Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #4222 - February 2023

Analysis	Analysis Name
3501	Thickness (Caliper), Packaging papers
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The CTS Paper & Paperboard Interlaboratory Program

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

About CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of 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.

If there are any questions on the report or testing program, please contact:

Collaborative Testing Services, Inc.
21331 Gentry Drive
Sterling, Virginia 20166 USA
+1-571-434-1925
FAX #: +1-571-434-1937
paper@cts-interlab.com

Office Hours: 8:00 a.m. - 4:30 p.m. ET

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 3501
Thickness (Caliper), Packaging papers
TAPPI Official Test Method T411

WebCode	Data Flag	Sample CK13 Lab Mean	Sample CK13 Diff from Grand Mean	Sample CK13 CPV	Sample CK14 Lab Mean	Sample CK14 Diff from Grand Mean	Sample CK14 CPV	Instr Code
2ZAD92		9.684	0.087	0.55	9.685	0.076	0.48	PP
3UP78T		9.626	0.029	0.18	9.692	0.083	0.52	EM
47GUZ8		9.685	0.088	0.56	9.689	0.080	0.51	XX
47UP88		9.577	-0.020	-0.13	9.629	0.020	0.13	LC
6WN27L		9.480	-0.117	-0.75	9.420	-0.189	-1.20	XX
7RRYER		9.417	-0.180	-1.15	9.412	-0.197	-1.25	TM
7TEETF		9.621	0.024	0.15	9.577	-0.032	-0.20	OK
8286PZ		9.706	0.109	0.69	9.727	0.118	0.75	XX
8DJG26		9.697	0.100	0.63	9.695	0.086	0.54	XX
8GHHWE		9.298	-0.299	-1.90	9.298	-0.311	-1.97	XX
AC22QZ		9.447	-0.150	-0.96	9.562	-0.047	-0.30	LW
B3UNKH		9.790	0.192	1.22	9.804	0.194	1.23	LA
BT6ZLA		9.810	0.213	1.35	9.881	0.272	1.72	LW
DP24V7		9.679	0.082	0.52	9.691	0.082	0.52	TA
DPD96H		9.628	0.031	0.19	9.652	0.043	0.27	LW
HMPQQD		9.470	-0.127	-0.81	9.442	-0.167	-1.06	LA
J8XGTK		9.728	0.131	0.83	9.754	0.145	0.92	LW
KC37L8		9.444	-0.153	-0.97	9.480	-0.129	-0.82	LB
KX7L7A		9.618	0.021	0.13	9.654	0.045	0.28	EM
NAKN4Q	*	9.191	-0.406	-2.58	9.259	-0.350	-2.22	XX
PAL23W		9.641	0.044	0.28	9.649	0.040	0.25	EM
PG4BQT		9.818	0.220	1.40	9.818	0.208	1.32	LW
Q6KNWD		9.903	0.306	1.94	9.897	0.288	1.83	PP
QKKWY8		9.658	0.061	0.39	9.702	0.092	0.59	LW
R7NZPY		9.467	-0.130	-0.83	9.452	-0.157	-1.00	XX
RB42VJ		9.480	-0.117	-0.75	9.410	-0.199	-1.26	XX
REKXEM		9.354	-0.243	-1.55	9.430	-0.179	-1.14	TA
RYZHXQ		9.722	0.125	0.79	9.746	0.136	0.86	LW
TFAJM4		9.701	0.103	0.66	9.693	0.084	0.53	LW
TUEKKF		9.485	-0.112	-0.71	9.508	-0.101	-0.64	EM
VRJDB8		9.667	0.070	0.44	9.616	0.007	0.04	EM
YEM9XR		9.607	0.010	0.06	9.593	-0.016	-0.10	EM
Z3REZN		9.614	0.017	0.11	9.590	-0.019	-0.12	LB

Summary Statistics	Sample CK13	Sample CK14
Grand Means	9.60 mils	9.61 mils
Stnd Dev Btwn Labs	0.16 mils	0.16 mils

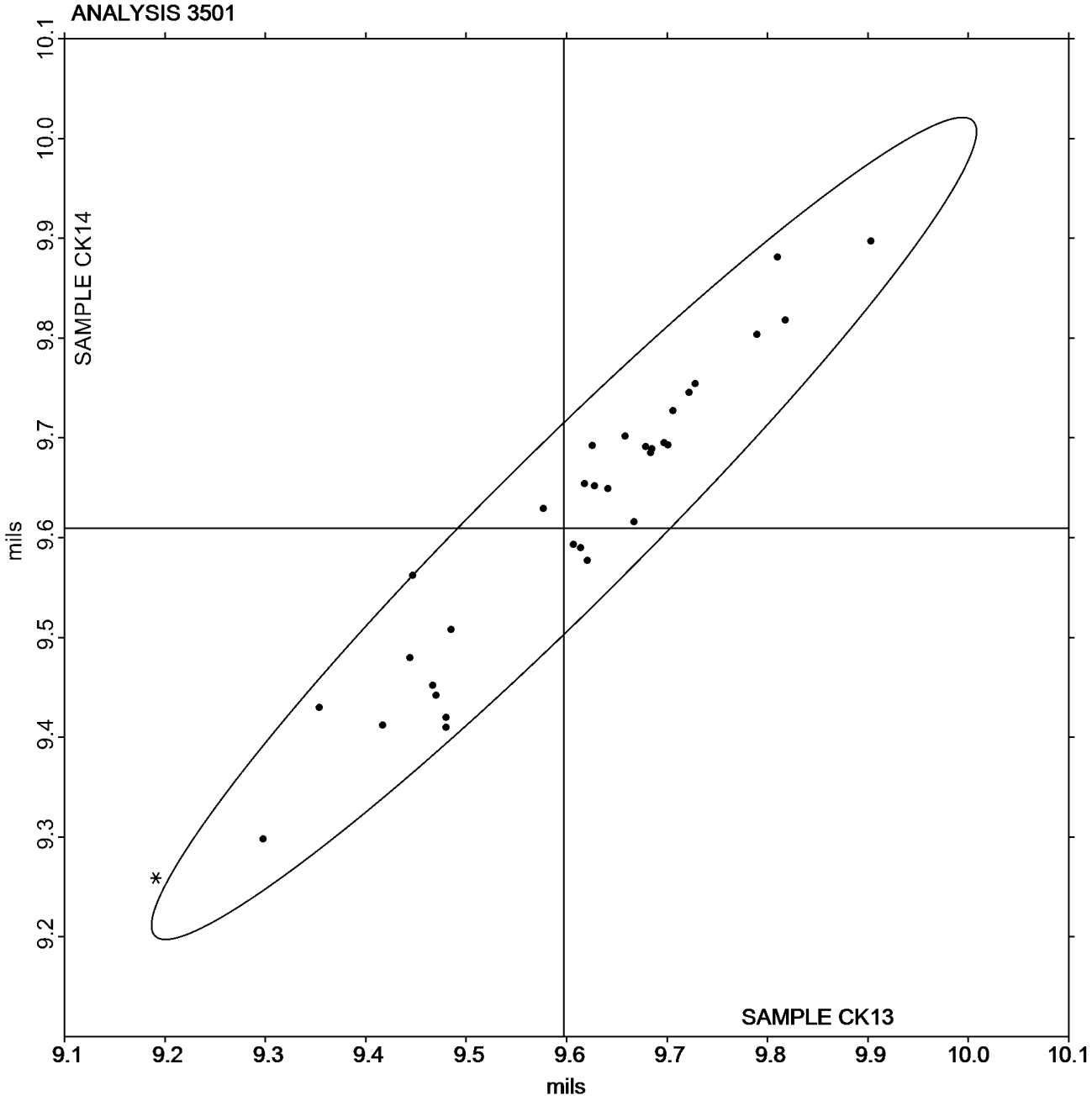
Statistics based on 33 of 33 reporting participants.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LB	L & W Autoline 600	LC	L & W Autoline 400
LW	L & W	OK	Oakland
PP	Technidyne Profile/Plus	TA	Thwing-Albert
TM	TMI	XX	Instrument make/model not specified by lab

Grand Mean Sample CK13 = 9.5974 mils

Grand Mean Sample CK14 = 9.6092 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 3511

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

WebCode	Data Flag	Sample BK13 Lab Mean	Sample BK13 Diff from Grand Mean	Sample BK13 CPV	Sample BK14 Lab Mean	Sample BK14 Diff from Grand Mean	Sample BK14 CPV	Instr Code
7TEETF		52.65	2.22	0.45	51.59	1.45	0.30	ZZ
7ZL49T		48.78	-1.65	-0.34	48.18	-1.95	-0.41	ZZ
823G3A	*	67.50	17.07	3.46	66.50	16.36	3.41	ZZ
84TTB9		49.70	-0.72	-0.15	49.78	-0.36	-0.07	ZZ
9RDHVG		50.51	0.08	0.02	52.24	2.11	0.44	ZZ
BT6ZLA		46.09	-4.34	-0.88	44.14	-6.00	-1.25	ZZ
GMUNN4		52.56	2.13	0.43	52.88	2.74	0.57	ZZ
H738YX		49.46	-0.97	-0.20	49.20	-0.94	-0.20	ZZ
HCY48H		49.16	-1.27	-0.26	45.27	-4.86	-1.01	ZZ
JTVGV6		47.05	-3.38	-0.69	47.60	-2.54	-0.53	ZZ
PG4BQT		49.48	-0.95	-0.19	49.33	-0.81	-0.17	ZZ
QDDWH6		49.97	-0.46	-0.09	49.43	-0.71	-0.15	ZZ
QKKWY8		51.68	1.25	0.25	50.70	0.56	0.12	ZZ
QVU3PU		54.00	3.57	0.72	49.10	-1.04	-0.22	ZZ
R7NZPY		46.70	-3.73	-0.76	48.00	-2.14	-0.45	ZZ
REKXEM		46.95	-3.48	-0.71	49.80	-0.34	-0.07	ZZ
RYZHXQ		48.40	-2.03	-0.41	46.90	-3.24	-0.67	ZZ
TFAJM4		52.10	1.67	0.34	52.69	2.56	0.53	ZZ
TZFY4V		56.60	6.17	1.25	57.20	7.06	1.47	ZZ
UUCPVM		45.00	-5.43	-1.10	47.30	-2.84	-0.59	ZZ
XRCE84		44.69	-5.74	-1.17	45.03	-5.10	-1.06	ZZ

Summary Statistics	Sample BK13	Sample BK14
Grand Means	50.43 psi	50.14 psi
Stnd Dev Btwn Labs	4.93 psi	4.80 psi

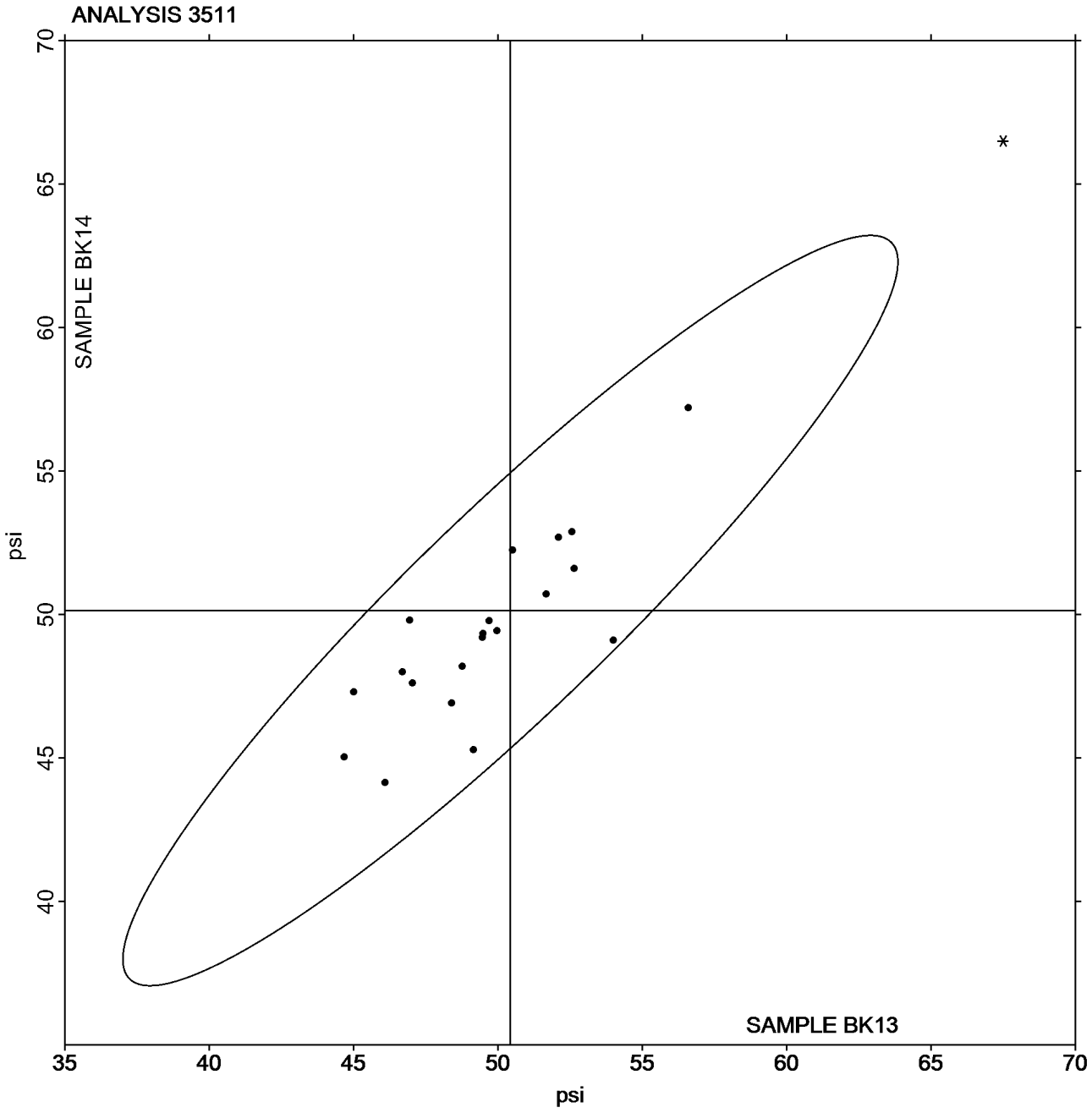
Statistics based on 21 of 21 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample BK13 = 50.430 psi

Grand Mean Sample BK14 = 50.137 psi



Paper & Paperboard Interlaboratory Testing Program

Analysis 3513
Tearing Strength - Packaging Papers
TAPPI Official Test Method T414

Report #4222, February 2023

WebCode	Data Flag	Sample RK13 Lab Mean	Sample RK13 Diff from Grand Mean	Sample RK13 CPV	Sample RK14 Lab Mean	Sample RK14 Diff from Grand Mean	Sample RK14 CPV	Instr Code
2CC8M6		124.7	-5.6	-0.51	156.4	-18.3	-1.47	ZZ
3UP78T		126.8	-3.6	-0.32	177.8	3.1	0.25	ZZ
47GUZ8		133.3	3.0	0.27	180.0	5.3	0.43	ZZ
6WN27L		139.2	8.8	0.79	178.4	3.7	0.29	ZZ
7TEETF		138.3	7.9	0.71	183.3	8.6	0.69	ZZ
8DJG26		145.5	15.2	1.36	195.1	20.4	1.63	ZZ
9RDHVG		142.4	12.1	1.08	177.7	3.0	0.24	ZZ
BT6ZLA		130.4	0.0	0.00	180.7	5.9	0.48	ZZ
DP24V7		128.0	-2.4	-0.21	169.1	-5.6	-0.45	ZZ
DPD96H		126.9	-3.5	-0.31	168.1	-6.7	-0.53	ZZ
H84CYL		151.3	21.0	1.88	204.2	29.5	2.36	ZZ
HARNXR		139.8	9.4	0.84	190.8	16.1	1.29	ZZ
HCY48H		115.4	-15.0	-1.34	163.4	-11.3	-0.91	ZZ
HMPQQD		121.8	-8.6	-0.77	166.9	-7.9	-0.63	ZZ
J8XGTK		139.7	9.3	0.84	178.5	3.8	0.30	ZZ
JYKUYD		135.9	5.6	0.50	181.6	6.9	0.55	ZZ
KC37L8		138.7	8.3	0.75	180.9	6.2	0.50	ZZ
PAL23W	X	558.4	428.0	38.32	723.2	548.5	43.97	ZZ
PG4BQT		142.3	11.9	1.07	187.5	12.8	1.03	ZZ
QKKWY8		134.3	3.9	0.35	167.2	-7.6	-0.61	ZZ
R7NZPY		107.2	-23.2	-2.07	150.0	-24.7	-1.98	ZZ
RPBVNL		122.3	-8.1	-0.72	172.0	-2.8	-0.22	ZZ
RYZHXQ		125.1	-5.3	-0.47	169.9	-4.8	-0.38	ZZ
UUCPVM		121.2	-9.2	-0.82	169.4	-5.3	-0.43	ZZ
VDUGUG		128.0	-2.3	-0.21	183.0	8.2	0.66	ZZ
VRJDB8		129.4	-1.0	-0.09	164.2	-10.6	-0.85	ZZ
WPU7QB		125.9	-4.5	-0.40	171.0	-3.8	-0.30	ZZ
X9YRLW		101.3	-29.1	-2.61	148.3	-26.4	-2.12	ZZ
XTQ88J		135.1	4.7	0.42	177.0	2.3	0.19	ZZ
YEM9XR	X	185.3	54.9	4.92	231.8	57.1	4.57	ZZ

Summary Statistics	Sample RK13	Sample RK14
Grand Means	130.36 Grams	174.72 Grams
Stnd Dev Btwn Labs	11.17 Grams	12.47 Grams

Statistics based on 28 of 30 reporting participants.

