Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #2962 G - October 2018

Analysis	Analysis Name
350	Color & Color Difference - Near White Papers - C/2deg obs
351	Color & Color Difference - Near White Papers - D65/10deg obs
360	Thickness (Caliper), Printing papers
361	Thickness (Caliper), Packaging papers
364	Coefficient of Static Friction - Horizontal Plane Method - Printing Papers
365	Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers
370	Air Resistance - Gurley Oil Type
372	Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice
376	Roughness - Print Surf Method - 0.5 to 4.0 Microns
377	Roughness - Print Surf Method - 2.5 to 6.0 Microns
378	Roughness - Sheffield Type
382	Moisture in Paper
384	Opacity (89% Reflectance Backing) - Fine Papers
386	Opacity (Paper Backing) - Fine Papers and Newsprint
390	Directional Brightness
391	Directional Brightness of Fluorescent Samples
392	Diffuse Brightness
394	Fluorescent Component of Directional Brightness
395	Specular Gloss at 75 Degrees - High Range
396	Specular Gloss at 75 Degrees - Low Range
398	Grammage (Mass per Unit Area)
399	Sizing Test (Hercules Type)

The CTS Paper & Paperboard Interlaboratory Program

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

About CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately - owned company that specializes in interlaboratory tests for a variety of industrial sectors: rubber, plastics, fasteners and metals, CKPG, paper, color and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 80 countries, currently participate in CTS programs.

If there are any questions on the report or testing program, please contact:

Collaborative Testing Services, Inc.
21331 Gentry Drive
Sterling, Virginia 20166 USA
+1-571-434-1925
FAX #: +1-571-434-1937
paper@cts-interlab.com

Office Hours: 8:00 a.m. - 4:30 p.m. ET

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			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
2KDNX3		GA59	90.51	1.33	-0.72	-0.91	-1.31	2.34	2.83	TS
		GA60	89.60	0.01	1.62					
33PYTY		GA59	92.74	1.23	-0.70	-0.38	-1.57	2.75	3.19	LS
		GA60	92.36	-0.34	2.05					
3MW77D		GA59	92.91	1.00	-0.61	-0.61	-1.55	2.63	3.12	TC
		GA60	92.30	-0.55	2.03					
6DY7UH		GA59	92.18	1.16	-2.70	-0.84	-1.79	3.94	4.40	HE
		GA60	91.34	-0.63	1.24					
7GBME7	X	GA59	91.45	1.81	-1.02	-0.64	-1.29	2.50	2.88	TS
		GA60	90.81	0.52	1.48					
7JJNLY		GA59	93.05	1.11	-0.73	-0.64	-1.51	2.64	3.11	TC
		GA60	92.41	-0.40	1.91					
7Z82YQ		GA59	91.72	0.98	-2.53	-0.75	-1.77	3.89	4.34	HE
		GA60	90.97	-0.78	1.36					
8ATCZ6		GA59	93.35	1.44	-1.70	-0.92	-1.81	2.90	3.54	XS
		GA60	92.43	-0.36	1.20					
92ZC8Y		GA59	91.04	1.12	-0.73	-0.77	-1.56	2.68	3.19	TC
		GA60	90.27	-0.43	1.95					
9ZXTY3		GA59	93.22	0.66	-0.42	-0.66	-1.31	2.44	2.84	NE
		GA60	92.56	-0.64	2.02					
A8FLQR	X	GA59	90.43	2.33	-4.39	-1.17	-2.94	5.90	6.69 X	XX
		GA60	89.26	-0.61	1.51					
BUP9P3		GA59	92.90	1.19	-0.76	-0.57	-1.68	2.83	3.34	EH
		GA60	92.33	-0.49	2.06					
F7MU4M	X	GA59	79.17	0.40	-1.78	-3.36	-0.80	1.51	3.77	HH
		GA60	75.81	-0.40	-0.27					
FKKQFU		GA59	92.83	1.12	-0.80	-0.60	-1.70	2.82	3.35	LS
		GA60	92.23	-0.58	2.01					
KXWPEH		GA59	92.83	1.19	-0.84	-0.49	-1.83	2.83	3.41	EH
		GA60	92.34	-0.64	2.00					
LV47X3		GA59	92.39	1.34	-3.45	-0.90	-2.08	5.51	5.96 X	HE
		GA60	91.49	-0.75	2.06					

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
LY3KGL	X	GA59	91.31	0.53	-2.16	-0.46	-1.75	3.11	3.60	HG
		GA60	90.85	-1.22	0.95					
MNZL9C	X	GA59	90.19	1.65	-0.90	-0.88	-1.22	2.29	2.74	TS
		GA60	89.31	0.43	1.39					
QY7MAL	X	GA59	84.04	1.16	-0.16	-6.78	-0.30	1.80	7.02 X	TS
		GA60	77.26	0.86	1.64					
VPQFNT	X	GA59	90.43	1.88	-0.94	-0.84	-1.42	2.34	2.86	TS
		GA60	89.58	0.47	1.40					
YGJ8AN		GA59	90.60	0.99	-0.74	-0.86	-1.41	2.47	2.97	TS
		GA60	89.74	-0.43	1.73					

Summary Statistics

Grand Means							
GA59	91.898	1.084	-1.350	-0.707	-1.634	3.048	3.542
GA60	91.167	-0.495	1.680				
Stnd Dev Btwn Labs							
GA59	1.109	0.263	1.120	0.169	0.217	0.856	0.844
GA60	1.223	0.197	0.349				

Statistics based on 14 of 21 reporting participants

Comments on Assigned Data Flags for Test #350

MNZL9C (X) - High "a" value for sample GA60. Inconsistent within replicate readings of "a" for sample GA60.

LY3KGL (X) - Low "a" value for sample GA60.

F7MU4M (X) - Extreme data for both "L" values. Low "b" value for sample GA60. Low delta "L" value; high delta "a" value.

VPQFNT (X) - High "a" values for both samples. Inconsistent within replicate readings of "a" for sample GA60.

7GBME7 (X) - High "a" values for both samples.

QY7MAL (X) - Extreme data for both "L" values. Extreme data for "a" value for Sample GA60. Low delta "L" value; high delta "a" and delta "E" values.

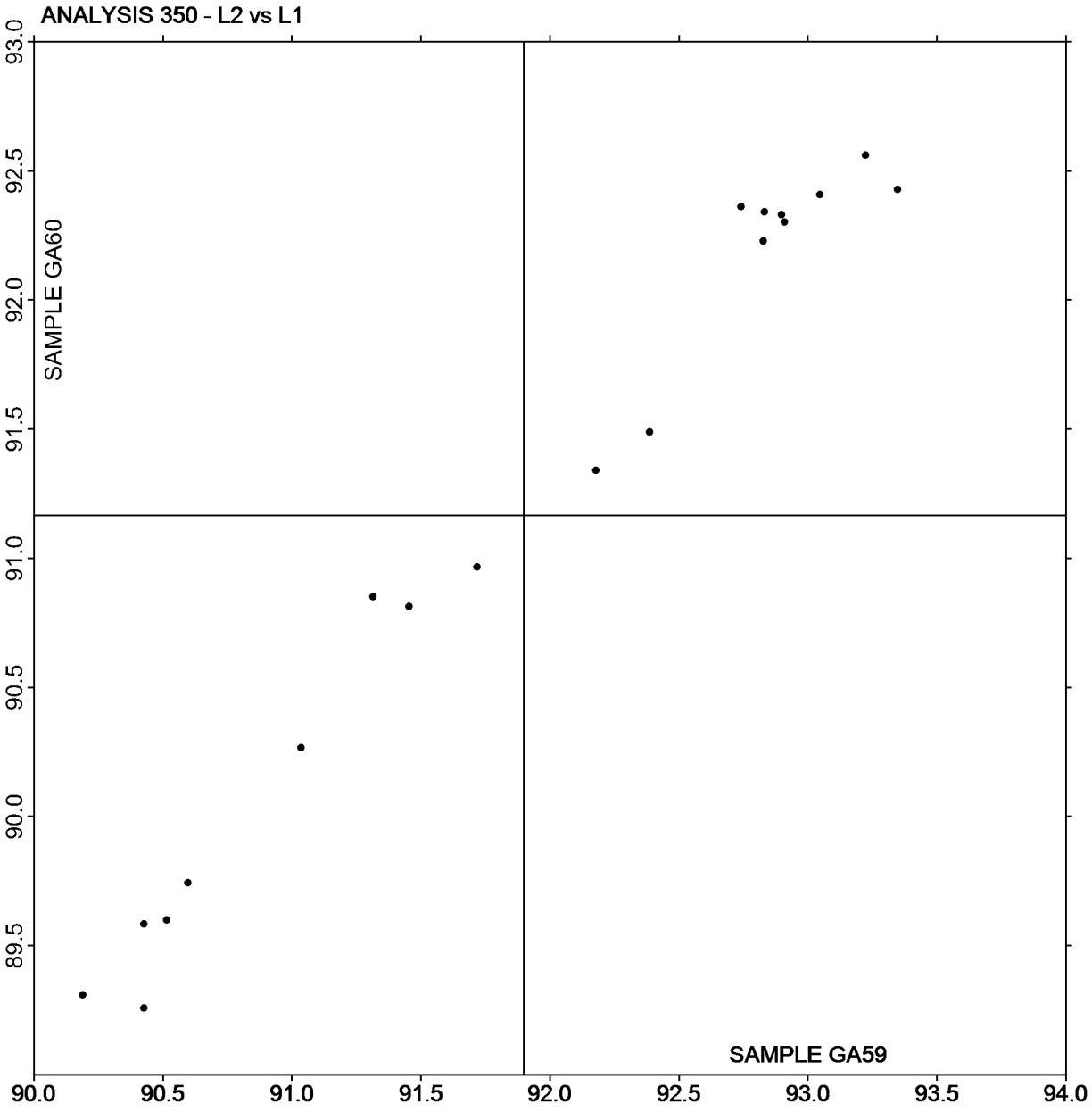
A8FLQR (X) - High "a" value for sample GA59. Inconsistent within replicate readings of "a" for sample GA59. Low delta "L" and delta "a" values; high delta "b" and delta "E" values.

QY7MAL - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is higher than negative Grand Mean for GA60 as shown above graphs.

Key to Instrument Codes Reported by Participants

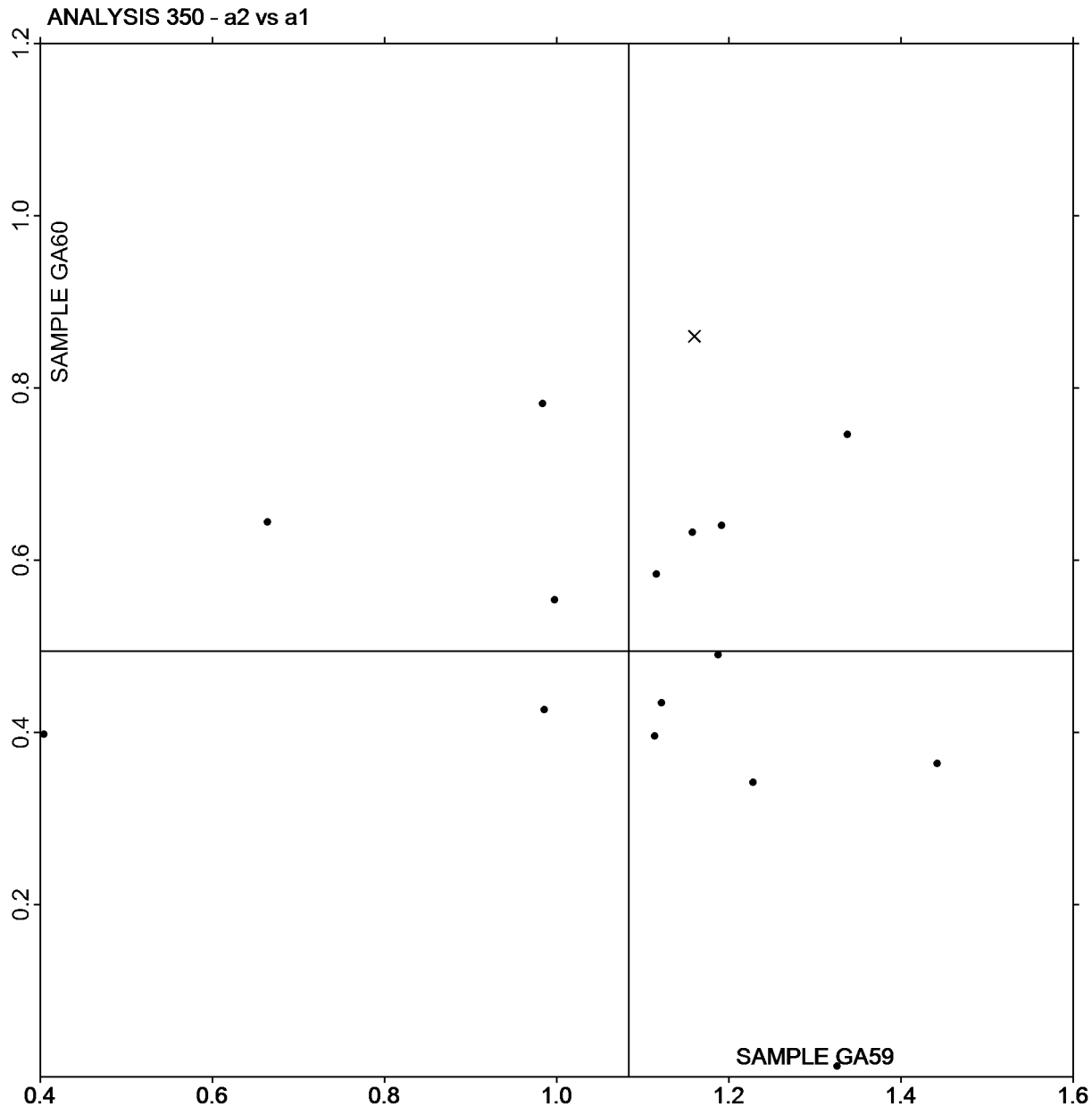
EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HG	Hunter ColorQUEST	HH	Hunter D25DP - 9000
LS	L & W Elrepho SE 070	NE	Minolta CM-3500d Spectrophotometer
TC	Technidyne Color Touch Series	TS	Technidyne Brightimeter Micro S-5
XS	X-Rite 938 Spectrodensitometer	XX	Instrument make/model not specified by lab

Plot of L values GA60 v L values GA59



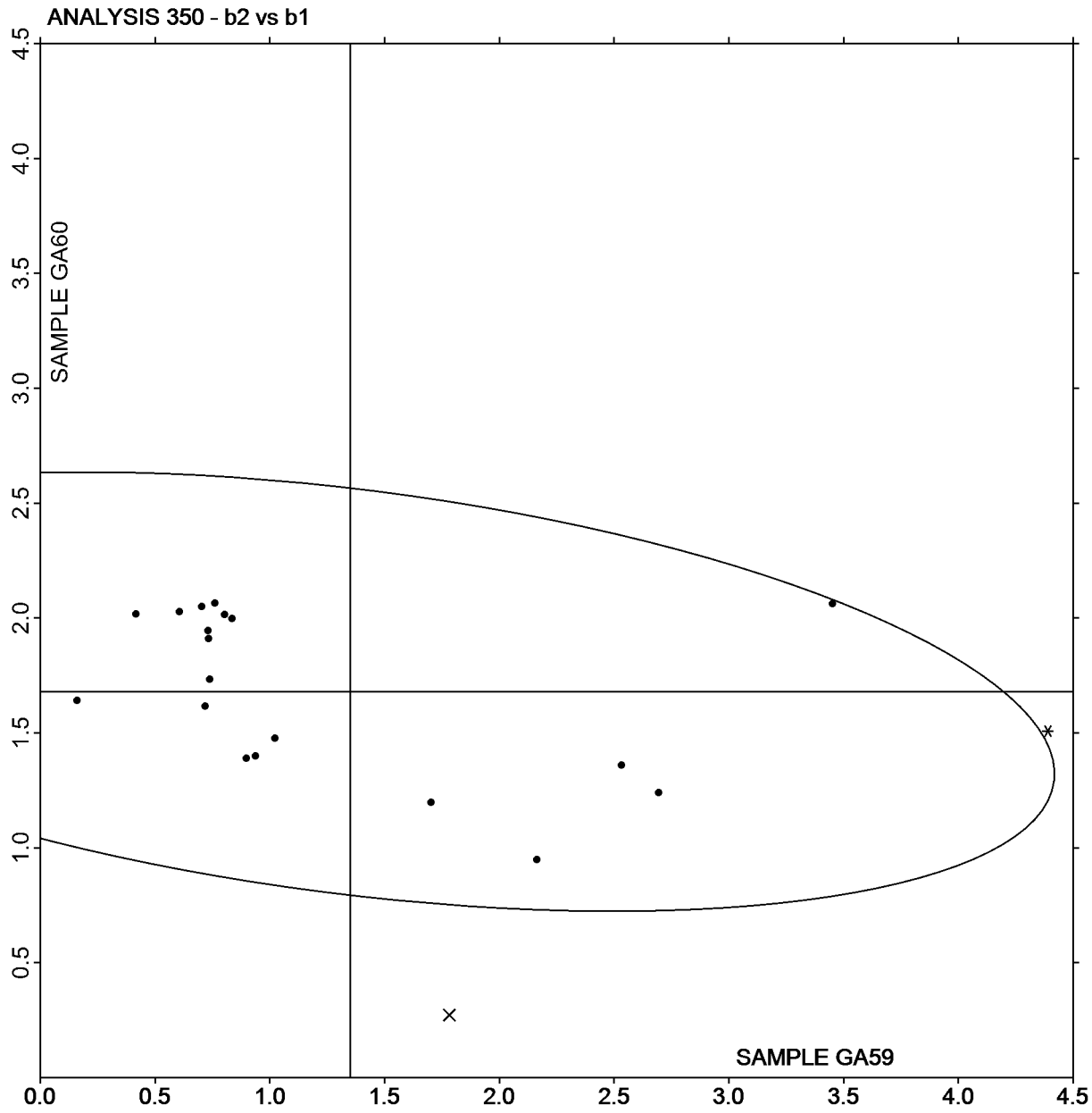
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA60 v a values GA59



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 GA60 v b values GA59



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

24MRDY		GA59	95.25	1.02	-1.26	-0.77	-1.11	2.55	2.88	XP
		GA60	94.48	-0.08	1.29					
33PYTY		GA59	92.82	1.24	-0.75	-0.52	-1.58	2.77	3.23	LS
		GA60	92.30	-0.35	2.02					
82LQZH		GA59	93.20	1.05	-1.70	-0.57	-1.64	3.80	4.18	NF
		GA60	92.62	-0.59	2.11					
8H4N4U		GA59	91.36	1.14	-2.75	-0.87	-1.94	4.59	5.06	XA
		GA60	90.49	-0.80	1.84					
BETURT		GA59	91.78	0.80	-1.04	-0.69	-1.34	3.21	3.55	HE
		GA60	91.09	-0.54	2.18					
E4JEJC	X	GA59	92.82	0.37	0.47	-0.54	-1.19	1.92	2.33	EH
		GA60	92.28	-0.82	2.40					
FY76JT	X	GA59	92.70	0.15	1.45	-0.42	-0.88	1.02	1.41 X	NG
		GA60	92.28	-0.73	2.47					
HNTV6Y	X	GA59	92.84	-0.35	0.46	-0.56	-0.42	1.79	1.92 X	LS
		GA60	92.27	-0.77	2.25					
L8ZEEJ		GA59	93.20	0.80	-0.95	-0.87	-1.68	2.98	3.53	XM
		GA60	92.33	-0.88	2.03					
LV47X3		GA59	92.39	1.28	-3.33	-0.97	-2.03	5.39	5.84	HE
		GA60	91.42	-0.75	2.06					
QK4E7C		GA59	93.26	0.84	-1.93	-0.60	-1.66	4.24	4.59	HT
		GA60	92.66	-0.82	2.30					
T3ZLDA		GA59	92.35	1.69	-2.79	-1.24	-2.30	4.59	5.28	HV
		GA60	91.12	-0.61	1.80					
UMJZE3		GA59	93.35	0.95	-1.94	-0.72	-1.75	4.01	4.43	HE
		GA60	92.63	-0.80	2.07					
UTTWJC		GA59	93.10	1.10	-2.20	-0.68	-1.96	4.38	4.85	EF
		GA60	92.42	-0.86	2.18					
UZP3RJ		GA59	93.19	0.99	-1.86	-0.65	-1.76	4.22	4.61	HT
		GA60	92.54	-0.77	2.35					
ZP7CU9	X	GA59	93.00	0.06	1.93	-0.44	-0.86	0.53	1.11 X	NG
		GA60	92.56	-0.80	2.47					

Summary Statistics

Grand Means							
GA59	92.912	0.899	-1.875	-0.762	-1.729	3.894	4.336
GA60	92.218	-0.680	2.019				
Stnd Dev Btwn Labs							
GA59	0.834	0.430	0.801	0.200	0.315	0.855	0.890
GA60	0.897	0.219	0.281				

Statistics based on 12 of 16 reporting participants

Comments on Assigned Data Flags for Test #351

E4JEJC (X) - High "b" value for sample GA59.

HNTV6Y (X) - Low "a" value for sample GA59. High "b" value for sample GA59. High delta "a", low delta "b" and delta "E" values.

ZP7CU9 (X) - High "b" value for sample GA59. High delta "a", low delta "b" and delta "E" values.

