Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3202 G - October 2022

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 sectors: including color, rubber, plastics, fasteners and metals, containerboard, paper, agriculture, hemp, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 100 countries, currently participate in the CTS programs.

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Key for Web Summary Reports (Page 1 of 2)

WebCode — Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Paper Report published on the CTS Web site. 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.

ΔE — The calculated total color difference between the two samples. For the Hunter L,a,b analyses it is calculated in Hunter units (ΔE). For the L*,a*,b* analyses it is calculated in CIELAB units (ΔE*).

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 350

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
4EE8ZX		GA09	94.69	-0.57	1.85	0.03	0.01	-0.04	0.05	LS
		GA10	94.73	-0.55	1.81					
4PVWY4		GA09	93.46	-0.38	1.77	0.00	0.00	-0.01	0.01	LA
		GA10	93.46	-0.38	1.77					
8ZKRM9		GA09	94.74	-0.57	1.65	0.00	0.04	-0.12	0.12	EH
		GA10	94.74	-0.54	1.54					
AC4FB4		GA09	93.43	-0.70	1.94	0.02	0.04	-0.02	0.05	TC
		GA10	93.45	-0.66	1.92					
BCLLAU		GA09	94.07	-0.79	3.85 *	0.08	0.02	0.12	0.15	XS
		GA10	94.15	-0.77	3.97					
DWJUMF		GA09	93.27	-0.63	1.44	0.12	0.04	0.17	0.21	HE
		GA10	93.38	-0.58	1.61					
G89ULN	X	GA09	82.78	0.36 X	0.44	0.56 X	-0.06 X	-0.16	0.59 X	TS
		GA10	83.34	0.30	0.28					
LAJQCE	X	GA09	92.48	0.00 X	1.26	0.04	-0.02	-0.07	0.08	TS
		GA10	92.52	-0.02	1.19					
LN67FE		GA09	92.35	-1.04	0.83	0.00	0.01	0.01	0.01	HZ
		GA10	92.35	-1.04	0.84					
NE8UYW	X	GA09	92.60 X	0.07 X	1.28	0.68 X	-0.07 X	-0.01	0.68 X	XX
		GA10	93.28	0.00	1.28					
PYQ9X4		GA09	93.77	-0.61	1.53	-0.06	0.00	0.06	0.08	HE
		GA10	93.71	-0.61	1.58					
Q3PQRP		GA09	94.75	-0.56	1.84	-0.01	0.01	-0.03	0.03	LS
		GA10	94.74	-0.54	1.81					
Q8DRR3		GA09	94.47	-0.50	2.16	-0.03	0.00	0.01	0.03	NG
		GA10	94.44	-0.51	2.17					
QHEKC8		GA09	93.29	-0.59	1.85	0.13	0.00	-0.01	0.13	TC
		GA10	93.41	-0.59	1.83					
VE4ZEA		GA09	92.93	-0.05	1.26	0.14	-0.03	0.09	0.17	TS
		GA10	93.07	-0.08	1.35					
WA3CB8		GA09	96.01	-1.04 *	3.06	-0.07	-0.04	-0.07	0.11	HZ
		GA10	95.94	-1.08	2.99					

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Paper & Paperboard Interlaboratory Testing Program

Analysis 350

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

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

Report #3202 G, October 2022

Web Code	Data Flag	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
WYMURW		GA09	93.33	-0.61	1.87	-0.02	0.01	-0.01	0.02	TC
		GA10	93.31	-0.60	1.86					
Z48ZW9		GA09	81.99	-0.25	-0.72	0.55 X	-0.01	0.06	0.55 X	TC
		GA10	82.54	-0.26	-0.66					

Summary Statistics

Grand Means							
GA09	92.459	-0.592	1.620	0.058	0.007	0.014	0.115
GA10	92.546	-0.585	1.619				
Stnd Dev Btwn Labs							
GA09	3.905	0.257	0.958	0.151	0.023	0.075	0.137
GA10	3.728	0.255	0.969				

Statistics based on 15 of 18 reporting participants

Comments on Assigned Data Flags for Test #350

LAJQCE (X) - Inconsistent within replicate readings of "a" sample GA09.

G89ULN (X) - Very high "a" values for both samples. Inconsistent within replicate readings of "a" for both samples. Large delta L & E. Small delta a.

NE8UYW (X) - Inconsistent within replicate readings of "L" sample GA10. High "a" values for for GA09. Large delta L & E. Small delta a.

Analysis Notes:

G89ULN - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than the negative Grand Mean as shown above graphs.

NE8UYW - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than the negative Grand Mean as shown above graphs.

Key to Instrument Codes Reported by Participants

EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HZ	Hunter ColorFlex EZ	LA	L & W Elrepho AL300
LS	L & W Elrepho SE 070	NG	Minolta CM-3700d Spectrophotometer
TC	Technidyne Color Touch Series	TS	Technidyne Brightimeter Micro S-5
XS	X-Rite 938 Spectrodensitometer	XX	Instrument make/model not specified by lab

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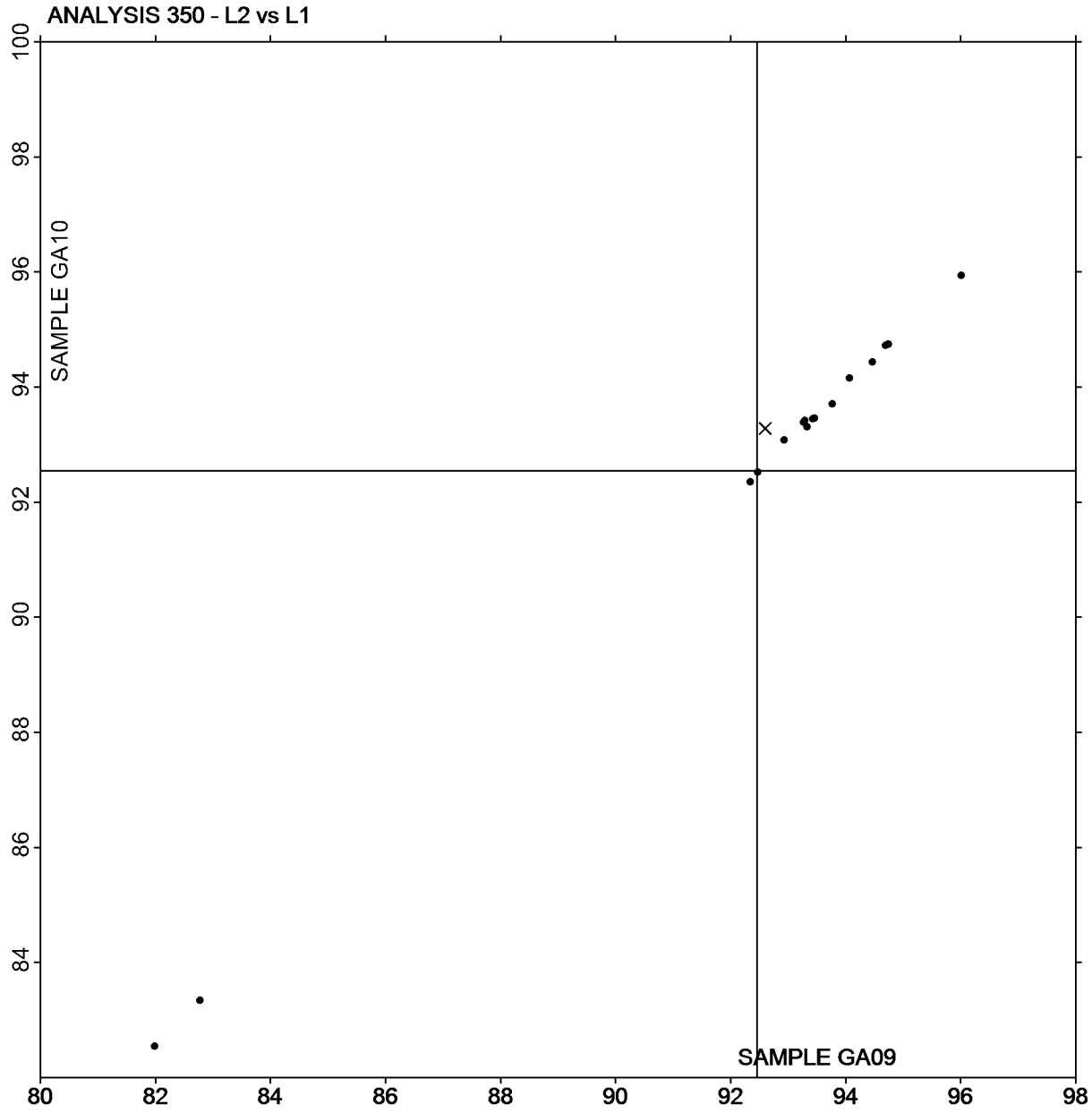
Plot of L values GA10 vs L values GA09



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

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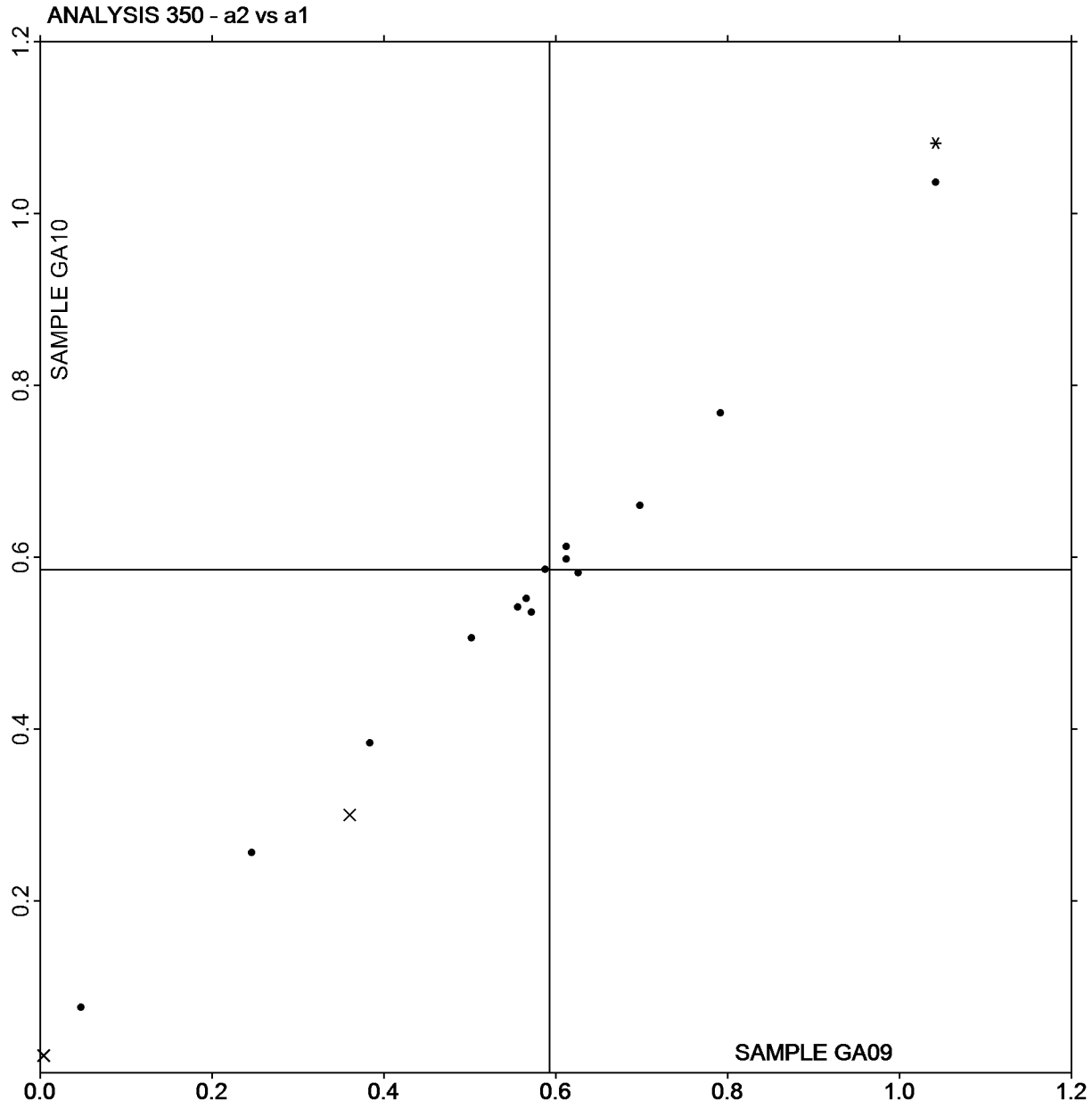
Plot of a values GA10 vs a values GA09



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

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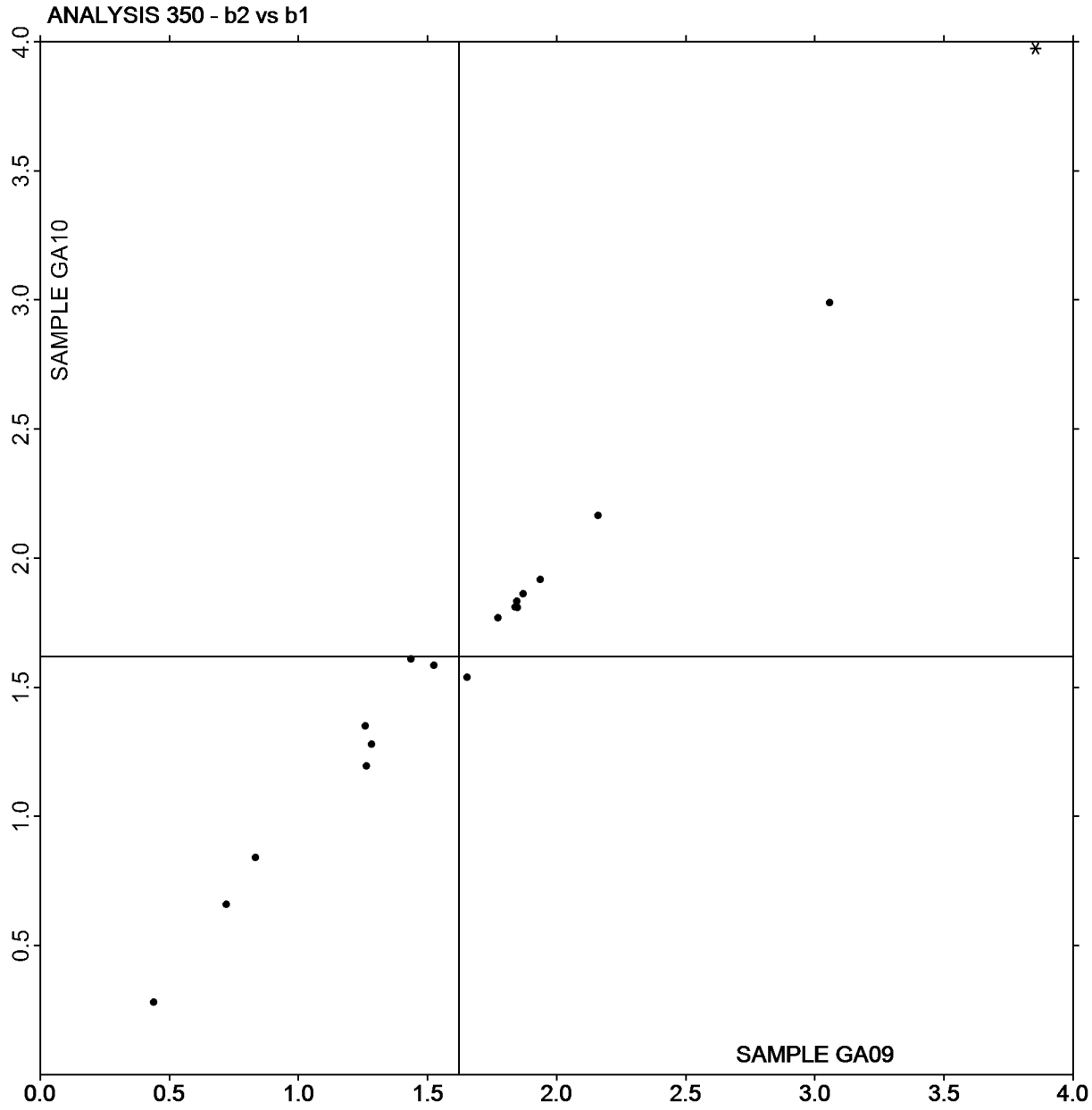
Plot of b values GA10 vs b values GA09



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 351

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

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

Web Code	Data Flag	Samples	CIE L* a* b* Color Values L*	a*	b*	Color Difference Values ΔL*	Δa*	Δb*	ΔE*	InstrCode
6WD8KN		GA09	93.27	-0.38	1.67	0.02	0.02	-0.04	0.05	XB
		GA10	93.29	-0.37	1.63					
8GVYWP		GA09	94.85	-0.57	1.93	-0.01	0.01	0.01	0.01	EF
		GA10	94.84	-0.57	1.93					
8ZKRM9		GA09	94.69	-0.59	1.74	0.04	0.01	-0.15	0.15	EH
		GA10	94.74	-0.58	1.59					
93M8DC		GA09	94.84	-0.42	1.56	-0.01	-0.03	-0.04	0.05	NH
		GA10	94.83	-0.44	1.51					
9RNCJM		GA09	94.75	-0.56	1.98	0.04	-0.01	-0.10	0.10	EH
		GA10	94.79	-0.56	1.88					
BGFMB9		GA09	93.94 *	-0.37 *	1.44	0.15 X	0.09 X	0.12	0.21	XC
		GA10	94.10	-0.28	1.56					
CJ2L6X		GA09	94.79	-0.61	1.83	0.00	0.00	-0.01	0.01	TC
		GA10	94.79	-0.61	1.82					
GEURCW		GA09	94.81	-0.49	2.06	0.04	-0.01	-0.13	0.13	NG
		GA10	94.85	-0.50	1.93					
HYU8AY		GA09	94.82	-0.50	2.04	0.01	0.00	-0.03	0.03	HT
		GA10	94.83	-0.50	2.01					
KVZK8L		GA09	94.86	-0.50	1.99	0.01	0.00	-0.02	0.03	HT
		GA10	94.87	-0.50	1.97					
L3GFLV		GA09	93.79	-0.42	1.70	0.01	0.00	0.01	0.01	HE
		GA10	93.79	-0.41	1.71					
Q3PQRP		GA09	94.75	-0.55	1.83	0.02	-0.01	-0.03	0.04	LS
		GA10	94.77	-0.55	1.80					
QEWUY6		GA09	95.08	-0.51	1.78	0.00	0.00	0.01	0.01	NF
		GA10	95.08	-0.50	1.79					
QWZADD		GA09	94.94	-0.48	1.62	-0.06	-0.01	-0.17	0.18	NG
		GA10	94.87	-0.49	1.45					
TW9NT4		GA09	94.56	-0.59	1.72	-0.06	-0.01	-0.01	0.06	XC
		GA10	94.51	-0.59	1.71					
Z48ZW9		GA09	93.35	-0.71	0.64 *	0.01	0.00	-0.01	0.02	HE
		GA10	93.36	-0.71	0.63					

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Z8AYAM	GA09	94.77	-0.61 *	1.89 *	0.04	0.09	-0.35 X	0.37 X	TC
	GA10	94.81	-0.52	1.54					
ZJX3DC	GA09	95.34	-0.60	1.47	0.03	-0.03	0.06	0.07	XP
	GA10	95.36	-0.63	1.52					

Summary Statistics

Grand Means							
GA09	94.567	-0.525	1.716	0.016	0.008	-0.050	0.085
GA10	94.583	-0.517	1.666				
Stnd Dev Btwn Labs							
GA09	0.578	0.091	0.326	0.045	0.031	0.103	0.094
GA10	0.570	0.100	0.312				

Statistics based on 18 of 18 reporting participants

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
LS	L & W Elrepho SE 070	NF	Minolta CM-3600d Spectrophotometer
NG	Minolta CM-3700d Spectrophotometer	NH	Minolta CM-3700A Spectrophotometer
TC	Technidyne Color Touch Series	XB	X-Rite Ci7
XC	X-Rite eXact Series	XP	X-Rite Spectrophotometer DTP

