Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #3212 G - December 2022

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The CTS Paper & Paperboard Interlaboratory Program

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

About CTS

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

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Key for Web Summary Reports (Page 1 of 2)

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

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

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

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

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

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

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

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

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

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

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

Common Problems Highlighted in Footnotes

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

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

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

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

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

Paper & Paperboard Interlaboratory Testing Program

Analysis 350

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

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

Web Code	Data Flag	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
9THBAL		GA11	93.09	-1.03	3.57	-0.01	-0.03	-0.07	0.08	TC
		GA12	93.08	-1.05	3.50					
A74NLV		GA11	95.04	-0.83	4.36	0.01	-0.01	-0.02	0.02	LS
		GA12	95.05	-0.84	4.34					
B666VE		GA11	92.46	-0.22	3.67	0.10	-0.01	0.05	0.11	TS
		GA12	92.56	-0.23	3.73					
BDY3QU		GA11	92.64	-0.13 *	3.81	0.00	-0.06 X	0.00	0.06	TS
		GA12	92.65	-0.19	3.80					
C7VNEQ		GA11	93.78	-1.01	4.48	0.01	0.00	-0.02	0.02	TC
		GA12	93.79	-1.01	4.47					
CGFUBV		GA11	92.46	-0.33	3.93	0.16 X	-0.02	-0.02	0.16 X	TS
		GA12	92.62	-0.35	3.91					
DNRD7E		GA11	95.41	-0.79	3.82	0.06	-0.02	0.05	0.08	XS
		GA12	95.46	-0.81	3.87					
HZKKQB		GA11	93.66	-0.91	4.37	0.04	-0.01	-0.05	0.06	TC
		GA12	93.69	-0.92	4.32					
M67287		GA11	94.35	-0.64	4.24	0.01	0.00	-0.04	0.05	HE
		GA12	94.36	-0.64	4.19					
PBKNV8		GA11	94.89	-0.58	4.08	-0.01	-0.01	0.05	0.05	LS
		GA12	94.88	-0.59	4.12					
PKB8DL		GA11	95.14	-0.82	4.19	-0.02	-0.01	0.09	0.09	TC
		GA12	95.12	-0.83	4.28					
PQJ9W6		GA11	93.99	-0.77	4.27	-0.01	-0.01	0.10	0.10	HE
		GA12	93.98	-0.78	4.37					
RGKKTX		GA11	93.71	-0.77	4.48	0.01	-0.02	0.05	0.05	HZ
		GA12	93.72	-0.79	4.52					
WW34FL		GA11	93.68	-0.89	4.30	0.08	0.00	0.02	0.08	TC
		GA12	93.75	-0.90	4.32					
X8Z8GU		GA11	93.92	-0.04	3.54	0.02	0.00	-0.06	0.06	TS
		GA12	93.94	-0.04	3.48					
ZGEXX3		GA11	94.95	-0.80	4.12	-0.02	0.00	0.04	0.05	EH
		GA12	94.94	-0.81	4.16					

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

Summary Statistics

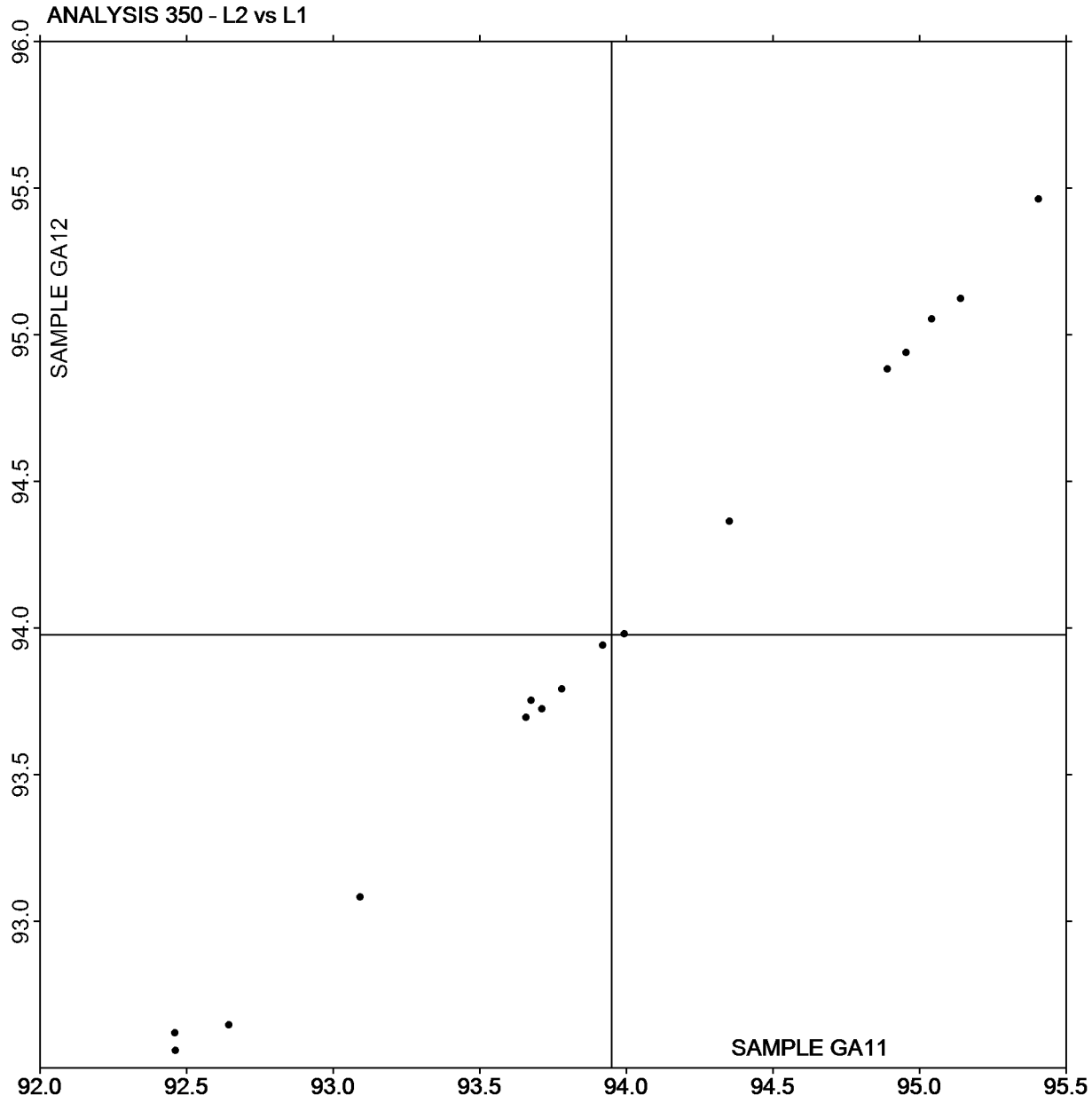
Grand Means							
GA11	93.949	-0.661	4.077	0.027	-0.013	0.011	0.070
GA12	93.976	-0.674	4.088				
Stnd Dev Btwn Labs							
GA11	0.963	0.312	0.314	0.049	0.014	0.054	0.036
GA12	0.939	0.308	0.332				

Statistics based on 16 of 16 reporting participants

Key to Instrument Codes Reported by Participants

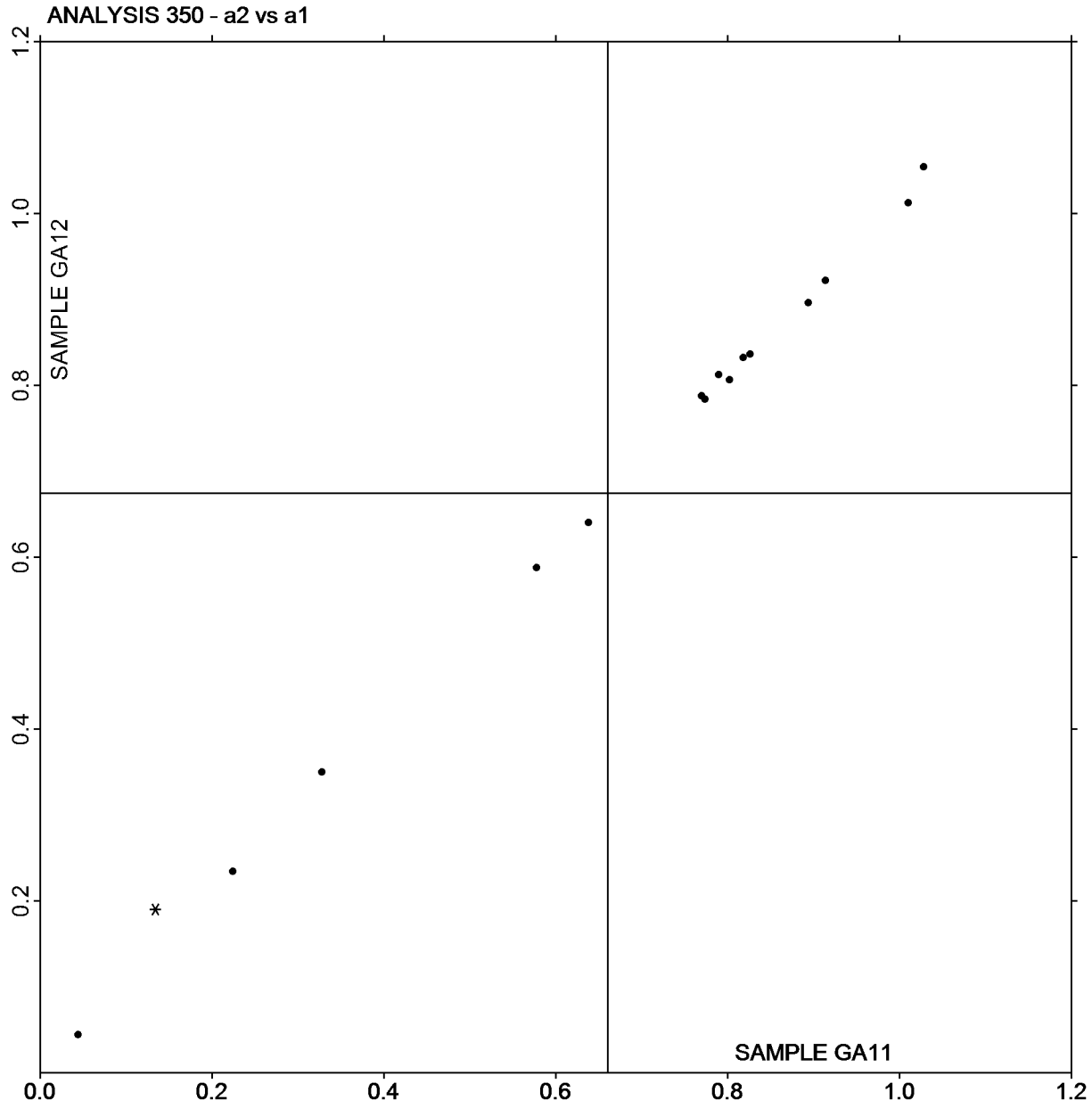
EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HZ	Hunter ColorFlex EZ	LS	L & W Elrepho SE 070
TC	Technidyne Color Touch Series	TS	Technidyne Brightimeter Micro S-5
XS	X-Rite 938 Spectrodensitometer		

Plot of L values GA12 vs L values GA11



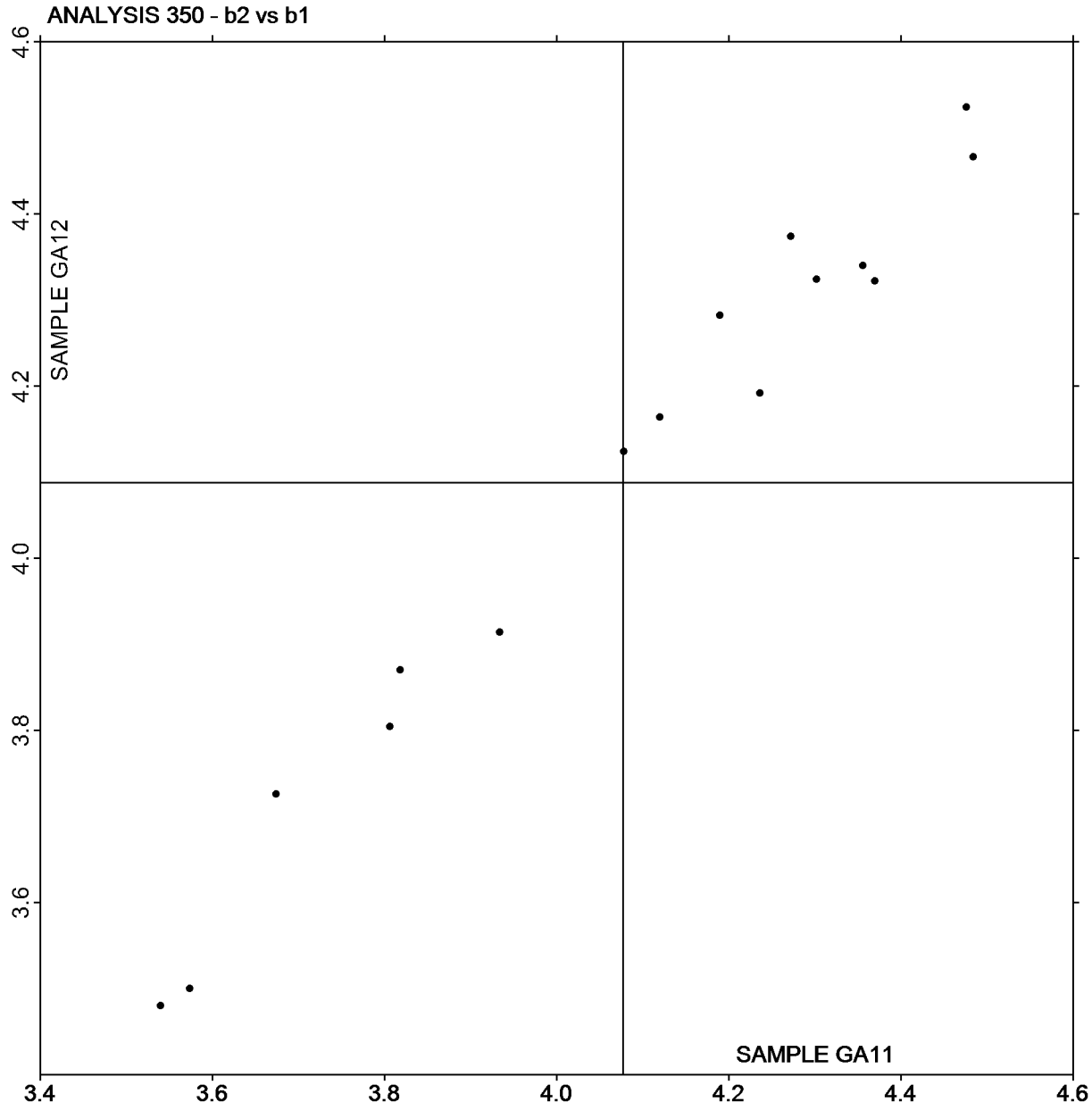
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA12 vs a values GA11



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 GA12 vs b values GA11



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
9TFL7N		GA11	95.04	-0.72	4.55	0.02	0.00	-0.04	0.04	LS
		GA12	95.07	-0.72	4.51					
9THBAL		GA11	94.23	-0.85	4.10	-0.04	0.00	0.06	0.07	HE
		GA12	94.19	-0.86	4.16					
A74NLV		GA11	95.05	-0.83	4.34	0.02	-0.01	0.00	0.02	LS
		GA12	95.06	-0.84	4.34					
CDGJFV		GA11	94.67	-0.87	4.37	0.00	0.00	-0.19 X	0.19 X	XC
		GA12	94.68	-0.87	4.18					
DEG9U9		GA11	95.06	-0.70	4.47	-0.02	-0.01	0.00	0.02	EH
		GA12	95.04	-0.71	4.47					
DUX4B6		GA11	95.27	-0.53	4.78	-0.03	0.00	-0.01	0.03	XC
		GA12	95.25	-0.53	4.77					
EQARAE		GA11	95.10	-0.63	4.29	0.02	-0.01	0.02	0.03	HT
		GA12	95.12	-0.64	4.32					
FBWXYG		GA11	95.06	-0.94	4.33	-0.01	-0.01	-0.01	0.02	TC
		GA12	95.05	-0.95	4.32					
FLH37F		GA11	94.99	-0.65	4.48	-0.01	0.00	0.02	0.02	HT
		GA12	94.99	-0.65	4.49					
JPKCMY		GA11	95.10	-0.71	4.37	-0.04	-0.01	0.00	0.04	EF
		GA12	95.06	-0.72	4.37					
M32B4C		GA11	95.41	-0.55	4.05	0.06	0.00	0.10	0.12	NG
		GA12	95.47	-0.55	4.15					
M8BPPG	X	GA11	93.52	-0.47 *	3.93	0.42 X	-0.03 X	-0.01	0.42 X	HE
		GA12	93.94 X	-0.50	3.92					
MER3RL		GA11	95.02	-0.62	4.62	0.02	-0.01	-0.10	0.10	NG
		GA12	95.04	-0.63	4.52					
RJQ89M		GA11	94.95	-0.66	4.36	-0.02	-0.01	0.01	0.02	TC
		GA12	94.93	-0.67	4.38					
RVGW78		GA11	95.56	-0.76	3.80	0.06	0.00	-0.09	0.11	XP
		GA12	95.62	-0.76	3.71					
T7GMRF		GA11	93.62 *	-0.49	3.87	-0.09	0.00	0.08	0.12	XB
		GA12	93.53	-0.49	3.96					

VFF4BG	GA11	95.05	-0.64	4.45	0.00	-0.01	-0.04	0.04	NH
	GA12	95.05	-0.66	4.41					
ZGEXX3	GA11	94.88	-0.64	4.26	-0.03	0.00	-0.01	0.03	EH
	GA12	94.85	-0.65	4.26					

Summary Statistics

Grand Means							
GA11	94.945	-0.681	4.301	-0.005	-0.006	-0.011	0.061
GA12	94.940	-0.688	4.290				
Stnd Dev Btwn Labs							
GA11	0.445	0.132	0.262	0.038	0.006	0.069	0.049
GA12	0.474	0.130	0.252				

Statistics based on 17 of 18 reporting participants

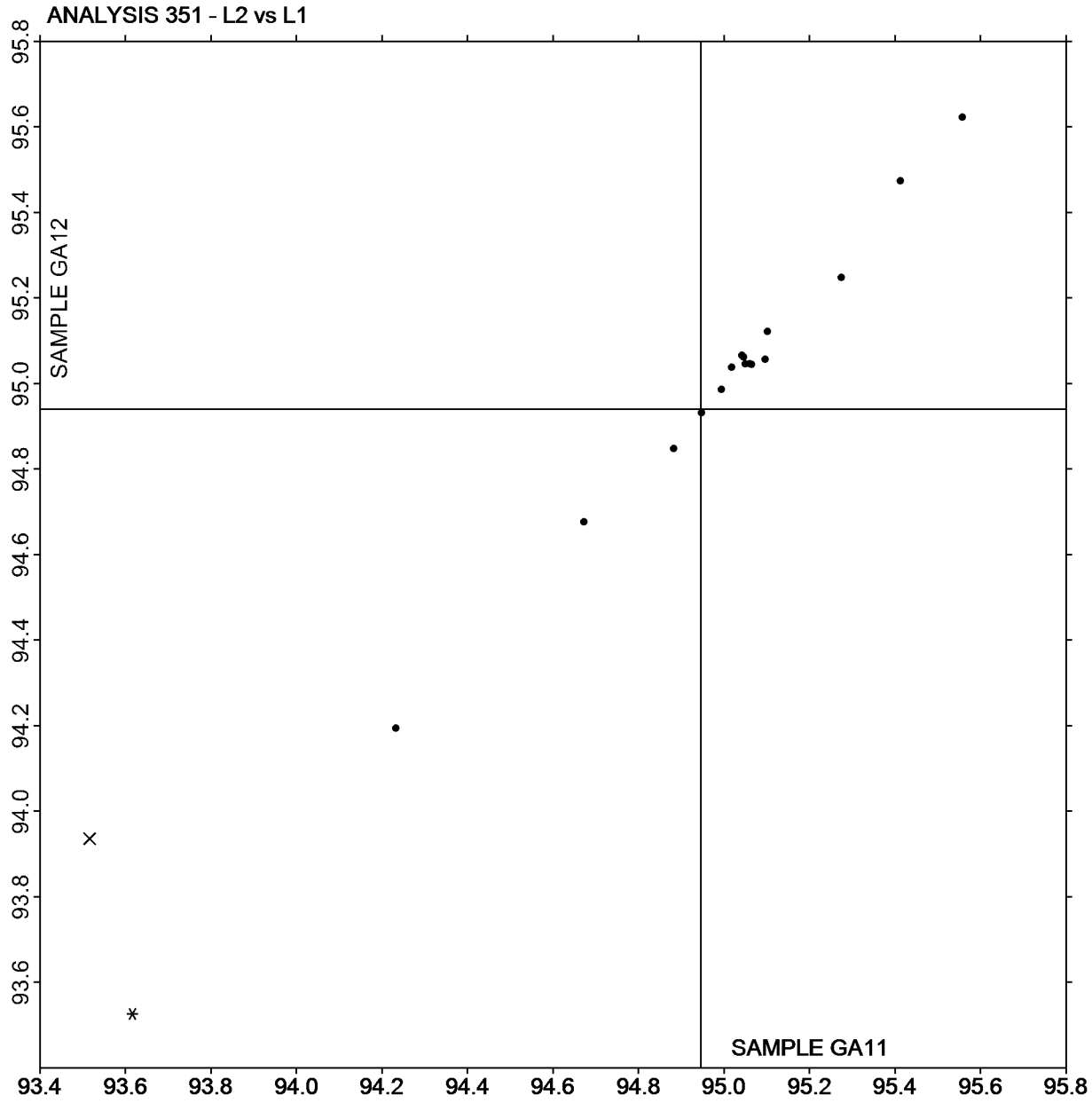
Comments on Assigned Data Flags for Test #351

M8BPPG (X) - Low "L" value for sample GA11. Large delta "L" and "E". Small delta "a".

