Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #4412 - April 2026

Introduction to the Paper & Paperboard Interlaboratory Program

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The CTS Paper & Paperboard Interlaboratory Program

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

About CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of industries including color, rubber, plastics, fasteners and metals, containerboard, paper, agriculture, hemp, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 100 countries, currently participate in the CTS programs.

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Key for Web Summary Reports (Page 1 of 2)

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

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

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

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

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

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

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

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

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

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

Common Problems Highlighted in Footnotes

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

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

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

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

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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3501

Thickness (Caliper), Packaging papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample CK51 Lab Mean	Sample CK51 Diff from Grand Mean	Sample CK51 CPV	Sample CK52 Lab Mean	Sample CK52 Diff from Grand Mean	Sample CK52 CPV	Instr Code
37PVTR		13.65	0.01	0.10	13.68	0.03	0.25	LB
6FTTRF		13.67	0.04	0.29	13.67	0.02	0.19	PP
6JR4MF		13.60	-0.03	-0.20	13.65	0.01	0.08	LW
7EREGR		13.71	0.08	0.55	13.68	0.04	0.27	TA
8J3PAL		13.54	-0.09	-0.63	13.61	-0.03	-0.27	TA
B8UGWK		13.92	0.29	2.01	13.86	0.21	1.67	LW
CVYMYG		13.40	-0.23	-1.62	13.42	-0.23	-1.78	XX
CZTJLM		13.82	0.19	1.33	13.73	0.08	0.64	LW
E2YKMB		13.84	0.21	1.45	13.79	0.15	1.14	LC
EL8QC7		13.76	0.13	0.89	13.78	0.14	1.10	PP
EYT3NF		13.75	0.11	0.79	13.78	0.13	1.03	TM
JQHMN9		13.34	-0.30	-2.05	13.38	-0.26	-2.06	XX
JRCFG8		13.57	-0.06	-0.42	13.61	-0.03	-0.25	XX
KJ2DV7		13.60	-0.03	-0.19	13.75	0.11	0.84	PP
KMVBHC		13.82	0.19	1.32	13.83	0.19	1.46	EM
LEK9WB		13.72	0.09	0.63	13.70	0.05	0.42	EM
NC4V86		13.43	-0.20	-1.39	13.46	-0.18	-1.44	XX
NEC4E4		13.61	-0.02	-0.14	13.50	-0.15	-1.16	MS
QDT47Y		13.59	-0.04	-0.26	13.62	-0.03	-0.21	OK
R3BJL3		13.60	-0.03	-0.22	13.62	-0.02	-0.19	LW
R4WMUZ		13.80	0.17	1.19	13.73	0.09	0.68	LW
RH47W2		13.64	0.01	0.06	13.68	0.04	0.31	LW
RUXML2		13.56	-0.07	-0.50	13.50	-0.14	-1.12	LC
V7GB6Q		13.55	-0.08	-0.58	13.66	0.01	0.11	LC
VGEE7Y		13.63	0.00	-0.03	13.63	-0.01	-0.10	LW
VVCJEW	*	13.43	-0.20	-1.37	13.65	0.01	0.08	LW
YCRVER		13.41	-0.22	-1.53	13.36	-0.28	-2.22	TA
ZGHRGN		13.71	0.08	0.56	13.70	0.06	0.48	LW
ZHU8BP		13.63	-0.01	-0.03	13.65	0.00	0.03	LA

Summary Statistics	Sample CK51	Sample CK52
Grand Means	13.63 mils	13.64 mils
Stnd Dev Btwn Labs	0.14 mils	0.13 mils

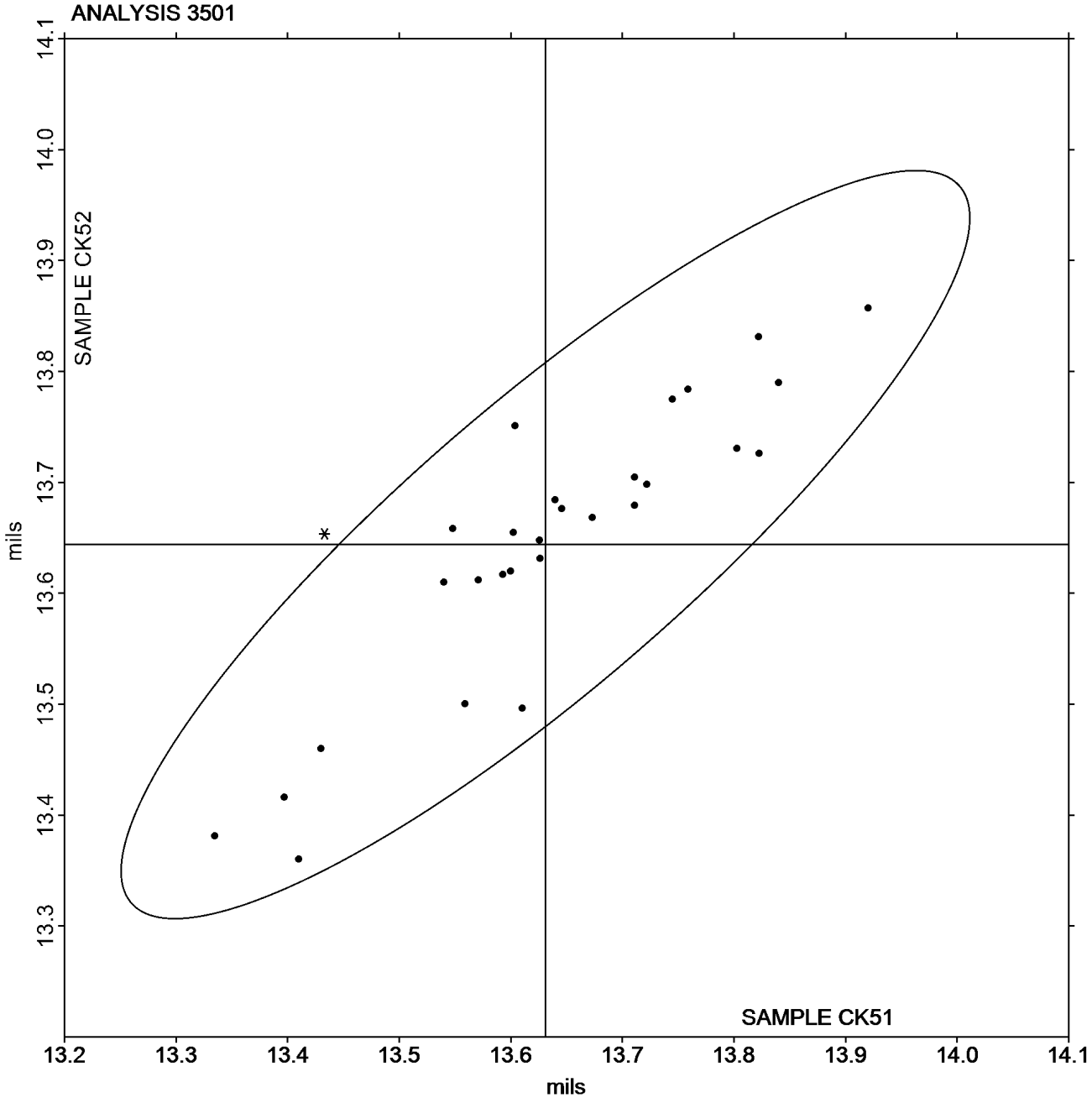
Statistics based on 29 of 29 reporting participants.

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample CK51 = 13.631 mils

Grand Mean Sample CK52 = 13.644 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 3511

Bursting Strength - Packaging Papers

TAPPI Official Test Method T403

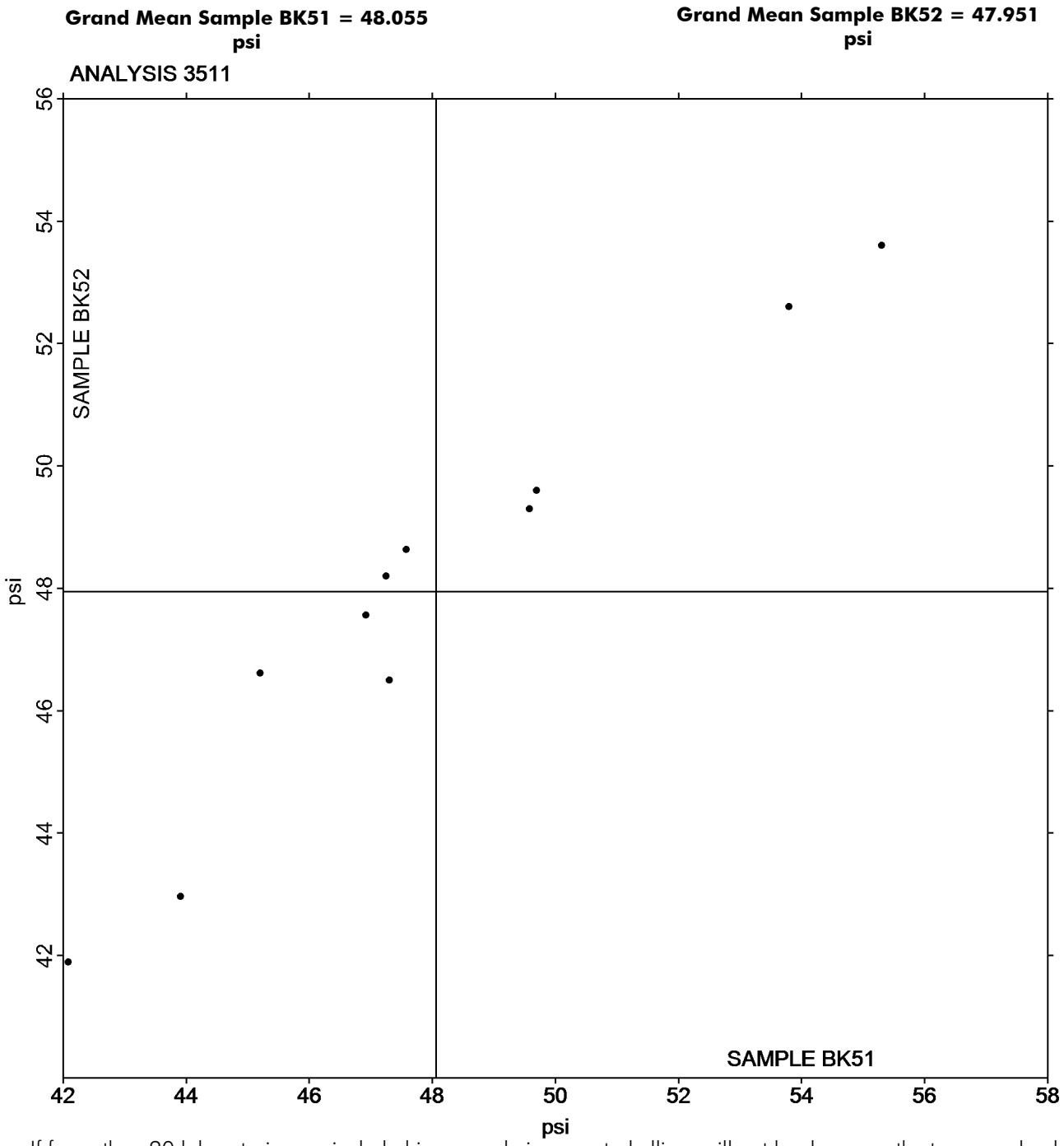
WebCode	Data Flag	Sample BK51 Lab Mean	Sample BK51 Diff from Grand Mean	Sample BK51 CPV	Sample BK52 Lab Mean	Sample BK52 Diff from Grand Mean	Sample BK52 CPV	Instr Code
6JR4MF		49.69	1.63	0.42	49.60	1.65	0.47	ZZ
6M7Y8J		47.30	-0.76	-0.19	46.50	-1.45	-0.41	ZZ
B8UGWK		49.58	1.52	0.39	49.30	1.35	0.38	ZZ
CZTJLM		43.91	-4.14	-1.06	42.96	-4.99	-1.41	ZZ
GWEF48		55.30	7.24	1.84	53.60	5.65	1.60	ZZ
KJ2DV7		53.80	5.74	1.46	52.60	4.65	1.32	ZZ
N94KC6		45.20	-2.85	-0.73	46.61	-1.34	-0.38	ZZ
R4WMUZ		42.08	-5.97	-1.52	41.89	-6.06	-1.72	ZZ
XEHHWV		46.92	-1.14	-0.29	47.56	-0.39	-0.11	ZZ
YCRVER		47.25	-0.81	-0.21	48.20	0.25	0.07	ZZ
Z3KF9K		47.57	-0.48	-0.12	48.63	0.68	0.19	ZZ

Summary Statistics	Sample BK51	Sample BK52
Grand Means	48.06 psi	47.95 psi
Stnd Dev Btwn Labs	3.93 psi	3.53 psi

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 3513

Tearing Strength - Packaging Papers

TAPPI Official Test Method T414

WebCode	Data Flag	Sample RK51 Lab Mean	Sample RK51 Diff from Grand Mean	Sample RK51 CPV	Sample RK52 Lab Mean	Sample RK52 Diff from Grand Mean	Sample RK52 CPV	Instr Code
6FTTRF		105.7	-5.1	-0.61	106.8	-3.6	-0.43	ZZ
6M7Y8J		115.4	4.6	0.54	111.5	1.2	0.14	ZZ
7EREGR		103.5	-7.4	-0.88	103.4	-7.0	-0.83	ZZ
B8UGWK		110.7	-0.2	-0.02	109.1	-1.3	-0.15	ZZ
CZTJLM		113.2	2.4	0.28	110.6	0.2	0.03	ZZ
EYT3NF		110.5	-0.3	-0.04	111.1	0.7	0.08	ZZ
KH8K39		112.6	1.7	0.20	110.9	0.5	0.06	ZZ
KJ2DV7		111.7	0.9	0.10	112.2	1.8	0.22	ZZ
KXXTVZ		96.7	-14.1	-1.67	99.2	-11.1	-1.32	ZZ
LEK9WB		108.4	-2.5	-0.30	106.4	-4.0	-0.47	ZZ
N94KC6		106.4	-4.4	-0.53	108.6	-1.8	-0.21	ZZ
NC4V86		120.8	10.0	1.18	120.8	10.4	1.24	ZZ
PKF8ZW		129.4	18.5	2.20	130.6	20.2	2.40	ZZ
QDUTE3		110.3	-0.6	-0.07	107.1	-3.3	-0.39	ZZ
QENL8Z		109.9	-0.9	-0.11	110.2	-0.1	-0.01	ZZ
R4WMUZ		107.7	-3.1	-0.37	107.0	-3.4	-0.40	ZZ
RH47W2		105.4	-5.5	-0.65	104.8	-5.6	-0.67	ZZ
RUXML2		98.8	-12.1	-1.43	98.1	-12.3	-1.46	ZZ
VGEE7Y	*	133.1	22.2	2.64	133.2	22.8	2.72	ZZ
Y7L3KW		113.6	2.8	0.33	112.7	2.4	0.28	ZZ
YBY3LU	X	111.1	0.2	0.03	88.2	-22.2	-2.64	ZZ
ZGHRGN		107.7	-3.2	-0.38	107.0	-3.4	-0.40	ZZ
ZHU8BP		107.2	-3.7	-0.44	106.8	-3.6	-0.43	ZZ

Summary Statistics	Sample RK51	Sample RK52
Grand Means	110.84 Grams	110.36 Grams
Stnd Dev Btwn Labs	8.43 Grams	8.41 Grams

Statistics based on 22 of 23 reporting participants.

