Collaborative Testing Services, Inc.

Paper & PaperboardTesting Program

Summary Report #271G-August 2014

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:

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.

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

Technidyne Corporation
James Bruner/Nicholas Riggs
100 Quality Avenue
New Albany, IN 47150-2272 USA
Phone: (812) 948-2884
FAX #: (812) 945-6847

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

Testing Machines Inc.
Michael Foran, Technical Support Engineer
2910 Expressway Drive South
Islandia, NY 11722
Phone: (631) 439-5400
FAX #: (631) 439-5420

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

Hercules, Inc.
Steven R. Boone
7510 Baymeadows Way
Jacksonville, FL 32256-7524
Phone: (904) 732-3136
FAX #: (904) 448-4995

Lorentzen & Wettre USA Inc.
Bill Crain, Technical Manager
1055 Windward Ridge Pkwy
Suite 160
Alpharetta, GA 30005
Phone: (770) 442-8015 ext 232
FAX #: (770) 442-6792

Valmet Inc.
Eeva Nettamo, Product Manager Paper Testing
3100 Medlock Bridge Road - Suite 260
Norcross, GA 30071
Phone: (770) 448-0849
FAX #: (770) 242-8386

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

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

BYK-Gardner
Randy Snavely
9104 Guilford Road
Columbia, MD 21046-2729
Phone: (301) 483-6500
FAX #: (301) 483-6555

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

TAPPI-CTS Interlaboratory Testing Program

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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE		Instr Code
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						
QEWPHX		GA09	92.31	-1.24	1.87	0.07	0.32	0.09	0.34		HE
		GA10	92.38	-0.92	1.96						

TAPPI-CTS Interlaboratory Testing Program

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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
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					

Summary Statistics

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

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

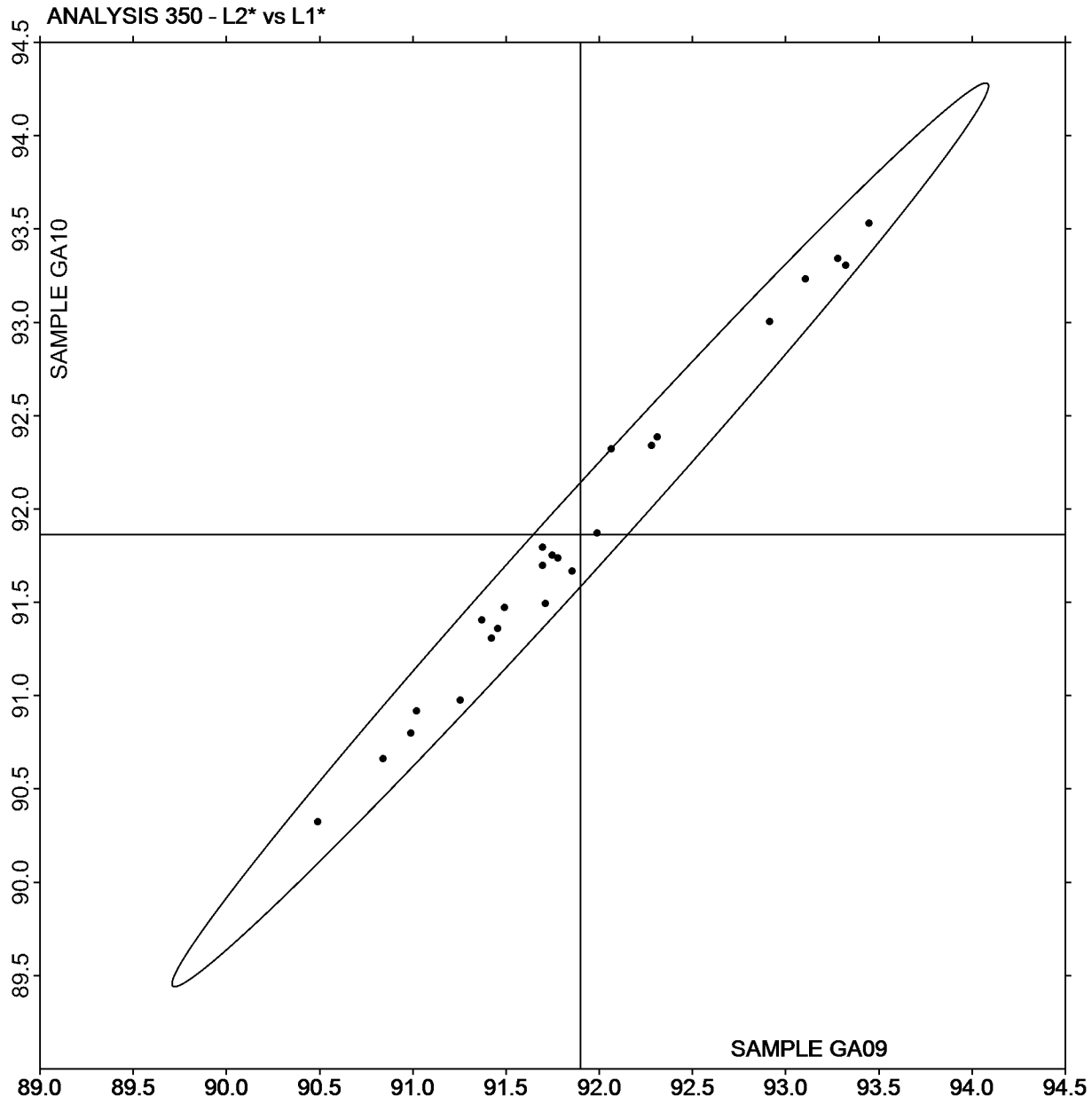
TAPPI-CTS Interlaboratory Testing Program

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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of L values GA10 v L values GA09

