Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #4231 - March 2023

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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 sectors: 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 CP15 Lab Mean	Sample CP15 Diff from Grand Mean	Sample CP15 CPV	Sample CP16 Lab Mean	Sample CP16 Diff from Grand Mean	Sample CP16 CPV
2H29XR		3.800	-0.082	-1.33	3.801	-0.064	-1.11
2JWHEN		4.003	0.121	1.97	3.981	0.116	1.99
4YY7DT		3.859	-0.023	-0.37	3.894	0.029	0.49
666Y64		3.857	-0.025	-0.40	3.880	0.015	0.25
6Y6G4X		3.962	0.080	1.31	3.921	0.056	0.95
6ZM2BL		3.854	-0.028	-0.45	3.841	-0.024	-0.42
7T4X4J		3.881	-0.001	-0.01	3.844	-0.021	-0.37
98XRKP		3.807	-0.075	-1.22	3.778	-0.087	-1.50
9HDBLD		3.754	-0.128	-2.08	3.757	-0.108	-1.86
A9R8GY		3.857	-0.025	-0.40	3.880	0.015	0.25
AA43WP		3.877	-0.005	-0.08	3.890	0.025	0.42
AVPXPW		3.886	0.004	0.07	3.881	0.016	0.27
C64DTN	X	3.465	-0.417	-6.78	3.445	-0.420	-7.21
DMKZUP		3.881	-0.001	-0.01	3.873	0.008	0.13
DNCX6G		3.834	-0.048	-0.78	3.814	-0.051	-0.88
EGNQQG		3.948	0.067	1.09	3.933	0.067	1.15
JKBY3D		3.885	0.003	0.05	3.868	0.003	0.04
K69U6Z	*	4.004	0.122	1.98	3.935	0.069	1.19
KGHRQF		3.772	-0.110	-1.79	3.755	-0.110	-1.90
L4X898		3.767	-0.115	-1.87	3.770	-0.095	-1.64
LGZXUC		3.891	0.009	0.15	3.897	0.032	0.54
LZCKFJ		3.951	0.069	1.12	3.934	0.068	1.17
M9BBT8		3.815	-0.067	-1.09	3.787	-0.078	-1.34
N9LXHZ		3.951	0.069	1.13	3.915	0.050	0.85
NAVVHA		3.888	0.006	0.10	3.836	-0.029	-0.50
NWMYF8		3.897	0.015	0.25	3.896	0.031	0.52
P8JHFY		3.832	-0.050	-0.81	3.797	-0.068	-1.18
QDZKRU		3.822	-0.060	-0.97	3.782	-0.083	-1.43
QRPBV7		3.905	0.023	0.37	3.874	0.009	0.15
QTFGAB		3.836	-0.046	-0.74	3.820	-0.045	-0.78
QUEGF3		3.939	0.057	0.93	3.885	0.020	0.33
R2RWGB		3.917	0.035	0.57	3.888	0.023	0.39
R4JV9G		3.874	-0.008	-0.13	3.878	0.013	0.21
R792QR		3.955	0.073	1.19	3.899	0.034	0.58
R7ZQP9		3.858	-0.024	-0.39	3.825	-0.040	-0.69
REUVHA		3.862	-0.020	-0.32	3.858	-0.007	-0.12
U268J2		3.885	0.004	0.06	3.887	0.022	0.38
UUFTGM		3.915	0.033	0.53	3.915	0.049	0.85
V7U9Z7		3.854	-0.028	-0.45	3.807	-0.058	-1.00
VMWPAK		3.908	0.026	0.43	3.872	0.007	0.11

Paper & Paperboard Interlaboratory Testing Program

Analysis 3101
Thickness (Caliper), Printing papers
TAPPI Official Test Method T411

WebCode	Data Flag	Sample CP15 Lab Mean	Sample CP15 Diff from Grand Mean	Sample CP15 CPV	Sample CP16 Lab Mean	Sample CP16 Diff from Grand Mean	Sample CP16 CPV
W6DB92		4.000	0.118	1.92	3.992	0.127	2.17
X2KYM2		3.903	0.021	0.35	3.854	-0.011	-0.20
XF77QT		3.895	0.014	0.22	3.874	0.009	0.15
XHWC6Y		3.855	-0.027	-0.43	3.870	0.005	0.08
YAFQL2		3.971	0.089	1.45	3.941	0.076	1.30
YDWNZW		3.793	-0.089	-1.44	3.797	-0.068	-1.18
YTCLJ4		3.864	-0.018	-0.29	3.858	-0.007	-0.13
YZVPG7		3.970	0.088	1.43	3.985	0.120	2.06
ZLTHC2		3.830	-0.052	-0.84	3.822	-0.043	-0.75

Summary Statistics	Sample CP15	Sample CP16
Grand Means	3.88 mils	3.87 mils
Stnd Dev Btwn Labs	0.06 mils	0.06 mils

Statistics based on 48 of 49 reporting participants.

Comments on Assigned Data Flags for Test #3101

C64DTN (X) - Extreme Data.

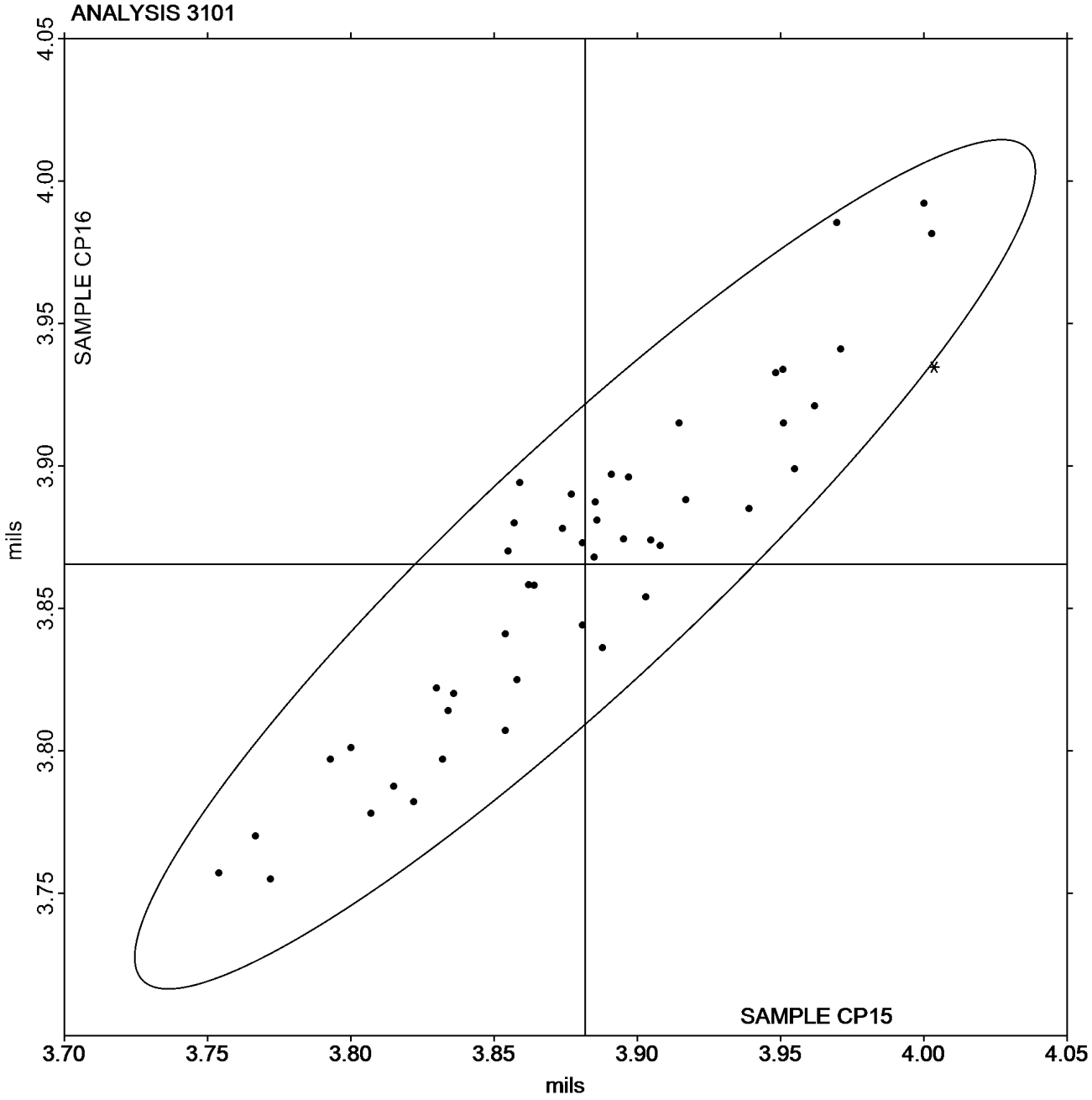
Analysis Notes:

L4X898 - One determination removed from the Lab Mean of Sample CP15 per Grubb's Test at 1% risk (TAPPI 1205).

YAFQL2 - One determination removed from the Lab Mean of Sample CP15 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample CP15 = 3.8817 mils

Grand Mean Sample CP16 = 3.8655 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 3111

Bursting Strength - Printing Papers

TAPPI Official Test Method T403

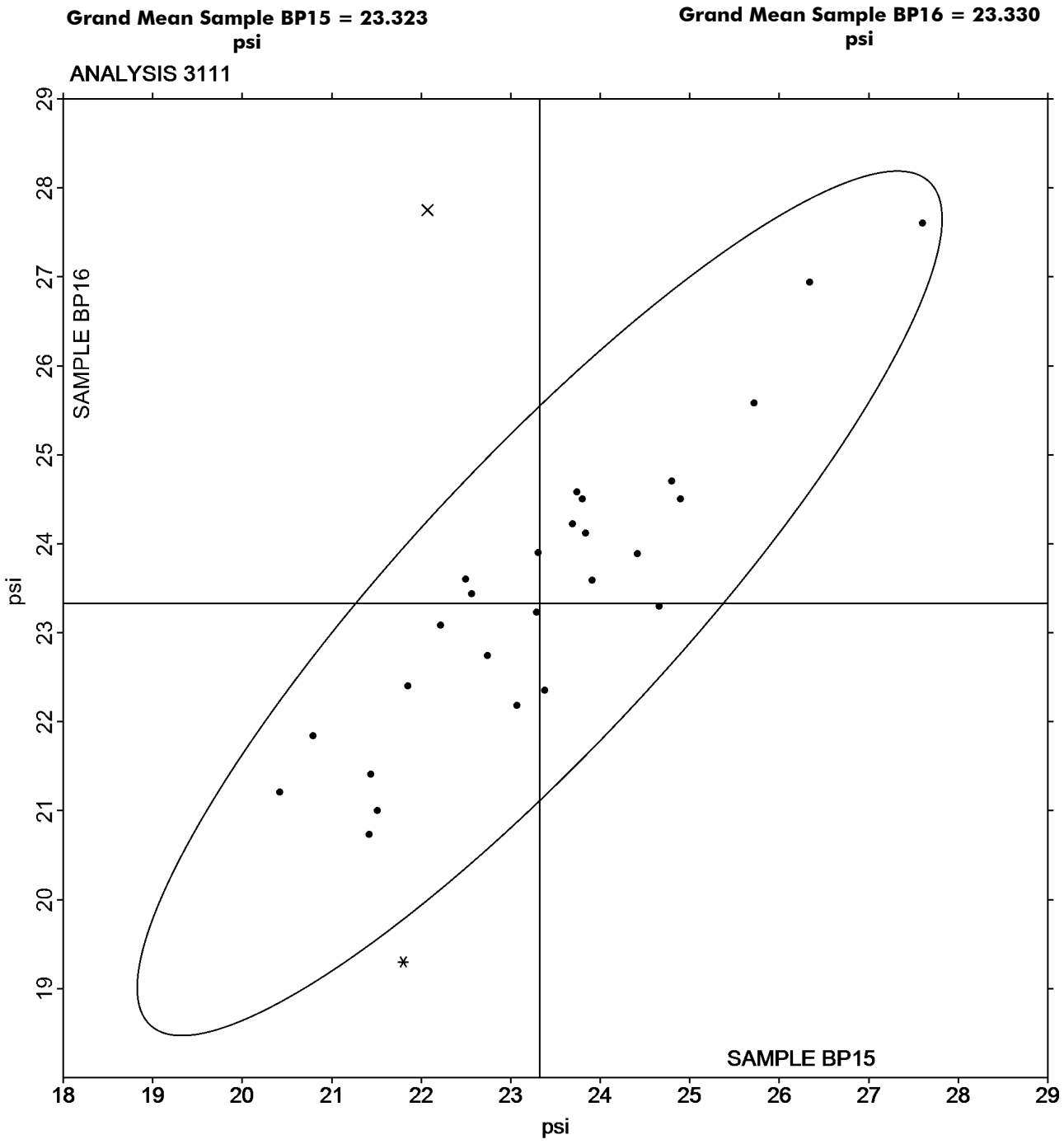
WebCode	Data Flag	Sample BP15 Lab Mean	Sample BP15 Diff from Grand Mean	Sample BP15 CPV	Sample BP16 Lab Mean	Sample BP16 Diff from Grand Mean	Sample BP16 CPV
2P67RQ		24.80	1.48	0.87	24.70	1.37	0.75
4FMFZV	*	21.80	-1.52	-0.90	19.30	-4.03	-2.20
666Y64		23.84	0.52	0.31	24.12	0.79	0.43
6YJ3FK		23.29	-0.04	-0.02	23.23	-0.10	-0.05
7T4X4J		20.79	-2.53	-1.49	21.84	-1.49	-0.81
9N4KXX		23.07	-0.25	-0.15	22.18	-1.15	-0.63
AA43WP		23.80	0.48	0.28	24.50	1.17	0.64
AJ4WUV		27.60	4.28	2.52	27.60	4.27	2.33
EGNQQG		20.42	-2.90	-1.71	21.20	-2.13	-1.16
KGHRQF		22.74	-0.58	-0.34	22.74	-0.59	-0.32
L4X898		21.44	-1.89	-1.11	21.41	-1.92	-1.05
LZCKFJ		21.51	-1.81	-1.07	21.00	-2.33	-1.27
N9LXHZ		26.34	3.02	1.78	26.94	3.61	1.97
NAVVHA		24.41	1.09	0.64	23.89	0.56	0.30
NWMYF8		22.22	-1.11	-0.65	23.08	-0.25	-0.13
QRPBV7		23.69	0.37	0.22	24.22	0.89	0.49
R792QR		21.42	-1.90	-1.12	20.73	-2.60	-1.42
REUVHA		23.91	0.59	0.35	23.59	0.26	0.14
U268J2		22.57	-0.75	-0.45	23.44	0.11	0.06
UCPJWY		23.31	-0.01	-0.01	23.90	0.57	0.31
UGPY6T		21.85	-1.47	-0.87	22.40	-0.93	-0.51
V7U9Z7		25.72	2.40	1.41	25.58	2.25	1.23
VMWPAK		23.74	0.42	0.25	24.58	1.25	0.68
XWVGDV		24.66	1.34	0.79	23.30	-0.03	-0.02
YAFQL2	X	22.07	-1.25	-0.74	27.75	4.42	2.41
YTCLJ4		24.90	1.58	0.93	24.50	1.17	0.64
YZVPG7		23.38	0.06	0.03	22.35	-0.98	-0.54
ZMLDU4		22.50	-0.83	-0.49	23.60	0.27	0.15

Summary Statistics	Sample BP15	Sample BP16
Grand Means	23.32 psi	23.33 psi
Stnd Dev Btwn Labs	1.69 psi	1.83 psi

Statistics based on 27 of 28 reporting participants.

