Paper & Paperboard Testing Program

Summary Report #284G-October 2016

Introduction to the Paper & Paperboard Program

Explanation of Tables and Definitions of Terms

Analysis	Analysis Name
350	Color & Color Difference (Near White Papers),
351	Color & Color Difference (Near White Papers),
360	Thickness (Caliper), Printing papers,
361	Thickness (Caliper), Packaging papers,
364	Coefficient of Static Friction-Horizontal Plane,
365	Coefficient of Kinetic Friction-Horizontal Plane,
370	Air Resistance, Gurley Oil Type,
372	Porosity, Sheffield Type,
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 Content,
384	Opacity (89% Backing) 82 to 95%,
386	Opacity (Paper Backing) 82 to 95%,
390	Brightness (Directional),
391	Directional Brightness of Fluorescent Samples,
392	Brightness (Diffuse),
394	Fluorescent Component of Directional Brightness,
395	Specular Gloss 75 Degree, 50-95 Units,
396	Specular Gloss 75 Degreee, 20-65 Units,
398	Grammage (Basis Weight),
399	Sizing Test, Hercules Type,

The CTS Paper, Paperboard & Corrugated Fiberboard 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, wine, and color, 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:

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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.

Key for Web Summary Reports (Page 2 of 2)

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	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
22JHGE		GA35	92.49	-0.34	2.11	0.03	-0.01	0.03	0.04	LA
		GA36	92.51	-0.34	2.14					
24E4B7		GA35	91.65	-1.19	0.97	-0.05	-0.03	0.06	0.09	HG
		GA36	91.60	-1.22	1.03					
2TAU4F		GA35	94.70	-0.56	1.20	-0.01	-0.01	-0.10	0.10	XS
		GA36	94.69	-0.56	1.10					
2WBZK8		GA35	92.86	-0.04	1.55	0.18	0.00	-0.04	0.18	TS
		GA36	93.04	-0.04	1.52					
3T9PJ4		GA35	94.23	-0.63	2.14	-0.08	-0.02	0.02	0.09	TC
		GA36	94.14	-0.66	2.16					
4XF7YJ		GA35	92.36	-0.44	2.08	-0.07	-0.06	0.01	0.10	TM
		GA36	92.28	-0.50	2.09					
6GRBZ3		GA35	92.33	-0.58	2.11	0.13	-0.03	-0.07	0.15	TC
		GA36	92.46	-0.61	2.05					
7XUCBE	X	GA35	79.64	0.72	1.98	0.80	0.06	-0.02	0.80 X	TS
		GA36	80.44	0.78	1.96					
8PV8UJ		GA35	91.14	0.15	1.59	-0.06	0.03	-0.09	0.11	TS
		GA36	91.08	0.19	1.51					
97Y22H		GA35	93.48	-0.61	2.35	-0.15	-0.09	-0.11	0.21	HE
		GA36	93.33	-0.70	2.24					
AMFM2Y		GA35	91.23	0.07	1.86	0.04	-0.03	-0.08	0.09	TS
		GA36	91.27	0.04	1.79					
BAMPC7		GA35	91.17	0.17	1.70	-0.29	-0.01	0.00	0.29	TS
		GA36	90.88	0.16	1.70					
DM2RMU		GA35	92.56	-0.73	2.29	0.04	0.02	-0.04	0.06	TC
		GA36	92.60	-0.71	2.25					
FP4AXV		GA35	92.40	-0.81	2.45	0.03	0.04	-0.06	0.08	HH
		GA36	92.43	-0.77	2.39					
GBKVCM		GA35	92.77	-0.58	2.11	-0.04	0.02	-0.05	0.07	MK
		GA36	92.73	-0.56	2.06					
GMAPNG		GA35	94.23	-0.73	2.24	0.01	0.14	-0.15	0.20	EH
		GA36	94.24	-0.59	2.09					

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Paper & Paperboard Interlaboratory Testing Program

Analysis 350

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

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

Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
HMPLBZ		GA35	92.59	-0.61	2.01	0.23	0.09	0.06	0.25	NE
		GA36	92.82	-0.53	2.07					
J4EU9Y		GA35	93.95	-0.65	2.33	0.09	0.08	0.00	0.12	EH
		GA36	94.04	-0.57	2.33					
LXZZ7X		GA35	94.02	-0.76	2.14	-0.02	0.02	-0.05	0.06	LS
		GA36	94.01	-0.74	2.09					
M9R7D2		GA35	90.94	-0.78	0.73	0.04	-0.02	0.00	0.04	HH
		GA36	90.98	-0.80	0.73					
QU43KM		GA35	91.20	0.16	1.66	-0.04	-0.01	0.02	0.05	TS
		GA36	91.16	0.15	1.68					
V3JA9T		GA35	91.25	-1.06	0.79	-0.02	0.03	0.00	0.04	HH
		GA36	91.23	-1.03	0.79					
VKFXEH		GA35	93.96	0.80	2.11	-0.08	0.08	-0.16	0.20	HE
		GA36	93.87	0.88	1.95					
VNZUY3		GA35	92.14	-0.54	1.91	-0.08	-0.05	-0.05	0.11	XX
		GA36	92.06	-0.58	1.87					

Summary Statistics

Grand Means							
GA35	92.593	-0.398	1.851	-0.007	0.008	-0.036	0.118
GA36	92.586	-0.388	1.816				
Stnd Dev Btwn Labs							
GA35	1.171	0.511	0.491	0.108	0.053	0.061	0.071
GA36	1.186	0.521	0.476				

Statistics based on 23 of 24 reporting participants

Comments on Assigned Data Flags for Test #350

7XUCBE (X) - Low L values for both samples. Large delta L and delta E values.

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Paper & Paperboard Interlaboratory Testing Program

Analysis 350

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

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

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	

Key to Instrument Codes Reported by Participants

EH	Datacolor Elrepho SF450	HE	Hunter LabScan
HG	Hunter ColorQUEST	HH	Hunter D25DP - 9000
LA	L & W Elrepho AL300	LS	L & W Elrepho SE 070
MK	Macbeth Color-Eye 7000 Spectrophotometer	NE	Minolta CM-3500d Spectrophotometer
TC	Technidyne Color Touch Series	TM	Technidyne Technibrite Micro TB-1C
TS	Technidyne Brightimeter Micro S-5	XS	X-Rite 938 Spectrodensitometer
XX	Instrument make/model not specified by lab		

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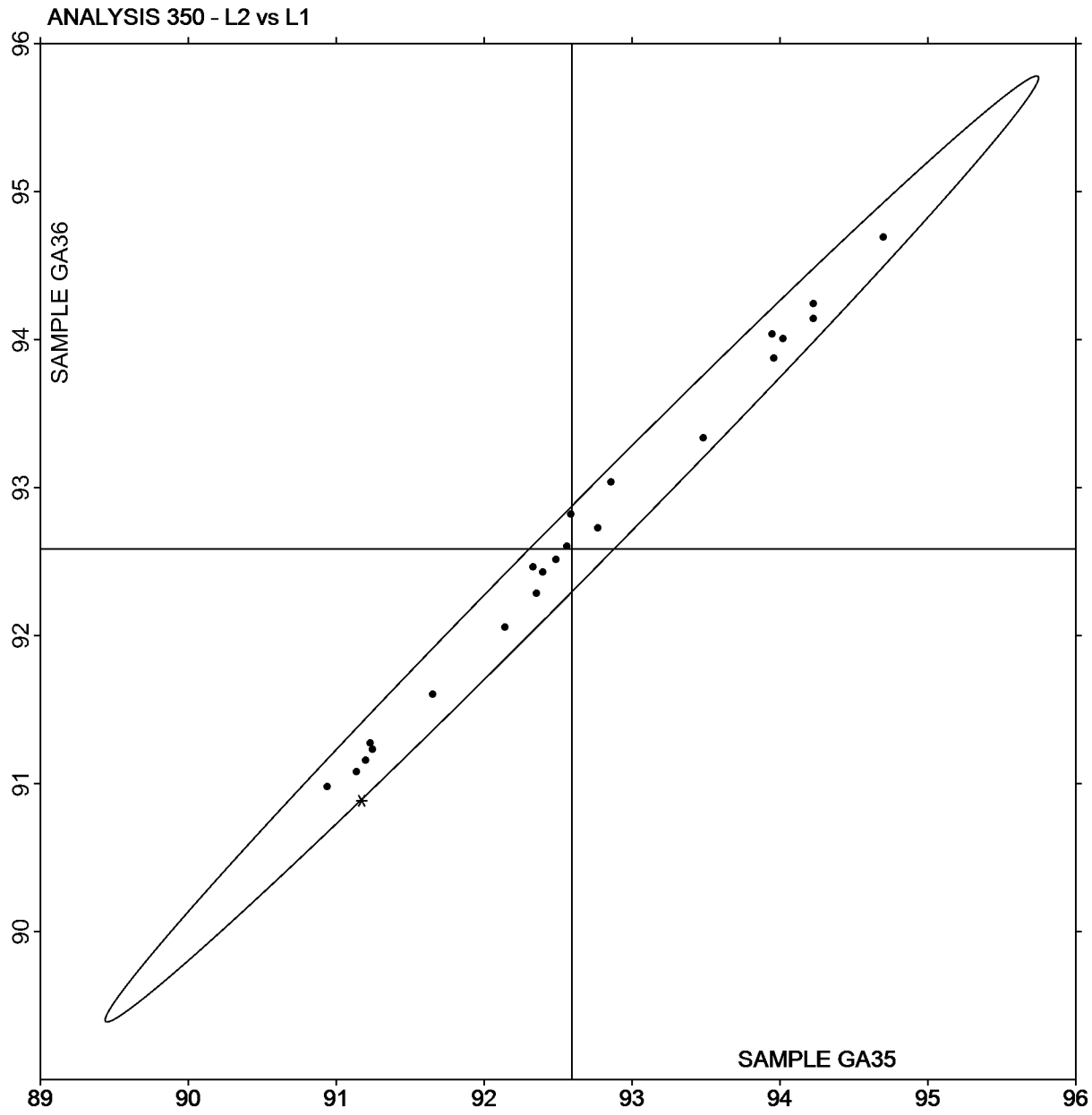
Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of L values GA36 v L values GA35



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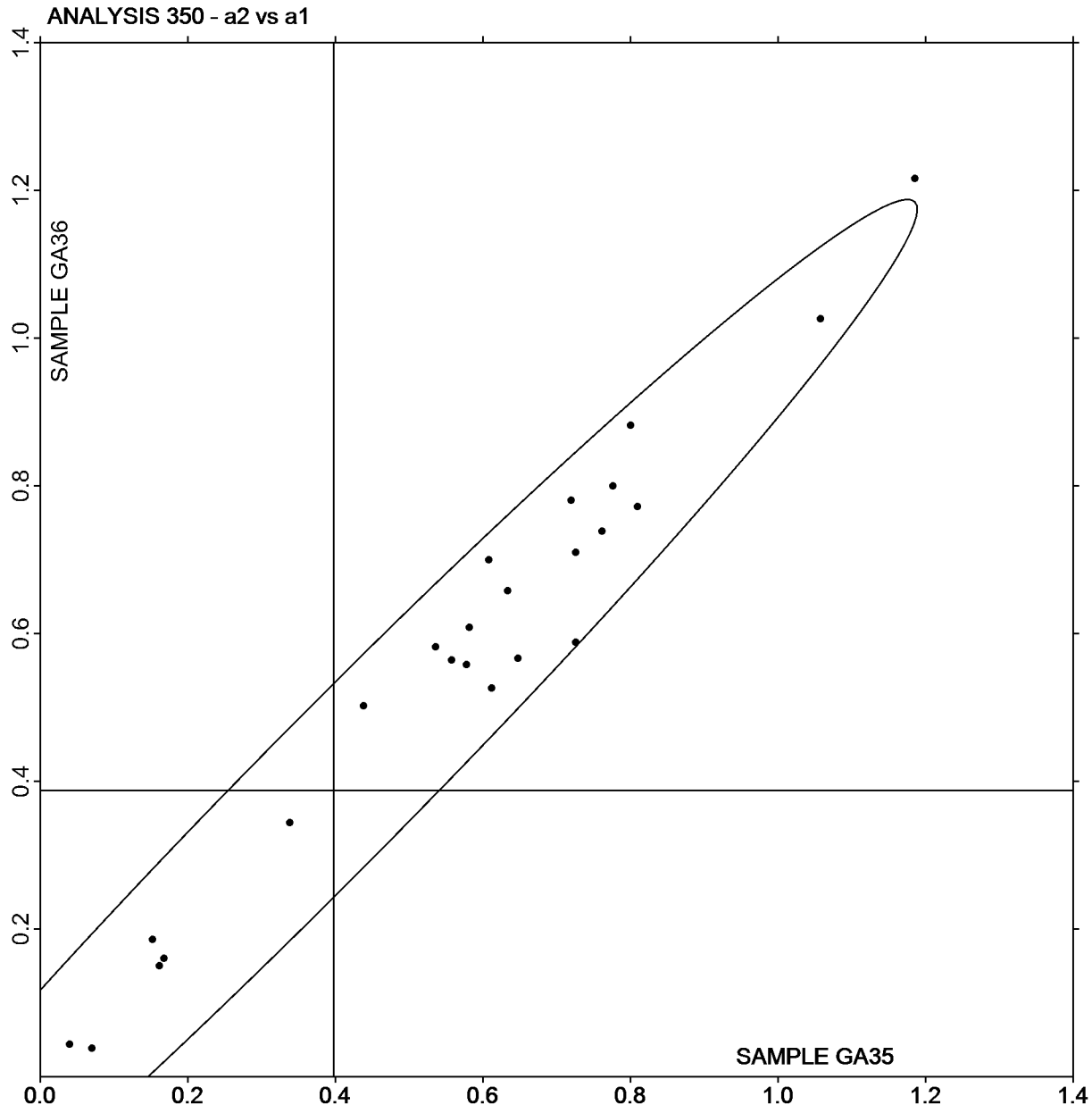
Plot of a values GA36 v a values GA35



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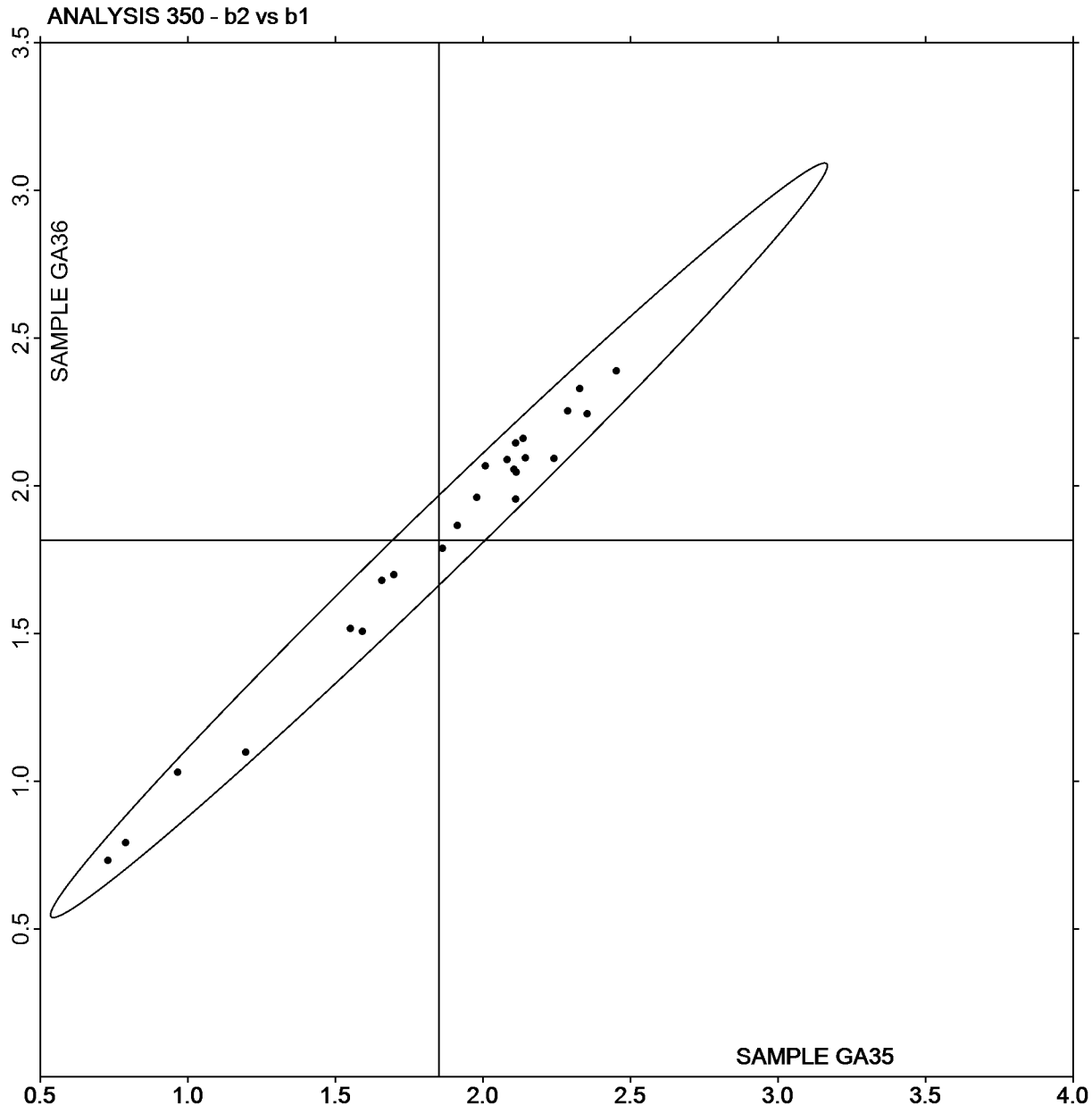
Plot of b values GA36 v b values GA35



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3YW4T6		GA35	94.20	-0.80	2.52	0.00	0.00	-0.02	0.02	EF
		GA36	94.20	-0.80	2.50					
4TN7EW		GA35	95.45	-0.27	1.95	-0.07	-0.24	0.39	0.46 X	XP
		GA36	95.38	-0.50	2.34					
6ATQVL		GA35	94.37	-0.77	2.62	0.08	0.12	0.00	0.15	NG
		GA36	94.45	-0.65	2.63					
6PH32Z	X	GA35	91.58	-0.49	3.77	0.05	0.07	0.07	0.11	TC
		GA36	91.62	-0.42	3.83					
7JMT7T		GA35	94.16	-0.74	2.60	0.03	0.01	-0.04	0.05	NG
		GA36	94.19	-0.73	2.56					
97Y22H		GA35	93.29	-0.74	2.29	-0.01	0.02	-0.04	0.05	HE
		GA36	93.28	-0.72	2.25					
AKRDPD		GA35	94.06	-0.85	2.34	0.09	0.13	-0.12	0.20	TC
		GA36	94.16	-0.72	2.23					
CG3Q8A		GA35	94.14	-0.81	2.32	0.00	0.05	-0.09	0.10	EH
		GA36	94.14	-0.76	2.23					
CNYR3U		GA35	94.21	-0.81	2.41	-0.04	0.04	-0.04	0.07	LS
		GA36	94.17	-0.77	2.37					
JGY9CX		GA35	94.42	-0.79	2.47	-0.01	0.04	-0.03	0.05	HT
		GA36	94.41	-0.75	2.44					
L7T8P4		GA35	92.83	-0.80	1.96	0.24	0.29	-0.06	0.38	HE
		GA36	93.06	-0.51	1.90					
LQZKCK		GA35	93.23	-0.69	2.10	0.10	0.02	-0.04	0.11	HV
		GA36	93.33	-0.68	2.05					
MBLR7T		GA35	92.68	-0.92	2.21	-0.05	0.00	-0.04	0.07	TC
		GA36	92.63	-0.91	2.17					
NFATPH		GA35	92.37	-0.67	2.49	-0.03	-0.03	0.03	0.05	XM
		GA36	92.34	-0.70	2.52					
QNFFQH		GA35	92.67	-0.60	2.23	0.07	0.12	-0.16	0.21	LS
		GA36	92.74	-0.48	2.08					
WYFW3F		GA35	94.49	-0.81	2.29	0.02	0.01	-0.04	0.05	XX
		GA36	94.51	-0.80	2.25					
XNDZHP		GA35	94.41	-0.74	2.46	-0.04	0.01	-0.02	0.05	NF
		GA36	94.36	-0.73	2.44					
YNPY77		GA35	94.30	-0.80	2.58	0.06	0.05	-0.10	0.13	HT
		GA36	94.36	-0.76	2.48					

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Paper & Paperboard Interlaboratory Testing Program

Analysis 351

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

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

Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
ZBE49M		GA35	94.10	-0.94	2.39	0.09	0.10	-0.19	0.23	TC
		GA36	94.19	-0.84	2.20					

Summary Statistics

Grand Means							
GA35	93.734	-0.738	2.370	0.030	0.041	-0.034	0.135
GA36	93.765	-0.695	2.311				
Stnd Dev Btwn Labs							
GA35	0.950	0.154	0.180	0.075	0.101	0.119	0.122
GA36	0.933	0.130	0.201				

Statistics based on 18 of 19 reporting participants

Comments on Assigned Data Flags for Test #351

6PH32Z (X) - High b values for both samples.