Comments on Assigned Data Flags for Test #3513

YEM9XR (X) - Data for both samples are high. Possible Systematic Error.

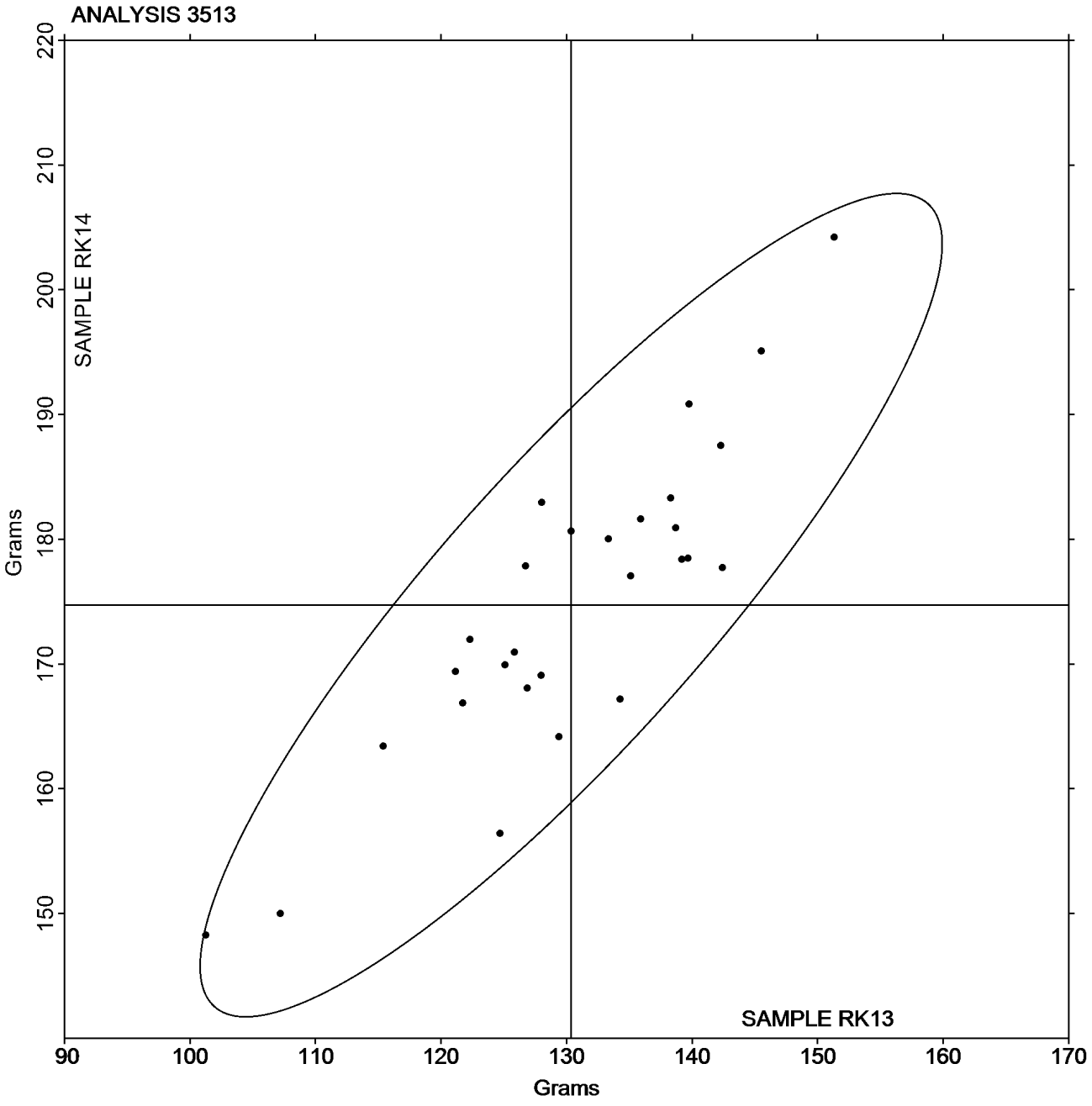
PAL23W (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample RK13 = 130.36 Grams

Grand Mean Sample RK14 = 174.72 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 3515

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK13 Lab Mean	Sample NK13 Diff from Grand Mean	Sample NK13 CPV	Sample NK14 Lab Mean	Sample NK14 Diff from Grand Mean	Sample NK14 CPV	Instr Code
47GUZ8		10.11	-0.60	-0.75	7.477	-0.421	-0.79	IF
47UP88	X	11.32	0.62	0.78	9.673	1.775	3.32	LB
69V8J8		12.23	1.53	1.92	8.654	0.756	1.41	LI
6WN27L		11.76	1.06	1.33	8.585	0.687	1.29	IF
88T2EJ		11.40	0.70	0.88	8.488	0.590	1.10	TT
8DJG26		10.50	-0.21	-0.26	7.429	-0.469	-0.88	ID
8GHHWE		10.71	0.01	0.01	7.762	-0.136	-0.25	TB
AC22QZ		11.76	1.06	1.33	8.961	1.063	1.99	TH
B6D4BC	*	11.93	1.22	1.54	8.108	0.210	0.39	TH
BT6ZLA		9.99	-0.71	-0.89	7.057	-0.841	-1.57	IM
DBHKXV		10.11	-0.60	-0.75	7.477	-0.421	-0.79	IR
DP24V7		10.42	-0.29	-0.36	7.715	-0.183	-0.34	TB
DPD96H		10.84	0.14	0.18	7.956	0.058	0.11	LE
FDJ72L		9.58	-1.13	-1.41	7.271	-0.627	-1.17	TS
GMUNN4		10.11	-0.59	-0.74	7.156	-0.742	-1.39	XX
H84CYL		10.16	-0.54	-0.68	7.253	-0.645	-1.21	TR
HAKYXY		11.42	0.72	0.90	8.533	0.635	1.19	LA
HARNXR		9.72	-0.98	-1.23	7.455	-0.443	-0.83	LE
HCY48H		10.16	-0.54	-0.68	7.571	-0.327	-0.61	TX
HMPQQD		9.96	-0.75	-0.94	7.647	-0.251	-0.47	LA
J8XGTK		9.82	-0.89	-1.11	7.486	-0.412	-0.77	LW
JDKX2J		11.36	0.65	0.82	8.215	0.317	0.59	MA
KC37L8		11.41	0.71	0.89	8.415	0.517	0.97	LA
KX7L7A		11.04	0.34	0.43	8.435	0.537	1.01	LE
PG4BQT		9.59	-1.12	-1.40	7.184	-0.714	-1.34	LE
PJ3QJP		11.26	0.55	0.69	8.320	0.422	0.79	DM
QKKWY8		10.74	0.04	0.05	7.832	-0.066	-0.12	LH
R7NZPY		11.06	0.36	0.45	7.709	-0.189	-0.35	TH
RB42VJ		10.39	-0.31	-0.39	7.879	-0.019	-0.04	XX
REKXEM		12.23	1.53	1.92	8.982	1.084	2.03	TO
RPBVNL		10.93	0.23	0.29	8.030	0.132	0.25	LW
RYZHXQ		12.36	1.65	2.08	8.739	0.841	1.57	TX
TZFY4V		11.28	0.58	0.73	8.644	0.746	1.40	IK
UUCPVM		10.54	-0.16	-0.20	7.889	-0.008	-0.02	LE
VDUGUG		10.02	-0.69	-0.86	7.444	-0.454	-0.85	IF
VJP8G7		9.71	-0.99	-1.24	7.280	-0.618	-1.16	IM
VRJDB8		10.57	-0.13	-0.16	7.900	0.002	0.00	TO
WPU7QB		10.40	-0.30	-0.38	7.632	-0.266	-0.50	LE
XRCE84		10.10	-0.60	-0.76	7.925	0.027	0.05	LW
XTQ88J		9.74	-0.97	-1.21	7.523	-0.374	-0.70	LH

Paper & Paperboard Interlaboratory Testing Program

Analysis 3515

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

Summary Statistics	Sample NK13	Sample NK14
Grand Means	10.70 kN/m	7.90 kN/m
Stnd Dev Btwn Labs	0.80 kN/m	0.53 kN/m

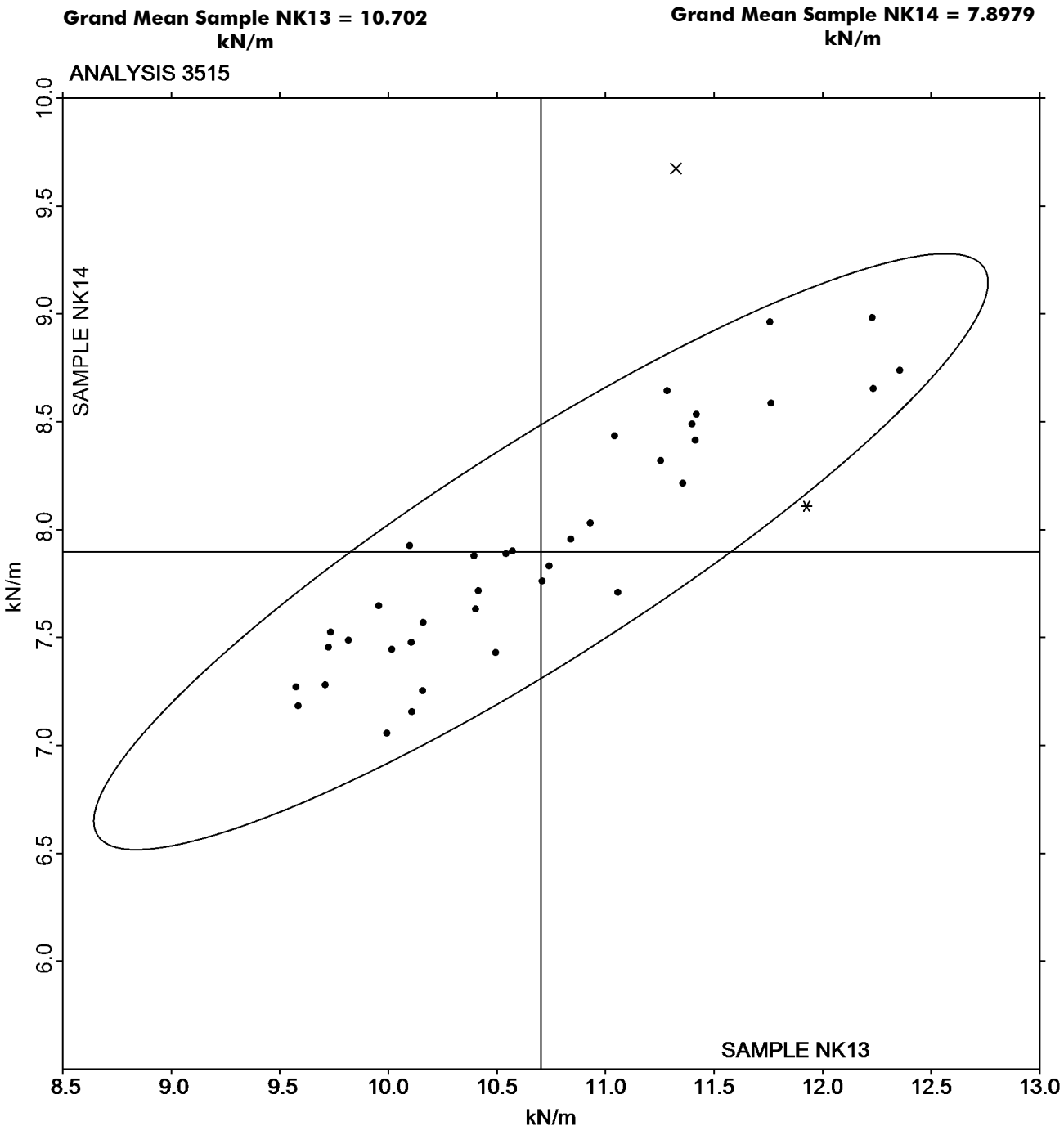
Statistics based on 39 of 40 reporting participants.

Comments on Assigned Data Flags for Test #3515

47UP88 (X) - Data for sample NK14 are high.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 Series
IF	Instron 3340 Series	IK	Instron 4400 Series
IM	Instron 5500 Series	IR	Instron 5900 Series
LA	L & W Autoline	LB	L & W Tensile - Autoline 400
LE	L & W Tensile Tester 066	LH	L & W Alwetron TH1 (Horizontal) SE 060
LI	LLoyds Instruments	LW	L & W Tensile Tester SE062
MA	Mark-10 ESM301L	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TO	Thwing-Albert QC-1000
TR	TMI Horizontal Tensile Tester	TS	TMI Horizontal Tensile Tester 84-58
TT	Tinius Olsen Model MHT	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

Report #4222, February 2023

Analysis 3516

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK13 Lab Mean	Sample NK13 Diff from Grand Mean	Sample NK13 CPV	Sample NK14 Lab Mean	Sample NK14 Diff from Grand Mean	Sample NK14 CPV	Instr Code
47GUZ8		158.9	1.8	0.11	99.46	3.36	0.39	IF
47UP88	*	127.0	-30.1	-1.83	100.61	4.51	0.52	LB
6WN27L	*	209.3	52.2	3.17	119.96	23.86	2.75	IN
88T2EJ		138.9	-18.2	-1.11	85.35	-10.75	-1.24	TT
8GHHWE		165.9	8.9	0.54	93.14	-2.96	-0.34	TB
AC22QZ		173.3	16.2	0.98	109.89	13.79	1.59	TH
BT6ZLA		164.2	7.1	0.43	99.63	3.53	0.41	IM
DBHKXV		158.9	1.8	0.11	99.46	3.36	0.39	IR
DPD96H		151.2	-5.9	-0.36	86.80	-9.30	-1.07	LE
FDJ72L		152.6	-4.5	-0.27	98.71	2.61	0.30	TS
GMUNN4		153.1	-4.0	-0.24	82.45	-13.65	-1.57	XX
H84CYL		152.6	-4.5	-0.27	83.27	-12.83	-1.48	TR
HAKYXY		168.2	11.1	0.68	104.74	8.64	0.99	LA
HARNXR		135.5	-21.6	-1.31	91.02	-5.08	-0.58	LE
HCY48H		167.3	10.2	0.62	96.65	0.55	0.06	TX
HMPQQD		164.9	7.8	0.47	101.79	5.69	0.66	LA
J8XGTK		146.9	-10.1	-0.62	91.22	-4.88	-0.56	LW
KC37L8		168.4	11.3	0.69	104.69	8.59	0.99	LC
KX7L7A		163.4	6.3	0.38	107.26	11.16	1.28	LE
PG4BQT		135.9	-21.2	-1.29	83.20	-12.90	-1.48	LE
PJ3QJP		179.9	22.8	1.38	105.58	9.48	1.09	DM
QKKWY8		157.5	0.4	0.02	92.68	-3.42	-0.39	LH
R7NZPY		174.3	17.2	1.04	93.09	-3.01	-0.35	TH
RB42VJ		155.4	-1.7	-0.10	103.86	7.76	0.89	TH
REKXEM		166.7	9.6	0.58	95.74	-0.36	-0.04	TO
RPBVNL		146.8	-10.3	-0.62	88.72	-7.38	-0.85	LE
RYZHXQ		173.8	16.7	1.01	99.90	3.79	0.44	LE
TZFY4V	X	131.6	-25.5	-1.55	129.68	33.58	3.87	IX
UUCPVM		151.9	-5.2	-0.32	98.36	2.26	0.26	LE
VJP8G7		138.0	-19.1	-1.16	92.97	-3.13	-0.36	IM
VRJDB8		163.0	5.9	0.36	98.65	2.55	0.29	TO
WPU7QB		149.7	-7.4	-0.45	83.36	-12.74	-1.47	LE
XRCE84		130.6	-26.5	-1.61	90.24	-5.86	-0.67	LW
XTQ88J		140.2	-16.9	-1.03	88.85	-7.25	-0.83	LH

Summary Statistics	Sample NK13	Sample NK14
Grand Means	157.09 Joules/sq m	96.10 Joules/sq m
Stnd Dev Btwn Labs	16.48 Joules/sq m	8.69 Joules/sq m

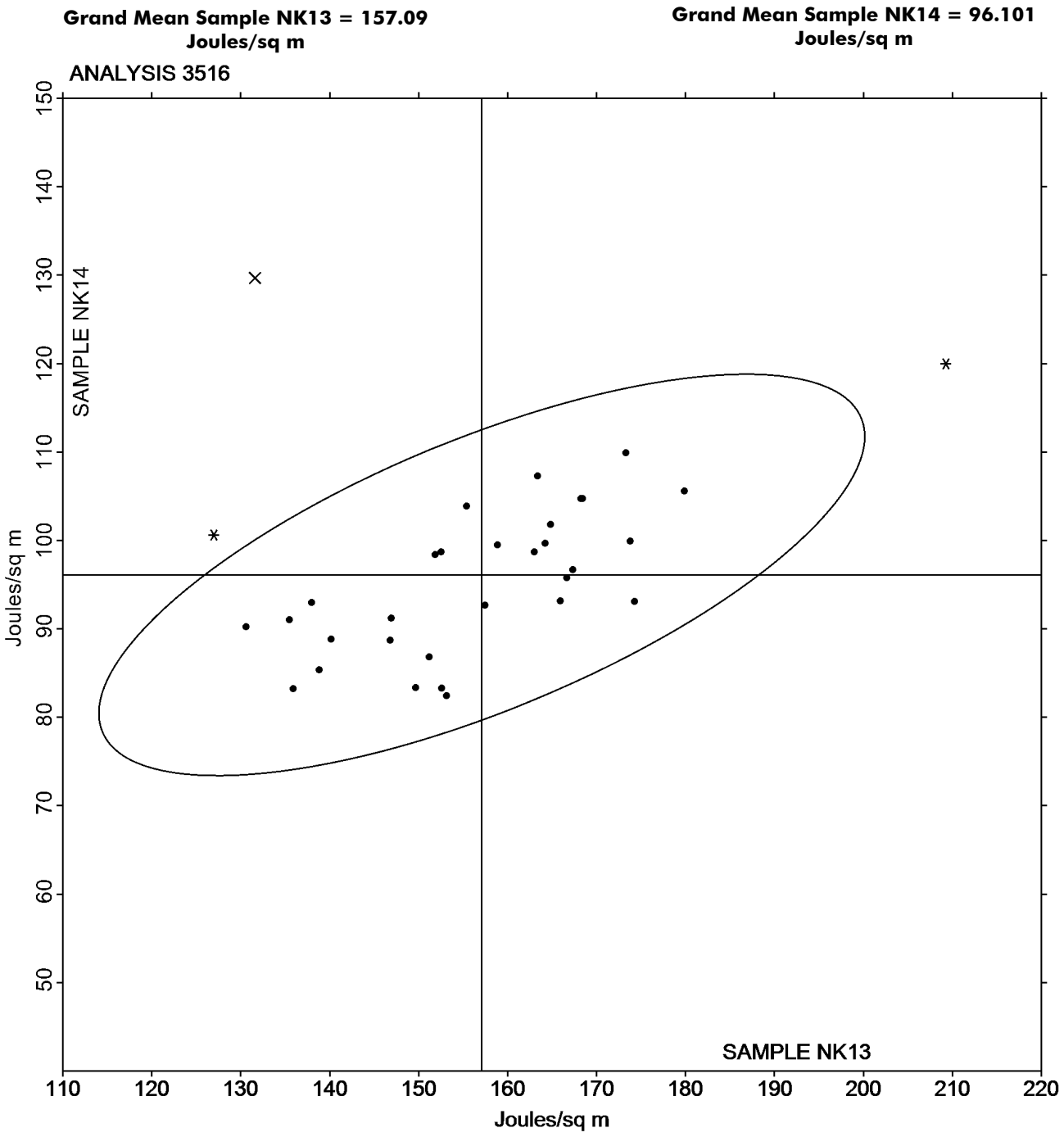
Statistics based on 33 of 34 reporting participants.

