Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3182 G - June 2022

Introduction to the Paper & Paperboard Interlaboratory Program

Explanation of Tables and Definitions of Terms

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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 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
22FXN9		GA05	94.91	-0.81	4.07	0.01	0.01	0.00	0.01	EH
		GA06	94.92	-0.80	4.06					
26HXN7		GA05	95.08	-0.91	4.21	-0.03	-0.02	0.03	0.04	LS
		GA06	95.06	-0.92	4.24					
6VHEZ8		GA05	95.03	-0.88	4.13	0.01	-0.02	0.07	0.08	TC
		GA06	95.04	-0.90	4.20					
9Z24NZ		GA05	94.94	-0.89	4.25	-0.01	-0.01	-0.02	0.03	LS
		GA06	94.93	-0.90	4.22					
F2C4XF		GA05	93.70	-0.81	4.41	0.02	-0.01	0.06	0.07	HZ
		GA06	93.73	-0.81	4.47					
HBALLN		GA05	95.28	-0.70	3.82	-0.02	0.01	-0.04	0.04	XS
		GA06	95.27	-0.69	3.79					
JWNTBL		GA05	92.12 *	-0.54	3.32	-0.14 X	0.00	-0.04	0.15	TS
		GA06	91.98	-0.54	3.28					
N3WRMM		GA05	93.07	-1.07 *	3.58	-0.01	0.02	-0.05	0.06	TC
		GA06	93.05	-1.05	3.53					
RFQHWF		GA05	93.80	-1.01	4.37	0.00	-0.02	-0.01	0.02	TC
		GA06	93.80	-1.03	4.36					
RRNCF6		GA05	93.71	-0.70	4.09	-0.01	0.01	-0.02	0.03	LA
		GA06	93.69	-0.70	4.06					
UEAWL6		GA05	94.29	-0.63	4.05	0.03	0.00	-0.04	0.05	HE
		GA06	94.32	-0.63	4.01					
VBA8H3		GA05	93.63	-0.87	4.09	0.00	0.00	0.03	0.03	TC
		GA06	93.63	-0.88	4.12					
VC3VZY		GA05	92.64	-0.25	3.66	0.12	0.00	0.02	0.12	TS
		GA06	92.75	-0.25	3.68					
VNBNHD		GA05	93.19	-1.08	3.92	0.03	-0.01	0.02	0.04	EG
		GA06	93.22	-1.10	3.95					
WKDHPT		GA05	93.68	-0.81	4.10	0.06	0.00	-0.07	0.09	TC
		GA06	93.74	-0.81	4.03					
ZBW6XY		GA05	94.05	-0.77	4.23	0.02	0.00	-0.01	0.03	HE
		GA06	94.07	-0.77	4.22					

Paper & Paperboard Interlaboratory Testing Program

Report #3182 G, June 2022

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

Summary Statistics

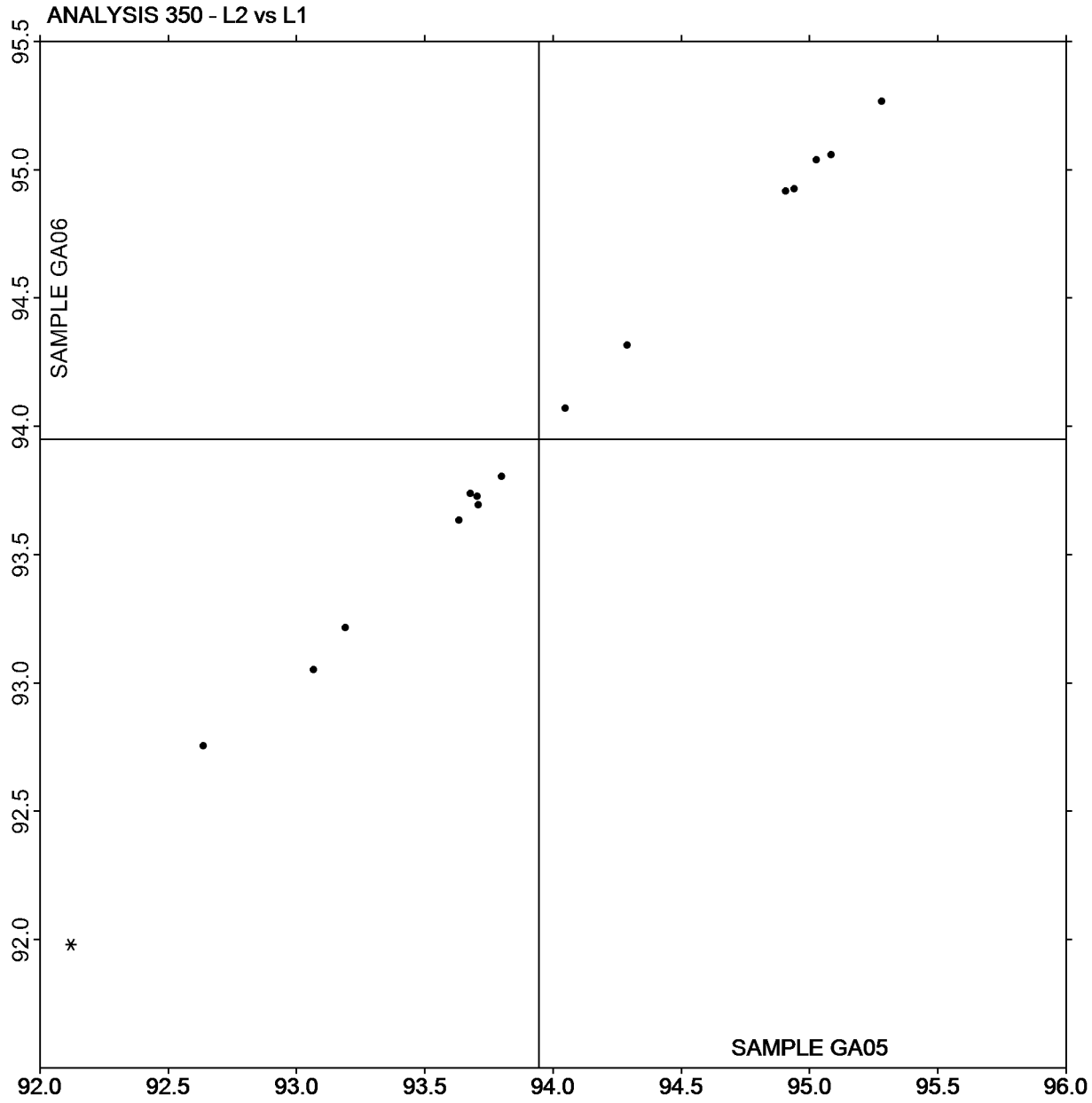
Grand Means							
GA05	93.945	-0.796	4.019	0.005	-0.002	-0.004	0.055
GA06	93.949	-0.798	4.015				
Stnd Dev Btwn Labs							
GA05	0.931	0.208	0.294	0.052	0.012	0.040	0.037
GA06	0.935	0.211	0.312				

Statistics based on 16 of 16 reporting participants

Key to Instrument Codes Reported by Participants

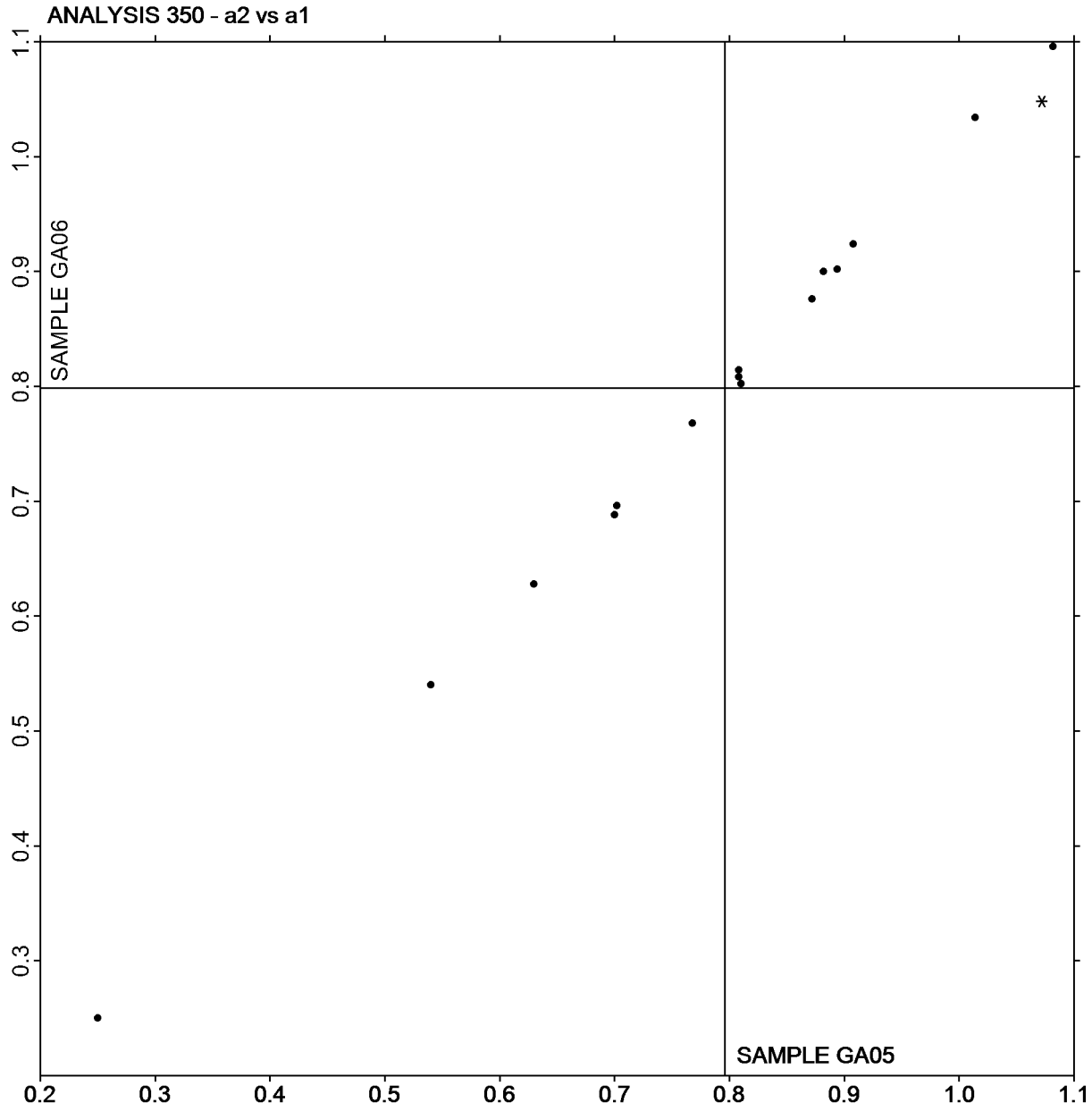
EG	Datacolor Elrepho 3300	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HZ	Hunter ColorFlex EZ
LA	L & W Elrepho AL300	LS	L & W Elrepho SE 070
TC	Technidyne Color Touch Series	TS	Technidyne Brightimeter Micro S-5
XS	X-Rite 938 Spectrodensitometer		

Plot of L values GA06 vs L values GA05



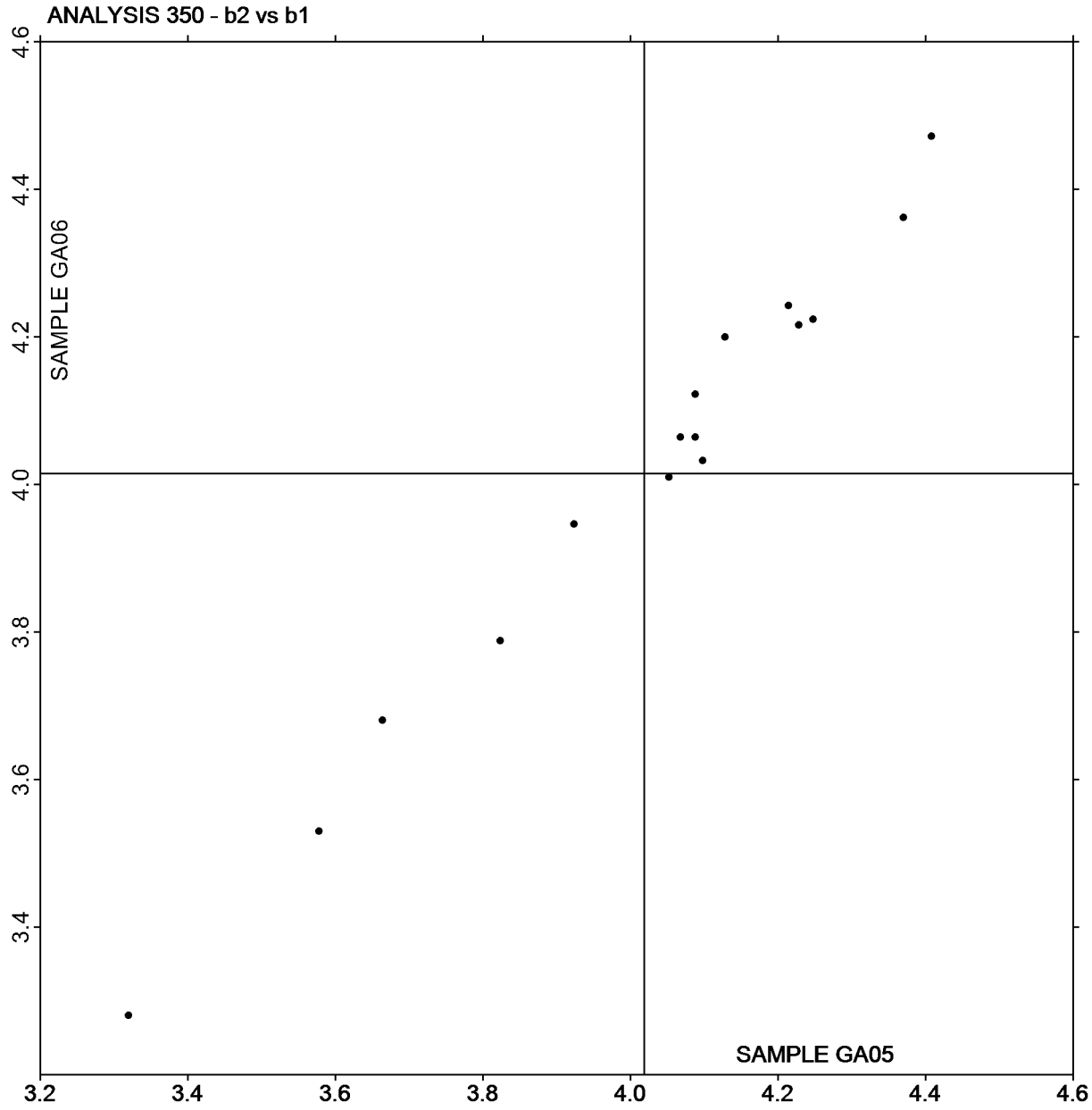
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA06 vs a values GA05



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

Plot of b values GA06 vs b values GA05



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 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
22FXN9		GA05	94.87		-0.69		4.16	-0.04	0.01	-0.03	0.05	EH
		GA06	94.83		-0.68		4.13					
22JJ2G		GA05	95.03		-0.63		4.50	0.00	0.01	-0.03	0.03	NG
		GA06	95.03		-0.62		4.48					
2L82DM		GA05	93.51	*	-0.68		3.90	-0.02	-0.01	0.02	0.03	TC
		GA06	93.49		-0.69		3.92					
33ULME		GA05	95.09		-0.66		4.53	0.01	-0.01	-0.02	0.03	NG
		GA06	95.11		-0.67		4.50					
6UVQQT		GA05	95.11		-0.66		4.14	-0.01	0.00	0.09	0.09	HT
		GA06	95.10		-0.65		4.23					
7VG2T6		GA05	93.77	*	-0.45		3.80	-0.21	0.00	0.13	0.25	HE
		GA06	93.56		-0.45		3.93					
7YH8AW		GA05	94.96		-0.67	*	4.17	-0.01	0.07 X	-0.03	0.08	LS
		GA06	94.95		-0.60		4.14					
9Z24NZ		GA05	94.95		-0.89		4.21	0.00	0.01	-0.05	0.05	LS
		GA06	94.95		-0.88		4.16					
BWFNLC		GA05	95.21		-0.80		3.87	0.00	-0.01	0.08	0.08	XC
		GA06	95.21		-0.81		3.95					
DP3WWW		GA05	95.23		-0.65		4.29	-0.01	-0.01	0.01	0.02	HT
		GA06	95.22		-0.67		4.29					
HK3WX4		GA05	95.00		-0.72		4.25	-0.03	0.02	0.03	0.05	EF
		GA06	94.96		-0.70		4.28					
M76JK3		GA05	93.82		-0.46		3.82	-0.12	-0.01	0.03	0.13	XB
		GA06	93.70		-0.48		3.85					
MHW7V6		GA05	94.94		-0.63		4.21	-0.03	0.01	-0.03	0.05	EH
		GA06	94.91		-0.63		4.17					
N3WRMM		GA05	94.33		-0.85		4.08	0.01	-0.01	-0.10	0.10	HE
		GA06	94.34		-0.86		3.98					
NKFQTK		GA05	95.11	X	-0.78		4.12	-1.04 X	-0.02	0.02	1.04 X	XP
		GA06	94.07		-0.80		4.14					
V7CH8X		GA05	94.89		-0.56		4.09	0.02	-0.01	-0.01	0.02	TC
		GA06	94.91		-0.57		4.08					

W6U29A	GA05	94.93	-0.74	3.54	0.02	-0.05	0.04	0.06	NG
	GA06	94.95	-0.78	3.58					
ZM2GZR	GA05	95.08	-0.67	4.31	-0.01	-0.01	-0.01	0.02	NH
	GA06	95.07	-0.68	4.30					

Summary Statistics

Grand Means							
GA05	94.748	-0.678	4.111	-0.081	-0.001	0.006	0.120
GA06	94.723	-0.679	4.118				
Stnd Dev Btwn Labs							
GA05	0.540	0.115	0.248	0.247	0.023	0.055	0.237
GA06	0.578	0.117	0.227				

Statistics based on 18 of 18 reporting participants

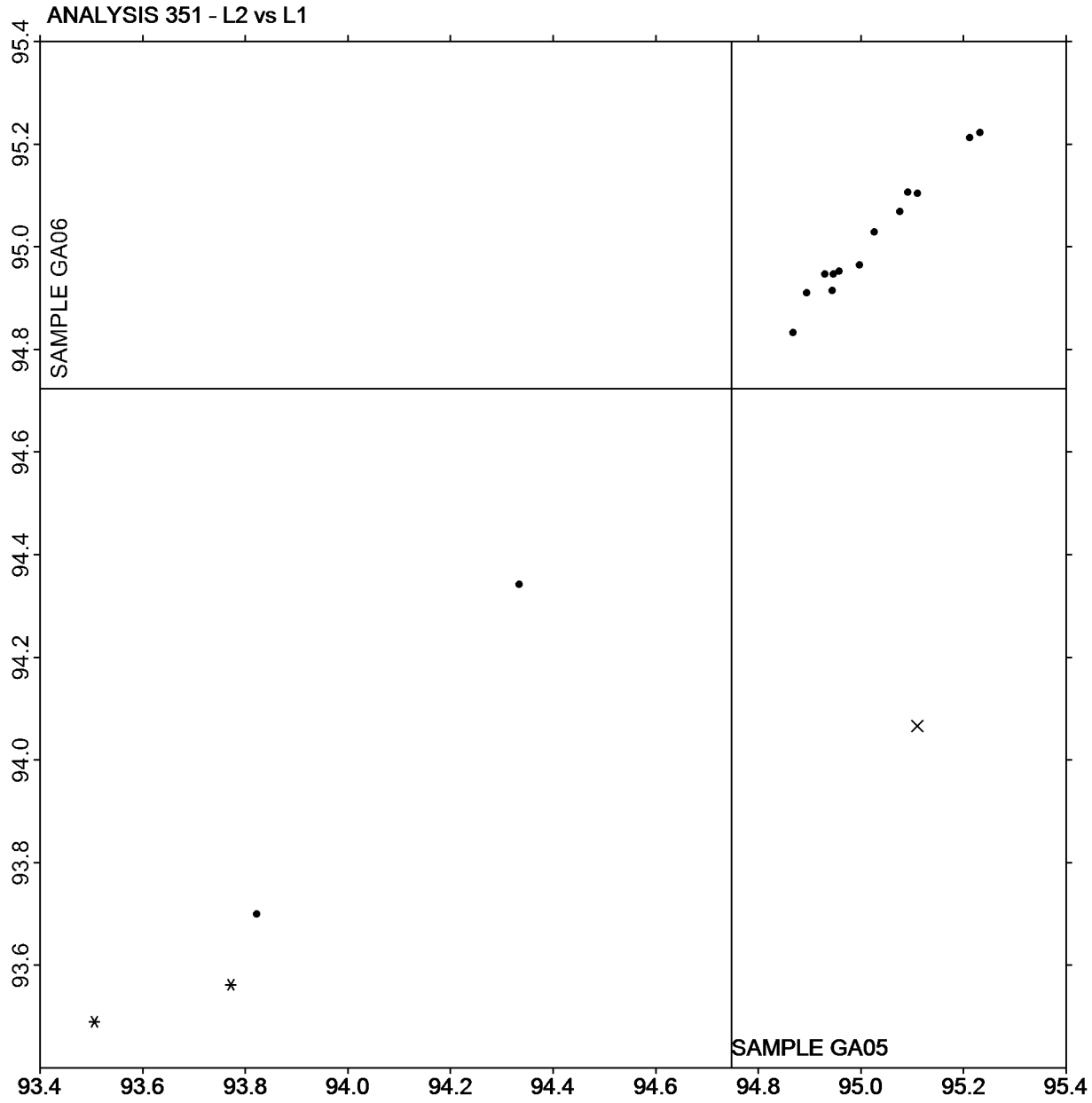
Analysis Notes:

7YH8AW - Two determinations removed from the Lab Mean for Sample GA05 for "b" (TAPPI T1205 using Grubbs test at 1% risk level).