Comments on Assigned Data Flags for Test #3111

YAFQL2 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample BP16.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3113

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample RP15 Lab Mean	Sample RP15 Diff from Grand Mean	Sample RP15 CPV	Sample RP16 Lab Mean	Sample RP16 Diff from Grand Mean	Sample RP16 CPV
2H29XR		48.12	1.23	0.24	49.52	2.97	0.59
2JWHEN		53.61	6.72	1.29	51.37	4.82	0.96
2P67RQ		50.20	3.31	0.64	49.60	3.05	0.60
3DMNTR		41.44	-5.45	-1.04	43.05	-3.50	-0.70
4YY7DT		39.24	-7.65	-1.47	39.50	-7.05	-1.40
666Y64		47.40	0.51	0.10	49.80	3.25	0.64
6ZM2BL		42.18	-4.71	-0.90	43.80	-2.75	-0.55
7T4X4J		49.24	2.35	0.45	49.18	2.63	0.52
AA43WP		49.18	2.29	0.44	48.79	2.24	0.44
BM3C3H		42.11	-4.78	-0.92	41.42	-5.13	-1.02
C64DTN		40.59	-6.30	-1.21	38.46	-8.09	-1.61
CZMALR		45.60	-1.29	-0.25	43.43	-3.12	-0.62
DMKZUP		46.10	-0.79	-0.15	46.20	-0.35	-0.07
DWNCMD		49.88	2.99	0.57	49.66	3.11	0.62
EGNQQG		50.68	3.79	0.73	50.50	3.94	0.78
JKBY3D		43.41	-3.48	-0.67	44.08	-2.48	-0.49
K69U6Z		49.25	2.36	0.45	49.64	3.09	0.61
KG43R9		44.01	-2.88	-0.55	43.58	-2.97	-0.59
LGZXUC	*	63.50	16.61	3.18	62.60	16.05	3.18
LZCKFJ		49.18	2.29	0.44	48.42	1.86	0.37
M9BBT8		43.20	-3.69	-0.71	41.20	-5.35	-1.06
MF8B7E		48.34	1.45	0.28	48.04	1.49	0.29
N9LXHZ		56.78	9.89	1.90	55.96	9.41	1.87
NAVVHA		48.28	1.39	0.27	47.40	0.85	0.17
NWMYF8		48.76	1.87	0.36	47.40	0.85	0.17
QDZKRU		45.38	-1.51	-0.29	45.82	-0.73	-0.15
QRPBV7		44.27	-2.62	-0.50	44.26	-2.30	-0.46
QUEGF3		42.86	-4.03	-0.77	42.76	-3.79	-0.75
R2RWGB		51.51	4.62	0.89	52.04	5.49	1.09
R792QR		46.56	-0.33	-0.06	47.12	0.57	0.11
REUVHA		44.93	-1.96	-0.38	45.00	-1.55	-0.31
RJBR76		40.57	-6.32	-1.21	39.54	-7.01	-1.39
TMPMQ9		56.27	9.38	1.80	55.20	8.64	1.71
TQDYPE		33.52	-13.37	-2.56	33.86	-12.69	-2.52
U268J2		49.95	3.06	0.59	49.59	3.04	0.60
V7U9Z7		42.94	-3.95	-0.76	42.86	-3.69	-0.73
VMWPAK		44.20	-2.69	-0.52	43.50	-3.05	-0.61
X2KYM2		51.78	4.89	0.94	49.50	2.95	0.58
XWVGDV	*	50.06	3.17	0.61	46.34	-0.21	-0.04
YTCLJ4		47.60	0.71	0.14	48.50	1.95	0.39

Paper & Paperboard Interlaboratory Testing Program

Analysis 3113

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

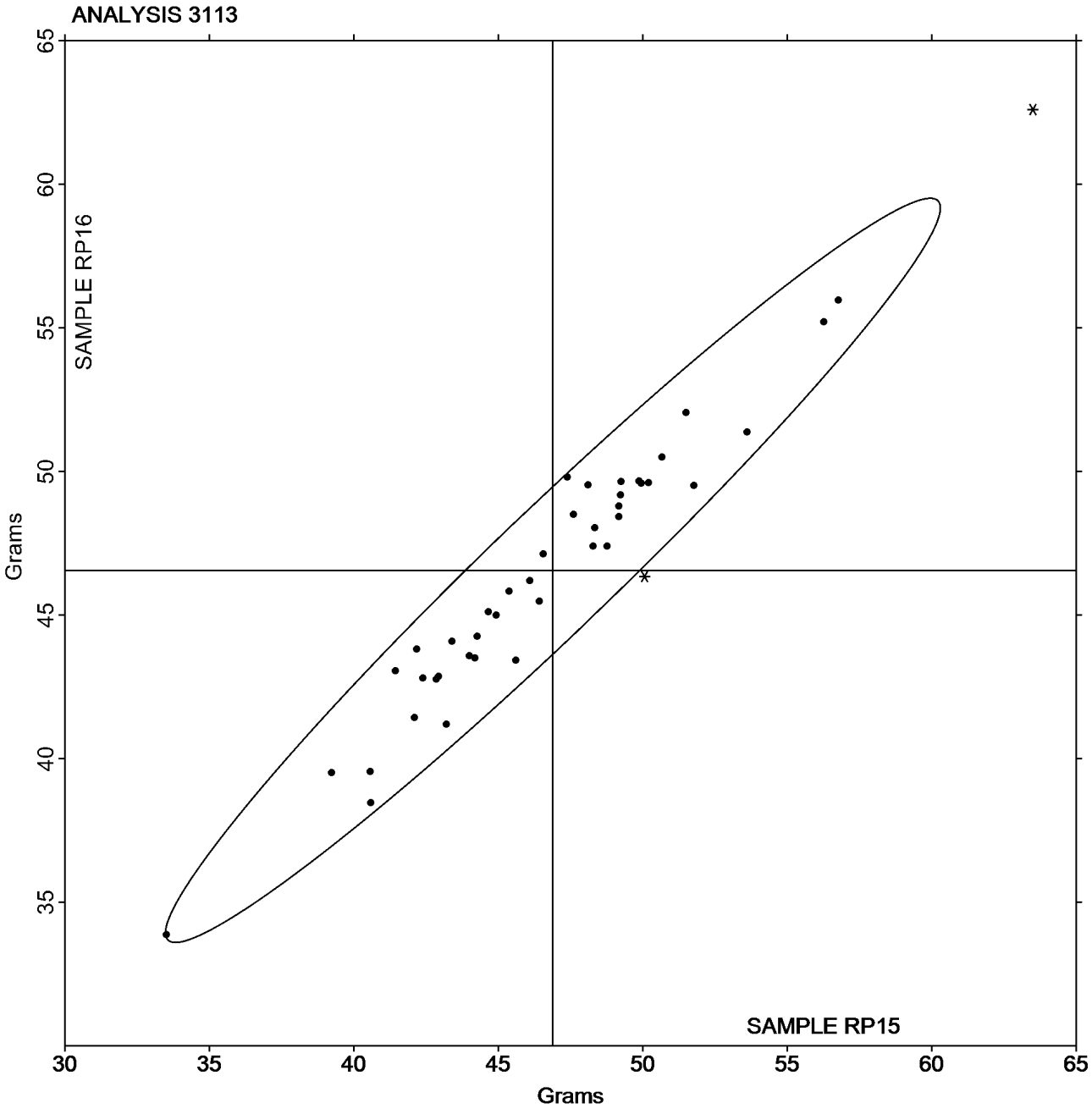
WebCode	Data Flag	Sample RP15 Lab Mean	Sample RP15 Diff from Grand Mean	Sample RP15 CPV	Sample RP16 Lab Mean	Sample RP16 Diff from Grand Mean	Sample RP16 CPV
ZKTKJT		44.67	-2.22	-0.43	45.11	-1.44	-0.29
ZLTHC2		42.40	-4.49	-0.86	42.80	-3.75	-0.75
ZMLDU4		46.43	-0.46	-0.09	45.47	-1.09	-0.22

Summary Statistics	Sample RP15	Sample RP16
Grand Means	46.89 Grams	46.55 Grams
Stnd Dev Btwn Labs	5.22 Grams	5.04 Grams

Statistics based on 43 of 43 reporting participants.

Grand Mean Sample RP15 = 46.888 Grams

Grand Mean Sample RP16 = 46.555 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP15 Lab Mean	Sample NP15 Diff from Grand Mean	Sample NP15 CPV	Sample NP16 Lab Mean	Sample NP16 Diff from Grand Mean	Sample NP16 CPV
278PJM	*	3.868	-0.447	-1.46	3.651	-0.675	-2.10
2H29XR		4.927	0.612	2.00	4.924	0.598	1.86
2JWHEN		4.103	-0.212	-0.70	4.147	-0.179	-0.56
4YY7DT		4.360	0.045	0.15	4.460	0.134	0.42
666Y64	*	4.721	0.406	1.33	4.514	0.188	0.59
6Y6G4X		3.822	-0.493	-1.61	3.839	-0.487	-1.52
6ZM2BL		4.154	-0.161	-0.53	4.223	-0.103	-0.32
747FEL		4.165	-0.151	-0.49	4.055	-0.271	-0.84
7MG6RJ		4.362	0.047	0.15	4.354	0.028	0.09
7T4X4J		4.139	-0.176	-0.58	4.184	-0.142	-0.44
AA43WP		4.196	-0.119	-0.39	4.201	-0.124	-0.39
AVPXPW		4.718	0.403	1.32	4.902	0.576	1.79
BZUN9N		4.336	0.021	0.07	4.324	-0.002	-0.01
C64DTN		4.566	0.250	0.82	4.394	0.068	0.21
CZMALR		4.130	-0.185	-0.61	4.190	-0.136	-0.42
D6EXF6		4.570	0.255	0.84	4.491	0.165	0.51
EGNQQG		4.283	-0.033	-0.11	4.262	-0.064	-0.20
FTXUJH		4.245	-0.070	-0.23	4.233	-0.093	-0.29
G4QVZR		4.597	0.282	0.92	4.696	0.370	1.15
JKBY3D		4.576	0.261	0.85	4.564	0.238	0.74
K69U6Z		3.993	-0.322	-1.05	3.989	-0.337	-1.05
KG43R9		4.389	0.073	0.24	4.329	0.003	0.01
L4X898		4.430	0.115	0.38	4.299	-0.027	-0.08
LGZXUC		4.065	-0.250	-0.82	4.145	-0.181	-0.56
LZCKFJ		4.411	0.096	0.31	4.617	0.291	0.91
M9BBT8		4.720	0.405	1.33	4.733	0.407	1.27
MF8B7E		4.146	-0.169	-0.55	4.055	-0.271	-0.84
MNGQJF		4.399	0.084	0.27	4.407	0.081	0.25
N9LXHZ		4.320	0.005	0.02	4.341	0.015	0.05
NWMYF8		3.999	-0.316	-1.03	3.922	-0.404	-1.26
QRPBV7		4.353	0.038	0.12	4.357	0.031	0.10
QTFGAB		4.725	0.410	1.34	4.783	0.457	1.42
QUEGF3		3.742	-0.573	-1.88	3.906	-0.420	-1.31
R2RWGB		4.084	-0.231	-0.76	4.072	-0.254	-0.79
R4JV9G		3.993	-0.322	-1.05	3.923	-0.403	-1.25
R792QR		4.046	-0.269	-0.88	3.970	-0.356	-1.11
REUVHA		4.001	-0.314	-1.03	3.915	-0.411	-1.28
RJBR76		4.679	0.364	1.19	4.684	0.358	1.11
TQDYPE		4.914	0.599	1.96	4.851	0.525	1.63
U268J2		4.245	-0.070	-0.23	4.335	0.009	0.03

Paper & Paperboard Interlaboratory Testing Program

Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP15 Lab Mean	Sample NP15 Diff from Grand Mean	Sample NP15 CPV	Sample NP16 Lab Mean	Sample NP16 Diff from Grand Mean	Sample NP16 CPV
UUFTGM		4.083	-0.232	-0.76	4.171	-0.155	-0.48
V7U9Z7		4.672	0.357	1.17	4.758	0.432	1.35
W6DB92	X	4.039	-0.276	-0.90	3.423	-0.903	-2.81
X2KYM2	*	4.684	0.369	1.21	4.940	0.614	1.91
XWVGDV		4.072	-0.243	-0.79	4.126	-0.200	-0.62
YTCLJ4		3.905	-0.410	-1.34	3.944	-0.382	-1.19
YXNEGW		4.124	-0.191	-0.62	4.186	-0.140	-0.44
YZVPG7		4.545	0.230	0.75	4.577	0.251	0.78
ZKTKJT		4.576	0.260	0.85	4.540	0.214	0.66
ZLTHC2		4.778	0.463	1.51	4.820	0.494	1.54
ZMLDU4		3.828	-0.487	-1.59	3.994	-0.332	-1.03

Summary Statistics	Sample NP15	Sample NP16
Grand Means	4.32 kN/m	4.33 kN/m
Stnd Dev Btwn Labs	0.31 kN/m	0.32 kN/m

Statistics based on 50 of 51 reporting participants.

Comments on Assigned Data Flags for Test #3115

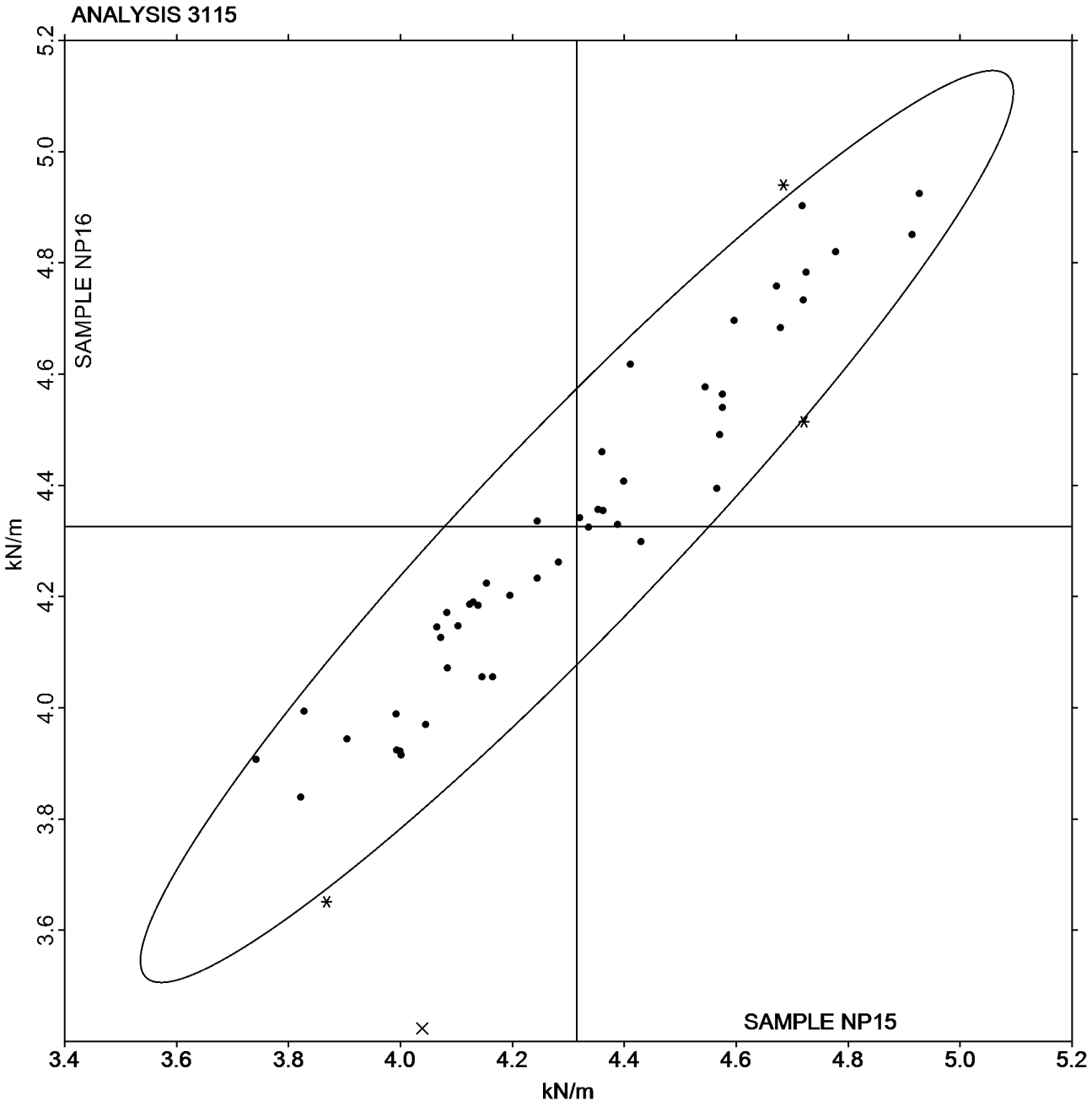
W6DB92 (X) - Data for sample NP16 are low. Inconsistent within the determinations of sample NP16.

Analysis Notes:

L4X898 - One determination removed from the Lab Mean of Sample NP16 per Grubb's Test at 1% risk (TAPPI 1205).

Grand Mean Sample NP15 = 4.3152 kN/m

Grand Mean Sample NP16 = 4.3259 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3116

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP15 Lab Mean	Sample NP15 Diff from Grand Mean	Sample NP15 CPV	Sample NP16 Lab Mean	Sample NP16 Diff from Grand Mean	Sample NP16 CPV
278PJM	*	40.27	-5.15	-1.18	34.49	-10.66	-2.40
2H29XR		39.64	-5.78	-1.33	38.56	-6.60	-1.49
2JWHEN		43.87	-1.55	-0.36	43.48	-1.67	-0.38
4YY7DT		44.27	-1.15	-0.26	47.73	2.58	0.58
666Y64		38.87	-6.55	-1.51	39.36	-5.79	-1.31
6Y6G4X		46.72	1.30	0.30	46.69	1.53	0.35
747FEL		47.74	2.32	0.53	45.38	0.22	0.05
7MG6RJ		53.94	8.52	1.96	50.47	5.32	1.20
7T4X4J		49.61	4.19	0.96	49.88	4.72	1.06
AA43WP		43.34	-2.08	-0.48	42.98	-2.18	-0.49
AVPXPW		50.20	4.78	1.10	53.13	7.97	1.80
BZUN9N		47.24	1.81	0.42	46.50	1.35	0.30
CZMALR		45.74	0.32	0.07	47.64	2.49	0.56
D6EXF6		47.42	2.00	0.46	45.65	0.50	0.11
EGNQQG		46.02	0.60	0.14	46.91	1.76	0.40
FTXUJH		48.64	3.22	0.74	46.74	1.58	0.36
G4QVZR		43.24	-2.18	-0.50	44.24	-0.91	-0.21
JKBY3D		40.87	-4.55	-1.05	38.12	-7.04	-1.59
K69U6Z		40.50	-4.92	-1.13	38.79	-6.37	-1.44
KG43R9		51.52	6.10	1.40	50.79	5.63	1.27
LGZXUC		54.52	9.10	2.09	54.64	9.48	2.14
LZCKFJ		46.07	0.65	0.15	50.19	5.04	1.14
MNGQJF		51.60	6.18	1.42	51.68	6.53	1.47
N9LXHZ		46.22	0.80	0.18	44.79	-0.36	-0.08
NWMYF8		44.91	-0.52	-0.12	43.83	-1.33	-0.30
QRPBV7		46.38	0.96	0.22	45.80	0.65	0.15
R2RWGB		47.28	1.86	0.43	45.82	0.67	0.15
R4JV9G		41.94	-3.48	-0.80	42.64	-2.51	-0.57
R792QR		48.51	3.09	0.71	45.01	-0.15	-0.03
RJBR76		40.80	-4.62	-1.06	38.47	-6.69	-1.51
TQDYPE		39.29	-6.13	-1.41	39.49	-5.67	-1.28
U268J2		45.13	-0.29	-0.07	47.44	2.29	0.52
UUFTGM		40.76	-4.66	-1.07	43.73	-1.43	-0.32
W6DB92	X	71.66	26.24	6.03	60.83	15.67	3.53
X2KYM2		43.84	-1.58	-0.36	47.39	2.23	0.50
XWVGDV		45.47	0.05	0.01	46.60	1.44	0.33
YTCLJ4		42.29	-3.13	-0.72	42.43	-2.73	-0.62
YXNEGW	X	66.09	20.67	4.75	68.26	23.11	5.21
YZVPG7		51.59	6.17	1.42	48.82	3.67	0.83
ZKTKJT		44.72	-0.70	-0.16	44.52	-0.63	-0.14

Paper & Paperboard Interlaboratory Testing Program

Analysis 3116

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP15 Lab Mean	Sample NP15 Diff from Grand Mean	Sample NP15 CPV	Sample NP16 Lab Mean	Sample NP16 Diff from Grand Mean	Sample NP16 CPV
ZLTHC2		50.28	4.86	1.12	45.67	0.51	0.12
ZMLDU4	*	35.51	-9.91	-2.28	39.73	-5.43	-1.22

Summary Statistics	Sample NP15	Sample NP16
Grand Means	45.42 Joules/sq m	45.15 Joules/sq m
Stnd Dev Btwn Labs	4.35 Joules/sq m	4.43 Joules/sq m

Statistics based on 40 of 42 reporting participants.