Key to Instrument Codes Reported by Participants

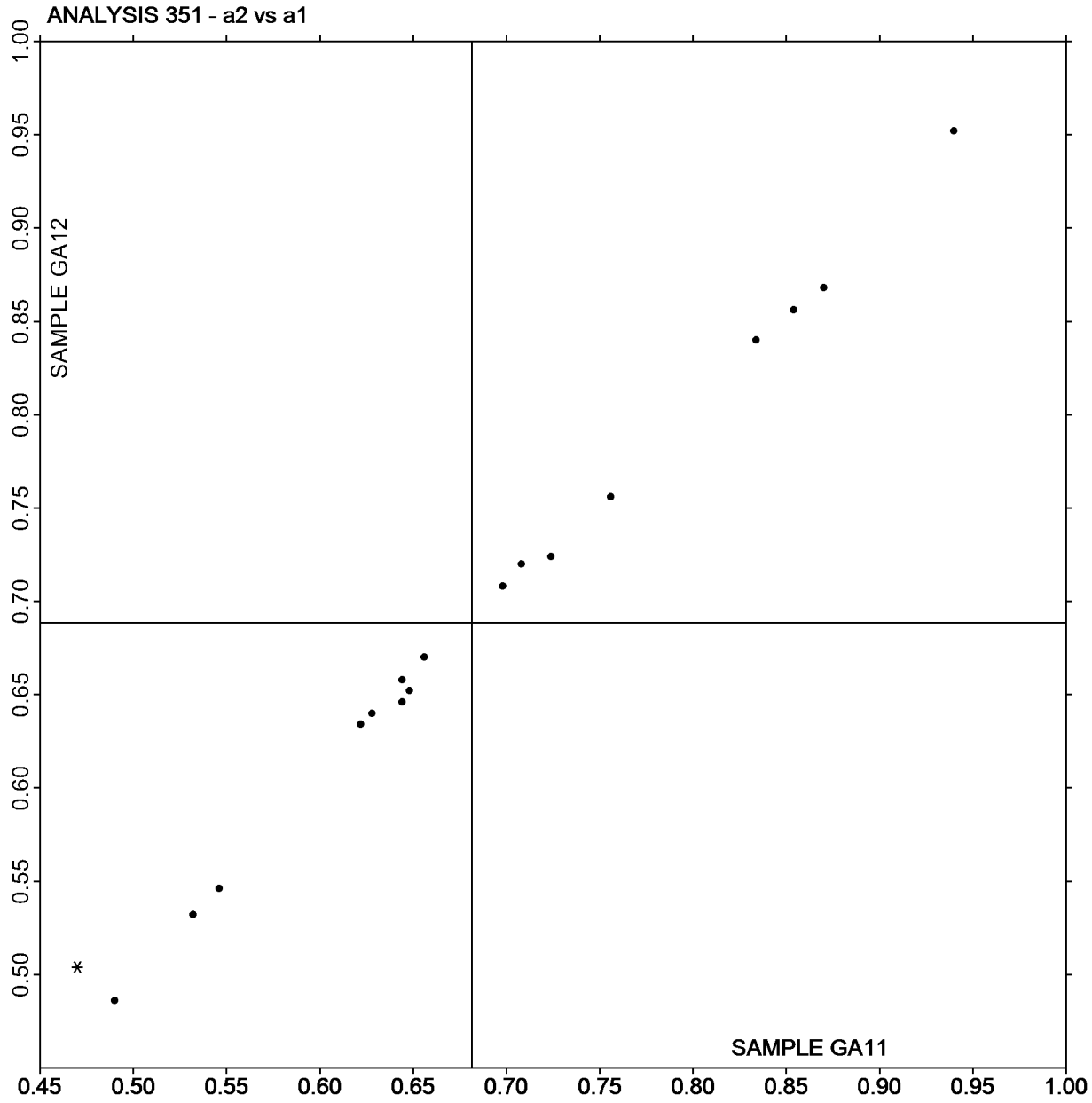
EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
LS	L & W Elrepho SE 070	NG	Minolta CM-3700d Spectrophotometer
NH	Minolta CM-3700A Spectrophotometer	TC	Technidyne Color Touch Series
XB	X-Rite Ci7	XC	X-Rite eXact Series
XP	X-Rite Spectrophotometer DTP		

Plot of L values GA12 vs L values GA11



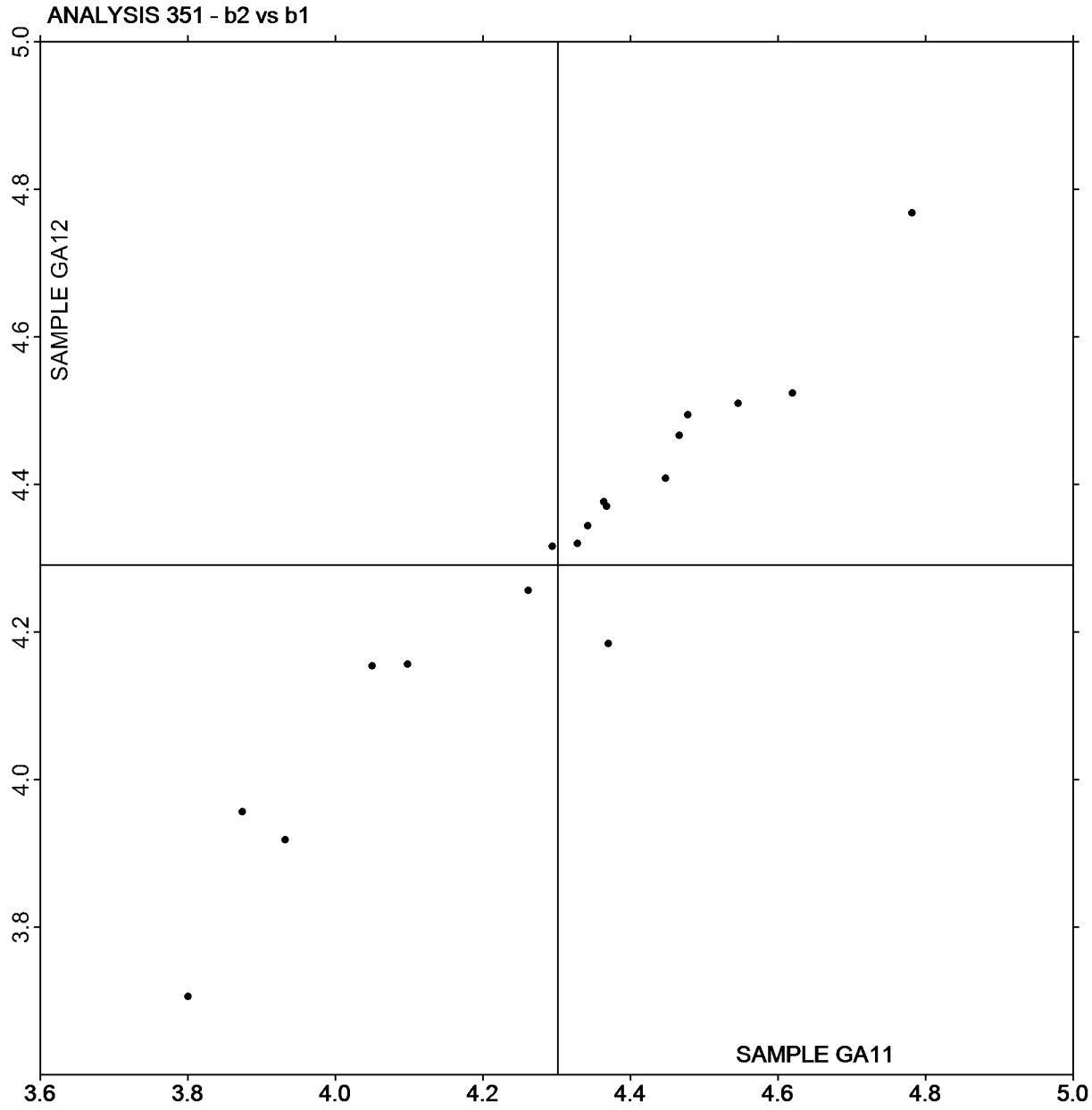
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA12 vs a values GA11



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 GA12 vs b values GA11



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

WebCode	Data Flag	Sample GV11 Lab Mean	Sample GV11 Diff from Grand Mean	Sample GV11 CPV	Sample GV12 Lab Mean	Sample GV12 Diff from Grand Mean	Sample GV12 CPV	Instr Code
22XLJE		3.840	-0.032	-0.55	3.866	0.012	0.21	PP
3ZFV89		3.896	0.024	0.41	3.843	-0.011	-0.18	EM
6KZG2V		3.834	-0.038	-0.64	3.820	-0.033	-0.56	LW
86WNCW		3.797	-0.075	-1.28	3.741	-0.113	-1.89	PP
8D94YX		3.811	-0.061	-1.04	3.802	-0.051	-0.86	PP
B666VE		3.891	0.019	0.32	3.863	0.009	0.16	EM
CDGJFV	X	4.098	0.226	3.85	4.075	0.221	3.71	TM
CGFUBV		3.881	0.009	0.15	3.861	0.007	0.12	LA
DEG9U9		3.798	-0.074	-1.26	3.828	-0.026	-0.43	EM
DN726K		3.866	-0.006	-0.10	3.850	-0.004	-0.06	PP
DNRD7E	*	3.770	-0.102	-1.74	3.710	-0.144	-2.41	TM
DUX4B6		3.909	0.037	0.64	3.906	0.052	0.87	LW
EPXF73		3.905	0.033	0.56	3.918	0.064	1.08	LW
EQARAE		3.927	0.055	0.93	3.889	0.035	0.59	EM
FA3AFK		3.894	0.022	0.37	3.843	-0.011	-0.18	XX
FALWCH	*	3.962	0.090	1.53	3.993	0.139	2.34	LW
FBWXYG		3.843	-0.029	-0.50	3.879	0.026	0.43	LA
FLH37F		3.878	0.006	0.10	3.865	0.011	0.19	EM
FWXWG9		3.860	-0.012	-0.21	3.837	-0.017	-0.28	OK
GC8ZHU		3.886	0.014	0.23	3.843	-0.011	-0.19	MS
GU6KV9		3.878	0.006	0.10	3.849	-0.005	-0.08	TA
HLTL8P		3.899	0.027	0.46	3.842	-0.012	-0.19	EM
JGCKGB		3.909	0.037	0.63	3.903	0.050	0.83	TM
JJWRGX		3.918	0.046	0.78	3.918	0.064	1.08	TA
JPKCMY		3.814	-0.058	-0.99	3.816	-0.038	-0.63	TM
K3M32C		3.974	0.102	1.73	3.933	0.079	1.33	LW
K4GQK8		3.860	-0.012	-0.21	3.830	-0.024	-0.40	LW
M8BPPG		3.889	0.017	0.29	3.867	0.013	0.22	PP
MER3RL		3.877	0.005	0.08	3.852	-0.002	-0.03	PP
MQLGPX		3.914	0.042	0.71	3.929	0.075	1.26	LB
MRJRLZ	*	3.719	-0.153	-2.60	3.710	-0.144	-2.41	TA
MTUTAK		3.961	0.089	1.51	3.919	0.065	1.10	EM
NYWZNM		3.804	-0.068	-1.16	3.807	-0.047	-0.78	EM
PBKNV8	*	4.023	0.151	2.57	3.992	0.139	2.32	LW
PKB8DL		3.801	-0.071	-1.21	3.785	-0.069	-1.15	EM
PRBL29		3.791	-0.082	-1.39	3.778	-0.076	-1.27	LW
QBER49		3.851	-0.021	-0.36	3.854	0.000	0.01	TM
RJQ89M		3.913	0.041	0.70	3.854	0.001	0.01	PP
RVGW78		3.808	-0.064	-1.09	3.822	-0.032	-0.53	TM
T7GMRF		3.950	0.078	1.33	3.916	0.062	1.05	TM
TKXMFT		3.839	-0.033	-0.56	3.812	-0.042	-0.70	PP

Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GV11 Lab Mean	Sample GV11 Diff from Grand Mean	Sample GV11 CPV	Sample GV12 Lab Mean	Sample GV12 Diff from Grand Mean	Sample GV12 CPV	Instr Code
VE4PJ2		3.875	0.003	0.05	3.877	0.024	0.39	FR
VFF4BG		3.869	-0.003	-0.05	3.868	0.014	0.24	PP
WLJPE4		3.804	-0.068	-1.16	3.777	-0.077	-1.28	TA
XCAHAN		3.853	-0.019	-0.32	3.821	-0.033	-0.55	LA
Z7R4HZ		3.908	0.036	0.62	3.837	-0.016	-0.27	LW
ZBRB2C		3.916	0.044	0.75	3.918	0.064	1.08	PP
ZGEXX3		3.922	0.050	0.85	3.876	0.022	0.38	EM

Summary Statistics	Sample GV11	Sample GV12
Grand Means	3.87 mils	3.85 mils
Stnd Dev Btwn Labs	0.06 mils	0.06 mils

Statistics based on 47 of 48 reporting participants.

Comments on Assigned Data Flags for Test #360

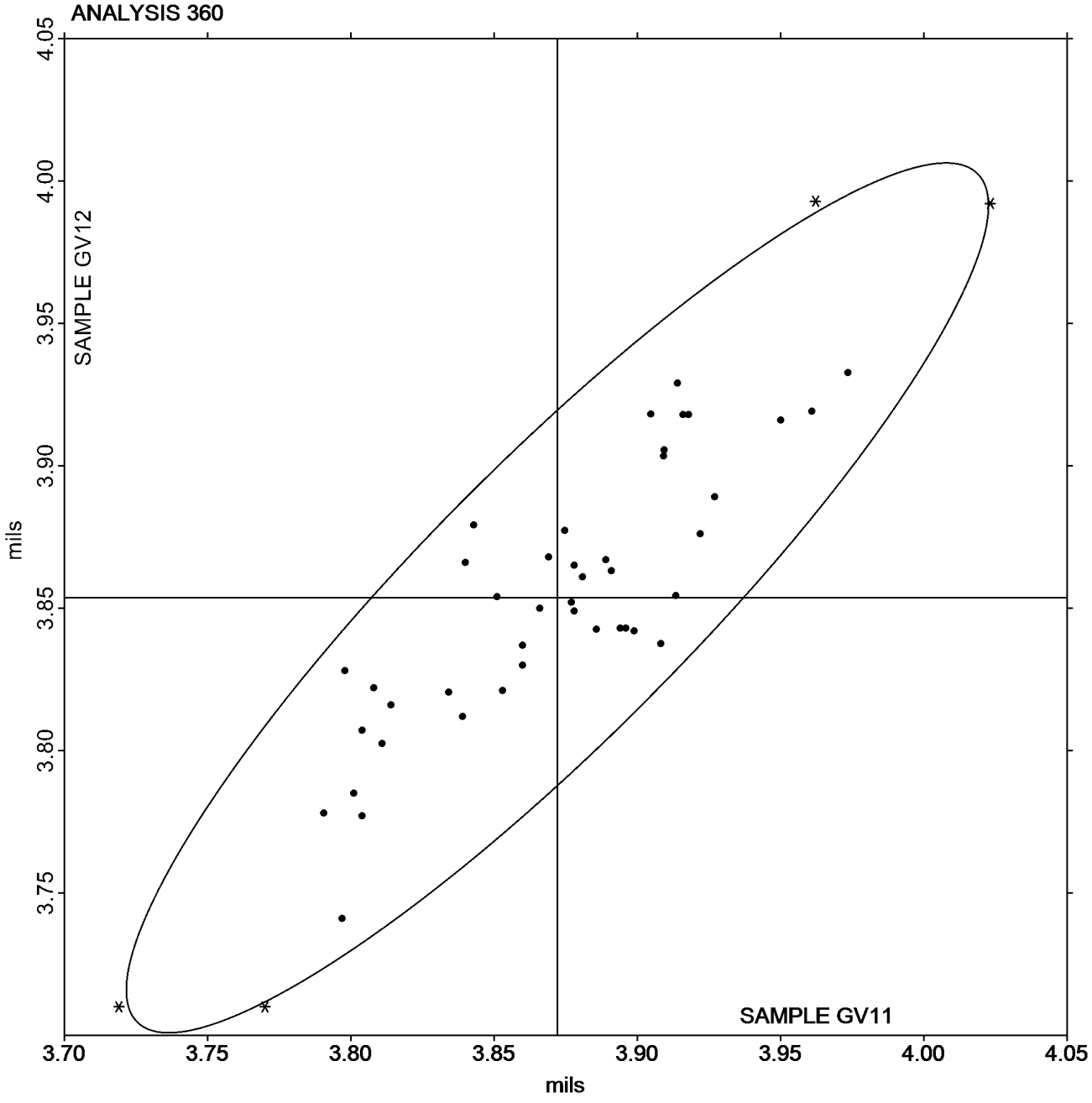
CDGJFV (X) - Data for both samples are high. Possible Systematic Error.