FY76JT (X) - High "b" value for sample GA59. High delta "a", low delta "b" and delta "E" values.

FY76JT - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "b" data is higher than negative Grand Mean for GA59 as shown above graphs.

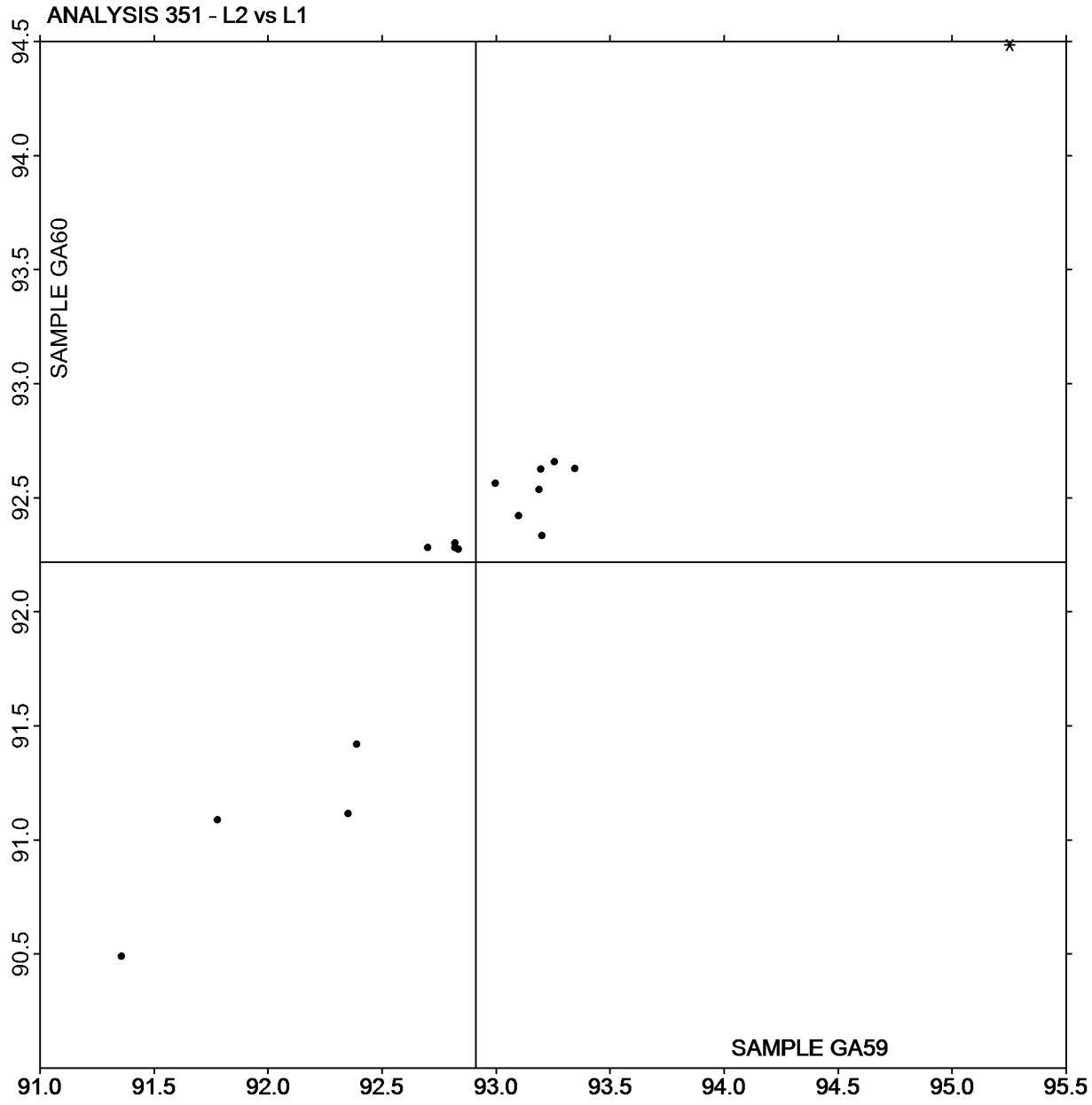
HNTV6Y - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "a" data is lower than Grand Mean for GA59 as shown above graphs.

ZP7CU9 - Due to CTS graphs using Absolute Values, data Flag is located within consensus data. However, "b" data is higher than negative Grand Mean for GA59 as shown above graphs.

Key to Instrument Codes Reported by Participants

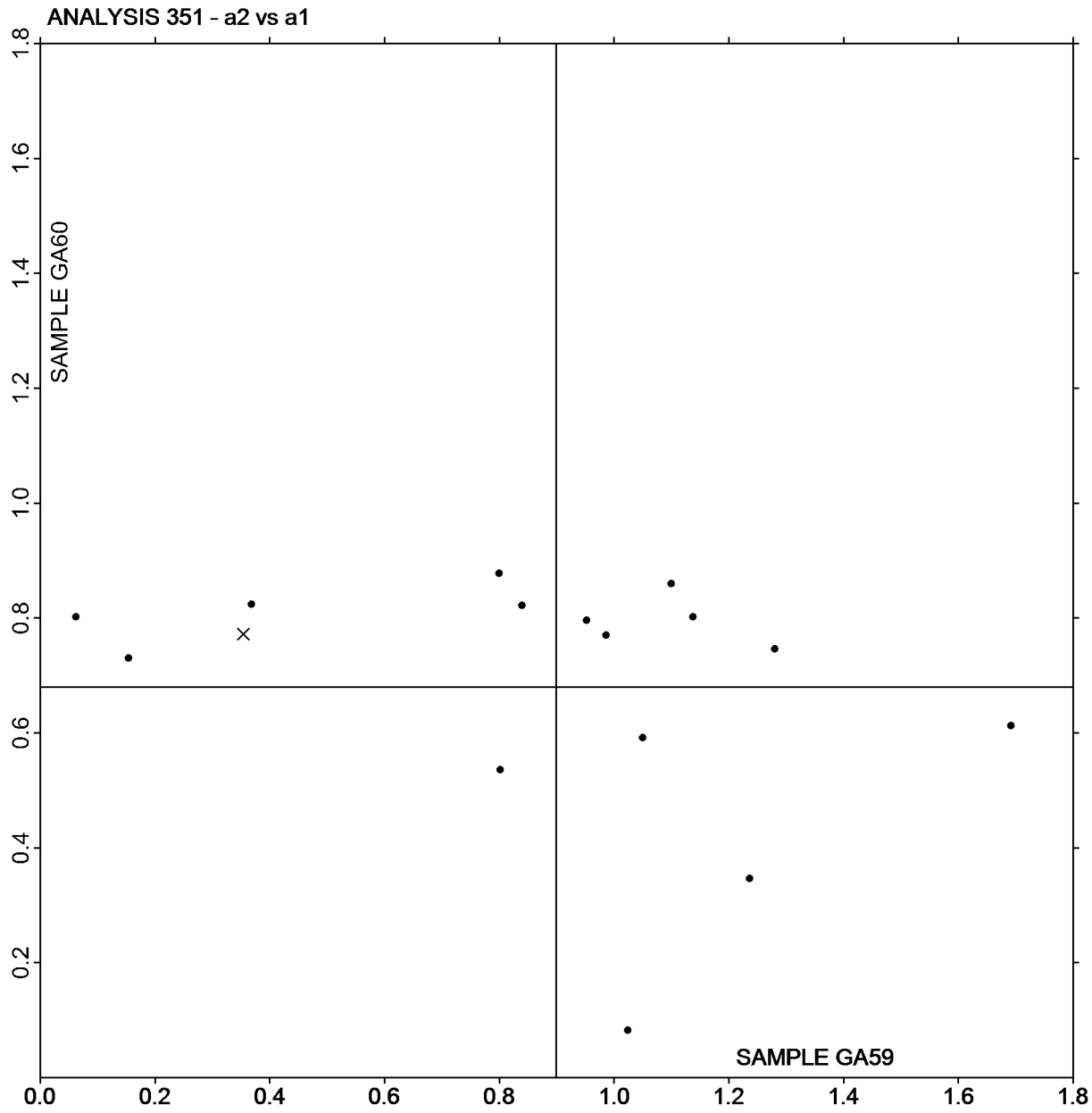
EF	Datacolor Elrepho 3000	EH	Datacolor Elrepho SF450
HE	Hunter LabScan	HT	Hunter UltraScan Vis
HV	Hunter Ultrascan XE	LS	L & W Elrepho SE 070
NF	Minolta CM-3600d Spectrophotometer	NG	Minolta CM-3700d Spectrophotometer
XA	X-Rite (model not specified)	XM	X-Rite CA-22
XP	X-Rite Spectrophotometer DTP		

Plot of L values GA60 v L values GA59



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

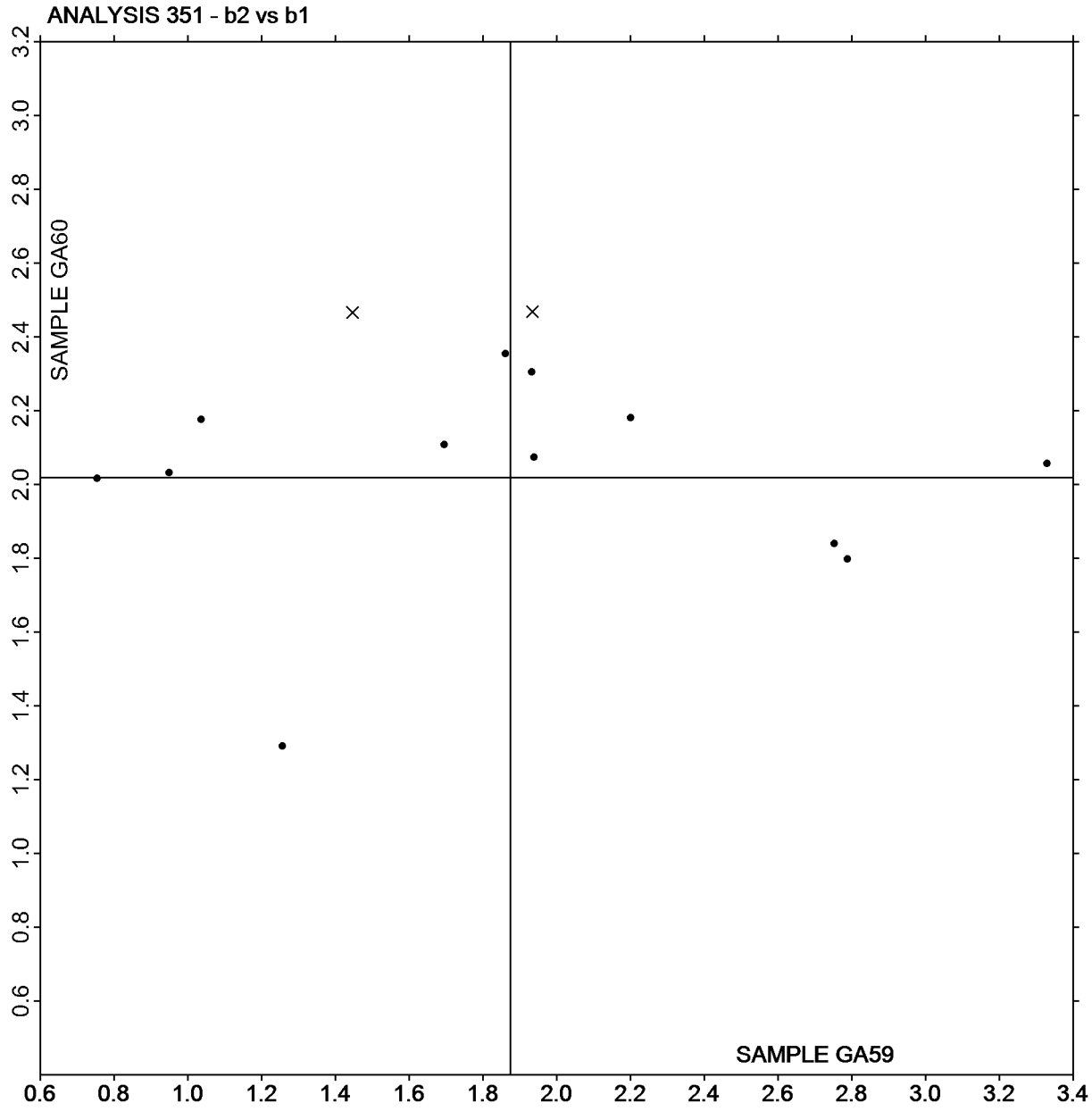
Plot of a values GA60 v a values GA59



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

Web Code	Data Flag	Samples	CIE L* a* b* Color Values L*	a*	b*	Color Difference Values ΔL*	Δa*	Δb*	ΔE*	InstrCode

Plot of b values GA60 v b values GA59



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 GV59 Lab Mean	Sample GV59 Diff from Grand Mean	Sample GV59 CPV	Sample GV60 Lab Mean	Sample GV60 Diff from Grand Mean	Sample GV60 CPV	Instr Code
24MRDY		3.844	-0.040	-0.58	4.872	-0.097	-1.22	TM
2KDNX3		3.926	0.042	0.62	4.968	-0.001	-0.01	EM
3MW77D		3.928	0.044	0.65	4.995	0.026	0.33	LA
48XL4F		3.760	-0.124	-1.82	4.920	-0.049	-0.61	TM
6PWYE3		3.890	0.006	0.09	5.045	0.076	0.97	EM
6TCND6		3.904	0.020	0.29	4.981	0.013	0.16	LW
7GBME7		3.859	-0.025	-0.36	4.978	0.010	0.12	TM
7JJNLY		3.916	0.032	0.47	4.973	0.004	0.06	TA
82LQZH	*	3.953	0.069	1.02	5.178	0.210	2.65	TM
8ATCZ6		3.770	-0.114	-1.67	4.940	-0.029	-0.36	TM
8H4N4U		3.860	-0.024	-0.35	4.892	-0.077	-0.97	LW
8W4CA3		3.946	0.062	0.91	4.991	0.022	0.28	LW
8ZHC69		3.972	0.089	1.31	5.019	0.050	0.63	LW
92BKRJ		3.848	-0.036	-0.53	4.961	-0.008	-0.10	TA
A8FLQR	*	3.710	-0.174	-2.56	4.880	-0.089	-1.12	XX
AR4879		3.925	0.041	0.61	4.929	-0.039	-0.50	MS
C8RZ7Z		3.954	0.070	1.03	5.045	0.076	0.96	TM
CBR2GV		3.919	0.036	0.52	4.959	-0.010	-0.12	LW
CH9P66		3.891	0.007	0.11	4.922	-0.047	-0.59	LW
DFLFJB		3.840	-0.044	-0.64	4.896	-0.073	-0.92	PP
DNQMWP		3.903	0.020	0.29	5.047	0.078	0.99	LW
DXYYDT		3.947	0.064	0.93	5.070	0.102	1.29	LW
E4JQRZ	X	3.409	-0.474	-6.98	4.098	-0.870	-11.00	MT
F6DKDB		3.869	-0.015	-0.22	4.862	-0.107	-1.35	LA
FA9GZG		4.006	0.122	1.79	5.057	0.088	1.11	LW
FKKQFU		3.938	0.054	0.80	5.005	0.036	0.46	LW
FWFVUL		3.866	-0.018	-0.26	4.975	0.006	0.08	EM
FY76JT		3.852	-0.032	-0.47	5.011	0.042	0.54	PP
GBQ6M2		4.046	0.162	2.39	5.094	0.125	1.59	TM
GQ7WYM		3.839	-0.045	-0.66	4.965	-0.004	-0.05	TM
GZCZMW		3.805	-0.079	-1.16	4.929	-0.040	-0.50	TM
HZV4WH		3.934	0.050	0.74	4.936	-0.033	-0.41	EM
JLQ8BV		3.868	-0.016	-0.23	5.033	0.065	0.82	LW
KXWPEH		3.935	0.051	0.75	5.069	0.100	1.27	EM
L8ZEEJ		3.850	-0.033	-0.49	5.012	0.043	0.55	LW
LK4MBF	X	3.655	-0.229	-3.37	4.681	-0.288	-3.63	PP
M4DVAF		3.828	-0.056	-0.82	4.865	-0.104	-1.31	PP
MWXCR2		3.794	-0.090	-1.32	4.844	-0.125	-1.57	EM
PZ6J7B		3.911	0.027	0.40	4.924	-0.045	-0.56	PP
QK4E7C		3.943	0.059	0.87	5.021	0.052	0.66	EM

Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GV59 Lab Mean	Sample GV59 Diff from Grand Mean	Sample GV59 CPV	Sample GV60 Lab Mean	Sample GV60 Diff from Grand Mean	Sample GV60 CPV	Instr Code
T26XWZ		3.929	0.045	0.67	5.039	0.071	0.89	XX
T3ZLDA		3.831	-0.053	-0.78	4.849	-0.120	-1.51	EM
TJL7VF		3.884	0.000	0.00	4.975	0.006	0.08	LA
UCLZ3X		3.810	-0.074	-1.09	4.940	-0.029	-0.36	TA
UMJZE3		3.970	0.087	1.28	5.053	0.085	1.07	TM
UT43C7		3.799	-0.085	-1.25	4.783	-0.186	-2.34	TA
UUYQRG		3.917	0.033	0.48	5.049	0.080	1.01	LW
UZP3RJ		3.874	-0.010	-0.14	4.918	-0.051	-0.64	EM
VFHRMF		3.863	-0.021	-0.31	5.018	0.049	0.62	PP
VPQFNT		3.727	-0.157	-2.30	4.790	-0.178	-2.25	TM
WHZKXA		3.828	-0.055	-0.82	4.941	-0.028	-0.35	LW
X6QDC9		3.921	0.037	0.55	5.018	0.049	0.62	EM
XHF4H7	X	3.757	-0.127	-1.87	4.652	-0.317	-4.00	PP
Y4D4WG		3.971	0.088	1.29	5.058	0.090	1.13	LW
YGJ8AN		3.846	-0.038	-0.56	4.868	-0.101	-1.27	LA
ZP7CU9		3.919	0.035	0.52	4.972	0.003	0.04	EM

Summary Statistics	Sample GV59	Sample GV60
Grand Means	3.88 mils	4.97 mils
Stnd Dev Btwn Labs	0.07 mils	0.08 mils

Statistics based on 53 of 56 reporting participants.

Comments on Assigned Data Flags for Test #360

XHF4H7 (X) - Data for sample GV60 are low.

E4JQRZ (X) - Extreme Data.

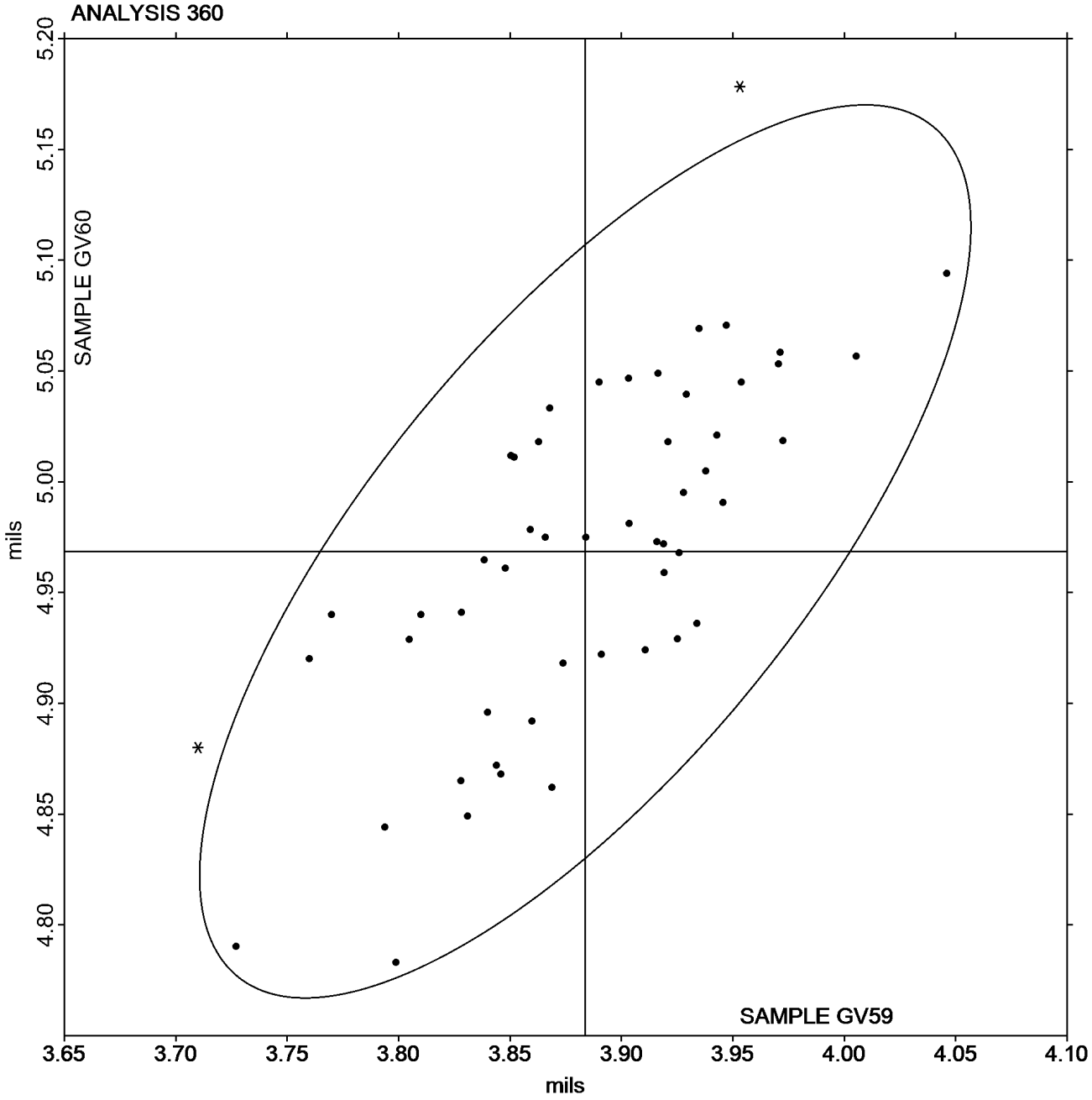
LK4MBF (X) - Data for both samples are low.