Comments on Assigned Data Flags for Test #3516

TZFY4V (X) - Data for sample NK14 are high.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	IF	Instron 3340 Series
IM	Instron 5500 Series	IN	Instron 3360 Series
IR	Instron 5900 Series	IX	Instron (model not specified)
LA	L & W Autoline	LB	L & W Tensile - Autoline 400
LC	L & W Tensile - Autoline 600	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LW	L & W Tensile Tester SE062
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TO	Thwing-Albert QC-1000	TR	TMI Horizontal Tensile Tester
TS	TMI Horizontal Tensile Tester 84-58	TT	Tinius Olsen Model MHT
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

Analysis 3517

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK13 Lab Mean	Sample NK13 Diff from Grand Mean	Sample NK13 CPV	Sample NK14 Lab Mean	Sample NK14 Diff from Grand Mean	Sample NK14 CPV	Instr Code
47GUZ8		2.336	0.099	0.60	1.978	0.133	0.95	XX
47UP88	X	3.370	1.133	6.79	3.355	1.510	10.73	LB
6WN27L		2.005	-0.232	-1.39	1.555	-0.290	-2.06	XX
88T2EJ		2.043	-0.194	-1.16	1.719	-0.126	-0.89	TT
8DJG26		2.251	0.014	0.09	1.776	-0.069	-0.49	XX
8GHHWE		2.318	0.081	0.49	1.852	0.007	0.05	XX
AC22QZ		2.294	0.057	0.34	1.925	0.080	0.57	TH
BT6ZLA		2.457	0.221	1.32	1.960	0.115	0.82	IM
DBHKXV		2.336	0.099	0.60	1.978	0.133	0.95	XX
DP24V7		2.252	0.015	0.09	1.813	-0.032	-0.23	TB
DPD96H		2.093	-0.144	-0.86	1.658	-0.187	-1.33	LE
FDJ72L		2.413	0.176	1.06	2.056	0.211	1.50	TS
GMUNN4		2.400	0.163	0.98	1.822	-0.023	-0.16	XX
H84CYL		2.316	0.079	0.48	1.893	0.048	0.34	TR
HAKYXY		2.132	-0.105	-0.63	1.771	-0.074	-0.53	XX
HARNXR		2.060	-0.177	-1.06	1.800	-0.045	-0.32	LE
HCY48H		2.443	0.206	1.24	1.900	0.055	0.39	TX
HMPQQD		2.505	0.268	1.61	1.968	0.123	0.88	LA
J8XGTK		2.198	-0.039	-0.23	1.802	-0.043	-0.30	LW
KC37L8		2.140	-0.097	-0.58	1.809	-0.036	-0.25	LX
KX7L7A		2.183	-0.054	-0.32	1.900	0.055	0.39	LE
PG4BQT		2.075	-0.162	-0.97	1.707	-0.138	-0.98	LE
PJ3QJP		2.480	0.243	1.46	2.071	0.226	1.61	DM
QKKWY8		2.103	-0.134	-0.80	1.692	-0.153	-1.09	LX
R7NZPY		2.648	0.411	2.46	2.069	0.224	1.59	XX
RB42VJ		2.284	0.047	0.28	2.016	0.171	1.22	XX
REKXEM		2.161	-0.076	-0.45	1.719	-0.126	-0.89	TO
RPBVNL		2.011	-0.226	-1.35	1.670	-0.175	-1.24	LW
RYZHXQ	X	0.155	-2.081	-12.46	0.068	-1.777	-12.63	LE
TZFY4V		2.137	-0.100	-0.60	1.963	0.118	0.84	IX
UUCPVM		2.157	-0.080	-0.48	1.858	0.013	0.09	LE
VJP8G7		2.373	0.136	0.82	2.078	0.233	1.66	IM
VRJDB8	X	0.200	-2.037	-12.20	0.264	-1.581	-11.23	TO
WPU7QB		2.119	-0.118	-0.70	1.625	-0.220	-1.56	LE
XRCE84		1.966	-0.271	-1.62	1.732	-0.113	-0.80	XX
XTQ88J		2.117	-0.120	-0.72	1.746	-0.099	-0.70	LH

Paper & Paperboard Interlaboratory Testing Program

Analysis 3517
Elongation to Break - Packaging Papers
TAPPI Official Test Method T494

Summary Statistics	Sample NK13	Sample NK14
Grand Means	2.24 Percent	1.84 Percent
Stnd Dev Btwn Labs	0.17 Percent	0.14 Percent

Statistics based on 33 of 36 reporting participants.

Comments on Assigned Data Flags for Test #3517

VRJDB8 (X) - Extreme Data.

RYZHXQ (X) - Extreme Data.

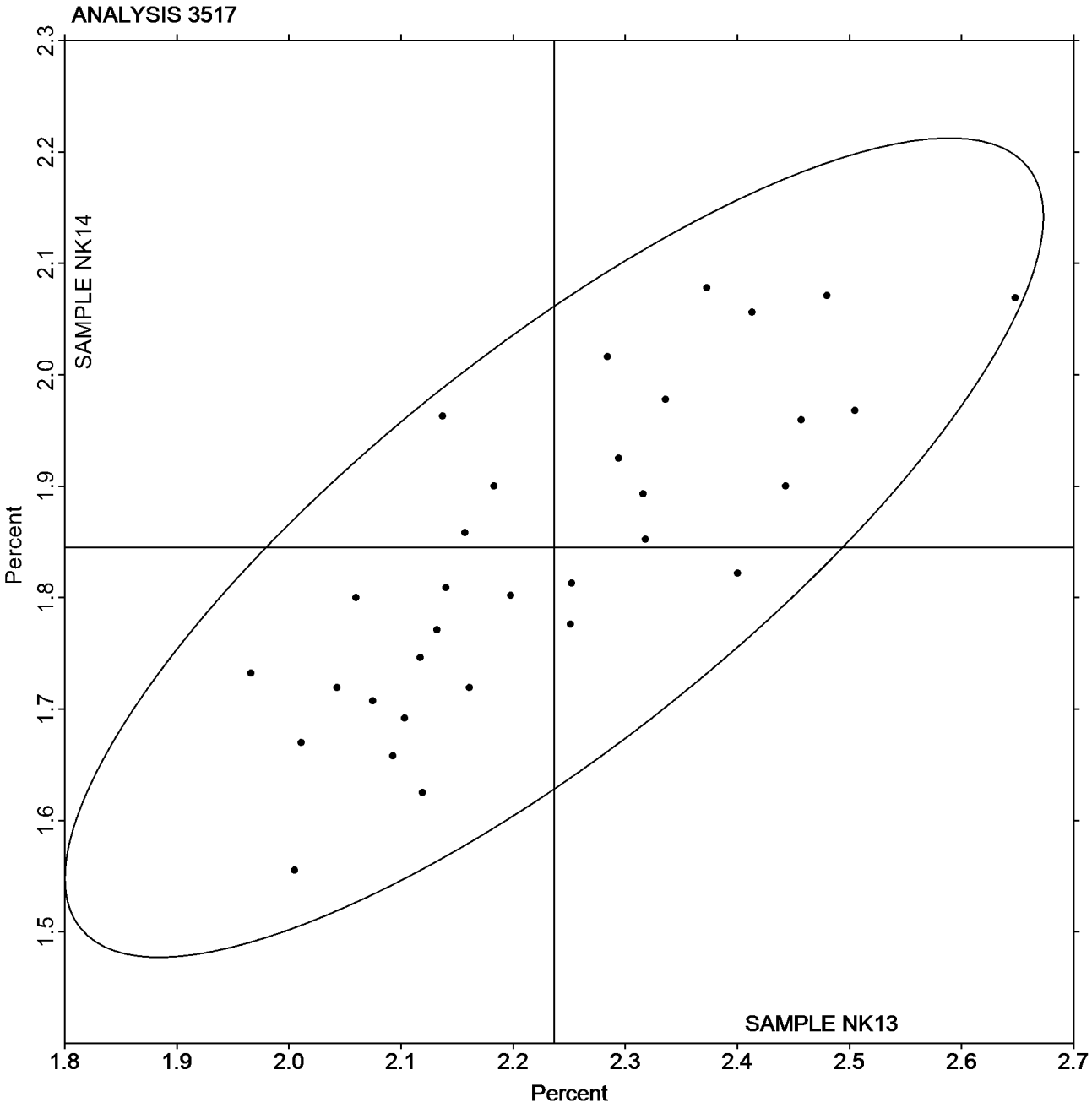
47UP88 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	IM	Instron 5500 Series
IX	Instron (model not specified)	LA	L & W Autoline
LB	L & W Tensile - Autoline 400	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LW	L & W Tensile Tester SE062
LX	L & W (model not specified)	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TO	Thwing-Albert QC-1000
TR	TMI Horizontal Tensile Tester	TS	TMI Horizontal Tensile Tester 84-58
TT	Tinius Olsen Model MHT	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		

Grand Mean Sample NK13 = 2.2366 Percent

Grand Mean Sample NK14 = 1.8449 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 3531

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample PS13 Lab Mean	Sample PS13 Diff from Grand Mean	Sample PS13 CPV	Sample PS14 Lab Mean	Sample PS14 Diff from Grand Mean	Sample PS14 CPV	Instr Code
2AFUPQ		2.133	0.055	0.27	2.171	0.097	0.48	ZZ
3UP78T		2.127	0.049	0.24	2.145	0.071	0.35	ZZ
47UP88		1.861	-0.217	-1.06	1.872	-0.202	-1.01	ZZ
4NFAYC	X	2.607	0.529	2.58	1.698	-0.376	-1.88	ZZ
4W3YBL		2.134	0.056	0.27	2.119	0.045	0.22	ZZ
7TEETF		2.195	0.117	0.57	2.186	0.112	0.56	ZZ
7VMQAG		2.364	0.286	1.39	2.293	0.219	1.09	ZZ
7ZL49T		2.092	0.014	0.07	2.141	0.067	0.33	ZZ
823G3A		2.205	0.127	0.62	2.178	0.104	0.52	ZZ
8GHHWE		2.135	0.057	0.28	2.136	0.062	0.31	ZZ
92ZGN9		2.120	0.042	0.20	2.106	0.032	0.16	ZZ
AC22QZ	*	2.382	0.304	1.48	2.222	0.148	0.74	ZZ
ALPKZL		1.653	-0.425	-2.07	1.647	-0.427	-2.13	ZZ
AX2RY8		2.128	0.050	0.24	2.222	0.148	0.74	ZZ
BBNTEJ		1.866	-0.212	-1.03	1.832	-0.242	-1.21	ZZ
EEWDQA		2.269	0.191	0.93	2.292	0.218	1.09	ZZ
FDJ72L		2.222	0.144	0.70	2.188	0.114	0.57	ZZ
GQWX3X		2.000	-0.078	-0.38	1.952	-0.122	-0.61	ZZ
K49ZR7		2.235	0.157	0.76	2.294	0.220	1.10	ZZ
KX7L7A		2.114	0.036	0.17	2.088	0.014	0.07	ZZ
MUTYLV	*	1.479	-0.599	-2.92	1.480	-0.594	-2.96	ZZ
NN73FQ		2.210	0.132	0.64	2.181	0.107	0.53	ZZ
PAL23W		2.075	-0.003	-0.02	2.173	0.099	0.49	ZZ
QKKWY8		1.969	-0.109	-0.53	2.012	-0.062	-0.31	ZZ
YEM9XR		1.877	-0.201	-0.98	1.877	-0.197	-0.98	ZZ
Z3REZN		2.107	0.029	0.14	2.048	-0.026	-0.13	ZZ

Summary Statistics	Sample PS13	Sample PS14
Grand Means	2.08 Microns	2.07 Microns
Stnd Dev Btwn Labs	0.21 Microns	0.20 Microns

Statistics based on 25 of 26 reporting participants.

Comments on Assigned Data Flags for Test #3531

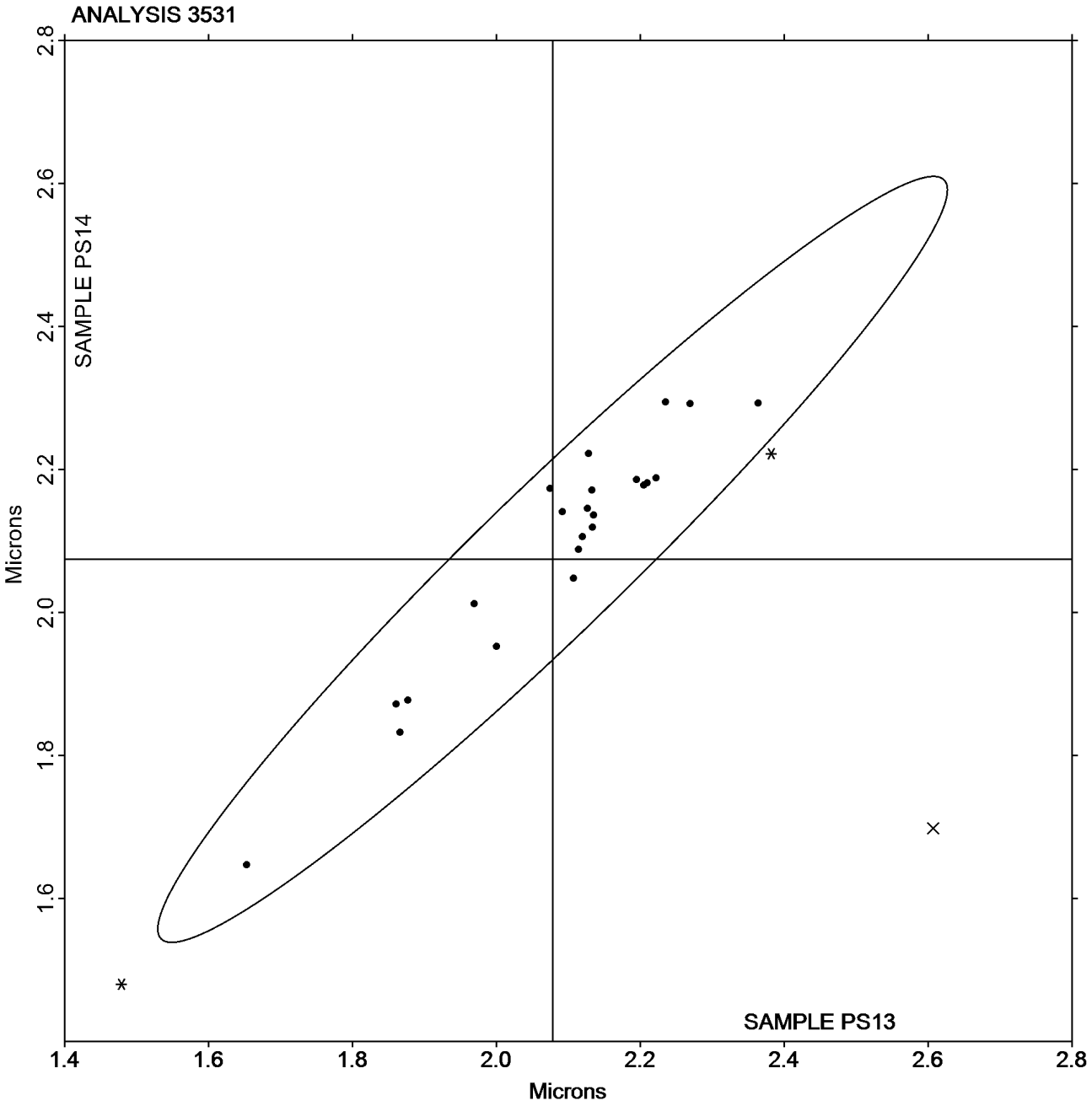
4NFAYC (X) - Inconsistent in testing between samples.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample PS13 = 2.0781 Microns