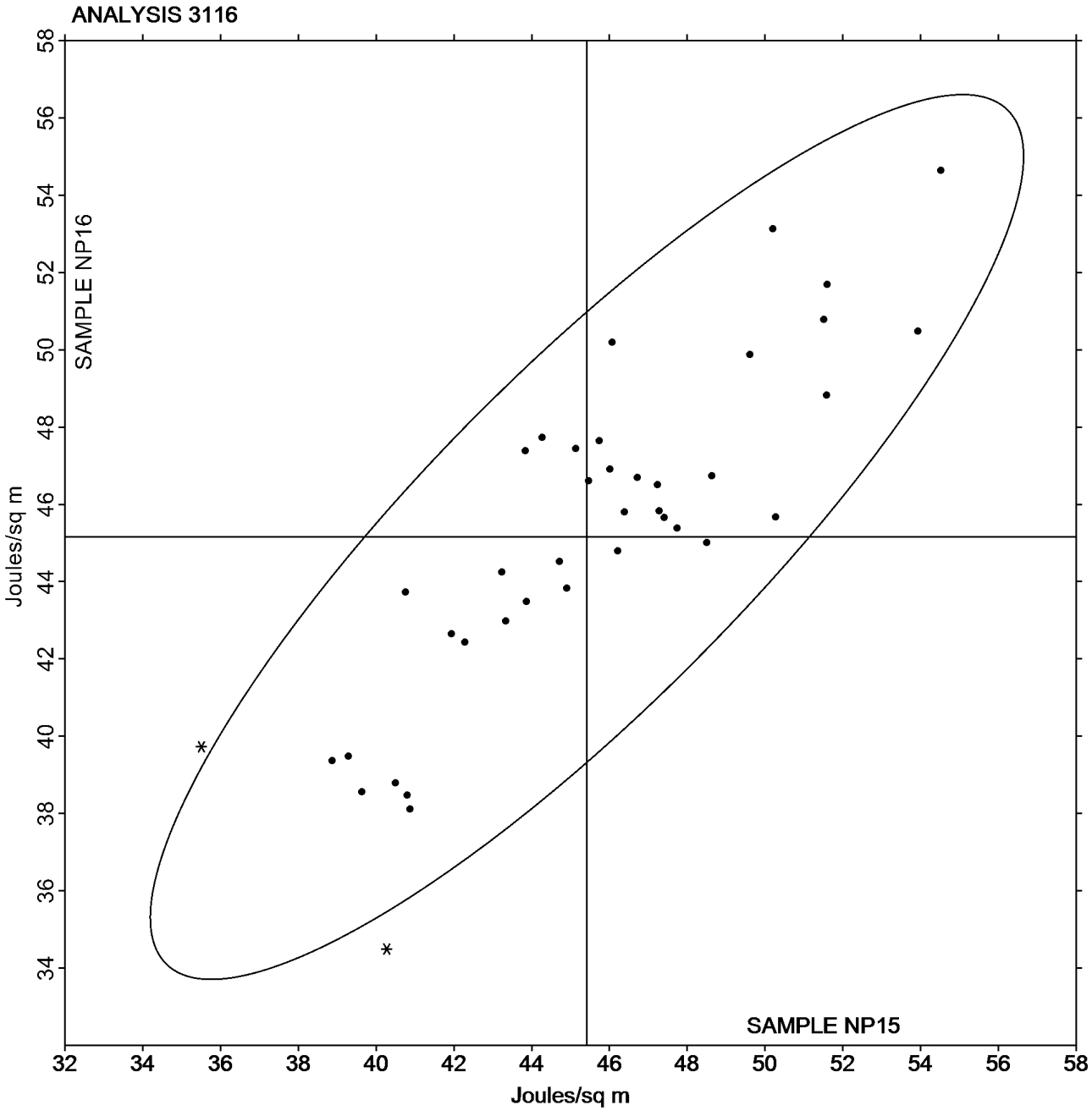
Comments on Assigned Data Flags for Test #3116

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

W6DB92 (X) - Extreme Data.

Grand Mean Sample NP15 = 45.420 Joules/sq m

Grand Mean Sample NP16 = 45.155 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3117

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP15 Lab Mean	Sample NP15 Diff from Grand Mean	Sample NP15 CPV	Sample NP16 Lab Mean	Sample NP16 Diff from Grand Mean	Sample NP16 CPV
278PJM		1.742	0.077	0.43	1.609	-0.043	-0.24
2H29XR		1.302	-0.363	-1.99	1.271	-0.381	-2.10
2JWHEN		1.648	-0.016	-0.09	1.614	-0.038	-0.21
4YY7DT		1.460	-0.205	-1.12	1.510	-0.142	-0.78
666Y64		1.848	0.183	1.01	1.934	0.282	1.55
6Y6G4X		1.868	0.203	1.12	1.852	0.200	1.10
6ZM2BL		1.548	-0.117	-0.64	1.527	-0.125	-0.69
747FEL		1.783	0.119	0.65	1.735	0.083	0.46
7MG6RJ		1.911	0.246	1.35	1.855	0.202	1.11
7T4X4J		1.995	0.331	1.82	2.010	0.358	1.97
AA43WP		1.595	-0.070	-0.38	1.580	-0.072	-0.40
AVPXPW		1.625	-0.040	-0.22	1.650	-0.002	-0.01
BZUN9N		1.698	0.033	0.18	1.705	0.053	0.29
C64DTN		1.430	-0.235	-1.29	1.500	-0.152	-0.84
CZMALR		1.690	0.025	0.14	1.730	0.078	0.43
D6EXF6		1.637	-0.028	-0.15	1.626	-0.026	-0.14
EGNQQG		1.635	-0.030	-0.16	1.670	0.018	0.10
FTXUJH		1.720	0.055	0.30	1.620	-0.032	-0.18
G4QVZR		1.522	-0.143	-0.78	1.533	-0.119	-0.65
JKBY3D		1.421	-0.244	-1.34	1.336	-0.316	-1.74
K69U6Z		1.556	-0.109	-0.60	1.483	-0.169	-0.93
KG43R9		1.834	0.169	0.93	1.822	0.170	0.94
LGZXUC	*	2.154	0.489	2.69	2.144	0.492	2.71
LZCKFJ		1.476	-0.189	-1.03	1.573	-0.079	-0.44
MNGQJF		1.826	0.161	0.89	1.846	0.194	1.07
N9LXHZ		1.870	0.205	1.13	1.723	0.071	0.39
NWMYF8		1.697	0.032	0.18	1.678	0.026	0.14
QRPBV7		1.726	0.061	0.34	1.669	0.017	0.09
QUEGF3		1.436	-0.229	-1.25	1.379	-0.273	-1.50
R2RWGB		1.886	0.221	1.22	1.897	0.245	1.35
R4JV9G		1.804	0.139	0.77	1.730	0.078	0.43
R792QR		1.868	0.203	1.12	1.794	0.142	0.78
RJBR76		1.413	-0.252	-1.38	1.345	-0.307	-1.69
TQDYPE		1.310	-0.355	-1.95	1.316	-0.336	-1.85
U268J2		1.616	-0.049	-0.27	1.658	0.006	0.03
UUFTGM		1.544	-0.121	-0.66	1.609	-0.043	-0.24
W6DB92	X	1.678	0.014	0.08	1.389	-0.264	-1.45
X2KYM2		1.600	-0.065	-0.35	1.692	0.040	0.22
XWVGDV		1.718	0.054	0.30	1.736	0.084	0.46
YTCLJ4		1.717	0.052	0.29	1.712	0.060	0.33

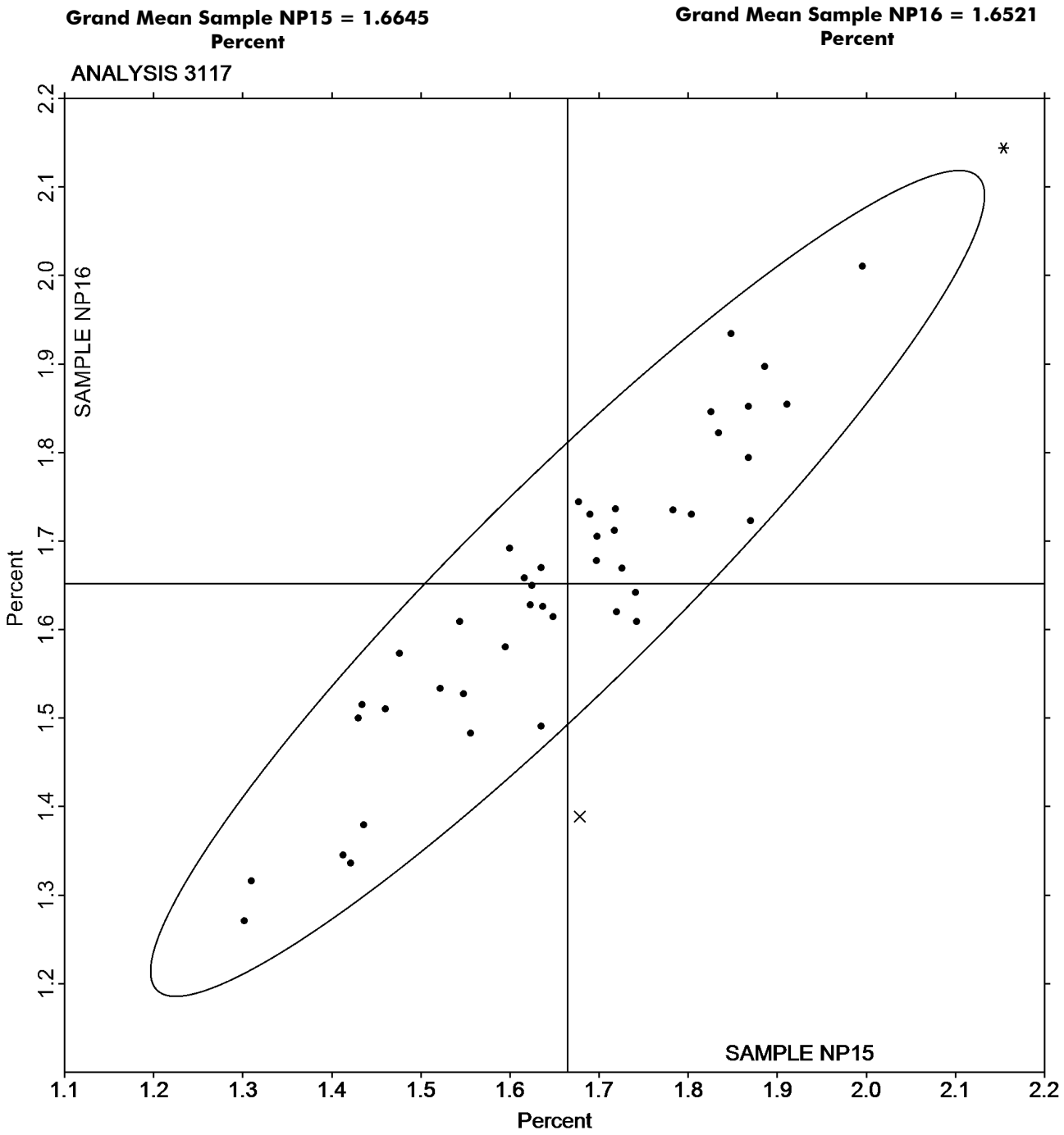
WebCode	Data Flag	Sample NP15 Lab Mean	Sample NP15 Diff from Grand Mean	Sample NP15 CPV	Sample NP16 Lab Mean	Sample NP16 Diff from Grand Mean	Sample NP16 CPV
YXNEGW		1.677	0.013	0.07	1.744	0.092	0.51
YZVPG7		1.741	0.076	0.42	1.642	-0.010	-0.06
ZKTKJT		1.623	-0.042	-0.23	1.628	-0.024	-0.13
ZLTHC2		1.635	-0.030	-0.16	1.491	-0.161	-0.89
ZMLDU4		1.434	-0.231	-1.27	1.515	-0.137	-0.75

Summary Statistics	Sample NP15	Sample NP16
Grand Means	1.66 Percent	1.65 Percent
Stnd Dev Btwn Labs	0.18 Percent	0.18 Percent

Statistics based on 44 of 45 reporting participants.

Comments on Assigned Data Flags for Test #3117

W6DB92 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample NP16.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3121

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample PP15 Lab Mean	Sample PP15 Diff from Grand Mean	Sample PP15 CPV	Sample PP16 Lab Mean	Sample PP16 Diff from Grand Mean	Sample PP16 CPV
2JWHEN		18.43	-0.26	-0.31	17.98	-0.73	-0.92
2P67RQ		18.80	0.11	0.13	19.10	0.39	0.49
4FMFZV		18.91	0.22	0.27	18.50	-0.21	-0.27
666Y64		17.92	-0.77	-0.93	18.57	-0.14	-0.17
6YJ3FK	X	16.22	-2.47	-2.98	15.55	-3.16	-4.00
6ZM2BL		18.46	-0.23	-0.28	19.01	0.30	0.38
747FEL		19.91	1.22	1.47	19.41	0.70	0.89
7MG6RJ		18.31	-0.38	-0.46	18.14	-0.57	-0.72
7T4X4J		19.35	0.66	0.79	19.50	0.79	1.00
84R6HT		17.40	-1.29	-1.56	17.02	-1.69	-2.14
8U4EUE		18.25	-0.44	-0.53	17.91	-0.80	-1.01
8VXZPR		17.79	-0.90	-1.09	17.75	-0.96	-1.21
9N4KXX		19.30	0.61	0.74	18.66	-0.05	-0.06
AJ4WUV		19.09	0.40	0.48	18.36	-0.35	-0.44
C64DTN	*	20.64	1.95	2.36	20.77	2.06	2.61
CZMALR		17.03	-1.66	-2.00	16.84	-1.87	-2.37
DMKZUP		18.03	-0.66	-0.80	18.94	0.23	0.29
DNCX6G		20.24	1.55	1.87	19.75	1.04	1.32
JUUFM8		19.13	0.44	0.53	19.25	0.54	0.69
K69U6Z		18.32	-0.37	-0.45	18.24	-0.47	-0.59
LGZXUC		18.90	0.21	0.25	19.31	0.60	0.76
LU7T8L		18.95	0.26	0.32	18.70	-0.01	-0.01
LZCKFJ		18.69	0.00	0.00	18.31	-0.40	-0.51
M9BBT8		19.10	0.41	0.50	18.70	-0.01	-0.01
MVPYGX		17.90	-0.79	-0.95	18.72	0.01	0.01
N9LXHZ		17.70	-0.99	-1.20	18.11	-0.60	-0.76
NWMYF8		18.04	-0.65	-0.79	18.09	-0.62	-0.79
QUEGF3		18.75	0.06	0.07	19.07	0.36	0.46
R2RWGB		20.32	1.63	1.97	20.51	1.80	2.28
R792QR		19.29	0.60	0.73	19.71	1.00	1.27
R7ZQP9		17.39	-1.30	-1.57	18.13	-0.58	-0.73
TEY48U		18.96	0.27	0.33	17.99	-0.72	-0.91
UAYCC3	X	51.80	33.11	39.99	48.20	29.49	37.31
UCPJWY		18.11	-0.58	-0.70	18.20	-0.51	-0.64
V7U9Z7		17.72	-0.97	-1.17	18.78	0.07	0.09
VMWPAK		18.88	0.19	0.23	18.83	0.12	0.15
X2KYM2		18.34	-0.35	-0.42	18.57	-0.14	-0.18
XHWC6Y		19.09	0.40	0.48	18.93	0.22	0.28
XVHUVG		18.86	0.17	0.21	19.64	0.93	1.18
XWVGDV		19.99	1.30	1.57	18.93	0.22	0.28

Paper & Paperboard Interlaboratory Testing Program

Analysis 3121

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample PP15 Lab Mean	Sample PP15 Diff from Grand Mean	Sample PP15 CPV	Sample PP16 Lab Mean	Sample PP16 Diff from Grand Mean	Sample PP16 CPV
YTCLJ4		19.18	0.49	0.59	19.16	0.45	0.57
YZVPG7		18.14	-0.55	-0.66	18.29	-0.42	-0.53

Summary Statistics	Sample PP15	Sample PP16
Grand Means	18.69 sec/100 cc	18.71 sec/100 cc
Stnd Dev Btwn Labs	0.83 sec/100 cc	0.79 sec/100 cc

Statistics based on 40 of 42 reporting participants.

