Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #4271 - November 2023

Analysis	Analysis Name
3101	Thickness (Caliper), Printing papers
3111	Bursting Strength - Printing Papers
3113	Tearing Strength - Printing Papers
3115	Tensile Breaking Strength - Printing Papers
3116	Tensile Energy Absorption - Printing Papers
3117	Elongation to Break - Printing Papers
3121	Air Resistance - Gurley Oil Type
3123	Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice
3131	Roughness - Print Surf Method - 2.5 to 6.0 Microns
3133	Roughness - Sheffield Type
3135	Grammage (Mass per Unit Area)
3141	Opacity (89% Reflectance Backing) - Fine Papers
3143	Opacity (Paper Backing) - Fine Papers and Newsprint
3145	Directional Brightness of Fluorescent Samples
3146	Fluorescent Component of Directional Brightness
3201	Bending Resistance, Taber Type - 0 to 10 Units
3203	Bending Resistance, Taber Type - 10 to 100 Taber Units
3205	Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard
3207	Z-Direction Tensile, Recycled Paperboard
3209	Z-Direction Tensile
3211	Internal Bond Strength - Modified Scott Mechanics
3213	Internal Bond Strength - Scott Bond Models

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 CP23 Lab Mean	Sample CP23 Diff from Grand Mean	Sample CP23 CPV	Sample CP24 Lab Mean	Sample CP24 Diff from Grand Mean	Sample CP24 CPV
4697XC		3.768	-0.095	-1.86	3.802	-0.082	-1.57
72ZURM	X	3.600	-0.263	-5.15	3.650	-0.234	-4.47
7JKNGQ		3.859	-0.004	-0.08	3.853	-0.031	-0.60
7U9DLQ		3.862	-0.001	-0.03	3.868	-0.017	-0.32
848CQH		3.882	0.019	0.37	3.917	0.032	0.61
8VVDW8		3.860	-0.003	-0.06	3.881	-0.003	-0.07
99YWFJ		3.880	0.017	0.33	3.928	0.044	0.83
9MJCJJ		3.955	0.092	1.80	3.946	0.062	1.17
A7NGCK		3.909	0.046	0.90	3.903	0.019	0.35
AMECWN		3.811	-0.052	-1.02	3.840	-0.044	-0.85
B74ZWH		3.772	-0.092	-1.79	3.783	-0.101	-1.92
B8V9PJ		3.835	-0.028	-0.55	3.844	-0.040	-0.77
BULMCT		3.940	0.077	1.50	3.939	0.055	1.04
C2G64A		3.771	-0.092	-1.80	3.807	-0.077	-1.48
CKDBWA		3.810	-0.053	-1.04	3.850	-0.034	-0.66
CMKKTD		3.923	0.060	1.17	3.952	0.068	1.29
CMN2BK		3.901	0.038	0.74	3.954	0.070	1.33
CYK84J		3.886	0.023	0.45	3.894	0.010	0.18
DGQBWK		3.783	-0.080	-1.57	3.810	-0.074	-1.42
DQE2JC		3.914	0.051	0.99	3.935	0.051	0.96
DQHGZJ		3.781	-0.082	-1.61	3.775	-0.109	-2.09
E6X2XH		3.906	0.042	0.83	3.929	0.045	0.85
FB4VRD		3.817	-0.046	-0.90	3.829	-0.055	-1.06
FDRCYZ		3.957	0.093	1.83	3.984	0.100	1.90
FP4W4E	X	3.689	-0.174	-3.41	3.837	-0.047	-0.90
GVZXXD		3.847	-0.016	-0.32	3.866	-0.018	-0.35
H6LGTX		3.884	0.021	0.41	3.875	-0.009	-0.18
HWBE8W		3.851	-0.012	-0.24	3.884	0.000	-0.01
J3DPX3		3.811	-0.052	-1.02	3.840	-0.044	-0.85
J9KEGV		3.866	0.003	0.05	3.902	0.018	0.33
JDDGJA		3.848	-0.015	-0.30	3.843	-0.042	-0.79
KNQQU7		3.898	0.034	0.67	3.913	0.029	0.55
N4P6G6		3.815	-0.048	-0.94	3.835	-0.049	-0.94
NC6XL9		3.940	0.077	1.50	3.970	0.086	1.63
NHUDD2		3.908	0.045	0.87	3.950	0.066	1.26
NHXTU9		3.878	0.015	0.30	3.904	0.019	0.37
P3Y4D3		3.885	0.021	0.42	3.887	0.002	0.04
PARM93		3.898	0.035	0.68	3.952	0.068	1.29
PX3NHZ		3.885	0.022	0.43	3.923	0.039	0.74
QNRLWY		3.894	0.031	0.60	3.932	0.048	0.91

Paper & Paperboard Interlaboratory Testing Program

Analysis 3101

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample CP23 Lab Mean	Sample CP23 Diff from Grand Mean	Sample CP23 CPV	Sample CP24 Lab Mean	Sample CP24 Diff from Grand Mean	Sample CP24 CPV
R787D3		3.837	-0.026	-0.51	3.865	-0.019	-0.37
RB3WKZ		3.906	0.043	0.84	3.908	0.024	0.45
TDZXX2		3.883	0.020	0.39	3.917	0.033	0.62
TKJCET		3.860	-0.004	-0.07	3.871	-0.014	-0.26
WFXLKT		3.858	-0.005	-0.10	3.865	-0.019	-0.36
WXGB32		3.764	-0.099	-1.95	3.803	-0.081	-1.55
YYKUVT		3.848	-0.015	-0.30	3.871	-0.014	-0.26

Summary Statistics	Sample CP23	Sample CP24
Grand Means	3.86 mils	3.88 mils
Stnd Dev Btwn Labs	0.05 mils	0.05 mils

Statistics based on 45 of 47 reporting participants.

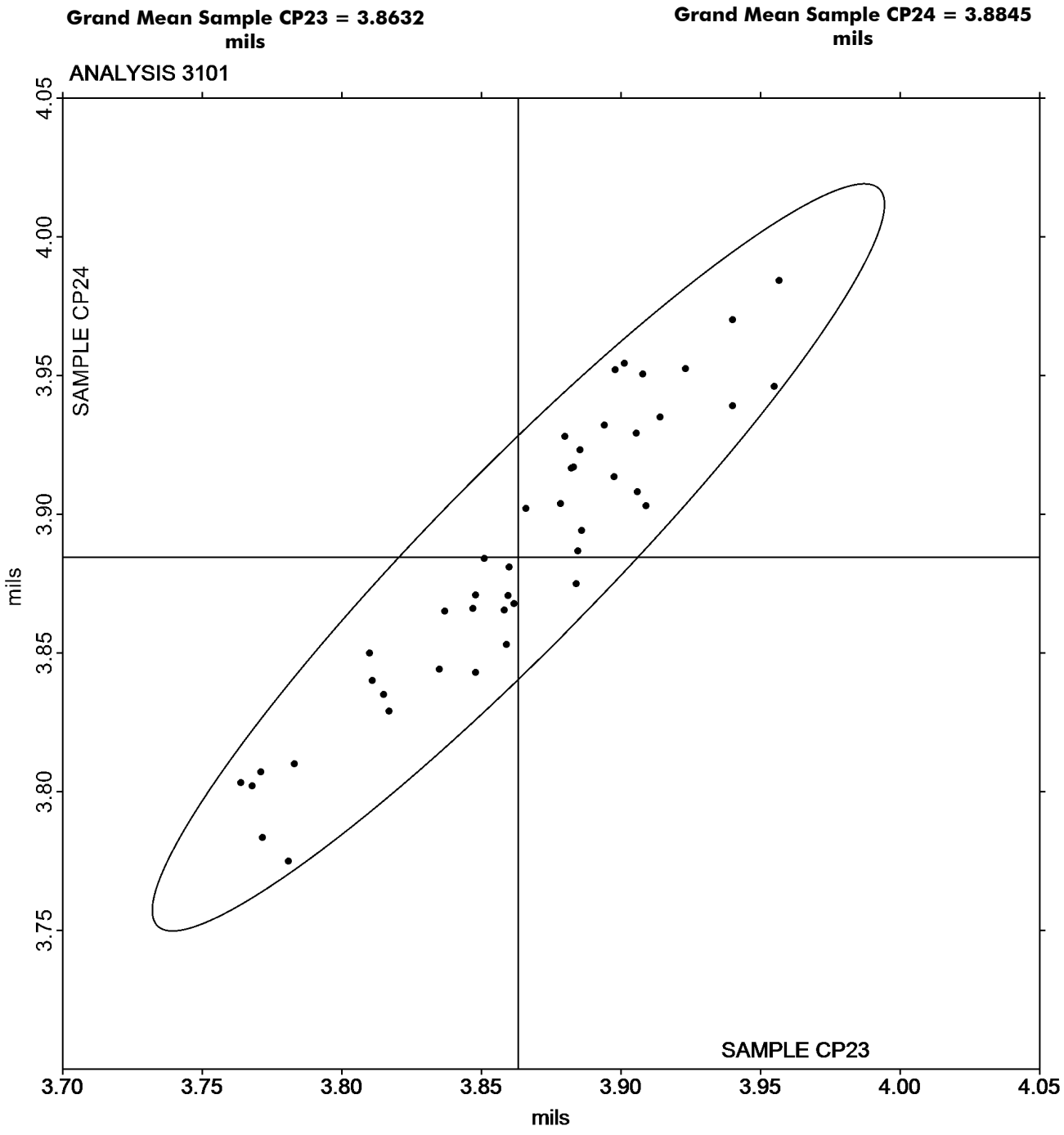
Comments on Assigned Data Flags for Test #3101

FP4W4E (X) - Data for sample CP23 are low.

72ZURM (X) - Data for both samples are low. Possible Systematic Error.

Analysis Notes:

8VVDW8 - Data appear to be reported as mils, not micrometers as indicated on data entry form. CTS will not correct the Units going forward.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3111

Bursting Strength - Printing Papers

TAPPI Official Test Method T403

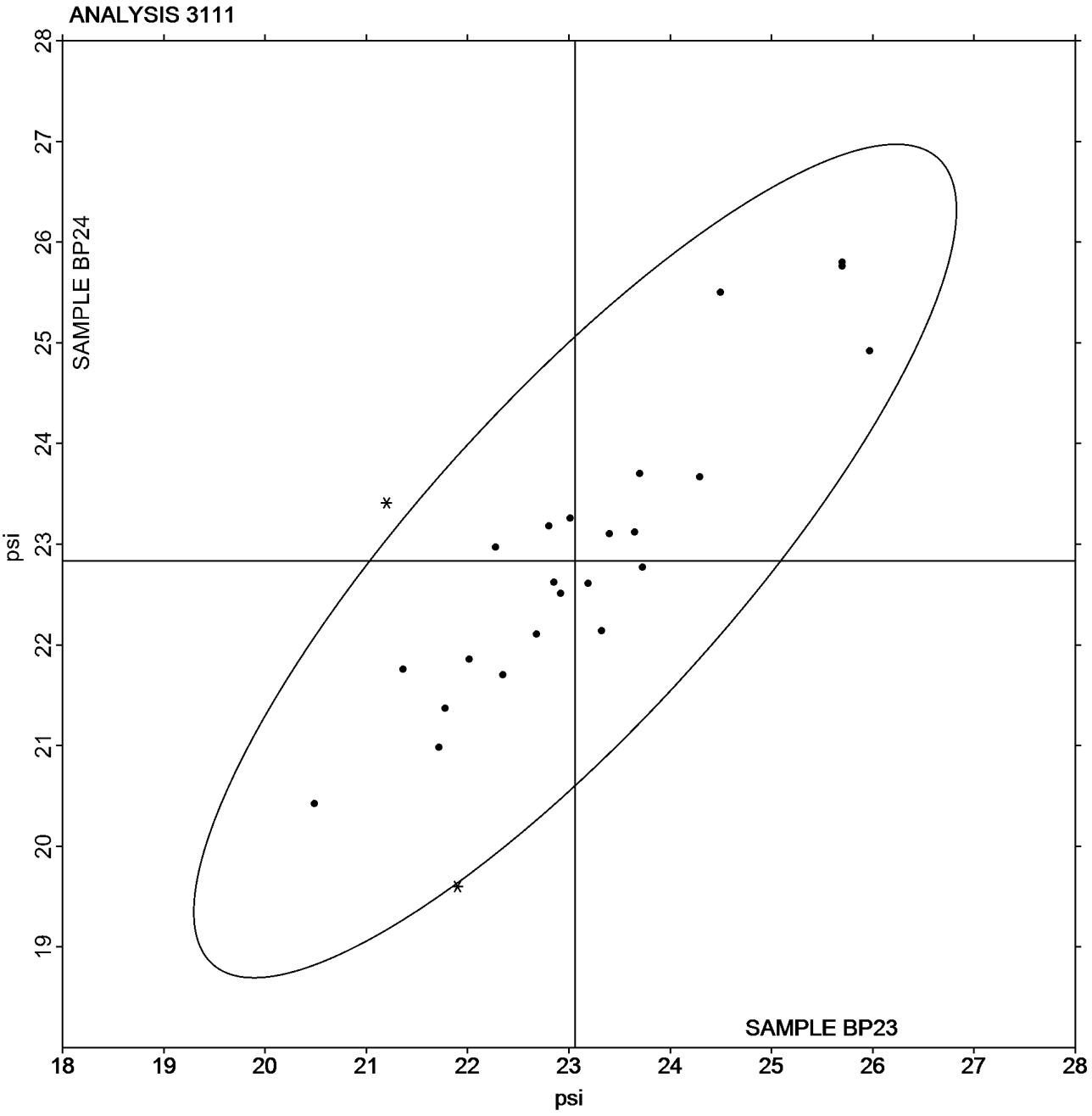
WebCode	Data Flag	Sample BP23 Lab Mean	Sample BP23 Diff from Grand Mean	Sample BP23 CPV	Sample BP24 Lab Mean	Sample BP24 Diff from Grand Mean	Sample BP24 CPV
848CQH		24.30	1.23	0.88	23.66	0.83	0.54
99YWFJ		21.78	-1.28	-0.91	21.37	-1.46	-0.94
CKDBWA		21.72	-1.34	-0.95	20.98	-1.85	-1.20
CMKKTD		23.73	0.67	0.47	22.77	-0.06	-0.04
CMN2BK		22.02	-1.04	-0.74	21.86	-0.98	-0.63
CYK84J		24.50	1.44	1.02	25.50	2.67	1.72
DGQBWK		23.70	0.64	0.45	23.70	0.87	0.56
GVZXXD		20.49	-2.57	-1.83	20.42	-2.41	-1.56
J9KEGV		25.97	2.91	2.07	24.92	2.09	1.35
L2RQYV		23.19	0.13	0.09	22.61	-0.22	-0.14
N4P6G6		22.80	-0.26	-0.18	23.18	0.35	0.22
NC6XL9		22.92	-0.14	-0.10	22.51	-0.32	-0.21
NHUDD2		21.36	-1.70	-1.20	21.76	-1.08	-0.70
P3Y4D3		22.68	-0.38	-0.27	22.10	-0.73	-0.47
PARM93	*	21.20	-1.86	-1.32	23.41	0.58	0.37
PX3NHZ		22.86	-0.21	-0.15	22.62	-0.21	-0.14
R787D3		25.70	2.64	1.87	25.76	2.93	1.89
R7MPWZ		23.32	0.26	0.19	22.14	-0.69	-0.45
TDZXX2		23.40	0.34	0.24	23.10	0.27	0.17
TKJCET		23.01	-0.05	-0.03	23.26	0.43	0.28
UJ2JF4	*	21.90	-1.16	-0.82	19.60	-3.23	-2.09
V3XJQZ		23.65	0.59	0.42	23.12	0.29	0.19
WEMKYU		25.70	2.64	1.87	25.80	2.97	1.92
XW2JJJ		22.28	-0.78	-0.55	22.97	0.14	0.09
ZB9GEU		22.35	-0.71	-0.51	21.70	-1.13	-0.73

Summary Statistics	Sample BP23	Sample BP24
Grand Means	23.06 psi	22.83 psi
Stnd Dev Btwn Labs	1.41 psi	1.55 psi

Statistics based on 25 of 25 reporting participants.

