Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #2932 G - April 2018

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351	Color & Color Difference - Near White Papers - D65/10deg obs
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384	Opacity (89% Reflectance Backing) - Fine Papers
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398	Grammage (Mass per Unit Area)
399	Sizing Test (Hercules Type)

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 industrial sectors: rubber, plastics, fasteners and metals, CKPG, paper, color 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 80 countries, currently participate in 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
2G3ZUJ		GA53	89.19	-0.66	1.74	-0.09	0.03	0.04	0.11	XS
		GA54	89.10	-0.63	1.79					
3BJWMG		GA53	90.28	-0.80	2.36	0.09	0.03	-0.10	0.14	LS
		GA54	90.37	-0.77	2.26					
4BD2GF		GA53	87.81	-0.57	2.35	0.44	0.05	0.00	0.44	NE
		GA54	88.25	-0.52	2.35					
4HN2N7	X	GA53	86.54	0.17	1.78	0.45	-0.10	0.12	0.48 X	TS
		GA54	87.00	0.06	1.90					
4U3YTA		GA53	87.00	-0.14	1.83	0.07	0.00	-0.06	0.09	TS
		GA54	87.06	-0.14	1.77					
9LWUL2		GA53	88.84	-0.74	1.74	-0.12	0.05	-0.15	0.20	HE
		GA54	88.72	-0.69	1.59					
9U7C3Y	X	GA53	89.86	-1.45	1.53	-0.05	0.01	-0.03	0.06	HG
		GA54	89.81	-1.44	1.50					
9WDGU2		GA53	88.82	-0.96	2.42	0.14	0.03	-0.11	0.18	HE
		GA54	88.96	-0.94	2.31					
ADZR6Z		GA53	90.26	-0.69	2.40	0.10	0.03	-0.07	0.12	EH
		GA54	90.35	-0.66	2.34					
CPKF6Y	X	GA53	87.34	0.07	1.78	-0.04	0.02	-0.02	0.05	TS
		GA54	87.30	0.10	1.76					
D8ZZK3		GA53	90.73	-0.34	2.19	-0.06	-0.10	-0.07	0.13	TC
		GA54	90.67	-0.44	2.12					
DVAMDP		GA53	90.20	-0.72	2.41	0.16	0.00	0.00	0.16	LS
		GA54	90.36	-0.72	2.41					
GRHPDN		GA53	90.35	-0.80	2.42	0.10	0.03	-0.11	0.16	TC
		GA54	90.45	-0.77	2.31					
KN2WNQ		GA53	87.87	-0.68	2.29	0.07	0.05	-0.08	0.12	LA
		GA54	87.94	-0.63	2.20					
MVZZTE		GA53	90.37	-0.76	2.85	0.09	-0.39	-0.19	0.45 X	EH
		GA54	90.46	-1.16	2.65					
MZZ68L		GA53	88.35	-0.68	1.62	-0.04	0.02	-0.05	0.07	HE
		GA54	88.31	-0.66	1.56					

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Paper & Paperboard Interlaboratory Testing Program

Report #2932 G, April 2018

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
PXFAUC		GA53	87.49	-0.86	2.06	0.06	0.05	0.02	0.08	XX
		GA54	87.55	-0.82	2.08					
VV44UC		GA53	87.87	-0.67	2.29	0.13	0.01	-0.04	0.14	TC
		GA54	88.00	-0.66	2.25					
W9AGNH		GA53	89.53	-0.39	3.26	0.12	-0.02	-0.13	0.17	VM
		GA54	89.65	-0.41	3.13					
Y7GM4C	X	GA53	87.13	0.04	1.85	0.22	0.02	-0.04	0.23	TS
		GA54	87.35	0.06	1.81					
YAPUWB		GA53	88.38	-0.33	2.32	0.08	0.07	-0.07	0.13	TS
		GA54	88.47	-0.26	2.25					

Summary Statistics

Grand Means							
GA53	88.771	-0.635	2.166	0.079	-0.004	-0.070	0.169
GA54	88.863	-0.640	2.112				
Stnd Dev Btwn Labs							
GA53	1.318	0.216	0.425	0.124	0.107	0.062	0.109
GA54	1.271	0.240	0.394				

Statistics based on 17 of 21 reporting participants

Comments on Assigned Data Flags for Test #350

4HN2N7 (X) - High a values for both samples. Inconsistent within a values for sample GA53. High delta L, delta b and delta E values.

9U7C3Y (X) - Low a values for both samples.

CPKF6Y (X) - High a values for both samples. Inconsistent within a values for sample GA54.

Y7GM4C (X) - High a values for both samples. Inconsistent within a values for sample GA54.

Key to Instrument Codes Reported by Participants

EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HG	Hunter ColorQUEST	LA	L & W Elrepho AL300
LS	L & W Elrepho SE 070	NE	Minolta CM-3500d Spectrophotometer
TC	Technidyne Color Touch Series	TS	Technidyne Brightimeter Micro S-5
VM	Valmet PaperLab (was Kajaani/Robotest)	XS	X-Rite 938 Spectrodensitometer
XX	Instrument make/model not specified by lab		

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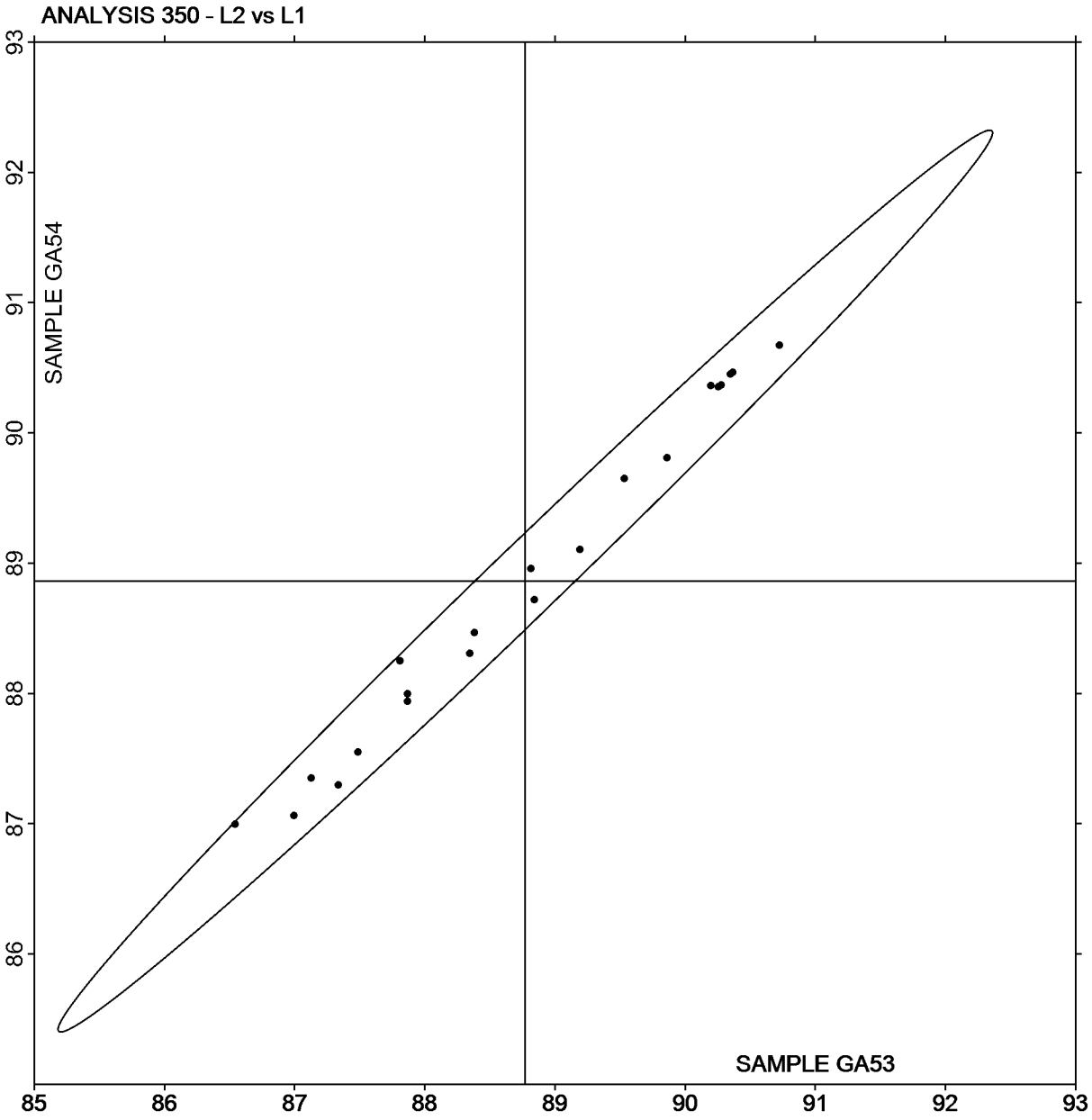
Plot of L values GA54 v L values GA53



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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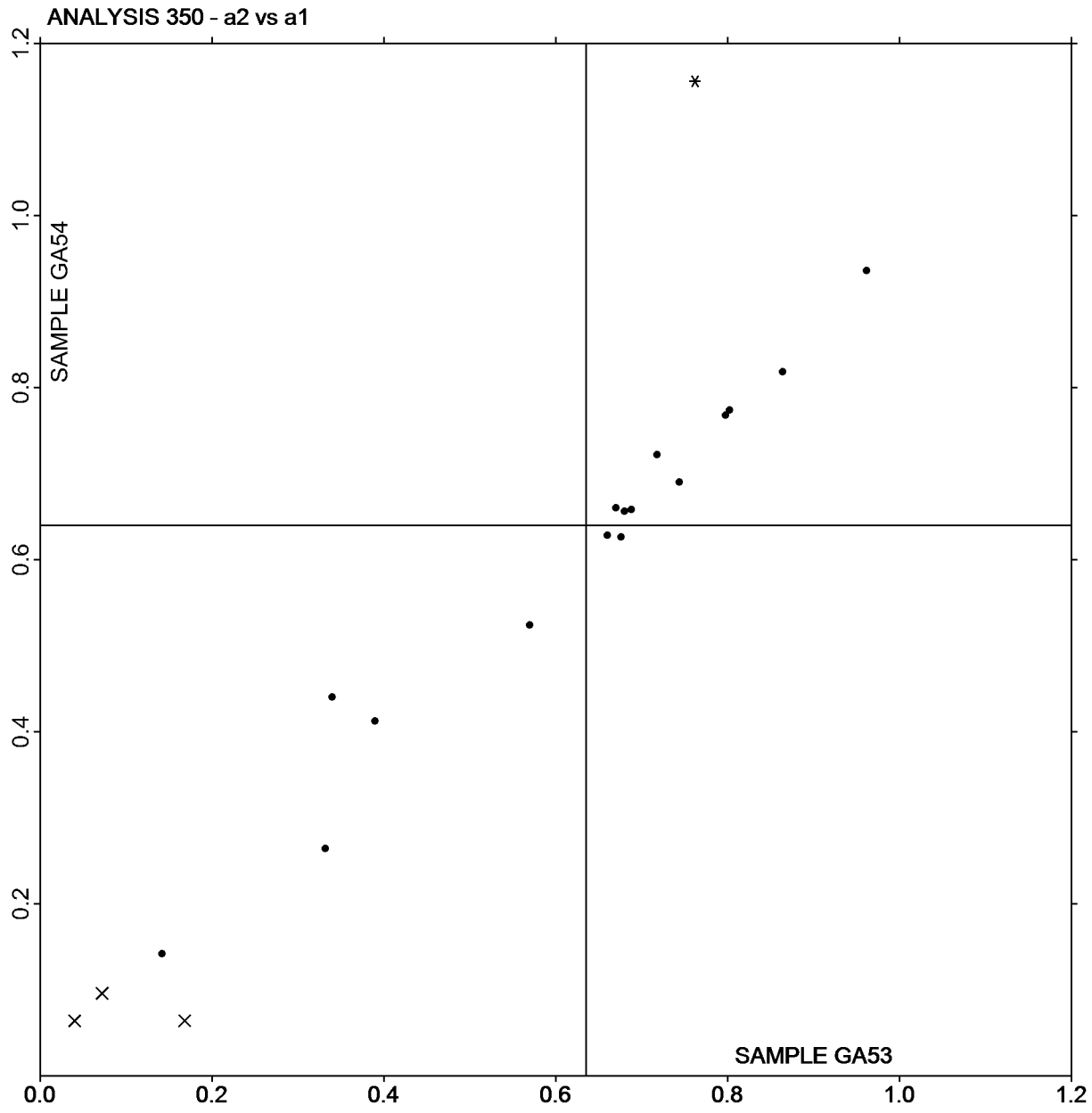
Plot of a values GA54 v a values GA53



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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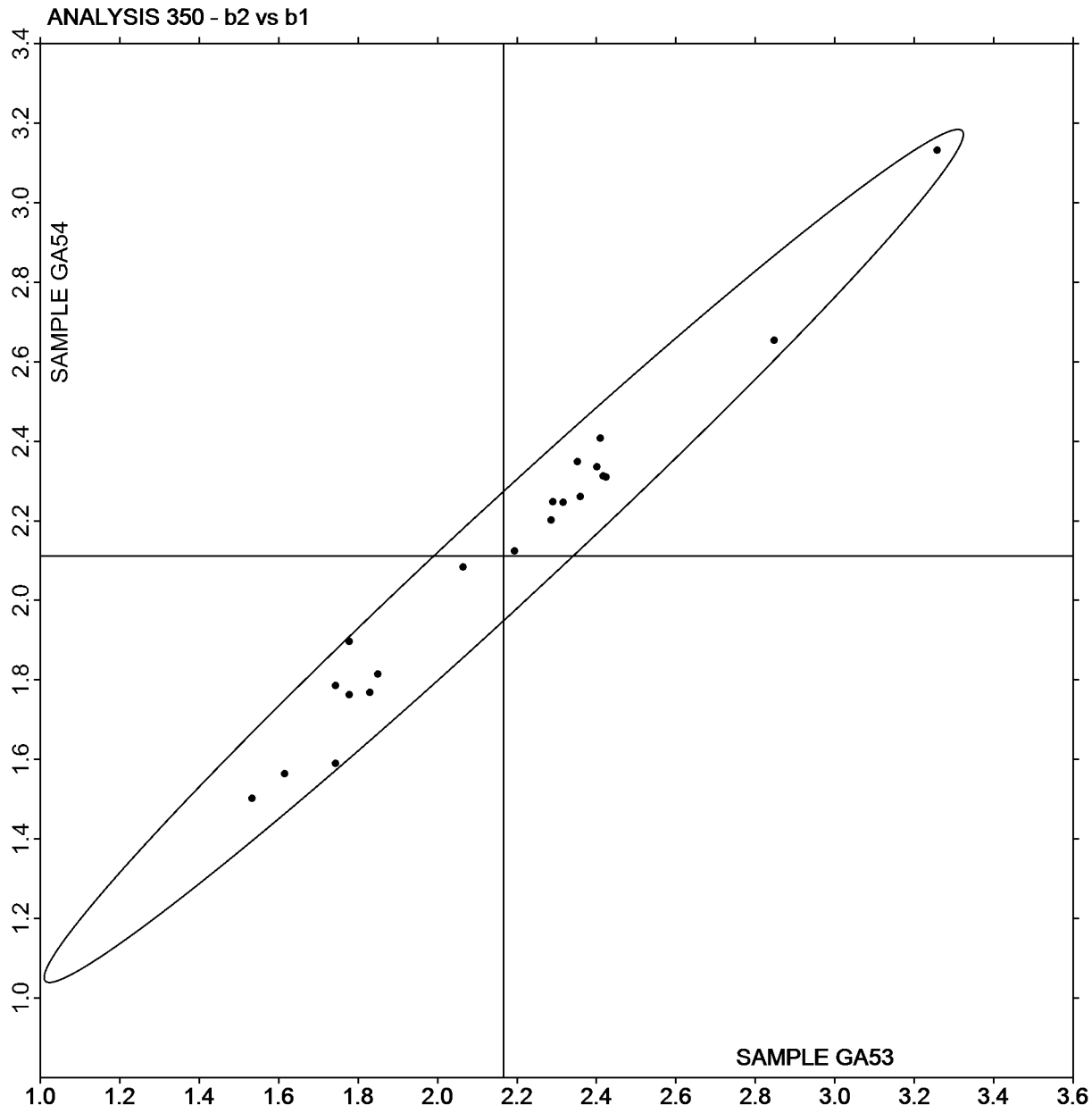
Plot of b values GA54 v b values GA53



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
2AL6Q4		**GA53**	90.70	-1.06	2.68	0.03	0.02	-0.12	0.13	XM
		GA54	90.73	-1.04	2.56					
3EVYBX		**GA53**	92.13	-1.05	2.08	-0.04	-0.04	-0.08	0.10	XP
		GA54	92.08	-1.09	2.00					
4GHZR6		**GA53**	90.46	-1.10	2.88	0.20	0.02	0.03	0.20	NG
		GA54	90.66	-1.09	2.91					
7JGELH		**GA53**	88.17	-1.19	2.21	0.12	0.02	-0.04	0.13	XX
		GA54	88.29	-1.18	2.17					
9WDGU2		**GA53**	88.80	-0.96	2.41	0.10	0.01	-0.13	0.16	HE
		GA54	88.90	-0.95	2.28					
9ZHKVU		**GA53**	90.96	-0.89	2.33	0.20	0.05	0.08	0.22	HV
		GA54	91.16	-0.84	2.41					
B9HER2		**GA53**	90.71	-1.09	2.67	-0.04	-0.02	-0.08	0.09	NF
		GA54	90.67	-1.11	2.59					
DVAMDP		**GA53**	90.20	-1.25	2.70	0.06	0.04	-0.16	0.17	LS
		GA54	90.26	-1.21	2.54					
GNRD3Q		**GA53**	90.56	-1.25	2.24	0.19	0.08	-0.04	0.21	HE
		GA54	90.75	-1.17	2.20					
GP6HPL		**GA53**	87.95	-1.06	2.54	0.00	-0.04	-0.14	0.15	TC
		GA54	87.96	-1.10	2.39					
HB62CT		**GA53**	90.70	-1.25	2.58	-0.01	0.05	-0.06	0.08	HT
		GA54	90.68	-1.21	2.52					
MNBYKJ		**GA53**	90.48	-1.26	2.72	-0.06	0.02	-0.10	0.12	EF
		GA54	90.42	-1.24	2.62					
XPDTXC		**GA53**	90.48	-1.14	2.82	0.15	0.01	-0.09	0.18	NG
		GA54	90.63	-1.13	2.73					
YPBK76		**GA53**	90.56	-1.20	2.61	0.18	0.01	0.03	0.18	HT
		GA54	90.74	-1.19	2.64					
Z4ND8F		**GA53**	90.26	-1.20	2.59	0.09	0.02	0.02	0.09	LS
		GA54	90.35	-1.17	2.60					
Z8MATB		**GA53**	90.32	-1.19	2.65	0.11	0.06	-0.15	0.19	EH
		GA54	90.42	-1.13	2.50					

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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

Summary Statistics

Grand Means							
GA53	90.216	-1.133	2.544	0.079	0.019	-0.065	0.150
GA54	90.294	-1.114	2.479				
Stnd Dev Btwn Labs							
GA53	1.054	0.111	0.228	0.091	0.032	0.072	0.046
GA54	1.051	0.103	0.229				

Statistics based on 16 of 16 reporting participants

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
HV	Hunter Ultrascan XE	LS	L & W Elrepho SE 070
NF	Minolta CM-3600d Spectrophotometer	NG	Minolta CM-3700d Spectrophotometer
TC	Technidyne Color Touch Series	XM	X-Rite CA-22
XP	X-Rite Spectrophotometer DTP	XX	Instrument make/model not specified by lab