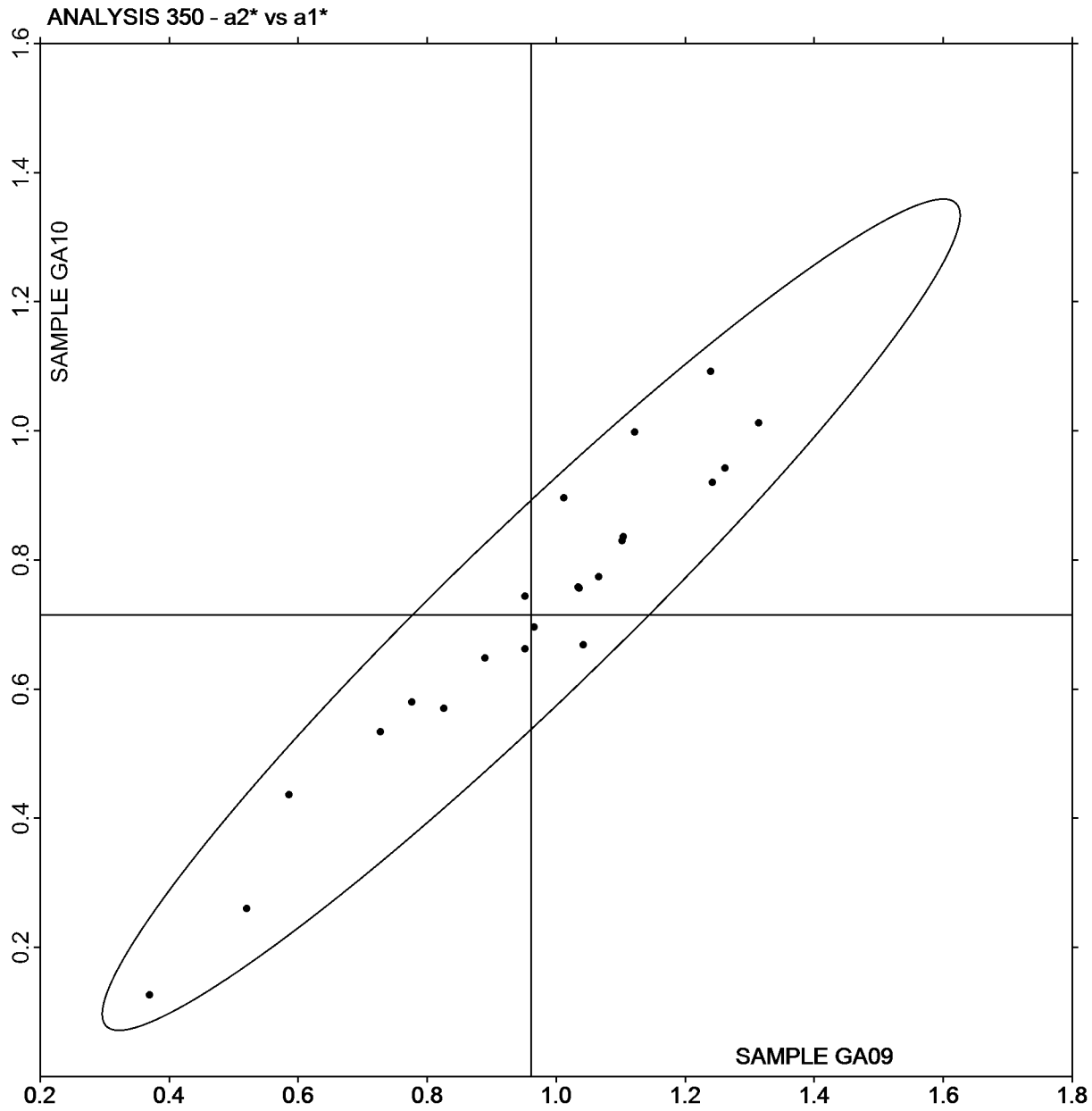


TAPPI-CTS Interlaboratory Testing Program

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

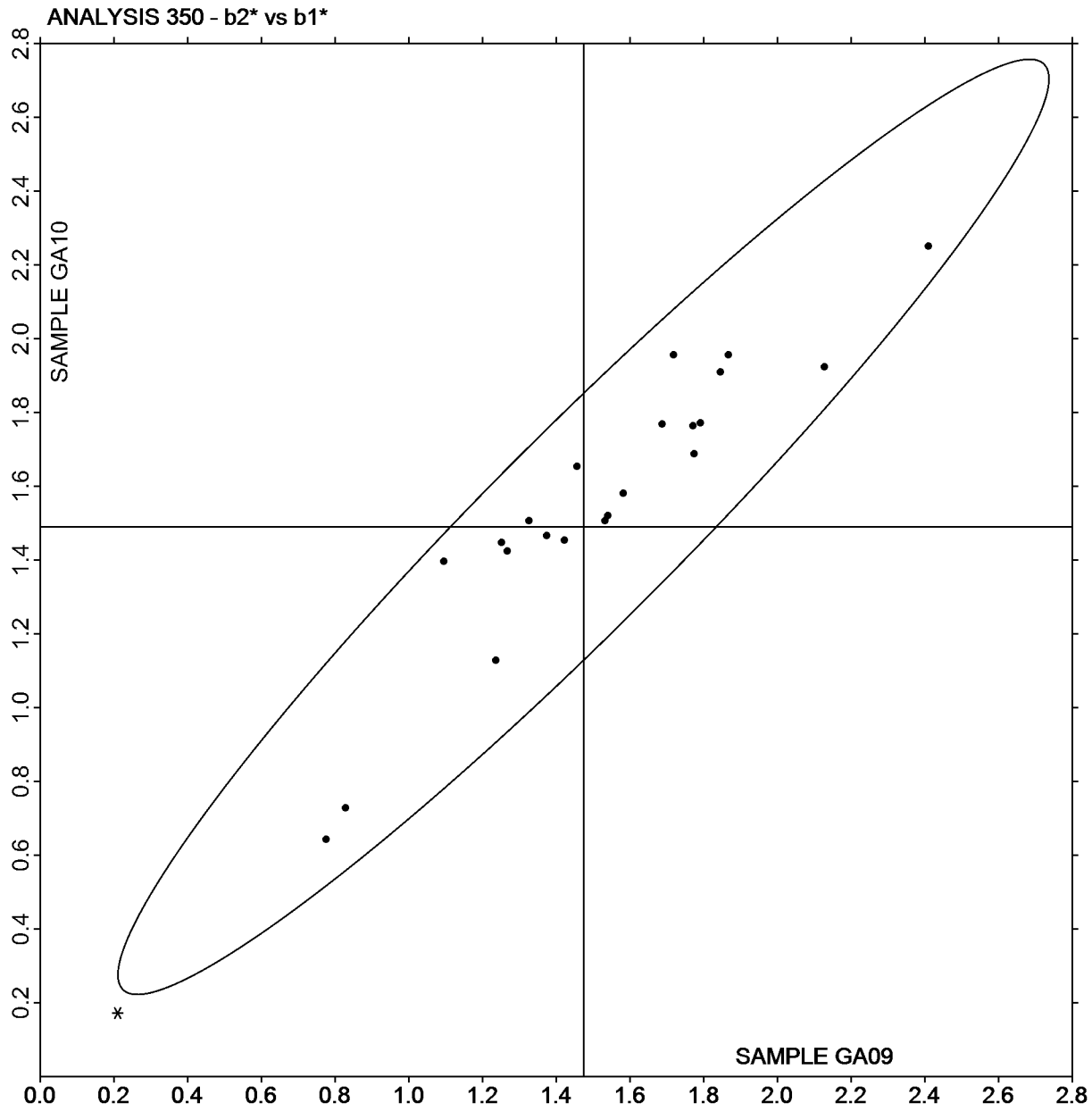


TAPPI-CTS Interlaboratory Testing Program

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					
QEWPHX	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					

TAPPI-CTS Interlaboratory Testing Program

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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
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	-0.049	0.351	0.013	0.427
GA10	92.983	-0.923	2.005				
Stnd Dev Btwn Labs							
GA09	0.868	0.239	0.299	0.180	0.077	0.161	0.066
GA10	0.959	0.208	0.269				

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

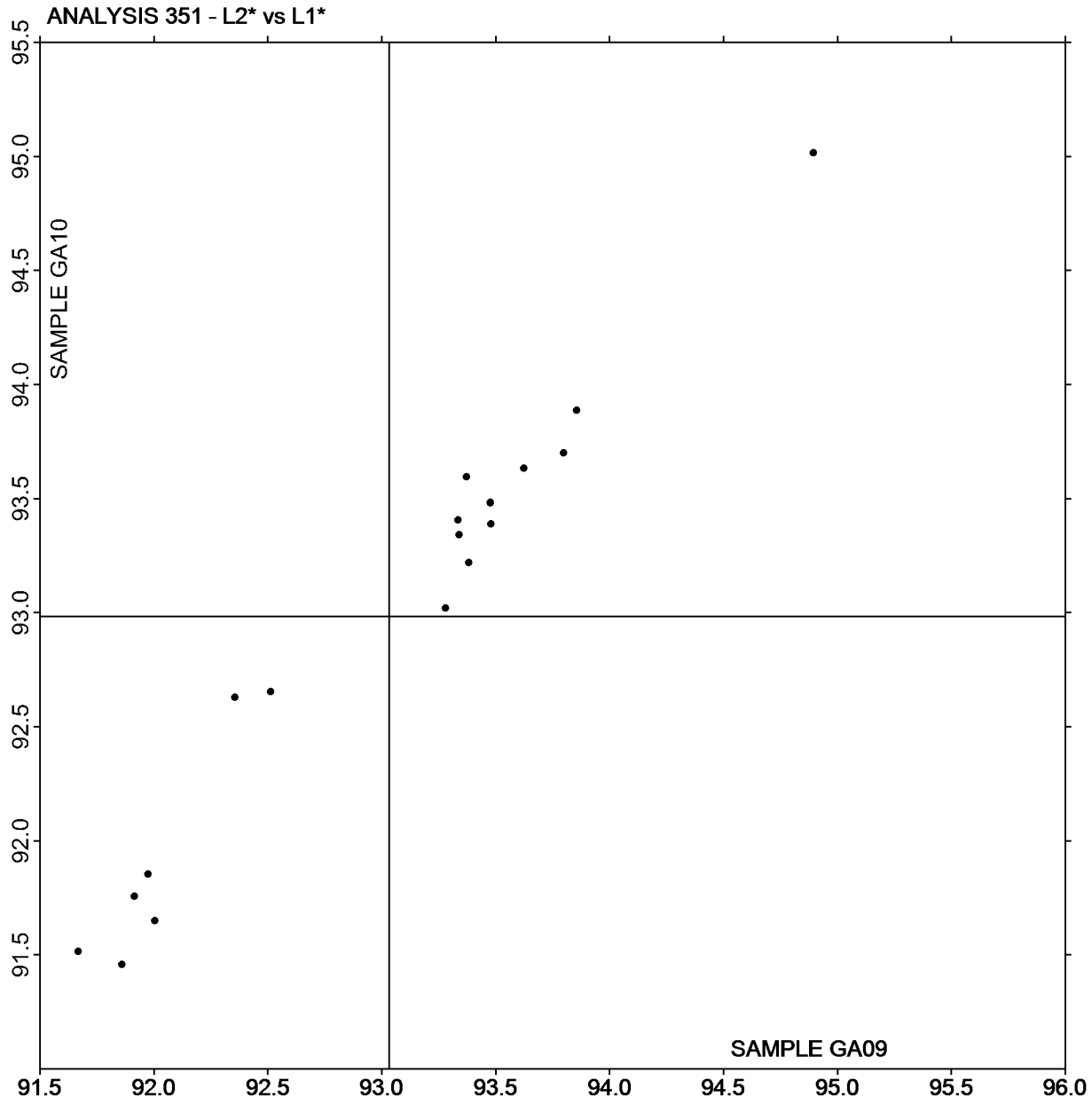
TAPPI-CTS Interlaboratory Testing Program

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 L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of L values GA10 v L values GA09