Grand Mean Sample BP23 = 23.061 psi

Grand Mean Sample BP24 = 22.833 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 3113

Tearing Strength - Printing Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample RP23 Lab Mean	Sample RP23 Diff from Grand Mean	Sample RP23 CPV	Sample RP24 Lab Mean	Sample RP24 Diff from Grand Mean	Sample RP24 CPV
28TY6P		40.58	-5.85	-1.38	41.01	-5.56	-1.33
44KQQP		49.39	2.95	0.70	49.46	2.88	0.69
6D6GQM		48.44	2.01	0.47	49.08	2.51	0.60
6G2AFB		44.39	-2.05	-0.48	45.40	-1.17	-0.28
848CQH		45.82	-0.62	-0.15	47.08	0.51	0.12
8ELKBP		46.89	0.46	0.11	46.15	-0.42	-0.10
8VVDW8		52.46	6.03	1.42	51.11	4.54	1.09
99YWFJ		47.82	1.39	0.33	49.20	2.63	0.63
A7NGCK		45.24	-1.19	-0.28	43.54	-3.03	-0.73
AU8WRN		43.70	-2.73	-0.65	45.11	-1.46	-0.35
B8V9PJ		45.82	-0.61	-0.15	45.40	-1.17	-0.28
BBBQYN	*	38.22	-8.21	-1.94	40.94	-5.63	-1.35
CKDBWA		47.55	1.12	0.26	48.72	2.15	0.51
CMN2BK		51.99	5.55	1.31	52.06	5.49	1.31
CYK84J		48.60	2.17	0.51	47.20	0.63	0.15
DGQBWK		45.04	-1.39	-0.33	44.80	-1.77	-0.42
DQE2JC		41.88	-4.55	-1.08	39.80	-6.77	-1.62
E6X2XH	X	56.31	9.88	2.33	50.56	3.99	0.95
EJBE4H		41.32	-5.11	-1.21	43.50	-3.07	-0.74
FB4VRD		47.00	0.57	0.13	46.00	-0.57	-0.14
FP4W4E	*	37.98	-8.45	-2.00	36.44	-10.13	-2.42
GVZXXD		44.28	-2.15	-0.51	45.44	-1.13	-0.27
H6LGTX		44.60	-1.83	-0.43	43.86	-2.71	-0.65
HWBE8W		37.74	-8.69	-2.05	37.71	-8.86	-2.12
J9KEGV		46.80	0.37	0.09	47.60	1.03	0.25
KNQQU7	X	56.40	9.97	2.35	51.60	5.03	1.20
KQHRXA	X	63.05	16.62	3.92	62.21	15.64	3.74
MV3TLR		56.93	10.50	2.48	56.18	9.60	2.30
N4P6G6		54.21	7.77	1.84	54.14	7.57	1.81
NHUDD2		48.20	1.77	0.42	47.91	1.33	0.32
NHXTU9		44.40	-2.03	-0.48	45.09	-1.48	-0.35
P3Y4D3		49.08	2.65	0.62	50.88	4.31	1.03
PARM93	X	54.60	8.17	1.93	47.90	1.33	0.32
PX3NHZ		49.92	3.48	0.82	50.37	3.80	0.91
QNRLWY		48.50	2.07	0.49	48.10	1.53	0.37
R787D3		42.20	-4.23	-1.00	42.72	-3.85	-0.92
TDZXX2		48.85	2.42	0.57	50.09	3.52	0.84
TKJCET		48.30	1.87	0.44	48.08	1.50	0.36
V3XJQZ		48.46	2.03	0.48	48.16	1.59	0.38
WEMKYU		52.20	5.77	1.36	51.60	5.03	1.20

WebCode	Data Flag	Sample RP23 Lab Mean	Sample RP23 Diff from Grand Mean	Sample RP23 CPV	Sample RP24 Lab Mean	Sample RP24 Diff from Grand Mean	Sample RP24 CPV
WXGB32		44.89	-1.54	-0.36	45.59	-0.98	-0.24
WXV3TW		47.03	0.60	0.14	47.66	1.09	0.26
YYKUVT		44.24	-2.19	-0.52	43.16	-3.41	-0.82

Summary Statistics	Sample RP23	Sample RP24
Grand Means	46.43 Grams	46.57 Grams
Stnd Dev Btwn Labs	4.23 Grams	4.18 Grams

Statistics based on 39 of 43 reporting participants.

Comments on Assigned Data Flags for Test #3113

KNQQU7 (X) - Inconsistent in testing between samples.

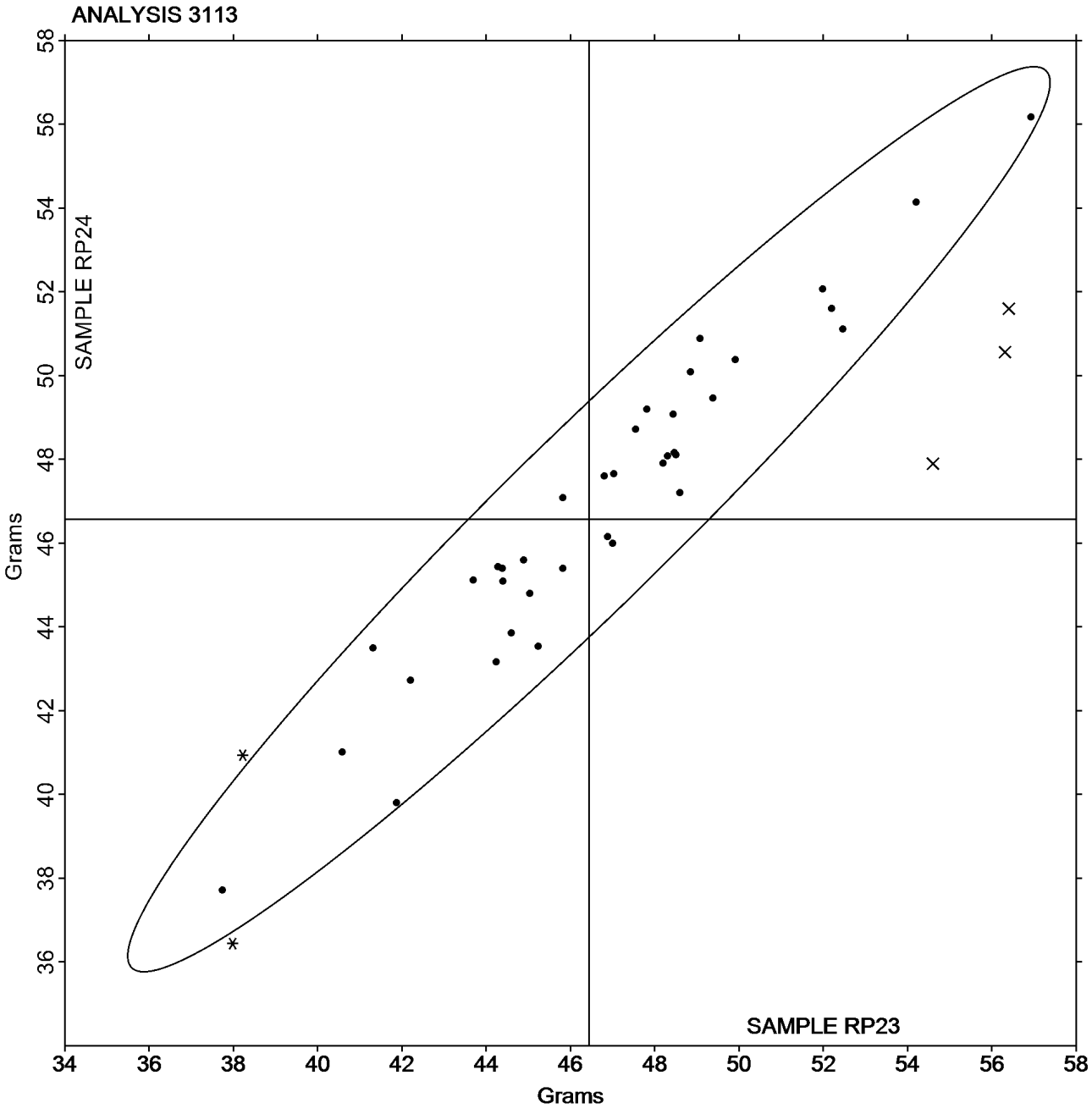
KQHRXA (X) - Data for both samples are high. Possible Systematic Error.

E6X2XH (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample RP23.

PARM93 (X) - Inconsistent in testing between samples.

Grand Mean Sample RP23 = 46.434 Grams

Grand Mean Sample RP24 = 46.573 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP23 Lab Mean	Sample NP23 Diff from Grand Mean	Sample NP23 CPV	Sample NP24 Lab Mean	Sample NP24 Diff from Grand Mean	Sample NP24 CPV
28TY6P		4.721	0.343	0.99	4.585	0.218	0.70
6G2AFB		4.240	-0.138	-0.40	4.240	-0.128	-0.41
7J738N		4.449	0.071	0.20	4.578	0.210	0.67
7JKNGQ		4.883	0.505	1.46	4.860	0.492	1.58
7U9DLQ		5.202	0.824	2.38	5.052	0.684	2.19
8ELKBP		4.248	-0.130	-0.38	4.232	-0.136	-0.43
8VVDW8		4.214	-0.165	-0.48	4.226	-0.142	-0.45
99YWFJ		4.100	-0.278	-0.80	4.044	-0.323	-1.04
9LHL6N		4.009	-0.369	-1.07	4.080	-0.288	-0.92
A7NGCK	X	4.021	-0.357	-1.03	3.560	-0.807	-2.59
BBBQYN		4.422	0.044	0.13	4.333	-0.035	-0.11
BJ9H8H		4.577	0.199	0.57	4.403	0.035	0.11
CKDBWA		4.931	0.553	1.60	4.867	0.499	1.60
CMKKTD		4.531	0.153	0.44	4.593	0.225	0.72
CMN2BK		4.318	-0.060	-0.17	4.238	-0.130	-0.42
CYK84J		3.889	-0.490	-1.41	3.813	-0.554	-1.78
DGQBWK		4.907	0.529	1.53	4.852	0.485	1.55
DQE2JC	*	3.658	-0.720	-2.08	3.943	-0.425	-1.36
DQHGZJ		4.085	-0.293	-0.85	4.198	-0.170	-0.54
E6X2XH		4.062	-0.316	-0.91	4.112	-0.255	-0.82
FB4VRD		4.936	0.558	1.61	4.825	0.457	1.47
FP4W4E		4.406	0.028	0.08	4.340	-0.028	-0.09
GVZXXD		4.269	-0.109	-0.31	4.173	-0.194	-0.62
H6LGTX		4.897	0.518	1.50	4.742	0.374	1.20
HWBE8W		4.450	0.072	0.21	4.490	0.122	0.39
J9KEGV		4.610	0.232	0.67	4.452	0.084	0.27
JDDGJA		3.911	-0.467	-1.35	3.941	-0.427	-1.37
KNQQU7		4.472	0.094	0.27	4.426	0.058	0.19
KQHRXA		4.694	0.316	0.91	4.635	0.268	0.86
KRNJHA		3.815	-0.563	-1.63	3.750	-0.618	-1.98
N4P6G6		4.596	0.218	0.63	4.526	0.158	0.51
NHUDD2		4.638	0.260	0.75	4.694	0.326	1.05
NHXTU9		4.424	0.046	0.13	4.410	0.042	0.14
P3Y4D3		4.237	-0.141	-0.41	4.247	-0.121	-0.39
PX3NHZ		4.003	-0.376	-1.08	4.021	-0.347	-1.11
QNRLWY		4.321	-0.057	-0.17	4.527	0.159	0.51
R787D3		4.735	0.357	1.03	4.728	0.361	1.16
RB3WKZ		4.078	-0.301	-0.87	4.074	-0.294	-0.94
TDZXX2		4.181	-0.197	-0.57	4.218	-0.150	-0.48
TKJCET		4.167	-0.212	-0.61	4.175	-0.193	-0.62

Paper & Paperboard Interlaboratory Testing Program

Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP23 Lab Mean	Sample NP23 Diff from Grand Mean	Sample NP23 CPV	Sample NP24 Lab Mean	Sample NP24 Diff from Grand Mean	Sample NP24 CPV
UKEB8K		4.570	0.192	0.55	4.696	0.328	1.05
V3XJQZ		4.031	-0.347	-1.00	4.019	-0.348	-1.12
WXGB32		4.216	-0.163	-0.47	4.328	-0.040	-0.13
WXV3TW		4.163	-0.215	-0.62	4.122	-0.246	-0.79
XZX69Z	X	2.465	-1.913	-5.52	2.532	-1.836	-5.88
YYKUVT	X	4.595	0.217	0.63	4.936	0.569	1.82

Summary Statistics	Sample NP23	Sample NP24
Grand Means	4.38 kN/m	4.37 kN/m
Stnd Dev Btwn Labs	0.35 kN/m	0.31 kN/m

Statistics based on 43 of 46 reporting participants.

Comments on Assigned Data Flags for Test #3115

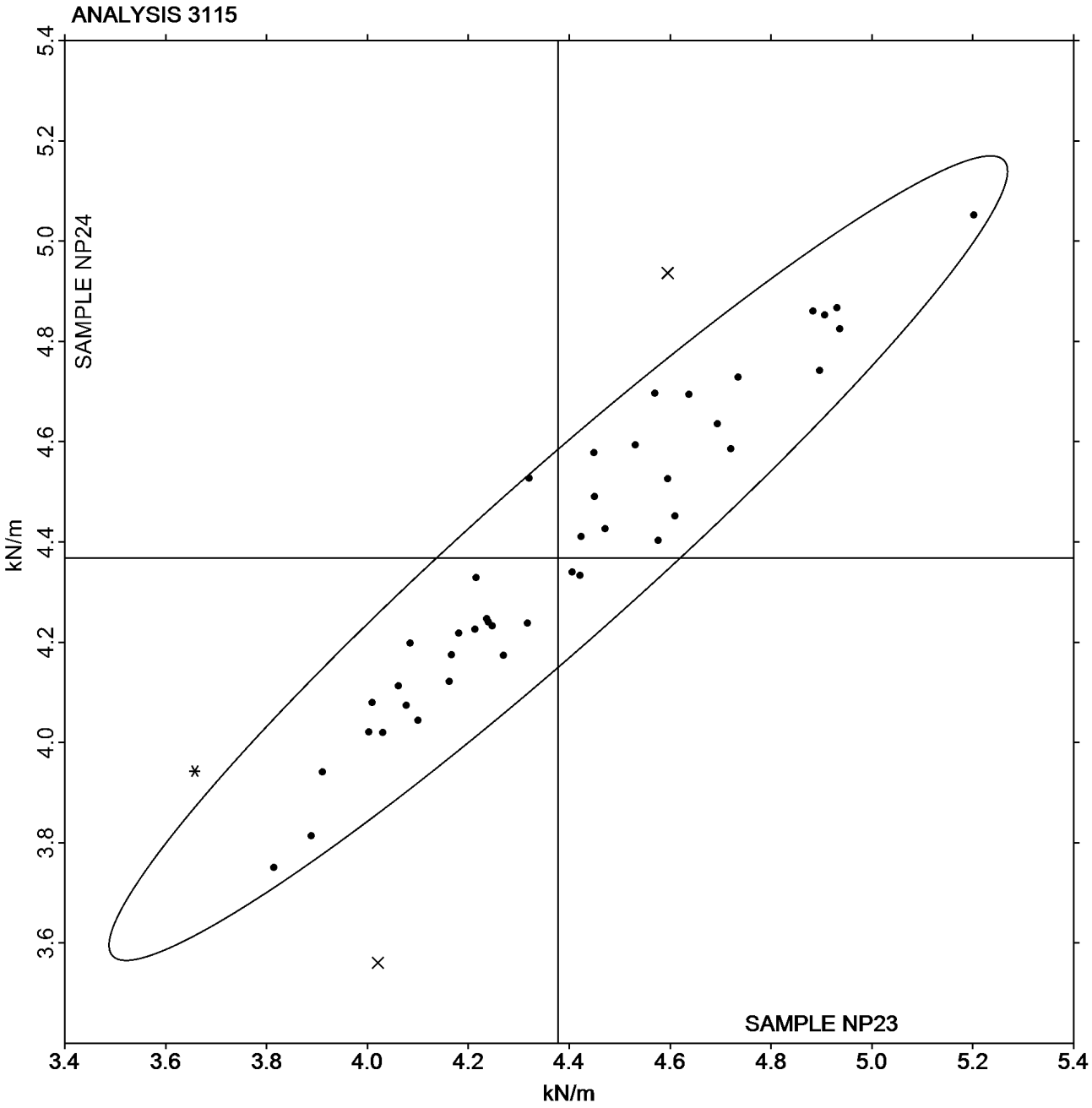
YYKUVT (X) - Inconsistent in testing between samples.

A7NGCK (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample NP23.

XZX69Z (X) - Data for both samples are low. Possible Systematic Error.

