

Paper & Paperboard Testing Program

Summary Report #271G-August 2014

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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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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:

<u>DATA FLAG</u>	<u>STATISTICALLY INCLUDED/EXCLUDED</u>	<u>ACTION REQUIRED</u>
*	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.

Instrument Manufacturer Contacts

If your data results have been flagged with an "X" and you suspect that the problem is with your instrument (and not your testing procedure), CTS urges you to contact the appropriate instrument manufacturer. CTS has asked manufacturers to supply a contact person who is familiar with the Paper, Paperboard & Corrugated Fiberboard Interlaboratory Program. The listed service contact should be able to work with you on evaluating your results and determining possible causes of the problem.

Applied Paper Technology Inc.

Vann Parker, President
555 14th Street, NW
Atlanta, GA 30318
Phone: (404) 881-9801
FAX #: (404) 881-0862
appliedpapertech@mindspring.com

Thwing Albert Instrument Co.

Jack Mirkowski, Service Contact
David Zarrilli, Sales Contact
10960 Dutton Road
Philadelphia, PA 19154
Phone: (215) 637-0100
FAX #: (215) 632-8370

Huygen Corporation

Richard Wade
P.O. Box 316
Waconda, IL 60084
Phone: (815) 455-2200
FAX #: (815) 455-2300

Lorentzen & Wettre USA Inc.

Bill Crain, Technical Manager
1055 Windward Ridge Pkwy
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Alpharetta, GA 30005
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FAX #: (770) 442-6792

Gurley Precision Instruments

Martin Gordinier, Product Manager
P.O. Box 88
Troy, NY 12181-0088
Phone: (800) 759-1844
FAX #: (518) 274-0336

BYK-Gardner

Randy Snavely
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Columbia, MD 21046-2729
Phone: (301) 483-6500
FAX #: (301) 483-6555

Technidyne Corporation

James Bruner/Nicholas Riggs
100 Quality Avenue
New Albany, IN 47150-2272 USA
Phone: (812) 948-2884
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Testing Machines Inc.

Michael Foran, Technical Support Engineer
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Phone: (631) 439-5400
FAX #: (631) 439-5420

Hercules, Inc.

Steven R. Boone
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Jacksonville, FL 32256-7524
Phone: (904) 732-3136
FAX #: (904) 448-4995

Valmet Inc.

Eeva Nettamo, Product Manager Paper Testing
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Norcross, GA 30071
Phone: (770) 448-0849
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Hunter Associates Lab, Inc.

Mary Ellen Zuyus
11491 Sunset Hills Road
Reston, VA 22090
Phone: (703) 471-6870 ext. 222
FAX #: (703) 471-4237

Emveco Inc.

Donald L. Stradley
113 North Blaine, P.O. Box 16
Newburg, OR 97132-0016
Phone: (503) 538-8616
FAX #: (503) 538-0912

Analysis 350

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

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		
47D6H7	X	GA09	91.70	-2.35	1.68	0.00	2.55	2.65	3.68	X	XX
		GA10	91.70	0.20	4.33						
6FHCX7		GA09	91.78	-0.89	1.77	-0.04	0.24	-0.01	0.25		MK
	GA10	91.74	-0.65	1.76							
A4C446		GA09	91.86	-1.31	2.41	-0.19	0.30	-0.16	0.39		HH
	GA10	91.67	-1.01	2.25							
AEFYMA		GA09	90.99	-0.78	1.37	-0.19	0.20	0.09	0.29		TS
	GA10	90.80	-0.58	1.47							
AWRPED		GA09	90.84	-1.01	0.83	-0.18	0.12	-0.10	0.23		HH
	GA10	90.66	-0.90	0.73							
CHLDX6		GA09	92.28	-0.52	1.54	0.06	0.26	-0.02	0.27		TS
	GA10	92.34	-0.26	1.52							
ECBWN8		GA09	92.07	-0.59	1.33	0.25	0.15	0.18	0.35		TS
	GA10	92.32	-0.44	1.51							
G3EZE2		GA09	91.99	-1.12	0.21	-0.12	0.12	-0.38	0.42		HG
	GA10	91.87	-1.00	-0.17							
GXJA76		GA09	91.71	-0.95	2.13	-0.22	0.21	-0.20	0.37		TC
	GA10	91.49	-0.74	1.92							
HKATZZ		GA09	93.11	-1.26	1.24	0.12	0.32	-0.11	0.36		HE
	GA10	93.23	-0.94	1.13							
JJUUHV	X	GA09	91.70	0.09	1.42	0.10	0.26	0.03	0.28		TS
		GA10	91.79	0.35	1.45						
JWH3U3		GA09	90.49	-0.37	1.10	-0.17	0.24	0.30	0.42		TS
	GA10	90.32	-0.13	1.40							
L637ZT		GA09	91.46	-0.83	1.58	-0.10	0.26	0.00	0.27		TM
	GA10	91.36	-0.57	1.58							
LZRZEV		GA09	92.91	-0.95	1.25	0.09	0.29	0.20	0.36		XS
	GA10	93.00	-0.66	1.45							
PJNW4R		GA09	91.37	-0.73	1.46	0.03	0.19	0.20	0.28		TM
	GA10	91.40	-0.53	1.65							
Q7FE6W		GA09	91.25	-0.97	1.53	-0.28	0.27	-0.03	0.39		TS
	GA10	90.97	-0.70	1.51							
QEWPXH		GA09	92.31	-1.24	1.87	0.07	0.32	0.09	0.34		HE
	GA10	92.38	-0.92	1.96							

Analysis 350

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

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	
RWQXZT		GA09	91.75	-1.03	1.69	0.00	0.28	0.08	0.29	EH
		GA10	91.75	-0.76	1.77					
T4MYVD		GA09	93.32	-1.04	1.77	-0.02	0.28	-0.09	0.29	EH
		GA10	93.30	-0.76	1.69					
TZQBE7		GA09	93.28	-1.04	1.72	0.06	0.37	0.24	0.45	LS
		GA10	93.34	-0.67	1.96					
ULFMDL		GA09	93.45	-1.07	1.27	0.08	0.29	0.16	0.34	EH
		GA10	93.53	-0.77	1.42					
V4E2BR		GA09	91.02	-1.24	0.78	-0.11	0.15	-0.13	0.23	HH
		GA10	90.92	-1.09	0.64					
WTEQHB		GA09	91.49	-1.10	1.85	-0.02	0.27	0.06	0.28	TC
		GA10	91.47	-0.84	1.91					
XZRYJC		GA09	91.42	-1.10	1.79	-0.12	0.27	-0.02	0.30	LS
		GA10	91.31	-0.83	1.77					

Grand Means		Summary Statistics							
GA09	91.898	-0.961	1.474						
GA10	91.862	-0.715	1.490	-0.044	0.246	0.016	0.325		
Stnd Dev Btwn Labs									
GA09	0.816	0.246	0.469						
GA10	0.902	0.238	0.518	0.134	0.068	0.164	0.064		

Statistics based on 22 of 24 reporting participants

Comments assigned on Data Flags for Test #350

47D6H7 (X) - Inconsistent in testing within L values for both samples. Inconsistent in testing between samples for a values, and within both samples for a values. High b values for Sample GA10. Large delta a, b, E

JJUUHV (X) - High a values for both samples. Inconsistent within a values for Sample GA10.

Instrument Code List as Reported by the Labs

(EH) - Datacolor Elrepho SF450

(HE) - Hunter LabScan

(HG) - Hunter ColorQUEST

(HH) - Hunter D25DP - 9000

(LS) - L & W Elrepho SE 070

(MK) - Macbeth Color-Eye 7000 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

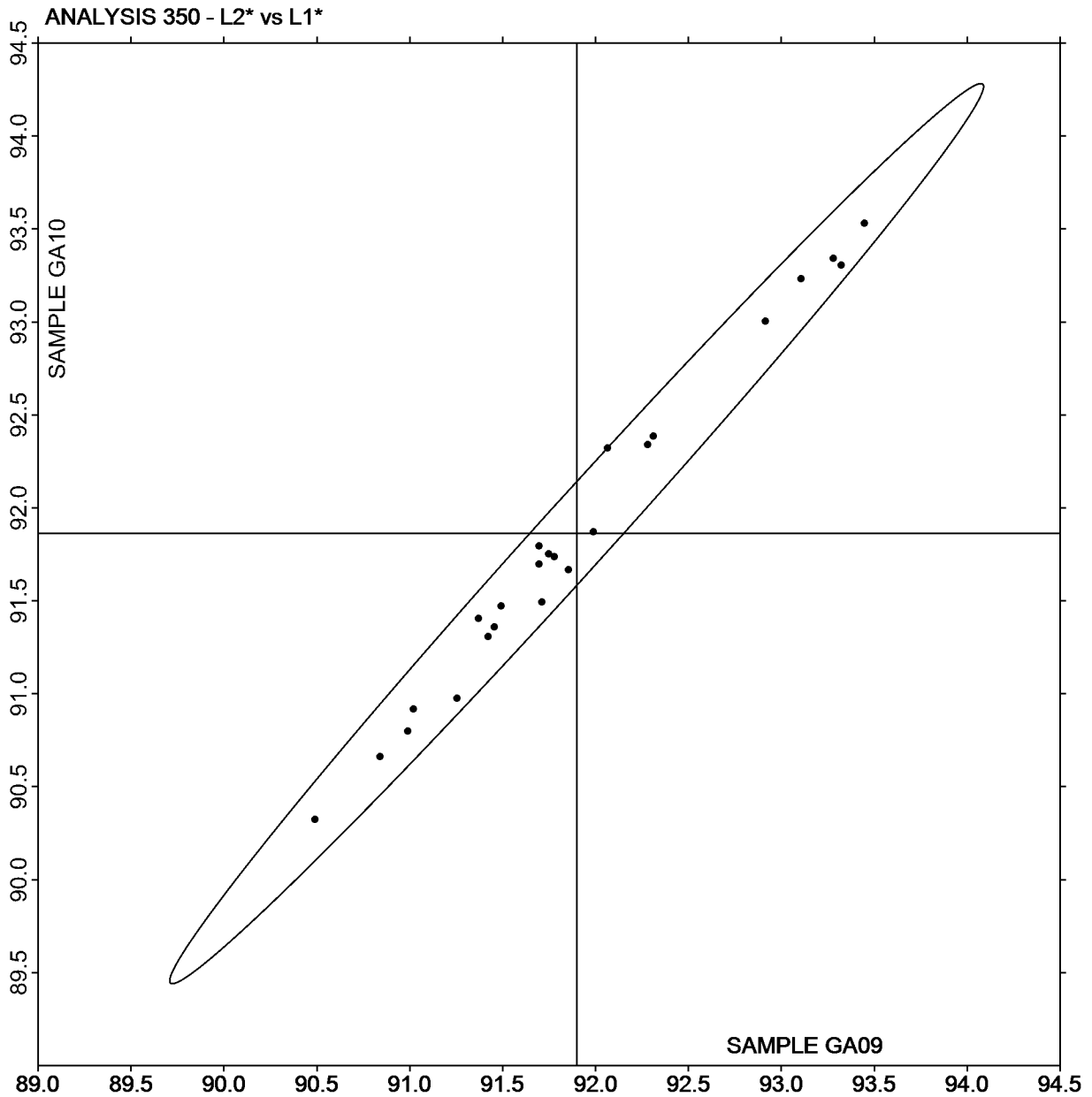
Analysis 350

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

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

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

Plot of L values GA10 v L values GA09

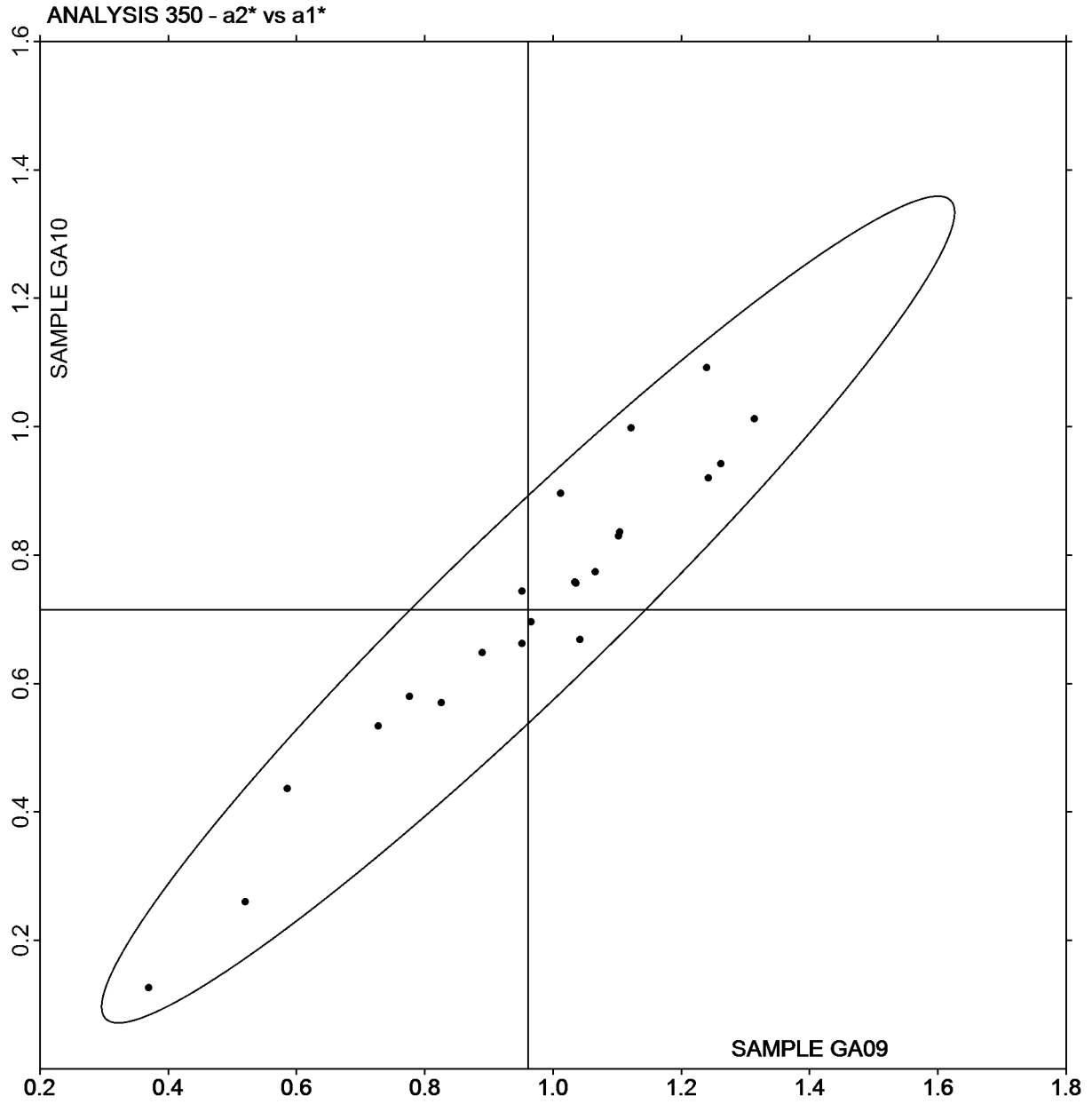


Analysis 350

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

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

Plot of a values GA10 v a values GA09

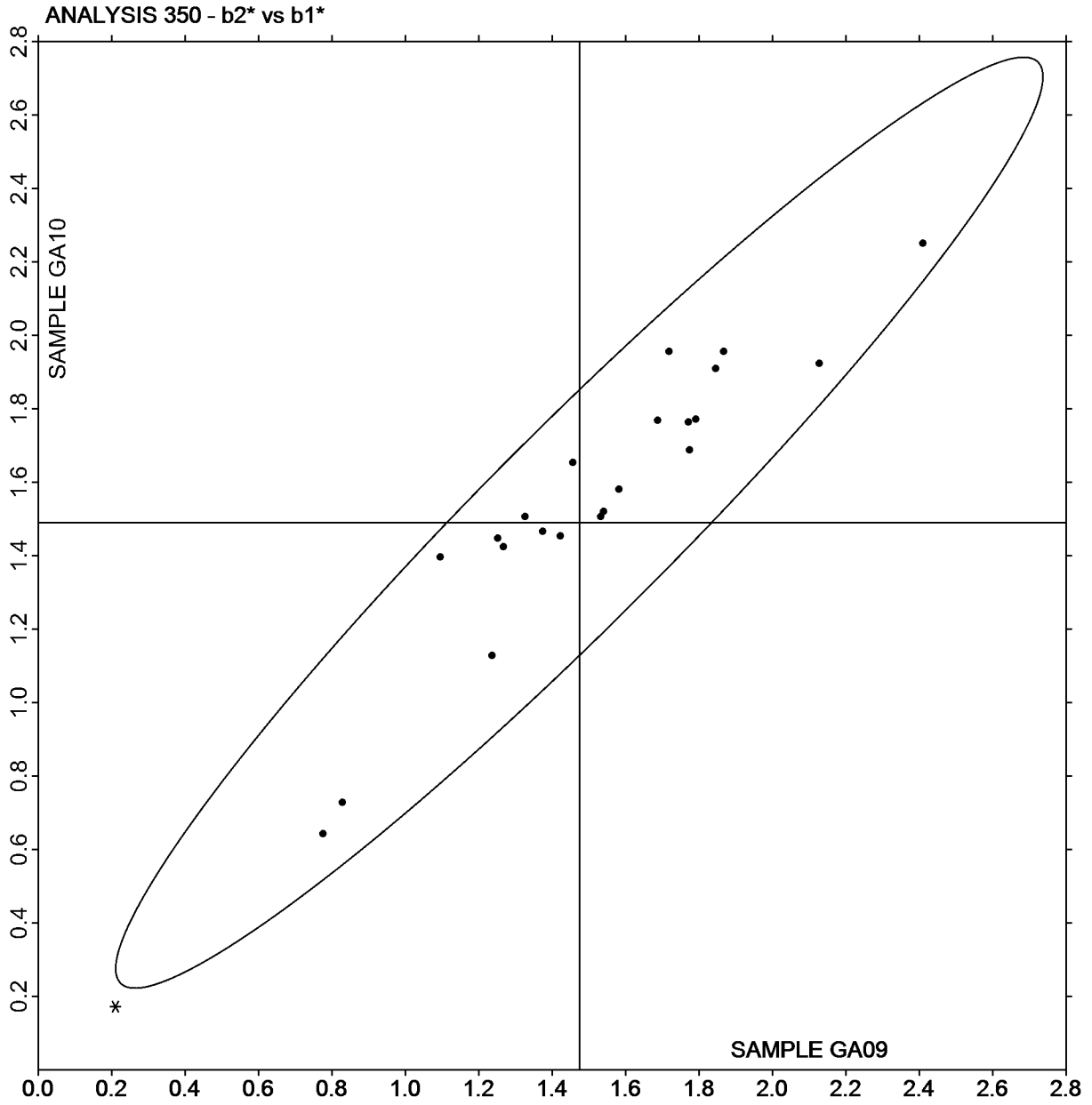


Analysis 350

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

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

Plot of b values GA10 v b values GA09



TAPPI-CTS Interlaboratory Testing Program

Analysis 351

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

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

4LPJXJ	GA09	93.48	-1.31	2.18	0.01	0.41	0.07	0.42	NG
	GA10	93.48	-0.90	2.25					
6GV4N3	GA09	93.86	-1.38	2.21	0.03	0.38	0.13	0.40	HT
	GA10	93.89	-1.00	2.34					
CUW4KD	GA09	91.67	-1.54	2.07	-0.15	0.32	-0.14	0.38	TC
	GA10	91.51	-1.22	1.92					
ELYTP9	GA09	93.28	-1.30	1.92	-0.26	0.30	-0.14	0.42	EF
	GA10	93.02	-1.00	1.78					
LGDLYL	GA09	92.51	-1.18	1.65	0.14	0.40	0.20	0.47	HV
	GA10	92.65	-0.78	1.84					
LVW97X	GA09	93.48	-1.43	1.99	0.00	0.35	0.08	0.35	TC
	GA10	93.48	-1.08	2.07					
N42ZNR	GA09	93.62	-1.41	2.11	0.01	0.38	0.08	0.38	HT
	GA10	93.63	-1.03	2.19					
NMFCEW	GA09	93.80	-1.32	2.25	-0.10	0.32	-0.10	0.35	NF
	GA10	93.70	-1.00	2.15					
NR9DKG	GA09	93.38	-1.31	2.31	-0.16	0.31	-0.14	0.38	LS
	GA10	93.22	-1.01	2.17					
NVM9ZE	GA09	93.34	-1.41	2.16	0.07	0.43	0.15	0.46	EH
	GA10	93.41	-0.99	2.31					
PNJNBN	GA09	91.97	-1.44	1.66	-0.12	0.36	0.13	0.40	HE
	GA10	91.85	-1.08	1.80					
QEWPXH	GA09	92.36	-1.23	1.90	0.27	0.40	0.24	0.54	HE
	GA10	92.63	-0.84	2.14					
R7C94T	GA09	93.37	-1.16	2.27	0.22	0.46	-0.02	0.51	EH
	GA10	93.59	-0.70	2.25					
TZQBE7	GA09	93.34	-1.46	1.97	0.00	0.51	0.09	0.52	LS
	GA10	93.34	-0.95	2.06					
W6AVUH	GA09	91.86	-0.70	1.78	-0.40	0.21	-0.27	0.53	EE
	GA10	91.46	-0.49	1.51					
XVX3W8	GA09	92.00	-1.21	2.12	-0.36	0.26	-0.24	0.50	XX
	GA10	91.65	-0.95	1.88					
Y8NABM	GA09	91.91	-1.18	2.18	-0.16	0.27	-0.12	0.33	XM
	GA10	91.76	-0.91	2.06					
YP9XKH	GA09	93.48	-1.56	2.07	-0.09	0.37	-0.01	0.38	TC
	GA10	93.39	-1.19	2.06					