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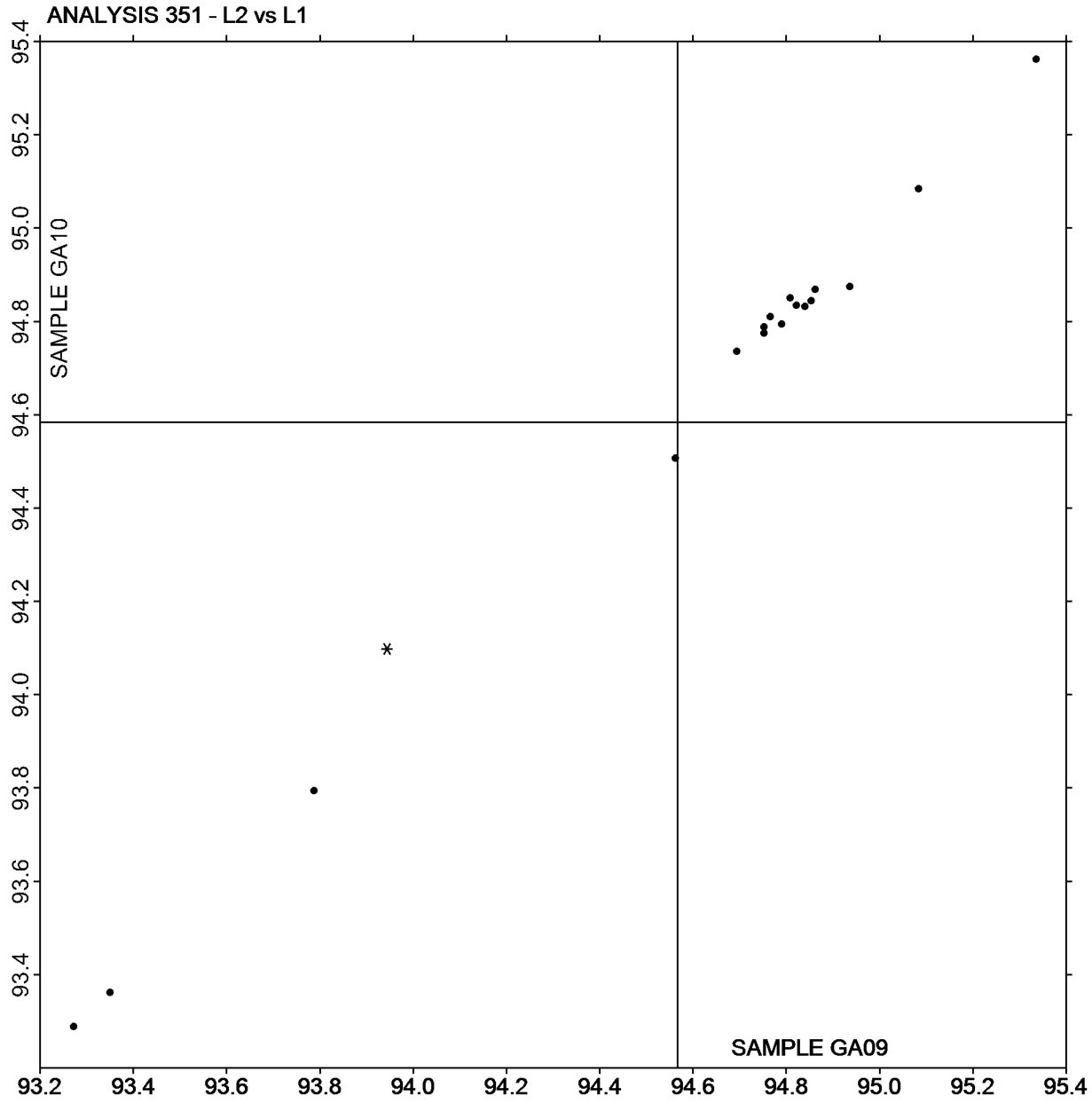
Plot of L values GA10 vs L values GA09



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

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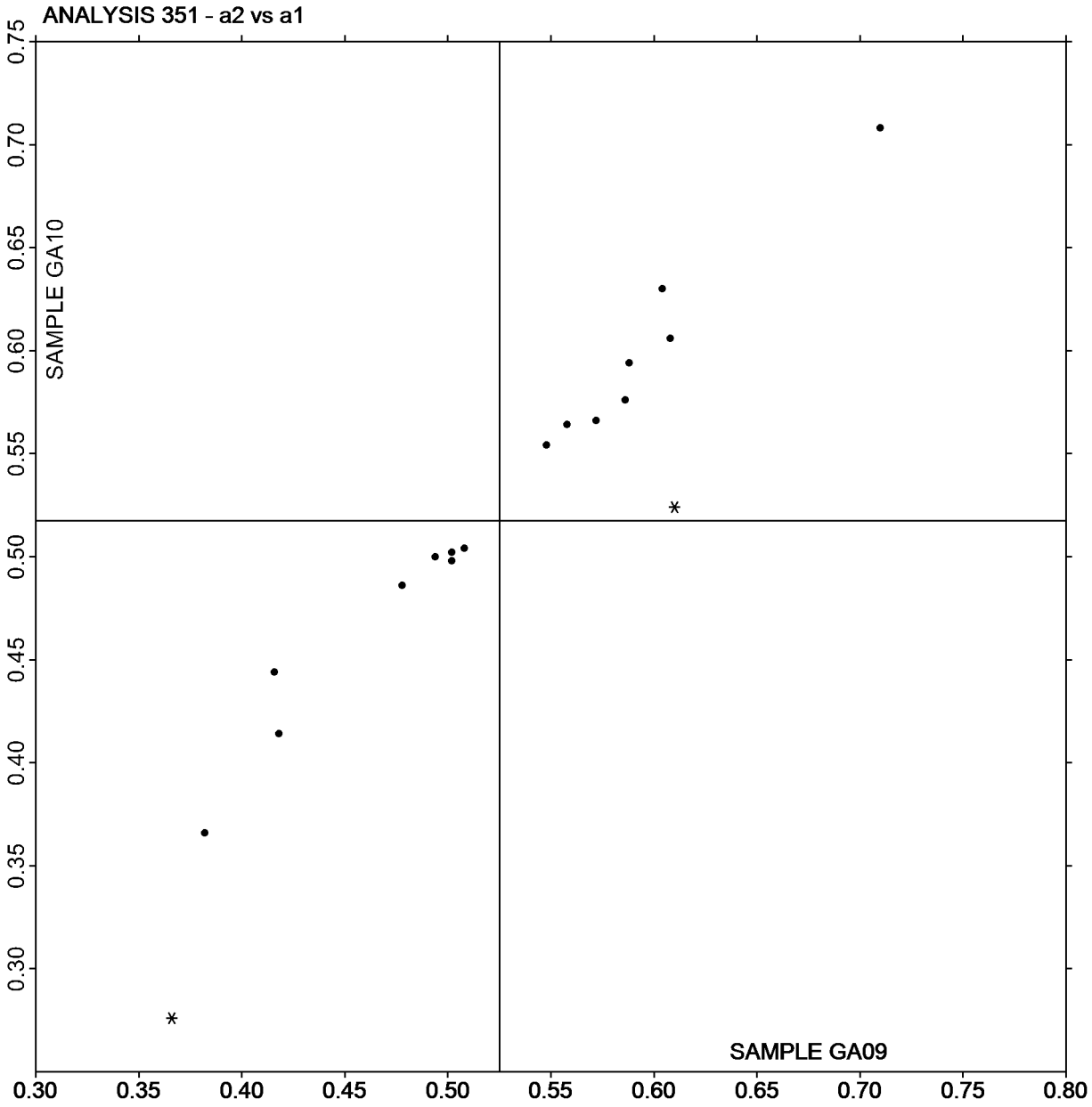
Plot of a values GA10 vs a values GA09



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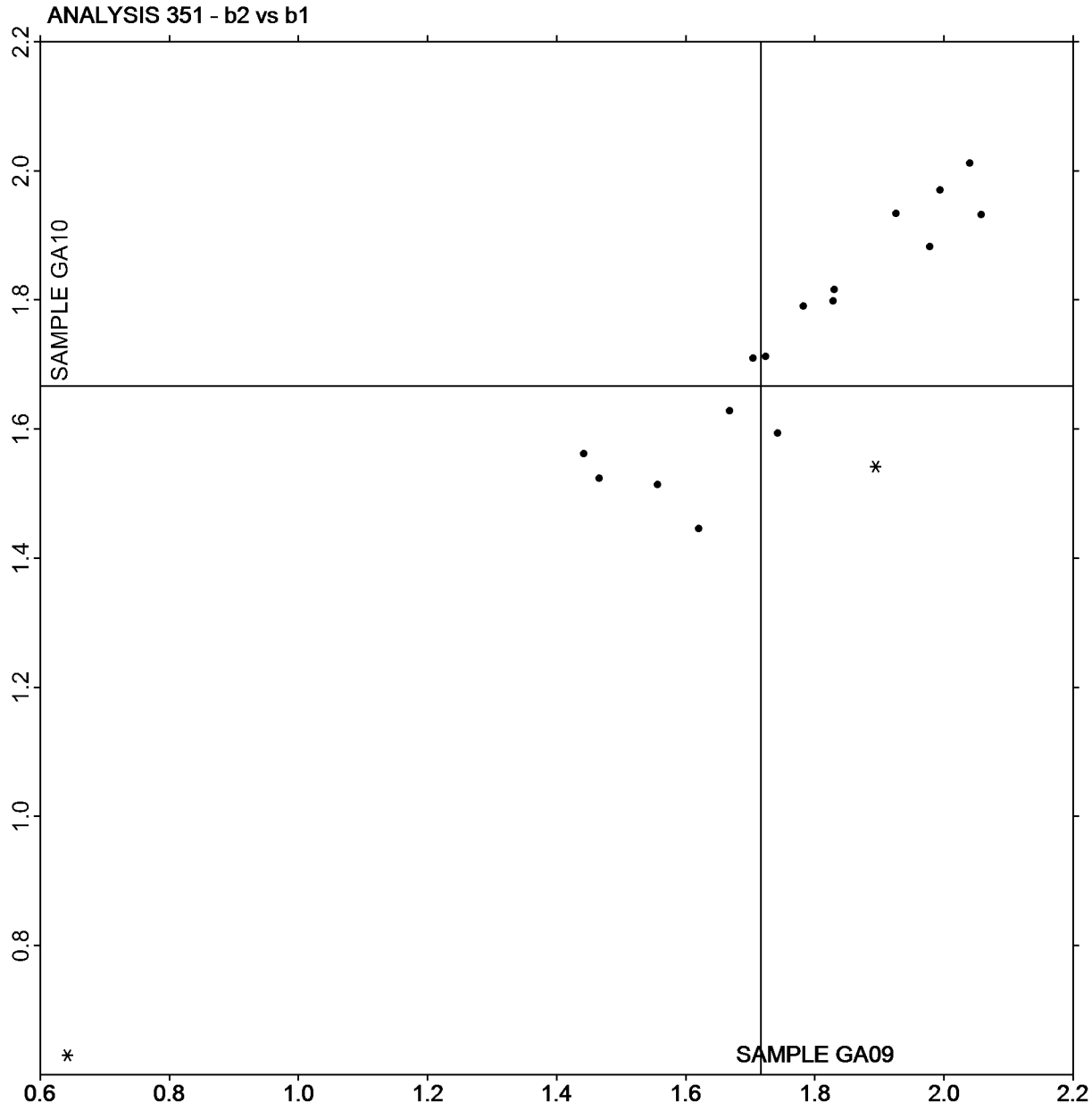
Plot of b values GA10 vs b values GA09



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

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Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV09 Lab Mean	Sample GV09 Diff from Grand Mean	Sample GV09 CPV	Sample GV10 Lab Mean	Sample GV10 Diff from Grand Mean	Sample GV10 CPV	Instr Code
43LJBQ		4.950	-0.031	-0.35	4.953	-0.036	-0.39	PP
4D46EZ		5.078	0.097	1.10	5.045	0.056	0.59	LW
4EE8ZX		5.061	0.080	0.92	5.065	0.075	0.80	LW
4N29G9	*	5.228	0.247	2.82	5.230	0.241	2.55	TM
4PVWY4		5.080	0.099	1.13	5.069	0.079	0.84	EM
4TGY2N		4.909	-0.072	-0.82	4.913	-0.076	-0.81	PP
63HDAM		4.998	0.017	0.19	5.002	0.013	0.14	TM
6WD8KN		4.948	-0.033	-0.37	4.921	-0.068	-0.72	TM
7KQ6J3		4.765	-0.215	-2.45	4.761	-0.228	-2.42	LW
7PLWQY		4.991	0.011	0.12	5.009	0.019	0.20	LW
8GVYWP		4.971	-0.010	-0.11	5.029	0.040	0.42	TM
8ZKRM9		4.981	0.000	0.00	5.010	0.021	0.22	EM
93M8DC		4.893	-0.088	-1.00	4.941	-0.048	-0.51	PP
96PCNB		5.053	0.072	0.82	5.070	0.081	0.85	EM
9RNCJM	*	4.987	0.006	0.07	4.865	-0.124	-1.32	EM
A76LKH		5.040	0.060	0.68	5.031	0.042	0.45	LW
A96URE		4.921	-0.060	-0.68	4.967	-0.022	-0.24	OK
AHTGMG		4.928	-0.053	-0.60	4.982	-0.007	-0.08	EM
AKHZXA		5.121	0.140	1.60	5.092	0.103	1.09	PP
B6NU67		5.000	0.019	0.22	4.906	-0.084	-0.89	MS
BCLLAU		4.860	-0.121	-1.37	4.910	-0.079	-0.84	TM
BGFMB9		5.091	0.110	1.25	5.177	0.188	1.99	TM
C2LBKJ		5.053	0.072	0.82	5.014	0.025	0.26	LB
CF3B9X		5.092	0.111	1.27	5.186	0.197	2.09	LW
CJ2L6X	*	4.810	-0.171	-1.94	4.950	-0.039	-0.42	TM
EWWQLT		4.955	-0.026	-0.29	4.968	-0.022	-0.23	FR
F2Q4LN		5.034	0.054	0.61	5.047	0.058	0.61	LW
FF9PC9		4.902	-0.079	-0.90	4.918	-0.071	-0.76	TA
FG68A4		4.912	-0.069	-0.79	4.942	-0.047	-0.50	LW
GEURCW		4.944	-0.037	-0.42	4.955	-0.034	-0.36	PP
HCZE96		5.026	0.045	0.52	4.975	-0.014	-0.15	LA
HYU8AY		4.882	-0.099	-1.12	4.842	-0.147	-1.56	EM
KVZK8L		4.924	-0.057	-0.65	4.986	-0.003	-0.04	EM
L3GFLV		4.959	-0.022	-0.25	4.979	-0.010	-0.11	PP
LU7WPQ		5.034	0.053	0.61	4.970	-0.019	-0.20	TM
NE8UYW		4.880	-0.101	-1.15	4.790	-0.199	-2.11	LA
Q8DRR3		5.015	0.035	0.39	5.024	0.034	0.36	LW
QEE9F9		5.027	0.046	0.53	5.016	0.026	0.28	LW
QEWUY6		5.144	0.163	1.86	5.195	0.206	2.18	TM
T28E7P		4.908	-0.073	-0.83	4.861	-0.128	-1.36	EM
TMMY4Q		5.064	0.083	0.95	5.076	0.087	0.92	EM

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Paper & Paperboard Interlaboratory Testing Program

Analysis 360
Thickness (Caliper), Printing papers
TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV09 Lab Mean	Sample GV09 Diff from Grand Mean	Sample GV09 CPV	Sample GV10 Lab Mean	Sample GV10 Diff from Grand Mean	Sample GV10 CPV	Instr Code
TW9NT4		5.028	0.047	0.53	4.984	-0.005	-0.05	LW
UV99TC		4.961	-0.020	-0.22	4.984	-0.005	-0.06	PP
VA9LWA		4.970	-0.011	-0.12	4.933	-0.056	-0.60	OK
VE4ZEA		4.926	-0.055	-0.62	5.018	0.029	0.30	EM
XWWL9Z		4.967	-0.014	-0.16	5.023	0.034	0.36	TA
Y6KBAF	X	4.573	-0.408	-4.64	4.679	-0.310	-3.29	TA
YGDEA7		4.914	-0.067	-0.76	4.985	-0.004	-0.05	TA
Z8AYAM	X	4.882	-0.099	-1.13	5.146	0.156	1.66	PP
ZJX3DC		4.890	-0.091	-1.03	4.920	-0.069	-0.74	TM

Summary Statistics	Sample GV09	Sample GV10
Grand Means	4.98 mils	4.99 mils
Stnd Dev Btwn Labs	0.09 mils	0.09 mils

Statistics based on 48 of 50 reporting participants.

Comments on Assigned Data Flags for Test #360

Y6KBAF (X) - Data for both samples are low. Possible Systematic Error.

Z8AYAM (X) - Inconsistent in testing between samples.

Key to Instrument Codes Reported by Participants

EM	Emveco	FR	Frank Instruments
LA	L & W Autoline	LB	L & W Autoline 600
LW	L & W	MS	Messmer
OK	Oakland	PP	Technidyne Profile/Plus
TA	Thwing-Albert	TM	TMI

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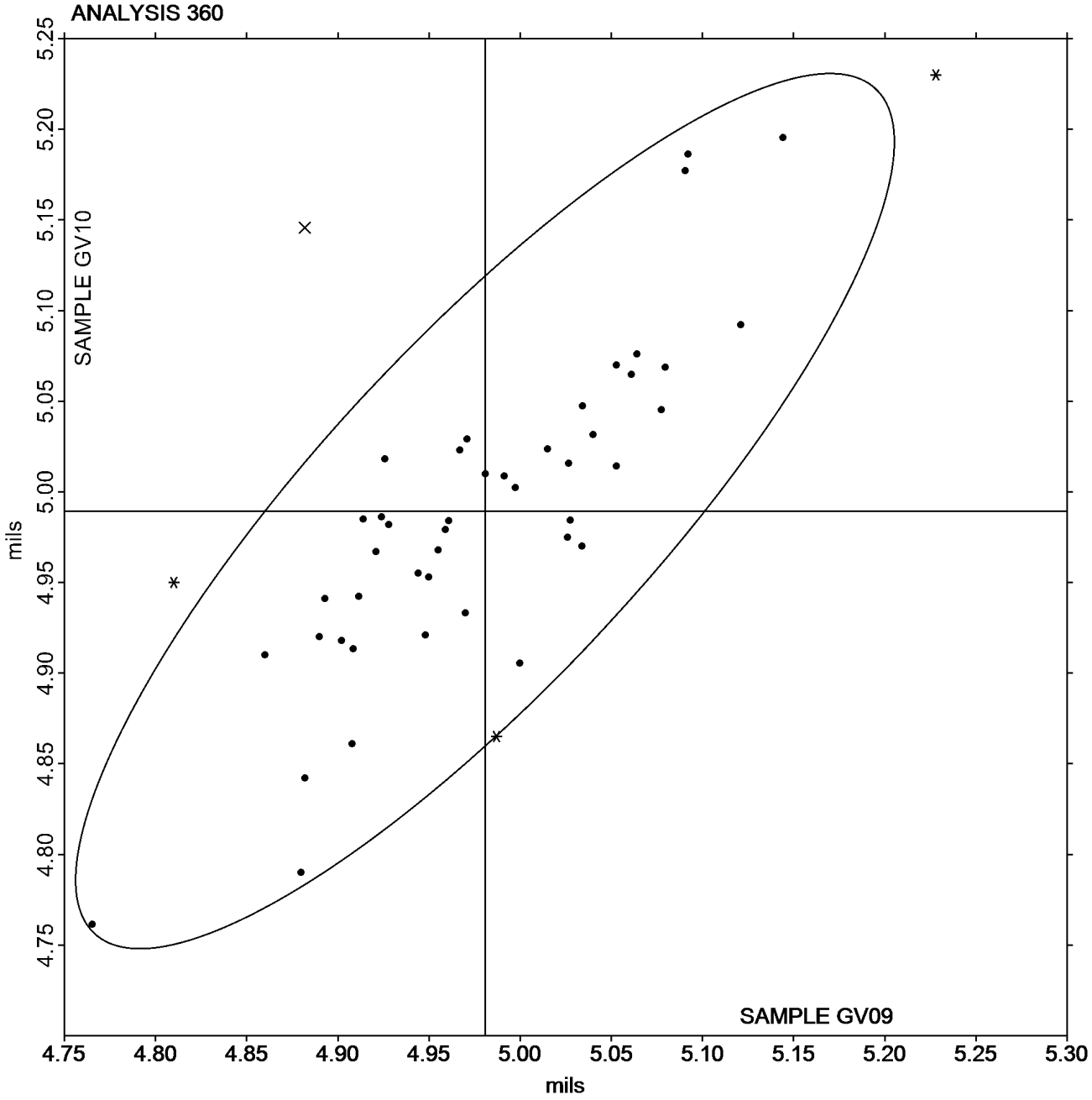
Grand Mean Sample GV09 = 4.9807 mils