Grand Mean Sample NP23 = 4.3782 kN/m

Grand Mean Sample NP24 = 4.3676 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3116

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP23 Lab Mean	Sample NP23 Diff from Grand Mean	Sample NP23 CPV	Sample NP24 Lab Mean	Sample NP24 Diff from Grand Mean	Sample NP24 CPV
28TY6P		40.73	-4.29	-0.86	38.40	-6.40	-1.12
6G2AFB		46.25	1.23	0.25	47.43	2.64	0.46
7J738N		49.26	4.25	0.86	50.87	6.08	1.06
7U9DLQ		52.29	7.27	1.47	50.73	5.94	1.04
8ELKBP		46.70	1.68	0.34	45.05	0.26	0.05
8VVDW8		44.66	-0.36	-0.07	43.34	-1.45	-0.25
99YWFJ		47.28	2.27	0.46	46.93	2.14	0.37
9LHL6N		44.34	-0.68	-0.14	46.20	1.41	0.25
BBBQYN		50.79	5.77	1.16	53.85	9.06	1.59
BJ9H8H	*	57.26	12.24	2.47	50.61	5.82	1.02
CKDBWA		47.42	2.41	0.49	47.85	3.06	0.54
CMKKTD		49.16	4.14	0.84	51.10	6.31	1.10
CMN2BK		48.79	3.78	0.76	46.79	1.99	0.35
CYK84J		41.73	-3.29	-0.66	37.11	-7.68	-1.34
DGQBWK		45.17	0.15	0.03	43.39	-1.41	-0.25
DQHGZJ		42.94	-2.08	-0.42	44.54	-0.25	-0.04
E6X2XH		42.26	-2.76	-0.56	43.07	-1.72	-0.30
FB4VRD		48.44	3.42	0.69	46.16	1.36	0.24
GVZXXD		49.46	4.44	0.90	46.20	1.40	0.25
H6LGTX		45.39	0.37	0.07	39.02	-5.77	-1.01
HWBE8W		47.86	2.84	0.57	51.03	6.24	1.09
J9KEGV		39.67	-5.35	-1.08	37.77	-7.03	-1.23
JDDGJA		37.88	-7.13	-1.44	40.04	-4.76	-0.83
KQHRXA	*	32.06	-12.95	-2.61	31.73	-13.07	-2.29
KRNJHA		42.15	-2.87	-0.58	38.55	-6.24	-1.09
N4P6G6		34.16	-10.85	-2.19	31.54	-13.26	-2.32
NHUDD2		48.54	3.52	0.71	51.45	6.66	1.16
NHXTU9		40.27	-4.75	-0.96	41.29	-3.51	-0.61
P3Y4D3		46.64	1.62	0.33	46.18	1.39	0.24
PX3NHZ		44.75	-0.27	-0.05	44.18	-0.62	-0.11
QNRLWY		51.30	6.28	1.27	57.54	12.75	2.23
RB3WKZ		45.04	0.03	0.01	44.97	0.18	0.03
TDZXX2		42.67	-2.34	-0.47	42.94	-1.86	-0.33
UKEB8K		41.77	-3.24	-0.65	45.19	0.40	0.07
V3XJQZ		43.56	-1.46	-0.29	41.44	-3.36	-0.59
XZX69Z	X	23.71	-21.31	-4.30	25.83	-18.97	-3.32
YYKUVT		41.97	-3.05	-0.61	48.10	3.31	0.58

Summary Statistics	Sample NP23	Sample NP24
Grand Means	45.02 Joules/sq m	44.79 Joules/sq m
Stnd Dev Btwn Labs	4.96 Joules/sq m	5.71 Joules/sq m

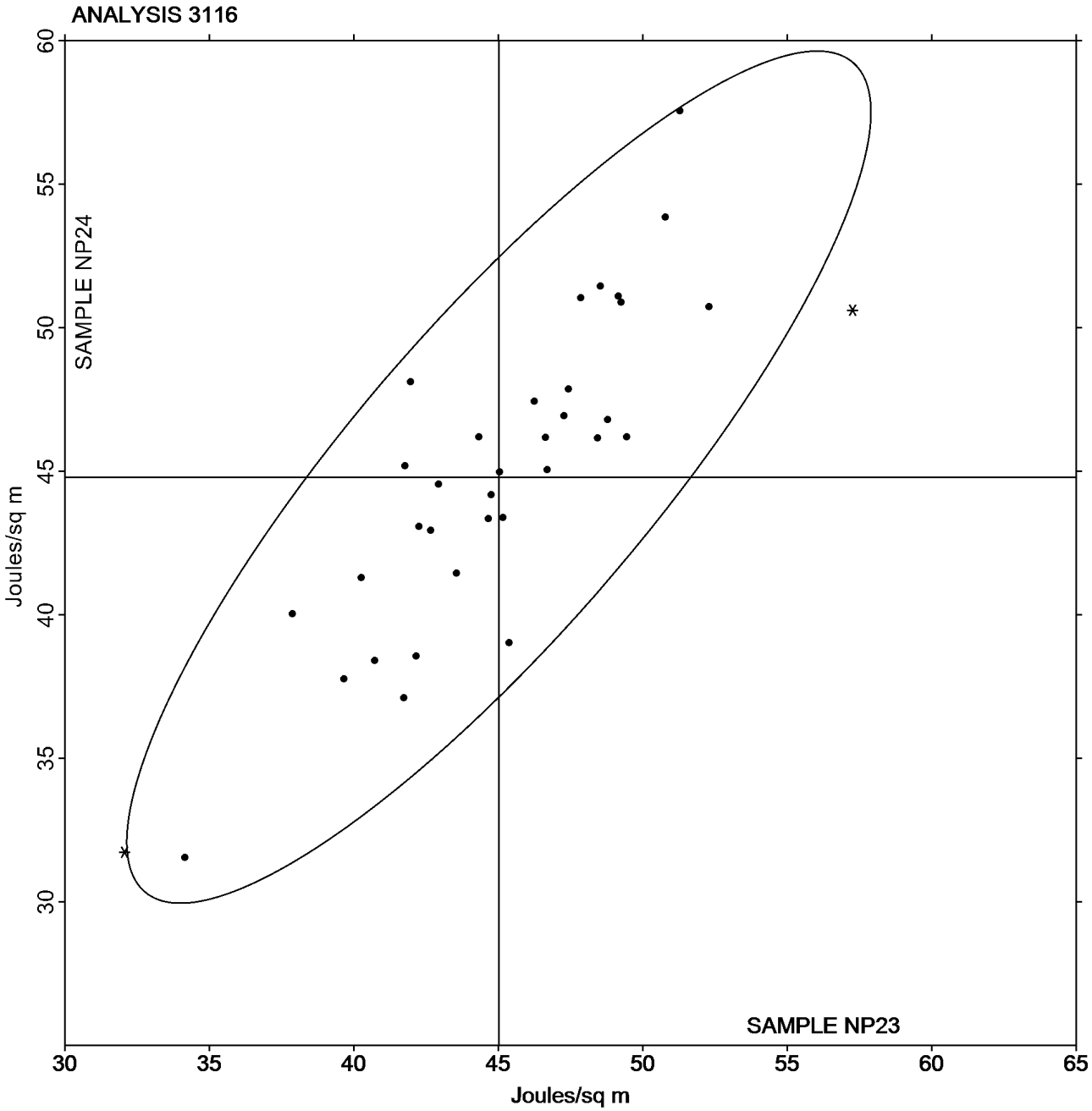
Statistics based on 36 of 37 reporting participants.

Comments on Assigned Data Flags for Test #3116

XZX69Z (X) - Data for both samples are low. Possible Systematic Error.

Grand Mean Sample NP23 = 45.017 Joules/sq m

Grand Mean Sample NP24 = 44.794 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3117

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NP23 Lab Mean	Sample NP23 Diff from Grand Mean	Sample NP23 CPV	Sample NP24 Lab Mean	Sample NP24 Diff from Grand Mean	Sample NP24 CPV
28TY6P		1.402	-0.228	-1.24	1.364	-0.270	-1.47
6G2AFB		1.700	0.070	0.38	1.700	0.066	0.36
7J738N		1.787	0.157	0.86	1.809	0.175	0.95
7U9DLQ		1.522	-0.108	-0.59	1.510	-0.124	-0.67
8ELKBP		1.665	0.035	0.19	1.629	-0.005	-0.03
8VVDW8		1.776	0.146	0.80	1.765	0.131	0.71
99YWFJ		1.845	0.215	1.17	1.850	0.216	1.17
9LHL6N		1.759	0.129	0.70	1.801	0.167	0.91
A7NGCK	X	1.526	-0.104	-0.57	1.171	-0.463	-2.51
BBBQYN		1.774	0.144	0.79	1.894	0.260	1.41
BJ9H8H		1.893	0.263	1.43	1.810	0.176	0.96
CKDBWA		1.447	-0.183	-1.00	1.437	-0.197	-1.07
CMKKTD		1.676	0.046	0.25	1.714	0.080	0.43
CMN2BK		1.710	0.080	0.44	1.678	0.044	0.24
CYK84J		1.667	0.037	0.20	1.530	-0.104	-0.56
DGQBWK		1.458	-0.172	-0.94	1.419	-0.215	-1.17
DQE2JC	*	1.243	-0.387	-2.11	1.387	-0.247	-1.34
DQHGZJ		1.655	0.025	0.14	1.678	0.044	0.24
E6X2XH		1.624	-0.006	-0.04	1.644	0.010	0.05
FB4VRD		1.579	-0.051	-0.28	1.549	-0.085	-0.46
GVZXXD		1.966	0.336	1.83	1.861	0.227	1.23
H6LGTX		1.517	-0.113	-0.62	1.393	-0.241	-1.31
HWBE8W		1.546	-0.084	-0.46	1.600	-0.034	-0.18
J9KEGV		1.917	0.287	1.57	1.915	0.281	1.52
JDDGJA		1.497	-0.133	-0.73	1.563	-0.071	-0.39
KQHRXA		1.423	-0.207	-1.13	1.345	-0.289	-1.57
KRNJHA		2.065	0.435	2.37	2.085	0.451	2.45
N4P6G6		1.425	-0.205	-1.12	1.346	-0.288	-1.56
NHUDD2		1.515	-0.115	-0.63	1.579	-0.055	-0.30
NHXTU9		1.435	-0.195	-1.06	1.477	-0.157	-0.85
P3Y4D3		1.707	0.077	0.42	1.697	0.063	0.34
PX3NHZ		1.654	0.024	0.13	1.615	-0.019	-0.10
QNRLWY		1.851	0.221	1.21	1.984	0.350	1.90
RB3WKZ		1.704	0.074	0.40	1.707	0.073	0.40
TDZXX2		1.575	-0.055	-0.30	1.570	-0.064	-0.35
TKJCET	X	2.550	0.920	5.02	2.650	1.016	5.51
UKEB8K		1.487	-0.143	-0.78	1.561	-0.073	-0.40
V3XJQZ		1.654	0.024	0.13	1.591	-0.043	-0.24
XZX69Z		1.485	-0.146	-0.79	1.572	-0.062	-0.34
YYKUVT		1.340	-0.290	-1.58	1.465	-0.169	-0.92

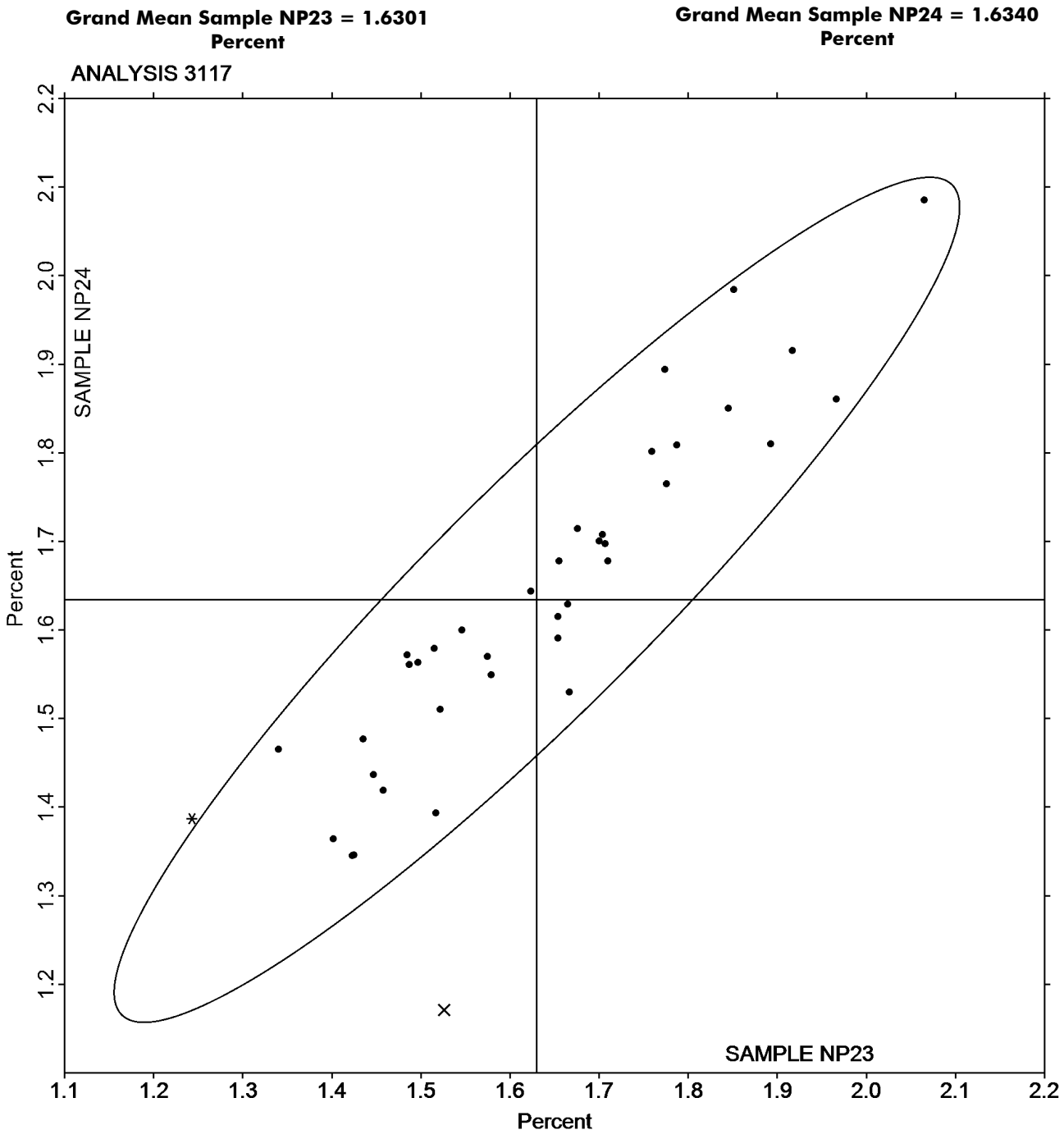
Summary Statistics	Sample NP23	Sample NP24
Grand Means	1.63 Percent	1.63 Percent
Stnd Dev Btwn Labs	0.18 Percent	0.18 Percent

Statistics based on 38 of 40 reporting participants.

Comments on Assigned Data Flags for Test #3117

A7NGCK (X) - Inconsistent in testing between samples.

TKJCET (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample NP24.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3121

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample PP23 Lab Mean	Sample PP23 Diff from Grand Mean	Sample PP23 CPV	Sample PP24 Lab Mean	Sample PP24 Diff from Grand Mean	Sample PP24 CPV
6G2AFB		23.76	-2.38	-1.82	14.00	-1.56	-1.74
732L8H		26.79	0.65	0.50	15.98	0.42	0.47
77XEUK		26.10	-0.04	-0.03	15.10	-0.46	-0.51
7J738N		25.71	-0.43	-0.33	15.14	-0.42	-0.47
8VVDW8		28.60	2.46	1.88	17.16	1.61	1.80
99YWFJ		26.42	0.28	0.22	16.43	0.87	0.97
9LHL6N		27.98	1.84	1.41	16.08	0.52	0.58
9MJCJJ		28.55	2.41	1.85	16.40	0.84	0.94
A7NGCK		25.73	-0.41	-0.31	15.54	-0.02	-0.02
B8V9PJ		26.32	0.18	0.14	14.77	-0.79	-0.88
CKDBWA	X	4.60	-21.54	-16.51	7.61	-7.95	-8.90
CMKKTD		24.40	-1.74	-1.33	15.19	-0.37	-0.41
CYK84J		26.31	0.17	0.13	15.96	0.40	0.45
DGQBWK		26.23	0.09	0.07	15.46	-0.10	-0.11
DQE2JC		26.52	0.38	0.29	15.36	-0.20	-0.22
E6X2XH		24.89	-1.25	-0.96	14.98	-0.58	-0.65
FP4W4E		26.00	-0.14	-0.11	15.70	0.14	0.16
GVZXXD		28.66	2.52	1.93	17.26	1.70	1.90
H6LGTX		25.11	-1.03	-0.79	15.23	-0.33	-0.37
J3DPX3		26.47	0.33	0.25	15.24	-0.32	-0.36
J9KEGV		24.70	-1.44	-1.10	15.22	-0.34	-0.38
KNQQU7		26.20	0.06	0.05	16.10	0.54	0.61
L2RQYV		26.07	-0.07	-0.05	15.53	-0.03	-0.03
N4P6G6	*	28.36	2.22	1.70	18.12	2.56	2.87
N8PFD6		24.31	-1.83	-1.40	14.70	-0.86	-0.96
NHUDD2		25.50	-0.64	-0.49	15.40	-0.16	-0.18
PARM93		24.95	-1.19	-0.91	14.17	-1.39	-1.55
QNRLWY		26.35	0.21	0.16	14.51	-1.05	-1.18
R787D3		25.67	-0.47	-0.36	15.01	-0.54	-0.61
R7MPWZ		27.90	1.76	1.35	16.79	1.23	1.38
RA3776		25.34	-0.80	-0.61	14.98	-0.58	-0.65
RE6XLW		24.18	-1.96	-1.50	15.33	-0.23	-0.26
TMT99X		25.08	-1.06	-0.81	14.31	-1.25	-1.40
UJ2JF4	X	20.42	-5.72	-4.39	19.05	3.49	3.90
V3XJQZ		28.20	2.06	1.58	16.23	0.67	0.75
WEMKYU		26.90	0.76	0.58	15.70	0.14	0.16
WXGB32		26.17	0.03	0.02	16.43	0.87	0.98
X2YVMV	X	5.98	-20.16	-15.46	9.70	-5.85	-6.55
XW2JJJ		25.38	-0.76	-0.58	15.70	0.14	0.16
XW42PU		25.36	-0.78	-0.60	14.46	-1.10	-1.23

Summary Statistics	Sample PP23	Sample PP24
Grand Means	26.14 sec/100 cc	15.56 sec/100 cc
Stnd Dev Btwn Labs	1.30 sec/100 cc	0.89 sec/100 cc

Statistics based on 37 of 40 reporting participants.