Analysis 351

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

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

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
ZA8PXZ		GA09	94.90	-0.67	1.05	0.12	0.25	0.27	0.39	XP
		GA10	95.02	-0.41	1.32					

		Summary Statistics								
Grand Means										
	GA09	93.032	-1.274	1.992						
	GA10	92.983	-0.923	2.005	-0.049	0.351	0.013	0.427		
Stnd Dev Btwn Labs										
	GA09	0.868	0.239	0.299						
	GA10	0.959	0.208	0.269	0.180	0.077	0.161	0.066		
Statistics based on 19 of 19 reporting participants										

Instrument Code List as Reported by the Labs

(EE) - Datacolor Elrepho 2000

(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

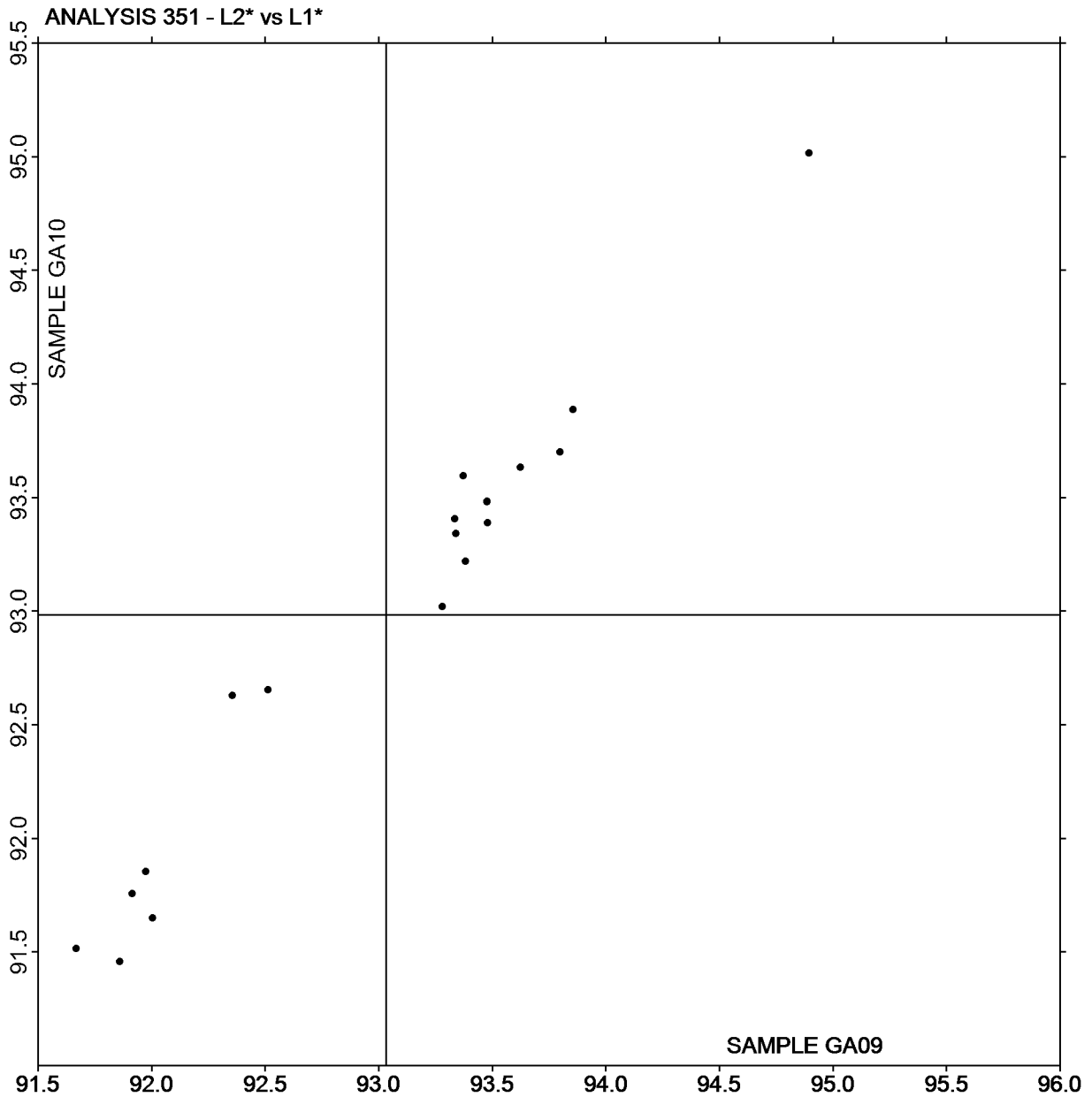
Analysis 351

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

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

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

Plot of L values GA10 v L values GA09



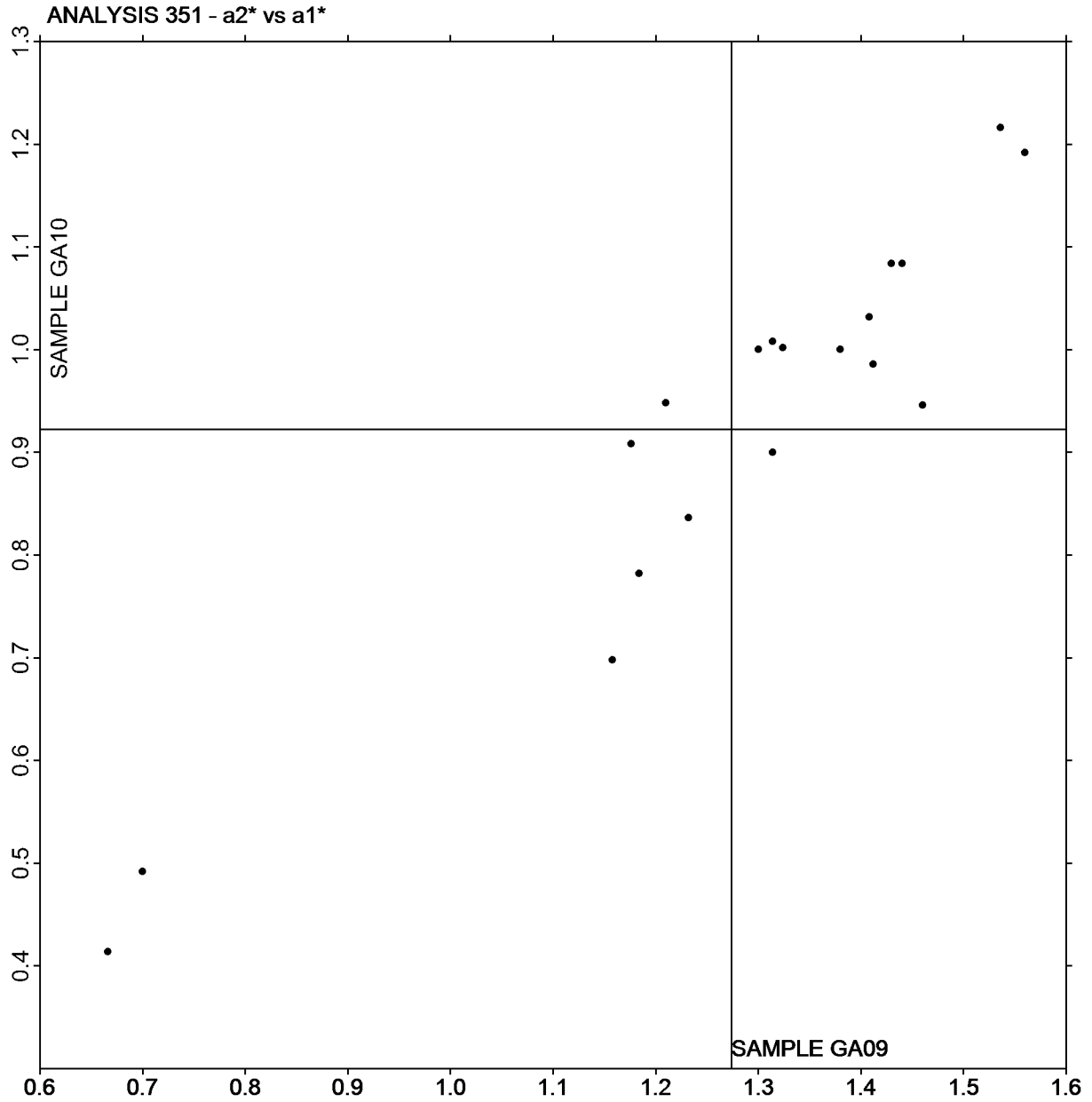
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Analysis 351

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

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

Plot of a values GA10 v a values GA09



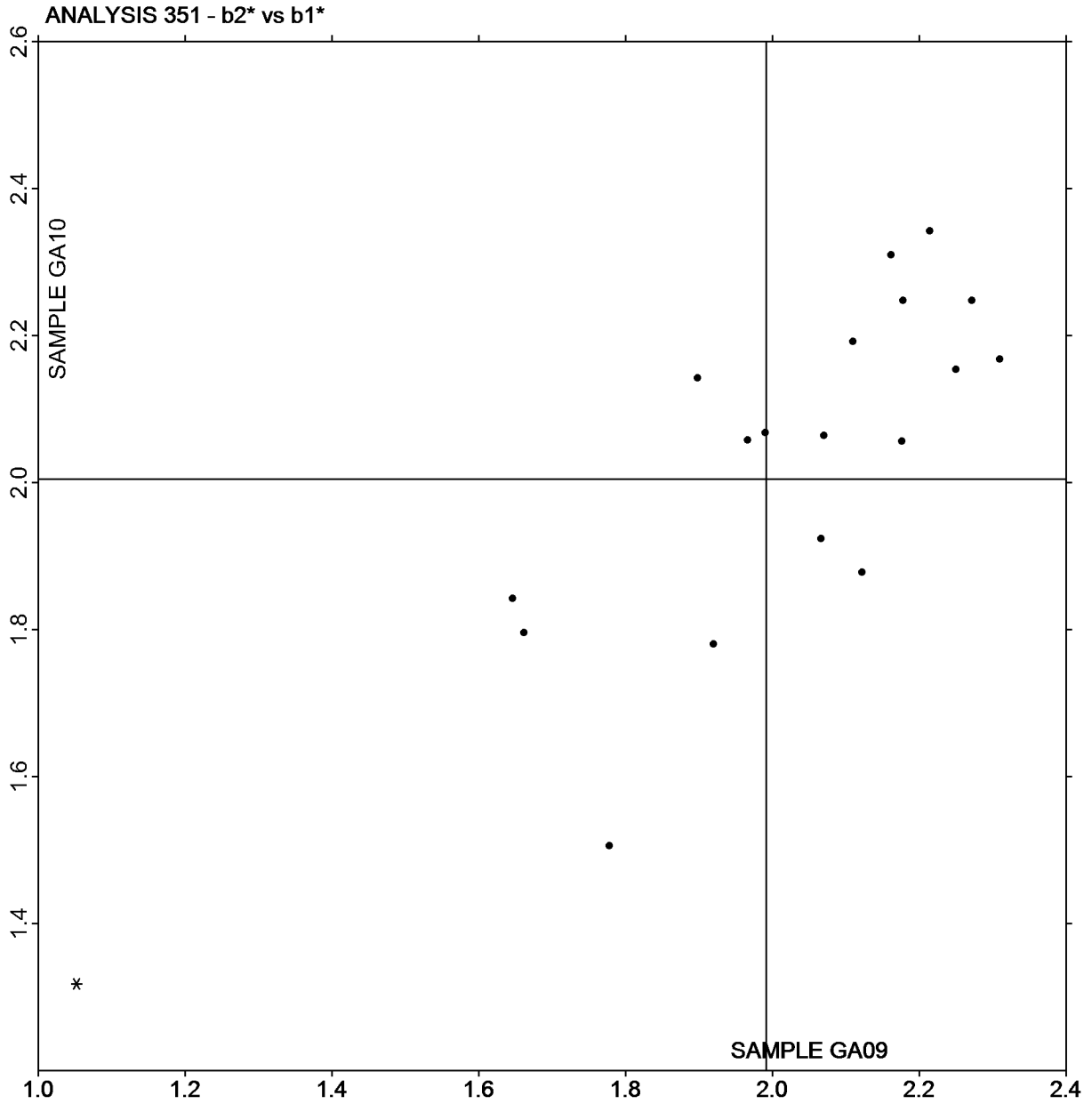
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Analysis 351

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

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

Plot of b values GA10 v b values GA09



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

WebCode	Data Flag	Sample GV09			Sample GV10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Q9UXH		4.615	-0.029	-0.40	3.762	-0.038	-0.59	LA
3DJ8CM		4.582	-0.063	-0.84	3.732	-0.068	-1.05	EM
4LPJXJ		4.750	0.106	1.42	3.865	0.065	0.99	LW
4MK226		4.641	-0.003	-0.04	3.794	-0.006	-0.09	LW
6FHCX7		4.662	0.018	0.24	3.827	0.027	0.41	EM
6GV4N3		4.647	0.003	0.04	3.837	0.037	0.56	EM
6PPAJN		4.688	0.044	0.59	3.784	-0.016	-0.25	XX
9EBEY7		4.663	0.019	0.25	3.803	0.003	0.04	EM
AJPEUC		4.614	-0.030	-0.41	3.764	-0.036	-0.56	XX
ALB3AJ		4.631	-0.013	-0.18	3.794	-0.006	-0.10	TM
AVX2ZN	*	4.500	-0.144	-1.94	3.610	-0.190	-2.91	XX
B8N9E6		4.626	-0.018	-0.25	3.838	0.038	0.58	TM
BDFD99		4.610	-0.034	-0.46	3.745	-0.055	-0.85	TM
CB2F8W		4.610	-0.034	-0.46	3.720	-0.080	-1.23	TM
CUW4KD		4.734	0.090	1.21	3.812	0.012	0.18	TA
DM9ML9		4.693	0.049	0.65	3.822	0.022	0.33	EM
DR7W32		4.784	0.139	1.87	3.921	0.121	1.85	LW
EQ8BN2		4.610	-0.034	-0.46	3.748	-0.052	-0.80	TM
F7D2WJ	*	4.600	-0.044	-0.60	3.870	0.070	1.07	XX
F88R3X		4.573	-0.071	-0.96	3.764	-0.036	-0.55	TM
FJ4RYB		4.599	-0.045	-0.61	3.752	-0.048	-0.74	LW
FKYA3X		4.580	-0.064	-0.87	3.730	-0.070	-1.08	TM
GP6ATT		4.619	-0.025	-0.34	3.854	0.053	0.82	LW
GXJA76		4.706	0.062	0.83	3.891	0.091	1.39	TA
H2F3VT		4.667	0.023	0.30	3.879	0.079	1.21	PP
H8ZDTU		4.590	-0.054	-0.73	3.690	-0.110	-1.69	LW
JJUUHV		4.742	0.098	1.31	3.845	0.044	0.68	EM
JWH3U3		4.490	-0.154	-2.07	3.735	-0.066	-1.00	TM
JXDLXP		4.648	0.004	0.05	3.838	0.038	0.58	EM
KQNKVH		4.637	-0.007	-0.10	3.802	0.002	0.03	TA
L637ZT		4.562	-0.082	-1.11	3.793	-0.007	-0.11	TA
LGDLYL		4.657	0.013	0.17	3.780	-0.020	-0.31	EM
LZRZEV		4.600	-0.044	-0.60	3.800	0.000	0.00	TM
MT4UWE		4.705	0.061	0.82	3.815	0.015	0.23	XX
N42ZNR		4.599	-0.045	-0.61	3.804	0.004	0.06	EM
NKQ38G		4.516	-0.129	-1.73	3.673	-0.127	-1.94	TA
NMFCEW	*	4.827	0.183	2.46	3.957	0.157	2.40	TM
PBJMYM		4.748	0.104	1.39	3.836	0.036	0.55	TM
PJNW4R		4.714	0.070	0.94	3.849	0.049	0.74	XX
PNJNBN		4.679	0.034	0.46	3.814	0.014	0.21	TM
Q7FE6W		4.553	-0.091	-1.23	3.731	-0.069	-1.06	LA
QMPX7A	X	4.578	-0.066	-0.89	3.513	-0.287	-4.40	TA
RG2TUK		4.622	-0.022	-0.30	3.780	-0.020	-0.31	PP

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

WebCode	Data Flag	Sample GV09			Sample GV10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
T4MYVD		4.565	-0.079	-1.07	3.722	-0.078	-1.20	TA
T9Y68D		4.752	0.108	1.45	3.905	0.105	1.60	LW
THPQDB		4.690	0.045	0.61	3.818	0.018	0.27	LW
TUJ73C		4.626	-0.018	-0.25	3.768	-0.032	-0.50	FR
U77Q4L		4.711	0.067	0.90	3.817	0.017	0.25	EM
ULFMDL		4.673	0.029	0.39	3.799	-0.001	-0.02	MT
VF7KRH		4.732	0.088	1.18	3.887	0.087	1.33	LW
VVMJWJ		4.586	-0.059	-0.79	3.757	-0.043	-0.65	LW
W4ECQV		4.576	-0.068	-0.91	3.761	-0.039	-0.60	LW
WTEQHB		4.633	-0.011	-0.15	3.815	0.015	0.23	PP
XGH222		4.584	-0.060	-0.81	3.715	-0.085	-1.30	PP
XLB7TK		4.484	-0.160	-2.15	3.669	-0.131	-2.00	PP
XND44D		4.540	-0.104	-1.40	3.740	-0.060	-0.92	TM
XT9VDV		4.719	0.075	1.00	3.869	0.069	1.05	XX
XU8WJM		4.747	0.103	1.38	3.884	0.083	1.28	LW
XZRYJC		4.556	-0.089	-1.20	3.763	-0.037	-0.56	LW
Y8NABM		4.642	-0.003	-0.04	3.850	0.050	0.77	LW
YGEUGL		4.757	0.113	1.52	3.882	0.082	1.26	LW
YP9XKH	*	4.739	0.094	1.27	3.764	-0.036	-0.55	LW
YZ7KTE		4.665	0.021	0.28	3.803	0.003	0.04	MS
Z37DYH		4.632	-0.012	-0.16	3.880	0.079	1.21	TM
ZA8PXZ		4.632	-0.012	-0.17	3.762	-0.038	-0.59	TM
ZNQFUG		4.755	0.111	1.49	3.871	0.071	1.08	VM
ZWHVJL		4.639	-0.005	-0.07	3.854	0.054	0.82	EM

Summary Statistics			
	Sample GV09		Sample GV10
Grand Means	4.6444 mils		3.8002 mils
SD Btwn Labs	0.0743 mils		0.0653 mils
Statistics based on 66 of 67 reporting participants			

Comments on assigned Data Flags for Test #360

QMPX7A (X) - Inconsistent in testing between samples, data for Sample GV10 are low.