Key to Instrument Codes Reported by Participants

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

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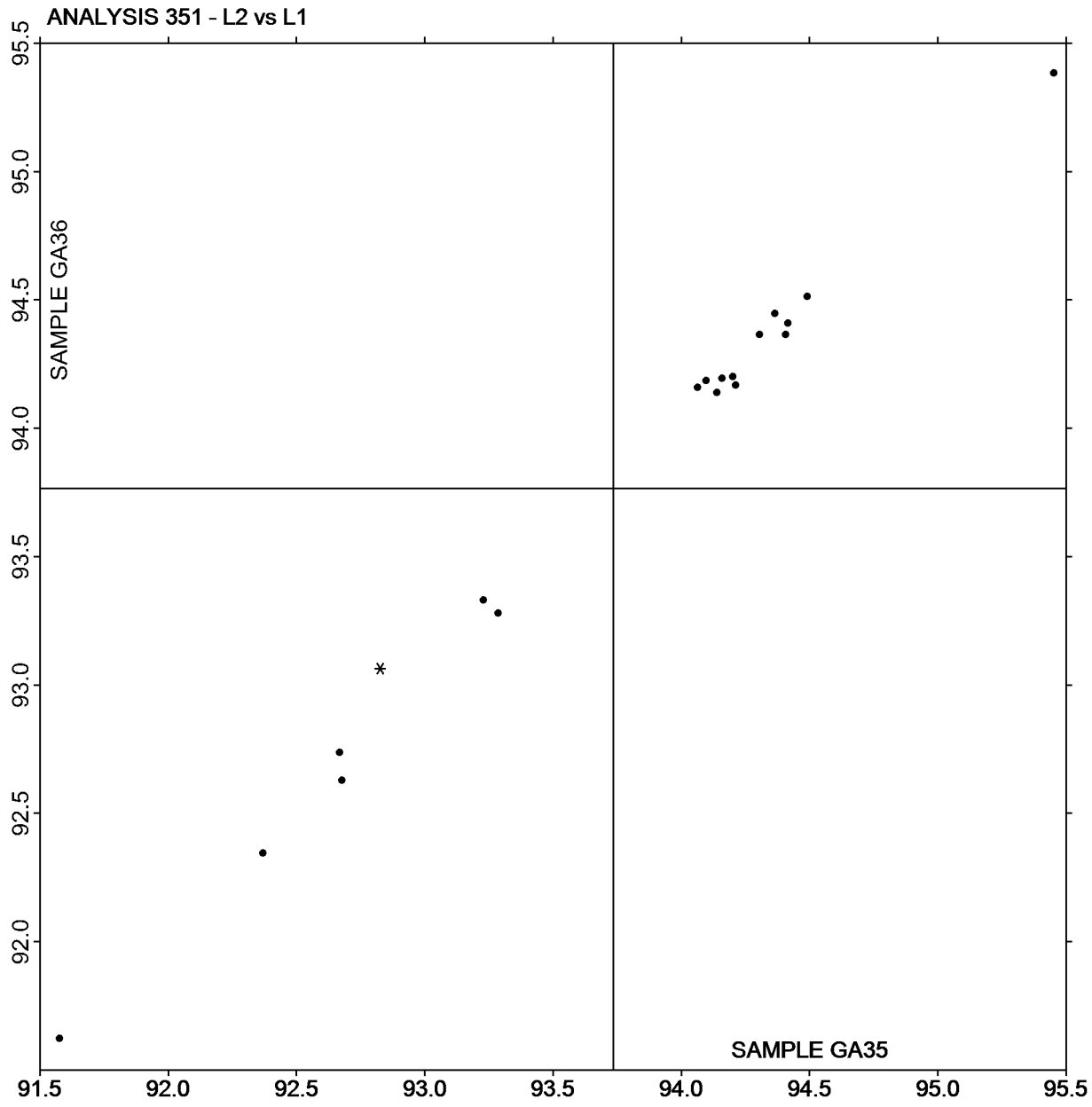
Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of L values GA36 v L values GA35



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

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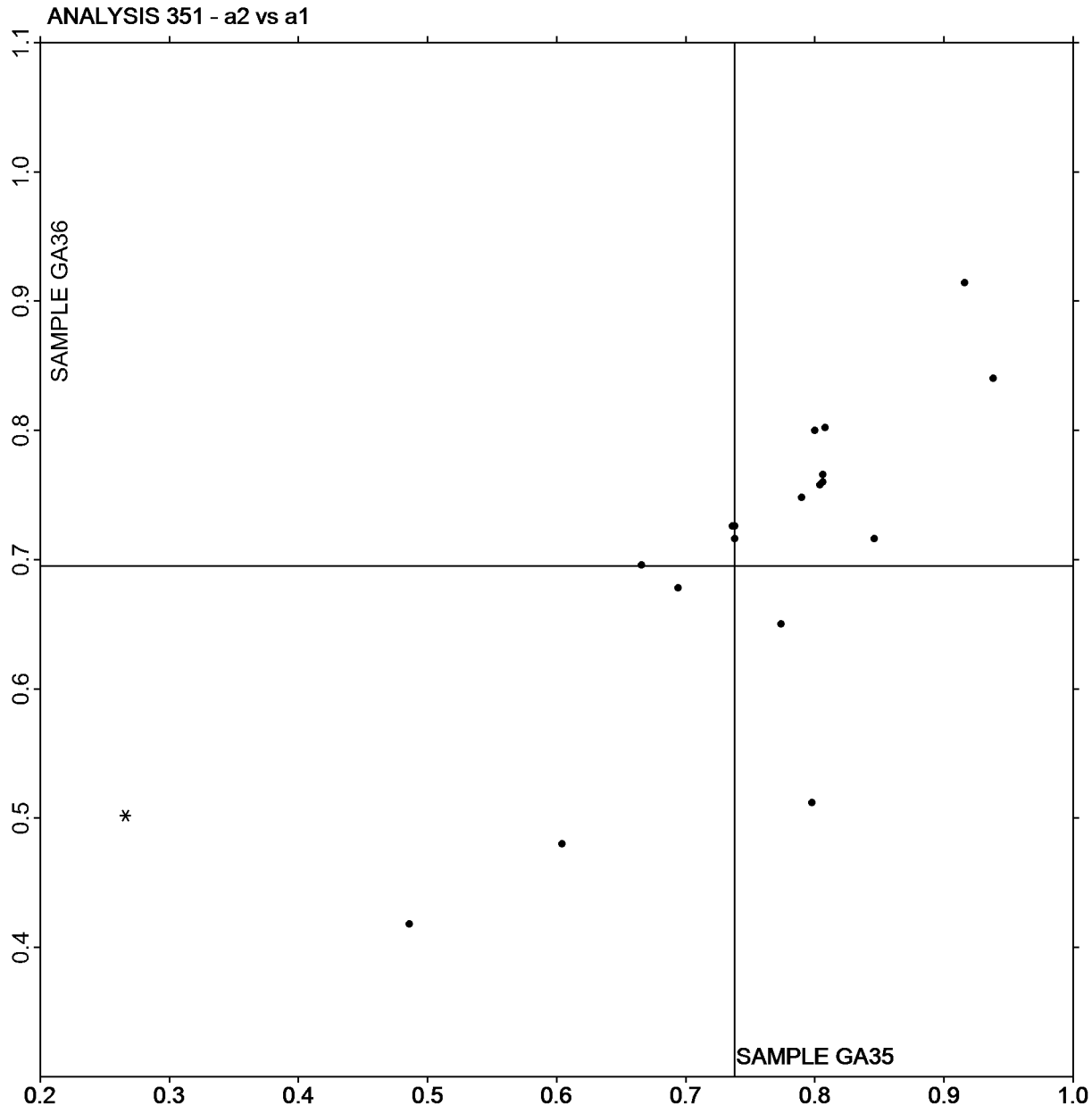
Plot of a values GA36 v a values GA35



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

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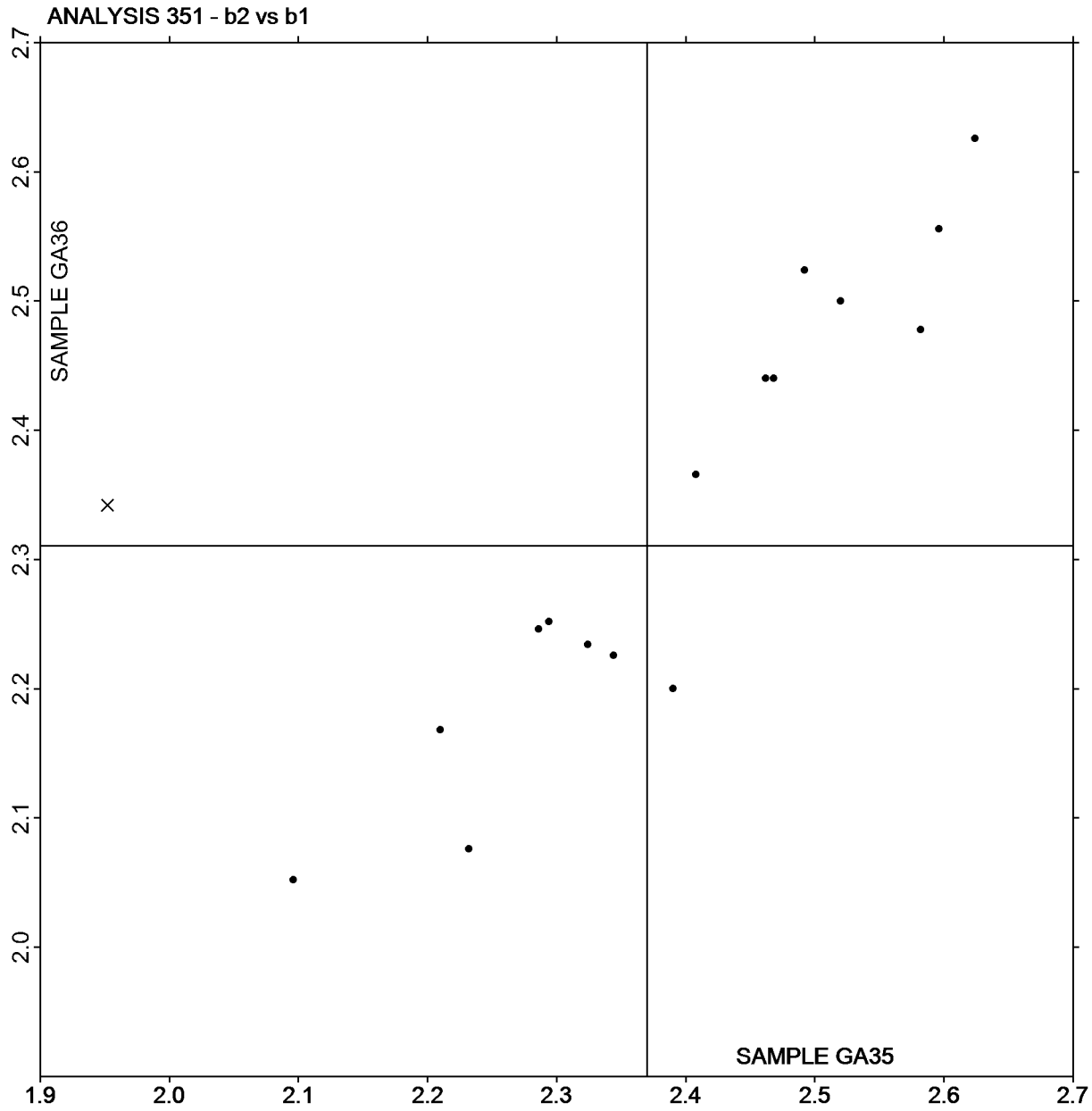
Plot of b values GA36 v b values GA35



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 360
Thickness (Caliper), Printing papers

WebCode	Data Flag	Sample GV35 Lab Mean	Sample GV35 Diff from Grand Mean	Sample GV35 CPV	Sample GV36 Lab Mean	Sample GV36 Diff from Grand Mean	Sample GV36 CPV	Instr Code
22JHGE		3.875	0.076	1.36	5.139	0.137	2.16	LA
2LV668		3.758	-0.041	-0.73	4.990	-0.012	-0.19	TM
2PD6M9		3.850	0.051	0.91	5.020	0.018	0.28	LW
2TAU4F		3.750	-0.049	-0.88	4.950	-0.052	-0.82	TM
3T9PJ4		3.850	0.051	0.91	5.026	0.024	0.38	LA
3Z9ZXA		3.757	-0.042	-0.75	4.937	-0.065	-1.03	TA
4TN7EW		3.780	-0.019	-0.34	4.996	-0.006	-0.10	TM
4XF7YJ		3.810	0.011	0.20	4.988	-0.014	-0.22	TA
6ATQVL		3.869	0.070	1.25	5.059	0.057	0.90	LW
6GRBZ3		3.825	0.026	0.46	4.939	-0.063	-1.00	TA
7JMT7T		3.801	0.002	0.03	5.004	0.002	0.03	XX
7ZX66D		3.789	-0.010	-0.18	5.045	0.043	0.68	LW
84BEPV		3.880	0.081	1.45	5.022	0.020	0.31	TM
8GEVGH		3.747	-0.052	-0.93	4.933	-0.069	-1.09	EM
8J432E		3.814	0.015	0.27	5.016	0.014	0.22	LA
8PV8UJ		3.785	-0.014	-0.25	4.987	-0.015	-0.23	TM
AMFM2Y		3.788	-0.011	-0.20	5.021	0.019	0.30	EM
B3PVE9		3.827	0.028	0.50	5.099	0.097	1.53	PP
B7N92X		3.798	-0.001	-0.01	5.033	0.031	0.49	EM
BAMPC7		3.678	-0.121	-2.16	4.861	-0.141	-2.23	TM
BQVGGW		3.818	0.019	0.34	5.004	0.002	0.03	TM
CUQPXC	X	3.595	-0.204	-3.65	4.965	-0.037	-0.59	LW
E9J2NR		3.807	0.008	0.14	5.028	0.025	0.40	LW
FEZ2BH		3.741	-0.058	-1.04	4.869	-0.133	-2.10	TA
G2BLKN		3.683	-0.116	-2.07	4.901	-0.101	-1.60	FR
GBKVCM		3.915	0.116	2.07	5.053	0.051	0.80	PP
GMAPNG		3.820	0.021	0.37	5.087	0.084	1.33	EM
GPXGGY		3.817	0.018	0.32	4.984	-0.018	-0.29	EM
HEEAAW		3.809	0.010	0.18	5.021	0.019	0.30	EM
J2PMN2		3.768	-0.031	-0.56	4.978	-0.024	-0.38	LW
JF7MCF	*	3.640	-0.159	-2.84	4.860	-0.142	-2.25	XX
JG3VQQ		3.809	0.010	0.18	4.992	-0.010	-0.16	EM
JGY9CX		3.777	-0.022	-0.39	4.982	-0.020	-0.32	EM
JYEPBK		3.740	-0.059	-1.06	4.970	-0.032	-0.51	TM
KXKGL2		3.765	-0.034	-0.61	4.980	-0.022	-0.35	PP
L3B9AN		3.882	0.083	1.48	5.126	0.124	1.95	TM
L6ZEUK	X	4.007	0.208	3.71	5.222	0.219	3.46	LW
L7T8P4		3.831	0.032	0.57	4.997	-0.006	-0.09	TM
LQZKCK		3.822	0.023	0.41	5.018	0.016	0.25	EM
LXDN66	X	3.582	-0.217	-3.88	4.751	-0.251	-3.97	EM
LXZZ7X		3.807	0.008	0.14	5.061	0.059	0.93	LW

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Paper & Paperboard Interlaboratory Testing Program
Analysis 360
Thickness (Caliper), Printing papers

WebCode	Data Flag	Sample GV35 Lab Mean	Sample GV35 Diff from Grand Mean	Sample GV35 CPV	Sample GV36 Lab Mean	Sample GV36 Diff from Grand Mean	Sample GV36 CPV	Instr Code
MBLR7T		3.898	0.099	1.77	5.068	0.066	1.04	TA
MQDN8N	X	3.839	0.040	0.71	4.901	-0.101	-1.60	PP
MY7YHJ		3.851	0.052	0.93	4.994	-0.008	-0.13	LW
N9AJAD		3.775	-0.024	-0.43	4.944	-0.058	-0.92	TA
NDKM6L		3.752	-0.047	-0.84	5.046	0.043	0.69	LW
NFATPH		3.783	-0.016	-0.28	5.008	0.006	0.09	LW
NRL9LP		3.788	-0.011	-0.20	4.968	-0.034	-0.54	XX
P3FYPU		3.887	0.088	1.57	5.122	0.119	1.89	LW
PFNNJP		3.828	0.029	0.52	5.056	0.054	0.85	EM
PLEUMR		3.807	0.008	0.15	5.044	0.042	0.67	LW
Q3TXEB		3.776	-0.023	-0.42	4.972	-0.030	-0.47	MS
QBRFWU	X	3.512	-0.287	-5.13	4.713	-0.290	-4.57	TM
QZ4QUE		3.807	0.008	0.14	5.016	0.014	0.21	LW
TJUG3D		3.782	-0.017	-0.30	5.006	0.003	0.05	LW
TR9638		3.774	-0.025	-0.45	4.953	-0.049	-0.78	XX
VAZVC7		3.737	-0.062	-1.11	5.034	0.032	0.50	XX
VNZUY3	X	3.910	0.111	1.98	5.220	0.218	3.44	XX
W88EGN		3.818	0.019	0.34	5.021	0.019	0.29	TM
WYFW3F		3.760	-0.039	-0.70	4.952	-0.050	-0.79	LW
XL6VXA		3.876	0.077	1.37	5.090	0.088	1.38	LW
XNDZHP		3.888	0.089	1.59	5.093	0.090	1.43	TM
YNPY77		3.845	0.046	0.82	4.987	-0.015	-0.24	EM
Z2CJ8F		3.683	-0.116	-2.07	4.897	-0.105	-1.66	EM
ZBE49M		3.733	-0.066	-1.17	4.956	-0.046	-0.73	LW
ZCUAPX	*	3.766	-0.033	-0.59	4.871	-0.131	-2.07	PP
ZHX8FP		3.845	0.046	0.81	5.063	0.061	0.96	LW

Summary Statistics

	Sample GV35	Sample GV36
Grand Means	3.7990 mils	5.0022 mils
SD Btwn Labs	0.0560 mils	0.0633 mils

Statistics based on 61 of 67 reporting participants

Comments on Assigned Data Flags for Test #360

L6ZEUK (X) - Data for both samples are high. Possible Systematic Error.

MQDN8N (X) - Inconsistent in testing between samples.

LXDN66 (X) - Data for both samples are low. Possible Systematic Error.

CUQPXC (X) - Data for sample GV35 are low.

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

VNZUY3 (X) - Data for sample GV36 are high.

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GMAPNG - One determination removed from the Lab Mean of Sample GV36 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

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

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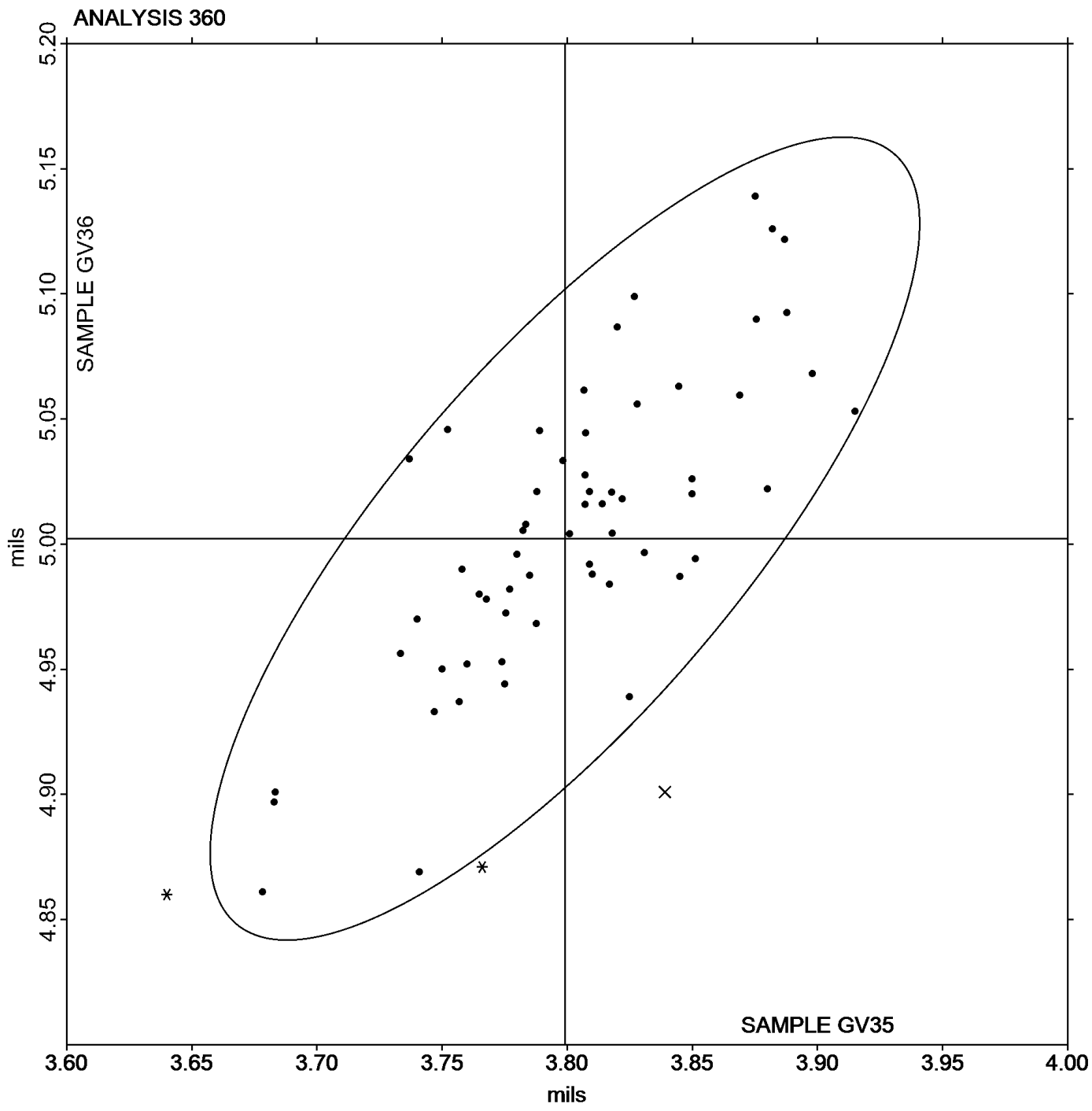
Grand Mean Sample **GV35** = 3.7990 mils