Comments on Assigned Data Flags for Test #3513

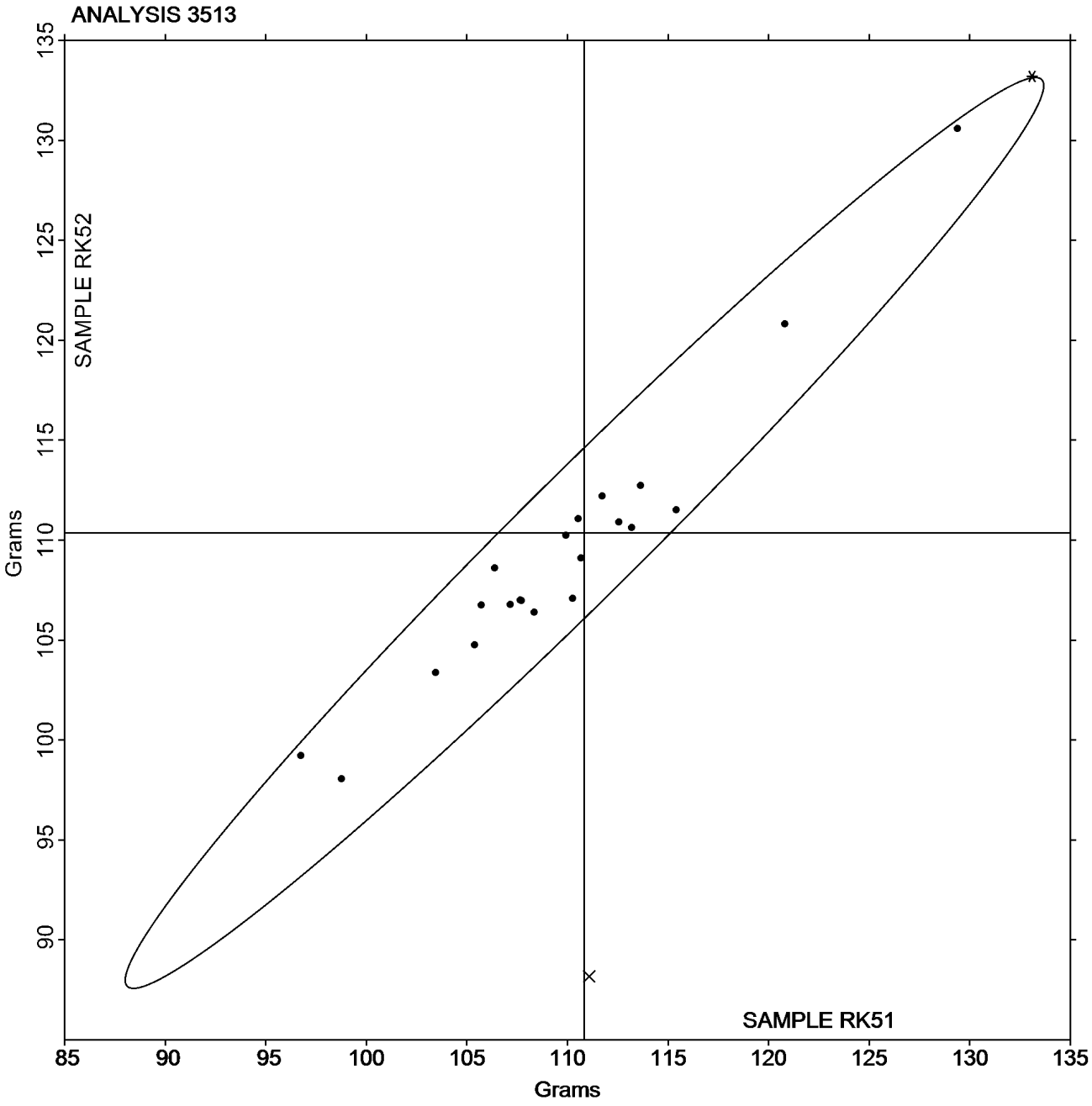
YBY3LU (X) - Data for sample RK52 are low.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample RK51 = 110.84 Grams

Grand Mean Sample RK52 = 110.36 Grams



Paper & Paperboard Interlaboratory Testing Program

Analysis 3515

Tensile Breaking Strength - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK51 Lab Mean	Sample NK51 Diff from Grand Mean	Sample NK51 CPV	Sample NK52 Lab Mean	Sample NK52 Diff from Grand Mean	Sample NK52 CPV	Instr Code
37PVTR		8.886	0.773	1.63	8.647	0.554	1.13	LC
3CJTLP		7.684	-0.429	-0.90	7.752	-0.341	-0.69	TS
6M7Y8J		8.481	0.368	0.78	8.324	0.231	0.47	LE
7EREGR		8.109	-0.004	-0.01	7.911	-0.182	-0.37	TB
8J3PAL		8.896	0.783	1.65	9.019	0.926	1.89	TX
B8UGWK		7.641	-0.472	-1.00	7.847	-0.246	-0.50	LE
CZTJLM		7.868	-0.245	-0.52	7.874	-0.218	-0.44	IM
EYT3NF		8.371	0.258	0.54	8.360	0.267	0.54	ID
HQLUBB		8.663	0.550	1.16	8.655	0.563	1.15	LI
J8PNHB	X	1,006.988	998.874	2,105.19	1,016.468	1,008.375	2,053.07	DM
JRCFG8		8.035	-0.078	-0.16	7.814	-0.279	-0.57	TB
KH8K39		7.599	-0.514	-1.08	7.646	-0.447	-0.91	LE
KJ2DV7		8.255	0.142	0.30	8.199	0.107	0.22	TA
KMVBHC		8.519	0.406	0.86	8.539	0.446	0.91	LE
LL22R8		7.716	-0.397	-0.84	7.736	-0.357	-0.73	IR
N94KC6		7.832	-0.282	-0.59	7.793	-0.300	-0.61	TX
NC4V86		8.600	0.487	1.03	8.669	0.576	1.17	XX
QDUTE3		7.870	-0.243	-0.51	7.884	-0.209	-0.42	LE
R3BJL3	*	7.900	-0.213	-0.45	7.513	-0.580	-1.18	TH
R4WMUZ		8.236	0.123	0.26	8.218	0.125	0.25	LH
REHNCV		8.884	0.771	1.63	9.002	0.909	1.85	XX
RH47W2		7.743	-0.370	-0.78	7.793	-0.300	-0.61	LW
RUXML2		7.727	-0.387	-0.81	7.759	-0.334	-0.68	IF
RVRFEZ	*	7.052	-1.061	-2.24	6.842	-1.251	-2.55	TT
U6M9ZV		8.620	0.507	1.07	8.638	0.545	1.11	LA
VGEE7Y		7.837	-0.277	-0.58	7.887	-0.206	-0.42	LW
Y7L3KW		7.515	-0.599	-1.26	7.541	-0.552	-1.12	LH
YBY3LU		7.572	-0.541	-1.14	7.713	-0.380	-0.77	TV
YCRVER		8.585	0.472	0.99	8.546	0.453	0.92	TV
Z3KF9K		8.660	0.547	1.15	8.682	0.589	1.20	LE
ZGHRGN		8.021	-0.092	-0.19	8.009	-0.084	-0.17	LE
ZHU8BP		8.131	0.017	0.04	8.065	-0.027	-0.06	LA

Summary Statistics	Sample NK51	Sample NK52
Grand Means	8.11 kN/m	8.09 kN/m
Stnd Dev Btwn Labs	0.47 kN/m	0.49 kN/m

Statistics based on 31 of 32 reporting participants.

Comments on Assigned Data Flags for Test #3515

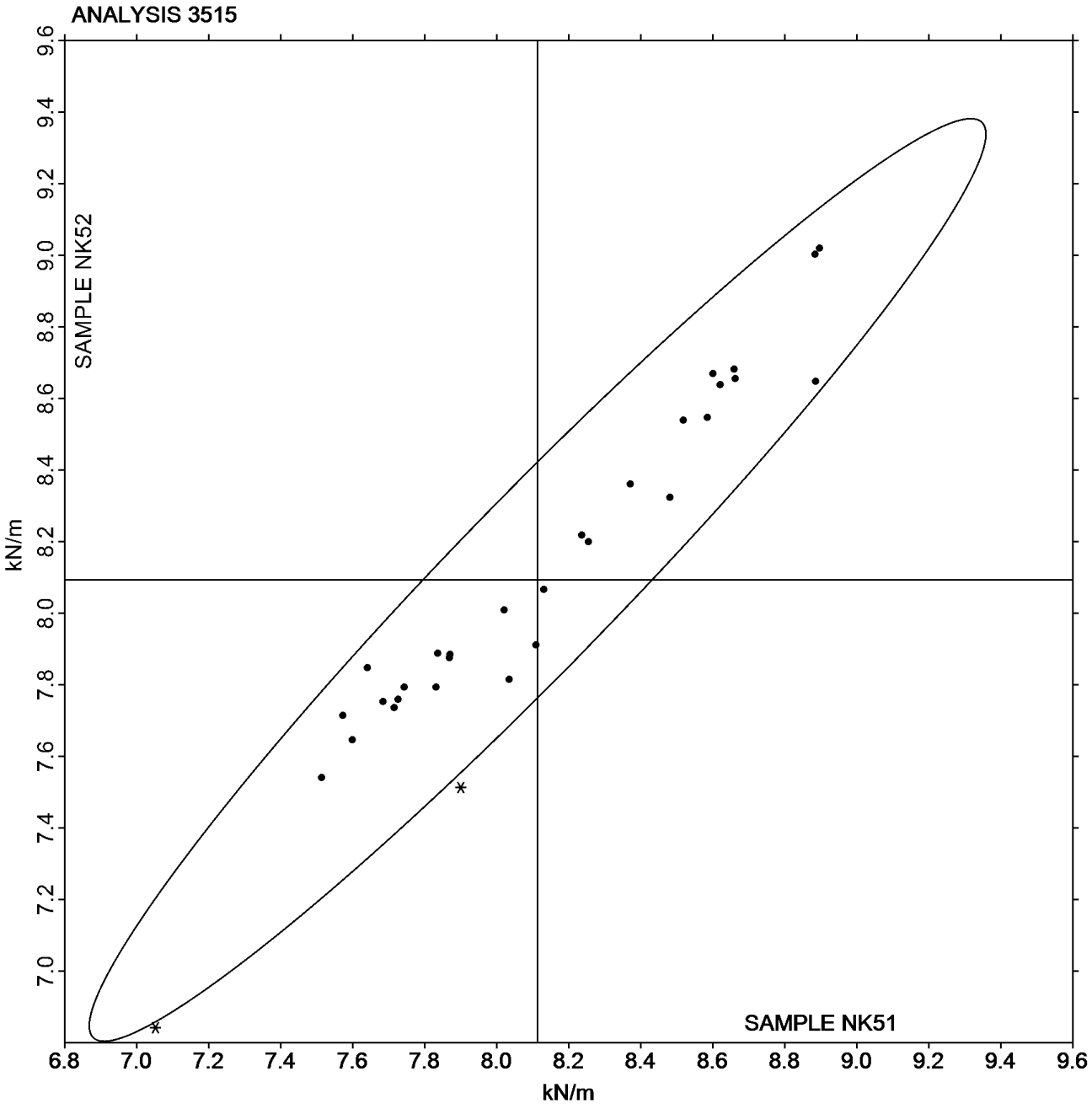
J8PNHB (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 Series
IF	Instron 3340 Series	IM	Instron 5500 Series
IR	Instron 5900 Series	LA	L & W Autoline
LC	L & W Tensile - Autoline 600	LE	L & W Tensile Tester 066
LH	L & W Alwetron TH1 (Horizontal) SE 060	LI	LLoyds Instruments
LW	L & W Tensile Tester SE062	TA	Thwing-Albert Tensile Tester
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TS	TMI Horizontal Tensile Tester 84-58	TT	Tinius Olsen Model MHT
TV	Thwing-Albert Vantage NX	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		

Grand Mean Sample NK51 = 8.1132 kN/m

Grand Mean Sample NK52 = 8.0929 kN/m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3516

Tensile Energy Absorption - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK51 Lab Mean	Sample NK51 Diff from Grand Mean	Sample NK51 CPV	Sample NK52 Lab Mean	Sample NK52 Diff from Grand Mean	Sample NK52 CPV	Instr Code
37PVTR		114.3	-0.9	-0.08	104.4	-10.5	-0.79	LC
3CJTLP		115.7	0.5	0.05	115.9	1.0	0.07	TS
6M7Y8J	*	117.0	1.9	0.16	101.7	-13.2	-0.99	LE
8J3PAL		111.5	-3.7	-0.32	112.9	-2.0	-0.15	TX
B8UGWK		102.7	-12.5	-1.07	107.5	-7.4	-0.55	LE
CZTJLM		117.1	1.9	0.17	117.9	3.0	0.22	IM
EYT3NF		124.3	9.1	0.78	125.2	10.3	0.78	ID
J8PNHB		132.3	17.1	1.46	134.2	19.3	1.46	DM
JRCFG8		110.7	-4.5	-0.39	104.5	-10.4	-0.78	TB
KH8K39		100.4	-14.8	-1.27	101.7	-13.1	-0.99	LE
KJ2DV7		114.1	-1.1	-0.09	116.6	1.7	0.13	TA
KMVBHC		126.2	11.0	0.94	126.9	12.0	0.90	LE
LL22R8		110.7	-4.5	-0.38	110.3	-4.6	-0.35	IR
N94KC6		118.7	3.6	0.30	118.8	3.9	0.29	TX
NC4V86	*	148.8	33.6	2.88	152.5	37.6	2.83	XX
QDUTE3		107.3	-7.9	-0.68	108.7	-6.2	-0.47	LE
R3BJL3		122.9	7.7	0.66	124.8	9.9	0.75	TH
R4WMUZ		115.7	0.5	0.05	114.4	-0.5	-0.04	LH
REHNCV		120.1	4.9	0.42	122.9	8.0	0.60	XX
RH47W2		102.3	-12.9	-1.10	103.0	-11.9	-0.89	LW
RUXML2		107.1	-8.1	-0.69	112.3	-2.6	-0.20	IF
RVRFEZ	*	88.8	-26.4	-2.26	77.5	-37.4	-2.82	TT
U6M9ZV		110.5	-4.7	-0.40	108.4	-6.5	-0.49	LA
VGEE7Y		103.4	-11.8	-1.01	104.9	-10.0	-0.75	LW
Y7L3KW	X	1,018.4	903.2	77.36	978.5	863.6	65.05	LH
YBY3LU		107.4	-7.8	-0.67	118.8	3.9	0.29	TV
YCRVER		125.1	9.9	0.85	122.3	7.4	0.56	TV
Z3KF9K		126.1	10.9	0.93	122.9	8.0	0.60	LE
ZGHRGN		109.9	-5.3	-0.45	111.2	-3.7	-0.28	LE
ZHU8BP		129.3	14.1	1.21	128.9	14.0	1.05	LA

Summary Statistics	Sample NK51	Sample NK52
Grand Means	115.19 Joules/sq m	114.90 Joules/sq m
Stnd Dev Btwn Labs	11.68 Joules/sq m	13.28 Joules/sq m

Statistics based on 29 of 30 reporting participants.

Comments on Assigned Data Flags for Test #3516

Y7L3KW (X) - Extreme Data.