Grand Mean Sample GV10 = 4.9894 mils



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Paper & Paperboard Interlaboratory Testing Program

Analysis 361
Thickness (Caliper), Packaging papers
TAPPI Official Test Method T411

WebCode	Data Flag	Sample GY09 Lab Mean	Sample GY09 Diff from Grand Mean	Sample GY09 CPV	Sample GY10 Lab Mean	Sample GY10 Diff from Grand Mean	Sample GY10 CPV	Instr Code
2GPTTY		9.619	0.023	0.19	7.416	-0.063	-0.74	LA
39EQ8Y		9.609	0.013	0.11	7.425	-0.054	-0.63	LA
4AJFQF		9.506	-0.090	-0.75	7.392	-0.087	-1.02	LA
4C8RR8		9.489	-0.107	-0.89	7.493	0.014	0.17	LW
4PVWY4		9.591	-0.006	-0.05	7.476	-0.002	-0.03	MS
4TGY2N		9.606	0.010	0.08	7.524	0.045	0.53	LW
7W7YWF		9.752	0.156	1.29	7.535	0.056	0.66	LA
7XG2HE		9.401	-0.195	-1.62	7.407	-0.072	-0.84	LW
93M8DC		9.844	0.248	2.06	7.632	0.153	1.80	PP
9RNCJM		9.546	-0.050	-0.42	7.451	-0.028	-0.32	EM
A3FMZT		9.551	-0.045	-0.38	7.492	0.014	0.16	LW
BBRXQY	X	9.054	-0.542	-4.51	7.047	-0.432	-5.07	TM
BRX67Z		9.686	0.090	0.75	7.545	0.066	0.78	TM
C2LBKJ		9.611	0.015	0.12	7.587	0.108	1.27	LB
CHN8JA		9.404	-0.192	-1.60	7.447	-0.032	-0.37	LW
DWJUMF		9.718	0.122	1.01	7.504	0.025	0.30	EM
EG9ZJQ		9.757	0.161	1.34	7.592	0.113	1.33	LW
F2Q4LN		9.696	0.100	0.83	7.507	0.029	0.34	LW
FG3KQ6		9.691	0.095	0.79	7.491	0.012	0.15	LW
G89ULN		9.430	-0.166	-1.38	7.340	-0.139	-1.63	OK
GYGCD8		9.591	-0.005	-0.04	7.374	-0.105	-1.23	LW
LUKLNW		9.654	0.057	0.48	7.528	0.049	0.58	LW
NUFL3M		9.553	-0.043	-0.36	7.544	0.065	0.77	LA
PYQ9X4		9.677	0.081	0.67	7.502	0.023	0.27	EM
Q3PQRP	X	0.009	-9.587	-79.72	0.007	-7.471	-87.76	TM
QA3X8T		9.698	0.102	0.85	7.552	0.073	0.86	PP
WA3CB8		9.542	-0.054	-0.45	7.420	-0.059	-0.69	VP
WYMURW		9.645	0.049	0.40	7.518	0.039	0.46	EM
XZW747		9.541	-0.055	-0.46	7.449	-0.030	-0.35	TM
Y6KBAF	*	9.322	-0.274	-2.28	7.227	-0.252	-2.96	TA
YGDEA7		9.706	0.110	0.91	7.586	0.107	1.26	TA
Z48ZW9		9.453	-0.143	-1.19	7.403	-0.076	-0.89	OK

Summary Statistics	Sample GY09	Sample GY10
Grand Means	9.60 mils	7.48 mils
Stnd Dev Btwn Labs	0.12 mils	0.09 mils

Statistics based on 30 of 32 reporting participants.

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Comments on Assigned Data Flags for Test #361

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

Q3PQRP (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LB	L & W Autoline 600	LW	L & W
MS	Messmer	OK	Oakland
PP	Technidyne Profile/Plus	TA	Thwing-Albert
TM	TMI	VP	Valmet Paper Lab Automated Tester

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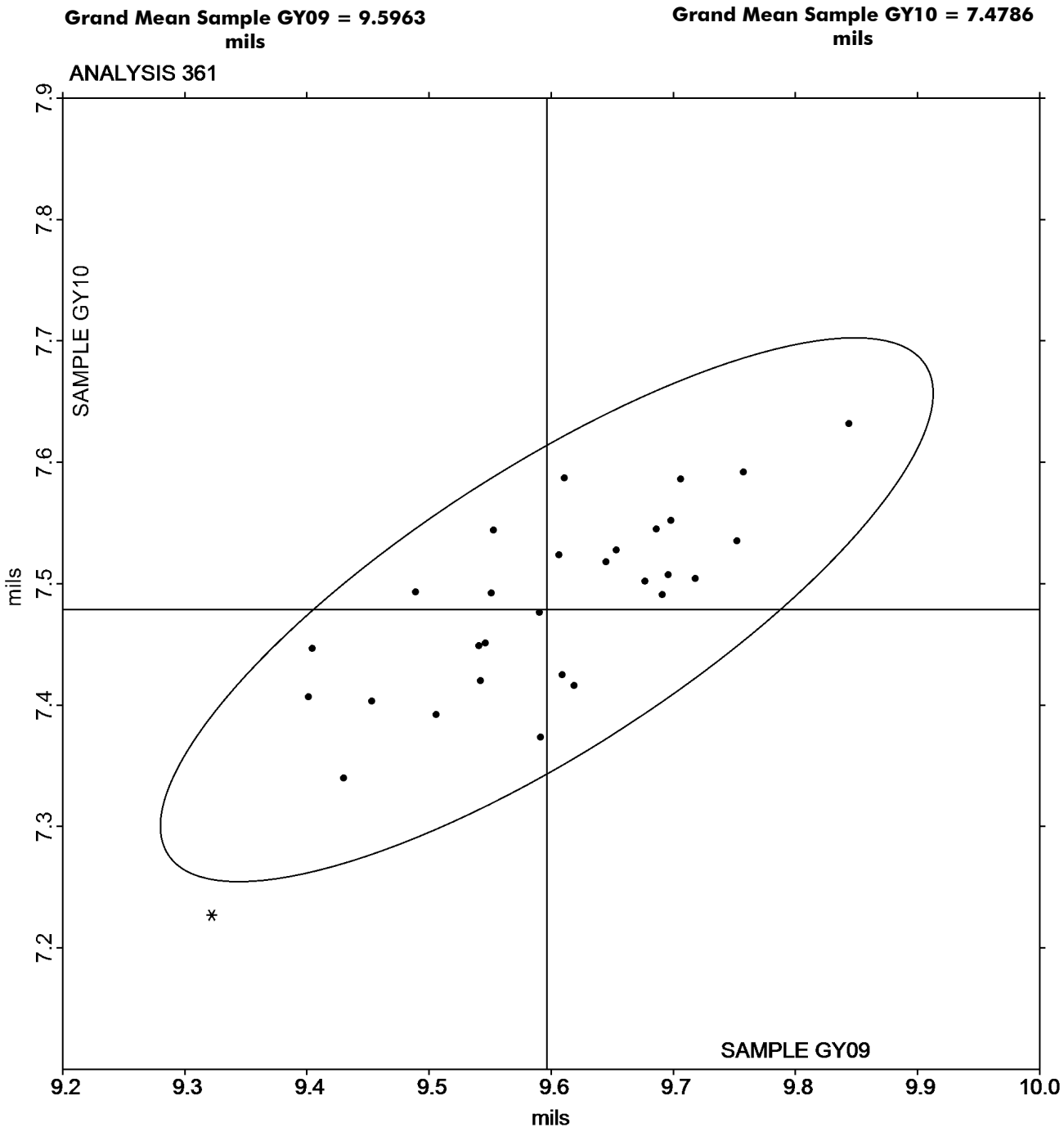

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Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

WebCode	Data Flag	Sample GD09 Lab Mean	Sample GD09 Diff from Grand Mean	Sample GD09 CPV	Sample GD10 Lab Mean	Sample GD10 Diff from Grand Mean	Sample GD10 CPV	Instr Code
7W7YWF		0.5914	0.0687	0.86	0.5778	0.0476	0.59	TA
93M8DC		0.5220	-0.0007	-0.01	0.5080	-0.0222	-0.27	TP
AHTGMG		0.5440	0.0213	0.27	0.5480	0.0178	0.22	TA
AKHZXA	X	0.1564	-0.3663	-4.61	0.1742	-0.3560	-4.39	TA
BCLLAU		0.3672	-0.1555	-1.95	0.3608	-0.1694	-2.09	XX
EG9ZJQ		0.5226	-0.0001	0.00	0.5606	0.0304	0.37	TA
F2NEHQ		0.5666	0.0439	0.55	0.5590	0.0288	0.35	TA
L3GFLV		0.3900	-0.1327	-1.67	0.4140	-0.1162	-1.43	TA
LAJQCE		0.5710	0.0483	0.61	0.5960	0.0658	0.81	TA
Q8DRR3		0.5710	0.0483	0.61	0.5672	0.0370	0.46	TM
VE4ZEA		0.5808	0.0581	0.73	0.6108	0.0806	0.99	TA

Summary Statistics	Sample GD09	Sample GD10
Grand Means	0.52 COF	0.53 COF
Stnd Dev Btwn Labs	0.08 COF	0.08 COF

Statistics based on 10 of 11 reporting participants.

Comments on Assigned Data Flags for Test #364

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

Key to Instrument Codes Reported by Participants

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

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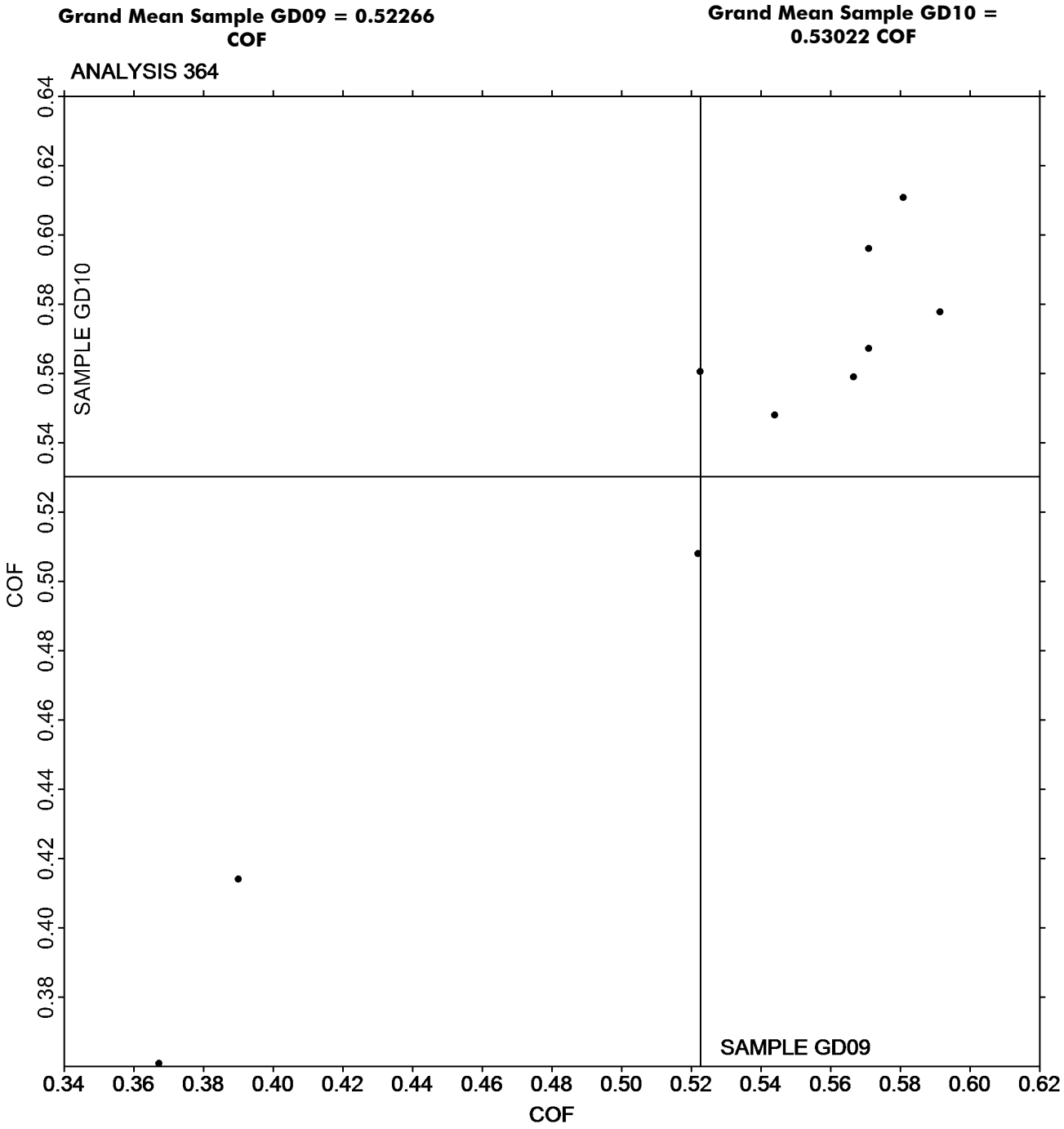

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

WebCode	Data Flag	Sample GD09 Lab Mean	Sample GD09 Diff from Grand Mean	Sample GD09 CPV	Sample GD10 Lab Mean	Sample GD10 Diff from Grand Mean	Sample GD10 CPV	Instr Code
7W7YWF		0.4466	0.0484	0.85	0.4314	0.0187	0.35	TA
AHTGMG		0.3960	-0.0022	-0.04	0.4300	0.0173	0.33	XX
AKHZXA	X	0.0584	-0.3398	-5.96	0.1006	-0.3121	-5.88	TA
BCLLAU		0.3960	-0.0022	-0.04	0.3894	-0.0233	-0.44	XX
EG9ZJQ		0.4140	0.0158	0.28	0.4368	0.0241	0.45	TN
F2NEHQ		0.3732	-0.0250	-0.44	0.3832	-0.0295	-0.56	TA
L3GFLV		0.2620	-0.1362	-2.39	0.2900	-0.1227	-2.31	TA
LAJQCE		0.4420	0.0438	0.77	0.4438	0.0311	0.59	TA
Q8DRR3		0.4448	0.0466	0.82	0.4420	0.0293	0.55	TM
VE4ZEA		0.4090	0.0108	0.19	0.4678	0.0551	1.04	TA

Summary Statistics	Sample GD09	Sample GD10
Grand Means	0.40 COF	0.41 COF
Stnd Dev Btwn Labs	0.06 COF	0.05 COF

Statistics based on 9 of 10 reporting participants.

Comments on Assigned Data Flags for Test #365

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

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

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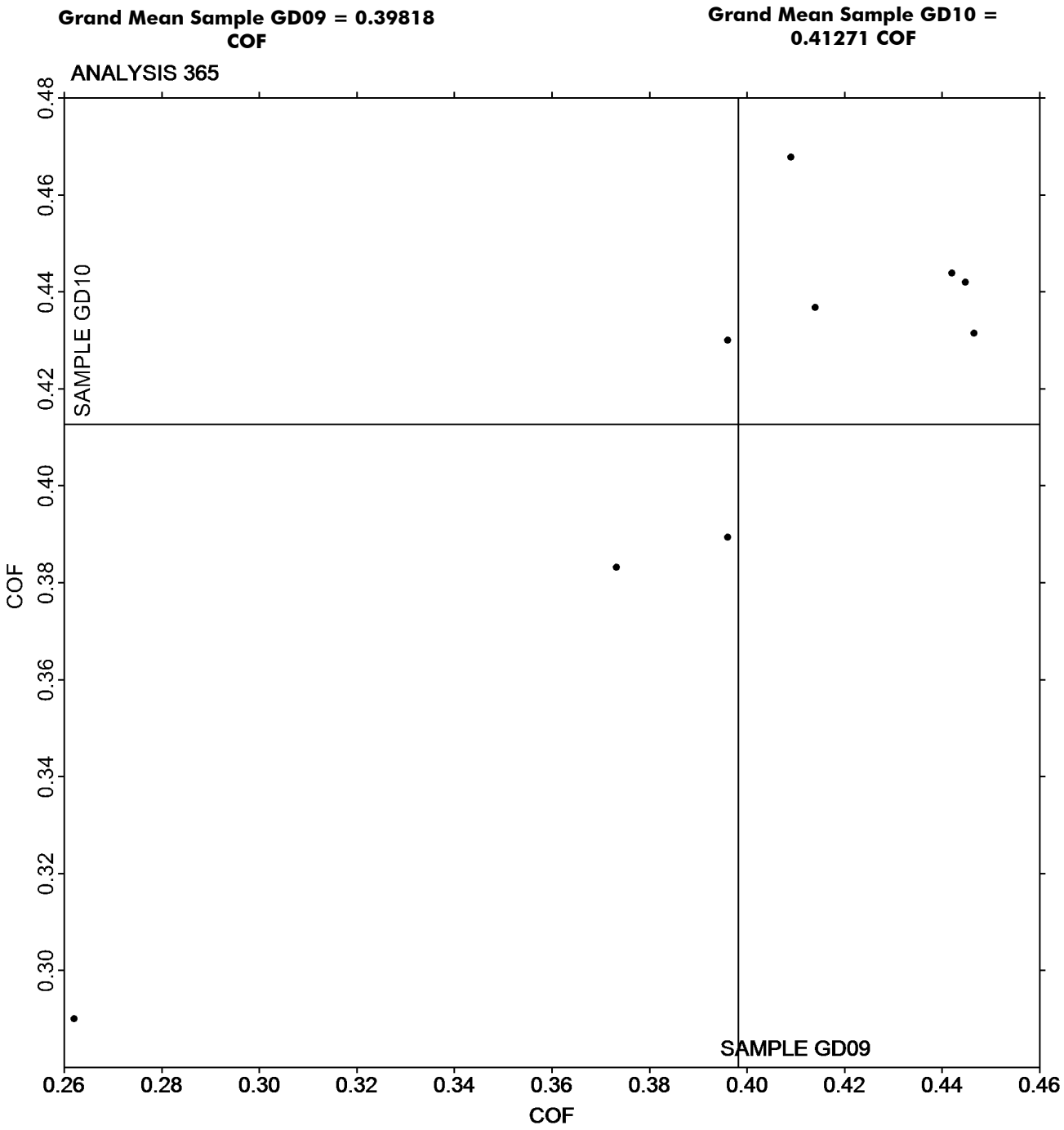

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE09 Lab Mean	Sample GE09 Diff from Grand Mean	Sample GE09 CPV	Sample GE10 Lab Mean	Sample GE10 Diff from Grand Mean	Sample GE10 CPV	Instr Code
2GPTTY		21.30	0.13	0.13	17.72	0.12	0.15	LA
4AJFQF		22.07	0.90	0.90	18.17	0.57	0.70	LA
4D46EZ		20.75	-0.42	-0.42	17.84	0.24	0.30	LP
4EE8ZX		20.81	-0.36	-0.36	16.99	-0.61	-0.74	LP
4N29G9		19.96	-1.21	-1.21	17.17	-0.43	-0.52	HG
4TGY2N		20.80	-0.37	-0.37	17.27	-0.33	-0.40	PP
6WD8KN		20.11	-1.06	-1.06	17.08	-0.52	-0.63	PP
7W7YWF	*	22.72	1.55	1.55	17.79	0.19	0.24	LA
7XG2HE		20.79	-0.38	-0.38	16.78	-0.82	-0.99	LP
8ARLPE		19.48	-1.69	-1.69	16.67	-0.93	-1.13	LP
8GVYWP		22.78	1.61	1.61	19.18	1.58	1.92	LP
8XFM8K		20.97	-0.20	-0.20	17.47	-0.13	-0.15	LP
8ZKRM9		20.21	-0.96	-0.96	16.59	-1.01	-1.22	PP
93M8DC		22.13	0.96	0.96	17.90	0.30	0.37	PP
96PCNB		21.46	0.29	0.29	17.81	0.21	0.26	PP
AHTGMG		22.03	0.86	0.86	18.55	0.95	1.15	PP
AKHZXA		21.76	0.59	0.59	18.73	1.13	1.38	VM
BCLLAU		21.00	-0.17	-0.17	17.80	0.20	0.25	GS
C86LP8		21.55	0.39	0.39	17.69	0.10	0.12	PP
CF3B9X		21.30	0.13	0.13	17.36	-0.24	-0.29	LP
CHN8JA	X	4.83	-16.34	-16.35	4.84	-12.76	-15.51	LA
F2NEHQ		22.92	1.75	1.75	18.73	1.13	1.38	WG
FF9PC9		21.21	0.04	0.04	17.84	0.24	0.30	GA
FG3KQ6		21.41	0.24	0.24	17.56	-0.04	-0.04	LP
G7E73T		21.27	0.11	0.11	18.48	0.88	1.07	XX
HCZE96		22.92	1.75	1.75	19.41	1.82	2.21	LA
HDQ689		21.22	0.05	0.05	17.53	-0.07	-0.08	GL
HYU8AY		21.42	0.25	0.25	18.00	0.40	0.49	HG
KVZK8L		21.95	0.78	0.78	17.97	0.37	0.45	PP
L3GFLV		21.45	0.28	0.28	17.33	-0.27	-0.33	PP
LUKLNW		19.88	-1.29	-1.29	16.14	-1.46	-1.77	LP
N48MEC		19.52	-1.65	-1.65	15.75	-1.85	-2.24	GA
QEWUY6		20.63	-0.54	-0.54	16.99	-0.61	-0.74	LP
T28E7P		20.87	-0.30	-0.30	17.30	-0.30	-0.36	TL
TW9NT4		21.00	-0.17	-0.17	17.40	-0.20	-0.24	LW
UV99TC		20.30	-0.87	-0.87	16.89	-0.71	-0.86	PP
VA9LWA	*	20.06	-1.11	-1.11	17.85	0.26	0.31	PP
WA3CB8		19.33	-1.84	-1.84	16.40	-1.20	-1.45	VM
YGDEA7		20.31	-0.86	-0.86	16.77	-0.83	-1.00	GA
Z48ZW9		21.52	0.36	0.36	17.63	0.04	0.05	PP
Z8AYAM		23.59	2.42	2.42	19.33	1.74	2.11	PP

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Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

Summary Statistics	Sample GE09	Sample GE10
Grand Means	21.17 sec/100 cc	17.60 sec/100 cc
Stnd Dev Btwn Labs	1.00 sec/100 cc	0.82 sec/100 cc

Statistics based on 40 of 41 reporting participants.