Key to Instrument Codes Reported by Participants

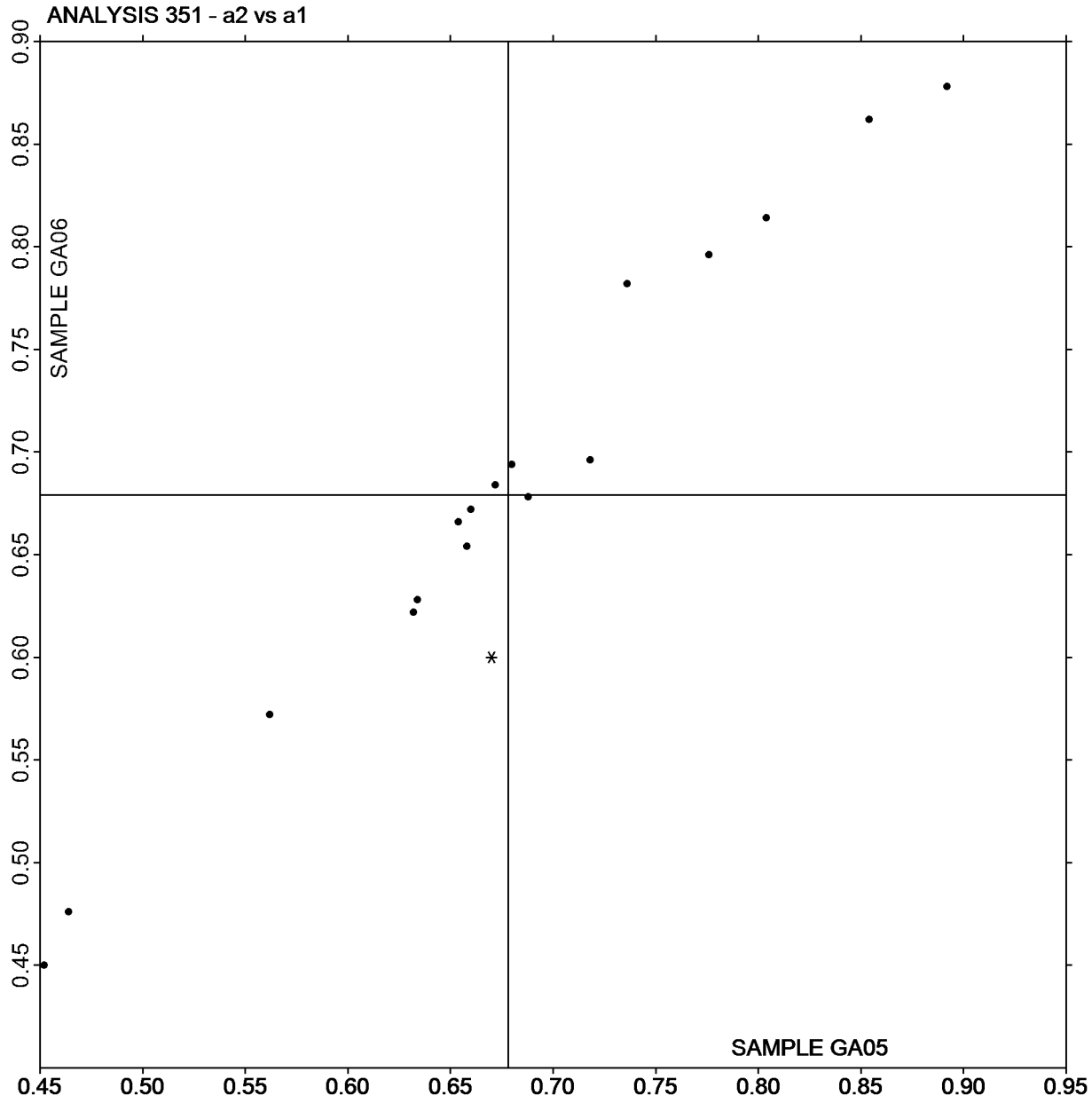
EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
LS	L & W Elrepho SE 070	NG	Minolta CM-3700d Spectrophotometer
NH	Minolta CM-3700A Spectrophotometer	TC	Technidyne Color Touch Series
XB	X-Rite Ci7	XC	X-Rite eXact Series
XP	X-Rite Spectrophotometer DTP		

Plot of L values GA06 vs L values GA05



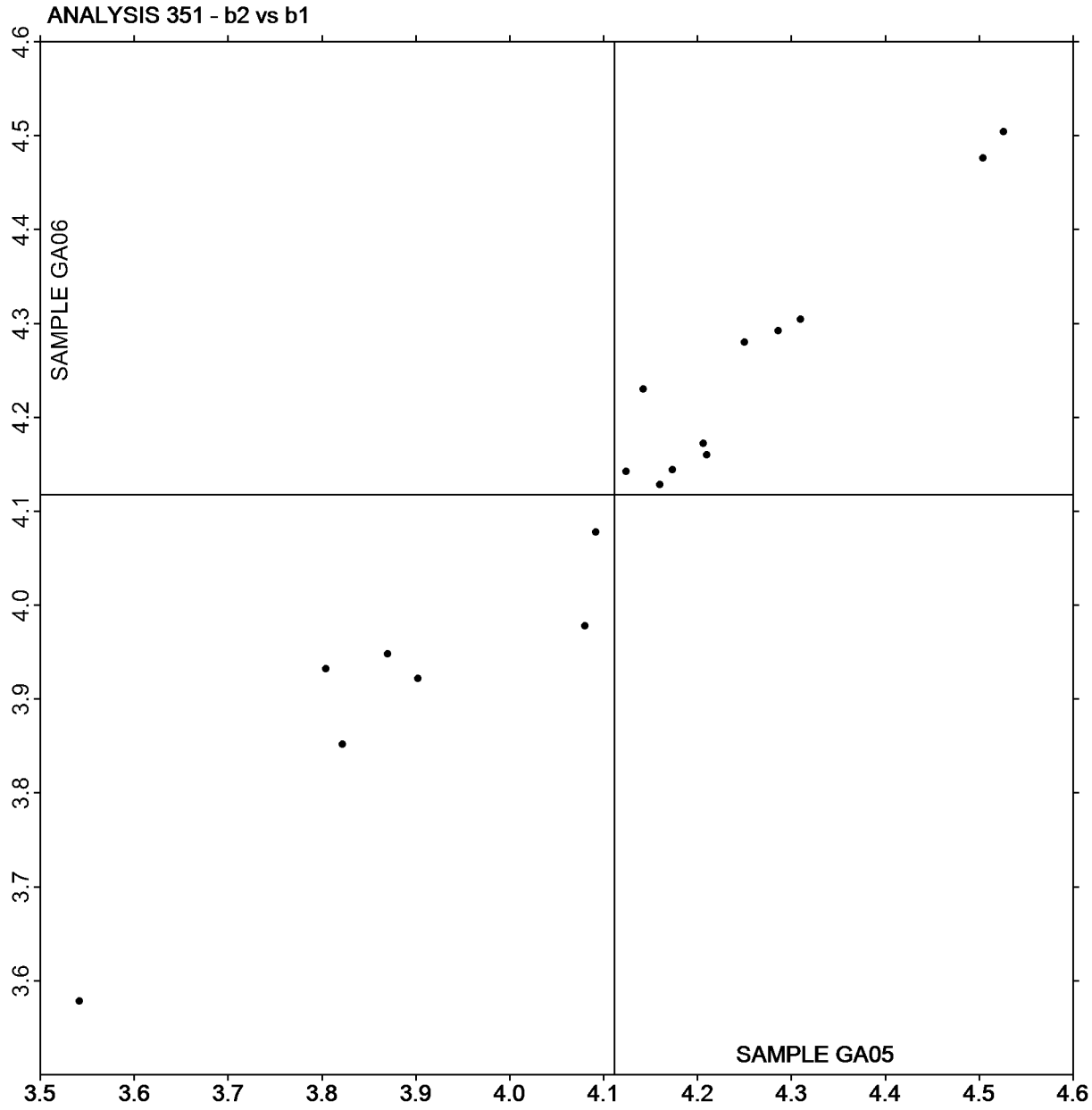
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA06 vs a values GA05



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

Plot of b values GA06 vs b values GA05



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV05 Lab Mean	Sample GV05 Diff from Grand Mean	Sample GV05 CPV	Sample GV06 Lab Mean	Sample GV06 Diff from Grand Mean	Sample GV06 CPV	Instr Code
22FXN9		4.897	-0.066	-0.84	4.923	-0.053	-0.60	EM
22JJ2G		4.957	-0.006	-0.08	5.009	0.033	0.37	PP
26HXN7		4.960	-0.003	-0.04	5.071	0.095	1.07	LW
2AFDHM		4.898	-0.066	-0.83	4.898	-0.078	-0.88	PP
2EPNC3		4.930	-0.033	-0.42	5.011	0.035	0.40	LW
2L82DM		4.862	-0.101	-1.29	4.868	-0.108	-1.22	PP
336NAD		4.880	-0.083	-1.06	4.800	-0.176	-1.98	LA
33ULME		4.881	-0.082	-1.05	4.990	0.014	0.16	EM
3JQD3L		4.827	-0.137	-1.73	4.953	-0.023	-0.26	MS
3TK8PJ		4.898	-0.065	-0.83	4.968	-0.008	-0.09	EM
42RB83		4.969	0.005	0.06	4.995	0.019	0.22	TM
6DJDAV		4.976	0.013	0.16	5.059	0.083	0.93	LB
6UVQQT		4.994	0.031	0.39	4.993	0.017	0.19	EM
6VHEZ8		4.955	-0.009	-0.11	4.948	-0.028	-0.32	LA
7VG2T6		4.952	-0.011	-0.15	4.929	-0.047	-0.53	PP
8AR7BH		5.040	0.077	0.97	5.071	0.095	1.07	EM
943XVH	*	5.010	0.047	0.59	4.863	-0.113	-1.27	LA
BNJZHT		4.905	-0.058	-0.74	4.953	-0.023	-0.26	TM
BWFNLC		4.902	-0.062	-0.78	4.969	-0.008	-0.08	LW
BZFZGC		4.978	0.014	0.18	4.920	-0.056	-0.63	LW
C4UUVN	*	5.192	0.228	2.89	5.224	0.248	2.78	TM
CTUDYR		4.780	-0.184	-2.33	4.787	-0.189	-2.12	LW
D63GXU		5.005	0.042	0.53	5.031	0.055	0.61	LW
DP3WWW		4.977	0.014	0.17	5.005	0.029	0.33	EM
FGNK6H		4.996	0.032	0.41	4.999	0.023	0.26	TM
FUUMHY	*	4.878	-0.086	-1.08	4.756	-0.220	-2.48	TM
HBALLN		4.920	-0.043	-0.55	4.830	-0.146	-1.64	TM
HF6P6U		5.089	0.125	1.59	5.051	0.075	0.84	LW
HK3WX4		4.994	0.031	0.39	4.955	-0.021	-0.24	TM
HW9798		4.891	-0.072	-0.92	4.931	-0.045	-0.51	EM
JHKE4W		5.082	0.119	1.50	5.063	0.087	0.98	EM
KL7ATB		4.980	0.017	0.21	4.994	0.018	0.20	PP
M4BWLK		4.869	-0.094	-1.20	4.882	-0.094	-1.06	TA
M76JK3		5.047	0.084	1.06	5.085	0.109	1.22	TM
MHW7V6		4.984	0.021	0.26	4.980	0.004	0.04	EM
NKFQTK		4.840	-0.123	-1.56	4.890	-0.086	-0.97	TM
PP94D9		4.999	0.035	0.45	5.011	0.035	0.40	LW
PXNK94		4.941	-0.022	-0.28	4.932	-0.044	-0.50	OK
QPHLHX		4.918	-0.046	-0.58	4.914	-0.062	-0.70	LW
RRNCF6		4.996	0.033	0.41	5.041	0.065	0.73	EM
UMZNM4		4.954	-0.009	-0.12	4.928	-0.048	-0.54	PP

Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GV05 Lab Mean	Sample GV05 Diff from Grand Mean	Sample GV05 CPV	Sample GV06 Lab Mean	Sample GV06 Diff from Grand Mean	Sample GV06 CPV	Instr Code
UWE4Z8		5.006	0.043	0.54	5.031	0.055	0.62	PP
V7CH8X		4.980	0.017	0.21	5.059	0.083	0.93	PP
VC3VZY		5.032	0.069	0.87	5.024	0.048	0.54	EM
VNBNHD		5.000	0.037	0.46	4.930	-0.046	-0.52	XX
VZAECX		4.885	-0.078	-0.99	4.932	-0.044	-0.50	TA
XQDGDM		5.041	0.078	0.98	5.020	0.044	0.49	TA
ZB8ZBQ		5.109	0.146	1.84	5.105	0.129	1.45	PP
ZCQTGU		4.978	0.015	0.18	5.003	0.027	0.30	TA
ZGYZVD		4.987	0.023	0.29	5.068	0.092	1.03	FR
ZM2GZR		5.120	0.157	1.98	5.127	0.151	1.70	PP

Summary Statistics	Sample GV05	Sample GV06
Grand Means	4.96 mils	4.98 mils
Stnd Dev Btwn Labs	0.08 mils	0.09 mils

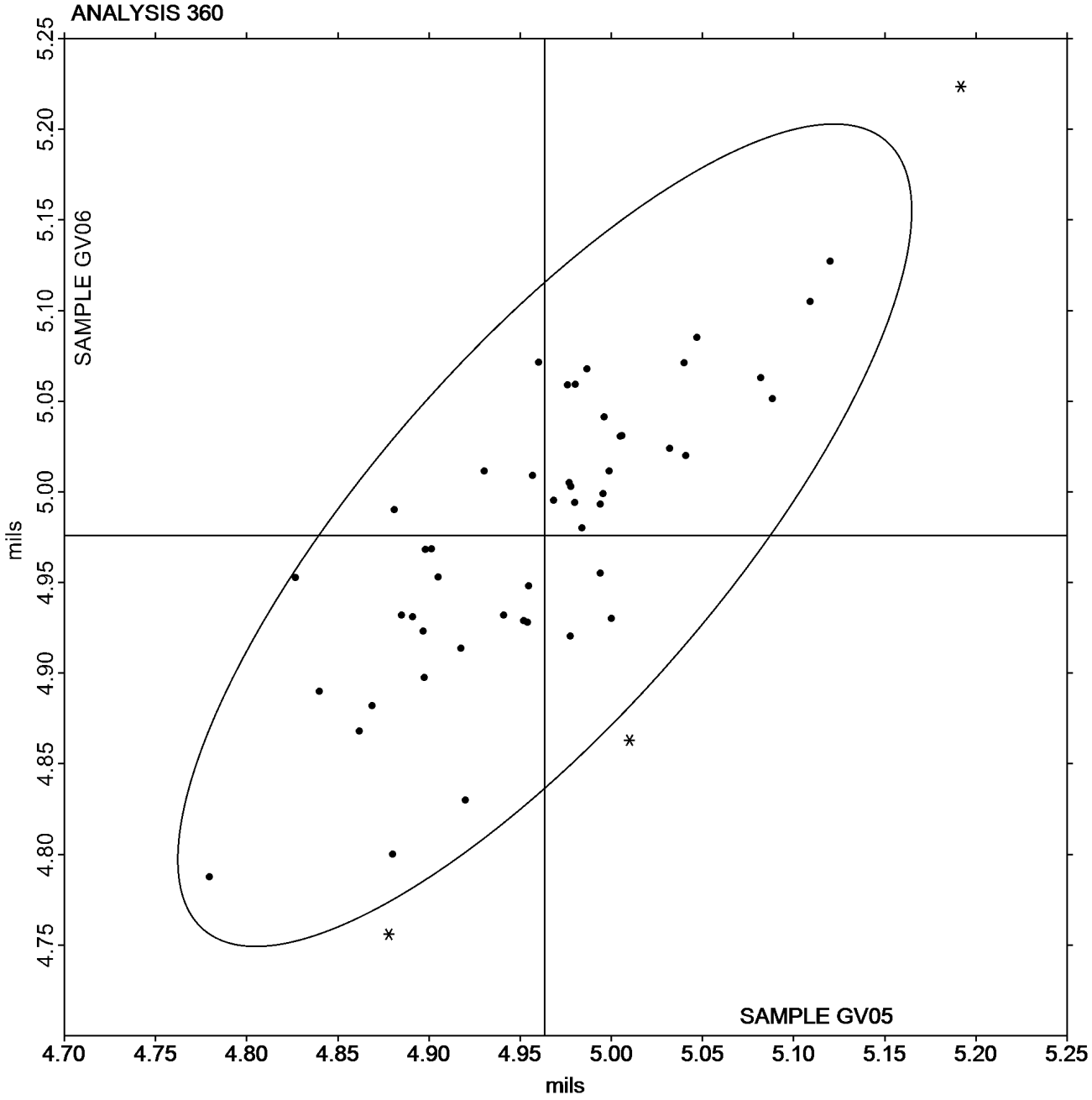
Statistics based on 51 of 51 reporting participants.