Analysis Notes:

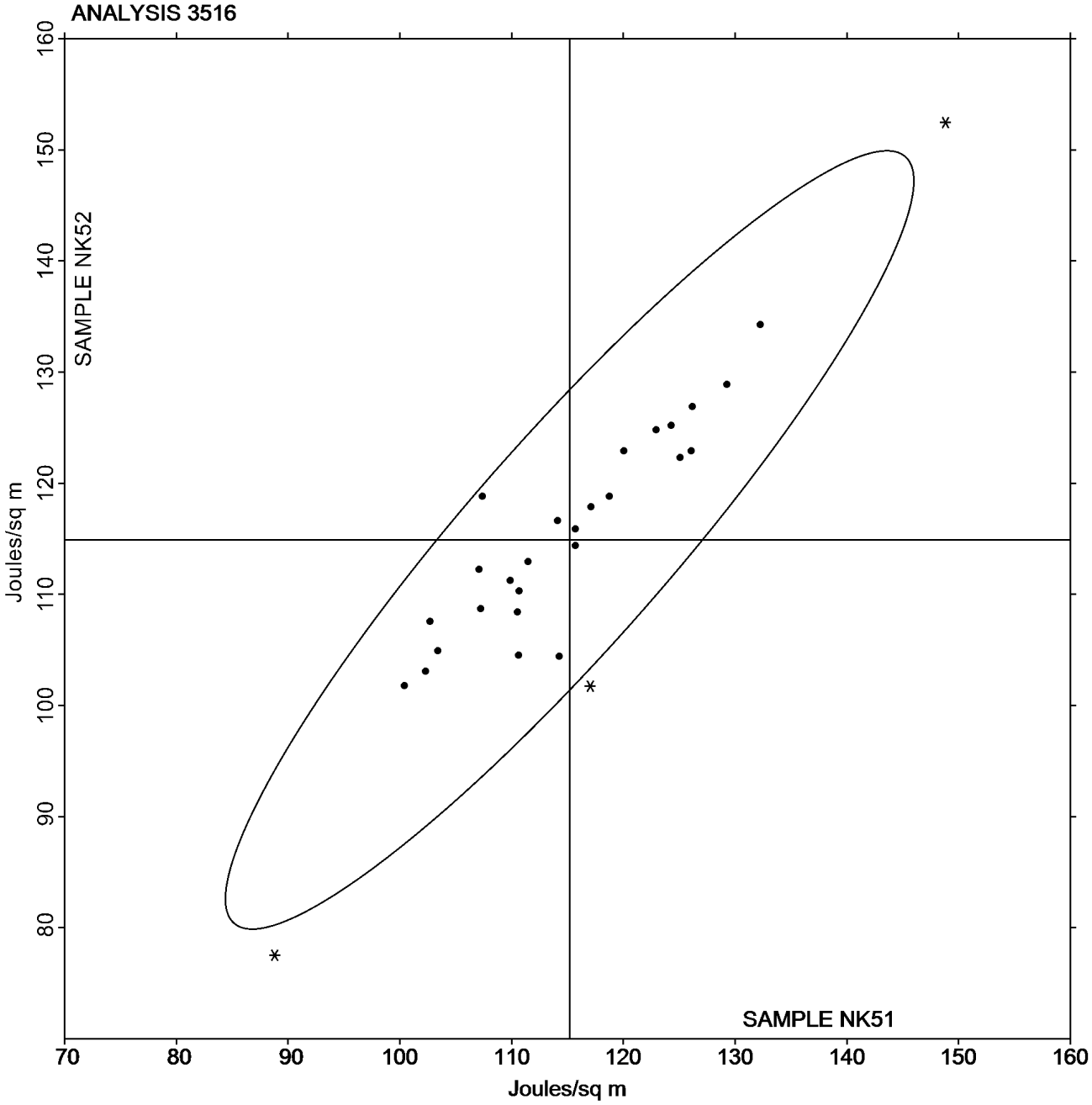
JRCFG8 - One determination removed from the Lab Mean of Sample NK51 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 series
IF	Instron 3340 Series	IM	Instron 5500 Series
IR	Instron 5900 Series	LA	L & W Autoline
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
TA	Thwing-Albert Tensile Tester	TB	Thwing-Albert EJA/1000
TH	Thwing-Albert QC-3A	TS	TMI Horizontal Tensile Tester 84-58
TT	Tinius Olsen Model MHT	TV	Thwing-Albert Vantage NX
TX	Thwing-Albert (model not specified)	XX	Instrument make/model not specified by lab

Grand Mean Sample NK51 = 115.19 Joules/sq m

Grand Mean Sample NK52 = 114.90 Joules/sq m



Paper & Paperboard Interlaboratory Testing Program

Analysis 3517

Elongation to Break - Packaging Papers

TAPPI Official Test Method T494

WebCode	Data Flag	Sample NK51 Lab Mean	Sample NK51 Diff from Grand Mean	Sample NK51 CPV	Sample NK52 Lab Mean	Sample NK52 Diff from Grand Mean	Sample NK52 CPV	Instr Code
37PVTR		1.740	-0.294	-1.82	1.641	-0.386	-1.99	LC
3CJTLP		2.229	0.195	1.21	2.215	0.188	0.97	TS
6M7Y8J		1.988	-0.046	-0.28	1.808	-0.219	-1.13	LE
7EREGR		2.020	-0.014	-0.09	1.983	-0.044	-0.22	TB
8J3PAL		1.978	-0.056	-0.35	1.983	-0.044	-0.22	TX
B8UGWK		1.927	-0.107	-0.66	1.957	-0.070	-0.36	LE
CZTJLM		2.100	0.066	0.41	2.108	0.082	0.42	IM
EYT3NF		2.042	0.008	0.05	2.057	0.031	0.16	ID
J8PNHB		2.330	0.296	1.83	2.342	0.316	1.63	DM
JRCFG8		2.040	0.006	0.04	1.983	-0.044	-0.22	XX
KH8K39		1.881	-0.153	-0.95	1.868	-0.159	-0.82	LE
KJ2DV7	X	2.183	0.149	0.92	2.579	0.552	2.84	TA
KMVBHC		2.133	0.099	0.61	2.136	0.109	0.56	LE
LL22R8		2.101	0.067	0.42	2.085	0.058	0.30	XX
N94KC6		2.212	0.178	1.10	2.227	0.200	1.03	TX
NC4V86		1.826	-0.208	-1.28	1.827	-0.199	-1.03	XX
QDUTE3		1.955	-0.079	-0.49	1.974	-0.053	-0.27	LE
R3BJL3	*	2.415	0.381	2.36	2.546	0.519	2.67	TH
R4WMUZ		2.003	-0.031	-0.19	1.972	-0.055	-0.28	LX
REHNCV		1.800	-0.234	-1.45	1.822	-0.205	-1.05	XX
RH47W2		1.907	-0.127	-0.79	1.910	-0.117	-0.60	LW
RUXML2		2.014	-0.020	-0.12	2.097	0.070	0.36	IF
RVRFEZ		1.958	-0.076	-0.47	1.779	-0.248	-1.27	TT
U6M9ZV		1.818	-0.216	-1.34	1.784	-0.243	-1.25	XX
VGEE7Y		1.917	-0.117	-0.72	1.930	-0.097	-0.50	LW
Y7L3KW	X	19.650	17.616	109.07	19.050	17.023	87.66	LH
YBY3LU		2.086	0.052	0.32	2.245	0.218	1.12	TV
YCRVER		2.260	0.226	1.40	2.220	0.193	1.00	TV
Z3KF9K		2.098	0.064	0.40	2.054	0.027	0.14	LE
ZGHRGN		1.983	-0.051	-0.31	2.005	-0.022	-0.11	LE
ZHU8BP		2.219	0.185	1.15	2.211	0.184	0.95	LX

Summary Statistics	Sample NK51	Sample NK52
Grand Means	2.03 Percent	2.03 Percent
Stnd Dev Btwn Labs	0.16 Percent	0.19 Percent

Statistics based on 29 of 31 reporting participants.

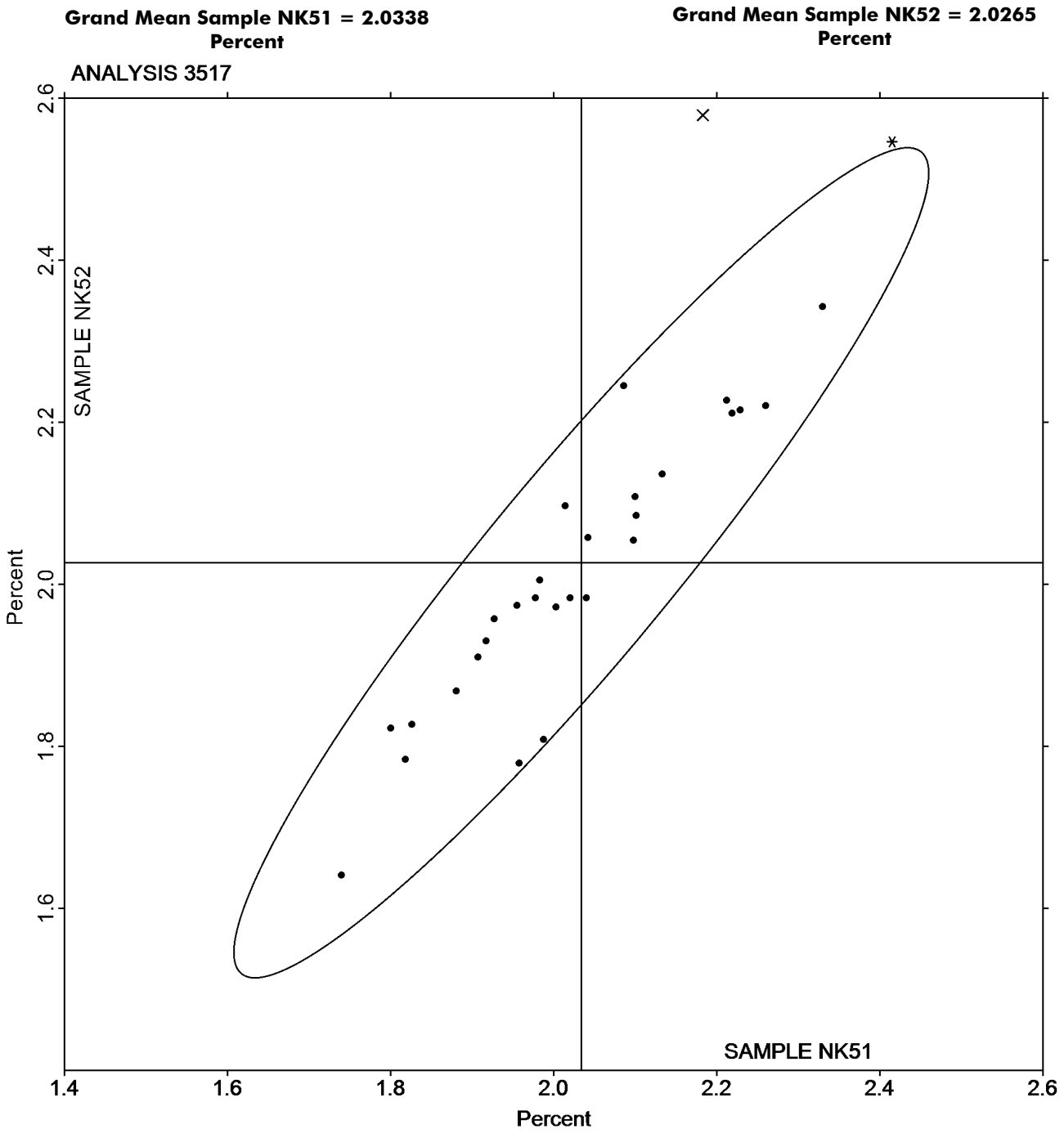
Comments on Assigned Data Flags for Test #3517

Y7L3KW (X) - Extreme Data.

KJ2DV7 (X) - Data for sample NK52 are high. Inconsistent within the determinations of both samples.

Key to Instrument Codes Reported by Participants

DM	IDM MTC-100 Tensile Tester	ID	Instron 4200 Series
IF	Instron 3340 Series	IM	Instron 5500 Series
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
LX	L & W (model not specified)	TA	Thwing-Albert Tensile Tester
TB	Thwing-Albert EJA/1000	TH	Thwing-Albert QC-3A
TS	TMI Horizontal Tensile Tester 84-58	TT	Tinius Olsen Model MHT
TV	Thwing-Albert Vantage NX	TX	Thwing-Albert (model not specified)
XX	Instrument make/model not specified by lab		



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 PS51 Lab Mean	Sample PS51 Diff from Grand Mean	Sample PS51 CPV	Sample PS52 Lab Mean	Sample PS52 Diff from Grand Mean	Sample PS52 CPV	Instr Code
37PVTR		0.8890	0.0476	0.33	0.7920	-0.0522	-0.32	ZZ
38LC6P		0.8010	-0.0404	-0.28	0.8200	-0.0242	-0.15	ZZ
3CJTLP		0.7680	-0.0734	-0.51	0.7840	-0.0602	-0.37	ZZ
4XUFGT		0.8170	-0.0244	-0.17	0.8030	-0.0412	-0.25	ZZ
E2YKMB		0.7040	-0.1374	-0.96	0.6920	-0.1522	-0.94	ZZ
HHEQQ8		0.7990	-0.0424	-0.30	0.8220	-0.0222	-0.14	ZZ
JL6PCF	*	1.3210	0.4796	3.36	1.3420	0.4978	3.07	ZZ
JRCFG8		0.8010	-0.0404	-0.28	0.8260	-0.0182	-0.11	ZZ
KMVBHC		0.8270	-0.0144	-0.10	0.8440	-0.0002	0.00	ZZ
LEK9WB		0.8490	0.0076	0.05	0.8200	-0.0242	-0.15	ZZ
LHZZN4		0.9030	0.0616	0.43	0.8020	-0.0422	-0.26	ZZ
QDT47Y	*	0.9830	0.1416	0.99	1.1620	0.3178	1.96	ZZ
R3BJL3		0.8010	-0.0404	-0.28	0.8110	-0.0332	-0.20	ZZ
T736RV		0.8510	0.0096	0.07	0.8270	-0.0172	-0.11	ZZ
VGEE7Y		0.7080	-0.1334	-0.93	0.7230	-0.1212	-0.75	ZZ
Y2UV3N		0.7480	-0.0934	-0.65	0.7550	-0.0892	-0.55	ZZ
YVZXDW		0.7340	-0.1074	-0.75	0.7260	-0.1182	-0.73	ZZ

Summary Statistics	Sample PS51	Sample PS52
Grand Means	0.84 Microns	0.84 Microns
Stnd Dev Btwn Labs	0.14 Microns	0.16 Microns

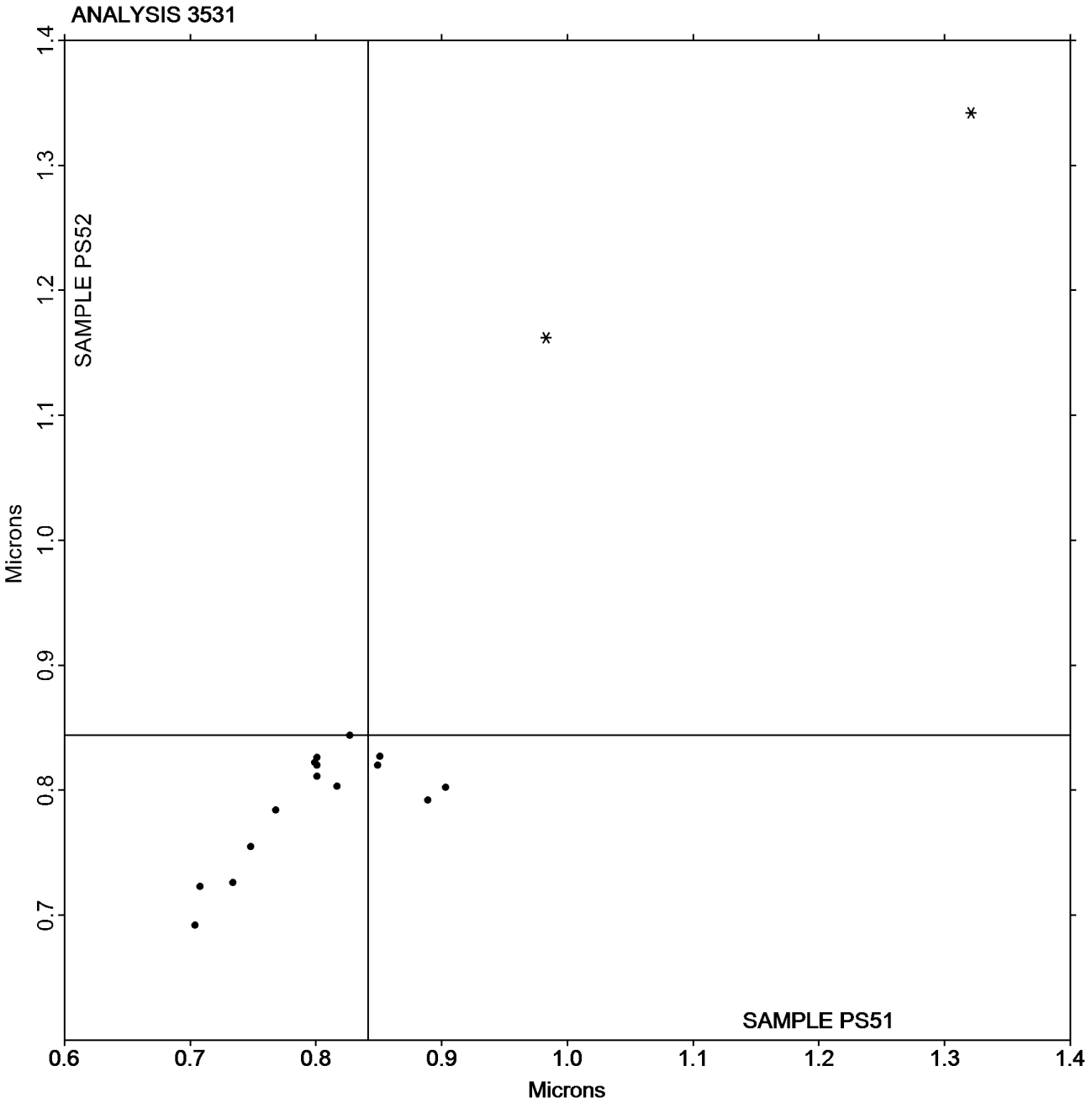
Statistics based on 17 of 17 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample PS51 = 0.84141 Microns