Grand Mean Sample PS14 = 2.0742 Microns



Paper & Paperboard Interlaboratory Testing Program

Analysis 3545
Directional Brightness
TAPPI Official Test Method T452

WebCode	Data Flag	Sample BR13 Lab Mean	Sample BR13 Diff from Grand Mean	Sample BR13 CPV	Sample BR14 Lab Mean	Sample BR14 Diff from Grand Mean	Sample BR14 CPV	Instr Code
2AFUPQ		82.07	-0.95	-0.84	81.99	-1.09	-0.98	TP
3UP78T		83.02	0.01	0.01	83.07	-0.01	-0.01	HG
4W3YBL		84.46	1.44	1.27	84.42	1.34	1.20	TS
6WN27L	*	85.16	2.15	1.89	85.46	2.38	2.13	XX
7TEETF		83.69	0.67	0.59	83.62	0.54	0.48	HG
AC22QZ		82.24	-0.78	-0.68	82.26	-0.82	-0.73	TP
ALPKZL		82.45	-0.56	-0.49	82.42	-0.67	-0.60	HZ
AX2RY8		82.24	-0.78	-0.69	82.50	-0.59	-0.53	TT
DP24V7		82.99	-0.03	-0.03	83.06	-0.03	-0.02	XC
FDJ72L		82.16	-0.86	-0.75	82.18	-0.90	-0.81	TS
G6YQQH	X	83.66	0.65	0.57	82.45	-0.63	-0.57	TP
GYDC63		81.49	-1.53	-1.35	81.84	-1.25	-1.11	XX
J8XGTK		82.09	-0.92	-0.81	82.20	-0.89	-0.79	TS
KAGVWK		84.58	1.56	1.37	84.49	1.41	1.26	TT
KX7L7A		83.88	0.86	0.76	83.93	0.85	0.76	HG
PAL23W		84.48	1.46	1.29	84.36	1.28	1.14	TP
TFV3N6		81.65	-1.36	-1.20	81.66	-1.42	-1.27	TS
V67H8H		83.60	0.59	0.52	83.84	0.76	0.68	TS
YEM9XR		82.05	-0.97	-0.85	82.20	-0.88	-0.79	TP

Summary Statistics	Sample BR13	Sample BR14
Grand Means	83.01 Percent	83.08 Percent
Stnd Dev Btwn Labs	1.14 Percent	1.12 Percent

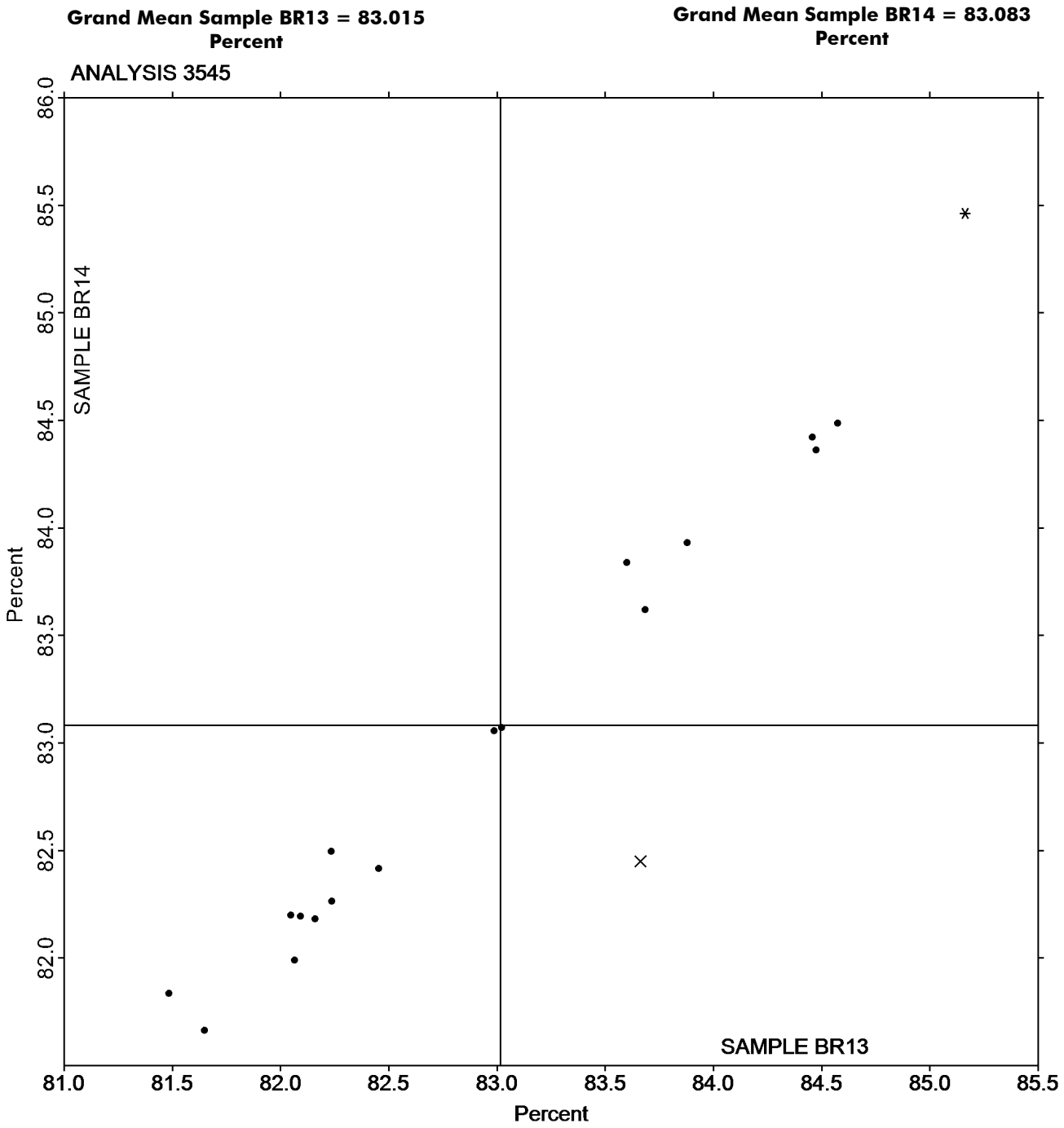
Statistics based on 18 of 19 reporting participants.

Comments on Assigned Data Flags for Test #3545

G6YQQH (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample BR13.

Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
TP	Technidyne Test/Plus	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	XC	X-Rite Color i5
XX	Instrument make/model not specified by lab		



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3547
Diffuse Brightness
TAPPI Official Test Method T525

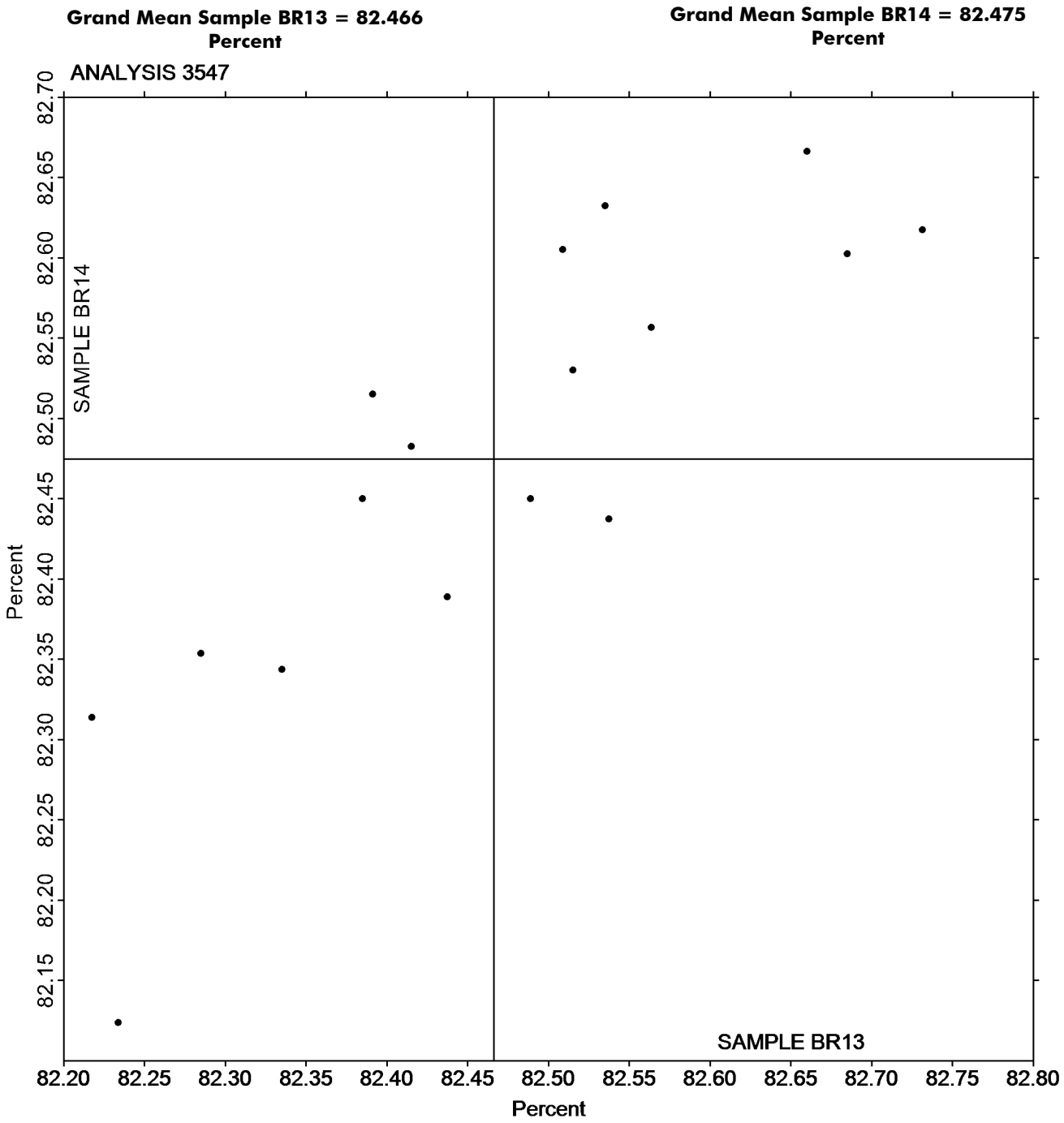
WebCode	Data Flag	Sample BR13 Lab Mean	Sample BR13 Diff from Grand Mean	Sample BR13 CPV	Sample BR14 Lab Mean	Sample BR14 Diff from Grand Mean	Sample BR14 CPV	Instr Code
4W3YBL		82.42	-0.05	-0.34	82.48	0.01	0.06	TC
7TEETF		82.39	-0.08	-0.54	82.45	-0.02	-0.17	TC
8TVHVT		82.66	0.19	1.29	82.67	0.19	1.36	TD
8WYMUE		82.51	0.04	0.28	82.61	0.13	0.93	XX
AC22QZ		82.52	0.05	0.32	82.53	0.06	0.39	LT
B3UNKH		82.44	-0.03	-0.19	82.39	-0.09	-0.61	LA
EEWDQA		82.29	-0.18	-1.21	82.35	-0.12	-0.86	TC
FDJ72L		82.23	-0.23	-1.55	82.12	-0.35	-2.49	LT
GQWX3X		82.69	0.22	1.46	82.60	0.13	0.91	TC
H84CYL		82.73	0.27	1.76	82.62	0.14	1.01	TC
L2N32Z		82.34	-0.13	-0.87	82.34	-0.13	-0.93	TC
PAL23W		82.39	-0.07	-0.50	82.52	0.04	0.29	TC
QKKWY8		82.54	0.07	0.46	82.63	0.16	1.12	LT
RPBVNL		82.56	0.10	0.65	82.56	0.08	0.58	LT
W8PZZM		82.54	0.07	0.47	82.44	-0.04	-0.26	LE
W9634F		82.22	-0.25	-1.65	82.31	-0.16	-1.14	LE
YEM9XR		82.49	0.02	0.15	82.45	-0.02	-0.17	EG

Summary Statistics	Sample BR13	Sample BR14
Grand Means	82.47 Percent	82.47 Percent
Stnd Dev Btwn Labs	0.15 Percent	0.14 Percent

Statistics based on 17 of 17 reporting participants.

Key to Instrument Codes Reported by Participants

EG	Datacolor Elrepho 450X	LA	L & W Elrepho - Autoline
LE	L & W Elrepho	LT	L & W Elrepho SE 071
TC	Technidyne Color Touch Series	TD	Technidyne Color Touch X
XX	Instrument make/model not specified by lab		



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

Paper & Paperboard Interlaboratory Testing Program

Report #4222, February 2023

Analysis 3549

Color & Color Difference - Near White Papers - C/2deg obs

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	Data Flag	Samples	Hunter L, a, b Color Values L	a	b		Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
3UP78T		**CA13**	93.91	-0.79	4.34		-0.77	0.12	-2.88	2.99 X	HK
		CA14	93.14	-0.67	1.45						
6WN27L		**CA13**	94.79	-0.71	3.90		-1.34 X	0.10	-1.99 X	2.41	XX
		CA14	93.45	-0.61	1.90						
7TEETF	X	**CA13**	94.14	-0.87	4.27	X	-0.88	0.15	-3.67 X	3.78 X	HF
		CA14	93.26	-0.72	0.59						
8WYMUE		**CA13**	95.01	-0.62	4.31		-0.14	0.14	-2.47	2.47	TC
		CA14	94.87	-0.49	1.84						
AX2RY8		**CA13**	95.00	-0.83	4.12		-0.23	0.30	-2.65	2.68	EH
		CA14	94.77	-0.53	1.47						
B3UNKH		**CA13**	93.73	-0.71	4.16		-0.30	0.32	-2.45	2.49	LA
		CA14	93.43	-0.39	1.71						
FDJ72L		**CA13**	93.00	-0.30	3.83		-0.52	0.24	-2.55	2.62	TS
		CA14	92.48	-0.06	1.27						
H738YX		**CA13**	93.82	-1.00	4.26		-0.26	0.28	-2.63	2.66	XX
		CA14	93.56	-0.72	1.62						
KX7L7A		**CA13**	94.31	-0.64	4.16		-0.55	0.03	-2.60	2.66	HK
		CA14	93.75	-0.60	1.56						
NN73FQ		**CA13**	93.77	-0.88	4.31		-0.34	0.38	-2.41	2.46	TC
		CA14	93.43	-0.49	1.90						
PAL23W		**CA13**	93.64	-0.94	4.36		-0.29	0.37	-2.58	2.62	TC
		CA14	93.35	-0.57	1.78						
RKGUNT		**CA13**	92.90	-0.30	4.06		-0.49	0.29	-2.75	2.81	TS
		CA14	92.41	-0.01	1.31						
TFV3N6		**CA13**	92.72	-0.46	4.00		-0.20	0.19	-2.50	2.52	TS
		CA14	92.52	-0.27	1.50						
TUEKKF		**CA13**	95.09	-0.83	4.35		-0.28	0.32	-2.54	2.57	TC
		CA14	94.81	-0.51	1.81						
W9634F		**CA13**	95.01	-0.91	4.26		-0.31	0.35	-2.46	2.50	LS
		CA14	94.70	-0.56	1.81						

Summary Statistics

Grand Means							
CA13	94.056	-0.721	4.172	-0.431	0.246	-2.533	2.604
CA14	93.595	-0.481	1.639				
Stnd Dev Btwn Labs							
CA13	0.805	0.220	0.172	0.311	0.110	0.201	0.155
CA14	0.844	0.215	0.213				

Statistics based on 14 of 15 reporting participants

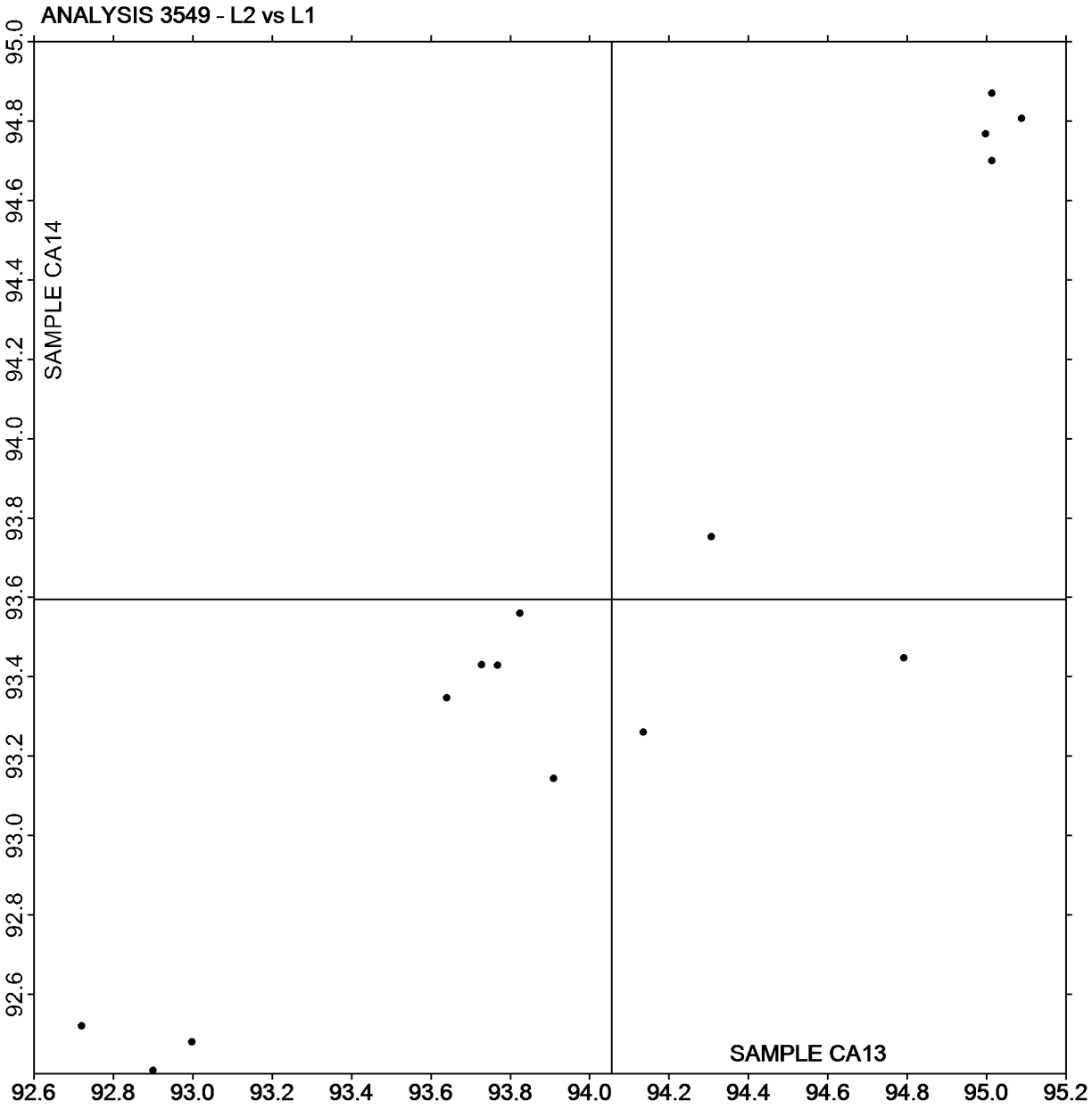
Comments on Assigned Data Flags for Test #3549

7TEETF (X) - Low "b" value for sample CA14. Large delta E. Small delta b.