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
XX	Instrument make/model not specified by lab		

Grand Mean Sample GV05 = 4.9635 mils

Grand Mean Sample GV06 = 4.9761 mils



Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GY05 Lab Mean	Sample GY05 Diff from Grand Mean	Sample GY05 CPV	Sample GY06 Lab Mean	Sample GY06 Diff from Grand Mean	Sample GY06 CPV	Instr Code
2AFDHM		5.016	0.058	0.53	9.528	-0.133	-0.94	LW
2EPNC3		4.969	0.012	0.11	9.798	0.137	0.97	LW
6DJDAV		5.061	0.104	0.95	9.611	-0.050	-0.35	LB
7P9UDM		4.869	-0.089	-0.81	9.509	-0.152	-1.07	LW
7YH8AW		5.012	0.055	0.50	9.651	-0.010	-0.07	LW
8RA7L8	*	5.251	0.294	2.69	9.924	0.263	1.85	LA
9QV2NA		4.741	-0.216	-1.98	9.483	-0.178	-1.26	LW
9Z24NZ	X	0.005	-4.952	-45.37	0.010	-9.651	-68.05	TM
B6N8WV		4.988	0.031	0.28	9.727	0.066	0.46	TM
BXDYGE	*	5.031	0.074	0.68	9.465	-0.197	-1.39	LA
F2C4XF		4.858	-0.099	-0.91	9.513	-0.148	-1.04	VP
GJ79TM	X	4.504	-0.453	-4.15	9.047	-0.614	-4.33	TM
GQ4ZZV		4.933	-0.024	-0.22	9.626	-0.035	-0.25	LW
JN89YA		5.080	0.123	1.12	9.922	0.261	1.84	PP
JVDXKN		5.031	0.074	0.68	9.776	0.115	0.81	LW
JWNTBL		4.769	-0.188	-1.73	9.450	-0.211	-1.49	OK
M4BWLK		4.953	-0.004	-0.04	9.622	-0.039	-0.28	TA
MHW7V6		4.960	0.003	0.02	9.588	-0.073	-0.52	EM
N3WRMM		4.866	-0.091	-0.84	9.634	-0.027	-0.19	EM
NXNAQE		4.900	-0.057	-0.53	9.585	-0.076	-0.54	LA
NZB2LH		4.996	0.038	0.35	9.757	0.096	0.67	LW
PQ2RW4		5.032	0.074	0.68	9.780	0.119	0.84	LW
Q6J2XZ		4.780	-0.177	-1.63	9.578	-0.083	-0.59	LA
RRNCF6		4.831	-0.127	-1.16	9.551	-0.110	-0.77	MS
TX9RJ3		5.051	0.093	0.86	9.820	0.159	1.12	LW
UEAWL6		5.021	0.064	0.58	9.748	0.087	0.61	EM
VBA8H3		4.990	0.033	0.30	9.629	-0.032	-0.23	EM
VXZE3J		5.096	0.138	1.27	9.739	0.078	0.55	LW
WJDJAQ		4.828	-0.129	-1.19	9.466	-0.195	-1.38	EM
WMDZE8		4.890	-0.067	-0.62	9.600	-0.061	-0.43	TA
ZBW6XY		4.927	-0.030	-0.28	9.715	0.054	0.38	EM
ZCQTGU		4.928	-0.029	-0.27	9.713	0.052	0.37	TA
ZM2GZR	*	5.022	0.065	0.59	9.986	0.325	2.29	PP

Summary Statistics	Sample GY05	Sample GY06
Grand Means	4.96 mils	9.66 mils
Stnd Dev Btwn Labs	0.11 mils	0.14 mils

Statistics based on 31 of 33 reporting participants.

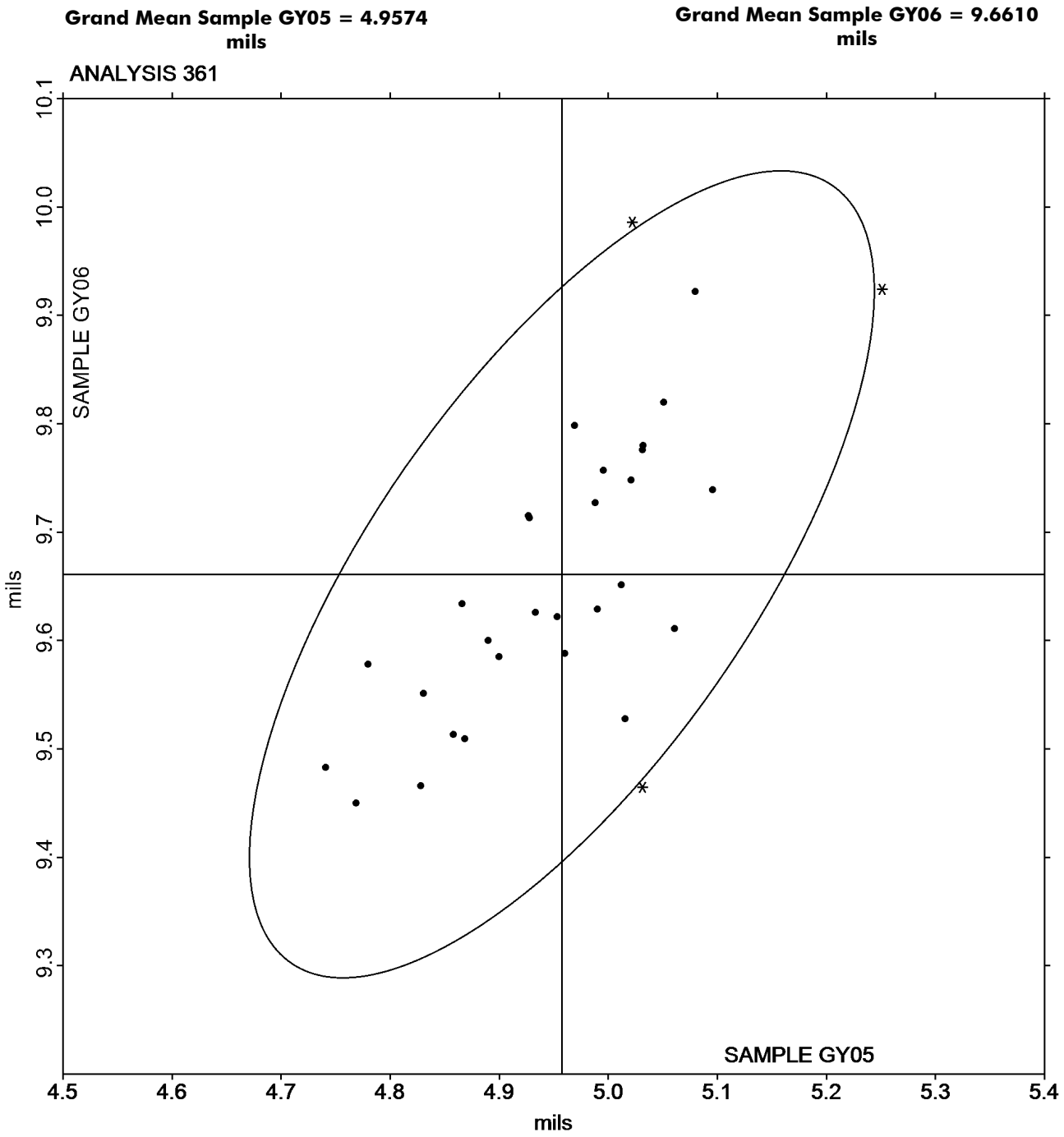
Comments on Assigned Data Flags for Test #361

GJ79TM (X) - Data for both samples are low.

9Z24NZ (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



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

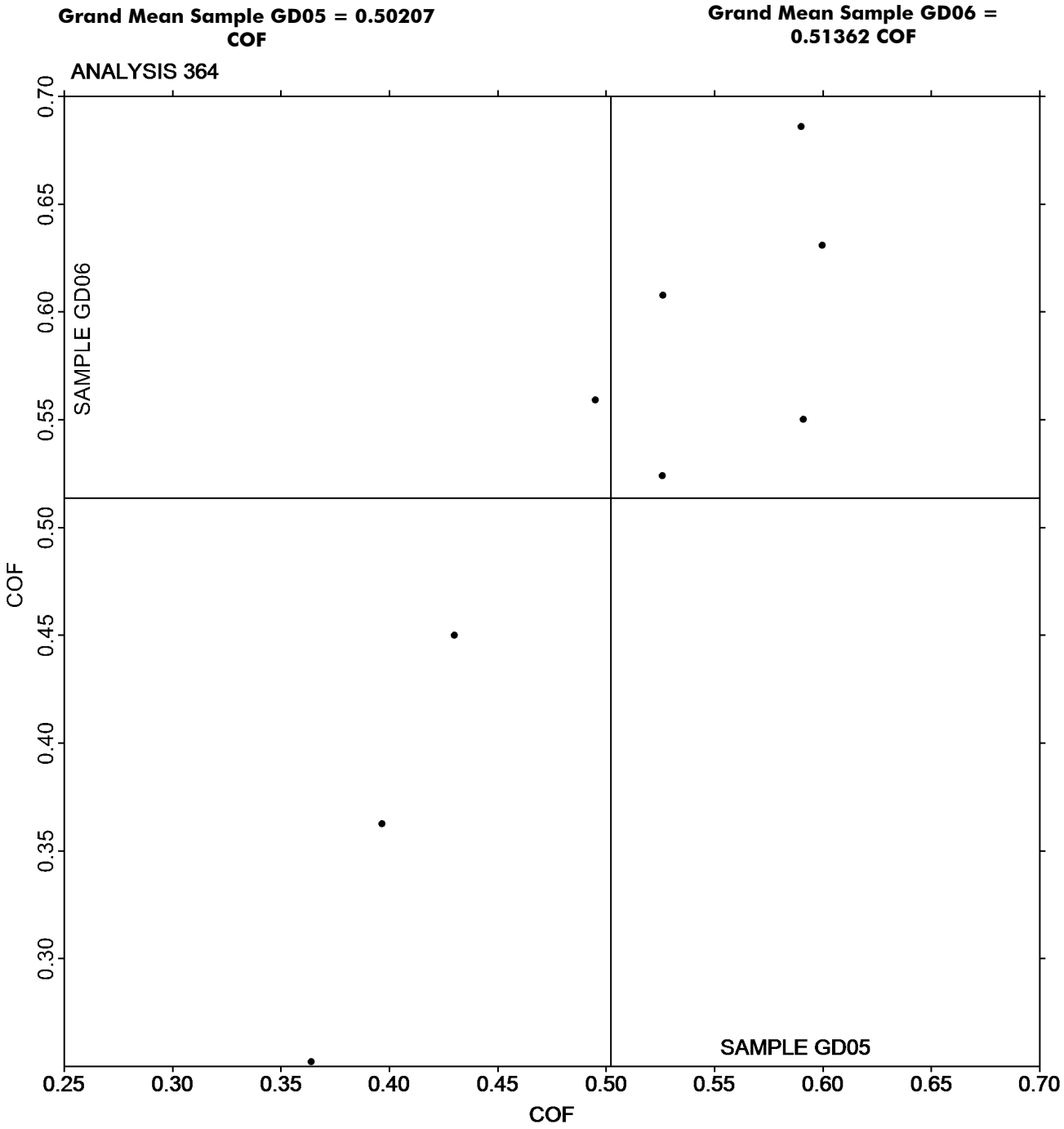
WebCode	Data Flag	Sample GD05 Lab Mean	Sample GD05 Diff from Grand Mean	Sample GD05 CPV	Sample GD06 Lab Mean	Sample GD06 Diff from Grand Mean	Sample GD06 CPV	Instr Code
3TK8PJ		0.5260	0.0239	0.27	0.5240	0.0104	0.08	TA
7VG2T6		0.4300	-0.0721	-0.82	0.4500	-0.0636	-0.46	TA
BXRNFL		0.4950	-0.0071	-0.08	0.5592	0.0456	0.33	TA
HBALLN		0.3966	-0.1055	-1.20	0.3626	-0.1510	-1.10	XX
KBJCM4		0.5262	0.0241	0.27	0.6078	0.0942	0.69	IT
TX9RJ3		0.5910	0.0889	1.01	0.5502	0.0366	0.27	TA
VC3VZY		0.5998	0.0977	1.11	0.6308	0.1172	0.85	TA
ZB8ZBQ		0.3640	-0.1381	-1.57	0.2520	-0.2616	-1.90	TA
ZM2GZR		0.5900	0.0879	1.00	0.6860	0.1724	1.25	TP

Summary Statistics	Sample GD05	Sample GD06
Grand Means	0.50 COF	0.51 COF
Stnd Dev Btwn Labs	0.09 COF	0.14 COF

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

IT	IMASS SP-2100	TA	Thwing-Albert Friction Tester
TP	TMI 32-25 COF Tester (Inclined Plane)	XX	Instrument make/model not specified by lab



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

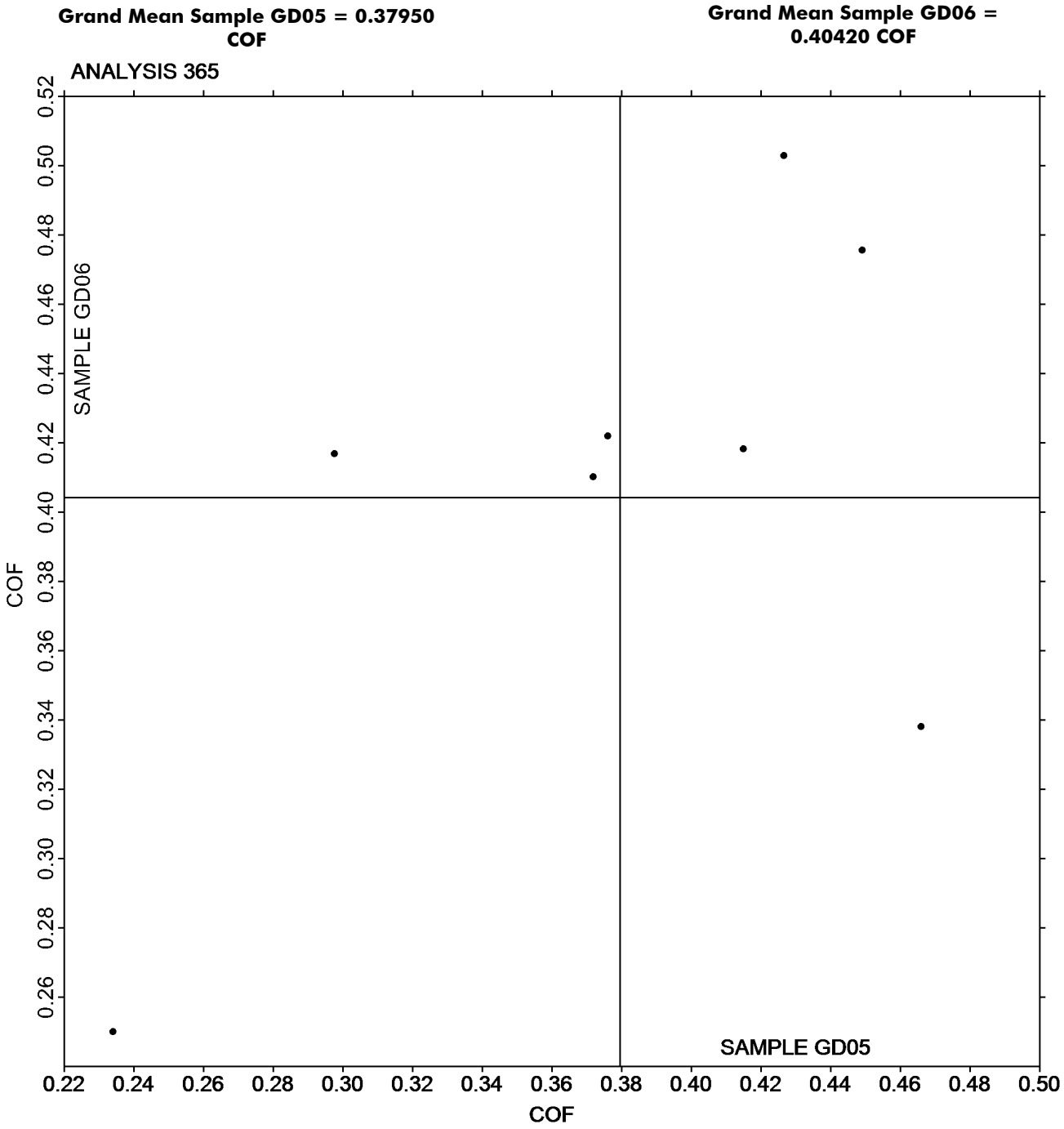
WebCode	Data Flag	Sample GD05 Lab Mean	Sample GD05 Diff from Grand Mean	Sample GD05 CPV	Sample GD06 Lab Mean	Sample GD06 Diff from Grand Mean	Sample GD06 CPV	Instr Code
3TK8PJ		0.3760	-0.0035	-0.04	0.4220	0.0178	0.23	XX
7VG2T6		0.2340	-0.1455	-1.84	0.2500	-0.1542	-1.95	TA
BXRNFL		0.3718	-0.0077	-0.10	0.4102	0.0060	0.08	TA
HBALLN		0.4150	0.0355	0.45	0.4182	0.0140	0.18	XX
KBJCM4		0.2976	-0.0819	-1.04	0.4168	0.0126	0.16	IR
TX9RJ3		0.4490	0.0695	0.88	0.4756	0.0714	0.90	TN
VC3VZY		0.4266	0.0471	0.60	0.5028	0.0986	1.25	TA
ZB8ZBQ		0.4660	0.0865	1.09	0.3380	-0.0662	-0.84	TA

Summary Statistics	Sample GD05	Sample GD06
Grand Means	0.38 COF	0.40 COF
Stnd Dev Btwn Labs	0.08 COF	0.08 COF

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

IR	IMASS SP-2000	TA	Thwing-Albert Friction Tester
TN	TMI 32-07 Monitor/Slip and Friction	XX	Instrument make/model not specified by lab



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE05 Lab Mean	Sample GE05 Diff from Grand Mean	Sample GE05 CPV	Sample GE06 Lab Mean	Sample GE06 Diff from Grand Mean	Sample GE06 CPV	Instr Code
22FXN9		20.49	-0.31	-0.26	18.13	0.63	0.61	PP
26HXN7		20.87	0.07	0.06	17.48	-0.02	-0.02	LP
2AFDHM		20.47	-0.33	-0.28	17.42	-0.08	-0.08	PP
2L82DM		19.91	-0.89	-0.75	17.22	-0.29	-0.28	PP
3TK8PJ		22.15	1.34	1.12	18.15	0.64	0.62	PP
446YTN		19.75	-1.05	-0.88	16.36	-1.14	-1.10	LP
4MBHGB		20.92	0.12	0.10	17.29	-0.21	-0.21	PP
4PYUH2		20.52	-0.28	-0.24	16.80	-0.70	-0.68	XX
6UVQQT		21.27	0.47	0.39	17.95	0.45	0.43	PP
7VG2T6		22.15	1.35	1.13	19.19	1.69	1.63	PP
8RA7L8		19.41	-1.39	-1.17	16.03	-1.47	-1.42	LA
8W8F2F		21.15	0.35	0.29	17.45	-0.05	-0.05	LP
943XVH	X	33.91	13.11	10.96	28.58	11.07	10.69	LA
9QV2NA		21.20	0.40	0.33	16.69	-0.81	-0.79	TL
BNJZHT		19.15	-1.65	-1.38	16.89	-0.61	-0.59	HG
BWFNLC		19.00	-1.80	-1.51	17.50	0.00	0.00	LW
BXDYGE		21.54	0.74	0.62	17.97	0.46	0.44	LA
BXRNFL		21.38	0.58	0.48	18.39	0.89	0.85	WG
D63GXU		21.12	0.32	0.26	17.11	-0.39	-0.38	LP
DP3WWW		20.93	0.13	0.11	17.78	0.28	0.27	HG
F2C4XF		19.21	-1.59	-1.33	15.50	-2.00	-1.93	VM
FXCZ48		20.72	-0.08	-0.07	17.81	0.31	0.29	GL
GQ4ZZV		18.81	-1.99	-1.67	16.16	-1.34	-1.30	LP
HBALLN		20.70	-0.10	-0.09	17.90	0.40	0.38	GS
HF6P6U		20.01	-0.79	-0.66	17.22	-0.28	-0.27	LP
HK3WX4		22.42	1.62	1.35	19.43	1.93	1.86	LP
HW9798		20.80	0.00	0.00	17.49	-0.01	-0.01	TL
JHKE4W		21.58	0.78	0.65	18.17	0.66	0.64	PP
KL7ATB		23.52	2.71	2.27	19.31	1.80	1.74	PP
KP6Q66		18.99	-1.81	-1.52	14.97	-2.53	-2.45	GA
M76JK3		20.57	-0.23	-0.20	17.03	-0.48	-0.46	PP
N3WRMM		21.36	0.56	0.47	18.83	1.32	1.28	PP
UMZNM4		21.79	0.99	0.83	17.09	-0.42	-0.40	PP
V7CH8X	*	23.66	2.86	2.39	20.28	2.78	2.68	PP
VNBNHD		20.18	-0.62	-0.52	16.90	-0.60	-0.58	LP
VXZE3J		20.69	-0.11	-0.10	17.45	-0.05	-0.05	LP
VZAECX		22.03	1.23	1.03	17.94	0.44	0.42	GA
WJDJAQ		19.19	-1.61	-1.35	17.44	-0.06	-0.06	LP
ZB8ZBQ		22.72	1.92	1.60	17.92	0.41	0.40	VM
ZCQTGU		19.65	-1.15	-0.96	16.64	-0.86	-0.83	GA
ZM2GZR		20.15	-0.65	-0.55	16.93	-0.57	-0.55	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

Summary Statistics	Sample GE05	Sample GE06
Grand Means	20.80 sec/100 cc	17.50 sec/100 cc
Stnd Dev Btwn Labs	1.20 sec/100 cc	1.04 sec/100 cc

Statistics based on 40 of 41 reporting participants.