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample GV59 = 3.8837 mils

Grand Mean Sample GV60 = 4.9686 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

TAPPI Official Test Method T411

WebCode	Data Flag	Sample GY59 Lab Mean	Sample GY59 Diff from Grand Mean	Sample GY59 CPV	Sample GY60 Lab Mean	Sample GY60 Diff from Grand Mean	Sample GY60 CPV	Instr Code
2863A3	X	13.78	-0.29	-1.99	9.126	-0.447	-3.62	LW
33PYTY		14.08	0.01	0.08	9.594	0.022	0.18	TM
3YB4C3		14.08	0.01	0.05	9.689	0.116	0.94	LW
48XL4F		13.82	-0.25	-1.72	9.400	-0.173	-1.40	TM
6DY7UH		14.13	0.06	0.43	9.579	0.006	0.05	EM
6TCND6		14.10	0.03	0.19	9.646	0.074	0.60	LW
7HNV29		14.17	0.09	0.64	9.740	0.167	1.36	TA
7Z82YQ		14.19	0.12	0.82	9.586	0.013	0.11	EM
92BKRJ		14.25	0.18	1.22	9.673	0.100	0.81	TA
9V8GZY		13.93	-0.14	-0.97	9.557	-0.015	-0.12	LW
BETURT		13.83	-0.24	-1.63	9.377	-0.196	-1.58	EM
DDP73E		13.98	-0.09	-0.62	9.543	-0.029	-0.24	MM
DNQMWP		14.28	0.21	1.42	9.692	0.120	0.97	XX
E4JEJC		14.34	0.27	1.84	9.749	0.176	1.43	EM
EW347B		14.17	0.09	0.64	9.731	0.158	1.28	LA
F7MU4M		13.84	-0.23	-1.55	9.400	-0.173	-1.40	EM
FAPKMV		14.05	-0.02	-0.16	9.613	0.040	0.33	TM
GQ7WYM		14.02	-0.05	-0.32	9.579	0.006	0.05	TM
GXND73		14.18	0.11	0.72	9.628	0.055	0.45	TM
HNTV6Y		14.10	0.03	0.20	9.660	0.087	0.71	LW
HQYFRY		14.10	0.03	0.20	9.610	0.037	0.30	TA
LF747W		14.05	-0.02	-0.14	9.462	-0.111	-0.90	TM
LGAG37		14.08	0.01	0.06	9.490	-0.083	-0.67	LA
LV47X3		14.20	0.13	0.88	9.584	0.011	0.09	EM
M8WW7M		13.93	-0.14	-0.97	9.374	-0.198	-1.61	LW
MBVBTC		14.03	-0.04	-0.28	9.500	-0.073	-0.59	TM
PZ6J7B		14.28	0.21	1.43	9.669	0.097	0.78	LW
Q6BLJQ		14.22	0.15	1.02	9.650	0.077	0.63	LW
QK9LJ7		14.11	0.04	0.30	9.635	0.062	0.51	TM
QY7MAL		13.91	-0.17	-1.14	9.458	-0.115	-0.93	EM
QZ3D3L		14.04	-0.03	-0.21	9.605	0.032	0.26	TA
R9C3H7		14.07	0.00	-0.01	9.591	0.018	0.15	LA
UCLZ3X		14.17	0.10	0.68	9.740	0.167	1.36	TA
UT43C7		14.01	-0.06	-0.40	9.426	-0.147	-1.19	TA
Z494C8	*	13.67	-0.40	-2.72	9.234	-0.339	-2.74	LA

Summary Statistics	Sample GY59	Sample GY60
Grand Means	14.07 mils	9.57 mils
Stnd Dev Btwn Labs	0.15 mils	0.12 mils

Statistics based on 34 of 35 reporting participants.

Comments on Assigned Data Flags for Test #361

2863A3 (X) - Data for sample GY60 are low.

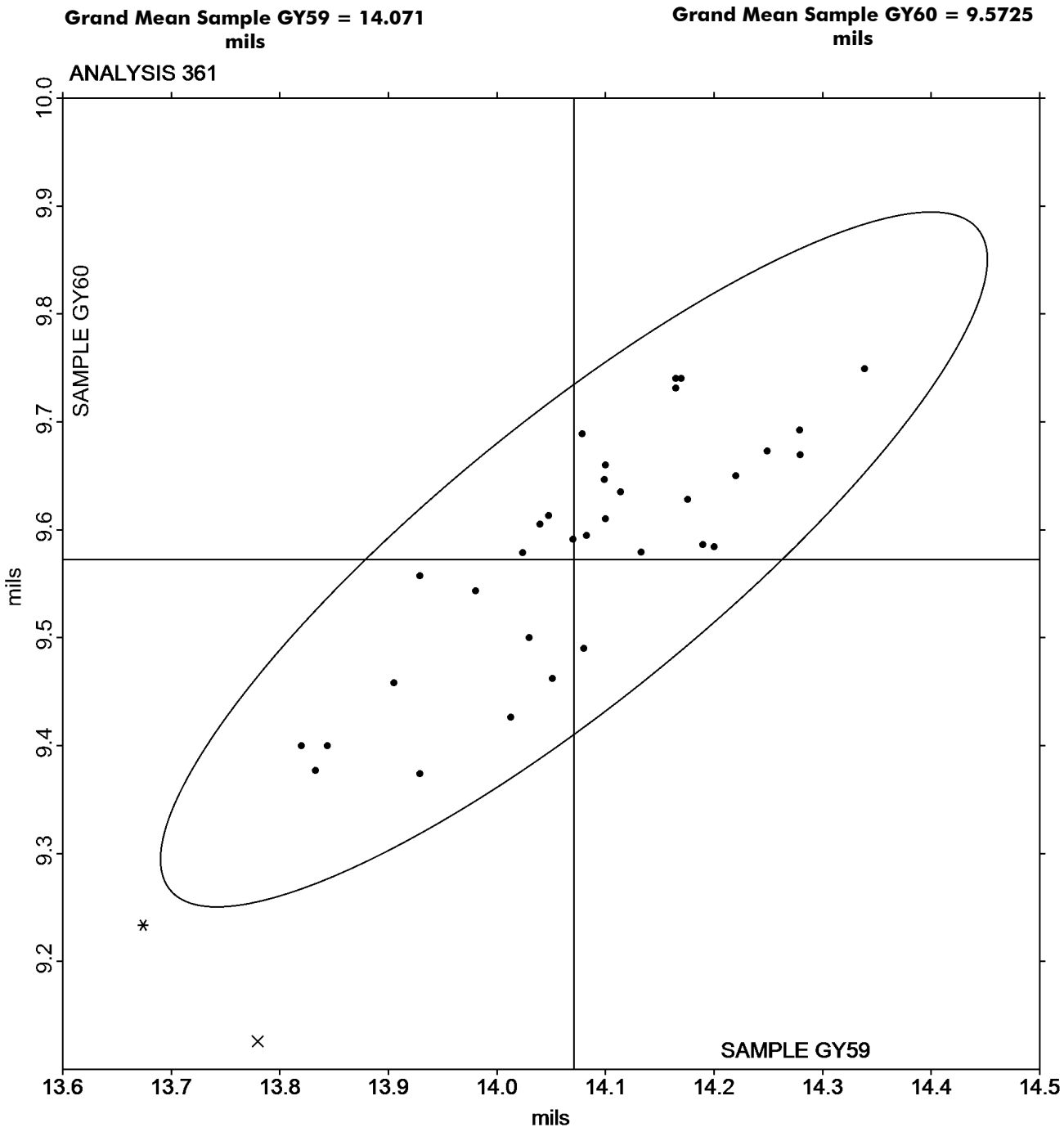
Analysis Notes:

7Z82YQ - One determination removed from the Lab Mean of Sample GY59 per Grubb's Test at 1% risk (TAPPI 1205).

9V8GZY - One determination removed from the Lab Mean of Sample GY59 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

EM	Emveco	LA	L & W Autoline
LW	L & W	MM	Mitutoyo Digital Micrometer
TA	Thwing-Albert	TM	TMI
XX	Instrument make/model not specified by lab		



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

TAPPI Official Test Method T549

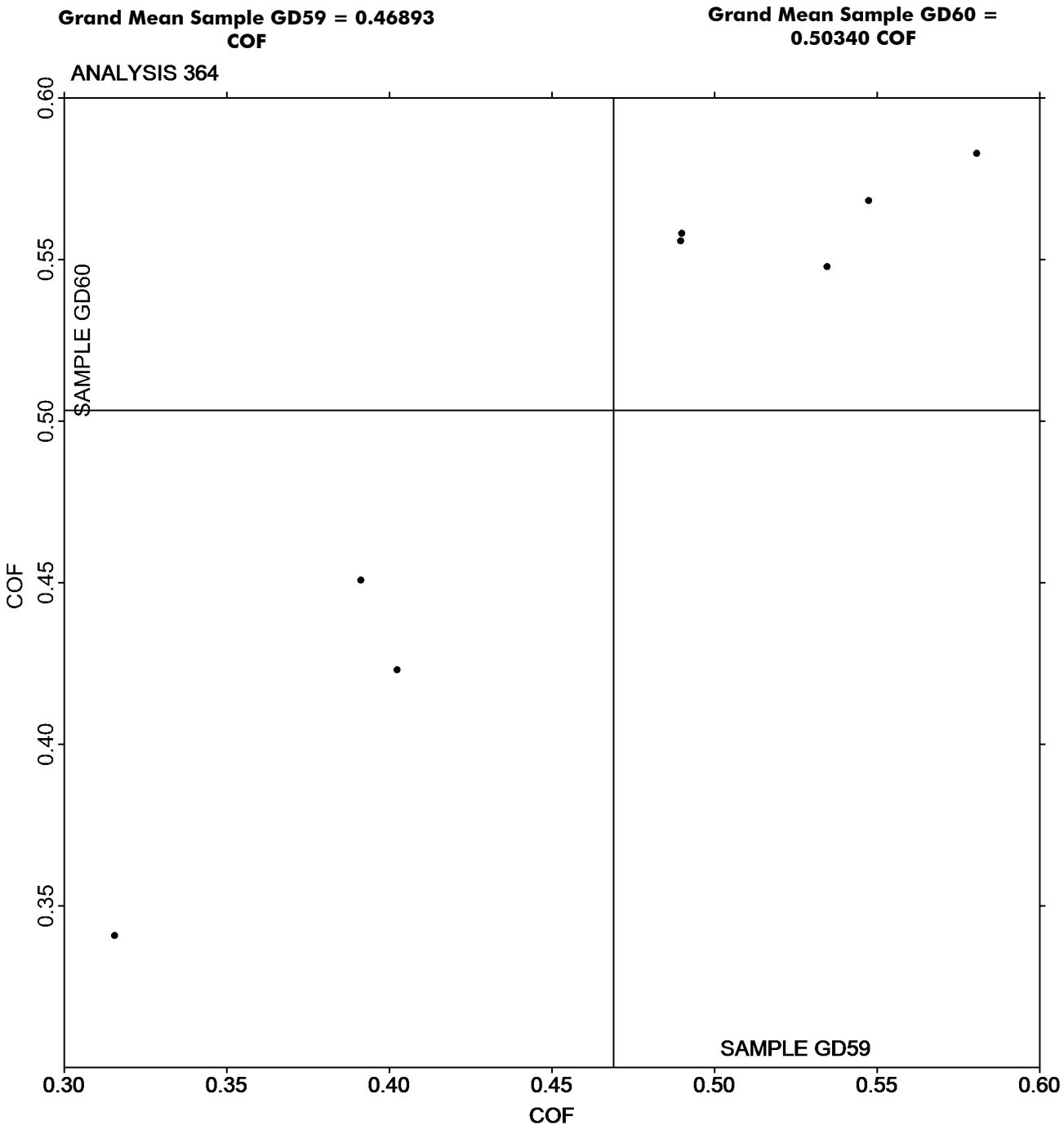
WebCode	Data Flag	Sample GD59 Lab Mean	Sample GD59 Diff from Grand Mean	Sample GD59 CPV	Sample GD60 Lab Mean	Sample GD60 Diff from Grand Mean	Sample GD60 CPV	Instr Code
2KDNX3		0.5474	0.0785	0.86	0.5682	0.0648	0.74	TA
8ATCZ6		0.3912	-0.0777	-0.86	0.4508	-0.0526	-0.60	XX
96EC36		0.5806	0.1117	1.23	0.5828	0.0794	0.91	TA
DNQMWP		0.5346	0.0657	0.72	0.5478	0.0444	0.51	TL
HZV4WH		0.4900	0.0211	0.23	0.5580	0.0546	0.62	TA
T3ZLDA		0.3156	-0.1533	-1.69	0.3408	-0.1626	-1.85	TA
THVV78		0.4024	-0.0665	-0.73	0.4230	-0.0804	-0.92	IT
Z494C8		0.4896	0.0207	0.23	0.5558	0.0524	0.60	TA

Summary Statistics	Sample GD59	Sample GD60
Grand Means	0.47 COF	0.50 COF
Stnd Dev Btwn Labs	0.09 COF	0.09 COF

Statistics based on 8 of 8 reporting participants.

Key to Instrument Codes Reported by Participants

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



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

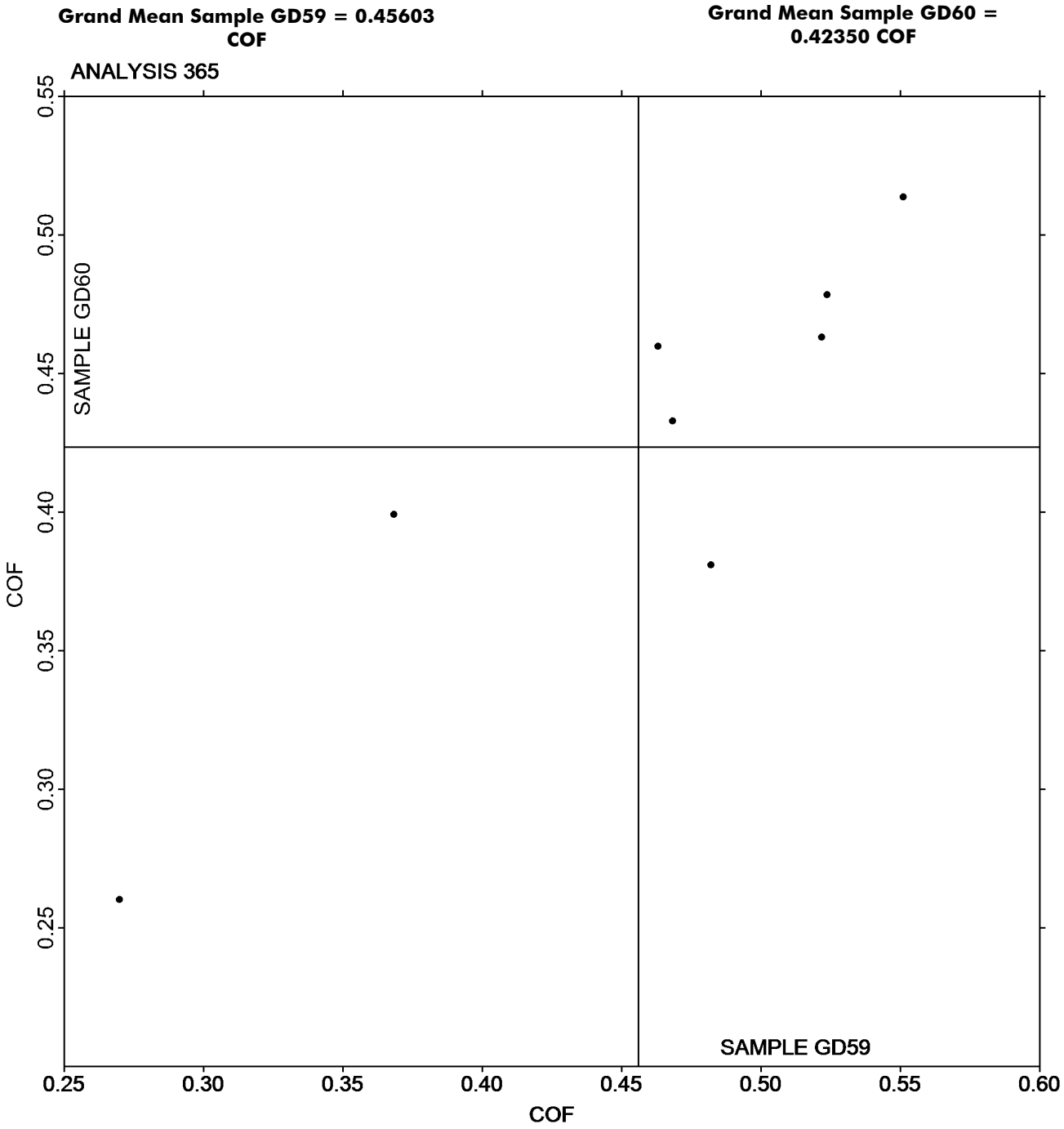
WebCode	Data Flag	Sample GD59 Lab Mean	Sample GD59 Diff from Grand Mean	Sample GD59 CPV	Sample GD60 Lab Mean	Sample GD60 Diff from Grand Mean	Sample GD60 CPV	Instr Code
8ATCZ6		0.3684	-0.0876	-0.94	0.3992	-0.0243	-0.31	XX
96EC36		0.4684	0.0124	0.13	0.4328	0.0093	0.12	TA
DNQMWP		0.5238	0.0678	0.72	0.4784	0.0549	0.70	TL
FWFVUL		0.4820	0.0260	0.28	0.3810	-0.0425	-0.54	TA
M4DVAF		0.5218	0.0658	0.70	0.4630	0.0395	0.50	TA
MNZL9C		0.5510	0.0950	1.02	0.5136	0.0901	1.15	TA
THVV78		0.2698	-0.1862	-1.99	0.2602	-0.1633	-2.08	IR
Z494C8		0.4630	0.0070	0.07	0.4598	0.0363	0.46	TA

Summary Statistics	Sample GD59	Sample GD60
Grand Means	0.46 COF	0.42 COF
Stnd Dev Btwn Labs	0.09 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
TL	TMI 32-90 Lab Master/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 GE59 Lab Mean	Sample GE59 Diff from Grand Mean	Sample GE59 CPV	Sample GE60 Lab Mean	Sample GE60 Diff from Grand Mean	Sample GE60 CPV	Instr Code
2863A3		13.70	-0.09	-0.11	19.38	-1.42	-1.12	LW
2Q3ZYQ		12.79	-1.00	-1.26	19.65	-1.15	-0.91	LP
3YB4C3		12.45	-1.34	-1.69	18.78	-2.02	-1.59	LP
7GBME7	*	11.31	-2.48	-3.13	17.09	-3.71	-2.92	LW
7JJNLY		14.12	0.34	0.43	21.44	0.64	0.51	PP
82LQZH		13.11	-0.68	-0.85	20.11	-0.69	-0.54	PR
8ATCZ6		13.00	-0.79	-0.99	19.80	-1.00	-0.79	GS
8NUYDT		14.53	0.74	0.94	20.40	-0.40	-0.31	LP
8W4CA3		14.56	0.77	0.98	21.55	0.75	0.59	LP
8ZHC69		13.24	-0.55	-0.69	19.42	-1.38	-1.09	LP
92BKRJ		14.20	0.41	0.52	20.97	0.17	0.13	PP
96EC36		13.88	0.09	0.12	21.21	0.41	0.32	WG
9V8GZY		13.14	-0.65	-0.82	21.13	0.33	0.26	TL
A8FLQR		13.61	-0.18	-0.22	20.39	-0.41	-0.32	XX
BETURT		14.08	0.29	0.37	21.85	1.05	0.83	PP
BUP9P3		12.42	-1.37	-1.73	17.70	-3.10	-2.44	RE
DNQMWP		13.76	-0.03	-0.03	20.39	-0.41	-0.32	LP
EANFHK		13.91	0.12	0.16	20.78	-0.02	-0.02	XX
F6DKDB	*	16.03	2.24	2.83	23.65	2.85	2.25	LA
F7MU4M		12.60	-1.19	-1.50	18.56	-2.24	-1.76	VM
FKKQFU		13.57	-0.22	-0.27	20.85	0.05	0.04	LP
GBQ6M2		13.35	-0.44	-0.55	20.34	-0.46	-0.36	HG
HEAG4H		13.79	0.00	0.00	21.20	0.40	0.32	PP
HVV3LM	*	13.60	-0.19	-0.24	18.74	-2.06	-1.62	PP
HZV4WH		14.36	0.57	0.72	21.91	1.11	0.88	PP
KXWPEH		13.32	-0.47	-0.60	20.60	-0.20	-0.16	HG
L8ZEEJ		13.80	0.01	0.02	20.30	-0.50	-0.39	LW
LGAG37		14.40	0.61	0.78	21.80	1.00	0.79	LA
LK4MBF		13.56	-0.23	-0.29	20.86	0.06	0.05	HG
MBVBTC		14.90	1.11	1.41	22.45	1.65	1.30	TL
PQFVB9		14.45	0.66	0.84	21.38	0.58	0.45	LA
PZ6J7B		13.81	0.02	0.03	21.51	0.71	0.56	PP
QK4E7C		14.53	0.74	0.94	21.63	0.83	0.65	HG
RZX42A		13.63	-0.16	-0.20	21.71	0.91	0.72	PP
T3ZLDA		14.06	0.27	0.34	20.59	-0.21	-0.16	PP
UCLZ3X		14.06	0.27	0.35	22.67	1.87	1.47	GA
UFKBVC		13.12	-0.67	-0.84	20.14	-0.66	-0.52	GA
UTTWJC		14.63	0.84	1.07	21.90	1.10	0.87	LP
UZP3RJ		13.87	0.08	0.11	21.00	0.20	0.16	PP
VFHRMF		13.25	-0.54	-0.68	21.43	0.63	0.50	PP

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

WebCode	Data Flag	Sample GE59 Lab Mean	Sample GE59 Diff from Grand Mean	Sample GE59 CPV	Sample GE60 Lab Mean	Sample GE60 Diff from Grand Mean	Sample GE60 CPV	Instr Code
VPQFNT		14.65	0.86	1.09	20.61	-0.19	-0.15	LP
X6QDC9		13.29	-0.50	-0.63	20.38	-0.42	-0.33	PP
XC9LXK		14.65	0.86	1.09	22.07	1.27	1.00	XX
XHF4H7		14.55	0.76	0.97	21.70	0.90	0.71	PP
Y4D4WG		14.10	0.31	0.40	21.72	0.92	0.72	LP
YGJ8AN		13.68	-0.11	-0.13	21.69	0.89	0.70	LA
Z494C8		14.58	0.79	1.00	22.16	1.36	1.07	LA

Summary Statistics	Sample GE59	Sample GE60
Grand Means	13.79 sec/100 cc	20.80 sec/100 cc
Stnd Dev Btwn Labs	0.79 sec/100 cc	1.27 sec/100 cc

Statistics based on 47 of 47 reporting participants.