Key to Instrument Codes Reported by Participants

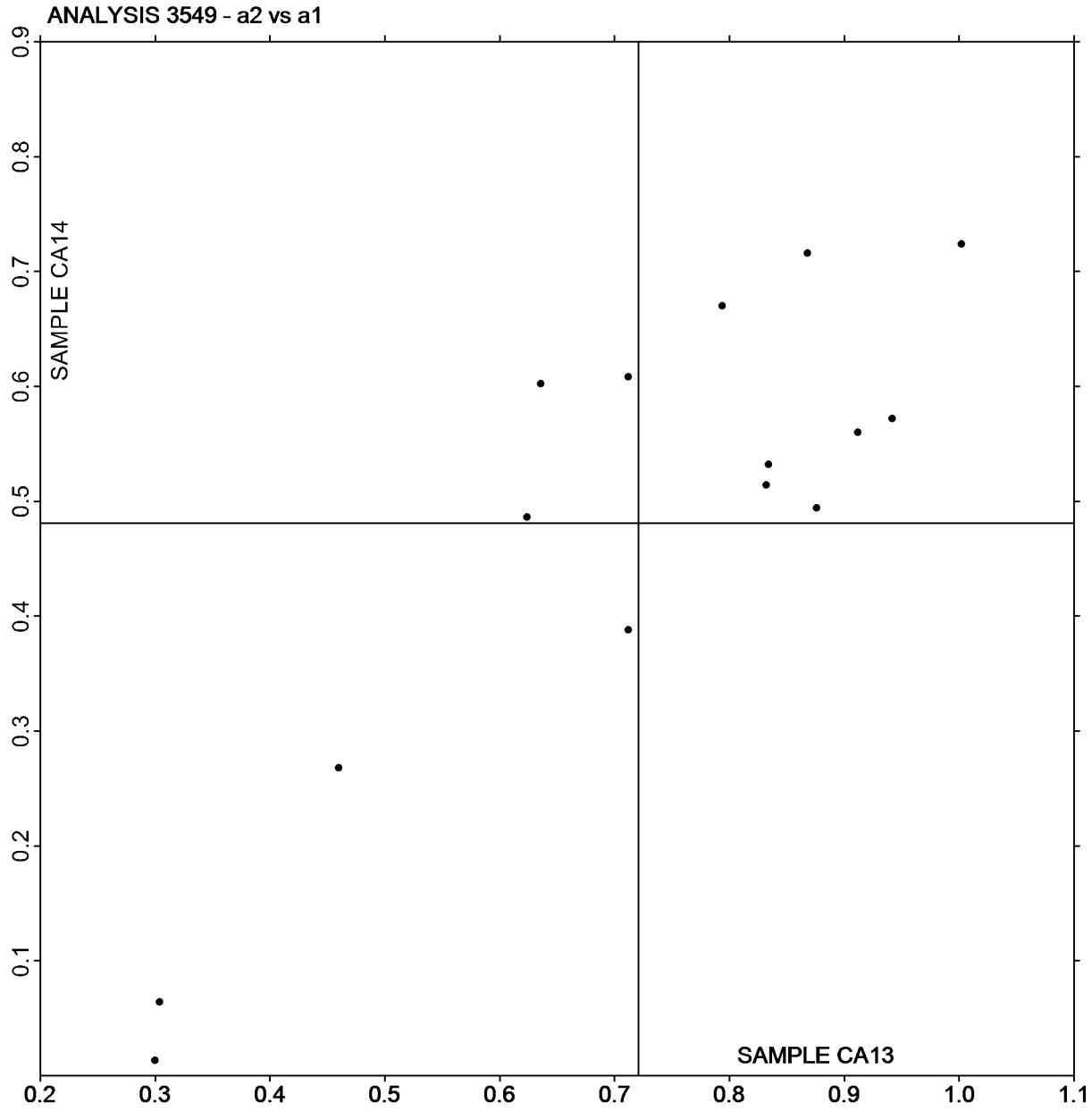
EH	Datacolor Elrepho SF450	HF	Hunter LabScan II
HK	Hunter LabScan XE	LA	L & W Elrepho AL300
LS	L & W Elrepho SE 070	TC	Technidyne Color Touch Series
TS	Technidyne Brightimeter Micro S-5	XX	Instrument make/model not specified by lab

Plot of L values CA14 vs L values CA13



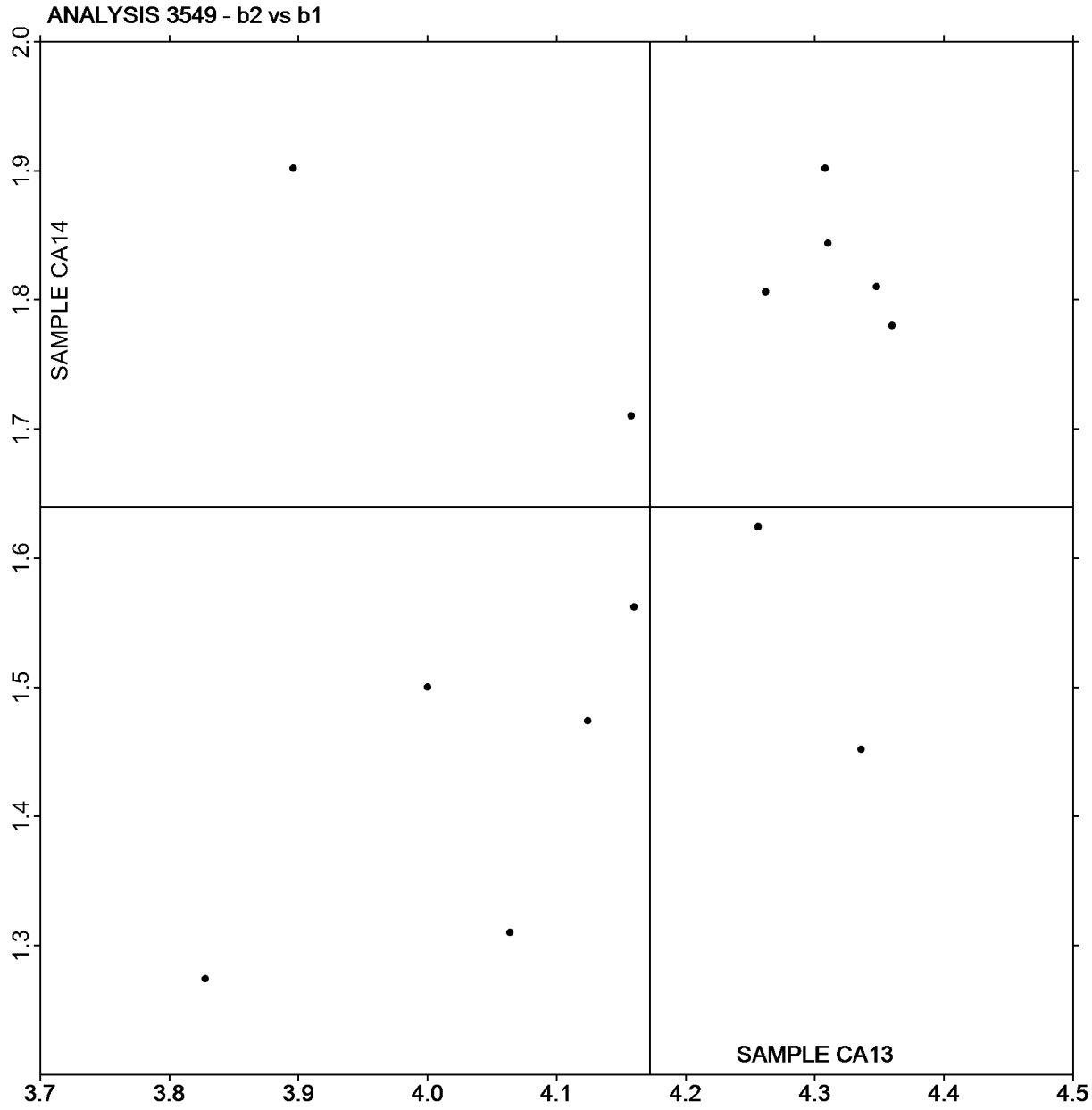
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values CA14 vs a values CA13



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

Plot of b values CA14 vs b values CA13



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

Paper & Paperboard Interlaboratory Testing Program

Report #4222, February 2023

Analysis 3551

Color & Color Difference - Near White Papers - D65/10deg obs

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Web Code	Data Flag	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
2AFUPQ		CA13	94.40	-0.49	3.96	-0.50	0.07	-2.27	2.32	HE
		CA14	93.90	-0.42	1.69					
3NDT3U	X	CA13	94.48	-6.21 X	10.01 X	-0.39	0.26	-2.29	2.34	XC
		CA14	94.09	-5.94	7.72					
7TEETF	X	CA13	92.98 X	-0.83 *	3.41 *	-10.71 X	0.50 X	-4.14 X	11.49X	TC
		CA14	82.27	-0.33	-0.74					
8WYMUE		CA13	95.01	-0.62	4.31	-0.14	0.14	-2.47	2.47	XX
		CA14	94.87	-0.49	1.84					
92ZGN9		CA13	95.05	-0.94	4.34	-0.26	0.35 X	-2.52	2.56	TC
		CA14	94.78	-0.59	1.83					
AC22QZ		CA13	94.91	-0.67	4.43	-0.11	0.15	-2.53	2.53	LT
		CA14	94.80	-0.52	1.90					
AX2RY8		CA13	94.88	-0.64	4.24	-0.17	0.08	-2.61	2.61	EH
		CA14	94.72	-0.56	1.63					
CN7439		CA13	95.10	-0.66	4.43	-0.18	0.14	-2.39	2.40	XX
		CA14	94.92	-0.52	2.04					
G3QAEB		CA13	95.15	-0.63	4.29	-0.18	0.12	-2.39	2.40	XX
		CA14	94.96	-0.51	1.89					
GQLVFY		CA13	95.31 *	-0.67	4.09	-0.99 X	0.12	-2.30	2.51	XC
		CA14	94.32	-0.54	1.79					
KAGVWK		CA13	93.77	-0.43	3.98	-0.48	0.15	-2.25	2.31	XB
		CA14	93.29	-0.28	1.73					
M7RRW8		CA13	94.98	-0.64	4.30	-0.11	0.11	-2.78	2.78	TC
		CA14	94.86	-0.53	1.52					
RPBVNL		CA13	95.05	-0.67	4.42	-0.23	0.14	-2.49	2.50	LS
		CA14	94.82	-0.54	1.93					
TXHTA4		CA13	95.25	-0.78	3.62	-0.04	0.27	-1.95	1.97 X	XX
		CA14	95.21	-0.51	1.67					
Y8QBAP		CA13	95.28	-0.57	4.28	-0.18	0.05	-2.51	2.52	NG
		CA14	95.10	-0.52	1.77					
YEM9XR		CA13	94.98	-0.71	4.52	-0.19	0.16	-2.53	2.54	EH
		CA14	94.79	-0.55	1.99					

Summary Statistics

Grand Means							
CA13	94.907	-0.664	4.174	-0.270	0.147	-2.427	2.459
CA14	94.629	-0.493	1.633				
Stnd Dev Btwn Labs							
CA13	0.405	0.124	0.315	0.244	0.079	0.196	0.186
CA14	0.513	0.086	0.670				

Statistics based on 14 of 16 reporting participants

Comments on Assigned Data Flags for Test #3551

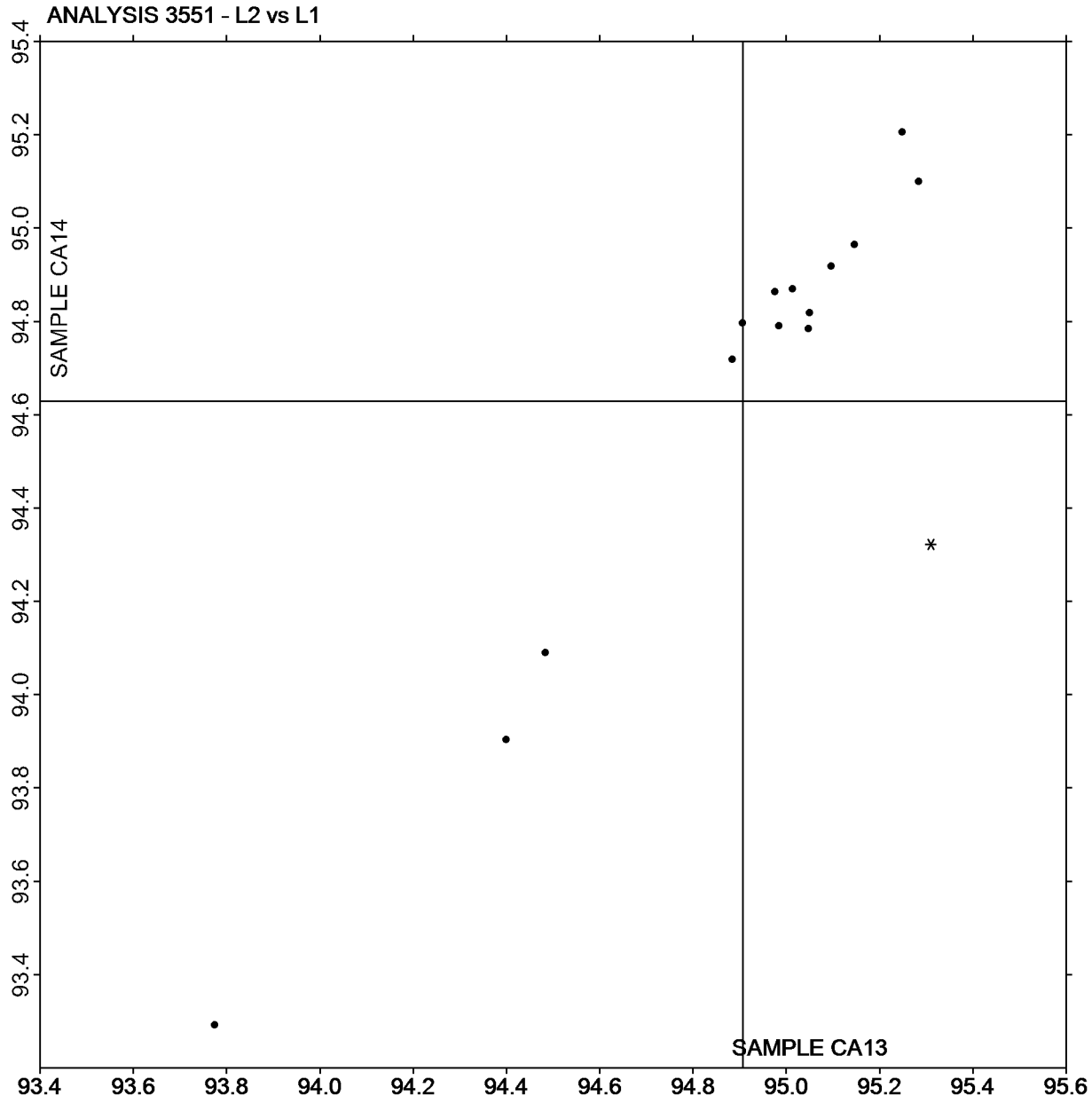
7TEETF (X) - Low data for both "L" values. Inconsistent within replicate readings of "L" sample CA14. Large delta a & E. Small delta L & b.

3NDT3U (X) - Extreme data for both "a" values. Very high data for both "b" values.