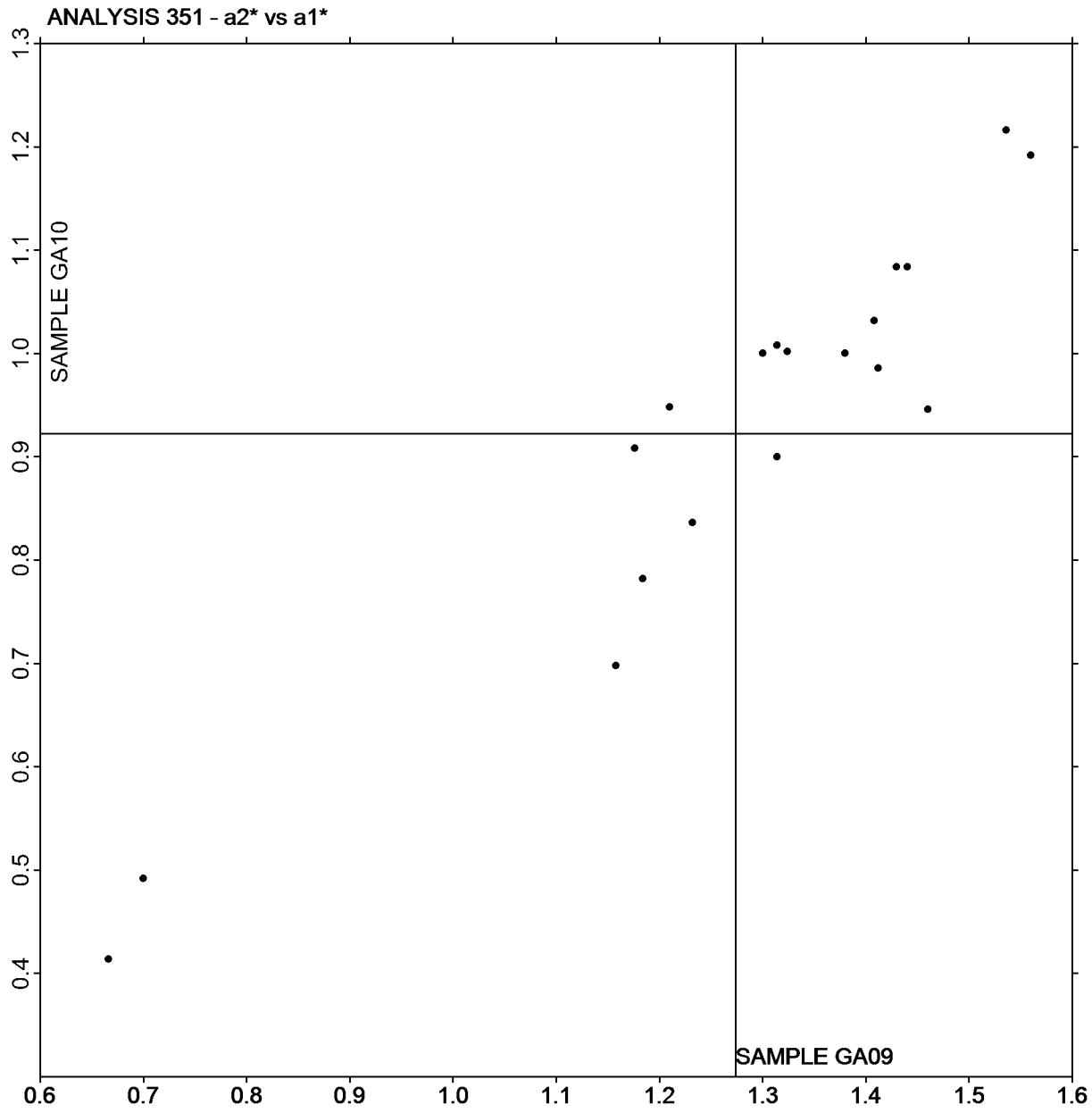
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

TAPPI-CTS Interlaboratory Testing Program

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



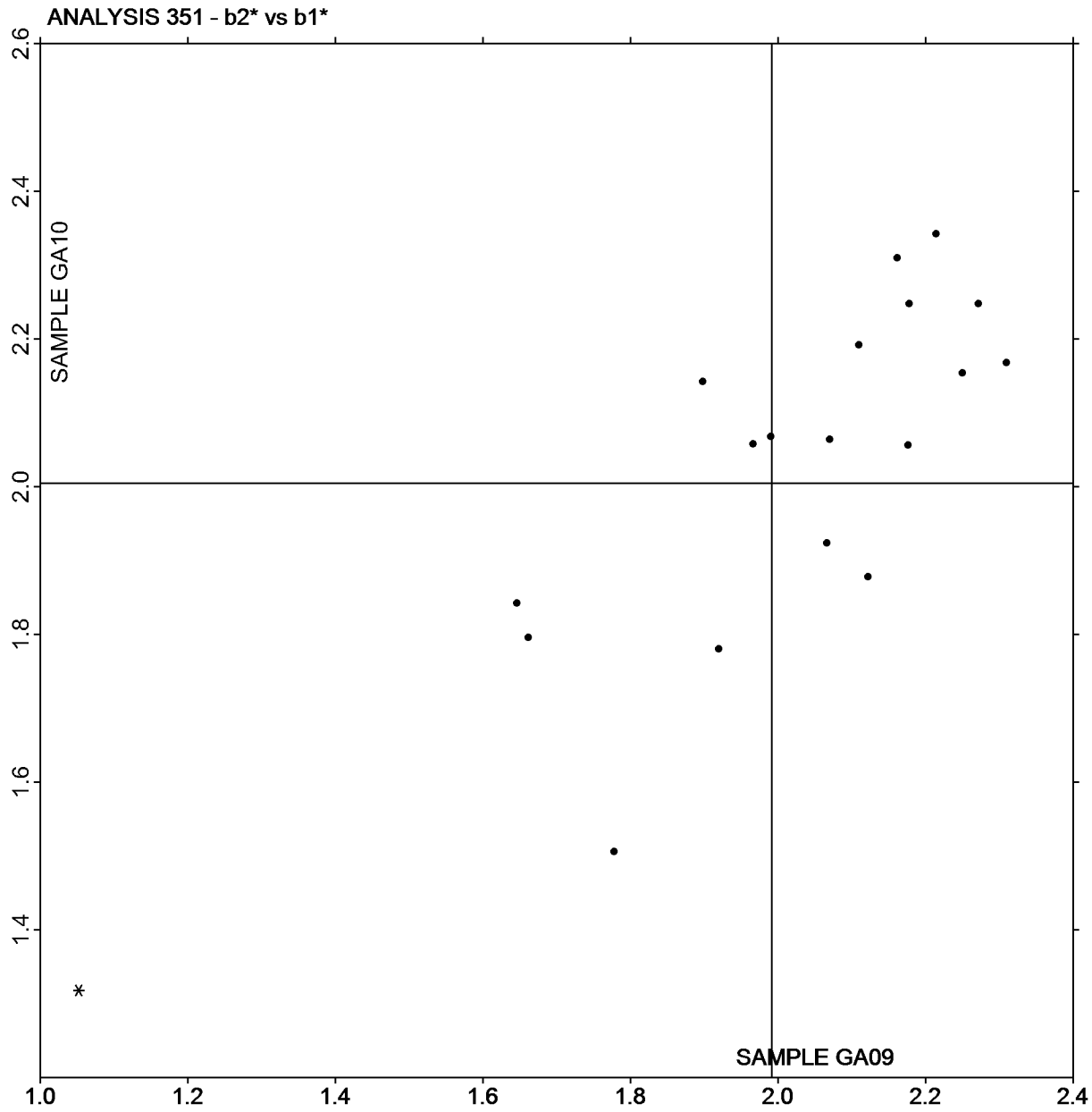
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

TAPPI-CTS Interlaboratory Testing Program

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 Lab Mean	Sample GV09 Diff from Grand Mean	Sample GV09 CPV	Sample GV10 Lab Mean	Sample GV10 Diff from Grand Mean	Sample GV10 CPV	Instr Code
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 Lab Mean	Sample GV09 Diff from Grand Mean	Sample GV09 CPV	Sample GV10 Lab Mean	Sample GV10 Diff from Grand Mean	Sample GV10 CPV	Instr Code
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

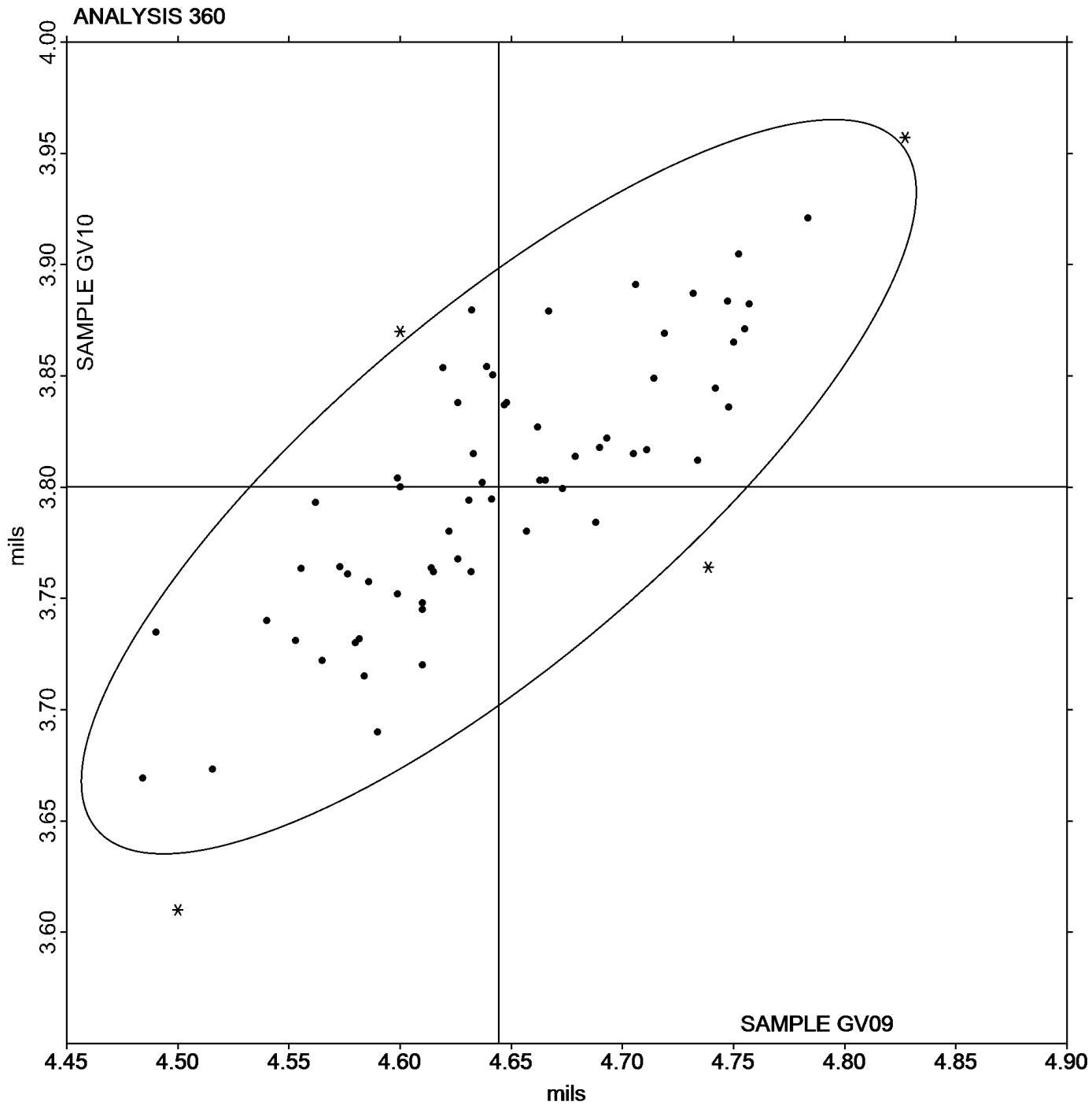
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GY09 Diff from Grand Mean	Sample GY09 CPV	Sample GY10 Lab Mean	Sample GY10 Diff from Grand Mean	Sample GY10 CPV	Instr Code
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 Btwn 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