Comments on Assigned Data Flags for Test #370

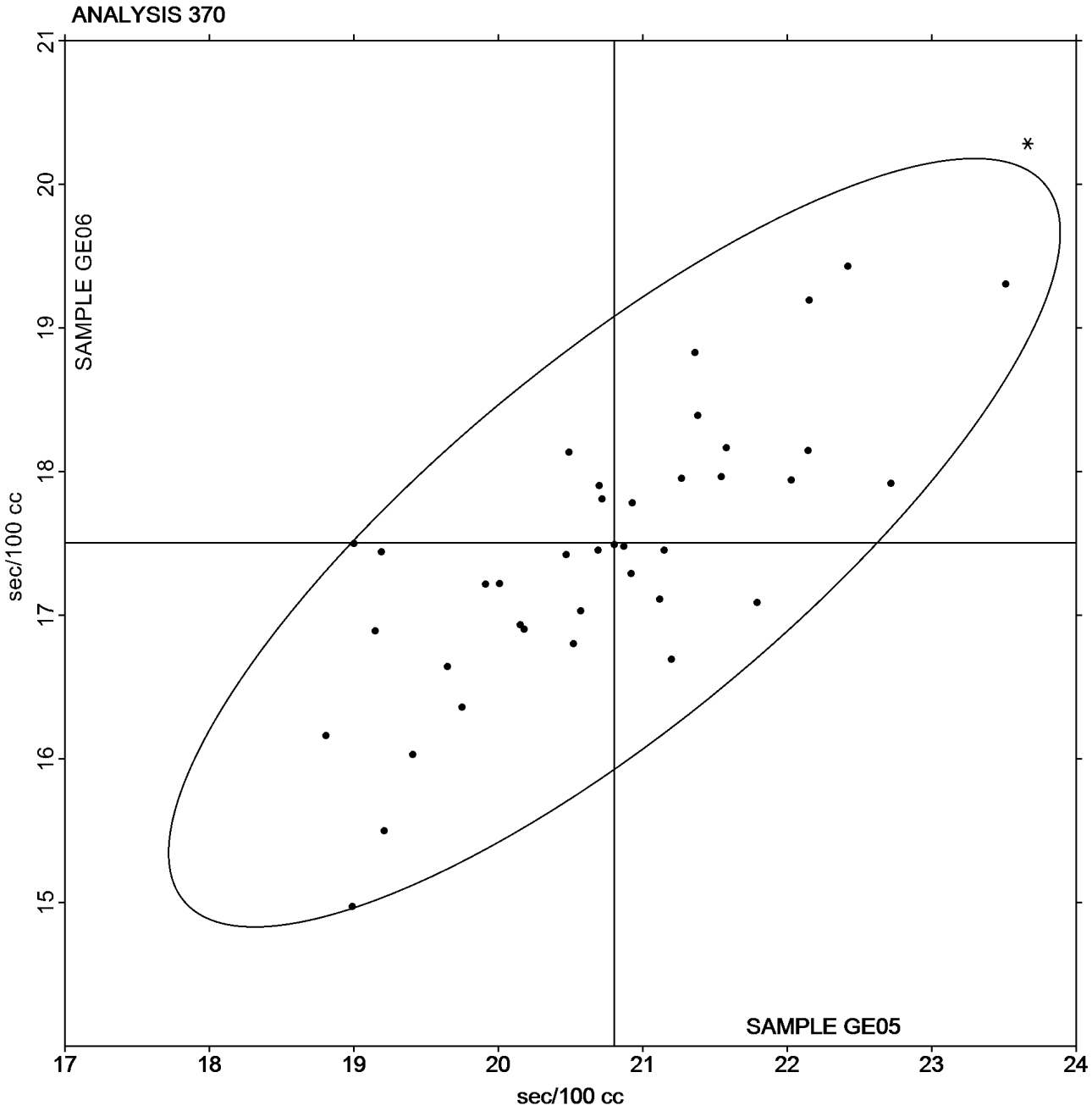
943XVH (X) - Extreme Data.

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

Grand Mean Sample GE05 = 20.804 sec/100 cc

Grand Mean Sample GE06 = 17.505 sec/100 cc



Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

TAPPI Official Test Method T547

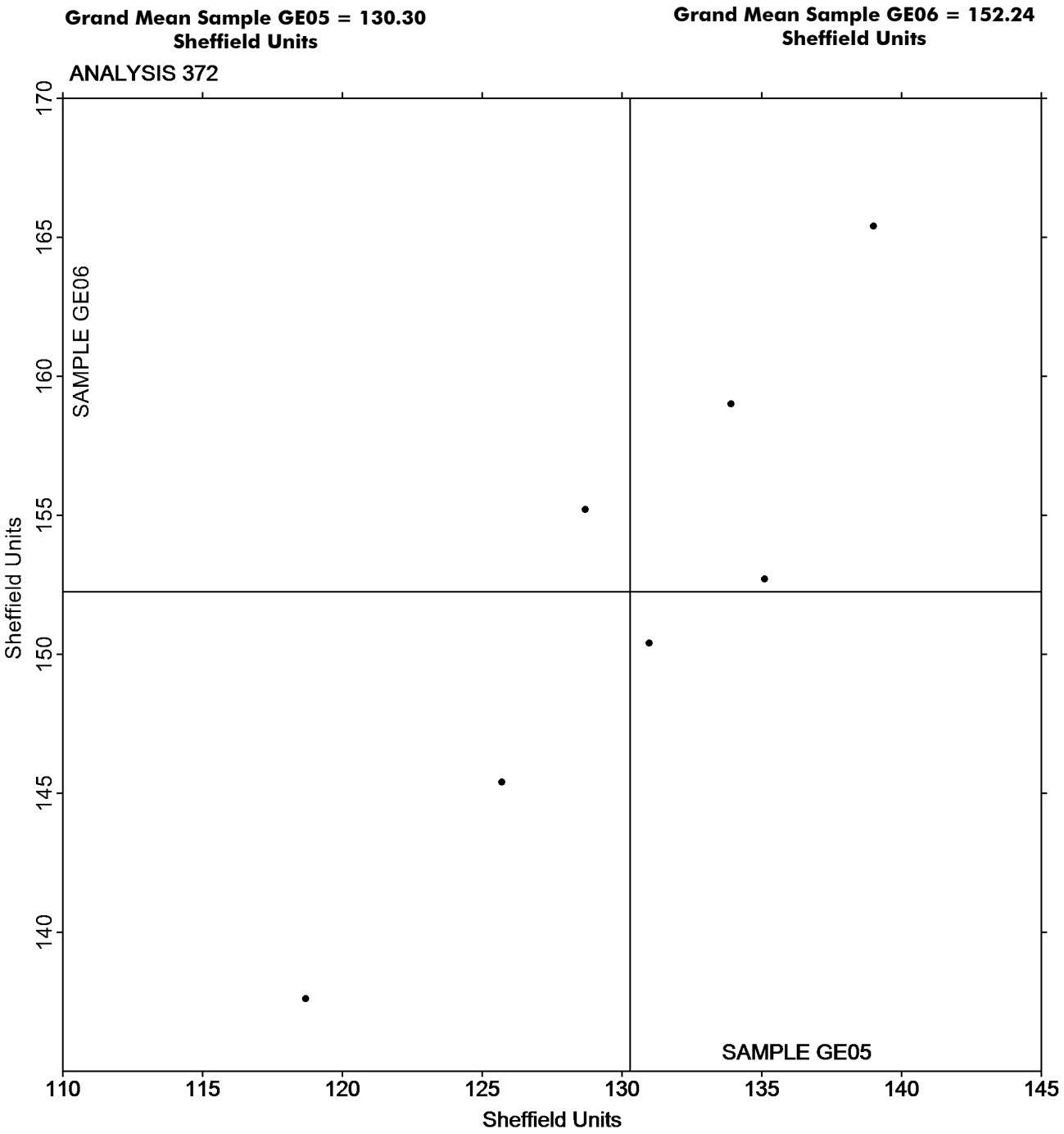
WebCode	Data Flag	Sample GE05 Lab Mean	Sample GE05 Diff from Grand Mean	Sample GE05 CPV	Sample GE06 Lab Mean	Sample GE06 Diff from Grand Mean	Sample GE06 CPV	Instr Code
2L82DM		131.0	0.7	0.10	150.4	-1.8	-0.20	PP
F2C4XF		128.7	-1.6	-0.24	155.2	3.0	0.33	PP
HBALLN		125.7	-4.6	-0.68	145.4	-6.8	-0.76	SH
NKFQTK		118.7	-11.6	-1.73	137.6	-14.6	-1.62	TT
PXNK94		139.0	8.7	1.30	165.4	13.2	1.45	LA
XQDGDM		133.9	3.6	0.54	159.0	6.8	0.75	HM
ZCQTGU		135.1	4.8	0.72	152.7	0.5	0.05	GA

Summary Statistics	Sample GE05	Sample GE06
Grand Means	130.30 Sheffield Units	152.24 Sheffield Units
Stnd Dev Btwn Labs	6.71 Sheffield Units	9.06 Sheffield Units

Statistics based on 7 of 7 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



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

TAPPI Official Test Method T555

WebCode	Data Flag	Sample GJ05 Lab Mean	Sample GJ05 Diff from Grand Mean	Sample GJ05 CPV	Sample GJ06 Lab Mean	Sample GJ06 Diff from Grand Mean	Sample GJ06 CPV	Instr Code
22FXN9		2.004	-0.138	-1.17	1.891	-0.146	-1.06	ZZ
2EPNC3		2.064	-0.078	-0.67	1.969	-0.068	-0.50	ZZ
336NAD		2.125	-0.017	-0.15	2.010	-0.027	-0.20	ZZ
4MBHGB		2.093	-0.049	-0.42	1.958	-0.079	-0.58	ZZ
6DJDAV		2.034	-0.108	-0.92	1.934	-0.103	-0.75	ZZ
6VHEZ8		2.136	-0.006	-0.05	2.007	-0.030	-0.22	ZZ
7VG2T6		2.208	0.066	0.56	2.169	0.132	0.95	ZZ
7YH8AW		2.213	0.071	0.60	2.043	0.006	0.04	ZZ
9FCMK8		2.274	0.132	1.12	2.204	0.167	1.21	ZZ
9Z24NZ		2.178	0.036	0.30	2.053	0.016	0.11	ZZ
BXRNFL		2.100	-0.042	-0.36	1.815	-0.222	-1.61	ZZ
BZFZGC		2.226	0.084	0.71	1.985	-0.052	-0.38	ZZ
F2C4XF		2.079	-0.063	-0.54	2.100	0.063	0.45	ZZ
JHKE4W		2.309	0.167	1.41	2.282	0.245	1.77	ZZ
JWNTBL		2.178	0.036	0.30	2.056	0.019	0.13	ZZ
MHW7V6		2.041	-0.101	-0.86	1.923	-0.114	-0.83	ZZ
N3WRMM		2.117	-0.025	-0.22	2.156	0.119	0.86	ZZ
NXNAQE		2.110	-0.032	-0.27	1.787	-0.250	-1.81	ZZ
TN22TK	*	1.756	-0.386	-3.28	1.750	-0.287	-2.08	ZZ
TXM4BF		2.222	0.080	0.68	2.165	0.128	0.92	ZZ
UEAWL6		2.168	0.026	0.22	2.084	0.047	0.34	ZZ
UWE4Z8		2.140	-0.002	-0.02	2.077	0.040	0.29	ZZ
VBA8H3		2.231	0.089	0.75	2.202	0.165	1.19	ZZ
WKDHPT		2.352	0.210	1.78	2.195	0.158	1.14	ZZ
ZBW6XY		2.202	0.060	0.51	2.121	0.084	0.60	ZZ

Summary Statistics	Sample GJ05	Sample GJ06
Grand Means	2.14 Microns	2.04 Microns
Stnd Dev Btwn Labs	0.12 Microns	0.14 Microns

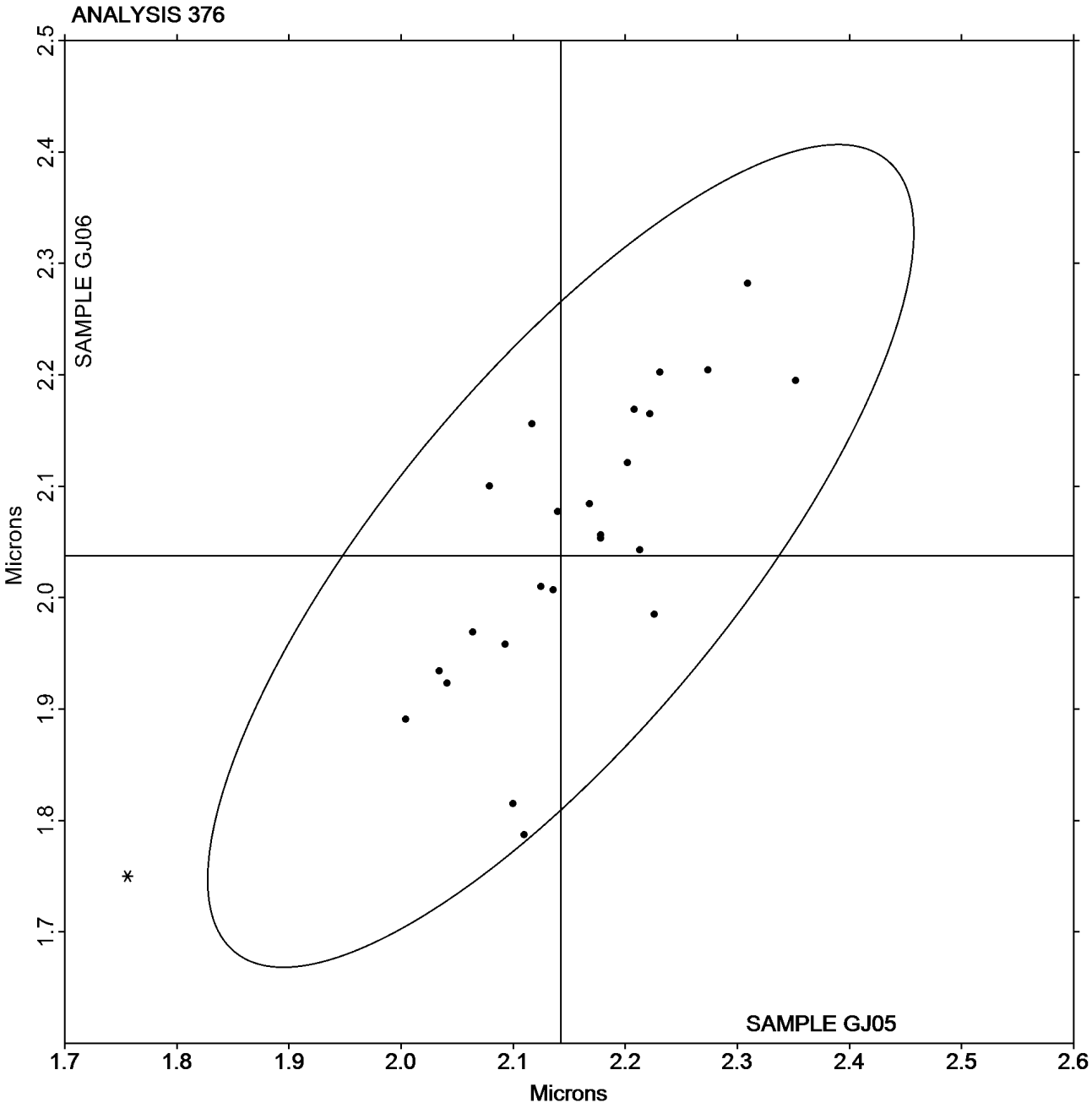
Statistics based on 25 of 25 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GJ05 = 2.1424 Microns

Grand Mean Sample GJ06 = 2.0374 Microns



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 GK05 Lab Mean	Sample GK05 Diff from Grand Mean	Sample GK05 CPV	Sample GK06 Lab Mean	Sample GK06 Diff from Grand Mean	Sample GK06 CPV	Instr Code
2AFDHM		5.756	-0.188	-0.92	6.048	-0.144	-0.92	ZZ
3TK8PJ		6.128	0.184	0.89	6.125	-0.066	-0.43	ZZ
6DJDAV		5.818	-0.126	-0.61	6.124	-0.068	-0.43	ZZ
BXRNFL		5.820	-0.124	-0.60	6.039	-0.153	-0.98	ZZ
MHW7V6		5.745	-0.199	-0.97	6.237	0.045	0.29	ZZ
N3WRMM		6.324	0.380	1.85	6.522	0.330	2.13	ZZ
TX9RJ3		5.917	-0.027	-0.13	6.179	-0.013	-0.08	ZZ
VC3VZY		6.046	0.102	0.50	6.258	0.066	0.43	ZZ
ZM2GZR	X	10.313	4.369	21.26	11.219	5.028	32.38	ZZ