Analysis Notes:

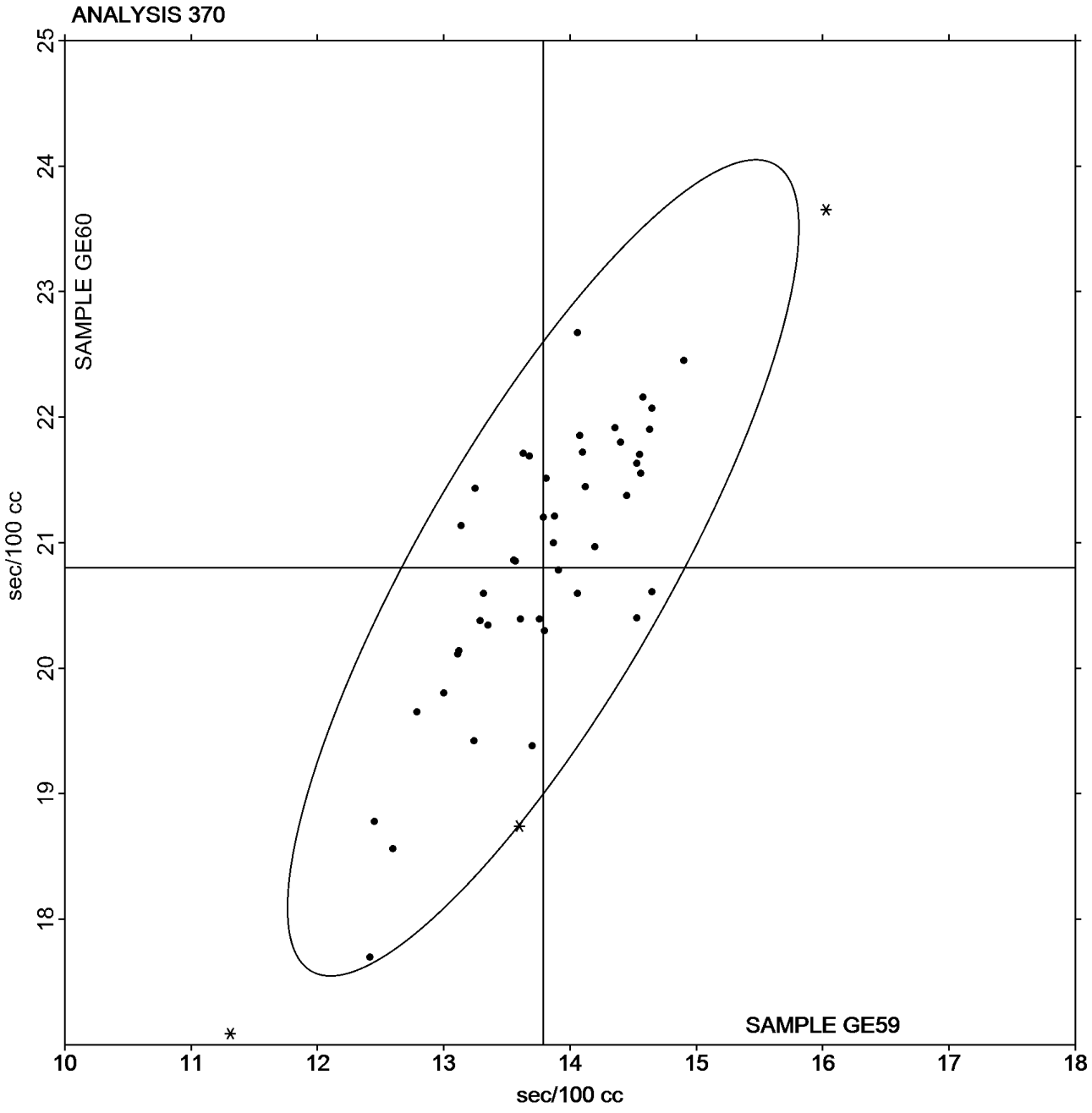
LK4MBF - One determination removed from the Lab Mean of Sample GE59 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GS	Gurley-Hill S-P-S Tester #4190
HG	Technidyne - Hagerty Model #1	LA	L & W Autoline
LP	L & W Densometer, Air Permeance	LW	L & W Type Gurley Densometer, Oil Flotation
PP	Technidyne Profile/Plus	PR	Parker Print-Surf (PPS) Model M590
RE	Regmed Gurley Densometer PGH-T	TL	Gurley Densometer #4110, Oil Flotation
VM	Valmet PaperLab (was Kajaani/Robotest)	WG	W & LE Gurley Tester
XX	Instrument make/model not specified by lab		

Grand Mean Sample GE59 = 13.787 sec/100 cc

Grand Mean Sample GE60 = 20.800 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 GE59 Lab Mean	Sample GE59 Diff from Grand Mean	Sample GE59 CPV	Sample GE60 Lab Mean	Sample GE60 Diff from Grand Mean	Sample GE60 CPV	Instr Code
24MRDY		183.7	-4.8	-0.81	141.3	9.8	1.40	TT
7JJNLY		186.3	-2.2	-0.38	126.1	-5.4	-0.77	HM
8ATCZ6	X	158.8	-29.7	-4.99	136.6	5.1	0.73	SH
A8FLQR		187.0	-1.5	-0.26	131.2	-0.3	-0.04	XX
C8RZ7Z		193.0	4.5	0.75	138.0	6.5	0.93	TT
F7MU4M		201.0	12.5	2.09	139.8	8.3	1.19	PP
HYW8ZT		189.8	1.3	0.21	131.5	0.0	0.00	HM
M4XHLJ		184.1	-4.4	-0.74	127.7	-3.8	-0.54	PP
MGHBVB		183.0	-5.5	-0.93	125.5	-6.0	-0.85	GA
UCLZ3X		183.2	-5.3	-0.90	119.4	-12.1	-1.73	GA
WRPBK2		194.3	5.8	0.97	134.4	2.9	0.41	TT
WYPGDJ	X	133.2	-55.3	-9.28	113.5	-18.0	-2.57	TT

Summary Statistics	Sample GE59	Sample GE60
Grand Means	188.54 Sheffield Units	131.49 Sheffield Units
Stnd Dev Btwn Labs	5.97 Sheffield Units	7.01 Sheffield Units

Statistics based on 10 of 12 reporting participants.

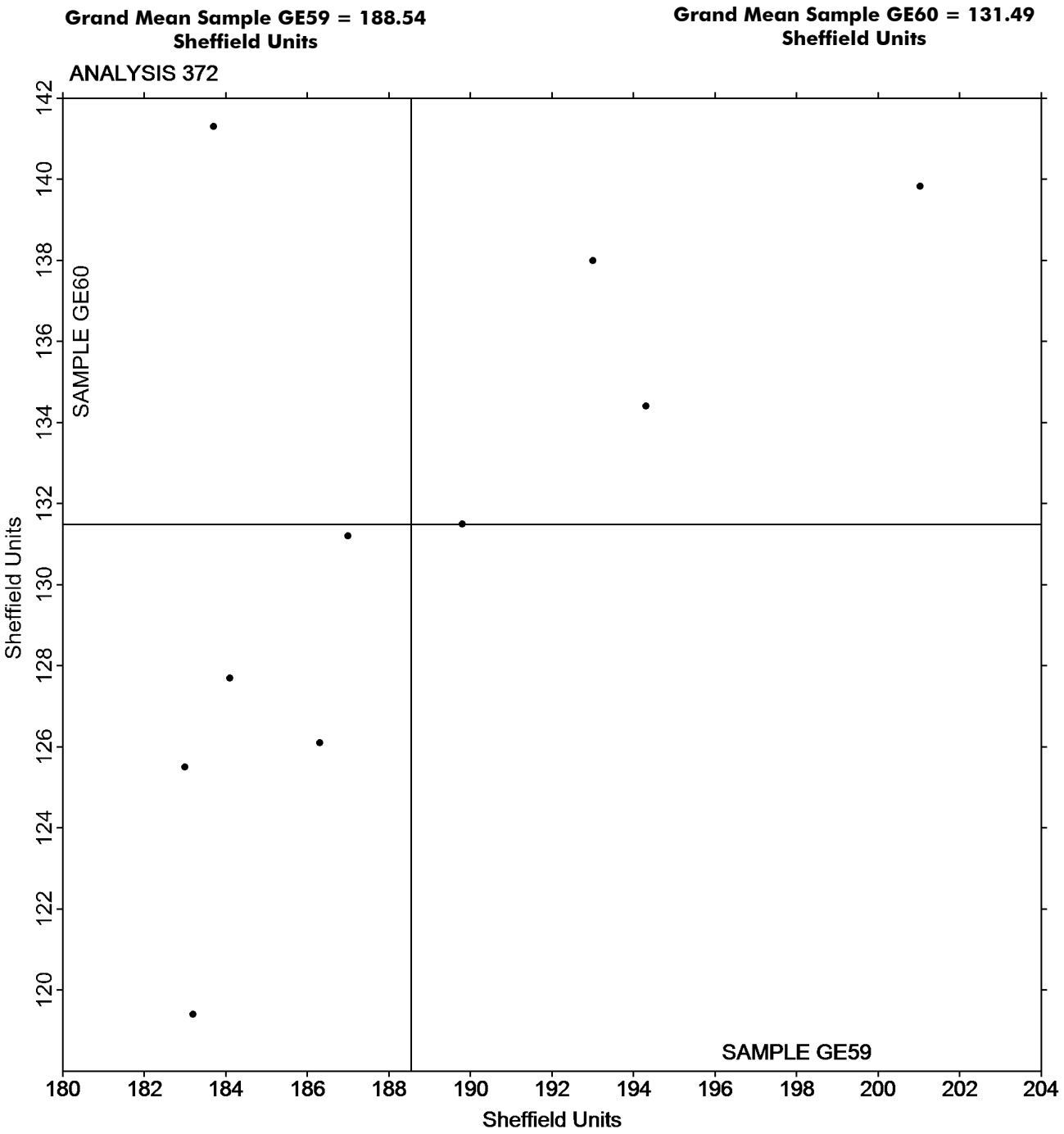
Comments on Assigned Data Flags for Test #372

8ATCZ6 (X) - Data for sample GE59 are low.

WYPGDJ (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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



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 GJ59 Lab Mean	Sample GJ59 Diff from Grand Mean	Sample GJ59 CPV	Sample GJ60 Lab Mean	Sample GJ60 Diff from Grand Mean	Sample GJ60 CPV	Instr Code
22YH2C		0.7860	-0.0522	-0.70	0.8070	0.0191	0.32	ZZ
33PYTY		0.7470	-0.0912	-1.22	0.7260	-0.0619	-1.03	ZZ
3MW77D		0.8660	0.0278	0.37	0.7760	-0.0119	-0.20	ZZ
6DY7UH		0.8300	-0.0082	-0.11	0.7520	-0.0359	-0.60	ZZ
6PWYE3		0.8550	0.0168	0.23	0.7540	-0.0339	-0.57	ZZ
6TCND6		0.8130	-0.0252	-0.34	0.7800	-0.0079	-0.13	ZZ
7Z82YQ		0.8250	-0.0132	-0.18	0.7410	-0.0469	-0.78	ZZ
92BKRJ		0.7900	-0.0482	-0.65	0.7880	0.0001	0.00	ZZ
92ZC8Y		0.8120	-0.0262	-0.35	0.7440	-0.0439	-0.73	ZZ
96EC36		0.7100	-0.1282	-1.72	0.6970	-0.0909	-1.52	ZZ
C9JVVU	X	1.8440	1.0058	13.49	1.7550	0.9671	16.15	ZZ
CBR2GV		0.8830	0.0448	0.60	0.7680	-0.0199	-0.33	ZZ
DZMFLG		0.7980	-0.0402	-0.54	0.7990	0.0111	0.19	ZZ
E4JEJC		0.7880	-0.0502	-0.67	0.7900	0.0021	0.04	ZZ
EW347B		0.9170	0.0788	1.06	0.8660	0.0781	1.30	ZZ
F7MU4M		0.9040	0.0658	0.88	0.8260	0.0381	0.64	ZZ
GM6Y6L		0.8710	0.0328	0.44	0.8600	0.0721	1.20	ZZ
GQ7WYM		0.8270	-0.0112	-0.15	0.7630	-0.0249	-0.42	ZZ
HNTV6Y		0.9180	0.0798	1.07	0.8300	0.0421	0.70	ZZ
HYW8ZT		0.8830	0.0448	0.60	0.8730	0.0851	1.42	ZZ
KXWPEH		0.8070	-0.0312	-0.42	0.7780	-0.0099	-0.17	ZZ
LK4MBF		0.8230	-0.0152	-0.20	0.7810	-0.0069	-0.12	ZZ
LV47X3		0.8390	0.0008	0.01	0.7500	-0.0379	-0.63	ZZ
MEAANJ		0.9620	0.1238	1.66	0.9320	0.1441	2.41	ZZ
MNZL9C		0.7040	-0.1342	-1.80	0.6950	-0.0929	-1.55	ZZ
MWXCR2	X	1.1240	0.2858	3.83	1.0880	0.3001	5.01	ZZ
MX7DRE		0.8940	0.0558	0.75	0.8210	0.0331	0.55	ZZ
Q6BLJQ		0.9280	0.0898	1.20	0.8710	0.0831	1.39	ZZ
QY7MAL		0.8140	-0.0242	-0.33	0.7430	-0.0449	-0.75	ZZ
T3ZLDA		0.8340	-0.0042	-0.06	0.7220	-0.0659	-1.10	ZZ
UUYQRG		0.7930	-0.0452	-0.61	0.7860	-0.0019	-0.03	ZZ
VPQFNT		0.7150	-0.1232	-1.65	0.7040	-0.0839	-1.40	ZZ
X6QDC9	*	1.0490	0.2108	2.83	0.9020	0.1141	1.91	ZZ

Summary Statistics	Sample GJ59	Sample GJ60
Grand Means	0.84 Microns	0.79 Microns
Stnd Dev Btwn Labs	0.07 Microns	0.06 Microns

Statistics based on 31 of 33 reporting participants.

Comments on Assigned Data Flags for Test #376

MWXCR2 (X) - Data for both samples are high.

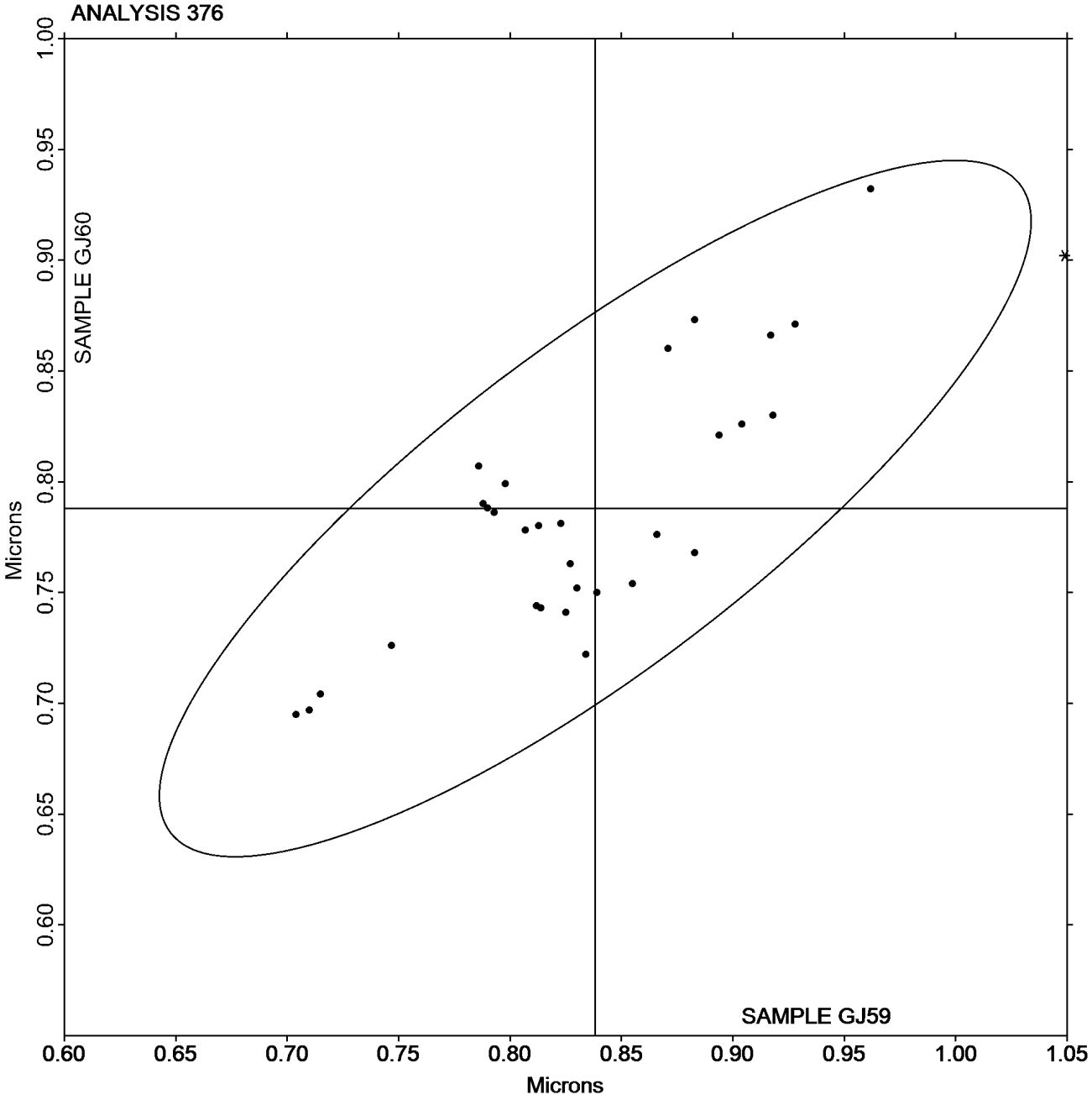
C9JVVU (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GJ59 = 0.83823 Microns

Grand Mean Sample GJ60 = 0.78790 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 GK59 Lab Mean	Sample GK59 Diff from Grand Mean	Sample GK59 CPV	Sample GK60 Lab Mean	Sample GK60 Diff from Grand Mean	Sample GK60 CPV	Instr Code
2KDNX3		3.618	-0.003	-0.04	3.992	-0.015	-0.16	ZZ
96EC36		3.601	-0.020	-0.27	3.944	-0.063	-0.67	ZZ
BETURT	X	0.383	-3.238	-43.04	0.379	-3.628	-38.79	ZZ
DNQMWP		3.652	0.031	0.41	4.155	0.148	1.58	ZZ
HZV4WH		3.701	0.080	1.06	4.057	0.050	0.54	ZZ
PZ6J7B		3.669	0.048	0.64	4.009	0.002	0.02	ZZ
YGJ8AN		3.486	-0.135	-1.80	3.884	-0.123	-1.31	ZZ

Summary Statistics	Sample GK59	Sample GK60
Grand Means	3.62 Microns	4.01 Microns
Stnd Dev Btwn Labs	0.08 Microns	0.09 Microns

Statistics based on 6 of 7 reporting participants.