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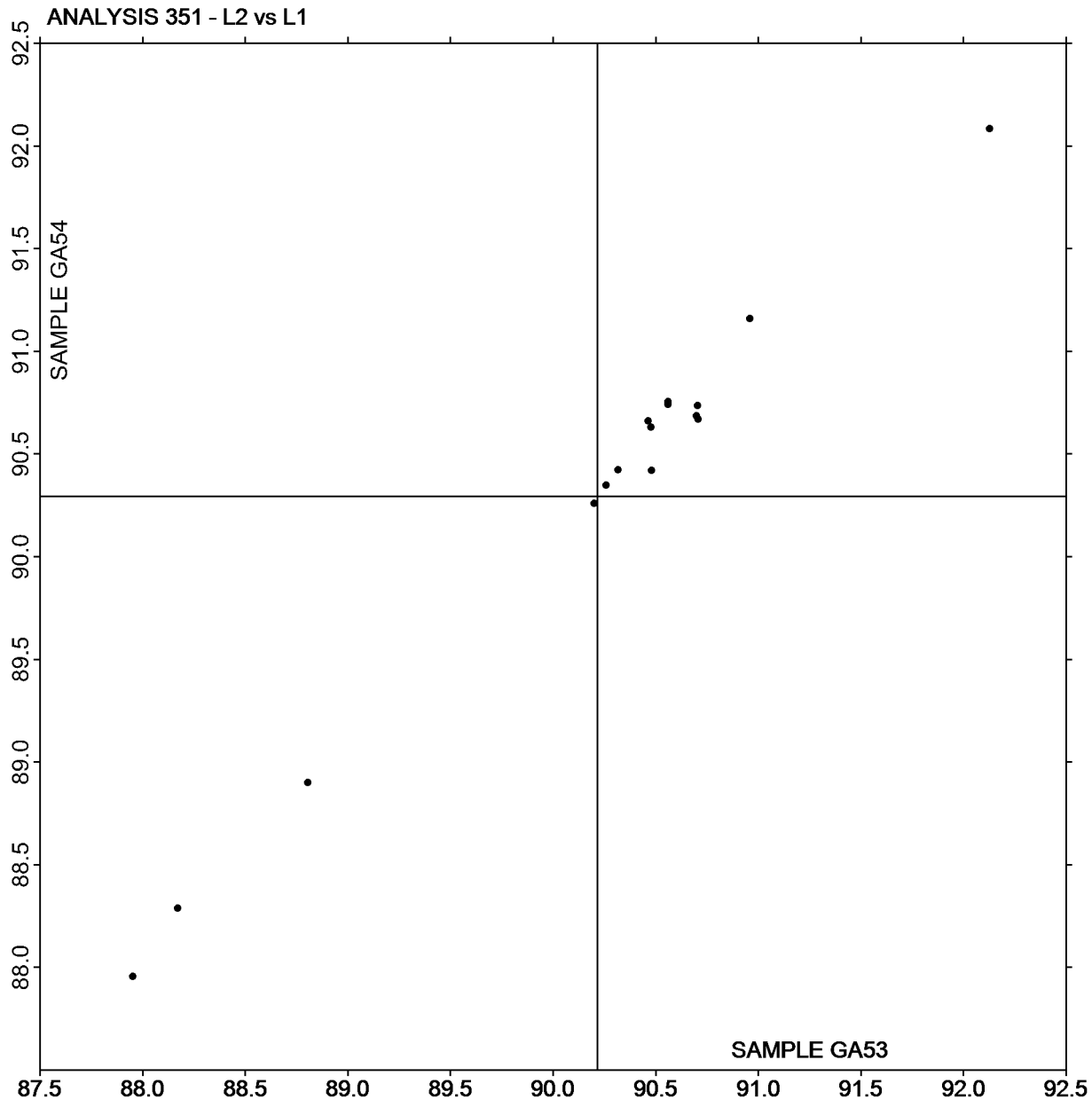
Plot of L values GA54 v L values GA53



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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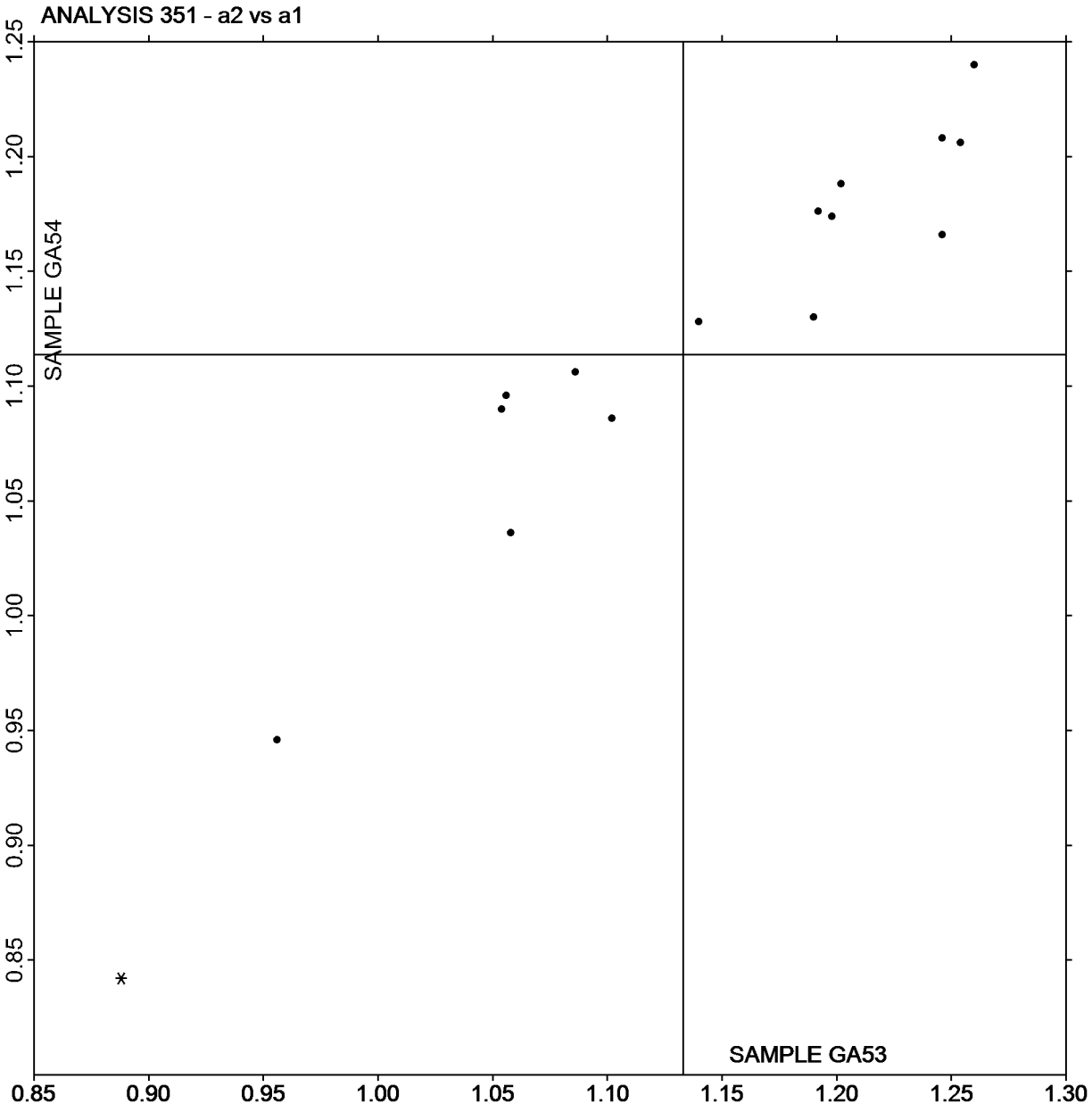
Plot of a values GA54 v a values GA53



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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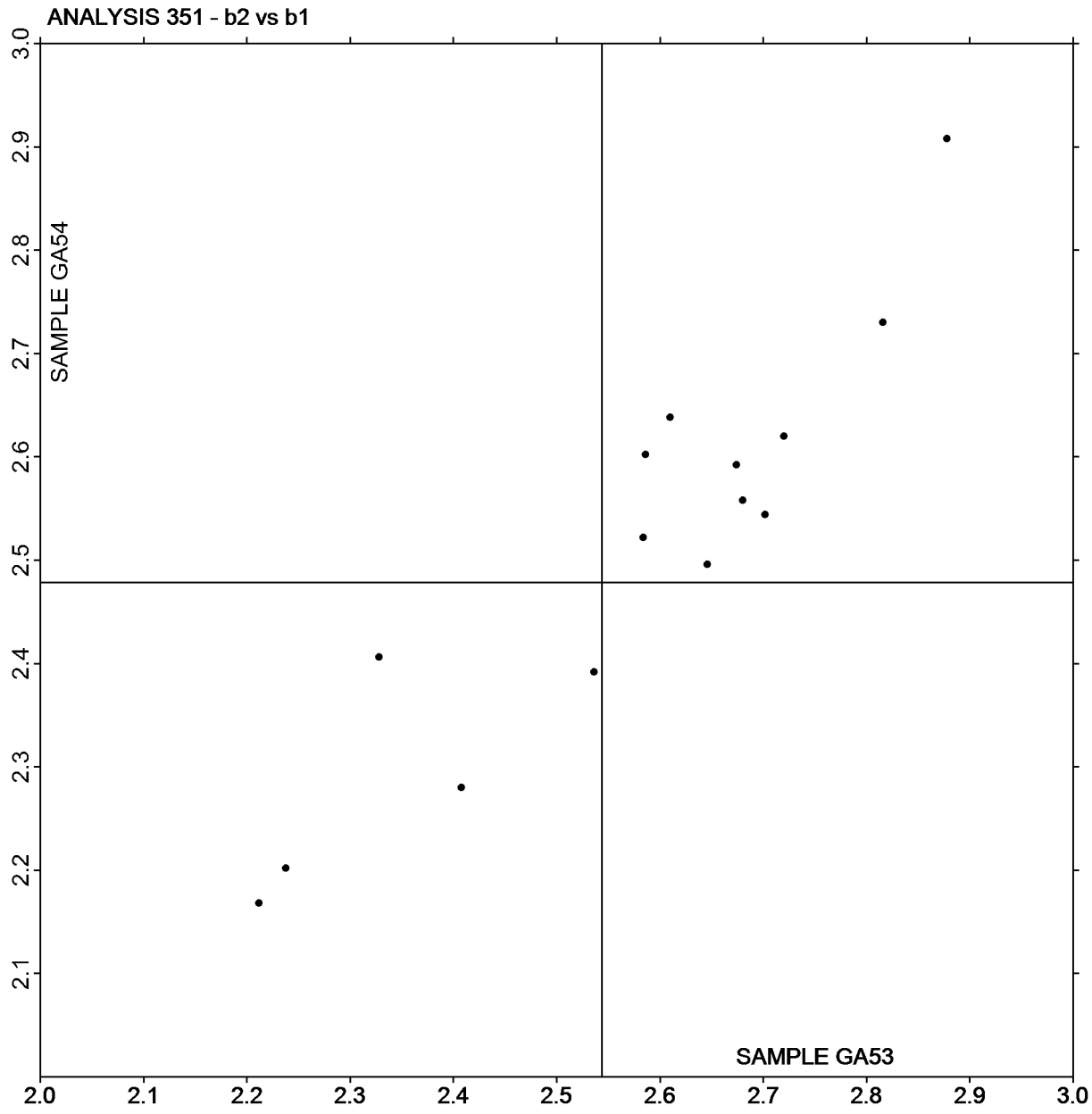
Plot of b values GA54 v b values GA53



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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WebCode	Data Flag	Sample GV53 Lab Mean	Sample GV53 Diff from Grand Mean	Sample GV53 CPV	Sample GV54 Lab Mean	Sample GV54 Diff from Grand Mean	Sample GV54 CPV	Instr Code
2AL6Q4		4.520	-0.050	-0.62	5.008	0.039	0.42	LW
2B2NZ8		4.542	-0.027	-0.34	4.980	0.011	0.12	XX
2G3ZUJ		4.510	-0.059	-0.75	4.950	-0.019	-0.20	TM
3BJWMG		4.651	0.082	1.03	5.080	0.111	1.20	LW
3EVYBX		4.610	0.041	0.51	4.945	-0.024	-0.25	TM
44R7FC		4.619	0.050	0.63	5.092	0.123	1.33	LW
4GHZR6		4.454	-0.115	-1.45	4.902	-0.067	-0.72	PP
4JM9RJ		4.479	-0.090	-1.14	4.916	-0.053	-0.57	EM
4U3YTA		4.622	0.053	0.66	5.017	0.048	0.52	EM
4VL3R2		4.718	0.149	1.87	5.095	0.127	1.37	LW
7GTLEC		4.653	0.083	1.05	5.037	0.069	0.74	LW
7JGELH		4.570	0.001	0.01	4.893	-0.076	-0.81	LW
7QGFRU		4.508	-0.061	-0.77	4.827	-0.142	-1.53	MT
8EHYFX		4.535	-0.034	-0.43	4.961	-0.008	-0.09	TM
98RR6D		4.642	0.073	0.92	5.074	0.105	1.14	EM
9N43W7	X	4.370	-0.199	-2.51	4.920	-0.049	-0.52	LW
9ZHKVU		4.442	-0.127	-1.60	4.778	-0.191	-2.06	EM
AW8LN2		4.544	-0.025	-0.32	5.035	0.066	0.72	EM
B9HER2		4.668	0.098	1.24	5.123	0.155	1.67	TM
BLMP8Z		4.498	-0.071	-0.90	4.898	-0.071	-0.76	LA
CPKF6Y		4.439	-0.130	-1.64	4.859	-0.109	-1.18	TM
CXXHAZ	X	4.522	-0.047	-0.60	4.601	-0.368	-3.96	TM
D8ZZK3		4.638	0.069	0.87	4.932	-0.037	-0.39	TA
D9R37X		4.604	0.035	0.44	4.931	-0.038	-0.40	PP
ELGE4T		4.638	0.069	0.87	5.058	0.089	0.96	LW
ERKZVL		4.407	-0.162	-2.04	4.819	-0.150	-1.61	TA
FGZR8T		4.602	0.033	0.41	4.954	-0.015	-0.16	EM
GNRD3Q		4.601	0.032	0.40	5.020	0.052	0.56	TM
GRHPDN		4.616	0.047	0.59	5.049	0.080	0.87	LA
GYGXRX		4.719	0.150	1.89	5.198	0.229	2.47	LW
H78GBU		4.609	0.040	0.50	5.062	0.093	1.01	TM
HB62CT		4.657	0.088	1.10	5.041	0.072	0.78	EM
HUFV6Y		4.634	0.065	0.81	4.992	0.024	0.25	MS
KN2WNQ		4.655	0.086	1.08	5.014	0.046	0.49	LA
MVZZTE		4.611	0.042	0.53	5.017	0.048	0.52	EM
MYBD9T		4.604	0.035	0.44	5.002	0.033	0.36	LW
N2H9NY		4.460	-0.109	-1.38	4.843	-0.126	-1.36	PP
NF2FPW		4.605	0.036	0.45	5.026	0.057	0.62	LW
PXCP6M		4.625	0.056	0.71	5.037	0.068	0.74	LW
PXFAUC		4.630	0.061	0.76	5.040	0.071	0.77	XX

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Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV53 Lab Mean	Sample GV53 Diff from Grand Mean	Sample GV53 CPV	Sample GV54 Lab Mean	Sample GV54 Diff from Grand Mean	Sample GV54 CPV	Instr Code
Q2AQKB		4.556	-0.013	-0.17	4.956	-0.013	-0.14	PP
T2KPPD		4.540	-0.029	-0.37	4.989	0.020	0.22	LW
T8K7ZJ		4.575	0.006	0.07	4.993	0.024	0.26	TA
TBUJ8R		4.573	0.004	0.05	4.877	-0.092	-0.99	PP
U84WPN		4.470	-0.099	-1.25	4.800	-0.169	-1.82	TM
UXHTJA		4.522	-0.047	-0.59	4.846	-0.122	-1.32	FR
WEED8H		4.469	-0.100	-1.26	4.882	-0.087	-0.93	PP
WJ9WDC		4.566	-0.003	-0.04	4.991	0.022	0.24	LA
X2947J	*	4.366	-0.203	-2.56	4.715	-0.254	-2.73	TM
XPDTXC		4.622	0.053	0.66	5.022	0.053	0.58	EM
XTBCYB		4.566	-0.003	-0.04	4.917	-0.052	-0.56	EM
XXNWGQ		4.505	-0.064	-0.81	4.899	-0.070	-0.75	PP
Y7GM4C		4.459	-0.110	-1.38	4.924	-0.045	-0.48	TM
YAPUWB		4.482	-0.087	-1.10	4.961	-0.008	-0.08	LA
YPBK76		4.632	0.063	0.79	5.003	0.034	0.37	EM
YTPXK7		4.637	0.068	0.85	5.018	0.050	0.53	LW
Z84MKK		4.631	0.061	0.77	4.974	0.005	0.05	LW

Summary Statistics	Sample GV53	Sample GV54
Grand Means	4.57 mils	4.97 mils
Stnd Dev Btwn Labs	0.08 mils	0.09 mils

Statistics based on 55 of 57 reporting participants.

Comments on Assigned Data Flags for Test #360

9N43W7 (X) - Inconsistent in testing between samples.

CXXHAZ (X) - Data for sample GV54 are low.

Key to Instrument Codes Reported by Participants

EM	Emveco	FR	Frank Instruments
LA	L & W Autoline	LW	L & W
MS	Messmer	MT	Mitutoyo
PP	Technidyne Profile/Plus	TA	Thwing-Albert
TM	TMI	XX	Instrument make/model not specified by lab

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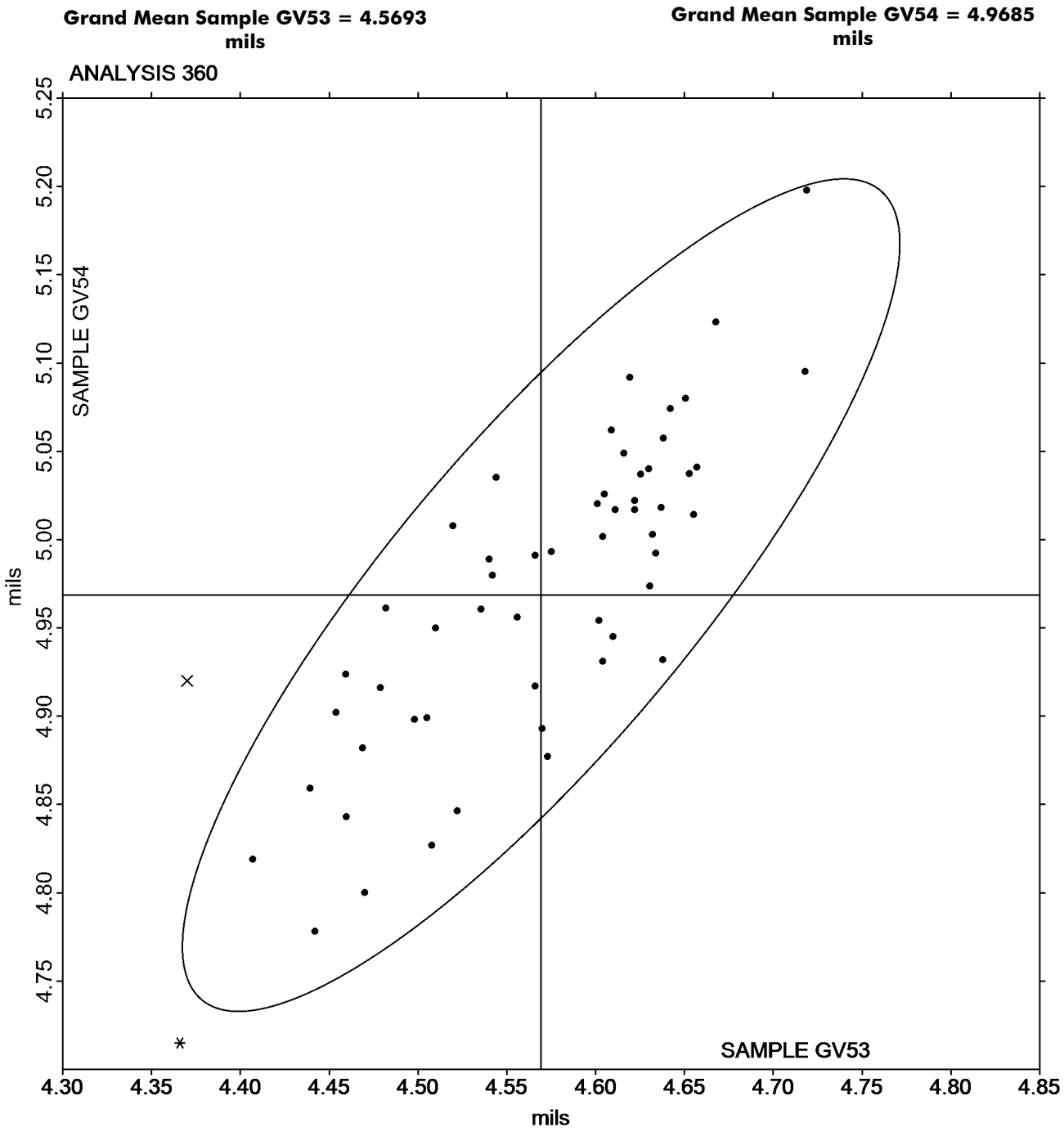

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Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GY53 Lab Mean	Sample GY53 Diff from Grand Mean	Sample GY53 CPV	Sample GY54 Lab Mean	Sample GY54 Diff from Grand Mean	Sample GY54 CPV	Instr Code
3GJZ49		13.72	-0.32	-1.47	13.83	-0.30	-1.38	TM
3V6QBG		14.02	-0.01	-0.06	14.04	-0.09	-0.43	TM
3Y3ADF		14.26	0.23	1.05	14.37	0.24	1.09	LW
6DY7ND		14.07	0.03	0.16	14.22	0.09	0.41	TM
9JREM2		13.97	-0.07	-0.32	13.93	-0.20	-0.90	LW
9LWUL2		13.96	-0.07	-0.34	14.10	-0.03	-0.15	EM
9WDGU2		13.95	-0.09	-0.41	14.02	-0.11	-0.52	EM
CKAZLT		13.89	-0.15	-0.67	14.05	-0.08	-0.36	TM
CUYQ7Z		13.84	-0.20	-0.93	13.98	-0.15	-0.69	TA
CYQVY4		14.09	0.05	0.25	14.10	-0.03	-0.14	LA
D6WRH4		13.90	-0.14	-0.63	14.07	-0.06	-0.28	TA
DVAMDP	*	14.74	0.70	3.26	14.78	0.65	2.97	TM
EP9QTX		14.34	0.31	1.42	14.34	0.21	0.98	LA
ERKZVL		13.79	-0.25	-1.16	13.92	-0.21	-0.98	TA
GP6HPL		14.07	0.03	0.15	14.23	0.10	0.44	EM
GYGXRX		14.26	0.22	1.02	14.45	0.32	1.47	XX
KN2WNQ		14.14	0.11	0.49	14.38	0.25	1.14	LA
MZZ68L		13.97	-0.07	-0.31	14.05	-0.08	-0.38	EM
N2H9NY		14.06	0.02	0.09	14.17	0.04	0.20	LW
NNA8UK		13.98	-0.06	-0.28	14.13	0.00	0.02	LA
RZVJW9		13.79	-0.25	-1.14	13.76	-0.37	-1.70	TM
T8K7ZJ		14.06	0.02	0.09	14.20	0.07	0.30	TA
TYFJDJ		14.02	-0.02	-0.10	14.15	0.02	0.07	TA
U84WPN		13.74	-0.30	-1.37	13.87	-0.26	-1.20	TM
UR6C2E		14.12	0.08	0.37	14.14	0.01	0.06	TM
V3N2KK		14.32	0.28	1.31	14.42	0.29	1.34	LW
W9AGNH		13.85	-0.19	-0.87	13.91	-0.22	-1.03	VP
XETLZ9	X	359.50	345.46	1,602.44	360.00	345.87	1,592.01	XX
XTRRRH		13.80	-0.24	-1.09	13.85	-0.28	-1.29	TM
Z4ND8F		14.04	0.00	0.02	14.11	-0.02	-0.09	TM
Z84MKK		14.05	0.02	0.08	14.11	-0.01	-0.07	LW
Z8MATB		14.34	0.30	1.41	14.37	0.24	1.09	EM

Summary Statistics	Sample GY53	Sample GY54
Grand Means	14.04 mils	14.13 mils
Stnd Dev Btwn Labs	0.22 mils	0.22 mils

Statistics based on 31 of 32 reporting participants.