Summary Statistics	Sample GK05	Sample GK06
Grand Means	5.94 Microns	6.19 Microns
Stnd Dev Btwn Labs	0.21 Microns	0.16 Microns

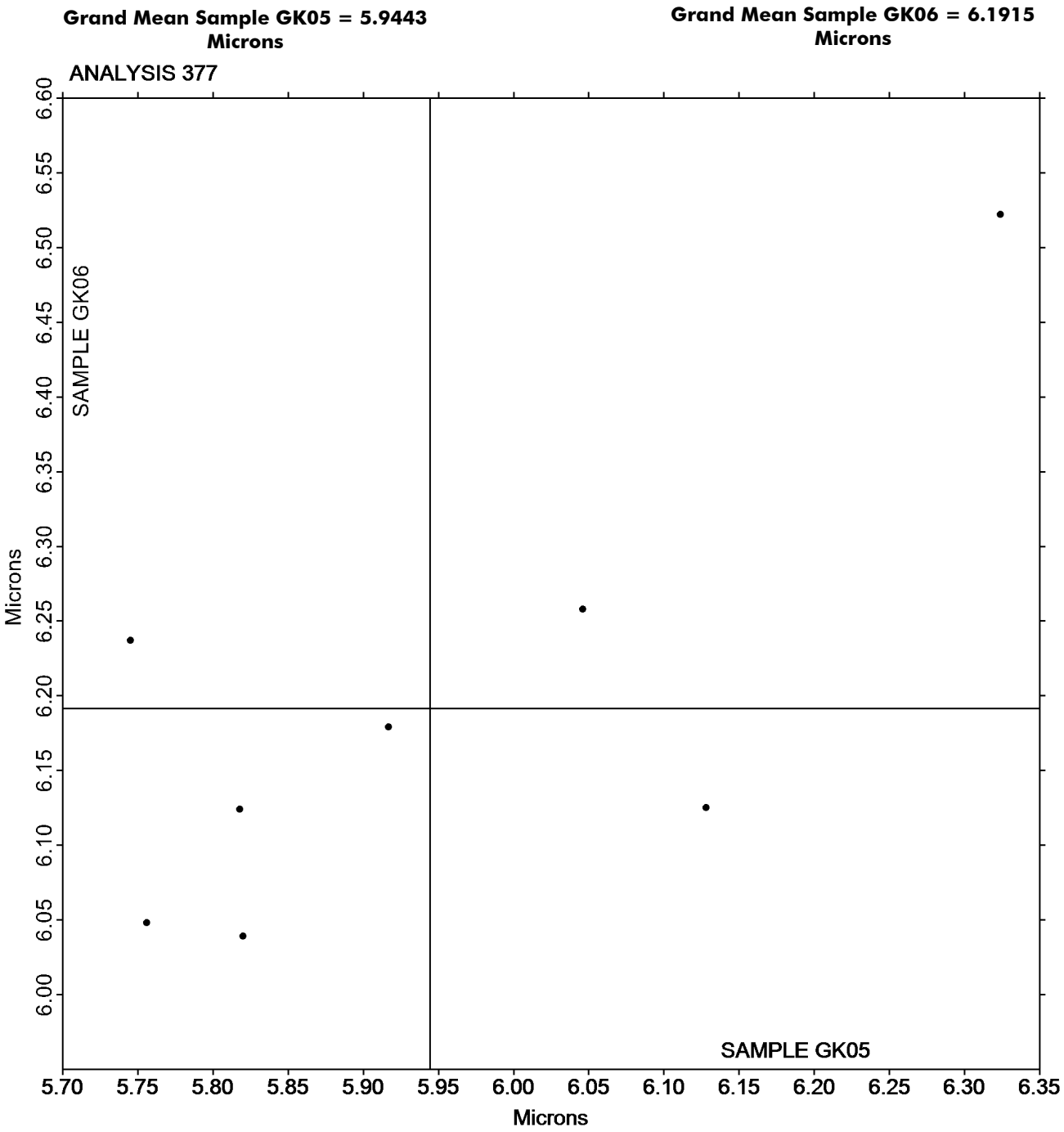
Statistics based on 8 of 9 reporting participants.

Comments on Assigned Data Flags for Test #377

ZM2GZR (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL05 Lab Mean	Sample GL05 Diff from Grand Mean	Sample GL05 CPV	Sample GL06 Lab Mean	Sample GL06 Diff from Grand Mean	Sample GL06 CPV	Instr Code
22FXN9		129.9	5.5	0.44	133.2	0.3	0.02	PP
22JJ2G		119.0	-5.4	-0.44	120.4	-12.5	-1.00	PP
26HXN7	X	163.3	38.9	3.14	188.2	55.3	4.42	LW
2AFDHM		133.1	8.7	0.70	140.6	7.7	0.62	PP
2L82DM		125.4	1.0	0.08	134.0	1.1	0.09	TT
2WMZTQ		147.3	22.9	1.85	141.3	8.4	0.67	LA
33ULME		115.7	-8.7	-0.70	120.2	-12.7	-1.01	PP
3TK8PJ		119.5	-4.9	-0.39	133.7	0.8	0.07	PP
4UCLTN		95.4	-29.0	-2.34	103.7	-29.2	-2.33	LA
6DJDAV		120.3	-4.1	-0.33	128.6	-4.3	-0.34	LB
6UVQQT		126.1	1.7	0.14	136.4	3.5	0.28	SH
7VG2T6		118.8	-5.6	-0.45	131.0	-1.9	-0.15	PP
7YH8AW		128.4	4.0	0.33	137.6	4.7	0.38	PP
8RA7L8		117.7	-6.7	-0.54	123.5	-9.4	-0.75	LA
943XVH		110.2	-14.2	-1.15	117.5	-15.4	-1.23	LA
9FCMK8		113.6	-10.8	-0.87	117.5	-15.4	-1.23	PP
9Z24NZ	*	156.3	31.9	2.58	159.8	26.9	2.15	TT
BNJZHT		125.6	1.2	0.10	130.9	-2.0	-0.16	TS
BWFNLC		124.5	0.1	0.01	137.6	4.7	0.38	TS
BXRNFL		143.0	18.6	1.50	149.0	16.1	1.29	XX
DP3WWW	*	106.6	-17.8	-1.44	136.0	3.1	0.25	HM
F2C4XF		124.6	0.2	0.02	125.6	-7.3	-0.58	VM
HBALLN		118.2	-6.2	-0.50	126.9	-6.0	-0.48	XX
HK3WX4		109.6	-14.8	-1.19	127.7	-5.2	-0.41	LW
HW9798		138.0	13.6	1.10	143.0	10.1	0.81	SS
JHKE4W		134.0	9.6	0.77	143.9	11.0	0.88	PP
JWNTBL	X	181.5	57.1	4.61	184.5	51.6	4.12	GL
K4MMXL		124.5	0.1	0.01	135.9	3.0	0.24	GA
KL7ATB	X	130.9	6.5	0.52	98.1	-34.8	-2.78	PP
M76JK3		117.6	-6.8	-0.55	138.2	5.3	0.42	PP
MHW7V6		116.6	-7.8	-0.63	123.5	-9.4	-0.75	LW
N3WRMM		132.0	7.6	0.62	140.8	7.9	0.63	LW
NXNAQE		133.2	8.8	0.71	140.0	7.1	0.57	LA
PXNK94		124.2	-0.2	-0.01	127.8	-5.1	-0.41	LA
TN22TK		128.1	3.7	0.30	133.3	0.4	0.03	LW
TX9RJ3		130.3	5.9	0.48	150.3	17.4	1.39	LW
UEAWL6		139.9	15.5	1.25	141.5	8.6	0.69	PP
UMZNM4		119.9	-4.4	-0.36	124.6	-8.3	-0.67	PP
V7CH8X		98.2	-26.2	-2.11	101.3	-31.6	-2.52	PP
VBA8H3		118.2	-6.2	-0.50	118.3	-14.6	-1.16	PP
VC3VZY	*	107.1	-17.3	-1.40	136.3	3.5	0.28	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL05 Lab Mean	Sample GL05 Diff from Grand Mean	Sample GL05 CPV	Sample GL06 Lab Mean	Sample GL06 Diff from Grand Mean	Sample GL06 CPV	Instr Code
VNBNHD		125.6	1.2	0.10	126.7	-6.2	-0.49	XX
VXZE3J		122.2	-2.2	-0.18	130.6	-2.3	-0.18	LW
VZAECX		131.2	6.9	0.55	136.8	3.9	0.31	GA
ZB8ZBQ		115.8	-8.5	-0.69	121.9	-11.0	-0.88	PP
ZBW6XY		136.1	11.7	0.95	139.7	6.8	0.54	PP
ZCQTGU		125.7	1.3	0.11	143.5	10.6	0.85	PP
ZM2GZR	*	150.1	25.7	2.08	169.7	36.8	2.94	PP

Summary Statistics	Sample GL05	Sample GL06
Grand Means	124.39 Sheffield	132.89 Sheffield
Stnd Dev Btwn Labs	12.38 Sheffield	12.53 Sheffield

Statistics based on 45 of 48 reporting participants.

Comments on Assigned Data Flags for Test #378

KL7ATB (X) - Data for sample GL06 are low.

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

26HXN7 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

Analysis Notes:

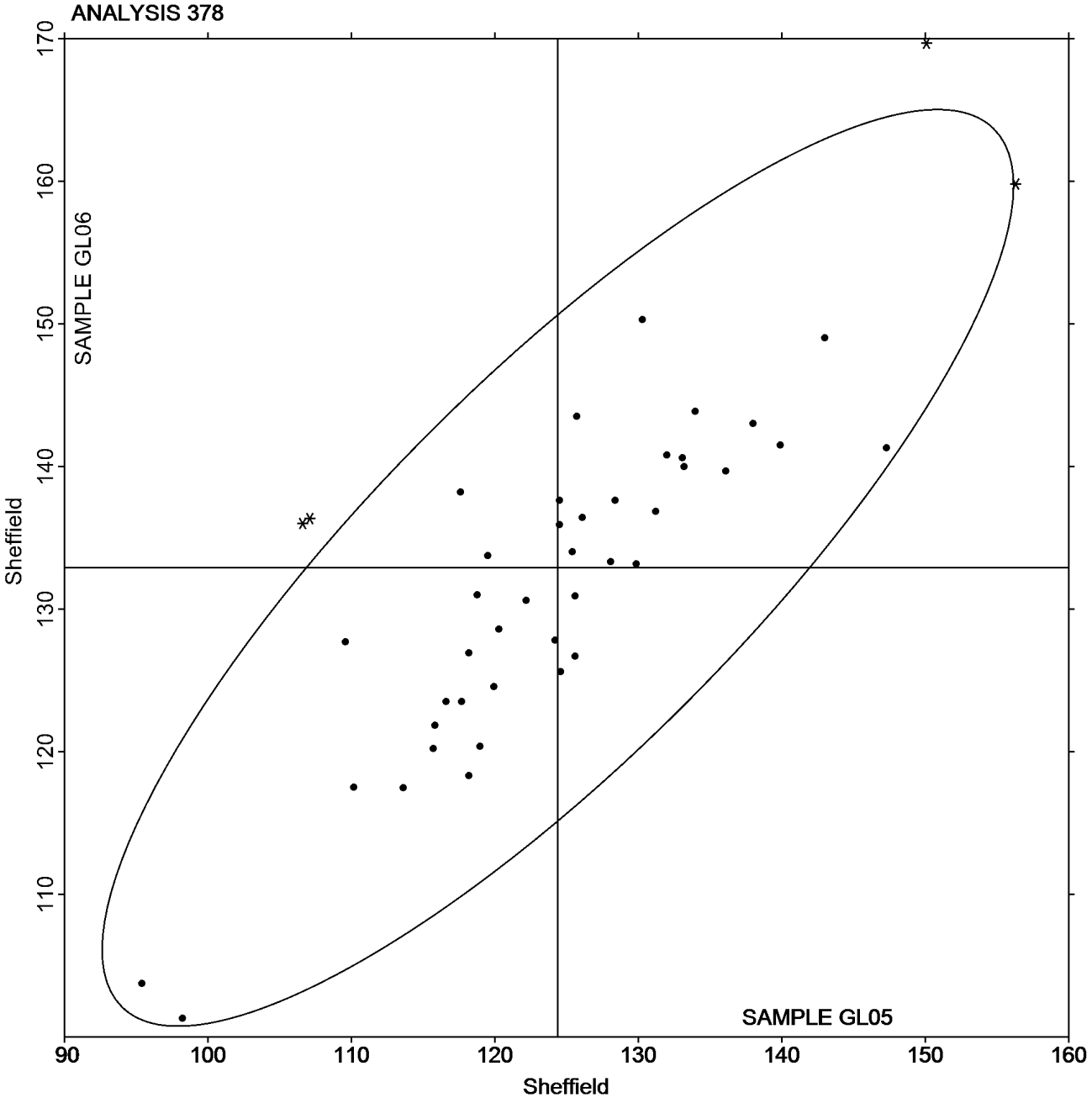
7YH8AW - One determination removed from the Lab Mean for Sample GL05 (TAPPI T1205 using Grubbs test at 1% risk level).

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		

Grand Mean Sample GL05 = 124.39
Sheffield

Grand Mean Sample GL06 = 132.89
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

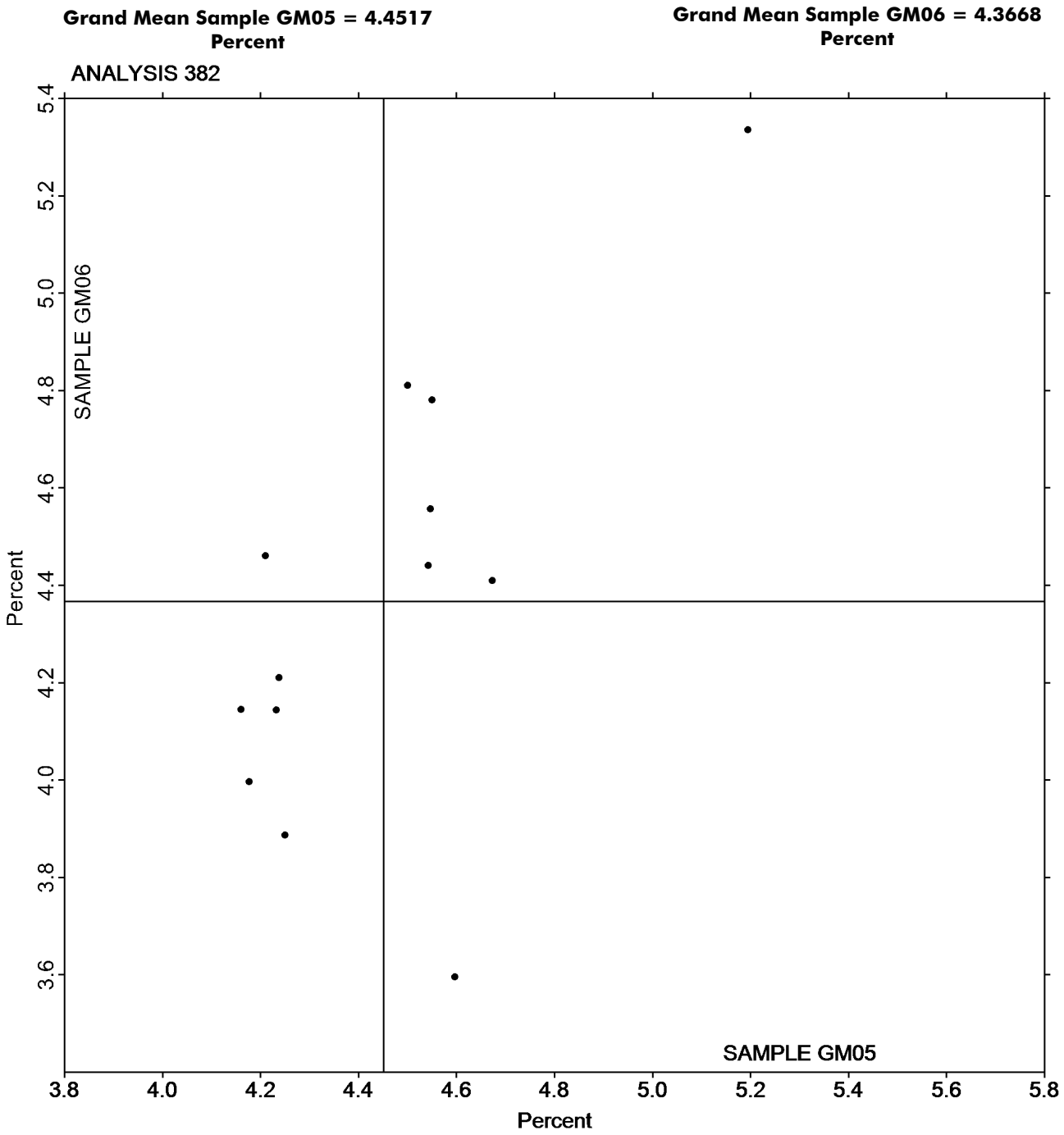
WebCode	Data Flag	Sample GM05 Lab Mean	Sample GM05 Diff from Grand Mean	Sample GM05 CPV	Sample GM06 Lab Mean	Sample GM06 Diff from Grand Mean	Sample GM06 CPV	Instr Code
26HXN7		4.177	-0.275	-0.95	3.996	-0.371	-0.82	ZZ
2CFPVE		4.250	-0.202	-0.70	3.887	-0.480	-1.06	ZZ
3TK8PJ		4.547	0.096	0.33	4.556	0.189	0.42	ZZ
42RB83		4.160	-0.292	-1.01	4.145	-0.222	-0.49	ZZ
9Z24NZ		5.195	0.743	2.57	5.335	0.968	2.15	ZZ
B6N8WV		4.233	-0.219	-0.76	4.144	-0.223	-0.49	ZZ
D6EEMC		4.597	0.145	0.50	3.596	-0.771	-1.71	ZZ
JKE3LT		4.673	0.221	0.76	4.409	0.042	0.09	ZZ
L9BNEQ		4.500	0.048	0.17	4.810	0.443	0.98	ZZ
QPHLHX		4.238	-0.214	-0.74	4.211	-0.156	-0.35	ZZ
RV9YCY		4.550	0.098	0.34	4.780	0.413	0.92	ZZ
W6U29A		4.210	-0.242	-0.83	4.460	0.093	0.21	ZZ
XQDGDM		4.542	0.090	0.31	4.440	0.073	0.16	ZZ

Summary Statistics	Sample GM05	Sample GM06
Grand Means	4.45 Percent	4.37 Percent
Stnd Dev Btwn Labs	0.29 Percent	0.45 Percent

Statistics based on 13 of 13 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