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 GV11 = 3.8721 mils

Grand Mean Sample GV12 = 3.8536 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GY11 Lab Mean	Sample GY11 Diff from Grand Mean	Sample GY11 CPV	Sample GY12 Lab Mean	Sample GY12 Diff from Grand Mean	Sample GY12 CPV	Instr Code
3THZCW		7.496	-0.006	-0.07	9.666	0.031	0.26	LA
7YGNLY		7.585	0.083	1.03	9.779	0.144	1.22	LA
8D94YX		7.610	0.109	1.34	9.563	-0.072	-0.61	LW
9TFL7N		7.502	0.000	0.00	9.782	0.147	1.24	LW
9THBAL		7.440	-0.062	-0.76	9.585	-0.050	-0.42	OK
A74NLV	X	0.008	-7.494	-92.46	0.010	-9.625	-81.48	TM
AWEX2N		7.440	-0.062	-0.76	9.470	-0.165	-1.40	TA
CE8KGC		7.443	-0.058	-0.72	9.650	0.015	0.13	LW
DEG9U9		7.531	0.029	0.36	9.673	0.038	0.32	EM
DGBWD4		7.528	0.026	0.32	9.748	0.113	0.96	LW
FWBM7J		7.649	0.147	1.82	9.767	0.132	1.11	LW
GU6KV9		7.537	0.035	0.44	9.640	0.005	0.04	TA
HL4MPG	X	7.159	-0.343	-4.23	9.315	-0.320	-2.71	TM
HUXV9M		7.412	-0.090	-1.11	9.485	-0.150	-1.27	LA
HZKKQB		7.560	0.058	0.72	9.606	-0.029	-0.25	EM
KFEPAT	*	7.640	0.138	1.71	9.947	0.312	2.64	PP
M67287		7.453	-0.049	-0.60	9.661	0.026	0.22	EM
M7GZ7L		7.557	0.056	0.69	9.530	-0.105	-0.89	LW
MQLGPX		7.656	0.154	1.90	9.781	0.146	1.24	LB
NLAQ3H		7.472	-0.029	-0.36	9.724	0.089	0.76	LW
NXLDUF		7.440	-0.062	-0.76	9.510	-0.125	-1.06	LA
PKB8DL		7.437	-0.065	-0.80	9.525	-0.110	-0.93	EM
PQJ9W6		7.583	0.081	1.00	9.684	0.049	0.41	EM
REEZ8H		7.574	0.072	0.89	9.682	0.047	0.40	LA
RGKKTX		7.491	-0.011	-0.13	9.548	-0.087	-0.74	VP
TBCJAE		7.534	0.032	0.40	9.671	0.036	0.30	LW
U93V9U		7.475	-0.027	-0.33	9.613	-0.022	-0.19	LW
UZLG34		7.415	-0.087	-1.07	9.482	-0.153	-1.30	TM
VFF4BG		7.446	-0.056	-0.69	9.687	0.052	0.44	PP
WLJPE4		7.402	-0.100	-1.23	9.421	-0.214	-1.81	TA
WXVT49		7.464	-0.038	-0.46	9.660	0.025	0.21	EM
X8Z8GU	*	7.283	-0.219	-2.70	9.398	-0.237	-2.01	OK
XMPAZJ		7.450	-0.052	-0.64	9.667	0.032	0.27	LW
Z6GY7W		7.525	0.023	0.29	9.664	0.029	0.25	TM
Z7R4HZ		7.525	0.024	0.29	9.686	0.051	0.43	LW

Summary Statistics	Sample GY11	Sample GY12
Grand Means	7.50 mils	9.63 mils
Stnd Dev Btwn Labs	0.08 mils	0.12 mils

Statistics based on 33 of 35 reporting participants.

Comments on Assigned Data Flags for Test #361

HL4MPG (X) - Data for both samples are low.

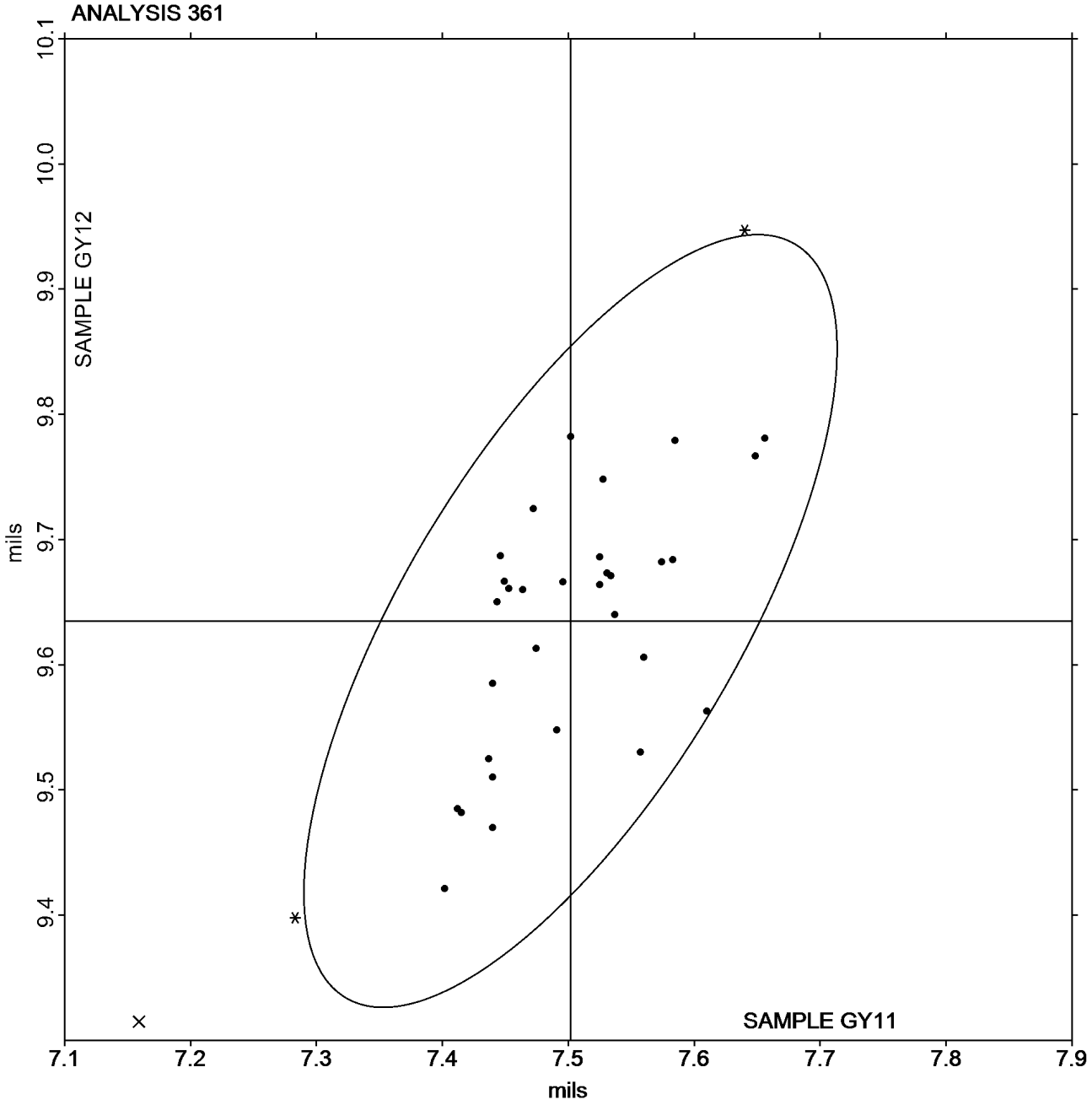
A74NLV (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample GY11 = 7.5017 mils

Grand Mean Sample GY12 = 9.6350 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

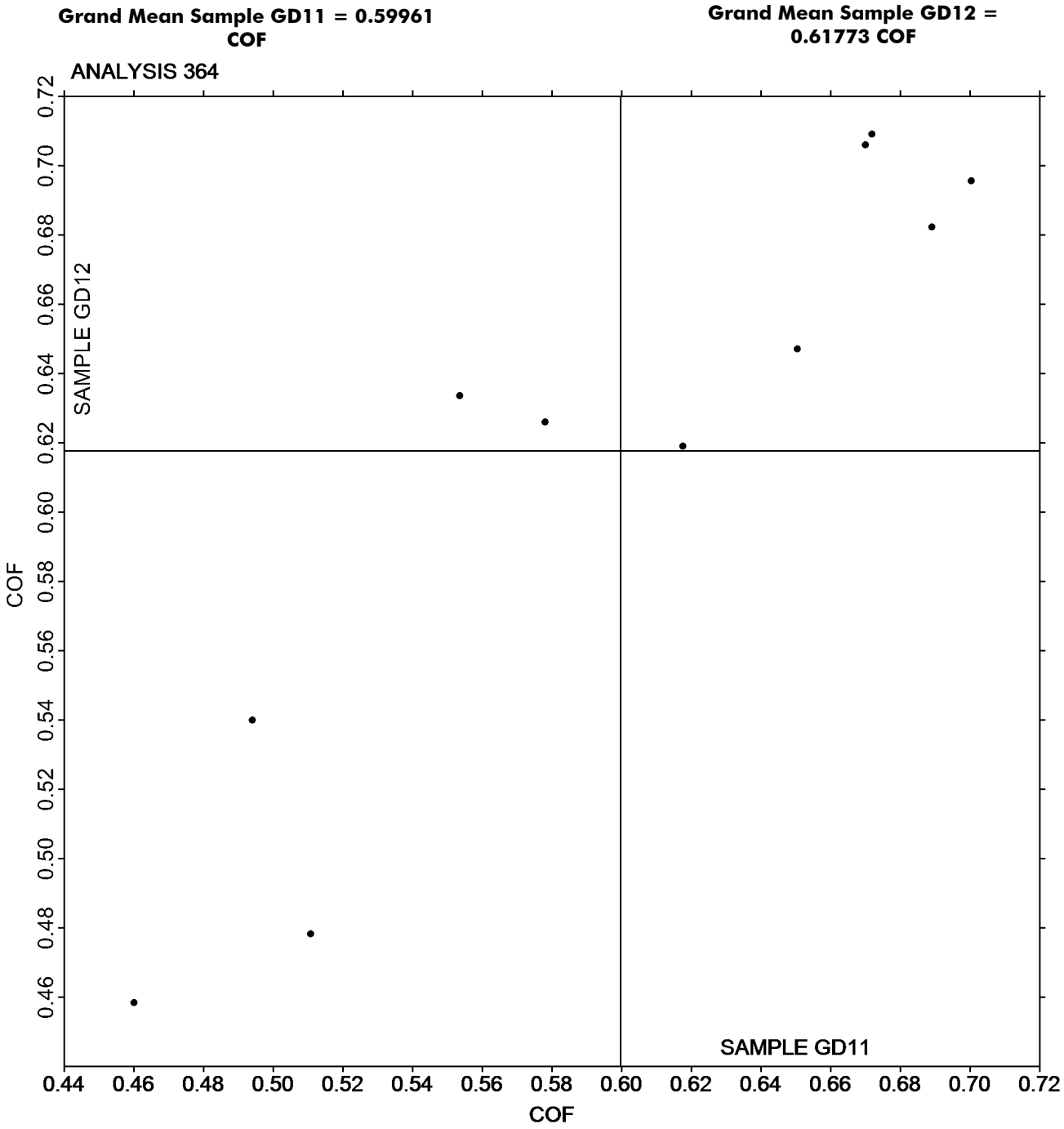
WebCode	Data Flag	Sample GD11 Lab Mean	Sample GD11 Diff from Grand Mean	Sample GD11 CPV	Sample GD12 Lab Mean	Sample GD12 Diff from Grand Mean	Sample GD12 CPV	Instr Code
B666VE		0.6718	0.0722	0.85	0.7090	0.0913	1.03	TA
BDY3QU		0.7004	0.1008	1.18	0.6956	0.0779	0.88	TA
DNRD7E		0.4600	-0.1396	-1.64	0.4584	-0.1593	-1.80	XX
HLTL8P		0.5780	-0.0216	-0.25	0.6260	0.0083	0.09	TA
M8BPPG		0.5108	-0.0888	-1.04	0.4782	-0.1395	-1.58	TA
MPEYV9		0.6891	0.0895	1.05	0.6822	0.0645	0.73	TA
REEZ8H		0.6176	0.0180	0.21	0.6190	0.0013	0.01	TA
VFF4BG		0.6700	0.0704	0.83	0.7060	0.0883	1.00	TP
XMPAZJ		0.5536	-0.0460	-0.54	0.6336	0.0159	0.18	TA
XTEREU		0.6504	0.0508	0.60	0.6470	0.0293	0.33	TA
ZBRB2C		0.4940	-0.1056	-1.24	0.5400	-0.0777	-0.88	TA

Summary Statistics	Sample GD11	Sample GD12
Grand Means	0.60 COF	0.62 COF
Stnd Dev Btwn Labs	0.09 COF	0.09 COF

Statistics based on 11 of 11 reporting participants.

Key to Instrument Codes Reported by Participants

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 GD11 Lab Mean	Sample GD11 Diff from Grand Mean	Sample GD11 CPV	Sample GD12 Lab Mean	Sample GD12 Diff from Grand Mean	Sample GD12 CPV	Instr Code
B666VE		0.5548	0.0562	0.76	0.5784	0.0663	0.83	TA
BDY3QU		0.6136	0.1150	1.56	0.6032	0.0911	1.13	TA
DNRD7E		0.4454	-0.0532	-0.72	0.4368	-0.0753	-0.94	XX
HLTL8P		0.5040	0.0054	0.07	0.5320	0.0199	0.25	XX
M8BPPG		0.3506	-0.1480	-2.00	0.3308	-0.1813	-2.26	TA
MPEYV9		0.5367	0.0381	0.52	0.5259	0.0138	0.17	TA
REEZ8H		0.5310	0.0324	0.44	0.5474	0.0353	0.44	TA
XMPAZJ		0.4950	-0.0036	-0.05	0.5672	0.0551	0.69	TN
XTEREU		0.5250	0.0264	0.36	0.5276	0.0155	0.19	TA
ZBRB2C		0.4300	-0.0686	-0.93	0.4720	-0.0401	-0.50	TA

Summary Statistics	Sample GD11	Sample GD12
Grand Means	0.50 COF	0.51 COF
Stnd Dev Btwn Labs	0.07 COF	0.08 COF

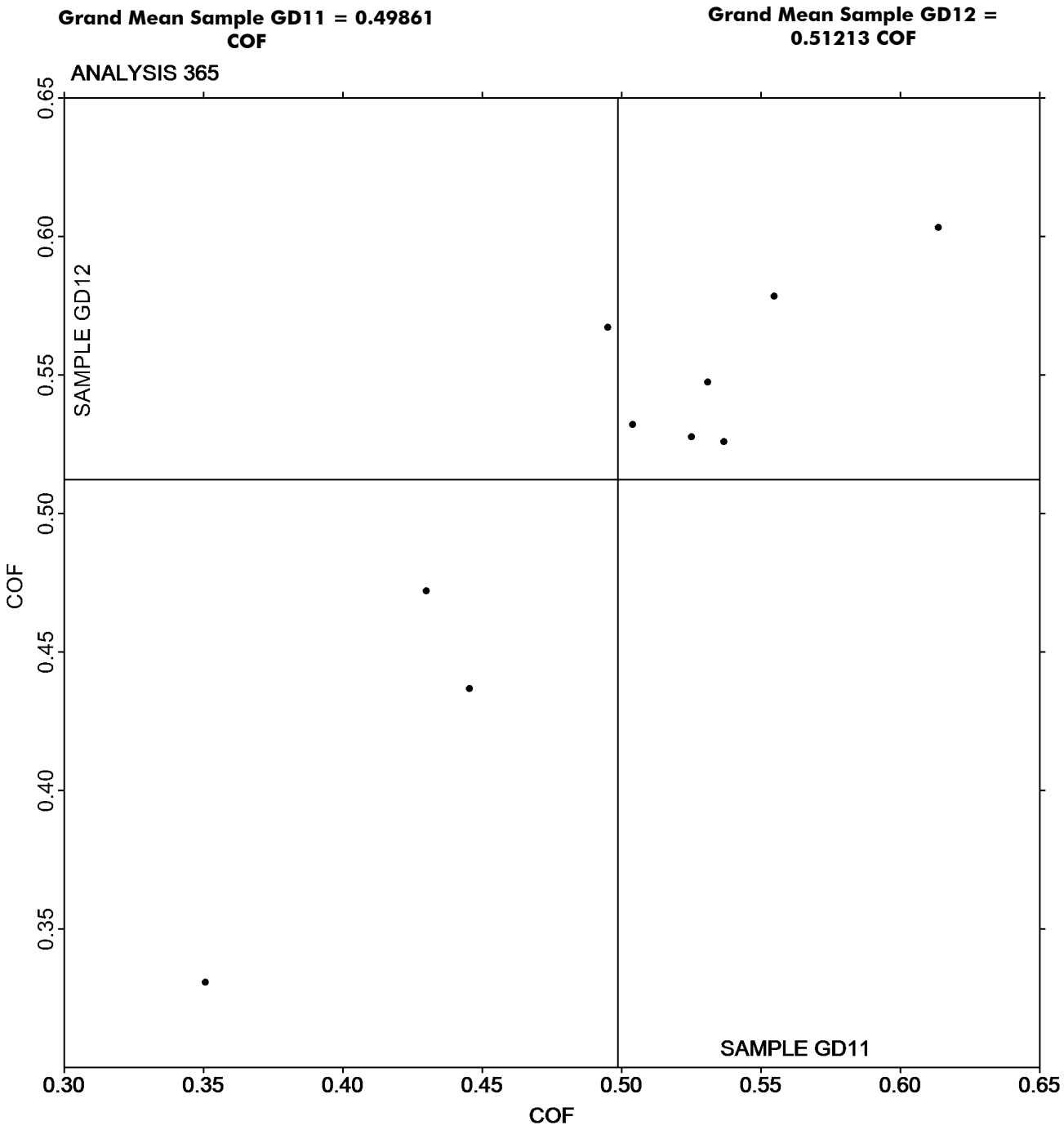
Statistics based on 10 of 10 reporting participants.