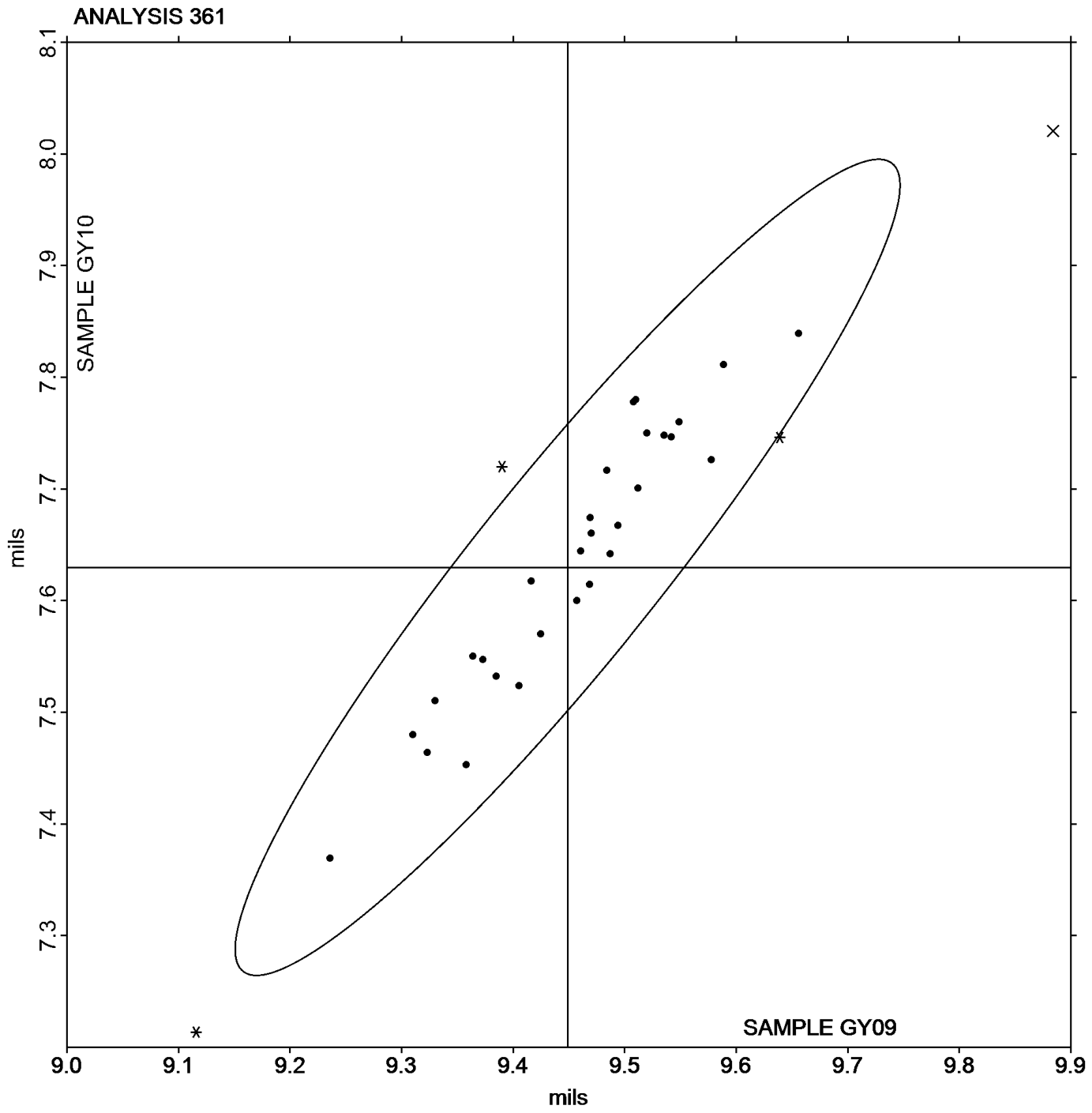
Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample **GY09** = 9.4488 mils

Grand Mean Sample **GY10** = 7.6298 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

WebCode	Data Flag	Sample GD09 Lab Mean	Sample GD09 Diff from Grand Mean	Sample GD09 CPV	Sample GD10 Lab Mean	Sample GD10 Diff from Grand Mean	Sample GD10 CPV	Instr Code
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

Summary Statistics

	Sample GD09	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

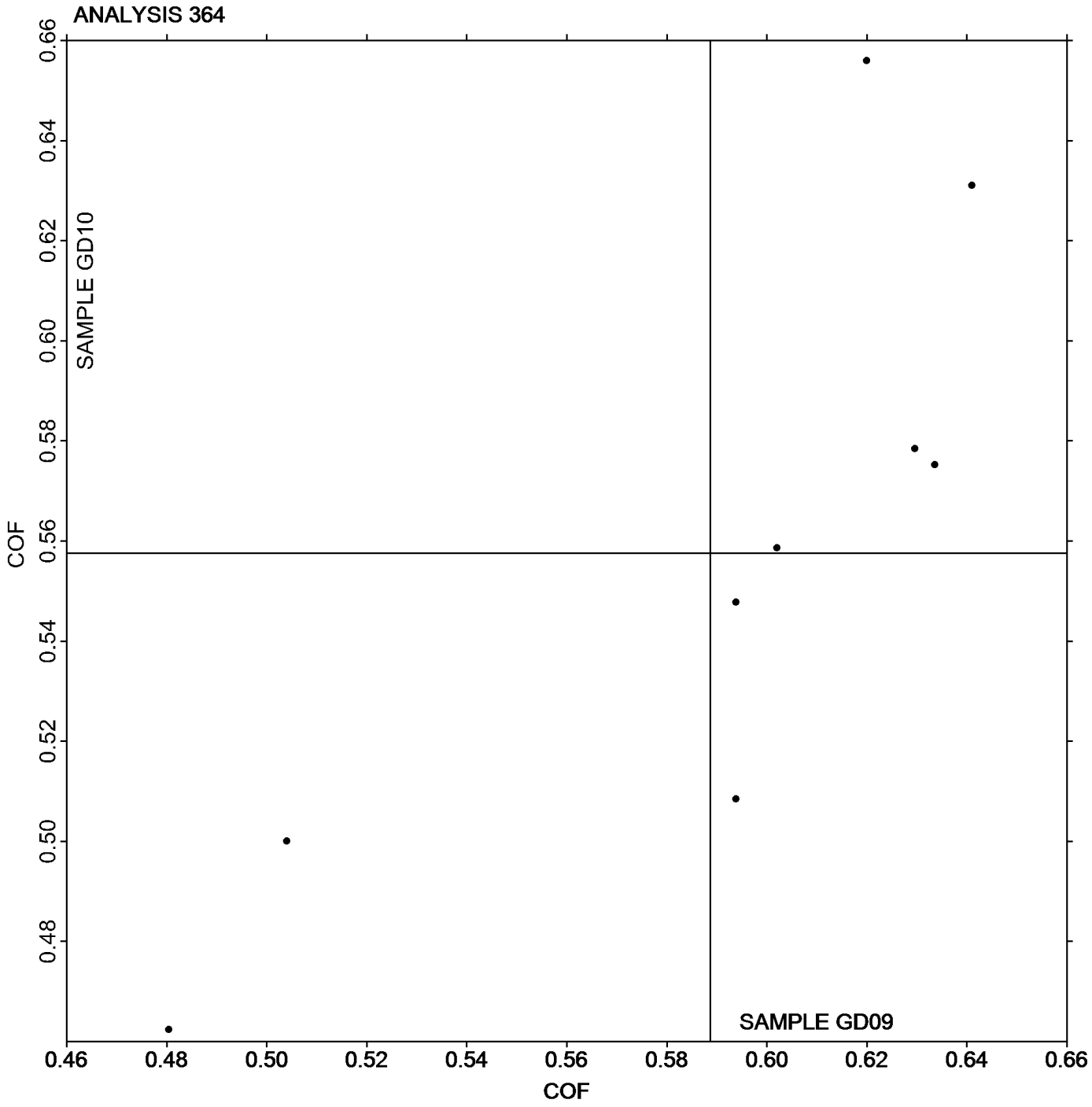
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GD09 Diff from Grand Mean	Sample GD09 CPV	Sample GD10 Lab Mean	Sample GD10 Diff from Grand Mean	Sample GD10 CPV	Instr Code
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	0.42784 COF
SD Btwn Labs	0.08789 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