Comments on Assigned Data Flags for Test #3121

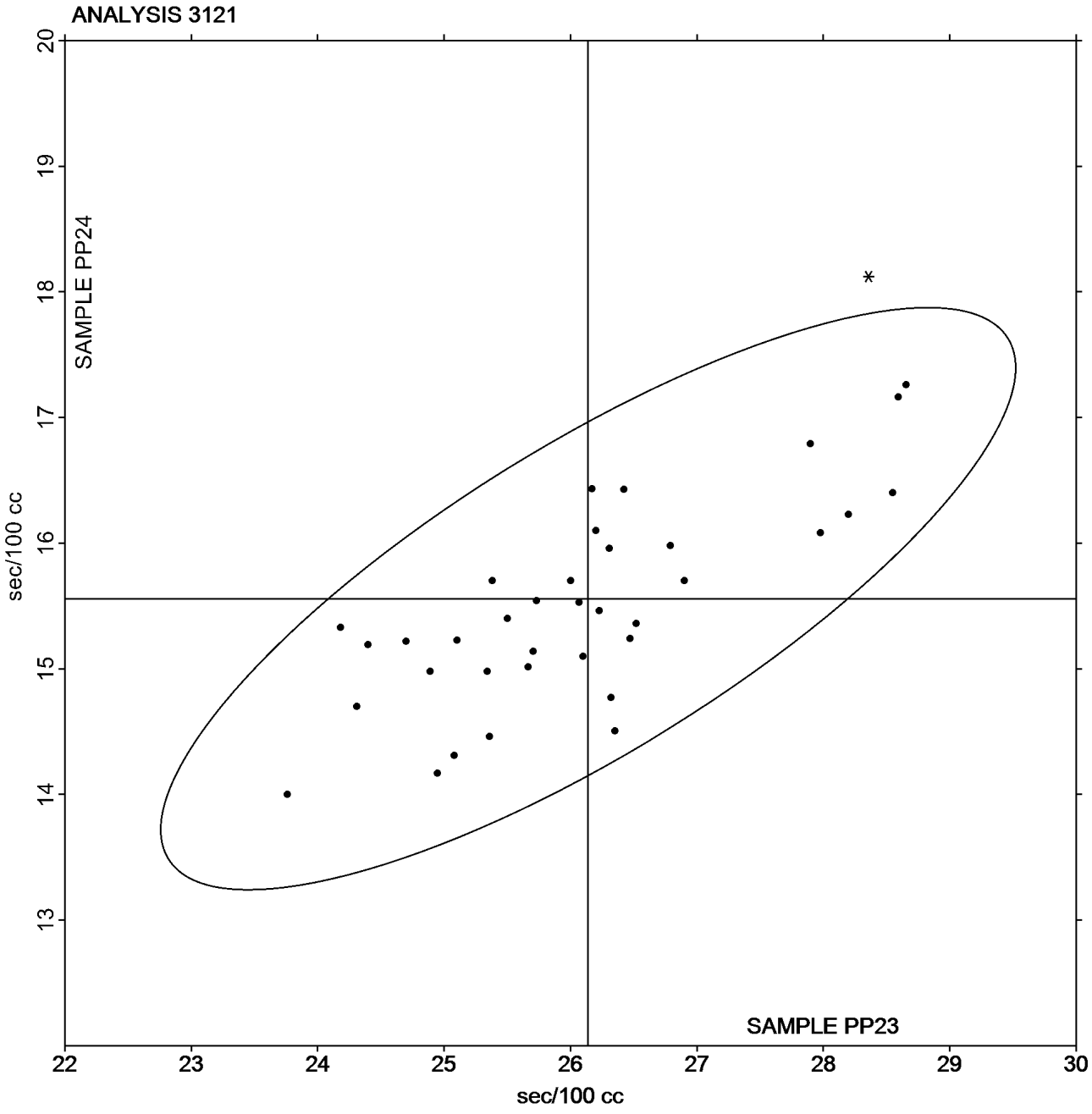
X2YVMV (X) - Extreme Data.

UJ2JF4 (X) - Data for sample PP23 are low and data for sample PP24 are high.

CKDBWA (X) - Extreme Data.

Grand Mean Sample PP23 = 26.139 sec/100 cc

Grand Mean Sample PP24 = 15.558 sec/100 cc



Paper & Paperboard Interlaboratory Testing Program

Analysis 3123

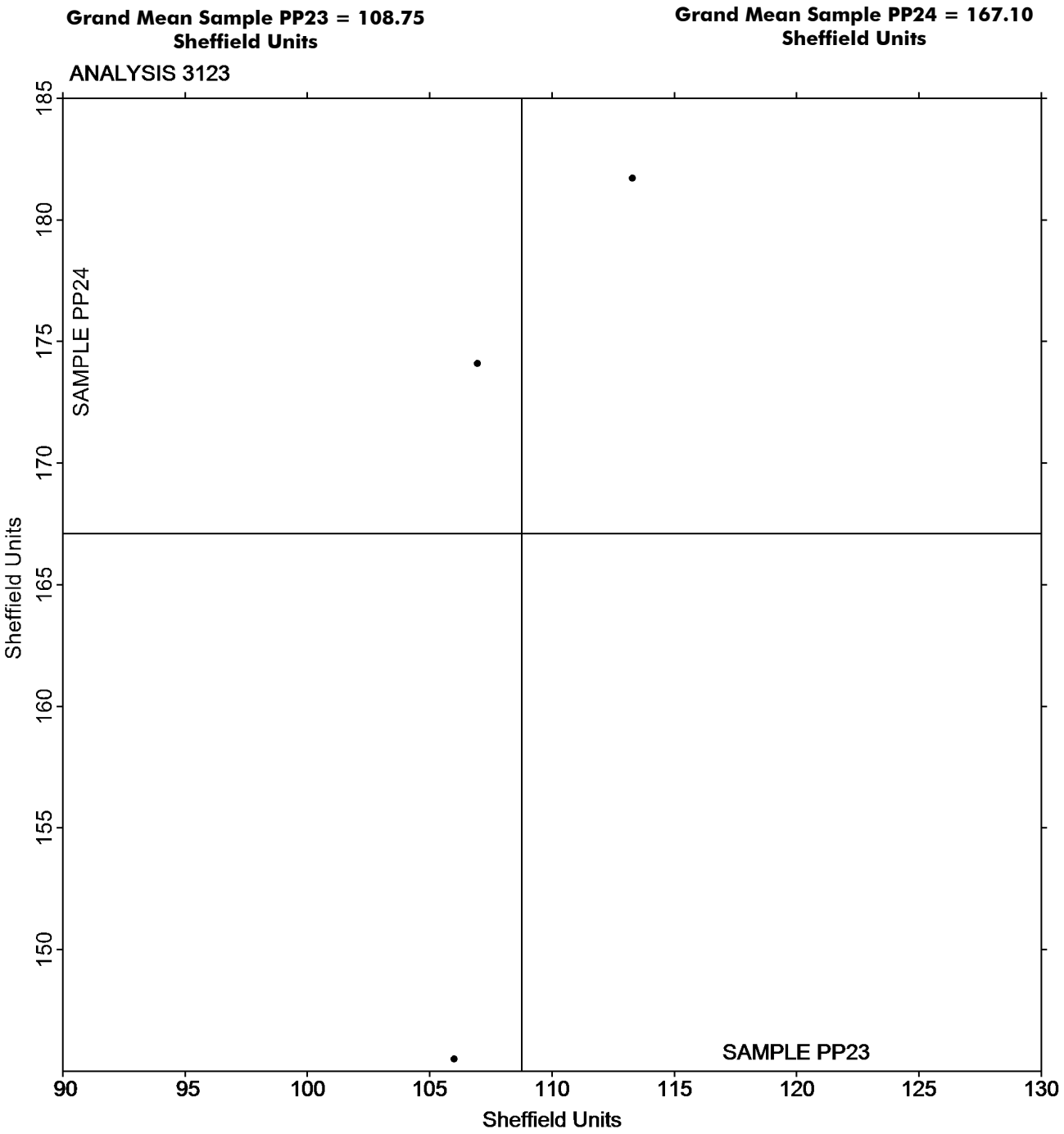
Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice

TAPPI Official Test Method T547

WebCode	Data Flag	Sample PP23 Lab Mean	Sample PP23 Diff from Grand Mean	Sample PP23 CPV	Sample PP24 Lab Mean	Sample PP24 Diff from Grand Mean	Sample PP24 CPV
B8V9PJ		107.0	-1.8	-0.45	174.1	7.0	0.37
FB4VRD		113.3	4.5	1.15	181.7	14.6	0.76
WEMKYU		106.0	-2.8	-0.69	145.5	-21.6	-1.13

Summary Statistics	Sample PP23	Sample PP24
Grand Means	108.75 Sheffield Units	167.10 Sheffield Units
Stnd Dev Btwn Labs	3.97 Sheffield Units	19.09 Sheffield Units

Statistics based on 3 of 3 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 3131

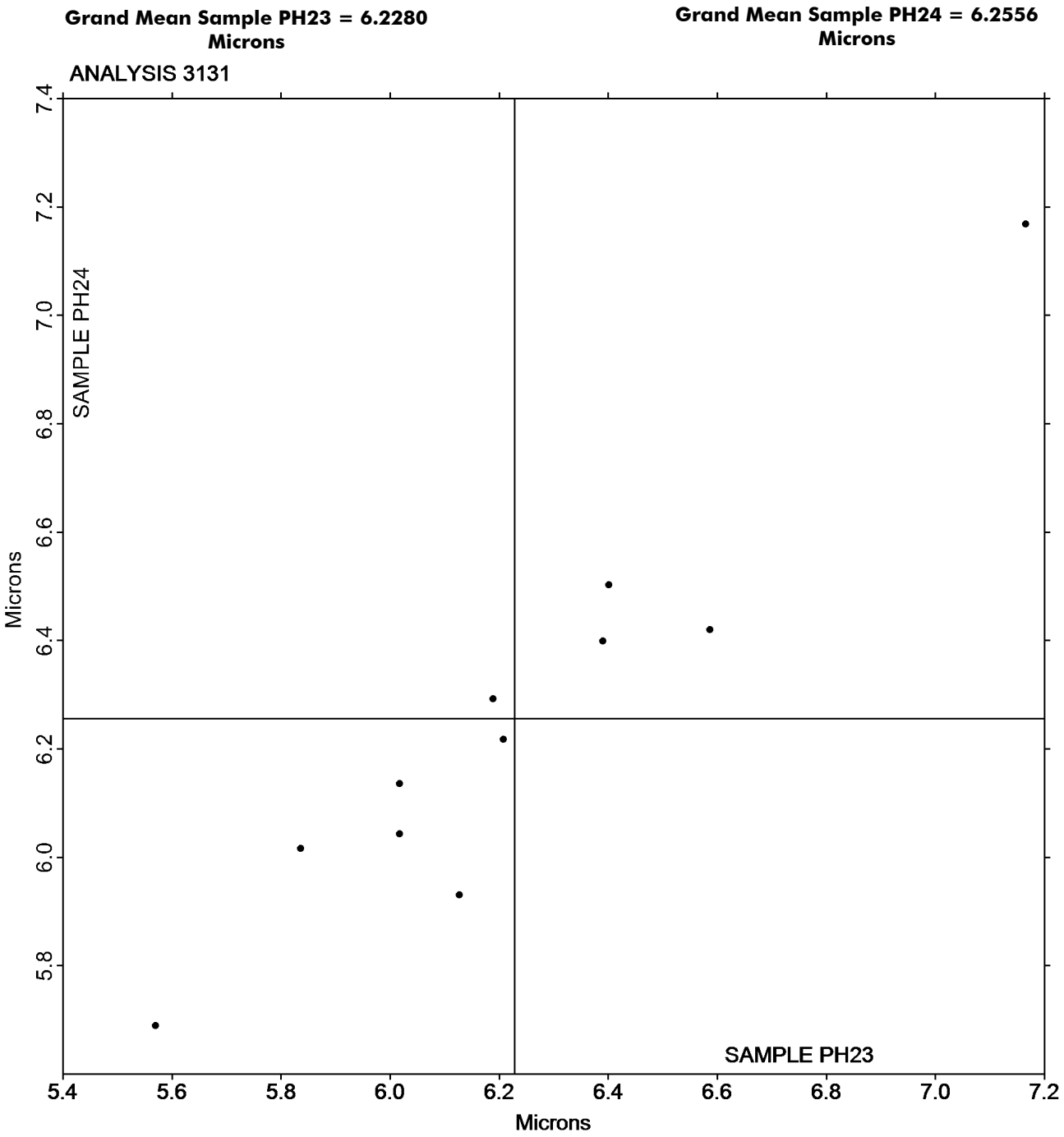
Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample PH23 Lab Mean	Sample PH23 Diff from Grand Mean	Sample PH23 CPV	Sample PH24 Lab Mean	Sample PH24 Diff from Grand Mean	Sample PH24 CPV
223XFW		6.390	0.162	0.39	6.399	0.143	0.37
7U9DLQ		6.208	-0.020	-0.05	6.217	-0.039	-0.10
99YWFJ		6.401	0.173	0.41	6.502	0.246	0.64
DQHGZJ		5.836	-0.392	-0.94	6.016	-0.240	-0.62
J9KEGV		7.166	0.938	2.24	7.168	0.912	2.37
RA3776		6.587	0.359	0.86	6.420	0.164	0.43
RE6XLW		6.017	-0.211	-0.50	6.136	-0.120	-0.31
TDZXX2		6.189	-0.039	-0.09	6.292	0.036	0.09
V3XJQZ		6.017	-0.211	-0.50	6.043	-0.213	-0.55
WXGB32		5.570	-0.658	-1.57	5.689	-0.567	-1.47
XWJMYW		6.127	-0.101	-0.24	5.930	-0.326	-0.84

Summary Statistics	Sample PH23	Sample PH24
Grand Means	6.23 Microns	6.26 Microns
Stnd Dev Btwn Labs	0.42 Microns	0.39 Microns

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.

WebCode	Data Flag	Sample SR23 Lab Mean	Sample SR23 Diff from Grand Mean	Sample SR23 CPV	Sample SR24 Lab Mean	Sample SR24 Diff from Grand Mean	Sample SR24 CPV
223XFW		109.6	-2.7	-0.27	97.2	-14.9	-1.34
44Y2KN	X	220.5	108.2	10.70	226.5	114.4	10.31
46BRUR		124.7	12.3	1.22	119.2	7.1	0.64
4C8TNQ	*	142.0	29.7	2.94	144.4	32.3	2.91
4JRU7P		110.0	-2.3	-0.23	107.8	-4.3	-0.39
6BGRKN		117.6	5.3	0.52	113.5	1.4	0.12
6D2XJB		115.7	3.4	0.33	115.9	3.8	0.34
6D6GQM		128.4	16.1	1.59	132.6	20.5	1.85
72ZURM		106.5	-5.8	-0.58	93.0	-19.1	-1.72
7J738N		120.0	7.7	0.76	125.0	12.8	1.16
7JKNGQ		115.1	2.7	0.27	109.0	-3.1	-0.28
7U9DLQ		105.4	-6.9	-0.68	102.5	-9.6	-0.87
8VVDW8		106.0	-6.4	-0.63	107.5	-4.7	-0.42
99YWFJ		115.0	2.7	0.27	113.4	1.3	0.11
9MJCJJ		100.3	-12.0	-1.19	106.9	-5.2	-0.47
9QHQ6M		99.8	-12.5	-1.24	105.3	-6.8	-0.61
A7NGCK		109.5	-2.8	-0.28	110.2	-1.9	-0.17
B8V9PJ		104.0	-8.3	-0.82	109.0	-3.1	-0.28
CKDBWA		112.1	-0.2	-0.02	104.2	-8.0	-0.72
CMKKTD	X	144.6	32.3	3.19	120.0	7.9	0.71
CYK84J		117.6	5.3	0.52	122.6	10.5	0.94
DM2YWG	*	93.0	-19.3	-1.91	107.2	-4.9	-0.44
DQE2JC		112.7	0.4	0.04	107.7	-4.4	-0.40
DQHGZJ		105.4	-6.9	-0.68	105.0	-7.1	-0.64
EDUWVG		122.3	9.9	0.98	125.6	13.5	1.22
FB4VRD		101.8	-10.5	-1.04	115.1	3.0	0.27
FP4W4E		111.2	-1.1	-0.11	97.3	-14.8	-1.34
GVZXXD		104.3	-8.0	-0.79	104.0	-8.1	-0.73
H6LGTX		115.6	3.3	0.33	106.6	-5.5	-0.50
HP7FW8		107.3	-5.0	-0.50	106.5	-5.6	-0.51
J3DPX3		113.5	1.2	0.12	110.0	-2.1	-0.19
J9KEGV		124.2	11.9	1.18	124.3	12.2	1.10
KNQQU7		117.8	5.5	0.54	111.9	-0.2	-0.02
KQHRXA		99.1	-13.2	-1.30	97.7	-14.4	-1.30
L2RQYV		131.6	19.3	1.91	132.6	20.5	1.85
N4P6G6		94.5	-17.8	-1.76	92.8	-19.4	-1.75
PARM93		113.5	1.2	0.12	117.0	4.9	0.44
PP9FX9		101.7	-10.6	-1.05	102.0	-10.1	-0.91
QNRLWY		114.1	1.8	0.18	113.2	1.1	0.10
R787D3		108.1	-4.2	-0.42	109.2	-3.0	-0.27

Paper & Paperboard Interlaboratory Testing Program

Analysis 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample SR23 Lab Mean	Sample SR23 Diff from Grand Mean	Sample SR23 CPV	Sample SR24 Lab Mean	Sample SR24 Diff from Grand Mean	Sample SR24 CPV
RA3776		112.4	0.1	0.01	116.6	4.5	0.40
RE6XLW		125.2	12.8	1.27	123.7	11.6	1.04
TDZXX2		108.9	-3.4	-0.34	115.4	3.3	0.30
U3WBZ2	X	152.7	40.4	3.99	166.4	54.3	4.89
V3XJQZ		132.0	19.7	1.95	137.0	24.9	2.24
WEMKYU		103.3	-9.0	-0.89	109.1	-3.0	-0.27
WXGB32		110.4	-1.9	-0.19	110.0	-2.1	-0.19
XW2JJJ		111.2	-1.1	-0.11	108.8	-3.3	-0.30

Summary Statistics	Sample SR23	Sample SR24
Grand Means	112.32 Sheffield	112.13 Sheffield
Stnd Dev Btwn Labs	10.11 Sheffield	11.09 Sheffield

Statistics based on 45 of 48 reporting participants.