Key to Instrument Codes Reported by Participants

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 GE11 Lab Mean	Sample GE11 Diff from Grand Mean	Sample GE11 CPV	Sample GE12 Lab Mean	Sample GE12 Diff from Grand Mean	Sample GE12 CPV	Instr Code
22XLJE		13.35	-0.15	-0.20	13.13	-0.27	-0.40	PP
2VUKHK		12.57	-0.93	-1.20	12.87	-0.53	-0.80	LP
8D94YX		13.05	-0.45	-0.58	12.74	-0.66	-0.99	PP
9THBAL		14.08	0.58	0.74	13.53	0.12	0.18	PP
DB3BP8		12.42	-1.08	-1.39	12.53	-0.87	-1.30	GA
DGBWD4		13.20	-0.30	-0.39	13.23	-0.17	-0.26	LW
DN726K		13.01	-0.49	-0.63	12.89	-0.51	-0.76	PP
DNRD7E		13.10	-0.40	-0.52	13.00	-0.40	-0.60	GS
DUX4B6		13.30	-0.20	-0.26	13.30	-0.10	-0.15	LW
EQARAE		13.36	-0.14	-0.18	13.38	-0.02	-0.03	PP
FALWCH		13.04	-0.46	-0.59	12.99	-0.41	-0.62	LP
FLH37F		13.57	0.07	0.09	14.18	0.78	1.16	HG
GU6KV9		13.56	0.06	0.07	13.54	0.14	0.20	PP
HLTL8P		13.10	-0.40	-0.51	13.71	0.31	0.46	PP
HUXV9M		13.51	0.01	0.01	13.83	0.43	0.64	LA
JPKCMY		13.95	0.45	0.58	14.38	0.98	1.46	LP
K3M32C		13.61	0.11	0.14	13.44	0.04	0.05	LP
M7GZ7L		14.10	0.60	0.77	13.98	0.58	0.86	LP
M8BPPG	*	15.58	2.08	2.67	15.41	2.00	2.99	PP
MRJRLZ		12.83	-0.67	-0.86	13.50	0.10	0.14	GA
MTUTAK		13.14	-0.36	-0.47	13.65	0.24	0.36	PP
NLAQ3H		12.26	-1.24	-1.59	12.87	-0.53	-0.80	LP
NXLDUF		13.58	0.08	0.10	13.35	-0.06	-0.09	LA
NYWZNM		14.07	0.57	0.73	12.87	-0.53	-0.80	TL
PBKNV8		13.63	0.13	0.17	13.54	0.14	0.20	LP
QBER49		13.76	0.26	0.33	14.43	1.03	1.53	HG
REEZ8H		14.33	0.83	1.06	13.52	0.12	0.17	LA
RGKKTX		12.73	-0.77	-0.99	12.59	-0.81	-1.22	VM
RJQ89M		15.44	1.94	2.49	14.71	1.31	1.96	PP
T7GMRF		12.89	-0.61	-0.79	12.63	-0.78	-1.16	PP
TBCJAE		13.10	-0.40	-0.52	13.04	-0.36	-0.54	LP
U93V9U		13.00	-0.50	-0.64	12.97	-0.43	-0.64	LA
VFF4BG		12.52	-0.98	-1.26	12.78	-0.63	-0.94	PP
WXVT49		13.56	0.06	0.08	13.48	0.08	0.11	LP
XCAHAN	*	15.59	2.09	2.69	14.85	1.44	2.16	LA
XTEREU		13.32	-0.18	-0.23	13.41	0.01	0.01	WG
YKYNN8		13.88	0.38	0.49	13.09	-0.31	-0.47	LP
ZBRB2C	*	14.29	0.79	1.02	12.78	-0.62	-0.93	VM
ZGEXX3		13.18	-0.32	-0.42	12.62	-0.79	-1.17	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

Summary Statistics	Sample GE11	Sample GE12
Grand Means	13.50 sec/100 cc	13.40 sec/100 cc
Stnd Dev Btwn Labs	0.78 sec/100 cc	0.67 sec/100 cc

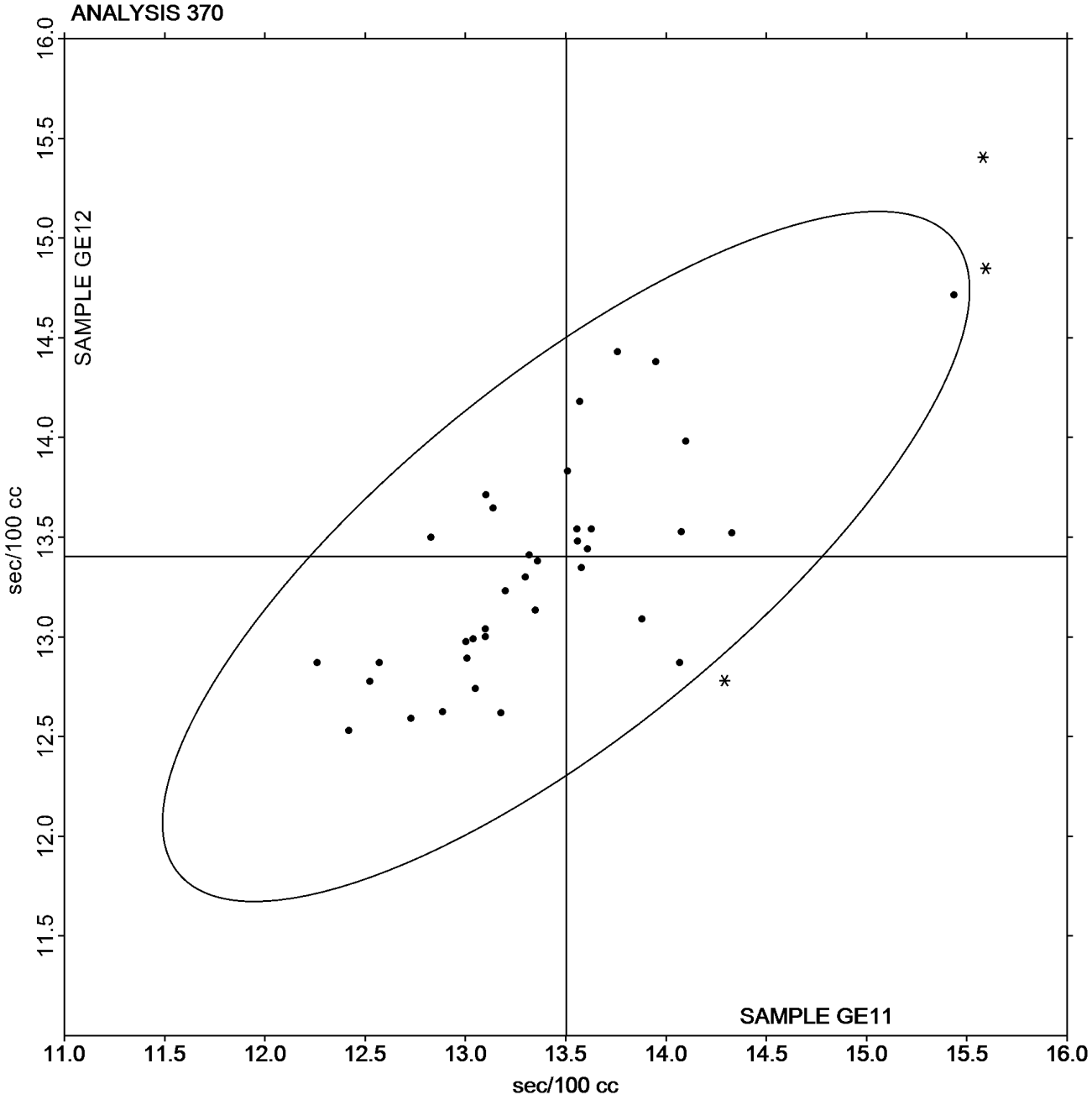
Statistics based on 39 of 39 reporting participants.

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	TL	Gurley Densometer #4110, Oil Flotation
VM	Valmet PaperLab (was Kajaani/Robotest)	WG	W & LE Gurley Tester

Grand Mean Sample GE11 = 13.501 sec/100 cc

Grand Mean Sample GE12 = 13.403 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

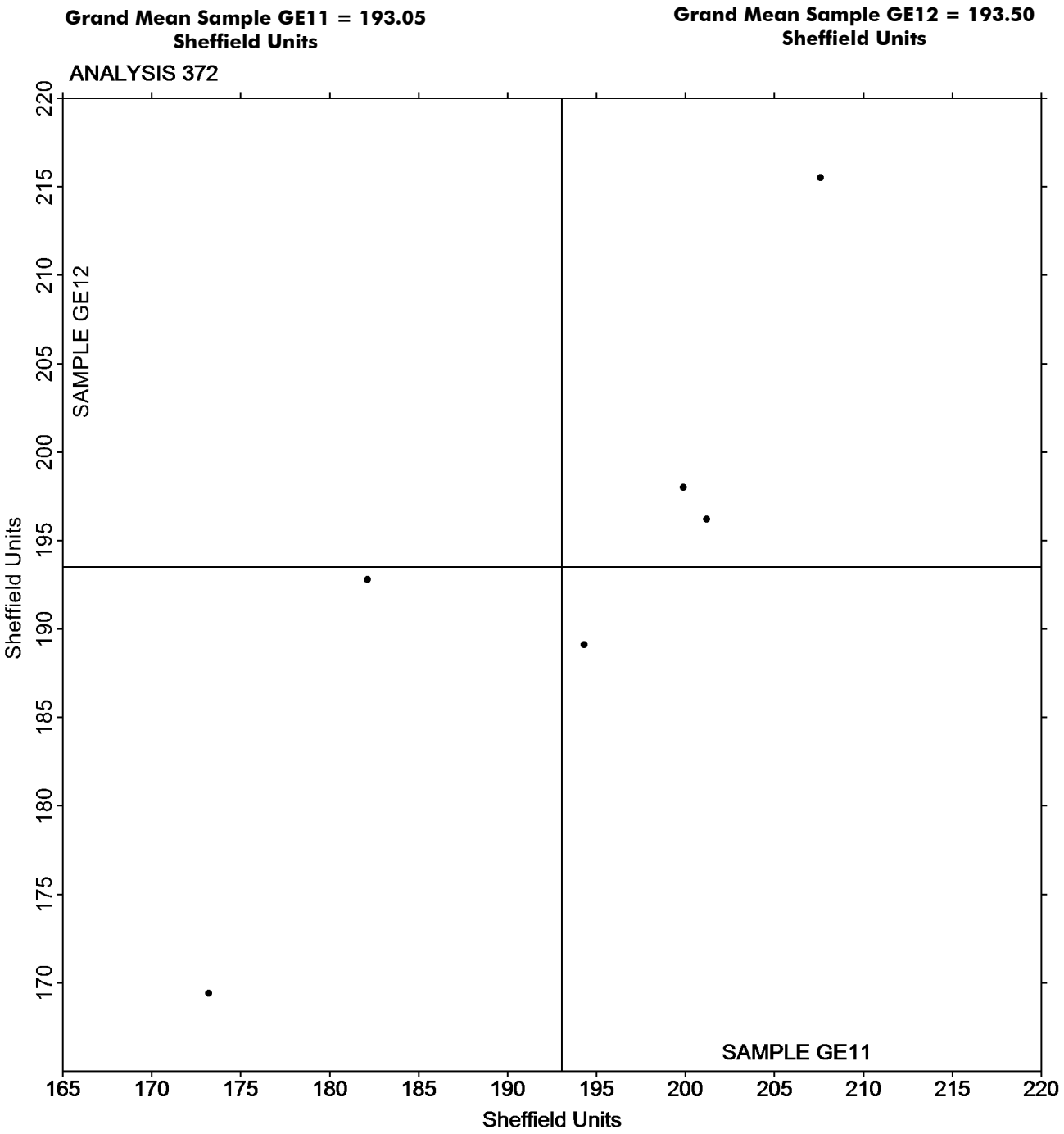
WebCode	Data Flag	Sample GE11 Lab Mean	Sample GE11 Diff from Grand Mean	Sample GE11 CPV	Sample GE12 Lab Mean	Sample GE12 Diff from Grand Mean	Sample GE12 CPV	Instr Code
DNRD7E		173.2	-19.9	-1.53	169.4	-24.1	-1.62	SH
FWXWG9		207.6	14.5	1.12	215.5	22.0	1.48	LA
GU6KV9		194.3	1.2	0.10	189.1	-4.4	-0.30	PP
JJWRGX		199.9	6.8	0.53	198.0	4.5	0.30	HM
RGKKTX		201.2	8.1	0.63	196.2	2.7	0.18	PP
RVGW78		182.1	-10.9	-0.84	192.8	-0.7	-0.05	TT

Summary Statistics	Sample GE11	Sample GE12
Grand Means	193.05 Sheffield Units	193.50 Sheffield Units
Stnd Dev Btwn Labs	12.96 Sheffield Units	14.91 Sheffield Units

Statistics based on 6 of 6 reporting participants.

Key to Instrument Codes Reported by Participants

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 GJ11 Lab Mean	Sample GJ11 Diff from Grand Mean	Sample GJ11 CPV	Sample GJ12 Lab Mean	Sample GJ12 Diff from Grand Mean	Sample GJ12 CPV	Instr Code
3THZCW		1.888	-0.271	-1.46	1.975	-0.210	-1.07	ZZ
4ALZX6		2.160	0.001	0.00	2.299	0.114	0.59	ZZ
6KZG2V		2.320	0.161	0.86	2.283	0.098	0.50	ZZ
86WNCW	X	3.887	1.728	9.27	3.318	1.133	5.80	ZZ
9TFL7N		2.238	0.079	0.42	2.413	0.228	1.17	ZZ
9THBAL		2.359	0.200	1.07	2.252	0.067	0.34	ZZ
A74NLV	*	2.053	-0.106	-0.57	1.728	-0.457	-2.34	ZZ
BDY3QU		2.097	-0.062	-0.33	2.257	0.072	0.37	ZZ
CGFUBV		2.120	-0.039	-0.21	2.030	-0.155	-0.79	ZZ
DEG9U9		1.998	-0.161	-0.86	2.057	-0.128	-0.65	ZZ
EPXF73		2.117	-0.042	-0.23	2.192	0.007	0.04	ZZ
FBWXYG		2.168	0.009	0.05	2.132	-0.053	-0.27	ZZ
HH9VGK	*	1.589	-0.570	-3.06	1.670	-0.515	-2.64	ZZ
HZKKQB		2.491	0.332	1.78	2.303	0.118	0.61	ZZ
M67287		2.076	-0.083	-0.45	2.133	-0.052	-0.27	ZZ
M8BPPG		2.220	0.061	0.33	2.240	0.055	0.28	ZZ
MPEYV9		2.391	0.232	1.24	2.545	0.360	1.84	ZZ
MQLGPX		2.113	-0.046	-0.25	2.249	0.064	0.33	ZZ
MTUTAK		2.223	0.064	0.34	2.410	0.225	1.15	ZZ
PQJ9W6		2.308	0.149	0.80	2.200	0.015	0.08	ZZ
RGKKTX		2.155	-0.004	-0.02	2.124	-0.061	-0.31	ZZ
TKXMFT		2.208	0.049	0.26	2.383	0.198	1.02	ZZ
WDA2Z7	X	12.533	10.374	55.68	11.037	8.852	45.34	ZZ
WW34FL		2.424	0.265	1.42	2.377	0.192	0.98	ZZ
X8Z8GU		2.373	0.214	1.15	2.340	0.155	0.80	ZZ
XTEREU		2.035	-0.124	-0.67	2.055	-0.130	-0.66	ZZ
YMM6XF		1.949	-0.210	-1.13	2.069	-0.116	-0.59	ZZ
Z7R4HZ		2.079	-0.080	-0.43	2.171	-0.014	-0.07	ZZ
ZGEXX3		2.145	-0.014	-0.08	2.102	-0.083	-0.42	ZZ

Summary Statistics	Sample GJ11	Sample GJ12
Grand Means	2.16 Microns	2.18 Microns
Stnd Dev Btwn Labs	0.19 Microns	0.20 Microns

Statistics based on 27 of 29 reporting participants.

Comments on Assigned Data Flags for Test #376

86WNCW (X) - Extreme Data.

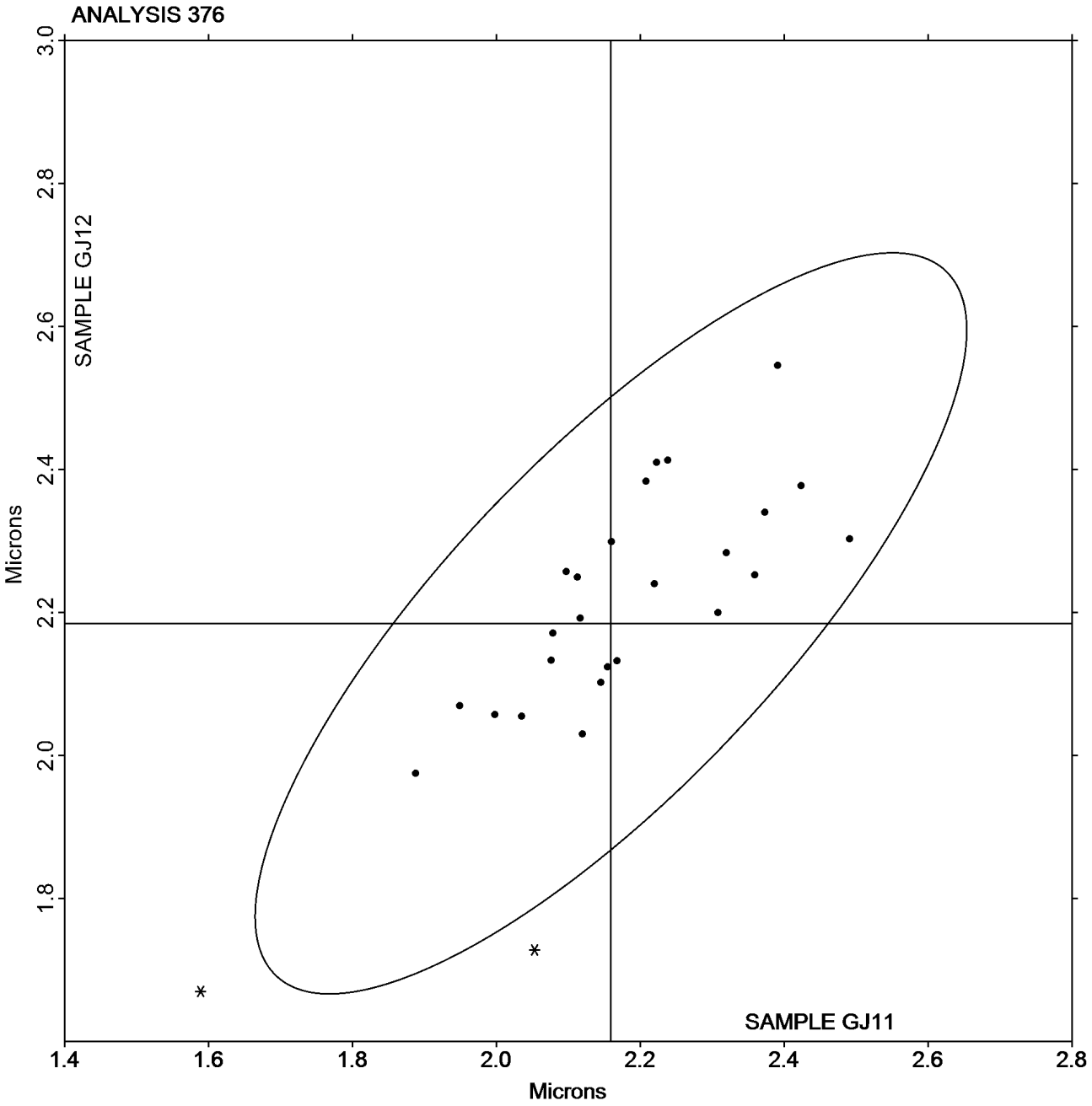
WDA2Z7 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GJ11 = 2.1591 Microns