Comments on Assigned Data Flags for Test #370

CHN8JA (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GL	Gurley #4110
GS	Gurley-Hill S-P-S Tester #4190	HG	Technidyne - Hagerty Model #1
LA	L & W Autoline	LP	L & W Densometer, Air Permeance
LW	L & W Type Gurley Densometer, Oil Flotation	PP	Technidyne Profile/Plus
TL	Gurley Densometer #4110, Oil Flotation	VM	Valmet PaperLab (was Kajaani/Robotest)
WG	W & LE Gurley Tester	XX	Instrument make/model not specified by lab

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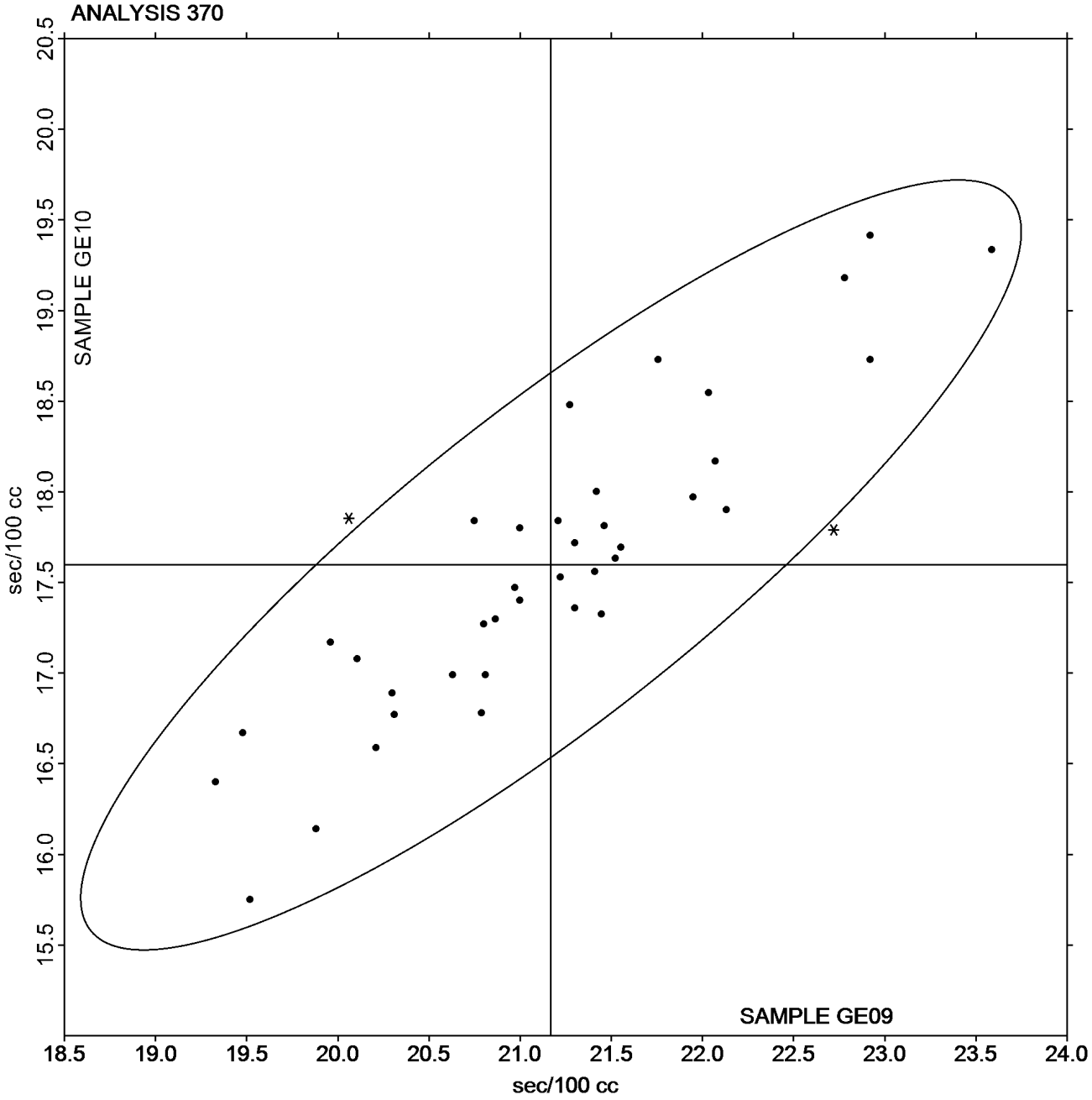
Grand Mean Sample GE09 = 21.169 sec/100 cc

Grand Mean Sample GE10 = 17.597 sec/100 cc



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Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

TAPPI Official Test Method T547

WebCode	Data Flag	Sample GE09 Lab Mean	Sample GE09 Diff from Grand Mean	Sample GE09 CPV	Sample GE10 Lab Mean	Sample GE10 Diff from Grand Mean	Sample GE10 CPV	Instr Code
A96URE		138.6	6.0	1.41	157.6	5.1	0.94	LA
BCLLAU		129.5	-3.1	-0.73	145.2	-7.3	-1.33	SH
WA3CB8		136.3	3.7	0.87	154.0	1.5	0.28	PP
XWWL9Z		132.2	-0.4	-0.09	154.4	1.9	0.35	HM
YGDEA7		131.9	-0.7	-0.16	157.4	4.9	0.90	GA
ZJX3DC		127.1	-5.5	-1.29	146.2	-6.3	-1.15	TT

Summary Statistics	Sample GE09	Sample GE10
Grand Means	132.60 Sheffield Units	152.47 Sheffield Units
Stnd Dev Btwn Labs	4.25 Sheffield Units	5.46 Sheffield Units

Statistics based on 6 of 6 reporting participants.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	HM	Technidyne - Hagerty Model #538
LA	L & W Roughness Sheffield - Autoline	PP	Technidyne Profile/Plus
SH	Sheffield	TT	TMI Monitor/Smoothness II, Model 58-24

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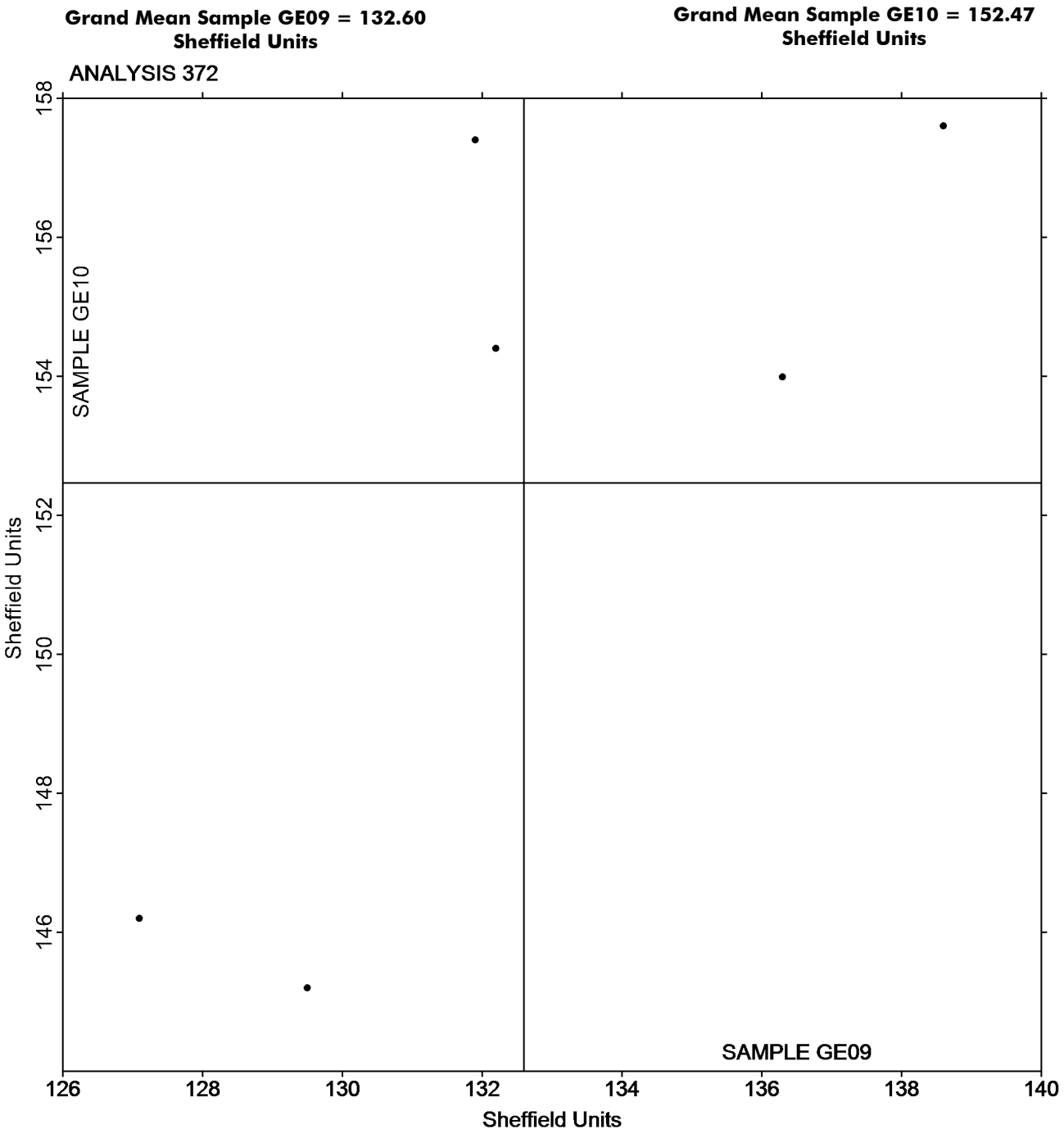

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample GJ09 Lab Mean	Sample GJ09 Diff from Grand Mean	Sample GJ09 CPV	Sample GJ10 Lab Mean	Sample GJ10 Diff from Grand Mean	Sample GJ10 CPV	Instr Code
43LJBQ		2.195	0.019	0.12	2.240	0.078	0.55	ZZ
4C8RR8		2.199	0.023	0.14	2.153	-0.009	-0.06	ZZ
79VT9A	X	1.554	-0.622	-3.92	1.386	-0.776	-5.50	ZZ
7PLWQY		2.364	0.188	1.18	2.327	0.165	1.17	ZZ
8ZKRM9		2.107	-0.069	-0.44	2.059	-0.103	-0.73	ZZ
96PCNB		2.381	0.205	1.29	2.460	0.298	2.11	ZZ
9RNCJM		2.081	-0.095	-0.60	2.149	-0.013	-0.09	ZZ
C2LBKJ		1.952	-0.224	-1.41	2.086	-0.076	-0.54	ZZ
C86LP8		1.927	-0.249	-1.57	1.994	-0.168	-1.19	ZZ
CJ2L6X		2.288	0.112	0.70	2.258	0.096	0.68	ZZ
DLGGHA		2.167	-0.009	-0.06	2.283	0.121	0.86	ZZ
DWJUMF		2.278	0.102	0.64	2.304	0.142	1.01	ZZ
F2NEHQ		2.145	-0.031	-0.20	1.949	-0.213	-1.51	ZZ
F2Q4LN		2.209	0.033	0.21	2.298	0.136	0.96	ZZ
G89ULN		2.265	0.089	0.56	2.205	0.043	0.30	ZZ
J9EYE3		1.911	-0.265	-1.67	1.888	-0.274	-1.94	ZZ
L3GFLV		2.284	0.108	0.68	2.087	-0.075	-0.53	ZZ
L4VKKT		2.181	0.005	0.03	2.225	0.063	0.45	ZZ
LAJQCE		2.282	0.106	0.67	2.292	0.130	0.92	ZZ
NE8UYW		1.890	-0.286	-1.80	2.040	-0.122	-0.87	ZZ
NUFL3M		1.837	-0.339	-2.14	1.852	-0.310	-2.20	ZZ
PYQ9X4		2.337	0.161	1.01	2.125	-0.037	-0.26	ZZ
Q3PQRP		2.138	-0.038	-0.24	2.111	-0.051	-0.36	ZZ
QEE9F9		2.174	-0.002	-0.01	2.218	0.056	0.40	ZZ
QHEKC8		2.280	0.104	0.65	2.225	0.063	0.45	ZZ
WA3CB8		2.196	0.020	0.12	2.094	-0.068	-0.48	ZZ
WYMURW		2.219	0.043	0.27	2.181	0.019	0.13	ZZ
Z48ZW9		2.471	0.295	1.86	2.273	0.111	0.79	ZZ

Summary Statistics	Sample GJ09	Sample GJ10
Grand Means	2.18 Microns	2.16 Microns
Stnd Dev Btwn Labs	0.16 Microns	0.14 Microns

Statistics based on 27 of 28 reporting participants.

Comments on Assigned Data Flags for Test #376

79VT9A (X) - Data for both samples are low. Possible Systematic Error.

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Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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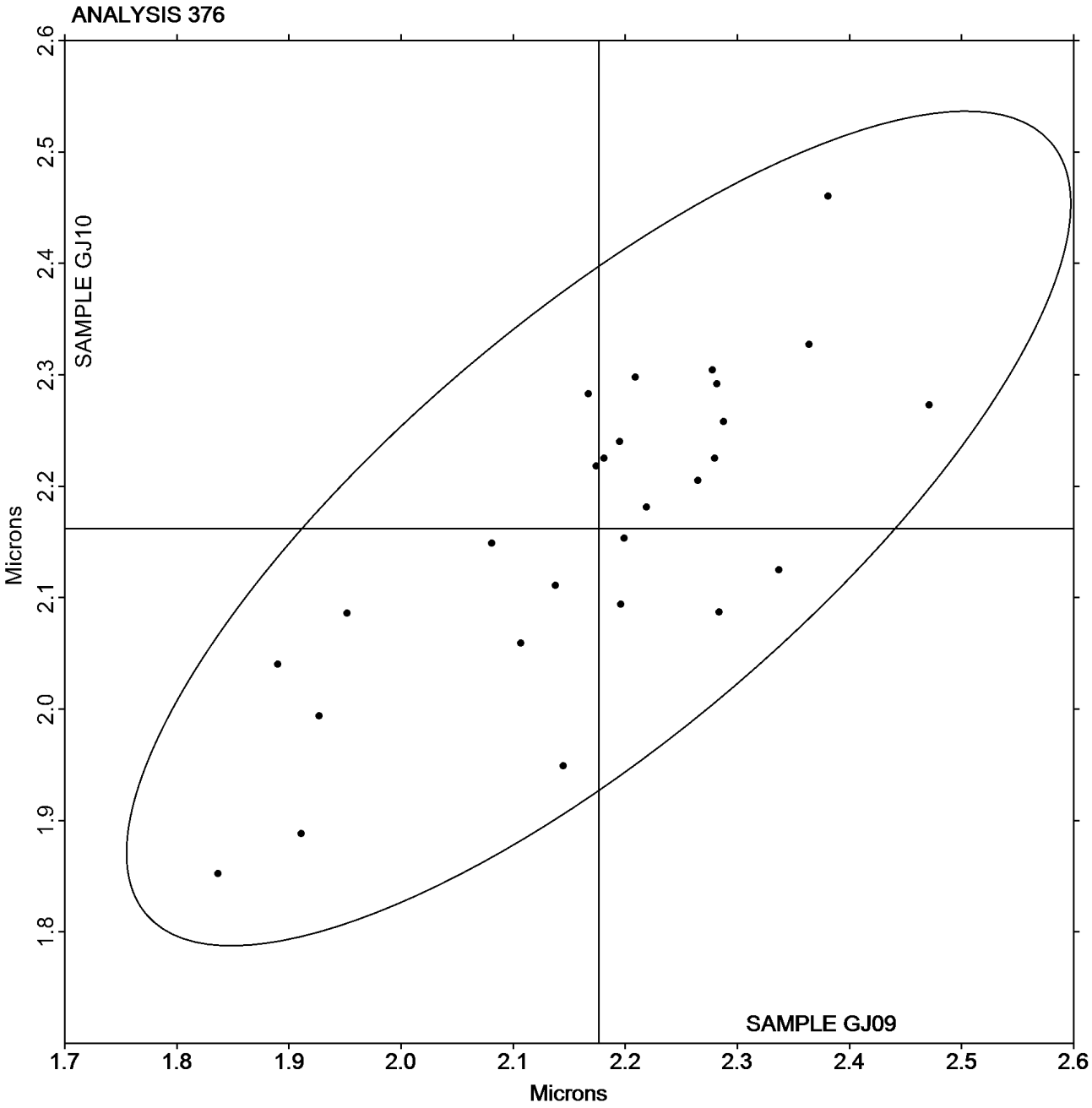
Grand Mean Sample GJ09 = 2.1762 Microns

Grand Mean Sample GJ10 = 2.1621 Microns



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Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample GK09 Lab Mean	Sample GK09 Diff from Grand Mean	Sample GK09 CPV	Sample GK10 Lab Mean	Sample GK10 Diff from Grand Mean	Sample GK10 CPV	Instr Code
4TGY2N		5.853	-0.051	-0.29	5.777	-0.169	-0.79	ZZ
93M8DC		6.029	0.125	0.73	6.050	0.104	0.48	ZZ
9RNCJM		5.629	-0.275	-1.59	5.763	-0.183	-0.85	ZZ
AHTGMG		6.027	0.123	0.71	6.051	0.105	0.49	ZZ
C2LBKJ		5.846	-0.058	-0.33	5.961	0.015	0.07	ZZ
EG9ZJQ		5.745	-0.159	-0.92	5.931	-0.015	-0.07	ZZ
F2NEHQ		5.787	-0.117	-0.68	5.586	-0.360	-1.68	ZZ
VE4ZEA		6.069	0.165	0.96	6.083	0.137	0.64	ZZ
Z48ZW9		6.149	0.245	1.42	6.315	0.369	1.72	ZZ