Grand Mean Sample **GV36** = 5.0022 mils



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Paper & Paperboard Interlaboratory Testing Program
Analysis 361
Thickness (Caliper), Packaging papers

WebCode	Data Flag	Sample GY35 Lab Mean	Sample GY35 Diff from Grand Mean	Sample GY35 CPV	Sample GY36 Lab Mean	Sample GY36 Diff from Grand Mean	Sample GY36 CPV	Instr Code
22JHGE		14.28	0.21	1.39	9.663	0.176	1.11	LA
28W4QL	*	14.17	0.10	0.70	9.795	0.308	1.95	LA
2ERB3Y		14.04	-0.03	-0.22	9.481	-0.006	-0.04	PP
2LV668		14.23	0.16	1.06	9.746	0.259	1.64	TM
37T6M4		14.01	-0.06	-0.40	9.510	0.023	0.15	LA
4LK3NY		13.84	-0.23	-1.54	9.400	-0.087	-0.55	TM
6A7HLG		13.95	-0.12	-0.80	9.520	0.033	0.21	TM
6PH32Z		14.13	0.06	0.39	9.595	0.108	0.68	EM
772D4T		13.93	-0.14	-0.92	9.319	-0.168	-1.06	LW
7XUCBE		13.87	-0.20	-1.35	9.299	-0.188	-1.19	EM
7ZX66D		14.02	-0.05	-0.33	9.494	0.007	0.04	LW
97Y22H		14.21	0.14	0.93	9.418	-0.069	-0.44	EM
9RFKRR		14.00	-0.07	-0.46	9.437	-0.050	-0.32	LA
AE6PU8		13.80	-0.27	-1.81	9.245	-0.242	-1.53	TA
AGQE9T		13.94	-0.13	-0.88	9.318	-0.169	-1.07	TM
AUFBAQ		13.89	-0.18	-1.19	9.197	-0.290	-1.83	PP
CG3Q8A		14.33	0.26	1.76	9.706	0.219	1.39	EM
CNYR3U		14.02	-0.05	-0.33	9.400	-0.087	-0.55	XX
FEZ2BH		14.20	0.13	0.87	9.524	0.037	0.23	TA
FP4AXV		14.13	0.06	0.41	9.447	-0.040	-0.25	EM
JUP3NR		14.03	-0.04	-0.28	9.378	-0.109	-0.69	XX
JYEPBK		13.89	-0.18	-1.21	9.360	-0.127	-0.80	TM
LJKWMN		14.26	0.19	1.29	9.661	0.174	1.10	XX
M8LLP2		14.23	0.16	1.09	9.562	0.075	0.47	TM
M9R7D2		14.23	0.16	1.06	9.730	0.243	1.54	EM
NDKM6L		14.24	0.17	1.15	9.649	0.162	1.03	XX
PLEUMR		13.96	-0.11	-0.73	9.331	-0.156	-0.99	LW
PMKL9D		14.02	-0.05	-0.33	9.460	-0.027	-0.17	TA
UWVEPA		14.32	0.25	1.69	9.725	0.238	1.51	TM
V3JA9T		14.22	0.15	1.00	9.654	0.167	1.06	EM
VKFXEH		14.04	-0.03	-0.22	9.370	-0.117	-0.74	LA
VWWMDN		14.00	-0.07	-0.47	9.445	-0.042	-0.27	TM
VZT7FL		13.94	-0.13	-0.90	9.320	-0.167	-1.06	TA
Y36EUN		14.01	-0.06	-0.40	9.400	-0.087	-0.55	LA

Summary Statistics

	Sample GY35	Sample GY36
Grand Means	14.069 mils	9.4870 mils
SD Btwn Labs	0.148 mils	0.1581 mils

Statistics based on 34 of 34 reporting participants

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Key to Instrument Codes Reported by Participants

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

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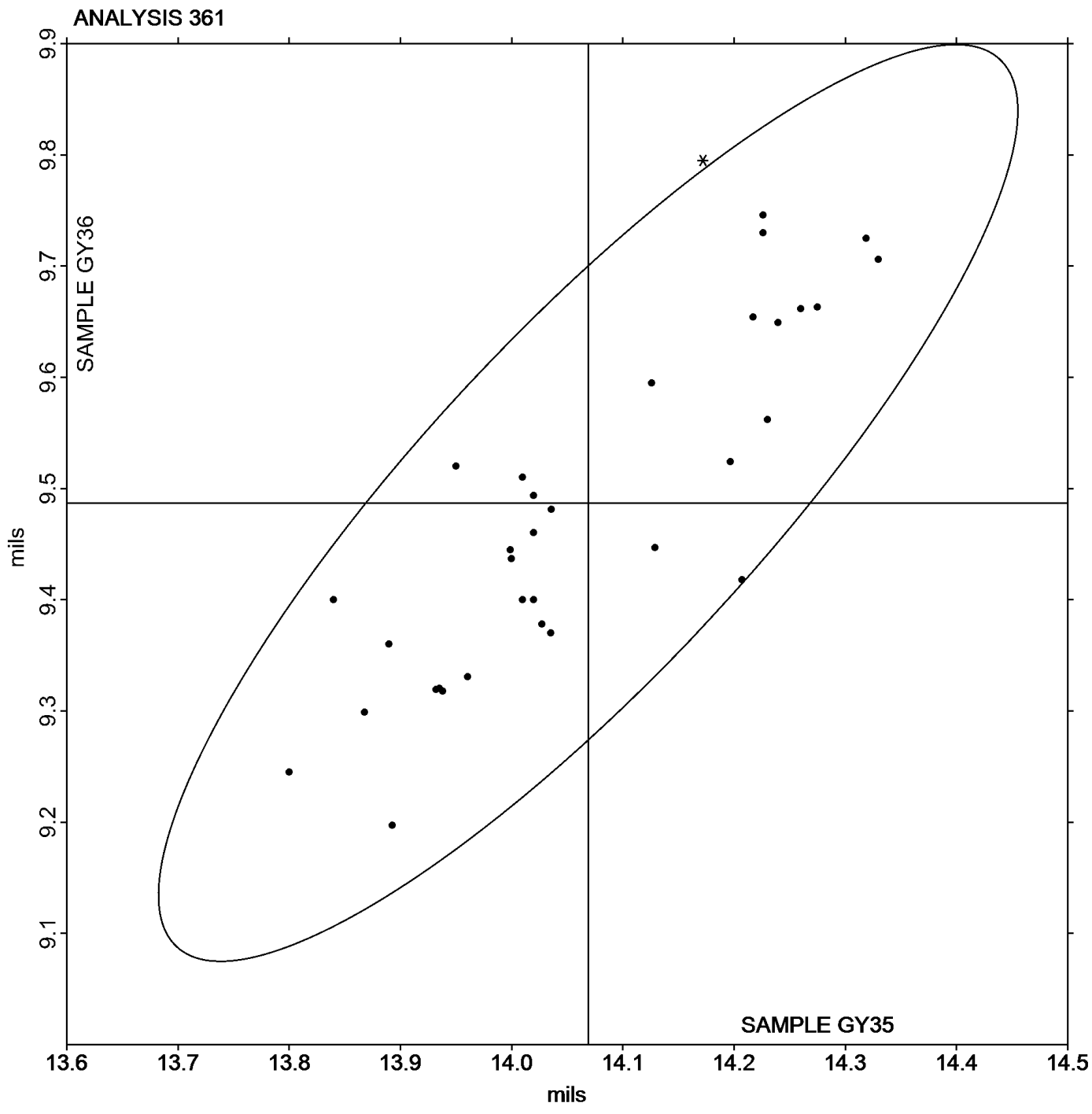
Grand Mean Sample **GY35** = 14.069 mils

Grand Mean Sample **GY36** = 9.4870 mils



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Paper & Paperboard Interlaboratory Testing Program
Analysis 364
Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

WebCode	Data Flag	Sample GD35 Lab Mean	Sample GD35 Diff from Grand Mean	Sample GD35 CPV	Sample GD36 Lab Mean	Sample GD36 Diff from Grand Mean	Sample GD36 CPV	Instr Code
2TAU4F		0.2460	-0.2651	-1.46	0.3156	-0.2342	-1.73	XX
3GFY8D		0.3834	-0.1277	-0.70	0.5840	0.0342	0.25	IT
7BUBYC		0.6068	0.0957	0.53	0.6092	0.0594	0.44	TA
9RFKRR		0.4884	-0.0227	-0.12	0.5358	-0.0140	-0.10	TA
AMFM2Y		0.6018	0.0907	0.50	0.5058	-0.0440	-0.33	XX
GMAPNG		0.4410	-0.0701	-0.38	0.5302	-0.0196	-0.14	TA
NDKM6L		0.8100	0.2989	1.64	0.7680	0.2182	1.61	TL

Summary Statistics

	Sample GD35	Sample GD36
Grand Means	0.51106 COF	0.54980 COF
SD Btwn Labs	0.18200 COF	0.13520 COF

Statistics based on 7 of 7 reporting participants

Key to Instrument Codes Reported by Participants

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

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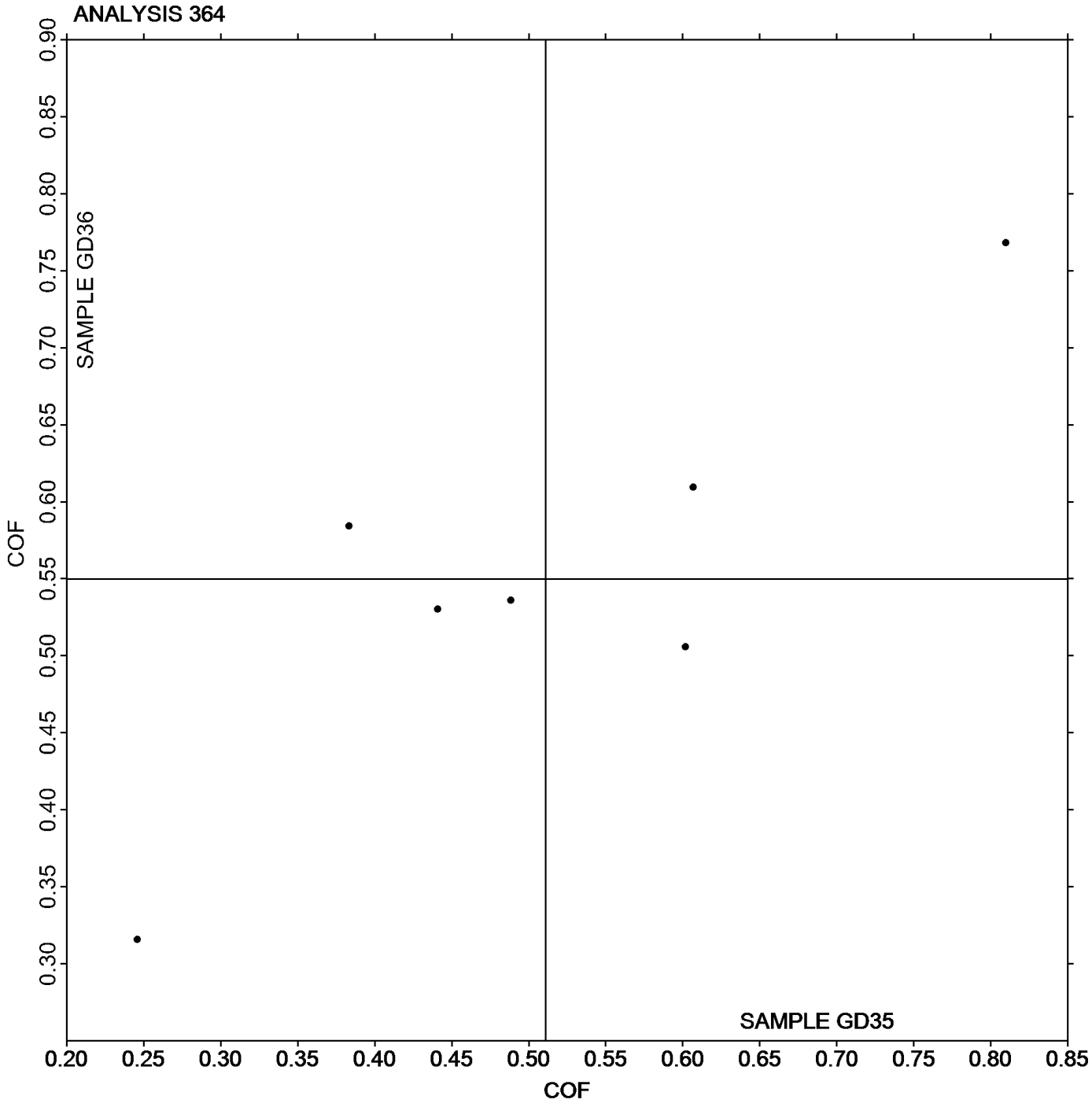
Paper & Paperboard Interlaboratory Testing Program
Analysis 364
Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD35** = 0.51106 COF

Grand Mean Sample **GD36** = 0.54980 COF



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 365
Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

WebCode	Data Flag	Sample GD35 Lab Mean	Sample GD35 Diff from Grand Mean	Sample GD35 CPV	Sample GD36 Lab Mean	Sample GD36 Diff from Grand Mean	Sample GD36 CPV	Instr Code
22JHGE		0.5372	0.1149	0.88	0.5428	0.0837	0.74	TM
2TAU4F		0.2838	-0.1385	-1.06	0.3308	-0.1283	-1.13	XX
3GFY8D		0.2554	-0.1669	-1.27	0.3998	-0.0593	-0.52	IR
3Z9ZXA		0.3934	-0.0289	-0.22	0.3890	-0.0701	-0.62	TM
4XF7YJ		0.3332	-0.0891	-0.68	0.3704	-0.0887	-0.78	TA
7BUBYC		0.4696	0.0473	0.36	0.4792	0.0201	0.18	TA
9BNMQW		0.5110	0.0887	0.68	0.6185	0.1594	1.40	TA
9RFKRR		0.4640	0.0417	0.32	0.4842	0.0251	0.22	TA
EF47CL		0.3450	-0.0773	-0.59	0.3404	-0.1187	-1.04	TM
GMAPNG		0.3912	-0.0311	-0.24	0.3766	-0.0825	-0.73	TA
NDKM6L		0.7180	0.2957	2.25	0.7080	0.2489	2.19	TL
QU43KM		0.2722	-0.1501	-1.14	0.4088	-0.0503	-0.44	TA
Z2CJ8F		0.5158	0.0935	0.71	0.5202	0.0611	0.54	TA

Summary Statistics

	Sample GD35	Sample GD36
Grand Means	0.42229 COF	0.45913 COF
SD Btwn Labs	0.13118 COF	0.11377 COF

Statistics based on 13 of 13 reporting participants

Key to Instrument Codes Reported by Participants

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

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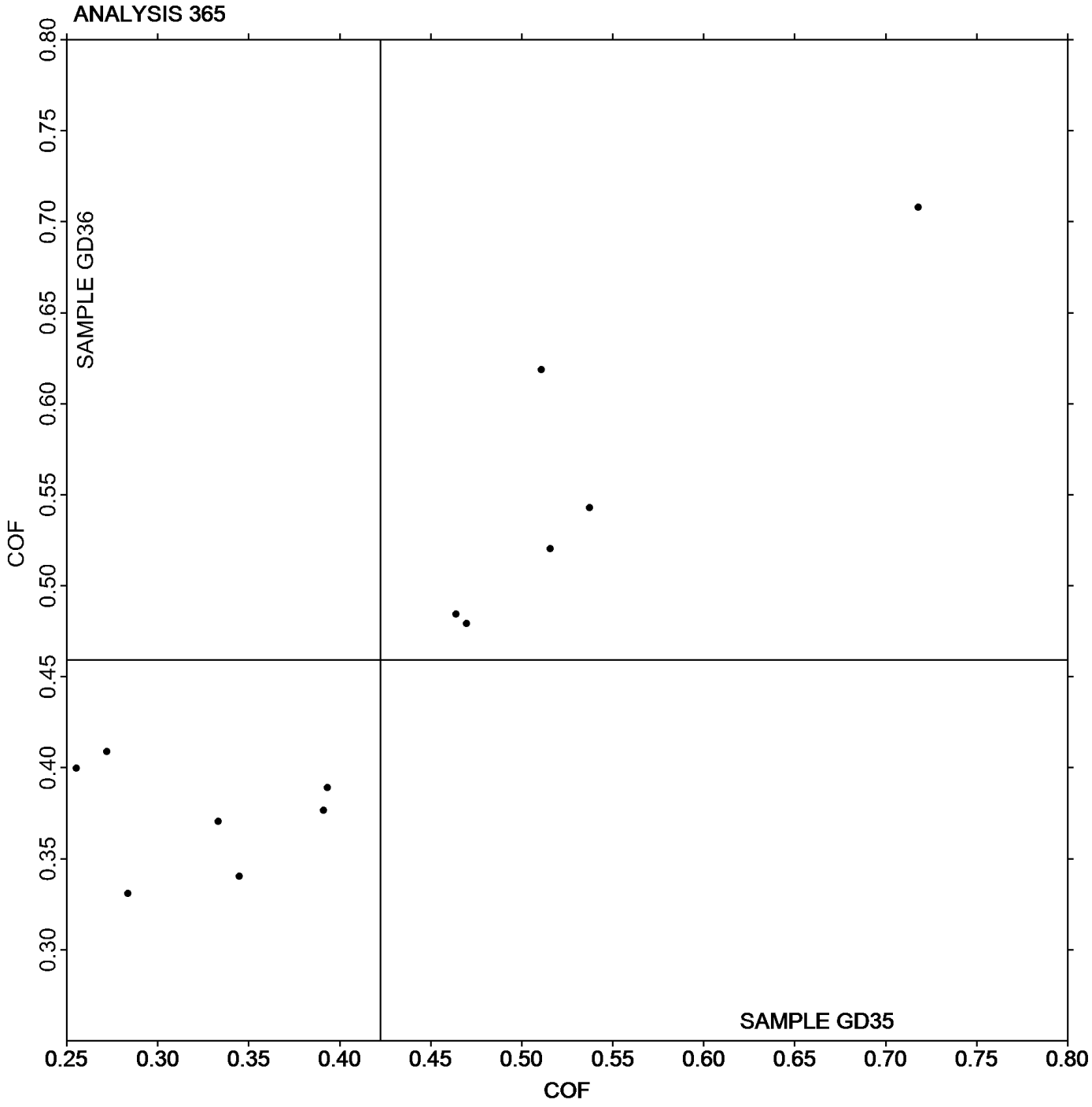
Paper & Paperboard Interlaboratory Testing Program
Analysis 365
Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD35** = 0.42229 COF

Grand Mean Sample **GD36** = 0.45913 COF



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 370
Air Resistance - Gurley Oil Type

WebCode	Data Flag	Sample GE35 Lab Mean	Sample GE35 Diff from Grand Mean	Sample GE35 CPV	Sample GE36 Lab Mean	Sample GE36 Diff from Grand Mean	Sample GE36 CPV	Instr Code
2ERB3Y		122.9	4.0	0.26	16.90	-0.56	-0.66	PP
2LV668		127.6	8.6	0.57	17.97	0.51	0.60	GA
2TAU4F	*	76.4	-42.5	-2.79	17.10	-0.36	-0.42	GS
3YW4T6		129.1	10.2	0.67	18.43	0.97	1.14	LP
4LK3NY		138.2	19.3	1.27	17.84	0.38	0.45	TL
4XJTDC		112.8	-6.2	-0.41	17.79	0.33	0.39	LP
6A7HLG		131.1	12.2	0.80	17.08	-0.38	-0.45	TL
6GRBZ3		112.0	-6.9	-0.45	17.79	0.32	0.38	PP
6PH32Z		113.7	-5.3	-0.35	18.46	1.00	1.18	PP
772D4T		137.2	18.3	1.20	17.81	0.35	0.41	TL
7BUBYC		121.8	2.9	0.19	18.28	0.82	0.96	WG
84BEPV		120.8	1.8	0.12	17.29	-0.17	-0.20	HG
8J432E	X	76.4	-42.5	-2.79	19.20	1.74	2.05	LA
8PV8UJ		120.2	1.3	0.08	16.47	-0.99	-1.17	LP
9RFKRR		134.5	15.5	1.02	17.64	0.18	0.21	LA
AUFBAQ		123.1	4.2	0.28	17.28	-0.18	-0.21	PP
B3PVE9		113.3	-5.6	-0.37	17.80	0.34	0.40	PP
BAMPC7		90.9	-28.0	-1.84	16.74	-0.72	-0.85	LW
BR27BT		91.8	-27.1	-1.78	17.01	-0.45	-0.53	TN
EX2KTZ		122.9	4.0	0.26	18.00	0.54	0.63	XX
FB68J9		102.7	-16.3	-1.07	16.69	-0.77	-0.91	LP
FP4AXV		96.1	-22.8	-1.50	16.37	-1.09	-1.28	PP
GMAPNG		134.0	15.1	0.99	18.23	0.77	0.90	HG
GPXGGY		128.4	9.4	0.62	17.37	-0.09	-0.11	PP
GXDZ2X		137.2	18.2	1.20	18.14	0.68	0.80	LA
J4EU9Y		102.4	-16.6	-1.09	15.68	-1.78	-2.09	RE
JF7MCF		155.0	36.1	2.37	17.69	0.23	0.27	WG
JG3VQQ	X	49.3	-69.6	-4.57	19.19	1.73	2.03	GL
JGY9CX		129.3	10.4	0.68	16.02	-1.44	-1.70	PP
JUP3NR		137.8	18.9	1.24	16.33	-1.13	-1.33	XX
LJKWMN		118.5	-0.4	-0.03	16.73	-0.73	-0.86	LW
LJZF7L	*	108.6	-10.3	-0.68	19.37	1.91	2.25	GA
LQZKCK		117.0	-2.0	-0.13	17.82	0.36	0.42	PP
LXZZ7X		112.6	-6.3	-0.41	17.82	0.36	0.42	LP
MBLR7T	*	117.9	-1.0	-0.07	19.74	2.28	2.68	HG
MQDN8N		107.6	-11.3	-0.74	17.01	-0.45	-0.53	PP
NDKM6L		116.6	-2.3	-0.15	17.53	0.07	0.08	LP
NFATPH		118.1	-0.8	-0.05	16.70	-0.76	-0.90	LW
P3FYPU		113.4	-5.5	-0.36	16.97	-0.49	-0.58	LP
PFNNJP		123.0	4.1	0.27	17.92	0.46	0.54	HG
PLEUMR		111.5	-7.4	-0.49	17.70	0.24	0.28	PP

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Paper & Paperboard Interlaboratory Testing Program
Analysis 370
Air Resistance - Gurley Oil Type

WebCode	Data Flag	Sample GE35 Lab Mean	Sample GE35 Diff from Grand Mean	Sample GE35 CPV	Sample GE36 Lab Mean	Sample GE36 Diff from Grand Mean	Sample GE36 CPV	Instr Code
TJUG3D		121.7	2.8	0.18	16.10	-1.36	-1.60	LP
VNZUY3		114.7	-4.2	-0.27	18.19	0.73	0.86	XX
XL6VXA		91.8	-27.1	-1.78	16.13	-1.33	-1.57	LP
Y36EUN		121.1	2.2	0.14	17.70	0.24	0.28	LA
YNPY77		129.9	11.0	0.72	18.49	1.03	1.21	HG
ZCUAPX		144.3	25.4	1.67	17.63	0.17	0.20	HG

Summary Statistics

	Sample GE35	Sample GE36
Grand Means	118.92 sec/100 cc	17.461 sec/100 cc
SD Btwn Labs	15.23 sec/100 cc	0.850 sec/100 cc

Statistics based on 45 of 47 reporting participants

Comments on Assigned Data Flags for Test #370

JG3VQQ (X) - Data for sample GE35 are low. Inconsistent within the determinations of sample GE36.