Grand Mean Sample GJ12 = 2.1848 Microns



Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

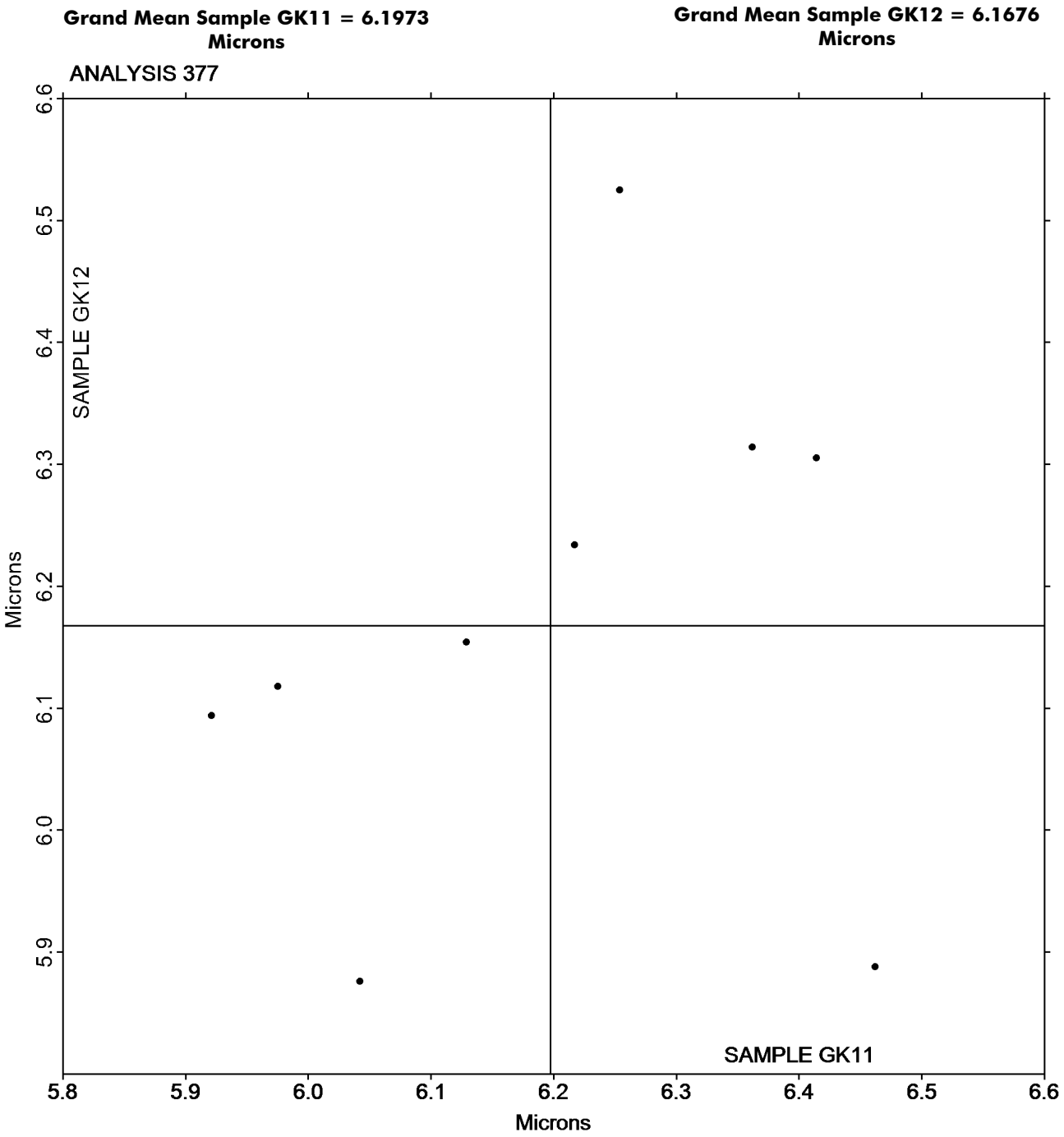
WebCode	Data Flag	Sample GK11 Lab Mean	Sample GK11 Diff from Grand Mean	Sample GK11 CPV	Sample GK12 Lab Mean	Sample GK12 Diff from Grand Mean	Sample GK12 CPV	Instr Code
8D94YX		6.042	-0.155	-0.80	5.876	-0.292	-1.41	ZZ
9THBAL		6.462	0.265	1.36	5.888	-0.280	-1.35	ZZ
B666VE		6.254	0.057	0.29	6.525	0.357	1.72	ZZ
DEG9U9		5.975	-0.222	-1.14	6.118	-0.050	-0.24	ZZ
HLTL8P		6.362	0.165	0.85	6.314	0.146	0.71	ZZ
MQLGPX		6.414	0.217	1.11	6.305	0.137	0.66	ZZ
VFF4BG		6.129	-0.068	-0.35	6.154	-0.014	-0.07	ZZ
XMPAZJ		6.217	0.020	0.10	6.234	0.066	0.32	ZZ
XTEREU		5.921	-0.276	-1.42	6.094	-0.074	-0.35	ZZ

Summary Statistics	Sample GK11	Sample GK12
Grand Means	6.20 Microns	6.17 Microns
Stnd Dev Btwn Labs	0.19 Microns	0.21 Microns

Statistics based on 9 of 9 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 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL11 Lab Mean	Sample GL11 Diff from Grand Mean	Sample GL11 CPV	Sample GL12 Lab Mean	Sample GL12 Diff from Grand Mean	Sample GL12 CPV	Instr Code
22XLJE		121.5	2.4	0.36	117.0	0.6	0.10	PP
3THZCW		125.5	6.4	0.95	122.9	6.5	1.06	LA
6B6P2F		107.4	-11.8	-1.75	103.4	-13.0	-2.11	MP
86WNCW		118.1	-1.0	-0.15	111.6	-4.8	-0.77	HM
8D94YX		125.3	6.2	0.92	119.6	3.2	0.53	PP
9TFL7N		118.7	-0.4	-0.06	119.2	2.8	0.46	PP
9THBAL		122.9	3.8	0.56	121.6	5.2	0.85	LW
A74NLV	X	140.7	21.6	3.22	142.3	25.9	4.20	TT
B666VE		116.7	-2.4	-0.36	114.7	-1.7	-0.27	PP
BDY3QU	*	131.5	12.4	1.84	118.7	2.3	0.38	HM
DEG9U9		127.1	8.0	1.19	127.4	11.0	1.79	LW
DN726K		112.5	-6.6	-0.99	108.1	-8.2	-1.33	PP
DNRD7E		117.7	-1.4	-0.21	120.8	4.4	0.72	XX
DUX4B6		113.9	-5.2	-0.78	115.1	-1.3	-0.21	TS
EQARAE		122.1	3.0	0.44	118.7	2.3	0.38	SH
FLH37F		117.2	-1.9	-0.29	119.8	3.4	0.56	HM
FWXWG9		116.4	-2.7	-0.41	116.7	0.3	0.05	LA
GU6KV9		116.4	-2.7	-0.41	113.3	-3.1	-0.50	PP
HH9VGK		115.4	-3.7	-0.56	109.9	-6.5	-1.05	LW
HLTL8P		120.3	1.1	0.17	115.8	-0.6	-0.10	PP
HUXV9M		113.7	-5.4	-0.81	114.4	-2.0	-0.32	LA
HZKKQB		116.6	-2.5	-0.38	112.9	-3.5	-0.56	PP
JPKCMY		113.0	-6.1	-0.91	107.2	-9.2	-1.49	LW
K2ATTC	X	184.3	65.2	9.72	175.6	59.2	9.60	TT
KH34X3		115.1	-4.1	-0.60	112.6	-3.8	-0.62	LA
M67287	*	124.5	5.3	0.79	128.6	12.3	1.99	PP
M8BPPG		108.7	-10.4	-1.55	114.3	-2.1	-0.33	PP
MER3RL		113.8	-5.4	-0.80	112.5	-3.8	-0.62	PP
MQLGPX		120.7	1.6	0.23	115.6	-0.8	-0.12	LB
MRJRLZ		122.6	3.4	0.51	119.9	3.5	0.56	GA
MTUTAK		114.8	-4.3	-0.64	109.2	-7.2	-1.17	PP
NYWZNM		115.0	-4.1	-0.62	117.0	0.6	0.10	SS
PBKNV8		130.9	11.8	1.75	123.2	6.8	1.11	LW
PQJ9W6		125.9	6.8	1.01	120.8	4.5	0.72	PP
QBER49		125.8	6.7	0.99	119.1	2.7	0.44	TS
RGKKTX		121.7	2.6	0.38	112.5	-3.9	-0.63	VM
RJQ89M		113.8	-5.3	-0.80	110.3	-6.1	-0.99	PP
RVGW78		110.5	-8.7	-1.29	109.2	-7.2	-1.16	TT
T7GMRF		115.6	-3.6	-0.53	111.4	-4.9	-0.80	PP
TAF7ML		114.6	-4.5	-0.68	112.8	-3.6	-0.58	LA
TBCJAE		120.7	1.6	0.23	115.4	-1.0	-0.16	LW

Paper & Paperboard Interlaboratory Testing Program

Report #3212G, December 2022

Analysis 378
Roughness - Sheffield Type
TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL11 Lab Mean	Sample GL11 Diff from Grand Mean	Sample GL11 CPV	Sample GL12 Lab Mean	Sample GL12 Diff from Grand Mean	Sample GL12 CPV	Instr Code
URCTP6		121.5	2.4	0.35	118.6	2.2	0.36	GA
VFF4BG	X	22.7	-96.4	-14.38	24.1	-92.3	-14.95	PP
X8Z8GU	X	185.0	65.9	9.82	180.0	63.6	10.31	GL
XCAHAN		103.1	-16.1	-2.39	102.2	-14.2	-2.30	LA
XMPAZJ		121.7	2.6	0.38	124.5	8.1	1.32	LW
XTEREU	*	139.5	20.4	3.04	132.0	15.6	2.53	XX
YMM6XF		118.8	-0.3	-0.05	119.4	3.0	0.49	LW
ZBRB2C		126.5	7.4	1.10	121.7	5.3	0.86	PP
ZGEXX3		124.5	5.4	0.80	121.5	5.2	0.84	PP

Summary Statistics	Sample GL11	Sample GL12
Grand Means	119.13 Sheffield	116.37 Sheffield
Stnd Dev Btwn Labs	6.71 Sheffield	6.17 Sheffield

Statistics based on 46 of 50 reporting participants.

Comments on Assigned Data Flags for Test #378

X8Z8GU (X) - Extreme Data.

K2ATTC (X) - Extreme Data.

A74NLV (X) - Data for both samples are high. Possible Systematic Error.

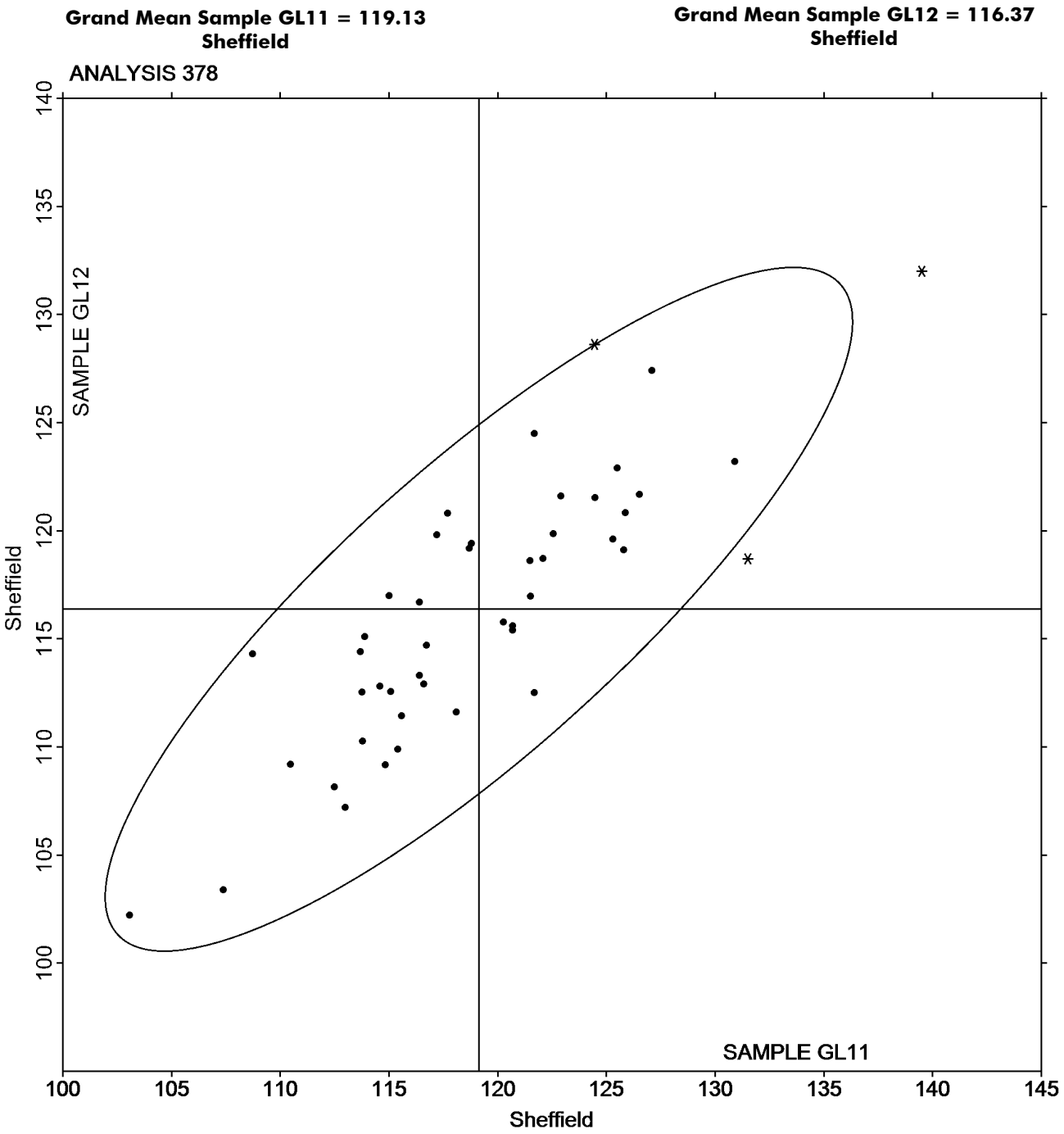
VFF4BG (X) - Extreme Data.

Analysis Notes:

RVGW78 - One determination removed from the Lab Mean for Sample GL12 (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
MP	Metso Paperlab	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



Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

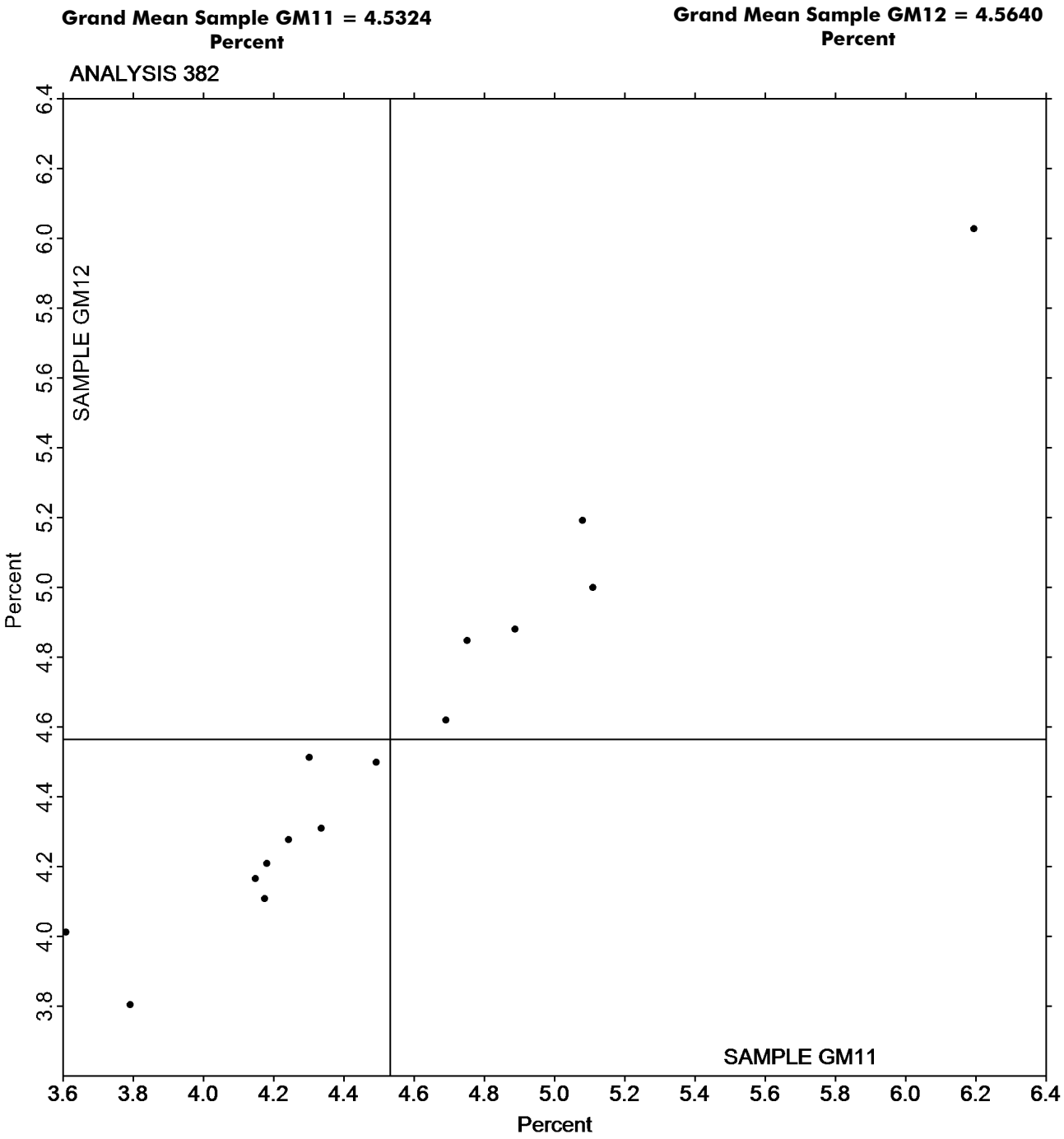
WebCode	Data Flag	Sample GM11 Lab Mean	Sample GM11 Diff from Grand Mean	Sample GM11 CPV	Sample GM12 Lab Mean	Sample GM12 Diff from Grand Mean	Sample GM12 CPV	Instr Code
6KZG2V		4.148	-0.385	-0.61	4.166	-0.398	-0.71	ZZ
A74NLV		6.195	1.663	2.63	6.027	1.463	2.60	ZZ
GC8ZHU		4.888	0.355	0.56	4.880	0.316	0.56	ZZ
HLTL8P		4.301	-0.231	-0.37	4.513	-0.051	-0.09	ZZ
JJWRGX		4.751	0.219	0.35	4.848	0.284	0.50	ZZ
KFC3WL		5.110	0.578	0.92	5.000	0.436	0.77	ZZ
M32B4C		4.690	0.158	0.25	4.620	0.056	0.10	ZZ
NT8KXV		5.080	0.548	0.87	5.191	0.627	1.11	ZZ
PBKNV8		3.792	-0.740	-1.17	3.804	-0.760	-1.35	ZZ
PJXB9G		3.608	-0.924	-1.46	4.012	-0.552	-0.98	ZZ
T3WW2B		4.492	-0.041	-0.06	4.498	-0.066	-0.12	ZZ
VWJXHG		4.242	-0.290	-0.46	4.278	-0.286	-0.51	ZZ
WLXWXZ		4.335	-0.197	-0.31	4.310	-0.254	-0.45	ZZ
XZDCHB		4.174	-0.358	-0.57	4.107	-0.457	-0.81	ZZ
Z6GY7W		4.180	-0.352	-0.56	4.208	-0.356	-0.63	ZZ

Summary Statistics	Sample GM11	Sample GM12
Grand Means	4.53 Percent	4.56 Percent
Stnd Dev Btwn Labs	0.63 Percent	0.56 Percent