Comments on Assigned Data Flags for Test #377

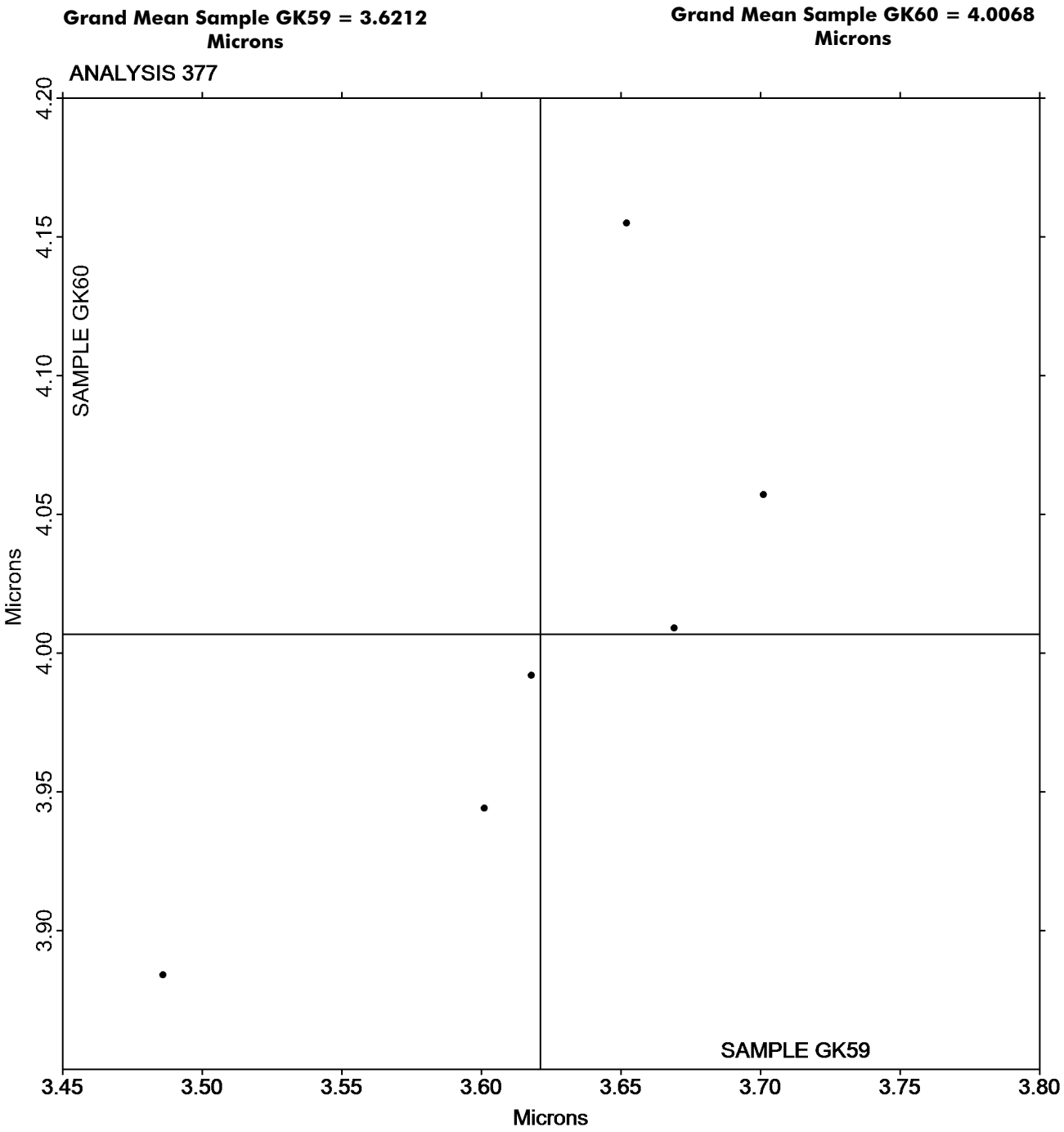
BETURT (X) - Extreme Data.

Analysis Notes:

BETURT - Data appear to be off by a factor of 10.

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 GL59 Lab Mean	Sample GL59 Diff from Grand Mean	Sample GL59 CPV	Sample GL60 Lab Mean	Sample GL60 Diff from Grand Mean	Sample GL60 CPV	Instr Code
24MRDY		111.00	18.29	1.71	139.3	14.8	1.42	TT
2KDNX3		85.76	-6.95	-0.65	119.8	-4.7	-0.45	PP
33PYTY		118.10	25.39	2.37	149.7	25.2	2.42	TT
48XL4F		114.50	21.79	2.03	146.0	21.5	2.07	GL
6DY7UH		87.99	-4.72	-0.44	121.3	-3.2	-0.31	PP
7GBME7	X	52.00	-40.71	-3.80	111.5	-13.0	-1.25	SH
7HNV29		90.27	-2.44	-0.23	115.8	-8.7	-0.83	PP
7Z82YQ		84.87	-7.84	-0.73	121.3	-3.2	-0.30	PP
8ATCZ6	*	121.60	28.89	2.69	147.3	22.8	2.19	XX
8H4N4U		91.63	-1.08	-0.10	123.0	-1.5	-0.14	PP
96EC36		102.10	9.39	0.88	132.7	8.2	0.79	XX
A8FLQR		89.50	-3.21	-0.30	125.5	1.0	0.10	XX
BETURT		84.79	-7.92	-0.74	115.6	-8.9	-0.85	PP
C8RZ7Z		113.50	20.79	1.94	142.0	17.5	1.68	TT
DAC743		101.90	9.19	0.86	129.2	4.7	0.45	TT
DNQMWP		88.00	-4.71	-0.44	118.4	-6.1	-0.59	LW
DZMFLG		95.20	2.49	0.23	124.1	-0.4	-0.04	LW
E4JEJC	*	84.40	-8.31	-0.77	128.3	3.8	0.37	LW
EW347B		87.60	-5.11	-0.48	124.1	-0.4	-0.04	LA
EXDRJV		81.70	-11.01	-1.03	120.0	-4.5	-0.43	GA
F6DKDB		83.48	-9.23	-0.86	113.0	-11.5	-1.11	LA
F7MU4M	X	92.25	-0.46	-0.04	299.4	174.9	16.81	PP
FY76JT		89.74	-2.97	-0.28	116.5	-8.0	-0.77	PP
GBQ6M2		96.80	4.09	0.38	127.3	2.8	0.27	TS
GM6Y6L		80.00	-12.71	-1.19	110.1	-14.4	-1.38	LW
GQ7WYM		90.50	-2.21	-0.21	118.8	-5.7	-0.55	HM
HEAG4H		90.80	-1.91	-0.18	127.3	2.8	0.27	PP
HNTV6Y		88.86	-3.85	-0.36	120.4	-4.1	-0.39	PP
HZV4WH		84.70	-8.01	-0.75	119.5	-5.0	-0.48	PP
L8ZEEJ		100.00	7.29	0.68	126.8	2.3	0.22	TS
LK4MBF		85.60	-7.11	-0.66	122.0	-2.5	-0.24	HM
LV47X3		89.49	-3.22	-0.30	116.5	-8.0	-0.77	PP
M4XHLJ		87.70	-5.01	-0.47	117.3	-7.2	-0.69	PP
MGHBVB		94.10	1.39	0.13	127.1	2.6	0.25	GA
MNZL9C		93.10	0.39	0.04	130.1	5.6	0.54	HM
PZ6J7B		92.71	0.00	0.00	122.3	-2.2	-0.21	PP
Q6BLJQ		85.00	-7.71	-0.72	123.7	-0.8	-0.08	LA
QK4E7C		87.70	-5.01	-0.47	122.2	-2.3	-0.22	HM
QK9LJ7		111.88	19.17	1.79	138.1	13.6	1.31	GA
QY7MAL	*	121.50	28.79	2.68	154.5	30.0	2.88	GL

Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

TAPPI Official Test Method T538

WebCode	Data Flag	Sample GL59 Lab Mean	Sample GL59 Diff from Grand Mean	Sample GL59 CPV	Sample GL60 Lab Mean	Sample GL60 Diff from Grand Mean	Sample GL60 CPV	Instr Code
QZ3D3L		87.54	-5.17	-0.48	116.4	-8.1	-0.77	PP
RZX42A		88.23	-4.48	-0.42	131.6	7.1	0.68	PP
T3ZLDA		90.32	-2.39	-0.22	117.9	-6.6	-0.63	PP
TJL7VF		90.20	-2.51	-0.23	120.6	-3.9	-0.37	LA
TV6CFX		84.46	-8.25	-0.77	118.5	-6.0	-0.57	XX
UCLZ3X		89.50	-3.21	-0.30	123.8	-0.7	-0.07	PP
UTTWJC		81.00	-11.71	-1.09	109.4	-15.1	-1.45	LW
UZP3RJ		91.50	-1.21	-0.11	115.5	-9.0	-0.86	SH
VFHRMF		84.75	-7.96	-0.74	124.2	-0.3	-0.02	PP
VPQFNT		103.20	10.49	0.98	127.4	2.9	0.28	TS
WYPGDJ		76.40	-16.31	-1.52	102.8	-21.7	-2.09	TT
X6QDC9		83.39	-9.32	-0.87	113.3	-11.2	-1.08	PP
XHF4H7		92.97	0.26	0.02	133.8	9.3	0.89	PP
YGJ8AN		95.60	2.89	0.27	131.8	7.3	0.70	LA
ZP7CU9		86.50	-6.21	-0.58	114.2	-10.3	-0.99	PP

Summary Statistics	Sample GL59	Sample GL60
Grand Means	92.71 Sheffield	124.49 Sheffield
Stnd Dev Btwn Labs	10.73 Sheffield	10.40 Sheffield

Statistics based on 53 of 55 reporting participants.

Comments on Assigned Data Flags for Test #378

F7MU4M (X) - Extreme Data for Sample GL60.

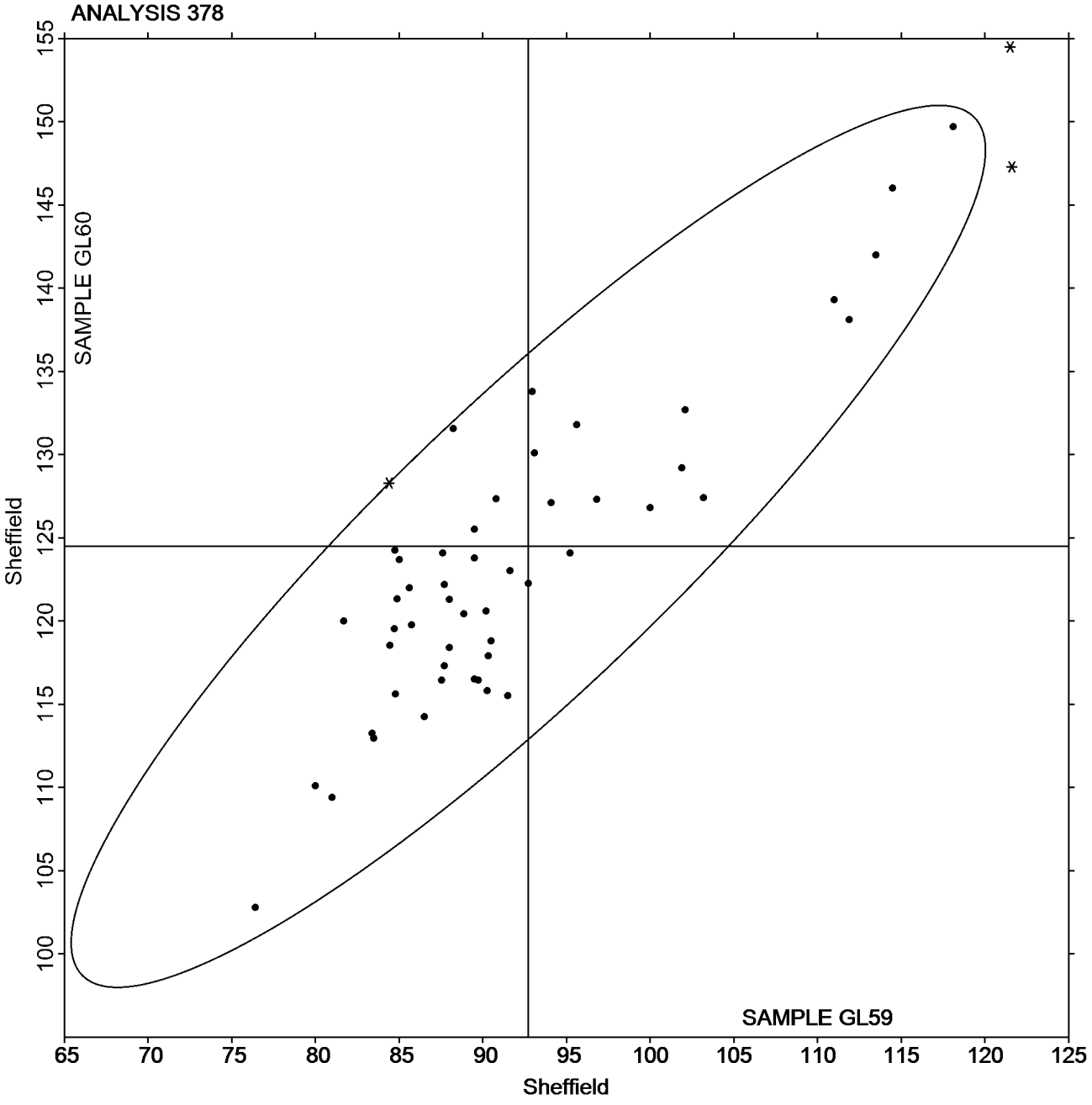
7GBME7 (X) - Data for sample GL59 are low.

Key to Instrument Codes Reported by Participants

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

Grand Mean Sample GL59 = 92.710
Sheffield

Grand Mean Sample GL60 = 124.49
Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 382
Moisture in Paper
TAPPI Official Test Method T412

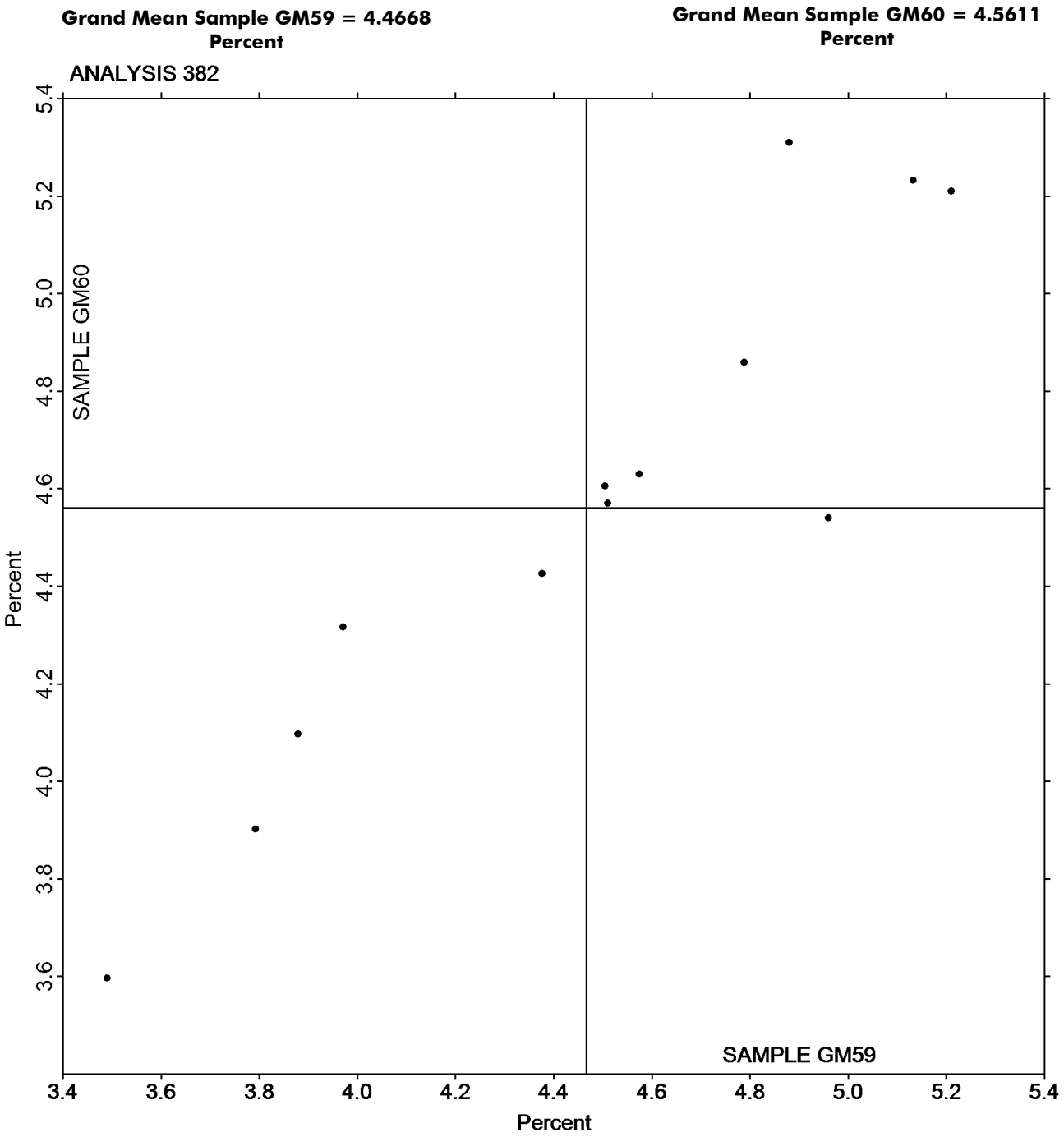
WebCode	Data Flag	Sample GM59 Lab Mean	Sample GM59 Diff from Grand Mean	Sample GM59 CPV	Sample GM60 Lab Mean	Sample GM60 Diff from Grand Mean	Sample GM60 CPV	Instr Code
33PYTY		4.880	0.413	0.76	5.310	0.749	1.45	ZZ
4WDAR3		4.574	0.107	0.20	4.630	0.069	0.13	ZZ
7F2FDY		3.793	-0.674	-1.24	3.902	-0.659	-1.28	ZZ
9ZXTY3		4.960	0.493	0.91	4.540	-0.021	-0.04	ZZ
AR4879		4.505	0.038	0.07	4.605	0.044	0.09	ZZ
DDP73E		3.490	-0.977	-1.80	3.597	-0.964	-1.87	ZZ
FKKQFU		3.879	-0.588	-1.08	4.097	-0.464	-0.90	ZZ
GXND73		4.376	-0.091	-0.17	4.426	-0.135	-0.26	ZZ
HZV4WH		5.132	0.665	1.23	5.233	0.672	1.30	ZZ
K34DRJ		5.210	0.743	1.37	5.210	0.649	1.26	ZZ
UUYQRG		4.510	0.043	0.08	4.570	0.009	0.02	ZZ
VFFFPC		3.971	-0.496	-0.91	4.316	-0.245	-0.48	ZZ
VNDT29		4.788	0.321	0.59	4.859	0.297	0.58	ZZ

Summary Statistics	Sample GM59	Sample GM60
Grand Means	4.47 Percent	4.56 Percent
Stnd Dev Btwn Labs	0.54 Percent	0.52 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 GN59 Lab Mean	Sample GN59 Diff from Grand Mean	Sample GN59 CPV	Sample GN60 Lab Mean	Sample GN60 Diff from Grand Mean	Sample GN60 CPV	Instr Code
24MRDY	X	92.87	-0.33	-0.64	95.19	1.84	3.47	ZZ
2KDNX3		93.10	-0.10	-0.19	93.31	-0.04	-0.07	ZZ
3MW77D		93.26	0.07	0.13	93.54	0.19	0.36	ZZ
48XL4F	X	95.80	2.60	5.08	94.53	1.18	2.23	ZZ
6PWYE3	*	92.75	-0.45	-0.87	93.45	0.10	0.19	ZZ
82LQZH		93.29	0.09	0.18	93.41	0.06	0.12	ZZ
8ATCZ6		92.83	-0.37	-0.72	93.00	-0.35	-0.65	ZZ
8H4N4U		93.28	0.08	0.16	93.38	0.03	0.06	ZZ
92BKRJ		93.75	0.55	1.07	93.99	0.64	1.20	ZZ
92ZC8Y		93.41	0.21	0.42	93.63	0.28	0.53	ZZ
A8FLQR	X	74.92	-18.27	-35.70	70.03	-23.31	-43.96	ZZ
BFMH84		93.00	-0.20	-0.38	93.15	-0.20	-0.38	ZZ
C8RZ7Z		93.22	0.02	0.04	93.42	0.07	0.14	ZZ
C9JVVU	*	91.81	-1.39	-2.72	91.77	-1.58	-2.97	ZZ
F6DKDB	*	94.44	1.24	2.43	94.18	0.83	1.57	ZZ
FY76JT		94.01	0.81	1.59	94.05	0.70	1.33	ZZ
GBQ6M2		93.63	0.43	0.85	93.65	0.30	0.57	ZZ
GQ7WYM		92.14	-1.06	-2.07	92.06	-1.29	-2.43	ZZ
HVV3LM		93.46	0.26	0.51	93.42	0.07	0.13	ZZ
HZV4WH		93.05	-0.15	-0.29	93.32	-0.03	-0.06	ZZ
KXWPEH		93.06	-0.14	-0.27	93.17	-0.18	-0.33	ZZ
L8ZEEJ		92.91	-0.29	-0.56	93.24	-0.11	-0.20	ZZ
LK4MBF		93.21	0.01	0.02	93.37	0.02	0.04	ZZ
MBVBTC		93.51	0.31	0.61	93.69	0.34	0.65	ZZ
MEAANJ		92.57	-0.63	-1.23	92.32	-1.03	-1.93	ZZ
MNZL9C		93.49	0.29	0.57	93.52	0.17	0.33	ZZ
PZ6J7B		93.24	0.04	0.08	93.65	0.30	0.56	ZZ
QK4E7C		92.97	-0.23	-0.44	93.05	-0.30	-0.56	ZZ
T3ZLDA		93.44	0.24	0.47	93.62	0.27	0.51	ZZ
UCLZ3X		92.58	-0.62	-1.21	92.74	-0.61	-1.14	ZZ
UMJZE3		93.02	-0.18	-0.35	93.20	-0.15	-0.28	ZZ
UZP3RJ		93.49	0.29	0.57	93.65	0.30	0.57	ZZ
XHF4H7		93.11	-0.09	-0.18	93.44	0.10	0.18	ZZ
YGJ8AN		93.41	0.21	0.41	93.69	0.35	0.65	ZZ
ZP7CU9		93.89	0.69	1.35	94.04	0.69	1.31	ZZ

Summary Statistics	Sample GN59	Sample GN60
Grand Means	93.20 Percent	93.35 Percent
Stnd Dev Btwn Labs	0.51 Percent	0.53 Percent

Statistics based on 32 of 35 reporting participants.