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

Instrument Code List as Reported by the Labs

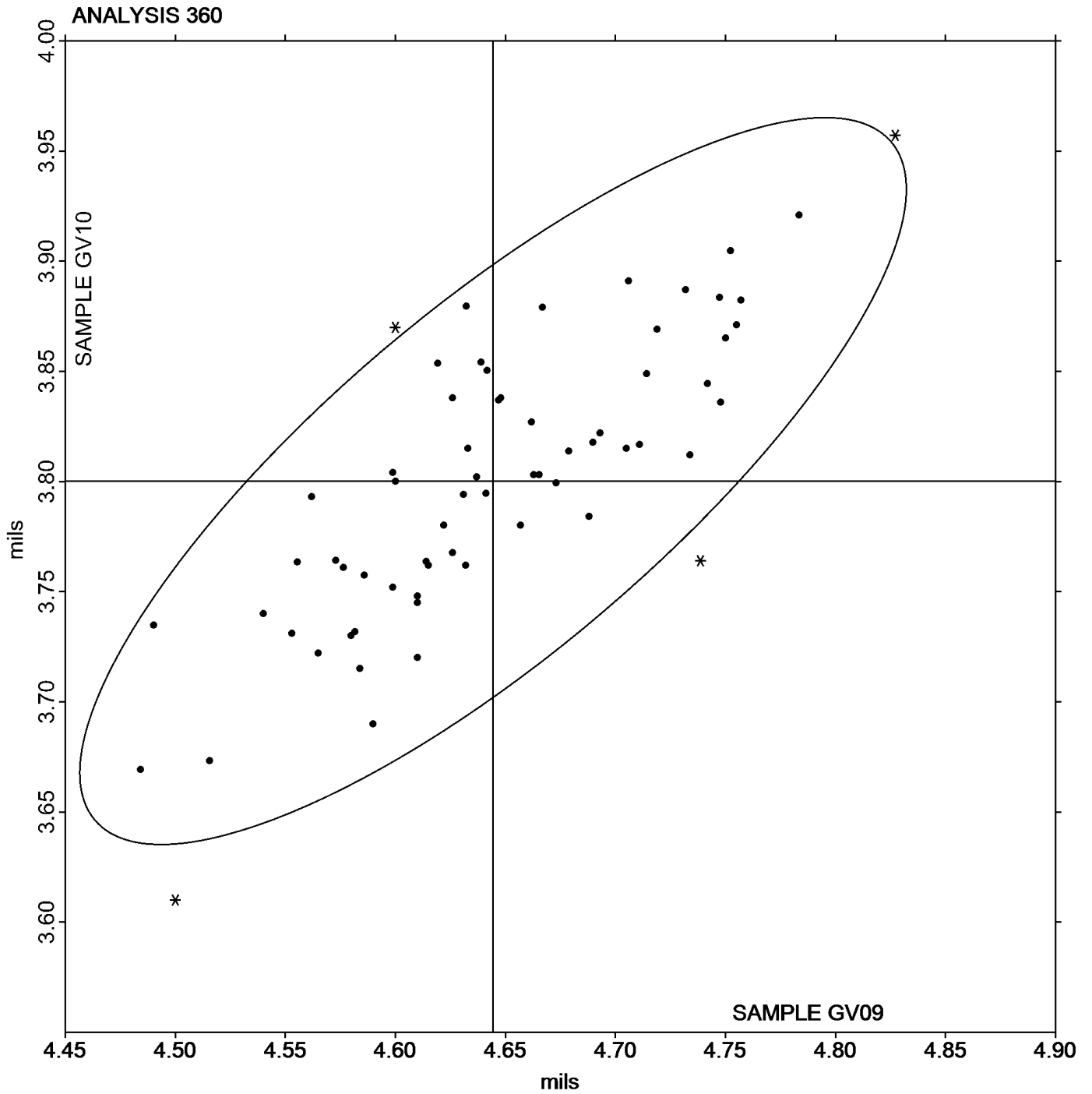
(EM) - Emveco	(FR) - Frank Instruments
(LA) - L & W Autoline	(LW) - L & W
(MS) - Messmer	(MT) - Mitutoyo
(PP) - Technidyne Profile/Plus	(TA) - Thwing-Albert
(TM) - TMI	(VM) - Valmet PaperLab (was Kajaani/Robotest)
(XX) - Instrument make/model not specified by lab	

Analysis 360

Thickness (Caliper), Printing papers

Grand Mean Sample **GV09** = 4.6444 mils

Grand Mean Sample **GV10** = 3.8002 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

WebCode	Data Flag	Sample GY09			Sample GY10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4MK226		9.461	0.012	0.10	7.644	0.015	0.11	LW
67UGXQ	X	9.884	0.435	3.82	8.021	0.391	2.80	LA
7FBKGA		9.425	-0.024	-0.21	7.570	-0.060	-0.43	TA
9273LR		9.373	-0.076	-0.67	7.547	-0.083	-0.59	PP
A2ZB3B		9.589	0.140	1.23	7.811	0.181	1.30	LA
A4C446		9.494	0.045	0.40	7.667	0.037	0.27	EM
AWRPED		9.549	0.100	0.88	7.760	0.130	0.93	EM
BNUGBX		9.417	-0.032	-0.28	7.618	-0.012	-0.09	TM
C9C7ZG		9.457	0.009	0.08	7.600	-0.030	-0.21	LW
CA7W4A	*	9.390	-0.059	-0.52	7.720	0.090	0.65	TM
CB2F8W		9.520	0.071	0.63	7.750	0.120	0.86	TM
CHLDX6		9.487	0.038	0.34	7.642	0.012	0.09	EM
DB2PMZ		9.469	0.020	0.17	7.614	-0.016	-0.11	XX
EQ8BN2		9.508	0.059	0.52	7.778	0.148	1.06	TM
EUMTW6	X	8.920	-0.529	-4.65	7.090	-0.540	-3.87	LA
GCXLFP		9.323	-0.126	-1.10	7.464	-0.166	-1.19	TM
HKATZZ		9.358	-0.091	-0.80	7.453	-0.177	-1.27	LA
LZBYFY		9.484	0.035	0.31	7.717	0.087	0.62	XX
ML9PCQ		9.406	-0.043	-0.38	7.524	-0.106	-0.76	LW
NVM9ZE		9.510	0.061	0.54	7.780	0.150	1.08	LA
PJNW4R		9.542	0.093	0.82	7.746	0.117	0.84	XX
QEWPHX		9.385	-0.064	-0.56	7.532	-0.098	-0.70	EM
QMPX7A		9.364	-0.085	-0.74	7.550	-0.080	-0.57	TA
QNZ3GD		9.470	0.021	0.19	7.660	0.030	0.22	TA
QXQMKP		9.236	-0.213	-1.87	7.369	-0.261	-1.87	EM
R7C94T	*	9.639	0.190	1.67	7.746	0.116	0.83	EM
RKUWEC	*	9.116	-0.333	-2.93	7.214	-0.416	-2.98	TM
TGCYKU		9.469	0.020	0.18	7.674	0.044	0.32	TM
TZQBE7		9.512	0.063	0.55	7.701	0.071	0.51	TM
V4E2BR		9.656	0.207	1.82	7.839	0.209	1.50	EM
W4ECQV		9.535	0.087	0.76	7.748	0.118	0.85	LW
XEMJXF		9.578	0.129	1.14	7.726	0.096	0.69	TM
XND44D		9.310	-0.139	-1.22	7.480	-0.150	-1.07	TM
ZZG4R3		9.330	-0.119	-1.04	7.510	-0.120	-0.86	TM

Summary Statistics			
	Sample GY09		Sample GY10
Grand Means	9.4488 mils		7.6298 mils
SD Btw Labs	0.1138 mils		0.1396 mils
Statistics based on 32 of 34 reporting participants			

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

Comments on assigned Data Flags for Test #361

67UGXQ (X) - Data for both samples are high.

EUMTW6 (X) - Data for both samples are low.

Instrument Code List as Reported by the Labs

(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

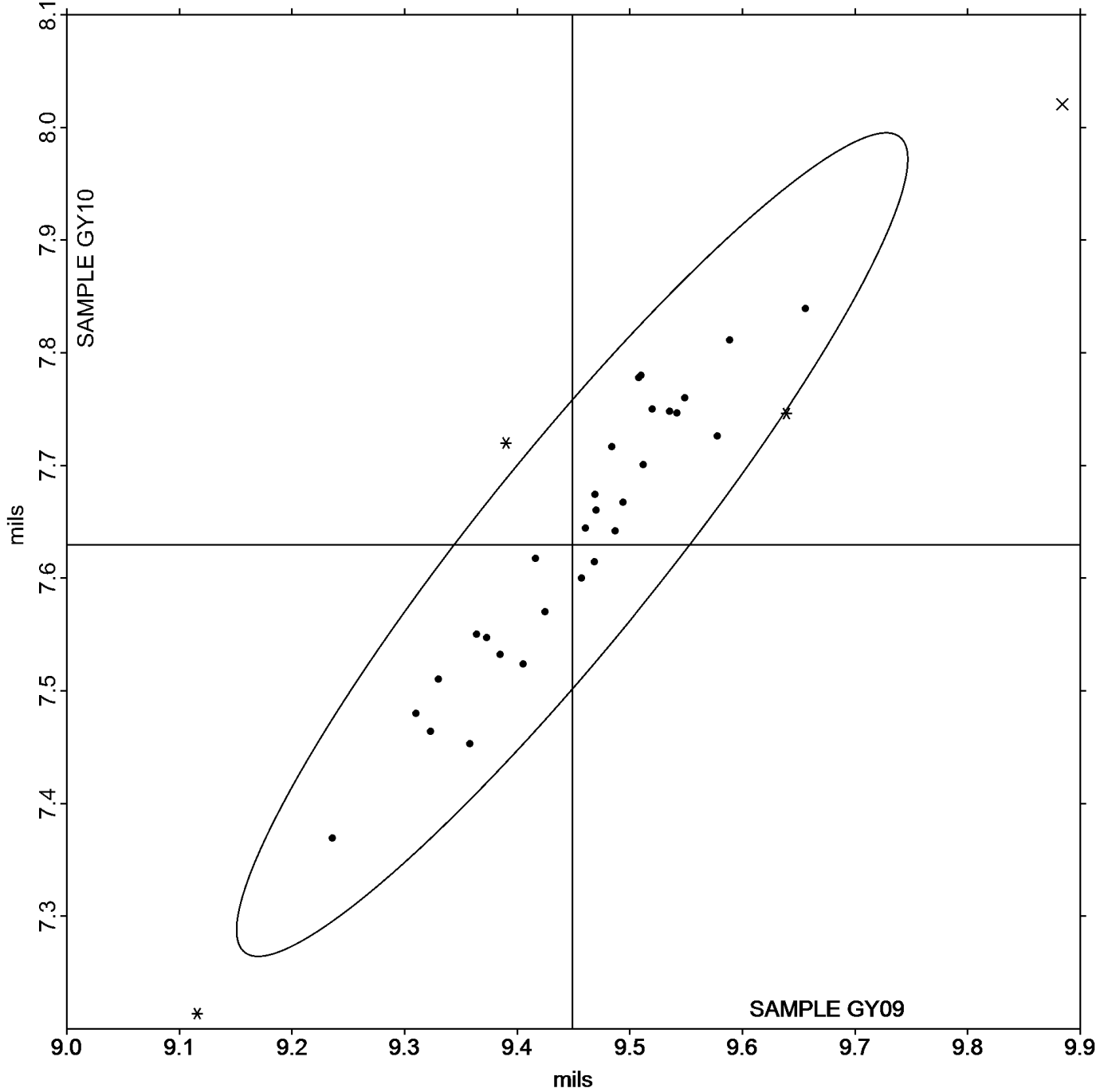
Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample GY09 = 9.4488 mils

Grand Mean Sample GY10 = 7.6298 mils

ANALYSIS 361



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

WebCode	Data Flag	Sample GD09			Sample GD10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4LPJXJ		0.6336	0.0449	0.78	0.5752	0.0177	0.29	TM
67UGXQ		0.4804	-0.1083	-1.88	0.4624	-0.0951	-1.54	TA
A2LL46		0.6020	0.0133	0.23	0.5586	0.0011	0.02	TA
CQG96F		0.6410	0.0523	0.91	0.6310	0.0735	1.19	IT
DR7W32		0.6200	0.0313	0.54	0.6560	0.0985	1.59	TL
JJUUHV		0.5938	0.0051	0.09	0.5084	-0.0491	-0.79	XX
LZRZEV	X	0.4416	-0.1471	-2.55	0.2384	-0.3191	-5.15	XX
N2VALH		0.5938	0.0051	0.09	0.5478	-0.0097	-0.16	CH
PJNW4R		0.6296	0.0409	0.71	0.5784	0.0209	0.34	TM
T4MYVD		0.5040	-0.0847	-1.47	0.5000	-0.0575	-0.93	XX

Sample GD09		Summary Statistics	Sample GD10	
Grand Means	0.58869 COF		0.55753 COF	
SD Btwn Labs	0.05759 COF		0.06196 COF	
Statistics based on 9 of 10 reporting participants				

Comments on assigned Data Flags for Test #364

LZRZEV (X) - Data for both samples are low. Inconsistent within the determinations for Sample GD10.

Instrument Code List as Reported by the Labs

(CH) - Cheminstruments AR-1000

(IT) - IMASS SP-2100

(TA) - Thwing-Albert Friction Tester

(TL) - TMI 32-90 Lab Master/Slip and Friction

(TM) - TMI 32-06 Monitor/Slip and Friction

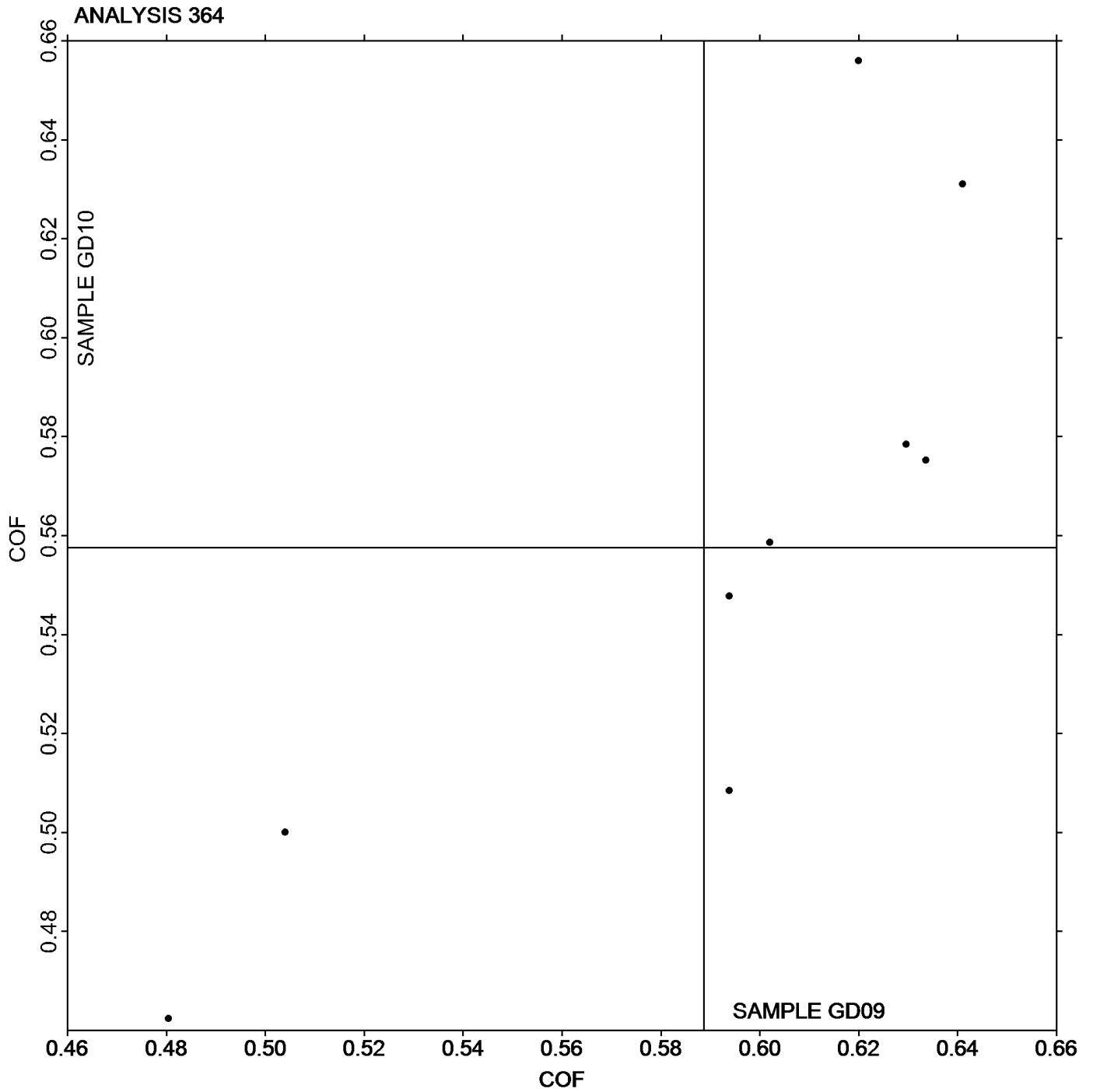
(XX) - Instrument make/model not specified by lab

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD09** = 0.58869 COF

Grand Mean Sample **GD10** = 0.55753 COF



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

WebCode	Data Flag	Sample GD09			Sample GD10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3DJ8CM		0.4216	-0.0442	-0.50	0.4122	-0.0156	-0.18	TA
4LPJXJ		0.4470	-0.0188	-0.21	0.4604	0.0326	0.38	TM
67UGXQ		0.4788	0.0130	0.15	0.4276	-0.0002	0.00	TA
A2LL46		0.4578	-0.0080	-0.09	0.4120	-0.0158	-0.18	TA
AEFYMA		0.3260	-0.1398	-1.59	0.3106	-0.1172	-1.36	TA
CQG96F		0.5246	0.0588	0.67	0.4580	0.0302	0.35	IR
DR7W32		0.6400	0.1742	1.98	0.6060	0.1782	2.06	TL
HAPJB7		0.4138	-0.0520	-0.59	0.3932	-0.0346	-0.40	TM
L637ZT		0.3596	-0.1062	-1.21	0.3456	-0.0822	-0.95	TA
LZRZEV	*	0.4158	-0.0500	-0.57	0.2780	-0.1498	-1.73	XX
N2VALH		0.5790	0.1132	1.29	0.5272	0.0994	1.15	CH
PJNW4R		0.5650	0.0992	1.13	0.5116	0.0838	0.97	TM
R6JF9A		0.3980	-0.0678	-0.77	0.3934	-0.0344	-0.40	TM
T4MYVD		0.4940	0.0282	0.32	0.4540	0.0262	0.30	XX

Summary Statistics

Sample GD09

Sample GD10

Grand Means 0.46579 COF
SD Btwn Labs 0.08789 COF

0.42784 COF
0.08644 COF

Statistics based on 14 of 14 reporting participants

Instrument Code List as Reported by the Labs

(CH) - Cheminstruments AR-1000

(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

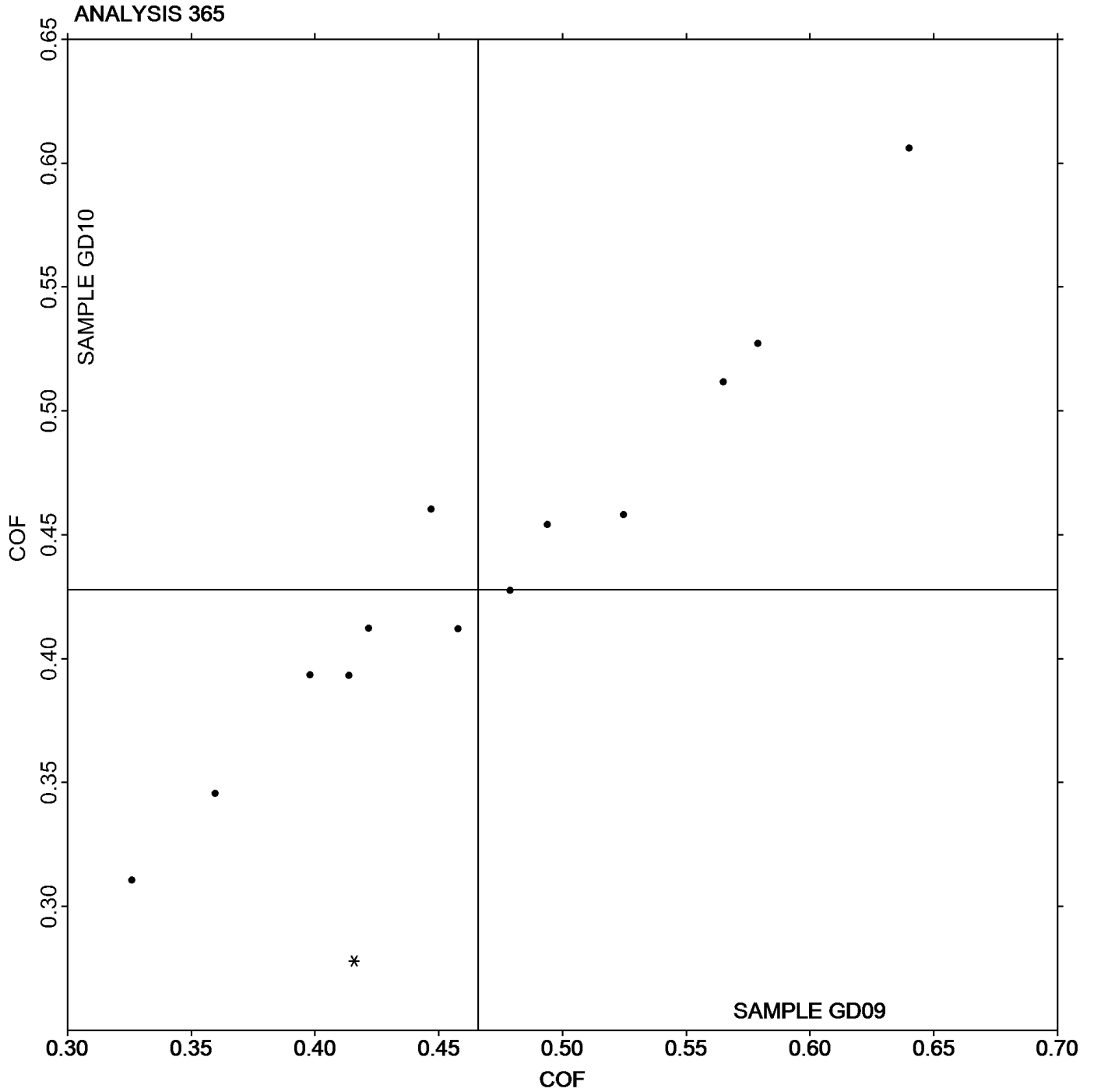
(XX) - Instrument make/model not specified by lab