Statistics based on 15 of 15 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 GN11 Lab Mean	Sample GN11 Diff from Grand Mean	Sample GN11 CPV	Sample GN12 Lab Mean	Sample GN12 Diff from Grand Mean	Sample GN12 CPV	Instr Code
22XLJE		89.19	0.08	0.16	89.20	0.08	0.18	ZZ
6DJXL3		89.14	0.03	0.06	88.80	-0.32	-0.72	ZZ
8D94YX	*	89.95	0.84	1.67	90.25	1.13	2.52	ZZ
B666VE		88.99	-0.12	-0.23	89.13	0.01	0.03	ZZ
BDY3QU		89.19	0.08	0.16	89.35	0.23	0.51	ZZ
CGFUBV		88.60	-0.51	-1.02	88.86	-0.26	-0.58	ZZ
DNRD7E		89.99	0.88	1.76	89.68	0.56	1.25	ZZ
DUX4B6		89.06	-0.05	-0.10	88.85	-0.27	-0.61	ZZ
DZKUUF		89.62	0.51	1.01	89.36	0.23	0.53	ZZ
EQARAE	X	83.71	-5.40	-10.78	83.43	-5.69	-12.75	ZZ
FBWXYG		89.17	0.06	0.12	88.92	-0.20	-0.44	ZZ
FLH37F		88.89	-0.22	-0.44	88.66	-0.46	-1.03	ZZ
FWXWG9		90.19	1.08	2.16	90.02	0.90	2.01	ZZ
GU6KV9		88.71	-0.40	-0.80	88.90	-0.22	-0.49	ZZ
HLTL8P		88.96	-0.15	-0.30	88.97	-0.15	-0.34	ZZ
M8BPPG		88.90	-0.22	-0.43	88.99	-0.13	-0.29	ZZ
MER3RL		88.60	-0.51	-1.02	88.58	-0.54	-1.21	ZZ
NYWZNM		88.43	-0.68	-1.36	89.03	-0.09	-0.20	ZZ
PKB8DL		89.16	0.05	0.09	88.83	-0.29	-0.65	ZZ
RJQ89M		89.00	-0.11	-0.23	88.95	-0.17	-0.39	ZZ
RVGW78		89.65	0.54	1.08	89.47	0.35	0.78	ZZ
T7GMRF		89.25	0.14	0.28	89.35	0.23	0.51	ZZ
VFF4BG		89.03	-0.08	-0.16	89.04	-0.08	-0.18	ZZ
WW34FL		89.26	0.14	0.29	89.14	0.02	0.05	ZZ
XCAHAN		89.39	0.28	0.56	89.57	0.45	1.01	ZZ
ZBRB2C		87.91	-1.20	-2.40	88.07	-1.05	-2.35	ZZ
ZGEXX3		88.66	-0.45	-0.90	89.17	0.05	0.11	ZZ

Summary Statistics	Sample GN11	Sample GN12
Grand Means	89.11 Percent	89.12 Percent
Stnd Dev Btwn Labs	0.50 Percent	0.45 Percent

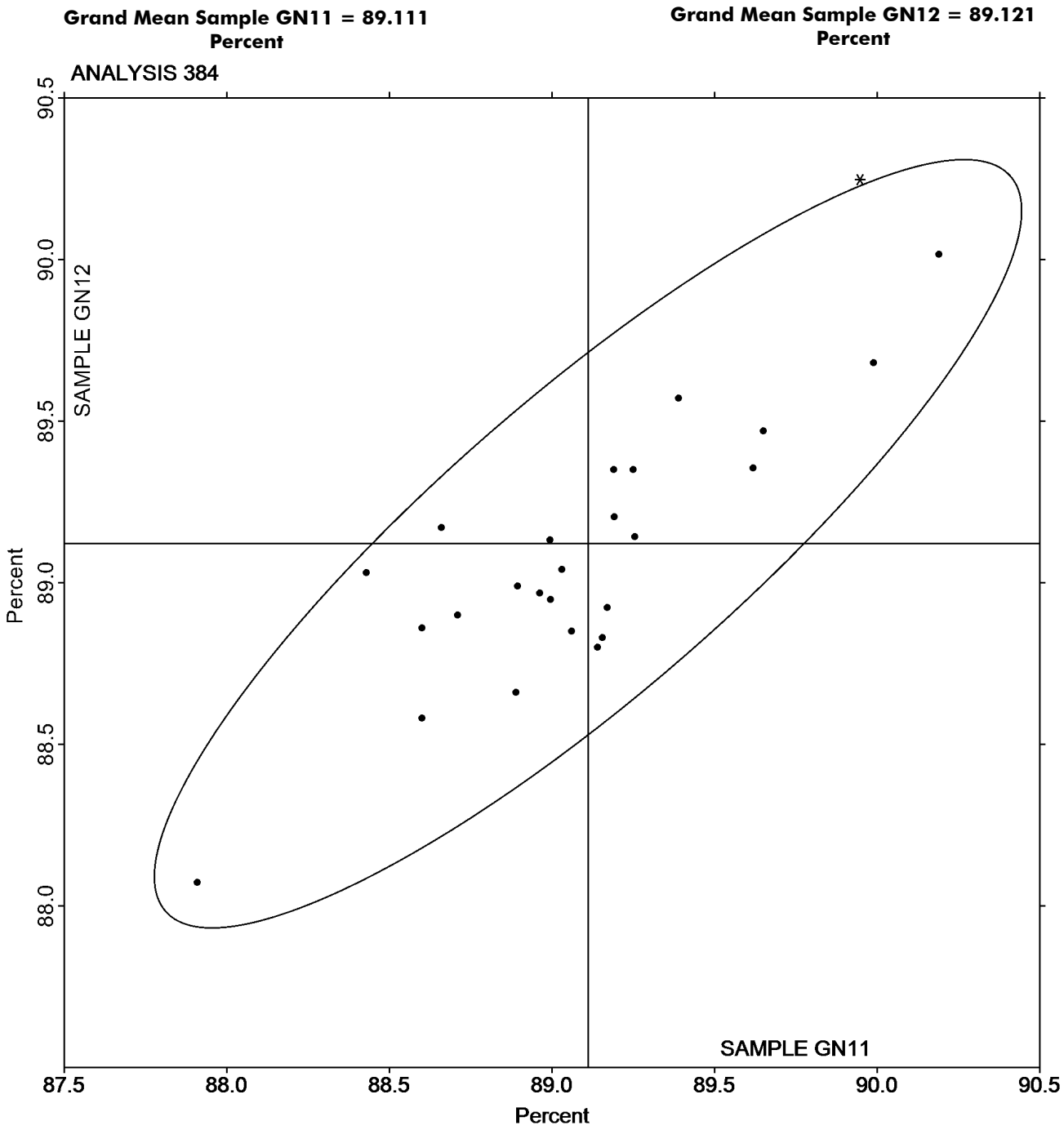
Statistics based on 26 of 27 reporting participants.

Comments on Assigned Data Flags for Test #384

EQARAE (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

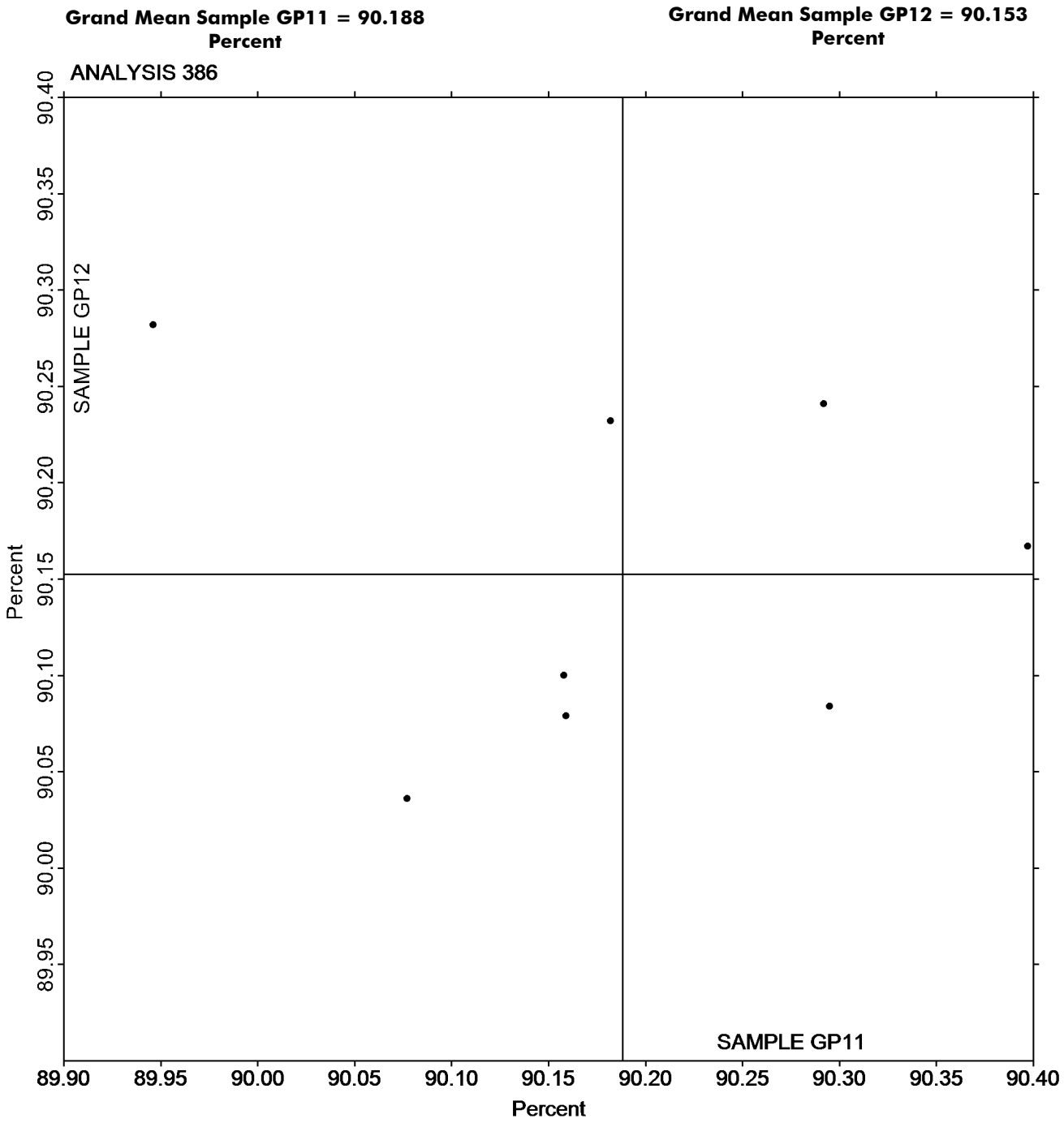
WebCode	Data Flag	Sample GP11 Lab Mean	Sample GP11 Diff from Grand Mean	Sample GP11 CPV	Sample GP12 Lab Mean	Sample GP12 Diff from Grand Mean	Sample GP12 CPV	Instr Code
C7VNEQ		90.29	0.10	0.74	90.24	0.09	0.97	ZZ
DGBWD4		90.40	0.21	1.48	90.17	0.01	0.16	ZZ
FALWCH		90.16	-0.03	-0.21	90.08	-0.07	-0.81	ZZ
GC8ZHU		90.16	-0.03	-0.21	90.10	-0.05	-0.58	ZZ
NLAQ3H		89.95	-0.24	-1.72	90.28	0.13	1.43	ZZ
PBKNV8		90.08	-0.11	-0.79	90.04	-0.12	-1.29	ZZ
YKYNN8		90.18	-0.01	-0.04	90.23	0.08	0.88	ZZ
Z7R4HZ		90.30	0.11	0.76	90.08	-0.07	-0.76	ZZ

Summary Statistics	Sample GP11	Sample GP12
Grand Means	90.19 Percent	90.15 Percent
Stnd Dev Btwn Labs	0.14 Percent	0.09 Percent

Statistics based on 8 of 8 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

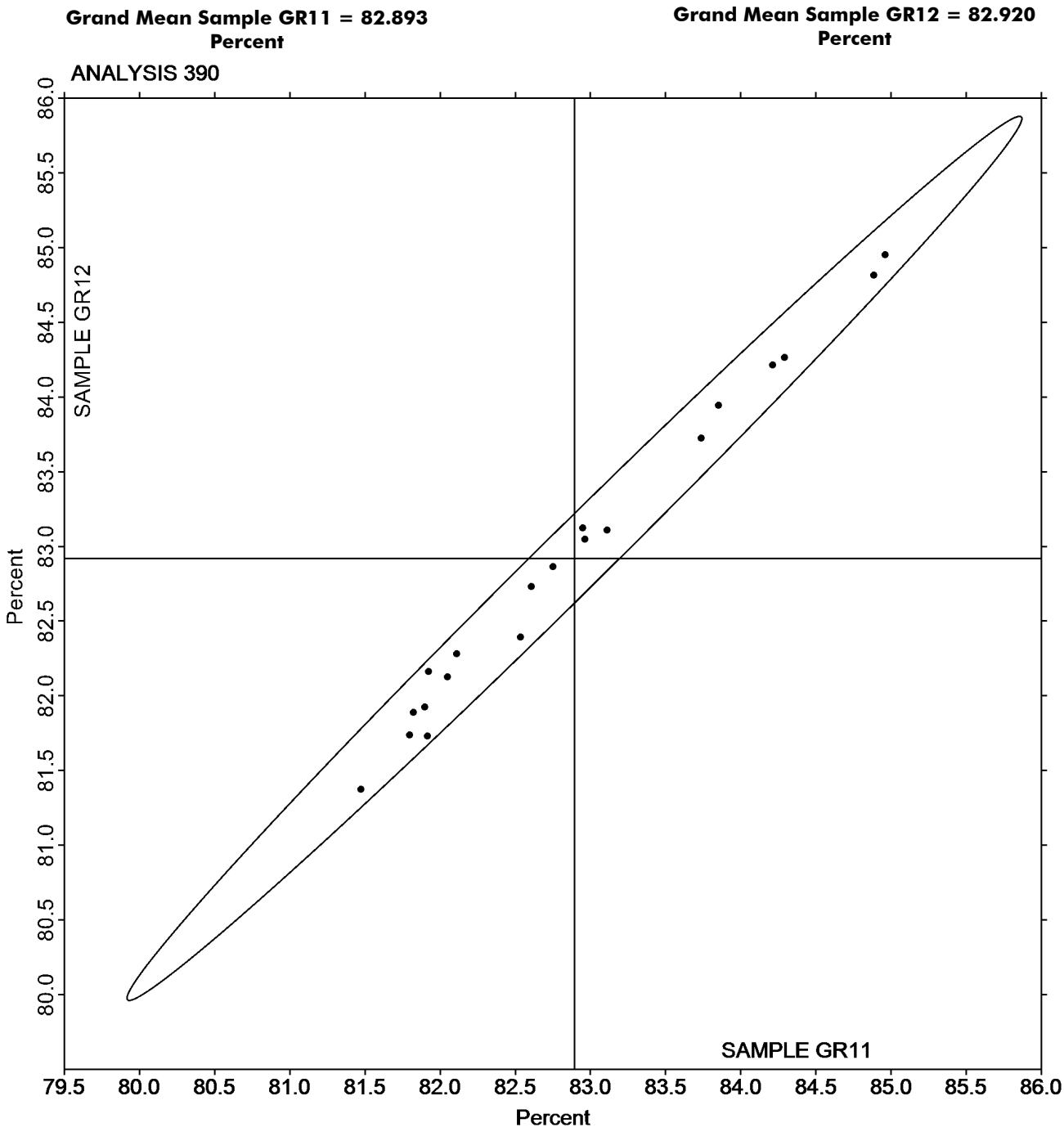
WebCode	Data Flag	Sample GR11 Lab Mean	Sample GR11 Diff from Grand Mean	Sample GR11 CPV	Sample GR12 Lab Mean	Sample GR12 Diff from Grand Mean	Sample GR12 CPV	Instr Code
22XLJE		81.80	-1.10	-1.01	81.74	-1.18	-1.09	TP
4ALZX6		84.29	1.40	1.29	84.27	1.35	1.25	TS
9TFL7N		82.75	-0.14	-0.13	82.86	-0.06	-0.05	TP
9THBAL		83.74	0.84	0.78	83.73	0.81	0.75	HG
BDY3QU		81.92	-0.98	-0.90	81.73	-1.19	-1.10	TS
CGFUBV		81.92	-0.97	-0.89	82.16	-0.76	-0.70	TS
DEG9U9		82.95	0.06	0.05	83.12	0.20	0.19	TP
DNRD7E		84.96	2.07	1.90	84.95	2.03	1.88	PE
GU6KV9		82.97	0.07	0.07	83.05	0.13	0.12	XC
HZKKQB		84.21	1.32	1.21	84.21	1.29	1.20	TP
M67287		83.85	0.96	0.88	83.94	1.02	0.95	HG
M8BPPG		82.54	-0.36	-0.33	82.39	-0.53	-0.49	TP
MER3RL		81.83	-1.07	-0.98	81.89	-1.03	-0.96	XX
NYWZNM		84.89	1.99	1.84	84.81	1.89	1.75	TP
PQJ9W6		83.11	0.22	0.20	83.11	0.19	0.17	HG
QBER49		82.05	-0.84	-0.78	82.13	-0.79	-0.74	TS
T7GMRF		81.90	-0.99	-0.91	81.93	-0.99	-0.92	TT
X8Z8GU		81.48	-1.42	-1.30	81.38	-1.54	-1.43	TS
YMM6XF		82.61	-0.29	-0.26	82.73	-0.19	-0.18	HZ
ZGEXX3		82.11	-0.78	-0.72	82.28	-0.64	-0.59	TT

Summary Statistics	Sample GR11	Sample GR12
Grand Means	82.89 Percent	82.92 Percent
Stnd Dev Btwn Labs	1.09 Percent	1.08 Percent

Statistics based on 20 of 20 reporting participants.