Comments on Assigned Data Flags for Test #384

48XL4F (X) - Data for sample GN59 are high. Inconsistent within the determinations of both samples.

A8FLQR (X) - Extreme Data.

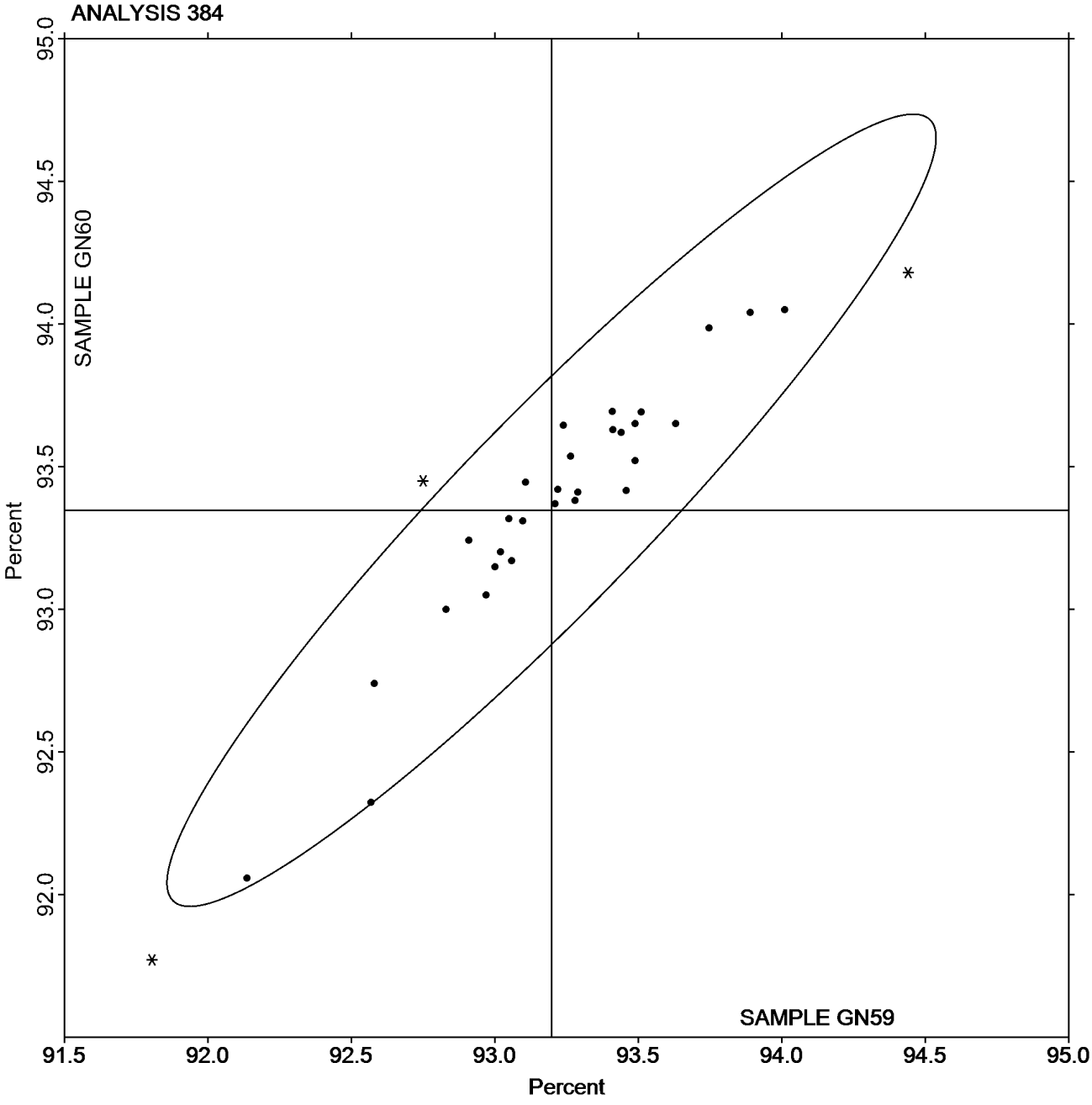
24MRDY (X) - Data for sample GN60 are high.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GN59 = 93.197
Percent

Grand Mean Sample GN60 = 93.347
Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

WebCode	Data Flag	Sample GP59 Lab Mean	Sample GP59 Diff from Grand Mean	Sample GP59 CPV	Sample GP60 Lab Mean	Sample GP60 Diff from Grand Mean	Sample GP60 CPV	Instr Code
2863A3		93.02	0.01	0.13	92.59	0.01	0.23	ZZ
3YB4C3		93.21	0.20	2.56	92.60	0.02	0.37	ZZ
6TCND6		93.00	-0.01	-0.11	92.56	-0.01	-0.25	ZZ
7JJNLY		93.07	0.06	0.80	92.65	0.08	1.33	ZZ
8NUYDT		93.08	0.08	0.95	92.59	0.01	0.25	ZZ
8ZHC69		92.94	-0.06	-0.79	92.69	0.11	1.93	ZZ
9LHT6W		92.98	-0.02	-0.29	92.60	0.02	0.39	ZZ
BUP9P3		92.93	-0.08	-0.97	92.55	-0.03	-0.46	ZZ
DXYYDT		92.94	-0.07	-0.87	92.58	0.01	0.15	ZZ
FA9GZG		92.92	-0.09	-1.09	92.45	-0.13	-2.19	ZZ
FKKQFU		92.94	-0.06	-0.80	92.49	-0.08	-1.47	ZZ
GQ7WYM		93.06	0.06	0.70	92.56	-0.01	-0.18	ZZ
T26XWZ		93.06	0.05	0.63	92.61	0.04	0.70	ZZ
WHZKXA		92.94	-0.07	-0.88	92.55	-0.02	-0.39	ZZ
WYPGDJ	X	94.27	1.26	15.82	93.57	0.99	17.24	ZZ
Y4D4WG		93.01	0.00	0.03	92.55	-0.02	-0.41	ZZ

Summary Statistics	Sample GP59	Sample GP60
Grand Means	93.01 Percent	92.57 Percent
Stnd Dev Btwn Labs	0.08 Percent	0.06 Percent

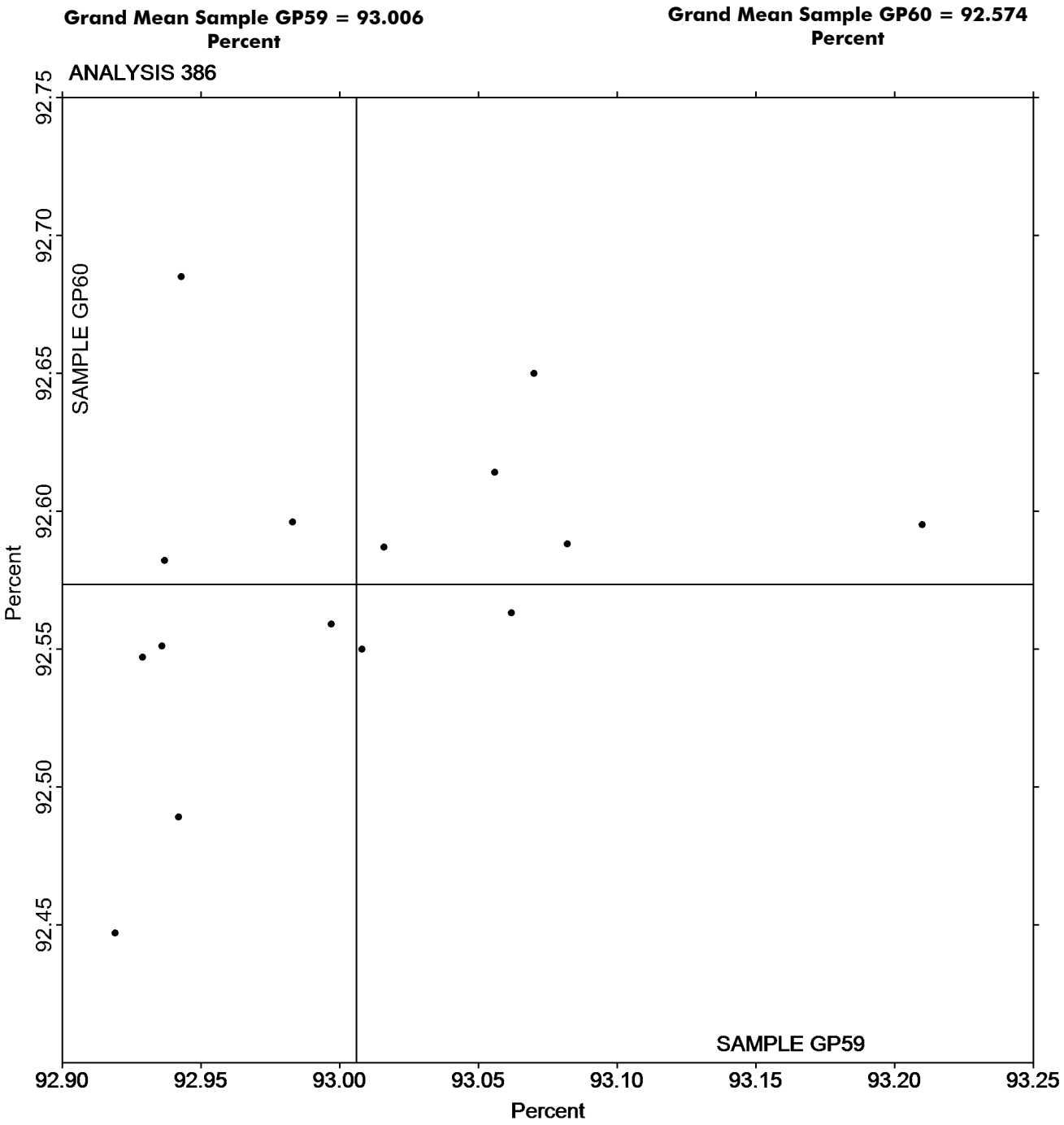
Statistics based on 15 of 16 reporting participants.

Comments on Assigned Data Flags for Test #386

WYPGDJ (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 390
Directional Brightness
TAPPI Official Test Method T452

WebCode	Data Flag	Sample GR59 Lab Mean	Sample GR59 Diff from Grand Mean	Sample GR59 CPV	Sample GR60 Lab Mean	Sample GR60 Diff from Grand Mean	Sample GR60 CPV	Instr Code
3VMU2F		84.64	0.57	0.30	84.70	0.61	0.33	TS
6DY7UH		87.97	3.90	2.08	87.92	3.82	2.07	HG
7HNV29	*	83.04	-1.03	-0.55	82.67	-1.43	-0.77	TS
7Z82YQ		87.26	3.20	1.70	87.19	3.09	1.67	HG
8ATCZ6	*	89.70	5.64	3.00	89.65	5.55	3.00	PE
8H4N4U		82.85	-1.21	-0.65	82.74	-1.36	-0.74	TT
A8FLQR	*	83.15	-0.91	-0.49	83.66	-0.44	-0.24	XX
AR4879		82.16	-1.90	-1.01	82.13	-1.97	-1.07	XX
BETURT		86.18	2.11	1.12	86.10	2.00	1.08	HG
C8RZ7Z	X	70.98	-13.09	-6.97	71.09	-13.01	-7.04	TS
C9JVVU		85.64	1.58	0.84	85.59	1.49	0.81	VM
DZMFLG		82.84	-1.22	-0.65	82.76	-1.34	-0.73	HZ
E4JEJC		82.83	-1.24	-0.66	82.94	-1.16	-0.63	TT
FY76JT		82.75	-1.31	-0.70	82.84	-1.26	-0.68	XX
GBQ6M2		83.58	-0.49	-0.26	83.65	-0.45	-0.24	TS
GQ7WYM		83.81	-0.25	-0.14	83.75	-0.35	-0.19	TS
HNTV6Y		84.33	0.27	0.14	84.31	0.21	0.11	PP
KXWPEH		83.11	-0.95	-0.51	83.33	-0.77	-0.42	TT
LV47X3		84.91	0.85	0.45	85.08	0.98	0.53	TT
MBVBTC		84.56	0.50	0.26	84.64	0.54	0.29	TS
MEAANJ		83.14	-0.93	-0.49	83.35	-0.75	-0.40	TS
MNZL9C		83.04	-1.03	-0.55	82.96	-1.14	-0.61	TT
QY7MAL	X	64.89	-19.18	-10.21	64.56	-19.54	-10.57	TS
QZ3D3L		82.88	-1.19	-0.63	82.80	-1.30	-0.70	TS
T3ZLDA		82.53	-1.54	-0.82	82.76	-1.34	-0.72	TT
UCLZ3X	X	86.28	2.22	1.18	87.20	3.10	1.68	XC
XHF4H7		82.74	-1.33	-0.71	82.89	-1.21	-0.66	TP
YGJ8AN		83.24	-0.83	-0.44	83.28	-0.82	-0.44	TS
ZP7CU9		82.83	-1.24	-0.66	82.90	-1.20	-0.65	TS

Summary Statistics	Sample GR59	Sample GR60
Grand Means	84.06 Percent	84.10 Percent
Stnd Dev Btwn Labs	1.88 Percent	1.85 Percent

Statistics based on 26 of 29 reporting participants.

Comments on Assigned Data Flags for Test #390

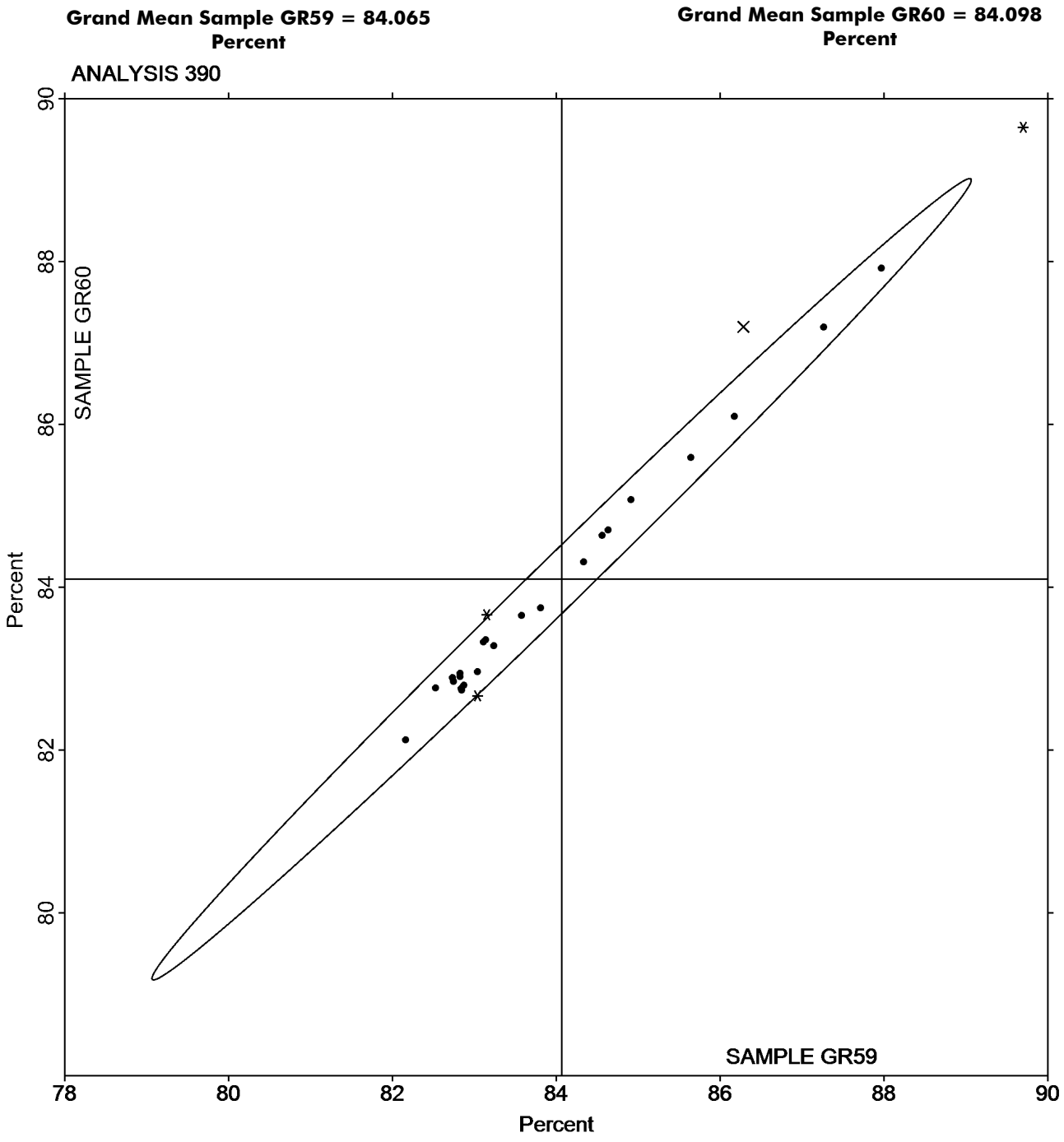
UCLZ3X (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

QY7MAL (X) - Extreme Data.