Comments on Assigned Data Flags for Test #3133

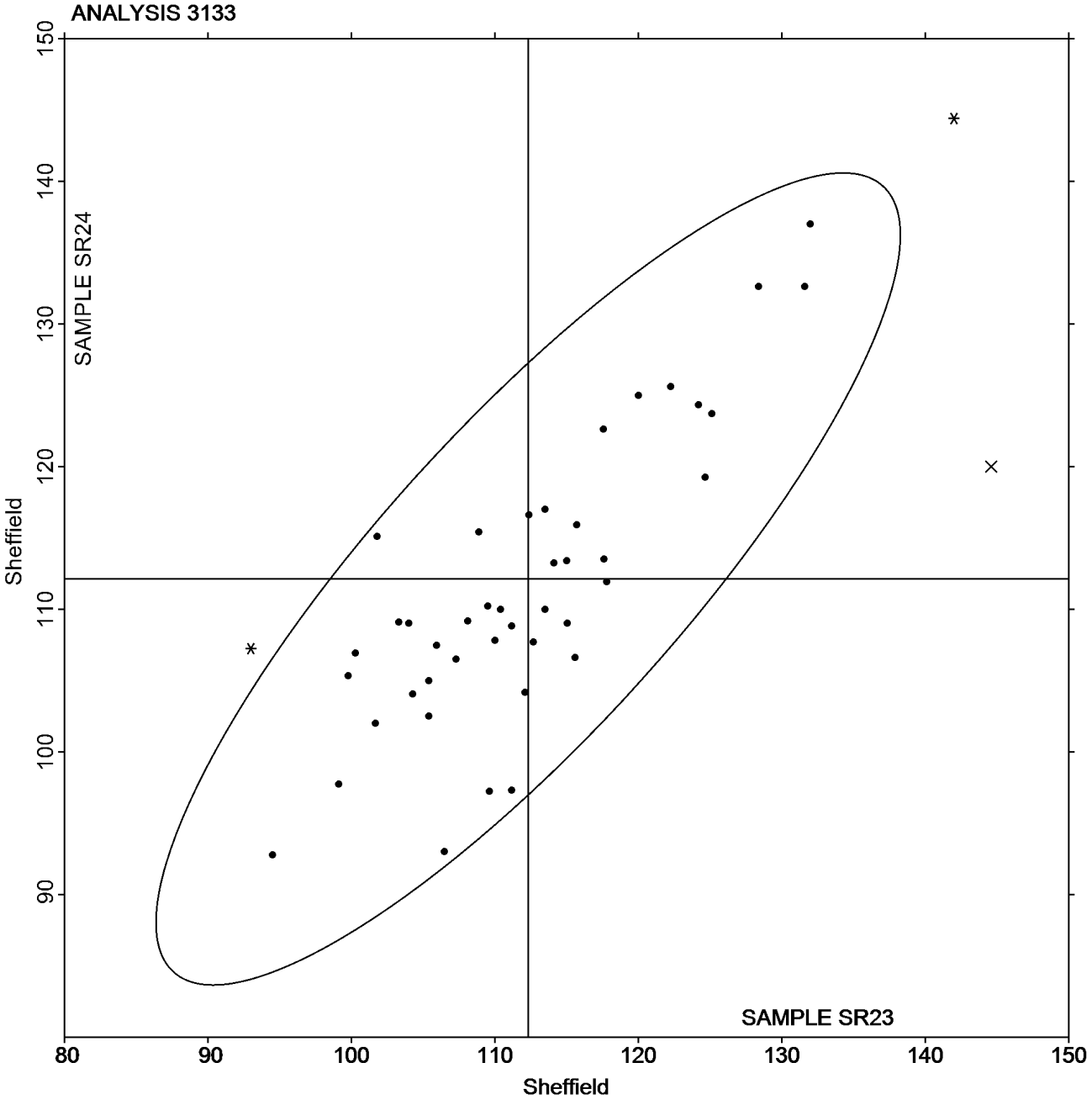
44Y2KN (X) - Extreme Data.

CMKKTD (X) - Data for sample SR23 are high. Inconsistent within the determinations of sample SR24.

U3WBZ2 (X) - Data for both samples are high. Possible Systematic Error.

Grand Mean Sample SR23 = 112.32
Sheffield

Grand Mean Sample SR24 = 112.13
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 3135

Grammage (Mass per Unit Area)

TAPPI Official Test Method T410

WebCode	Data Flag	Sample GM23 Lab Mean	Sample GM23 Diff from Grand Mean	Sample GM23 CPV	Sample GM24 Lab Mean	Sample GM24 Diff from Grand Mean	Sample GM24 CPV
4C8TNQ		74.90	-0.30	-0.54	75.40	0.30	0.83
4LHV9R		74.64	-0.56	-1.02	74.54	-0.56	-1.56
6G2AFB		75.25	0.05	0.09	74.94	-0.16	-0.45
7JKNGQ	*	75.92	0.72	1.31	74.30	-0.80	-2.23
848CQH		75.38	0.18	0.32	75.05	-0.05	-0.14
A7NGCK		75.74	0.54	0.99	75.38	0.28	0.77
B2NR9H	*	73.44	-1.75	-3.20	74.75	-0.35	-0.98
B8V9PJ		76.07	0.87	1.59	75.37	0.26	0.73
C2G64A		74.59	-0.61	-1.11	74.40	-0.70	-1.94
CMKKTD		75.60	0.40	0.73	75.48	0.38	1.05
CYK84J		75.11	-0.09	-0.17	75.21	0.11	0.30
DQE2JC		74.94	-0.26	-0.47	75.20	0.10	0.27
E6X2XH		75.50	0.30	0.55	75.30	0.20	0.55
FB4VRD		74.94	-0.26	-0.47	74.99	-0.11	-0.31
FDRCYZ		75.12	-0.08	-0.14	75.20	0.10	0.27
JDDGJA		75.26	0.06	0.12	75.36	0.26	0.72
K3U2F8		74.97	-0.23	-0.41	74.99	-0.12	-0.32
KNQQU7		75.85	0.65	1.19	75.83	0.73	2.02
KRNJHA	X	77.27	2.07	3.76	76.68	1.58	4.39
LEHN2T		75.36	0.16	0.29	75.16	0.06	0.16
MU7BR3		75.48	0.28	0.51	75.36	0.26	0.72
NC6XL9		74.47	-0.73	-1.33	75.32	0.22	0.60
PX3NHZ		75.21	0.01	0.02	75.12	0.02	0.04
RB3WKZ		75.13	-0.06	-0.12	74.56	-0.54	-1.51
TKJCET		75.46	0.26	0.47	75.25	0.15	0.40
XW42PU		75.63	0.43	0.79	75.11	0.00	0.01

Summary Statistics	Sample GM23	Sample GM24
Grand Means	75.20 g/sq m	75.10 g/sq m
Stnd Dev Btwn Labs	0.55 g/sq m	0.36 g/sq m

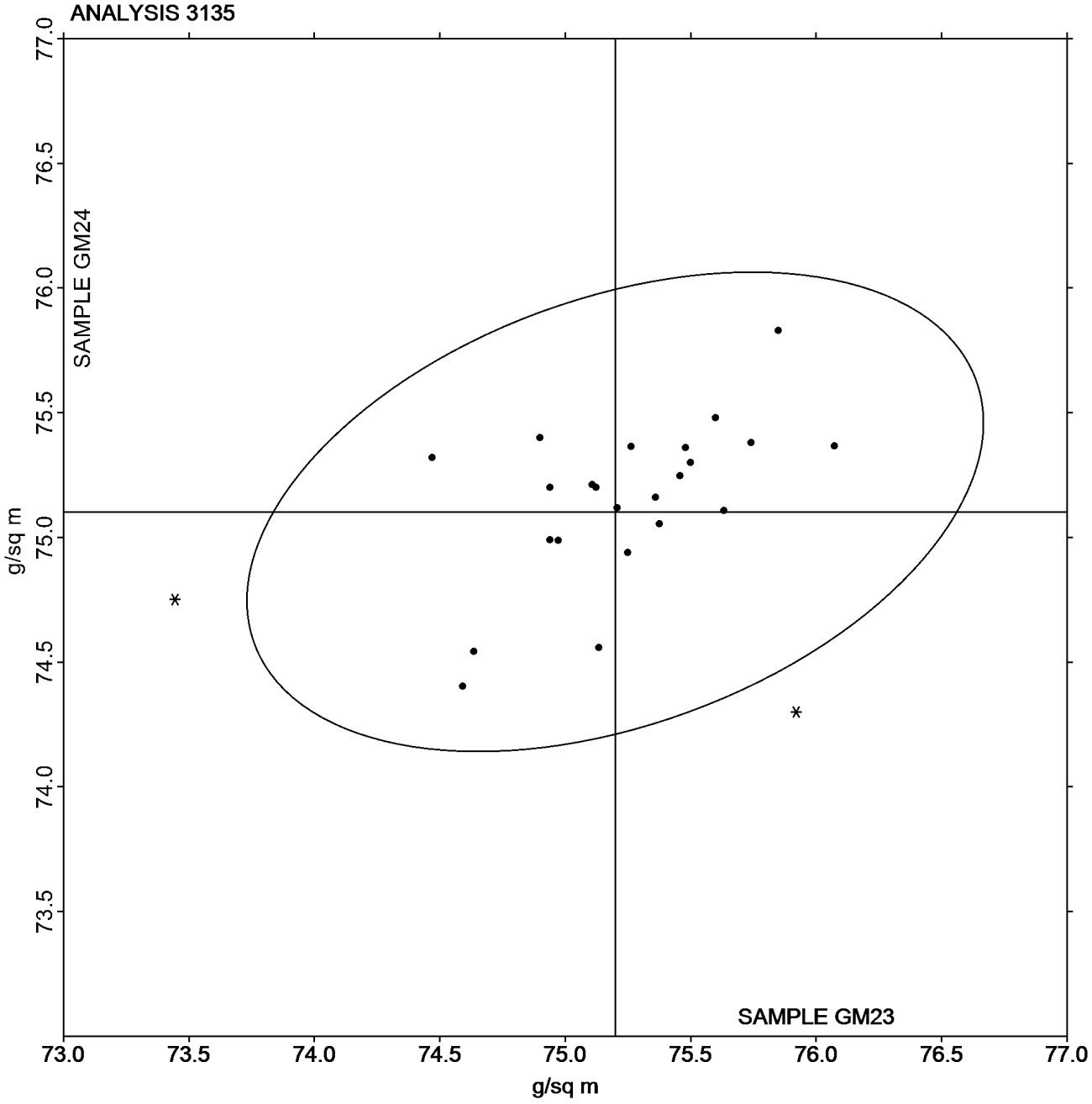
Statistics based on 25 of 26 reporting participants.

Comments on Assigned Data Flags for Test #3135

KRNJHA (X) - Data for both samples are high.

Grand Mean Sample GM23 = 75.199 g/sq m

Grand Mean Sample GM24 = 75.103 g/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3141

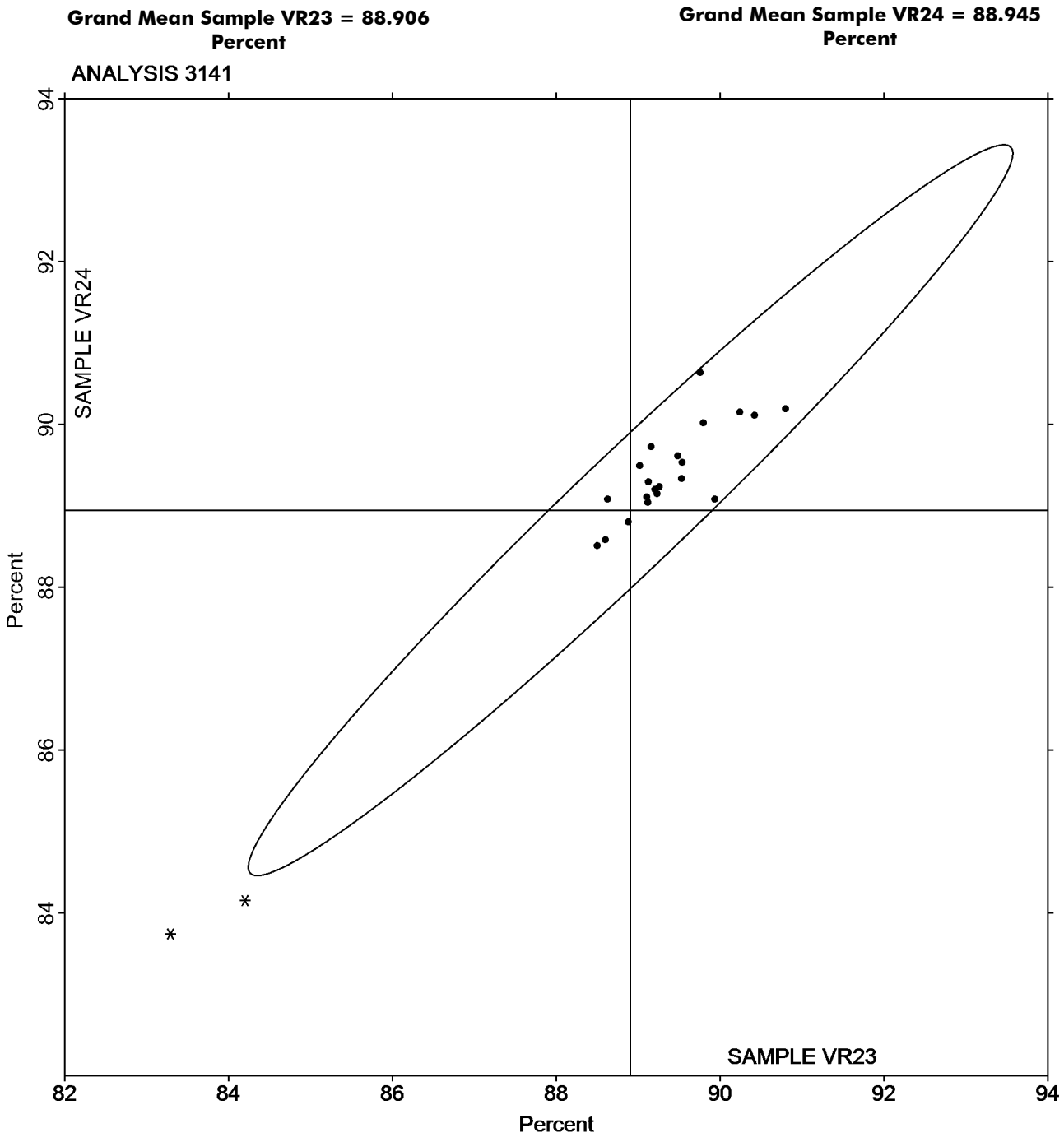
Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample VR23 Lab Mean	Sample VR23 Diff from Grand Mean	Sample VR23 CPV	Sample VR24 Lab Mean	Sample VR24 Diff from Grand Mean	Sample VR24 CPV
223XFW		89.54	0.63	0.37	89.53	0.58	0.35
28TY6P		89.80	0.89	0.52	90.02	1.07	0.64
6D6GQM		90.42	1.51	0.87	90.11	1.16	0.70
72ZURM		90.24	1.33	0.77	90.15	1.20	0.72
7JKNGQ		88.63	-0.28	-0.16	89.08	0.13	0.08
8VVDW8		90.80	1.89	1.09	90.19	1.24	0.75
99YWFJ		89.11	0.20	0.12	89.11	0.16	0.10
A7NGCK	*	83.29	-5.62	-3.24	83.74	-5.21	-3.13
B8V9PJ		89.53	0.62	0.36	89.33	0.38	0.23
C2G64A		89.13	0.22	0.13	89.30	0.35	0.21
CKDBWA		89.49	0.58	0.34	89.61	0.67	0.40
DQE2JC	*	84.20	-4.71	-2.72	84.15	-4.80	-2.88
E6X2XH		88.88	-0.03	-0.02	88.80	-0.15	-0.09
FB4VRD		89.02	0.11	0.07	89.49	0.54	0.33
GVZXXD		89.76	0.85	0.49	90.63	1.69	1.01
J3DPX3		88.60	-0.31	-0.18	88.58	-0.37	-0.22
J9KEGV		89.94	1.03	0.59	89.08	0.13	0.08
KNQQU7		88.50	-0.41	-0.23	88.51	-0.44	-0.26
QTLFUZ		89.12	0.21	0.12	89.04	0.10	0.06
R787D3		89.21	0.30	0.17	89.20	0.26	0.15
TDZXX2		89.23	0.32	0.19	89.15	0.20	0.12
WEMKYU		89.26	0.35	0.20	89.23	0.28	0.17
YYKUVT		89.16	0.26	0.15	89.72	0.78	0.47

Summary Statistics	Sample VR23	Sample VR24
Grand Means	88.91 Percent	88.95 Percent
Stnd Dev Btwn Labs	1.73 Percent	1.67 Percent

Statistics based on 23 of 23 reporting participants.