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Comments on Assigned Data Flags for Test #361

XETLZ9 (X) - Extreme Data.

Analysis Notes:

XETLZ9 - Data appear to be reported as micrometers, not mils as indicated on datasheet.

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LW	L & W	TA	Thwing-Albert
TM	TMI	VP	Valmet Paper Lab
XX	Instrument make/model not specified by lab		

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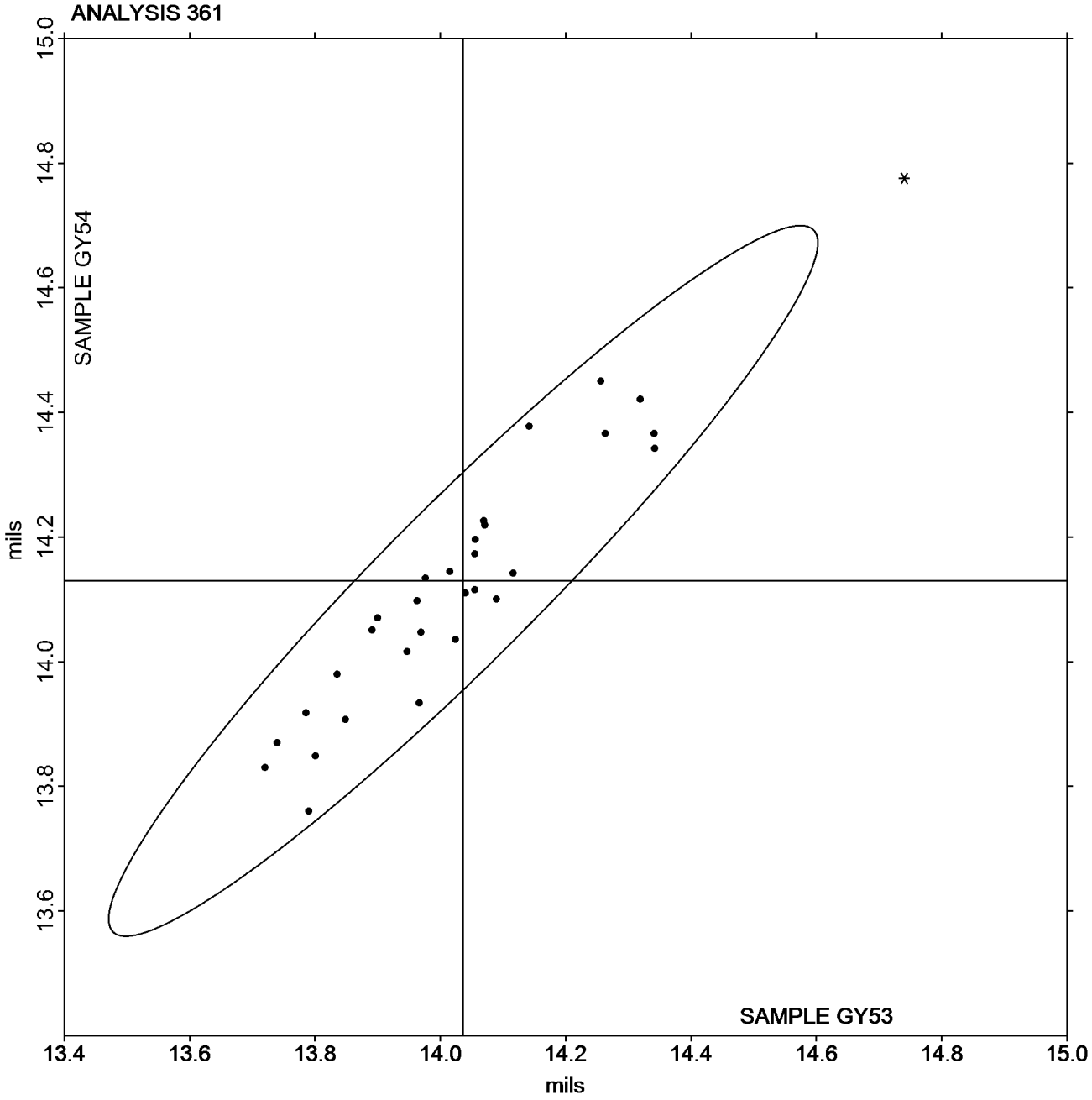
Grand Mean Sample GY53 = 14.036 mils

Grand Mean Sample GY54 = 14.130 mils



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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 GD53 Lab Mean	Sample GD53 Diff from Grand Mean	Sample GD53 CPV	Sample GD54 Lab Mean	Sample GD54 Diff from Grand Mean	Sample GD54 CPV	Instr Code
2G3ZUJ		0.3706	-0.1185	-1.02	0.3792	-0.1644	-1.50	XX
4U3YTA		0.5234	0.0343	0.29	0.5930	0.0494	0.45	TA
6B6XEH		0.4404	-0.0487	-0.42	0.5544	0.0108	0.10	IT
98RR6D		0.6020	0.1129	0.97	0.6700	0.1264	1.15	TA
9ZHKVU		0.2848	-0.2043	-1.75	0.3778	-0.1658	-1.51	TA
GYGXRX		0.5794	0.0903	0.78	0.6222	0.0786	0.72	TL
H22LRU		0.6102	0.1211	1.04	0.6158	0.0722	0.66	TA
NNA8UK		0.5018	0.0127	0.11	0.5364	-0.0072	-0.07	TA

Summary Statistics	Sample GD53	Sample GD54
Grand Means	0.49 COF	0.54 COF
Stnd Dev Btwn Labs	0.12 COF	0.11 COF

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

IT	IMASS SP-2100	TA	Thwing-Albert Friction Tester
TL	TMI 32-90 Lab Master/Slip and Friction	XX	Instrument make/model not specified by lab

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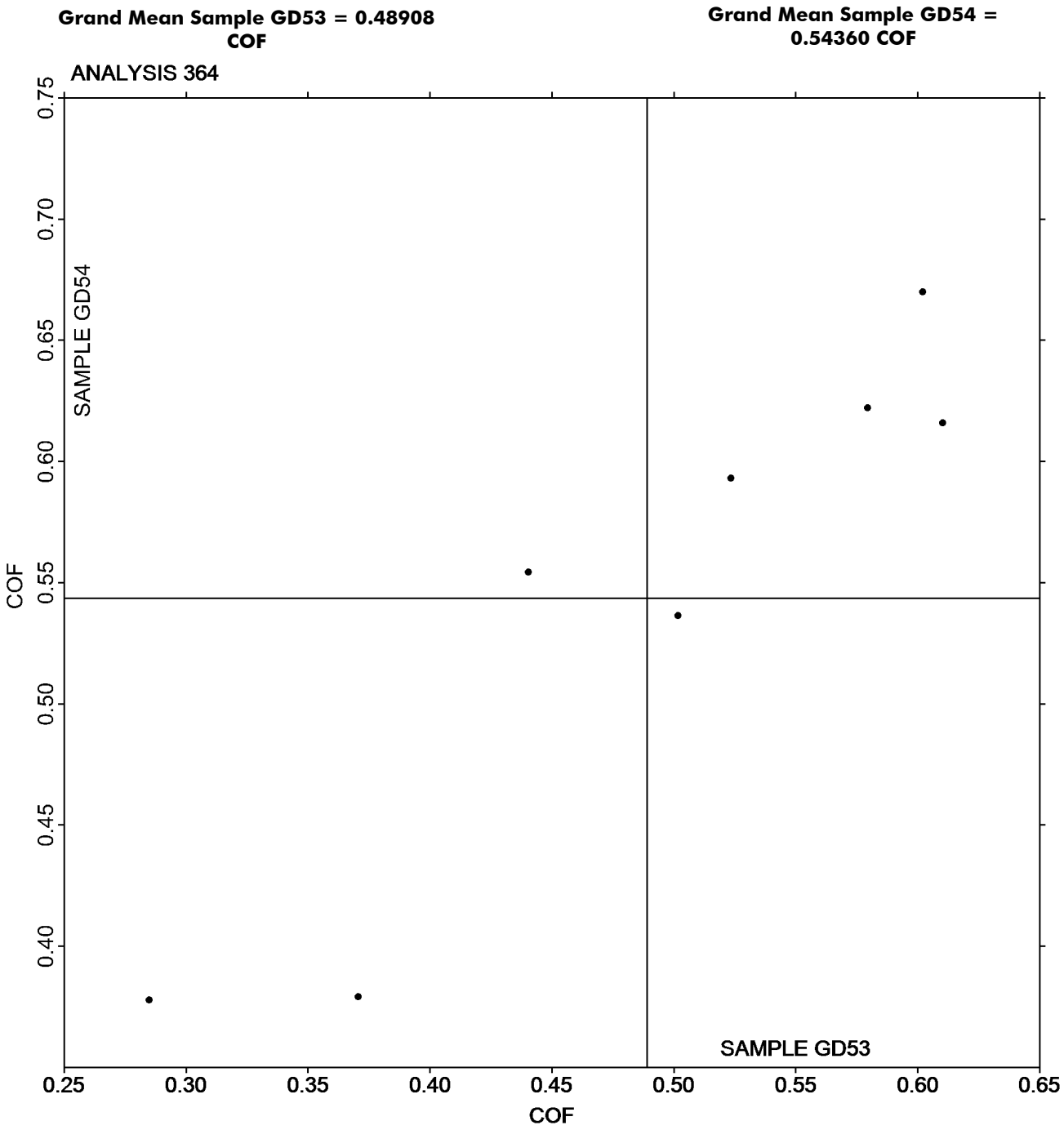

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

WebCode	Data Flag	Sample GD53 Lab Mean	Sample GD53 Diff from Grand Mean	Sample GD53 CPV	Sample GD54 Lab Mean	Sample GD54 Diff from Grand Mean	Sample GD54 CPV	Instr Code
2G3ZUJ		0.3772	-0.1130	-1.27	0.3832	-0.0962	-1.64	XX
4HN2N7		0.6184	0.1282	1.44	0.5682	0.0888	1.51	TA
4JM9RJ		0.4708	-0.0194	-0.22	0.4832	0.0038	0.06	TA
6B6XEH		0.3204	-0.1698	-1.91	0.4304	-0.0490	-0.84	IR
GYGXRX		0.5452	0.0550	0.62	0.5064	0.0270	0.46	TL
H22LRU		0.4706	-0.0196	-0.22	0.4868	0.0074	0.13	TA
KN2WNQ		0.5792	0.0890	1.00	0.5544	0.0750	1.28	TM
NNA8UK		0.4974	0.0072	0.08	0.5036	0.0242	0.41	TA
RNFTVH		0.4972	0.0070	0.08	0.4624	-0.0170	-0.29	TM
XXNWGQ		0.5256	0.0354	0.40	0.4154	-0.0640	-1.09	TA

Summary Statistics	Sample GD53	Sample GD54
Grand Means	0.49 COF	0.48 COF
Stnd Dev Btwn Labs	0.09 COF	0.06 COF

Statistics based on 10 of 10 reporting participants.

Key to Instrument Codes Reported by Participants

IR	IMASS SP-2000	TA	Thwing-Albert Friction Tester
TL	TMI 32-90 Lab Master/Slip and Friction	TM	TMI 32-06 Monitor/Slip and Friction
XX	Instrument make/model not specified by lab		

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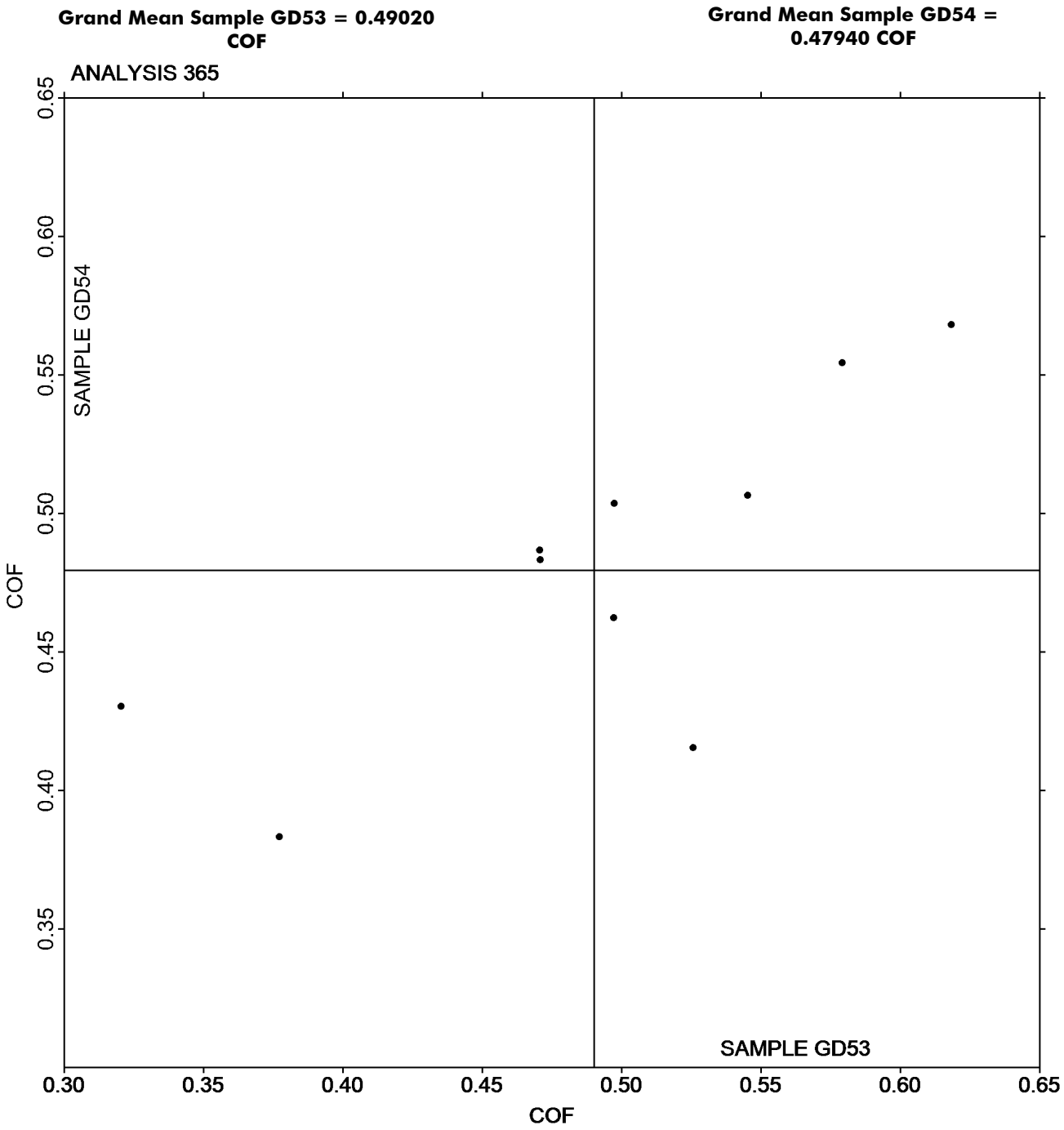

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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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 GE53 Lab Mean	Sample GE53 Diff from Grand Mean	Sample GE53 CPV	Sample GE54 Lab Mean	Sample GE54 Diff from Grand Mean	Sample GE54 CPV	Instr Code
2AL6Q4		25.30	-0.46	-0.34	28.10	-0.99	-0.63	LW
2G3ZUJ		25.90	0.14	0.10	29.20	0.11	0.07	GS
3BJWMG		24.96	-0.80	-0.59	27.24	-1.85	-1.17	LP
3GJZ49		28.11	2.35	1.72	30.72	1.63	1.04	TL
44R7FC		24.20	-1.56	-1.14	26.34	-2.75	-1.74	LP
4HQQR4	X	33.69	7.93	5.80	35.41	6.32	4.01	GA
4VL3R2		24.66	-1.10	-0.81	27.52	-1.57	-0.99	LP
7GTLEC		25.59	-0.17	-0.13	29.04	-0.05	-0.03	LP
7HJ4QF		27.11	1.35	0.98	29.95	0.86	0.55	XX
84XRG9		25.90	0.14	0.10	30.43	1.34	0.85	XX
98RR6D		25.17	-0.59	-0.43	28.25	-0.83	-0.53	PP
9JREM2		25.85	0.08	0.06	28.11	-0.98	-0.62	TL
9ZHKVU		26.40	0.63	0.46	28.54	-0.54	-0.34	PP
ADZR6Z		24.94	-0.82	-0.60	28.81	-0.28	-0.18	RE
B9HER2		22.39	-3.37	-2.47	26.58	-2.51	-1.59	PR
BLMP8Z		27.92	2.16	1.58	31.90	2.81	1.79	LA
BPMXBB		25.37	-0.39	-0.29	30.66	1.57	1.00	LP
CPKF6Y		25.80	0.04	0.03	30.25	1.16	0.74	LP
D8ZZK3		26.02	0.25	0.19	27.80	-1.28	-0.81	PP
GP6HPL		26.01	0.24	0.18	29.61	0.53	0.33	PP
GYGXRX		25.01	-0.75	-0.55	28.37	-0.72	-0.45	LP
H22LRU		25.81	0.05	0.03	29.62	0.53	0.34	WG
HB62CT		25.97	0.21	0.15	27.54	-1.55	-0.98	PP
MNBYKJ		27.26	1.50	1.09	32.33	3.24	2.06	LP
MVZZTE		27.23	1.47	1.07	28.76	-0.33	-0.21	HG
N2H9NY		26.26	0.50	0.36	29.19	0.10	0.07	PP
NNA8UK		26.10	0.34	0.25	30.02	0.93	0.59	LA
P2CYBJ	X	17.82	-7.94	-5.81	19.34	-9.75	-6.19	TN
PXFAUC		25.50	-0.26	-0.19	28.55	-0.54	-0.34	XX
Q2AQKB		25.40	-0.36	-0.27	29.55	0.46	0.29	HG
Q8WWDL		24.06	-1.70	-1.25	26.70	-2.39	-1.51	LP
RZVJW9		27.79	2.03	1.48	32.15	3.06	1.94	TL
T8K7ZJ		24.81	-0.96	-0.70	28.66	-0.42	-0.27	PP
TBUJ8R	*	25.27	-0.50	-0.36	31.64	2.56	1.62	PP
V3N2KK		24.60	-1.16	-0.85	29.41	0.32	0.21	LW
W9AGNH		27.96	2.20	1.61	31.34	2.25	1.43	VM
WEED8H		28.00	2.23	1.63	30.71	1.62	1.03	PP
X2947J		25.14	-0.63	-0.46	27.50	-1.59	-1.01	HG
XETLZ9		22.78	-2.98	-2.18	27.41	-1.68	-1.06	XX
XTBCYB		23.73	-2.03	-1.49	26.83	-2.26	-1.43	PP

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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 GE53 Lab Mean	Sample GE53 Diff from Grand Mean	Sample GE53 CPV	Sample GE54 Lab Mean	Sample GE54 Diff from Grand Mean	Sample GE54 CPV	Instr Code
Y7GM4C	X	24.22	-1.54	-1.13	23.74	-5.35	-3.39	LW
YAPUWB		26.39	0.63	0.46	29.05	-0.04	-0.02	LA
YPBK76		27.90	2.14	1.56	29.04	-0.05	-0.03	HG
YTM9FA	X	16.07	-9.69	-7.09	12.56	-16.53	-10.49	LA

Summary Statistics	Sample GE53	Sample GE54
Grand Means	25.76 sec/100 cc	29.09 sec/100 cc
Stnd Dev Btwn Labs	1.37 sec/100 cc	1.58 sec/100 cc

Statistics based on 40 of 44 reporting participants.