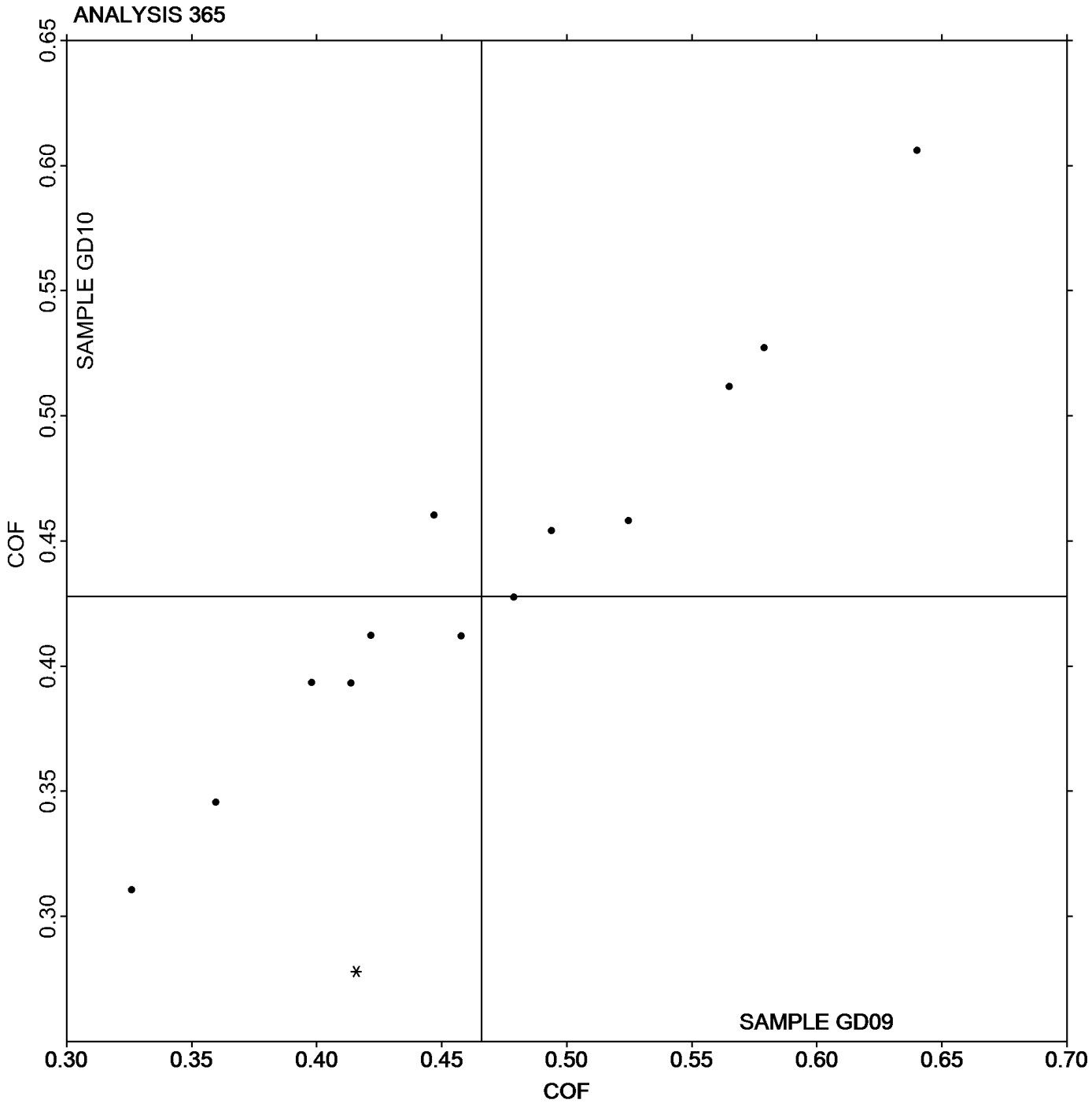
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GE09 Diff from Grand Mean	Sample GE09 CPV	Sample GE10 Lab Mean	Sample GE10 Diff from Grand Mean	Sample GE10 CPV	Instr Code
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
GCJZ43		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

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

Summary Statistics

	Sample GE09	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

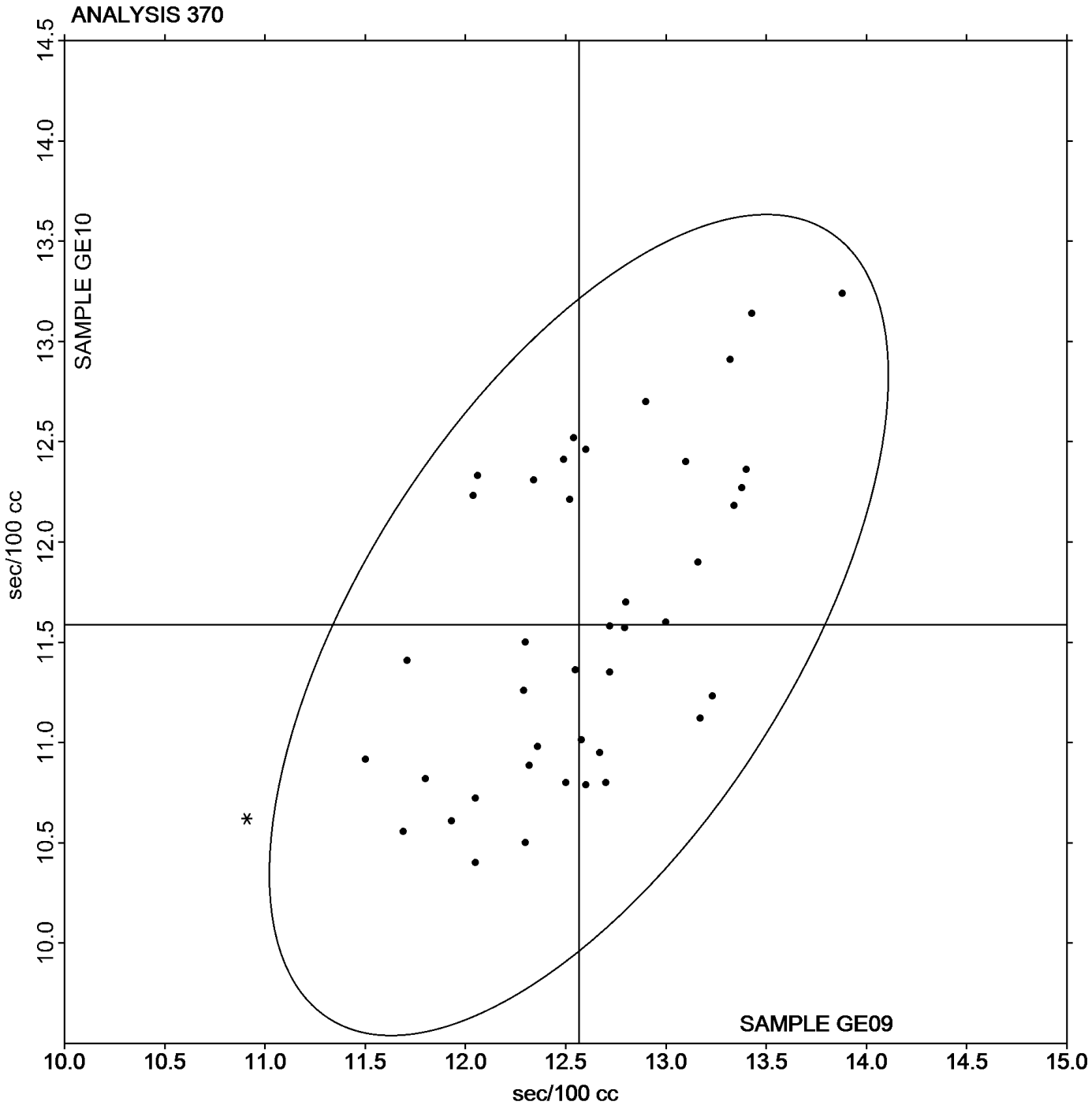
Paper & Paperboard Interlaboratory Testing Program

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



Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

WebCode	Data Flag	Sample GE09 Lab Mean	Sample GE09 Diff from Grand Mean	Sample GE09 CPV	Sample GE10 Lab Mean	Sample GE10 Diff from Grand Mean	Sample GE10 CPV	Instr Code
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	212.32 Sheffield Units
SD Btwn Labs	20.49 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)