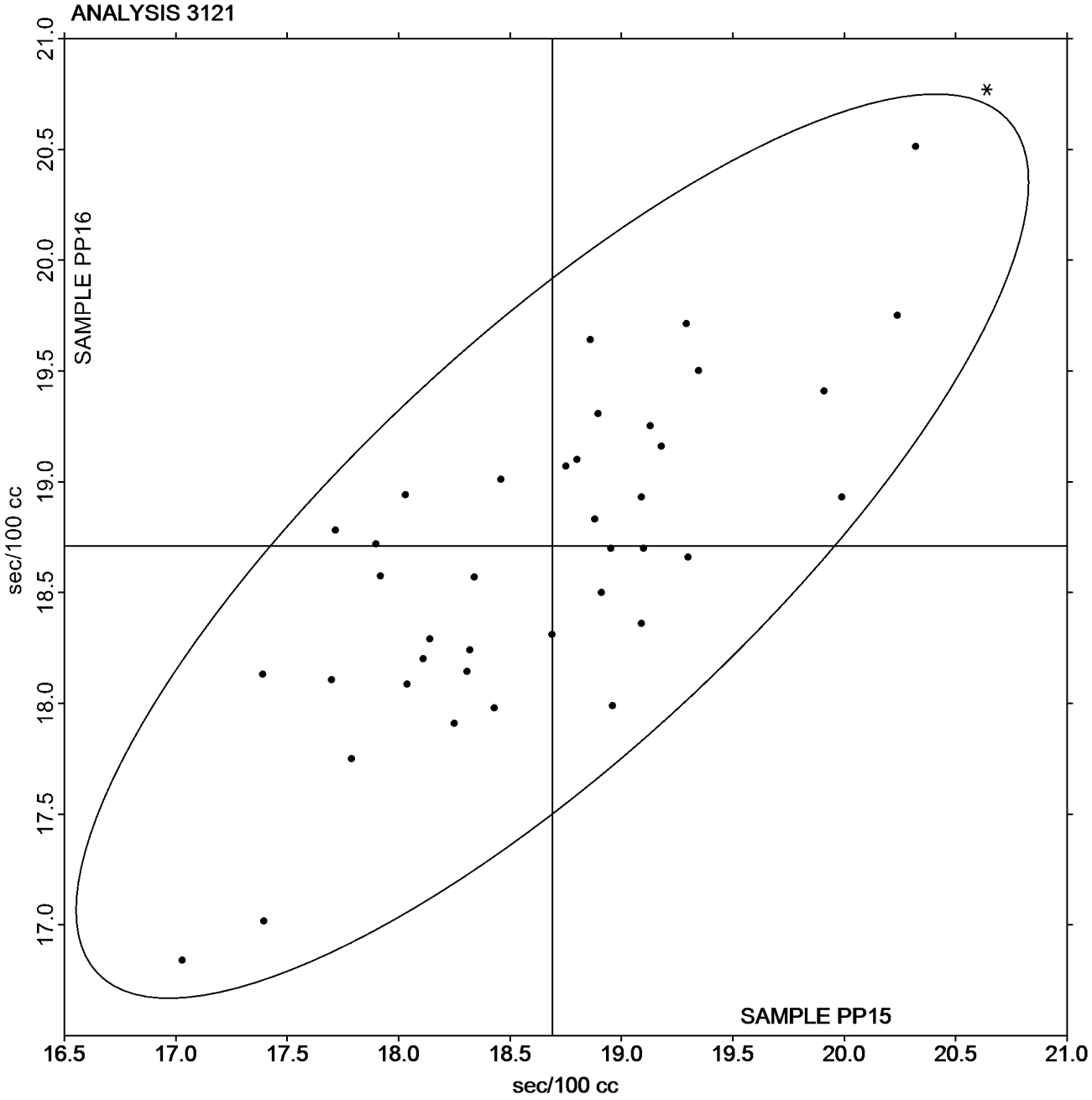
Comments on Assigned Data Flags for Test #3121

6YJ3FK (X) - Data for both samples are low. Possible Systematic Error.

UAYCC3 (X) - Extreme Data.

Grand Mean Sample PP15 = 18.690 sec/100 cc

Grand Mean Sample PP16 = 18.710 sec/100 cc



Paper & Paperboard Interlaboratory Testing Program

Analysis 3123

Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice

TAPPI Official Test Method T547

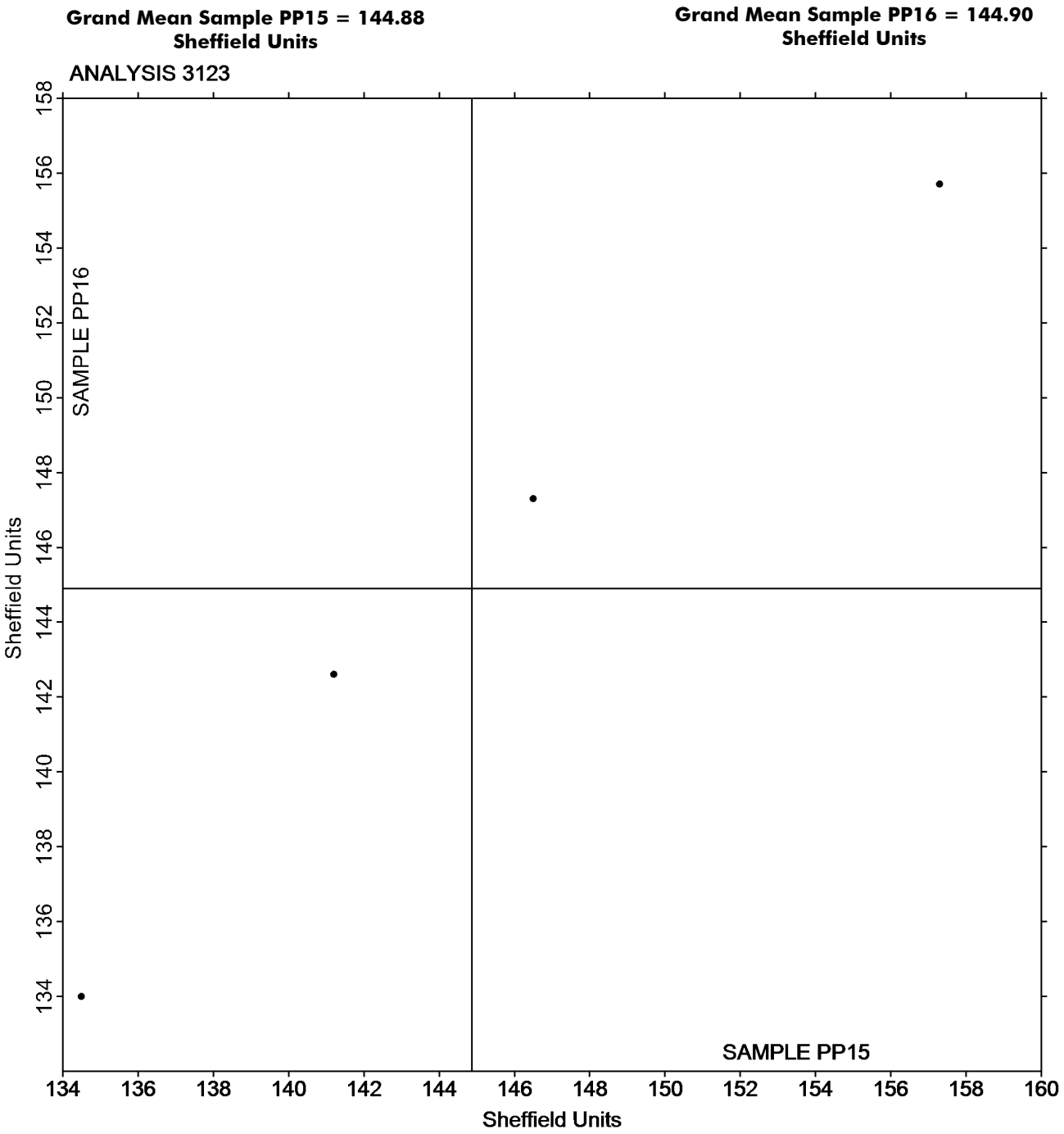
WebCode	Data Flag	Sample PP15 Lab Mean	Sample PP15 Diff from Grand Mean	Sample PP15 CPV	Sample PP16 Lab Mean	Sample PP16 Diff from Grand Mean	Sample PP16 CPV
2P67RQ		134.5	-10.4	-1.08	134.0	-10.9	-1.20
6Y6G4X		146.5	1.6	0.17	147.3	2.4	0.26
DMKZUP		141.2	-3.7	-0.38	142.6	-2.3	-0.25
L4X898	X	19.6	-125.3	-13.01	19.0	-125.9	-13.88
ZLTHC2		157.3	12.4	1.29	155.7	10.8	1.19

Summary Statistics	Sample PP15	Sample PP16
Grand Means	144.88 Sheffield Units	144.90 Sheffield Units
Stnd Dev Btwn Labs	9.63 Sheffield Units	9.06 Sheffield Units

Statistics based on 4 of 5 reporting participants.

Comments on Assigned Data Flags for Test #3123

L4X898 (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

Analysis 3131

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

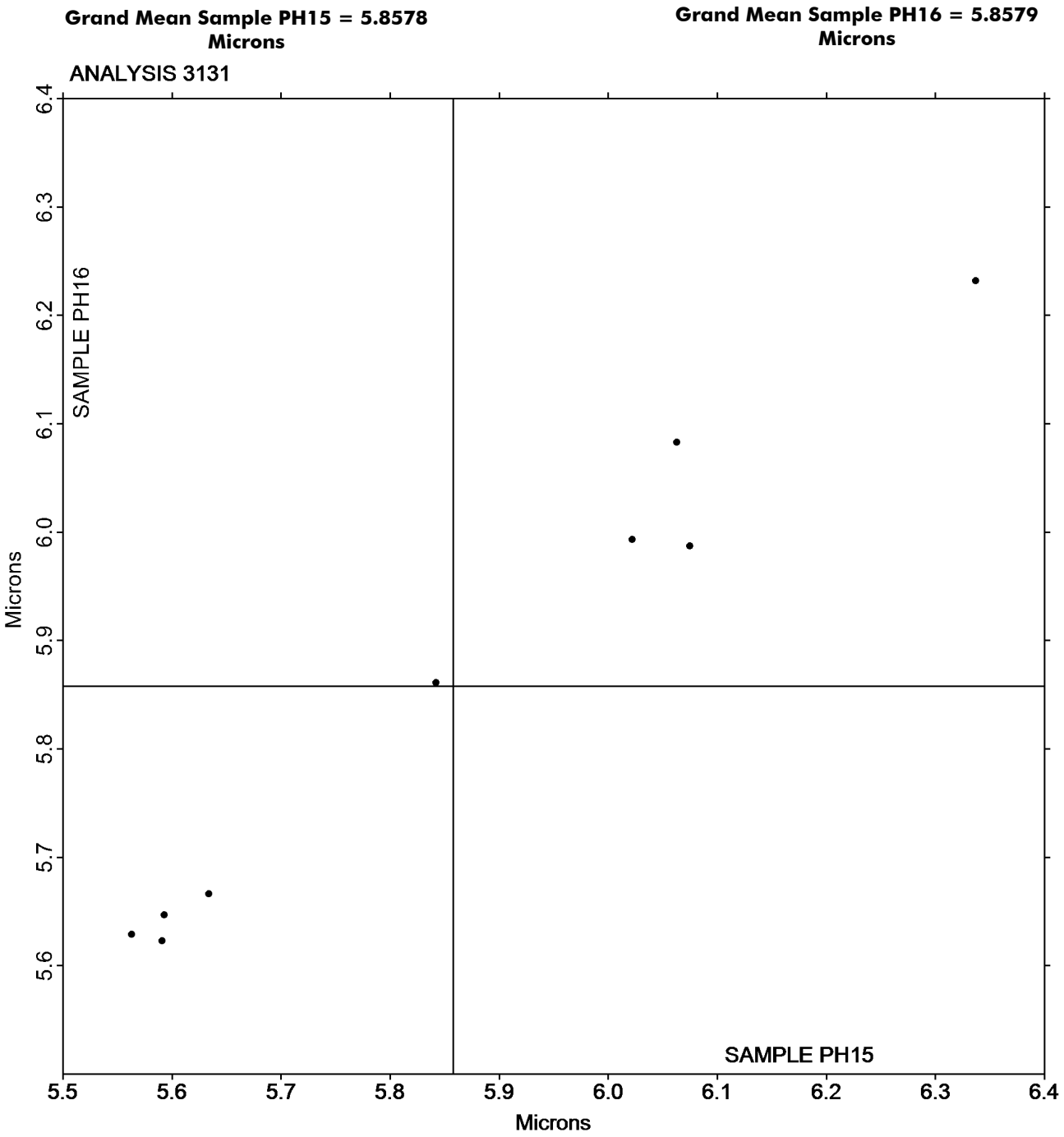
WebCode	Data Flag	Sample PH15 Lab Mean	Sample PH15 Diff from Grand Mean	Sample PH15 CPV	Sample PH16 Lab Mean	Sample PH16 Diff from Grand Mean	Sample PH16 CPV
666Y64	X	11.975	6.117	21.90	13.018	7.160	31.46
8U4EUE		5.593	-0.265	-0.95	5.647	-0.211	-0.93
AA43WP		6.075	0.217	0.78	5.987	0.129	0.57
AVPXPW		5.842	-0.016	-0.06	5.861	0.003	0.01
JUUFM8		6.337	0.479	1.72	6.232	0.374	1.64
R4JV9G		5.563	-0.295	-1.06	5.629	-0.229	-1.01
R792QR		6.022	0.164	0.59	5.993	0.135	0.59
TYXQB6		6.063	0.205	0.73	6.083	0.225	0.99
XQEPG6		5.634	-0.224	-0.80	5.666	-0.192	-0.84
XWVGDV		5.591	-0.267	-0.95	5.623	-0.235	-1.03

Summary Statistics	Sample PH15	Sample PH16
Grand Means	5.86 Microns	5.86 Microns
Stnd Dev Btwn Labs	0.28 Microns	0.23 Microns

Statistics based on 9 of 10 reporting participants.

Comments on Assigned Data Flags for Test #3131

666Y64 (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

Analysis 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample SR15 Lab Mean	Sample SR15 Diff from Grand Mean	Sample SR15 CPV	Sample SR16 Lab Mean	Sample SR16 Diff from Grand Mean	Sample SR16 CPV
26ERFM		111.7	-11.0	-1.46	120.2	-2.0	-0.29
2H29XR		116.4	-6.3	-0.83	114.1	-8.1	-1.17
2P67RQ		120.5	-2.2	-0.29	121.4	-0.8	-0.12
666Y64		122.2	-0.5	-0.06	123.4	1.2	0.17
6ZM2BL		121.9	-0.8	-0.10	119.2	-3.0	-0.43
7GVCH6		116.3	-6.4	-0.85	112.4	-9.8	-1.42
7MG6RJ		136.4	13.7	1.82	134.1	11.9	1.72
7T4X4J		120.7	-2.0	-0.27	116.5	-5.7	-0.82
7Z8VXG		136.6	13.9	1.85	130.5	8.3	1.19
8U4EUE		132.2	9.5	1.26	131.9	9.7	1.40
9N4KXX		113.8	-8.9	-1.18	121.0	-1.2	-0.17
9NM8T9		114.3	-8.4	-1.12	114.2	-8.0	-1.16
AA43WP		127.8	5.1	0.68	127.8	5.6	0.80
AJ4WUV		127.3	4.6	0.61	122.8	0.6	0.09
C64DTN		119.6	-3.1	-0.41	117.1	-5.1	-0.74
DMKZUP		116.2	-6.5	-0.86	121.5	-0.7	-0.10
DNCX6G		117.2	-5.5	-0.73	113.9	-8.3	-1.20
DWNCMD		140.5	17.8	2.37	135.4	13.2	1.91
EJRQGF		113.0	-9.7	-1.28	113.8	-8.4	-1.21
FK79L8		133.8	11.1	1.48	133.3	11.1	1.61
JUUFM8		125.3	2.6	0.35	123.7	1.5	0.22
KEHGYL		122.5	-0.2	-0.02	120.1	-2.1	-0.30
KWENBY	X	158.3	35.6	4.73	160.3	38.1	5.51
LGZXUC		124.3	1.6	0.22	113.6	-8.6	-1.24
M9BBT8		125.8	3.1	0.41	121.0	-1.2	-0.17
N9LXHZ		112.6	-10.0	-1.33	117.1	-5.1	-0.74
NWMYF8	*	119.8	-2.9	-0.38	109.9	-12.3	-1.78
QTFGAB		115.2	-7.4	-0.99	116.2	-6.0	-0.86
QUEGF3		125.3	2.6	0.35	124.0	1.8	0.26
R2RWGB	*	118.4	-4.3	-0.57	129.2	7.0	1.01
R792QR		128.1	5.5	0.72	124.4	2.2	0.32
R7ZQP9		119.5	-3.2	-0.42	120.5	-1.7	-0.25
RGHYVU		129.5	6.8	0.91	128.5	6.3	0.91
TYXQB6		113.2	-9.4	-1.25	116.7	-5.5	-0.79
V7U9Z7		116.6	-6.1	-0.81	113.6	-8.6	-1.24
VMWPAK		123.1	0.4	0.06	125.4	3.2	0.46
X2KYM2		124.4	1.8	0.23	119.9	-2.3	-0.34
X7EVA7		123.0	0.3	0.04	123.1	0.9	0.13
XHWC6Y		113.1	-9.6	-1.27	119.6	-2.6	-0.38
XMMP2F		123.2	0.5	0.07	127.8	5.6	0.80

Paper & Paperboard Interlaboratory Testing Program

Analysis 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample SR15 Lab Mean	Sample SR15 Diff from Grand Mean	Sample SR15 CPV	Sample SR16 Lab Mean	Sample SR16 Diff from Grand Mean	Sample SR16 CPV
XWVGDV	*	141.6	18.9	2.51	141.2	19.0	2.75
YAFQL2		125.4	2.8	0.37	125.5	3.3	0.48
YTCLJ4		124.8	2.1	0.28	124.3	2.1	0.31
YZVPG7	X	150.6	27.9	3.71	151.1	28.9	4.18
ZLTHC2		121.8	-0.9	-0.12	125.0	2.8	0.40

Summary Statistics	Sample SR15	Sample SR16
Grand Means	122.67 Sheffield	122.20 Sheffield
Stnd Dev Btwn Labs	7.54 Sheffield	6.92 Sheffield

Statistics based on 43 of 45 reporting participants.