Comments on Assigned Data Flags for Test #370

YTM9FA (X) - Extreme Data.

4HQQR4 (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

Y7GM4C (X) - Data for sample GE54 are low.

P2CYBJ (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	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	PR	Parker Print-Surf (PPS) Model M590
RE	Regmed Gurley Densometer PGH-T	TL	Gurley Densometer #4110, Oil Flotation
TN	Gurley S-P-S Tester #4190	VM	Valmet PaperLab (was Kajaani/Robotest)
WG	W & LE Gurley Tester	XX	Instrument make/model not specified by lab

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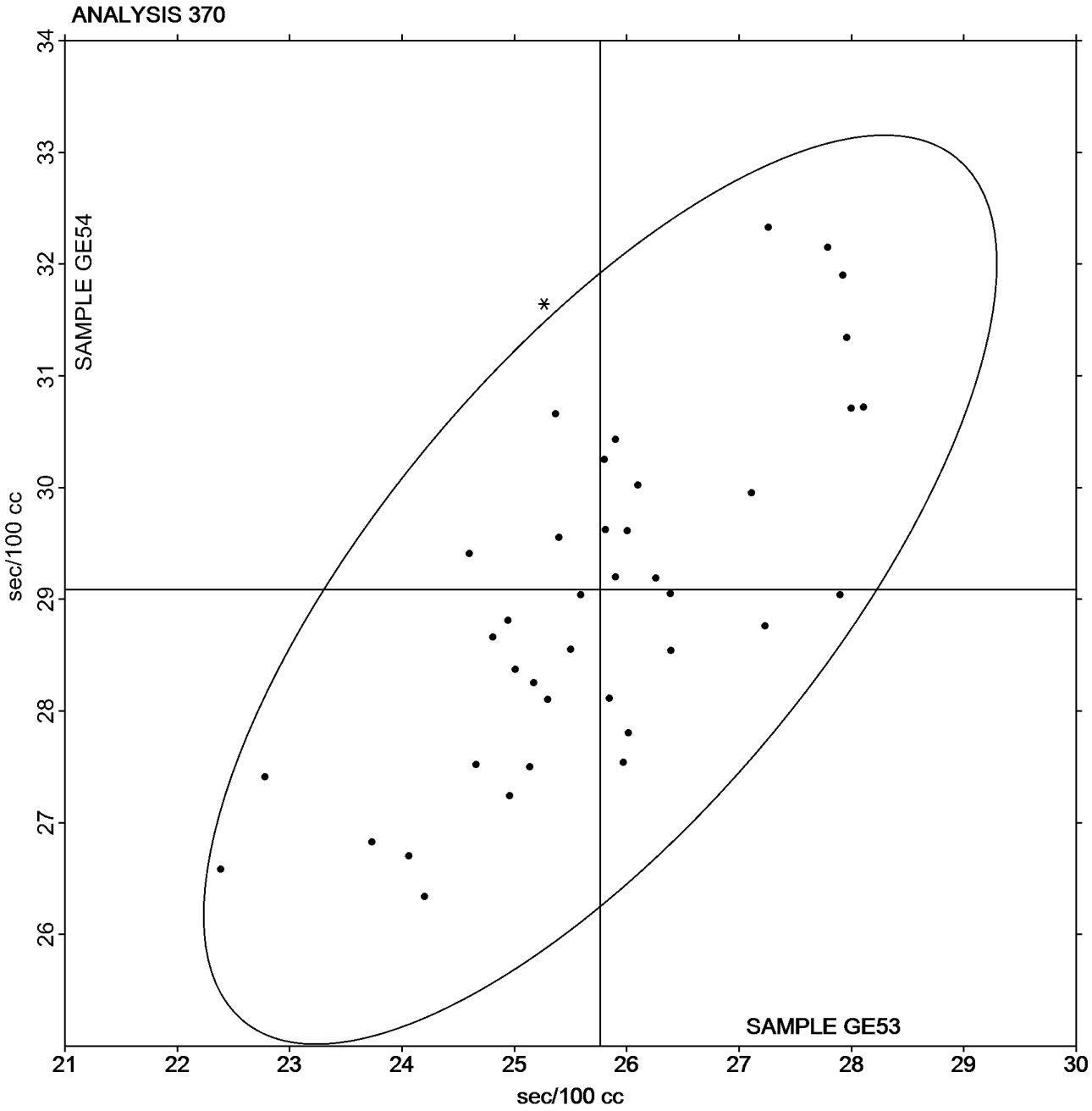
Grand Mean Sample GE53 = 25.764 sec/100 cc

Grand Mean Sample GE54 = 29.086 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 GE53 Lab Mean	Sample GE53 Diff from Grand Mean	Sample GE53 CPV	Sample GE54 Lab Mean	Sample GE54 Diff from Grand Mean	Sample GE54 CPV	Instr Code
2G3ZUJ		113.6	4.7	0.79	109.2	8.9	1.35	SH
3EVYBX		116.9	8.0	1.35	110.3	10.0	1.52	TT
CXXHAZ		109.2	0.3	0.05	101.5	1.2	0.18	SH
D8ZZK3		111.9	3.0	0.51	103.7	3.4	0.52	HM
E6UFZ7		113.9	5.0	0.84	97.3	-3.0	-0.46	HM
H443ZR		97.5	-11.4	-1.93	89.6	-10.7	-1.63	GA
L3J4ZG		101.2	-7.7	-1.30	93.9	-6.4	-0.98	XX
PXFAUC	X	25.7	-83.3	-14.08	28.5	-71.8	-10.93	XX
T8K7ZJ		109.6	0.7	0.12	103.5	3.2	0.49	PP
TJZJHD		108.5	-0.4	-0.07	97.0	-3.3	-0.50	XX
W9AGNH		106.8	-2.1	-0.36	97.1	-3.2	-0.49	PP

Summary Statistics	Sample GE53	Sample GE54
Grand Means	108.91 Sheffield Units	100.31 Sheffield Units
Stnd Dev Btwn Labs	5.91 Sheffield Units	6.57 Sheffield Units

Statistics based on 10 of 11 reporting participants.

Comments on Assigned Data Flags for Test #372

PXFAUC (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	HM	Technidyne - Hagerty Model #538
PP	Technidyne Profile/Plus	SH	Sheffield
TT	TMI Monitor/Smoothness II, Model 58-24	XX	Instrument make/model not specified by lab

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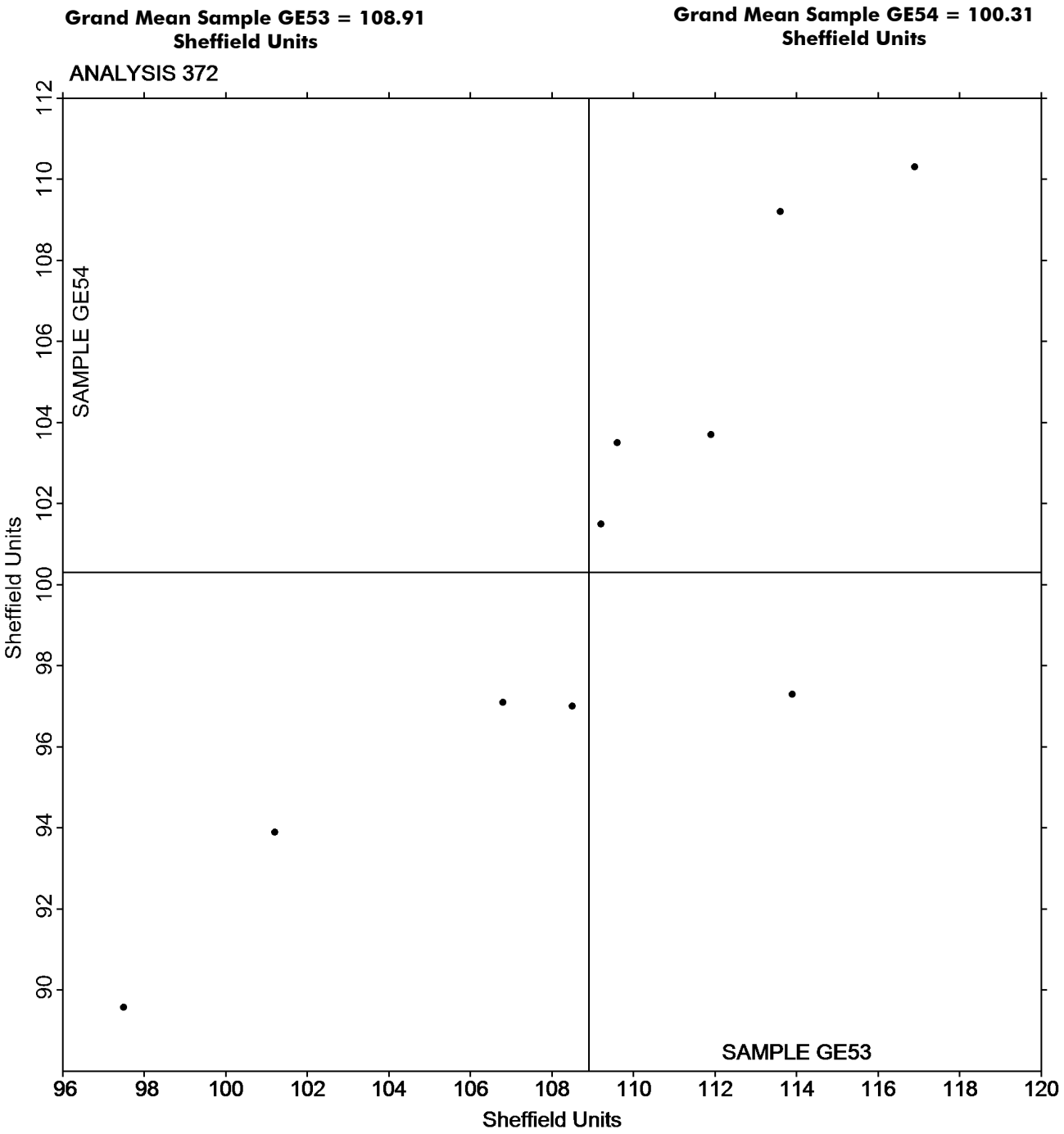

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample GJ53 Lab Mean	Sample GJ53 Diff from Grand Mean	Sample GJ53 CPV	Sample GJ54 Lab Mean	Sample GJ54 Diff from Grand Mean	Sample GJ54 CPV	Instr Code
3EVYBX		0.9480	0.1152	0.69	0.8810	0.0555	0.37	ZZ
4HN2N7	*	0.6450	-0.1878	-1.12	0.7270	-0.0985	-0.67	ZZ
9LWUL2		0.7390	-0.0938	-0.56	0.7690	-0.0565	-0.38	ZZ
9WDGU2		0.7370	-0.0958	-0.57	0.7580	-0.0675	-0.46	ZZ
9ZHKVU		0.7450	-0.0878	-0.52	0.7470	-0.0785	-0.53	ZZ
AW8LN2		0.8160	-0.0168	-0.10	0.8070	-0.0185	-0.13	ZZ
CPKF6Y		0.7030	-0.1298	-0.77	0.7160	-0.1095	-0.74	ZZ
CYQVY4		0.9540	0.1212	0.72	0.9360	0.1105	0.75	ZZ
DNNXQU		0.9540	0.1212	0.72	0.9720	0.1465	0.99	ZZ
DVAMDP		0.5340	-0.2988	-1.78	0.5560	-0.2695	-1.82	ZZ
E6UFZ7		0.6380	-0.1948	-1.16	0.6560	-0.1695	-1.15	ZZ
ELGE4T		0.7460	-0.0868	-0.52	0.7420	-0.0835	-0.56	ZZ
EP9QTX		0.8300	-0.0028	-0.02	0.8180	-0.0075	-0.05	ZZ
FGZR8T		0.7430	-0.0898	-0.53	0.7400	-0.0855	-0.58	ZZ
GRHPDN	*	0.7250	-0.1078	-0.64	0.6650	-0.1605	-1.08	ZZ
GZ9D9Q	X	2.0830	1.2502	7.44	1.9620	1.1365	7.68	ZZ
H22LRU		0.7180	-0.1148	-0.68	0.7210	-0.1045	-0.71	ZZ
HUJFUM		0.7290	-0.1038	-0.62	0.7510	-0.0745	-0.50	ZZ
MVZZTE		0.7360	-0.0968	-0.58	0.7480	-0.0775	-0.52	ZZ
MZZ68L		0.9920	0.1592	0.95	0.9450	0.1195	0.81	ZZ
NF2FPW		1.1590	0.3262	1.94	1.1300	0.3045	2.06	ZZ
NTNLYE		1.1090	0.2762	1.64	1.0320	0.2065	1.40	ZZ
Q2AQKB		0.8070	-0.0258	-0.15	0.7760	-0.0495	-0.33	ZZ
RZRY7J		0.8970	0.0642	0.38	0.8750	0.0495	0.33	ZZ
VT3H77		0.8160	-0.0168	-0.10	0.8180	-0.0075	-0.05	ZZ
VV44UC		0.7530	-0.0798	-0.48	0.7590	-0.0665	-0.45	ZZ
W9AGNH	*	1.3320	0.4992	2.97	1.2800	0.4545	3.07	ZZ
XTBCYB		0.9260	0.0932	0.55	0.9110	0.0855	0.58	ZZ
Z4ND8F		0.9010	0.0682	0.41	0.8850	0.0595	0.40	ZZ
Z8MATB		0.8200	-0.0128	-0.08	0.8190	-0.0065	-0.04	ZZ

Summary Statistics	Sample GJ53	Sample GJ54
Grand Means	0.83 Microns	0.83 Microns
Stnd Dev Btwn Labs	0.17 Microns	0.15 Microns

Statistics based on 29 of 30 reporting participants.

Comments on Assigned Data Flags for Test #376

GZ9D9Q (X) - Extreme Data.

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Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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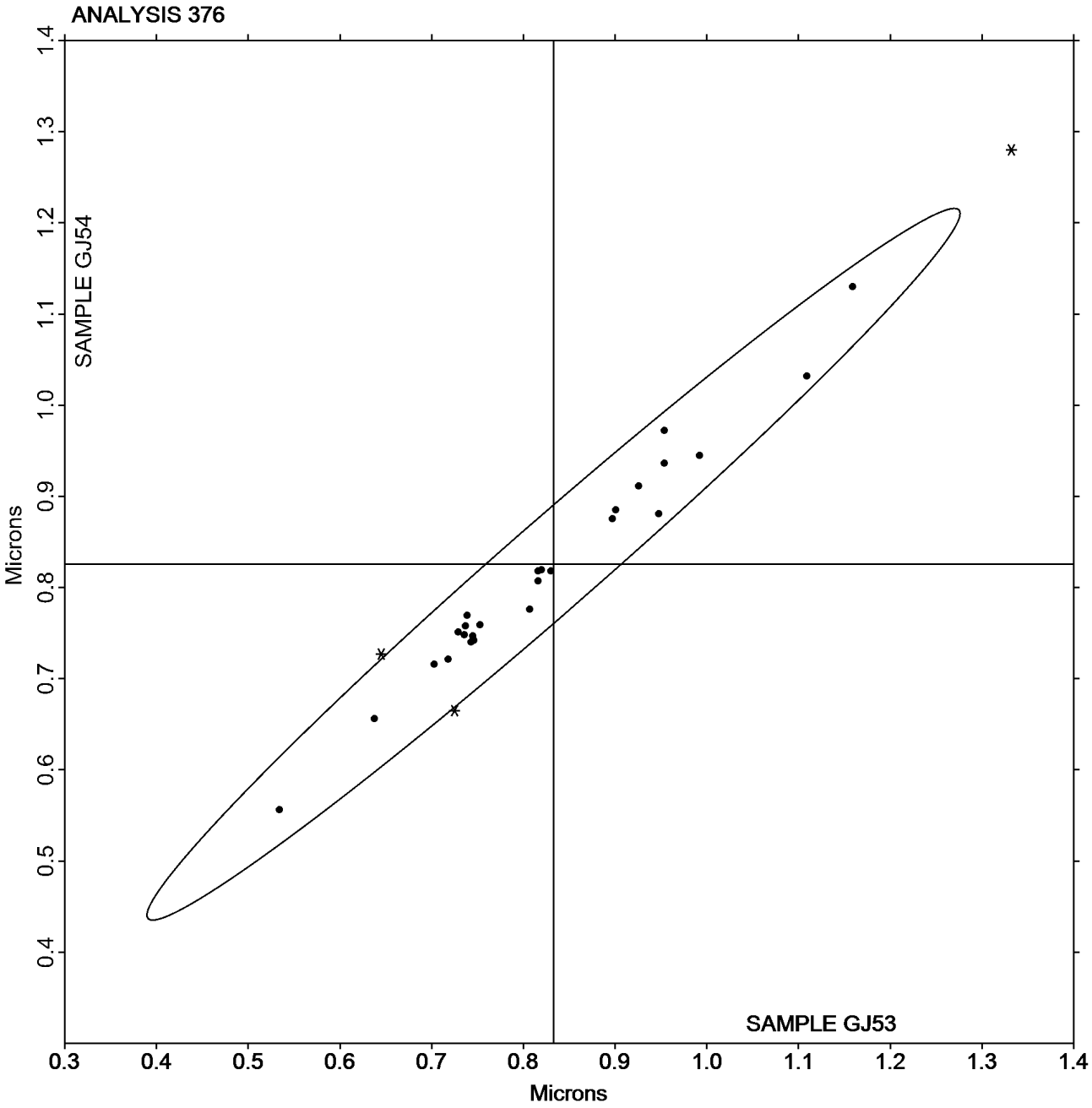
Grand Mean Sample GJ53 = 0.83283 Microns

Grand Mean Sample GJ54 = 0.82552 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 GK53 Lab Mean	Sample GK53 Diff from Grand Mean	Sample GK53 CPV	Sample GK54 Lab Mean	Sample GK54 Diff from Grand Mean	Sample GK54 CPV	Instr Code
4U3YTA		3.958	0.083	0.34	3.621	0.037	0.15	ZZ
98RR6D		4.166	0.291	1.20	4.011	0.427	1.81	ZZ
CKAZLT		3.390	-0.485	-2.01	3.230	-0.354	-1.50	ZZ
GP6HPL		4.087	0.212	0.88	3.618	0.034	0.14	ZZ
GYGXRX		3.876	0.001	0.00	3.661	0.077	0.32	ZZ
H22LRU		3.973	0.098	0.41	3.688	0.104	0.44	ZZ
N2H9NY		3.834	-0.041	-0.17	3.501	-0.083	-0.35	ZZ
YAPUWB		3.715	-0.160	-0.66	3.345	-0.239	-1.01	ZZ

Summary Statistics	Sample GK53	Sample GK54
Grand Means	3.87 Microns	3.58 Microns
Stnd Dev Btwn Labs	0.24 Microns	0.24 Microns