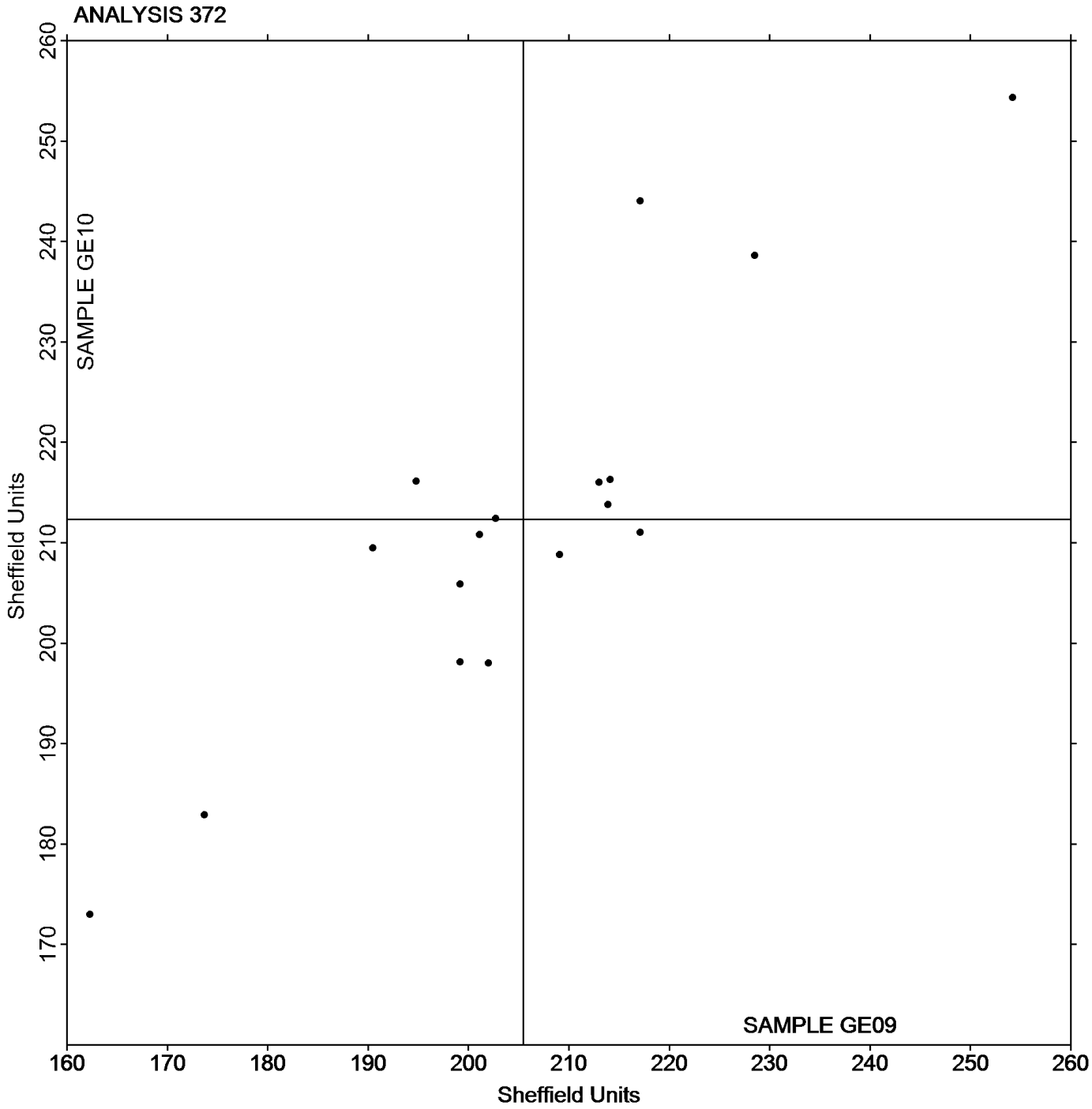
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GJ09 Diff from Grand Mean	Sample GJ09 CPV	Sample GJ10 Lab Mean	Sample GJ10 Diff from Grand Mean	Sample GJ10 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

Summary Statistics

	Sample GJ09	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.

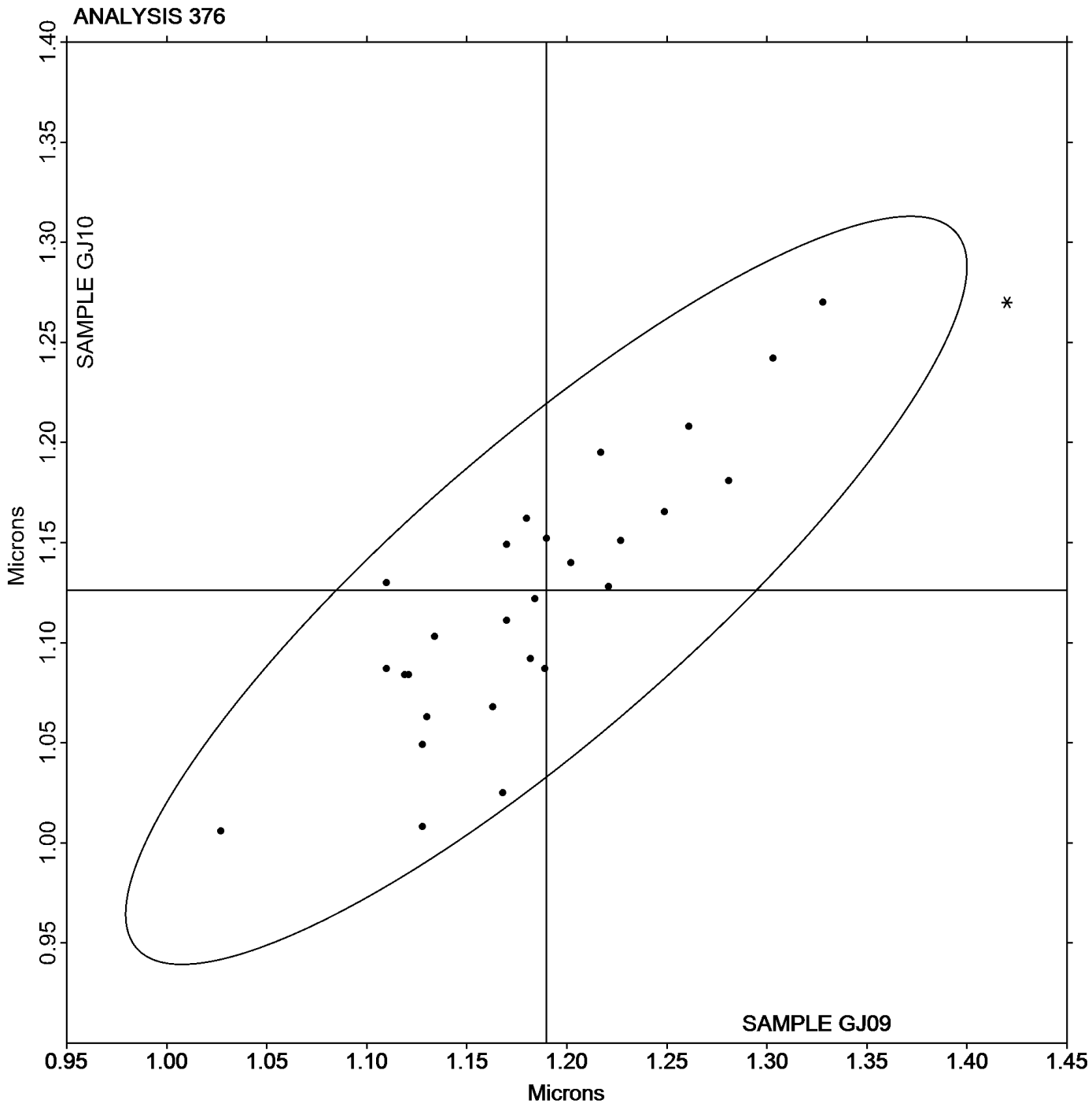
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GK09 Diff from Grand Mean	Sample GK09 CPV	Sample GK10 Lab Mean	Sample GK10 Diff from Grand Mean	Sample GK10 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