Grand Mean Sample PS52 = 0.84418 Microns



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 3545
Directional Brightness
TAPPI Official Test Method T452

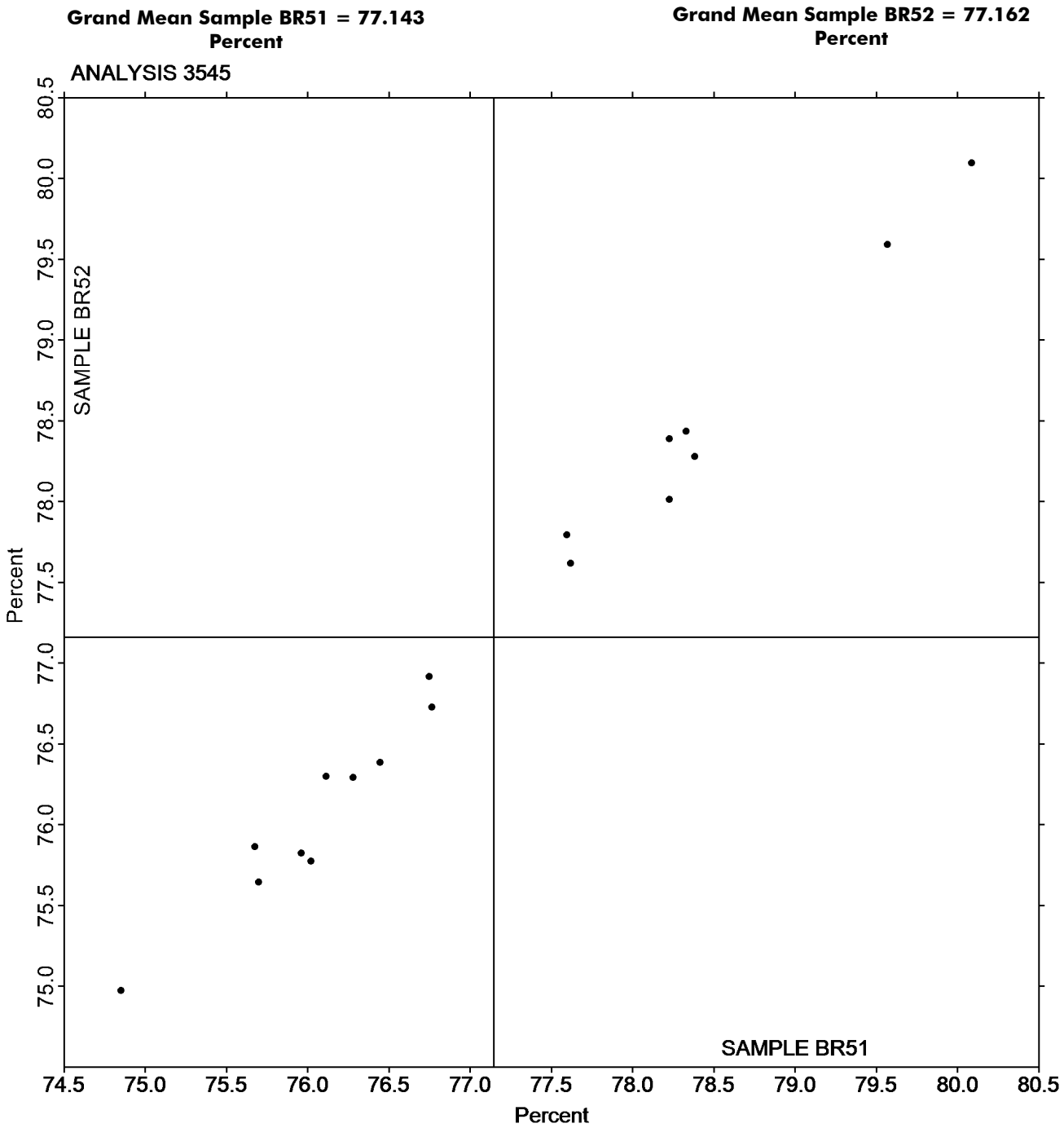
WebCode	Data Flag	Sample BR51 Lab Mean	Sample BR51 Diff from Grand Mean	Sample BR51 CPV	Sample BR52 Lab Mean	Sample BR52 Diff from Grand Mean	Sample BR52 CPV	Instr Code
22ZYQW		75.96	-1.18	-0.83	75.82	-1.34	-0.93	XX
38LC6P		76.02	-1.12	-0.78	75.77	-1.39	-0.97	TP
3CJTLP		76.75	-0.40	-0.28	76.92	-0.25	-0.17	TS
7EREGR		76.45	-0.70	-0.49	76.39	-0.78	-0.54	XD
94JJDD		76.76	-0.38	-0.26	76.73	-0.43	-0.30	TP
AHKFAK		78.23	1.08	0.75	78.01	0.85	0.59	TS
EYR6DK		75.70	-1.45	-1.01	75.65	-1.52	-1.06	TD
EYT3NF		78.33	1.18	0.83	78.43	1.27	0.89	TD
HHEQQ8		75.67	-1.47	-1.02	75.86	-1.30	-0.91	PP
KMVBHC		80.09	2.94	2.05	80.10	2.93	2.04	HG
LEK9WB		79.57	2.43	1.69	79.59	2.43	1.69	HG
NC4V86		77.62	0.48	0.33	77.62	0.46	0.32	XX
QDT47Y		77.60	0.45	0.32	77.80	0.63	0.44	HG
R3BJL3		74.85	-2.29	-1.60	74.98	-2.19	-1.52	TP
RH47W2		78.23	1.08	0.75	78.39	1.23	0.85	TS
T736RV		76.28	-0.87	-0.60	76.29	-0.87	-0.60	HZ
VGEE7Y		76.11	-1.03	-0.72	76.30	-0.86	-0.60	TP
WYCUBW		78.38	1.24	0.86	78.28	1.12	0.78	TP

Summary Statistics	Sample BR51	Sample BR52
Grand Means	77.14 Percent	77.16 Percent
Stnd Dev Btwn Labs	1.44 Percent	1.44 Percent

Statistics based on 18 of 18 reporting participants.

Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
PP	Technidyne Profile/Plus	TD	Technidyne Color Touch 45X
TP	Technidyne Test/Plus	TS	Technidyne Brightimeter Micro S-5
XD	X-Rite Color Ci7600	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

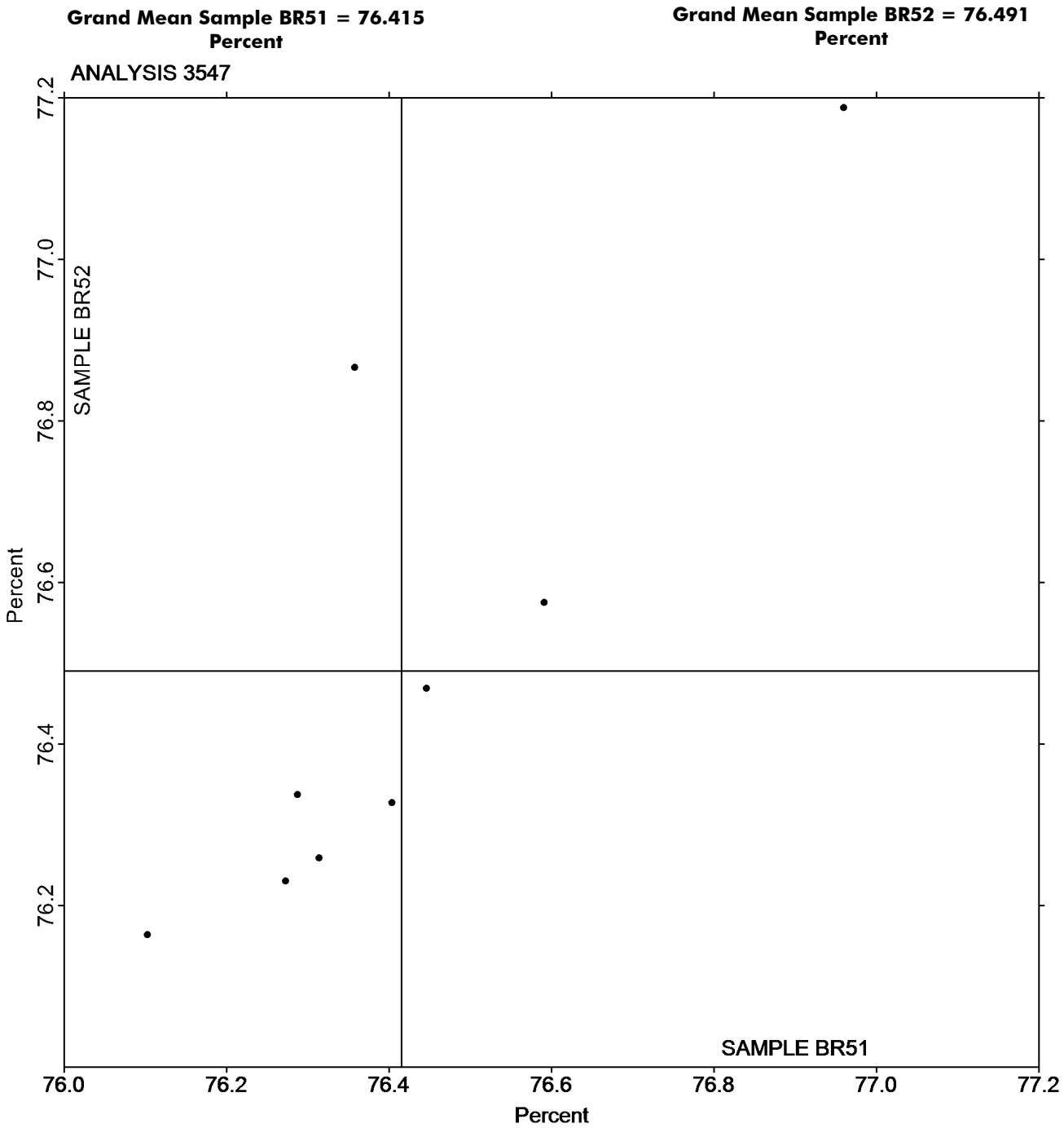
WebCode	Data Flag	Sample BR51 Lab Mean	Sample BR51 Diff from Grand Mean	Sample BR51 CPV	Sample BR52 Lab Mean	Sample BR52 Diff from Grand Mean	Sample BR52 CPV	Instr Code
2FLC6R		76.31	-0.10	-0.41	76.26	-0.23	-0.69	LE
3CJTLP		76.96	0.54	2.23	77.19	0.70	2.06	LT
4XUFGT		76.10	-0.31	-1.28	76.16	-0.33	-0.97	LE
6NNVTQ		76.45	0.03	0.13	76.47	-0.02	-0.06	LA
QDT47Y		76.36	-0.06	-0.24	76.87	0.38	1.11	TC
R3BJL3		76.29	-0.13	-0.52	76.34	-0.15	-0.45	LT
R4WMUZ		76.27	-0.14	-0.58	76.23	-0.26	-0.77	LT
VGEE7Y		76.40	-0.01	-0.05	76.33	-0.16	-0.48	EA
WZ6M4U		76.59	0.18	0.72	76.58	0.08	0.25	LE

Summary Statistics	Sample BR51	Sample BR52
Grand Means	76.42 Percent	76.49 Percent
Stnd Dev Btwn Labs	0.24 Percent	0.34 Percent

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

EA	Datacolor Elrepho	LA	L & W Elrepho - Autoline
LE	L & W Elrepho	LT	L & W Elrepho SE 071
TC	Technidyne Color Touch Series		



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 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
2FLC6R		**CA51**	89.32	0.38	-0.65	0.01	0.04	0.03	0.06	LS
		CA52	89.33	0.42	-0.62					
3CJTLP		**CA51**	85.52	1.90	-1.65	0.00	0.21	-0.02	0.21	TS
		CA52	85.52	2.10	-1.67					
8ELKBR		**CA51**	85.52	0.81	-1.31	-0.15	0.02	-0.10	0.18	TD
		CA52	85.38	0.83	-1.41					
HHEQQ8		**CA51**	86.64	0.30	-0.43	0.00	0.03	-0.02	0.03	TC
		CA52	86.64	0.33	-0.45					
KMVBHC		**CA51**	87.33	0.82	-0.98	0.00	-0.01	0.07	0.07	HK
		CA52	87.33	0.81	-0.91					
LEK9WB		**CA51**	86.96	-0.25	-0.36	0.09	-0.02	0.13	0.16	HK
		CA52	87.06	-0.27	-0.23					
LHZZN4		**CA51**	89.43	0.42	-0.60	0.07	-0.06	0.17	0.20	TC
		CA52	89.50	0.35	-0.43					
NC4V86		**CA51**	90.28	0.25	-0.39	-0.18	0.08	-0.12	0.23	XX
		CA52	90.10	0.34	-0.50					
QDT47Y		**CA51**	87.22	0.82	-0.69	0.07	0.11	-0.09	0.16	HK
		CA52	87.29	0.93	-0.78					
WZ6PTY		**CA51**	89.80	-0.43	-0.02	-0.05	0.02	-0.03	0.06	NH
		CA52	89.75	-0.42	-0.05					
Y2UV3N		**CA51**	85.04	1.00	-1.63	0.02	-0.01	0.00	0.02	TC
		CA52	85.06	0.99	-1.63					

Summary Statistics

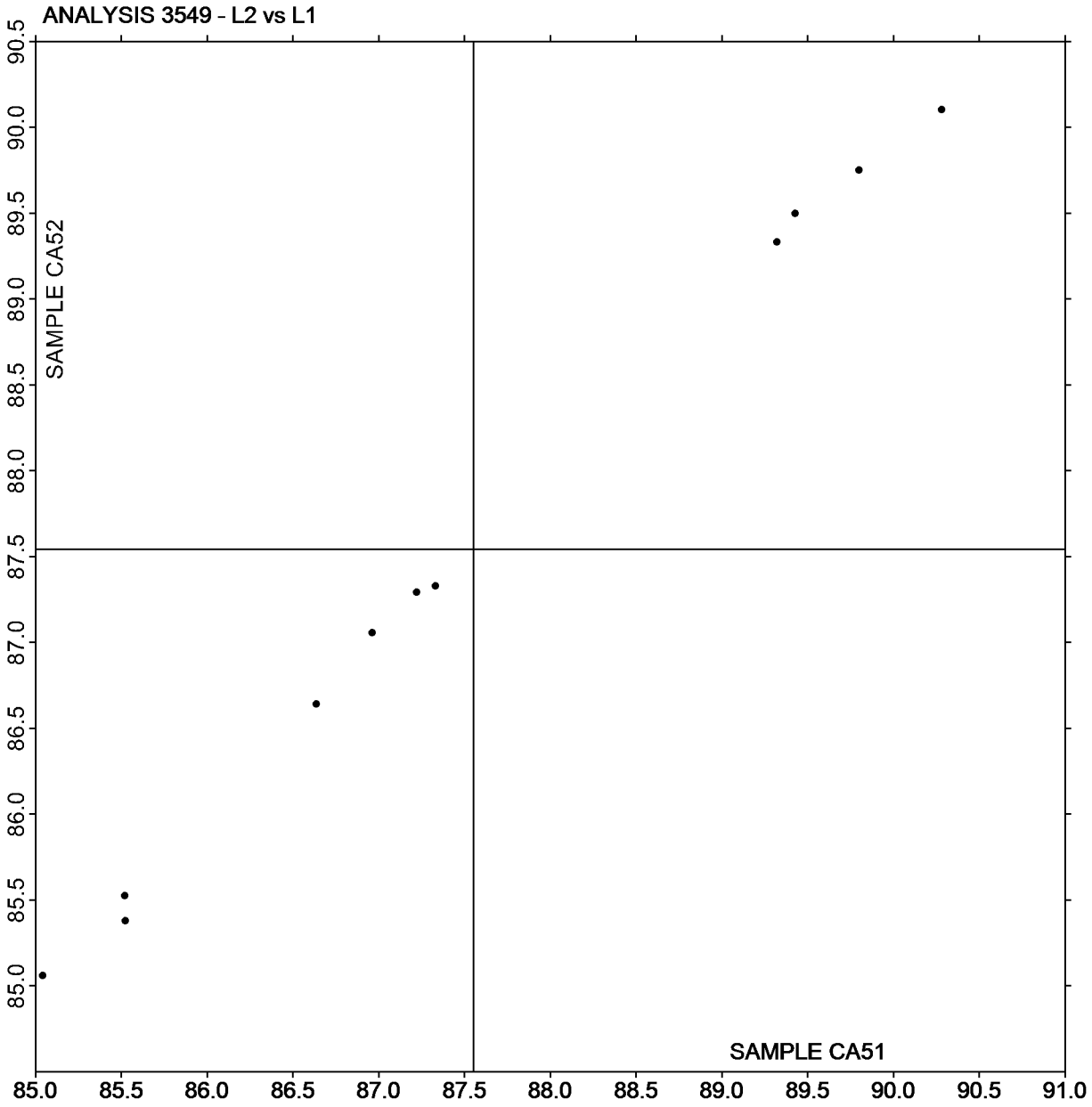
Grand Means							
CA51	87.551	0.546	-0.792	-0.009	0.037	0.003	0.124
CA52	87.542	0.583	-0.789				
Stnd Dev Btwn Labs							
CA51	1.872	0.635	0.537	0.086	0.073	0.091	0.077
CA52	1.859	0.681	0.556				