Paper & Paperboard Interlaboratory Testing Program

Analysis 3143

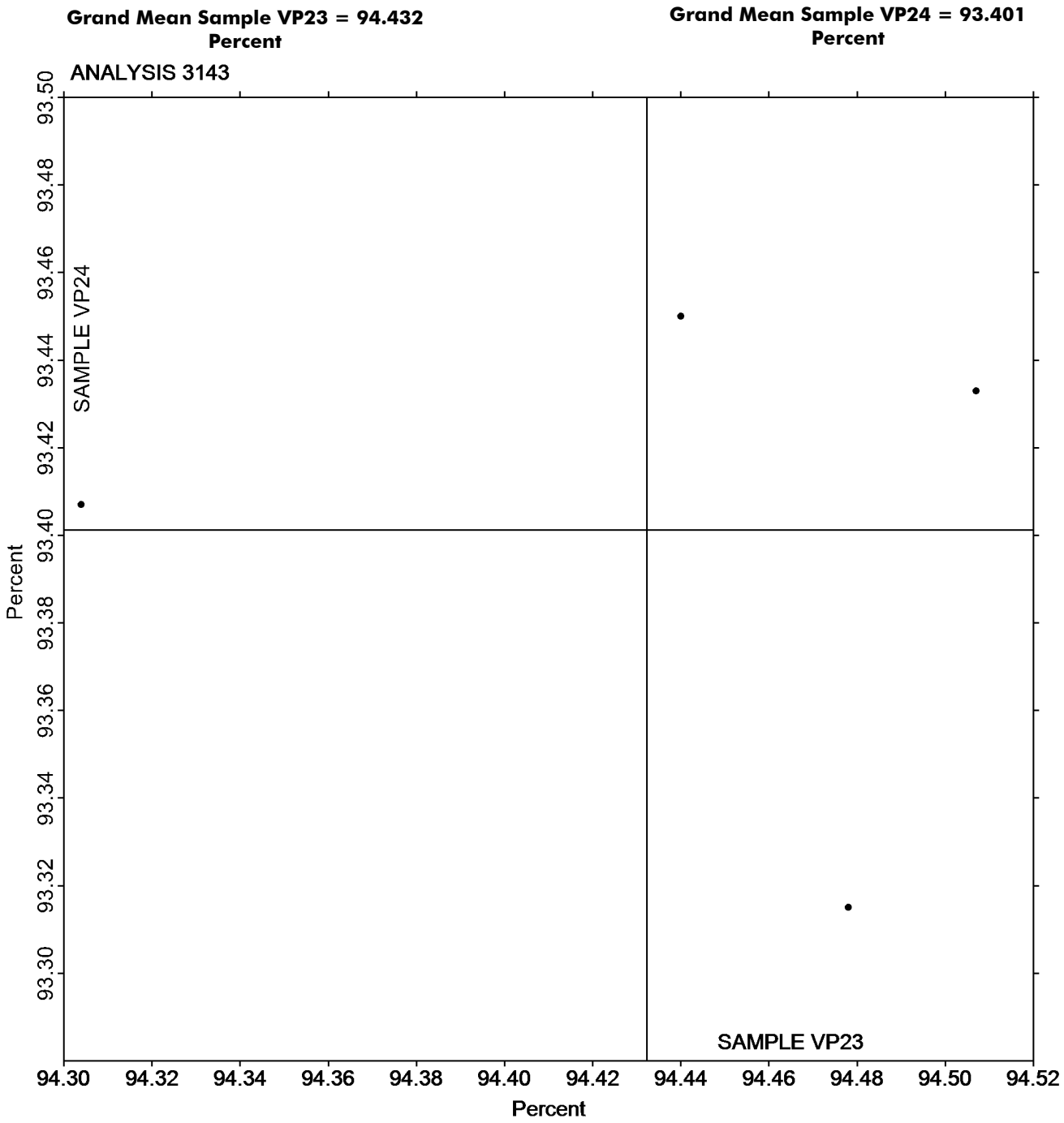
Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

WebCode	Data Flag	Sample VP23 Lab Mean	Sample VP23 Diff from Grand Mean	Sample VP23 CPV	Sample VP24 Lab Mean	Sample VP24 Diff from Grand Mean	Sample VP24 CPV
6G2AFB		94.44	0.01	0.09	93.45	0.05	0.81
CMKKTD		94.48	0.05	0.51	93.32	-0.09	-1.43
PX3NHZ		94.51	0.07	0.83	93.43	0.03	0.53
XW42PU		94.30	-0.13	-1.43	93.41	0.01	0.10

Summary Statistics	Sample VP23	Sample VP24
Grand Means	94.43 Percent	93.40 Percent
Stnd Dev Btwn Labs	0.09 Percent	0.06 Percent

Statistics based on 4 of 4 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3145

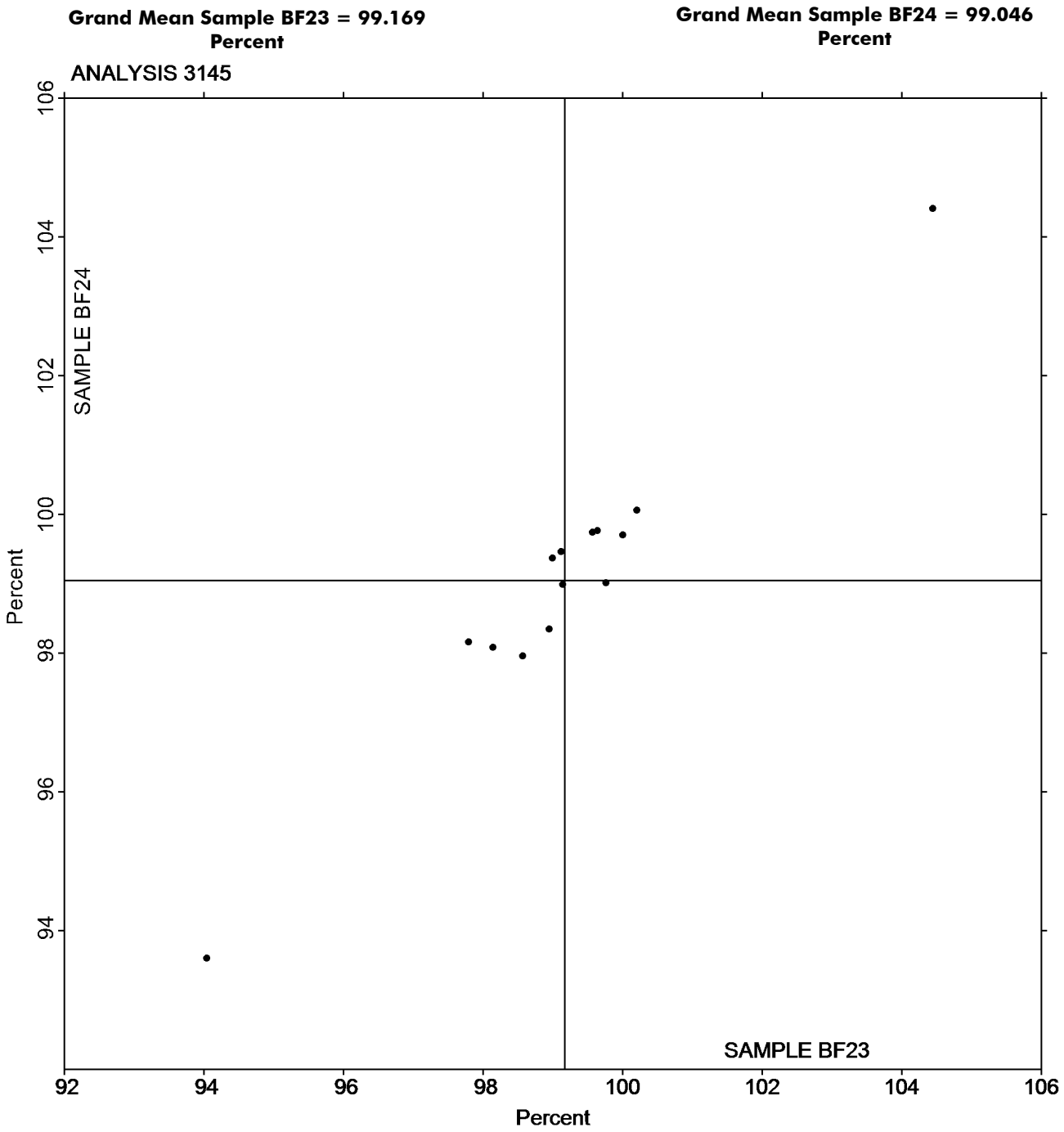
Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample BF23 Lab Mean	Sample BF23 Diff from Grand Mean	Sample BF23 CPV	Sample BF24 Lab Mean	Sample BF24 Diff from Grand Mean	Sample BF24 CPV
223XFW		100.21	1.04	0.48	100.06	1.01	0.46
28TY6P		97.80	-1.37	-0.64	98.16	-0.89	-0.40
8VVDW8		99.57	0.40	0.19	99.74	0.70	0.31
99YWFJ		98.99	-0.18	-0.08	99.37	0.33	0.15
C2G64A		98.57	-0.60	-0.28	97.96	-1.09	-0.49
CKDBWA		94.04	-5.13	-2.39	93.60	-5.45	-2.44
E6X2XH		100.00	0.83	0.39	99.70	0.65	0.29
J9KEGV		99.64	0.47	0.22	99.76	0.71	0.32
KNQQU7		98.14	-1.03	-0.48	98.08	-0.97	-0.43
N4P6G6		99.76	0.59	0.28	99.01	-0.03	-0.01
PARM93		99.12	-0.05	-0.02	99.46	0.41	0.19
R787D3		98.95	-0.22	-0.10	98.34	-0.70	-0.32
XZX69Z		104.44	5.27	2.45	104.41	5.36	2.41
YYKUVT		99.14	-0.03	-0.01	98.99	-0.06	-0.03

Summary Statistics	Sample BF23	Sample BF24
Grand Means	99.17 Percent	99.05 Percent
Stnd Dev Btwn Labs	2.15 Percent	2.23 Percent

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 3146

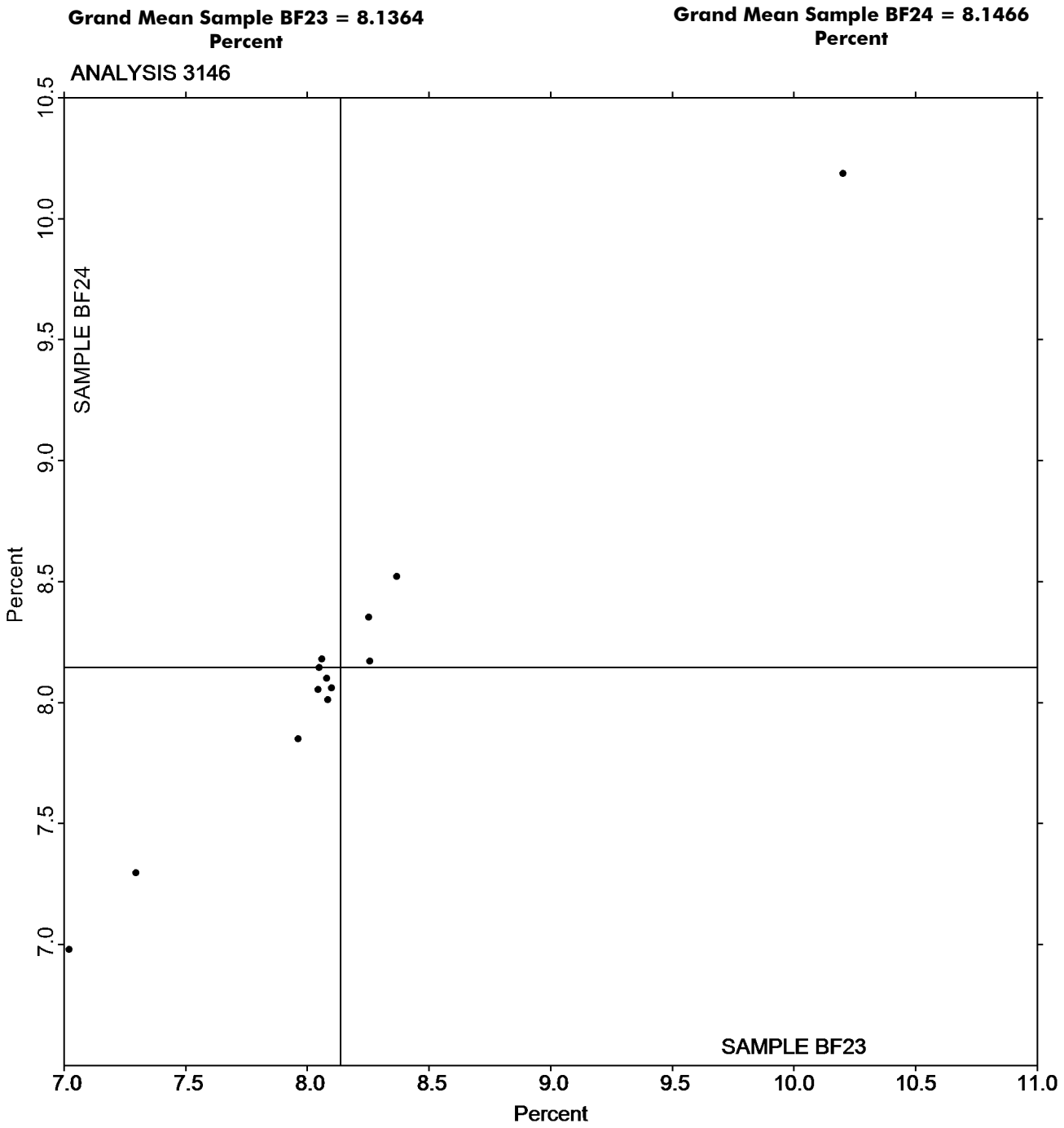
Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample BF23 Lab Mean	Sample BF23 Diff from Grand Mean	Sample BF23 CPV	Sample BF24 Lab Mean	Sample BF24 Diff from Grand Mean	Sample BF24 CPV
223XFW		8.258	0.122	0.17	8.172	0.025	0.03
28TY6P		7.296	-0.840	-1.15	7.296	-0.851	-1.15
8VVDW8		8.252	0.116	0.16	8.352	0.205	0.28
99YWFJ		8.048	-0.088	-0.12	8.144	-0.003	0.00
C2G64A		8.367	0.230	0.32	8.520	0.373	0.51
CKDBWA		7.020	-1.116	-1.53	6.980	-1.167	-1.58
E6X2XH		8.100	-0.036	-0.05	8.060	-0.087	-0.12
J9KEGV		8.060	-0.076	-0.10	8.180	0.033	0.05
N4P6G6		8.084	-0.052	-0.07	8.012	-0.135	-0.18
PARM93		8.080	-0.056	-0.08	8.100	-0.047	-0.06
R787D3		7.962	-0.174	-0.24	7.850	-0.297	-0.40
XZX69Z		10.202	2.066	2.84	10.186	2.039	2.76
YYKUVT		8.044	-0.092	-0.13	8.054	-0.093	-0.13

Summary Statistics	Sample BF23	Sample BF24
Grand Means	8.14 Percent	8.15 Percent
Stnd Dev Btwn Labs	0.73 Percent	0.74 Percent

Statistics based on 13 of 13 reporting participants.



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3201

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

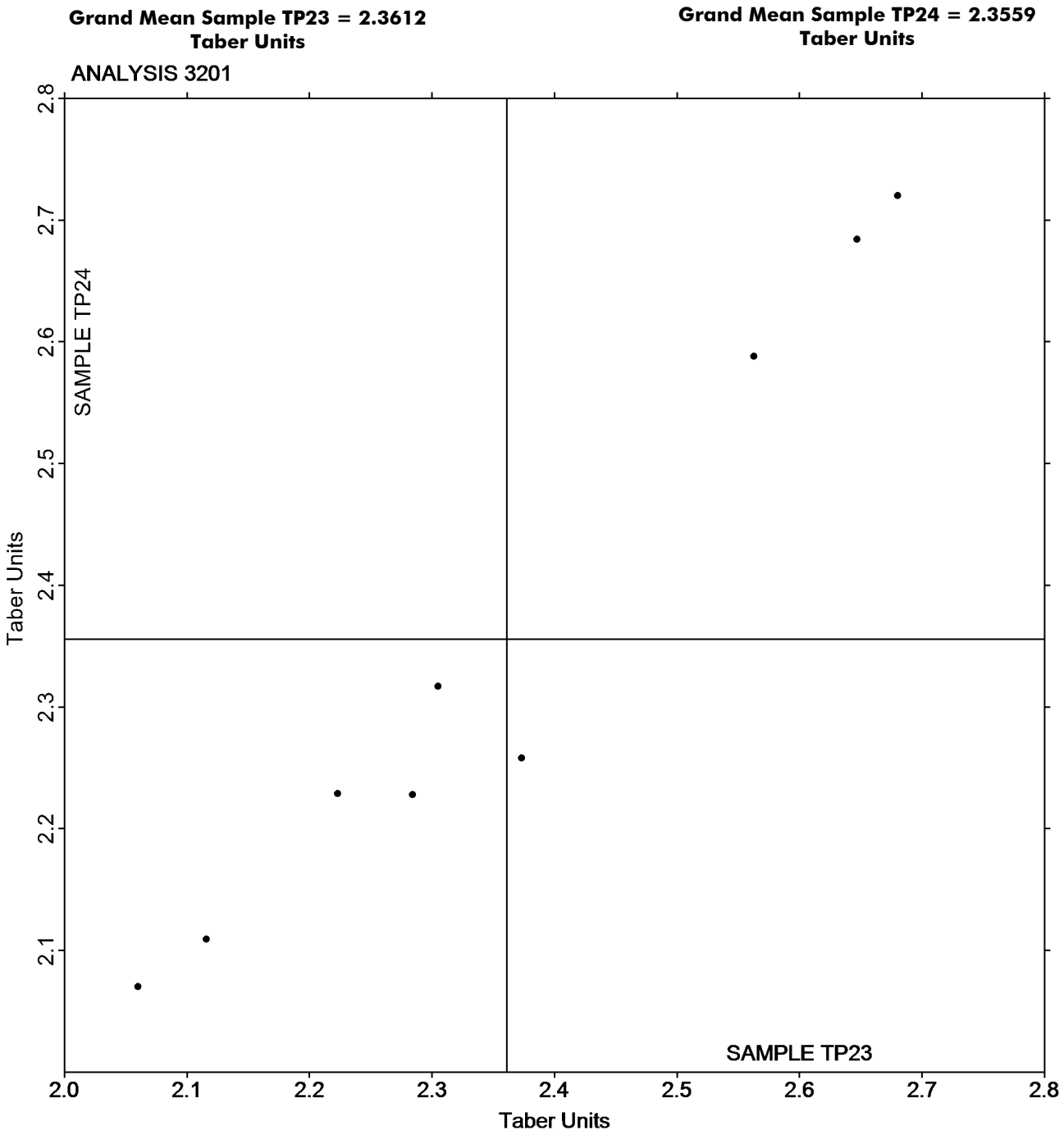
WebCode	Data Flag	Sample TP23 Lab Mean	Sample TP23 Diff from Grand Mean	Sample TP23 CPV	Sample TP24 Lab Mean	Sample TP24 Diff from Grand Mean	Sample TP24 CPV
7JKNGQ		2.373	0.012	0.05	2.258	-0.098	-0.40
8VVDW8		2.223	-0.138	-0.62	2.229	-0.127	-0.52
99YWFJ		2.116	-0.245	-1.09	2.109	-0.247	-1.01
9MJCJJ		2.060	-0.301	-1.34	2.070	-0.286	-1.17
CKDBWA		2.284	-0.077	-0.34	2.228	-0.128	-0.52
FB4VRD		2.563	0.202	0.90	2.588	0.232	0.95
J9KEGV		2.305	-0.056	-0.25	2.317	-0.039	-0.16
P3Y4D3		2.647	0.286	1.27	2.684	0.328	1.34
R787D3	X	2.115	-0.246	-1.10	0.969	-1.387	-5.66
WEMKYU		2.680	0.319	1.42	2.720	0.364	1.49

Summary Statistics	Sample TP23	Sample TP24
Grand Means	2.36 Taber Units	2.36 Taber Units
Stnd Dev Btwn Labs	0.22 Taber Units	0.25 Taber Units

Statistics based on 9 of 10 reporting participants.