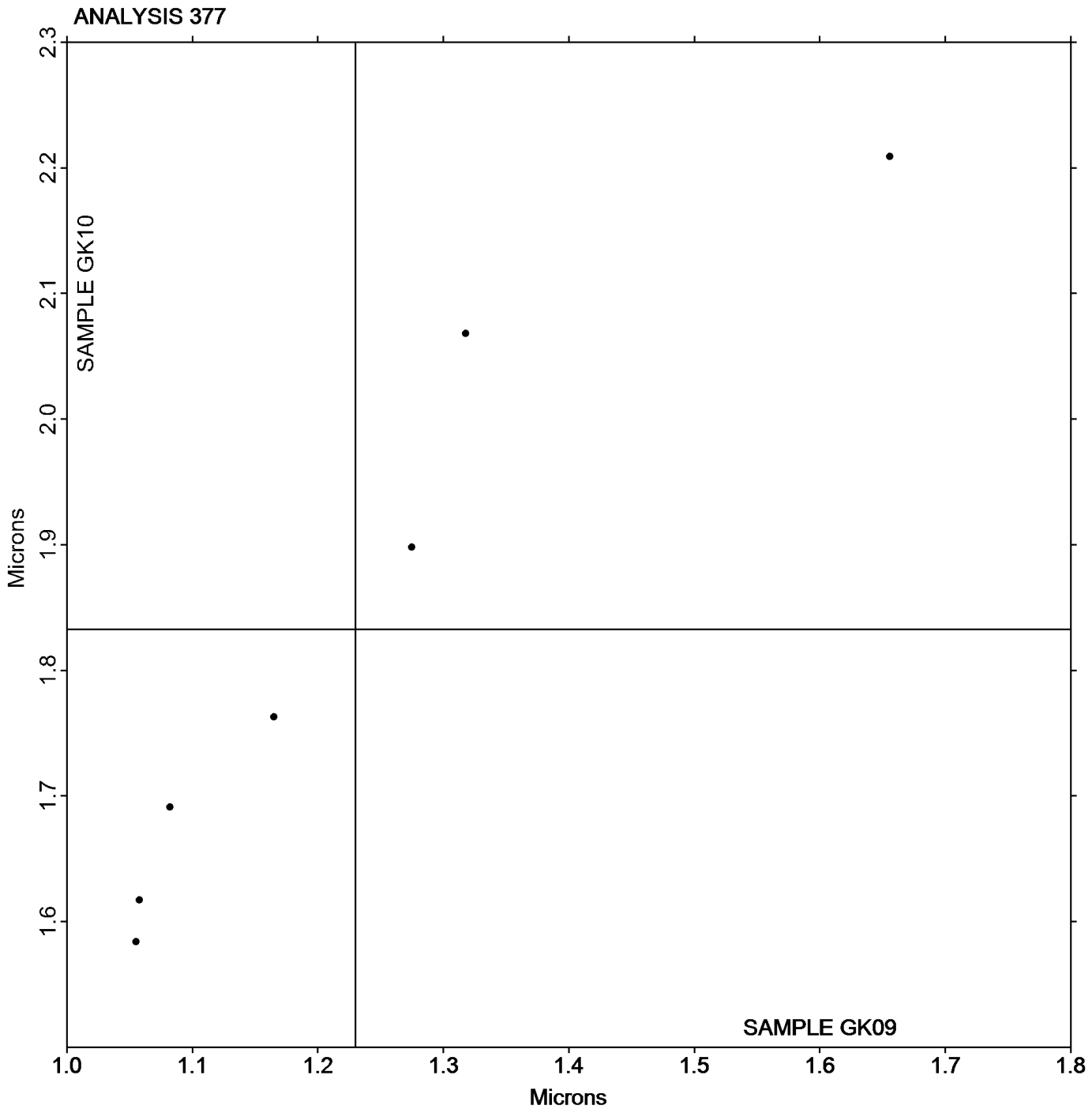
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GL09 Diff from Grand Mean	Sample GL09 CPV	Sample GL10 Lab Mean	Sample GL10 Diff from Grand Mean	Sample GL10 CPV	Instr Code
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 Lab Mean	Sample GL09 Diff from Grand Mean	Sample GL09 CPV	Sample GL10 Lab Mean	Sample GL10 Diff from Grand Mean	Sample GL10 CPV	Instr Code
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

Summary Statistics

	Sample GL09	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

(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

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

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

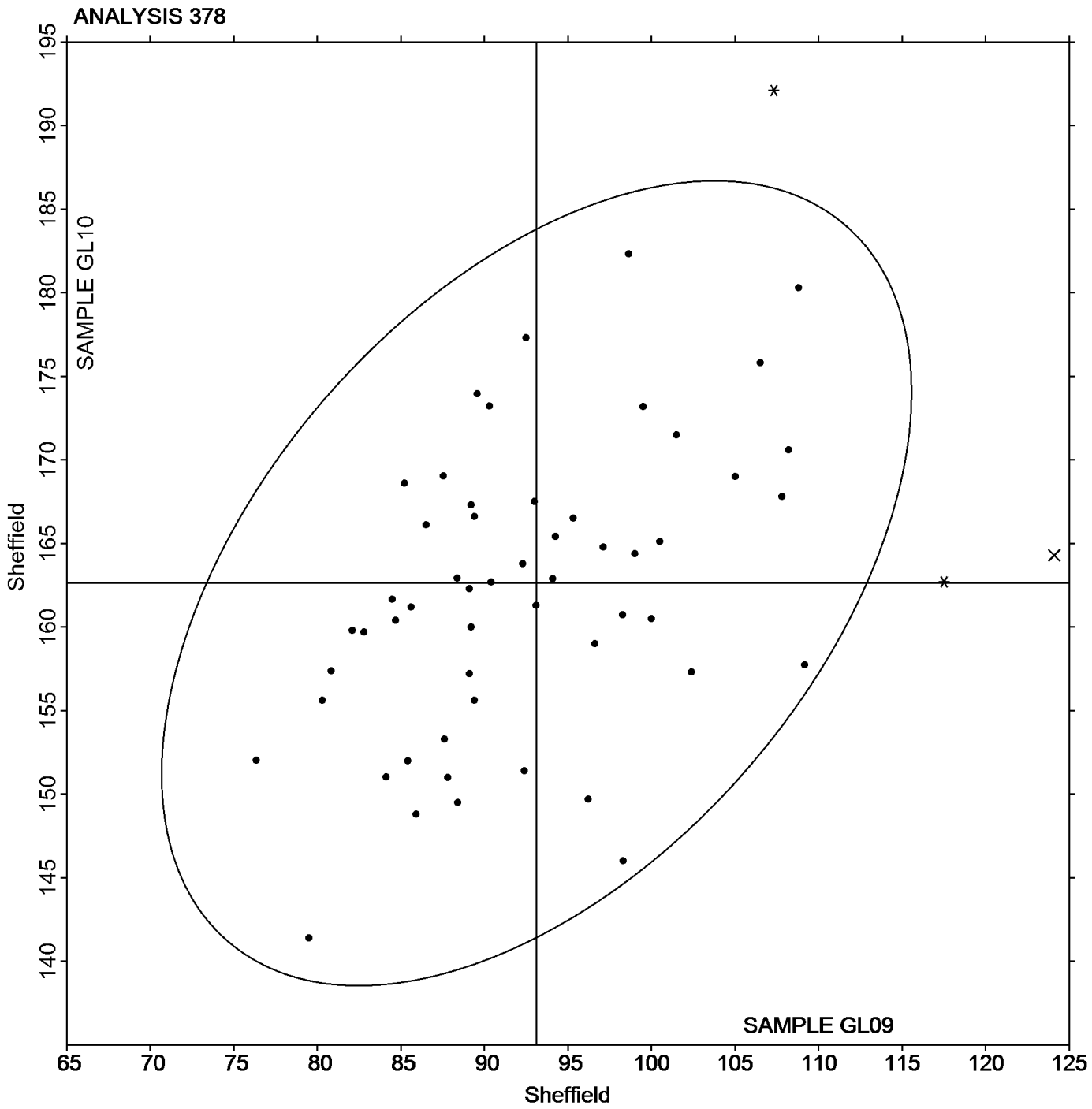
Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL09** = 93.114 Sheffield

Grand Mean Sample **GL10** = 162.63 Sheffield



Paper & Paperboard Interlaboratory Testing Program

Analysis 382

Moisture in Paper

WebCode	Data Flag	Sample GM09 Lab Mean	Sample GM09 Diff from Grand Mean	Sample GM09 CPV	Sample GM10 Lab Mean	Sample GM10 Diff from Grand Mean	Sample GM10 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 Percent
SD Btwn Labs	0.5241 Percent	0.3121 Percent

Statistics based on 9 of 9 reporting participants

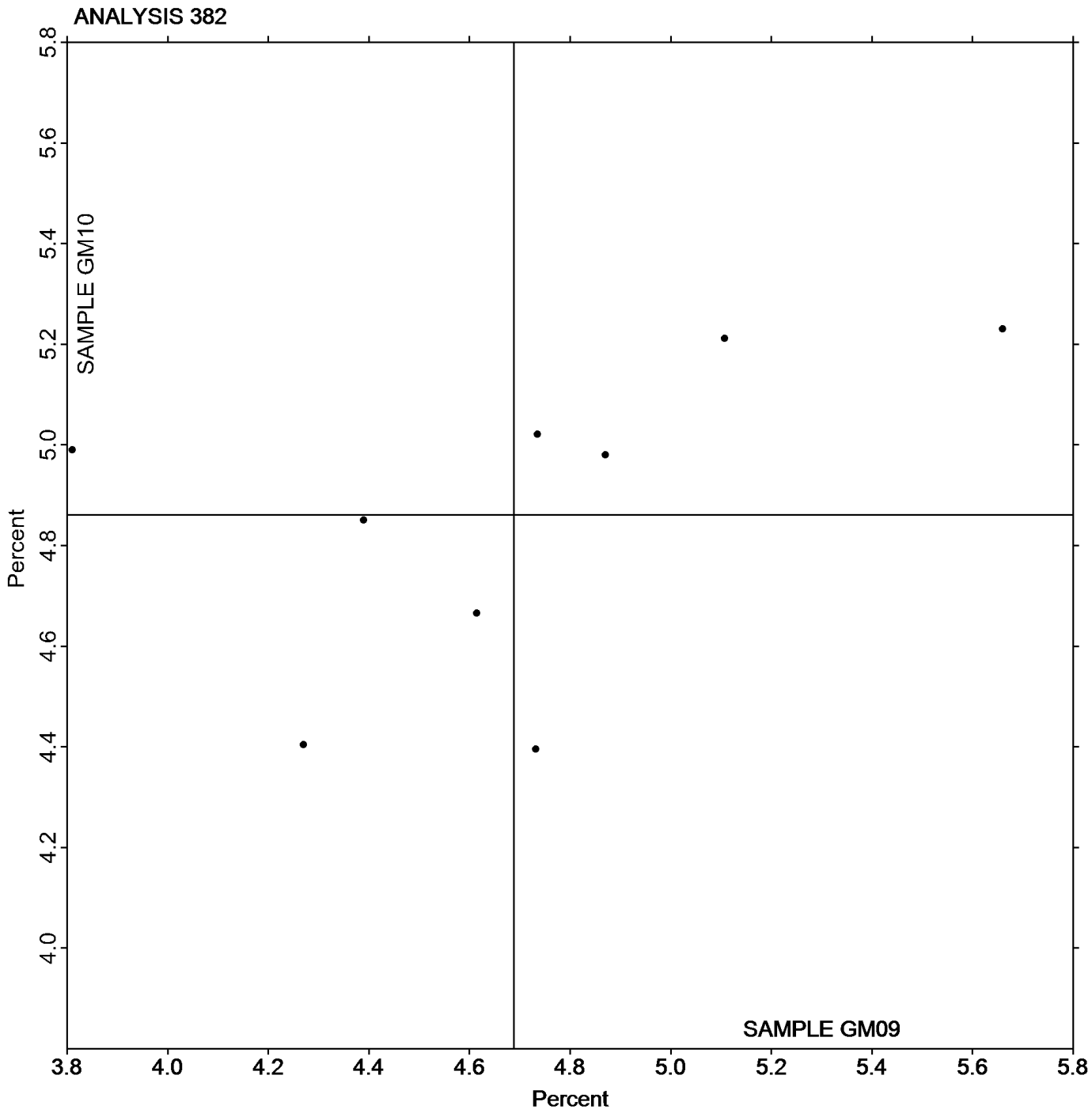
Paper & Paperboard Interlaboratory Testing Program

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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

WebCode	Data Flag	Sample GN09 Lab Mean	Sample GN09 Diff from Grand Mean	Sample GN09 CPV	Sample GN10 Lab Mean	Sample GN10 Diff from Grand Mean	Sample GN10 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

Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Summary Statistics

	Sample GN09	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.