Key to Instrument Codes Reported by Participants

HG	Hunter Labscan / XE	HZ	Hunter Lab ColorFlex EZ Series
PE	Photovolt 577	TP	Technidyne Test/Plus
TS	Technidyne Brightimeter Micro S-5	TT	Technidyne Brightimeter Micro S4-M
XC	X-Rite Color i5	XX	Instrument make/model not specified by lab



Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

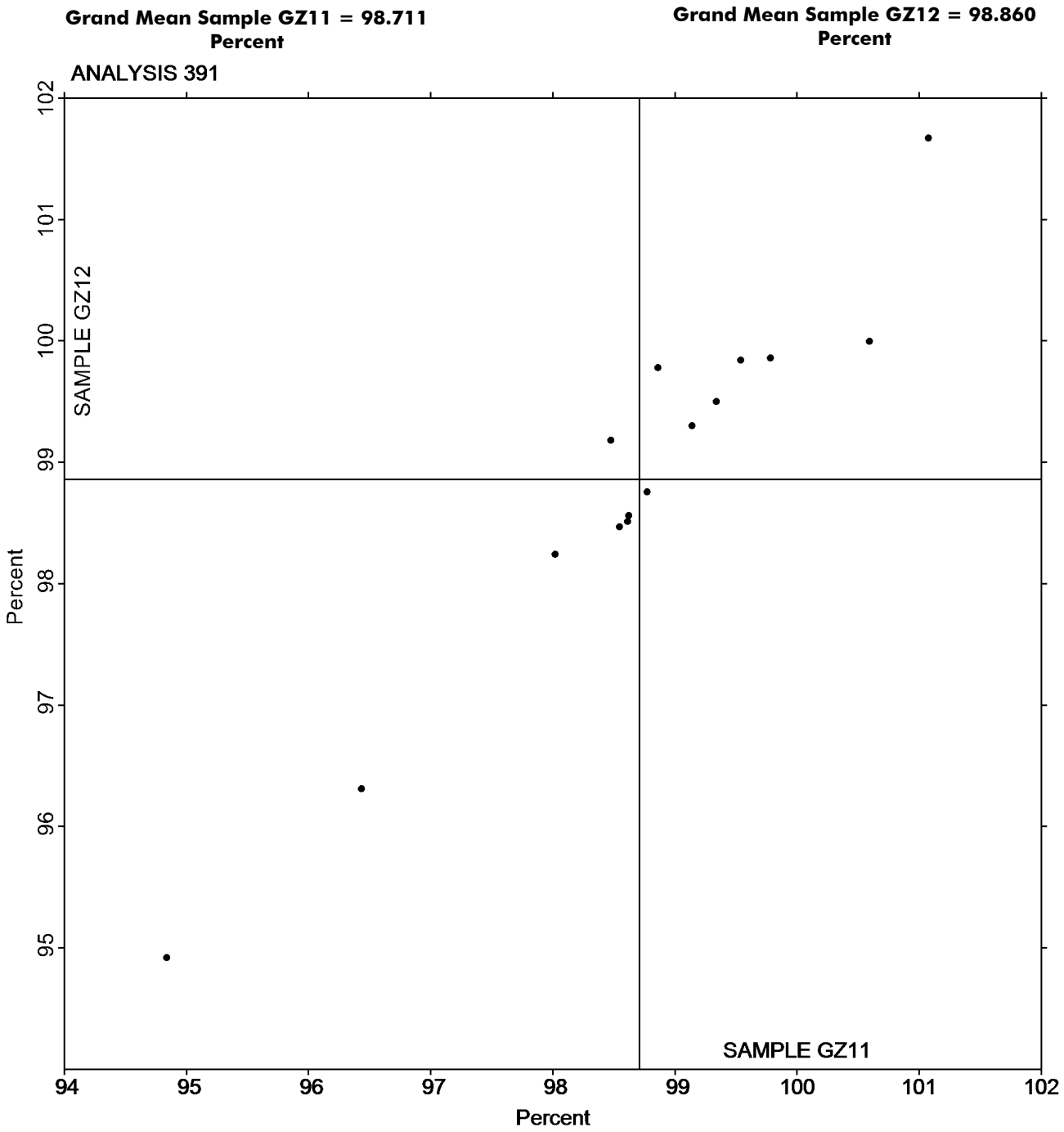
WebCode	Data Flag	Sample GZ11 Lab Mean	Sample GZ11 Diff from Grand Mean	Sample GZ11 CPV	Sample GZ12 Lab Mean	Sample GZ12 Diff from Grand Mean	Sample GZ12 CPV	Instr Code
22XLJE		98.61	-0.10	-0.06	98.51	-0.35	-0.22	PP
8D94YX		98.62	-0.09	-0.06	98.56	-0.30	-0.19	TS
CDGJFV		96.44	-2.27	-1.50	96.31	-2.55	-1.60	EF
DUX4B6		99.14	0.43	0.28	99.30	0.44	0.28	TS
FBWXYG		98.47	-0.24	-0.16	99.18	0.32	0.20	PP
HLTL8P		98.77	0.06	0.04	98.75	-0.11	-0.07	TS
PKB8DL		99.78	1.07	0.71	99.86	1.00	0.63	PP
QBER49		99.34	0.63	0.41	99.50	0.64	0.40	TS
RJQ89M		98.02	-0.69	-0.45	98.24	-0.62	-0.39	PP
RVGW78		98.86	0.15	0.10	99.78	0.92	0.58	TT
VFF4BG		99.54	0.83	0.55	99.84	0.98	0.62	TT
WW34FL		98.55	-0.16	-0.11	98.47	-0.39	-0.25	PP
XCAHAN		100.59	1.88	1.24	99.99	1.13	0.71	TD
ZBRB2C		94.84	-3.87	-2.55	94.92	-3.94	-2.47	PP
ZGEXX3		101.08	2.37	1.56	101.67	2.81	1.77	EF

Summary Statistics	Sample GZ11	Sample GZ12
Grand Means	98.71 Percent	98.86 Percent
Stnd Dev Btwn Labs	1.52 Percent	1.59 Percent

Statistics based on 15 of 15 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

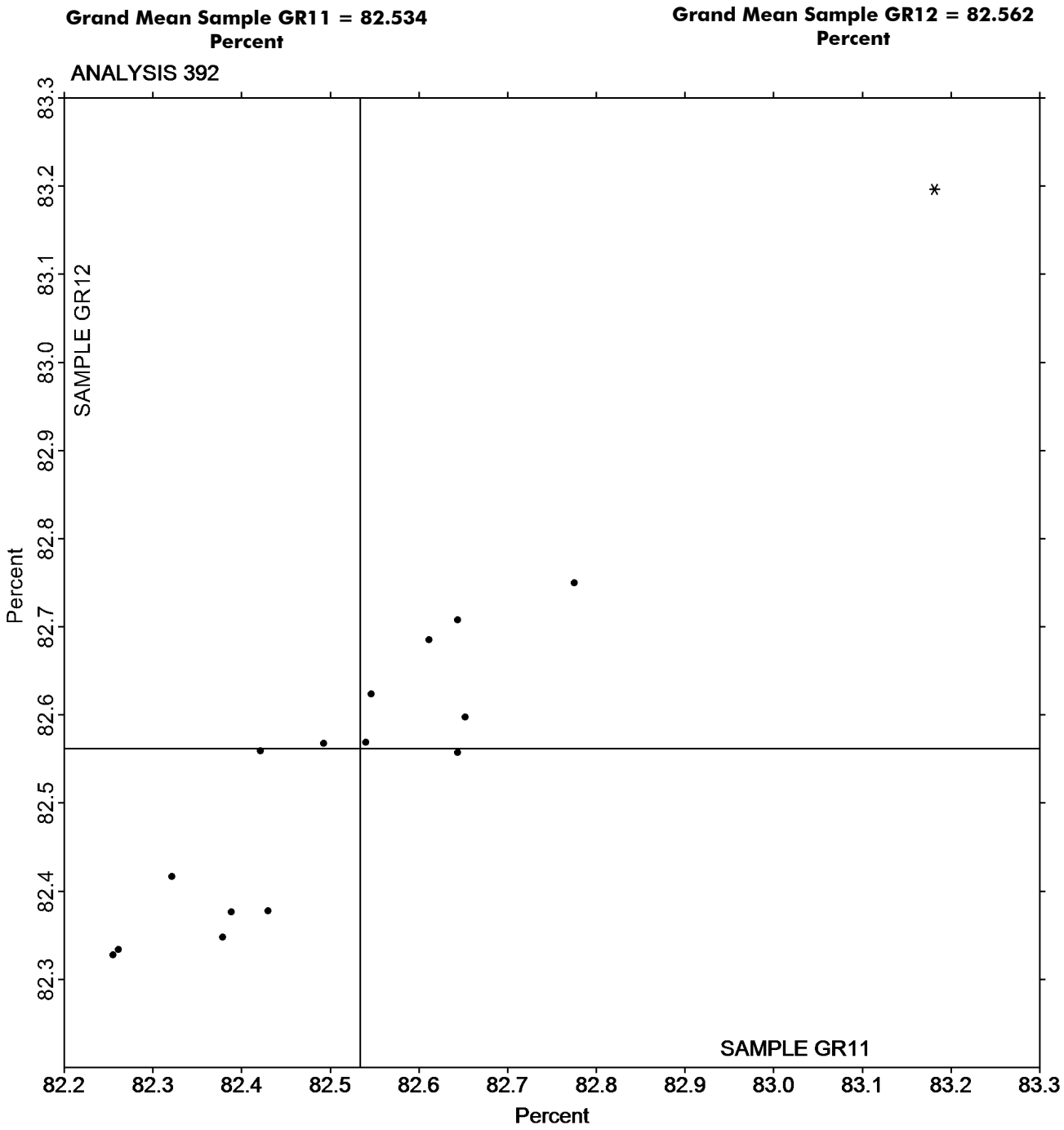
WebCode	Data Flag	Sample GR11 Lab Mean	Sample GR11 Diff from Grand Mean	Sample GR11 CPV	Sample GR12 Lab Mean	Sample GR12 Diff from Grand Mean	Sample GR12 CPV	Instr Code
4ALZX6		82.43	-0.10	-0.45	82.38	-0.18	-0.84	TC
6GYBLP		82.39	-0.15	-0.63	82.38	-0.19	-0.85	TC
9TFL7N		82.55	0.01	0.05	82.62	0.06	0.28	LT
9THBAL		82.49	-0.04	-0.18	82.57	0.01	0.03	TC
A74NLV		82.26	-0.28	-1.22	82.33	-0.23	-1.07	LE
BDY3QU		82.26	-0.27	-1.19	82.33	-0.23	-1.04	LT
DEG9U9		82.65	0.12	0.52	82.60	0.04	0.16	EG
EPXF73		82.64	0.11	0.48	82.56	0.00	-0.02	TC
GC8ZHU	*	83.18	0.65	2.82	83.20	0.63	2.89	XX
HZKKQB		82.42	-0.11	-0.49	82.56	0.00	-0.01	TC
JPKCMY		82.64	0.11	0.48	82.71	0.15	0.66	EF
PBKNV8		82.32	-0.21	-0.93	82.42	-0.15	-0.66	LE
PRBL29		82.78	0.24	1.05	82.75	0.19	0.86	LE
TKXMFT		82.38	-0.16	-0.68	82.35	-0.21	-0.98	TC
YKYNN8		82.54	0.01	0.03	82.57	0.01	0.03	TC
Z7R4HZ		82.61	0.08	0.34	82.69	0.12	0.56	AC

Summary Statistics	Sample GR11	Sample GR12
Grand Means	82.53 Percent	82.56 Percent
Stnd Dev Btwn Labs	0.23 Percent	0.22 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	LE	L & W Elrepho
LT	L & W Elrepho SE 071	TC	Technidyne Color Touch Series
XX	Instrument make/model not specified by lab		



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

Paper & Paperboard Interlaboratory Testing Program

Report #3212G, December 2022

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

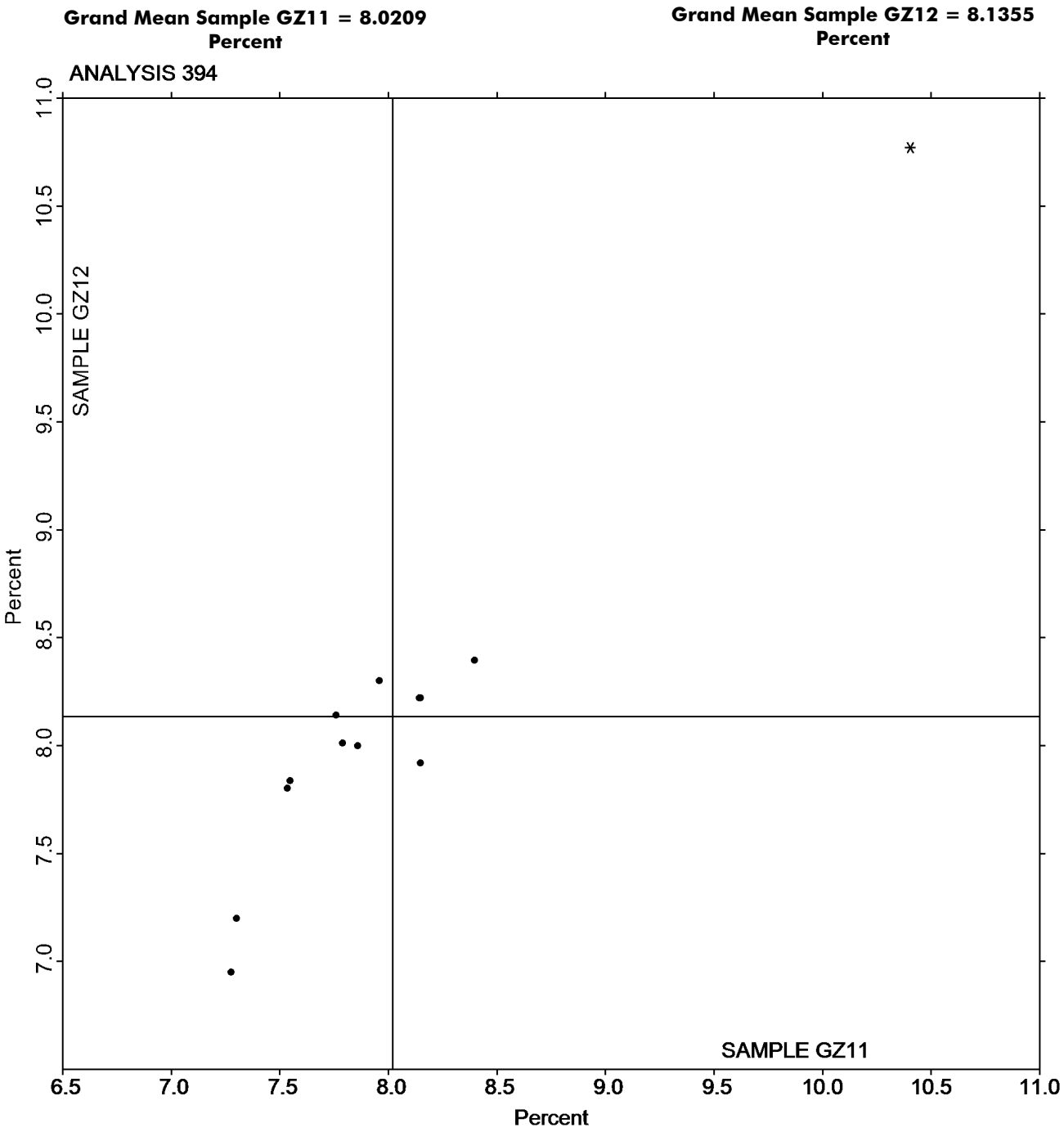
WebCode	Data Flag	Sample GZ11 Lab Mean	Sample GZ11 Diff from Grand Mean	Sample GZ11 CPV	Sample GZ12 Lab Mean	Sample GZ12 Diff from Grand Mean	Sample GZ12 CPV	Instr Code
22XLJE		8.144	0.123	0.16	8.220	0.084	0.09	XX
8D94YX		8.148	0.127	0.16	7.918	-0.218	-0.24	TS
CDGJFV		7.276	-0.745	-0.94	6.950	-1.186	-1.32	EF
FBWXYG		7.536	-0.485	-0.61	7.802	-0.334	-0.37	PP
HLTL8P		8.148	0.127	0.16	8.220	0.084	0.09	TS
PKB8DL		7.790	-0.231	-0.29	8.012	-0.124	-0.14	PP
QBER49		7.860	-0.161	-0.20	8.000	-0.136	-0.15	TS
RJQ89M		7.760	-0.261	-0.33	8.140	0.004	0.00	PP
VFF4BG		7.960	-0.061	-0.08	8.300	0.164	0.18	TT
WW34FL		7.548	-0.473	-0.60	7.836	-0.300	-0.33	PP
XCAHAN		8.398	0.377	0.48	8.394	0.258	0.29	TD
ZBRB2C		7.300	-0.721	-0.91	7.200	-0.936	-1.05	PP
ZGEXX3	*	10.404	2.383	3.00	10.770	2.634	2.94	EF

Summary Statistics	Sample GZ11	Sample GZ12
Grand Means	8.02 Percent	8.14 Percent
Stnd Dev Btwn Labs	0.79 Percent	0.89 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	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 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

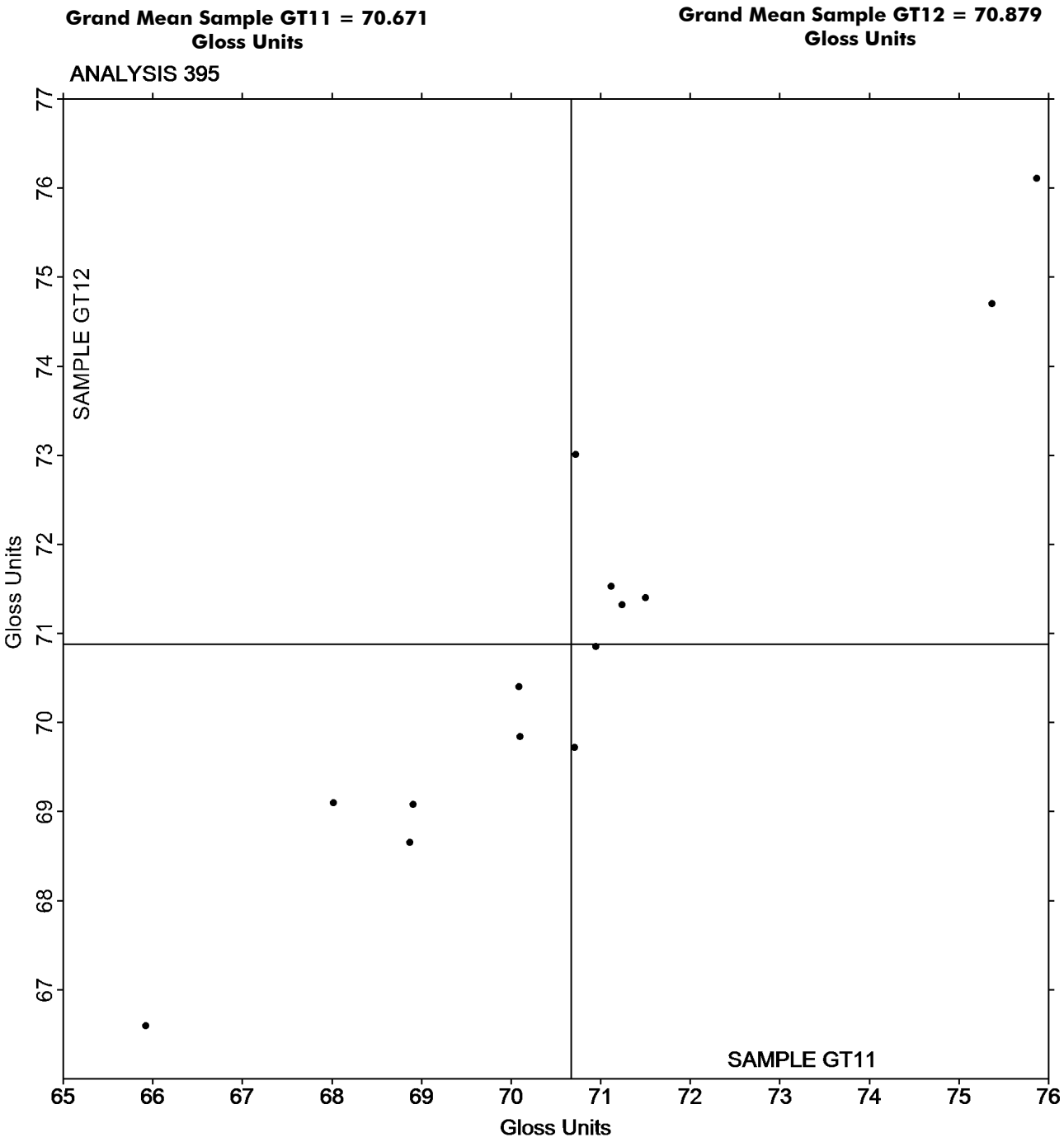
WebCode	Data Flag	Sample GT11 Lab Mean	Sample GT11 Diff from Grand Mean	Sample GT11 CPV	Sample GT12 Lab Mean	Sample GT12 Diff from Grand Mean	Sample GT12 CPV	Instr Code
3THZCW		75.37	4.70	1.82	74.70	3.82	1.54	LF
9TFL7N		71.12	0.45	0.17	71.53	0.65	0.26	GA
C7VNEQ		68.02	-2.65	-1.02	69.10	-1.78	-0.72	XX
CDGJFV		68.91	-1.76	-0.68	69.08	-1.80	-0.73	GM
CGFUBV		70.09	-0.58	-0.22	70.40	-0.48	-0.19	LA
DEG9U9		70.72	0.05	0.02	73.01	2.13	0.86	TH
FBWXYG		71.50	0.83	0.32	71.40	0.52	0.21	LF
HZKKQB		68.87	-1.80	-0.70	68.65	-2.23	-0.90	GM
M67287		75.87	5.20	2.01	76.11	5.23	2.11	PP
MQLGPX		70.95	0.28	0.11	70.85	-0.03	-0.01	LG
PQJ9W6		70.71	0.04	0.02	69.72	-1.16	-0.47	PP
WW34FL		70.10	-0.57	-0.22	69.84	-1.04	-0.42	PP
Z7R4HZ		71.24	0.57	0.22	71.32	0.44	0.18	LB
ZGEXX3		65.93	-4.75	-1.83	66.60	-4.28	-1.73	TH

Summary Statistics	Sample GT11	Sample GT12
Grand Means	70.67 Gloss Units	70.88 Gloss Units
Stnd Dev Btwn Labs	2.59 Gloss Units	2.48 Gloss Units

Statistics based on 14 of 14 reporting participants.