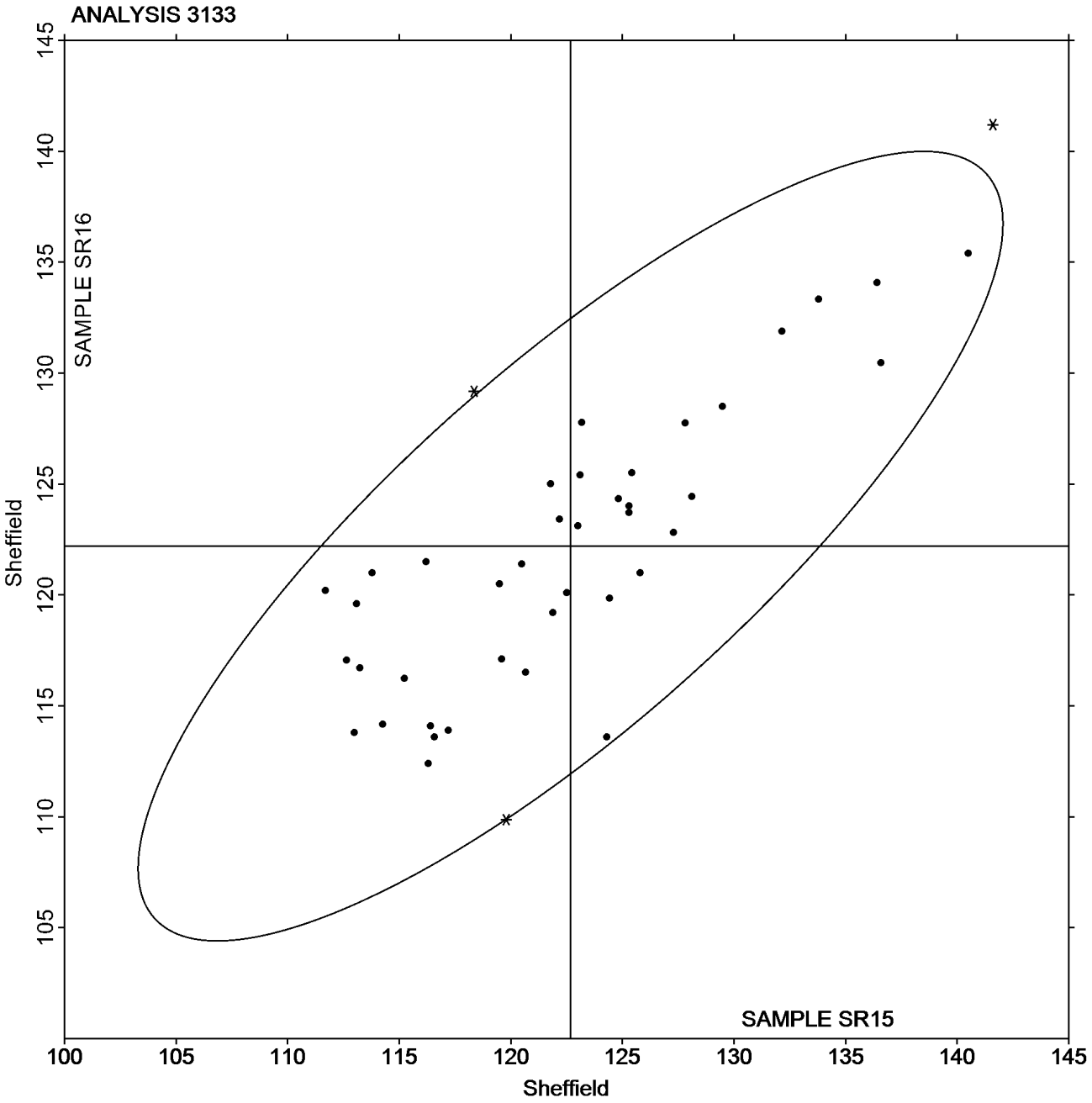
Comments on Assigned Data Flags for Test #3133

YZVPG7 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

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

Grand Mean Sample SR15 = 122.67
Sheffield

Grand Mean Sample SR16 = 122.20
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 3135

Grammage (Mass per Unit Area)

TAPPI Official Test Method T410

WebCode	Data Flag	Sample GM15 Lab Mean	Sample GM15 Diff from Grand Mean	Sample GM15 CPV	Sample GM16 Lab Mean	Sample GM16 Diff from Grand Mean	Sample GM16 CPV
278PJM		75.72	0.54	1.27	89.42	-0.20	-0.43
2JWHEN		75.83	0.65	1.54	90.26	0.64	1.35
6DZWYX		75.65	0.47	1.12	90.05	0.43	0.91
6Y6G4X		75.45	0.27	0.64	89.92	0.30	0.63
6ZM2BL		75.44	0.26	0.62	88.76	-0.86	-1.82
98XRKP		74.55	-0.63	-1.51	88.97	-0.65	-1.38
BZUN9N		75.28	0.10	0.23	89.66	0.04	0.08
CZMALR		75.08	-0.10	-0.24	89.33	-0.29	-0.61
D39DPJ		75.09	-0.09	-0.22	89.36	-0.26	-0.55
DMKZUP		75.49	0.31	0.74	89.98	0.36	0.77
FTXUJH		75.39	0.21	0.50	90.30	0.68	1.44
KGHRQF	X	77.16	1.98	4.71	89.61	-0.01	-0.02
M9BBT8		74.79	-0.39	-0.93	89.68	0.06	0.13
MVPYGX		74.85	-0.33	-0.78	89.47	-0.15	-0.33
N9LXHZ		75.04	-0.14	-0.34	89.82	0.20	0.42
NAVVHA		75.55	0.37	0.88	89.57	-0.05	-0.11
QRPBV7		75.17	-0.01	-0.03	89.37	-0.25	-0.52
QTFGAB		74.66	-0.52	-1.24	89.32	-0.30	-0.63
QUEGF3		74.08	-1.10	-2.62	88.96	-0.66	-1.39
REUVHA		74.92	-0.26	-0.62	90.33	0.71	1.51
RX7DAL		74.97	-0.21	-0.49	89.05	-0.57	-1.21
UUFTGM	X	1.50	-73.68	-175.22	1.80	-87.82	-185.70
W6DB92	X	375.65	300.47	714.58	88.88	-0.74	-1.56
XZEFZQ		75.04	-0.14	-0.34	90.40	0.78	1.65
YTCLJ4		75.15	-0.03	-0.06	89.18	-0.44	-0.92
YZVPG7		75.78	0.60	1.42	90.08	0.46	0.97
ZLTHC2		75.37	0.19	0.45	89.65	0.03	0.06

Summary Statistics	Sample GM15	Sample GM16
Grand Means	75.18 g/sq m	89.62 g/sq m
Stnd Dev Btwn Labs	0.42 g/sq m	0.47 g/sq m

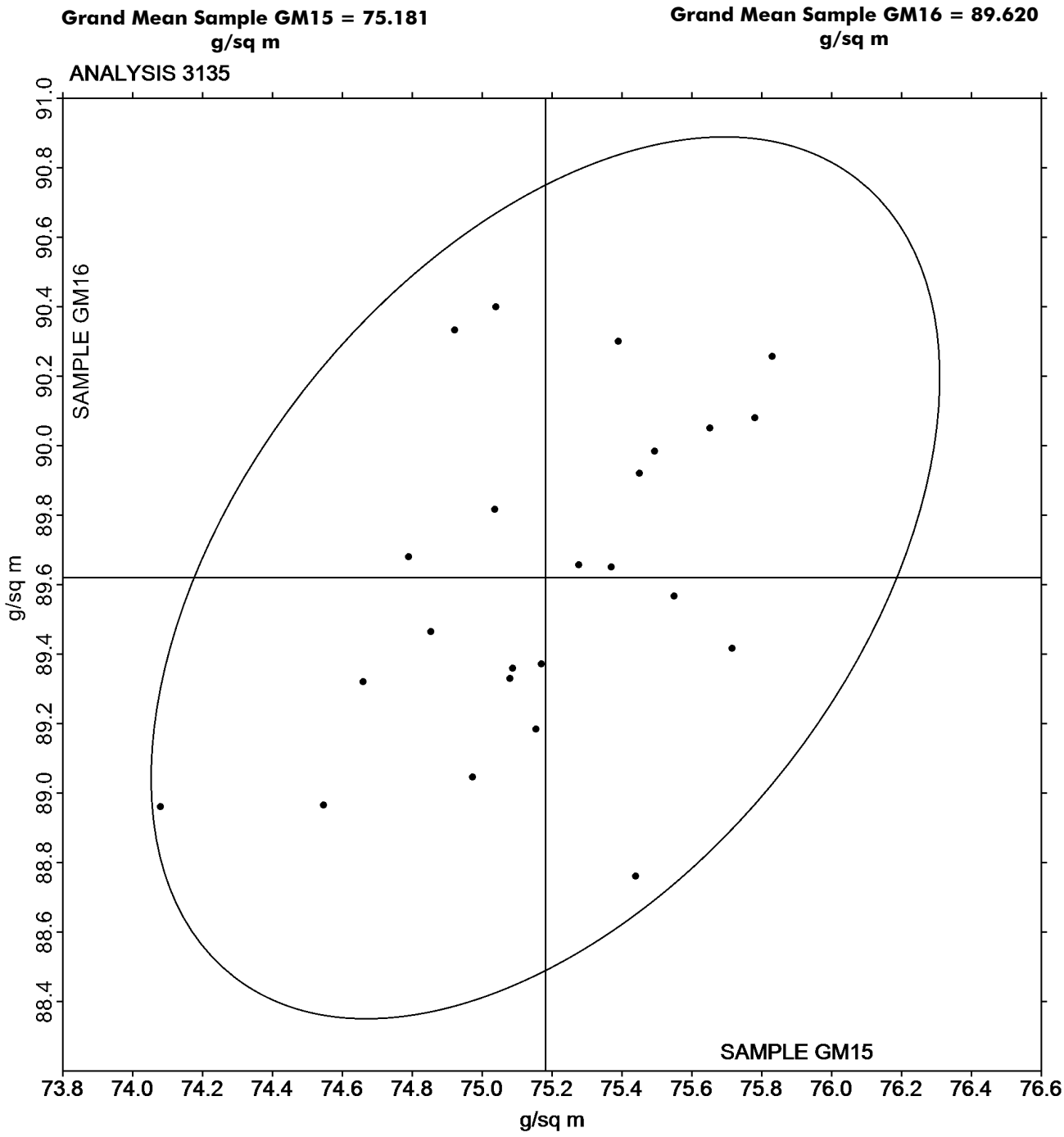
Statistics based on 24 of 27 reporting participants.

Comments on Assigned Data Flags for Test #3135

UUFTGM (X) - Extreme Data.

KGHRQF (X) - Data for sample GM15 are high. Inconsistent within the determinations of both samples.

W6DB92 (X) - Extreme Data for Sample GM15.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3141

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample VR15 Lab Mean	Sample VR15 Diff from Grand Mean	Sample VR15 CPV	Sample VR16 Lab Mean	Sample VR16 Diff from Grand Mean	Sample VR16 CPV
2P67RQ		89.54	0.29	0.74	89.41	0.29	0.70
4YY7DT		89.06	-0.19	-0.49	88.82	-0.30	-0.70
666Y64		89.27	0.02	0.05	88.89	-0.22	-0.53
6ZM2BL		88.70	-0.55	-1.42	88.74	-0.38	-0.89
7T4X4J		89.26	0.01	0.03	89.04	-0.08	-0.19
98XRKP		89.29	0.04	0.09	89.06	-0.06	-0.13
AA43WP		89.17	-0.08	-0.21	89.02	-0.09	-0.22
DMKZUP		89.07	-0.18	-0.46	88.98	-0.14	-0.32
DWNCMD		89.45	0.20	0.51	89.42	0.30	0.72
L4X898		89.61	0.36	0.92	89.17	0.05	0.13
LU7T8L	X	88.33	-0.92	-2.37	89.23	0.11	0.27
M9BBT8	*	90.25	1.00	2.57	89.79	0.67	1.60
N9LXHZ		89.54	0.29	0.74	89.54	0.42	1.01
NWMYF8		89.12	-0.13	-0.34	89.30	0.18	0.44
QDZKRU		89.50	0.25	0.64	89.60	0.48	1.14
QTFGAB		89.01	-0.24	-0.62	88.59	-0.53	-1.25
QUEGF3		88.38	-0.87	-2.24	88.27	-0.85	-2.01
R2RWGB		89.00	-0.25	-0.64	88.89	-0.23	-0.53
R792QR		89.05	-0.20	-0.52	88.68	-0.44	-1.04
R7ZQP9		88.64	-0.61	-1.57	88.44	-0.68	-1.60
RJBR76		89.45	0.20	0.51	89.69	0.58	1.37
TYXQB6		89.41	0.16	0.41	89.35	0.23	0.56
V7U9Z7		89.33	0.08	0.21	89.21	0.09	0.21
YAFQL2		89.67	0.42	1.08	89.76	0.65	1.53
ZLTHC2	X	93.05	3.80	9.76	93.29	4.17	9.91

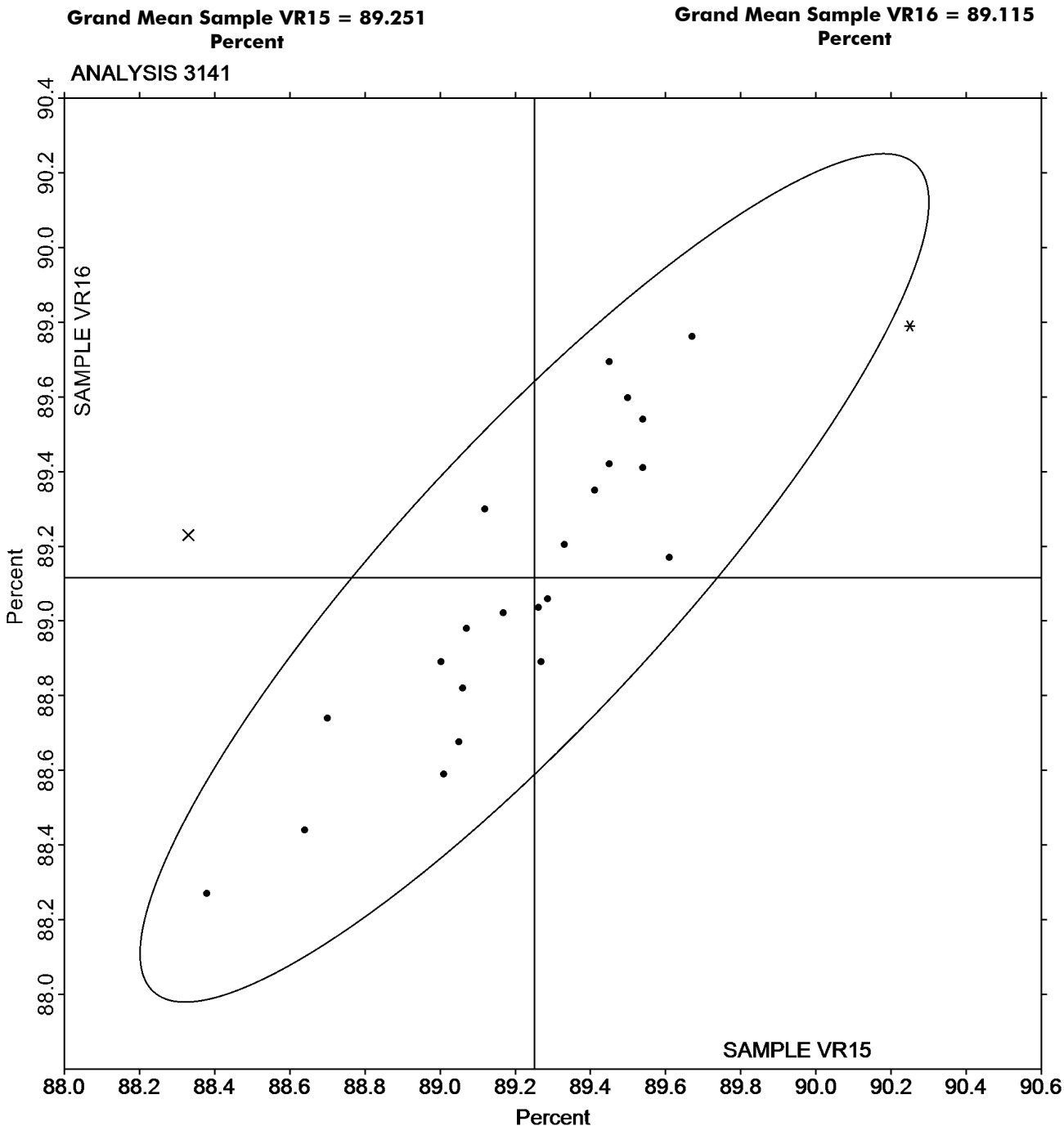
Summary Statistics	Sample VR15	Sample VR16
Grand Means	89.25 Percent	89.12 Percent
Stnd Dev Btwn Labs	0.39 Percent	0.42 Percent

Statistics based on 23 of 25 reporting participants.