Statistics based on 11 of 11 reporting participants

Key to Instrument Codes Reported by Participants

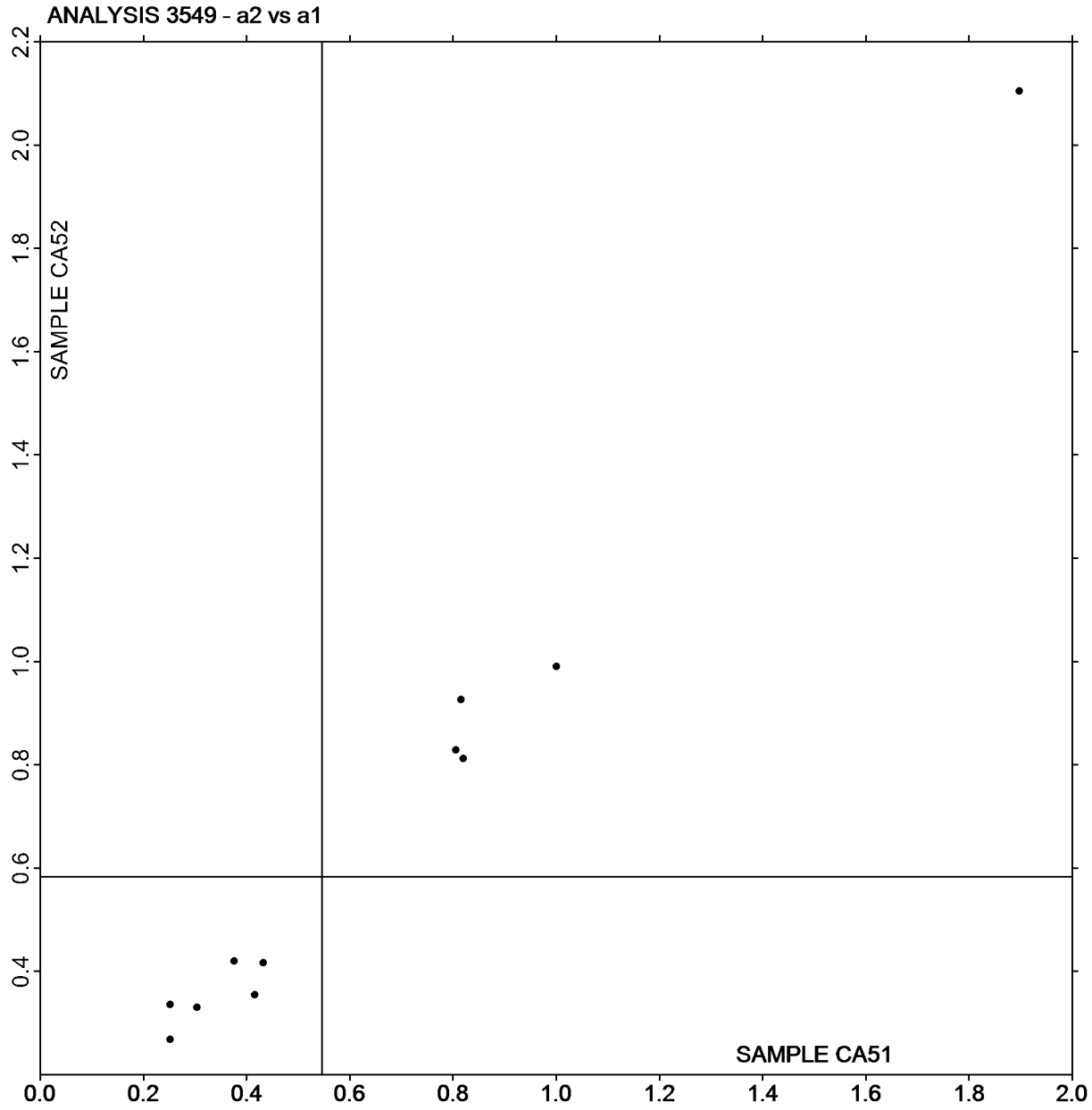
HK	Hunter LabScan XE	LS	L & W Elrepho SE 070
NH	Minolta CM-3700A Spectrophotometer	TC	Technidyne Color Touch Series
TD	Technidyne Color Touch X45	TS	Technidyne Brightimeter Micro S-5
XX	Instrument make/model not specified by lab		

Plot of L values CA52 vs L values CA51



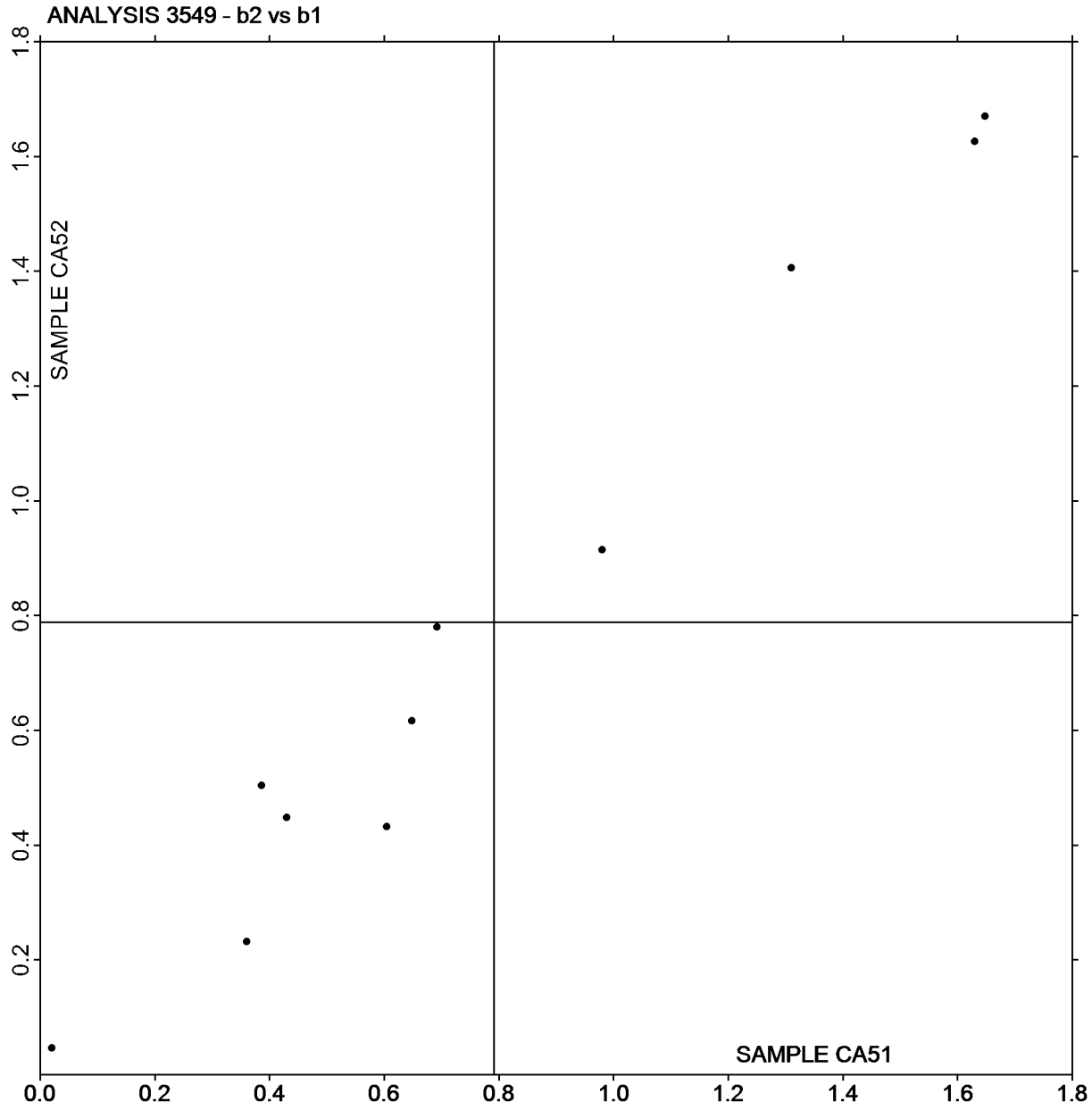
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values CA52 vs a values CA51



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 CA52 vs b values CA51



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 #4412, April 2026

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
38LC6P		CA51	87.76	-0.50	-0.14	-0.01	-0.01	-0.06	0.06	HL
		CA52	87.75	-0.51	-0.20					
3DCLEM		CA51	89.72	-0.55	0.00	-0.08	-0.01	-0.09	0.12	XX
		CA52	89.64	-0.56	-0.10					
HHUCW3		CA51	89.77	-0.43	-0.17	0.05	0.26 X	-0.38 X	0.46 X	TC
		CA52	89.82	-0.17	-0.54					
MP2CJ2		CA51	89.49	-0.40	0.15	0.01	-0.02	0.01	0.02	XX
		CA52	89.50	-0.41	0.16					
QDT47Y		CA51	86.73	-0.59	-0.22	0.14	0.10	-0.06	0.18	TC
		CA52	86.87	-0.49	-0.28					
R3BJL3		CA51	89.53	-0.52	-0.01	-0.06	0.01	-0.12	0.13	LT
		CA52	89.47	-0.50	-0.13					
TTE3A4		CA51	89.50	-0.56	-0.01	0.00	0.00	-0.01	0.01	XX
		CA52	89.50	-0.56	-0.02					
VGEE7Y		CA51	89.47	-0.56	-0.17	0.02	0.05	0.08	0.10	EG
		CA52	89.49	-0.51	-0.09					

Summary Statistics

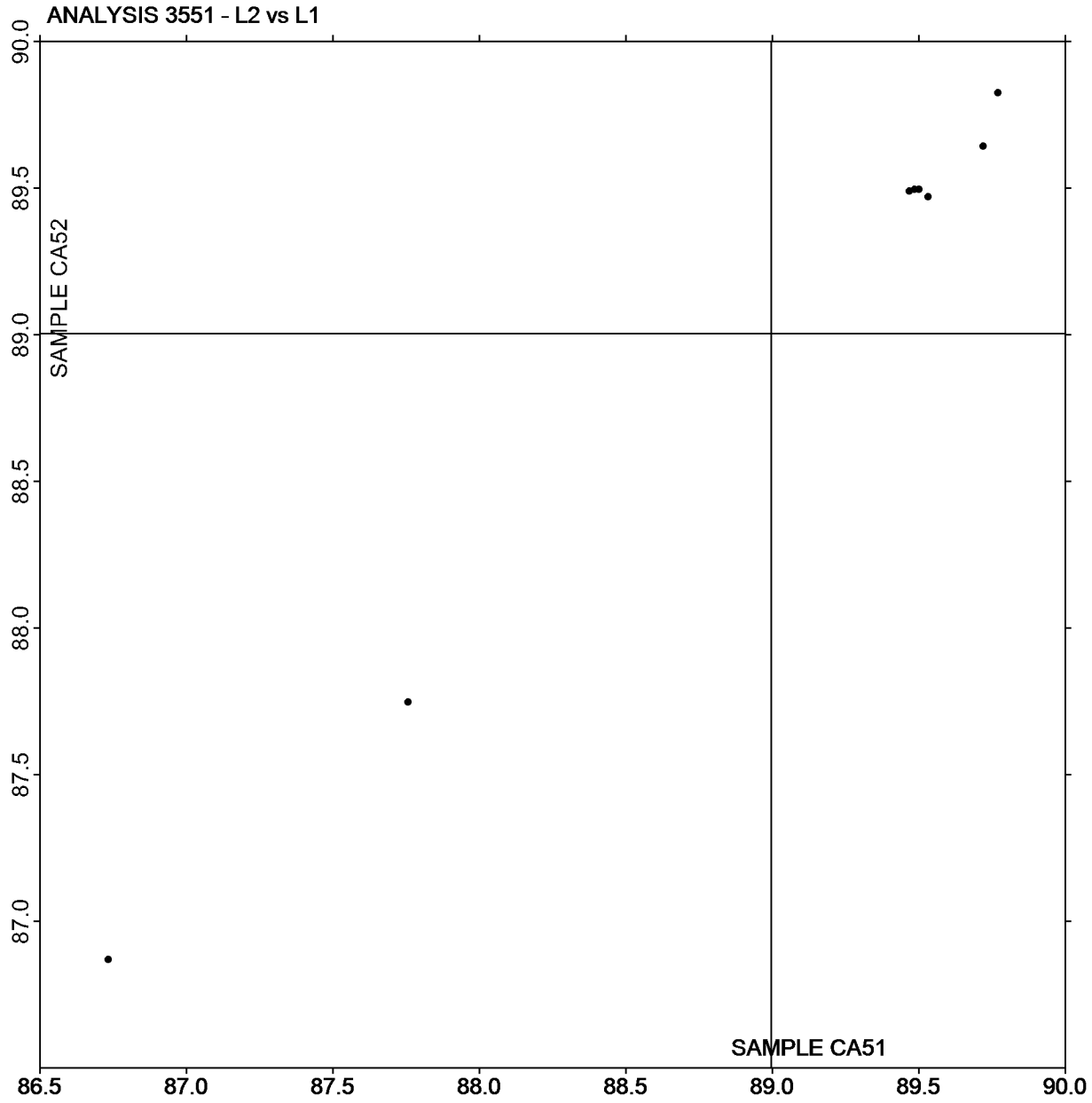
Grand Means							
CA51	88.996	-0.514	-0.072	0.009	0.048	-0.079	0.136
CA52	89.005	-0.466	-0.150				
Stnd Dev Btwn Labs							
CA51	1.120	0.067	0.123	0.067	0.093	0.136	0.143
CA52	1.079	0.126	0.205				

