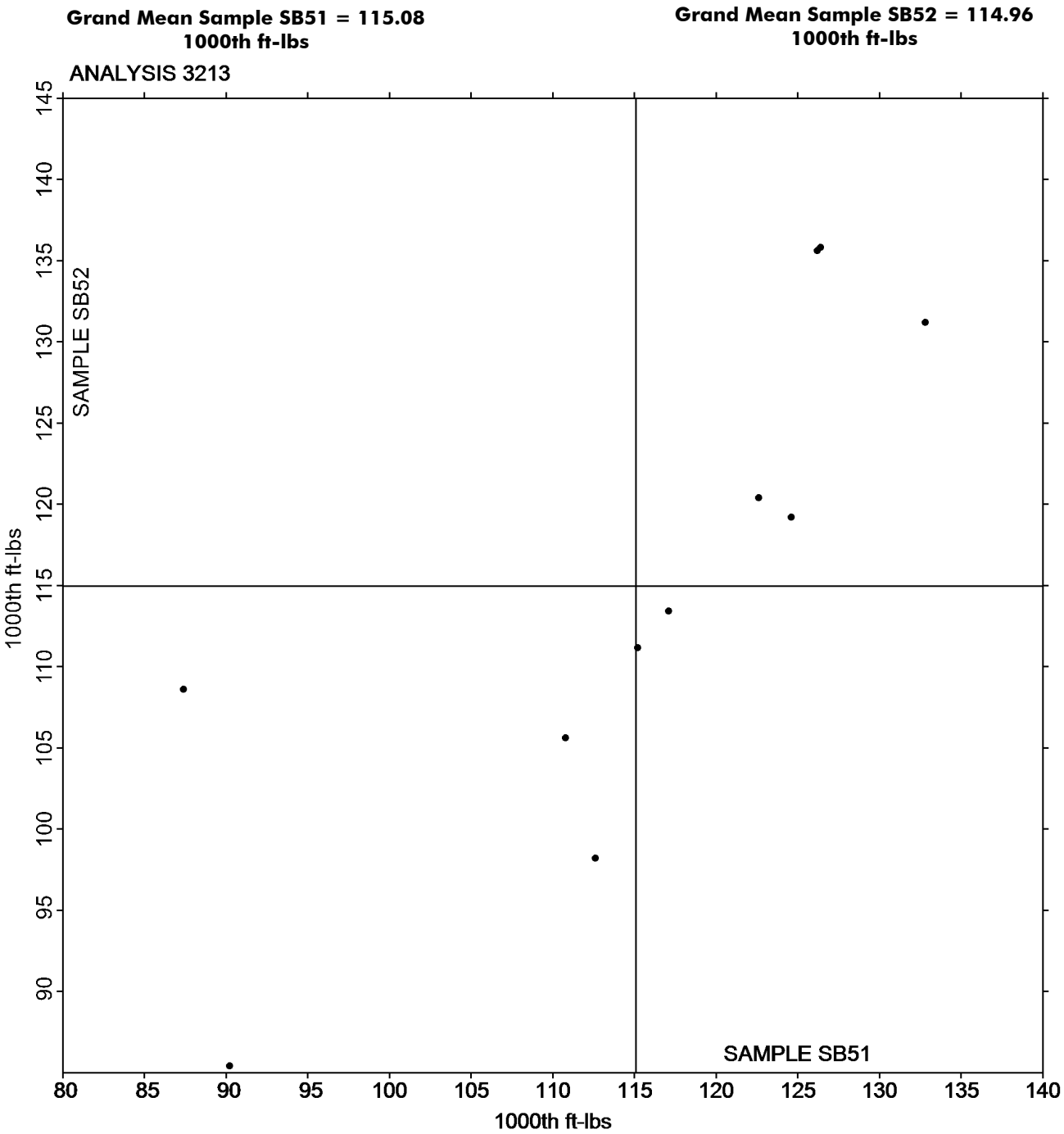
Key to Instrument Codes Reported by Participants

ID	IDM Internal Bond Tester	SC	Scott Internal Bond Tester (Manual)
TM	TMI Monitor/Internal Bond Tester	XX	Instrument make/model not specified by lab

Analysis Notes:

RL769E - Data appear to be off by a factor of .001 (x1000). CTS will not correct going forward.

UGZL2W - Data appear to be off by a factor of .001 (x1000). CTS will not correct going forward.



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-