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD09** = 0.46579 COF

Grand Mean Sample **GD10** = 0.42784 COF



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

WebCode	Data Flag	Sample GE09			Sample GE10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Q9UXH	X	17.17	4.60	7.67	15.23	3.65	4.59	LA
4M298M		12.67	0.10	0.17	10.95	-0.64	-0.80	XX
67UGXQ		13.23	0.67	1.11	11.23	-0.36	-0.45	LA
6GV4N3		12.70	0.13	0.22	10.80	-0.79	-0.99	HG
9273LR		12.79	0.23	0.38	11.57	-0.01	-0.02	PP
9347JA		13.43	0.86	1.44	13.14	1.55	1.95	TL
9EBEY7		12.90	0.33	0.56	12.70	1.11	1.40	XX
A2LL46		13.16	0.59	0.99	11.90	0.31	0.39	WG
A4C446	*	10.91	-1.66	-2.76	10.62	-0.97	-1.22	PP
AVX2ZN		12.54	-0.03	-0.04	12.52	0.93	1.17	WG
C9C7ZG		12.34	-0.23	-0.38	12.31	0.72	0.91	GA
CA7W4A		13.88	1.31	2.19	13.24	1.65	2.08	TL
CUW4KD		12.32	-0.25	-0.41	10.89	-0.70	-0.88	HG
DB2PMZ		12.50	-0.07	-0.11	10.80	-0.79	-0.99	XX
DR7W32		12.49	-0.08	-0.13	12.41	0.82	1.04	LP
EDK8F6		13.38	0.81	1.36	12.27	0.68	0.86	GA
ELYTP9		12.29	-0.28	-0.46	11.26	-0.33	-0.41	LP
EQ8BN2		11.93	-0.64	-1.06	10.61	-0.98	-1.23	HG
EUMTW6		12.80	0.23	0.39	11.70	0.11	0.14	LA
GCIJZ43		12.05	-0.52	-0.86	10.72	-0.87	-1.09	LP
GP6ATT		13.40	0.83	1.39	12.36	0.77	0.97	LP
GXJA76		12.58	0.01	0.02	11.01	-0.57	-0.72	HG
H2F3VT		12.04	-0.53	-0.88	12.23	0.64	0.81	HG
JWH3U3		12.60	0.03	0.06	10.79	-0.80	-1.00	LP
JXDLXP		13.00	0.43	0.72	11.60	0.01	0.02	PP
LGDLYL		12.55	-0.02	-0.03	11.36	-0.22	-0.28	PP
LZBYFY		12.72	0.15	0.26	11.35	-0.24	-0.30	LW
LZRZEV		13.10	0.53	0.89	12.40	0.81	1.02	GS
ML9PCQ		12.05	-0.52	-0.86	10.40	-1.19	-1.49	LW
N42ZNR		12.06	-0.51	-0.84	12.33	0.74	0.94	GS
NMFCEW		11.71	-0.86	-1.43	11.41	-0.18	-0.22	XX
PBJMYM		12.60	0.03	0.06	12.46	0.87	1.10	TN
Q7FE6W		12.36	-0.21	-0.34	10.98	-0.61	-0.76	LA
RG2TUK		13.32	0.76	1.26	12.91	1.32	1.67	PP
T4MYVD		13.17	0.60	1.01	11.12	-0.47	-0.59	XX
T9Y68D		11.80	-0.77	-1.28	10.82	-0.77	-0.96	LP
THPQDB		11.69	-0.88	-1.46	10.56	-1.03	-1.30	LP
ULFMDL		11.50	-1.06	-1.77	10.92	-0.67	-0.84	RE
W4ECQV		12.30	-0.27	-0.44	11.50	-0.09	-0.11	TL
XZRYJC		12.72	0.15	0.26	11.58	-0.01	-0.01	LP
Y8NABM		12.30	-0.27	-0.44	10.50	-1.09	-1.37	LW
ZNQFUG		12.52	-0.04	-0.07	12.21	0.63	0.79	TL
ZZG4R3		13.34	0.77	1.29	12.18	0.59	0.75	TL

Analysis 370

Air Resistance - Gurley Oil Type

	Sample GE09	Summary Statistics	Sample GE10
Grand Means	12.565 sec/100 cc		11.586 sec/100 cc
SD Btwn Labs	0.600 sec/100 cc		0.795 sec/100 cc
Statistics based on 42 of 43 reporting participants			

Comments on assigned Data Flags for Test #370

2Q9UXH (X) - Extreme data.

Instrument Code List as Reported by the Labs

(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

(RE) - Regmed Gurley Densometer PGH-T

(TL) - Teledyne Gurley Densometer #4110, Oil Flotation

(TN) - Teledyne Gurley S-P-S Tester #4190

(WG) - W & LE Gurley Tester

(XX) - Instrument make/model not specified by lab

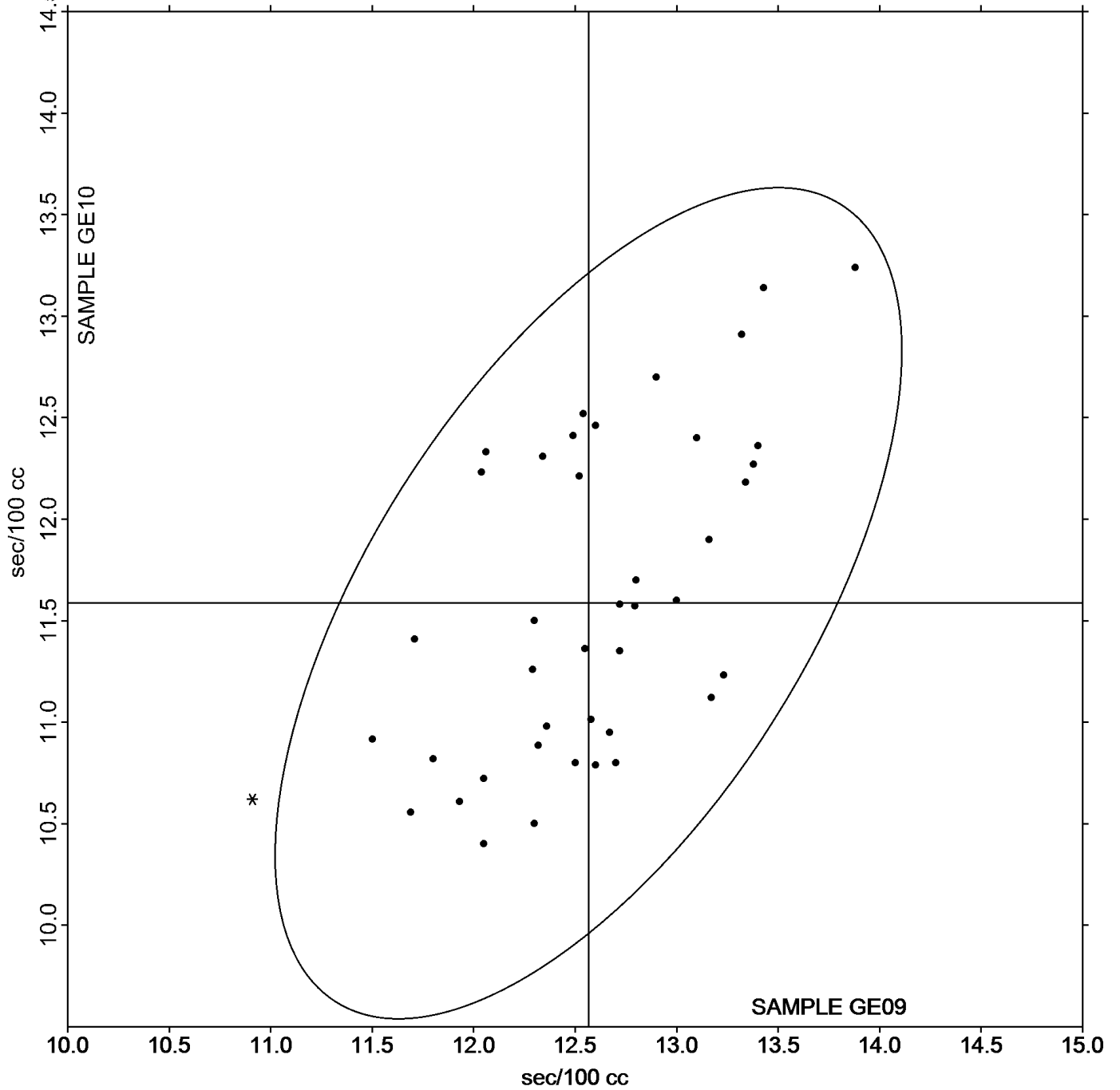
Analysis 370

Air Resistance - Gurley Oil Type

Grand Mean Sample **GE09** = 12.565 sec/100 cc

Grand Mean Sample **GE10** = 11.586 sec/100 cc

ANALYSIS 370



Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

WebCode	Data Flag	Sample GE09			Sample GE10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
32PUEB		209.1	3.7	0.18	208.8	-3.5	-0.18	PP
A4C446		217.1	11.7	0.57	244.0	31.7	1.59	SH
B8N9E6		194.8	-10.6	-0.52	216.1	3.8	0.19	SH
CUW4KD		199.2	-6.2	-0.30	198.1	-14.2	-0.71	TT
DZHFY7		201.1	-4.3	-0.21	210.8	-1.5	-0.08	LP
EQ8BN2		162.3	-43.1	-2.11	173.0	-39.3	-1.97	HG
GXJA76		199.2	-6.2	-0.30	205.9	-6.4	-0.32	HM
H8ZDTU		213.9	8.5	0.41	213.8	1.5	0.07	LP
L67QNW		202.7	-2.7	-0.13	212.4	0.1	0.00	GA
LZRZEV		173.7	-31.7	-1.55	182.9	-29.4	-1.47	SH
Q7KQQ8		254.2	48.8	2.38	254.3	42.0	2.10	VM
Q8XFXQ		202.0	-3.4	-0.17	198.0	-14.3	-0.72	TT
R89NFQ		214.1	8.7	0.42	216.3	4.0	0.20	HM
VQUGTJ		190.5	-14.9	-0.73	209.5	-2.8	-0.14	LP
YP9XKH		217.1	11.7	0.57	211.0	-1.3	-0.07	HM
Z37DYH		213.0	7.6	0.37	216.0	3.7	0.18	TT
ZA8PXZ		228.5	23.1	1.13	238.6	26.3	1.32	TT

Summary Statistics

Sample GE09

Sample GE10

Grand Means 205.44 Sheffield Units
SD Btw Labs 20.49 Sheffield Units

212.32 Sheffield Units
19.98 Sheffield Units

Statistics based on 17 of 17 reporting participants

Instrument Code List as Reported by the Labs

(GA) - Gurley Precision #4340 Automatic Densometer

(HG) - Technidyne - Hagerty Model #1

(HM) - Technidyne - Hagerty Model #538

(LP) - L & W Densometer, Air Permeance

(PP) - Technidyne Profile/Plus

(SH) - Sheffield

(TT) - TMI Monitor/Smoothness II, Model 58-24

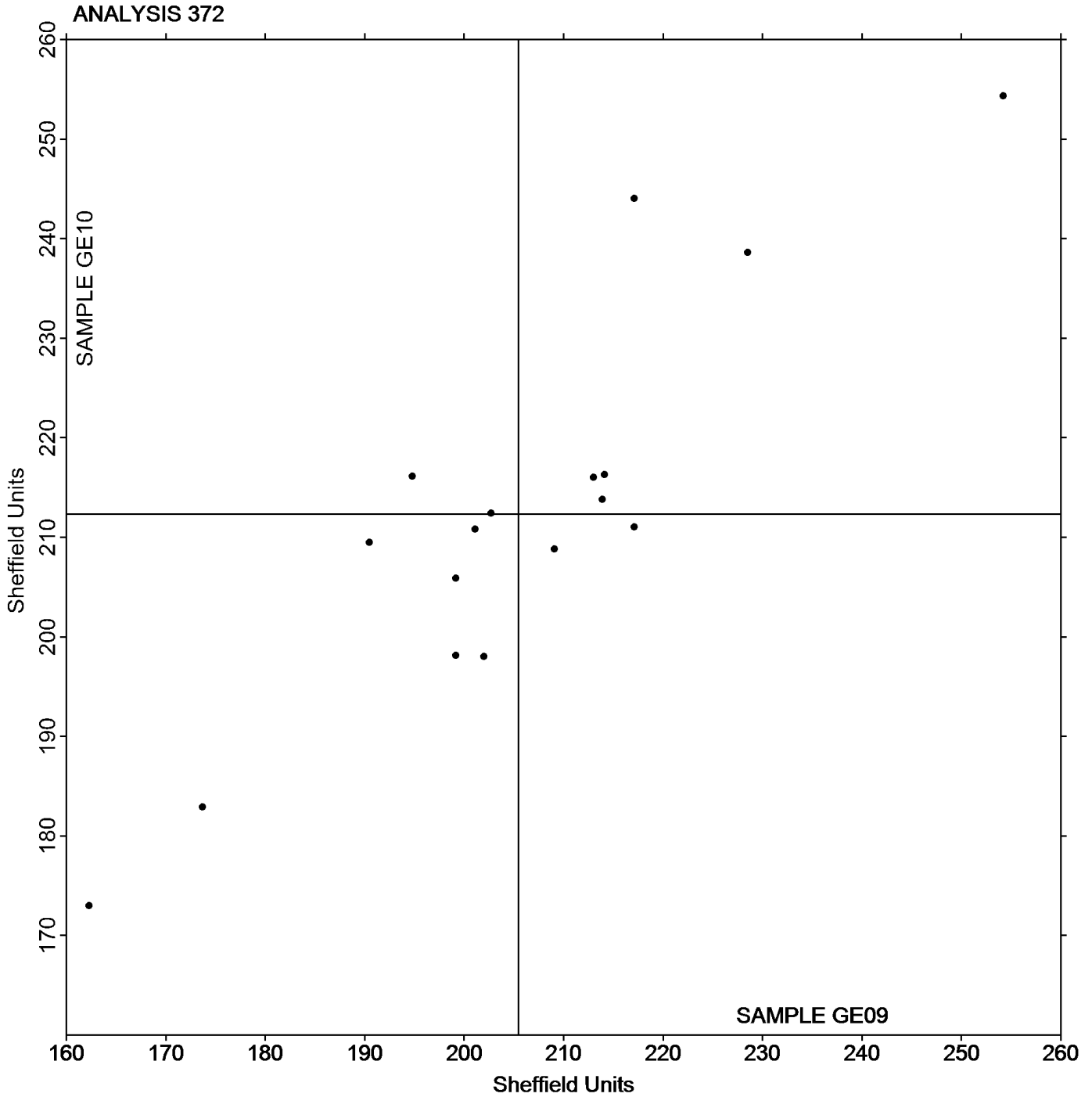
(VM) - Valmet PaperLab (was Kajaani/Robotest)

Analysis 372

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

Grand Mean Sample **GE09** = 205.44 Sheffield Units

Grand Mean Sample **GE10** = 212.32 Sheffield Units



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

WebCode	Data Flag	Sample GJ09			Sample GJ10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4MK226		1.121	-0.069	-0.86	1.084	-0.042	-0.60
6FHCX7		1.217	0.027	0.34	1.195	0.069	0.97
9273LR		1.130	-0.060	-0.75	1.063	-0.063	-0.89
A2LL46		1.027	-0.163	-2.05	1.006	-0.120	-1.70
A2ZB3B		1.168	-0.022	-0.27	1.025	-0.101	-1.43
A4C446		1.184	-0.006	-0.07	1.122	-0.004	-0.06
AEFYMA		1.170	-0.020	-0.25	1.149	0.023	0.32
AWRPED		1.163	-0.027	-0.34	1.068	-0.058	-0.82
CUW4KD		1.261	0.071	0.90	1.208	0.082	1.16
DKJDDR	*	1.420	0.230	2.90	1.270	0.144	2.04
HKATZZ		1.180	-0.010	-0.12	1.162	0.036	0.51
JWH3U3		1.182	-0.008	-0.10	1.092	-0.034	-0.48
L637ZT		1.303	0.113	1.43	1.242	0.116	1.64
LGDLYL		1.281	0.091	1.15	1.181	0.055	0.78
NR9DKG		1.134	-0.056	-0.70	1.103	-0.023	-0.33
NVM9ZE		1.110	-0.080	-1.00	1.130	0.004	0.05
QEWPHX		1.227	0.037	0.47	1.151	0.025	0.35
R7C94T		1.128	-0.062	-0.78	1.008	-0.118	-1.67
R89NFQ		1.128	-0.062	-0.78	1.049	-0.077	-1.09
RMK3XN		1.119	-0.071	-0.89	1.084	-0.042	-0.60
RWQXZT		1.190	0.000	0.00	1.152	0.026	0.37
T4MYVD		1.110	-0.080	-1.00	1.087	-0.039	-0.55
U77Q4L		1.249	0.059	0.75	1.166	0.039	0.56
V4E2BR		1.221	0.031	0.39	1.128	0.002	0.03
VYLUU6		1.189	-0.001	-0.01	1.087	-0.039	-0.55
XGH222		1.328	0.138	1.74	1.270	0.144	2.04
XU8WJM		1.170	-0.020	-0.25	1.111	-0.015	-0.21
YXGEA3	X	0.367	-0.823	-10.35	0.353	-0.773	-10.95
ZWHVJL		1.202	0.012	0.15	1.140	0.014	0.20

Sample GJ09		Summary Statistics	Sample GJ10	
Grand Means	1.1897 Microns		1.1262 Microns	
SD Btwn Labs	0.0795 Microns		0.0706 Microns	
Statistics based on 28 of 29 reporting participants				

Comments on assigned Data Flags for Test #376

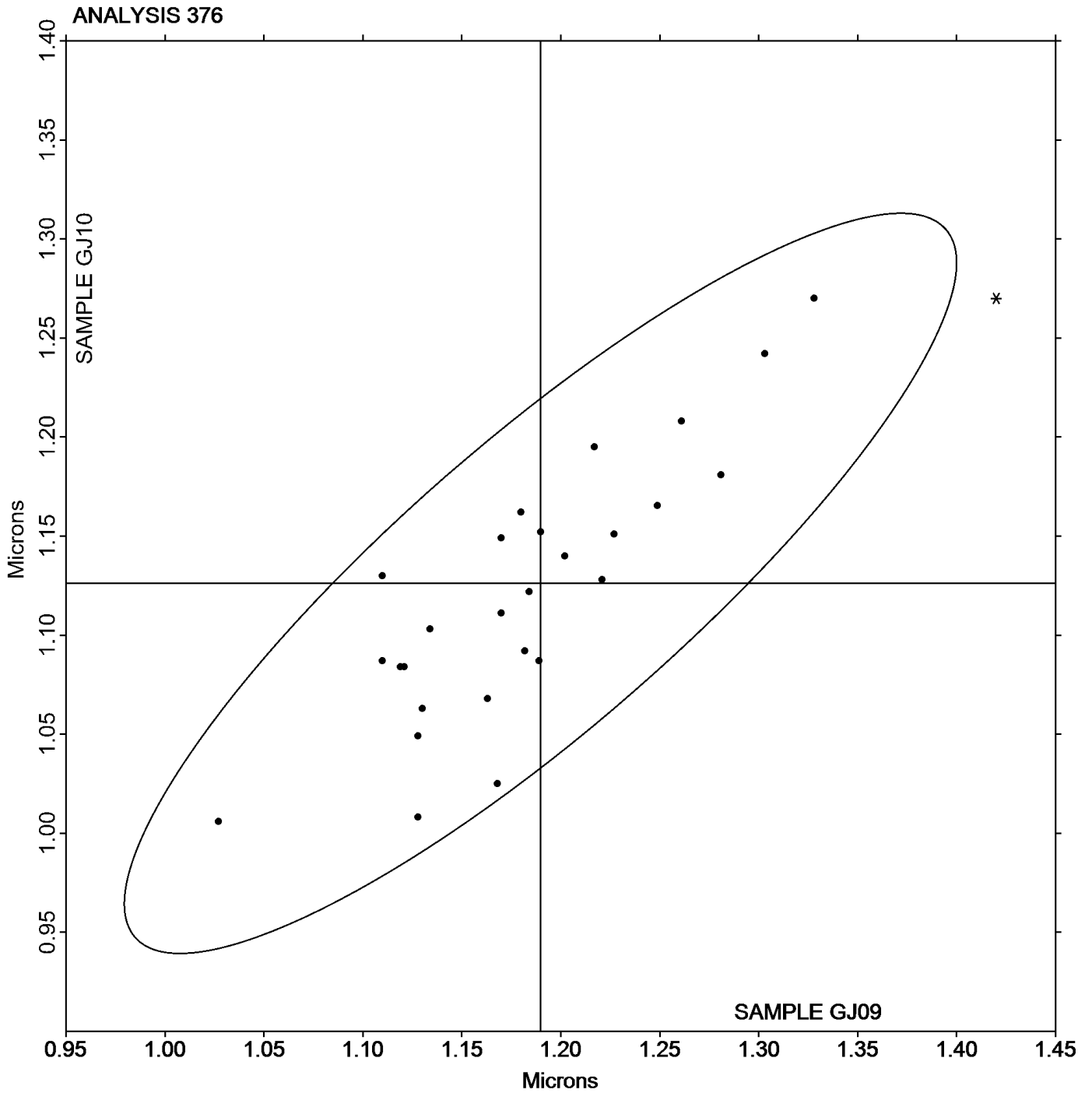
YXGEA3 (X) - Extreme data.