Summary Statistics	Sample GK09	Sample GK10
Grand Means	5.90 Microns	5.95 Microns
Stnd Dev Btwn Labs	0.17 Microns	0.21 Microns

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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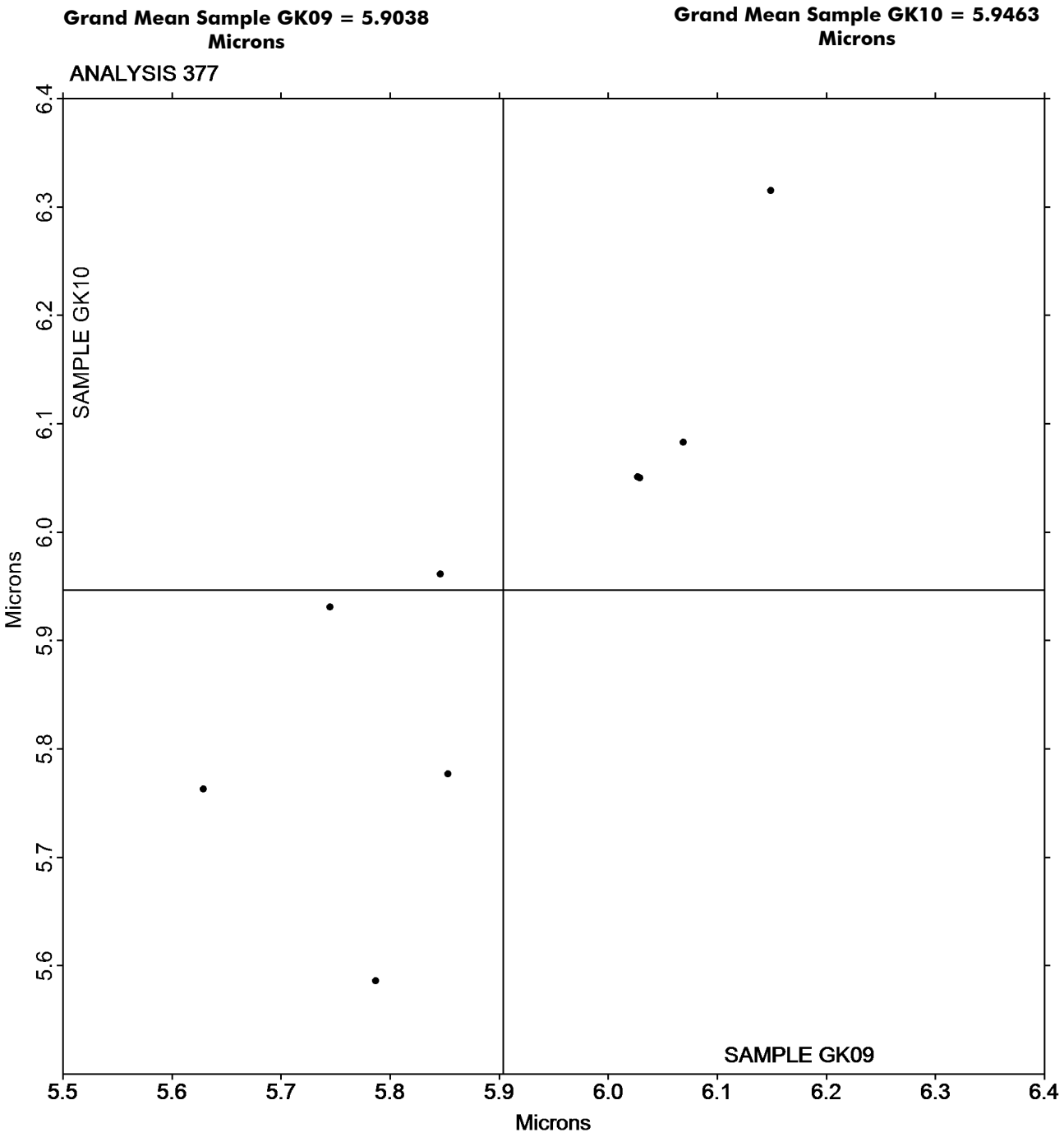

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL09 Lab Mean	Sample GL09 Diff from Grand Mean	Sample GL09 CPV	Sample GL10 Lab Mean	Sample GL10 Diff from Grand Mean	Sample GL10 CPV	Instr Code
4AJFQF		114.0	-4.7	-0.67	112.1	-6.2	-0.93	LA
4C8RR8		123.1	4.4	0.63	122.3	3.9	0.59	PP
4EE8ZX		117.4	-1.3	-0.19	114.5	-3.8	-0.57	LW
4N29G9		126.8	8.1	1.15	129.6	11.3	1.69	TS
4TGY2N		126.5	7.8	1.11	120.8	2.5	0.37	PP
6WD8KN		113.9	-4.8	-0.68	120.9	2.6	0.39	PP
79VT9A		113.6	-5.1	-0.73	112.0	-6.3	-0.94	LW
82XE6N		105.7	-13.0	-1.85	107.0	-11.4	-1.69	LA
8GVYWP		105.8	-12.9	-1.84	113.6	-4.7	-0.70	LW
8ZKRM9	X	6.9	-111.8	-15.92	7.0	-111.3	-16.62	PP
93M8DC		123.7	5.0	0.71	126.6	8.3	1.24	PP
96PCNB		116.5	-2.2	-0.31	121.2	2.9	0.43	PP
9RNCJM		113.8	-4.9	-0.70	118.4	0.1	0.01	LW
A96URE		118.5	-0.2	-0.03	120.6	2.3	0.34	LA
AHTGMG		118.3	-0.4	-0.06	111.9	-6.4	-0.95	PP
AKHZXA		119.4	0.7	0.10	123.8	5.5	0.82	PP
BBPBER		120.5	1.8	0.25	120.5	2.2	0.33	GA
BCLLAU		110.9	-7.8	-1.11	112.5	-5.8	-0.87	XX
C2LBKJ		112.9	-5.8	-0.83	110.7	-7.6	-1.14	LB
DWJUMF		124.5	5.8	0.83	121.8	3.5	0.52	PP
EG9ZJQ		124.1	5.4	0.77	122.8	4.5	0.67	LW
F2NEHQ		129.0	10.3	1.46	131.5	13.2	1.97	XX
FF9PC9		128.7	9.9	1.42	129.0	10.7	1.60	GA
FG3KQ6		113.1	-5.6	-0.80	118.9	0.6	0.09	LW
G89ULN	X	173.0	54.3	7.73	176.5	58.2	8.69	GL
GEURCW		115.1	-3.6	-0.51	113.2	-5.1	-0.76	PP
GFNFUR	X	185.7	67.0	9.54	182.0	63.7	9.51	TT
HCZE96		103.6	-15.1	-2.15	102.0	-16.3	-2.44	LA
HYU8AY		112.1	-6.6	-0.94	111.1	-7.2	-1.08	HM
J9EYE3		122.4	3.7	0.52	124.3	6.0	0.89	LW
JVTJB4	*	137.4	18.7	2.66	132.2	13.9	2.07	LA
KVZK8L		121.7	3.0	0.42	118.4	0.1	0.01	SH
L3GFLV		130.9	12.2	1.74	128.9	10.6	1.58	PP
LAJQCE		122.2	3.5	0.50	120.8	2.5	0.37	HM
NUFL3M		124.5	5.8	0.82	119.3	1.0	0.15	LA
PYQ9X4		127.1	8.3	1.19	128.2	9.9	1.48	PP
Q3PQRP	X	152.5	33.8	4.81	151.9	33.6	5.01	TT
Q8DRR3		112.4	-6.3	-0.89	113.2	-5.1	-0.77	PP
T28E7P		112.3	-6.4	-0.91	114.2	-4.1	-0.61	SS
TW9NT4		117.8	-0.9	-0.13	117.6	-0.7	-0.11	TS
UV99TC		114.9	-3.8	-0.54	115.4	-2.9	-0.43	PP

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Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL09 Lab Mean	Sample GL09 Diff from Grand Mean	Sample GL09 CPV	Sample GL10 Lab Mean	Sample GL10 Diff from Grand Mean	Sample GL10 CPV	Instr Code
VA9LWA		114.4	-4.3	-0.61	115.4	-2.9	-0.43	PP
VE4ZEA		118.3	-0.4	-0.06	116.0	-2.3	-0.34	PP
WA3CB8		120.9	2.2	0.31	111.6	-6.7	-1.00	VM
WYMURW		112.6	-6.1	-0.87	113.6	-4.7	-0.71	PP
YGDEA7		119.2	0.5	0.07	113.1	-5.2	-0.78	PP
Z48ZW9		124.9	6.2	0.88	118.1	-0.2	-0.03	LW
Z8AYAM		117.9	-0.8	-0.12	116.1	-2.3	-0.34	PP

Summary Statistics	Sample GL09	Sample GL10
Grand Means	118.72 Sheffield	118.31 Sheffield
Stnd Dev Btwn Labs	7.02 Sheffield	6.70 Sheffield

Statistics based on 44 of 48 reporting participants.

Comments on Assigned Data Flags for Test #378

G89ULN (X) - Extreme Data.

GFNFUR (X) - Extreme Data.

Q3PQRP (X) - Data for both samples are high. Possible Systematic Error.

8ZKRM9 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GL	Giddings and Lewis Sheffield
HM	Technidyne - Hagerty Model #538	LA	L & W Roughness Sheffield - Autoline
LB	L & W - Autoline 600	LW	L & W Roughness Tester
PP	Technidyne Profile/Plus	SH	Sheffield (Bendix Precisionaire)
SS	Sheffield Smoothchek Tester	TS	TMI Monitor/Smoothness, Model 58-02
TT	TMI Monitor/Smoothness II, Model 58-24	VM	Valmet PaperLab (was Kajaani\Robotest)
XX	Instrument make/model not specified by lab		

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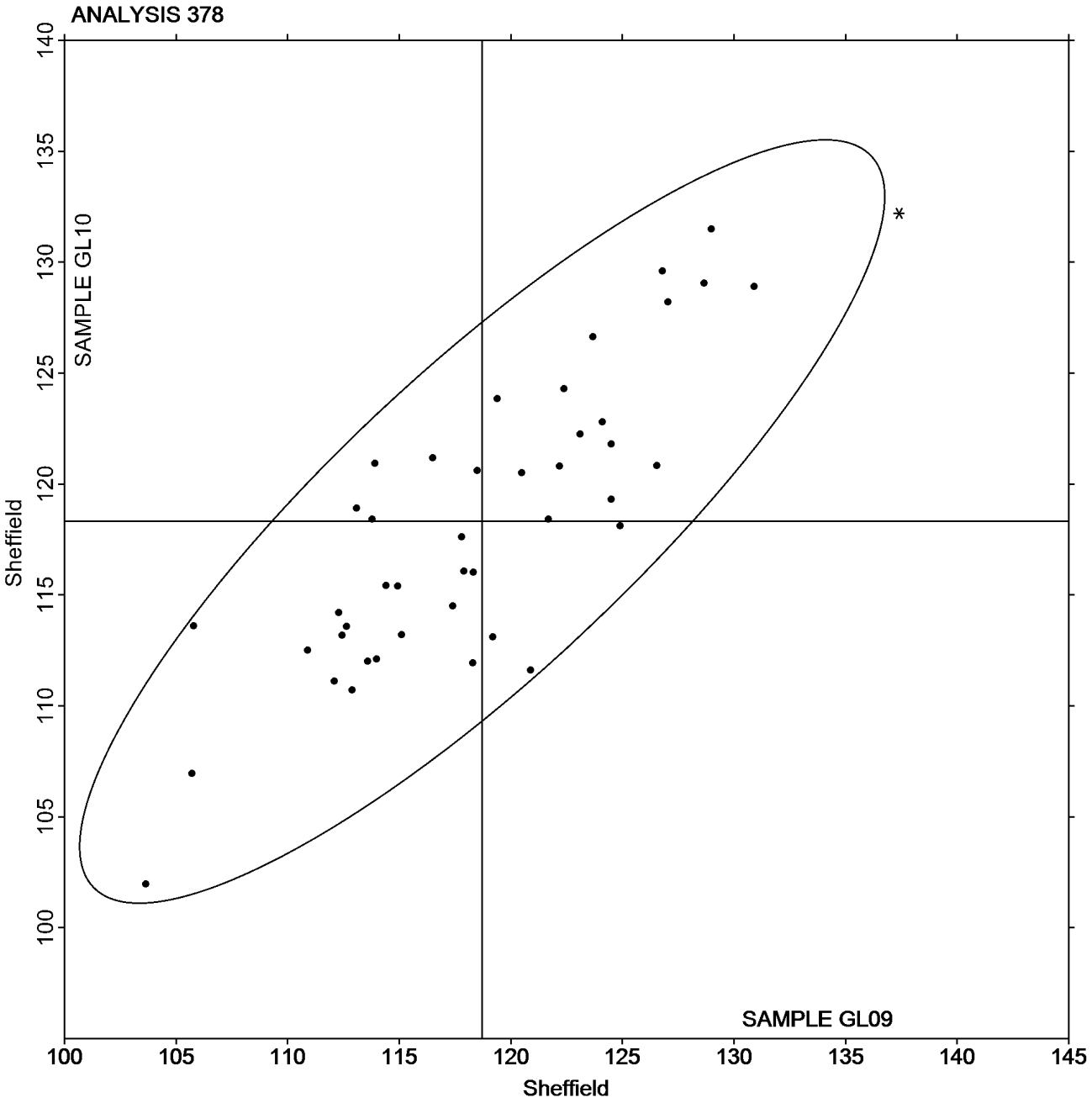
Grand Mean Sample GL09 = 118.72
Sheffield

Grand Mean Sample GL10 = 118.31
Sheffield



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Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

WebCode	Data Flag	Sample GM09 Lab Mean	Sample GM09 Diff from Grand Mean	Sample GM09 CPV	Sample GM10 Lab Mean	Sample GM10 Diff from Grand Mean	Sample GM10 CPV	Instr Code
4EE8ZX		3.789	-0.780	-1.49	3.737	-0.843	-1.52	ZZ
4WRQUG	M	4.087	-0.482	-0.92	No data reported for this sample			ZZ
63ZCHD		5.290	0.721	1.37	4.810	0.230	0.42	ZZ
6KXFUU		4.930	0.361	0.69	5.340	0.760	1.37	ZZ
6VEJ8E		3.727	-0.842	-1.61	3.686	-0.894	-1.62	ZZ
7PLWQY		4.287	-0.282	-0.54	4.205	-0.376	-0.68	ZZ
AHTGMG		4.481	-0.088	-0.17	4.413	-0.168	-0.30	ZZ
B6NU67		4.626	0.057	0.11	4.523	-0.057	-0.10	ZZ
BGHBU8	*	4.360	-0.209	-0.40	5.349	0.769	1.39	ZZ
BRX67Z		4.387	-0.182	-0.35	4.323	-0.257	-0.47	ZZ
CPMKV7		4.452	-0.117	-0.22	4.406	-0.174	-0.31	ZZ
FG68A4		4.515	-0.054	-0.10	4.414	-0.167	-0.30	ZZ
LU7WPQ		4.445	-0.124	-0.24	4.420	-0.160	-0.29	ZZ
Q3PQRP		5.846	1.277	2.44	5.673	1.093	1.98	ZZ
QWZADD		4.610	0.041	0.08	4.670	0.090	0.16	ZZ
XWWL9Z		4.791	0.222	0.42	4.735	0.155	0.28	ZZ

Summary Statistics	Sample GM09	Sample GM10
Grand Means	4.57 Percent	4.58 Percent
Stnd Dev Btwn Labs	0.52 Percent	0.55 Percent

Statistics based on 15 of 16 reporting participants.

Comments on Assigned Data Flags for Test #382

4WRQUG (M) Participant did not submit data for sample GM10.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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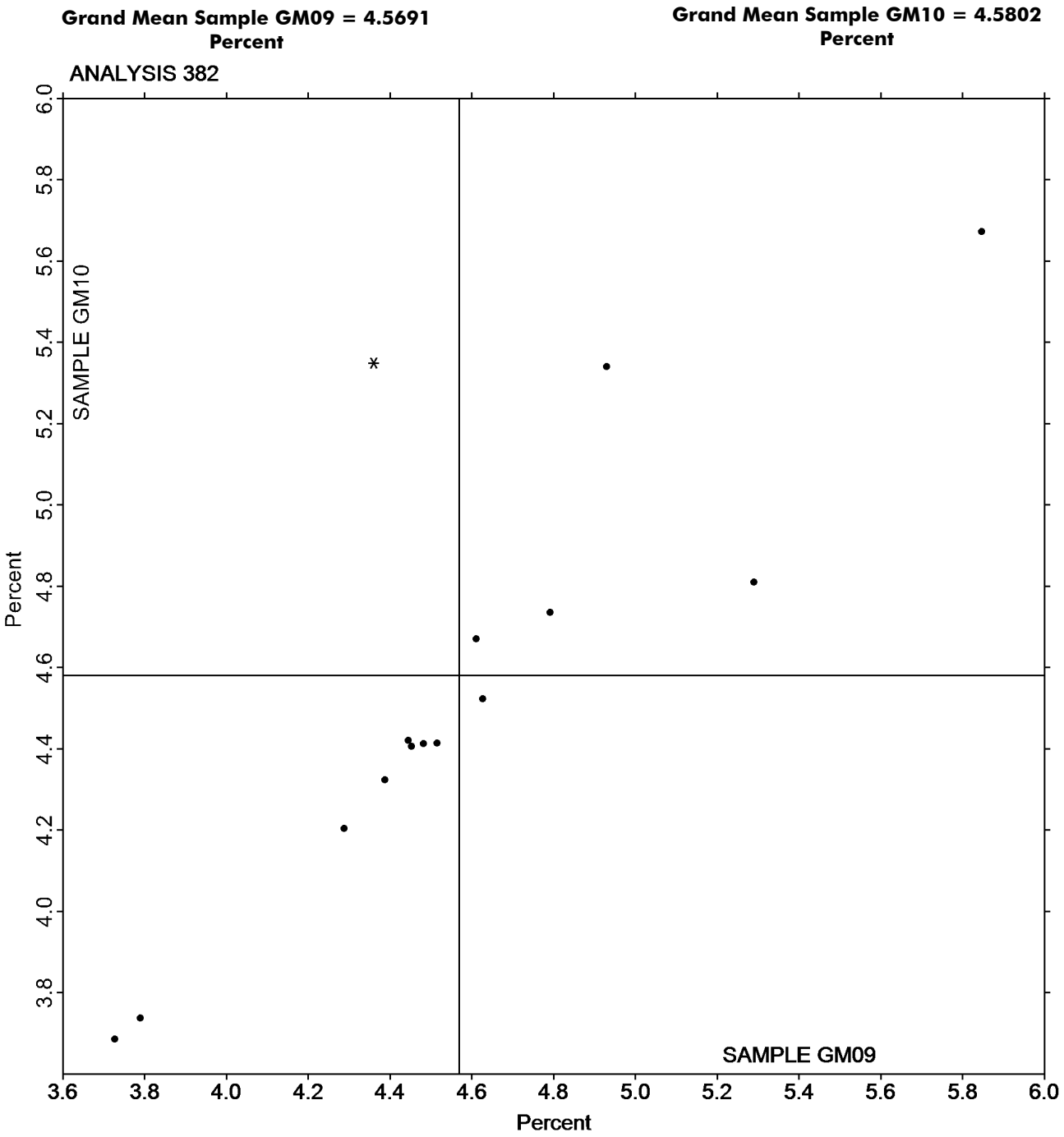