8J432E (X) - Data for sample GE35 are low.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GL	Gurley #4110
GS	Gurley-Hill S-P-S Tester #4190	HG	Technidyne - Hagerty Model #1
LA	L & W Autoline	LP	L & W Densometer, Air Permeance
LW	L & W Type Gurley Densometer, Oil Flotation	PP	Technidyne Profile/Plus
RE	Regmed Gurley Densometer PGH-T	TL	Gurley Densometer #4110, Oil Flotation
TN	Gurley S-P-S Tester #4190	WG	W & LE Gurley Tester
XX	Instrument make/model not specified by lab		

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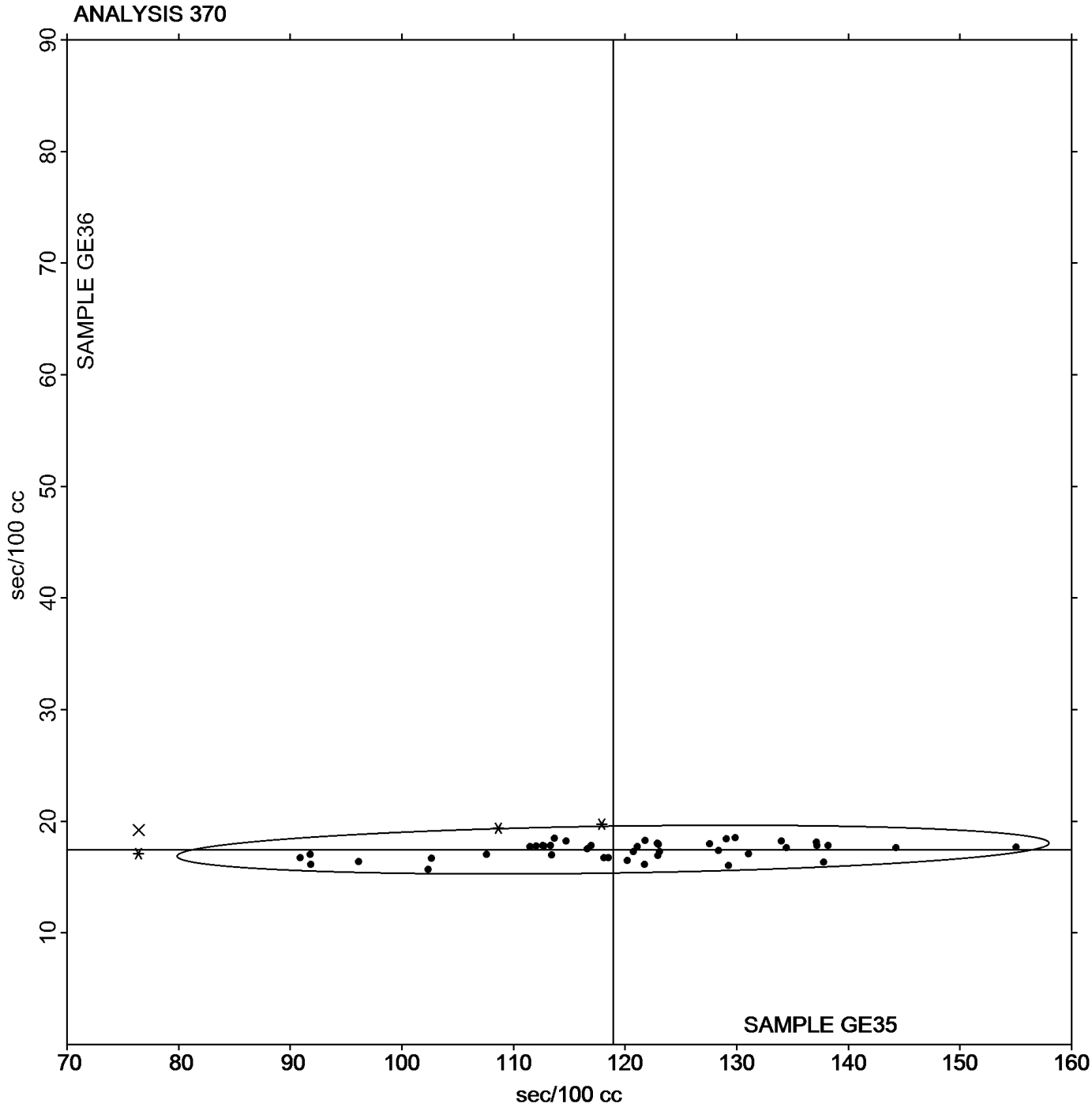
Paper & Paperboard Interlaboratory Testing Program
Analysis 370
Air Resistance - Gurley Oil Type

Grand Mean Sample **GE35** = 118.92 sec/100 cc

Grand Mean Sample **GE36** = 17.461 sec/100 cc



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Paper & Paperboard Interlaboratory Testing Program
Analysis 372
Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice

WebCode	Data Flag	Sample GE35 Lab Mean	Sample GE35 Diff from Grand Mean	Sample GE35 CPV	Sample GE36 Lab Mean	Sample GE36 Diff from Grand Mean	Sample GE36 CPV	Instr Code
2LV668		23.14	-4.53	-1.88	141.2	-11.2	-0.95	GA
2TAU4F		27.10	-0.57	-0.23	136.9	-15.5	-1.32	SH
4TN7EW		29.00	1.33	0.55	141.7	-10.7	-0.91	TT
6GRBZ3		26.80	-0.87	-0.36	153.9	1.5	0.13	HM
94NJKY		29.44	1.77	0.74	144.9	-7.5	-0.64	LP
FP4AXV		28.13	0.46	0.19	166.2	13.8	1.17	SH
MBLR7T		24.40	-3.27	-1.36	152.7	0.3	0.02	TT
RFGAAL		26.30	-1.37	-0.57	157.2	4.8	0.41	GA
VNZUY3		31.58	3.91	1.63	146.5	-5.9	-0.50	XX
W88EGN		27.60	-0.07	-0.03	153.9	1.5	0.13	TT
ZBE49M		30.70	3.03	1.26	154.6	2.2	0.18	HM
ZPTB3Y		27.80	0.13	0.06	179.4	27.0	2.29	VM

Summary Statistics

	Sample GE35	Sample GE36
Grand Means	27.666 Sheffield Units	152.43 Sheffield Units
SD Btwn Labs	2.408 Sheffield Units	11.76 Sheffield Units

Statistics based on 12 of 12 reporting participants

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	HM	Technidyne - Hagerty Model #538
LP	L & W Densometer, Air Permeance	SH	Sheffield
TT	TMI Monitor/Smoothness II, Model 58-24	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab		

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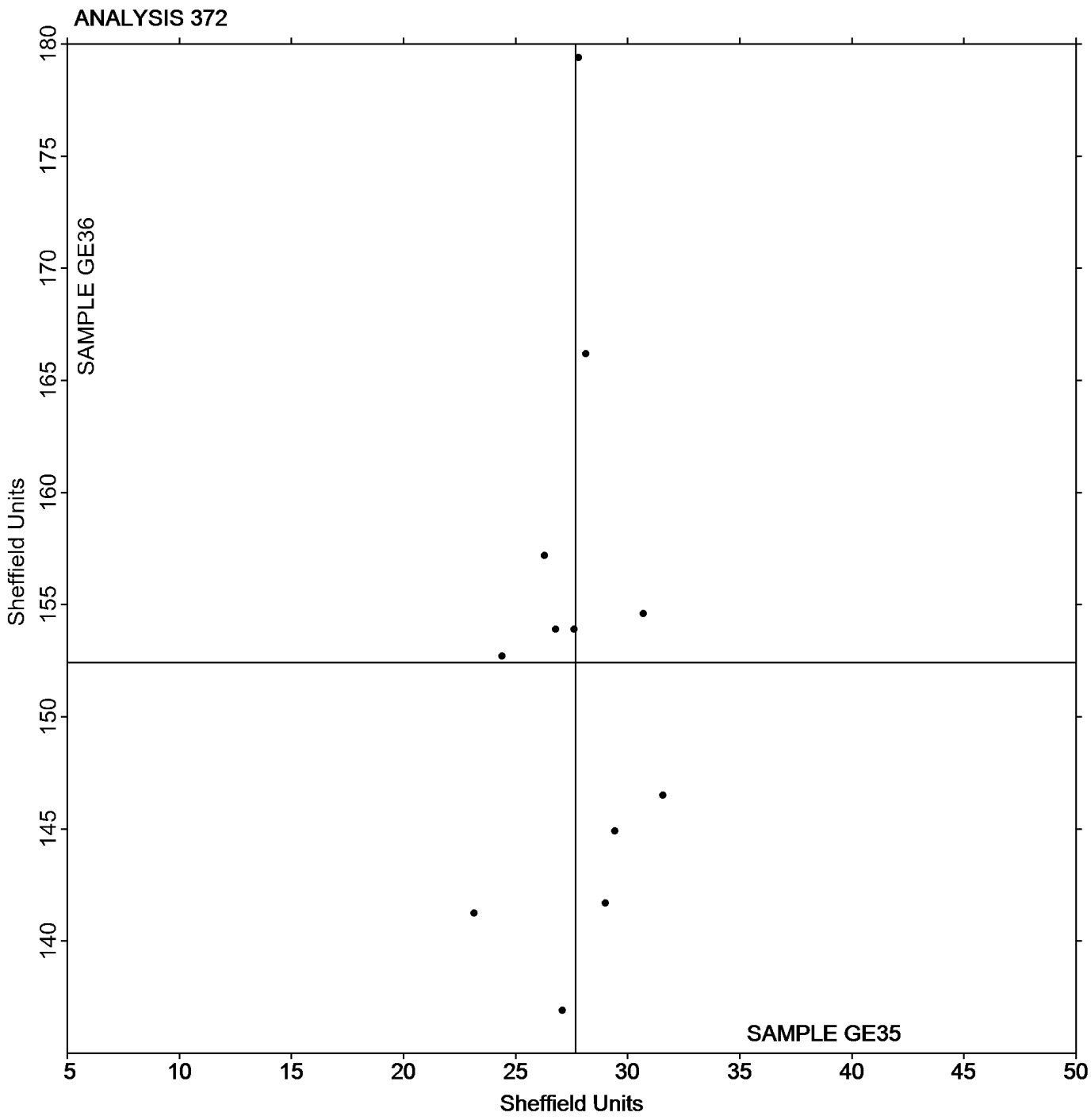
Grand Mean Sample **GE35** = 27.666 Sheffield Units Grand Mean Sample **GE36** = 152.43 Sheffield Units



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 376
Roughness - Print Surf Method - 0.5 to 4.0 Microns

WebCode	Data Flag	Sample GJ35 Lab Mean	Sample GJ35 Diff from Grand Mean	Sample GJ35 CPV	Sample GJ36 Lab Mean	Sample GJ36 Diff from Grand Mean	Sample GJ36 CPV
28W4QL		0.7270	-0.0668	-0.86	1.060	-0.083	-1.10
2ERB3Y		0.7920	-0.0018	-0.02	1.115	-0.028	-0.37
37T6M4		0.6410	-0.1528	-1.96	1.034	-0.109	-1.44
4TN7EW		0.8320	0.0382	0.49	1.164	0.021	0.27
4XF7YJ		0.9160	0.1222	1.57	1.289	0.146	1.92
6MRY9T		0.7940	0.0002	0.00	1.117	-0.026	-0.35
7BUBYC		0.6310	-0.1628	-2.09	1.018	-0.125	-1.65
7XUCBE		0.9760	0.1822	2.34	1.302	0.159	2.09
7ZX66D		0.7750	-0.0188	-0.24	1.107	-0.036	-0.48
8GEVGH		0.8150	0.0212	0.27	1.175	0.032	0.42
8PV8UJ		0.7590	-0.0348	-0.45	1.098	-0.045	-0.60
97Y22H		0.7230	-0.0708	-0.91	1.108	-0.035	-0.47
A9FVBN		0.8380	0.0442	0.57	1.140	-0.003	-0.04
AUFBAQ		0.7950	0.0012	0.02	1.119	-0.024	-0.32
B7N92X		0.8215	0.0277	0.35	1.157	0.014	0.18
CCQLD2	X	0.9630	0.1692	2.17	1.488	0.345	4.54
CG3Q8A		0.8310	0.0372	0.48	1.240	0.097	1.27
CNYR3U		0.8150	0.0212	0.27	1.095	-0.048	-0.64
DM2RMU		0.7440	-0.0498	-0.64	1.068	-0.075	-0.99
DVY9DY	X	1.0470	0.2532	3.25	1.218	0.075	0.98
FP4AXV		0.8570	0.0632	0.81	1.232	0.089	1.17
GBKVCM		0.9440	0.1502	1.93	1.250	0.107	1.41
GMAPNG		0.7300	-0.0638	-0.82	1.097	-0.046	-0.61
HEEAAW		0.7860	-0.0078	-0.10	1.124	-0.019	-0.26
LQZKCK	X	1.2440	0.4502	5.77	1.481	0.338	4.45
M9R7D2		0.7090	-0.0848	-1.09	1.083	-0.060	-0.80
MBLR7T		0.8620	0.0682	0.87	1.190	0.047	0.61
MX9NKV		0.7480	-0.0458	-0.59	1.047	-0.096	-1.27
MY7YHJ		0.7350	-0.0588	-0.75	1.132	-0.011	-0.15
PFNNJP		0.7890	-0.0048	-0.06	1.124	-0.019	-0.26
QU43KM		0.7180	-0.0758	-0.97	1.082	-0.061	-0.81
RD7GBD		0.8510	0.0572	0.73	1.245	0.102	1.34
V3JA9T		0.7270	-0.0668	-0.86	1.106	-0.037	-0.49
VKFXEH		0.8650	0.0712	0.91	1.265	0.122	1.60
ZCUAPX		0.8560	0.0622	0.80	1.206	0.063	0.83

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Paper & Paperboard Interlaboratory Testing Program
Analysis 376
Roughness - Print Surf Method - 0.5 to 4.0 Microns

Summary Statistics

	Sample GJ35	Sample GJ36
Grand Means	0.79383 Microns	1.1434 Microns
SD Btwn Labs	0.07798 Microns	0.0758 Microns

Statistics based on 32 of 35 reporting participants

Comments on Assigned Data Flags for Test #376

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

CCQLD2 (X) - Data for sample GJ36 are high.

DVY9DY (X) - Data for sample GJ35 are high. Inconsistent within the determinations of sample GJ35.

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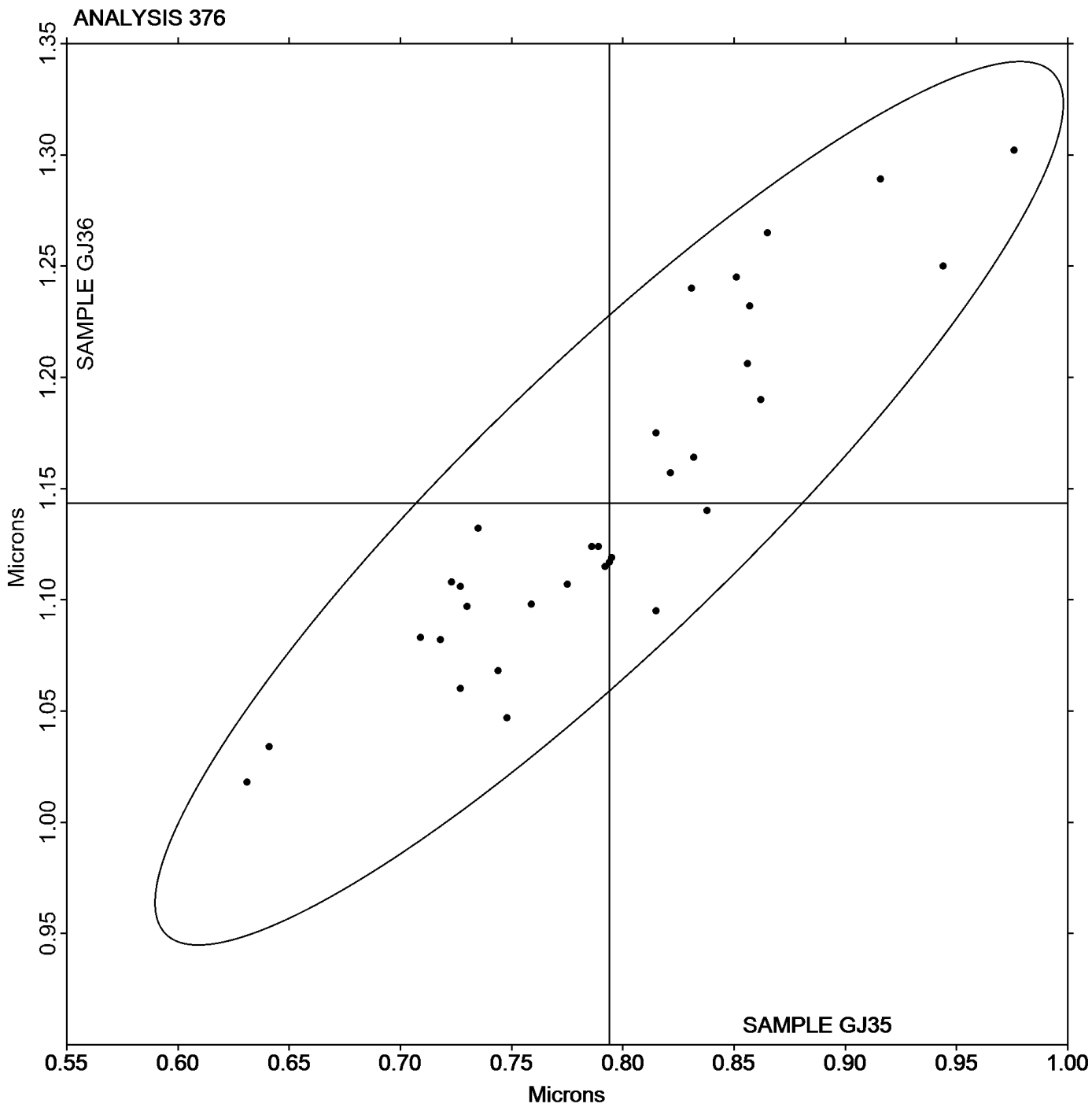
Paper & Paperboard Interlaboratory Testing Program
Analysis 376
Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample **GJ35** = 0.79383 Microns

Grand Mean Sample **GJ36** = 1.1434 Microns



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Paper & Paperboard Interlaboratory Testing Program
Analysis 377
Roughness - Print Surf Method - 2.5 to 6.0 Microns

WebCode	Data Flag	Sample GK35 Lab Mean	Sample GK35 Diff from Grand Mean	Sample GK35 CPV	Sample GK36 Lab Mean	Sample GK36 Diff from Grand Mean	Sample GK36 CPV
6PH32Z		4.214	0.011	0.15	3.976	0.040	0.33
7BUBYC		4.229	0.026	0.36	3.900	-0.036	-0.30
AMFM2Y		4.272	0.069	0.96	3.888	-0.048	-0.41
GMAPNG		4.170	-0.033	-0.46	4.074	0.138	1.16
GPXGGY		4.327	0.124	1.72	4.098	0.162	1.36
NDKM6L		4.134	-0.069	-0.96	3.727	-0.209	-1.76
PLEUMR		4.114	-0.089	-1.24	3.870	-0.066	-0.56
RD7GBD	X	4.852	0.649	9.03	4.599	0.663	5.57
ZPTB3Y		4.165	-0.038	-0.53	3.957	0.021	0.17

Summary Statistics

	Sample GK35	Sample GK36
Grand Means	4.2031 Microns	3.9363 Microns
SD Btwn Labs	0.0719 Microns	0.1189 Microns

Statistics based on 8 of 9 reporting participants

Comments on Assigned Data Flags for Test #377

RD7GBD (X) - Extreme Data.