Statistics based on 8 of 8 reporting participants

Key to Instrument Codes Reported by Participants

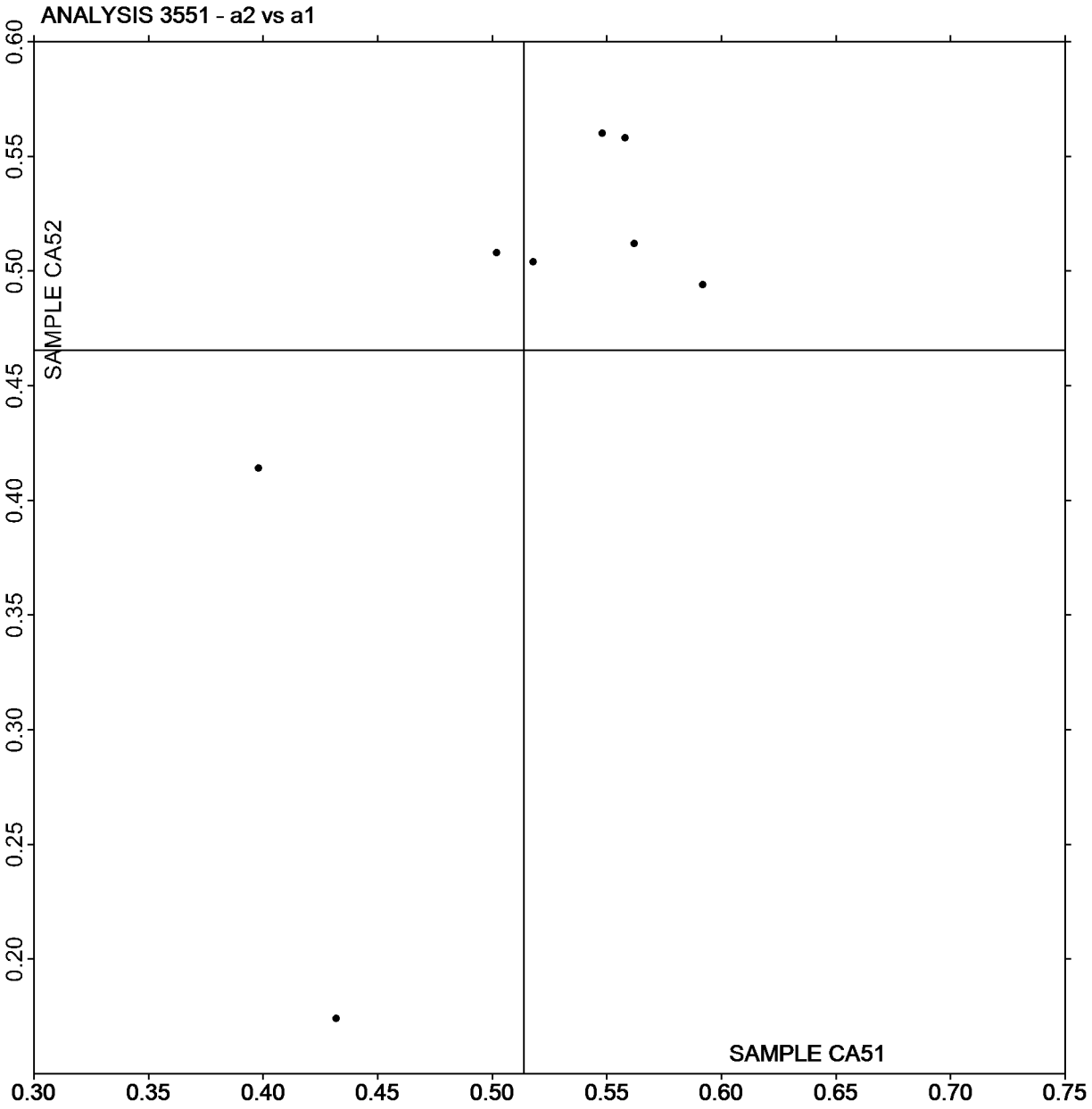
EG	Datacolor Elrepho	HL	Hunter Agera
LT	L & W Elrepho SE 071	TC	Technidyne Color Touch Series
XX	Instrument make/model not specified by lab		

Plot of L values CA52 vs L values CA51



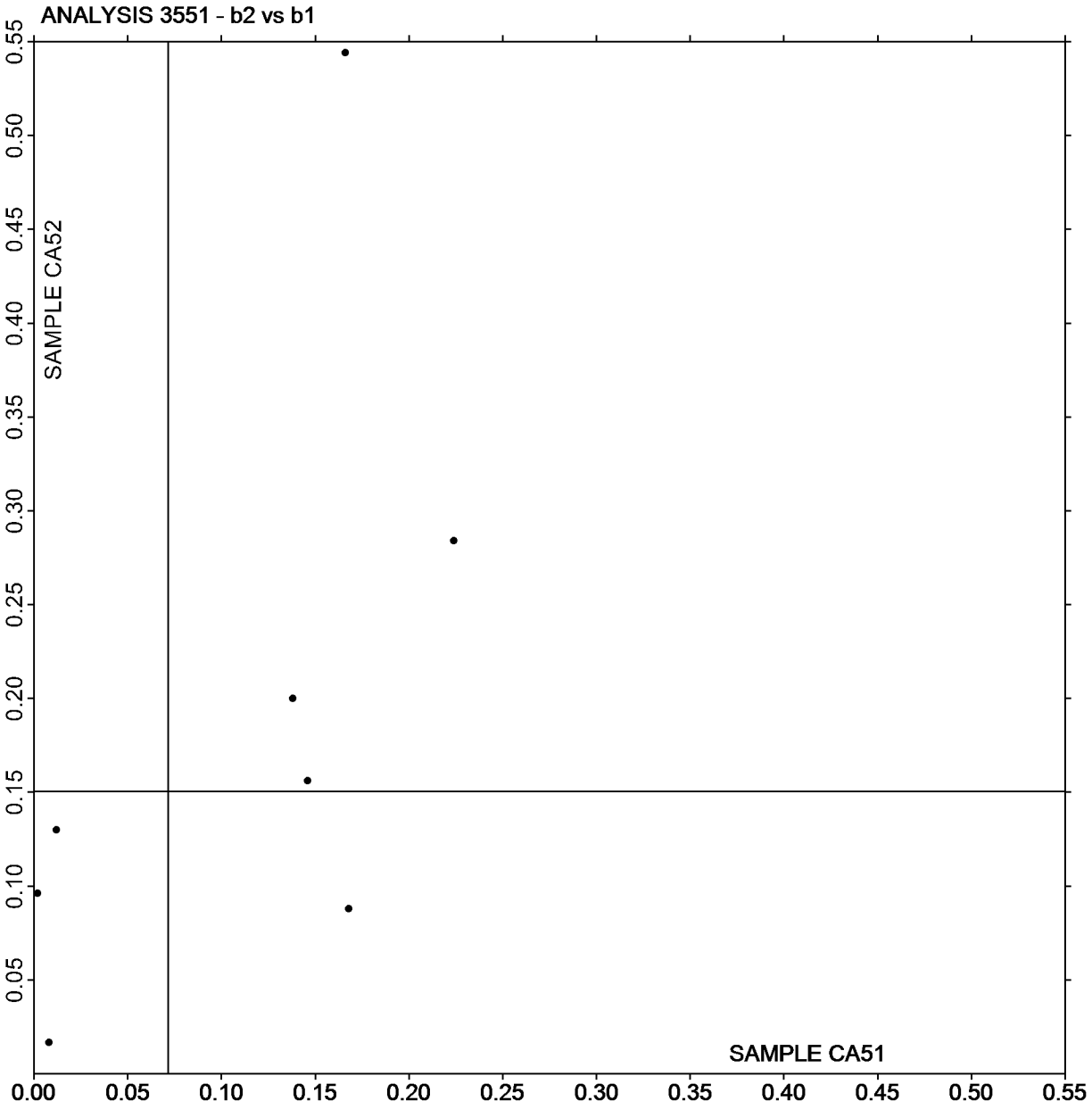
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values CA52 vs a values CA51



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 CA52 vs b values CA51



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

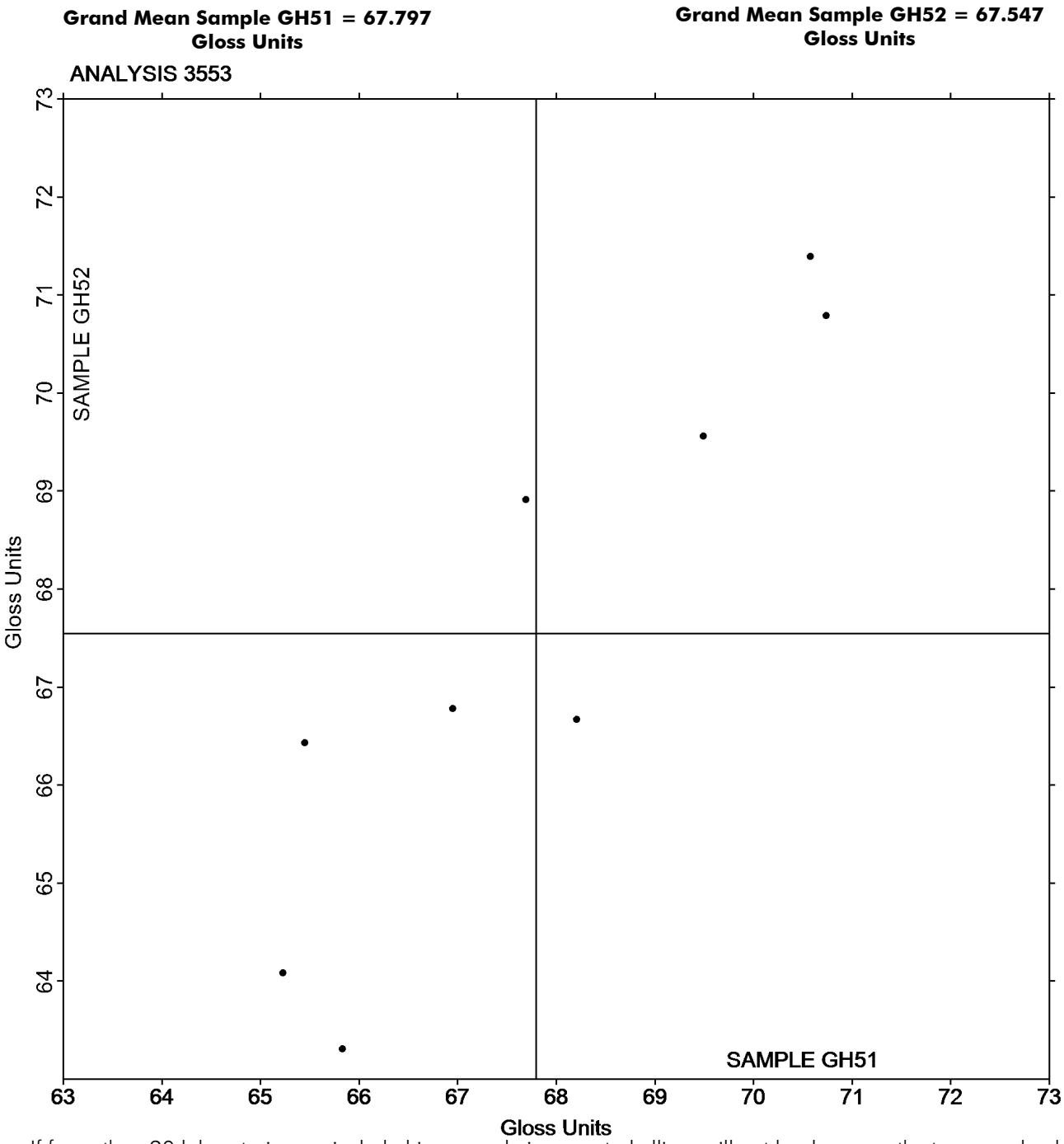
WebCode	Data Flag	Sample GH51 Lab Mean	Sample GH51 Diff from Grand Mean	Sample GH51 CPV	Sample GH52 Lab Mean	Sample GH52 Diff from Grand Mean	Sample GH52 CPV	Instr Code
37PVTR		65.23	-2.57	-1.21	64.08	-3.47	-1.23	LG
E2YKMB		65.83	-1.97	-0.93	63.31	-4.24	-1.50	LF
HHEQQ8		69.49	1.69	0.80	69.56	2.01	0.71	PP
JL6PCF		70.58	2.78	1.31	71.39	3.84	1.36	VM
KMVBHC		68.21	0.41	0.19	66.67	-0.88	-0.31	PP
LEK9WB		66.95	-0.85	-0.40	66.78	-0.77	-0.27	TP
LHZZN4		67.69	-0.11	-0.05	68.91	1.36	0.48	LF
R3BJL3		65.45	-2.35	-1.10	66.43	-1.12	-0.40	GA
VGEE7Y		70.74	2.94	1.38	70.79	3.24	1.15	TH

Summary Statistics	Sample GH51	Sample GH52
Grand Means	67.80 Gloss Units	67.55 Gloss Units
Stnd Dev Btwn Labs	2.13 Gloss Units	2.82 Gloss Units

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	LF	L & W Autoline 400
LG	L & W Autoline 600	PP	Technidyne Profile/Plus
TH	Technidyne T480A	TP	Technidyne Profile Plus
VM	Valmet PaperLab (was Kajaani/Robotest)		



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

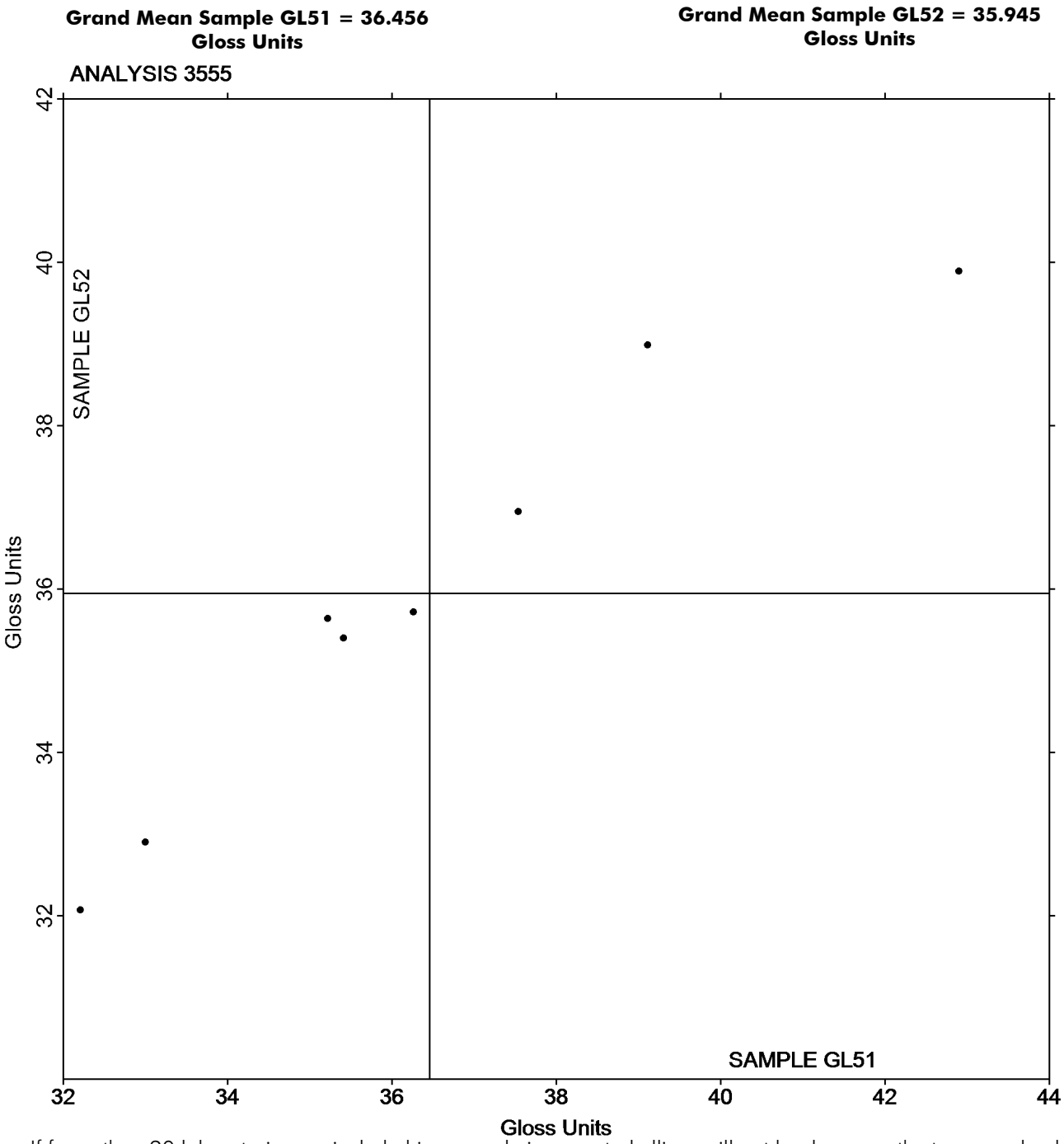
WebCode	Data Flag	Sample GL51 Lab Mean	Sample GL51 Diff from Grand Mean	Sample GL51 CPV	Sample GL52 Lab Mean	Sample GL52 Diff from Grand Mean	Sample GL52 CPV	Instr Code
7EREGR		32.21	-4.25	-1.24	32.07	-3.88	-1.44	TH
8ELKBR		35.41	-1.05	-0.30	35.40	-0.55	-0.20	TP
LMUUK6		42.90	6.44	1.88	39.89	3.95	1.47	XX
QDT47Y		37.54	1.08	0.32	36.95	1.01	0.37	PP
T736RV		35.22	-1.24	-0.36	35.64	-0.30	-0.11	GS
UQ7BVV		39.11	2.65	0.77	38.99	3.04	1.13	XX
XEHHWV		36.26	-0.20	-0.06	35.72	-0.23	-0.08	WJ
ZGHRGN		33.00	-3.46	-1.01	32.90	-3.05	-1.13	GM