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample GJ09 = 1.1897 Microns

Grand Mean Sample GJ10 = 1.1262 Microns



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

WebCode	Data Flag	Sample GK09			Sample GK10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A2LL46		1.055	-0.175	-0.81	1.584	-0.249	-1.05
DKJDDR		1.318	0.088	0.41	2.068	0.235	1.00
DR7W32		1.275	0.045	0.21	1.898	0.065	0.28
JJUUHV		1.165	-0.065	-0.30	1.763	-0.070	-0.30
Q7FE6W		1.058	-0.172	-0.80	1.617	-0.216	-0.91
Q7KQQ8		1.656	0.426	1.98	2.209	0.376	1.59
W4ECQV		1.082	-0.148	-0.69	1.691	-0.142	-0.60

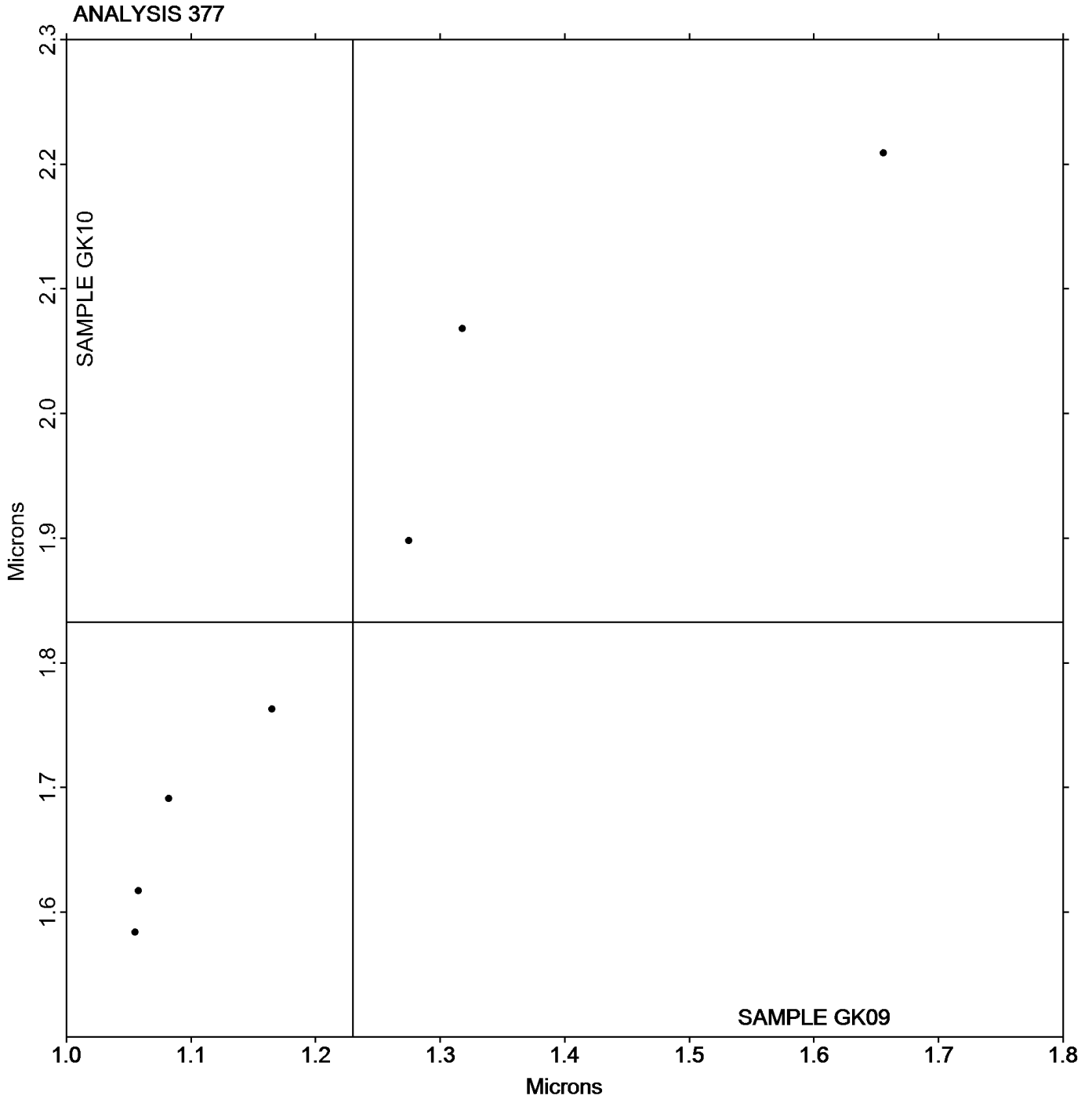
		Summary Statistics	
	Sample GK09		Sample GK10
Grand Means	1.2299 Microns		1.8329 Microns
SD Btwn Labs	0.2151 Microns		0.2361 Microns
Statistics based on 7 of 7 reporting participants			

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK09** = 1.2299 Microns

Grand Mean Sample **GK10** = 1.8329 Microns



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

WebCode	Data Flag	Sample GL09			Sample GL10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Q9UXH		84.14	-8.98	-1.02	151.0	-11.6	-1.22	LA
32PUEB		89.10	-4.01	-0.45	157.2	-5.4	-0.57	PP
4LPJXJ		90.29	-2.82	-0.32	173.2	10.6	1.12	HM
6GV4N3		82.10	-11.01	-1.25	159.8	-2.8	-0.30	HM
6PPAJN		89.20	-3.91	-0.44	160.0	-2.6	-0.28	PP
7FBKGA		84.48	-8.63	-0.98	161.7	-1.0	-0.10	PP
83HHD9		108.20	15.09	1.71	170.6	8.0	0.84	TS
9273LR		80.30	-12.81	-1.45	155.6	-7.0	-0.74	PP
9EBEY7		87.53	-5.59	-0.63	169.0	6.4	0.67	PP
A2ZB3B		93.10	-0.01	0.00	161.3	-1.3	-0.14	LA
A4C446		85.60	-7.51	-0.85	161.2	-1.4	-0.15	PP
AEFYMA		94.10	0.99	0.11	162.9	0.3	0.03	HM
AVX2ZN		101.50	8.39	0.95	171.5	8.9	0.94	PG
AWRPED	X	92.50	-0.61	-0.07	389.0	226.4	23.89	PP
B8N9E6		85.90	-7.21	-0.82	148.8	-13.8	-1.46	SH
CHLDX6		105.00	11.89	1.35	169.0	6.4	0.67	TS
CUW4KD		106.50	13.39	1.52	175.8	13.2	1.39	SH
DR7W32		100.50	7.39	0.84	165.1	2.5	0.26	LW
ELYTP9		87.60	-5.51	-0.62	153.3	-9.3	-0.98	XX
EQ8BN2		86.50	-6.61	-0.75	166.1	3.5	0.37	HM
EUMTW6	X	334.90	241.79	27.37	355.6	193.0	20.37	LA
FERN7M		79.50	-13.61	-1.54	141.4	-21.2	-2.24	TS
FJ4RYB		96.60	3.49	0.39	159.0	-3.6	-0.38	SH
GXJA76		92.30	-0.81	-0.09	163.8	1.2	0.12	HM
H2F3VT		92.50	-0.61	-0.07	177.3	14.7	1.55	HM
H8ZDTU		108.80	15.69	1.78	180.3	17.7	1.87	LW
JJUUHV		89.10	-4.01	-0.45	162.3	-0.3	-0.03	HM
JWH3U3		102.40	9.29	1.05	157.3	-5.3	-0.56	TS
JXDLXP		82.80	-10.31	-1.17	159.7	-2.9	-0.31	HM
L637ZT		90.40	-2.71	-0.31	162.7	0.1	0.01	HM
L67QNW		98.30	5.19	0.59	146.0	-16.6	-1.75	GA
LGDLYL		88.36	-4.75	-0.54	162.9	0.3	0.03	PP
LZRZEV	*	117.50	24.39	2.76	162.7	0.1	0.01	XX
MT4UWE		89.40	-3.71	-0.42	155.6	-7.0	-0.74	XX
N42ZNR		88.40	-4.71	-0.53	149.5	-13.1	-1.39	SH
NR9DKG		99.00	5.89	0.67	164.4	1.8	0.19	TT
NVM9ZE		80.83	-12.29	-1.39	157.4	-5.3	-0.55	LA
PBJMYM		92.40	-0.71	-0.08	151.4	-11.2	-1.18	TS
Q7FE6W		100.00	6.89	0.78	160.5	-2.1	-0.22	LA
QEWPHX		76.36	-16.76	-1.90	152.0	-10.6	-1.12	PP
QLUE2M		98.27	5.16	0.58	160.7	-1.9	-0.20	MP
R6JF9A		89.40	-3.71	-0.42	166.6	4.0	0.42	TT
R7C94T		95.30	2.19	0.25	166.5	3.9	0.41	LW

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

WebCode	Data Flag	Sample GL09			Sample GL10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
RG2TUK		89.55	-3.56	-0.40	174.0	11.3	1.20	PP
TGCYKU		109.17	16.06	1.82	157.7	-4.9	-0.52	GA
TZQBE7		107.80	14.69	1.66	167.8	5.2	0.55	TT
V4E2BR		98.64	5.52	0.63	182.3	19.7	2.08	PP
VQUGTJ		89.20	-3.91	-0.44	167.3	4.7	0.49	PP
W4ECQV	*	107.32	14.21	1.61	192.1	29.5	3.11	PP
XEMJXF	X	124.10	30.99	3.51	164.3	1.7	0.18	PP
XGH222		85.20	-7.91	-0.90	168.6	6.0	0.63	HM
XND44D		99.50	6.39	0.72	173.2	10.6	1.12	GL
XT9VDV		87.80	-5.31	-0.60	151.0	-11.6	-1.23	LA
XW888A		85.40	-7.71	-0.87	152.0	-10.6	-1.12	TT
Y8NABM		96.20	3.09	0.35	149.7	-12.9	-1.36	SH
YP9XKH		97.10	3.99	0.45	164.8	2.2	0.23	HM
YUXJ8B		84.70	-8.41	-0.95	160.4	-2.2	-0.23	GA
Z37DYH		93.00	-0.11	-0.01	167.5	4.9	0.51	TT
ZA8PXZ	X	35.80	-57.31	-6.49	136.7	-25.9	-2.74	TT
ZNQFUG		94.26	1.15	0.13	165.4	2.8	0.29	VM

Sample GL09		Summary Statistics	Sample GL10	
Grand Means	93.114 Sheffield		162.63 Sheffield	
SD Btwn Labs	8.833 Sheffield		9.47 Sheffield	
Statistics based on 56 of 60 reporting participants				

Comments on assigned Data Flags for Test #378

AWRPED (X) - Extreme data for Sample GL10.

EUMTW6 (X) - Extreme data.

XEMJXF (X) - Data for Sample GL09 are high.

ZA8PXZ (X) - Extreme data.

Instrument Code List as Reported by the Labs

(GA) - Gurley Precision #4340 Automatic Densometer

(HM) - Technidyne - Hagerty Model #538

(LW) - L & W Roughness Tester

(PG) - Precision Gage Smoothcheck

(SH) - Sheffield (Bendix Precisionaire)

(TT) - TMI Monitor/Smoothness II, Model 58-24

(XX) - Instrument make/model not specified by lab

(GL) - Giddings and Lewis Sheffield

(LA) - L & W Roughness Sheffield - Autoline

(MP) - Metso Paperlab

(PP) - Technidyne Profile/Plus

(TS) - TMI Monitor/Smoothness, Model 58-02

(VM) - Valmet PaperLab (was Kajaani\Robotest)

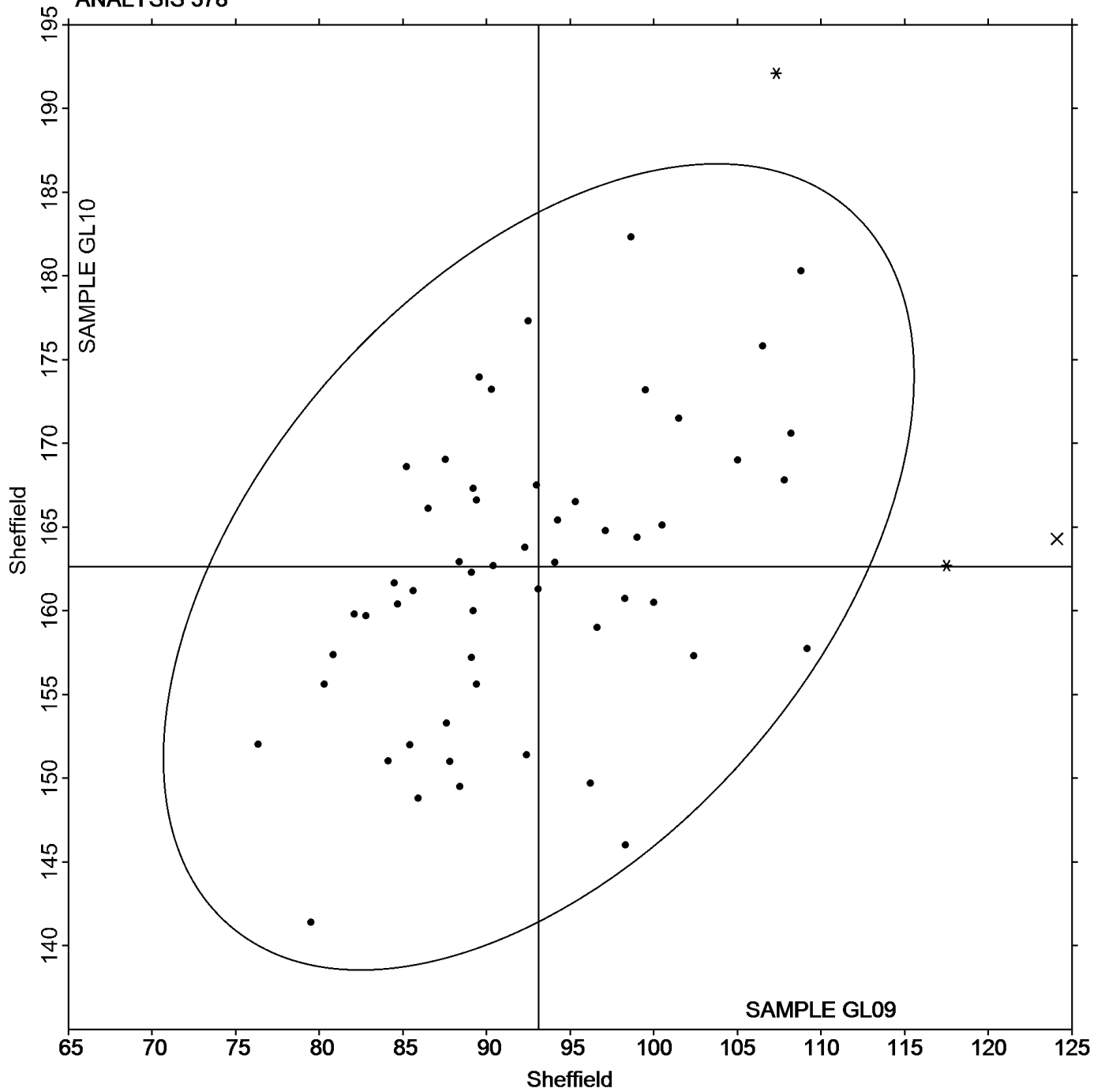
Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL09** = 93.114 Sheffield

Grand Mean Sample **GL10** = 162.63 Sheffield

ANALYSIS 378



**Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper**

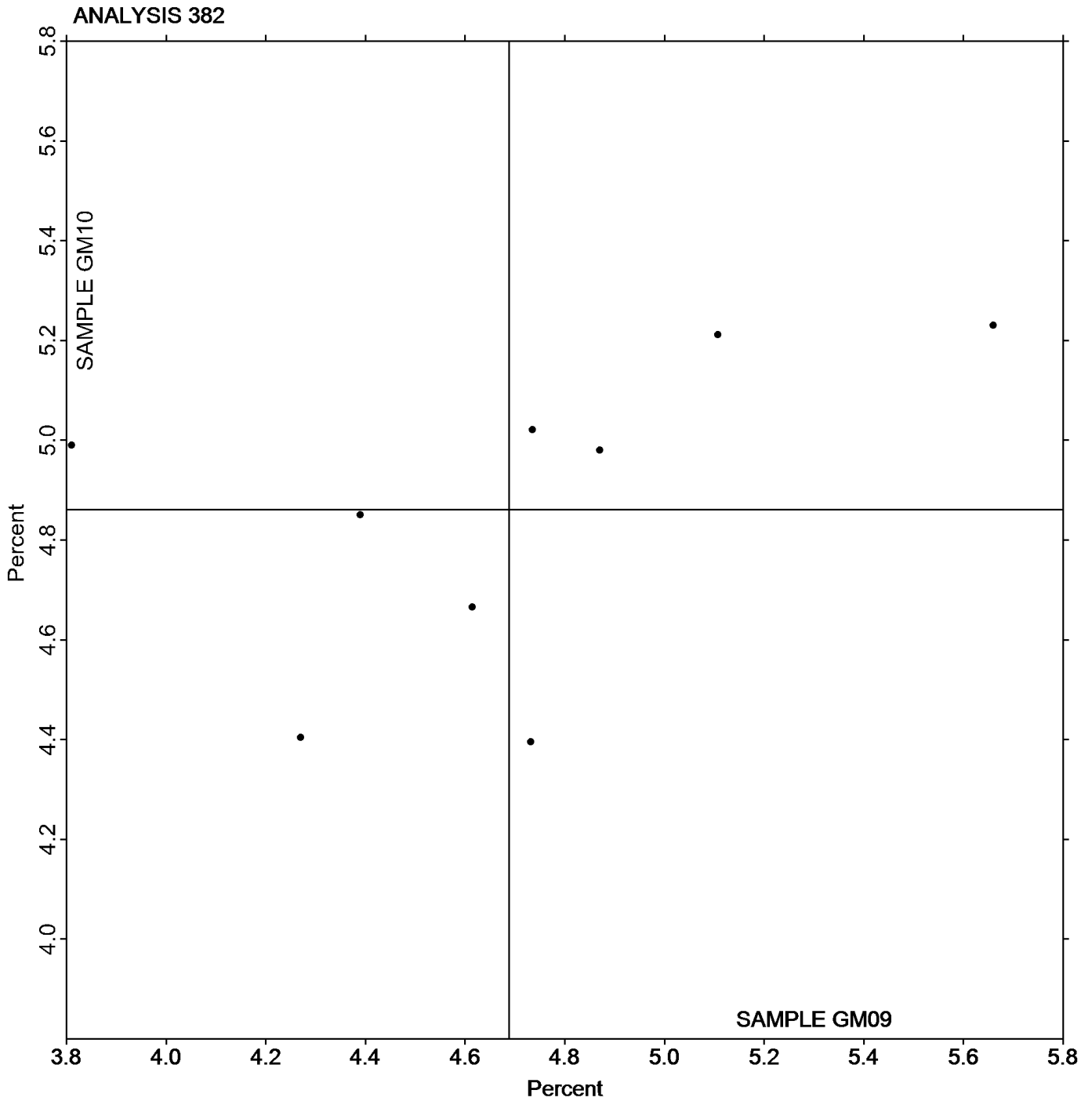
WebCode	Data Flag	Sample GM09			Sample GM10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
47D6H7		4.870	0.182	0.35	4.980	0.119	0.38
GCXLFP		3.810	-0.878	-1.67	4.990	0.129	0.41
JJUUHV		4.390	-0.298	-0.57	4.850	-0.011	-0.03
KLE6NE		5.107	0.419	0.80	5.211	0.350	1.12
TZQBE7		5.660	0.972	1.86	5.230	0.369	1.18
ULFMDL		4.735	0.048	0.09	5.020	0.160	0.51
XEMJXF		4.732	0.044	0.08	4.395	-0.466	-1.49
XZRYJC		4.270	-0.418	-0.80	4.404	-0.457	-1.46
YZ7KTE		4.615	-0.073	-0.14	4.665	-0.196	-0.63