WebCode	Data Flag	Sample GN05 Lab Mean	Sample GN05 Diff from Grand Mean	Sample GN05 CPV	Sample GN06 Lab Mean	Sample GN06 Diff from Grand Mean	Sample GN06 CPV	Instr Code
22FXN9		93.97	0.28	0.68	93.45	-0.21	-0.50	ZZ
22JJ2G		93.52	-0.17	-0.40	93.37	-0.29	-0.69	ZZ
2AFDHM		94.15	0.46	1.11	93.59	-0.07	-0.17	ZZ
2L82DM		93.59	-0.10	-0.24	93.76	0.10	0.25	ZZ
336NAD		93.16	-0.53	-1.27	93.55	-0.11	-0.26	ZZ
33ULME		93.80	0.11	0.26	94.01	0.35	0.85	ZZ
3TK8PJ		94.16	0.47	1.13	94.26	0.60	1.46	ZZ
4MBHGB		93.71	0.02	0.05	93.82	0.16	0.40	ZZ
6UVQQT		93.14	-0.55	-1.32	92.82	-0.84	-2.02	ZZ
6VHEZ8		94.06	0.37	0.90	93.84	0.19	0.45	ZZ
7VG2T6		93.96	0.27	0.66	93.60	-0.06	-0.13	ZZ
943XVH		94.28	0.59	1.43	94.23	0.57	1.39	ZZ
BURCKL		94.11	0.42	1.02	94.12	0.46	1.12	ZZ
BWFNLC		94.08	0.39	0.95	94.20	0.54	1.31	ZZ
C4UUVN		93.74	0.05	0.13	94.15	0.49	1.19	ZZ
DP3WWW		93.16	-0.53	-1.27	93.15	-0.51	-1.22	ZZ
HBALLN		93.31	-0.38	-0.91	93.35	-0.31	-0.74	ZZ
HW9798		93.01	-0.68	-1.64	92.96	-0.70	-1.68	ZZ
KL7ATB		93.66	-0.03	-0.07	93.52	-0.14	-0.34	ZZ
M76JK3		93.85	0.16	0.39	93.63	-0.03	-0.06	ZZ
NKFQTK		94.28	0.59	1.43	94.40	0.74	1.80	ZZ
PXNK94		94.21	0.52	1.26	93.81	0.15	0.37	ZZ
V7CH8X		93.18	-0.51	-1.23	93.20	-0.45	-1.10	ZZ
VC3VZY		93.88	0.19	0.46	93.76	0.10	0.24	ZZ
WKDHPT		93.52	-0.17	-0.40	93.72	0.06	0.15	ZZ
ZB8ZBQ		92.96	-0.72	-1.75	93.01	-0.65	-1.56	ZZ
ZCQTGU		93.57	-0.12	-0.28	93.72	0.06	0.15	ZZ
ZM2GZR		93.24	-0.45	-1.08	93.39	-0.27	-0.64	ZZ

Summary Statistics	Sample GN05	Sample GN06
Grand Means	93.69 Percent	93.66 Percent
Stnd Dev Btwn Labs	0.41 Percent	0.41 Percent

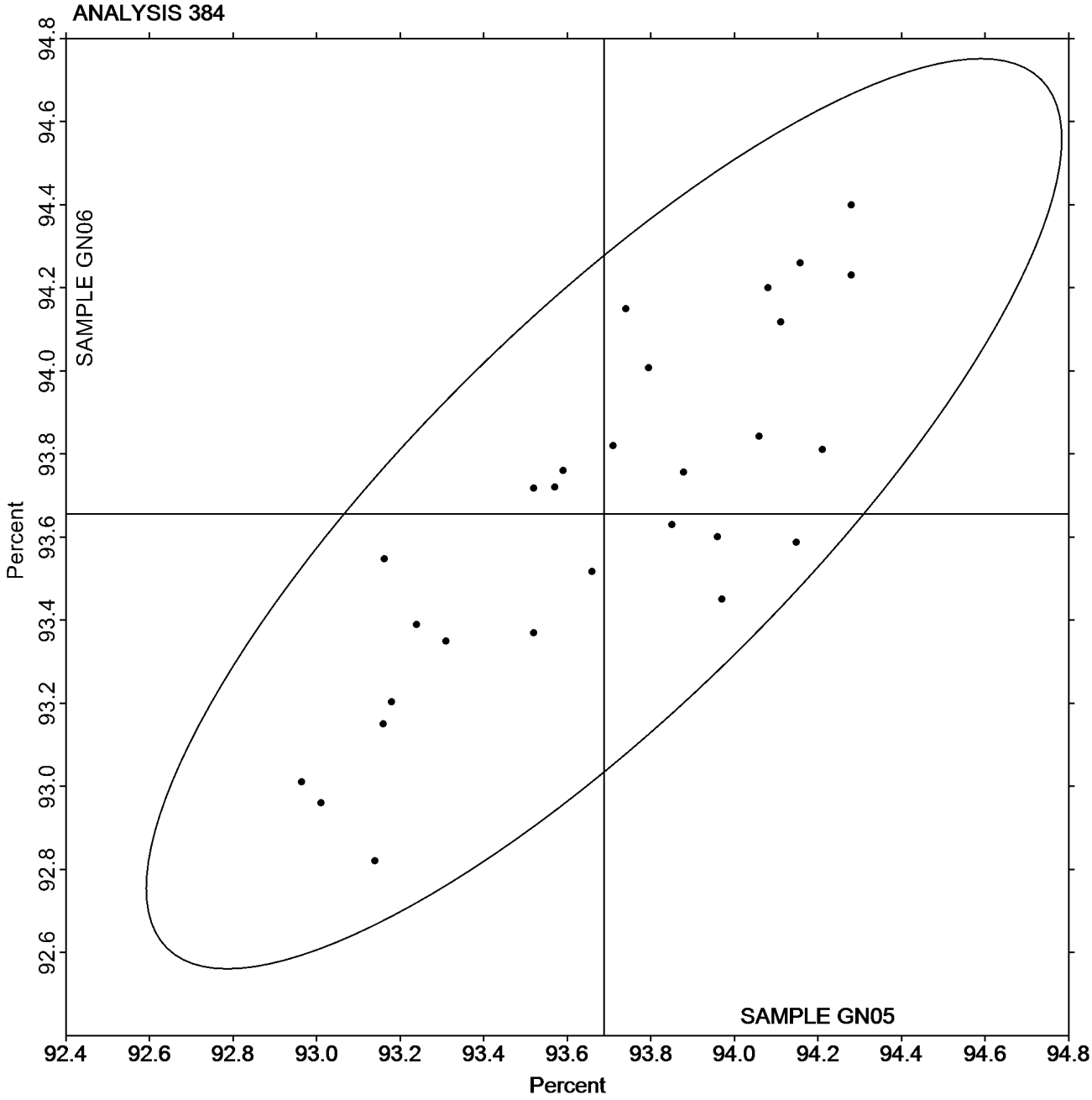
Statistics based on 28 of 28 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GN05 = 93.688
Percent

Grand Mean Sample GN06 = 93.656
Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

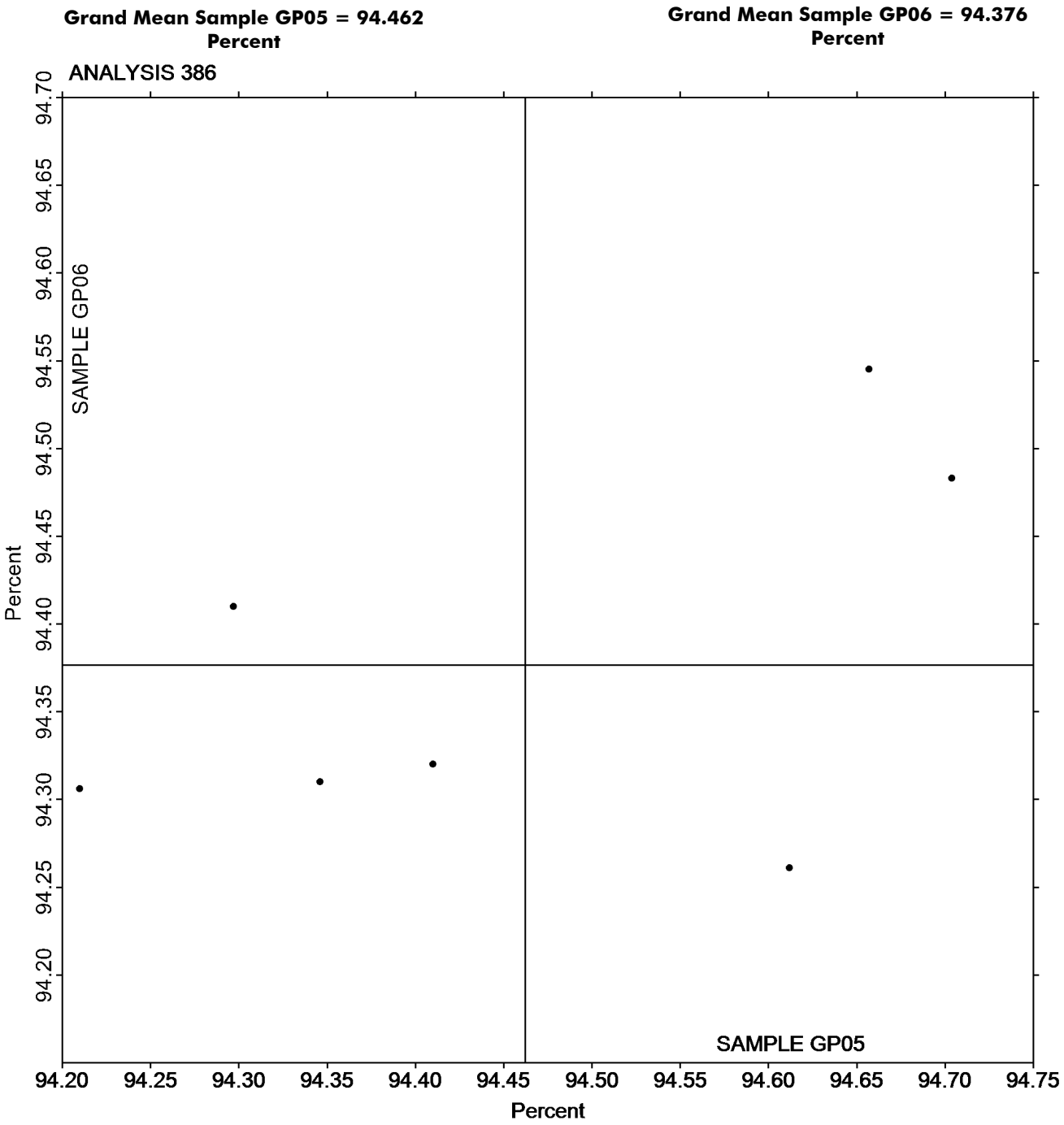
WebCode	Data Flag	Sample GP05 Lab Mean	Sample GP05 Diff from Grand Mean	Sample GP05 CPV	Sample GP06 Lab Mean	Sample GP06 Diff from Grand Mean	Sample GP06 CPV	Instr Code
26HXN7		94.66	0.19	1.00	94.55	0.17	1.60	ZZ
2EPNC3		94.35	-0.12	-0.60	94.31	-0.07	-0.63	ZZ
8W8F2F		94.61	0.15	0.77	94.26	-0.12	-1.09	ZZ
GQ4ZZV		94.41	-0.05	-0.27	94.32	-0.06	-0.53	ZZ
HF6P6U		94.21	-0.25	-1.30	94.31	-0.07	-0.67	ZZ
RFQHWF		94.70	0.24	1.25	94.48	0.11	1.01	ZZ
RRNCF6		94.30	-0.17	-0.85	94.41	0.03	0.32	ZZ

Summary Statistics	Sample GP05	Sample GP06
Grand Means	94.46 Percent	94.38 Percent
Stnd Dev Btwn Labs	0.19 Percent	0.11 Percent

Statistics based on 7 of 7 reporting participants.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 390
Directional Brightness
TAPPI Official Test Method T452

WebCode	Data Flag	Sample GR05 Lab Mean	Sample GR05 Diff from Grand Mean	Sample GR05 CPV	Sample GR06 Lab Mean	Sample GR06 Diff from Grand Mean	Sample GR06 CPV	Instr Code
22FXN9		82.81	-0.82	-0.42	82.71	-0.92	-0.48	TT
22JJ2G		82.18	-1.45	-0.75	82.33	-1.30	-0.68	XX
336NAD		82.14	-1.49	-0.77	82.15	-1.47	-0.77	TS
33ULME		82.17	-1.46	-0.75	82.16	-1.46	-0.76	TP
4MBHGB		82.29	-1.34	-0.69	82.26	-1.37	-0.71	TD
7VG2T6		82.48	-1.15	-0.59	82.45	-1.17	-0.61	TP
7YH8AW		82.11	-1.52	-0.78	82.24	-1.38	-0.72	TP
9FCMK8		84.60	0.97	0.50	84.22	0.60	0.31	TS
BNJZHT		81.94	-1.69	-0.87	82.01	-1.61	-0.84	TS
HBALLN		85.05	1.42	0.73	85.04	1.42	0.74	PE
HW9798		84.56	0.93	0.48	84.71	1.09	0.57	TP
JWNTBL		80.99	-2.64	-1.36	81.05	-2.57	-1.34	TS
KL7ATB		81.77	-1.86	-0.96	81.65	-1.98	-1.03	TP
M76JK3		84.45	0.82	0.42	84.56	0.94	0.49	TT
MHW7V6		85.15	1.52	0.78	84.77	1.15	0.60	TP
N3WRMM		83.95	0.32	0.17	83.97	0.35	0.18	HG
TN22TK		86.74	3.11	1.61	86.76	3.14	1.63	HZ
UEAWL6		83.95	0.32	0.17	83.94	0.31	0.16	HG
VBA8H3		84.34	0.71	0.36	84.43	0.80	0.42	TP
VNBNHD	*	89.60	5.97	3.08	89.60	5.98	3.11	XX
ZBW6XY		83.34	-0.29	-0.15	83.38	-0.25	-0.13	HG
ZCQTGU		83.26	-0.37	-0.19	83.31	-0.31	-0.16	XC

Summary Statistics	Sample GR05	Sample GR06
Grand Means	83.63 Percent	83.62 Percent
Stnd Dev Btwn Labs	1.94 Percent	1.92 Percent

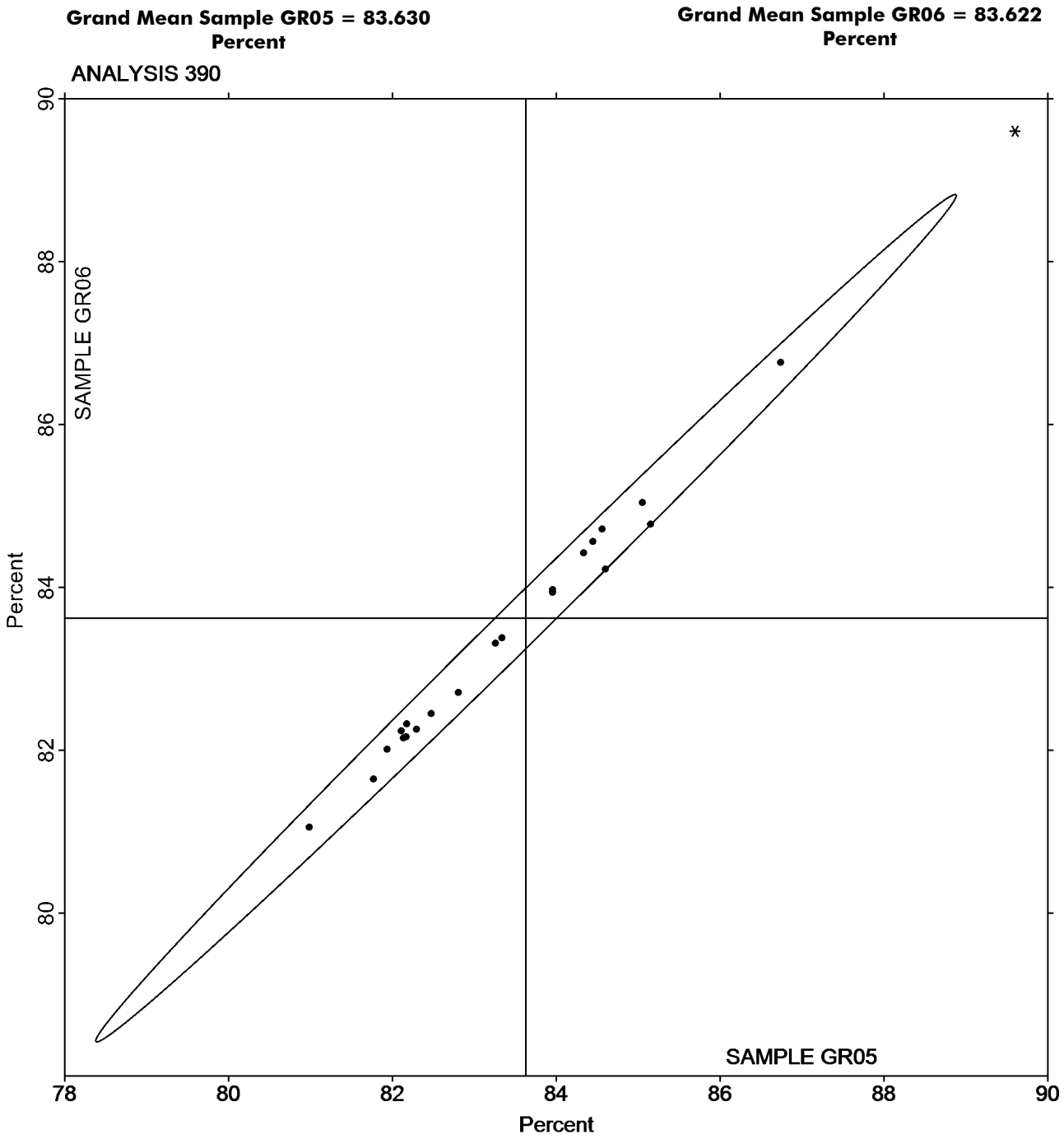
Statistics based on 22 of 22 reporting participants.

Analysis Notes:

KL7ATB - One determination removed from the Lab Mean for Sample GR05 (TAPPI T1205 using Grubbs test at 1% risk level).

Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
PE	Photovolt 577	TD	Technidyne Color Touch 45X
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		



Paper & Paperboard Interlaboratory Testing Program

Report #3182G, June 2022

Analysis 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

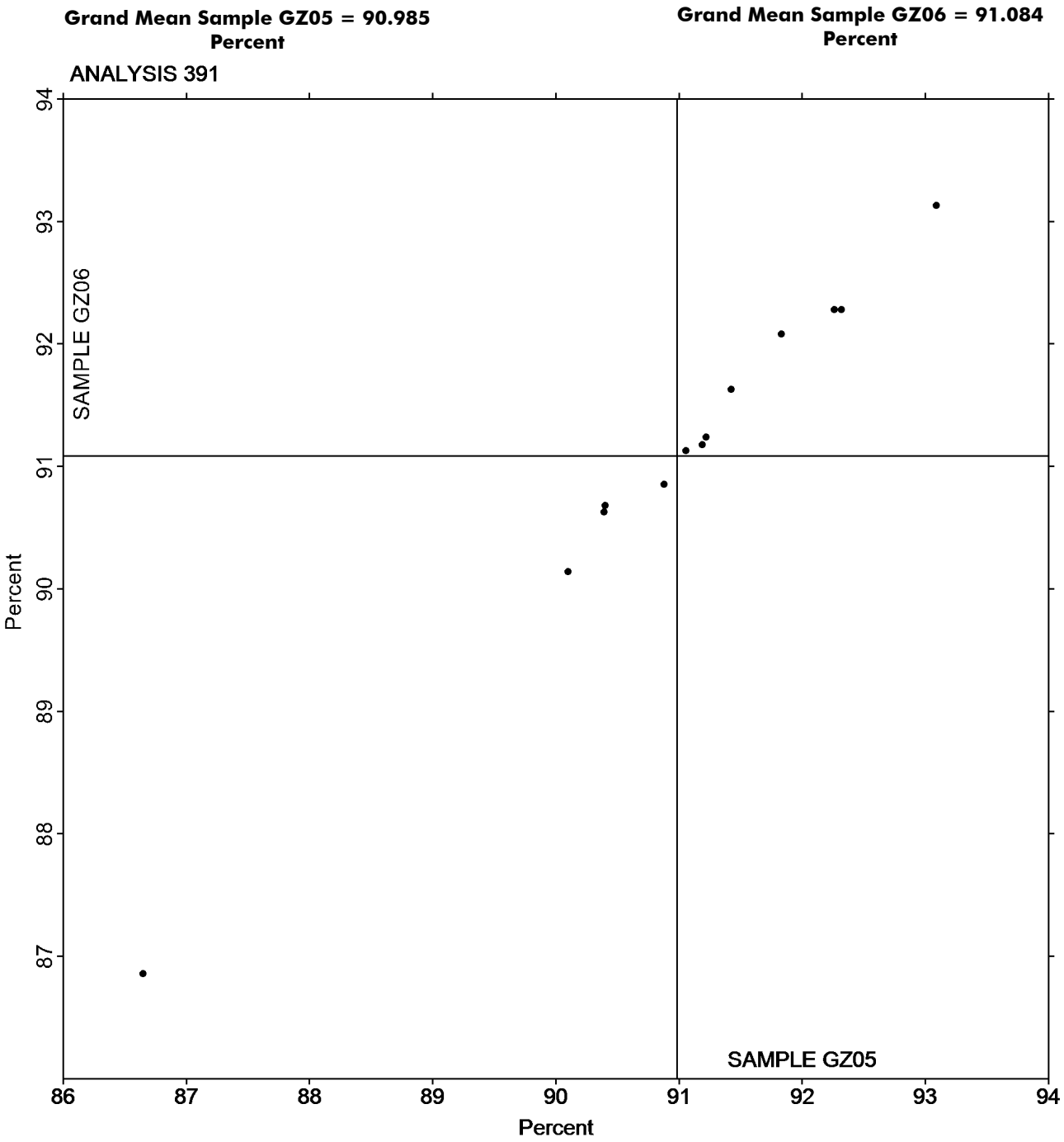
WebCode	Data Flag	Sample GZ05 Lab Mean	Sample GZ05 Diff from Grand Mean	Sample GZ05 CPV	Sample GZ06 Lab Mean	Sample GZ06 Diff from Grand Mean	Sample GZ06 CPV	Instr Code
22FXN9		91.83	0.84	0.54	92.08	0.99	0.66	EF
2AFDHM		90.88	-0.11	-0.07	90.85	-0.23	-0.15	TS
3TK8PJ		90.39	-0.59	-0.38	90.63	-0.46	-0.30	TS
6VHEZ8		91.42	0.44	0.28	91.63	0.54	0.36	TS
943XVH		91.06	0.07	0.05	91.13	0.04	0.03	TD
BNJZHT		91.19	0.20	0.13	91.17	0.09	0.06	TS
BWFNLC		91.22	0.23	0.15	91.24	0.16	0.10	TS
C4UUVN		92.26	1.27	0.82	92.28	1.20	0.79	TD
NKFQTK		93.09	2.10	1.35	93.13	2.05	1.35	TT
V7CH8X		90.40	-0.59	-0.38	90.68	-0.40	-0.27	PP
WKDHPT		86.65	-4.34	-2.78	86.86	-4.23	-2.79	PP
ZB8ZBQ		90.10	-0.89	-0.57	90.14	-0.94	-0.62	PP
ZM2GZR		92.32	1.33	0.86	92.28	1.20	0.79	TT

Summary Statistics	Sample GZ05	Sample GZ06
Grand Means	90.99 Percent	91.08 Percent
Stnd Dev Btwn Labs	1.56 Percent	1.51 Percent

Statistics based on 13 of 13 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		



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 392
Diffuse Brightness
TAPPI Official Test Method T525

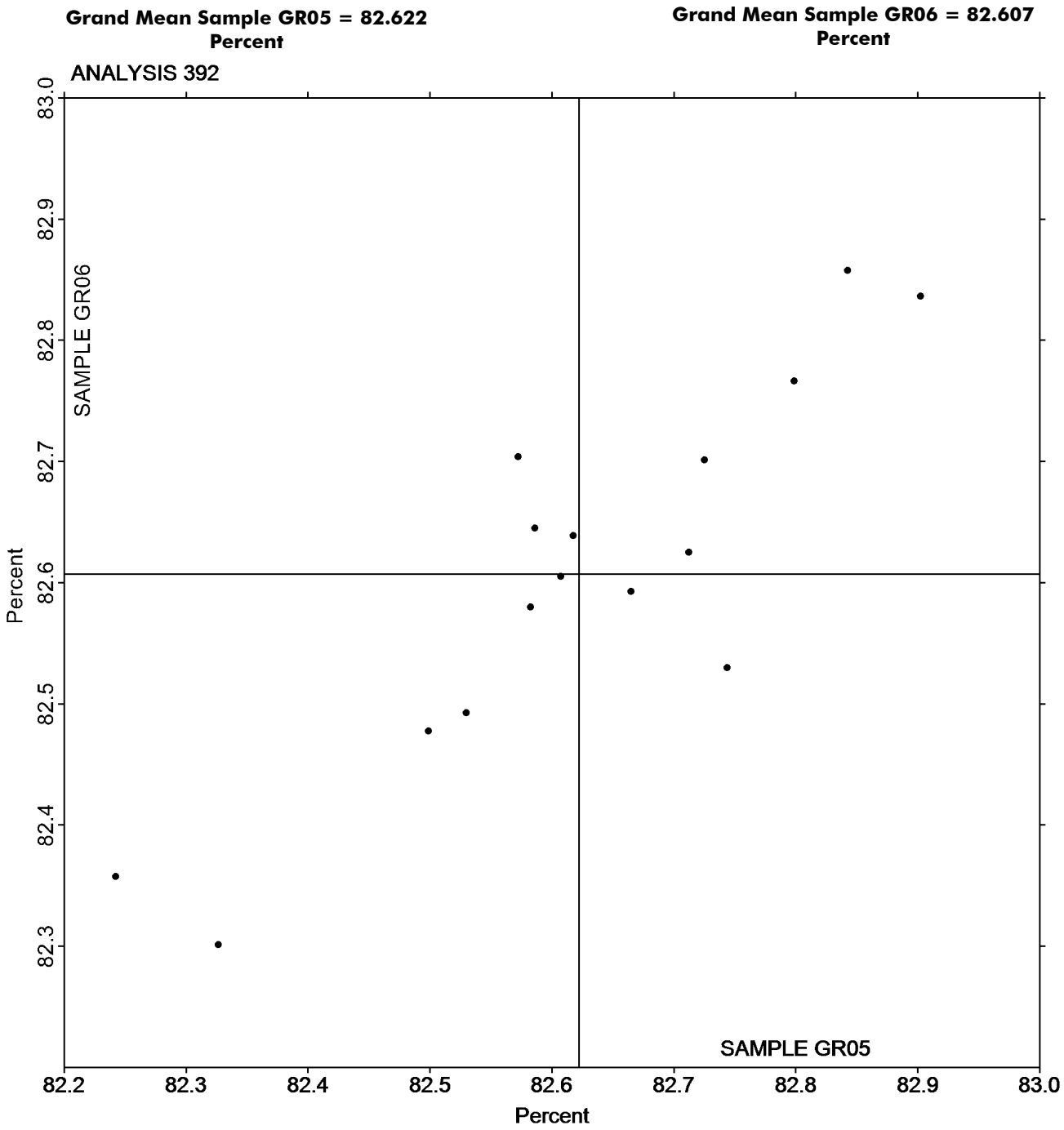
WebCode	Data Flag	Sample GR05 Lab Mean	Sample GR05 Diff from Grand Mean	Sample GR05 CPV	Sample GR06 Lab Mean	Sample GR06 Diff from Grand Mean	Sample GR06 CPV	Instr Code
26HXN7		82.53	-0.09	-0.53	82.49	-0.11	-0.74	LE
2EPNC3		82.90	0.28	1.61	82.84	0.23	1.49	AC
2L82DM		82.58	-0.04	-0.23	82.58	-0.03	-0.17	TC
7YH8AW		82.80	0.18	1.01	82.77	0.16	1.04	LT
8W8F2F		82.74	0.12	0.70	82.53	-0.08	-0.50	TC
9FCMK8		82.50	-0.12	-0.71	82.48	-0.13	-0.84	TC
9Z24NZ		82.33	-0.30	-1.70	82.30	-0.31	-1.99	LE
BZFZGC		82.84	0.22	1.27	82.86	0.25	1.63	TC
CTUDYR		82.71	0.09	0.52	82.63	0.02	0.12	LE
DGEWQL		82.67	0.04	0.25	82.59	-0.01	-0.09	TC
HK3WX4		82.62	0.00	-0.03	82.64	0.03	0.21	EF
MHW7V6		82.57	-0.05	-0.28	82.70	0.10	0.63	EG
N3WRMM		82.24	-0.38	-2.18	82.36	-0.25	-1.62	TC
RRNCF6		82.59	-0.04	-0.21	82.65	0.04	0.25	LA
UWE4Z8		82.61	-0.01	-0.08	82.61	0.00	-0.01	TC
VBA8H3		82.73	0.10	0.59	82.70	0.09	0.61	TC

Summary Statistics	Sample GR05	Sample GR06
Grand Means	82.62 Percent	82.61 Percent
Stnd Dev Btwn Labs	0.17 Percent	0.15 Percent

Statistics based on 16 of 16 reporting participants.

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		



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

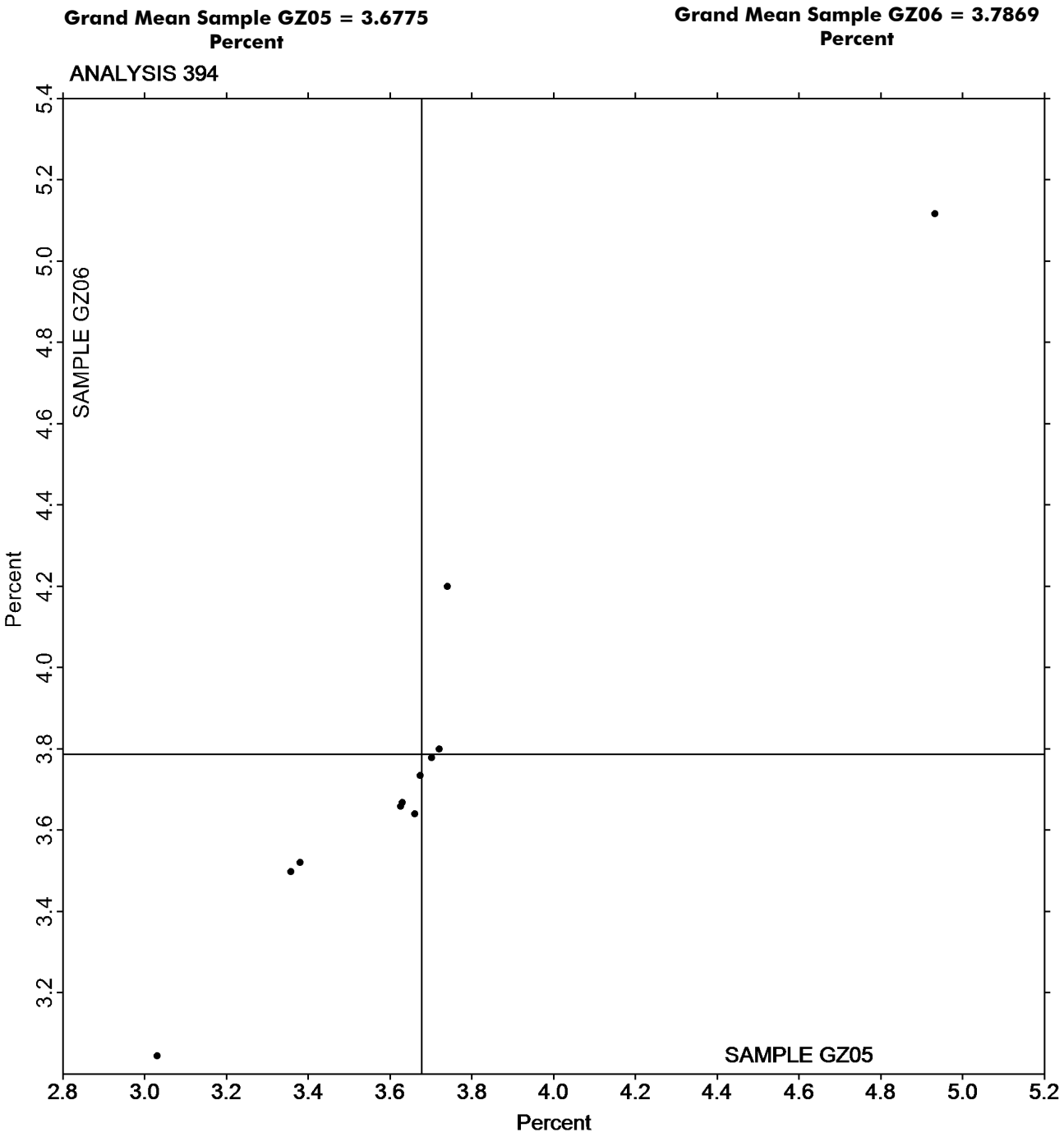
WebCode	Data Flag	Sample GZ05 Lab Mean	Sample GZ05 Diff from Grand Mean	Sample GZ05 CPV	Sample GZ06 Lab Mean	Sample GZ06 Diff from Grand Mean	Sample GZ06 CPV	Instr Code
22FXN9		4.932	1.255	2.68	5.116	1.329	2.56	EF
2AFDHM		3.702	0.025	0.05	3.778	-0.009	-0.02	TS
3TK8PJ		3.626	-0.051	-0.11	3.658	-0.129	-0.25	TS
6VHEZ8		3.358	-0.319	-0.68	3.498	-0.289	-0.56	TS
943XVH		3.030	-0.647	-1.38	3.044	-0.743	-1.43	TT
BNJZHT		3.630	-0.047	-0.10	3.668	-0.119	-0.23	TS
C4UUVN		3.720	0.043	0.09	3.800	0.013	0.03	TD
V7CH8X		3.660	-0.017	-0.04	3.640	-0.147	-0.28	PP
WKDHPT		3.674	-0.003	-0.01	3.734	-0.053	-0.10	PP
ZB8ZBQ		3.380	-0.297	-0.63	3.520	-0.267	-0.51	PP
ZM2GZR		3.740	0.063	0.13	4.200	0.413	0.80	TT

Summary Statistics	Sample GZ05	Sample GZ06
Grand Means	3.68 Percent	3.79 Percent
Stnd Dev Btwn Labs	0.47 Percent	0.52 Percent

Statistics based on 11 of 11 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		



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

Paper & Paperboard Interlaboratory Testing Program

Report #3182G, June 2022

Analysis 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GT05 Lab Mean	Sample GT05 Diff from Grand Mean	Sample GT05 CPV	Sample GT06 Lab Mean	Sample GT06 Diff from Grand Mean	Sample GT06 CPV	Instr Code
22FXN9		71.53	0.39	0.27	72.14	1.08	0.70	TH
2EPNC3		72.02	0.88	0.62	71.88	0.82	0.53	LB
336NAD		72.36	1.22	0.86	72.84	1.78	1.15	LA
6DJDAV		70.86	-0.28	-0.20	70.63	-0.43	-0.28	LG
6VHEZ8		70.28	-0.86	-0.61	70.53	-0.53	-0.34	LF
7YH8AW		70.17	-0.98	-0.69	71.38	0.32	0.21	GA
F2C4XF		71.00	-0.14	-0.10	70.60	-0.46	-0.30	GM
FUUMHY		69.72	-1.42	-1.01	69.18	-1.88	-1.22	GM
MHW7V6		72.70	1.56	1.11	72.87	1.81	1.17	TH
NXNAQE		72.88	1.74	1.23	71.96	0.90	0.58	LF
RFQHWF		74.12	2.98	2.11	74.12	3.06	1.98	XX
UEAWL6		69.88	-1.26	-0.90	69.35	-1.71	-1.11	PP
VBA8H3		70.60	-0.54	-0.39	69.70	-1.36	-0.88	GM
WKDHPT		69.67	-1.48	-1.05	69.64	-1.42	-0.92	PP
ZBW6XY		69.37	-1.77	-1.26	69.08	-1.98	-1.28	PP

Summary Statistics	Sample GT05	Sample GT06
Grand Means	71.14 Gloss Units	71.06 Gloss Units
Stnd Dev Btwn Labs	1.41 Gloss Units	1.55 Gloss Units

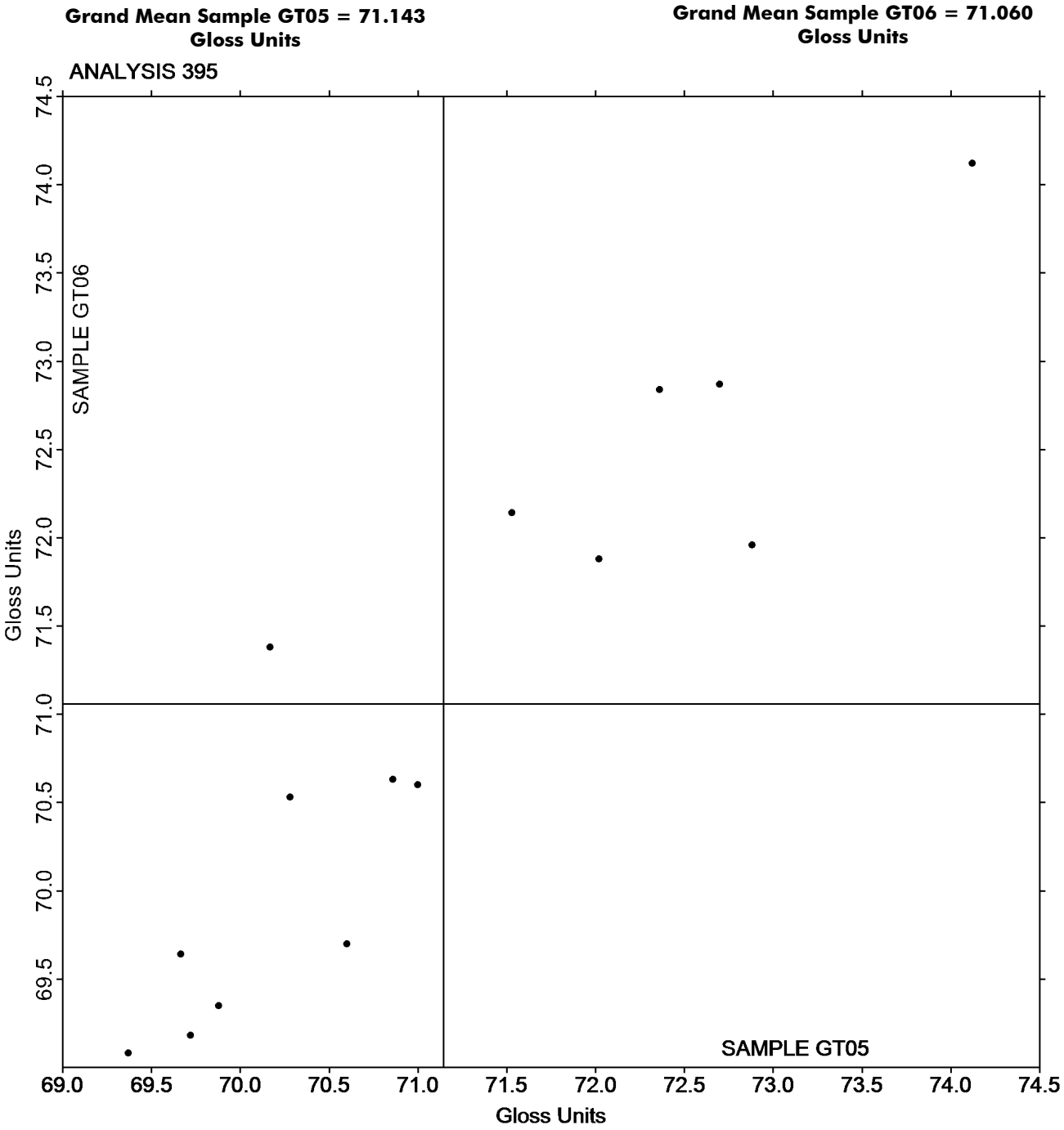
Statistics based on 15 of 15 reporting participants.