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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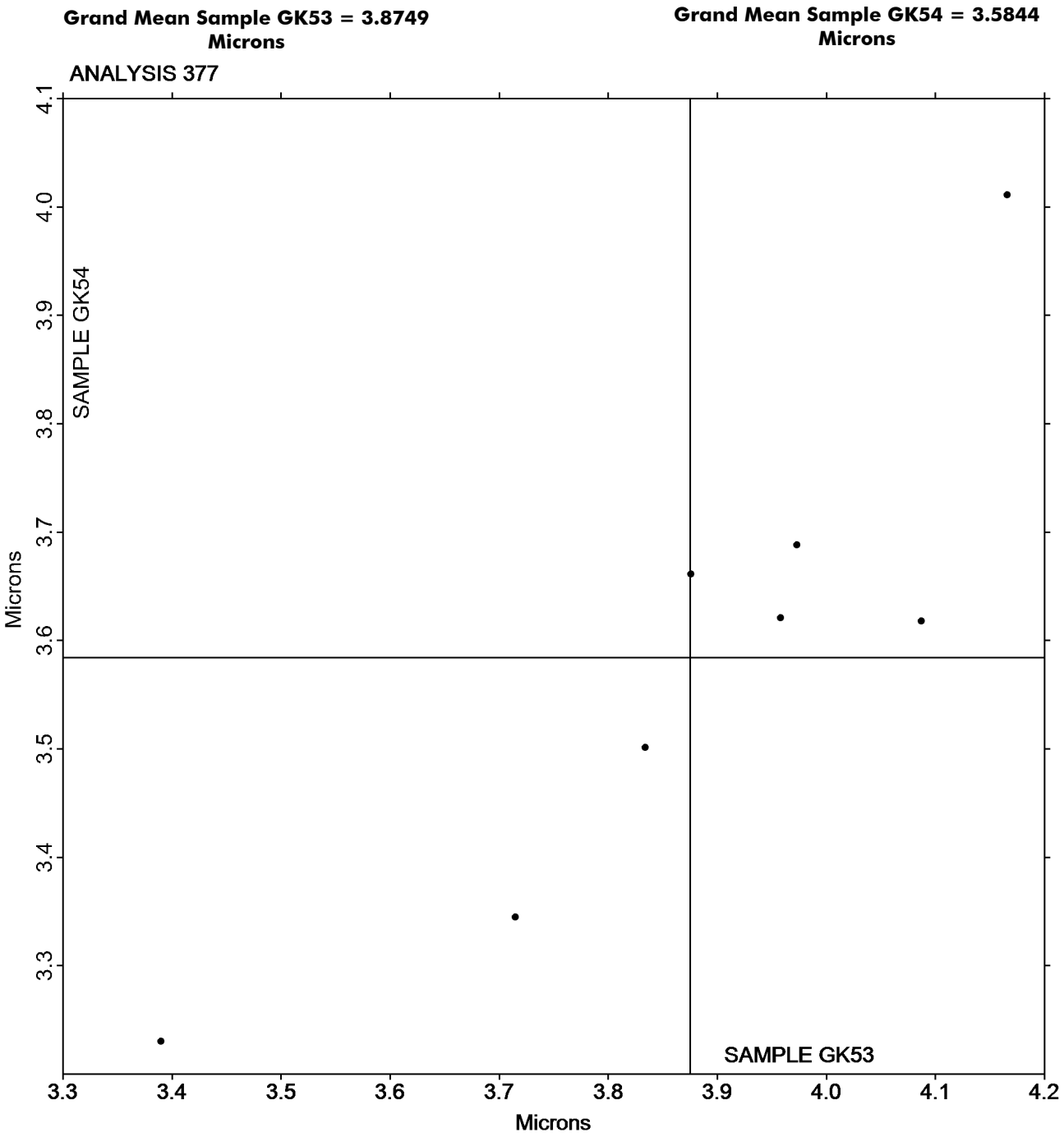

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL53 Lab Mean	Sample GL53 Diff from Grand Mean	Sample GL53 CPV	Sample GL54 Lab Mean	Sample GL54 Diff from Grand Mean	Sample GL54 CPV	Instr Code
2AL6Q4	*	101.90	11.02	1.66	98.30	7.30	1.09	TS
2B2NZ8	X	128.50	37.62	5.66	131.00	40.00	5.98	XX
2G3ZUJ	X	118.10	27.22	4.10	116.40	25.40	3.80	XX
3EVYBX	*	103.90	13.02	1.96	106.50	15.50	2.32	TT
4GHZR6	*	90.07	-0.81	-0.12	86.07	-4.92	-0.74	PP
4HN2N7		95.00	4.12	0.62	95.30	4.30	0.64	HM
4U3YTA		90.90	0.02	0.00	91.30	0.30	0.05	HM
7JGELH		84.85	-6.02	-0.91	83.98	-7.01	-1.05	SH
98RR6D		93.18	2.30	0.35	93.64	2.64	0.40	PP
9D7JLX		86.20	-4.68	-0.70	86.40	-4.60	-0.69	HM
9LWUL2		91.06	0.18	0.03	91.14	0.14	0.02	PP
9WDGU2		82.93	-7.95	-1.20	82.83	-8.17	-1.22	PP
9ZHKVU		86.78	-4.10	-0.62	87.33	-3.67	-0.55	PP
B9LEZ8		75.79	-15.09	-2.27	75.61	-15.39	-2.30	MP
BLMP8Z		84.86	-6.01	-0.90	86.56	-4.44	-0.66	LA
CPKF6Y		101.40	10.52	1.58	100.70	9.70	1.45	TS
CUYQ7Z		87.85	-3.02	-0.45	88.13	-2.87	-0.43	PP
CXXHAZ		85.00	-5.88	-0.88	84.90	-6.10	-0.91	SH
CYQVY4		87.20	-3.68	-0.55	86.90	-4.10	-0.61	LA
DVAMDP	X	117.30	26.42	3.98	118.20	27.20	4.07	TT
EP9QTX		94.10	3.22	0.49	93.30	2.30	0.34	LA
GP6HPL		89.24	-1.63	-0.25	87.16	-3.83	-0.57	PP
GYGXRX		94.40	3.52	0.53	95.00	4.00	0.60	LW
H22LRU		106.30	15.42	2.32	105.40	14.40	2.15	XX
H443ZR		96.06	5.18	0.78	94.56	3.56	0.53	GA
HB62CT		94.20	3.32	0.50	95.00	4.00	0.60	SH
HUJFUM		94.20	3.32	0.50	94.30	3.30	0.49	LW
L3J4ZG		102.40	11.52	1.73	100.20	9.20	1.38	XX
MNBYKJ		83.30	-7.58	-1.14	82.70	-8.30	-1.24	LW
MZZ68L		91.74	0.87	0.13	91.06	0.06	0.01	PP
N2H9NY		85.83	-5.05	-0.76	88.25	-2.75	-0.41	PP
NTNLYE		78.10	-12.78	-1.92	78.60	-12.40	-1.85	LW
PXFAUC		86.00	-4.88	-0.73	86.50	-4.50	-0.67	XX
Q2AQKB		89.20	-1.68	-0.25	89.10	-1.90	-0.28	HM
RNFTVH	X	45.70	-45.18	-6.80	46.90	-44.10	-6.59	TS
RQ4HDJ		87.42	-3.45	-0.52	87.50	-3.50	-0.52	XX
T66Y4B	X	111.10	20.22	3.04	105.70	14.70	2.20	TT
T8K7ZJ		89.44	-1.44	-0.22	88.02	-2.98	-0.45	PP
TBUJ8R		89.10	-1.78	-0.27	87.96	-3.04	-0.45	PP
TJZJHD		87.80	-3.08	-0.46	87.60	-3.40	-0.51	XX

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Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL53 Lab Mean	Sample GL53 Diff from Grand Mean	Sample GL53 CPV	Sample GL54 Lab Mean	Sample GL54 Diff from Grand Mean	Sample GL54 CPV	Instr Code
TYFJDJ		86.16	-4.72	-0.71	85.73	-5.27	-0.79	PP
U84WPN		102.50	11.62	1.75	103.00	12.00	1.79	GL
UR6C2E	*	103.28	12.40	1.87	106.53	15.53	2.32	GA
UU279P		87.70	-3.18	-0.48	90.20	-0.80	-0.12	GA
W9AGNH	X	91.00	0.12	0.02	83.90	-7.10	-1.06	VM
WEED8H		95.48	4.61	0.69	95.73	4.73	0.71	PP
WJ9WDC		90.40	-0.48	-0.07	92.40	1.40	0.21	LA
X2947J		93.50	2.62	0.39	94.44	3.45	0.52	TS
XPDTXC		87.40	-3.48	-0.52	88.00	-3.00	-0.45	PP
XTBCYB		82.21	-8.67	-1.30	84.63	-6.37	-0.95	PP
Y7GM4C	X	53.60	-37.28	-5.61	52.80	-38.20	-5.71	SH
YAPUWB		92.00	1.12	0.17	92.70	1.70	0.25	LA
YPBK76		90.60	-0.28	-0.04	89.60	-1.40	-0.21	HM
Z4ND8F		89.50	-1.38	-0.21	90.90	-0.10	-0.01	PP
Z8MATB		93.60	2.72	0.41	96.20	5.20	0.78	LW

Summary Statistics	Sample GL53	Sample GL54
Grand Means	90.88 Sheffield	91.00 Sheffield
Stnd Dev Btwn Labs	6.65 Sheffield	6.69 Sheffield

Statistics based on 48 of 55 reporting participants.

Comments on Assigned Data Flags for Test #378

W9AGNH (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample GL53.

Y7GM4C (X) - Data for both samples are low. Possible Systematic Error.

2G3ZUJ (X) - Data for both samples are high. Possible Systematic Error.

T66Y4B (X) - Data for sample GL53 are high.

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

RNFTVH (X) - Extreme Data.

2B2NZ8 (X) - Data for both samples are high. Possible Systematic Error.

Analysis Notes:

X2947J - One determination removed from the Lab Mean of Sample GL54 per Grubb's Test at 1% risk (TAPPI 1205).

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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
LW	L & W Roughness Tester	MP	Metso Paperlab
PP	Technidyne Profile/Plus	SH	Sheffield (Bendix Precisionaire)
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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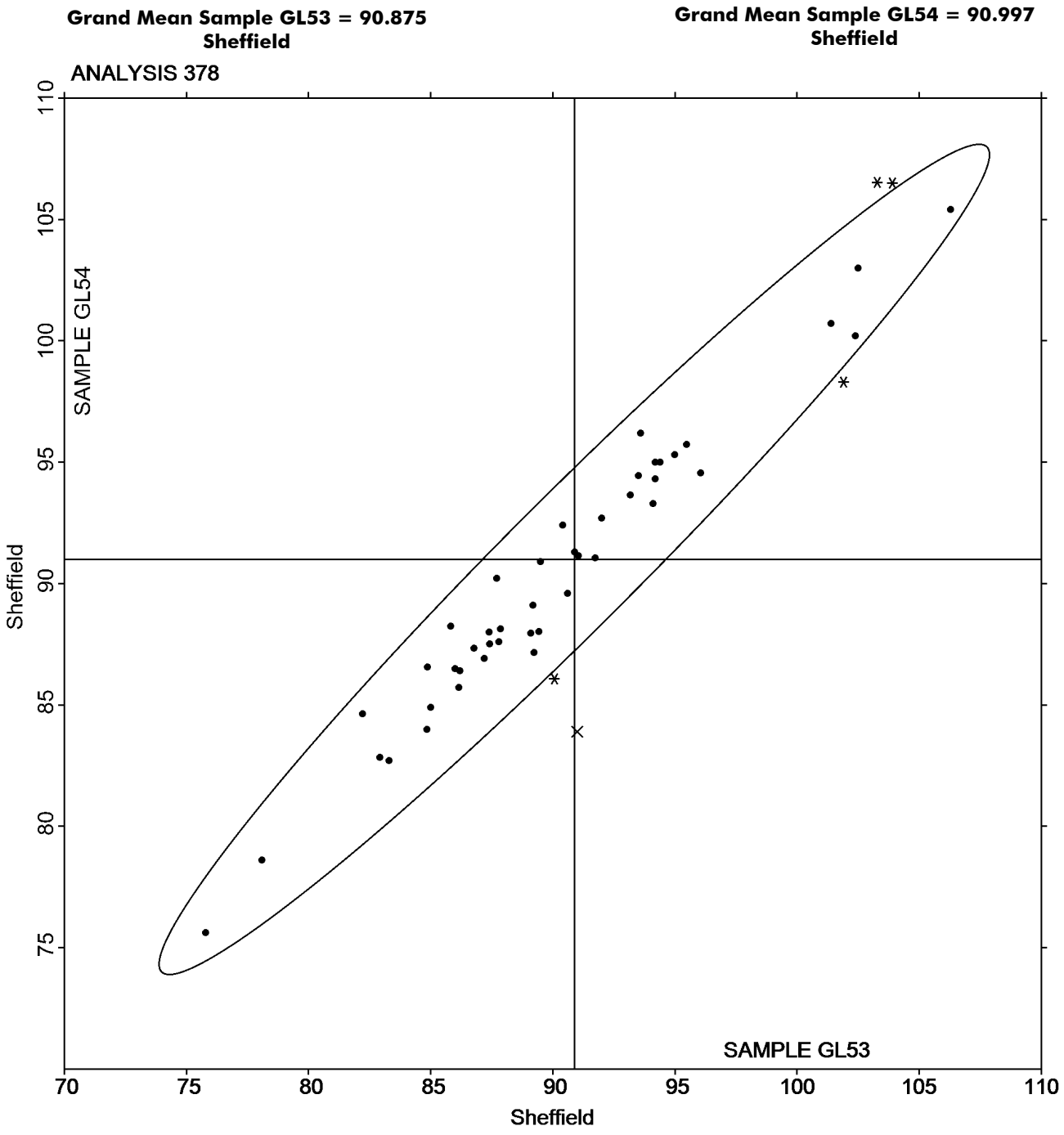

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Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

WebCode	Data Flag	Sample GM53 Lab Mean	Sample GM53 Diff from Grand Mean	Sample GM53 CPV	Sample GM54 Lab Mean	Sample GM54 Diff from Grand Mean	Sample GM54 CPV	Instr Code
3BJWMG		3.538	-0.782	-1.47	3.501	-0.713	-1.33	ZZ
4BD2GF		4.150	-0.170	-0.32	4.500	0.286	0.53	ZZ
6C3QE2		4.182	-0.137	-0.26	4.210	-0.004	-0.01	ZZ
6DY7ND		4.067	-0.253	-0.48	4.014	-0.200	-0.37	ZZ
98RR6D		4.452	0.132	0.25	4.524	0.309	0.58	ZZ
DVAMDP		5.050	0.730	1.38	5.110	0.896	1.67	ZZ
HUFV6Y		4.130	-0.190	-0.36	4.065	-0.149	-0.28	ZZ
MFLUGF		5.506	1.186	2.24	5.003	0.789	1.47	ZZ
NF2FPW		4.194	-0.126	-0.24	4.133	-0.081	-0.15	ZZ
W4EK2C		4.125	-0.195	-0.37	3.488	-0.726	-1.35	ZZ
Z888B9		4.122	-0.198	-0.37	3.808	-0.406	-0.76	ZZ

Summary Statistics	Sample GM53	Sample GM54
Grand Means	4.32 Percent	4.21 Percent
Stnd Dev Btwn Labs	0.53 Percent	0.54 Percent

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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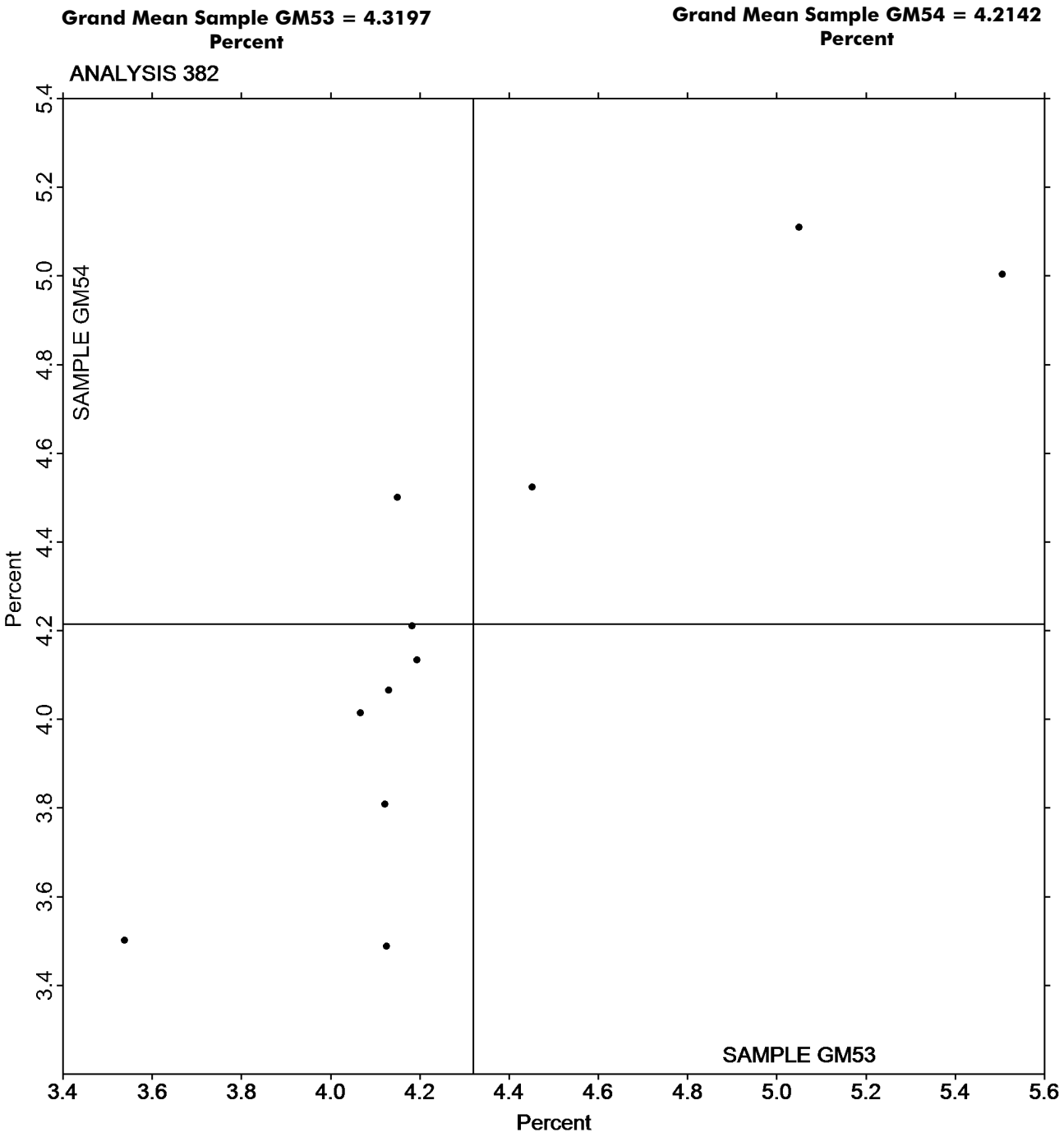

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample GN53 Lab Mean	Sample GN53 Diff from Grand Mean	Sample GN53 CPV	Sample GN54 Lab Mean	Sample GN54 Diff from Grand Mean	Sample GN54 CPV	Instr Code
2AL6Q4		93.49	0.20	0.35	93.91	-0.25	-0.46	ZZ
2B2NZ8		93.24	-0.05	-0.09	94.27	0.11	0.20	ZZ
2G3ZUJ	X	92.97	-0.32	-0.56	95.91	1.75	3.22	ZZ
3EVYBX	X	90.77	-2.52	-4.44	90.72	-3.44	-6.33	ZZ
4GHZR6		94.07	0.78	1.38	95.03	0.87	1.60	ZZ
4HN2N7		93.42	0.13	0.23	94.49	0.33	0.61	ZZ
4U3YTA		93.33	0.04	0.07	94.35	0.19	0.35	ZZ
7JGELH		93.65	0.36	0.63	94.48	0.32	0.59	ZZ
98RR6D		93.94	0.64	1.14	94.88	0.72	1.32	ZZ
9ZHKVU		93.30	0.01	0.02	94.27	0.11	0.20	ZZ
B9HER2		93.38	0.09	0.16	94.13	-0.03	-0.06	ZZ
BLMP8Z		94.29	1.00	1.76	94.99	0.83	1.53	ZZ
CXXHAZ	*	93.14	-0.15	-0.27	93.46	-0.70	-1.29	ZZ
DNNXQU		92.98	-0.31	-0.55	94.10	-0.06	-0.12	ZZ
FGZR8T		93.19	-0.10	-0.18	94.17	0.01	0.02	ZZ
GNRD3Q	X	92.80	-0.49	-0.86	92.40	-1.76	-3.24	ZZ
GRHPDN		93.26	-0.03	-0.05	94.15	-0.01	-0.02	ZZ
GZ9D9Q	*	91.64	-1.65	-2.91	92.69	-1.47	-2.71	ZZ
HB62CT		93.54	0.25	0.44	94.22	0.06	0.11	ZZ
MVZZTE		93.35	0.06	0.10	94.21	0.05	0.09	ZZ
N2H9NY		93.23	-0.06	-0.10	94.14	-0.02	-0.03	ZZ
PXFAUC		92.26	-1.03	-1.81	92.89	-1.27	-2.34	ZZ
Q2AQKB		93.31	0.02	0.03	94.21	0.05	0.09	ZZ
RZVJW9		93.09	-0.20	-0.35	94.36	0.20	0.37	ZZ
T8K7ZJ		93.06	-0.23	-0.41	93.79	-0.37	-0.68	ZZ
U84WPN		94.43	1.14	2.01	95.08	0.92	1.69	ZZ
VV44UC		93.26	-0.03	-0.05	94.23	0.07	0.13	ZZ
W82NXF		92.33	-0.96	-1.70	93.54	-0.62	-1.14	ZZ
WEED8H		93.18	-0.11	-0.19	94.15	-0.01	-0.01	ZZ
X2947J		93.54	0.25	0.44	94.41	0.25	0.46	ZZ
XPDTXC		93.96	0.67	1.18	94.64	0.48	0.88	ZZ
YAPUWB		93.05	-0.24	-0.42	93.86	-0.30	-0.55	ZZ
YPBK76		92.81	-0.48	-0.85	93.73	-0.43	-0.79	ZZ

Summary Statistics	Sample GN53	Sample GN54
Grand Means	93.29 Percent	94.16 Percent
Stnd Dev Btwn Labs	0.57 Percent	0.54 Percent

Statistics based on 30 of 33 reporting participants.