C8RZ7Z (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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



Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ59 Lab Mean	Sample GZ59 Diff from Grand Mean	Sample GZ59 CPV	Sample GZ60 Lab Mean	Sample GZ60 Diff from Grand Mean	Sample GZ60 CPV	Instr Code
24MRDY		82.80	-0.27	-0.32	93.12	0.56	0.63	TT
33PYTY	X	83.66	0.59	0.70	86.32	-6.24	-7.06	EF
3MW77D		82.77	-0.30	-0.36	92.54	-0.02	-0.03	TS
6PWYE3		82.28	-0.79	-0.94	92.04	-0.52	-0.59	TT
82LQZH		84.00	0.93	1.11	92.96	0.40	0.45	TS
92BKRJ		83.90	0.83	0.98	93.61	1.05	1.19	PP
92ZC8Y		83.15	0.08	0.09	92.21	-0.35	-0.40	PP
9LHT6W		85.44	2.37	2.82	94.33	1.77	2.00	TS
F6DKDB		82.42	-0.65	-0.77	91.90	-0.66	-0.75	TT
GBQ6M2		83.14	0.07	0.08	93.56	1.00	1.14	TS
HZV4WH		82.06	-1.01	-1.20	92.51	-0.05	-0.06	TS
L8ZEEJ		83.11	0.04	0.05	92.79	0.23	0.26	TS
LK4MBF		82.64	-0.43	-0.51	92.32	-0.24	-0.27	TT
PZ6J7B		82.91	-0.16	-0.19	92.30	-0.26	-0.29	TS
QK4E7C		82.83	-0.24	-0.29	91.14	-1.42	-1.60	HT
UZP3RJ		82.61	-0.46	-0.55	91.07	-1.49	-1.68	HT

Summary Statistics	Sample GZ59	Sample GZ60
Grand Means	83.07 Percent	92.56 Percent
Stnd Dev Btwn Labs	0.84 Percent	0.88 Percent

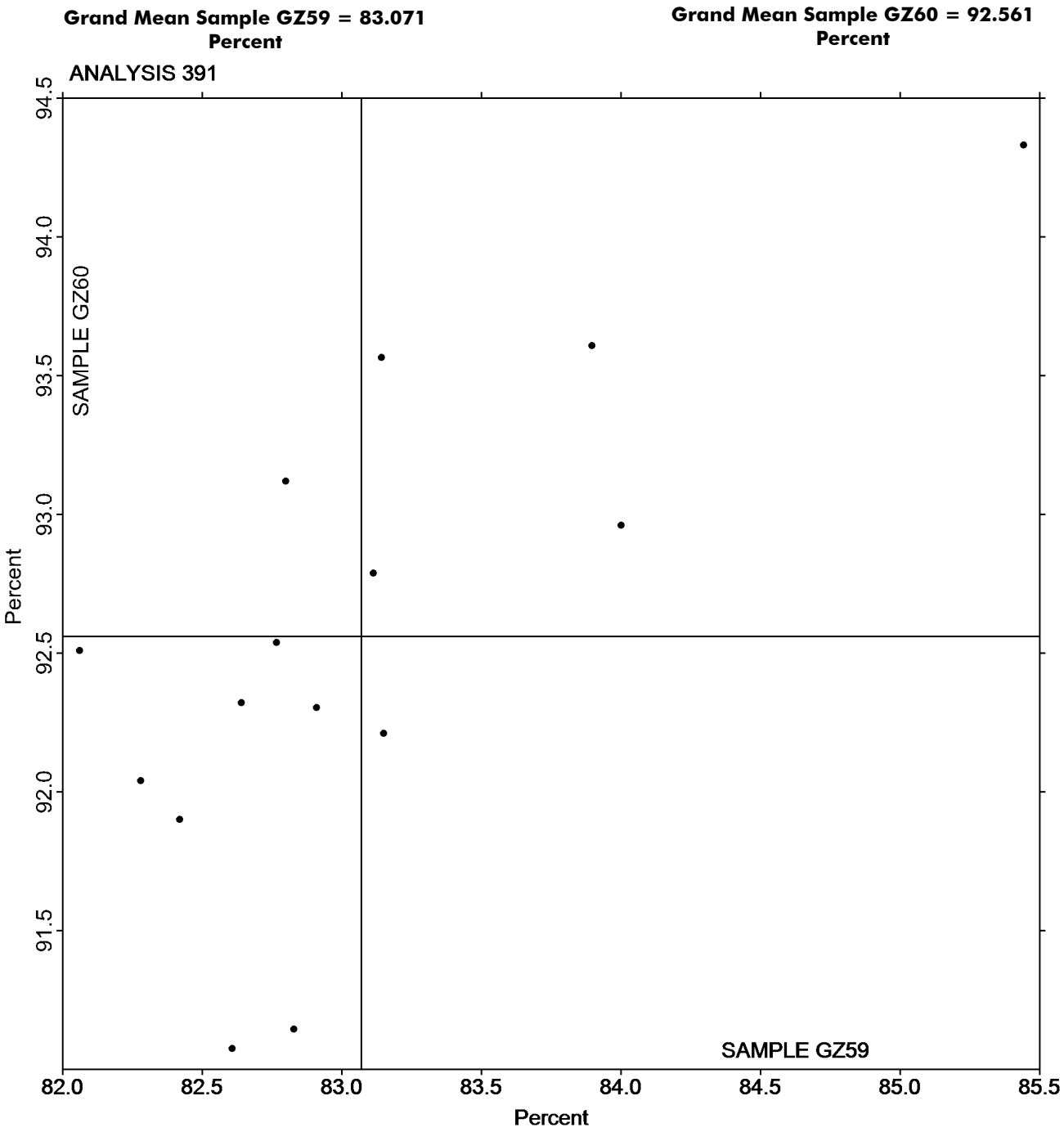
Statistics based on 15 of 16 reporting participants.

Comments on Assigned Data Flags for Test #391

33PYTY (X) - Extreme Data for Sample GZ60.

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho	HT	Hunter UltraScan Vis
PP	Technidyne Profile/Plus	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 GR59 Lab Mean	Sample GR59 Diff from Grand Mean	Sample GR59 CPV	Sample GR60 Lab Mean	Sample GR60 Diff from Grand Mean	Sample GR60 CPV	Instr Code
33PYTY		83.49	-0.44	-0.55	83.59	-0.36	-0.43	LA
3VMU2F		83.86	-0.08	-0.10	83.86	-0.09	-0.11	TC
6TCND6		83.91	-0.02	-0.02	84.02	0.07	0.08	AC
7JJNLY		84.16	0.23	0.29	84.15	0.21	0.25	TC
8NUYDT		84.13	0.20	0.25	84.17	0.22	0.27	TC
9LHT6W		83.94	0.01	0.01	83.90	-0.05	-0.06	TC
AR4879		83.89	-0.04	-0.05	83.88	-0.07	-0.08	EE
BETURT		83.90	-0.03	-0.04	83.84	-0.11	-0.13	TC
BUP9P3		83.79	-0.14	-0.18	83.84	-0.11	-0.13	EG
CBR2GV		84.24	0.31	0.38	84.08	0.14	0.16	TC
CH9P66		84.10	0.17	0.21	84.12	0.17	0.20	TC
DFLFJB	X	86.34	2.41	3.02	87.03	3.08	3.69	TC
E4JEJC		83.71	-0.22	-0.28	83.88	-0.07	-0.08	EG
FA9GZG		83.61	-0.32	-0.40	83.64	-0.31	-0.37	TM
FJBJFM		84.11	0.18	0.22	84.25	0.30	0.36	XX
FKKQFU		83.58	-0.35	-0.44	83.53	-0.42	-0.50	LE
FWFVUL		83.79	-0.14	-0.18	83.66	-0.29	-0.35	TC
GQ7WYM		84.47	0.54	0.68	84.49	0.54	0.64	TC
HNTV6Y		85.04	1.11	1.38	84.98	1.03	1.23	EG
JFXC4V		83.82	-0.11	-0.14	83.73	-0.22	-0.27	TC
LV47X3		82.99	-0.94	-1.18	83.04	-0.91	-1.09	TL
MNZL9C		84.52	0.59	0.74	84.69	0.74	0.89	LT
MWXCR2	*	86.36	2.42	3.03	86.55	2.60	3.12	TC
RZX42A	*	81.53	-2.41	-3.01	81.45	-2.50	-3.00	TC
UTTWJC		83.71	-0.22	-0.27	83.69	-0.26	-0.31	EF
YGJ8AN		83.65	-0.28	-0.35	83.71	-0.24	-0.29	TC

Summary Statistics	Sample GR59	Sample GR60
Grand Means	83.93 Percent	83.95 Percent
Stnd Dev Btwn Labs	0.80 Percent	0.83 Percent

Statistics based on 25 of 26 reporting participants.

Comments on Assigned Data Flags for Test #392

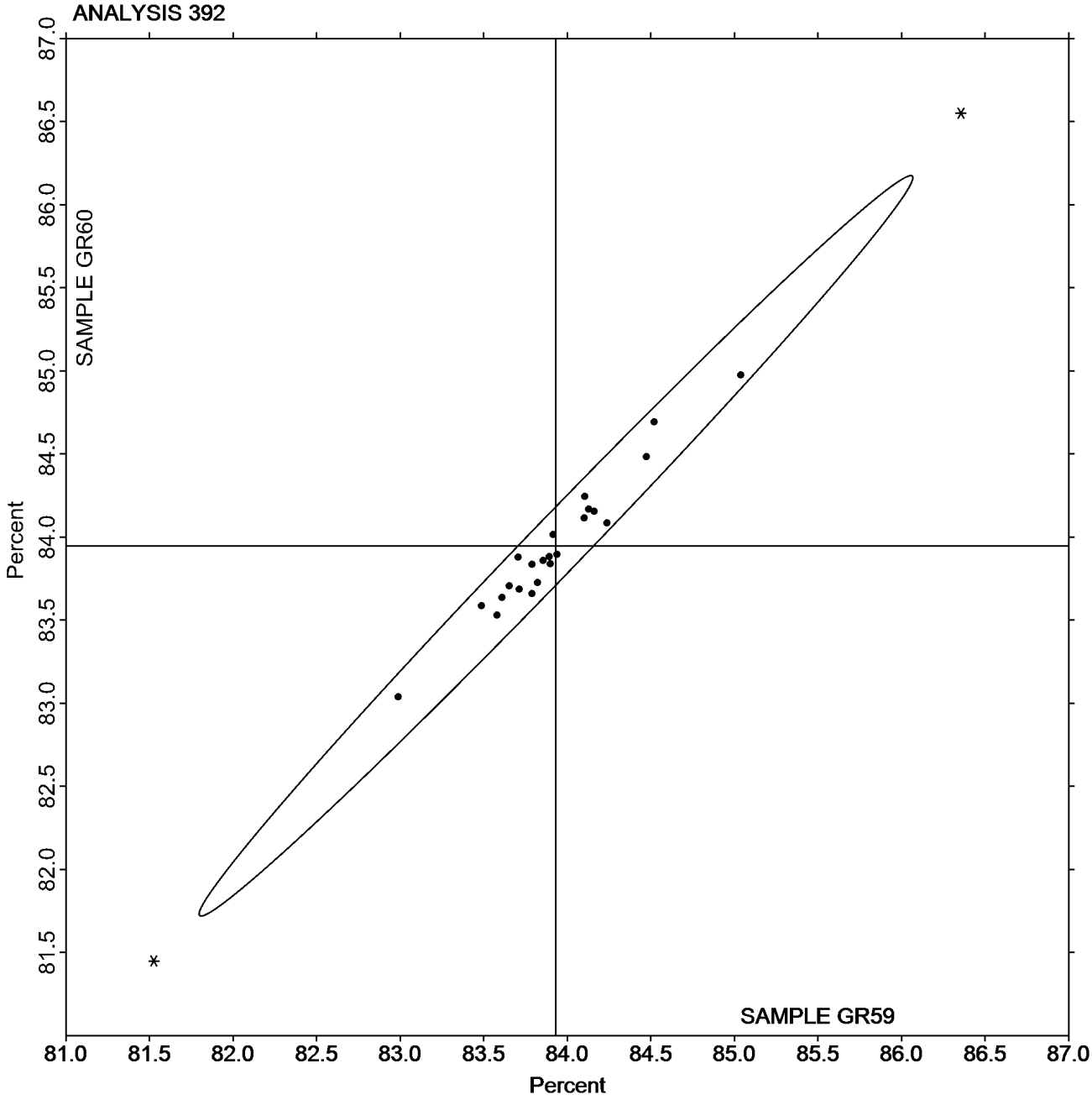
DFLFJB (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample GR60.

Key to Instrument Codes Reported by Participants

AC	ACS Spectro-Sensor II	EE	Datacolor Elrepho 2000
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
TL	Technidyne Technibrite TB-1	TM	Technidyne Technibrite Micro TB-1C
XX	Instrument make/model not specified by lab		

Grand Mean Sample GR59 = 83.931 Percent

Grand Mean Sample GR60 = 83.948 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

TAPPI Official Test Method T452

WebCode	Data Flag	Sample GZ59 Lab Mean	Sample GZ59 Diff from Grand Mean	Sample GZ59 CPV	Sample GZ60 Lab Mean	Sample GZ60 Diff from Grand Mean	Sample GZ60 CPV	Instr Code
33PYTY	X	2.214	0.635	6.31	8.486	2.450	16.74	EF
3MW77D		1.614	0.035	0.34	6.086	0.050	0.34	TS
82LQZH		1.580	0.001	0.01	6.040	0.004	0.03	TS
92BKRJ		1.718	0.139	1.38	6.234	0.198	1.35	PP
92ZC8Y		1.690	0.111	1.10	6.144	0.108	0.74	PP
9LHT6W		1.468	-0.111	-1.11	5.752	-0.284	-1.94	TS
F6DKDB		1.520	-0.059	-0.59	5.840	-0.196	-1.34	TT
GBQ6M2		1.380	-0.199	-1.98	6.154	0.118	0.81	TS
HZV4WH		1.598	0.019	0.18	6.020	-0.016	-0.11	TS
LK4MBF		1.620	0.041	0.40	6.100	0.064	0.44	TT
PZ6J7B		1.606	0.027	0.26	5.992	-0.044	-0.30	TS

Summary Statistics	Sample GZ59	Sample GZ60
Grand Means	1.58 Percent	6.04 Percent
Stnd Dev Btwn Labs	0.10 Percent	0.15 Percent

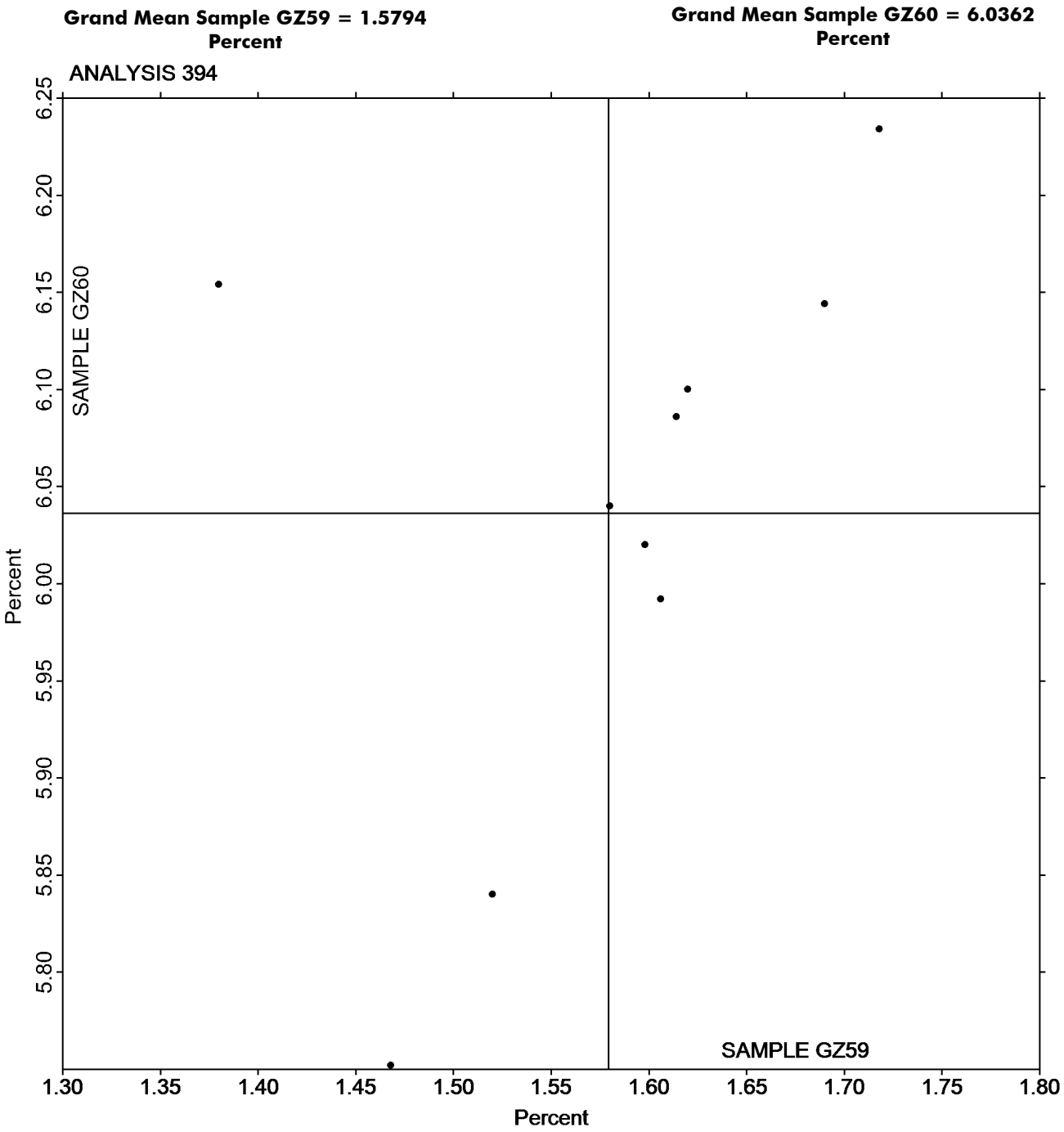
Statistics based on 10 of 11 reporting participants.

Comments on Assigned Data Flags for Test #394

33PYTY (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho 3000	PP	Technidyne Profile/Plus
TS	Technidyne Brightimeter Micro S-5	TT	Technidyne Brightimeter Micro S4-M



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 #2962G, October 2018

Analysis 395

Specular Gloss at 75 Degrees - High Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GT59 Lab Mean	Sample GT59 Diff from Grand Mean	Sample GT59 CPV	Sample GT60 Lab Mean	Sample GT60 Diff from Grand Mean	Sample GT60 CPV	Instr Code
3MW77D		74.64	1.08	0.42	76.21	0.84	0.50	LA
6DY7UH		73.75	0.19	0.07	77.13	1.76	1.04	TH
6PWYE3		76.74	3.18	1.25	76.88	1.50	0.89	TG
6TCND6		70.93	-2.63	-1.03	75.78	0.41	0.24	LB
7Z82YQ		72.10	-1.46	-0.57	75.87	0.50	0.30	TH
92BKRJ		71.40	-2.16	-0.85	71.35	-4.02	-2.38	PP
92ZC8Y		75.07	1.51	0.59	75.71	0.34	0.20	PP
9LHT6W		69.63	-3.93	-1.54	74.11	-1.26	-0.75	LA
C9JVVU		75.54	1.98	0.78	76.98	1.61	0.95	VM
E4JEJC		77.20	3.64	1.43	77.14	1.77	1.05	TH
EW347B		76.09	2.53	0.99	75.81	0.44	0.26	LA
F7MU4M		75.93	2.37	0.93	75.83	0.46	0.27	GM
HNTV6Y		72.99	-0.57	-0.22	74.72	-0.65	-0.39	GA
JFXC4V		66.97	-6.59	-2.59	71.42	-3.95	-2.34	ZH
KXWPEH		72.71	-0.85	-0.34	76.33	0.96	0.57	TH
LV47X3		73.71	0.15	0.06	75.07	-0.30	-0.18	GS
MEAANJ		75.13	1.57	0.62	75.06	-0.31	-0.18	LA
Q6BLJQ		73.07	-0.49	-0.19	73.25	-2.12	-1.26	GM
T26XWZ		75.20	1.64	0.64	76.52	1.15	0.68	EP
VPQFNT		72.44	-1.12	-0.44	76.26	0.89	0.53	XX

Summary Statistics	Sample GT59	Sample GT60
Grand Means	73.56 Gloss Units	75.37 Gloss Units
Stnd Dev Btwn Labs	2.55 Gloss Units	1.69 Gloss Units

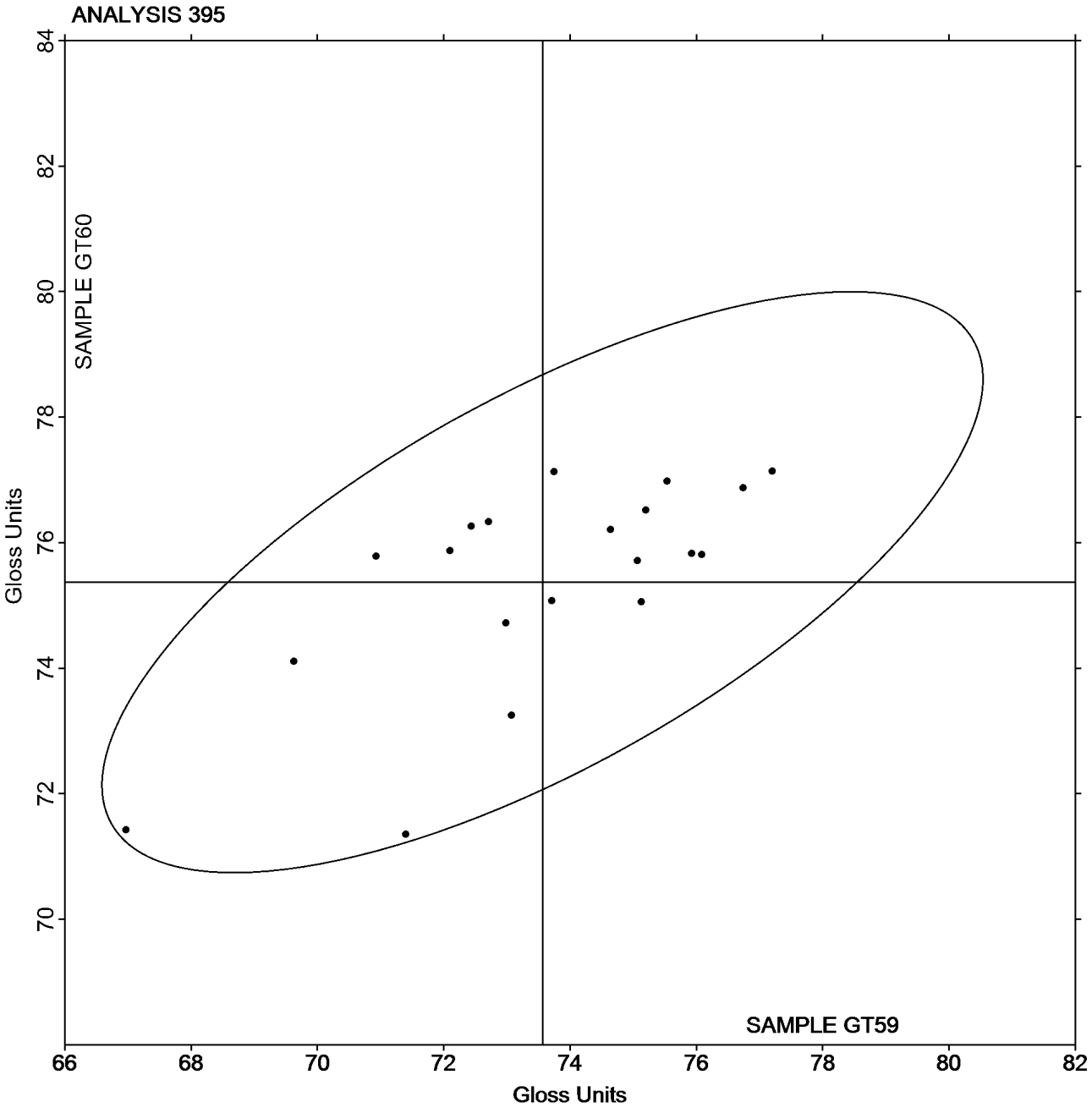
Statistics based on 20 of 20 reporting participants.