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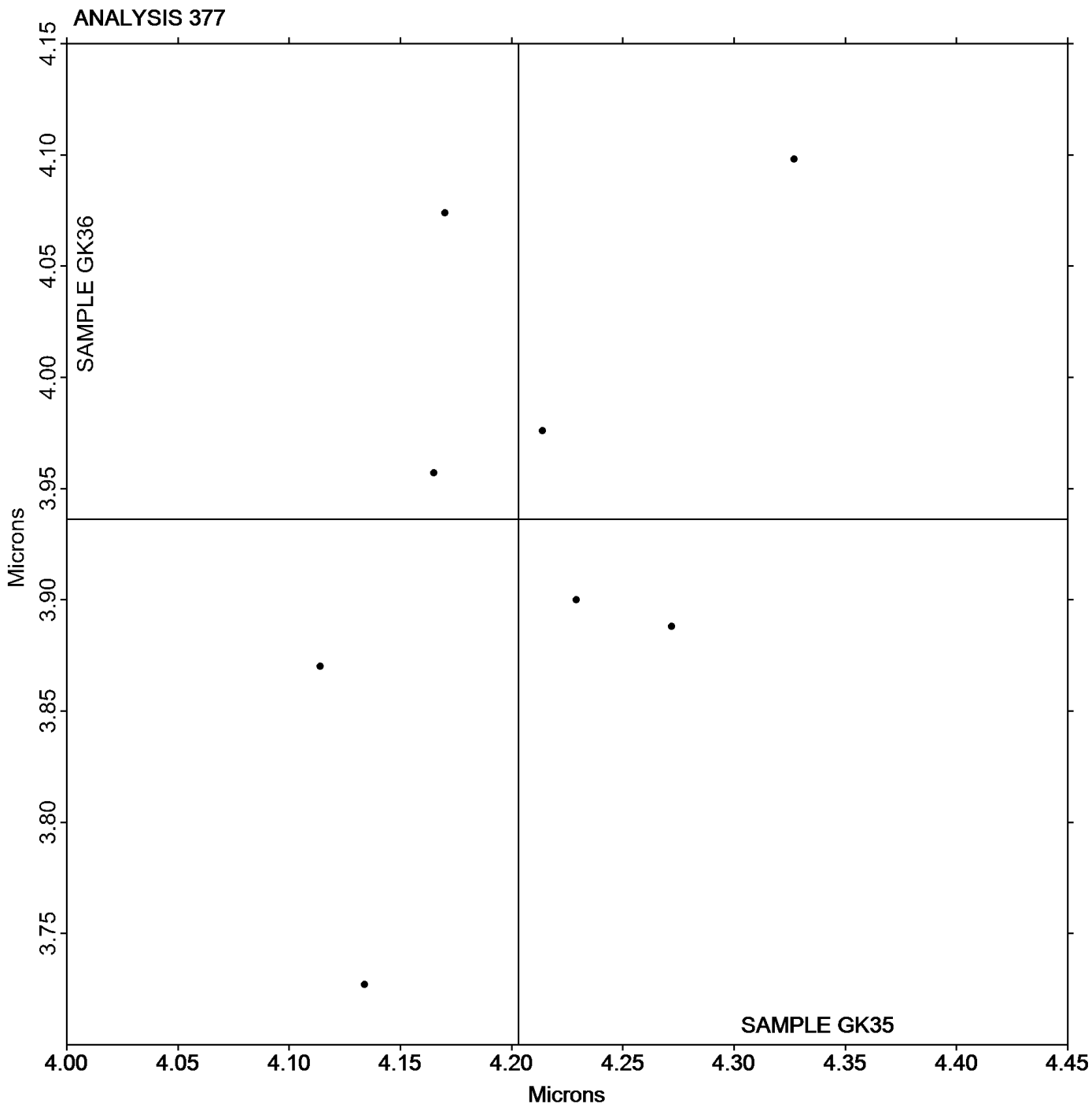
Paper & Paperboard Interlaboratory Testing Program
Analysis 377
Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK35** = 4.2031 Microns

Grand Mean Sample **GK36** = 3.9363 Microns



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 378
Roughness - Sheffield Type

WebCode	Data Flag	Sample GL35 Lab Mean	Sample GL35 Diff from Grand Mean	Sample GL35 CPV	Sample GL36 Lab Mean	Sample GL36 Diff from Grand Mean	Sample GL36 CPV	Instr Code
28W4QL		162.5	2.9	0.29	223.8	-1.0	-0.06	LA
2ERB3Y		156.5	-3.1	-0.32	234.7	9.9	0.60	PP
2LV668		158.0	-1.6	-0.17	219.0	-5.8	-0.35	HM
2TAU4F		171.4	11.8	1.20	245.0	20.2	1.23	XX
37T6M4		164.8	5.2	0.53	218.1	-6.7	-0.40	LA
3YW4T6		142.9	-16.7	-1.70	206.5	-18.3	-1.11	LW
4TN7EW		147.7	-11.9	-1.21	204.3	-20.5	-1.24	TT
4XF7YJ		159.0	-0.6	-0.06	228.9	4.1	0.25	PP
62WXGZ		163.5	3.9	0.39	201.1	-23.7	-1.43	TT
6ATQVL		171.0	11.4	1.16	231.3	6.6	0.40	PP
6GRBZ3		155.3	-4.4	-0.44	220.7	-4.0	-0.24	PP
6MRY9T	*	156.4	-3.2	-0.33	183.9	-40.9	-2.48	TS
6PH32Z		152.3	-7.3	-0.75	208.4	-16.4	-0.99	PP
7BUBYC		169.9	10.3	1.05	240.0	15.2	0.92	XX
7JMT7T		144.4	-15.2	-1.55	200.4	-24.4	-1.48	XX
7XUCBE		154.0	-5.6	-0.57	206.0	-18.8	-1.14	GL
84BEPV		161.1	1.5	0.15	235.0	10.2	0.62	TS
8HAF3W		154.3	-5.4	-0.55	251.1	26.4	1.60	MP
8J432E		148.9	-10.8	-1.10	218.7	-6.0	-0.37	LA
8PV8UJ		145.3	-14.3	-1.46	184.0	-40.8	-2.47	TS
97Y22H		153.0	-6.6	-0.67	214.7	-10.0	-0.61	PP
AE6PU8		161.1	1.5	0.15	230.6	5.8	0.35	PP
AMFM2Y		165.8	6.2	0.63	238.6	13.8	0.84	HM
AUFBAQ		150.2	-9.4	-0.96	225.8	1.0	0.06	PP
B3PVE9		141.4	-18.2	-1.85	204.0	-20.7	-1.26	PP
B7N92X		162.0	2.3	0.24	227.2	2.4	0.14	XX
BAMPC7		154.3	-5.3	-0.54	191.1	-33.7	-2.04	SH
BUVRBB		155.4	-4.3	-0.43	216.8	-8.0	-0.48	XX
CG3Q8A		166.5	6.9	0.70	219.6	-5.2	-0.31	LW
CNYR3U		175.2	15.6	1.59	252.0	27.2	1.65	TT
EF47CL	X	144.0	-15.6	-1.59	342.2	117.4	7.11	TS
FAAQZJ		156.8	-2.8	-0.29	241.1	16.3	0.99	TS
FP4AXV		169.1	9.5	0.96	243.9	19.1	1.16	PP
GPXGGY		173.5	13.9	1.41	241.2	16.5	1.00	PP
JF7MCF		175.5	15.9	1.62	245.7	20.9	1.27	PG
JG3VQQ		149.5	-10.1	-1.03	200.6	-24.2	-1.47	PP
JGY9CX		153.0	-6.6	-0.67	215.5	-9.3	-0.56	SH
JYEPBK	X	224.5	64.9	6.61	290.0	65.2	3.95	GL
LQZKCK		157.1	-2.5	-0.26	223.3	-1.5	-0.09	HM
M8LLP2		146.0	-13.7	-1.39	228.5	3.7	0.23	GA
M9R7D2		168.4	8.8	0.90	235.5	10.7	0.65	PP

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Paper & Paperboard Interlaboratory Testing Program
Analysis 378
Roughness - Sheffield Type

WebCode	Data Flag	Sample GL35 Lab Mean	Sample GL35 Diff from Grand Mean	Sample GL35 CPV	Sample GL36 Lab Mean	Sample GL36 Diff from Grand Mean	Sample GL36 CPV	Instr Code
MBLR7T		160.0	0.4	0.04	239.3	14.5	0.88	TT
MPJ4EW		146.5	-13.1	-1.34	237.6	12.8	0.78	GA
MQDN8N		177.3	17.6	1.79	242.8	18.0	1.09	PP
NDKM6L		159.9	0.3	0.03	217.7	-7.1	-0.43	LW
NFATPH		157.2	-2.4	-0.25	235.1	10.3	0.63	TS
NRL9LP		172.5	12.9	1.31	228.0	3.2	0.20	XX
PFNNJP		159.7	0.1	0.01	221.3	-3.5	-0.21	HM
PLEUMR		160.0	0.4	0.04	235.7	10.9	0.66	PP
QU43KM		176.7	17.1	1.74	218.1	-6.7	-0.40	HM
RBNAVQ		169.2	9.6	0.97	217.9	-6.9	-0.42	TS
RFGAAL		162.0	2.4	0.24	240.7	15.9	0.97	GA
TR9638		151.9	-7.7	-0.79	222.6	-2.1	-0.13	PP
V3JA9T		167.2	7.6	0.77	220.0	-4.8	-0.29	PP
VAZVC7		151.2	-8.4	-0.86	214.8	-10.0	-0.60	LA
VKFXEH		166.7	7.1	0.72	227.5	2.7	0.17	LW
VNZUY3		149.7	-9.9	-1.01	214.3	-10.5	-0.63	XX
VZT7FL		147.5	-12.1	-1.24	212.6	-12.1	-0.74	PP
W88EGN	*	187.6	28.0	2.85	255.5	30.7	1.86	TT
WYFW3F		153.7	-5.9	-0.60	220.7	-4.1	-0.25	SH
YNPY77		168.2	8.6	0.87	238.8	14.0	0.85	HM
ZBE49M		161.5	1.9	0.19	242.4	17.6	1.07	HM
ZCUAPX		158.2	-1.4	-0.15	250.9	26.1	1.58	HM

Summary Statistics

	Sample GL35	Sample GL36
Grand Means	159.63 Sheffield	224.77 Sheffield
SD Btwn Labs	9.82 Sheffield	16.51 Sheffield

Statistics based on 61 of 63 reporting participants

Comments on Assigned Data Flags for Test #378

JYEPBK (X) - Extreme Data.

EF47CL (X) - Extreme Data for Sample GL36.

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GL	Giddings and Lewis Sheffield
HM	Technidyne - Hagerty Model #538	LA	L & W Roughness Sheffield - Autoline
LW	L & W Roughness Tester	MP	Metso Paperlab
PG	Precision Gage Smoothcheck	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

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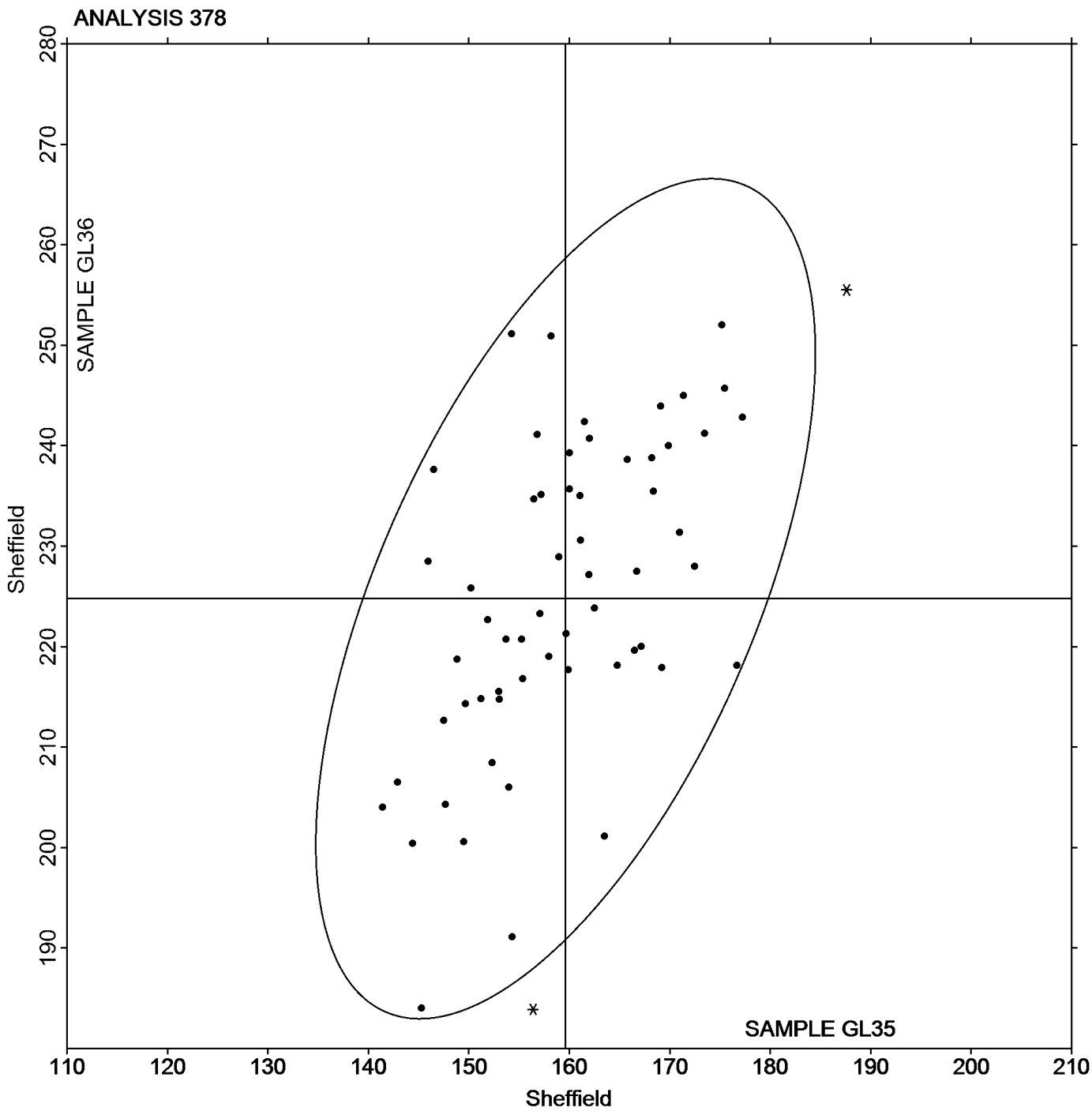
Paper & Paperboard Interlaboratory Testing Program
Analysis 378
Roughness - Sheffield Type

Grand Mean Sample **GL35** = 159.63 Sheffield

Grand Mean Sample **GL36** = 224.77 Sheffield



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Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

WebCode	Data Flag	Sample GM35 Lab Mean	Sample GM35 Diff from Grand Mean	Sample GM35 CPV	Sample GM36 Lab Mean	Sample GM36 Diff from Grand Mean	Sample GM36 CPV
AMFM2Y		4.230	-0.351	-0.85	4.750	0.089	0.17
FLNLFJ		5.304	0.723	1.74	5.575	0.914	1.79
GPXGGY		4.690	0.109	0.26	4.794	0.133	0.26
HMPLBZ		5.190	0.609	1.47	5.310	0.649	1.27
J2PMN2		4.453	-0.129	-0.31	4.370	-0.291	-0.57
KQJ4JC		4.481	-0.100	-0.24	4.242	-0.419	-0.82
LXZZ7X		4.074	-0.507	-1.22	3.987	-0.674	-1.32
Q3TXEB		4.380	-0.201	-0.49	4.435	-0.226	-0.44
UWVEPA		4.431	-0.150	-0.36	4.486	-0.175	-0.34

Summary Statistics

	Sample GM35	Sample GM36
Grand Means	4.5814 Percent	4.6610 Percent
SD Btwn Labs	0.4146 Percent	0.5097 Percent

Statistics based on 9 of 9 reporting participants

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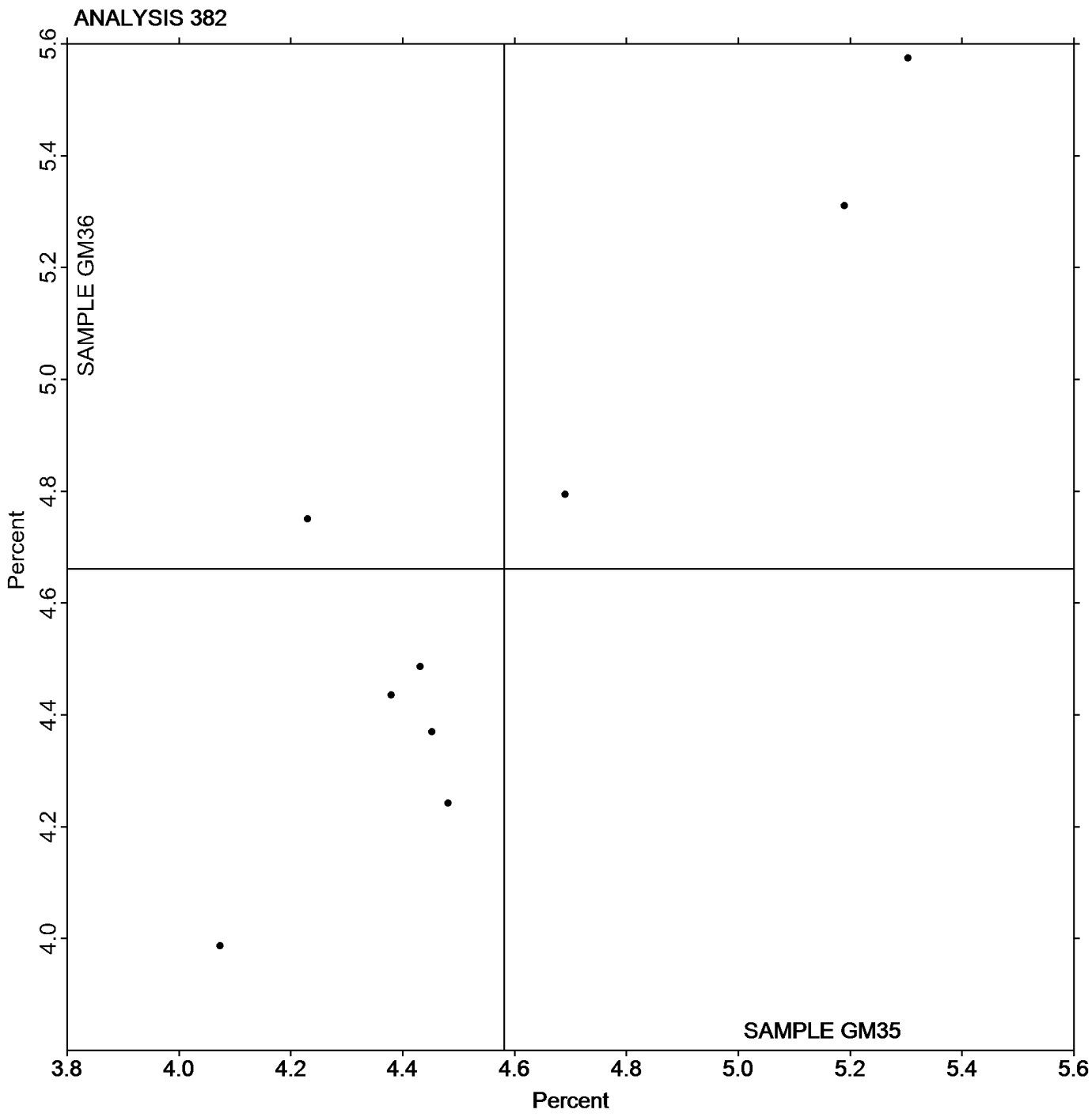
Grand Mean Sample **GM35** = 4.5814 Percent

Grand Mean Sample **GM36** = 4.6610 Percent



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 384
Opacity (89% Reflectance Backing) - Fine Papers

WebCode	Data Flag	Sample GN35 Lab Mean	Sample GN35 Diff from Grand Mean	Sample GN35 CPV	Sample GN36 Lab Mean	Sample GN36 Diff from Grand Mean	Sample GN36 CPV
2LV668		86.47	-0.28	-0.35	93.52	-0.15	-0.24
2TAU4F	X	80.64	-6.11	-7.81	86.27	-7.40	-11.57
3T9PJ4		86.62	-0.13	-0.17	93.63	-0.04	-0.06
4LK3NY		86.85	0.10	0.13	93.80	0.13	0.20
4TN7EW		88.06	1.31	1.68	94.26	0.59	0.92
4XF7YJ	*	86.02	-0.73	-0.93	92.31	-1.37	-2.14
6ATQVL		86.95	0.21	0.26	93.77	0.10	0.15
7JMT7T		87.57	0.82	1.05	94.28	0.61	0.95
84BEPV		87.36	0.61	0.79	94.16	0.49	0.76
8J432E		85.39	-1.36	-1.73	92.92	-0.75	-1.18
AMFM2Y		86.56	-0.19	-0.24	93.67	0.00	-0.01
B7N92X		86.11	-0.64	-0.81	92.90	-0.77	-1.21
CCQLD2		86.29	-0.46	-0.58	93.27	-0.41	-0.63
DM2RMU		86.78	0.03	0.04	93.82	0.15	0.23
DVY9DY	*	85.74	-1.01	-1.29	92.21	-1.47	-2.29
GBKVCM		86.28	-0.47	-0.60	93.84	0.17	0.26
GMAPNG		87.13	0.38	0.49	93.79	0.12	0.18
GPXGGY		87.22	0.47	0.60	93.90	0.23	0.36
HEEAAW	X	0.71	-86.03	-110.05	1.10	-92.58	-144.73
JF7MCF		85.92	-0.83	-1.06	92.85	-0.82	-1.29
JG3VQQ		85.87	-0.88	-1.12	93.32	-0.35	-0.55
JGY9CX		86.35	-0.40	-0.51	93.76	0.09	0.14
JYEPBK	*	89.17	2.42	3.10	95.57	1.90	2.97
L7T8P4		86.39	-0.36	-0.46	93.64	-0.03	-0.05
LQZKCK		87.03	0.28	0.36	94.10	0.43	0.67
MBLR7T		87.02	0.27	0.35	93.97	0.29	0.46
MQDN8N		86.79	0.05	0.06	93.65	-0.02	-0.03
NFATPH		86.12	-0.63	-0.80	93.62	-0.05	-0.08
NRL9LP		88.18	1.43	1.83	94.60	0.93	1.45
PLEUMR		86.65	-0.10	-0.13	93.85	0.18	0.28
QU43KM		87.34	0.59	0.76	94.14	0.47	0.73
TR9638		86.76	0.01	0.02	93.48	-0.19	-0.30
VNZUY3		85.09	-1.66	-2.12	92.40	-1.27	-1.99
W88EGN		87.00	0.25	0.32	94.06	0.39	0.60
WYFW3F		87.26	0.51	0.66	93.86	0.19	0.29
XNDZHP		86.69	-0.06	-0.08	94.01	0.34	0.53
YNPY77		87.18	0.43	0.56	93.42	-0.25	-0.40
ZCUAPX		86.66	-0.09	-0.11	93.88	0.21	0.32

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Paper & Paperboard Interlaboratory Testing Program
Analysis 384
Opacity (89% Reflectance Backing) - Fine Papers

Summary Statistics

	Sample GN35	Sample GN36
Grand Means	86.746 Percent	93.673 Percent
SD Btwn Labs	0.782 Percent	0.640 Percent

Statistics based on 36 of 38 reporting participants

Comments on Assigned Data Flags for Test #384

2TAU4F (X) - Extreme Data.