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Comments on Assigned Data Flags for Test #384

GNRD3Q (X) - Data for sample GN54 are low.

2G3ZUJ (X) - Data for sample GN54 are high.

3EVYBX (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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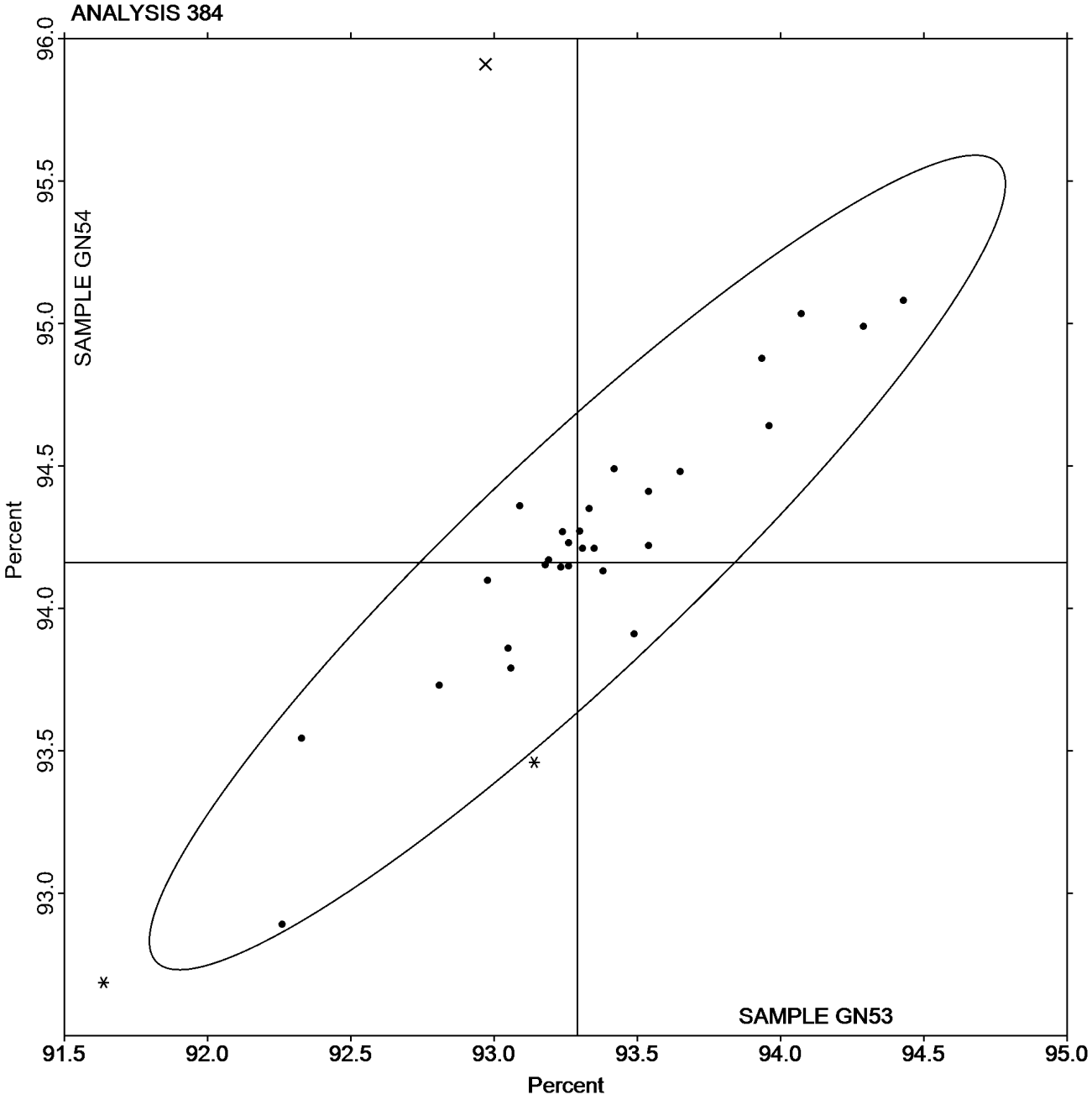
Grand Mean Sample GN53 = 93.291
Percent

Grand Mean Sample GN54 = 94.161
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 GP53 Lab Mean	Sample GP53 Diff from Grand Mean	Sample GP53 CPV	Sample GP54 Lab Mean	Sample GP54 Diff from Grand Mean	Sample GP54 CPV	Instr Code
3AMGC6		90.25	0.17	1.27	94.40	0.05	0.33	ZZ
3BJWMG		90.08	0.00	0.01	94.56	0.21	1.41	ZZ
3GJZ49	X	86.52	-3.56	-26.24	84.76	-9.59	-64.71	ZZ
44R7FC		89.92	-0.17	-1.22	94.42	0.07	0.51	ZZ
4VL3R2		90.07	-0.01	-0.07	94.38	0.03	0.23	ZZ
8EHYFX		89.97	-0.11	-0.80	94.20	-0.15	-1.01	ZZ
9N43W7		90.03	-0.05	-0.39	94.61	0.26	1.78	ZZ
ADZR6Z		90.13	0.05	0.36	94.33	-0.02	-0.12	ZZ
BPMXBB		90.17	0.09	0.64	94.57	0.22	1.52	ZZ
D8ZZK3		90.15	0.07	0.52	94.36	0.01	0.07	ZZ
KN2WNQ		90.11	0.03	0.24	94.32	-0.03	-0.19	ZZ
L3J4ZG	*	90.43	0.35	2.58	94.09	-0.26	-1.73	ZZ
T2KPPD		89.89	-0.19	-1.41	94.34	-0.01	-0.05	ZZ
V3N2KK		90.11	0.02	0.18	94.28	-0.07	-0.45	ZZ
XETLZ9		89.93	-0.15	-1.09	94.28	-0.07	-0.48	ZZ
YTPXK7		90.01	-0.07	-0.52	94.11	-0.24	-1.60	ZZ
Z84MKK		90.04	-0.04	-0.31	94.32	-0.03	-0.22	ZZ

Summary Statistics	Sample GP53	Sample GP54
Grand Means	90.08 Percent	94.35 Percent
Stnd Dev Btwn Labs	0.14 Percent	0.15 Percent

Statistics based on 16 of 17 reporting participants.

Comments on Assigned Data Flags for Test #386

3GJZ49 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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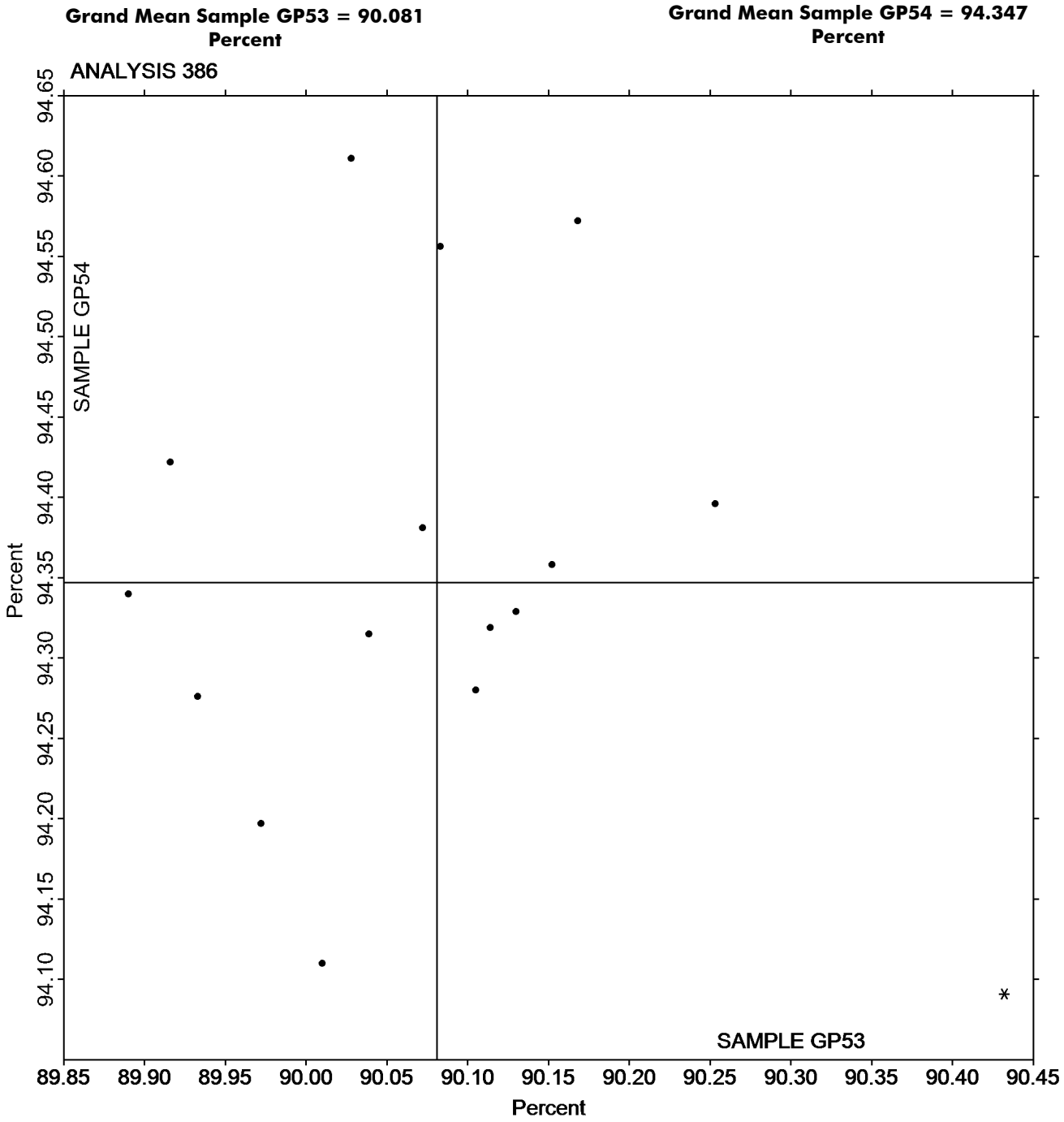

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 390

Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GR53 Lab Mean	Sample GR53 Diff from Grand Mean	Sample GR53 CPV	Sample GR54 Lab Mean	Sample GR54 Diff from Grand Mean	Sample GR54 CPV	Instr Code
2B2NZ8	*	85.01	0.77	0.82	83.65	0.06	0.06	XX
2G3ZUJ	X	88.14	3.89	4.13	87.73	4.14	4.01	PE
4GHZR6		85.53	1.28	1.36	84.89	1.30	1.26	XX
4HN2N7		83.35	-0.89	-0.95	82.71	-0.88	-0.85	TT
7JGELH		83.16	-1.08	-1.15	82.41	-1.18	-1.14	TA
9LWUL2		85.30	1.05	1.12	84.61	1.02	0.99	HG
9WDGU2		84.98	0.73	0.78	84.34	0.75	0.72	TT
9ZHKVU		83.96	-0.28	-0.30	83.54	-0.05	-0.05	TT
CKAZLT	X	85.80	1.56	1.65	86.41	2.82	2.73	TS
CUYQ7Z		83.77	-0.47	-0.50	83.02	-0.57	-0.56	TS
GP6HPL		83.19	-1.06	-1.12	82.68	-0.92	-0.89	TS
GZ9D9Q		85.00	0.76	0.80	84.35	0.76	0.73	VM
HUFV6Y		84.34	0.09	0.10	83.64	0.04	0.04	XX
HUJFUM	X	88.59	4.35	4.62	87.73	4.14	4.01	HZ
L7ZCLV		85.34	1.10	1.17	84.63	1.04	1.01	TS
MVZZTE		83.44	-0.81	-0.86	82.70	-0.89	-0.86	TT
MZZ68L		84.48	0.24	0.26	83.95	0.35	0.34	HG
PXFAUC		86.25	2.01	2.13	86.00	2.41	2.33	XX
RZVJW9		85.14	0.89	0.95	85.13	1.53	1.49	TS
T8K7ZJ		84.07	-0.18	-0.19	83.62	0.03	0.03	XC
TMZUED		83.73	-0.51	-0.55	82.93	-0.67	-0.65	TS
TYFJDJ		83.71	-0.53	-0.56	82.91	-0.69	-0.66	TS
WEED8H		83.20	-1.04	-1.11	82.06	-1.53	-1.48	TP
X2947J		82.35	-1.89	-2.01	81.74	-1.85	-1.80	TS
XPDTXC		83.73	-0.52	-0.55	83.15	-0.44	-0.43	TS
YAPUWB		84.43	0.18	0.19	83.65	0.06	0.06	TS
Z4ND8F		85.08	0.83	0.88	84.55	0.96	0.93	TT
Z8MATB		83.58	-0.67	-0.71	82.95	-0.64	-0.62	TT

Summary Statistics	Sample GR53	Sample GR54
Grand Means	84.24 Percent	83.59 Percent
Stnd Dev Btwn Labs	0.94 Percent	1.03 Percent

Statistics based on 25 of 28 reporting participants.

Comments on Assigned Data Flags for Test #390

2G3ZUJ (X) - Data for both samples are high. Possible Systematic Error.

CKAZLT (X) - Data for sample GR54 are high. Inconsistent within the determinations of sample GR53.

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

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Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
PE	Photovolt 577	TA	Technidyne, Diano, M.S. S-4
TP	Technidyne Test/Plus	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	VM	Valmet PaperLab (was Kajaani/Robotest)
XC	X-Rite Color i5	XX	Instrument make/model not specified by lab

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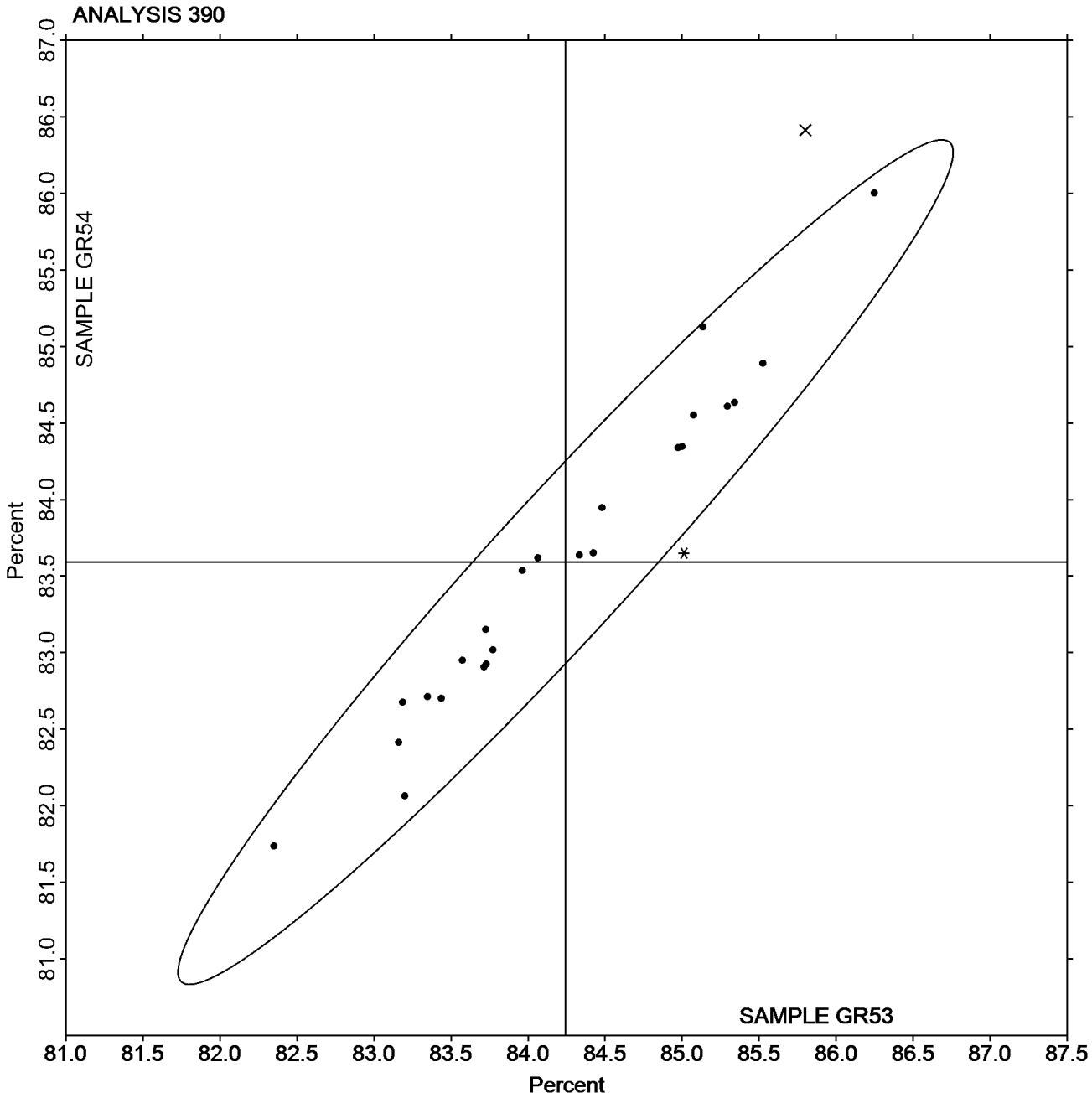
Grand Mean Sample GR53 = 84.244
Percent

Grand Mean Sample GR54 = 83.591
Percent



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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 GZ53 Lab Mean	Sample GZ53 Diff from Grand Mean	Sample GZ53 CPV	Sample GZ54 Lab Mean	Sample GZ54 Diff from Grand Mean	Sample GZ54 CPV	Instr Code
2AL6Q4		91.10	0.65	0.57	91.08	0.43	0.38	TS
2B2NZ8		92.60	2.15	1.91	92.85	2.20	1.95	XX
3AMGC6		90.28	-0.18	-0.16	91.25	0.60	0.53	TS
3EVYBX		90.98	0.53	0.47	91.02	0.37	0.32	TT
98RR6D		90.54	0.09	0.08	90.72	0.06	0.05	TS
BLMP8Z		90.14	-0.31	-0.28	90.24	-0.42	-0.37	TT
DVAMDP		91.86	1.41	1.25	92.02	1.37	1.21	EF
FGZR8T		90.52	0.07	0.06	90.62	-0.04	-0.03	TT
GRHPDN		90.30	-0.16	-0.14	90.29	-0.37	-0.33	TS
HB62CT		89.13	-1.32	-1.18	89.72	-0.94	-0.83	HT
N2H9NY		90.41	-0.04	-0.04	90.63	-0.02	-0.02	TS
Q2AQKB	X	85.82	-4.63	-4.12	86.02	-4.64	-4.12	TT
VV44UC		91.00	0.54	0.48	91.05	0.40	0.35	PP
X2947J		88.00	-2.45	-2.18	88.08	-2.58	-2.29	TS
YPBK76		89.50	-0.95	-0.85	89.60	-1.06	-0.94	HT

Summary Statistics	Sample GZ53	Sample GZ54
Grand Means	90.45 Percent	90.66 Percent
Stnd Dev Btwn Labs	1.12 Percent	1.13 Percent

Statistics based on 14 of 15 reporting participants.

Comments on Assigned Data Flags for Test #391

Q2AQKB (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample GZ54.