Comments on Assigned Data Flags for Test #3201

R787D3 (X) - Data for sample TP24 are low.



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

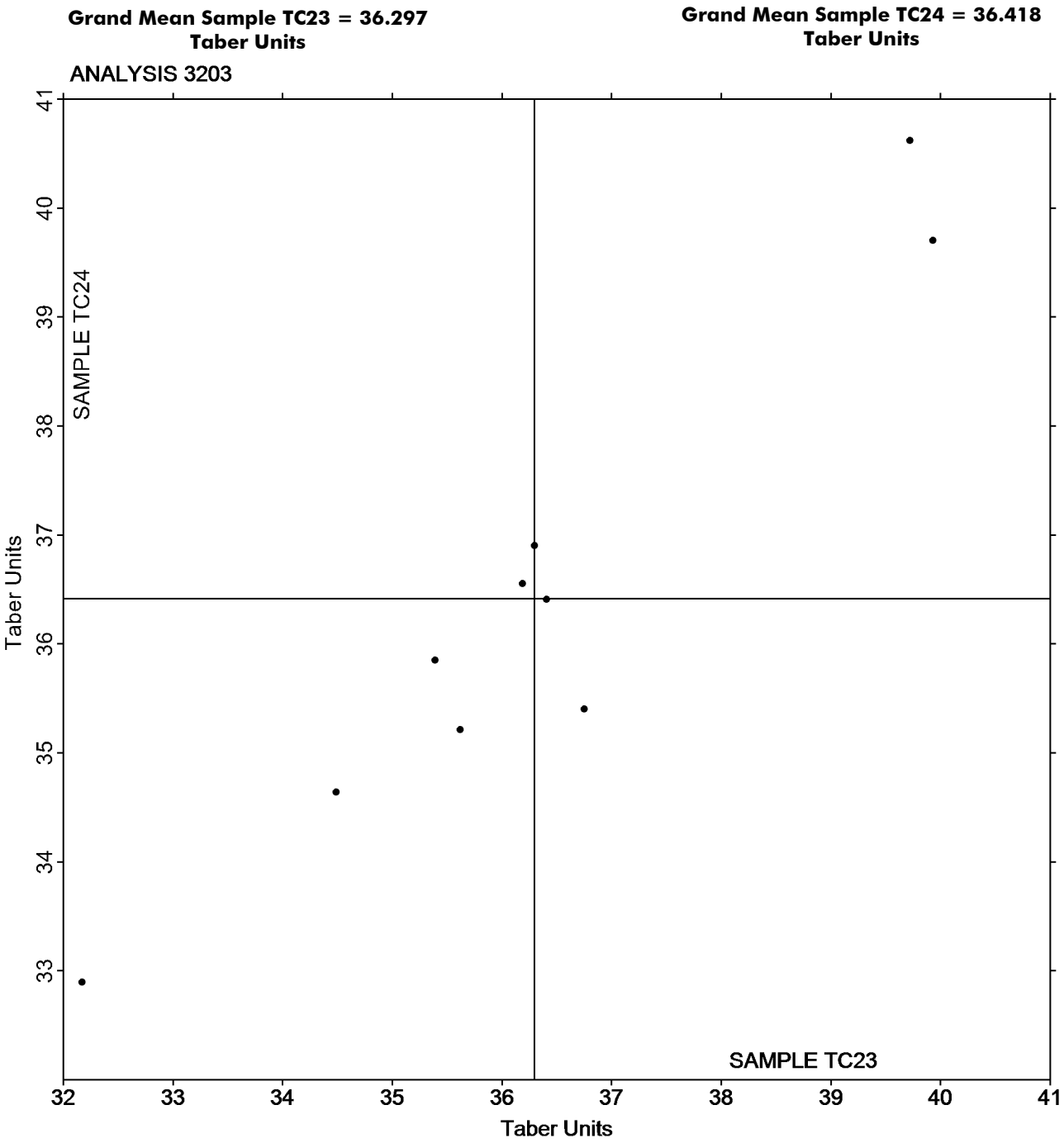
Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

WebCode	Data Flag	Sample TC23 Lab Mean	Sample TC23 Diff from Grand Mean	Sample TC23 CPV	Sample TC24 Lab Mean	Sample TC24 Diff from Grand Mean	Sample TC24 CPV
46BRUR		39.72	3.42	1.50	40.62	4.20	1.84
CYK84J		35.39	-0.91	-0.40	35.85	-0.57	-0.25
DQHGZJ		36.41	0.11	0.05	36.41	-0.01	0.00
EDUWVG		39.93	3.63	1.59	39.70	3.28	1.44
FPJ3HJ		36.30	0.00	0.00	36.90	0.48	0.21
J9KEGV		35.62	-0.68	-0.30	35.21	-1.21	-0.53
RE6XLW		36.75	0.45	0.20	35.40	-1.02	-0.45
V3XJQZ		36.19	-0.11	-0.05	36.55	0.13	0.06
WXGB32		32.17	-4.13	-1.81	32.90	-3.52	-1.54
XWJMYW		34.49	-1.81	-0.79	34.64	-1.78	-0.78

Summary Statistics	Sample TC23	Sample TC24
Grand Means	36.30 Taber Units	36.42 Taber Units
Stnd Dev Btwn Labs	2.28 Taber Units	2.29 Taber Units

Statistics based on 10 of 10 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

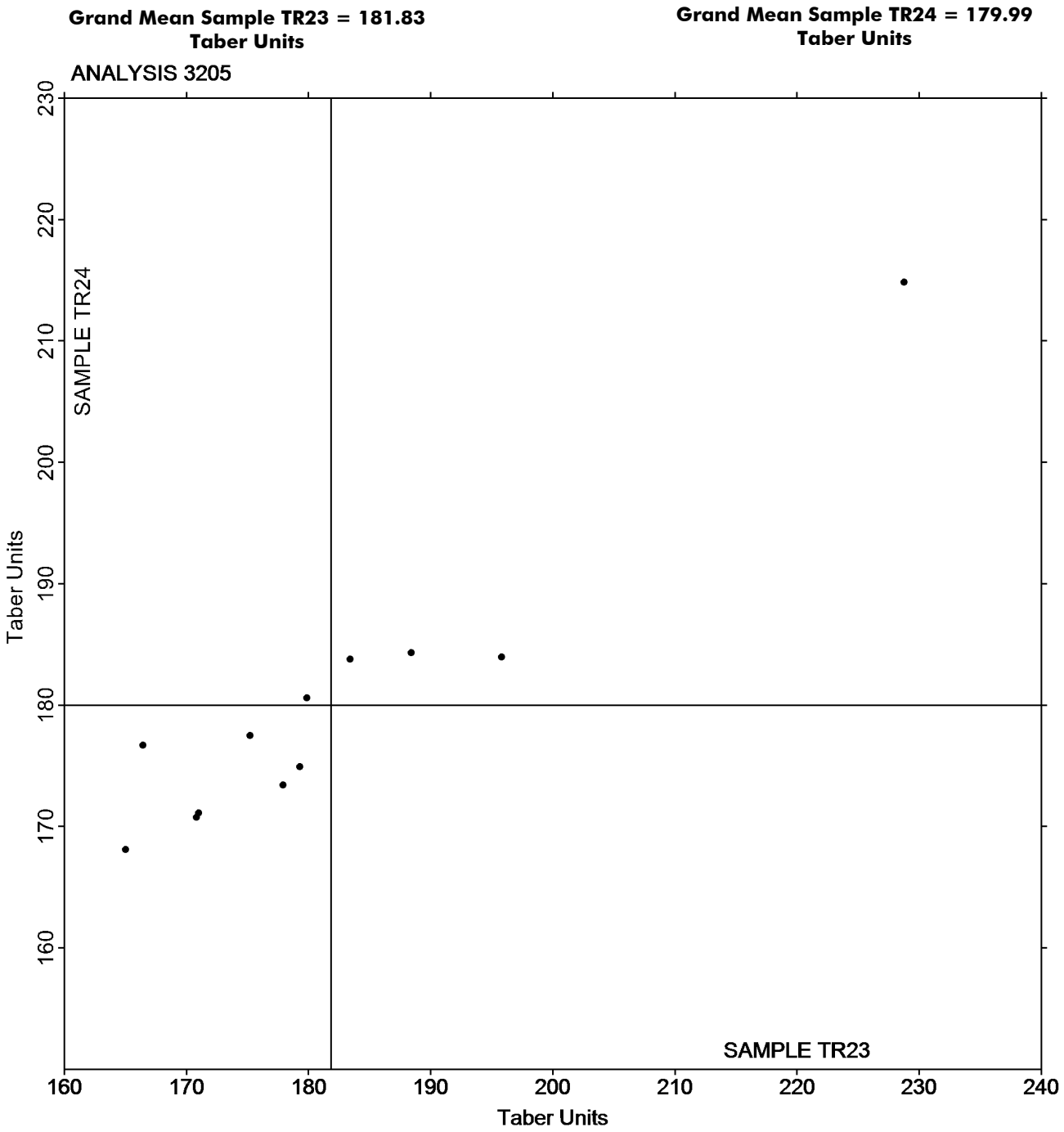
WebCode	Data Flag	Sample TR23 Lab Mean	Sample TR23 Diff from Grand Mean	Sample TR23 CPV	Sample TR24 Lab Mean	Sample TR24 Diff from Grand Mean	Sample TR24 CPV
44Y2KN		195.8	14.0	0.81	184.0	4.0	0.32
4C8TNQ	X	17.8	-164.0	-9.51	18.5	-161.5	-13.16
4JRU7P		179.3	-2.5	-0.15	174.9	-5.1	-0.41
6D2XJB		171.0	-10.8	-0.63	171.1	-8.9	-0.72
6D6GQM		170.8	-11.0	-0.64	170.8	-9.2	-0.75
7U9DLQ		183.4	1.6	0.09	183.8	3.8	0.31
9QHQ6M		188.4	6.6	0.38	184.3	4.3	0.35
DQHGZJ		166.4	-15.4	-0.89	176.7	-3.3	-0.27
RA3776		177.9	-3.9	-0.23	173.4	-6.6	-0.54
U3WBZ2		228.8	46.9	2.72	214.9	34.9	2.84
V3XJQZ		179.9	-2.0	-0.11	180.6	0.6	0.05
VYX9UZ		175.2	-6.6	-0.38	177.5	-2.5	-0.20
XW42PU		165.0	-16.8	-0.97	168.1	-11.9	-0.97

Summary Statistics	Sample TR23	Sample TR24
Grand Means	181.83 Taber Units	179.99 Taber Units
Stnd Dev Btwn Labs	17.24 Taber Units	12.27 Taber Units

Statistics based on 12 of 13 reporting participants.

Comments on Assigned Data Flags for Test #3205

4C8TNQ (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 3207
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

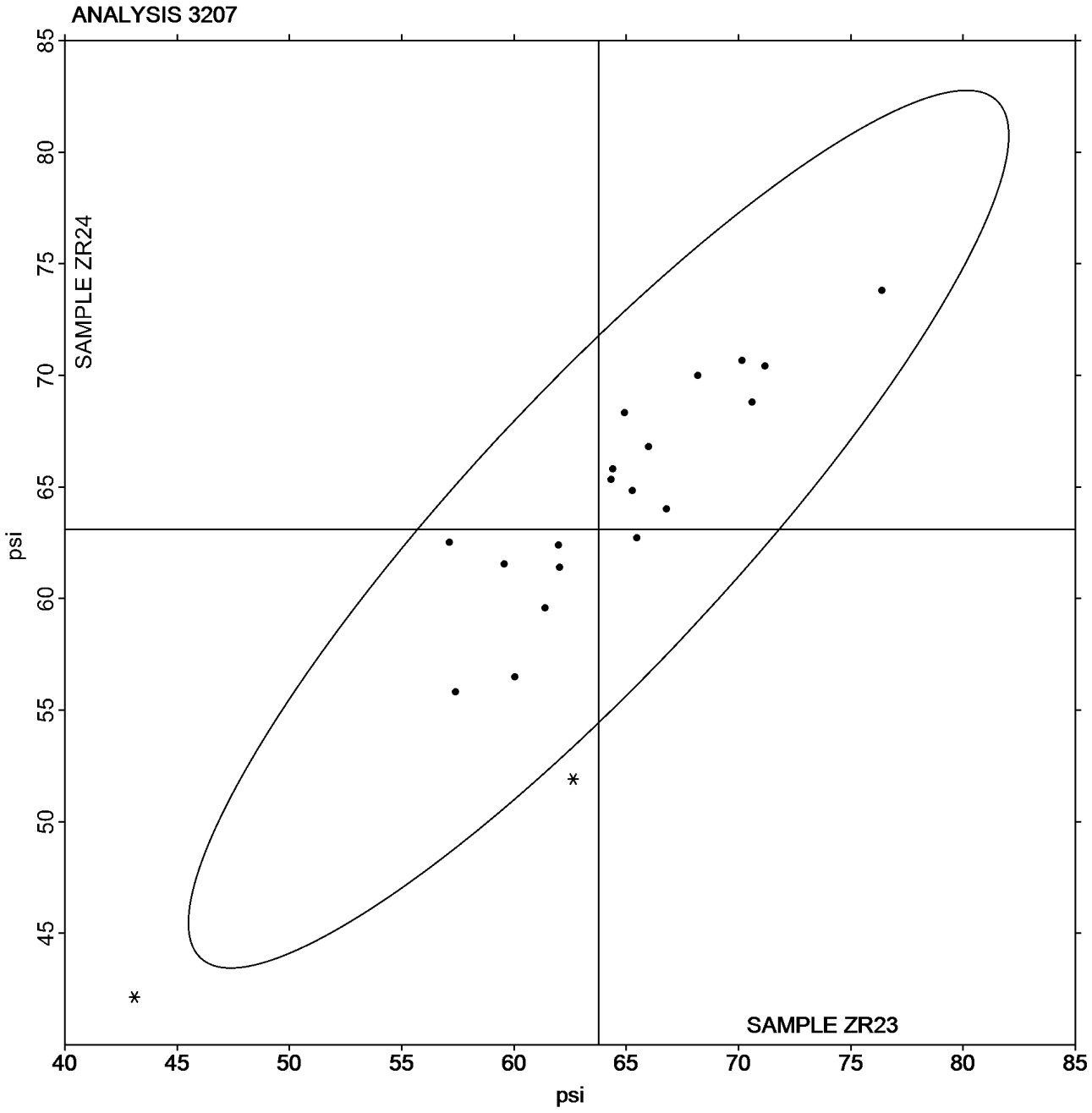
WebCode	Data Flag	Sample ZR23 Lab Mean	Sample ZR23 Diff from Grand Mean	Sample ZR23 CPV	Sample ZR24 Lab Mean	Sample ZR24 Diff from Grand Mean	Sample ZR24 CPV
44Y2KN		60.04	-3.73	-0.56	56.48	-6.63	-0.92
6D2XJB		62.04	-1.73	-0.26	61.38	-1.73	-0.24
6D6GQM		57.12	-6.65	-0.99	62.52	-0.59	-0.08
732L8H		64.94	1.17	0.17	68.32	5.21	0.72
77XEUK	*	62.64	-1.13	-0.17	51.91	-11.20	-1.55
9G8NJM		64.40	0.63	0.09	65.80	2.69	0.37
9LHL6N		71.18	7.41	1.11	70.40	7.29	1.01
9QHQ6M		65.28	1.51	0.23	64.84	1.73	0.24
B3NHMD		76.40	12.63	1.88	73.80	10.69	1.48
DQHGZJ		70.16	6.39	0.95	70.66	7.55	1.05
L392W3		70.60	6.83	1.02	68.80	5.69	0.79
LA8HJ2	*	43.10	-20.67	-3.08	42.14	-20.97	-2.90
LKBJ78		57.40	-6.37	-0.95	55.80	-7.31	-1.01
PP9FX9		66.00	2.23	0.33	66.80	3.69	0.51
Q7Q2U6		65.48	1.71	0.26	62.72	-0.39	-0.05
RA3776		66.80	3.03	0.45	64.00	0.89	0.12
TLTHU3		64.34	0.57	0.09	65.34	2.23	0.31
TR67UY		61.40	-2.37	-0.35	59.58	-3.53	-0.49
V3XJQZ		59.58	-4.19	-0.62	61.54	-1.57	-0.22
VYX9UZ		62.00	-1.77	-0.26	62.40	-0.71	-0.10
WFXLKT		68.20	4.43	0.66	70.00	6.89	0.95

Summary Statistics	Sample ZR23	Sample ZR24
Grand Means	63.77 psi	63.11 psi
Stnd Dev Btwn Labs	6.71 psi	7.22 psi

Statistics based on 21 of 21 reporting participants.