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample GN09 Lab Mean	Sample GN09 Diff from Grand Mean	Sample GN09 CPV	Sample GN10 Lab Mean	Sample GN10 Diff from Grand Mean	Sample GN10 CPV	Instr Code
4TGY2N		93.54	-0.04	-0.14	94.11	0.62	1.96	ZZ
6WD8KN		93.38	-0.20	-0.70	93.88	0.38	1.22	ZZ
8ZKRM9		93.56	-0.02	-0.06	93.41	-0.09	-0.27	ZZ
93M8DC		93.38	-0.20	-0.70	93.36	-0.14	-0.44	ZZ
A96URE		94.24	0.66	2.34	93.74	0.24	0.77	ZZ
AHTGMG		94.09	0.52	1.82	94.15	0.65	2.08	ZZ
AKHZXA		93.18	-0.40	-1.41	92.99	-0.51	-1.62	ZZ
ATQTNW		93.95	0.37	1.31	93.74	0.24	0.77	ZZ
BCLLAU		93.43	-0.15	-0.52	93.54	0.04	0.14	ZZ
C86LP8		93.61	0.03	0.12	93.50	0.00	0.01	ZZ
CJ2L6X		93.58	0.00	0.00	93.23	-0.27	-0.85	ZZ
GEURCW		93.56	-0.02	-0.06	93.29	-0.21	-0.66	ZZ
HCZE96		94.02	0.44	1.56	93.47	-0.03	-0.08	ZZ
HYU8AY		93.48	-0.10	-0.34	93.67	0.17	0.55	ZZ
KVZK8L		93.58	0.00	0.01	93.55	0.05	0.17	ZZ
L3GFLV		93.64	0.07	0.24	93.18	-0.32	-1.02	ZZ
LAJQCE		93.78	0.20	0.72	93.63	0.13	0.42	ZZ
NE8UYW		93.20	-0.38	-1.33	93.38	-0.12	-0.37	ZZ
QEWUY6		93.29	-0.29	-1.01	92.95	-0.55	-1.74	ZZ
QHEKC8		93.40	-0.17	-0.61	93.48	-0.02	-0.06	ZZ
T28E7P		93.19	-0.39	-1.37	93.23	-0.27	-0.85	ZZ
TW9NT4		93.91	0.33	1.17	93.92	0.42	1.35	ZZ
UV99TC		93.58	0.00	0.01	93.16	-0.34	-1.07	ZZ
VE4ZEA		93.74	0.16	0.56	93.36	-0.14	-0.44	ZZ
YGDEA7		93.24	-0.34	-1.19	93.15	-0.35	-1.10	ZZ
Z8AYAM		93.33	-0.25	-0.87	93.50	0.00	0.01	ZZ
ZJX3DC		93.71	0.13	0.47	93.85	0.35	1.12	ZZ

Summary Statistics	Sample GN09	Sample GN10
Grand Means	93.58 Percent	93.50 Percent
Stnd Dev Btwn Labs	0.28 Percent	0.31 Percent

Statistics based on 27 of 27 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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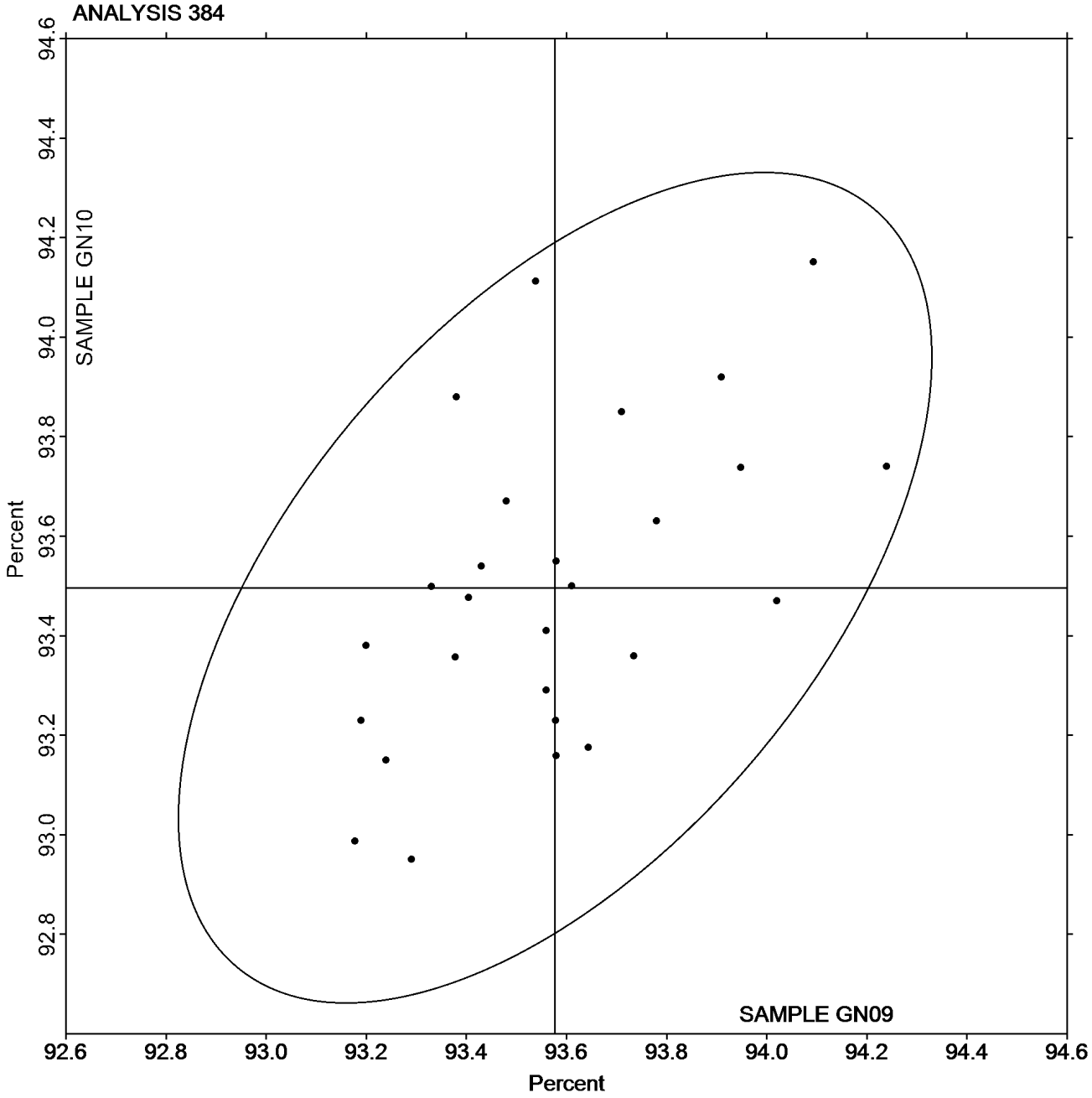
Grand Mean Sample GN09 = 93.577
Percent

Grand Mean Sample GN10 = 93.496
Percent



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Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

WebCode	Data Flag	Sample GP09 Lab Mean	Sample GP09 Diff from Grand Mean	Sample GP09 CPV	Sample GP10 Lab Mean	Sample GP10 Diff from Grand Mean	Sample GP10 CPV	Instr Code
4EE8ZX		94.32	-0.13	-0.38	94.57	-0.02	-0.07	ZZ
4PVWY4		95.15	0.69	2.00	95.17	0.58	2.29	ZZ
8XFM8K		94.34	-0.11	-0.33	94.56	-0.03	-0.11	ZZ
AC4FB4		94.55	0.10	0.28	94.59	0.00	0.00	ZZ
B6NU67		94.06	-0.39	-1.12	94.30	-0.29	-1.14	ZZ
CF3B9X		94.62	0.16	0.47	94.45	-0.14	-0.55	ZZ
F2Q4LN		94.50	0.05	0.14	94.57	-0.02	-0.08	ZZ
LUKLNW		94.08	-0.37	-1.07	94.50	-0.09	-0.35	ZZ

Summary Statistics	Sample GP09	Sample GP10
Grand Means	94.45 Percent	94.59 Percent
Stnd Dev Btwn Labs	0.35 Percent	0.25 Percent

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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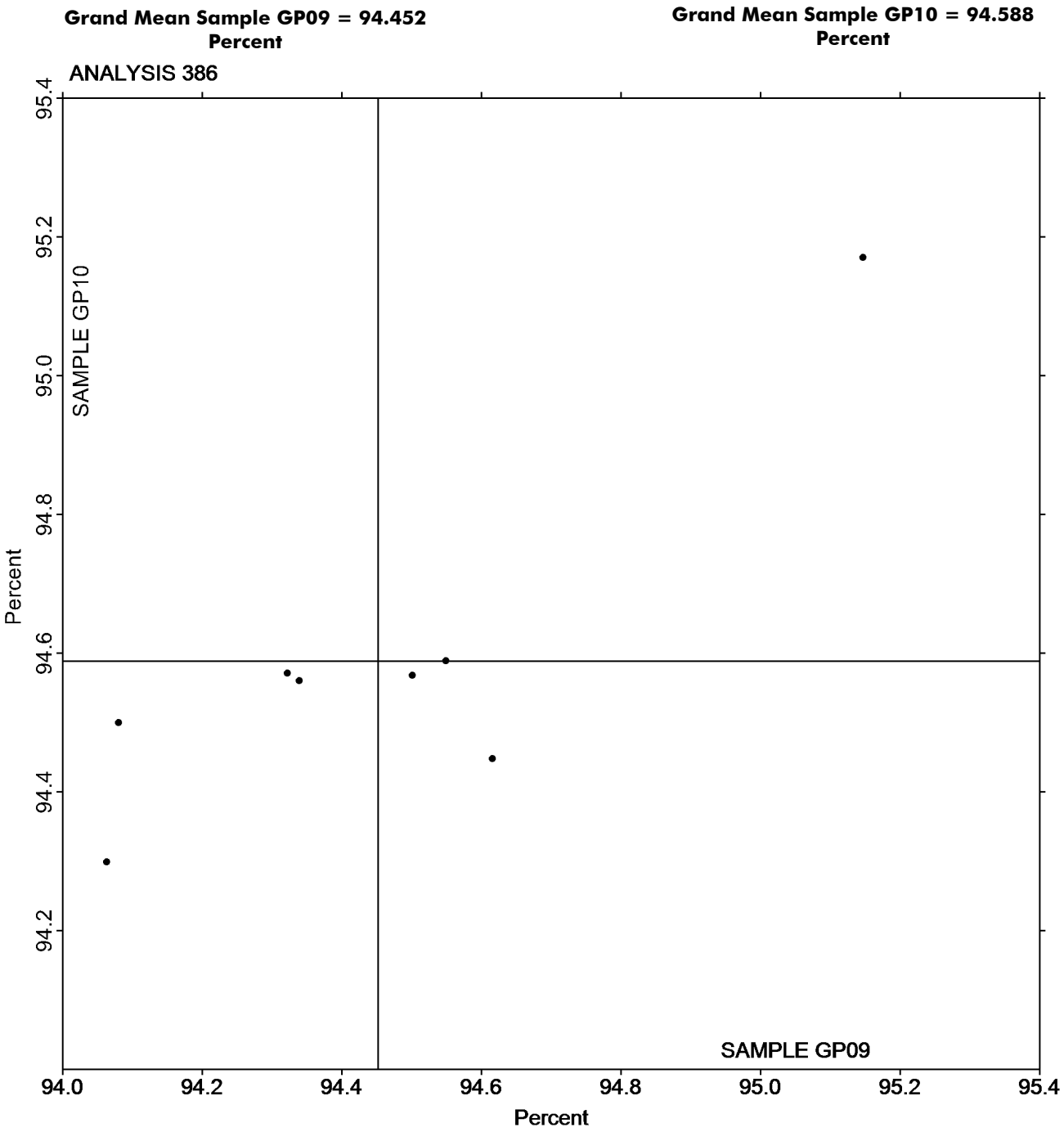

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 390
Directional Brightness
TAPPI Official Test Method T452

WebCode	Data Flag	Sample GR09 Lab Mean	Sample GR09 Diff from Grand Mean	Sample GR09 CPV	Sample GR10 Lab Mean	Sample GR10 Diff from Grand Mean	Sample GR10 CPV	Instr Code
4C8RR8		83.74	-1.58	-1.67	83.59	-1.75	-1.81	TP
4N29G9		84.15	-1.17	-1.24	84.59	-0.75	-0.77	TS
6WD8KN		87.00	1.68	1.77	86.99	1.65	1.71	TT
8ZKRM9		84.58	-0.74	-0.79	84.88	-0.46	-0.47	TT
9RNCJM		85.36	0.04	0.04	85.29	-0.04	-0.04	TP
BCLLAU		86.35	1.03	1.09	86.35	1.01	1.05	PE
DLGGHA		86.63	1.31	1.39	86.48	1.14	1.18	TS
DWJUMF		84.89	-0.43	-0.46	84.89	-0.44	-0.46	HG
G89ULN	X	69.53	-15.80	-16.69	69.61	-15.72	-16.28	TS
GEURCW		84.70	-0.62	-0.66	84.68	-0.66	-0.68	XX
J9EYE3		85.05	-0.28	-0.29	85.16	-0.18	-0.18	HZ
L3GFLV		84.93	-0.39	-0.41	84.56	-0.77	-0.80	TP
LAJQCE		84.79	-0.53	-0.56	84.77	-0.57	-0.59	TS
NE8UYW		84.94	-0.38	-0.41	84.66	-0.67	-0.70	TS
PYQ9X4		85.35	0.03	0.03	85.34	0.00	0.00	HG
T28E7P	X	70.65	-14.67	-15.50	70.26	-15.07	-15.60	TP
UV99TC		84.54	-0.78	-0.83	84.46	-0.87	-0.90	TP
WYMURW		86.76	1.44	1.52	86.94	1.60	1.66	TP
YGDEA7		85.62	0.30	0.32	85.99	0.65	0.67	XC
Z48ZW9		86.41	1.09	1.15	86.43	1.09	1.13	HG

Summary Statistics	Sample GR09	Sample GR10
Grand Means	85.32 Percent	85.34 Percent
Stnd Dev Btwn Labs	0.95 Percent	0.97 Percent

Statistics based on 18 of 20 reporting participants.

Comments on Assigned Data Flags for Test #390

G89ULN (X) - Extreme Data.

T28E7P (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
PE	Photovolt 577	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

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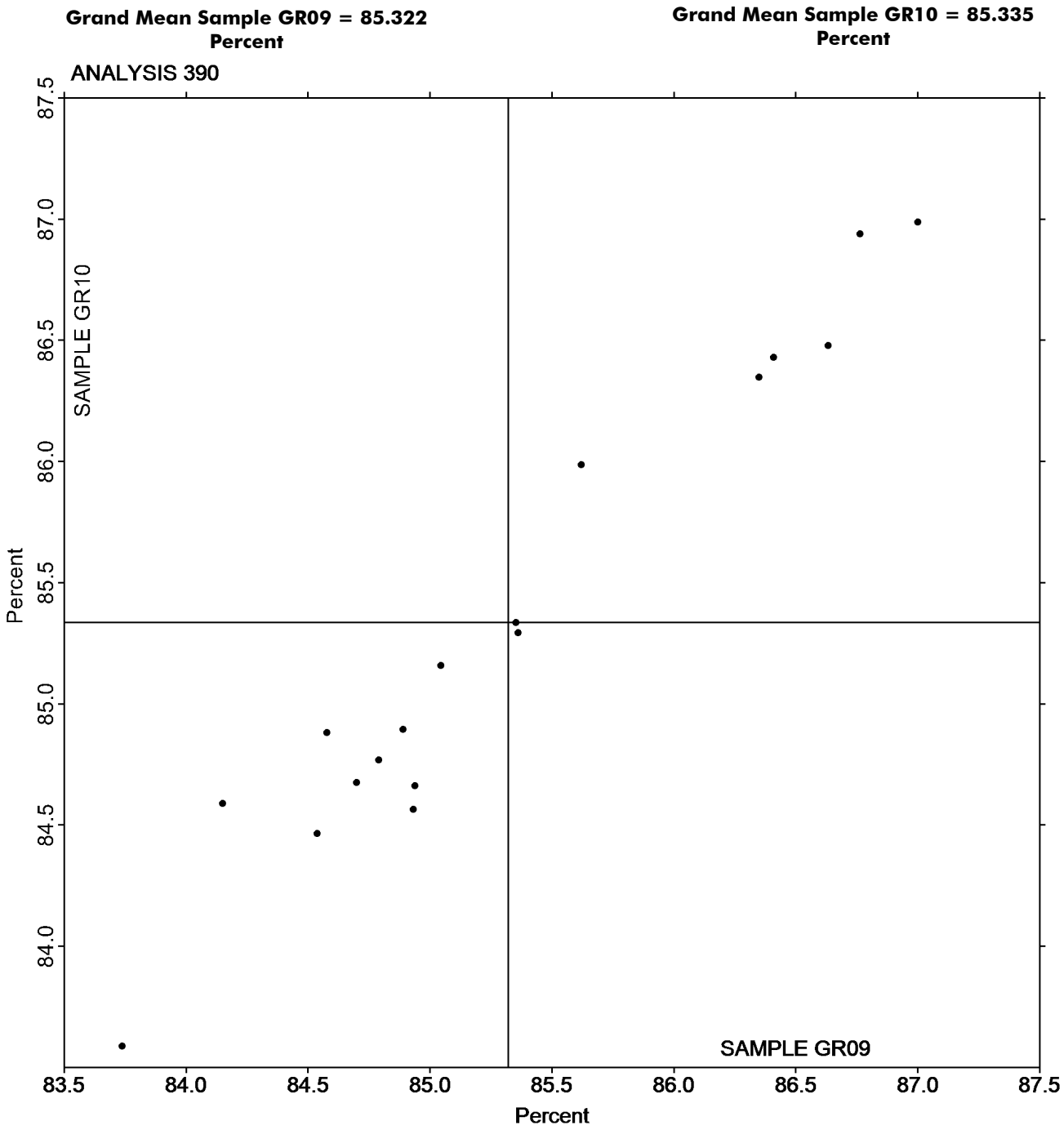

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ09 Lab Mean	Sample GZ09 Diff from Grand Mean	Sample GZ09 CPV	Sample GZ10 Lab Mean	Sample GZ10 Diff from Grand Mean	Sample GZ10 CPV	Instr Code
4N29G9		99.57	0.61	0.34	99.08	0.38	0.19	TS
4TGY2N		98.15	-0.82	-0.46	97.77	-0.93	-0.45	TS
8ZKRM9		101.56	2.60	1.47	101.86	3.16	1.53	EF
93M8DC		99.86	0.90	0.51	99.90	1.20	0.58	TT
AHTGMG		99.19	0.23	0.13	99.08	0.38	0.18	TS
AKHZXA	*	94.70	-4.26	-2.41	94.74	-3.96	-1.92	PP
BGFMB9	*	95.01	-3.96	-2.23	93.24	-5.46	-2.65	EF
CJ2L6X		99.66	0.70	0.39	98.99	0.29	0.14	TS
HCZE96		100.10	1.14	0.64	100.08	1.38	0.67	TD
Q8DRR3		99.45	0.49	0.27	99.24	0.54	0.26	TS
QEWUY6		100.16	1.20	0.67	100.20	1.50	0.73	TD
QHEKC8		98.53	-0.44	-0.25	98.35	-0.35	-0.17	PP
TW9NT4		99.52	0.56	0.31	99.34	0.64	0.31	TS
UV99TC		99.53	0.57	0.32	99.32	0.62	0.30	PP
Z8AYAM		98.92	-0.04	-0.03	98.70	0.00	0.00	PP
ZJX3DC		99.52	0.56	0.31	99.32	0.62	0.30	TT

Summary Statistics	Sample GZ09	Sample GZ10
Grand Means	98.96 Percent	98.70 Percent
Stnd Dev Btwn Labs	1.77 Percent	2.06 Percent

Statistics based on 16 of 16 reporting participants.