HEEAAW (X) - Extreme Data.

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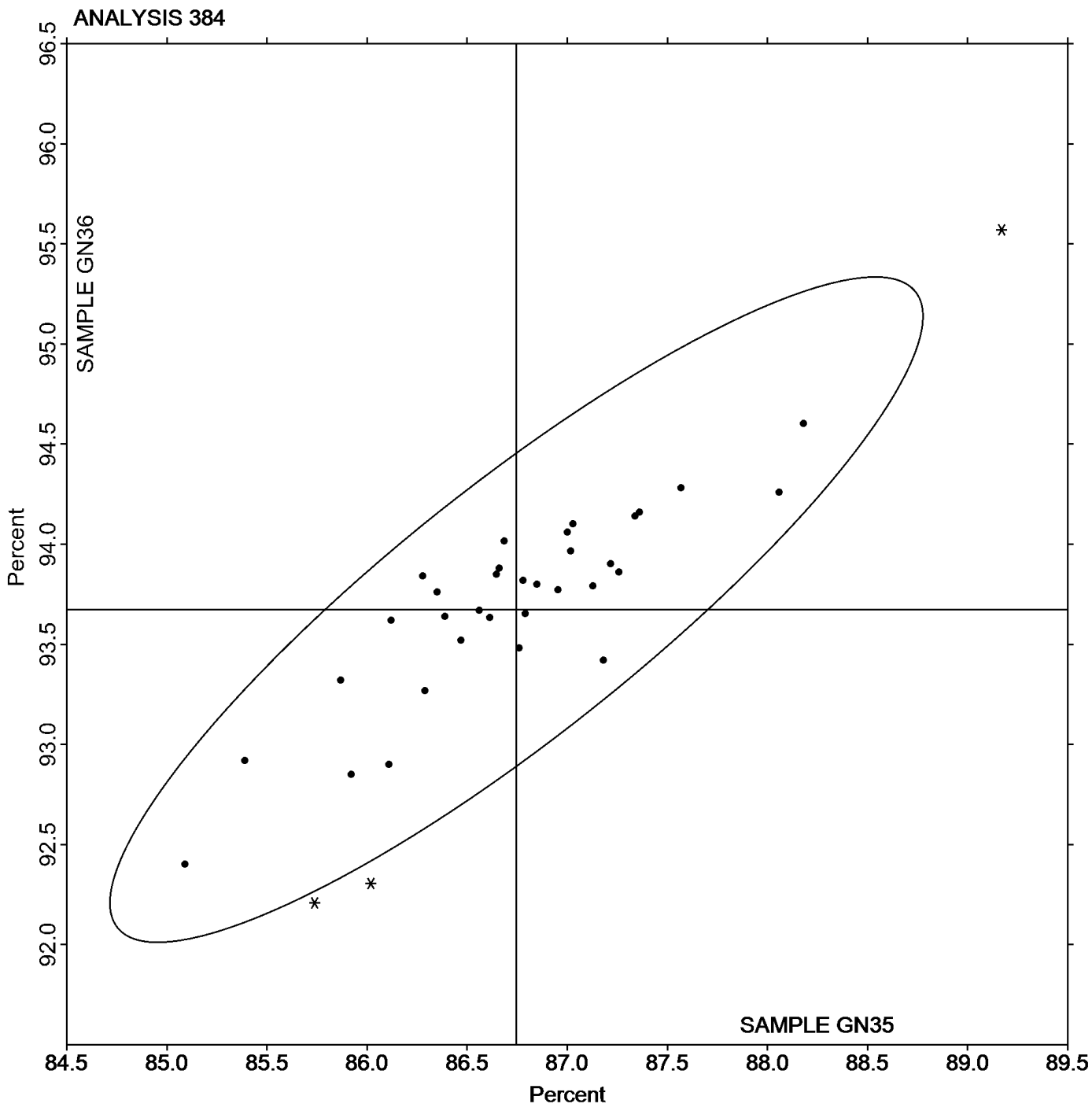
Paper & Paperboard Interlaboratory Testing Program
Analysis 384
Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN35** = 86.746 Percent

Grand Mean Sample **GN36** = 93.673 Percent



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Paper & Paperboard Interlaboratory Testing Program
Analysis 386
Opacity (Paper Backing) - Fine Papers and Newsprint

WebCode	Data Flag	Sample GP35 Lab Mean	Sample GP35 Diff from Grand Mean	Sample GP35 CPV	Sample GP36 Lab Mean	Sample GP36 Diff from Grand Mean	Sample GP36 CPV
22JHGE		89.12	0.18	0.85	94.18	-0.28	-1.49
2PD6M9		88.73	-0.21	-1.00	94.50	0.04	0.22
4A76GA		88.83	-0.11	-0.52	94.51	0.05	0.27
4XF7YJ		88.89	-0.06	-0.27	94.61	0.15	0.78
6A7HLG	X	90.32	1.38	6.49	93.59	-0.87	-4.58
6GRBZ3		88.81	-0.13	-0.62	94.31	-0.15	-0.78
7ZX66D		89.04	0.10	0.47	94.34	-0.12	-0.62
AKRDPD		89.12	0.18	0.83	94.98	0.52	2.73
B7N92X		89.05	0.10	0.49	94.48	0.02	0.10
CUQPXC		88.56	-0.38	-1.80	94.07	-0.39	-2.05
E9J2NR		88.87	-0.08	-0.37	94.43	-0.03	-0.18
J4EU9Y		88.97	0.02	0.10	94.60	0.14	0.73
JUP3NR		88.84	-0.11	-0.51	94.52	0.06	0.32
L6ZEUK		89.37	0.42	1.99	94.64	0.18	0.92
LJKWMN		89.11	0.17	0.78	94.53	0.07	0.37
LXZZ7X		88.90	-0.05	-0.22	94.45	-0.01	-0.06
QBRFWU		89.28	0.34	1.59	94.35	-0.11	-0.58
TJUG3D		88.74	-0.20	-0.96	94.47	0.01	0.04
XL6VXA		89.09	0.15	0.68	94.44	-0.02	-0.09
ZBE49M		88.63	-0.32	-1.50	94.34	-0.12	-0.62

Summary Statistics

	Sample GP35	Sample GP36
Grand Means	88.944 Percent	94.460 Percent
SD Btwn Labs	0.212 Percent	0.190 Percent

Statistics based on 19 of 20 reporting participants

Comments on Assigned Data Flags for Test #386

6A7HLG (X) - Extreme Data.

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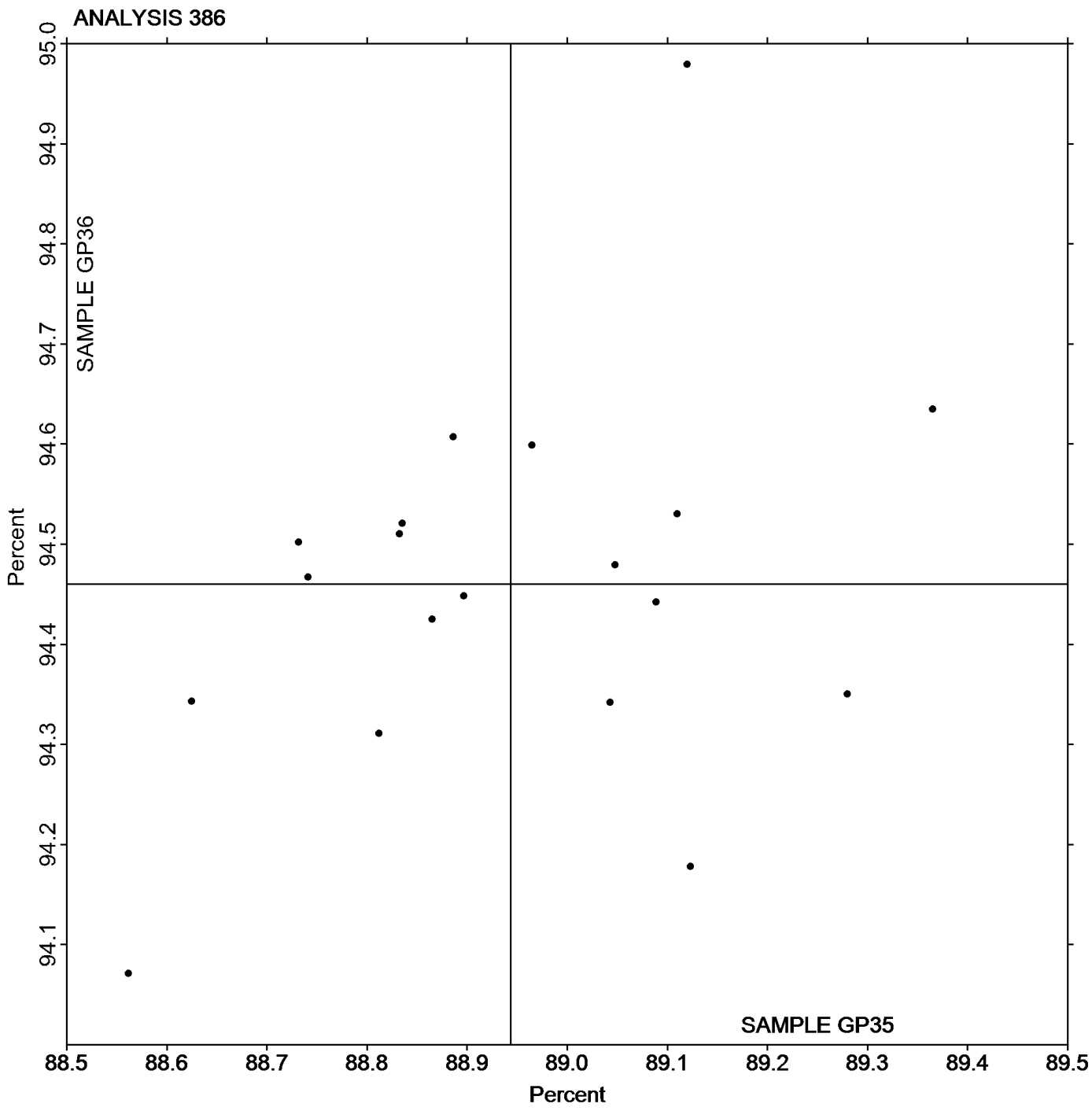
Paper & Paperboard Interlaboratory Testing Program
Analysis 386
Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample **GP35** = 88.944 Percent

Grand Mean Sample **GP36** = 94.460 Percent



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

WebCode	Data Flag	Sample GR35 Lab Mean	Sample GR35 Diff from Grand Mean	Sample GR35 CPV	Sample GR36 Lab Mean	Sample GR36 Diff from Grand Mean	Sample GR36 CPV	Instr Code
2LV668		83.52	0.09	0.06	83.82	0.29	0.17	XS
2TAU4F	*	88.96	5.54	3.27	89.05	5.52	3.30	PE
4LK3NY		84.24	0.82	0.48	84.34	0.80	0.48	TS
4XF7YJ		81.26	-2.16	-1.27	81.39	-2.15	-1.29	TS
6PH32Z	X	75.61	-7.81	-4.61	75.63	-7.91	-4.74	TS
7JMT7T		82.39	-1.03	-0.61	82.60	-0.93	-0.56	XX
7XUCBE	X	62.86	-20.56	-12.12	63.89	-19.65	-11.77	TS
84BEPV		82.29	-1.13	-0.67	82.34	-1.20	-0.72	TS
97Y22H		84.41	0.99	0.58	84.83	1.29	0.77	TT
AE6PU8		81.94	-1.48	-0.87	82.07	-1.47	-0.88	TS
B7N92X		81.14	-2.28	-1.34	81.28	-2.25	-1.35	TT
BQVGGW		84.63	1.20	0.71	84.96	1.43	0.86	HG
CCQLD2		83.64	0.22	0.13	83.31	-0.22	-0.13	TS
CG3Q8A		81.63	-1.80	-1.06	81.79	-1.75	-1.05	TT
CNYR3U		85.08	1.65	0.98	85.31	1.78	1.07	TT
DVY9DY		83.54	0.12	0.07	83.46	-0.07	-0.04	XX
GBKVCM		83.52	0.10	0.06	83.54	0.00	0.00	MK
GMAPNG		82.31	-1.11	-0.65	82.41	-1.12	-0.67	TT
JF7MCF		85.31	1.89	1.11	85.14	1.61	0.96	TS
LQZKCK		81.53	-1.90	-1.12	81.96	-1.57	-0.94	TT
M9R7D2		83.15	-0.27	-0.16	82.99	-0.54	-0.33	HD
MQDN8N		81.31	-2.11	-1.24	81.75	-1.78	-1.07	TT
NRL9LP		85.50	2.08	1.23	85.61	2.08	1.25	XX
Q3TXEB		83.02	-0.40	-0.24	83.05	-0.48	-0.29	XX
QU43KM		82.44	-0.98	-0.58	82.54	-1.00	-0.60	TT
TR9638		84.33	0.90	0.53	84.58	1.04	0.62	XX
V3JA9T		84.08	0.66	0.39	84.01	0.47	0.28	HD
VNZUY3		85.24	1.82	1.07	85.30	1.77	1.06	XX
VZT7FL		82.39	-1.03	-0.61	82.47	-1.06	-0.64	TS
W88EGN		84.28	0.85	0.50	84.23	0.69	0.41	TS
WYFW3F		82.16	-1.26	-0.74	82.36	-1.17	-0.70	TA

Summary Statistics

	Sample GR35	Sample GR36
Grand Means	83.421 Percent	83.534 Percent
SD Btwn Labs	1.696 Percent	1.669 Percent

Statistics based on 29 of 31 reporting participants

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Comments on Assigned Data Flags for Test #390

7XUCBE (X) - Extreme Data.

6PH32Z (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

Key to Instrument Codes Reported by Participants

HD	Hunter D25DP - 9000	HG	Hunter Labscan / XE
MK	Macbeth Color-Eye 7000 Spectrophotometer	PE	Photovolt 577
TA	Technidyne, Diano, M.S. S-4	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	XS	X-Rite 938 Spectrodensitometer
XX	Instrument make/model not specified by lab		

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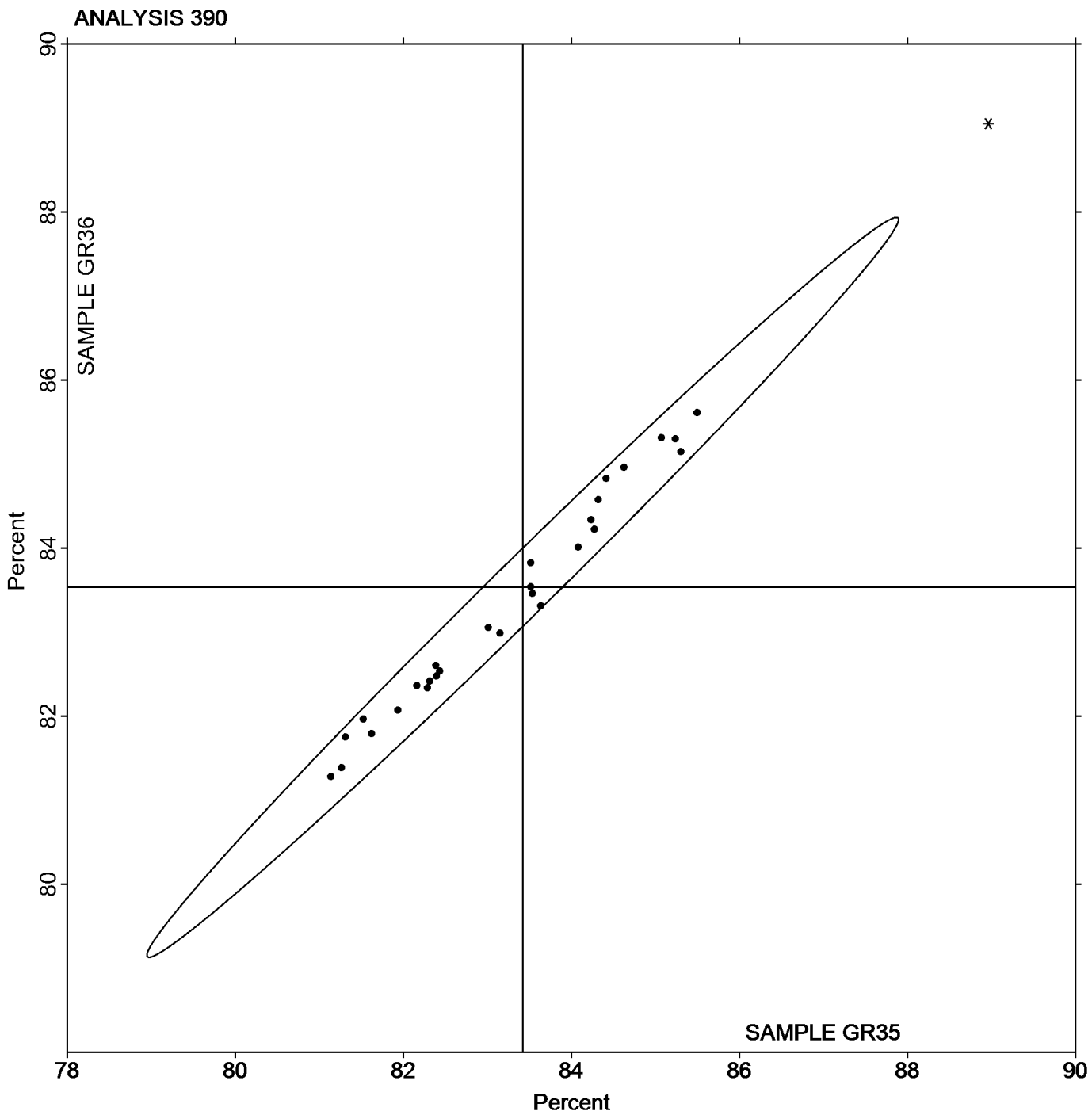
Grand Mean Sample **GR35** = 83.421 Percent

Grand Mean Sample **GR36** = 83.534 Percent



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Paper & Paperboard Interlaboratory Testing Program
Analysis 391
Directional Brightness of Fluorescent Samples

WebCode	Data Flag	Sample GZ35 Lab Mean	Sample GZ35 Diff from Grand Mean	Sample GZ35 CPV	Sample GZ36 Lab Mean	Sample GZ36 Diff from Grand Mean	Sample GZ36 CPV	Instr Code
2WBZK8		97.49	1.75	2.18	93.61	2.44	2.41	TS
3T9PJ4		96.01	0.27	0.34	91.06	-0.11	-0.11	TS
4TN7EW		96.36	0.61	0.77	91.48	0.31	0.30	TT
6ATQVL		95.56	-0.19	-0.23	91.06	-0.11	-0.11	TS
84BEPV		95.76	0.01	0.02	90.81	-0.37	-0.36	TS
8J432E		95.56	-0.19	-0.23	91.08	-0.09	-0.09	TT
9BNMQW		96.17	0.42	0.53	91.60	0.43	0.42	TS
DM2RMU		95.81	0.06	0.08	90.90	-0.27	-0.27	PP
GPXGGY		95.36	-0.38	-0.48	90.64	-0.53	-0.53	TS
HEEAAW		95.62	-0.13	-0.16	91.02	-0.15	-0.15	TT
JGY9CX		94.31	-1.44	-1.80	89.94	-1.23	-1.22	HT
NFATPH		95.54	-0.21	-0.26	90.70	-0.47	-0.47	TS
NRL9LP		96.76	1.02	1.27	93.10	1.92	1.90	XX
PLEUMR		95.67	-0.08	-0.10	90.92	-0.25	-0.25	TS
QU43KM		94.70	-1.05	-1.31	90.13	-1.04	-1.03	TS
XNDZHP		96.62	0.88	1.10	92.47	1.29	1.28	TS
YNPY77		94.35	-1.40	-1.74	89.66	-1.52	-1.50	HT
ZCUAPX		95.76	0.01	0.02	90.94	-0.23	-0.23	TT

Summary Statistics

	Sample GZ35	Sample GZ36
Grand Means	95.745 Percent	91.174 Percent
SD Btwn Labs	0.800 Percent	1.011 Percent