Key to Instrument Codes Reported by Participants

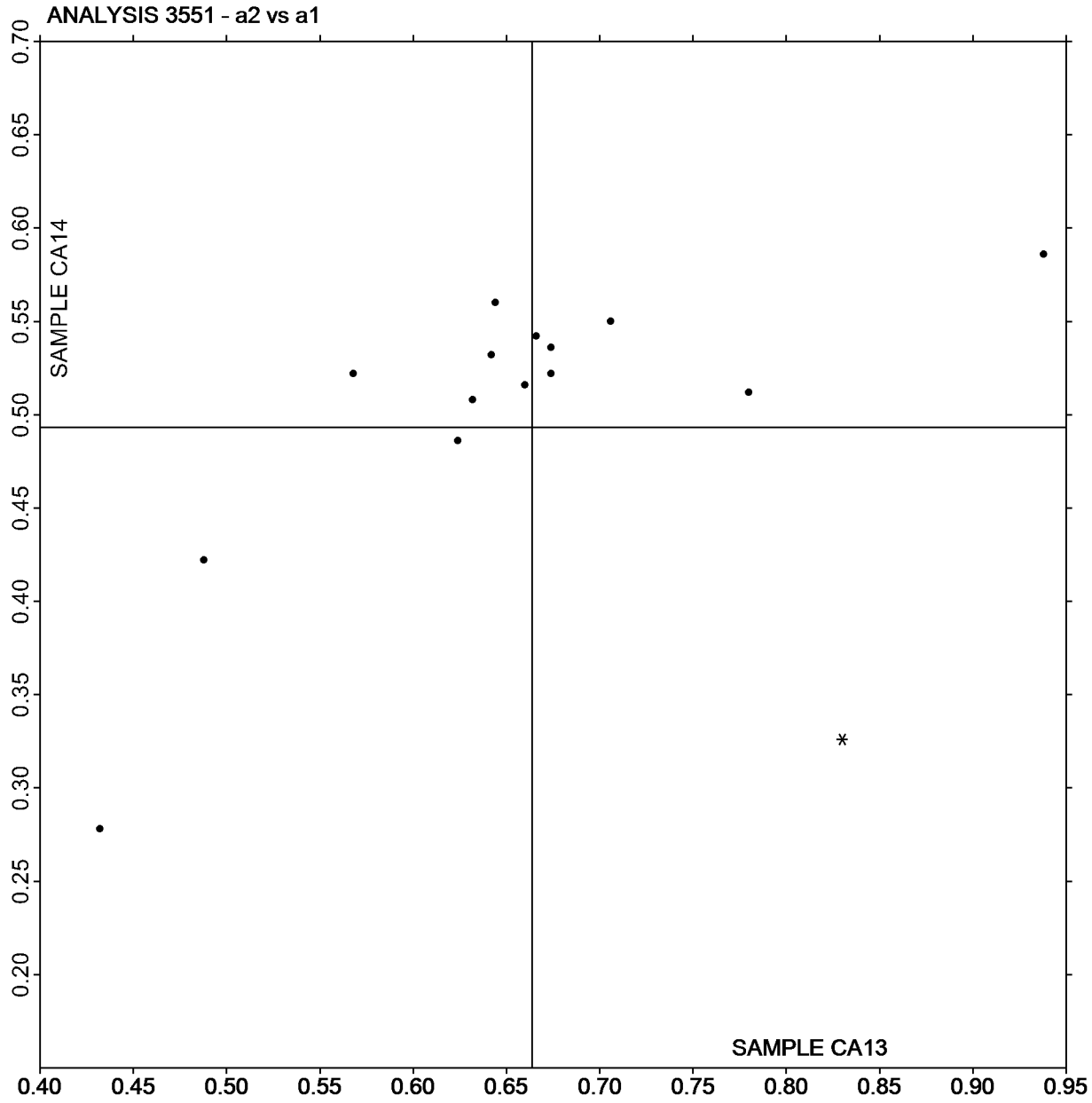
EH	Datacolor Elrepho SF450	HE	Hunter LabScan
LS	L & W Elrepho SE 070	LT	L & W Elrepho SE 071
NG	Minolta CM-3700d Spectrophotometer	TC	Technidyne Color Touch Series
XB	X-Rite Ci7	XC	X-Rite eXact Series
XX	Instrument make/model not specified by lab		

Plot of L values CA14 vs L values CA13



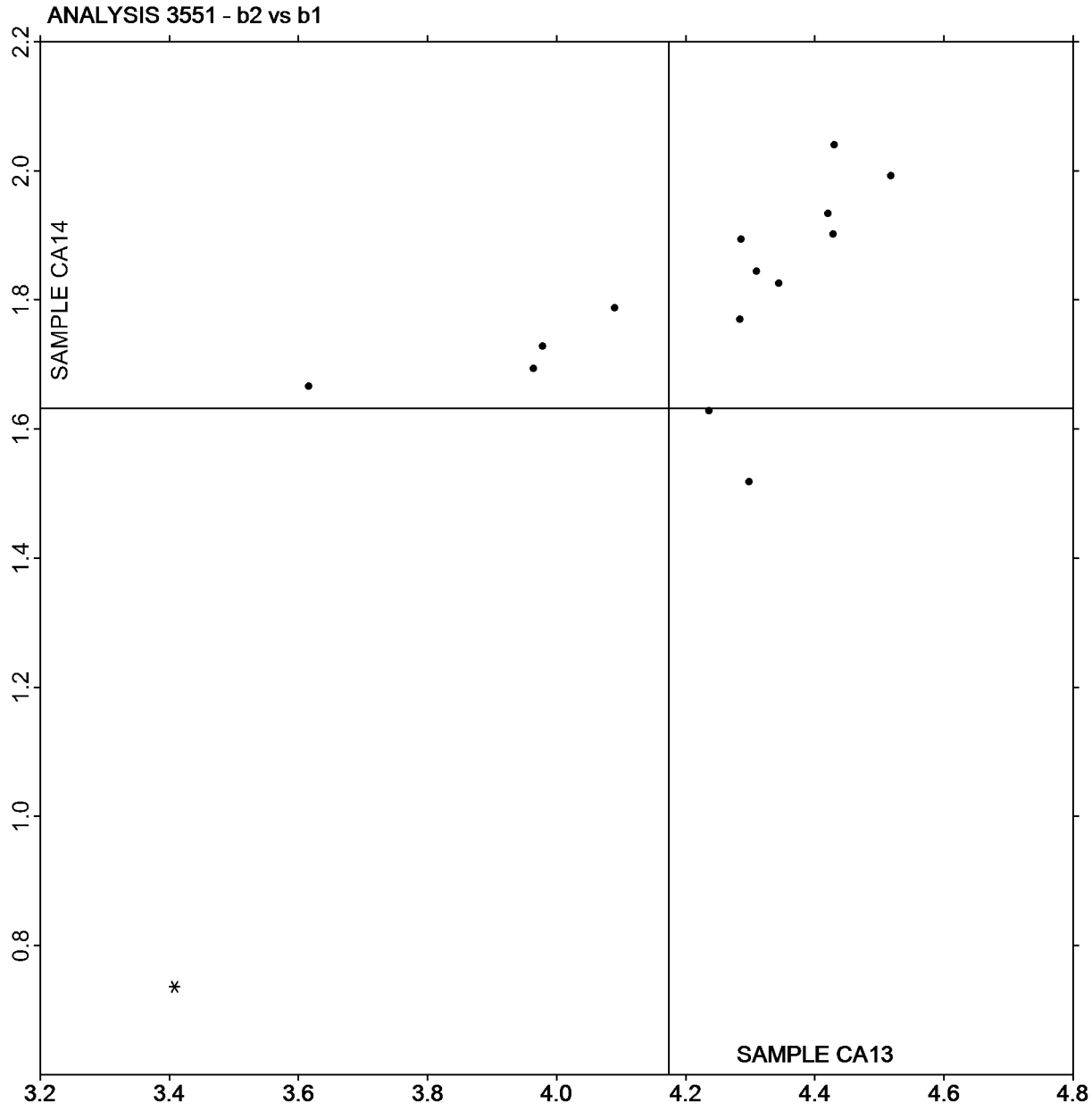
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values CA14 vs a values CA13



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

Plot of b values CA14 vs b values CA13



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 3553

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

Report #4222, February 2023

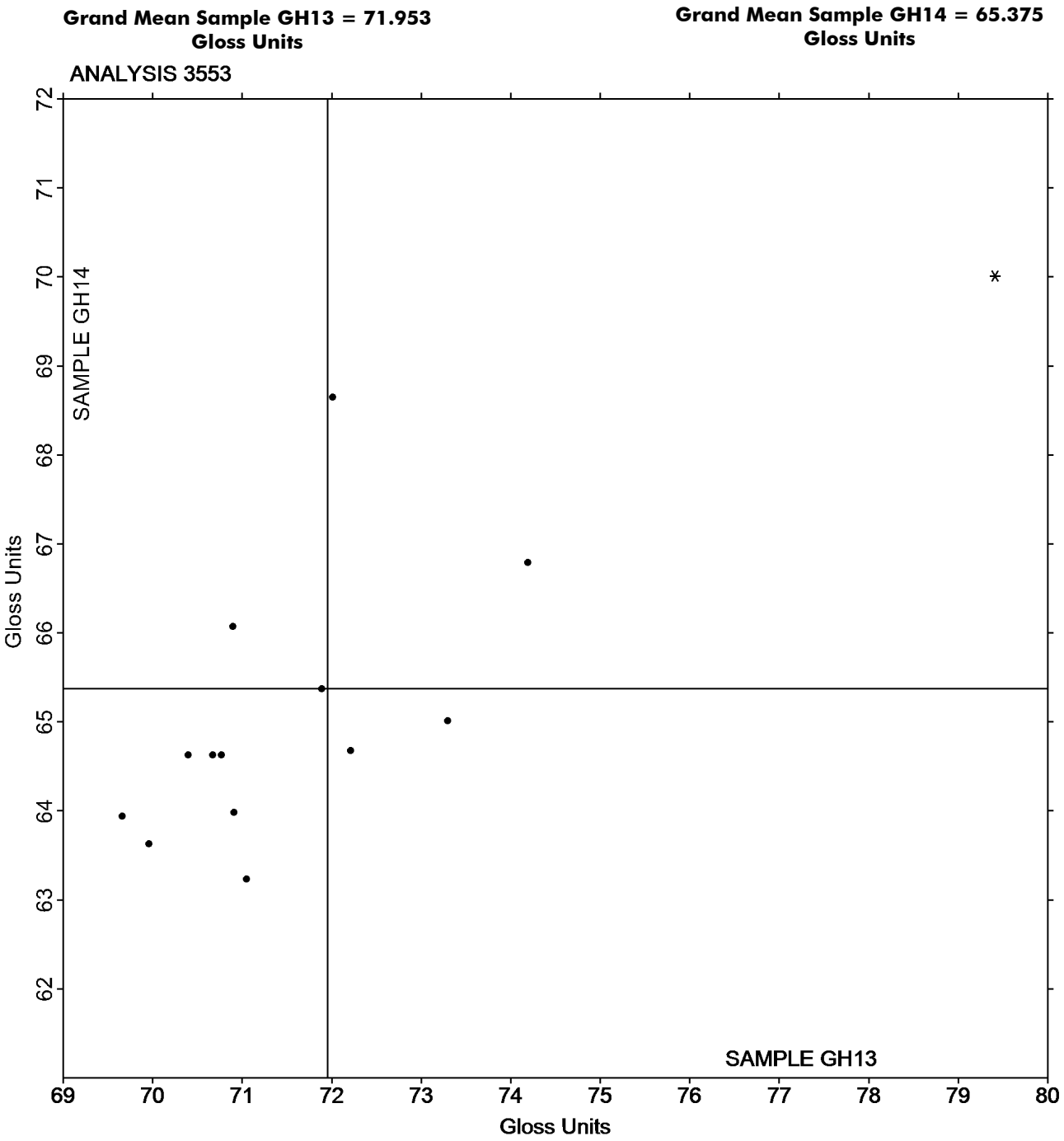
WebCode	Data Flag	Sample GH13 Lab Mean	Sample GH13 Diff from Grand Mean	Sample GH13 CPV	Sample GH14 Lab Mean	Sample GH14 Diff from Grand Mean	Sample GH14 CPV	Instr Code
3NDT3U		69.96	-1.99	-0.80	63.63	-1.74	-0.90	GM
3UP78T		69.66	-2.29	-0.92	63.94	-1.43	-0.74	TP
47UP88	*	79.41	7.46	3.00	70.01	4.64	2.40	LF
4NFAYC		71.89	-0.06	-0.03	65.37	0.00	0.00	VM
92ZGN9		70.40	-1.55	-0.63	64.63	-0.74	-0.38	LF
AC22QZ		70.67	-1.28	-0.52	64.63	-0.74	-0.38	GA
AX2RY8		72.01	0.06	0.02	68.65	3.28	1.69	TH
H738YX		70.77	-1.18	-0.48	64.63	-0.74	-0.38	XX
KX7L7A		70.90	-1.05	-0.42	66.07	0.70	0.36	PP
NN73FQ		72.22	0.26	0.11	64.68	-0.70	-0.36	PP
PAL23W		70.91	-1.04	-0.42	63.98	-1.39	-0.72	GM
QKKWY8		73.30	1.35	0.54	65.01	-0.36	-0.19	LW
YEM9XR		74.19	2.24	0.90	66.79	1.42	0.73	TH
Z3REZN		71.05	-0.90	-0.36	63.23	-2.14	-1.11	LG

Summary Statistics	Sample GH13	Sample GH14
Grand Means	71.95 Gloss Units	65.37 Gloss Units
Stnd Dev Btwn Labs	2.48 Gloss Units	1.93 Gloss Units

Statistics based on 14 of 14 reporting participants.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	GM	BYK-Gardner micro-gloss
LF	L & W Autoline 400	LG	L & W Autoline 600
LW	L & W Gloss Tester	PP	Technidyne Profile/Plus
TH	Technidyne T480A	TP	Technidyne Profile Plus
VM	Valmet PaperLab (was Kajaani/Robotest)	XX	Instrument make/model not specified by lab



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3555

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

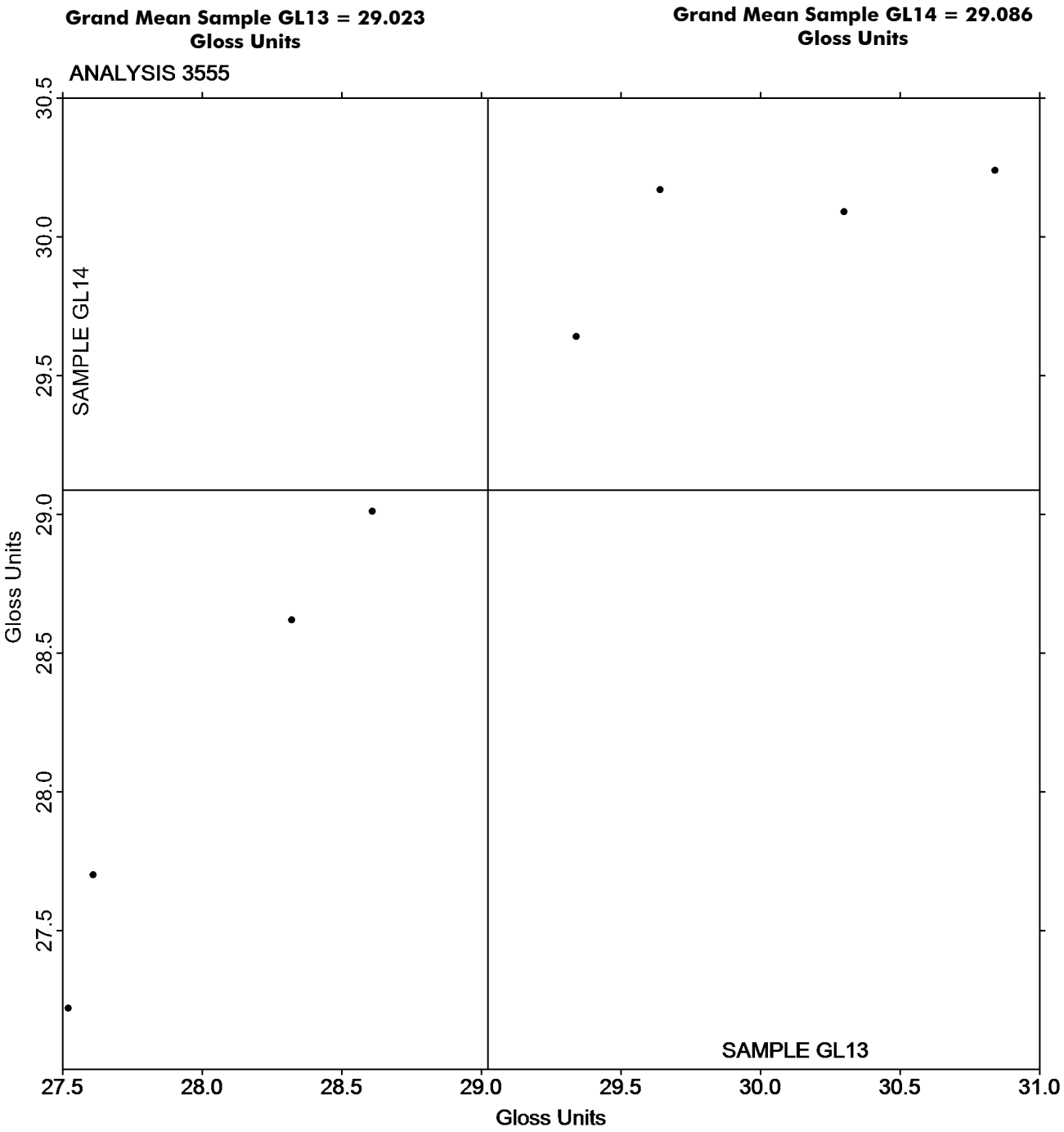
WebCode	Data Flag	Sample GL13 Lab Mean	Sample GL13 Diff from Grand Mean	Sample GL13 CPV	Sample GL14 Lab Mean	Sample GL14 Diff from Grand Mean	Sample GL14 CPV	Instr Code
7TEETF		30.84	1.82	1.50	30.24	1.15	0.99	PP
7ZL49T		28.32	-0.70	-0.58	28.62	-0.47	-0.40	WK
ALPKZL		27.61	-1.41	-1.16	27.70	-1.39	-1.19	GS
DP24V7		30.30	1.28	1.05	30.09	1.00	0.86	TH
DPD96H		27.52	-1.50	-1.24	27.22	-1.87	-1.61	GM
KAGVWK		29.64	0.62	0.51	30.17	1.08	0.93	TH
QKKWY8		28.61	-0.41	-0.34	29.01	-0.08	-0.07	LW
RKGUNT		29.34	0.32	0.26	29.64	0.55	0.48	TP

Summary Statistics	Sample GL13	Sample GL14
Grand Means	29.02 Gloss Units	29.09 Gloss Units
Stnd Dev Btwn Labs	1.22 Gloss Units	1.16 Gloss Units

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

GM	BYK-Gardner micro-gloss	GS	BYK-Gardner Glossgard II
LW	L & W Gloss Tester	PP	Technidyne Profile/Plus
TH	Technidyne T480A	TP	Technidyne Profile Plus
WK	Zehntner ZGN 1020		



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 3601

Folding Endurance (MIT) - Double Folds

TAPPI Official Test Method T511

WebCode	Data Flag	Sample MT13 Lab Mean	Sample MT13 Diff from Grand Mean	Sample MT13 CPV	Sample MT14 Lab Mean	Sample MT14 Diff from Grand Mean	Sample MT14 CPV	Instr Code
4NFAYC		35.60	-15.56	-1.06	50.40	1.03	0.08	MT
4VZD7F		63.90	12.74	0.87	52.60	3.23	0.26	XX
6DCCTN		57.00	5.84	0.40	56.80	7.43	0.60	MT
AC22QZ		29.20	-21.96	-1.50	30.00	-19.37	-1.57	MT
BBNTEJ		74.70	23.54	1.60	71.80	22.43	1.82	MT
BT6ZLA		59.00	7.84	0.53	49.00	-0.37	-0.03	MT
DP24V7		56.40	5.24	0.36	55.80	6.43	0.52	MT
G3QAEB	X	71.40	20.24	1.38	98.40	49.03	3.98	XX
H738YX		43.00	-8.16	-0.56	36.80	-12.57	-1.02	XX
KAGVWK		41.60	-9.56	-0.65	41.10	-8.27	-0.67	MT

Summary Statistics	Sample MT13	Sample MT14
Grand Means	51.16 Double Folds	49.37 Double Folds
Stnd Dev Btwn Labs	14.67 Double Folds	12.31 Double Folds

Statistics based on 9 of 10 reporting participants.