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho	PP	Technidyne Profile/Plus
TD	Technidyne Color Touch X-45	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M		

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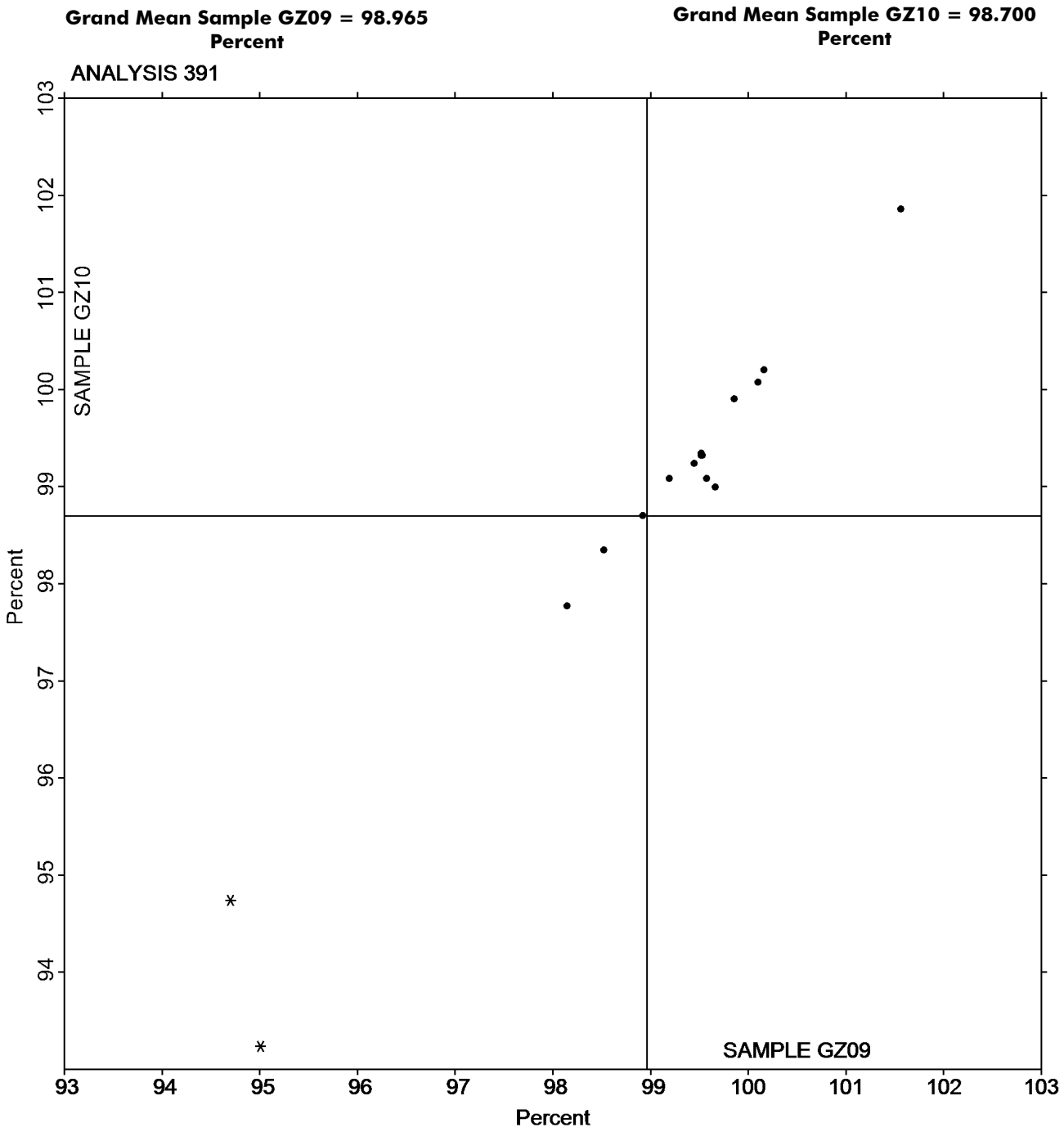

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 392
Diffuse Brightness
TAPPI Official Test Method T525

WebCode	Data Flag	Sample GR09 Lab Mean	Sample GR09 Diff from Grand Mean	Sample GR09 CPV	Sample GR10 Lab Mean	Sample GR10 Diff from Grand Mean	Sample GR10 CPV	Instr Code
43LJBQ	X	68.41	-16.59	-76.80	68.40	-16.61	-72.50	TC
4C8RR8		84.82	-0.18	-0.83	84.89	-0.13	-0.55	LT
4EE8ZX		84.74	-0.27	-1.24	84.75	-0.26	-1.14	LE
4PVWY4		85.11	0.10	0.47	85.02	0.00	0.02	LA
7KQ6J3		85.23	0.22	1.03	85.25	0.24	1.04	LE
8GVYWP		85.00	0.00	-0.02	85.04	0.02	0.11	EF
8XFM8K		85.17	0.17	0.77	85.22	0.21	0.90	TC
9RNCJM		84.78	-0.22	-1.01	84.81	-0.20	-0.88	EG
B6NU67	X	68.17	-16.83	-77.89	68.81	-16.20	-70.72	XX
DLGGHA		84.89	-0.11	-0.52	84.91	-0.10	-0.45	TC
F2Q4LN		84.93	-0.07	-0.33	84.89	-0.12	-0.52	AC
LAJQCE		85.41	0.41	1.89	85.52	0.50	2.20	LT
Q3PQRP		84.80	-0.20	-0.94	84.76	-0.26	-1.11	LE
QEE9F9		85.29	0.28	1.31	85.23	0.21	0.93	TC
W3M7NW	X	68.52	-16.48	-76.30	61.22	-23.79	-103.83	TC
WYMURW		84.88	-0.12	-0.57	84.89	-0.12	-0.54	TC
Z48ZW9	X	68.52	-16.49	-76.31	68.15	-16.86	-73.59	TC

Summary Statistics	Sample GR09	Sample GR10
Grand Means	85.00 Percent	85.01 Percent
Stnd Dev Btwn Labs	0.22 Percent	0.23 Percent

Statistics based on 13 of 17 reporting participants.

Comments on Assigned Data Flags for Test #392

43LJBQ (X) - Extreme Data.

W3M7NW (X) - Extreme Data.

Z48ZW9 (X) - Extreme Data.

B6NU67 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

AC	ACS Spectro-Sensor II	EF	Datacolor Elrepho 3000
EG	Datacolor Elrepho 450X	LA	L & W Elrepho - Autoline
LE	L & W Elrepho	LT	L & W Elrepho SE 071
TC	Technidyne Color Touch Series	XX	Instrument make/model not specified by lab

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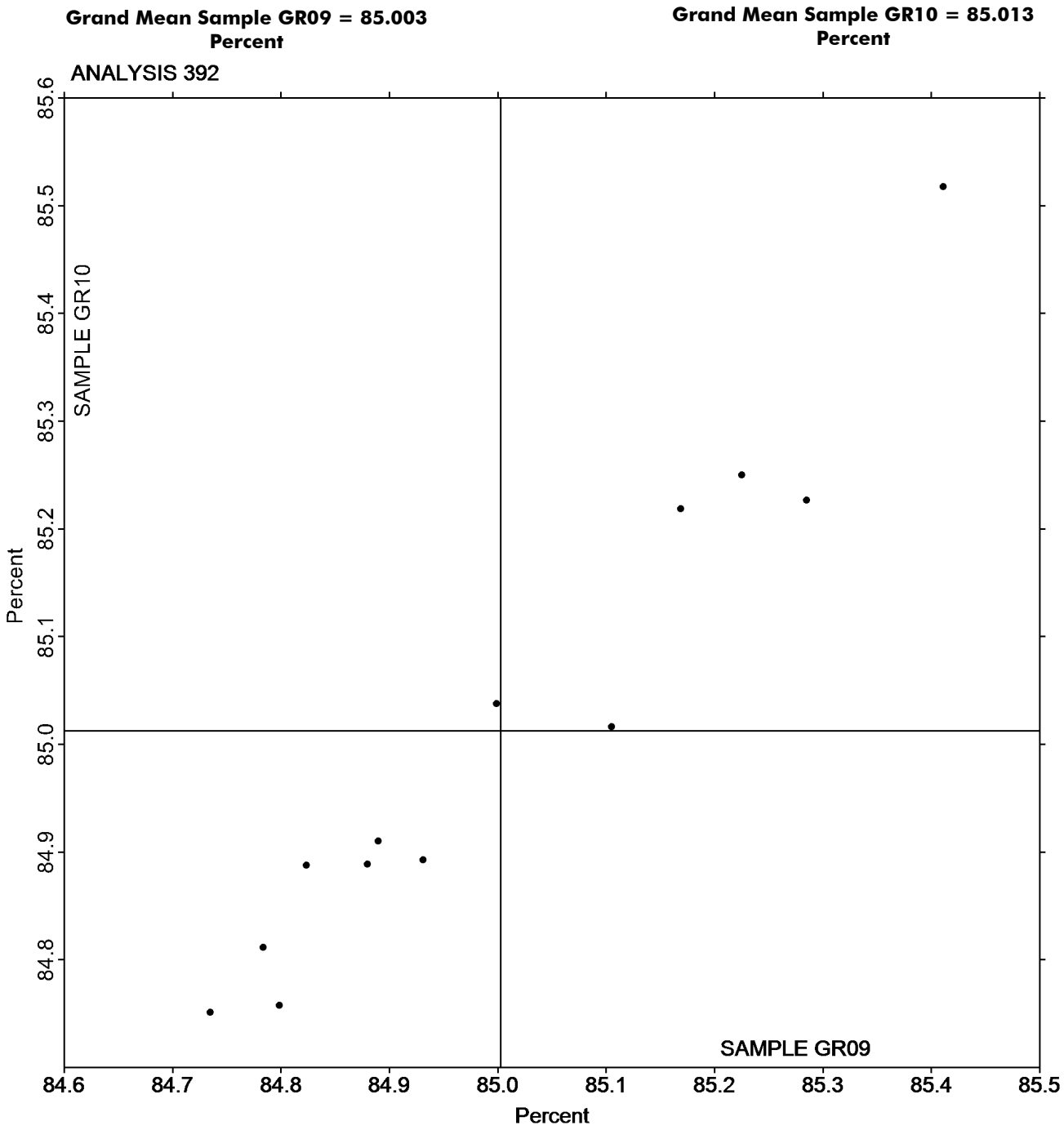

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ09 Lab Mean	Sample GZ09 Diff from Grand Mean	Sample GZ09 CPV	Sample GZ10 Lab Mean	Sample GZ10 Diff from Grand Mean	Sample GZ10 CPV	Instr Code
4N29G9		8.058	0.403	0.27	8.372	0.317	0.31	TS
4TGY2N		7.312	-0.343	-0.23	7.552	-0.503	-0.49	TS
8ZKRM9	*	10.522	2.867	1.91	10.858	2.803	2.73	EF
93M8DC		8.340	0.685	0.46	8.300	0.245	0.24	TT
AHTGMG		7.912	0.257	0.17	8.242	0.187	0.18	TS
AKHZXA		6.800	-0.855	-0.57	7.000	-1.055	-1.03	PP
BGFMB9	*	3.296	-4.359	-2.91	6.074	-1.981	-1.93	EF
CJ2L6X		7.890	0.235	0.16	8.132	0.077	0.07	TS
HCZE96		8.052	0.397	0.26	8.012	-0.043	-0.04	TT
Q8DRR3		7.554	-0.101	-0.07	7.688	-0.367	-0.36	TS
QEWUY6		8.100	0.445	0.30	8.380	0.325	0.32	TD
QHEKC8		7.736	0.081	0.05	8.070	0.015	0.01	PP
UV99TC		7.762	0.107	0.07	7.814	-0.241	-0.24	XX
Z8AYAM		7.840	0.185	0.12	8.280	0.225	0.22	PP

Summary Statistics	Sample GZ09	Sample GZ10
Grand Means	7.66 Percent	8.06 Percent
Stnd Dev Btwn Labs	1.50 Percent	1.03 Percent

Statistics based on 14 of 14 reporting participants.

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho	PP	Technidyne Profile/Plus
TD	Technidyne Color Touch X-45	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	XX	Instrument make/model not specified by lab

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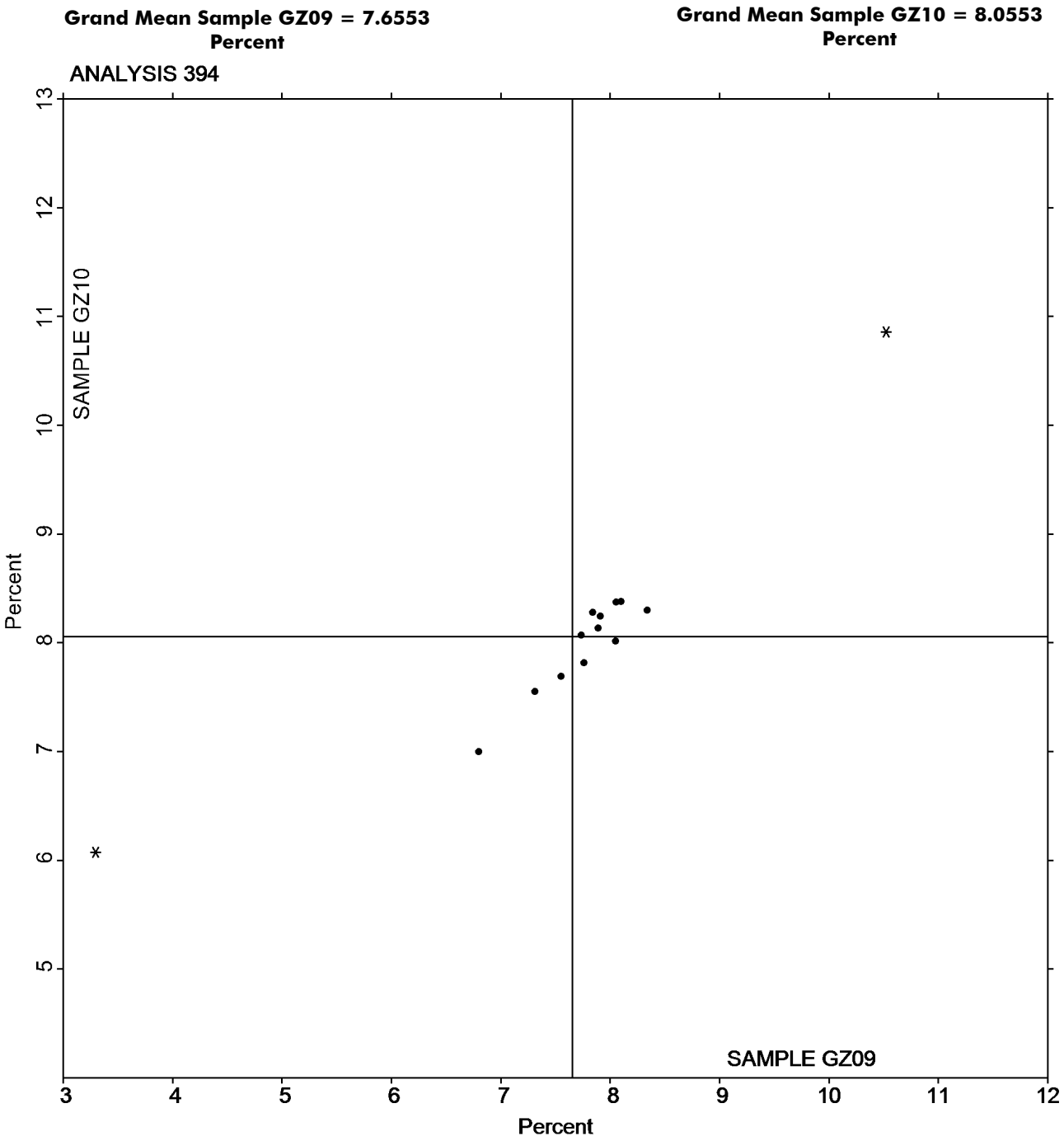

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GT09 Lab Mean	Sample GT09 Diff from Grand Mean	Sample GT09 CPV	Sample GT10 Lab Mean	Sample GT10 Diff from Grand Mean	Sample GT10 CPV	Instr Code
4C8RR8		67.29	-3.73	-1.72	67.48	-3.47	-1.76	GA
8ZKRM9		72.81	1.79	0.82	72.37	1.42	0.72	TH
9RNCJM		73.19	2.17	1.00	72.69	1.74	0.88	TH
AC4FB4		72.54	1.52	0.70	71.80	0.85	0.43	XX
BGFMB9		69.47	-1.55	-0.72	69.39	-1.56	-0.79	GM
C2LBKJ		69.32	-1.70	-0.79	69.48	-1.47	-0.75	LG
CJ2L6X		71.60	0.58	0.27	71.79	0.84	0.43	PP
DWJUMF		69.47	-1.55	-0.72	68.76	-2.19	-1.11	PP
F2Q4LN		73.27	2.25	1.04	73.00	2.05	1.04	LB
NE8UYW		68.96	-2.06	-0.95	69.83	-1.12	-0.57	LA
NUFL3M		73.97	2.95	1.36	74.02	3.07	1.56	LF
PYQ9X4		73.12	2.10	0.97	72.95	2.00	1.01	PP
QHEKC8		69.29	-1.73	-0.80	69.12	-1.84	-0.93	PP
WA3CB8		72.50	1.48	0.68	72.24	1.29	0.65	GM
WYMURW		68.57	-2.45	-1.13	69.38	-1.57	-0.80	GM

Summary Statistics	Sample GT09	Sample GT10
Grand Means	71.02 Gloss Units	70.95 Gloss Units
Stnd Dev Btwn Labs	2.17 Gloss Units	1.97 Gloss Units

Statistics based on 15 of 15 reporting participants.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	GM	BYK-Gardner micro-gloss
LA	L & W Gloss - Autoline 300	LB	L & W Gloss Tester Code 224
LF	L & W Autoline 400	LG	L & W Autoline 600
PP	Technidyne Profile/Plus	TH	Technidyne T480A
XX	Instrument make/model not specified by lab		

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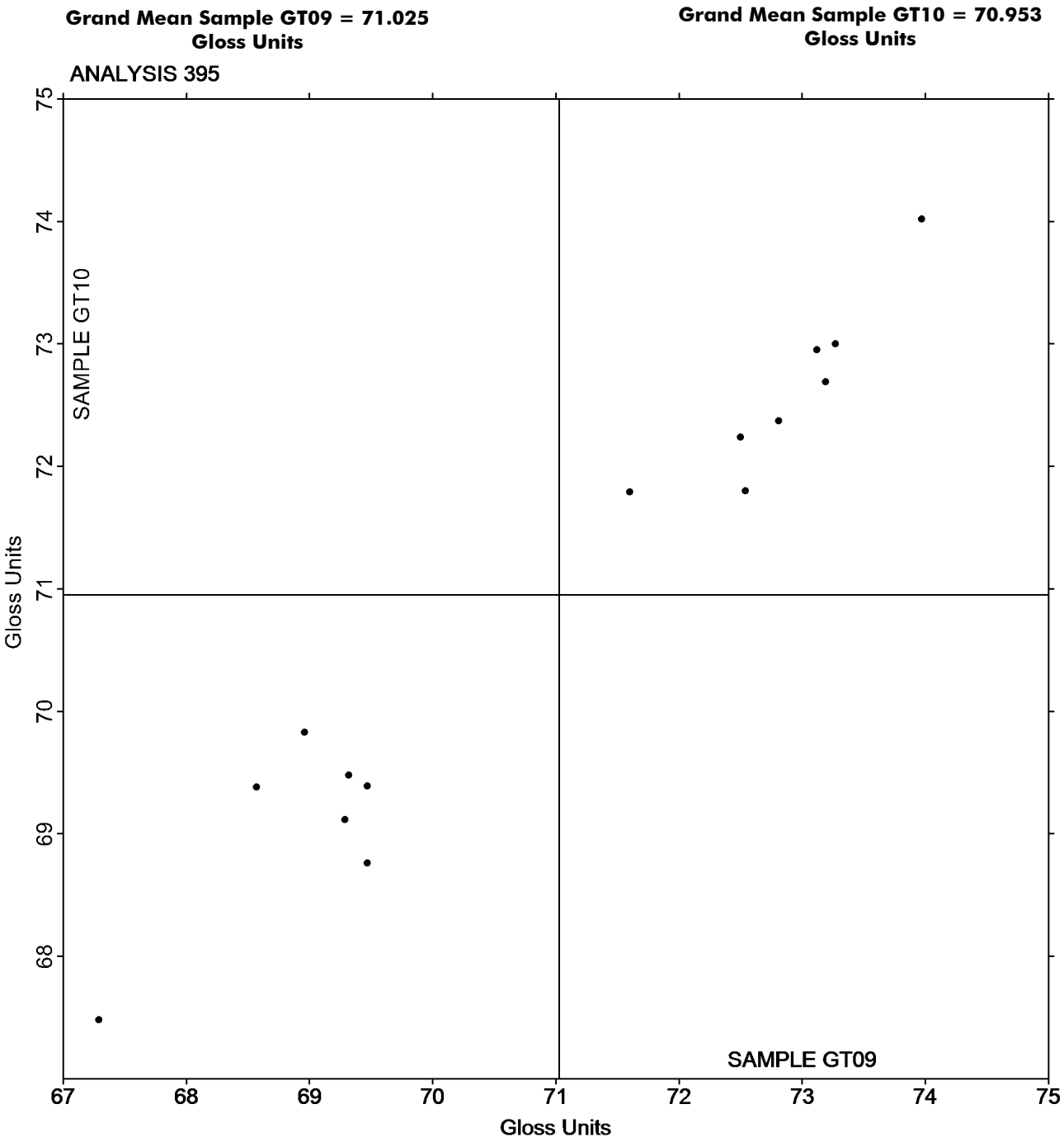