Summary Statistics	Sample GL51	Sample GL52
Grand Means	36.46 Gloss Units	35.95 Gloss Units
Stnd Dev Btwn Labs	3.43 Gloss Units	2.69 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
PP	Technidyne Profile/Plus	TH	Technidyne T480A
TP	Technidyne Profile Plus	WJ	Zehntner ZLR 1020
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 3601

Folding Endurance (MIT) - Double Folds

TAPPI Official Test Method T511

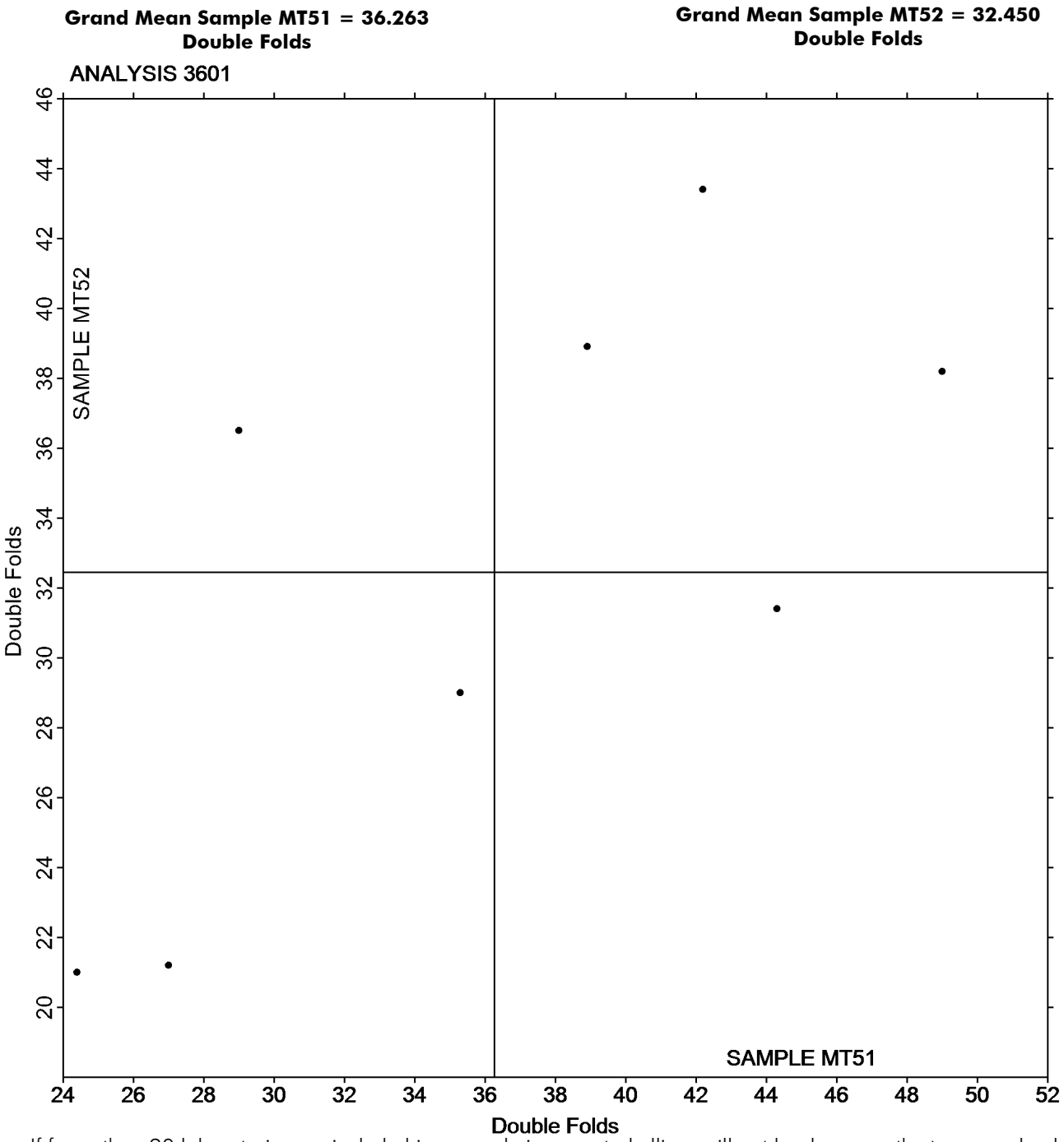
WebCode	Data Flag	Sample MT51 Lab Mean	Sample MT51 Diff from Grand Mean	Sample MT51 CPV	Sample MT52 Lab Mean	Sample MT52 Diff from Grand Mean	Sample MT52 CPV	Instr Code
7EREGR		24.40	-11.86	-1.34	21.00	-11.45	-1.38	MT
B3J4EL		42.20	5.94	0.67	43.40	10.95	1.32	MT
CZTJLM		29.00	-7.26	-0.82	36.50	4.05	0.49	MT
DQHGZL		27.00	-9.26	-1.05	21.20	-11.25	-1.36	MT
EYR6DK		44.30	8.04	0.91	31.40	-1.05	-0.13	MT
JL6PCF		38.90	2.64	0.30	38.90	6.45	0.78	MT
TTE3A4		49.00	12.74	1.44	38.20	5.75	0.69	XX
VGEE7Y		35.30	-0.96	-0.11	29.00	-3.45	-0.42	MT

Summary Statistics	Sample MT51	Sample MT52
Grand Means	36.26 Double Folds	32.45 Double Folds
Stnd Dev Btwn Labs	8.86 Double Folds	8.29 Double Folds

Statistics based on 8 of 8 reporting participants.

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 BG51 Lab Mean	Sample BG51 Diff from Grand Mean	Sample BG51 CPV	Sample BG52 Lab Mean	Sample BG52 Diff from Grand Mean	Sample BG52 CPV	Instr Code
22ZYQW	X	16.6	-99.0	-3.09	16.2	-96.4	-3.17	ZZ
38LC6P		127.0	11.4	0.35	124.8	12.1	0.40	ZZ
4XUFGT		124.8	9.1	0.29	124.8	12.1	0.40	ZZ
7EREGR		134.2	18.6	0.58	136.8	24.2	0.79	ZZ
8NFQBK	X	1.8	-113.8	-3.55	1.9	-110.7	-3.64	ZZ
EL8QC7		60.4	-55.2	-1.72	60.6	-52.0	-1.71	ZZ
EYR6DK		120.3	4.7	0.15	121.0	8.4	0.27	ZZ
HU7MMD		153.2	37.6	1.17	134.1	21.5	0.70	ZZ
JL6PCF		72.5	-43.1	-1.35	67.6	-45.0	-1.48	ZZ
WZ6PTY	X	3.0	-112.6	-3.51	2.9	-109.7	-3.60	ZZ
YVZXDW		132.5	16.9	0.53	131.4	18.8	0.62	ZZ

Summary Statistics	Sample BG51	Sample BG52
Grand Means	115.62 Gurley Units	112.63 Gurley Units
Stnd Dev Btwn Labs	32.04 Gurley Units	30.46 Gurley Units

Statistics based on 8 of 11 reporting participants.

Comments on Assigned Data Flags for Test #3603

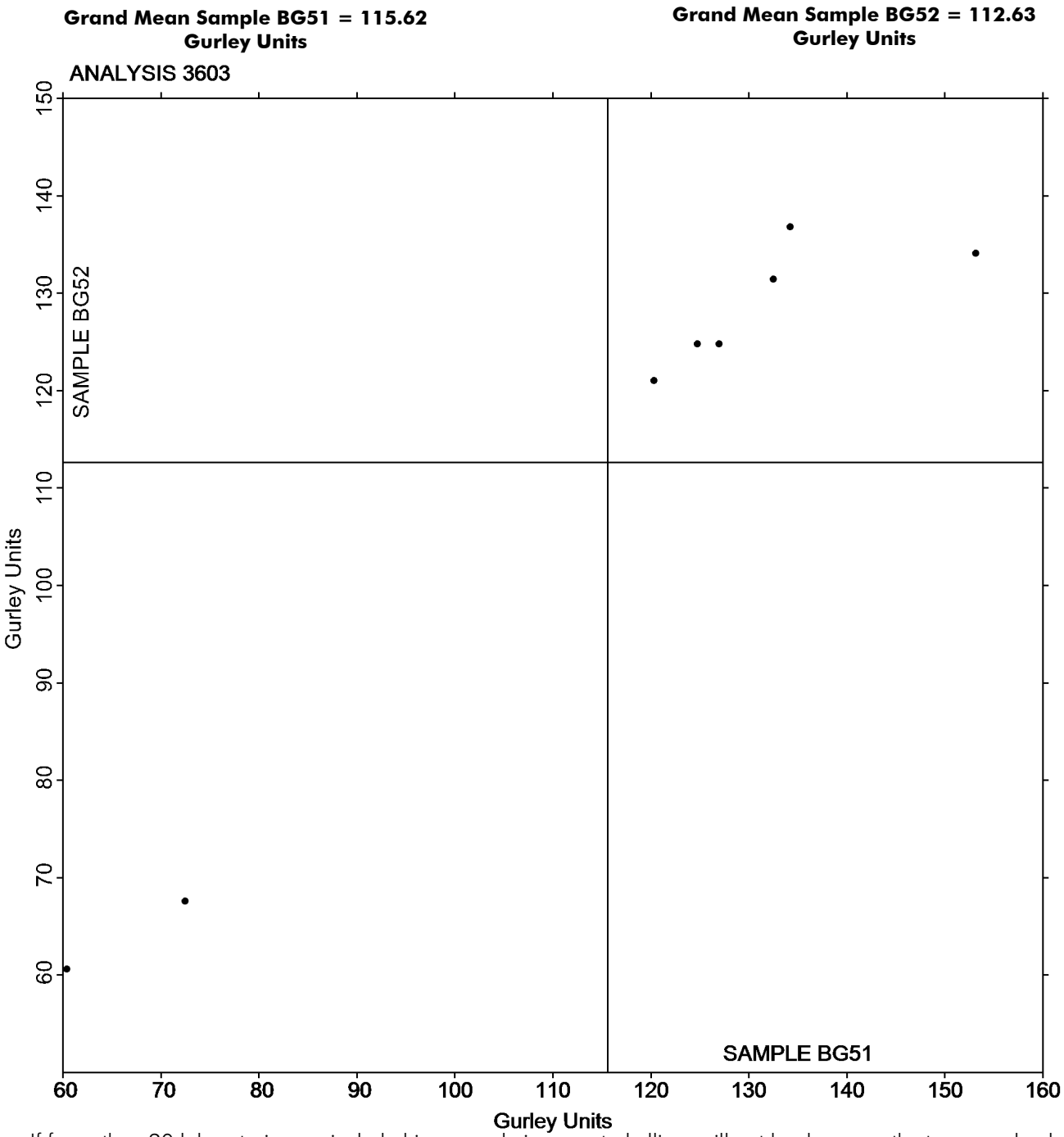
8NFQBK (X) - Data for both samples are low.

22ZYQW (X) - Data for both samples are low.

WZ6PTY (X) - Data for both samples are low.

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

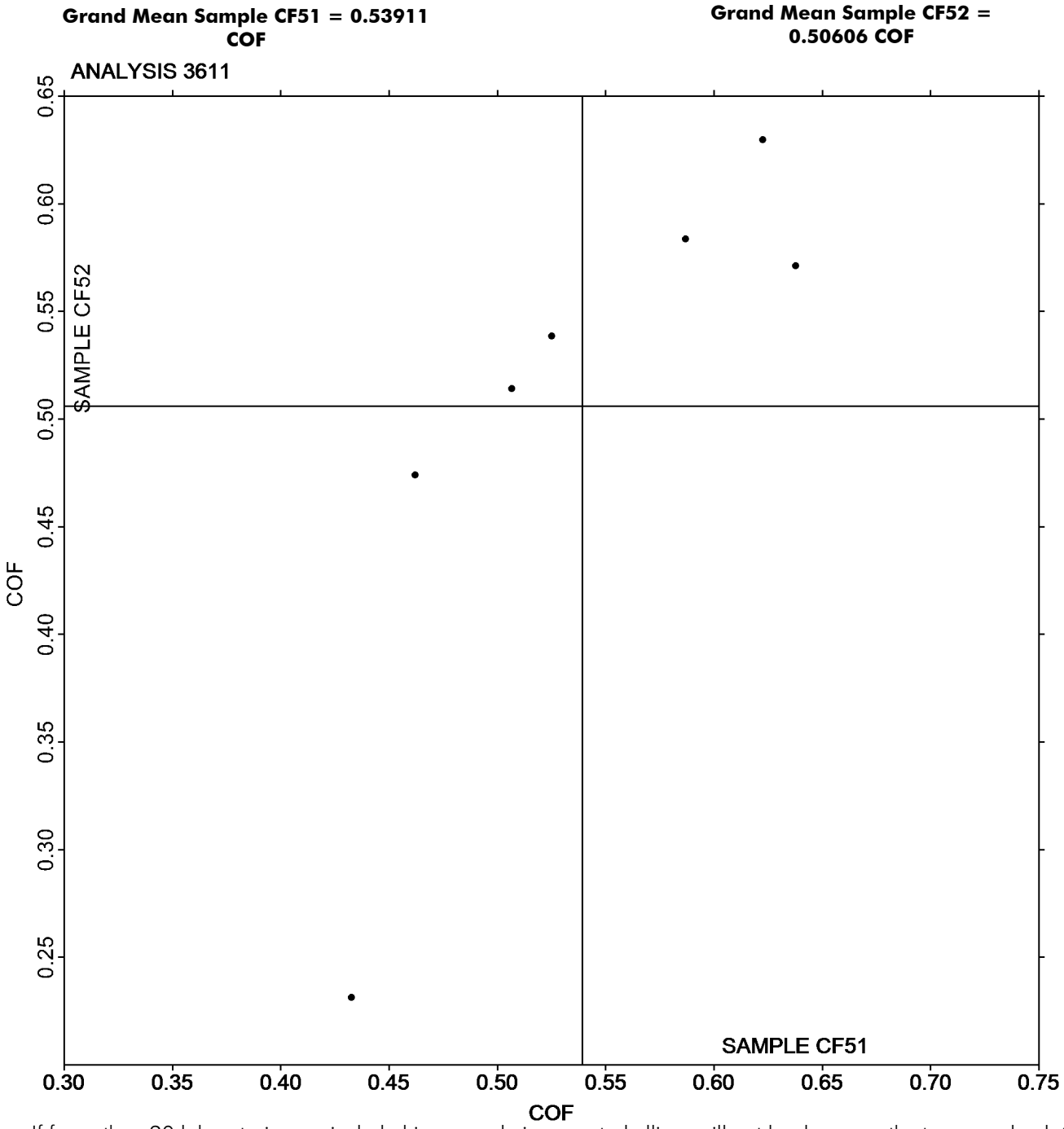
WebCode	Data Flag	Sample CF51 Lab Mean	Sample CF51 Diff from Grand Mean	Sample CF51 CPV	Sample CF52 Lab Mean	Sample CF52 Diff from Grand Mean	Sample CF52 CPV	Instr Code
3CJTLP		0.5250	-0.0141	-0.18	0.5384	0.0323	0.25	TA
8ELKBR		0.6378	0.0987	1.25	0.5712	0.0651	0.50	TA
8NFQBK		0.4620	-0.0771	-0.97	0.4740	-0.0321	-0.24	TA
CZTJLM		0.6226	0.0835	1.06	0.6298	0.1237	0.94	TM
NC4V86		0.5068	-0.0323	-0.41	0.5142	0.0081	0.06	XX
WZ6PTY		0.4326	-0.1065	-1.35	0.2312	-0.2749	-2.10	TX
YVZXDW		0.5870	0.0479	0.61	0.5836	0.0775	0.59	TA

Summary Statistics	Sample CF51	Sample CF52
Grand Means	0.54 COF	0.51 COF
Stnd Dev Btwn Labs	0.08 COF	0.13 COF

Statistics based on 7 of 7 reporting participants.