Summary Statistics			
	Sample GM09		Sample GM10
Grand Means	4.6877	Percent	4.8606
SD Btwn Labs	0.5241	Percent	0.3121
Statistics based on 9 of 9 reporting participants			

Analysis 382
Moisture in Paper

Grand Mean Sample **GM09** = 4.6877 Percent

Grand Mean Sample **GM10** = 4.8606 Percent



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

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

WebCode	Data Flag	Sample GN09			Sample GN10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q9UXH		92.84	-0.50	-1.19	85.96	-0.85	-1.44
4LPJXJ		93.01	-0.33	-0.79	86.31	-0.51	-0.85
6FHCX7		93.44	0.10	0.23	87.03	0.22	0.37
6GV4N3		93.68	0.34	0.80	86.74	-0.07	-0.12
6PPAJN		93.17	-0.17	-0.41	87.25	0.44	0.74
9BWKJA		93.55	0.21	0.49	86.97	0.16	0.27
9EBEY7		93.28	-0.06	-0.15	86.47	-0.34	-0.58
AEFYMA		93.84	0.50	1.18	87.64	0.83	1.40
AVX2ZN	*	92.34	-1.00	-2.36	85.30	-1.51	-2.55
B8N9E6		93.52	0.18	0.43	86.79	-0.02	-0.04
CUW4KD		93.63	0.29	0.68	87.01	0.20	0.33
EQ8BN2		93.25	-0.09	-0.22	86.83	0.02	0.03
F7D2WJ	*	92.26	-1.08	-2.56	85.20	-1.61	-2.72
FJ4RYB		93.64	0.30	0.70	87.44	0.63	1.06
GXJA76		93.56	0.21	0.50	86.84	0.03	0.05
JJUUHV		93.40	0.06	0.14	86.68	-0.13	-0.22
JXDLXP		93.37	0.03	0.07	86.51	-0.30	-0.51
L637ZT		93.75	0.40	0.95	87.46	0.65	1.09
LGDLYL		93.37	0.03	0.07	86.25	-0.56	-0.95
LZRZEV		92.43	-0.91	-2.16	85.73	-1.08	-1.82
MT4UWE		93.23	-0.11	-0.27	87.12	0.31	0.52
N42ZNR		93.54	0.20	0.47	86.67	-0.14	-0.24
NMFCEW		93.84	0.50	1.18	87.36	0.55	0.92
PBJMYM		93.24	-0.10	-0.24	87.30	0.49	0.82
PNJNBN		93.60	0.26	0.61	86.84	0.03	0.05
Q7FE6W		92.59	-0.75	-1.78	86.30	-0.51	-0.86
RG2TUK		93.43	0.09	0.21	86.93	0.12	0.20
RWQXZT		93.33	-0.01	-0.03	87.15	0.34	0.57
T4MYVD		93.72	0.38	0.89	87.41	0.60	1.01
U77Q4L		93.19	-0.15	-0.36	87.04	0.23	0.38
W4ECQV		93.31	-0.03	-0.08	86.76	-0.06	-0.09
WTEQHB		93.37	0.03	0.07	86.72	-0.09	-0.16
XND44D		94.19	0.85	2.00	87.93	1.12	1.88
Y8NABM		93.45	0.11	0.25	87.19	0.38	0.64
Z37DYH	X	95.76	2.42	5.71	90.91	4.10	6.91
ZA8PXZ		93.77	0.43	1.01	86.79	-0.02	-0.04
ZNQFUG	*	92.98	-0.36	-0.85	87.46	0.64	1.09
ZZG4R3		93.56	0.22	0.51	86.68	-0.13	-0.22

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

	Sample GN09	Summary Statistics	Sample GN10
Grand Means	93.342 Percent		86.812 Percent
SD Btwn Labs	0.423 Percent		0.593 Percent
Statistics based on 37 of 38 reporting participants			

Comments on assigned Data Flags for Test #384

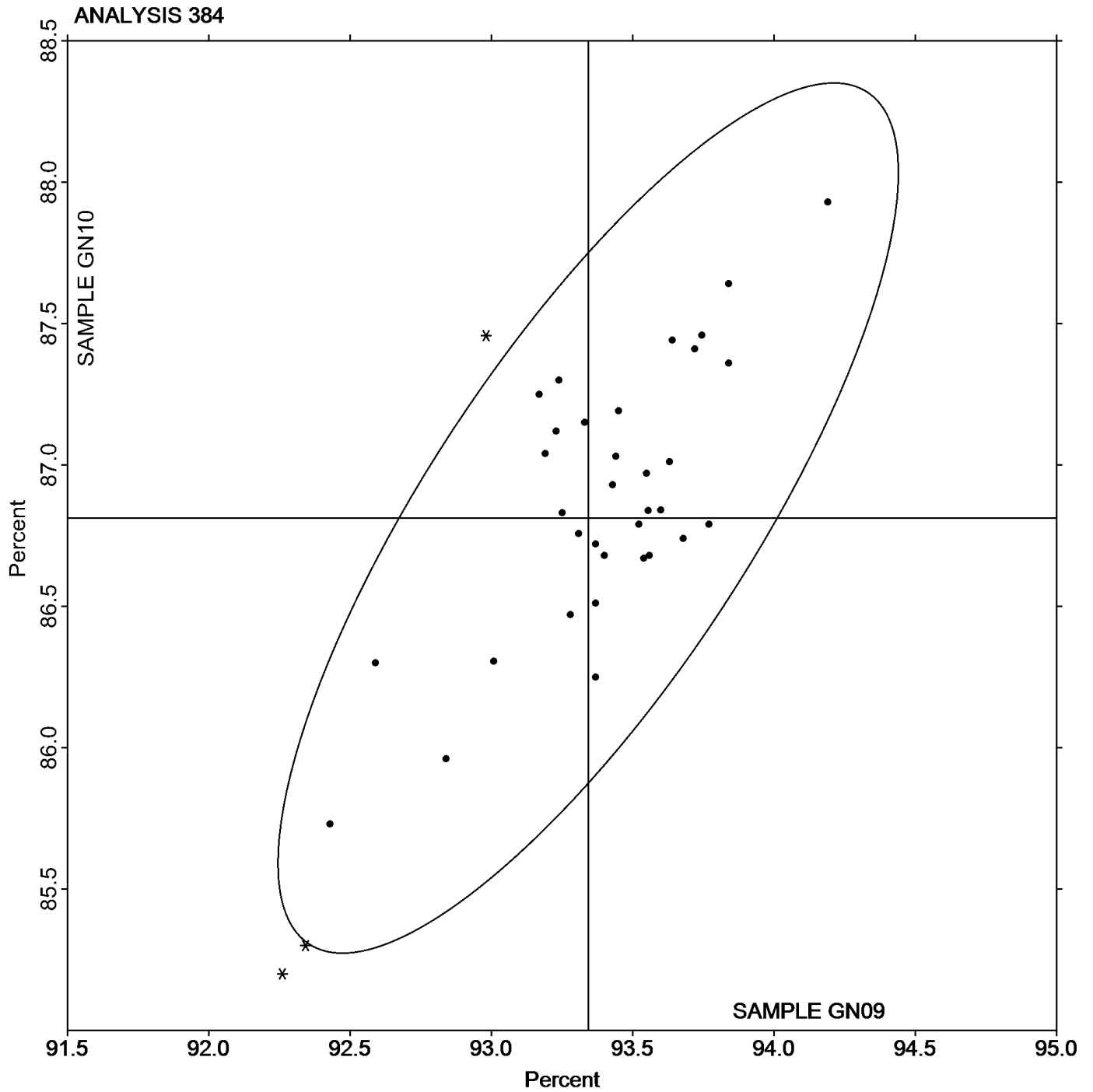
Z37DYH (X) - Extreme data.

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample GN09 = 93.342 Percent

Grand Mean Sample GN10 = 86.812 Percent



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

WebCode	Data Flag	Sample GP09			Sample GP10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4MK226		93.35	-0.03	-0.31	88.77	-0.18	-1.09
67UGXQ	X	93.60	0.22	2.57	90.23	1.29	7.64
AJPEUC	X	93.39	0.00	0.06	90.76	1.81	10.75
CA7W4A	X	92.99	-0.39	-4.64	88.00	-0.95	-5.63
DB2PMZ		93.40	0.02	0.20	89.07	0.12	0.73
GXJA76		93.42	0.04	0.46	88.92	-0.03	-0.18
H8ZDTU		93.40	0.02	0.23	88.93	-0.02	-0.11
L637ZT		93.44	0.05	0.65	88.95	0.00	-0.01
LVW97X		93.43	0.05	0.55	89.07	0.12	0.73
LZBYFY		93.43	0.05	0.59	88.79	-0.16	-0.94
ML9PCQ		93.46	0.08	0.99	89.36	0.42	2.47
PJNW4R		93.39	0.01	0.12	88.84	-0.11	-0.65
T9Y68D		93.41	0.03	0.32	88.59	-0.36	-2.16
THPQDB		93.40	0.02	0.25	89.11	0.16	0.98
TUJ73C	*	93.09	-0.29	-3.46	88.79	-0.16	-0.93
U77Q4L		93.28	-0.10	-1.18	88.92	-0.03	-0.18
ULFMDL		93.39	0.01	0.17	89.01	0.06	0.34
VVMJWJ		93.39	0.00	0.06	89.02	0.07	0.42
XLB7TK		93.34	-0.04	-0.48	89.06	0.11	0.67
XZRYJC		93.44	0.06	0.75	89.03	0.08	0.47
YGEUGL	X	93.31	-0.07	-0.86	90.53	1.59	9.43
YP9XKH		93.32	-0.06	-0.73	89.00	0.05	0.30
ZBZHTJ		93.45	0.07	0.82	88.80	-0.15	-0.87

		Summary Statistics			
		Sample GP09		Sample GP10	
Grand Means		93.380	Percent	88.948	Percent
SD Btwn Labs		0.084	Percent	0.168	Percent
Statistics based on 19 of 23 reporting participants					

Comments on assigned Data Flags for Test #386

67UGXQ (X) - Extreme data.

AJPEUC (X) - Extreme data for Sample GP10.

CA7W4A (X) - Data for both samples are low.

YGEUGL (X) - Extreme data for Sample GP10.

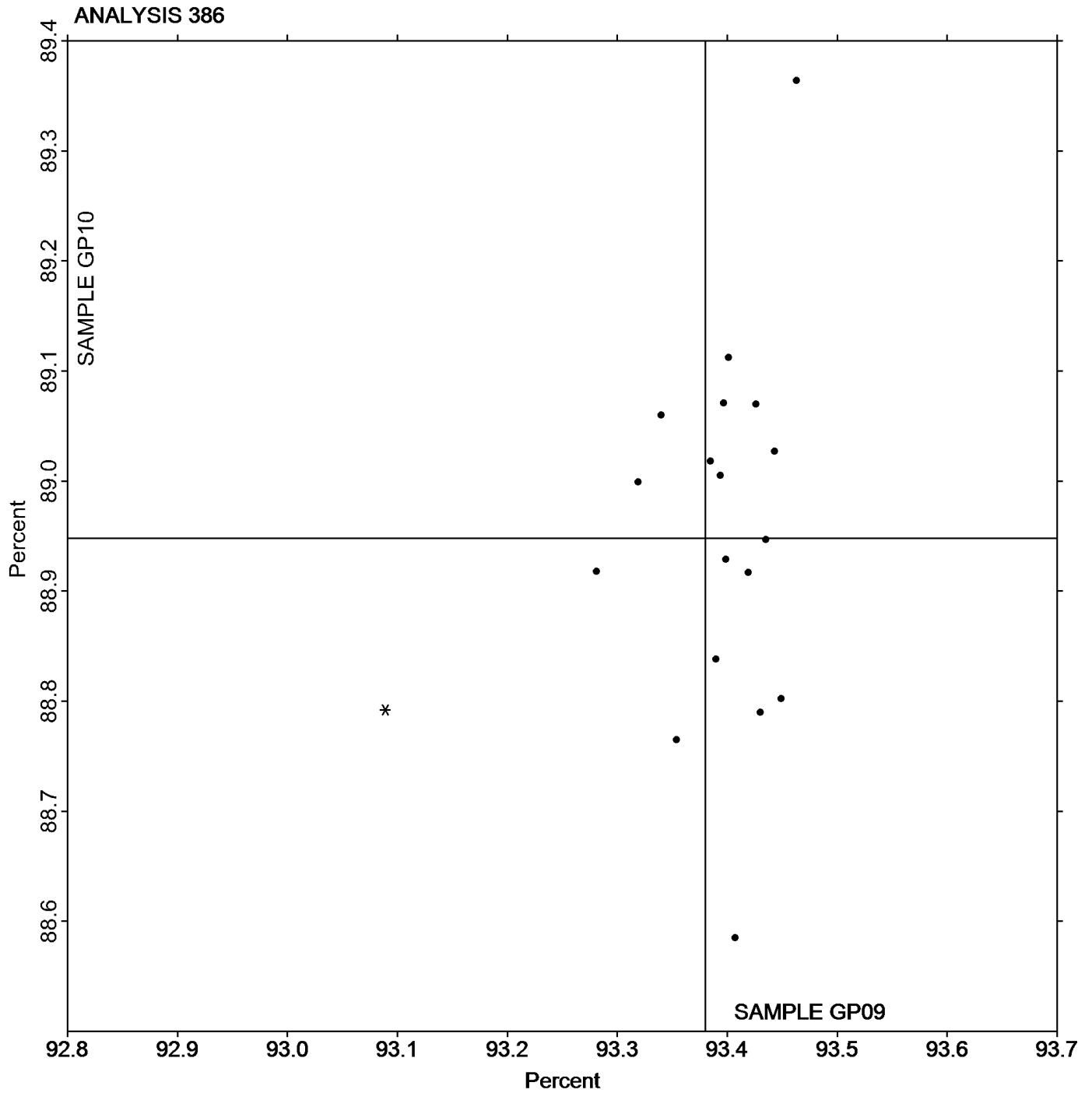
Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample **GP09** = 93.380 Percent

Grand Mean Sample **GP10** = 88.948 Percent



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

WebCode	Data Flag	Sample GR09			Sample GR10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6FHCX7		82.17	-0.28	-0.19	82.06	-0.18	-0.11	XX
6PPAJN		82.98	0.52	0.35	82.96	0.72	0.45	XX
7FBKGA		80.45	-2.00	-1.34	80.44	-1.80	-1.11	TS
AEFYMA		81.39	-1.07	-0.72	80.84	-1.40	-0.87	TT
AVX2ZN	X	61.93	-20.52	-13.77	64.07	-18.17	-11.23	TS
AWRPED		83.90	1.45	0.97	83.74	1.50	0.93	HD
BDFD99		83.95	1.49	1.00	84.15	1.91	1.18	HG
CHLDX6		84.21	1.76	1.18	84.16	1.92	1.19	TS
EQ8BN2	X	79.21	-3.24	-2.18	81.54	-0.70	-0.43	XX
F7D2WJ		85.49	3.03	2.03	85.59	3.35	2.07	XX
FJ4RYB		82.74	0.28	0.19	82.88	0.63	0.39	TA
GCXLFP	X	62.75	-19.71	-13.22	64.80	-17.44	-10.78	TS
GXJA76		81.08	-1.38	-0.93	80.73	-1.52	-0.94	TS
JXDLXP		83.01	0.56	0.37	82.89	0.65	0.40	TT
L637ZT		80.82	-1.64	-1.10	80.10	-2.14	-1.32	TS
LZRZEV		85.78	3.32	2.23	85.65	3.41	2.11	PE
MT4UWE		81.56	-0.89	-0.60	81.45	-0.79	-0.49	XX
NMFCEW		80.84	-1.62	-1.08	80.49	-1.75	-1.08	TS
NR9DKG		83.84	1.38	0.93	83.60	1.36	0.84	TT
PBJMYM		81.20	-1.26	-0.84	81.05	-1.19	-0.74	PE
Q7FE6W		81.57	-0.88	-0.59	81.08	-1.16	-0.72	TS
QEWPHX		82.79	0.33	0.22	82.83	0.58	0.36	TT
RG2TUK	X	83.56	1.11	0.74	81.40	-0.84	-0.52	TT
T4MYVD		82.01	-0.44	-0.30	81.18	-1.07	-0.66	TT
U77Q4L		80.56	-1.90	-1.27	80.24	-2.00	-1.24	TT
V4E2BR		83.48	1.02	0.69	83.16	0.92	0.57	HD
WTEQHB		81.01	-1.44	-0.97	80.55	-1.69	-1.05	TT
YZ7KTE		81.70	-0.76	-0.51	81.41	-0.83	-0.51	XX
Z37DYH		83.68	1.22	0.82	83.33	1.08	0.67	TT
ZZG4R3		81.64	-0.82	-0.55	81.74	-0.50	-0.31	TS

		Summary Statistics	
	Sample GR09		Sample GR10
Grand Means	82.455 Percent		82.242 Percent
SD Btwn Labs	1.490 Percent		1.619 Percent
Statistics based on 26 of 30 reporting participants			

Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

Comments on assigned Data Flags for Test #390

AVX2ZN (X) - Extreme data.

EQ8BN2 (X) - Inconsistent in testing between samples and within the determinations for Sample GR09.

GCXLFP (X) - Extreme data.

RG2TUK (X) - Inconsistent in testing between samples.

Instrument Code List as Reported by the Labs

(HD) - Hunter D25DP - 9000

(HG) - Hunter Labscan / XE

(PE) - Photovolt 577

(TA) - Technidyne, Diano, M.S. S-4

(TS) - Technidyne Brightimeter Micro S-5

(TT) - Technidyne Brightimeter Micro S4-M

(XX) - Instrument make/model not specified by lab

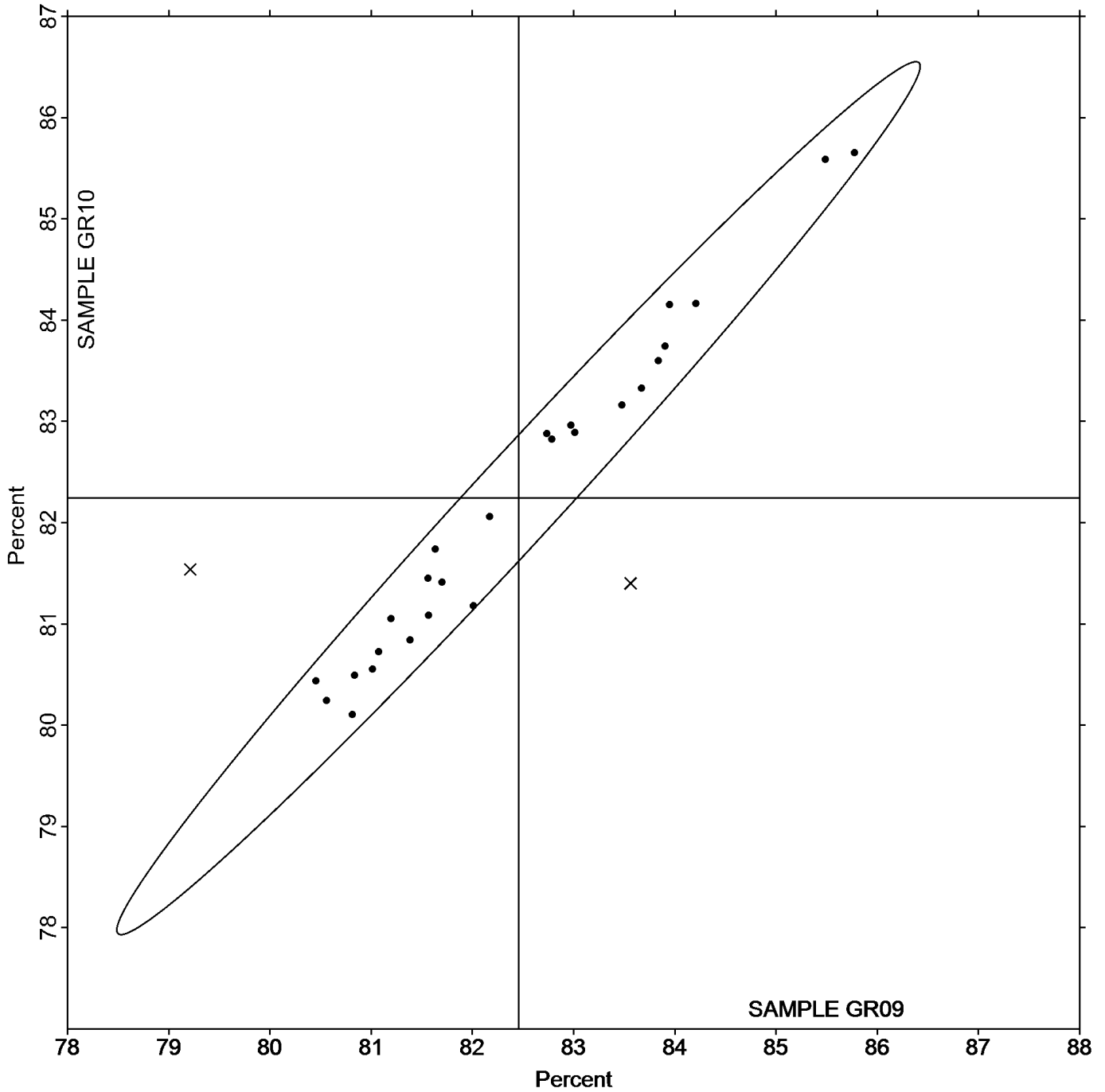
Analysis 390

Directional Brightness

Grand Mean Sample GR09 = 82.455 Percent

Grand Mean Sample GR10 = 82.242 Percent

ANALYSIS 390



**Paper & Paperboard Interlaboratory Testing Program
Analysis 391**

Directional Brightness of Fluorescent Samples

WebCode	Data Flag	Sample GZ09			Sample GZ10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Q9UXH		90.26	0.09	0.20	98.86	0.54	1.11	TT
4LPJXJ		90.26	0.09	0.19	98.44	0.13	0.26	TS
4TN7R4		90.97	0.80	1.71	98.23	-0.09	-0.19	TS
6GV4N3		90.05	-0.11	-0.24	98.36	0.04	0.08	HT
ECBWN8	X	91.22	1.06	2.25	99.94	1.62	3.31	TS
N42ZNR		89.05	-1.11	-2.37	97.18	-1.14	-2.33	HT
NVM9ZE		89.70	-0.47	-0.99	97.70	-0.62	-1.26	TT
PBJMYM		90.25	0.09	0.18	98.63	0.32	0.64	TS
RWQXZT		90.19	0.03	0.05	98.32	0.00	0.01	PP
TZQBE7	X	93.40	3.23	6.89	102.76	4.44	9.07	EF
W4ECQV		90.32	0.16	0.33	98.56	0.24	0.49	TS
WTEQHB		90.24	0.07	0.16	98.32	0.00	0.00	TT
Y8NABM		90.04	-0.13	-0.27	98.22	-0.10	-0.20	TS
ZA8PXZ		90.66	0.49	1.05	99.00	0.68	1.39	TT

Summary Statistics

Sample GZ09

Sample GZ10

Grand Means 90.167 Percent
SD Btwn Labs 0.469 Percent

98.319 Percent
0.490 Percent

Statistics based on 12 of 14 reporting participants

Comments on assigned Data Flags for Test #391

ECBWN8 (X) - Data for Sample GZ10 are high. Data appears to be transposed between Analysis #391 and Analysis #394. Data switched by CTS.