Key to Instrument Codes Reported by Participants

GA	BYK-Gardner (model not specified)	GM	BYK-Gardner micro-gloss
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

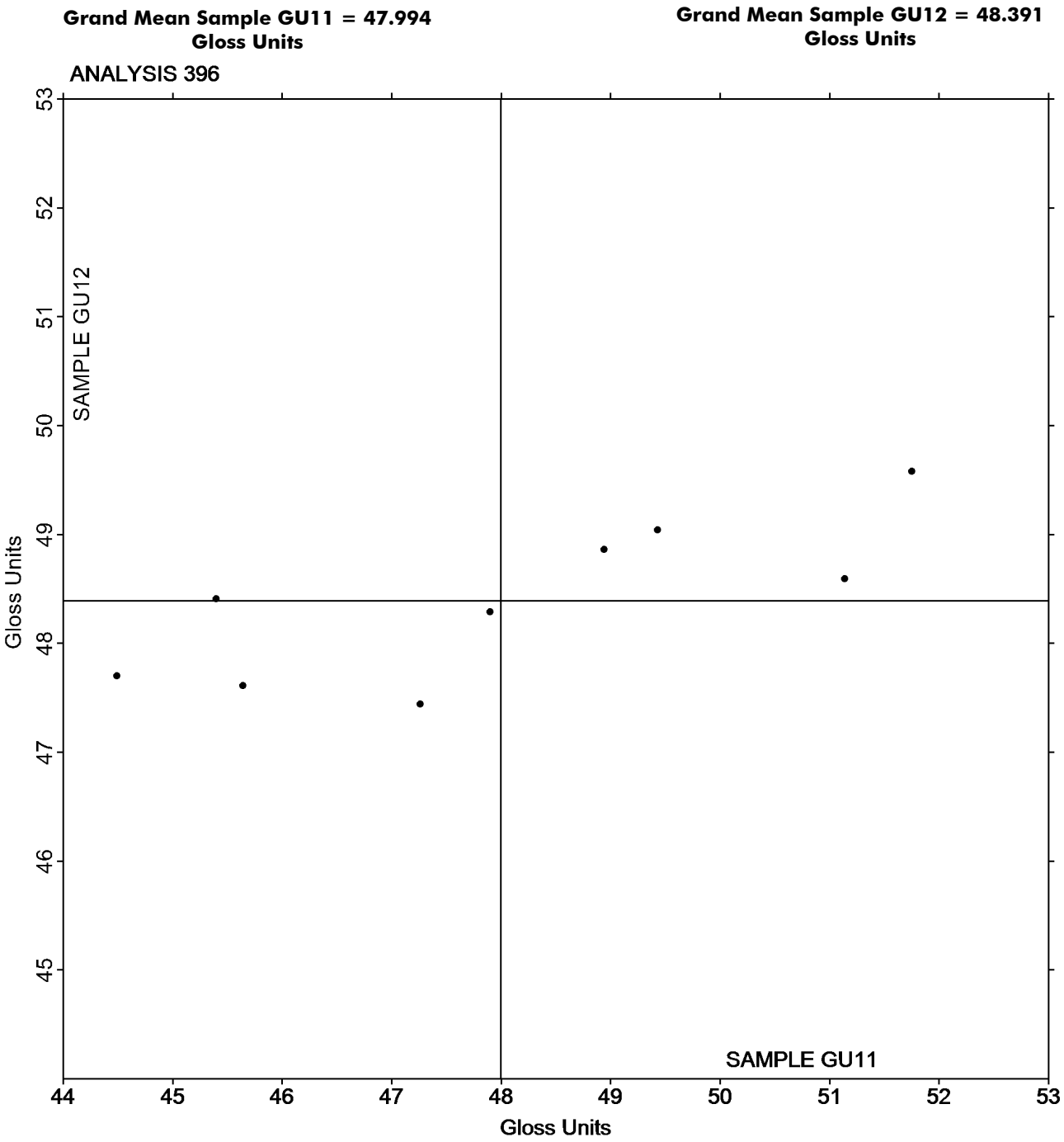
WebCode	Data Flag	Sample GU11 Lab Mean	Sample GU11 Diff from Grand Mean	Sample GU11 CPV	Sample GU12 Lab Mean	Sample GU12 Diff from Grand Mean	Sample GU12 CPV	Instr Code
6KZG2V		47.26	-0.73	-0.29	47.44	-0.95	-1.33	WJ
9THBAL		51.75	3.76	1.47	49.58	1.19	1.66	PP
A74NLV		51.14	3.15	1.23	48.59	0.20	0.28	TH
B666VE		44.49	-3.50	-1.37	47.70	-0.69	-0.97	PP
GU6KV9		49.43	1.44	0.56	49.04	0.65	0.91	TH
T7GMRF		45.64	-2.35	-0.92	47.61	-0.78	-1.09	TH
TBCJAE		47.90	-0.09	-0.04	48.29	-0.10	-0.14	GM
YMM6XF		48.94	0.95	0.37	48.86	0.47	0.66	GS
Z7R4HZ		45.40	-2.59	-1.02	48.41	0.02	0.03	LA

Summary Statistics	Sample GU11	Sample GU12
Grand Means	47.99 Gloss Units	48.39 Gloss Units
Stnd Dev Btwn Labs	2.55 Gloss Units	0.72 Gloss Units

Statistics based on 9 of 9 reporting participants.

Key to Instrument Codes Reported by Participants

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



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 GW11 Lab Mean	Sample GW11 Diff from Grand Mean	Sample GW11 CPV	Sample GW12 Lab Mean	Sample GW12 Diff from Grand Mean	Sample GW12 CPV	Instr Code
6KZG2V		90.11	0.41	0.56	75.48	0.11	0.24	ZZ
7YGNLY		90.22	0.52	0.72	75.86	0.48	1.10	ZZ
A74NLV		89.12	-0.59	-0.81	75.82	0.45	1.02	ZZ
CDGJFV		89.29	-0.41	-0.57	75.19	-0.18	-0.41	ZZ
DGBWD4		90.44	0.74	1.02	75.49	0.11	0.26	ZZ
DUX4B6		90.24	0.54	0.74	75.69	0.31	0.71	ZZ
EQARAE		89.16	-0.54	-0.75	75.56	0.18	0.42	ZZ
F9PHPP		88.87	-0.83	-1.15	74.74	-0.64	-1.45	ZZ
FLH37F		89.50	-0.20	-0.28	74.94	-0.44	-0.99	ZZ
FWXWG9		89.09	-0.61	-0.84	75.17	-0.21	-0.46	ZZ
GC8ZHU		89.20	-0.50	-0.69	74.93	-0.44	-1.00	ZZ
GU6KV9		89.84	0.14	0.19	75.30	-0.08	-0.17	ZZ
HL4MPG		88.89	-0.81	-1.12	75.60	0.22	0.51	ZZ
JJWRGX		90.10	0.40	0.55	75.04	-0.34	-0.76	ZZ
MER3RL		88.49	-1.21	-1.67	74.74	-0.64	-1.44	ZZ
MRJRLZ		89.46	-0.24	-0.34	75.52	0.15	0.34	ZZ
NLAQ3H		90.73	1.03	1.42	75.48	0.10	0.24	ZZ
PBKNV8		90.25	0.55	0.76	76.12	0.74	1.69	ZZ
PKB8DL		88.71	-0.99	-1.37	74.56	-0.81	-1.84	ZZ
REEZ8H		90.76	1.06	1.46	75.46	0.08	0.19	ZZ
T3WW2B		90.34	0.63	0.88	75.66	0.28	0.64	ZZ
T7GMRF		90.15	0.45	0.62	75.73	0.35	0.80	ZZ
VE4PJ2		90.82	1.12	1.54	75.55	0.17	0.39	ZZ
VWJXHG		89.20	-0.50	-0.69	75.16	-0.21	-0.48	ZZ
WMXUBG		90.80	1.10	1.52	76.28	0.90	2.05	ZZ
YKYNN8	X	4.47	-85.23	-117.72	3.77	-71.61	-162.23	ZZ
Z6GY7W		88.71	-0.99	-1.37	74.56	-0.81	-1.84	ZZ
Z7R4HZ		89.45	-0.25	-0.35	75.49	0.11	0.26	ZZ

Summary Statistics	Sample GW11	Sample GW12
Grand Means	89.70 g/sq m	75.38 g/sq m
Stnd Dev Btwn Labs	0.72 g/sq m	0.44 g/sq m

Statistics based on 27 of 28 reporting participants.

Comments on Assigned Data Flags for Test #398

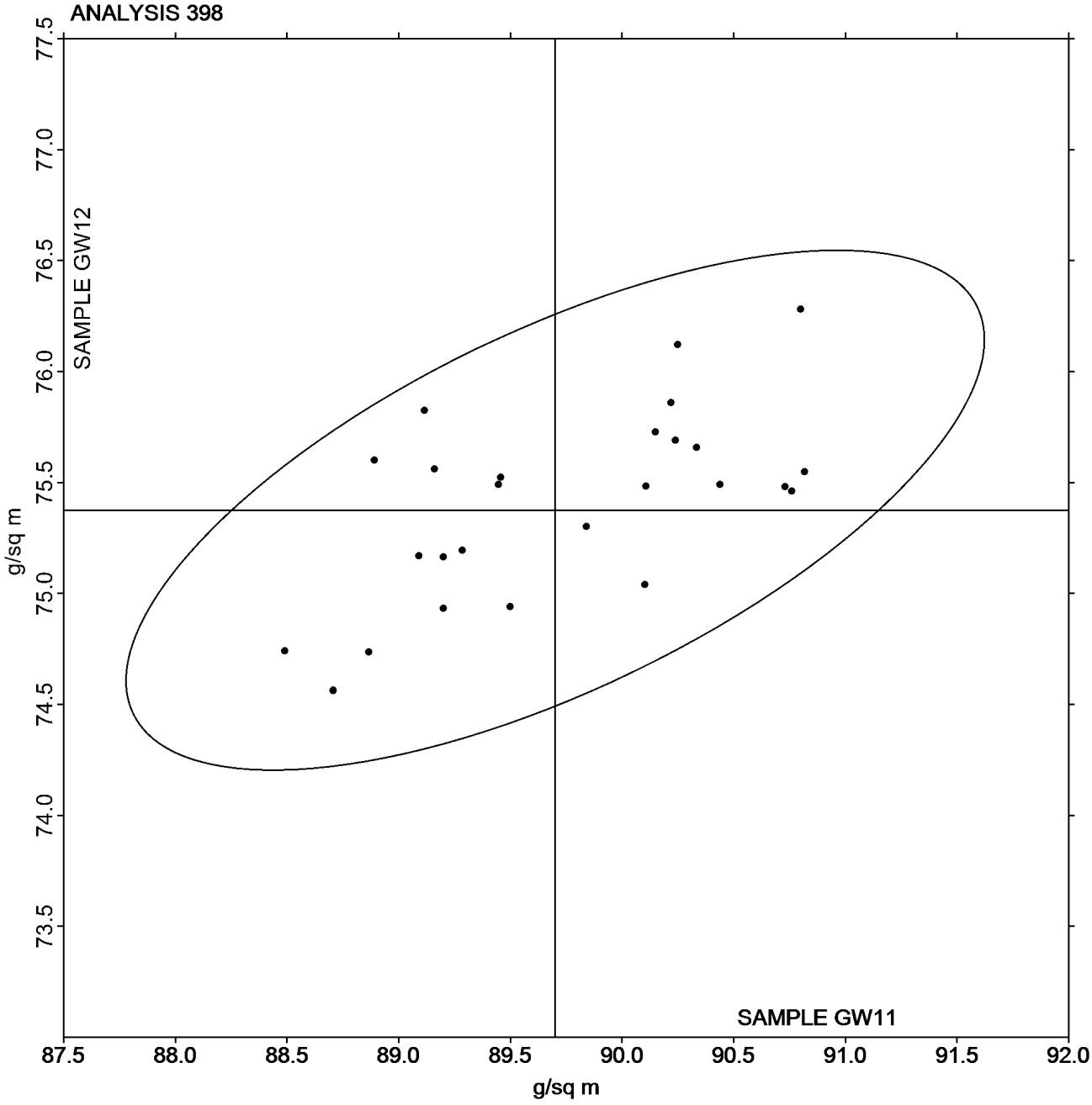
YKYNN8 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GW11 = 89.701 g/sq m

Grand Mean Sample GW12 = 75.375 g/sq m



Paper & Paperboard Interlaboratory Testing Program

Report #3212G, December 2022

Analysis 399

Sizing Test (Hercules Type)

TAPPI Official Test Method T530

WebCode	Data Flag	Sample GX11 Lab Mean	Sample GX11 Diff from Grand Mean	Sample GX11 CPV	Sample GX12 Lab Mean	Sample GX12 Diff from Grand Mean	Sample GX12 CPV	Instr Code
22XLJE		13.590	3.824	1.57	13.190	3.838	1.65	HE
B666VE		10.260	0.494	0.20	10.100	0.748	0.32	HE
BDY3QU		7.280	-2.486	-1.02	7.110	-2.242	-0.96	HE
DB3BP8		8.570	-1.196	-0.49	8.050	-1.302	-0.56	HE
DNRD7E		11.680	1.914	0.78	10.750	1.398	0.60	HE
DUX4B6		10.300	0.534	0.22	9.300	-0.052	-0.02	HE
EPXF73		12.370	2.604	1.07	11.570	2.218	0.95	HE
FBWXYG		9.900	0.134	0.05	9.780	0.428	0.18	HE
FWXWG9		12.160	2.394	0.98	11.160	1.808	0.78	HE
HLTL8P		8.530	-1.236	-0.51	8.630	-0.722	-0.31	HE
HUXV9M		9.100	-0.666	-0.27	9.700	0.348	0.15	HE
M8BPPG		13.080	3.314	1.36	12.660	3.308	1.42	HE
MER3RL		8.170	-1.596	-0.65	7.530	-1.822	-0.78	XX
MPEYV9		8.980	-0.786	-0.32	8.300	-1.052	-0.45	HE
NXLDUF		7.800	-1.966	-0.81	5.930	-3.422	-1.47	HE
PKB8DL		10.010	0.244	0.10	9.970	0.618	0.27	HE
QBER49	X	13.580	3.814	1.56	9.160	-0.192	-0.08	HE
RGKKTX		7.180	-2.586	-1.06	8.170	-1.182	-0.51	HE
RJQ89M		6.910	-2.856	-1.17	7.290	-2.062	-0.89	HE
RVGW78		7.930	-1.836	-0.75	7.940	-1.412	-0.61	HE
TBCJAE		8.420	-1.346	-0.55	8.410	-0.942	-0.41	HE
VFF4BG		7.300	-2.466	-1.01	6.300	-3.052	-1.31	HE
WLJPE4	*	17.220	7.454	3.05	16.190	6.838	2.94	HE
WXVT49		9.410	-0.356	-0.15	8.960	-0.392	-0.17	HE
XMPAZJ		8.300	-1.466	-0.60	9.560	0.208	0.09	HE
ZBRB2C		9.710	-0.056	-0.02	7.250	-2.102	-0.90	HE

Summary Statistics	Sample GX11	Sample GX12
Grand Means	9.77 Seconds	9.35 Seconds
Stnd Dev Btwn Labs	2.44 Seconds	2.32 Seconds

Statistics based on 25 of 26 reporting participants.

Comments on Assigned Data Flags for Test #399

QBER49 (X) - Inconsistent in testing between samples.

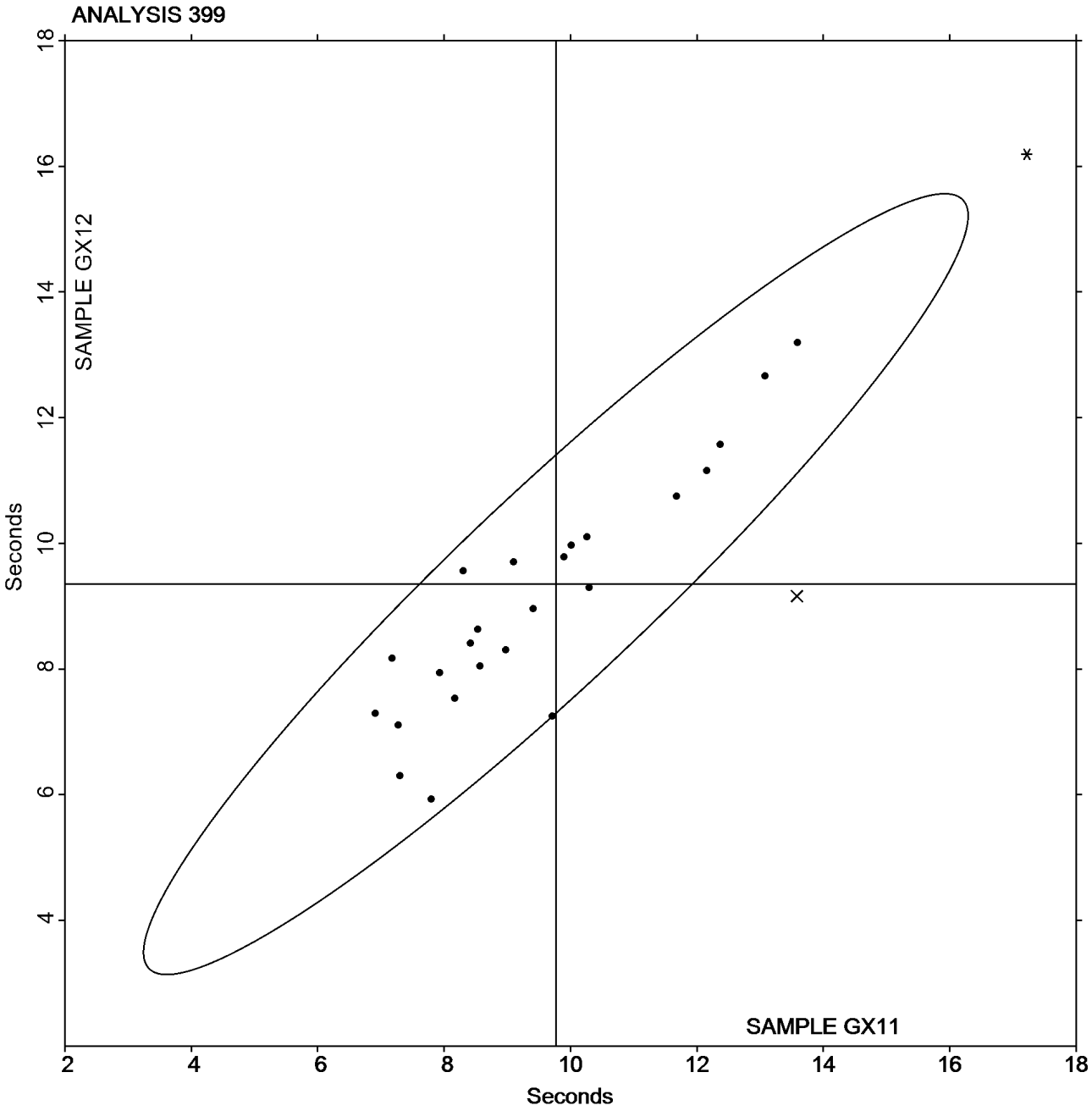
Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab

Grand Mean Sample GX11 = 9.7664 Seconds

Grand Mean Sample GX12 = 9.3520 Seconds



-End of Report-