Key to Instrument Codes Reported by Participants

EP	Erichsen Picogloss 503	GA	BYK-Gardner (model not specified)
GM	BYK-Gardner micro-gloss	GS	BYK-Gardner Glossgard II
LA	L & W Gloss - Autoline 300	LB	L & W Gloss Tester Code 224
PP	Technidyne Profile/Plus	TG	Technidyne T480
TH	Technidyne T480A	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab	ZH	Zehntner ZLR 1050

Grand Mean Sample GT59 = 73.562 Gloss Units

Grand Mean Sample GT60 = 75.371 Gloss Units



Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

TAPPI Official Test Method T480

WebCode	Data Flag	Sample GU59 Lab Mean	Sample GU59 Diff from Grand Mean	Sample GU59 CPV	Sample GU60 Lab Mean	Sample GU60 Diff from Grand Mean	Sample GU60 CPV	Instr Code
2KDNX3		32.72	-0.86	-0.52	27.09	0.25	0.14	PP
33PYTY		35.66	2.08	1.27	25.85	-0.99	-0.58	TG
6TCND6		33.33	-0.25	-0.15	26.79	-0.05	-0.03	LA
8H4N4U		31.58	-2.00	-1.22	23.91	-2.93	-1.72	TH
92BKRJ		34.26	0.68	0.41	26.99	0.15	0.09	TP
9LHT6W		31.33	-2.25	-1.37	26.92	0.08	0.04	LA
BETURT		36.25	2.67	1.63	30.76	3.92	2.29	TH
DZMFLG		33.24	-0.34	-0.21	26.15	-0.69	-0.41	GS
GQ7WYM	X	42.11	8.53	5.19	35.37	8.53	4.99	TG
UCLZ3X		34.80	1.22	0.74	26.40	-0.44	-0.26	TH
UUYQRG		32.61	-0.97	-0.59	27.58	0.74	0.43	XX

Summary Statistics	Sample GU59	Sample GU60
Grand Means	33.58 Gloss Units	26.84 Gloss Units
Stnd Dev Btwn Labs	1.64 Gloss Units	1.71 Gloss Units

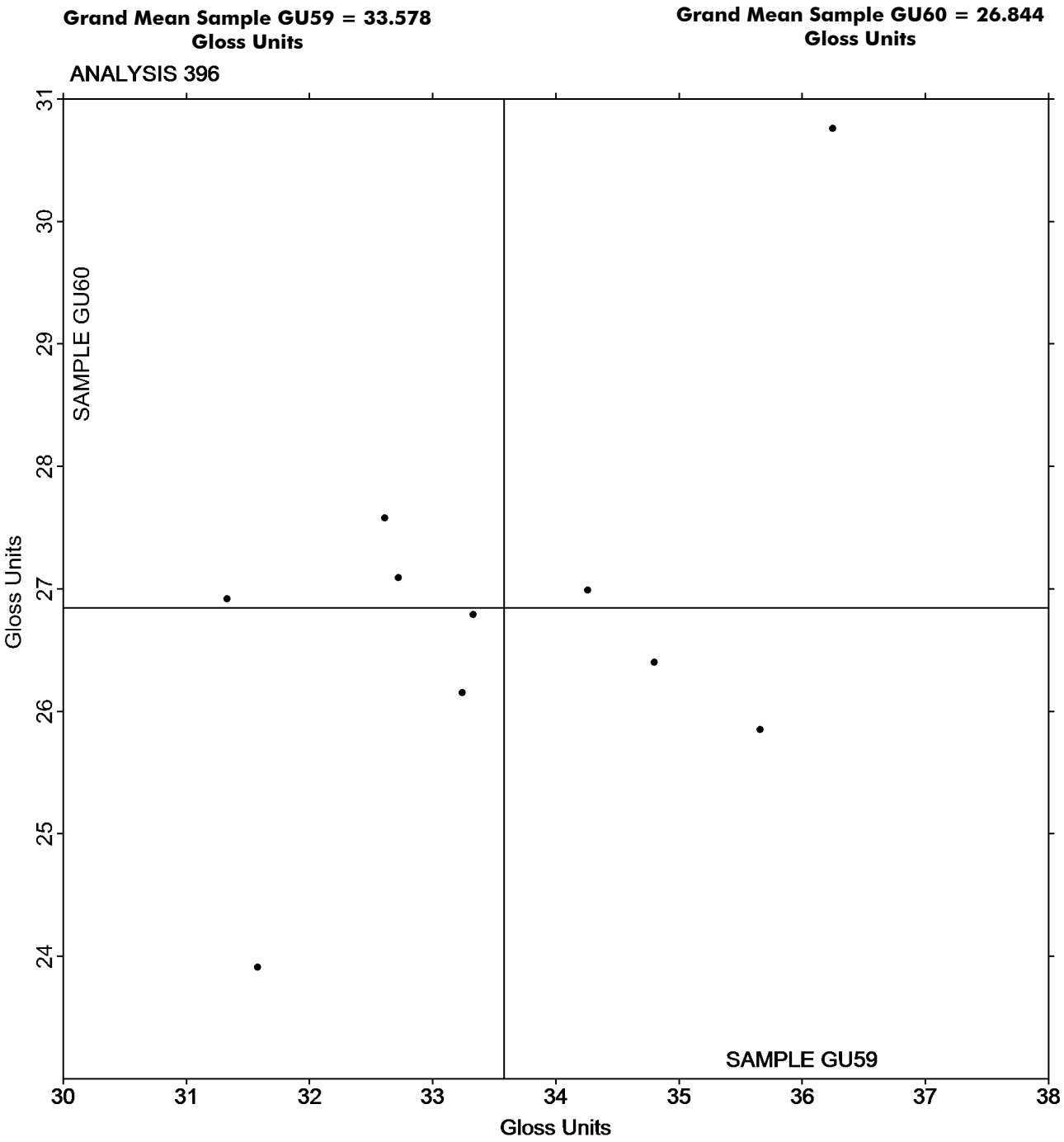
Statistics based on 10 of 11 reporting participants.

Comments on Assigned Data Flags for Test #396

GQ7WYM (X) - Data for both samples are high. Inconsistent within the determinations of sample GU60.

Key to Instrument Codes Reported by Participants

GS	BYK-Gardner Glossgard II	LA	L & W Gloss - Autoline 300
PP	Technidyne Profile/Plus	TG	Technidyne T480
TH	Technidyne T480A	TP	Technidyne Profile Plus
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 398
Grammage (Mass per Unit Area)
TAPPI Official Test Method T410

WebCode	Data Flag	Sample GW59 Lab Mean	Sample GW59 Diff from Grand Mean	Sample GW59 CPV	Sample GW60 Lab Mean	Sample GW60 Diff from Grand Mean	Sample GW60 CPV	Instr Code
2863A3		89.58	0.31	0.60	73.40	-0.08	-0.19	ZZ
33PYTY		88.00	-1.27	-2.51	72.60	-0.88	-2.08	ZZ
3VMU2F		89.74	0.47	0.92	74.28	0.80	1.89	ZZ
3YB4C3	X	89.32	0.05	0.09	89.07	15.59	36.79	ZZ
6TCND6		89.32	0.05	0.10	73.31	-0.17	-0.41	ZZ
82LQZH		89.28	0.01	0.01	73.47	-0.01	-0.02	ZZ
8H4N4U		89.93	0.66	1.29	73.65	0.17	0.40	ZZ
92BKRJ		88.83	-0.44	-0.87	72.97	-0.51	-1.20	ZZ
AR4879		89.00	-0.27	-0.54	73.81	0.33	0.78	ZZ
DDP73E		88.66	-0.62	-1.22	73.18	-0.30	-0.70	ZZ
DXYYDT		88.99	-0.28	-0.55	73.66	0.18	0.44	ZZ
E4JQRZ		89.79	0.51	1.01	73.80	0.32	0.75	ZZ
FKKQFU		89.22	-0.05	-0.11	73.35	-0.13	-0.31	ZZ
FY76JT		89.86	0.59	1.15	73.53	0.05	0.12	ZZ
GXND73		88.60	-0.68	-1.34	73.11	-0.37	-0.86	ZZ
K82WTH		88.96	-0.31	-0.61	73.10	-0.37	-0.88	ZZ
L8ZEEJ		89.70	0.43	0.84	73.98	0.50	1.17	ZZ
LF747W		89.00	-0.28	-0.55	73.20	-0.28	-0.66	ZZ
M8WW7M		89.60	0.32	0.64	73.69	0.21	0.50	ZZ
PRRHZA		89.80	0.52	1.02	73.51	0.03	0.07	ZZ
QK4E7C		89.15	-0.12	-0.24	73.68	0.20	0.47	ZZ
R9C3H7		89.55	0.28	0.54	73.38	-0.10	-0.23	ZZ
T26XWZ		88.87	-0.40	-0.80	73.00	-0.48	-1.13	ZZ
TJL7VF	*	90.09	0.82	1.61	73.02	-0.46	-1.08	ZZ
UCLZ3X		88.76	-0.51	-1.01	73.16	-0.32	-0.75	ZZ
UMJZE3		89.92	0.65	1.27	74.14	0.66	1.56	ZZ
UUYQRG		88.74	-0.53	-1.05	73.00	-0.48	-1.12	ZZ
UZP3RJ		89.92	0.65	1.27	74.32	0.84	1.98	ZZ
VNDT29		89.50	0.23	0.44	73.63	0.15	0.36	ZZ
Z494C8	*	88.88	-0.39	-0.78	74.15	0.67	1.58	ZZ
ZP7CU9		89.00	-0.27	-0.54	73.29	-0.19	-0.46	ZZ

Summary Statistics	Sample GW59	Sample GW60
Grand Means	89.27 g/sq m	73.48 g/sq m
Stnd Dev Btwn Labs	0.51 g/sq m	0.42 g/sq m

Statistics based on 30 of 31 reporting participants.

Comments on Assigned Data Flags for Test #398

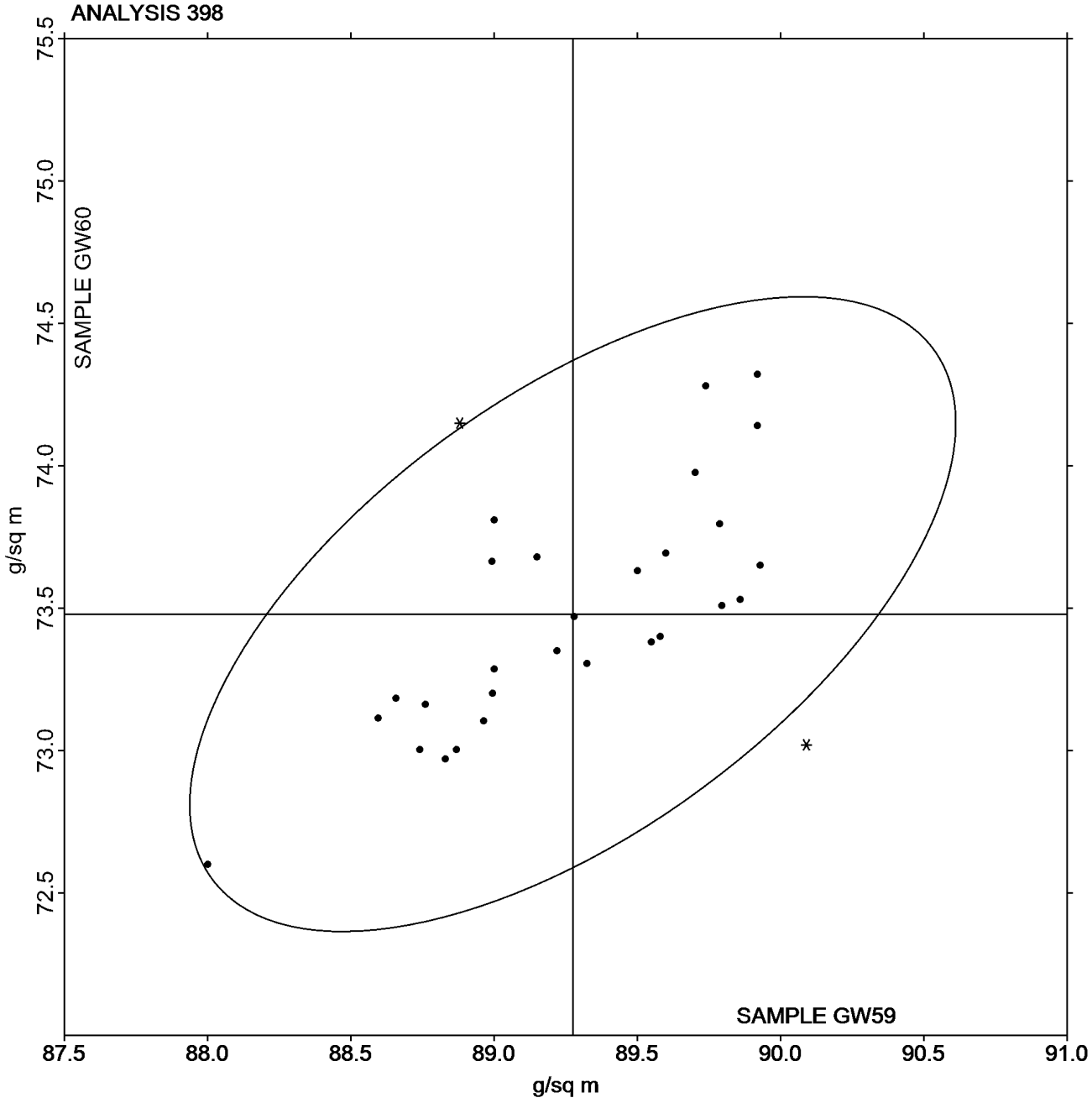
3YB4C3 (X) - Extreme Data for Sample GW60.

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Grand Mean Sample GW59 = 89.274 g/sq m

Grand Mean Sample GW60 = 73.479 g/sq m



Paper & Paperboard Interlaboratory Testing Program

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

WebCode	Data Flag	Sample GX59 Lab Mean	Sample GX59 Diff from Grand Mean	Sample GX59 CPV	Sample GX60 Lab Mean	Sample GX60 Diff from Grand Mean	Sample GX60 CPV	Instr Code
24MRDY		16.04	-0.94	-0.22	20.39	6.60	1.65	HE
2KDNX3		26.91	9.93	2.32	17.29	3.50	0.87	HE
3MW77D		16.90	-0.08	-0.02	12.85	-0.94	-0.23	HE
48XL4F	*	20.42	3.44	0.80	26.00	12.21	3.04	HE
7HNV29		13.82	-3.16	-0.74	9.80	-3.99	-1.00	HE
8ATCZ6		9.16	-7.82	-1.82	13.14	-0.65	-0.16	HE
92BKRJ		13.55	-3.43	-0.80	10.35	-3.44	-0.86	HE
A8FLQR		14.76	-2.22	-0.52	9.36	-4.43	-1.10	XX
C8RZ7Z		15.40	-1.58	-0.37	10.80	-2.99	-0.75	HE
CMLMCT		18.10	1.12	0.26	13.50	-0.29	-0.07	HE
DNQMWP		19.10	2.12	0.49	14.68	0.89	0.22	HE
F7MU4M		15.33	-1.65	-0.38	12.28	-1.51	-0.38	HE
FY76JT	X	40.58	23.60	5.50	19.20	5.41	1.35	XX
GBQ6M2		14.61	-2.37	-0.55	13.55	-0.24	-0.06	HE
HZV4WH		16.50	-0.48	-0.11	11.92	-1.87	-0.47	HE
L8ZEEJ		15.14	-1.84	-0.43	11.22	-2.57	-0.64	HE
M4XHLJ		14.60	-2.38	-0.55	9.23	-4.56	-1.14	HE
MEAANJ		13.95	-3.03	-0.71	12.13	-1.66	-0.41	HE
MNZL9C		15.79	-1.19	-0.28	18.79	5.00	1.25	HE
PQFVB9		14.63	-2.35	-0.55	12.23	-1.56	-0.39	HE
PZ6J7B		12.32	-4.66	-1.09	10.44	-3.35	-0.84	HE
QZ3D3L		14.13	-2.85	-0.66	9.56	-4.23	-1.05	HE
T3ZLDA		26.56	9.58	2.23	15.68	1.89	0.47	HE
UFKBVC		16.04	-0.94	-0.22	12.98	-0.81	-0.20	HE
UT43C7		15.80	-1.18	-0.27	11.10	-2.69	-0.67	HE
XHF4H7		25.08	8.10	1.89	19.38	5.59	1.39	HE
YGJ8AN		21.76	4.78	1.11	17.51	3.72	0.93	XX
ZP7CU9		21.99	5.01	1.17	16.20	2.41	0.60	HE

Summary Statistics	Sample GX59	Sample GX60
Grand Means	16.98 Seconds	13.79 Seconds
Stnd Dev Btwn Labs	4.29 Seconds	4.01 Seconds

Statistics based on 27 of 28 reporting participants.

Comments on Assigned Data Flags for Test #399

FY76JT (X) - Data for sample GX59 are high.

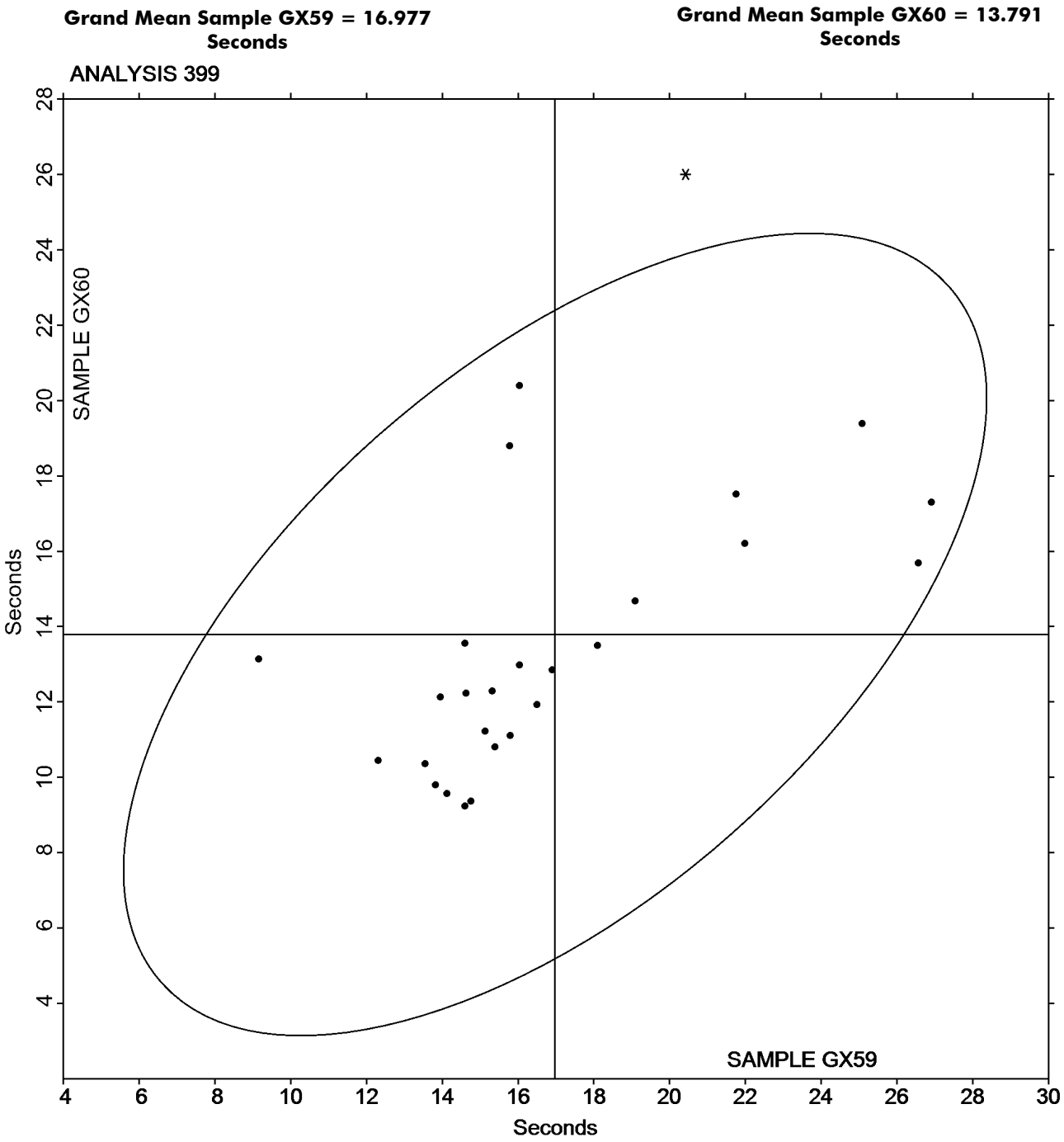
Key to Instrument Codes Reported by Participants

HE Hercules Sizing Tester

XX Instrument make/model not specified by lab

Key to Instrument Codes Reported by Participants

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



-End of Report-