Statistics based on 18 of 18 reporting participants

Key to Instrument Codes Reported by Participants

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

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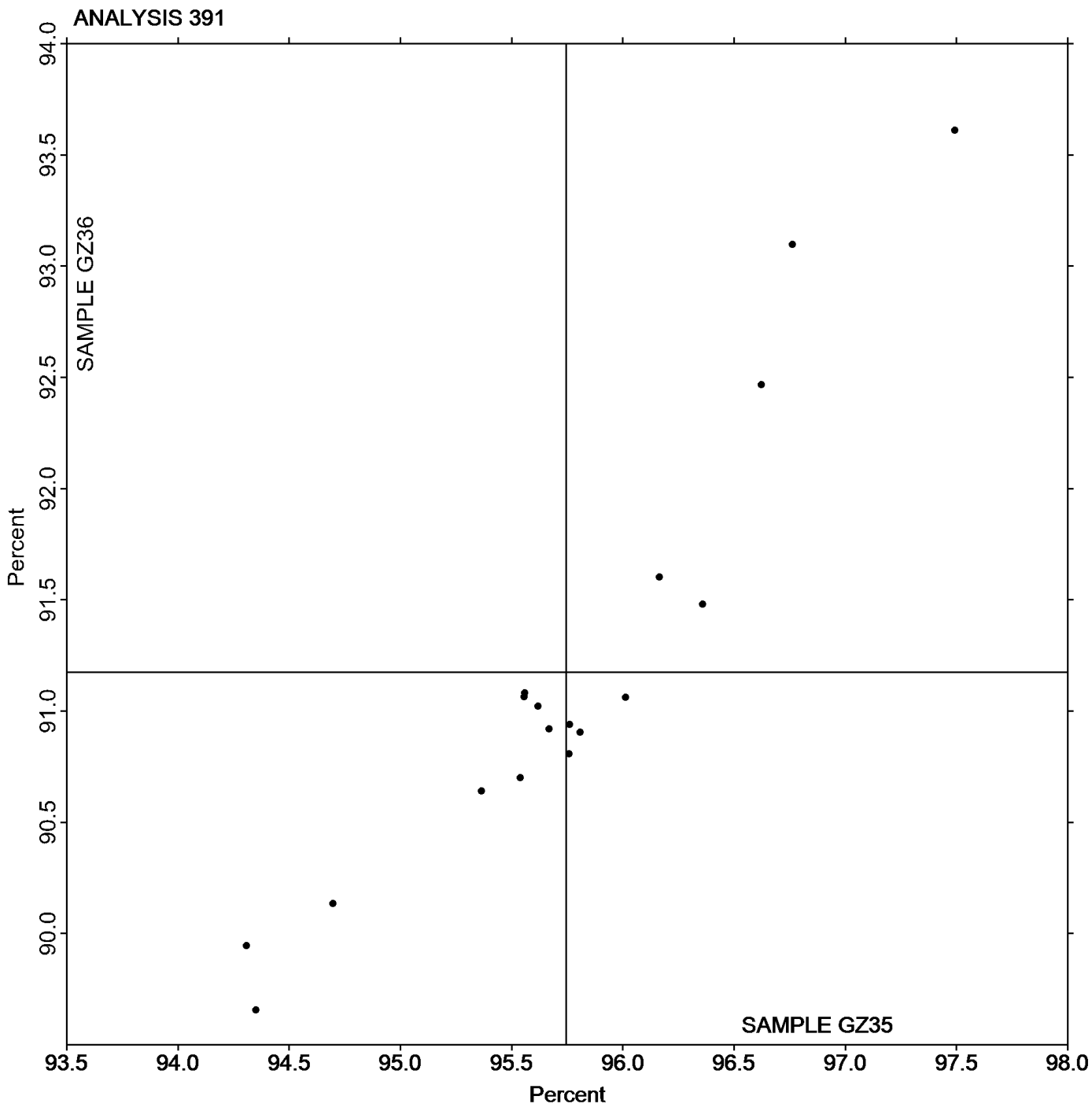
Grand Mean Sample **GZ35** = 95.745 Percent

Grand Mean Sample **GZ36** = 91.174 Percent



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

WebCode	Data Flag	Sample GR35 Lab Mean	Sample GR35 Diff from Grand Mean	Sample GR35 CPV	Sample GR36 Lab Mean	Sample GR36 Diff from Grand Mean	Sample GR36 CPV	Instr Code
22JHGE		82.80	-0.30	-1.02	82.96	-0.21	-0.65	LA
2ERB3Y		83.28	0.19	0.65	83.45	0.28	0.86	TC
2PD6M9		83.39	0.30	1.01	83.56	0.39	1.22	TC
3YW4T6		83.04	-0.05	-0.18	83.11	-0.06	-0.19	EF
4XF7YJ		82.88	-0.22	-0.74	83.03	-0.15	-0.46	TM
4XJTDC		83.20	0.11	0.36	83.17	0.00	0.00	TC
6A7HLG		82.84	-0.25	-0.87	82.80	-0.37	-1.16	TM
6GRBZ3		83.18	0.09	0.30	83.13	-0.05	-0.15	TC
6PH32Z	X	79.31	-3.78	-12.98	79.35	-3.83	-11.92	TC
7ZX66D		83.24	0.15	0.50	83.12	-0.06	-0.18	LS
8GEVGH		83.10	0.01	0.03	83.08	-0.09	-0.29	TC
97Y22H		83.03	-0.07	-0.23	82.96	-0.21	-0.66	TL
AKRDPD		83.03	-0.06	-0.22	83.08	-0.10	-0.31	TC
AUFBAQ		82.94	-0.15	-0.53	83.23	0.05	0.16	PP
B7N92X		83.23	0.14	0.47	83.23	0.05	0.17	TM
CG3Q8A	*	83.09	0.00	0.01	83.53	0.36	1.11	EG
CNYR3U	*	82.30	-0.79	-2.72	82.25	-0.92	-2.88	EG
CUQPXC		83.16	0.07	0.25	83.11	-0.06	-0.19	TM
J4EU9Y		82.61	-0.48	-1.65	82.66	-0.51	-1.60	EG
L3B9AN		83.58	0.49	1.69	83.62	0.45	1.39	TC
LXDN66	X	82.46	-0.63	-2.17	83.05	-0.13	-0.39	TC
LXZZ7X		82.71	-0.38	-1.30	82.92	-0.25	-0.79	LS
MBLR7T		83.19	0.10	0.34	83.36	0.19	0.58	TC
MY7YHJ		83.08	-0.01	-0.03	83.14	-0.03	-0.10	TC
Q3TXEB		83.36	0.27	0.93	83.45	0.28	0.86	EE
QNFFQH		83.51	0.42	1.45	83.59	0.42	1.30	LA
QU43KM		83.64	0.55	1.89	83.83	0.66	2.06	LT
QZ4QUE		82.92	-0.17	-0.59	83.14	-0.04	-0.12	TC
RD7GBD		82.83	-0.26	-0.89	82.90	-0.28	-0.86	TC
Z2CJ8F		83.23	0.14	0.49	83.22	0.04	0.13	TC
ZBE49M		83.27	0.18	0.60	83.42	0.25	0.76	TC

Summary Statistics

	Sample GR35	Sample GR36
Grand Means	83.091 Percent	83.174 Percent
SD Btwn Labs	0.291 Percent	0.321 Percent

Statistics based on 29 of 31 reporting participants

Comments on Assigned Data Flags for Test #392

LXDN66 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

6PH32Z (X) - Extreme Data.

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Key to Instrument Codes Reported by Participants			
EE	Datacolor Elrepho 2000	EF	Datacolor Elrepho 3000
EG	Datacolor Elrepho 450X	LA	L & W Elrepho - Autoline
LS	L & W Elrepho SE 070	LT	L & W Elrepho SE 071
PP	Technidyne Profile/Plus	TC	Technidyne Color Touch Series
TL	Technidyne Technibrite TB-1	TM	Technidyne Technibrite Micro TB-1C

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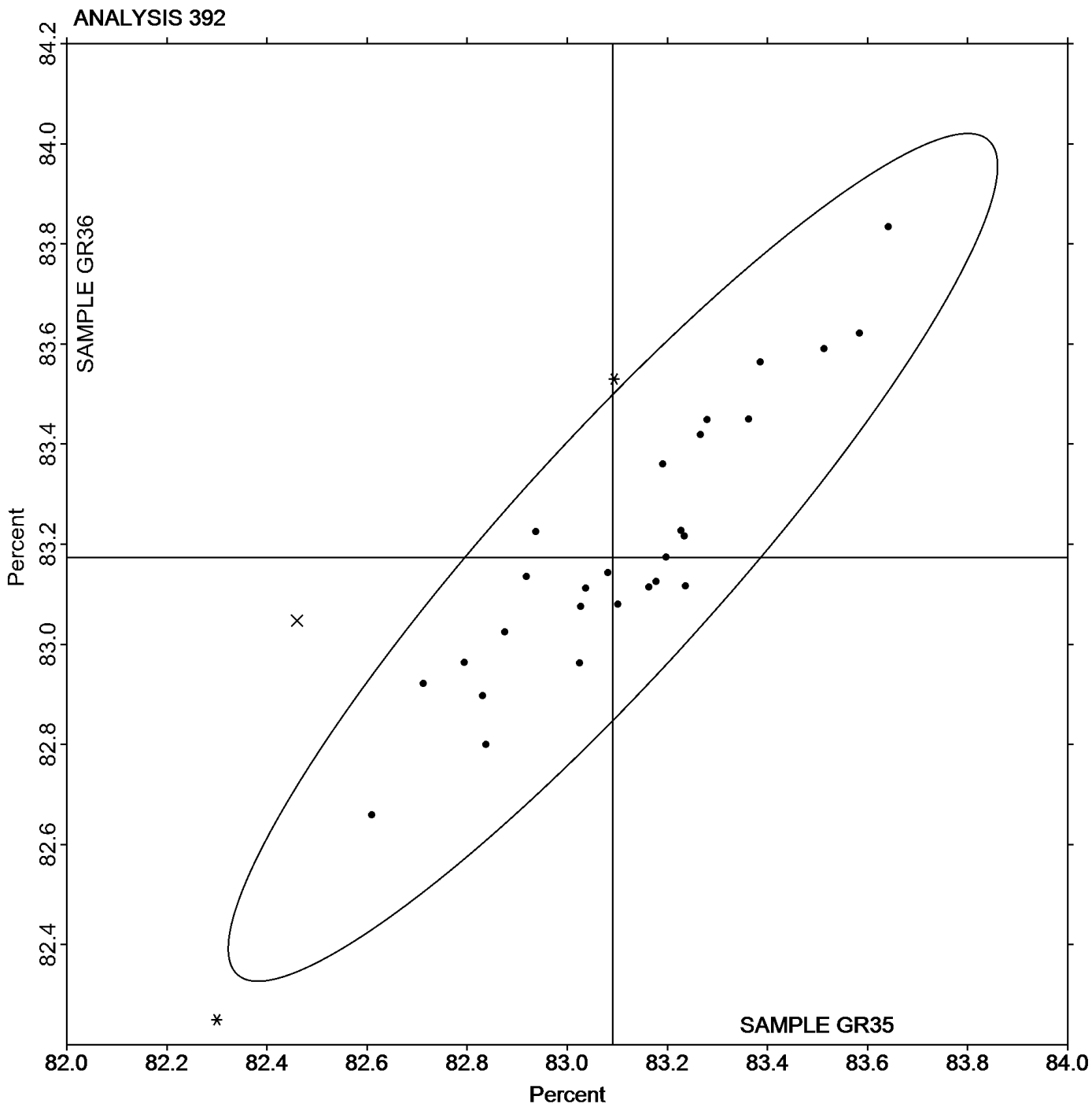
Grand Mean Sample **GR35** = 83.091 Percent

Grand Mean Sample **GR36** = 83.174 Percent



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Paper & Paperboard Interlaboratory Testing Program
Analysis 394
Fluorescent Component of Directional Brightness

WebCode	Data Flag	Sample GZ35 Lab Mean	Sample GZ35 Diff from Grand Mean	Sample GZ35 CPV	Sample GZ36 Lab Mean	Sample GZ36 Diff from Grand Mean	Sample GZ36 CPV	Instr Code
2WBZK8		7.160	-0.362	-1.14	3.300	-0.291	-1.28	TS
3T9PJ4		7.636	0.114	0.36	3.640	0.049	0.21	TS
6ATQVL		7.688	0.166	0.52	3.738	0.147	0.65	TS
84BEPV	X	6.312	-1.210	-3.82	2.336	-1.255	-5.52	TS
8J432E		7.560	0.038	0.12	3.620	0.029	0.13	TT
9BNMQW		7.970	0.448	1.41	3.936	0.345	1.52	TS
DM2RMU		7.708	0.186	0.59	3.674	0.083	0.36	PP
GPXGGY		7.388	-0.134	-0.42	3.584	-0.007	-0.03	TS
NRL9LP		6.772	-0.750	-2.37	3.110	-0.481	-2.11	XX
PLEUMR		7.492	-0.030	-0.10	3.484	-0.107	-0.47	TS
QU43KM		7.414	-0.108	-0.34	3.450	-0.141	-0.62	TS
XNDZHP		7.680	0.158	0.50	3.758	0.167	0.73	TS
ZCUAPX		7.800	0.278	0.88	3.800	0.209	0.92	TT

Summary Statistics

	Sample GZ35	Sample GZ36
Grand Means	7.5223 Percent	3.5912 Percent
SD Btwn Labs	0.3167 Percent	0.2276 Percent

Statistics based on 12 of 13 reporting participants

Comments on Assigned Data Flags for Test #394

84BEPV (X) - Data for both samples are low.

Key to Instrument Codes Reported by Participants

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

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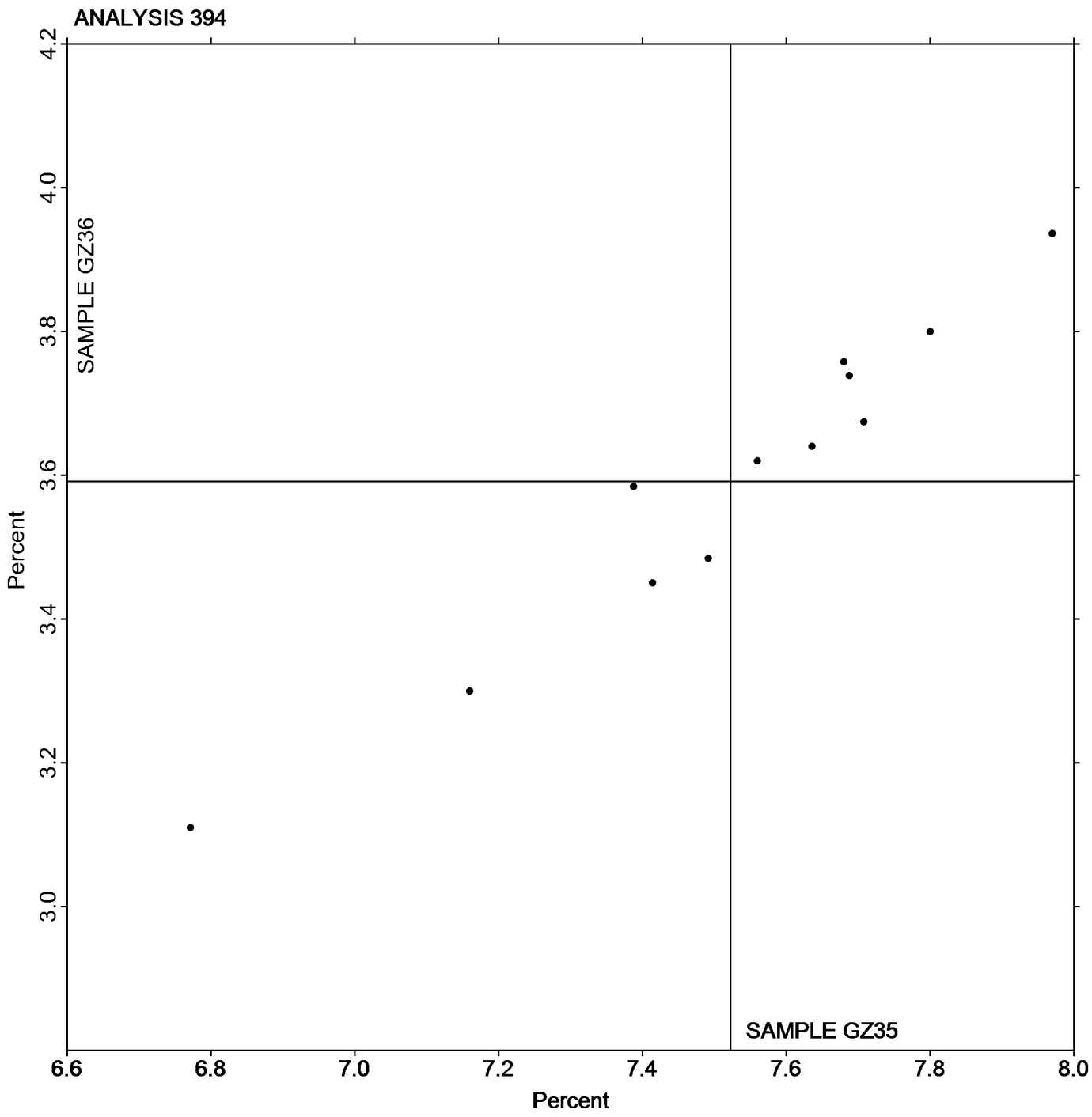
Grand Mean Sample **GZ35** = 7.5223 Percent

Grand Mean Sample **GZ36** = 3.5912 Percent



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 395
Specular Gloss at 75 Degrees - High Range

WebCode	Data Flag	Sample GT35 Lab Mean	Sample GT35 Diff from Grand Mean	Sample GT35 CPV	Sample GT36 Lab Mean	Sample GT36 Diff from Grand Mean	Sample GT36 CPV	Instr Code
28W4QL		74.53	-1.86	-1.30	66.87	-2.35	-1.46	LA
3T9PJ4		76.32	-0.07	-0.05	68.77	-0.45	-0.28	LA
4A76GA		74.24	-2.15	-1.50	66.85	-2.37	-1.48	GM
4XF7YJ		75.06	-1.33	-0.93	69.23	0.01	0.00	TH
7ZX66D		77.26	0.87	0.60	69.59	0.37	0.23	LB
8PV8UJ		76.40	0.01	0.00	69.33	0.11	0.07	XX
97Y22H		74.53	-1.86	-1.30	67.49	-1.73	-1.08	GS
B7N92X		78.91	2.51	1.75	72.36	3.13	1.95	TG
CCQLD2		76.68	0.29	0.20	68.36	-0.86	-0.54	LA
CG3Q8A		77.14	0.75	0.52	70.08	0.86	0.53	TH
CNYR3U		74.42	-1.97	-1.38	66.12	-3.10	-1.93	GM
DM2RMU		76.58	0.19	0.13	69.66	0.44	0.27	PP
DVY9DY		77.25	0.86	0.60	70.01	0.79	0.49	XX
FP4AXV		76.41	0.02	0.01	68.88	-0.34	-0.21	GM
GBKVCM		75.60	-0.79	-0.55	70.31	1.09	0.68	PP
GMAPNG		78.58	2.19	1.53	71.05	1.83	1.14	TH
HEEAAW		77.87	1.48	1.03	71.95	2.73	1.70	TG
M9R7D2		79.11	2.72	1.90	70.30	1.08	0.67	TH
QBRFWU		76.80	0.41	0.28	69.30	0.08	0.05	GA
RD7GBD		75.19	-1.20	-0.84	67.31	-1.91	-1.19	ZH
V3JA9T		76.26	-0.13	-0.09	68.88	-0.34	-0.21	TH
ZCUAPX		75.53	-0.87	-0.61	70.22	0.99	0.62	PP

Summary Statistics

	Sample GT35	Sample GT36
Grand Means	76.394 Gloss Units	69.223 Gloss Units
SD Btwn Labs	1.432 Gloss Units	1.607 Gloss Units

Statistics based on 22 of 22 reporting participants

Key to Instrument Codes Reported by Participants

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
XX	Instrument make/model not specified by lab	ZH	Zehntner ZLR 1050