Comments on Assigned Data Flags for Test #3141

ZLTHC2 (X) - Extreme Data.

LU7T8L (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample VR15.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3143

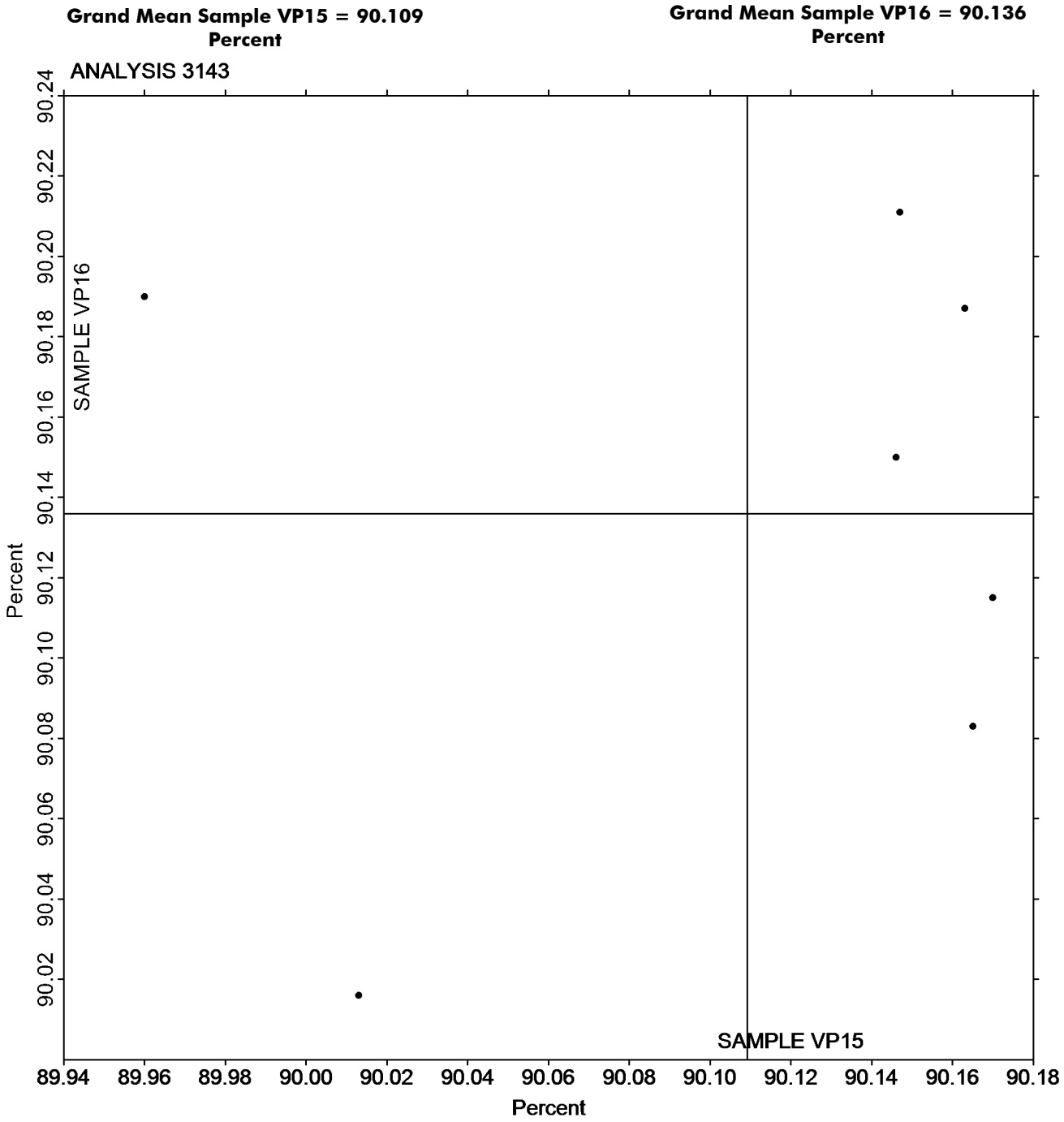
Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

WebCode	Data Flag	Sample VP15 Lab Mean	Sample VP15 Diff from Grand Mean	Sample VP15 CPV	Sample VP16 Lab Mean	Sample VP16 Diff from Grand Mean	Sample VP16 CPV
BZUN9N		90.16	0.05	0.63	90.19	0.05	0.73
CZMALR		89.96	-0.15	-1.74	90.19	0.05	0.78
K69U6Z		90.15	0.04	0.43	90.15	0.01	0.20
MVPYGX		90.17	0.06	0.71	90.12	-0.02	-0.30
QRPBV7		90.15	0.04	0.44	90.21	0.08	1.08
XF77QT		90.01	-0.10	-1.12	90.02	-0.12	-1.73
YZVPG7		90.17	0.06	0.65	90.08	-0.05	-0.76

Summary Statistics	Sample VP15	Sample VP16
Grand Means	90.11 Percent	90.14 Percent
Stnd Dev Btwn Labs	0.09 Percent	0.07 Percent

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 3145

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

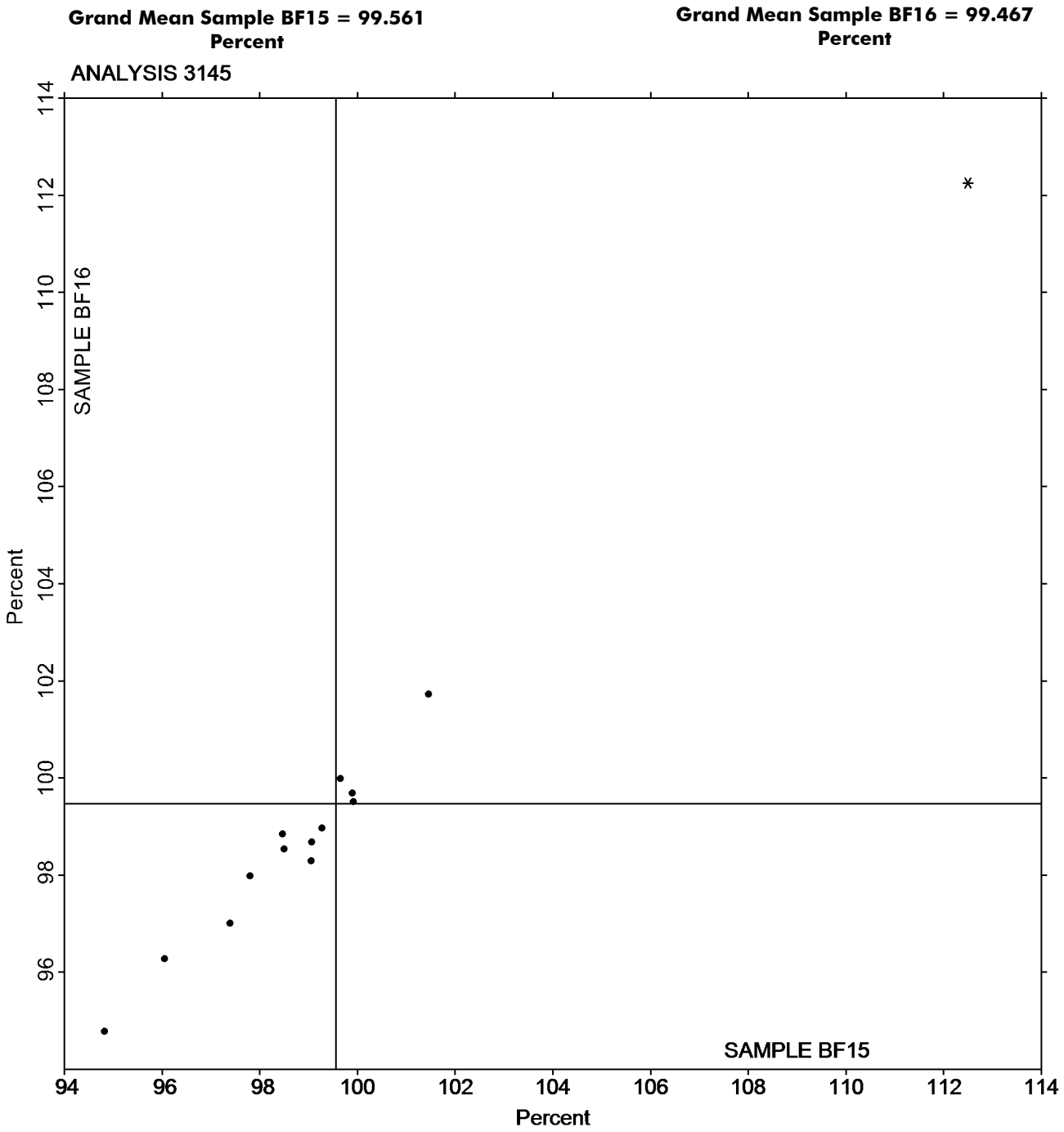
		Sample BF15			Sample BF16		
WebCode	Data Flag	Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
666Y64	M	99.26	-0.30	-0.07	No data reported for this sample		
98XRKP		99.65	0.09	0.02	99.99	0.52	0.13
L4X898		97.80	-1.76	-0.43	97.98	-1.49	-0.37
M9BBT8		98.50	-1.06	-0.26	98.54	-0.93	-0.23
NWMYF8		101.46	1.90	0.47	101.73	2.26	0.56
QDZKRU		98.47	-1.09	-0.27	98.85	-0.62	-0.15
R2RWGB		97.40	-2.16	-0.53	97.00	-2.46	-0.61
R792QR		99.07	-0.49	-0.12	98.68	-0.79	-0.19
RJBR76		99.27	-0.29	-0.07	98.97	-0.49	-0.12
TYXQB6		99.89	0.33	0.08	99.68	0.22	0.05
V7U9Z7		99.05	-0.51	-0.12	98.29	-1.17	-0.29
VMWPAK		99.92	0.36	0.09	99.51	0.04	0.01
W6DB92		96.05	-3.51	-0.86	96.27	-3.19	-0.79
YAFQL2		94.82	-4.74	-1.16	94.78	-4.69	-1.16
YXNEGW	*	112.50	12.94	3.17	112.25	12.79	3.16

Summary Statistics	Sample BF15	Sample BF16
Grand Means	99.56 Percent	99.47 Percent
Stnd Dev Btwn Labs	4.08 Percent	4.05 Percent

Statistics based on 14 of 15 reporting participants.

Comments on Assigned Data Flags for Test #3145

666Y64 (M) - Participant did not submit data for sample BF16.



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

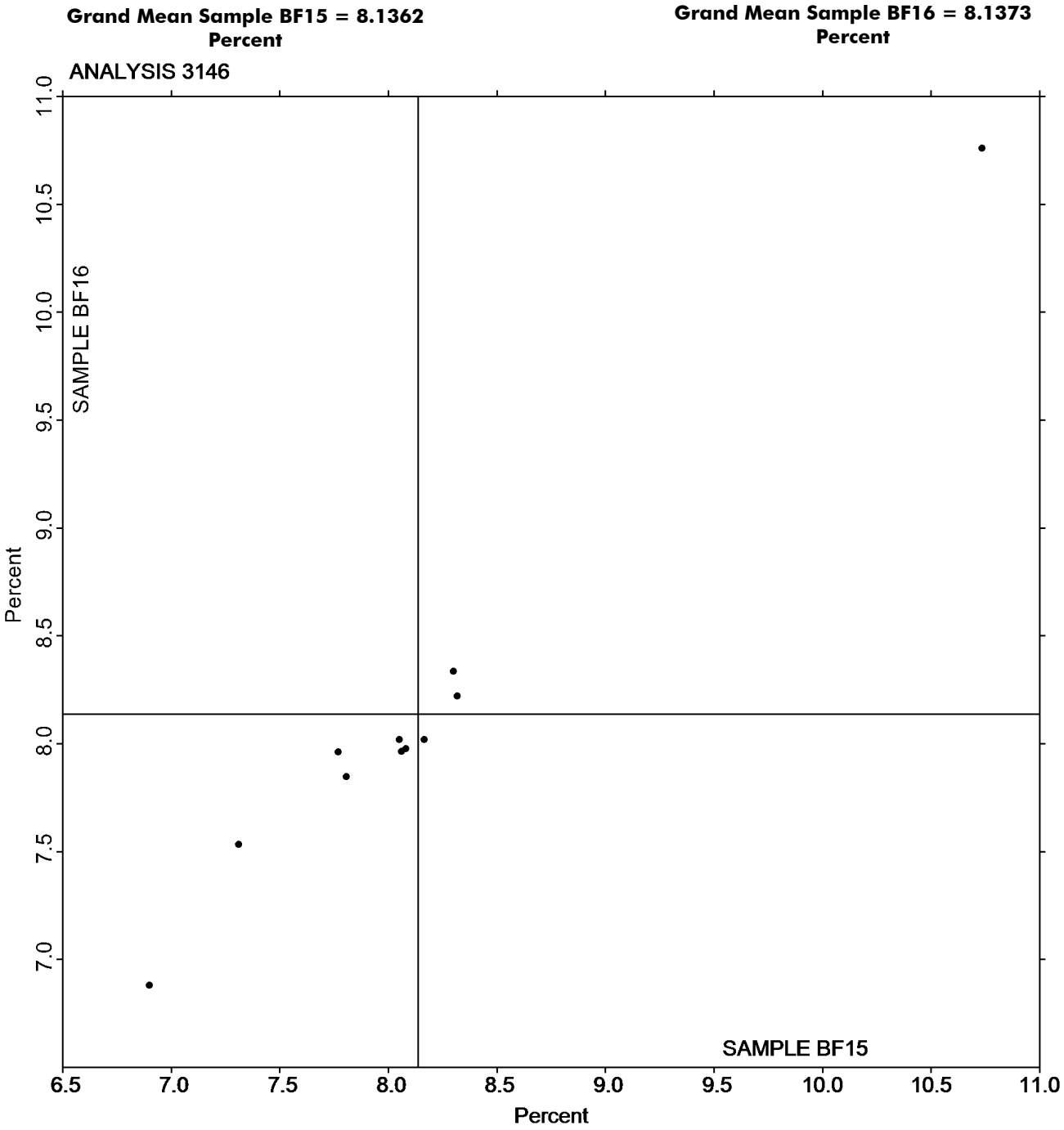
WebCode	Data Flag	Sample BF15 Lab Mean	Sample BF15 Diff from Grand Mean	Sample BF15 CPV	Sample BF16 Lab Mean	Sample BF16 Diff from Grand Mean	Sample BF16 CPV
98XRKP		8.050	-0.086	-0.09	8.018	-0.119	-0.13
NWMYF8		10.734	2.598	2.70	10.760	2.623	2.75
QDZKRU		7.770	-0.366	-0.38	7.962	-0.175	-0.18
R2RWGB		8.300	0.164	0.17	8.334	0.197	0.21
R792QR		8.082	-0.054	-0.06	7.976	-0.161	-0.17
RJBR76		7.806	-0.330	-0.34	7.846	-0.291	-0.31
TYXQB6		8.318	0.182	0.19	8.220	0.083	0.09
V7U9Z7		8.062	-0.074	-0.08	7.964	-0.173	-0.18
VMWPAK		8.166	0.030	0.03	8.018	-0.119	-0.13
W6DB92		7.310	-0.826	-0.86	7.532	-0.605	-0.64
YAFQL2		6.900	-1.236	-1.28	6.880	-1.257	-1.32
YXNEGW	X	21.022	12.886	13.38	21.022	12.885	13.53

Summary Statistics	Sample BF15	Sample BF16
Grand Means	8.14 Percent	8.14 Percent
Stnd Dev Btwn Labs	0.96 Percent	0.95 Percent

Statistics based on 11 of 12 reporting participants.