TZQBE7 (X) - Extreme data.

Instrument Code List as Reported by the Labs

(EF) - L & W Datacolor Elrepho

(HT) - Hunter UltraScan Vis

(PP) - Technidyne Profile/Plus

(TS) - Technidyne Brightimeter Micro S-5

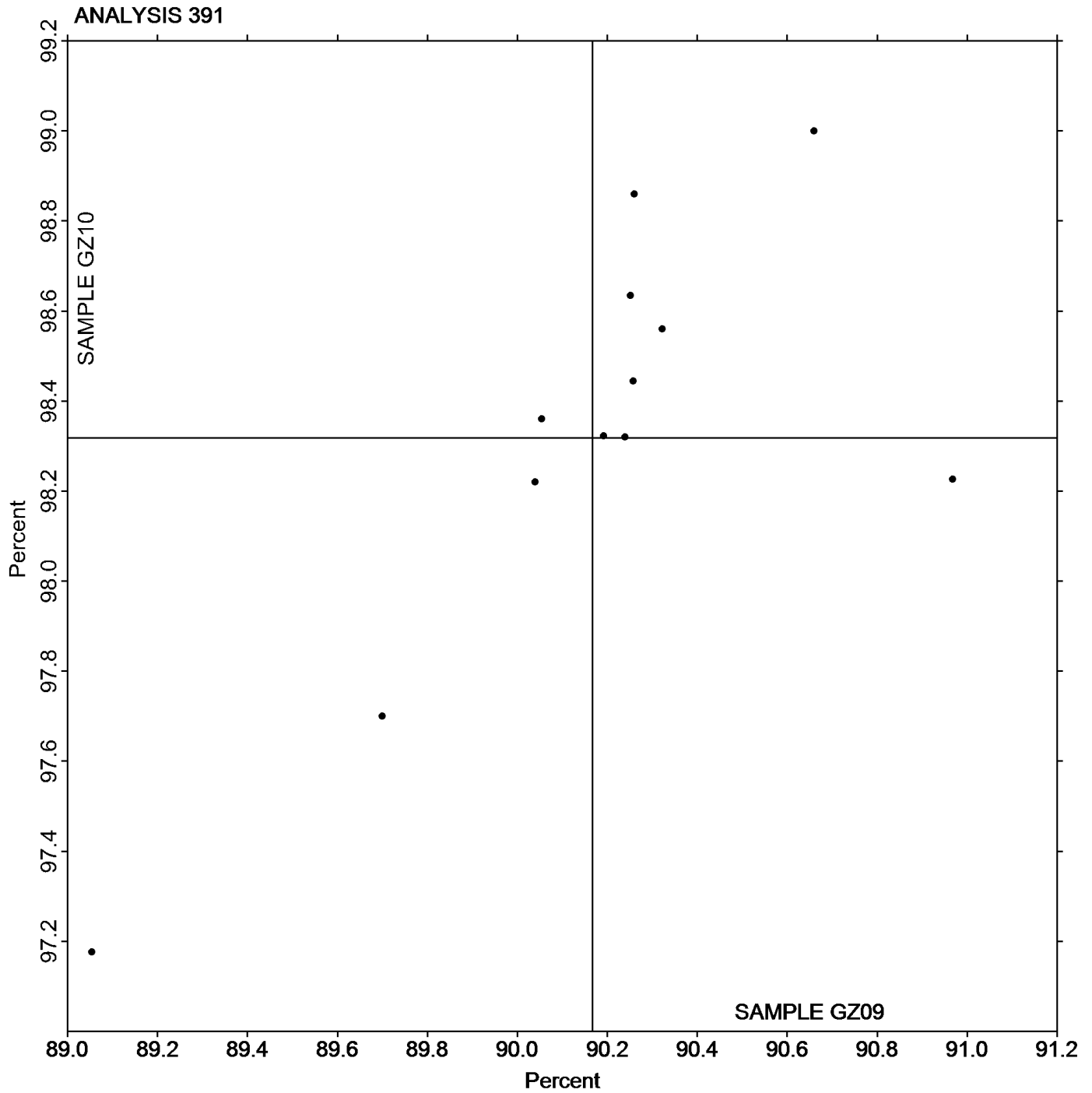
(TT) - Technidyne Brightimeter Micro S4-M

Analysis 391

Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ09** = 90.167 Percent

Grand Mean Sample **GZ10** = 98.319 Percent



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

WebCode	Data Flag	Sample GR09			Sample GR10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3DJ8CM		81.76	0.08	0.43	81.74	0.08	0.40	TC
4M298M		81.80	0.13	0.67	81.95	0.30	1.43	TC
4MK226		81.49	-0.19	-0.96	81.47	-0.18	-0.89	LS
9273LR		81.84	0.16	0.85	81.64	-0.02	-0.09	PP
CA7W4A		81.96	0.29	1.50	81.89	0.23	1.11	TM
CUW4KD		81.69	0.02	0.11	81.65	0.00	-0.01	TC
DKJDDR		81.43	-0.24	-1.24	81.46	-0.19	-0.93	TC
DM9ML9		81.54	-0.14	-0.71	81.48	-0.18	-0.87	TC
ELYTP9	X	79.46	-2.21	-11.43	79.70	-1.96	-9.39	EF
FKYA3X		81.63	-0.04	-0.20	81.59	-0.07	-0.33	TC
GXJA76		81.61	-0.06	-0.32	81.58	-0.08	-0.37	TC
H8ZDTU		81.64	-0.04	-0.19	81.58	-0.08	-0.37	TC
L637ZT		81.71	0.03	0.18	81.73	0.07	0.34	TM
LVW97X		81.87	0.20	1.03	81.93	0.27	1.32	TC
NKQ38G		81.56	-0.12	-0.60	81.48	-0.18	-0.87	TC
NR9DKG		81.53	-0.15	-0.76	81.56	-0.09	-0.45	EG
PJNW4R		81.82	0.14	0.74	81.82	0.17	0.81	TM
Q7FE6W		81.45	-0.23	-1.16	81.37	-0.28	-1.35	TC
QEWPHX		81.59	-0.09	-0.44	81.60	-0.06	-0.27	TL
TUJ73C	X	80.31	-1.36	-7.04	80.23	-1.43	-6.85	FR
TZQBE7		81.59	-0.09	-0.44	81.53	-0.13	-0.63	LA
U77Q4L	*	82.11	0.43	2.23	82.24	0.58	2.79	TM
VVMJWJ		81.59	-0.08	-0.42	81.67	0.01	0.05	TM
W6AVUH	*	82.22	0.55	2.83	82.13	0.48	2.30	EE
WTEQHB		81.53	-0.15	-0.76	81.54	-0.11	-0.55	TC
XU8WJM		81.58	-0.09	-0.46	81.60	-0.06	-0.29	TC
XZRYJC		81.41	-0.26	-1.35	81.41	-0.24	-1.17	LS
YP9XKH		81.70	0.02	0.12	81.57	-0.08	-0.40	TC
YZ7KTE		81.78	0.11	0.57	81.74	0.09	0.41	EE
ZBZHTJ		81.53	-0.14	-0.73	81.60	-0.05	-0.26	TC
ZWHVJL		81.58	-0.10	-0.50	81.48	-0.18	-0.87	TC

		Sample GR09	Summary Statistics	Sample GR10
Grand Means		81.673 Percent		81.656 Percent
SD Btwn Labs		0.193 Percent		0.208 Percent
Statistics based on 29 of 31 reporting participants				

Comments on assigned Data Flags for Test #392

ELYTP9 (X) - Extreme data.

TUJ73C (X) - Extreme data.

Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

Instrument Code List as Reported by the Labs

(EE) - Datacolor Elrepho 2000

(EF) - Datacolor Elrepho 3000

(EG) - Datacolor Elrepho 450X

(FR) - Frank Instruments

(LA) - L & W Elrepho - Autoline

(LS) - L & W Elrepho SE 070

(PP) - Technidyne Profile/Plus

(TC) - Technidyne Color Touch Series

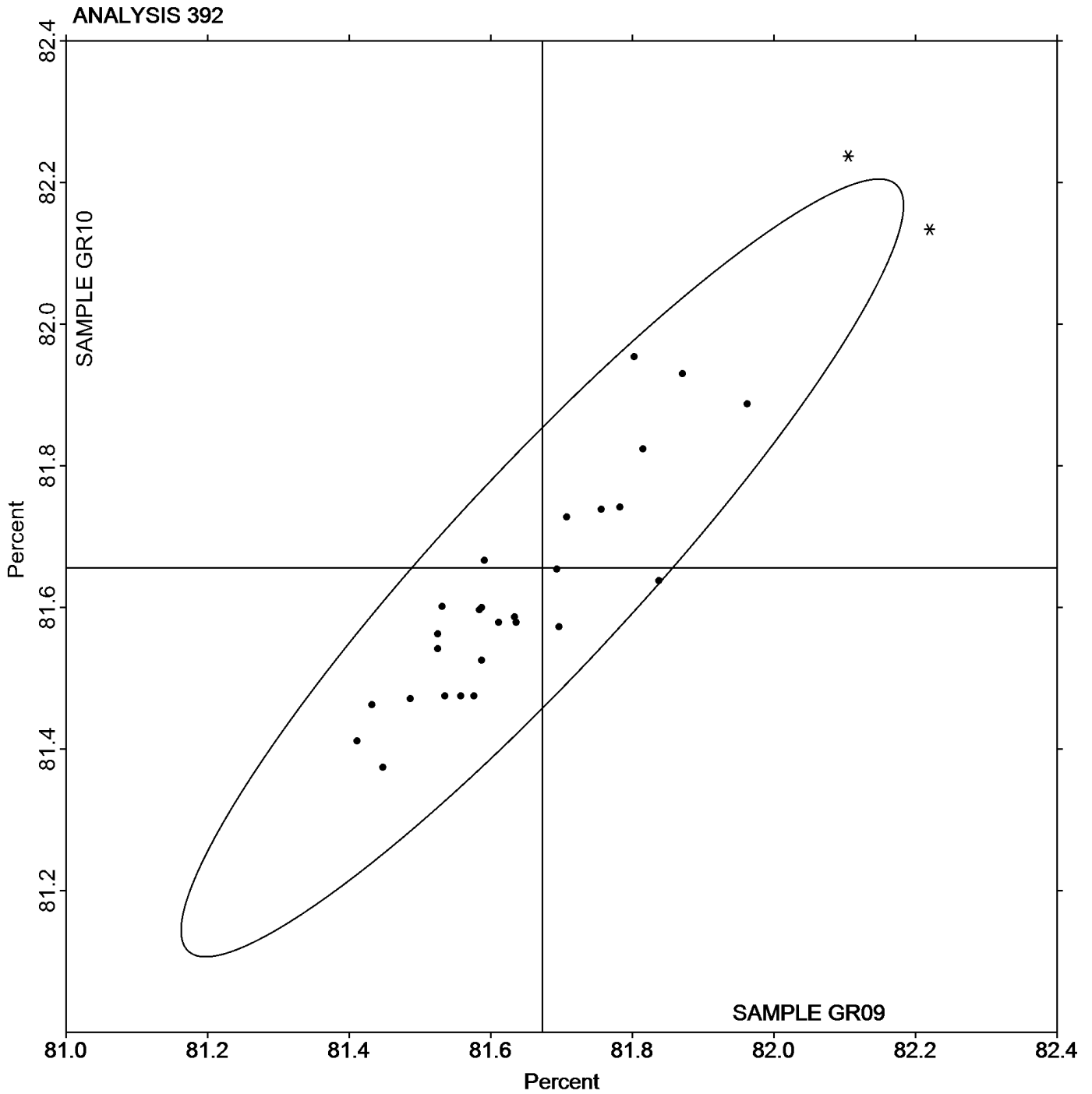
(TL) - Technidyne Technibrite TB-1

(TM) - Technidyne Technibrite Micro TB-1C

Analysis 392
Diffuse Brightness

Grand Mean Sample **GR09** = 81.673 Percent

Grand Mean Sample **GR10** = 81.656 Percent



**Paper & Paperboard Interlaboratory Testing Program
Analysis 394**

Fluorescent Component of Directional Brightness

WebCode	Data Flag	Sample GZ09			Sample GZ10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Q9UXH		7.980	0.778	1.62	10.180	0.940	1.54	TT
4LPJXJ		6.724	-0.478	-1.00	9.020	-0.220	-0.36	TS
4TN7R4		7.540	0.338	0.70	9.470	0.230	0.38	TS
6GV4N3		7.168	-0.034	-0.07	9.368	0.128	0.21	HT
ECBWN8	X	7.242	0.040	0.08	9.290	0.050	0.08	TS
N42ZNR		6.234	-0.968	-2.02	7.748	-1.492	-2.44	HT
NVM9ZE		7.120	-0.082	-0.17	9.200	-0.040	-0.07	TT
PBJMYM		7.040	-0.162	-0.34	9.310	0.070	0.11	TS
RWQXZT		7.536	0.334	0.70	9.422	0.182	0.30	PP
TZQBE7	X	10.640	3.438	7.16	13.400	4.160	6.81	EF
W4ECQV		7.382	0.180	0.37	9.524	0.284	0.46	TS
WTEQHB		7.300	0.098	0.20	9.160	-0.080	-0.13	TT

Summary Statistics			
	Sample GZ09		Sample GZ10
Grand Means	7.2024	Percent	9.2402
SD Btwn Labs	0.4799	Percent	0.6105
Statistics based on 10 of 12 reporting participants			

Comments on assigned Data Flags for Test #394

ECBWN8 (X) - Data appears to be transposed between Analysis #394 and Analysis #391. Data switched by CTS.

TZQBE7 (X) - Extreme data.

Instrument Code List as Reported by the Labs

(EF) - Datacolor Elrepho 3000

(HT) - Hunter UltraScan Vis

(PP) - Technidyne Profile/Plus

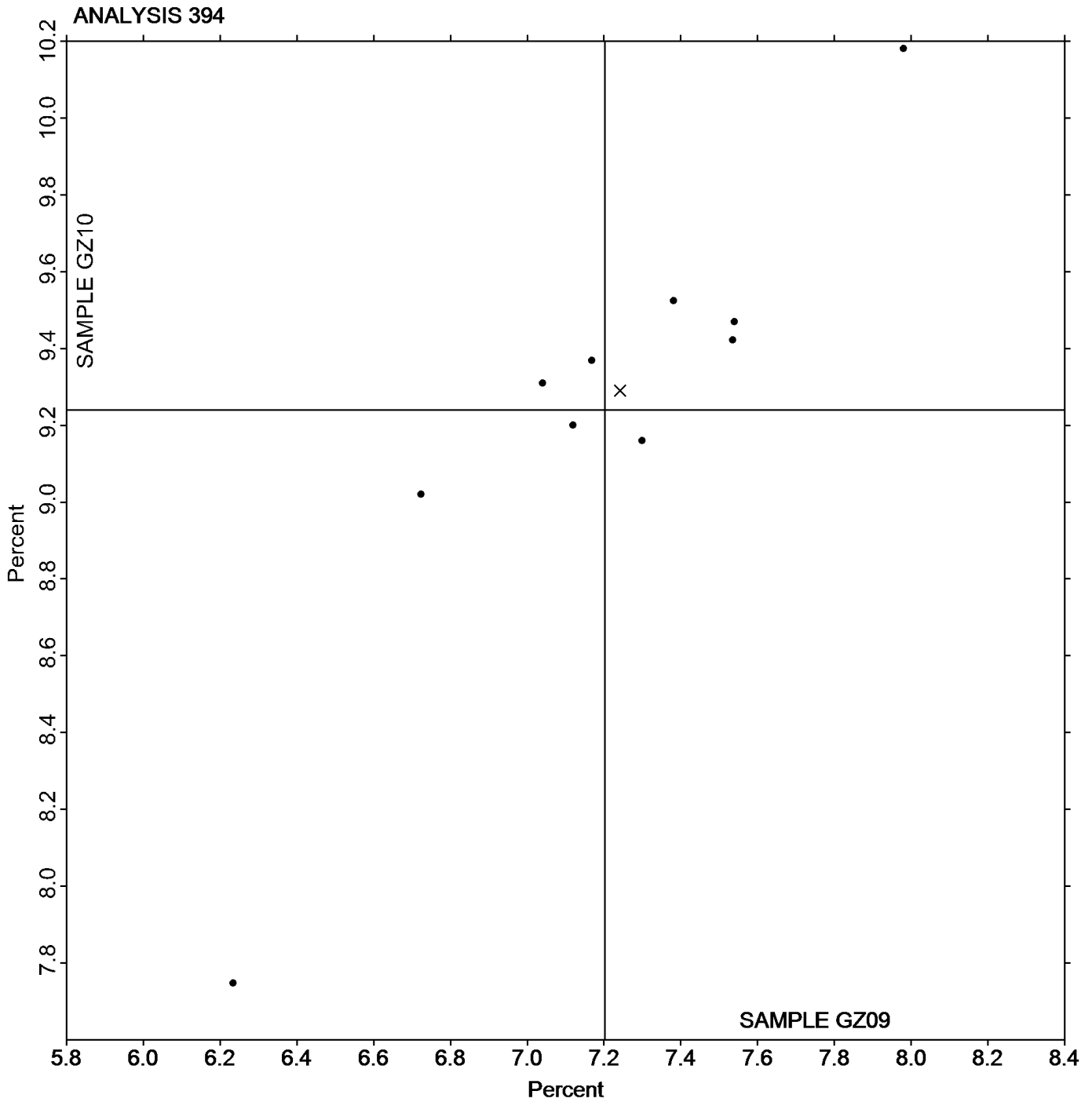
(TS) - Technidyne Brightimeter Micro S-5

(TT) - Technidyne Brightimeter Micro S4-M

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

Grand Mean Sample **GZ09** = 7.2024 Percent

Grand Mean Sample **GZ10** = 9.2402 Percent



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

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

WebCode	Data Flag	Sample GT09			Sample GT10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4MK226		73.13	-0.97	-0.58	70.22	0.15	0.10	LB
6FHCX7		74.54	0.44	0.26	71.51	1.44	0.93	TG
A2ZB3B		75.91	1.81	1.08	71.70	1.63	1.05	LA
A4C446		71.70	-2.40	-1.44	67.36	-2.71	-1.75	GM
AWRPED		75.51	1.41	0.84	71.31	1.24	0.80	TH
CHLDX6	X	69.84	-4.26	-2.55	61.98	-8.09	-5.22	TH
DKJDDR		72.50	-1.60	-0.96	69.55	-0.52	-0.34	ZH
JWH3U3		70.61	-3.49	-2.09	69.84	-0.23	-0.15	TH
JXDLXP		72.67	-1.43	-0.86	68.93	-1.14	-0.74	GS
L637ZT		75.59	1.49	0.89	69.97	-0.10	-0.07	TH
NR9DKG		73.85	-0.25	-0.15	67.12	-2.95	-1.90	GM
NVM9ZE		75.40	1.30	0.78	71.30	1.23	0.79	LA
QEWPHX		72.98	-1.12	-0.67	70.92	0.85	0.55	GS
R7C94T		74.52	0.42	0.25	70.73	0.66	0.42	TH
RWQXZT		74.09	-0.01	-0.01	69.07	-1.00	-0.65	PP
T4MYVD		75.43	1.33	0.80	71.51	1.44	0.93	TG
U77Q4L		77.15	3.05	1.82	72.73	2.66	1.71	TG
ULFMDL	X	70.41	-3.69	-2.21	58.74	-11.33	-7.31	TH
V4E2BR		75.14	1.04	0.62	69.31	-0.76	-0.49	TH
XLB7TK		73.10	-1.00	-0.60	68.20	-1.87	-1.21	GA

Sample GT09		Summary Statistics	Sample GT10	
Grand Means	74.101 Gloss Units		70.071 Gloss Units	
SD Btwn Labs	1.671 Gloss Units		1.550 Gloss Units	
Statistics based on 18 of 20 reporting participants				

Comments on assigned Data Flags for Test #395

CHLDX6 (X) - Data for both samples are low.