Analysis Notes:

7YH8AW - One determination removed from the Lab Mean for Sample GT05 (TAPPI T1205 using Grubbs test at 1% risk level).

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		



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

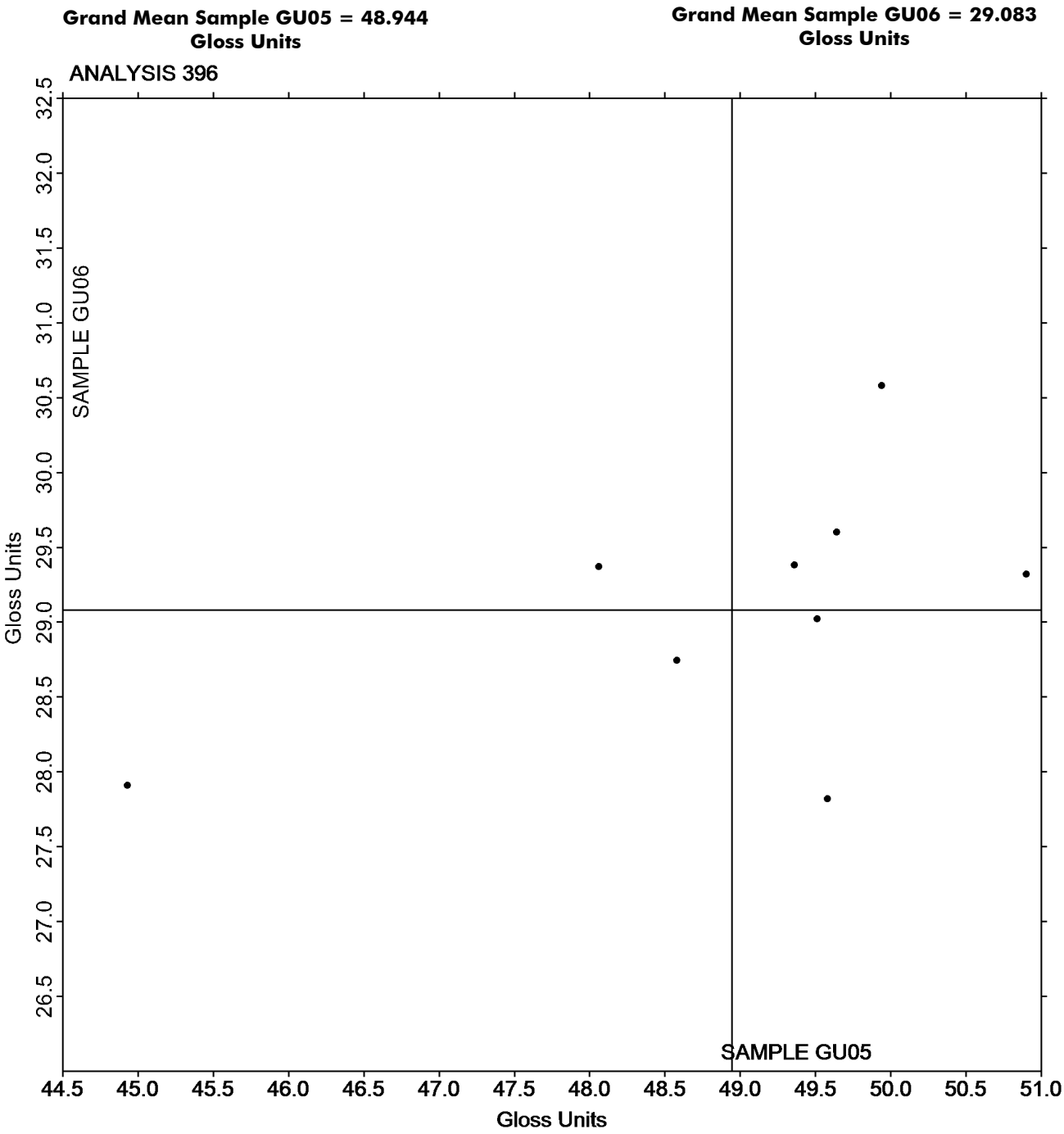
WebCode	Data Flag	Sample GU05 Lab Mean	Sample GU05 Diff from Grand Mean	Sample GU05 CPV	Sample GU06 Lab Mean	Sample GU06 Diff from Grand Mean	Sample GU06 CPV	Instr Code
2EPNC3		49.36	0.42	0.24	29.38	0.30	0.35	LA
2L82DM		50.90	1.96	1.15	29.32	0.24	0.28	TH
9Z24NZ		48.58	-0.36	-0.21	28.74	-0.34	-0.40	TH
M76JK3		49.51	0.57	0.33	29.02	-0.06	-0.07	TH
N3WRMM		49.94	1.00	0.58	30.58	1.50	1.75	PP
TN22TK		49.58	0.64	0.37	27.82	-1.26	-1.48	GS
VC3VZY		48.06	-0.88	-0.52	29.37	0.29	0.34	PP
VXZE3J		44.93	-4.01	-2.36	27.91	-1.17	-1.37	GM
ZCQTGU		49.64	0.70	0.41	29.60	0.52	0.61	TH

Summary Statistics	Sample GU05	Sample GU06
Grand Means	48.94 Gloss Units	29.08 Gloss Units
Stnd Dev Btwn Labs	1.70 Gloss Units	0.85 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		



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 398

Grammage (Mass per Unit Area)

TAPPI Official Test Method T410

WebCode	Data Flag	Sample GW05 Lab Mean	Sample GW05 Diff from Grand Mean	Sample GW05 CPV	Sample GW06 Lab Mean	Sample GW06 Diff from Grand Mean	Sample GW06 CPV	Instr Code
22JJ2G		74.92	-0.35	-0.81	74.98	-0.53	-0.96	ZZ
26HXN7		75.73	0.46	1.06	76.28	0.77	1.39	ZZ
2EPNC3		75.13	-0.14	-0.33	75.30	-0.21	-0.38	ZZ
2L82DM		74.83	-0.44	-1.02	75.84	0.32	0.59	ZZ
33ULME		75.38	0.11	0.25	75.62	0.11	0.20	ZZ
42RB83		75.23	-0.05	-0.11	75.70	0.19	0.34	ZZ
6UVQQT	*	74.76	-0.51	-1.18	75.98	0.47	0.85	ZZ
8W8F2F		75.22	-0.06	-0.13	75.05	-0.46	-0.83	ZZ
9AC6A2		75.39	0.11	0.26	75.19	-0.33	-0.59	ZZ
9Z24NZ	X	5.20	-70.08	-161.60	5.34	-70.18	-127.10	ZZ
B6N8WV		74.67	-0.61	-1.40	74.66	-0.85	-1.54	ZZ
BWFNLC		74.99	-0.28	-0.65	75.32	-0.19	-0.35	ZZ
D6EEMC		74.43	-0.84	-1.94	74.49	-1.02	-1.85	ZZ
DP3WWW		75.38	0.11	0.25	75.70	0.19	0.34	ZZ
FUUMHY		74.71	-0.57	-1.30	74.89	-0.62	-1.12	ZZ
GJ79TM		75.06	-0.22	-0.50	74.96	-0.55	-1.00	ZZ
GQ4ZZV		75.43	0.16	0.36	75.73	0.22	0.39	ZZ
HT779A		74.99	-0.28	-0.65	75.20	-0.32	-0.57	ZZ
JKE3LT		75.62	0.35	0.80	75.69	0.18	0.32	ZZ
JVDXKN		76.11	0.84	1.93	76.33	0.81	1.47	ZZ
M76JK3		75.61	0.34	0.78	75.90	0.39	0.70	ZZ
PW4UR4		75.75	0.48	1.10	76.05	0.54	0.98	ZZ
PXNK94		75.09	-0.18	-0.42	75.45	-0.06	-0.11	ZZ
Q6J2XZ		75.37	0.10	0.23	75.24	-0.27	-0.49	ZZ
QPHLHX		75.10	-0.17	-0.39	75.41	-0.10	-0.18	ZZ
VZAECX		75.48	0.21	0.48	75.44	-0.07	-0.13	ZZ
XQDGDM		75.37	0.10	0.23	75.03	-0.49	-0.88	ZZ
ZCQTGU		75.49	0.22	0.51	75.86	0.35	0.63	ZZ
ZGYZVD	*	76.40	1.12	2.59	77.05	1.54	2.79	ZZ

Summary Statistics	Sample GW05	Sample GW06
Grand Means	75.27 g/sq m	75.51 g/sq m
Stnd Dev Btwn Labs	0.43 g/sq m	0.55 g/sq m

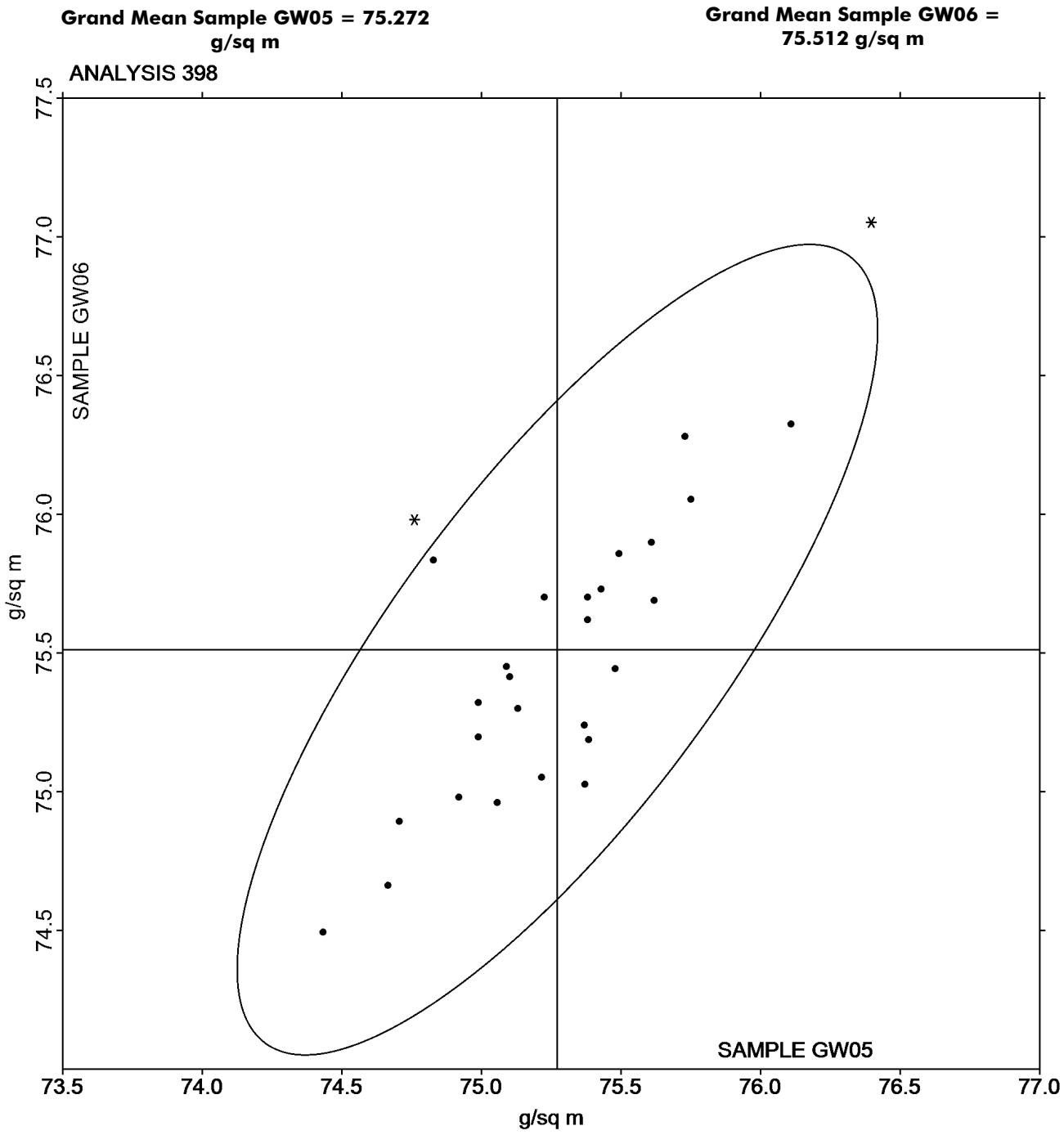
Statistics based on 28 of 29 reporting participants.

Comments on Assigned Data Flags for Test #398

9Z24NZ (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GX05 Lab Mean	Sample GX05 Diff from Grand Mean	Sample GX05 CPV	Sample GX06 Lab Mean	Sample GX06 Diff from Grand Mean	Sample GX06 CPV	Instr Code
22JJ2G		12.070	2.526	1.03	14.47	-0.53	-0.11	XX
2L82DM		14.540	4.996	2.03	26.28	11.28	2.36	HE
33ULME		10.090	0.546	0.22	16.39	1.39	0.29	HE
3TK8PJ		9.570	0.026	0.01	17.16	2.16	0.45	HE
6VHEZ8		10.060	0.516	0.21	15.69	0.69	0.14	HE
7VG2T6		14.170	4.626	1.88	20.30	5.30	1.11	HE
8RA7L8		7.500	-2.044	-0.83	9.04	-5.96	-1.25	HE
BNJZHT		7.280	-2.264	-0.92	10.70	-4.30	-0.90	HE
BWFNLC		8.900	-0.644	-0.26	11.60	-3.40	-0.71	HE
BXDYGE		10.130	0.586	0.24	17.85	2.85	0.60	HE
BZFZGC		9.180	-0.364	-0.15	11.90	-3.10	-0.65	HE
F2C4XF		9.700	0.156	0.06	15.18	0.18	0.04	HE
HBALLN		10.100	0.556	0.23	15.00	0.00	0.00	HE
KL7ATB		14.180	4.636	1.88	21.68	6.68	1.40	HE
KP6Q66		7.450	-2.094	-0.85	8.84	-6.16	-1.29	HE
M4BWLK		9.940	0.396	0.16	15.79	0.79	0.17	HE
NKFQTK		10.580	1.036	0.42	17.58	2.58	0.54	HE
PXNK94		8.800	-0.744	-0.30	14.60	-0.40	-0.08	HE
TX9RJ3		9.450	-0.094	-0.04	17.64	2.64	0.55	HE
V7CH8X		8.940	-0.604	-0.25	13.55	-1.45	-0.30	HE
VC3VZY	*	8.250	-1.294	-0.53	20.79	5.79	1.21	HE
VNBNHD	*	2.820	-6.724	-2.73	2.87	-12.13	-2.54	HE
VXZE3J		9.340	-0.204	-0.08	14.37	-0.63	-0.13	HE
WJDJAQ		8.360	-1.184	-0.48	15.24	0.24	0.05	HE
ZM2GZR		7.200	-2.344	-0.95	10.50	-4.50	-0.94	HE

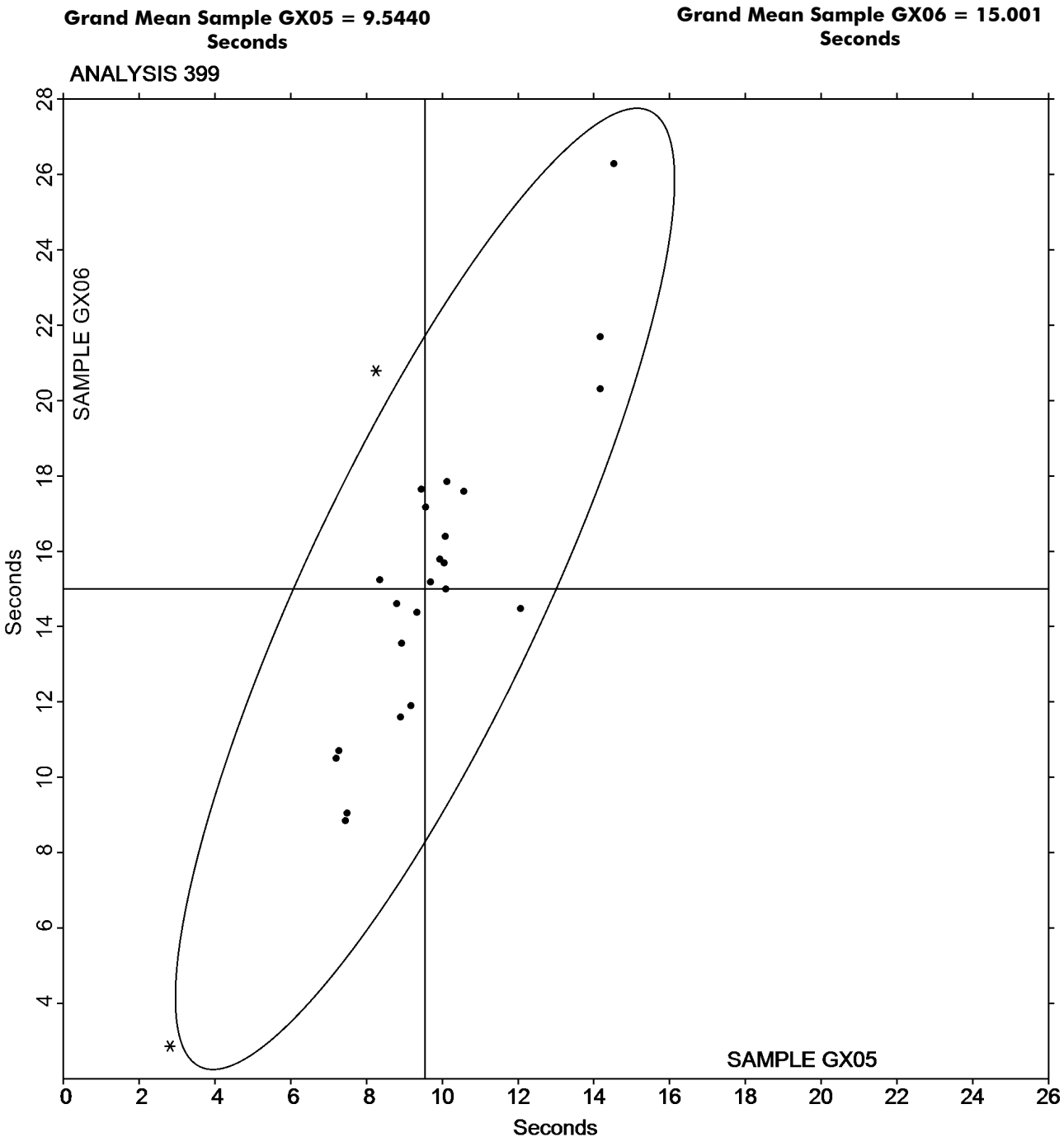
Summary Statistics	Sample GX05	Sample GX06
Grand Means	9.54 Seconds	15.00 Seconds
Stnd Dev Btwn Labs	2.46 Seconds	4.77 Seconds

Statistics based on 25 of 25 reporting participants.

Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab



-End of Report-