Comments on Assigned Data Flags for Test #3146

YXNEGW (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

Analysis 3201

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

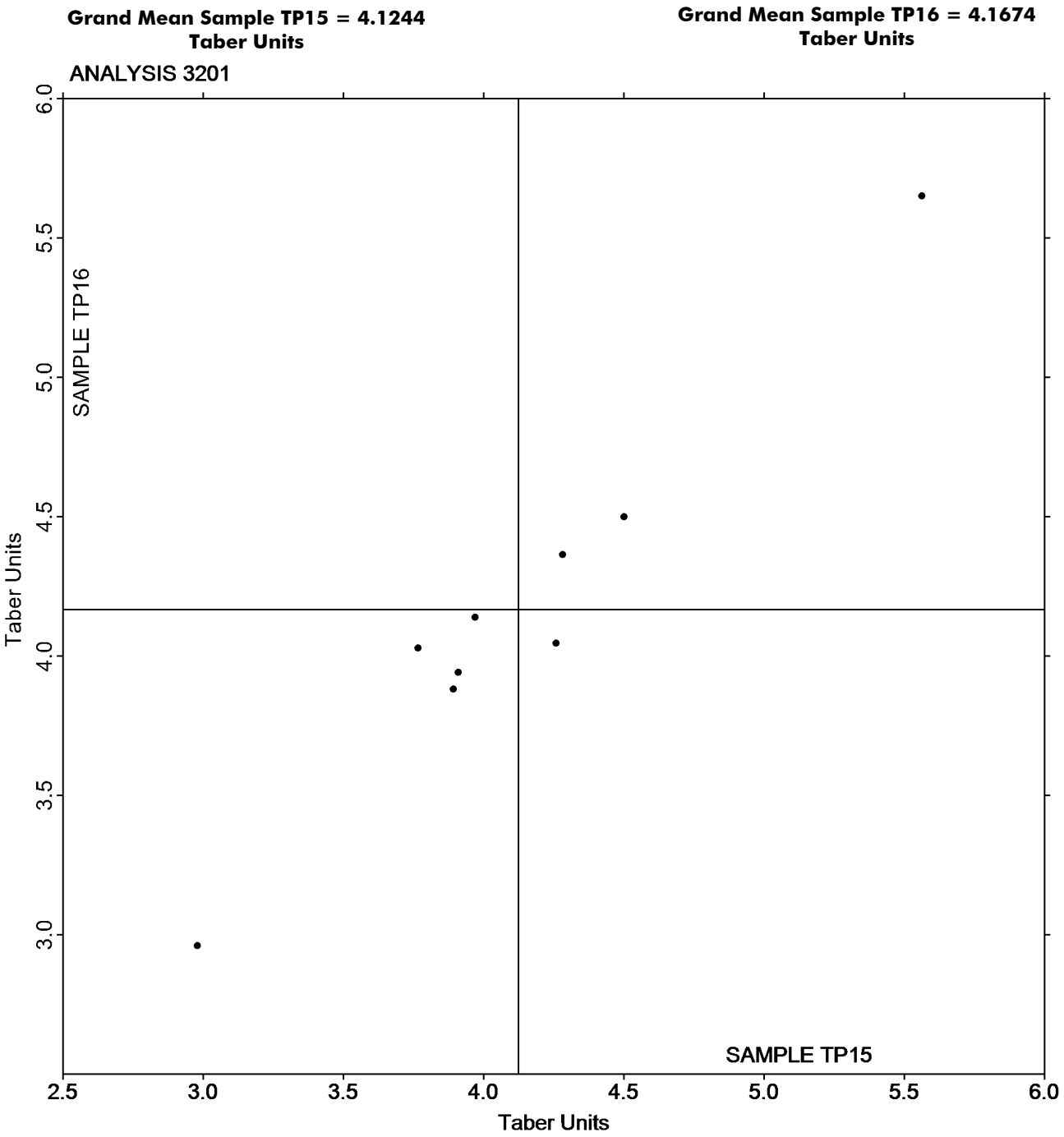
WebCode	Data Flag	Sample TP15 Lab Mean	Sample TP15 Diff from Grand Mean	Sample TP15 CPV	Sample TP16 Lab Mean	Sample TP16 Diff from Grand Mean	Sample TP16 CPV
2P67RQ		4.500	0.376	0.54	4.500	0.333	0.47
666Y64		3.969	-0.155	-0.23	4.139	-0.028	-0.04
DNCX6G		3.910	-0.214	-0.31	3.940	-0.227	-0.32
QTFGAB		4.259	0.135	0.19	4.045	-0.122	-0.17
R2RWGB	X	42.685	38.561	55.82	42.859	38.691	54.91
R792QR		3.892	-0.232	-0.34	3.880	-0.287	-0.41
U268J2		4.282	0.158	0.23	4.363	0.196	0.28
V7U9Z7		3.766	-0.358	-0.52	4.028	-0.139	-0.20
YAFQL2		2.979	-1.145	-1.66	2.961	-1.206	-1.71
ZLTHC2		5.563	1.439	2.08	5.650	1.483	2.10

Summary Statistics	Sample TP15	Sample TP16
Grand Means	4.12 Taber Units	4.17 Taber Units
Stnd Dev Btwn Labs	0.69 Taber Units	0.70 Taber Units

Statistics based on 9 of 10 reporting participants.

Comments on Assigned Data Flags for Test #3201

R2RWGB (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

Analysis 3203

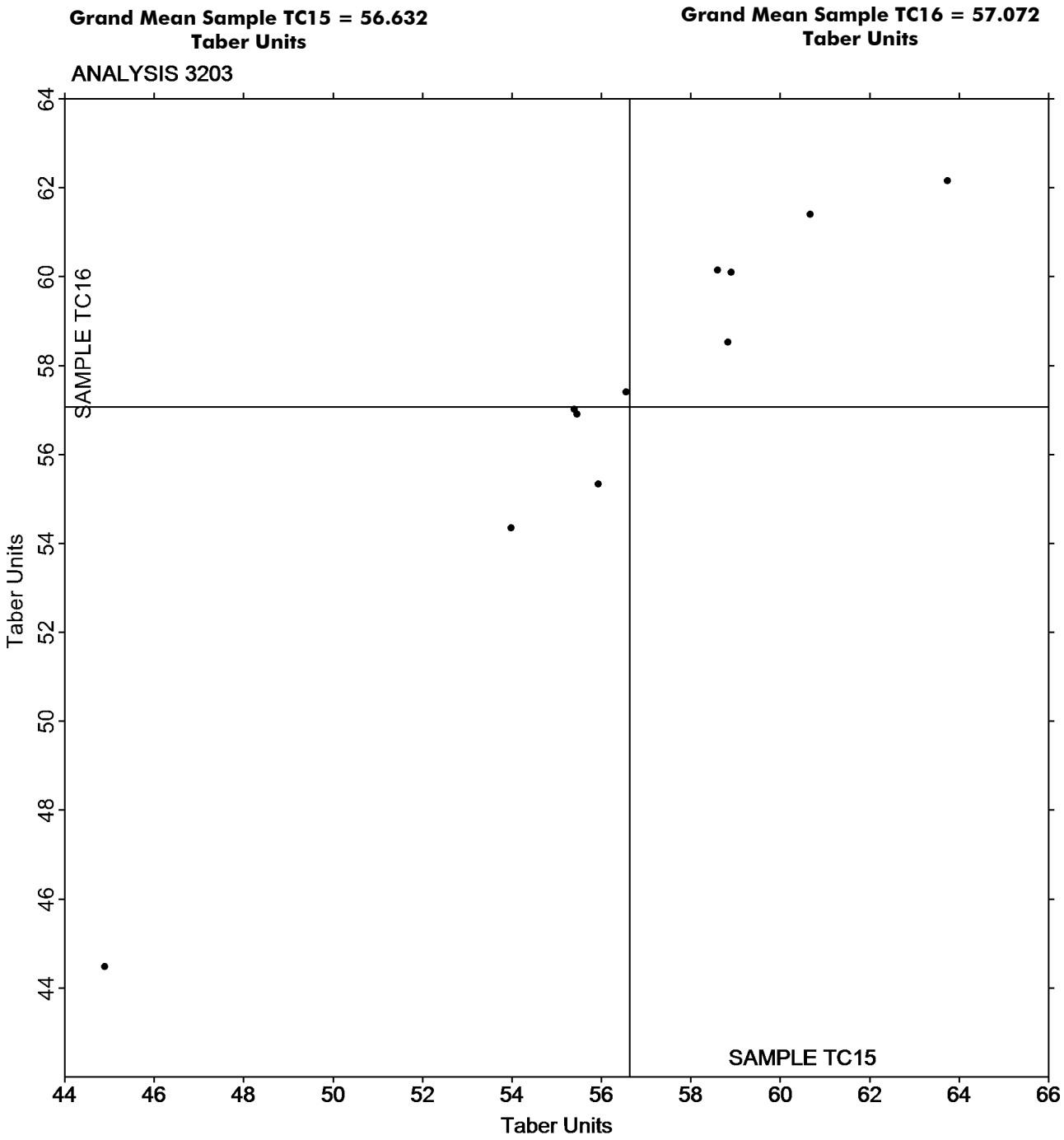
Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

WebCode	Data Flag	Sample TC15 Lab Mean	Sample TC15 Diff from Grand Mean	Sample TC15 CPV	Sample TC16 Lab Mean	Sample TC16 Diff from Grand Mean	Sample TC16 CPV
666Y64		58.83	2.20	0.46	58.52	1.45	0.30
7Z8VXG		63.74	7.11	1.49	62.15	5.08	1.05
8U4EUE		56.55	-0.08	-0.02	57.40	0.33	0.07
B9LCCJ		53.98	-2.65	-0.55	54.34	-2.73	-0.56
FK79L8		60.67	4.04	0.84	61.40	4.33	0.89
FTXUJH		58.90	2.27	0.47	60.10	3.03	0.63
R4JV9G		55.46	-1.17	-0.25	56.91	-0.16	-0.03
REUVHA		44.90	-11.73	-2.45	44.47	-12.60	-2.60
XQEPG6		58.60	1.97	0.41	60.15	3.08	0.64
XWVGDV		55.40	-1.24	-0.26	57.02	-0.05	-0.01
YTCLJ4		55.93	-0.70	-0.15	55.33	-1.74	-0.36

Summary Statistics	Sample TC15	Sample TC16
Grand Means	56.63 Taber Units	57.07 Taber Units
Stnd Dev Btwn Labs	4.78 Taber Units	4.84 Taber Units

Statistics based on 11 of 11 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 3205

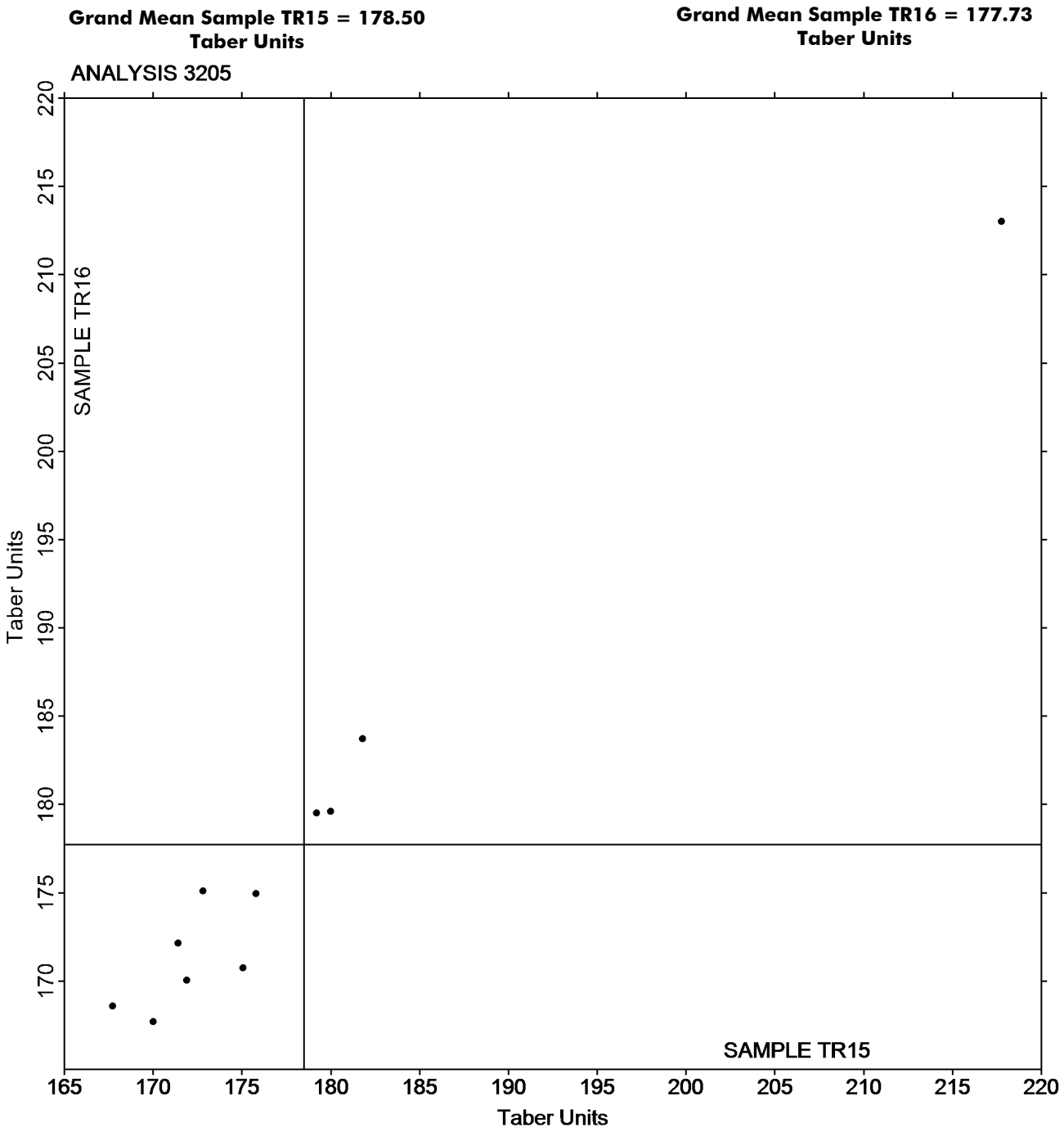
Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard

TAPPI Official Test Method T489

WebCode	Data Flag	Sample TR15 Lab Mean	Sample TR15 Diff from Grand Mean	Sample TR15 CPV	Sample TR16 Lab Mean	Sample TR16 Diff from Grand Mean	Sample TR16 CPV
26ERFM		181.8	3.3	0.24	183.7	6.0	0.47
79Z8VV		180.0	1.5	0.11	179.6	1.9	0.15
DWNCMD		175.8	-2.7	-0.20	174.9	-2.8	-0.22
JUUFM8		179.2	0.7	0.05	179.5	1.8	0.14
KWENBY		217.8	39.3	2.86	213.0	35.3	2.77
MVPYGX		167.7	-10.8	-0.78	168.6	-9.2	-0.72
Q2AM94		172.8	-5.7	-0.41	175.1	-2.6	-0.21
R4JV9G		171.4	-7.1	-0.52	172.1	-5.6	-0.44
X7EVA7		171.9	-6.6	-0.48	170.1	-7.7	-0.60
XMMP2F		170.0	-8.5	-0.62	167.7	-10.0	-0.79
XWVGDV		175.1	-3.4	-0.25	170.8	-7.0	-0.55

Summary Statistics	Sample TR15	Sample TR16
Grand Means	178.50 Taber Units	177.73 Taber Units
Stnd Dev Btwn Labs	13.74 Taber Units	12.74 Taber Units

Statistics based on 11 of 11 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 3207
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

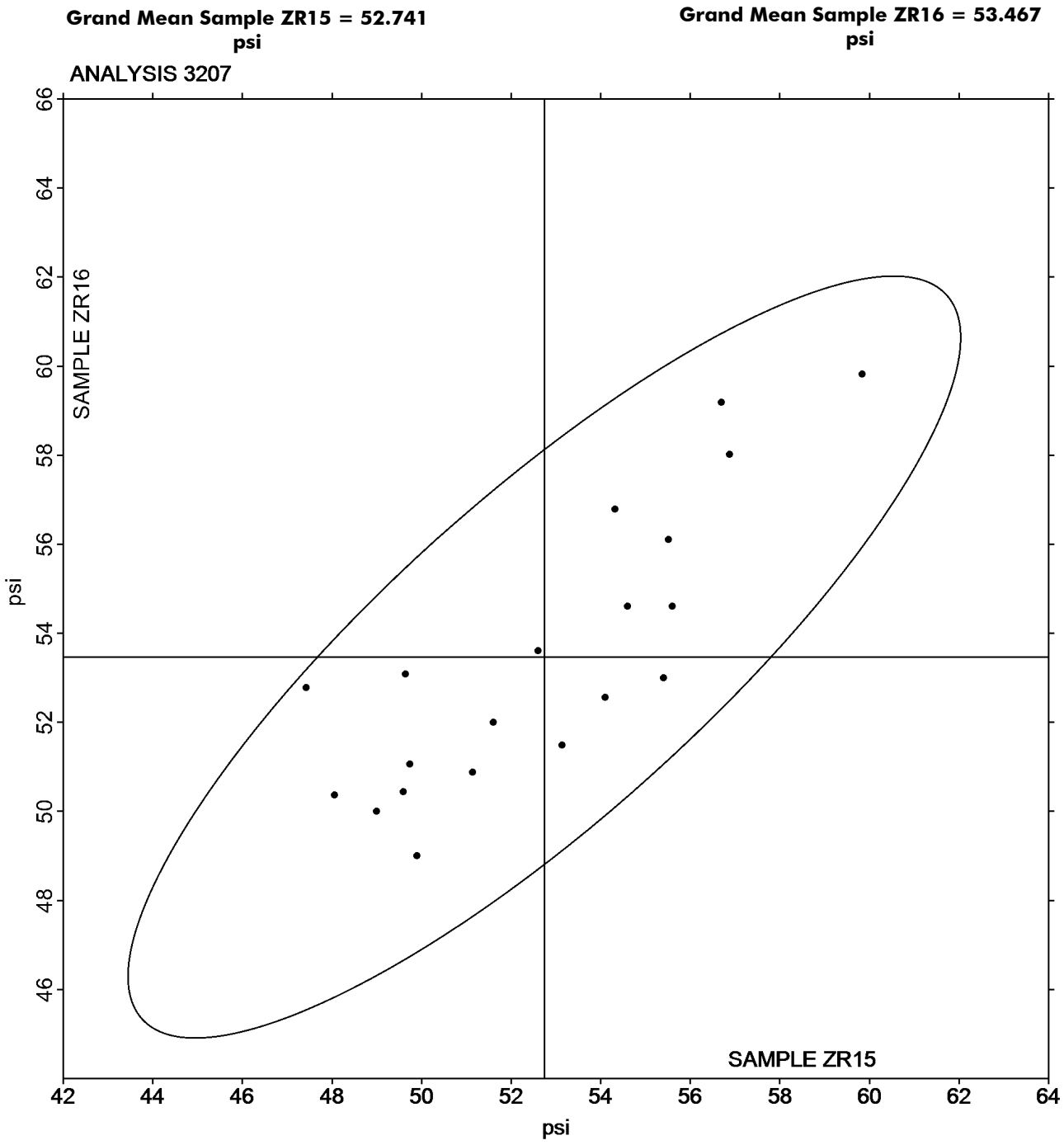
WebCode	Data Flag	Sample ZR15 Lab Mean	Sample ZR15 Diff from Grand Mean	Sample ZR15 CPV	Sample ZR16 Lab Mean	Sample ZR16 Diff from Grand Mean	Sample ZR16 CPV
26ERFM		52.60	-0.14	-0.04	53.60	0.13	0.04
747FEL		55.52	2.78	0.82	56.10	2.63	0.84
79Z8VV		54.32	1.58	0.47	56.78	3.31	1.06
7LDCBR		49.74	-3.00	-0.88	51.06	-2.41	-0.77
CJHXWN	X	28.26	-24.48	-7.22	27.94	-25.53	-8.17
DWNCMD		49.90	-2.84	-0.84	49.00	-4.47	-1.43
EJRQGF		54.10	1.36	0.40	52.56	-0.91	-0.29
JPT373		56.70	3.96	1.17	59.18	5.71	1.83
JUL6A3		59.84	7.10	2.09	59.82	6.35	2.03
JUUFM8		55.40	2.66	0.78	53.00	-0.47	-0.15
Q2AM94		51.60	-1.14	-0.34	52.00	-1.47	-0.47
R4JV9G		49.60	-3.14	-0.93	50.44	-3.03	-0.97
RZUP9R		51.14	-1.60	-0.47	50.88	-2.59	-0.83
TEY48U		56.88	4.14	1.22	58.02	4.55	1.46
U4UE4X		49.00	-3.74	-1.10	50.00	-3.47	-1.11
U6H7LU		54.60	1.86	0.55	54.60	1.13	0.36
VGMT3P		53.14	0.40	0.12	51.48	-1.99	-0.64
X7EVA7		48.06	-4.68	-1.38	50.36	-3.11	-0.99
XF77QT		55.60	2.86	0.84	54.60	1.13	0.36
XVHUVG		47.43	-5.31	-1.56	52.77	-0.69	-0.22
XWVGDV		49.64	-3.10	-0.91	53.08	-0.39	-0.12

Summary Statistics	Sample ZR15	Sample ZR16
Grand Means	52.74 psi	53.47 psi
Stnd Dev Btwn Labs	3.39 psi	3.12 psi

Statistics based on 20 of 21 reporting participants.