Grand Mean Sample ZR23 = 63.766 psi

Grand Mean Sample ZR24 = 63.106 psi



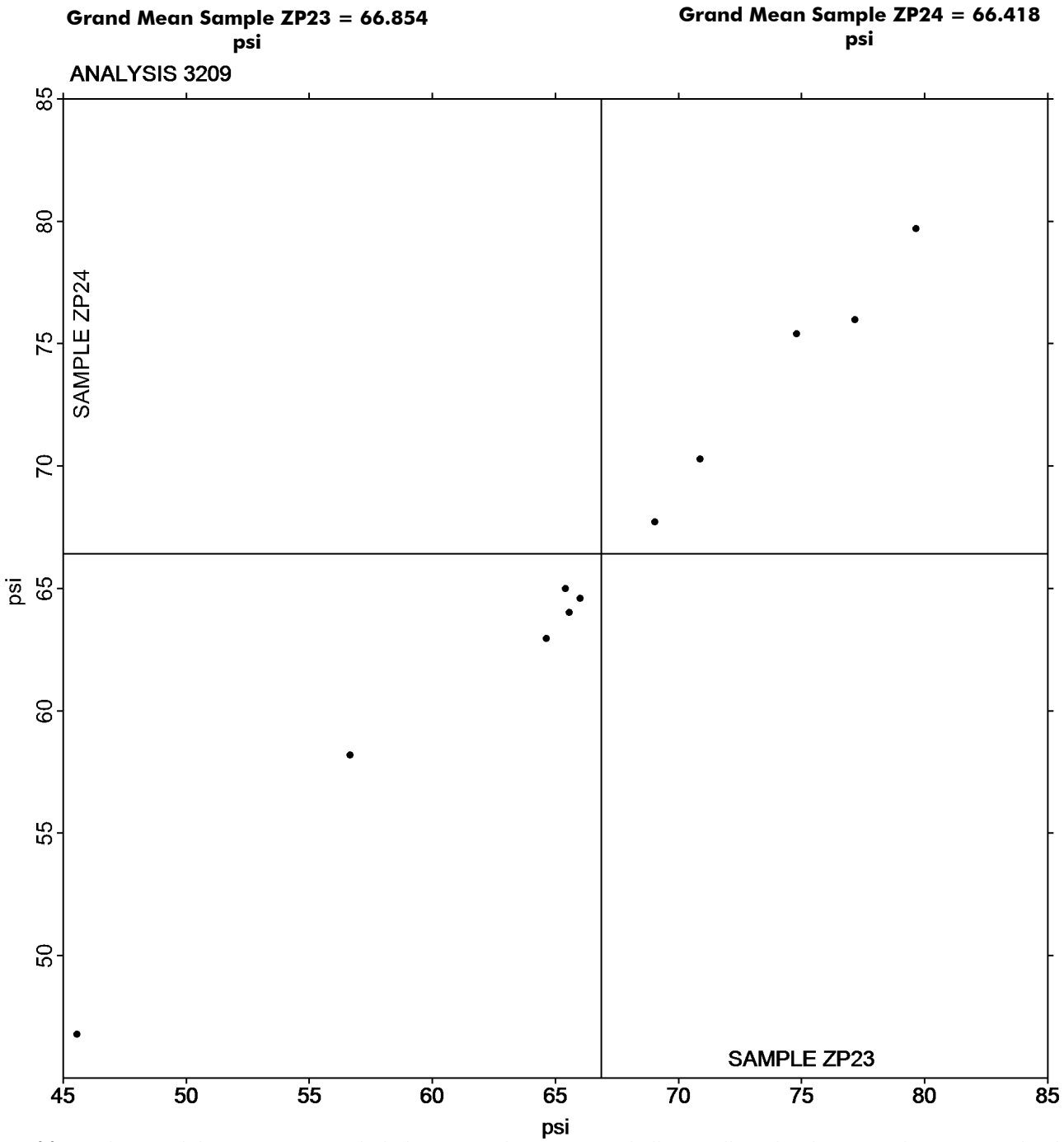
Paper & Paperboard Interlaboratory Testing Program

Analysis 3209
Z-Direction Tensile
TAPPI Official Test Method T541

WebCode	Data Flag	Sample ZP23 Lab Mean	Sample ZP23 Diff from Grand Mean	Sample ZP23 CPV	Sample ZP24 Lab Mean	Sample ZP24 Diff from Grand Mean	Sample ZP24 CPV
46BRUR		69.04	2.19	0.23	67.72	1.30	0.14
4C8TNQ		45.57	-21.28	-2.22	46.79	-19.63	-2.14
4JRU7P		77.18	10.33	1.08	75.98	9.56	1.04
CMKKTD		65.56	-1.30	-0.14	64.02	-2.40	-0.26
DQHGZJ		79.66	12.81	1.33	79.70	13.28	1.45
EDUWVG		70.88	4.03	0.42	70.28	3.86	0.42
FPJ3HJ		74.80	7.95	0.83	75.40	8.98	0.98
LBZGK7		65.42	-1.43	-0.15	64.98	-1.44	-0.16
WXGB32		64.62	-2.23	-0.23	62.95	-3.47	-0.38
XWJMYW		66.00	-0.85	-0.09	64.60	-1.82	-0.20
ZG2CLT		56.66	-10.19	-1.06	58.18	-8.24	-0.90

Summary Statistics	Sample ZP23	Sample ZP24
Grand Means	66.85 psi	66.42 psi
Stnd Dev Btwn Labs	9.60 psi	9.17 psi

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 3211

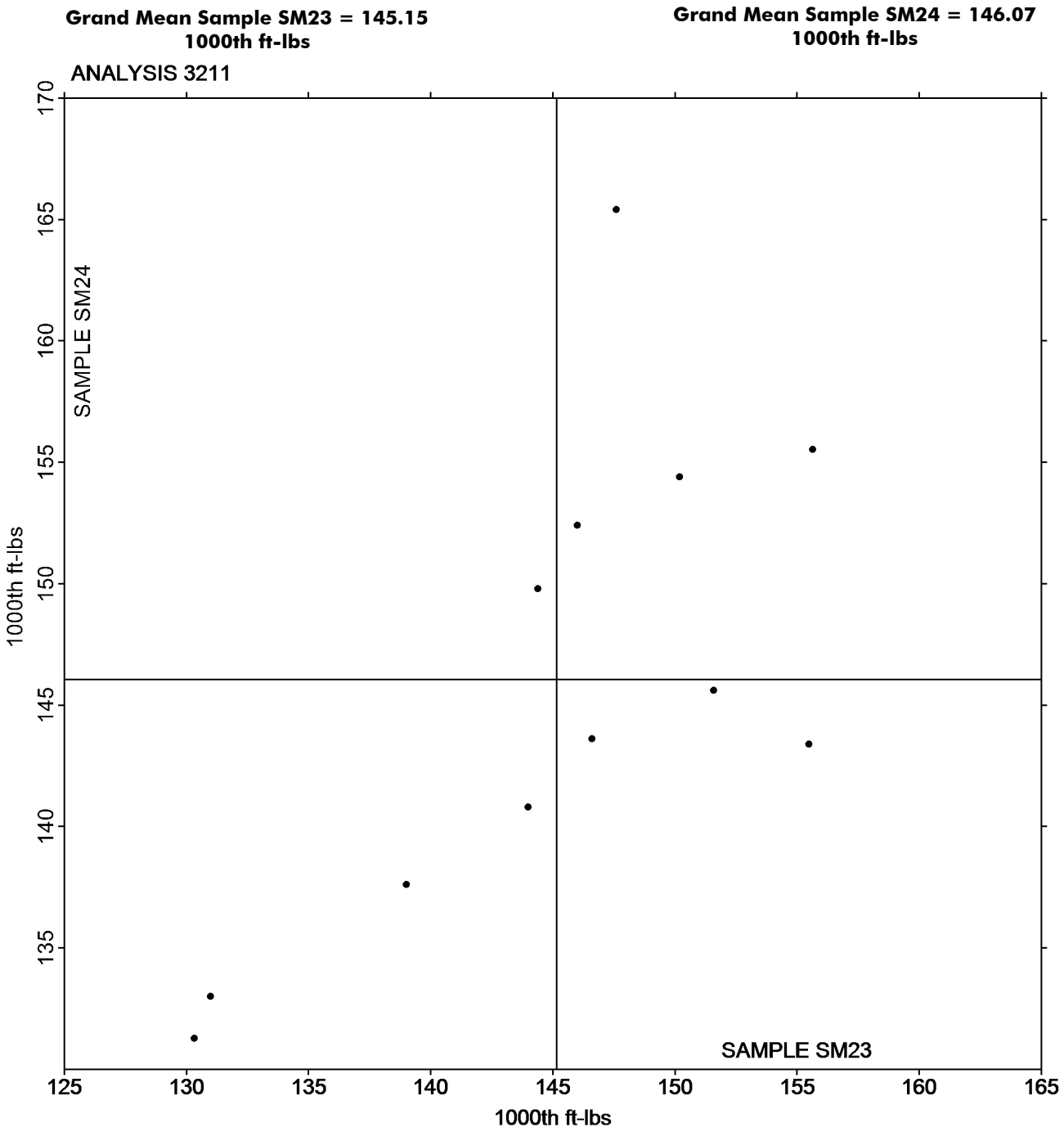
Internal Bond Strength - Modified Scott Mechanics

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SM23 Lab Mean	Sample SM23 Diff from Grand Mean	Sample SM23 CPV	Sample SM24 Lab Mean	Sample SM24 Diff from Grand Mean	Sample SM24 CPV
46BRUR		146.6	1.4	0.17	143.6	-2.5	-0.25
4JRU7P		139.0	-6.2	-0.74	137.6	-8.5	-0.85
6D6GQM		155.6	10.5	1.27	155.5	9.5	0.95
DGQBWK		147.6	2.4	0.30	165.4	19.3	1.94
DQHGZJ		151.6	6.4	0.78	145.6	-0.5	-0.05
EDUWVG		144.4	-0.8	-0.09	149.8	3.7	0.38
FP4W4E		130.3	-14.8	-1.79	131.3	-14.8	-1.49
FPJ3HJ		144.0	-1.2	-0.14	140.8	-5.3	-0.53
GVZXXD		131.0	-14.2	-1.71	133.0	-13.1	-1.31
P3Y4D3		155.5	10.3	1.25	143.4	-2.7	-0.27
QNRLWY		150.2	5.0	0.61	154.4	8.3	0.84
RA3776		146.0	0.8	0.10	152.4	6.3	0.64

Summary Statistics	Sample SM23	Sample SM24
Grand Means	145.15 1000th ft-lbs	146.07 1000th ft-lbs
Stnd Dev Btwn Labs	8.27 1000th ft-lbs	9.95 1000th ft-lbs

Statistics based on 12 of 12 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

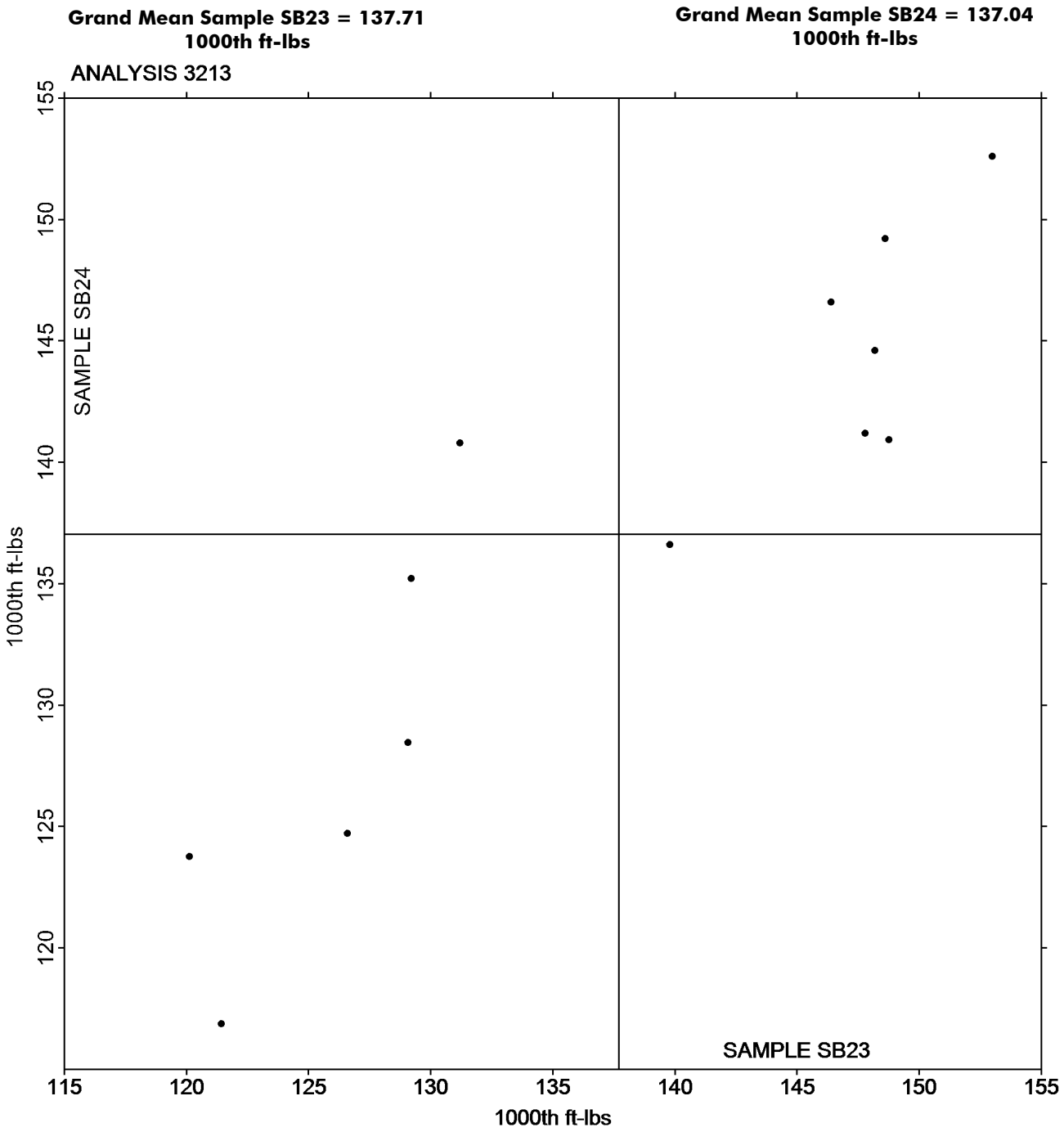
Internal Bond Strength - Scott Bond Models

TAPPI Provisional Test Method T569

WebCode	Data Flag	Sample SB23 Lab Mean	Sample SB23 Diff from Grand Mean	Sample SB23 CPV	Sample SB24 Lab Mean	Sample SB24 Diff from Grand Mean	Sample SB24 CPV
4C8TNQ		121.4	-16.3	-1.39	116.9	-20.2	-1.87
77XEUK		147.8	10.1	0.86	141.2	4.2	0.39
8VVDW8		131.2	-6.5	-0.55	140.8	3.8	0.35
99YWFJ		146.4	8.7	0.74	146.6	9.6	0.89
HWBE8W		148.2	10.5	0.89	144.6	7.6	0.70
J9KEGV		139.8	2.1	0.18	136.6	-0.4	-0.04
L2RQYV		148.6	10.9	0.93	149.2	12.2	1.13
LBZGK7		129.2	-8.5	-0.72	135.2	-1.8	-0.17
PX3NHZ		129.1	-8.6	-0.74	128.5	-8.6	-0.80
RE6XLW		148.8	11.1	0.94	140.9	3.9	0.36
UXPKXV		120.1	-17.6	-1.50	123.8	-13.3	-1.23
XW2JJJ		153.0	15.3	1.30	152.6	15.6	1.44
XZX69Z		126.6	-11.1	-0.95	124.7	-12.3	-1.14

Summary Statistics	Sample SB23	Sample SB24
Grand Means	137.71 1000th ft-lbs	137.04 1000th ft-lbs
Stnd Dev Btwn Labs	11.74 1000th ft-lbs	10.79 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-