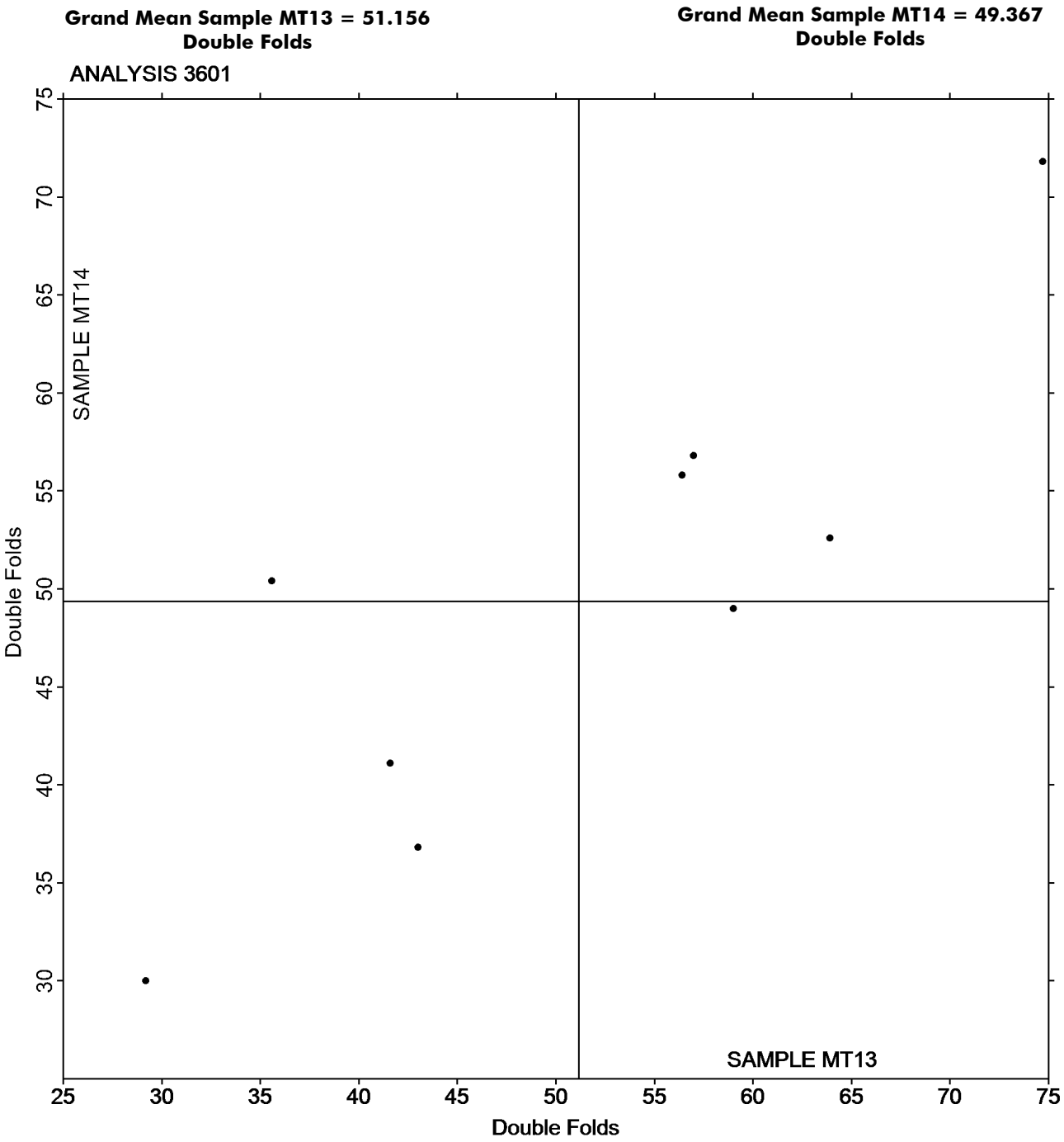
Comments on Assigned Data Flags for Test #3601

G3QAEB (X) - Data for sample MT14 are high. Inconsistent within the determinations of both samples.

Key to Instrument Codes Reported by Participants

MT MIT - Tinius Olsen

XX Instrument make/model not specified by lab



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3603
Bending Resistance, Gurley Type
TAPPI Official Test Method T543

WebCode	Data Flag	Sample BG13 Lab Mean	Sample BG13 Diff from Grand Mean	Sample BG13 CPV	Sample BG14 Lab Mean	Sample BG14 Diff from Grand Mean	Sample BG14 CPV	Instr Code
2AFUPQ		134.8	-12.0	-0.97	130.1	-15.7	-1.20	ZZ
2ZAD92		137.6	-9.1	-0.74	136.7	-9.1	-0.69	ZZ
4NFAYC		177.6	30.9	2.50	179.7	33.9	2.57	ZZ
BBNTEJ		131.2	-15.5	-1.26	130.3	-15.5	-1.18	ZZ
BT6ZLA		139.2	-7.6	-0.61	139.9	-6.0	-0.45	ZZ
DP24V7		147.6	0.9	0.07	151.5	5.7	0.43	ZZ
GQLVFY		149.6	2.9	0.23	152.3	6.5	0.49	ZZ
GQWX3X		157.6	10.9	0.88	143.0	-2.9	-0.22	ZZ
GYDC63		148.2	1.4	0.11	152.0	6.2	0.47	ZZ
KAGVWK	X	2.9	-143.9	-11.68	3.3	-142.6	-10.83	ZZ
PBZBH7		151.0	4.3	0.35	144.0	-1.8	-0.14	ZZ
UY3PP4		140.1	-6.6	-0.54	141.6	-4.2	-0.32	ZZ
V7MGZ9		146.5	-0.2	-0.02	149.0	3.1	0.24	ZZ

Summary Statistics	Sample BG13	Sample BG14
Grand Means	146.75 Gurley Units	145.84 Gurley Units
Stnd Dev Btwn Labs	12.32 Gurley Units	13.16 Gurley Units

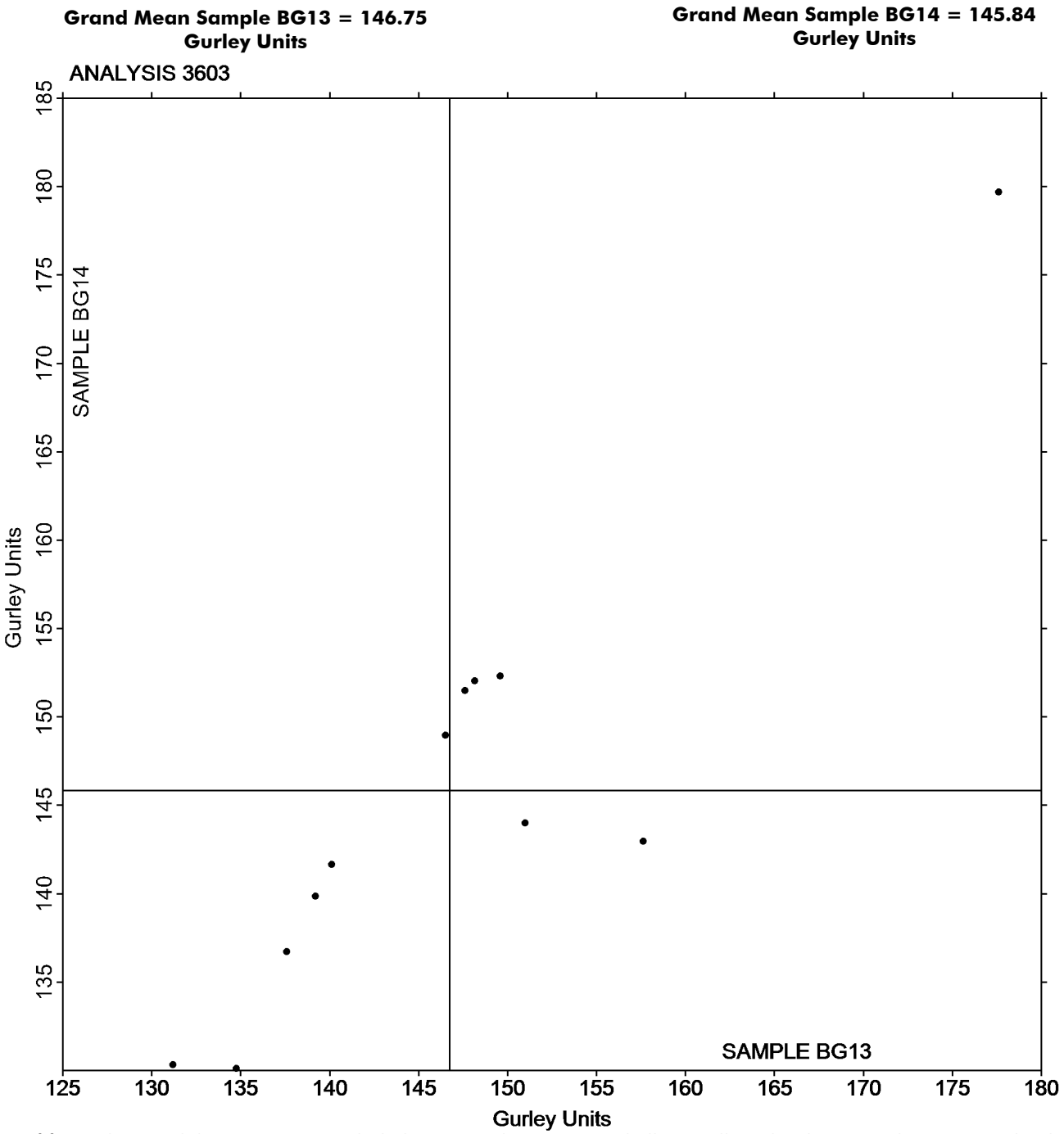
Statistics based on 12 of 13 reporting participants.

Comments on Assigned Data Flags for Test #3603

KAGVWK (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3611

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

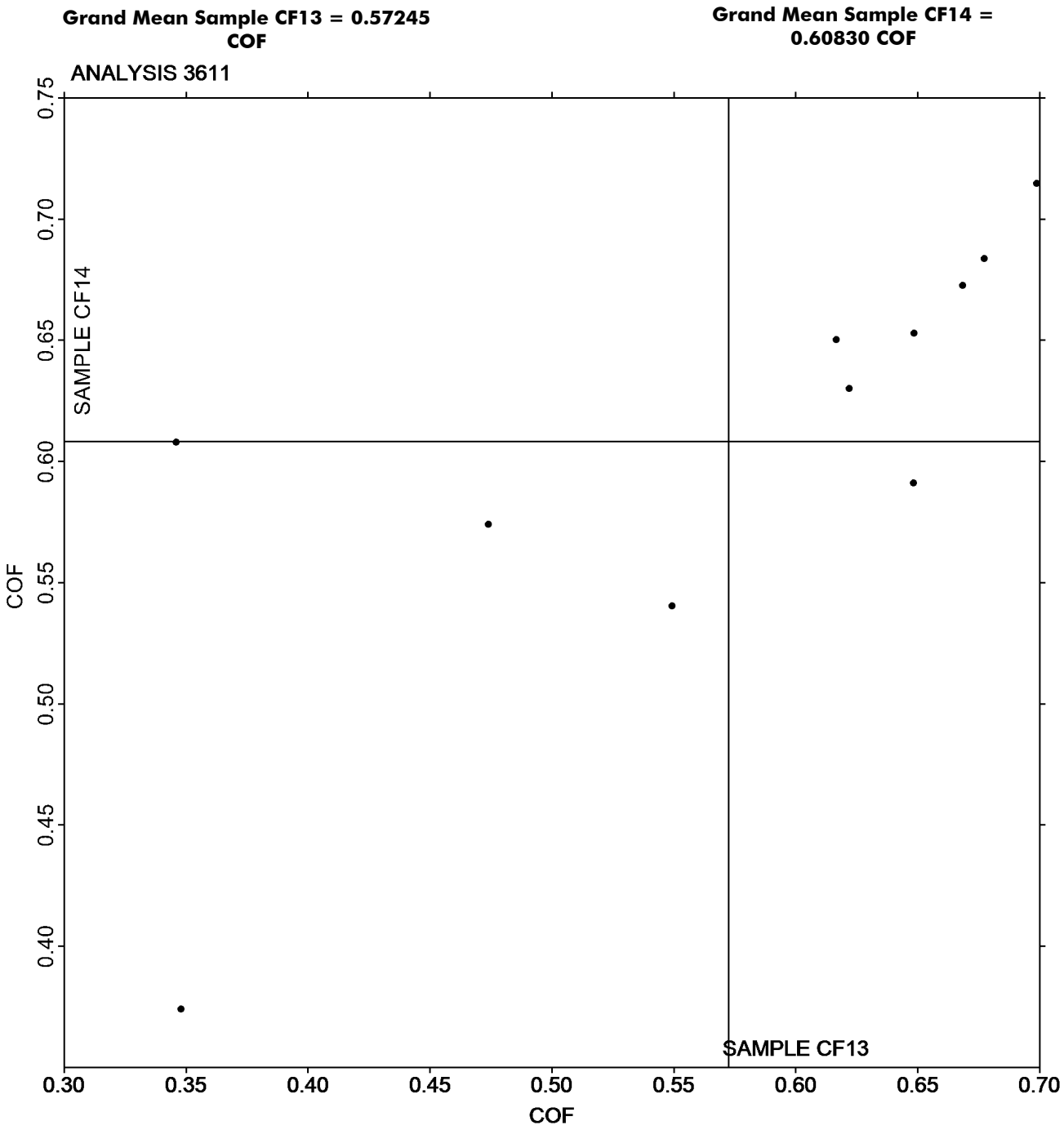
WebCode	Data Flag	Sample CF13 Lab Mean	Sample CF13 Diff from Grand Mean	Sample CF13 CPV	Sample CF14 Lab Mean	Sample CF14 Diff from Grand Mean	Sample CF14 CPV	Instr Code
2AFUPQ		0.4740	-0.0985	-0.77	0.5740	-0.0343	-0.37	TA
2ZAD92		0.3460	-0.2265	-1.77	0.6080	-0.0003	0.00	TP
6WN27L		0.5492	-0.0233	-0.18	0.5404	-0.0679	-0.73	XX
7VMQAG		0.6988	0.1263	0.99	0.7147	0.1064	1.14	TN
BBNTEJ		0.6774	0.1049	0.82	0.6836	0.0753	0.81	XX
BT6ZLA		0.6482	0.0757	0.59	0.5910	-0.0173	-0.19	TM
FDJ72L		0.6684	0.0959	0.75	0.6726	0.0643	0.69	TA
FH6LAK		0.3480	-0.2245	-1.75	0.3740	-0.2343	-2.52	XX
KC37L8		0.6166	0.0441	0.34	0.6502	0.0419	0.45	TA
RKGUNT		0.6484	0.0759	0.59	0.6528	0.0445	0.48	TA
V7MGZ9		0.6220	0.0495	0.39	0.6300	0.0217	0.23	TA

Summary Statistics	Sample CF13	Sample CF14
Grand Means	0.57 COF	0.61 COF
Stnd Dev Btwn Labs	0.13 COF	0.09 COF

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TM	TMI 32-06 Monitor/Slip and Friction
TN	TMI 32-07 Monitor/Slip and Friction	TP	TMI 32-25 COF Tester (Inclined Plane)
XX	Instrument make/model not specified by lab		