Key to Instrument Codes Reported by Participants

EF	L & W Datacolor Elrepho	HT	Hunter UltraScan Vis
PP	Technidyne Profile/Plus	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	XX	Instrument make/model not specified by lab

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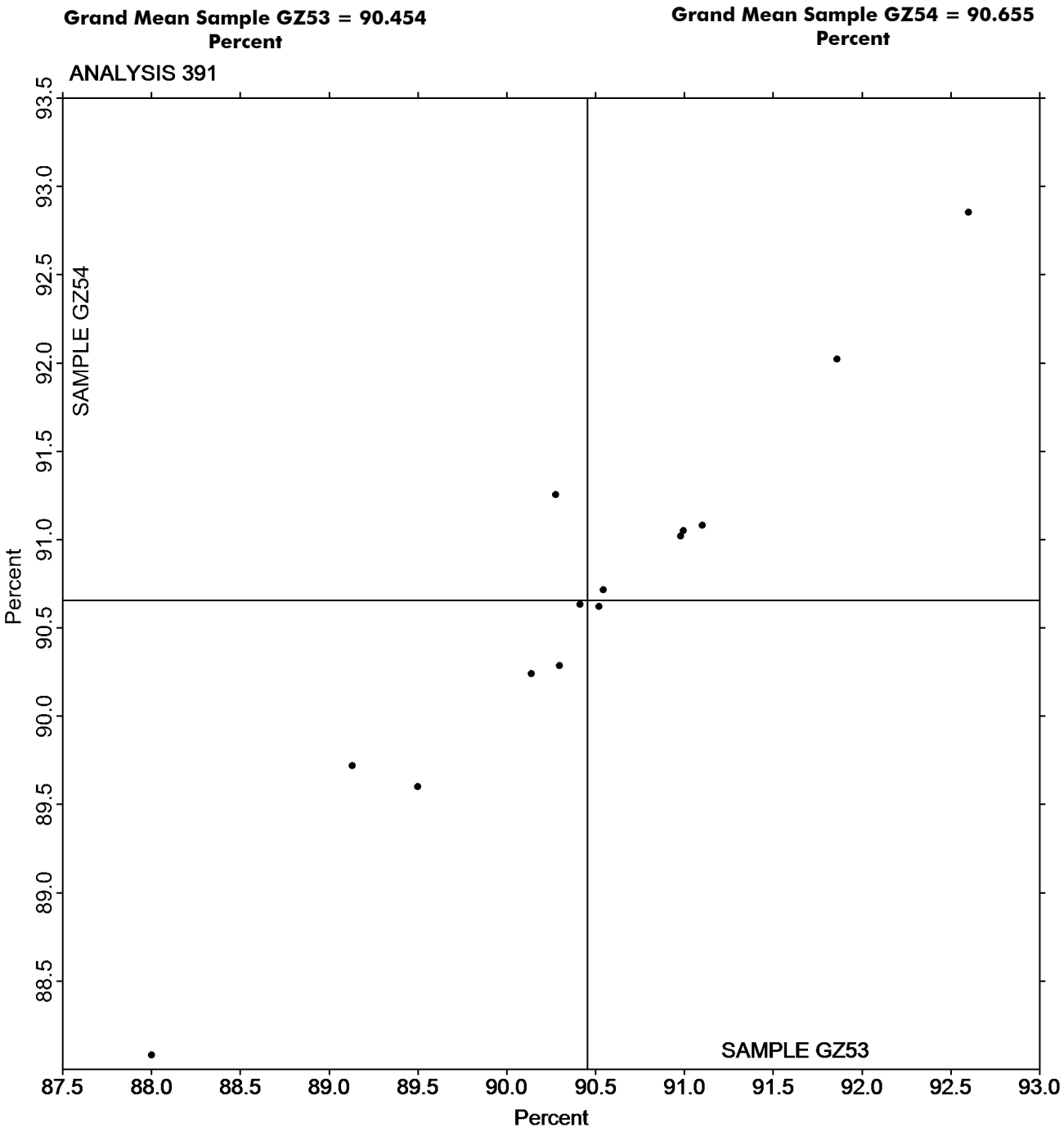

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 392
Diffuse Brightness
TAPPI Official Test Method T525

WebCode	Data Flag	Sample GR53 Lab Mean	Sample GR53 Diff from Grand Mean	Sample GR53 CPV	Sample GR54 Lab Mean	Sample GR54 Diff from Grand Mean	Sample GR54 CPV	Instr Code
3AMGC6		84.21	0.40	1.14	83.50	0.34	1.40	TC
3BJWMG		83.63	-0.18	-0.51	82.97	-0.20	-0.84	LS
3GJZ49		83.24	-0.57	-1.63	82.99	-0.18	-0.75	TM
4HN2N7		84.04	0.23	0.66	83.29	0.12	0.50	LT
4JM9RJ		83.93	0.11	0.33	83.13	-0.03	-0.14	TC
67DQVA		83.89	0.08	0.24	83.15	-0.02	-0.08	TC
9N43W7		83.95	0.14	0.40	83.23	0.07	0.27	TC
9WDGU2		84.15	0.34	0.97	83.28	0.11	0.46	TL
ADZR6Z		83.42	-0.39	-1.11	82.73	-0.44	-1.83	EG
AW8LN2		83.32	-0.49	-1.39	82.98	-0.19	-0.80	TC
BPMXBB		84.16	0.35	1.00	83.44	0.27	1.14	TC
CVTUVB	*	82.91	-0.90	-2.55	82.70	-0.47	-1.95	TZ
D8ZZK3		84.37	0.56	1.59	83.71	0.55	2.29	TC
DVAMDP		83.20	-0.61	-1.73	82.76	-0.40	-1.69	LA
ELGE4T	X	83.48	-0.33	-0.94	84.10	0.94	3.92	TC
EMPAMP		83.78	-0.03	-0.08	83.07	-0.10	-0.41	TC
GP6HPL		83.85	0.04	0.12	83.21	0.04	0.18	TC
HUFV6Y		84.02	0.21	0.60	83.33	0.16	0.67	EE
KN2WNQ		83.77	-0.04	-0.12	83.06	-0.11	-0.45	LA
L7ZCLV		84.09	0.28	0.78	83.37	0.20	0.85	TC
MJJEJE	X	84.98	1.17	3.33	84.39	1.23	5.14	XX
MNBYKJ		83.93	0.11	0.33	83.19	0.02	0.09	EF
MYBD9T		83.94	0.12	0.35	83.26	0.10	0.40	TC
YAPUWB		83.95	0.14	0.39	83.14	-0.02	-0.09	TC
Z4ND8F		83.70	-0.11	-0.31	83.05	-0.12	-0.49	EG
Z84MKK		83.77	-0.04	-0.10	83.23	0.07	0.28	LS
Z8MATB		84.04	0.23	0.64	83.40	0.23	0.96	EG

Summary Statistics	Sample GR53	Sample GR54
Grand Means	83.81 Percent	83.17 Percent
Stnd Dev Btwn Labs	0.35 Percent	0.24 Percent

Statistics based on 25 of 27 reporting participants.

Comments on Assigned Data Flags for Test #392

ELGE4T (X) - Data for sample GR54 are high. Inconsistent within the determinations of sample GR53.

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

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Key to Instrument Codes Reported by Participants

EE	Datacolor Elrepho 2000	EF	Datacolor Elrepho 3000
EG	Datacolor Elrepho 450X	LA	L & W Elrepho - Autoline
LS	L & W Elrepho SE 070	LT	L & W Elrepho SE 071
TC	Technidyne Color Touch Series	TL	Technidyne Technibrite TB-1
TM	Technidyne Technibrite Micro TB-1C	TZ	Technibrite Model TB-1
XX	Instrument make/model not specified by lab		

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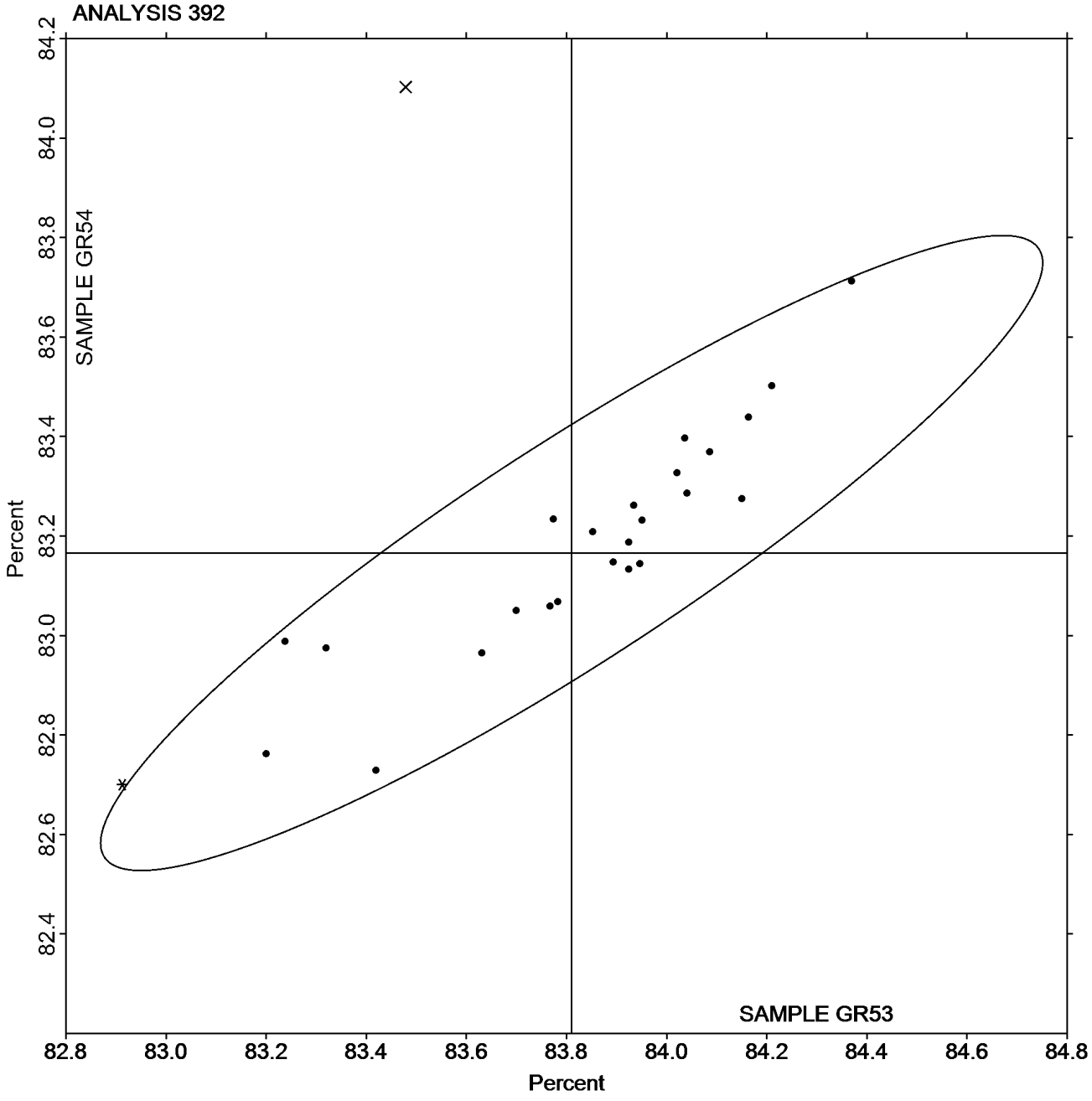
Grand Mean Sample GR53 = 83.810 Percent

Grand Mean Sample GR54 = 83.166 Percent



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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 GZ53 Lab Mean	Sample GZ53 Diff from Grand Mean	Sample GZ53 CPV	Sample GZ54 Lab Mean	Sample GZ54 Diff from Grand Mean	Sample GZ54 CPV	Instr Code
2B2NZ8		4.132	0.676	2.12	4.190	0.640	2.16	XX
3AMGC6		3.198	-0.258	-0.81	3.376	-0.174	-0.58	TS
98RR6D		3.630	0.174	0.55	3.616	0.066	0.22	TS
BLMP8Z		3.440	-0.016	-0.05	3.560	0.010	0.03	TT
DVAMDP	X	5.400	1.944	6.08	5.440	1.890	6.36	EF
GRHPDN		3.338	-0.118	-0.37	3.396	-0.154	-0.52	TS
N2H9NY		3.146	-0.310	-0.97	3.326	-0.224	-0.75	TS
Q2AQKB		3.240	-0.216	-0.68	3.260	-0.290	-0.98	TT
VV44UC		3.522	0.066	0.21	3.674	0.124	0.42	PP
X2947J	X	1.700	-1.756	-5.49	1.740	-1.810	-6.09	TS

Summary Statistics	Sample GZ53	Sample GZ54
Grand Means	3.46 Percent	3.55 Percent
Stnd Dev Btwn Labs	0.32 Percent	0.30 Percent

Statistics based on 8 of 10 reporting participants.

Comments on Assigned Data Flags for Test #394

X2947J (X) - Extreme Data.

DVAMDP (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho 3000	PP	Technidyne Profile/Plus
TS	Technidyne Brightimeter Micro S-5	TT	Technidyne Brightimeter Micro S4-M
XX	Instrument make/model not specified by lab		

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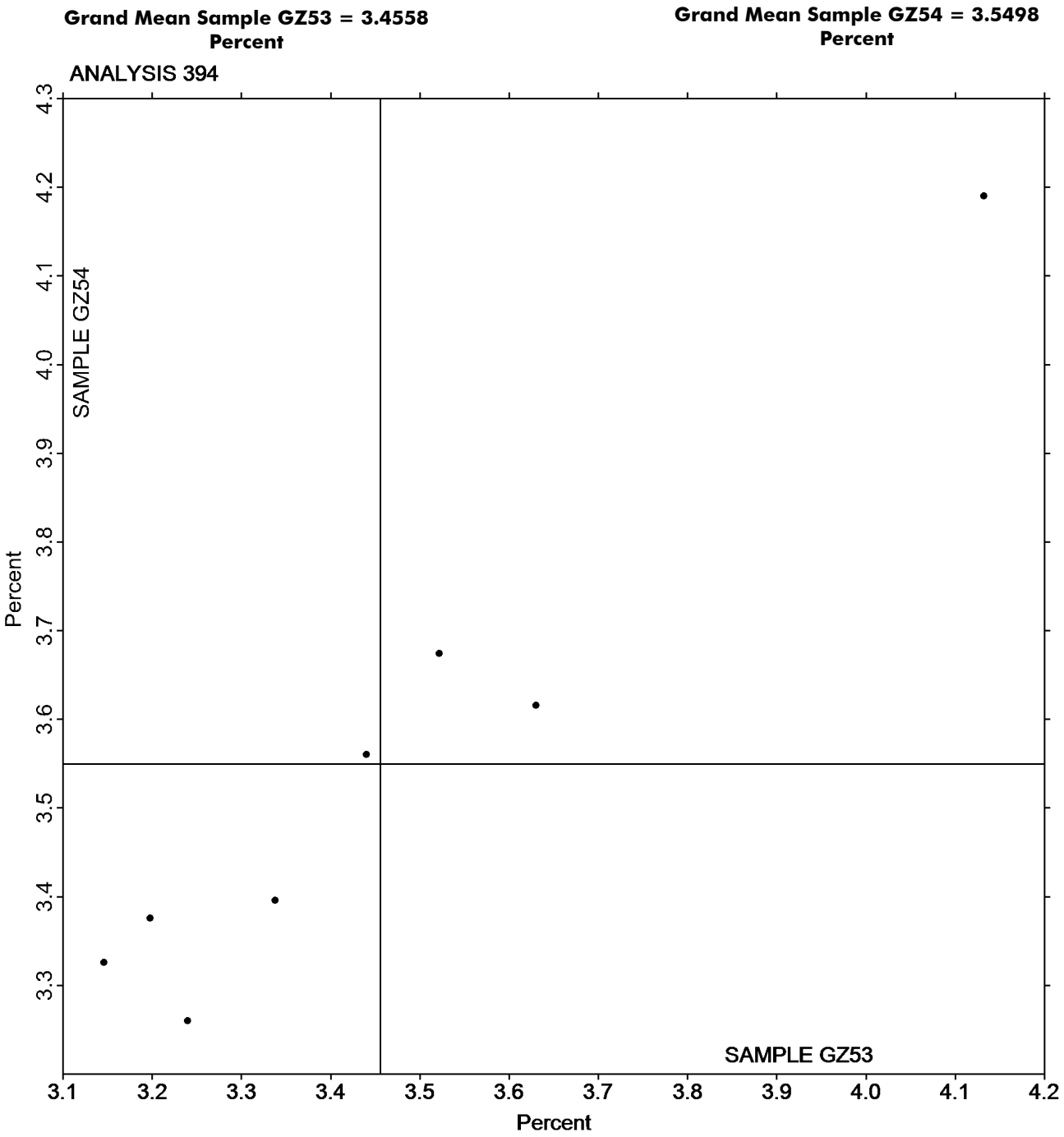

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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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 GT53 Lab Mean	Sample GT53 Diff from Grand Mean	Sample GT53 CPV	Sample GT54 Lab Mean	Sample GT54 Diff from Grand Mean	Sample GT54 CPV	Instr Code
3AMGC6		75.76	-0.82	-0.38	74.91	-0.62	-0.32	LA
8EHYFX		75.22	-1.36	-0.62	73.29	-2.24	-1.14	XX
9LWUL2		77.95	1.37	0.63	76.67	1.14	0.58	TH
9WDGU2		74.61	-1.97	-0.91	73.43	-2.10	-1.07	GS
CPKF6Y	*	74.61	-1.97	-0.91	75.11	-0.42	-0.21	XX
CYQVY4		79.57	2.99	1.38	78.24	2.71	1.38	LA
DNNXQU		78.17	1.59	0.73	76.98	1.45	0.74	LA
EMPAMP		71.60	-4.98	-2.29	71.47	-4.06	-2.07	ZH
EP9QTX		79.87	3.29	1.52	78.37	2.84	1.45	LA
FGZR8T		77.65	1.07	0.49	76.53	1.00	0.51	TG
GRHPDN		76.03	-0.55	-0.25	74.92	-0.61	-0.31	LA
GZ9D9Q		76.59	0.01	0.01	75.96	0.43	0.22	VM
MVZZTE		78.61	2.03	0.94	76.90	1.37	0.70	TH
MZZ68L		80.14	3.56	1.64	79.18	3.65	1.86	TH
Q2AQKB		74.05	-2.53	-1.17	72.90	-2.63	-1.34	PP
VV44UC		76.17	-0.41	-0.19	74.67	-0.86	-0.44	PP
W9AGNH		75.26	-1.32	-0.61	74.57	-0.96	-0.49	VM
Z4ND8F		75.21	-1.37	-0.63	74.23	-1.30	-0.66	LF
Z84MKK		76.49	-0.09	-0.04	75.87	0.34	0.17	LB
Z8MATB		77.98	1.40	0.65	76.41	0.88	0.45	TH

Summary Statistics	Sample GT53	Sample GT54
Grand Means	76.58 Gloss Units	75.53 Gloss Units
Stnd Dev Btwn Labs	2.17 Gloss Units	1.96 Gloss Units

Statistics based on 20 of 20 reporting participants.

Key to Instrument Codes Reported by Participants

GS	BYK-Gardner Glossgard II	LA	L & W Gloss - Autoline 300
LB	L & W Gloss Tester Code 224	LF	L & W Autoline 400
PP	Technidyne Profile/Plus	TG	Technidyne T480
TH	Technidyne T480A	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab	ZH	Zehntner ZLR 1050

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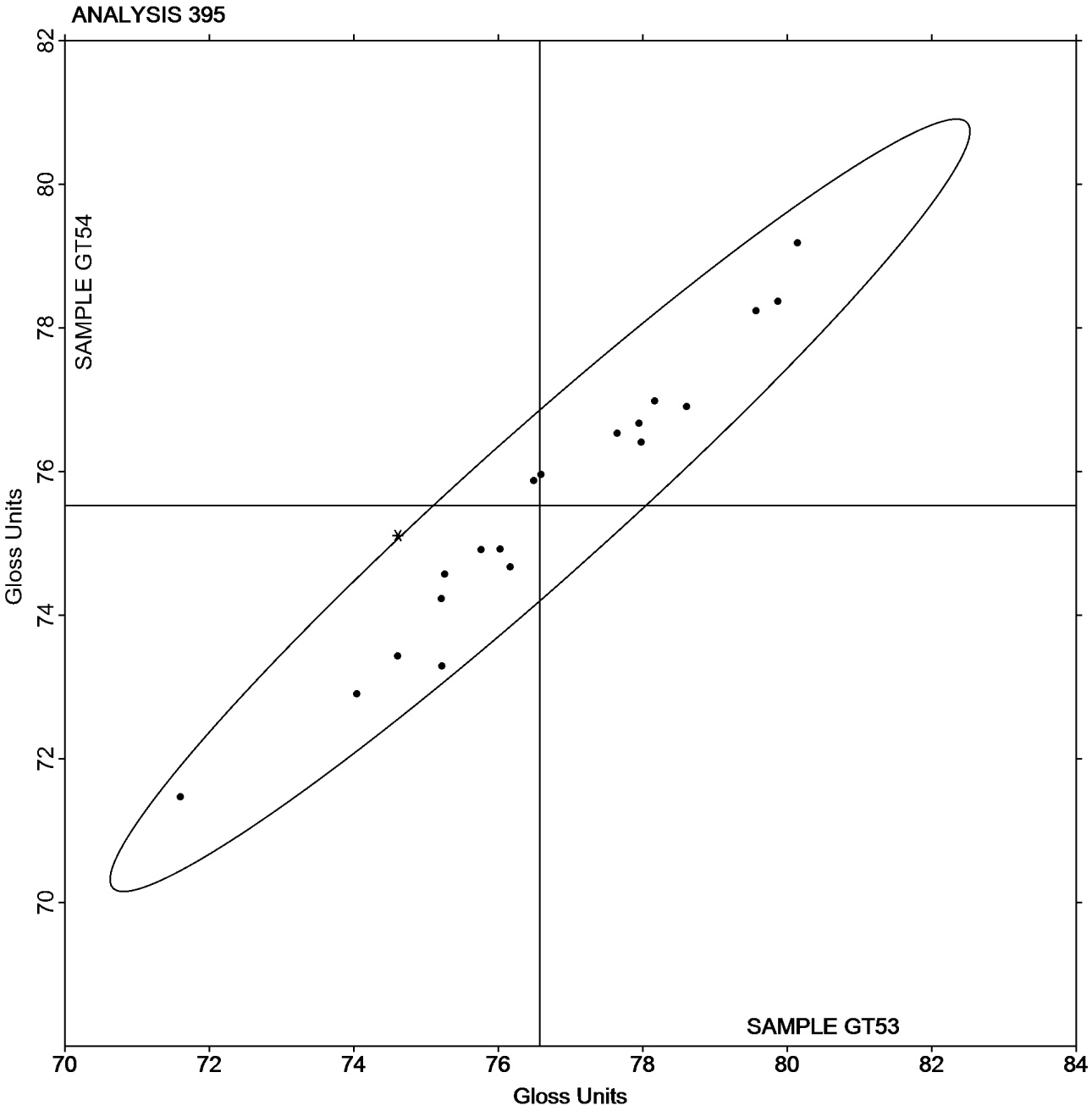
Grand Mean Sample GT53 = 76.577 Gloss Units

Grand Mean Sample GT54 = 75.531 Gloss Units



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Paper & Paperboard Interlaboratory Testing Program

Report #2932G, April 2018

Analysis 396

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GU53 Lab Mean	Sample GU53 Diff from Grand Mean	Sample GU53 CPV	Sample GU54 Lab Mean	Sample GU54 Diff from Grand Mean	Sample GU54 CPV	Instr Code
3AMGC6		33.69	0.00	0.00	24.72	-0.87	-1.13	LA
4U3YTA		32.78	-0.91	-1.02	26.76	1.17	1.53	PP
7JGELH		33.21	-0.49	-0.54	25.56	-0.03	-0.04	TH
DVAMDP		31.97	-1.72	-1.93	25.82	0.23	0.30	TG
GP6HPL		34.60	0.91	1.02	26.09	0.50	0.65	TH
HUJFUM		33.97	0.28	0.31	24.49	-1.10	-1.43	GS
NF2FPW		34.62	0.93	1.04	25.69	0.10	0.13	XX
T8K7ZJ		34.02	0.33	0.37	24.85	-0.74	-0.96	TH
Z84MKK		34.36	0.67	0.75	26.31	0.72	0.94	LA

Summary Statistics	Sample GU53	Sample GU54
Grand Means	33.69 Gloss Units	25.59 Gloss Units
Stnd Dev Btwn Labs	0.89 Gloss Units	0.77 Gloss Units

Statistics based on 9 of 9 reporting participants.