Key to Instrument Codes Reported by Participants

TA	Thwing-Albert Friction Tester	TM	TMI 32-06 Monitor/Slip and Friction
TX	TMI (model not specified)	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 CF51 Lab Mean	Sample CF51 Diff from Grand Mean	Sample CF51 CPV	Sample CF52 Lab Mean	Sample CF52 Diff from Grand Mean	Sample CF52 CPV	Instr Code
3CJTLP		0.4556	-0.0468	-1.16	0.4482	-0.0566	-1.45	TA
8ELKBR		0.5194	0.0170	0.42	0.5072	0.0024	0.06	TA
8NFQBK		0.4620	-0.0404	-1.00	0.4720	-0.0328	-0.84	TA
CZTJLM		0.5650	0.0626	1.56	0.5568	0.0520	1.33	TM
NC4V86		0.5020	-0.0004	-0.01	0.5200	0.0152	0.39	XX
WZ6PTY	X	0.5168	0.0144	0.36	0.1764	-0.3284	-8.42	TX
YVZXDW		0.5104	0.0080	0.20	0.5246	0.0198	0.51	TA

Summary Statistics	Sample CF51	Sample CF52
Grand Means	0.50 COF	0.50 COF
Stnd Dev Btwn Labs	0.04 COF	0.04 COF

Statistics based on 6 of 7 reporting participants.

Comments on Assigned Data Flags for Test #3612

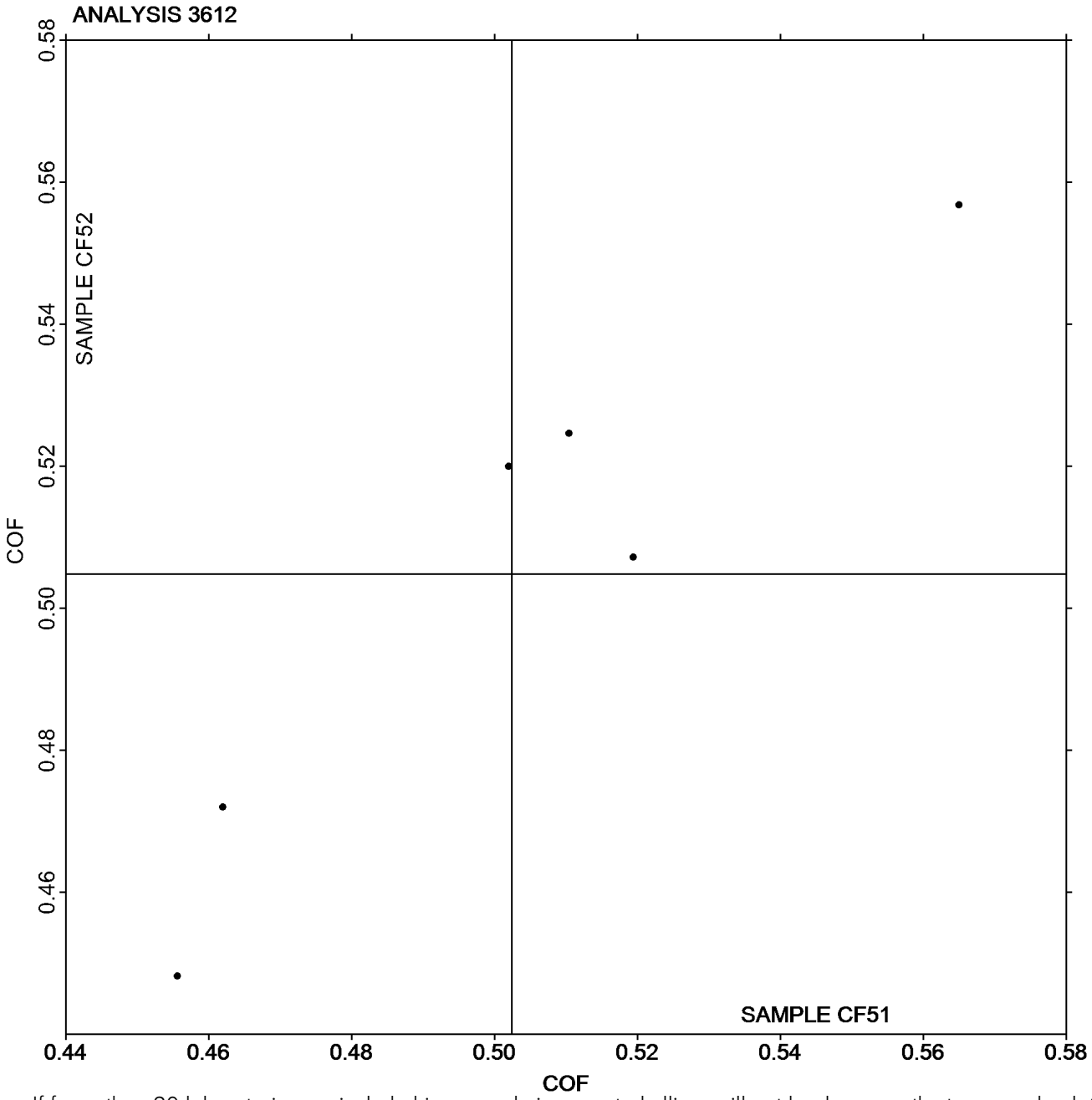
WZ6PTY (X) - Extreme Data for sample CF52.

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample CF51 = 0.50240 COF

Grand Mean Sample CF52 = 0.50480 COF



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

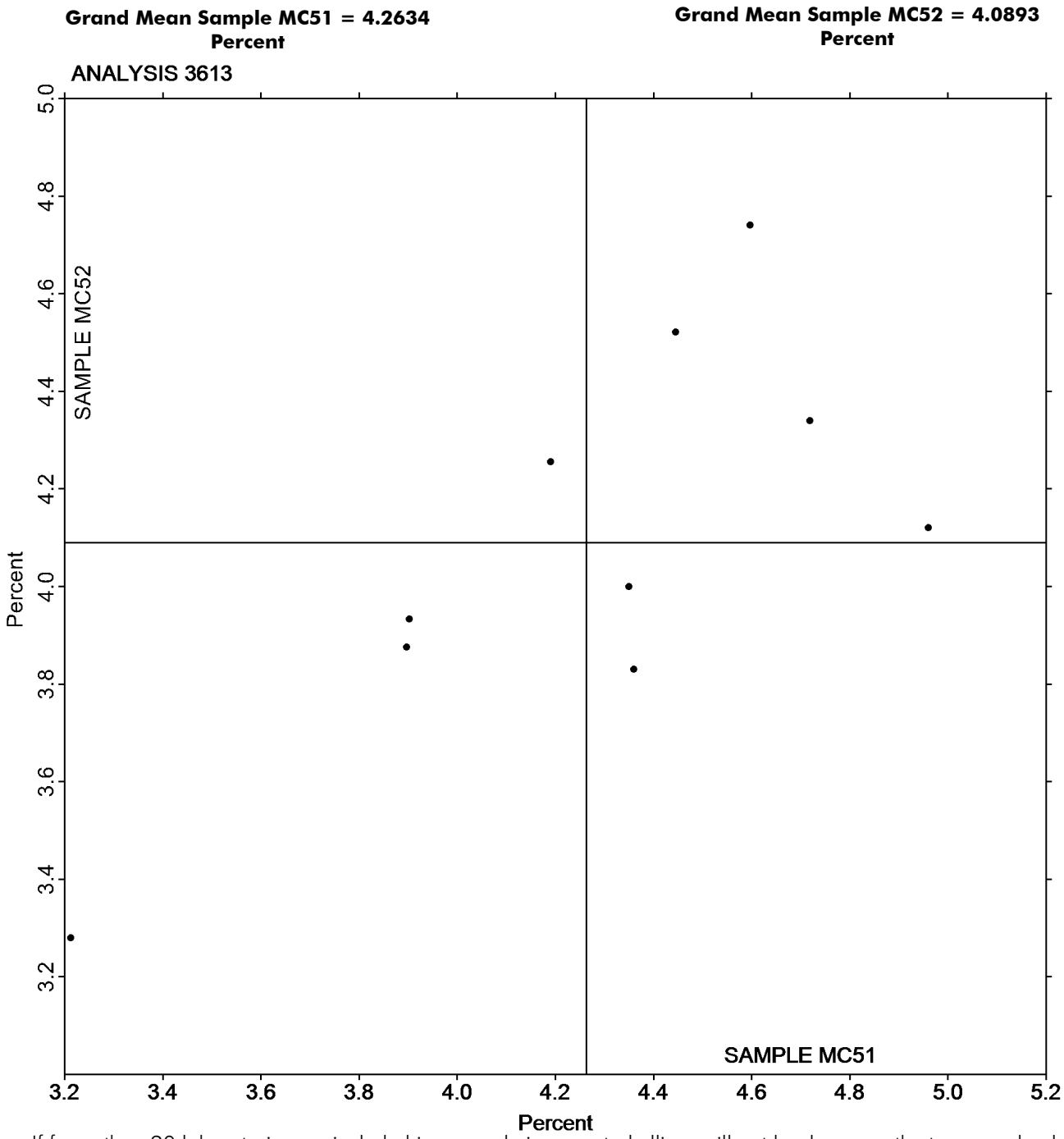
WebCode	Data Flag	Sample MC51 Lab Mean	Sample MC51 Diff from Grand Mean	Sample MC51 CPV	Sample MC52 Lab Mean	Sample MC52 Diff from Grand Mean	Sample MC52 CPV	Instr Code
2FLC6R		3.213	-1.050	-2.11	3.280	-0.809	-1.98	ZZ
8NFQBK		4.191	-0.073	-0.15	4.255	0.166	0.41	ZZ
ALJWME		3.898	-0.366	-0.74	3.876	-0.213	-0.52	ZZ
EYR6DK		4.598	0.334	0.67	4.740	0.651	1.59	ZZ
EYT3NF		4.445	0.182	0.37	4.521	0.432	1.06	ZZ
FCBAZ8		4.719	0.455	0.92	4.339	0.250	0.61	ZZ
QDUTE3		4.360	0.097	0.19	3.830	-0.259	-0.64	ZZ
RVRFEZ		4.350	0.086	0.17	4.000	-0.090	-0.22	ZZ
WWLVTR		4.960	0.697	1.40	4.120	0.031	0.08	ZZ
XEHHWV		3.903	-0.361	-0.73	3.933	-0.157	-0.38	ZZ

Summary Statistics	Sample MC51	Sample MC52
Grand Means	4.26 Percent	4.09 Percent
Stnd Dev Btwn Labs	0.50 Percent	0.41 Percent

Statistics based on 10 of 10 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample HS51 Lab Mean	Sample HS51 Diff from Grand Mean	Sample HS51 CPV	Sample HS52 Lab Mean	Sample HS52 Diff from Grand Mean	Sample HS52 CPV	Instr Code
22ZYQW	X	147.77	120.07	9.68	90.63	63.87	5.20	XX
38LC6P	X	174.04	146.34	11.80	82.98	56.22	4.57	HE
3CJTLP		18.73	-8.97	-0.72	18.69	-8.07	-0.66	HE
4XUFGT		33.95	6.25	0.50	28.11	1.35	0.11	HE
6M7Y8J		31.55	3.85	0.31	25.19	-1.57	-0.13	HE
8ELKBR	*	63.35	35.65	2.87	63.43	36.67	2.98	HE
8NFQBK		36.20	8.50	0.69	33.37	6.61	0.54	HE
AHKFAK		26.56	-1.14	-0.09	25.58	-1.18	-0.10	HE
EL8QC7		23.63	-4.07	-0.33	24.49	-2.27	-0.18	HE
FL2TEF		24.70	-3.00	-0.24	25.90	-0.86	-0.07	HE
HHUCW3		20.35	-7.35	-0.59	19.07	-7.69	-0.63	HE
JL6PCF		17.99	-9.71	-0.78	18.59	-8.17	-0.66	HE
LHZZN4		20.71	-6.99	-0.56	19.91	-6.85	-0.56	HE
MP2CJ2		20.66	-7.04	-0.57	20.08	-6.68	-0.54	XX
NC4V86		35.43	7.73	0.62	35.11	8.35	0.68	XX
R3BJL3		52.46	24.76	2.00	52.38	25.62	2.08	HE
RUXML2		18.82	-8.88	-0.72	18.51	-8.25	-0.67	HE
WZ6PTY		15.97	-11.73	-0.95	15.74	-11.02	-0.90	HE
ZGHRGN		21.80	-5.90	-0.48	22.70	-4.06	-0.33	HE
ZHU8BP		18.49	-9.21	-0.74	16.62	-10.14	-0.82	HE
ZTUV3L		25.01	-2.69	-0.22	24.94	-1.82	-0.15	HE

Summary Statistics	Sample HS51	Sample HS52
Grand Means	27.70 Seconds	26.76 Seconds
Stnd Dev Btwn Labs	12.40 Seconds	12.29 Seconds

Statistics based on 19 of 21 reporting participants.

Comments on Assigned Data Flags for Test #3615

22ZYQW (X) - Extreme Data.

38LC6P (X) - Extreme Data.

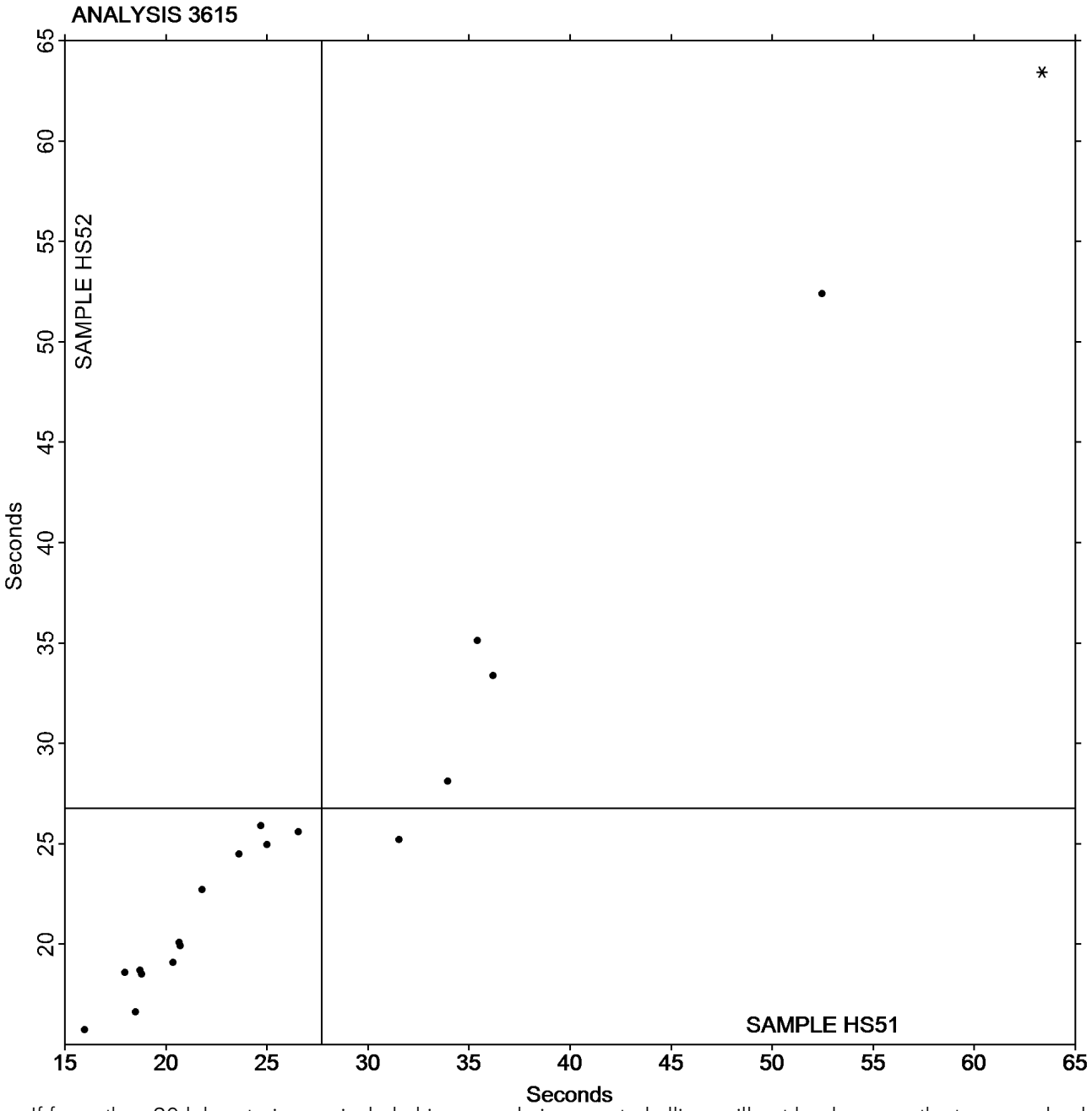
Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab

Grand Mean Sample HS51 = 27.703 Seconds

Grand Mean Sample HS52 = 26.758 Seconds



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-