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3612

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

WebCode	Data Flag	Sample CF13 Lab Mean	Sample CF13 Diff from Grand Mean	Sample CF13 CPV	Sample CF14 Lab Mean	Sample CF14 Diff from Grand Mean	Sample CF14 CPV	Instr Code
2AFUPQ		0.3720	-0.1375	-1.48	0.4500	-0.0678	-0.86	TA
6WN27L		0.5412	0.0317	0.34	0.5344	0.0166	0.21	XX
7VMQAG		0.5541	0.0446	0.48	0.5672	0.0493	0.63	TN
BBNTEJ		0.5570	0.0475	0.51	0.5520	0.0342	0.43	XX
BT6ZLA		0.5660	0.0565	0.61	0.5213	0.0034	0.04	TM
FDJ72L		0.5932	0.0837	0.90	0.6040	0.0862	1.09	TA
FH6LAK		0.3060	-0.2035	-2.18	0.3240	-0.1938	-2.46	XX
KC37L8		0.5476	0.0381	0.41	0.5608	0.0430	0.54	TA
RKGUNT		0.5216	0.0121	0.13	0.5228	0.0050	0.06	TA
V7MGZ9		0.5360	0.0265	0.28	0.5420	0.0242	0.31	TA

Summary Statistics	Sample CF13	Sample CF14
Grand Means	0.51 COF	0.52 COF
Stnd Dev Btwn Labs	0.09 COF	0.08 COF

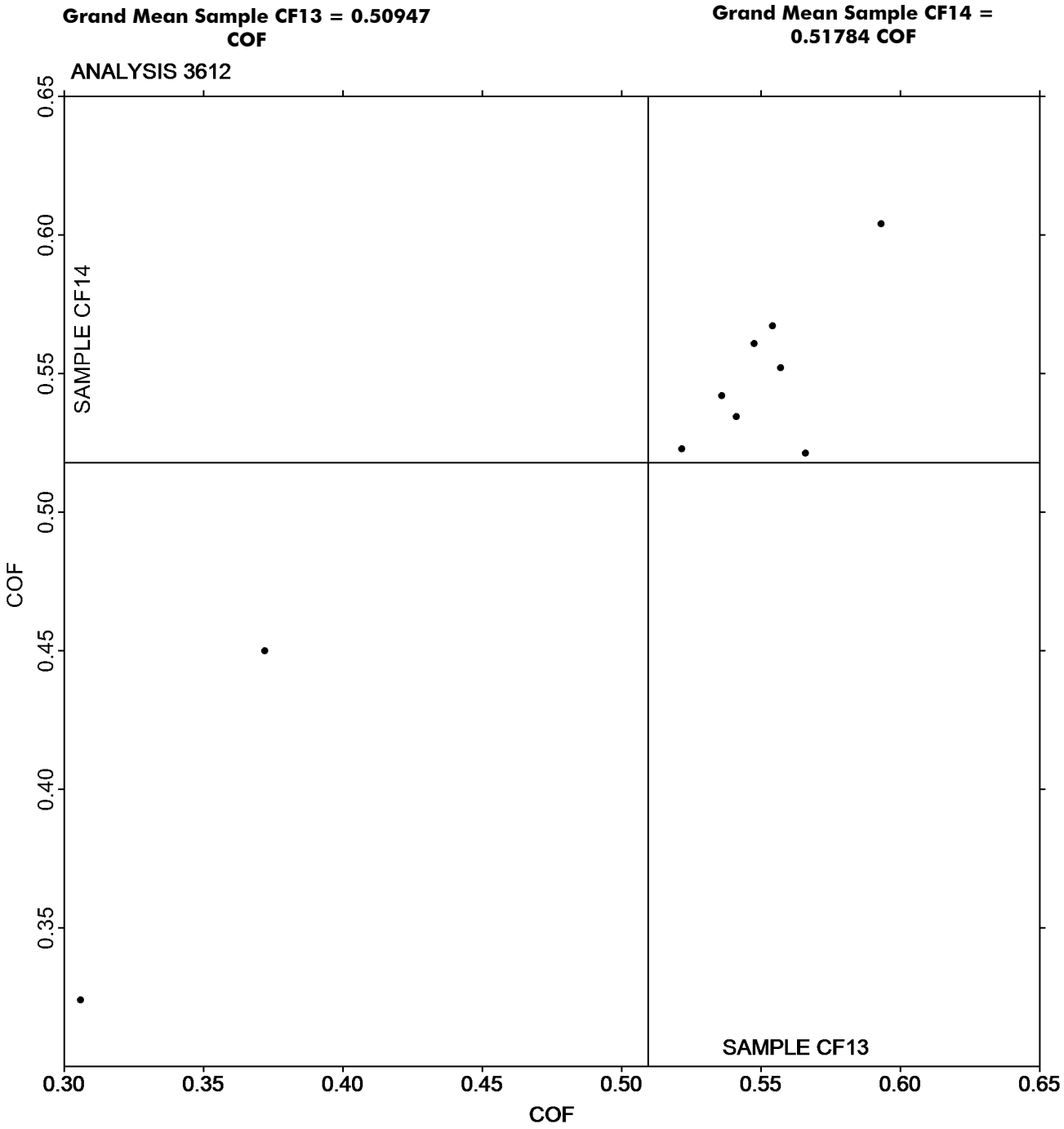
Statistics based on 10 of 10 reporting participants.

Analysis Notes:

BT6ZLA - One determination removed from the Lab Mean of Sample CF14 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TM	TMI 32-06 Monitor/Slip and Friction
TN	TMI 32-07 Monitor/Slip and Friction	XX	Instrument make/model not specified by lab



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3613
Moisture in Paper
TAPPI Official Test Method T412

WebCode	Data Flag	Sample MC13 Lab Mean	Sample MC13 Diff from Grand Mean	Sample MC13 CPV	Sample MC14 Lab Mean	Sample MC14 Diff from Grand Mean	Sample MC14 CPV	Instr Code
7ZL49T		4.193	-0.079	-0.23	4.114	-0.068	-0.24	ZZ
88T2EJ		4.234	-0.039	-0.11	4.316	0.134	0.48	ZZ
8DJG26		4.207	-0.066	-0.19	4.253	0.071	0.26	ZZ
8TVHVT		4.530	0.257	0.75	4.692	0.510	1.83	ZZ
FR2XTF		4.082	-0.190	-0.56	4.215	0.033	0.12	ZZ
MT3WF8		4.650	0.377	1.10	3.860	-0.322	-1.16	ZZ
P4BGRZ	M	No data reported for this sample			4.066	-0.116	-0.42	ZZ
RT2WH3		4.307	0.034	0.10	4.246	0.064	0.23	ZZ
TXHTA4		4.220	-0.053	-0.15	4.140	-0.042	-0.15	ZZ
V7MGZ9		4.150	-0.123	-0.36	4.288	0.106	0.38	ZZ
W9634F		3.545	-0.728	-2.12	3.586	-0.596	-2.14	ZZ
WPU7QB		4.880	0.607	1.77	4.290	0.108	0.39	ZZ

Summary Statistics	Sample MC13	Sample MC14
Grand Means	4.27 Percent	4.18 Percent
Stnd Dev Btwn Labs	0.34 Percent	0.28 Percent

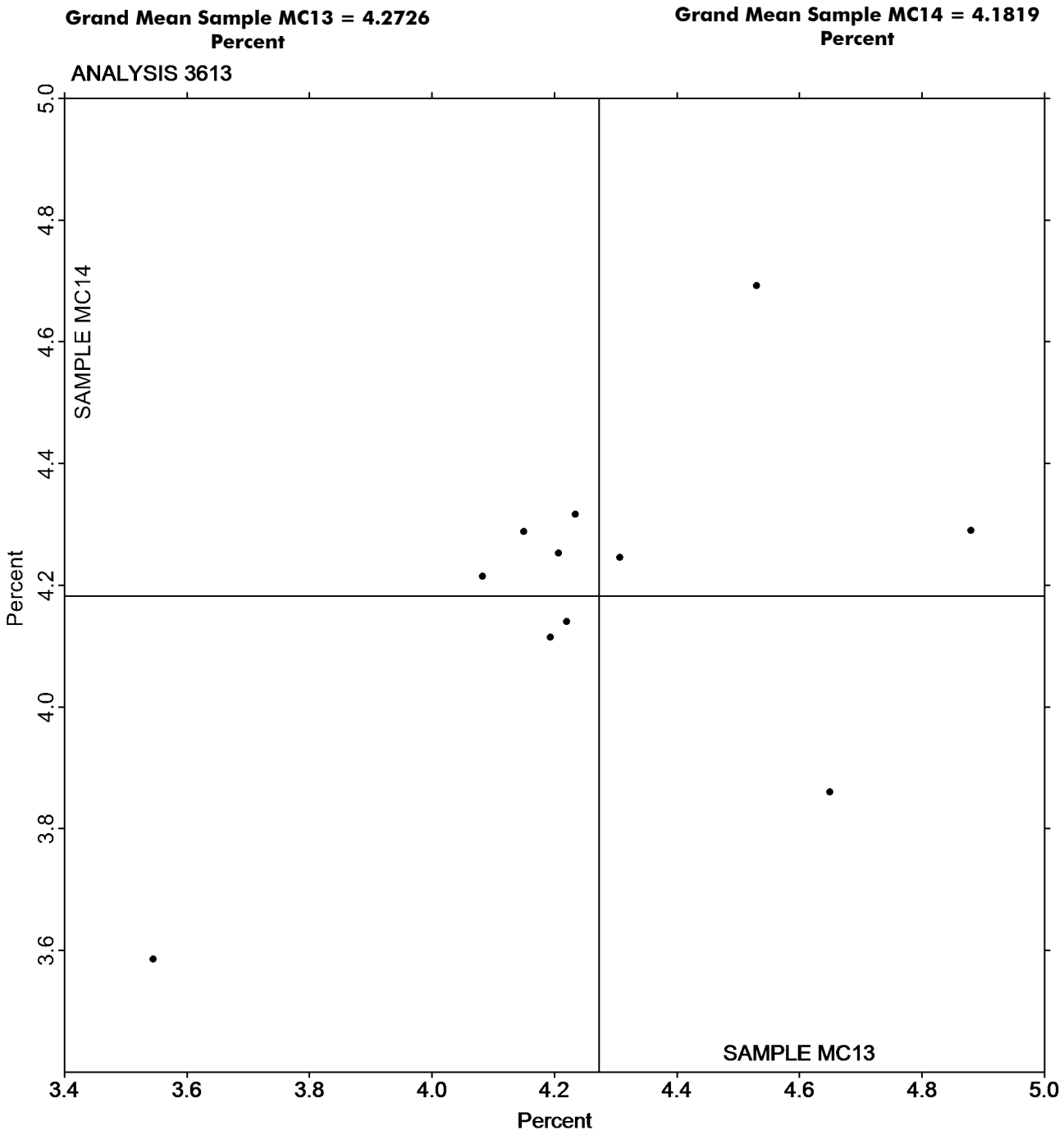
Statistics based on 11 of 12 reporting participants.

Comments on Assigned Data Flags for Test #3613

P4BGRZ (M) - Participant did not submit data for sample MC13.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3615
Sizing Test (Hercules Type)
TAPPI Official Test Method T530

WebCode	Data Flag	Sample HS13 Lab Mean	Sample HS13 Diff from Grand Mean	Sample HS13 CPV	Sample HS14 Lab Mean	Sample HS14 Diff from Grand Mean	Sample HS14 CPV	Instr Code
2AFUPQ		14.730	5.690	2.03	14.480	5.731	2.03	HE
2ZAD92		6.700	-2.340	-0.83	5.600	-3.149	-1.12	HE
47GUZ8		6.110	-2.930	-1.04	6.170	-2.579	-0.92	XX
4NFAYC		7.350	-1.690	-0.60	7.180	-1.569	-0.56	HE
6WN27L		9.100	0.060	0.02	9.300	0.551	0.20	XX
7VMQAG		9.660	0.620	0.22	9.660	0.911	0.32	HE
8N4H2D		7.400	-1.640	-0.58	7.000	-1.749	-0.62	HE
92ZGN9		10.560	1.520	0.54	9.760	1.011	0.36	HE
DPD96H		8.300	-0.740	-0.26	7.800	-0.949	-0.34	HE
FDJ72L		7.190	-1.850	-0.66	7.400	-1.349	-0.48	HE
FH6LAK		7.520	-1.520	-0.54	7.370	-1.379	-0.49	XX
GQLVFY		9.000	-0.040	-0.01	8.900	0.151	0.05	HE
GQWX3X		12.700	3.660	1.30	12.770	4.021	1.43	HE
GYDC63		12.520	3.480	1.24	12.840	4.091	1.45	XX
HMPQQD		9.360	0.320	0.11	8.790	0.041	0.01	HE
M7RRW8		7.240	-1.800	-0.64	6.643	-2.106	-0.75	HE
REKXEM	X	15.170	6.130	2.19	11.890	3.141	1.12	HE
RKGUNT		11.920	2.880	1.03	11.260	2.511	0.89	HE
TUEKKF		8.150	-0.890	-0.32	7.480	-1.269	-0.45	HE
UUCPVM		10.570	1.530	0.55	10.650	1.901	0.67	HE
V67H8H		11.260	2.220	0.79	10.510	1.761	0.63	HE
V7MGZ9		10.110	1.070	0.38	9.410	0.661	0.23	HE
VRJDB8	*	1.430	-7.610	-2.71	1.510	-7.239	-2.57	HE

Summary Statistics	Sample HS13	Sample HS14
Grand Means	9.04 Seconds	8.75 Seconds
Stnd Dev Btwn Labs	2.80 Seconds	2.82 Seconds

Statistics based on 22 of 23 reporting participants.

Comments on Assigned Data Flags for Test #3615

REKXEM (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample HS13.

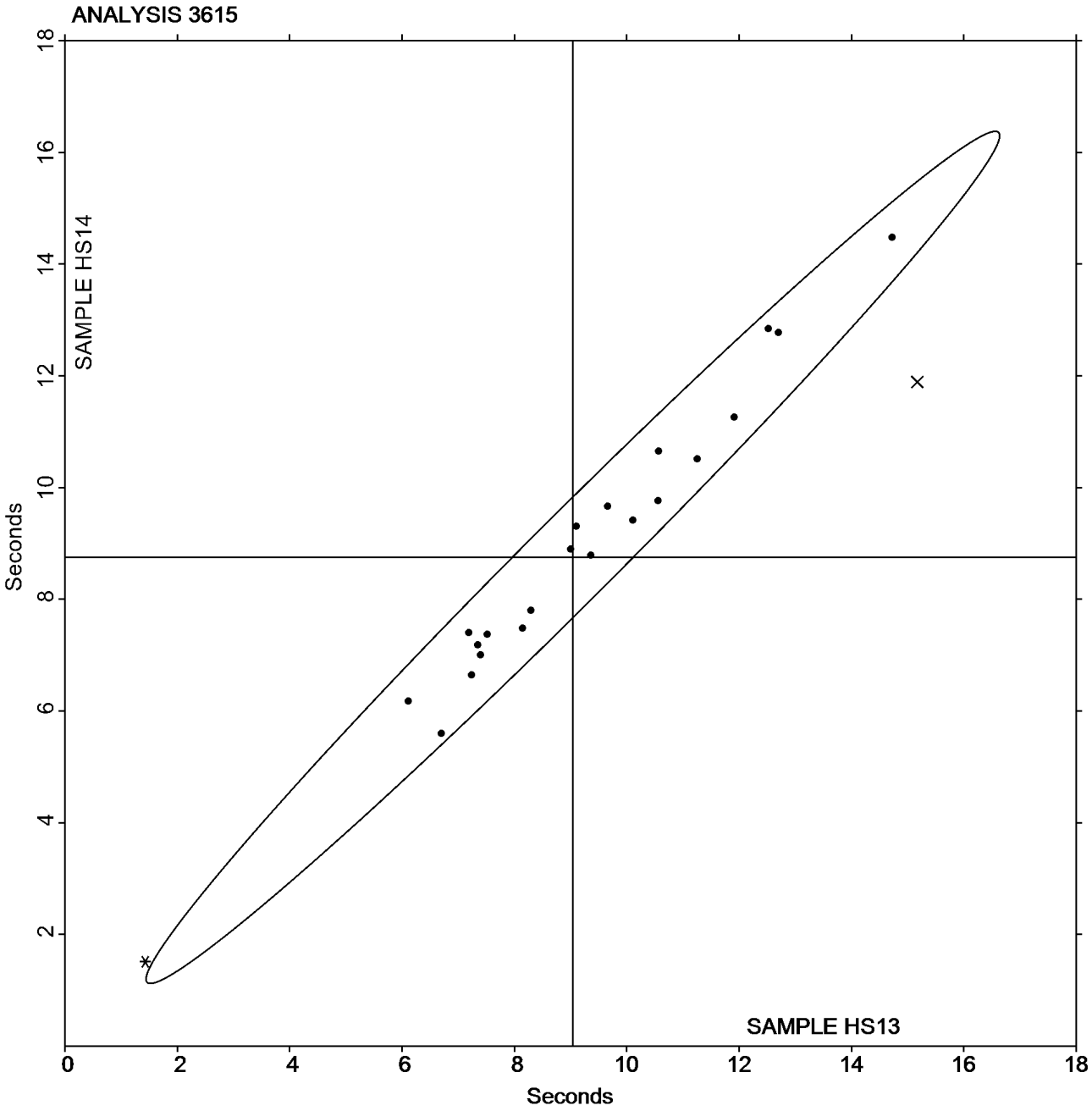
Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab

Grand Mean Sample HS13 = 9.0400 Seconds

Grand Mean Sample HS14 = 8.7492 Seconds



-End of Report-