Analysis Notes:

GP6HPL - One determination removed from the Lab Mean of Sample GU53 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

GS	BYK-Gardner Glossgard II	LA	L & W Gloss - Autoline 300
PP	Technidyne Profile/Plus	TG	Technidyne T480
TH	Technidyne T480A	XX	Instrument make/model not specified by lab

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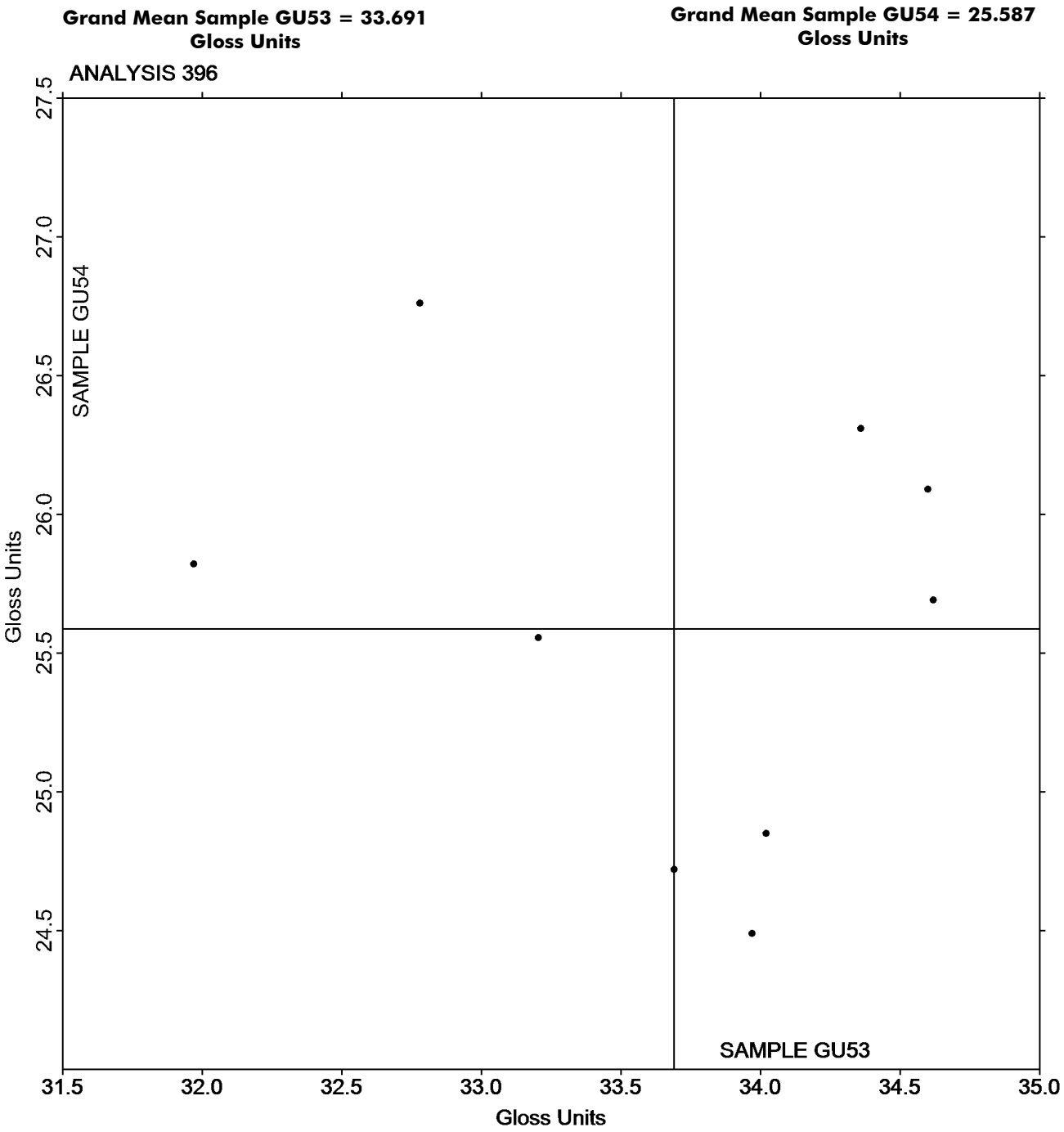

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

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Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GW53 Lab Mean	Sample GW53 Diff from Grand Mean	Sample GW53 CPV	Sample GW54 Lab Mean	Sample GW54 Diff from Grand Mean	Sample GW54 CPV	Instr Code
2AL6Q4		89.35	0.07	0.12	73.49	-0.08	-0.16	ZZ
3BJWMG		89.84	0.56	0.95	73.33	-0.24	-0.48	ZZ
3Y3ADF		89.82	0.55	0.92	73.39	-0.18	-0.36	ZZ
4GHZR6		88.39	-0.89	-1.50	73.04	-0.53	-1.06	ZZ
6DY7ND		88.16	-1.12	-1.90	73.32	-0.25	-0.51	ZZ
7JGELH		89.37	0.09	0.16	73.21	-0.36	-0.73	ZZ
8EHYFX	X	88.46	-0.81	-1.38	92.65	19.08	38.27	ZZ
B9HER2		89.24	-0.04	-0.07	73.57	0.00	0.00	ZZ
CXXHAZ		88.78	-0.50	-0.84	73.27	-0.30	-0.60	ZZ
DVAMDP	X	88.40	-0.88	-1.49	75.60	2.03	4.07	ZZ
GNRD3Q		89.61	0.33	0.56	73.76	0.19	0.38	ZZ
HB62CT		89.85	0.57	0.97	74.46	0.89	1.78	ZZ
HUFV6Y		89.33	0.05	0.09	73.55	-0.02	-0.04	ZZ
JD9T7R		90.58	1.30	2.20	74.34	0.77	1.55	ZZ
KTKRQH		88.24	-1.03	-1.75	72.59	-0.98	-1.97	ZZ
L7ZCLV		89.09	-0.19	-0.32	73.64	0.07	0.14	ZZ
MFLUGF	X	91.73	2.45	4.14	75.47	1.90	3.81	ZZ
NF2FPW		89.23	-0.05	-0.08	73.47	-0.10	-0.20	ZZ
NNA8UK		89.60	0.32	0.54	74.20	0.63	1.26	ZZ
T2KPPD		89.47	0.19	0.32	74.15	0.58	1.17	ZZ
T8K7ZJ		88.59	-0.69	-1.16	72.86	-0.72	-1.44	ZZ
UXHTJA		89.45	0.17	0.29	74.14	0.57	1.15	ZZ
V3N2KK		89.80	0.52	0.88	73.87	0.30	0.60	ZZ
WJ9WDC		89.64	0.36	0.61	73.15	-0.42	-0.84	ZZ
XETLZ9		89.46	0.18	0.30	73.51	-0.06	-0.11	ZZ
XPDTXC		88.60	-0.68	-1.15	73.46	-0.11	-0.22	ZZ
XTRRRH		88.60	-0.68	-1.15	73.19	-0.39	-0.77	ZZ
YPBK76		90.03	0.75	1.27	74.60	1.03	2.06	ZZ
Z84MKK		89.12	-0.16	-0.27	73.28	-0.29	-0.58	ZZ

Summary Statistics	Sample GW53	Sample GW54
Grand Means	89.28 g/sq m	73.57 g/sq m
Stnd Dev Btwn Labs	0.59 g/sq m	0.50 g/sq m

Statistics based on 26 of 29 reporting participants.

Comments on Assigned Data Flags for Test #398

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

DVAMDP (X) - Data for sample GW54 are high. Inconsistent within the determinations of sample GW54.

8EHYFX (X) - Extreme Data for Sample GW54.

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Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

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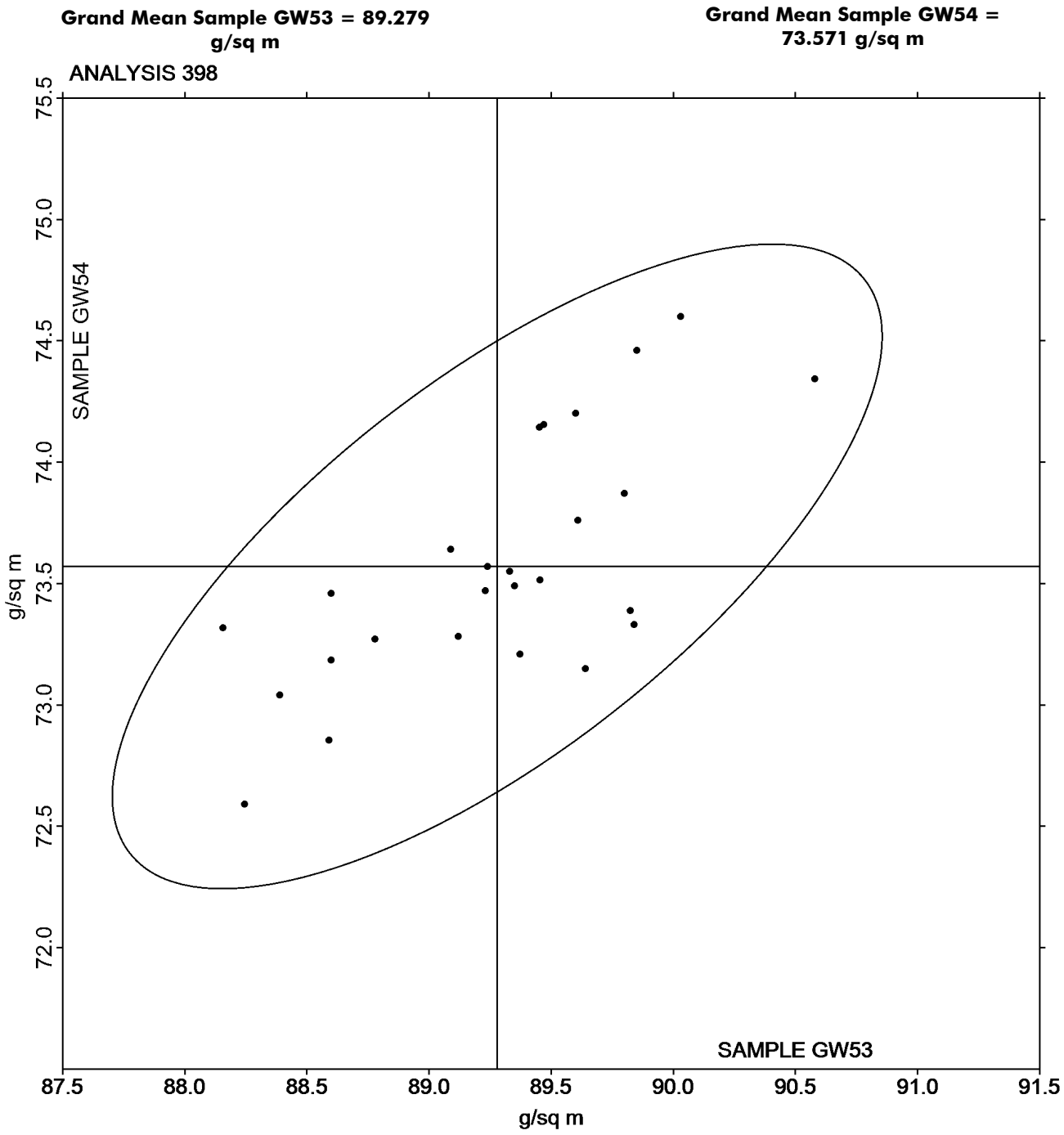

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Paper & Paperboard Interlaboratory Testing Program

Report #2932G, April 2018

Analysis 399

Sizing Test (Hercules Type)

TAPPI Official Test Method T530

WebCode	Data Flag	Sample GX53 Lab Mean	Sample GX53 Diff from Grand Mean	Sample GX53 CPV	Sample GX54 Lab Mean	Sample GX54 Diff from Grand Mean	Sample GX54 CPV	Instr Code
2AL6Q4		8.28	-4.12	-0.95	9.05	-3.46	-0.98	HE
2G3ZUJ		12.08	-0.32	-0.07	10.34	-2.17	-0.61	HE
3EVYBX		8.90	-3.50	-0.81	9.70	-2.81	-0.80	HE
4GHZR6		12.30	-0.10	-0.02	12.08	-0.43	-0.12	XX
4HN2N7		12.71	0.31	0.07	16.50	3.99	1.13	HE
4HQQR4		6.21	-6.19	-1.43	11.37	-1.14	-0.32	HE
4U3YTA		10.87	-1.53	-0.35	10.16	-2.35	-0.67	HE
98RR6D		12.14	-0.26	-0.06	11.26	-1.25	-0.35	HE
9D7JLX		10.10	-2.30	-0.53	7.00	-5.51	-1.56	XX
9ZHKVU		19.55	7.15	1.65	13.52	1.01	0.29	HE
CUYQ7Z		10.82	-1.58	-0.36	13.32	0.81	0.23	HE
CXXHAZ		16.18	3.78	0.87	13.33	0.82	0.23	HE
E6UFZ7		13.07	0.67	0.15	15.89	3.38	0.96	HE
ERKZVL	*	4.90	-7.50	-1.73	16.50	3.99	1.13	HE
GEB6PP		14.12	1.72	0.40	14.01	1.50	0.43	XX
GRHPDN		11.53	-0.87	-0.20	9.83	-2.68	-0.76	HE
GYGXRX		9.10	-3.30	-0.76	10.98	-1.53	-0.43	HE
N2H9NY		11.05	-1.35	-0.31	12.01	-0.50	-0.14	HE
PXFAUC		10.19	-2.21	-0.51	10.87	-1.64	-0.46	XX
TJZJHD		10.46	-1.94	-0.45	7.50	-5.01	-1.42	XX
TYFJDJ		12.04	-0.36	-0.08	13.25	0.74	0.21	HE
U84WPN	X	24.75	12.35	2.85	15.21	2.70	0.77	HE
W9AGNH		12.40	0.00	0.00	10.40	-2.11	-0.60	HE
WEED8H		22.34	9.94	2.30	20.14	7.63	2.16	HE
X2947J		15.45	3.05	0.70	11.87	-0.64	-0.18	HE
XPDTXC	*	23.20	10.80	2.49	21.80	9.29	2.63	HE
YAPUWB	X	7.77	-4.63	-1.07	21.17	8.66	2.45	XX
YTM9FA	X	18.54	6.14	1.42	3.30	-9.21	-2.61	HE

Summary Statistics	Sample GX53	Sample GX54
Grand Means	12.40 Seconds	12.51 Seconds
Stnd Dev Btwn Labs	4.33 Seconds	3.53 Seconds

Statistics based on 25 of 28 reporting participants.

Comments on Assigned Data Flags for Test #399

YTM9FA (X) - Data for sample GX54 are low.

YAPUWB (X) - Inconsistent in testing between samples.

U84WPN (X) - Data for sample GX53 are high. Inconsistent within the determinations of sample GX53.

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Key to Instrument Codes Reported by Participants

HE	Hercules Sizing Tester	XX	Instrument make/model not specified by lab

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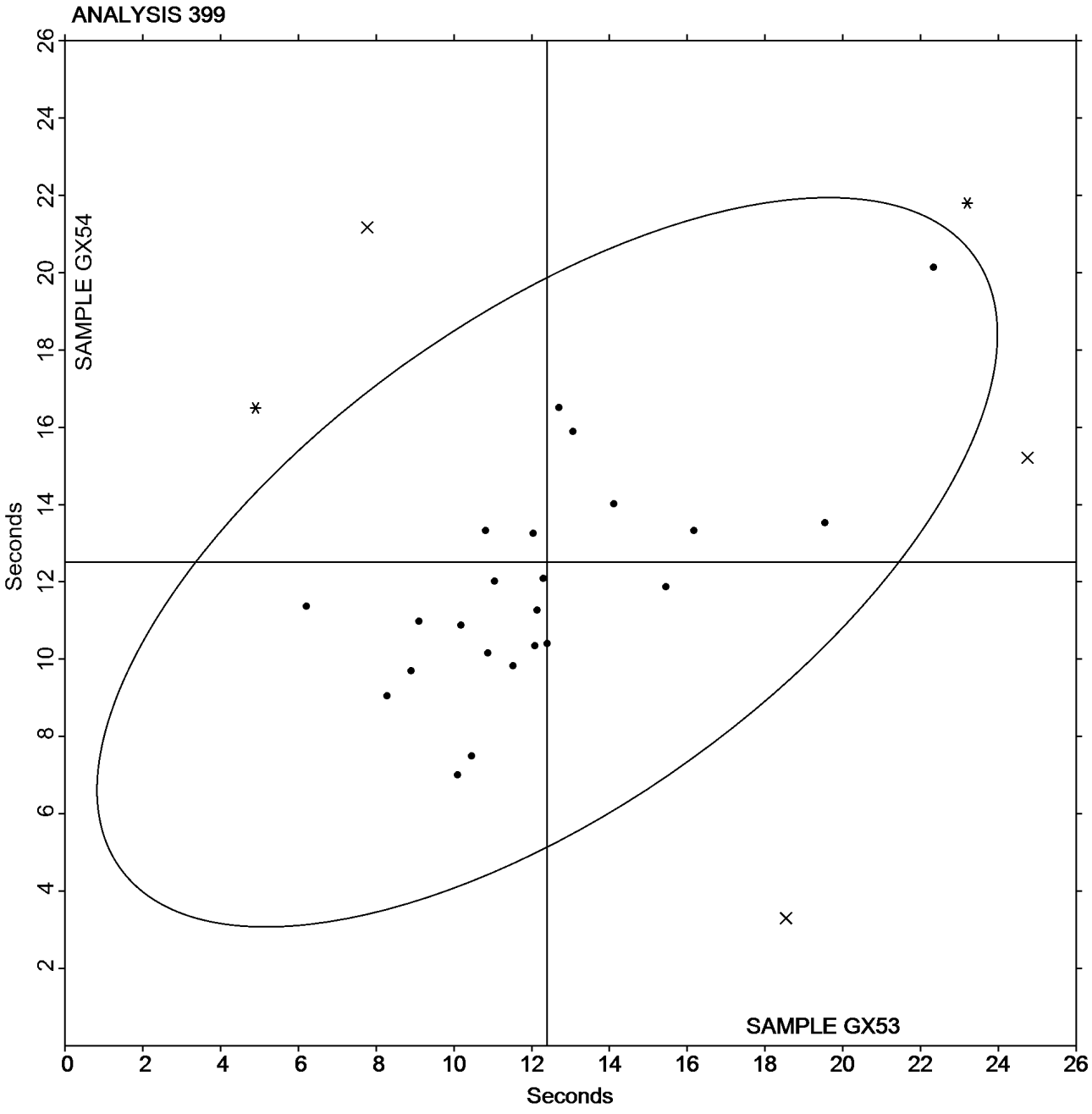
Grand Mean Sample GX53 = 12.400 Seconds

Grand Mean Sample GX54 = 12.507 Seconds



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