ULFMDL (X) - Extreme data for Sample GT10.

Instrument Code List as Reported by the Labs

(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
(ZH) - Zehntner ZLR 1050	

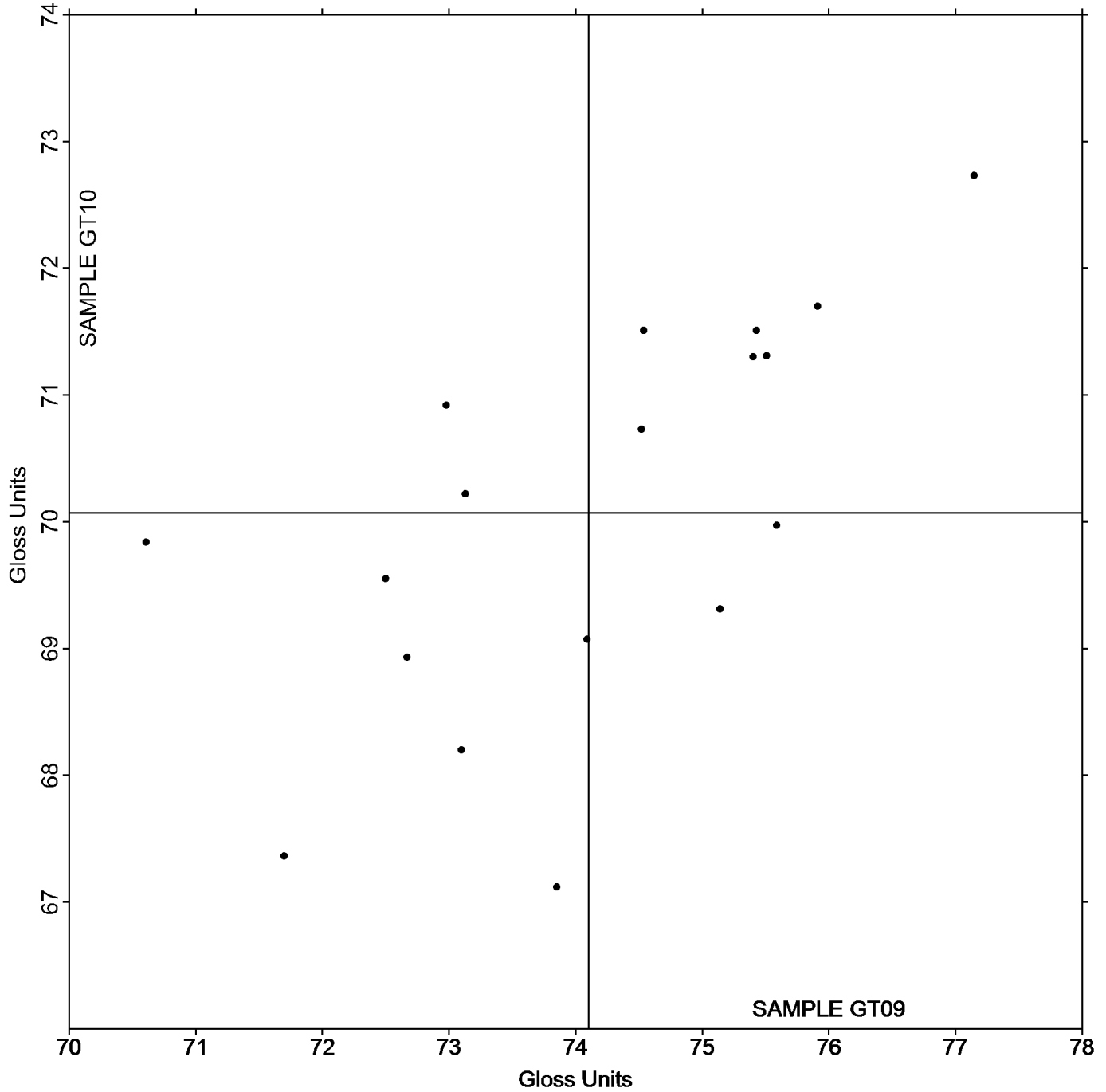
Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT09** = 74.101 Gloss Units

Grand Mean Sample **GT10** = 70.071 Gloss Units

ANALYSIS 395



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

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

WebCode	Data Flag	Sample GU09			Sample GU10			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4MK226		41.03	-1.14	-0.54	36.90	1.21	0.98	LA
9BWKJA		41.88	-0.29	-0.14	36.30	0.61	0.49	TG
CUW4KD		47.10	4.93	2.33	34.92	-0.77	-0.63	TH
EQ8BN2		40.25	-1.92	-0.91	35.90	0.21	0.17	HN
FJ4RYB		42.59	0.42	0.20	33.96	-1.74	-1.42	TH
JJUUHV		42.00	-0.17	-0.08	33.91	-1.78	-1.46	PP
JXDLXP		39.76	-2.41	-1.14	35.82	0.13	0.10	GM
TZQBE7		42.16	-0.01	-0.01	36.06	0.37	0.30	TG
U77Q4L		42.79	0.62	0.29	37.48	1.79	1.46	TG

Summary Statistics			
	Sample GU09		Sample GU10
Grand Means	42.173 Gloss Units		35.694 Gloss Units
SD Btwn Labs	2.115 Gloss Units		1.225 Gloss Units
Statistics based on 9 of 9 reporting participants			

Instrument Code List as Reported by the Labs

- | | |
|-----------------------------------|--------------------------------|
| (GM) - BYK-Gardner micro-gloss | (HN) - Hunter D-48 |
| (LA) - L & W Gloss - Autoline 300 | (PP) - Technidyne Profile/Plus |
| (TG) - Technidyne T480 | (TH) - Technidyne T480A |

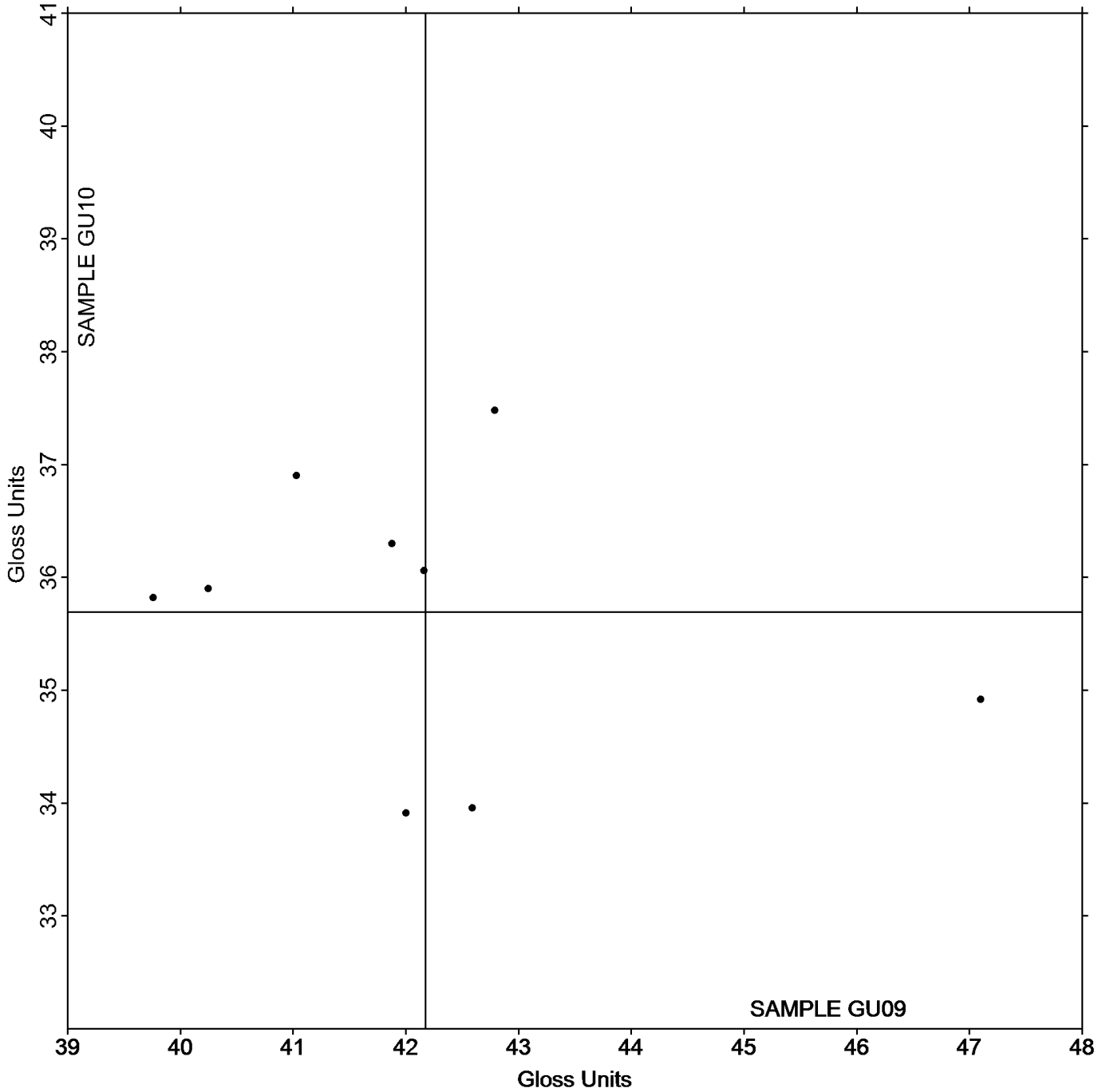
Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU09** = 42.173 Gloss Units

Grand Mean Sample **GU10** = 35.694 Gloss Units

ANALYSIS 396



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)

WebCode	Data Flag	Sample GW09			Sample GW10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4MK226		72.34	-0.28	-0.59	100.0	-0.4	-0.78
67UGXQ		73.00	0.38	0.80	100.7	0.2	0.41
6GV4N3		71.95	-0.67	-1.39	99.7	-0.8	-1.34
6PPAJN		72.56	-0.06	-0.12	100.4	0.0	-0.07
BDFD99		72.34	-0.28	-0.58	100.3	-0.1	-0.25
CB2F8W		73.20	0.58	1.21	100.9	0.5	0.80
CUW4KD		72.93	0.31	0.65	101.3	0.9	1.56
DB2PMZ	*	73.24	0.62	1.30	100.1	-0.4	-0.64
EQ8BN2		72.17	-0.45	-0.95	100.0	-0.5	-0.84
FJ4RYB		71.92	-0.70	-1.46	99.3	-1.1	-2.04
FTBBFL		73.15	0.53	1.10	100.8	0.3	0.55
JXDLXP	X	24.38	-48.24	-100.71	33.8	-66.7	-118.38
LZBYFY		72.62	0.00	0.00	100.8	0.4	0.64
ML9PCQ		72.34	-0.27	-0.57	100.2	-0.2	-0.43
MT4UWE		72.85	0.23	0.49	100.7	0.2	0.40
N42ZNR		72.87	0.25	0.52	100.4	-0.1	-0.13
NMFCEW		72.36	-0.26	-0.54	100.2	-0.3	-0.55
PNJNBN		72.39	-0.23	-0.48	99.7	-0.8	-1.35
RKUWEC	X	6.80	-65.82	-137.41	9.4	-91.0	-161.67
TUJ73C		71.74	-0.88	-1.84	99.7	-0.8	-1.36
TZQBE7		73.60	0.98	2.05	100.8	0.3	0.59
ULFMDL		72.12	-0.50	-1.04	100.1	-0.4	-0.65
WC7WP2		72.41	-0.21	-0.44	100.5	0.0	-0.03
XEMJXF		71.99	-0.63	-1.31	100.0	-0.5	-0.85
XT9VDV		72.51	-0.11	-0.23	101.1	0.7	1.17
XVX3W8		73.31	0.69	1.44	101.9	1.4	2.47
XZRYJC		72.52	-0.10	-0.21	100.7	0.2	0.32
Y8NABM		72.42	-0.20	-0.42	100.3	-0.1	-0.25
YGEUGL		73.00	0.38	0.79	100.9	0.4	0.71
YP9XKH		73.25	0.63	1.33	101.3	0.8	1.45
YZ7KTE		72.86	0.24	0.50	100.7	0.3	0.46

Sample GW09		Summary Statistics	Sample GW10	
Grand Means	72.619 g/sq m		100.47 g/sq m	
SD Btwn Labs	0.479 g/sq m		0.56 g/sq m	
Statistics based on 29 of 31 reporting participants				

JXDLXP (X) - Extreme data.
 RKUWEC (X) - Extreme data.

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

Analysis Notes:

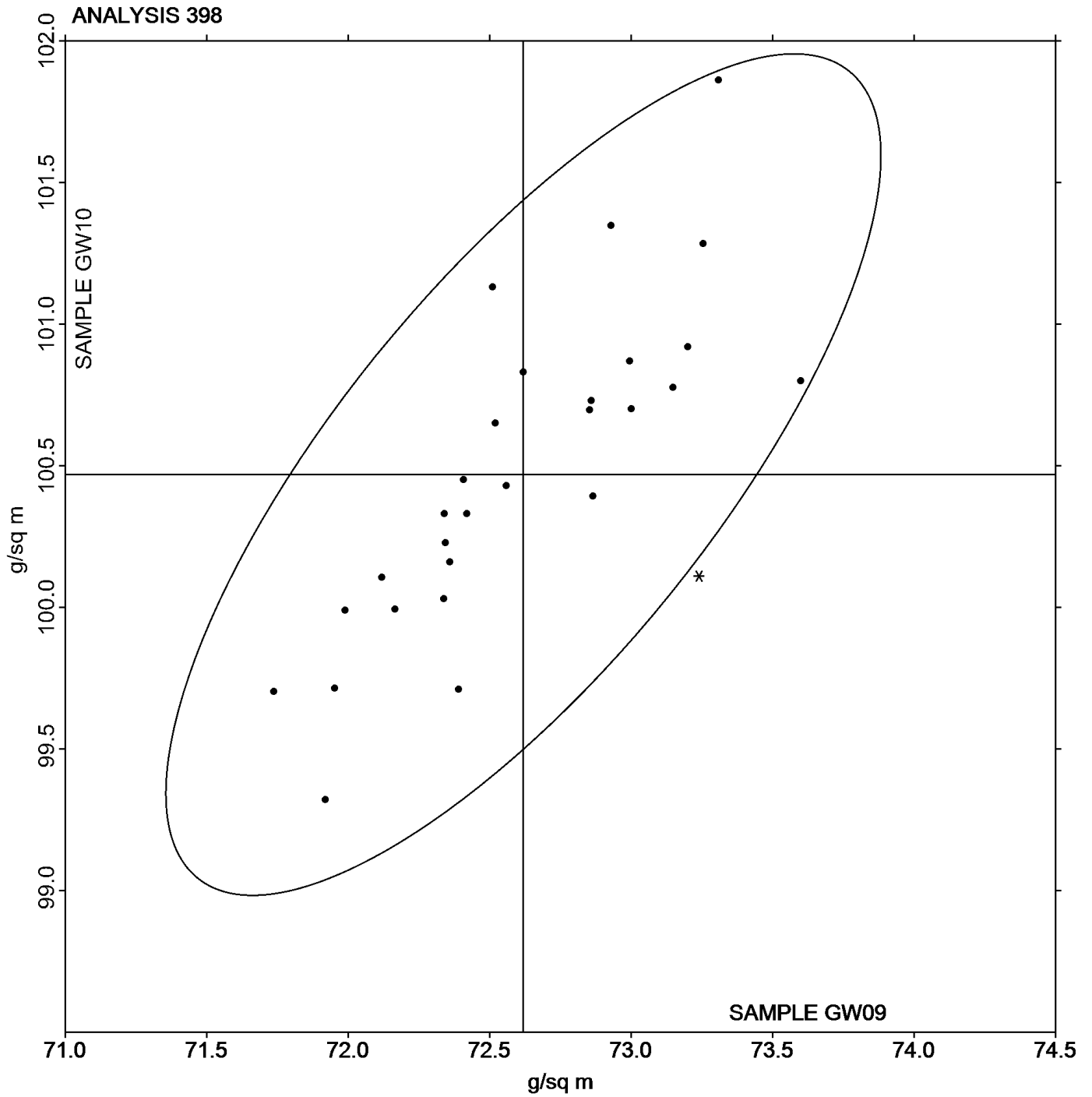
4MK226 - Data appears to be transposed between samples. Data Switched by CTS.

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW09** = 72.619 g/sq m

Grand Mean Sample **GW10** = 100.47 g/sq m



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

WebCode	Data Flag	Sample GX09			Sample GX10		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
32PUEB		9.750	2.218	1.31	14.87	-42.43	-1.52
4LPJXJ		6.720	-0.812	-0.48	42.56	-14.74	-0.53
4TN7R4		8.550	1.018	0.60	59.57	2.27	0.08
6PPAJN	M	7.580	0.048	0.03	No data reported for this sample		
7FBKGA		6.540	-0.992	-0.58	38.84	-18.46	-0.66
9BWKJA		11.700	4.168	2.45	63.30	6.00	0.22
9EBEY7		4.980	-2.552	-1.50	32.40	-24.90	-0.89
A4C446		6.900	-0.632	-0.37	31.50	-25.80	-0.93
AEFYMA		7.980	0.448	0.26	40.31	-16.99	-0.61
B8N9E6		6.520	-1.012	-0.60	44.13	-13.17	-0.47
CHLDX6		4.790	-2.742	-1.61	60.61	3.31	0.12
CUW4KD		7.990	0.458	0.27	102.54	45.24	1.62
DR7W32		6.870	-0.662	-0.39	49.52	-7.78	-0.28
EDK8F6		7.070	-0.462	-0.27	45.50	-11.80	-0.42
F7D2WJ		5.610	-1.922	-1.13	37.45	-19.85	-0.71
HAPJB7		7.640	0.108	0.06	68.48	11.18	0.40
JJUUHV		6.990	-0.542	-0.32	71.19	13.89	0.50
JXDLXP		10.100	2.568	1.51	53.90	-3.40	-0.12
L637ZT		7.710	0.178	0.10	49.70	-7.60	-0.27
LGDLYL		6.580	-0.952	-0.56	52.76	-4.54	-0.16
LZRZEV	X	11.170	3.638	2.14	539.78	482.48	17.32
MT4UWE		7.600	0.068	0.04	50.30	-7.00	-0.25
PBJMYM		9.400	1.868	1.10	129.10	71.80	2.58
Q7FE6W		10.610	3.078	1.81	82.09	24.79	0.89
R89NFQ		9.040	1.508	0.89	44.44	-12.86	-0.46
RG2TUK	X	10.310	2.778	1.64	191.13	133.83	4.80
W4ECQV	X	90.920	83.388	49.11	316.43	259.13	9.30
WTEQHB		8.340	0.808	0.48	73.30	16.00	0.57
XND44D	*	7.100	-0.432	-0.25	135.64	78.34	2.81
Y8NABM		6.700	-0.832	-0.49	42.90	-14.40	-0.52
ZA8PXZ		5.900	-1.632	-0.96	63.62	6.32	0.23
ZNQFUG		5.210	-2.322	-1.37	23.92	-33.38	-1.20

	Sample GX09	Summary Statistics	Sample GX10
Grand Means	7.5318 Seconds		57.301 Seconds
SD Btwn Labs	1.6980 Seconds		27.852 Seconds
Statistics based on 28 of 32 reporting participants			

Analysis 399

Sizing Test (Hercules Type)

Comments on assigned Data Flags for Test #399

6PPAJN (M) - No data for Sample GX10.

LZRZEV (X) - Extreme data for Sample GX10.

RG2TUK (X) - Data for Sample GX10 are high.

W4ECQV (X) - Extreme data.

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample **GX09** = 7.5318 Seconds

Grand Mean Sample **GX10** = 57.301 Seconds