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GU09 Lab Mean	Sample GU09 Diff from Grand Mean	Sample GU09 CPV	Sample GU10 Lab Mean	Sample GU10 Diff from Grand Mean	Sample GU10 CPV	Instr Code
6WD8KN		52.98	3.38	1.12	45.48	-2.34	-0.64	TH
7PLWQY		45.79	-3.81	-1.27	43.38	-4.44	-1.21	WJ
F2Q4LN		50.71	1.11	0.37	49.25	1.43	0.39	LA
FG3KQ6		44.85	-4.75	-1.58	43.74	-4.08	-1.11	GM
J9EYE3		48.86	-0.74	-0.25	47.58	-0.24	-0.06	GS
Q3PQRP		53.12	3.52	1.17	53.71	5.89	1.61	TH
VE4ZEA		48.69	-0.91	-0.30	47.46	-0.36	-0.10	PP
YGDEA7		48.92	-0.68	-0.23	46.73	-1.09	-0.30	TH
Z48ZW9		52.49	2.89	0.96	53.03	5.21	1.42	PP

Summary Statistics	Sample GU09	Sample GU10
Grand Means	49.60 Gloss Units	47.82 Gloss Units
Stnd Dev Btwn Labs	3.01 Gloss Units	3.66 Gloss Units

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

GM	BYK-Gardner micro-gloss	GS	BYK-Gardner Glossgard II
LA	L & W Gloss - Autoline 300	PP	Technidyne Profile/Plus
TH	Technidyne T480A	WJ	Zehntner ZLR 1020

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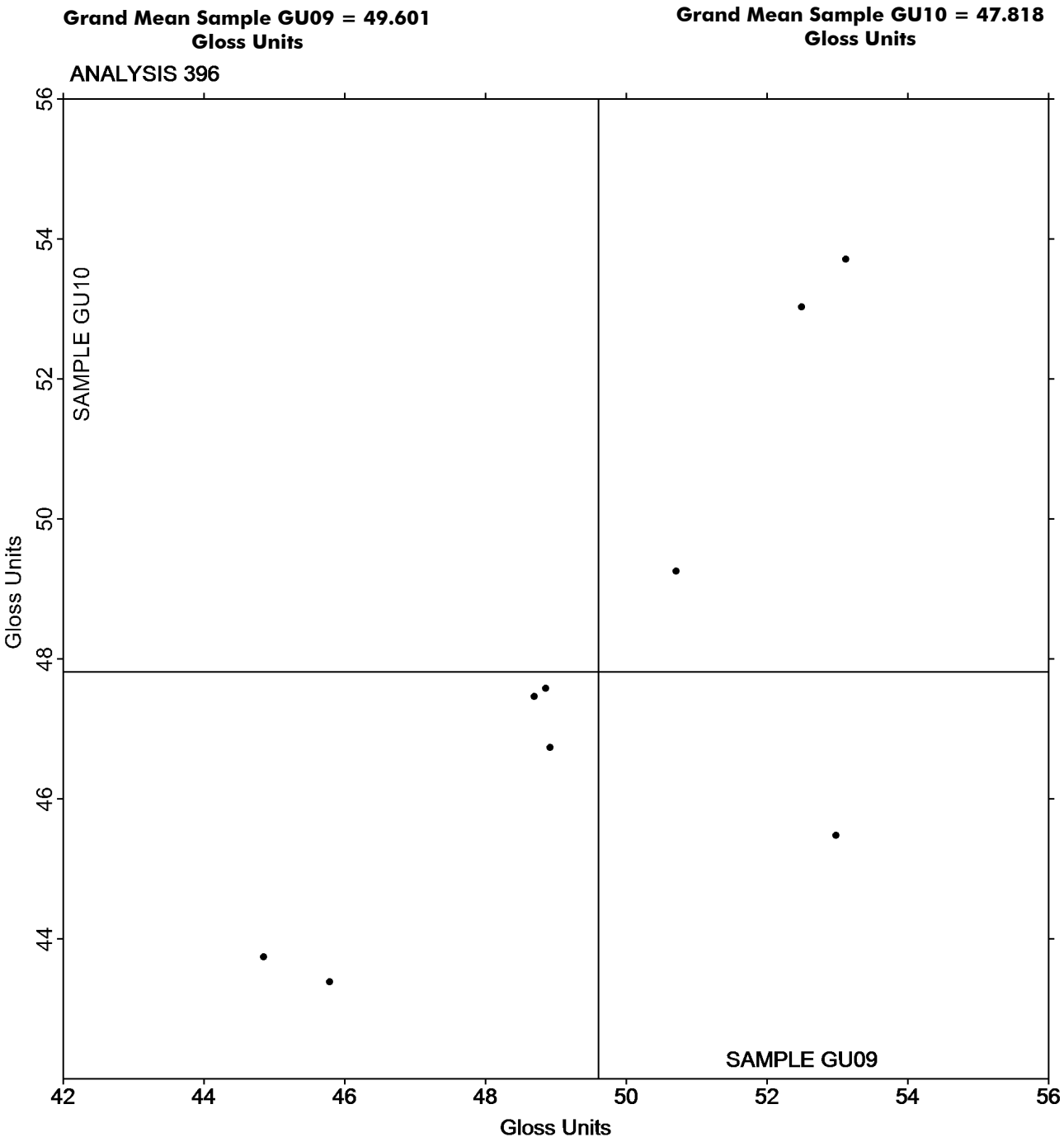

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 398
Grammage (Mass per Unit Area)
TAPPI Official Test Method T410

WebCode	Data Flag	Sample GW09 Lab Mean	Sample GW09 Diff from Grand Mean	Sample GW09 CPV	Sample GW10 Lab Mean	Sample GW10 Diff from Grand Mean	Sample GW10 CPV	Instr Code
39EQ8Y		75.92	0.34	0.79	90.11	0.41	0.84	ZZ
4EE8ZX		76.26	0.68	1.58	90.47	0.77	1.58	ZZ
6WD8KN		76.03	0.46	1.06	90.05	0.34	0.71	ZZ
7PLWQY		75.42	-0.16	-0.36	89.47	-0.23	-0.47	ZZ
7W7YWF		75.35	-0.23	-0.53	88.63	-1.07	-2.20	ZZ
8XFM8K		74.82	-0.76	-1.75	89.09	-0.61	-1.25	ZZ
A3FMZT		75.64	0.06	0.15	89.84	0.14	0.29	ZZ
A96URE		75.79	0.21	0.49	90.02	0.32	0.66	ZZ
B6NU67		75.62	0.04	0.10	90.17	0.47	0.97	ZZ
BBRXQY		75.42	-0.16	-0.36	89.25	-0.45	-0.92	ZZ
BGFMB9		75.00	-0.58	-1.34	88.91	-0.80	-1.64	ZZ
BGHBU8	*	75.03	-0.55	-1.26	90.35	0.65	1.33	ZZ
BRX67Z		75.12	-0.46	-1.07	89.18	-0.52	-1.08	ZZ
CPMKV7		74.66	-0.92	-2.13	89.18	-0.52	-1.07	ZZ
EWWQLT		75.84	0.26	0.61	90.26	0.56	1.14	ZZ
F2Q4LN		75.22	-0.36	-0.83	89.75	0.05	0.10	ZZ
FF9PC9		75.83	0.25	0.57	90.15	0.45	0.93	ZZ
FG68A4		75.70	0.12	0.28	89.64	-0.06	-0.12	ZZ
GEURCW		76.23	0.65	1.51	89.92	0.22	0.45	ZZ
HYU8AY		75.74	0.16	0.37	89.18	-0.52	-1.07	ZZ
KJRFLZ		76.28	0.70	1.62	90.08	0.38	0.78	ZZ
KVZK8L		74.94	-0.64	-1.48	89.20	-0.50	-1.03	ZZ
LUKLNW		75.52	-0.06	-0.13	89.47	-0.23	-0.47	ZZ
NACXFX		75.60	0.02	0.05	90.43	0.73	1.50	ZZ
Q3PQRP		75.69	0.11	0.25	89.46	-0.24	-0.49	ZZ
QEWUY6		76.00	0.42	0.98	89.90	0.20	0.41	ZZ
TW9NT4		75.72	0.14	0.33	89.94	0.24	0.49	ZZ
XWWL9Z		75.41	-0.17	-0.38	89.45	-0.25	-0.51	ZZ
YGDEA7		75.97	0.39	0.90	89.78	0.08	0.16	ZZ

Summary Statistics	Sample GW09	Sample GW10
Grand Means	75.58 g/sq m	89.70 g/sq m
Stnd Dev Btwn Labs	0.43 g/sq m	0.49 g/sq m

Statistics based on 29 of 29 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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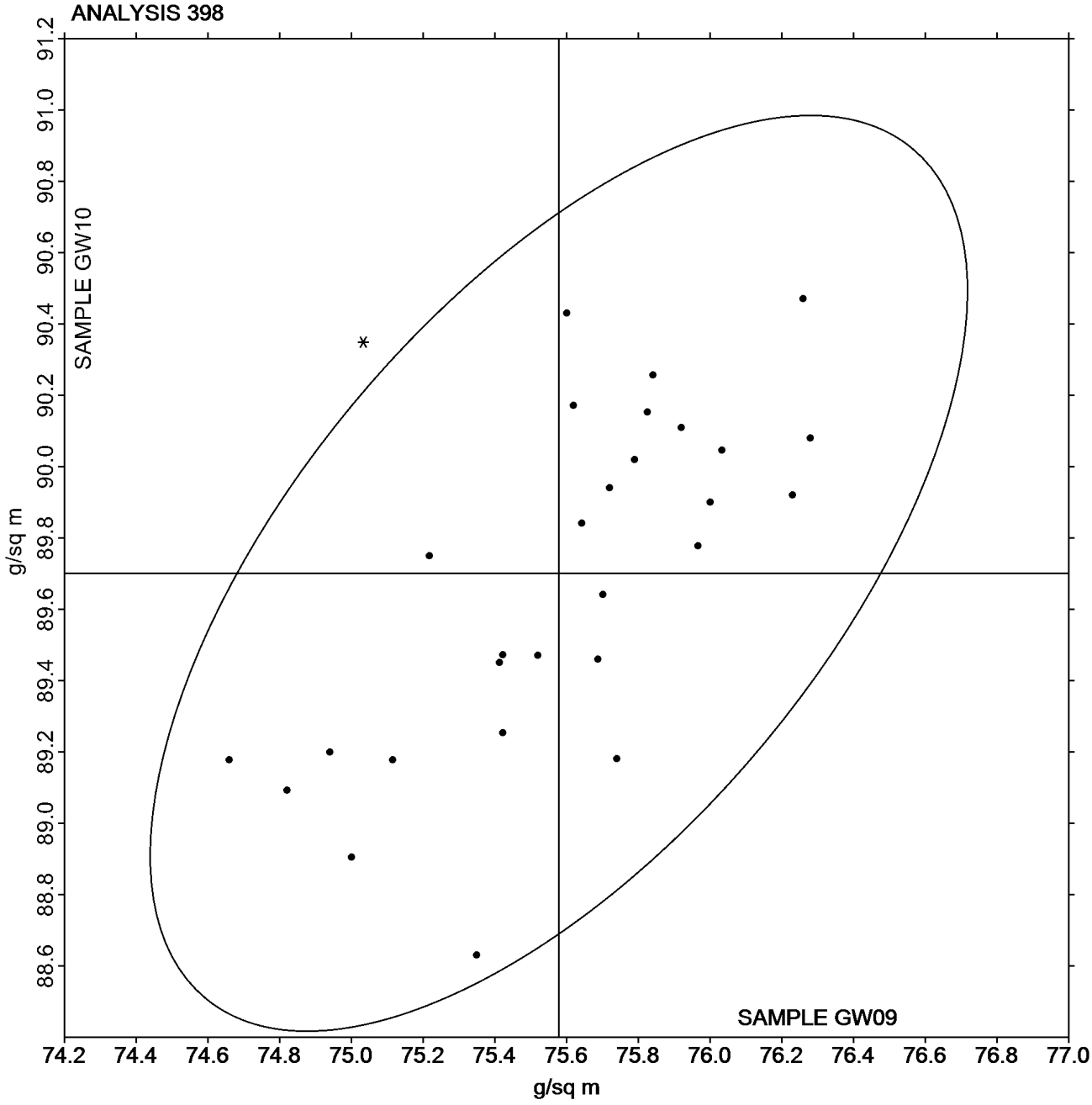
Grand Mean Sample GW09 = 75.578 g/sq m

Grand Mean Sample GW10 = 89.701 g/sq m



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Paper & Paperboard Interlaboratory Testing Program

Analysis 399
Sizing Test (Hercules Type)
TAPPI Official Test Method T530

WebCode	Data Flag	Sample GX09 Lab Mean	Sample GX09 Diff from Grand Mean	Sample GX09 CPV	Sample GX10 Lab Mean	Sample GX10 Diff from Grand Mean	Sample GX10 CPV	Instr Code
2GPTTY		6.19	-5.33	-1.28	5.91	-5.30	-1.20	HE
4AJFQF		11.54	0.02	0.01	10.93	-0.28	-0.06	HE
4N29G9		10.57	-0.95	-0.23	10.77	-0.44	-0.10	HE
93M8DC		6.00	-5.52	-1.33	6.30	-4.91	-1.11	HE
A96URE		11.75	0.23	0.06	8.81	-2.40	-0.54	HE
AHTGMG		12.01	0.49	0.12	10.75	-0.46	-0.10	HE
AKHZXA		12.62	1.10	0.27	13.59	2.38	0.54	HE
BCLLAU		20.51	8.99	2.17	18.54	7.33	1.66	HE
CJ2L6X		11.46	-0.06	-0.01	11.72	0.51	0.12	HE
EG9ZJQ		14.24	2.72	0.66	16.01	4.80	1.09	HE
FG3KQ6		13.72	2.20	0.53	14.26	3.05	0.69	HE
GEURCW		9.81	-1.71	-0.41	10.02	-1.19	-0.27	XX
L3GFLV		22.36	10.84	2.61	22.24	11.03	2.49	HE
LAJQCE		8.49	-3.03	-0.73	7.62	-3.59	-0.81	HE
N48MEC		5.33	-6.19	-1.49	4.18	-7.03	-1.59	HE
Q8DRR3		11.86	0.34	0.08	11.60	0.39	0.09	HE
QEE9F9		9.85	-1.67	-0.40	10.68	-0.53	-0.12	HE
TW9NT4		9.60	-1.92	-0.46	9.90	-1.31	-0.30	HE
UV99TC		18.77	7.25	1.75	19.79	8.58	1.94	HE
VE4ZEA		9.59	-1.93	-0.46	9.43	-1.78	-0.40	HE
WA3CB8		10.52	-1.00	-0.24	11.42	0.21	0.05	HE
Y6KBAF		9.56	-1.96	-0.47	9.34	-1.87	-0.42	HE
Z8AYAM		9.16	-2.36	-0.57	9.20	-2.01	-0.45	HE
ZJX3DC	*	10.95	-0.57	-0.14	5.95	-5.26	-1.19	HE

Summary Statistics	Sample GX09	Sample GX10
Grand Means	11.52 Seconds	11.21 Seconds
Stnd Dev Btwn Labs	4.15 Seconds	4.42 Seconds

Statistics based on 24 of 24 reporting participants.

Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab

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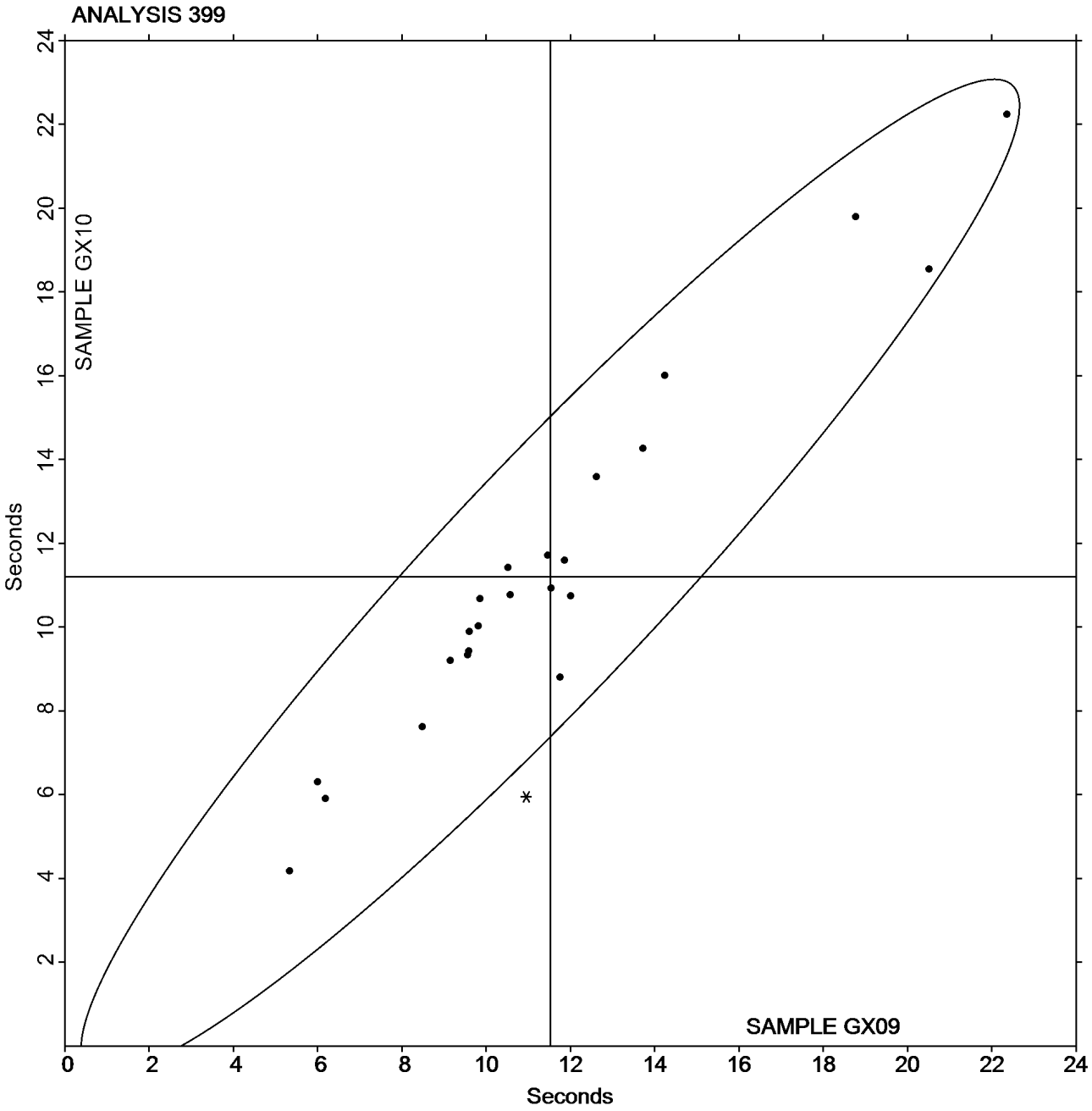
Grand Mean Sample GX09 = 11.519 Seconds

Grand Mean Sample GX10 = 11.207 Seconds



-End of Report-

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