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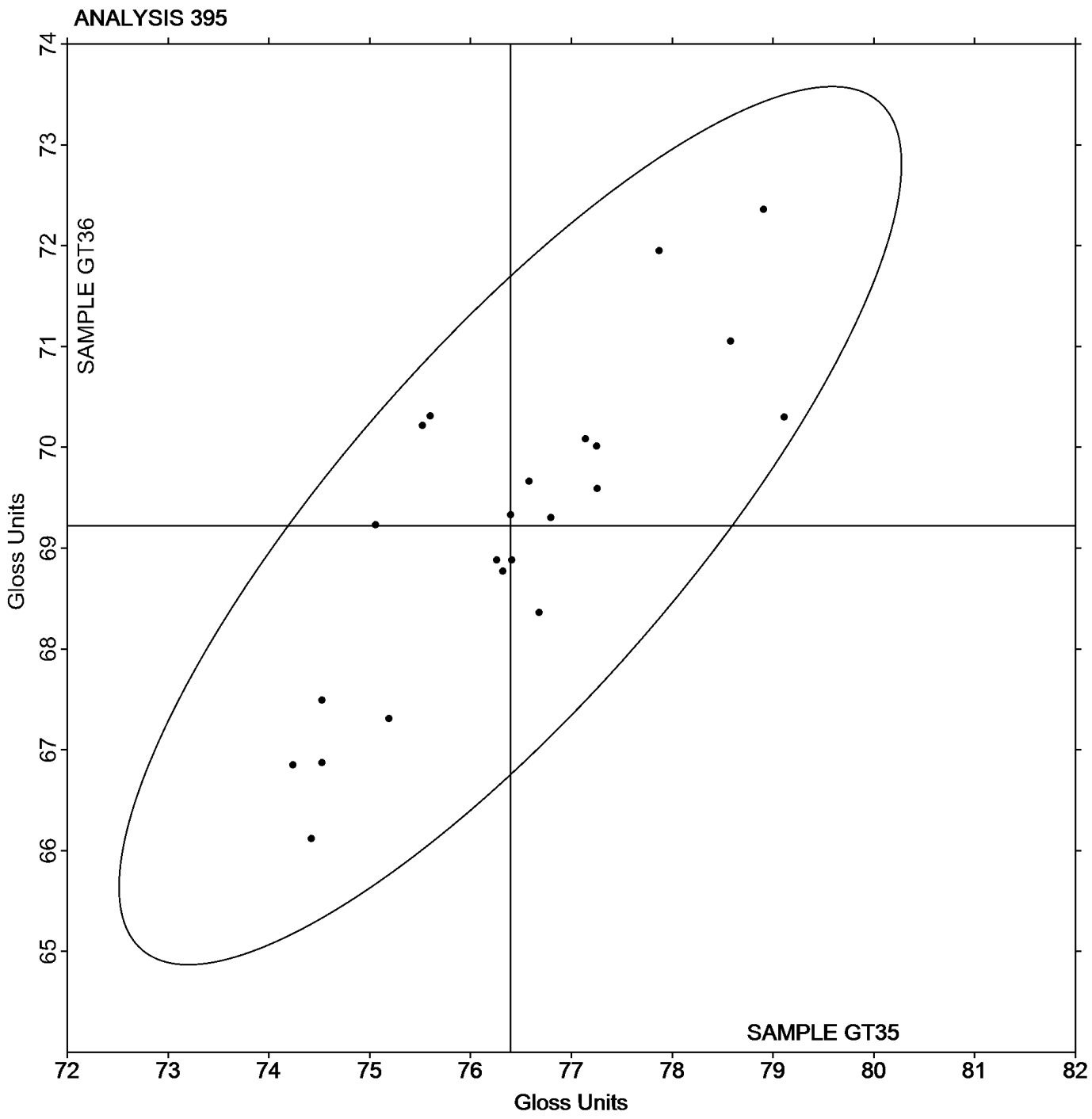
Paper & Paperboard Interlaboratory Testing Program
Analysis 395
Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT35** = 76.394 Gloss Units

Grand Mean Sample **GT36** = 69.223 Gloss Units



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Paper & Paperboard Interlaboratory Testing Program
Analysis 396
Specular Gloss at 75 Degrees - Low Range

WebCode	Data Flag	Sample GU35 Lab Mean	Sample GU35 Diff from Grand Mean	Sample GU35 CPV	Sample GU36 Lab Mean	Sample GU36 Diff from Grand Mean	Sample GU36 CPV	Instr Code
2LV668		28.35	1.65	1.52	44.16	1.89	0.83	TH
6PH32Z		27.12	0.42	0.39	42.41	0.14	0.06	TH
7ZX66D		25.47	-1.23	-1.13	41.47	-0.80	-0.35	LA
84BEPV		25.85	-0.85	-0.78	38.84	-3.43	-1.50	GN
AMFM2Y		26.37	-0.33	-0.30	41.53	-0.74	-0.32	PP
B7N92X		26.06	-0.64	-0.59	41.56	-0.71	-0.31	TG
J2PMN2		26.04	-0.66	-0.61	40.78	-1.49	-0.65	XX
MBLR7T		28.52	1.82	1.68	47.01	4.74	2.07	TH
WYFW3F		26.53	-0.18	-0.16	42.67	0.40	0.17	TH

Summary Statistics

	Sample GU35	Sample GU36
Grand Means	26.701 Gloss Units	42.269 Gloss Units
SD Btwn Labs	1.086 Gloss Units	2.288 Gloss Units

Statistics based on 9 of 9 reporting participants

Key to Instrument Codes Reported by Participants

GN	Gardco Novo-Gloss	LA	L & W Gloss - Autoline 300
PP	Technidyne Profile/Plus	TG	Technidyne T480
TH	Technidyne T480A	XX	Instrument make/model not specified by lab

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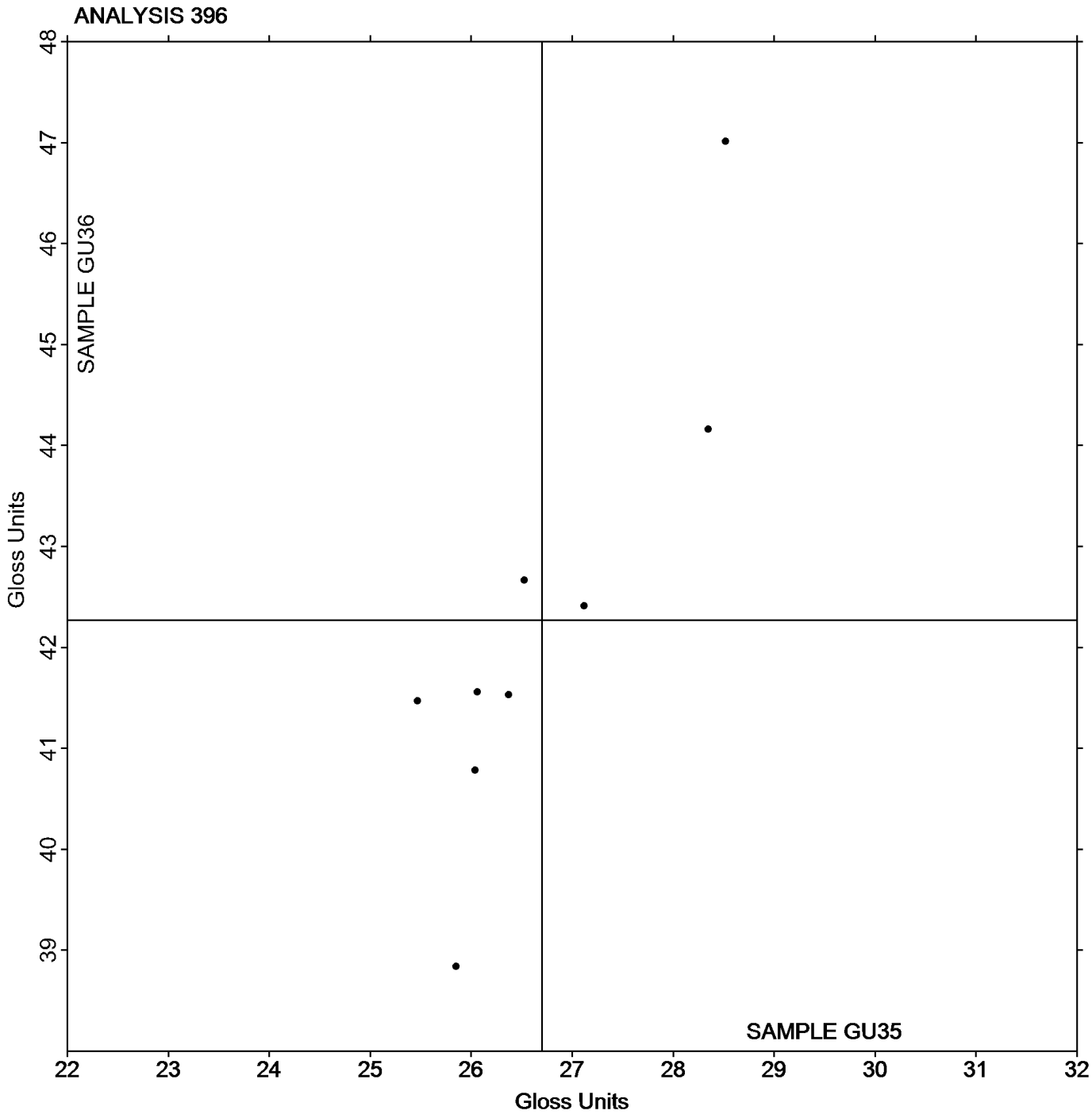
Paper & Paperboard Interlaboratory Testing Program
Analysis 396
Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU35** = 26.701 Gloss Units

Grand Mean Sample **GU36** = 42.269 Gloss Units



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 398
Grammage (Mass per Unit Area)

WebCode	Data Flag	Sample GW35 Lab Mean	Sample GW35 Diff from Grand Mean	Sample GW35 CPV	Sample GW36 Lab Mean	Sample GW36 Diff from Grand Mean	Sample GW36 CPV
2LV668		85.95	-0.11	-0.22	72.35	-0.16	-0.38
2QLN3W		86.36	0.31	0.61	72.91	0.40	0.96
7JMT7T		85.45	-0.61	-1.20	71.85	-0.66	-1.60
7ZX66D		85.59	-0.47	-0.93	72.11	-0.40	-0.96
9RFKRR		86.76	0.70	1.39	73.00	0.49	1.18
AGQE9T		86.01	-0.05	-0.10	73.01	0.50	1.21
BQVGGW		85.96	-0.10	-0.19	72.01	-0.50	-1.21
FCBUQL	*	87.49	1.43	2.84	73.59	1.08	2.61
FLNLFJ	X	85.98	-0.08	-0.16	75.83	3.32	8.03
G2BLKN		86.37	0.31	0.61	72.21	-0.30	-0.73
J2PMN2		86.07	0.01	0.02	72.51	-0.01	-0.01
JGY9CX		86.11	0.05	0.09	72.57	0.06	0.14
JUP3NR		86.41	0.35	0.69	71.97	-0.55	-1.32
L6ZEUK		86.53	0.47	0.93	72.59	0.08	0.19
L7T8P4		85.93	-0.13	-0.25	72.10	-0.41	-0.99
LJKWMN		86.20	0.14	0.28	72.48	-0.03	-0.08
LXZZ7X		85.98	-0.08	-0.15	72.41	-0.10	-0.25
MBLR7T		86.20	0.14	0.27	72.99	0.48	1.17
NFATPH	X	86.21	0.15	0.30	69.99	-2.52	-6.10
Q3TXEB		86.41	0.35	0.70	72.63	0.12	0.29
TR9638		85.62	-0.44	-0.87	72.36	-0.16	-0.38
UWVEPA		85.01	-1.05	-2.07	72.40	-0.11	-0.27
VAZVC7		86.46	0.40	0.80	73.05	0.54	1.30
WYFW3F		85.37	-0.68	-1.35	72.15	-0.36	-0.88
XNDZHP		85.60	-0.46	-0.91	72.30	-0.21	-0.51
YNPY77		85.84	-0.22	-0.43	72.81	0.30	0.72
ZBE49M		85.79	-0.27	-0.53	72.43	-0.08	-0.19

Summary Statistics

	Sample GW35	Sample GW36
Grand Means	86.058 g/sq m	72.511 g/sq m
SD Btwn Labs	0.505 g/sq m	0.414 g/sq m

Statistics based on 25 of 27 reporting participants

Comments on Assigned Data Flags for Test #398

NFATPH (X) - Extreme Data for Sample GW36.

FLNLFJ (X) - Extreme Data for Sample GW36.

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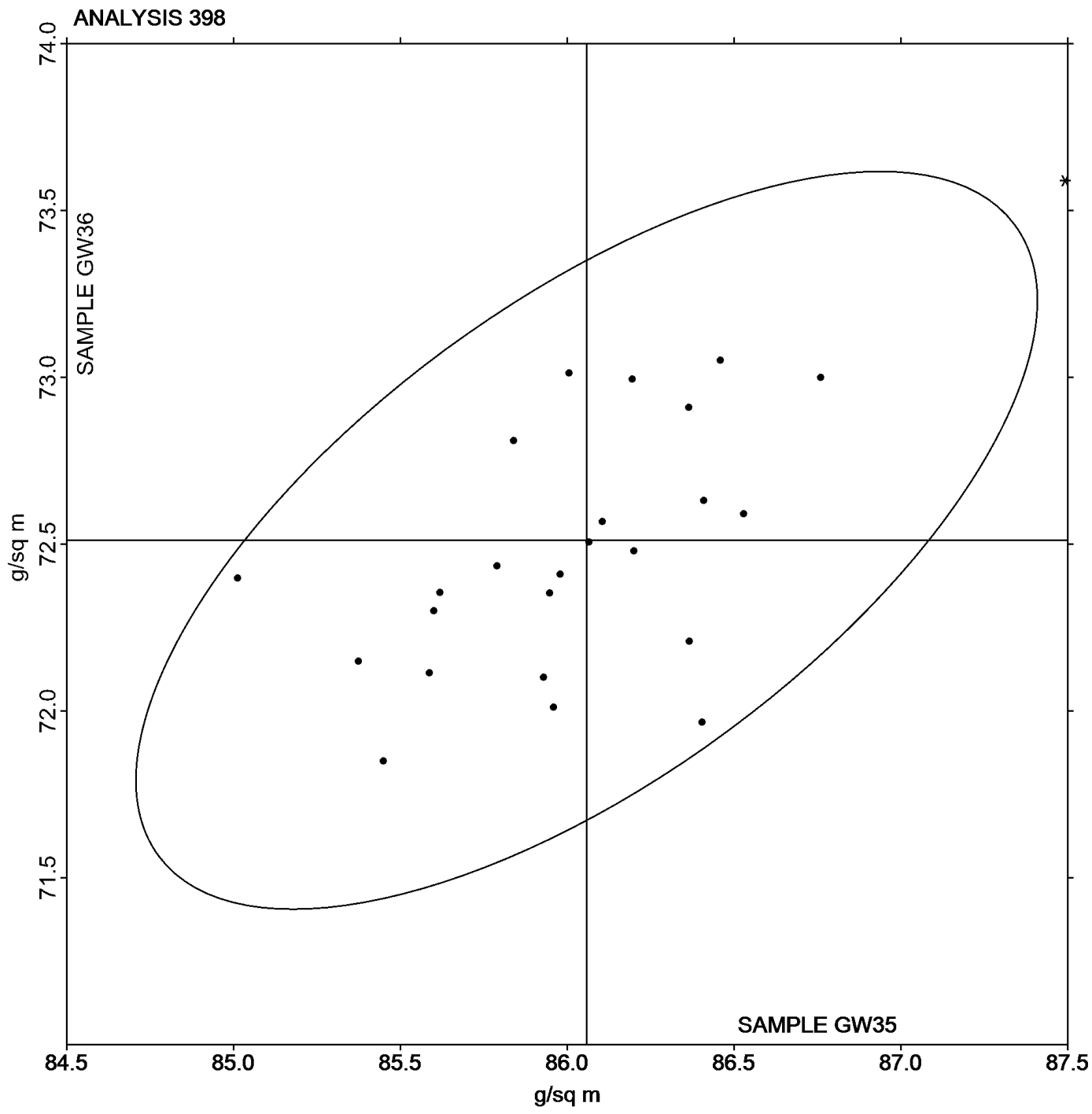
Paper & Paperboard Interlaboratory Testing Program
Analysis 398
Grammage (Mass per Unit Area)

Grand Mean Sample **GW35** = 86.058 g/sq m

Grand Mean Sample **GW36** = 72.511 g/sq m



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Paper & Paperboard Interlaboratory Testing Program
Analysis 399
Sizing Test (Hercules Type)

WebCode	Data Flag	Sample GX35 Lab Mean	Sample GX35 Diff from Grand Mean	Sample GX35 CPV	Sample GX36 Lab Mean	Sample GX36 Diff from Grand Mean	Sample GX36 CPV
2TAU4F		13.78	2.25	0.59	9.62	-1.85	-0.64
3T9PJ4		8.88	-2.65	-0.69	9.01	-2.46	-0.85
3Z9ZXA		13.49	1.96	0.51	15.47	4.00	1.38
4TN7EW		10.00	-1.53	-0.40	9.40	-2.07	-0.71
6ATQVL		15.44	3.91	1.02	11.08	-0.39	-0.13
7JMT7T		9.20	-2.33	-0.61	10.70	-0.77	-0.27
84BEPV		15.39	3.86	1.01	17.33	5.86	2.02
AE6PU8		9.25	-2.28	-0.60	11.42	-0.05	-0.02
AMFM2Y		10.01	-1.52	-0.40	9.54	-1.93	-0.67
CCQLD2		6.34	-5.19	-1.36	6.46	-5.01	-1.73
FEZ2BH		12.90	1.37	0.36	12.00	0.53	0.18
FP4AXV		12.40	0.87	0.23	15.60	4.13	1.42
GBKVCM		17.12	5.59	1.46	18.97	7.49	2.58
GMAPNG		17.22	5.69	1.49	12.74	1.27	0.44
GPXGGY		15.04	3.51	0.92	11.10	-0.37	-0.13
GXDZ2X		13.56	2.03	0.53	9.45	-2.02	-0.70
JG3VQQ		9.64	-1.89	-0.50	9.98	-1.49	-0.51
JYEPBK	M	No data reported for this sample			10.91	-0.56	-0.19
KXKGL2		5.75	-5.78	-1.51	8.86	-2.61	-0.90
LJZF7L		5.90	-5.63	-1.47	8.49	-2.98	-1.03
LQZKCK		11.56	0.03	0.01	11.86	0.39	0.13
MBLR7T		14.03	2.50	0.65	11.84	0.37	0.13
MQDN8N		15.68	4.15	1.09	12.31	0.84	0.29
NDKM6L		9.91	-1.62	-0.42	15.96	4.49	1.55
NFATPH		6.60	-4.93	-1.29	9.10	-2.37	-0.82
PLEUMR		16.53	5.00	1.31	13.20	1.73	0.60
QU43KM		8.46	-3.07	-0.80	9.15	-2.32	-0.80
TR9638		18.68	7.15	1.87	14.17	2.70	0.93
VNZUY3		6.98	-4.55	-1.19	8.64	-2.83	-0.98
VZT7FL		9.27	-2.26	-0.59	10.50	-0.97	-0.33
W88EGN		6.90	-4.63	-1.21	10.20	-1.27	-0.44

Summary Statistics

	Sample GX35	Sample GX36
Grand Means	11.530 Seconds	11.472 Seconds
SD Btwn Labs	3.819 Seconds	2.900 Seconds

Statistics based on 30 of 31 reporting participants

Comments on Assigned Data Flags for Test #399

JYEPBK (M) - Participant did not submit data for sample GX35.

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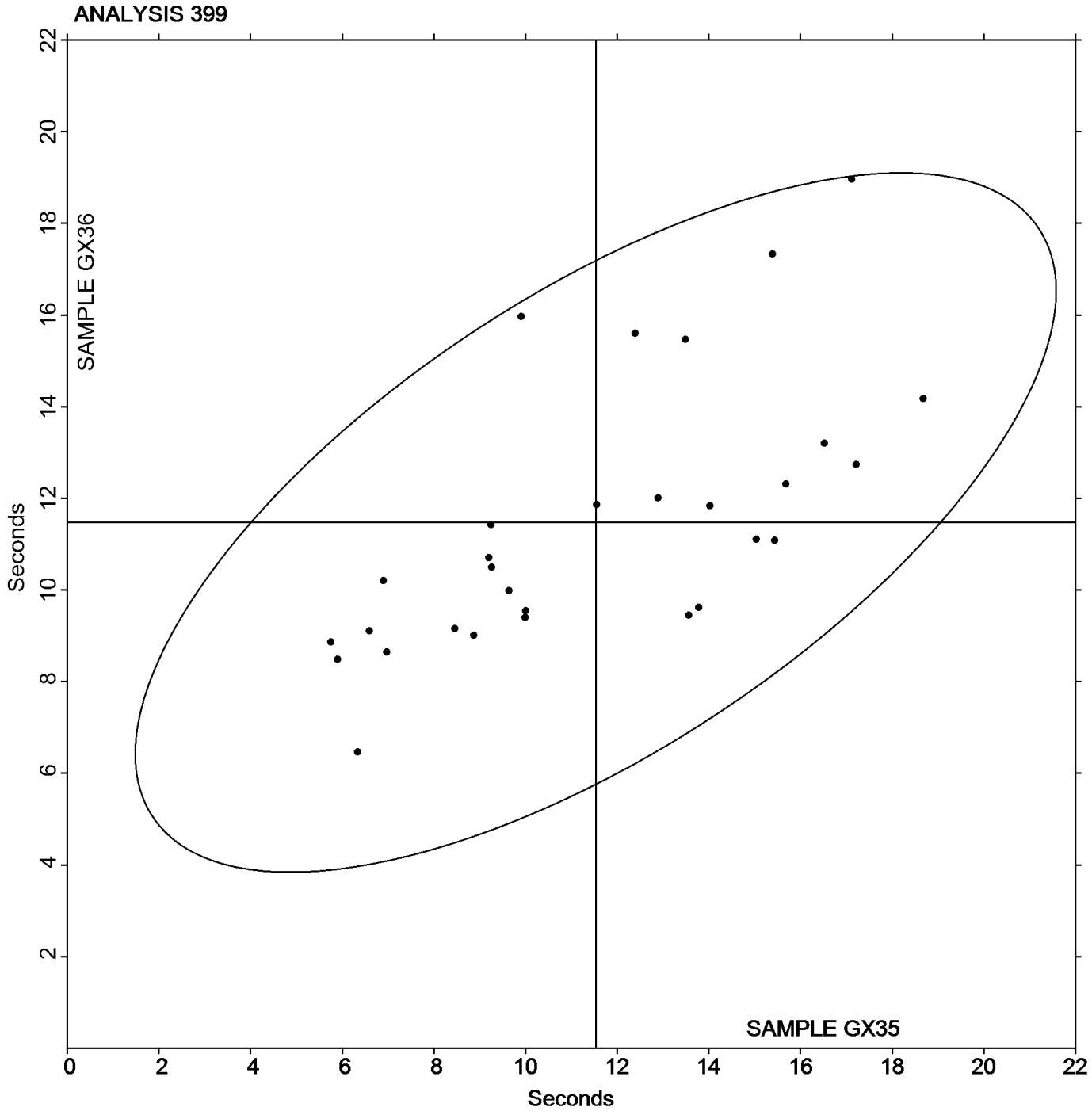
Paper & Paperboard Interlaboratory Testing Program
Analysis 399
Sizing Test (Hercules Type)

Grand Mean Sample **GX35** = 11.530 Seconds

Grand Mean Sample **GX36** = 11.472 Seconds



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