Comments on Assigned Data Flags for Test #3207

CJHXWN (X) - Extreme Data.



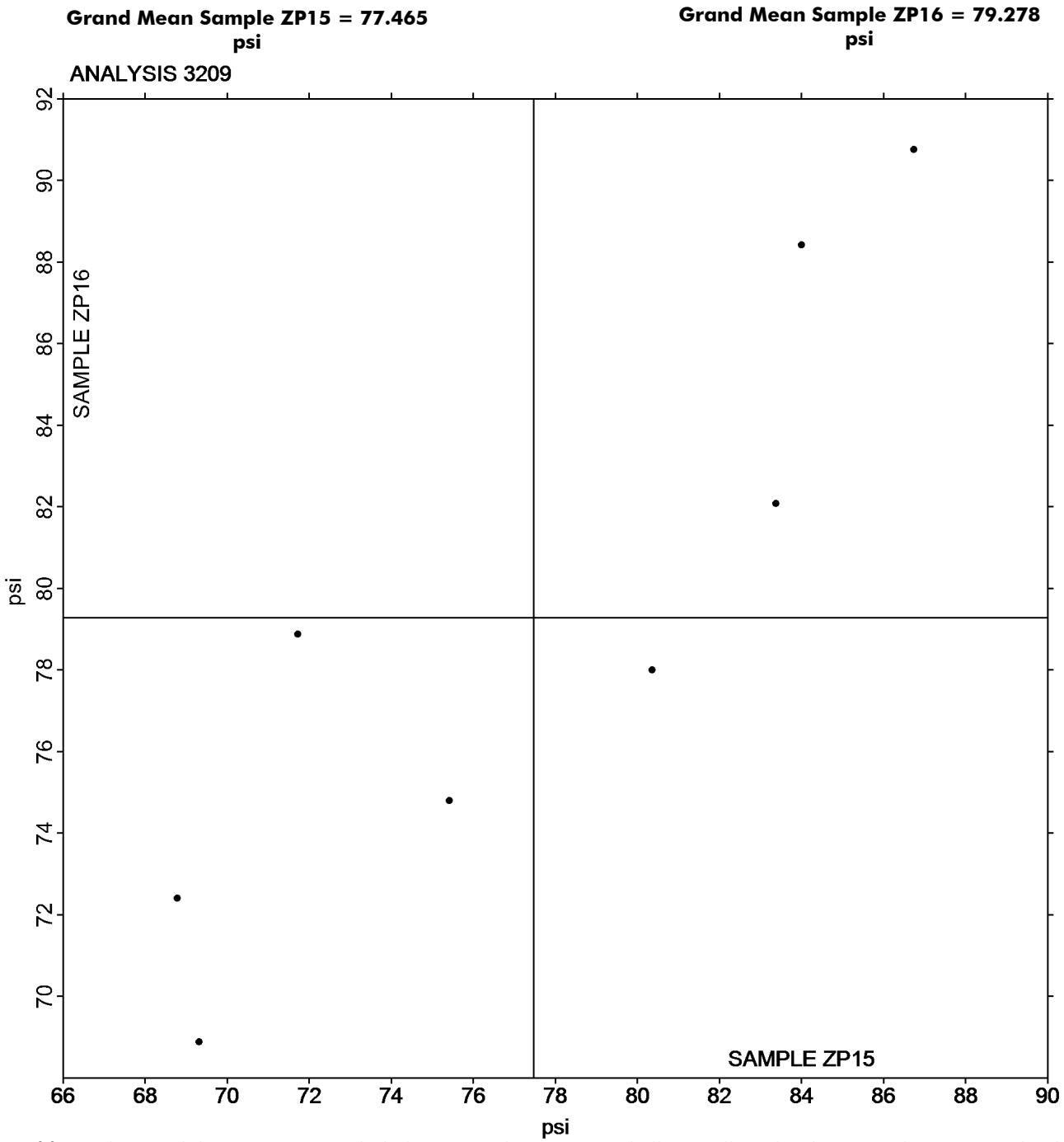
Paper & Paperboard Interlaboratory Testing Program

Analysis 3209
Z-Direction Tensile
TAPPI Official Test Method T541

WebCode	Data Flag	Sample ZP15 Lab Mean	Sample ZP15 Diff from Grand Mean	Sample ZP15 CPV	Sample ZP16 Lab Mean	Sample ZP16 Diff from Grand Mean	Sample ZP16 CPV
6MKBV9		75.42	-2.04	-0.29	74.80	-4.48	-0.59
7Z8VXG		80.36	2.90	0.41	78.00	-1.28	-0.17
B9LCCJ		83.38	5.92	0.84	82.08	2.80	0.37
FK79L8		71.72	-5.74	-0.81	78.88	-0.40	-0.05
R4JV9G		84.00	6.54	0.92	88.42	9.14	1.21
XMMP2F		86.74	9.28	1.31	90.76	11.48	1.52
XQEPG6		69.32	-8.14	-1.15	68.88	-10.40	-1.37
YZVPG7		68.78	-8.69	-1.23	72.40	-6.87	-0.91

Summary Statistics	Sample ZP15	Sample ZP16
Grand Means	77.46 psi	79.28 psi
Stnd Dev Btwn Labs	7.08 psi	7.56 psi

Statistics based on 8 of 8 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 3211

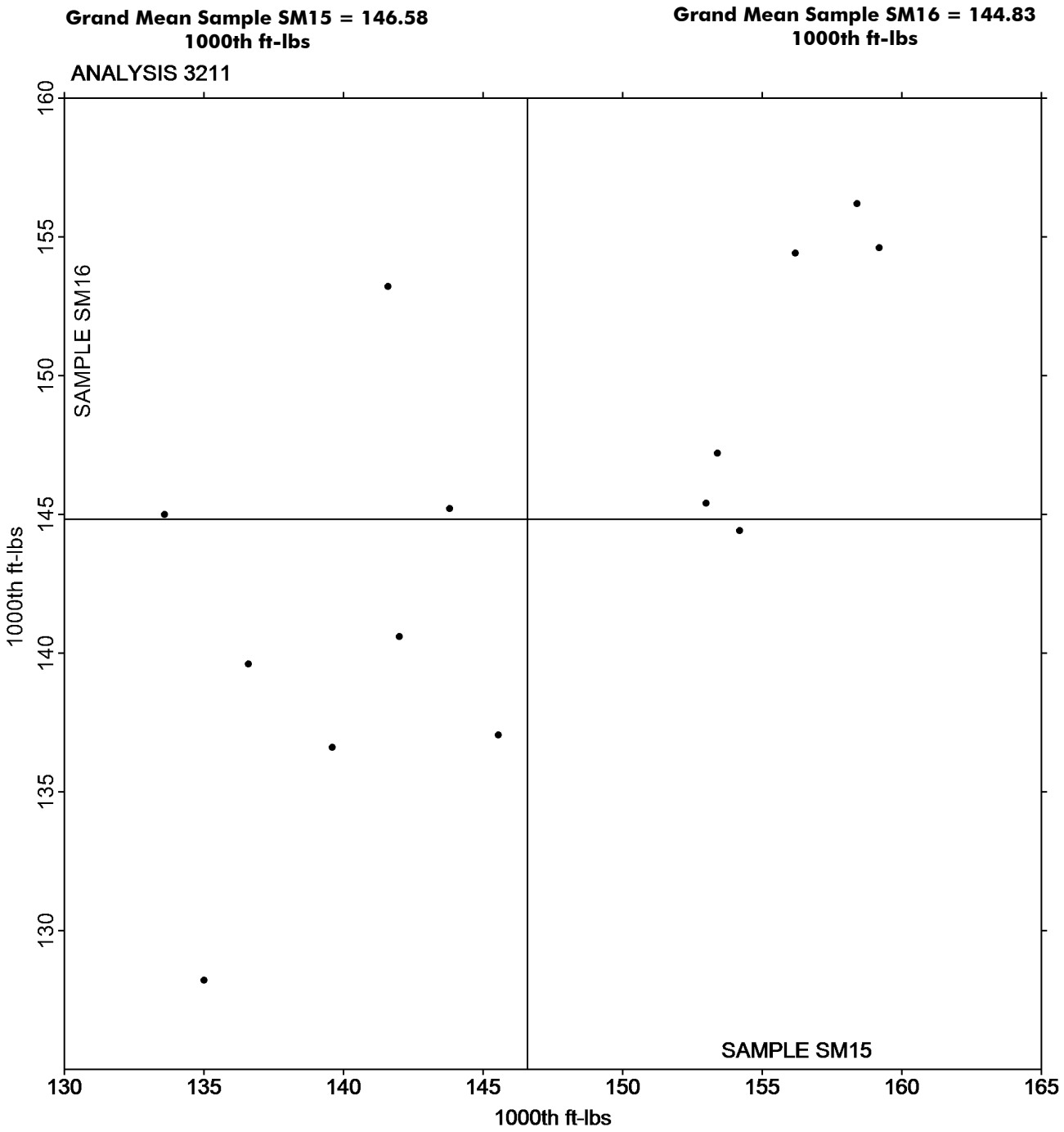
Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SM15 Lab Mean	Sample SM15 Diff from Grand Mean	Sample SM15 CPV	Sample SM16 Lab Mean	Sample SM16 Diff from Grand Mean	Sample SM16 CPV
7T4X4J		141.6	-5.0	-0.56	153.2	8.4	1.04
7Z8VXG		159.2	12.6	1.41	154.6	9.8	1.21
B9LCCJ		136.6	-10.0	-1.11	139.6	-5.2	-0.65
C64DTN		135.0	-11.6	-1.29	128.2	-16.6	-2.07
DWNCMD		158.4	11.8	1.32	156.2	11.4	1.41
FK79L8		153.0	6.4	0.72	145.4	0.6	0.07
JUUFM8		154.2	7.6	0.85	144.4	-0.4	-0.05
KG43R9		156.2	9.6	1.07	154.4	9.6	1.19
LGZXUC		142.0	-4.6	-0.51	140.6	-4.2	-0.53
NWMYF8		153.4	6.8	0.76	147.2	2.4	0.29
R4JV9G		143.8	-2.8	-0.31	145.2	0.4	0.05
U268J2		145.6	-1.0	-0.11	137.0	-7.8	-0.97
UCPJWY		133.6	-13.0	-1.45	145.0	0.2	0.02
XMMP2F		139.6	-7.0	-0.78	136.6	-8.2	-1.02

Summary Statistics	Sample SM15	Sample SM16
Grand Means	146.58 1000th ft-lbs	144.83 1000th ft-lbs
Stnd Dev Btwn Labs	8.96 1000th ft-lbs	8.05 1000th ft-lbs

Statistics based on 14 of 14 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 3213

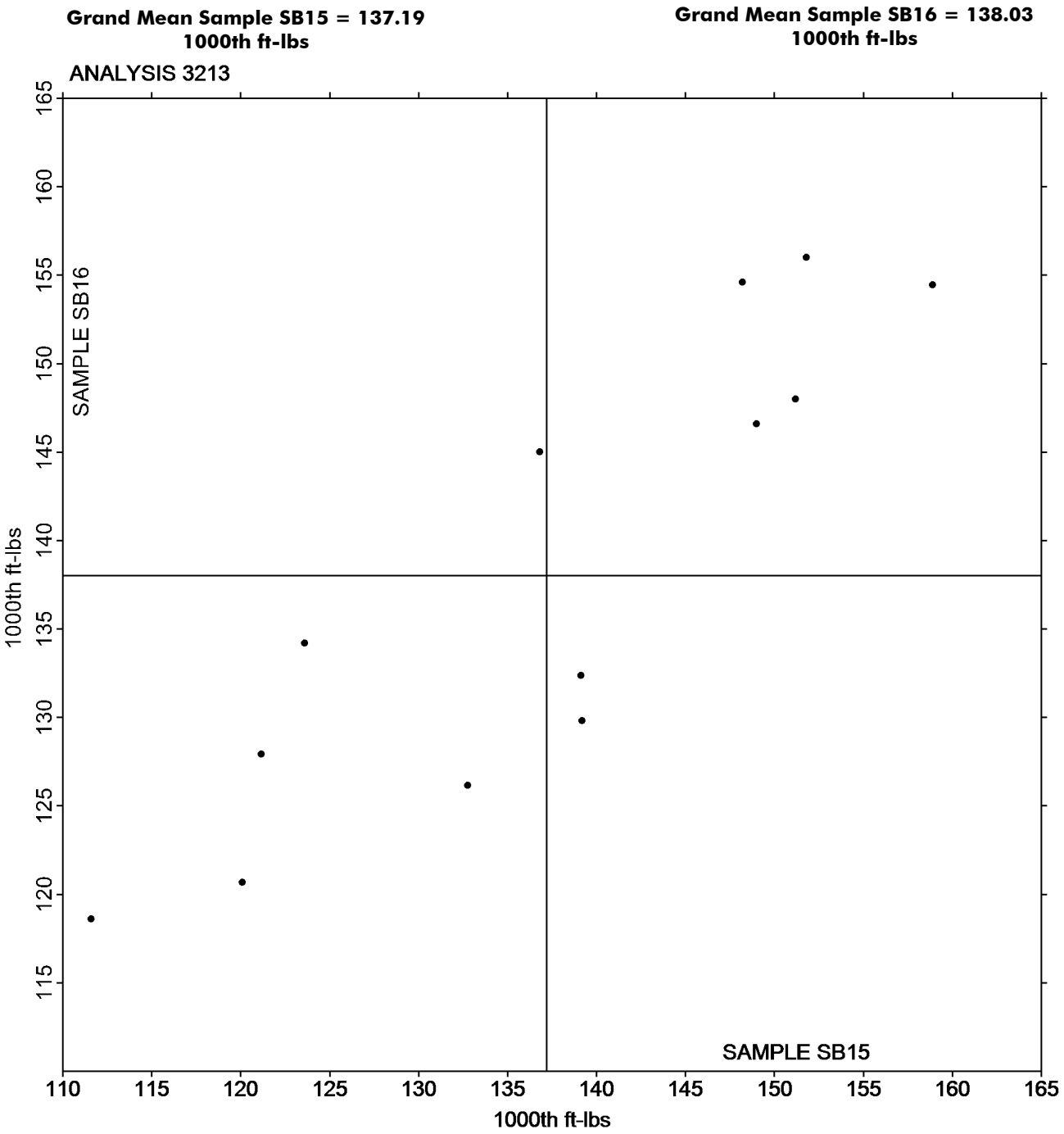
Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SB15 Lab Mean	Sample SB15 Diff from Grand Mean	Sample SB15 CPV	Sample SB16 Lab Mean	Sample SB16 Diff from Grand Mean	Sample SB16 CPV
2H29XR		149.0	11.8	0.81	146.6	8.6	0.64
4YY7DT		151.2	14.0	0.96	148.0	10.0	0.75
666Y64		139.2	2.0	0.14	129.8	-8.2	-0.62
8U4EUE		158.9	21.7	1.49	154.5	16.4	1.23
9N4KXX		148.2	11.0	0.75	154.6	16.6	1.25
AJ4WUV		136.8	-0.4	-0.03	145.0	7.0	0.52
C2L8ZU		132.8	-4.4	-0.30	126.2	-11.9	-0.89
QRPBV7		139.1	2.0	0.13	132.4	-5.6	-0.42
R2RWGB		123.6	-13.6	-0.93	134.2	-3.8	-0.29
R792QR		111.6	-25.6	-1.75	118.6	-19.4	-1.46
XVHUVG		151.8	14.6	1.00	156.0	18.0	1.35
YXNEGW		120.1	-17.1	-1.17	120.7	-17.4	-1.30
ZMLDU4		121.2	-16.0	-1.10	127.9	-10.1	-0.76

Summary Statistics	Sample SB15	Sample SB16
Grand Means	137.19 1000th ft-lbs	138.03 1000th ft-lbs
Stnd Dev Btwn Labs	14.60 1000th ft-lbs	13.31 1000th ft-lbs

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.

-End of Report-