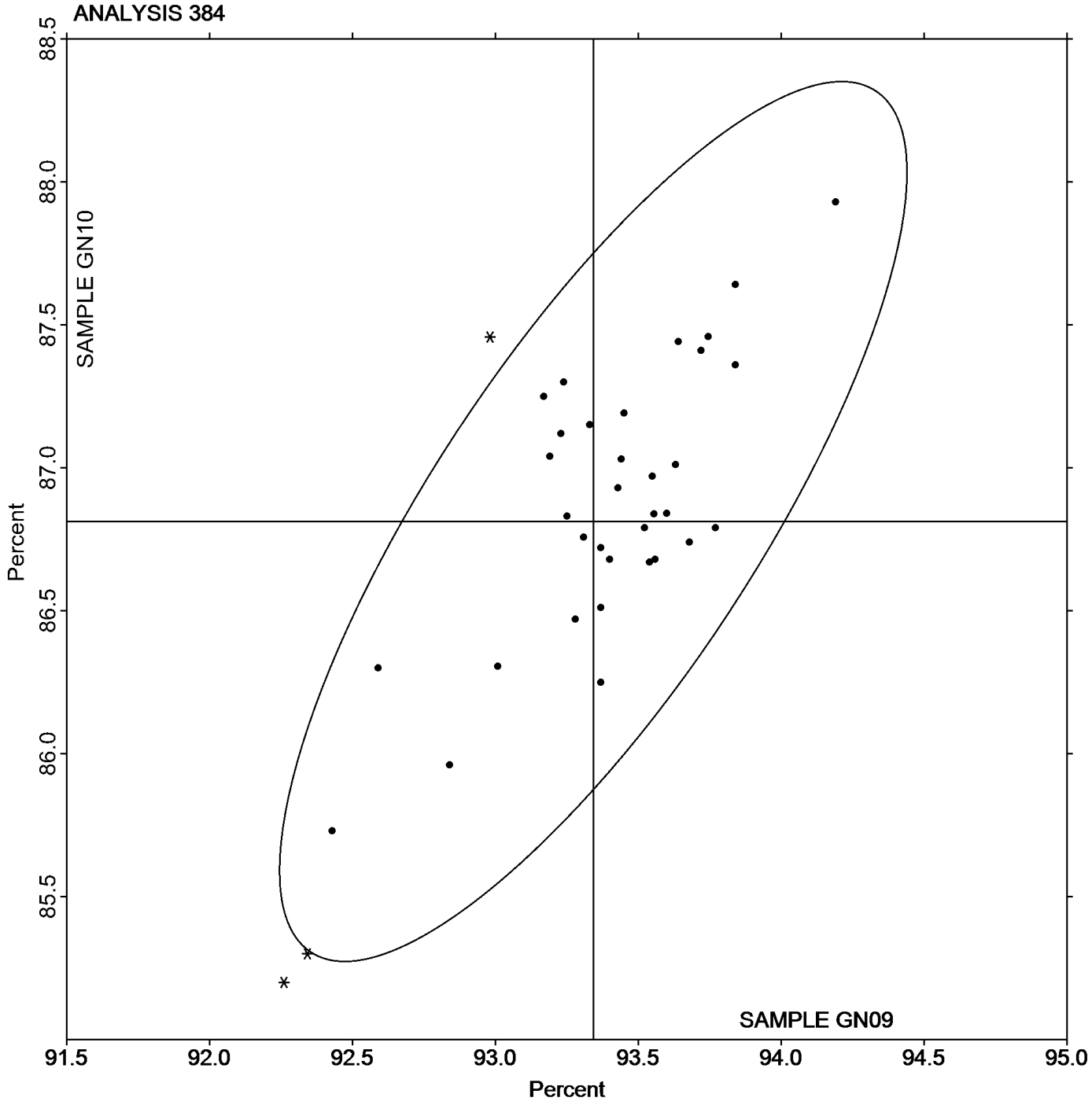
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GP09 Diff from Grand Mean	Sample GP09 CPV	Sample GP10 Lab Mean	Sample GP10 Diff from Grand Mean	Sample GP10 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.

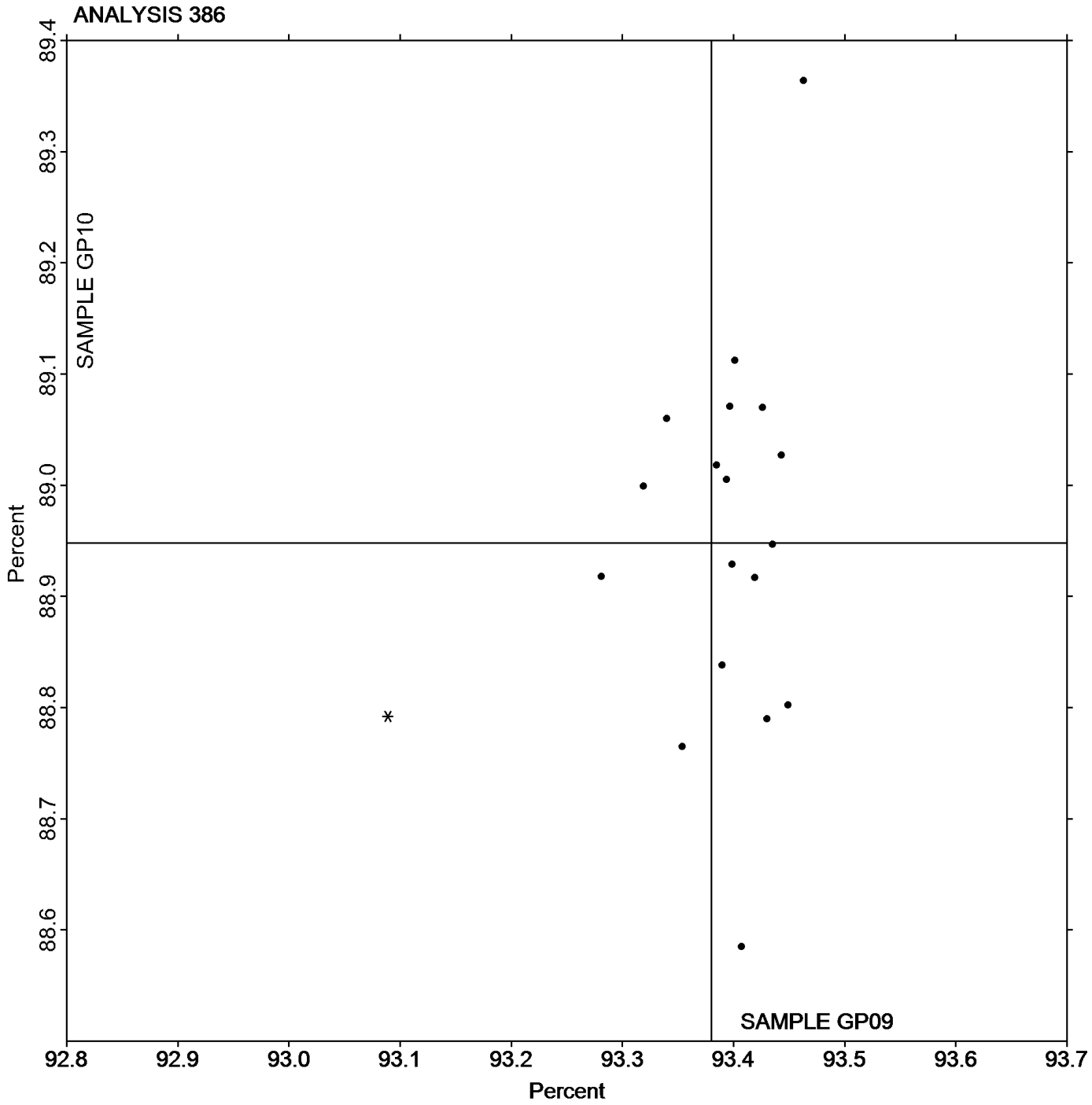
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GR09 Diff from Grand Mean	Sample GR09 CPV	Sample GR10 Lab Mean	Sample GR10 Diff from Grand Mean	Sample GR10 CPV	Instr Code
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

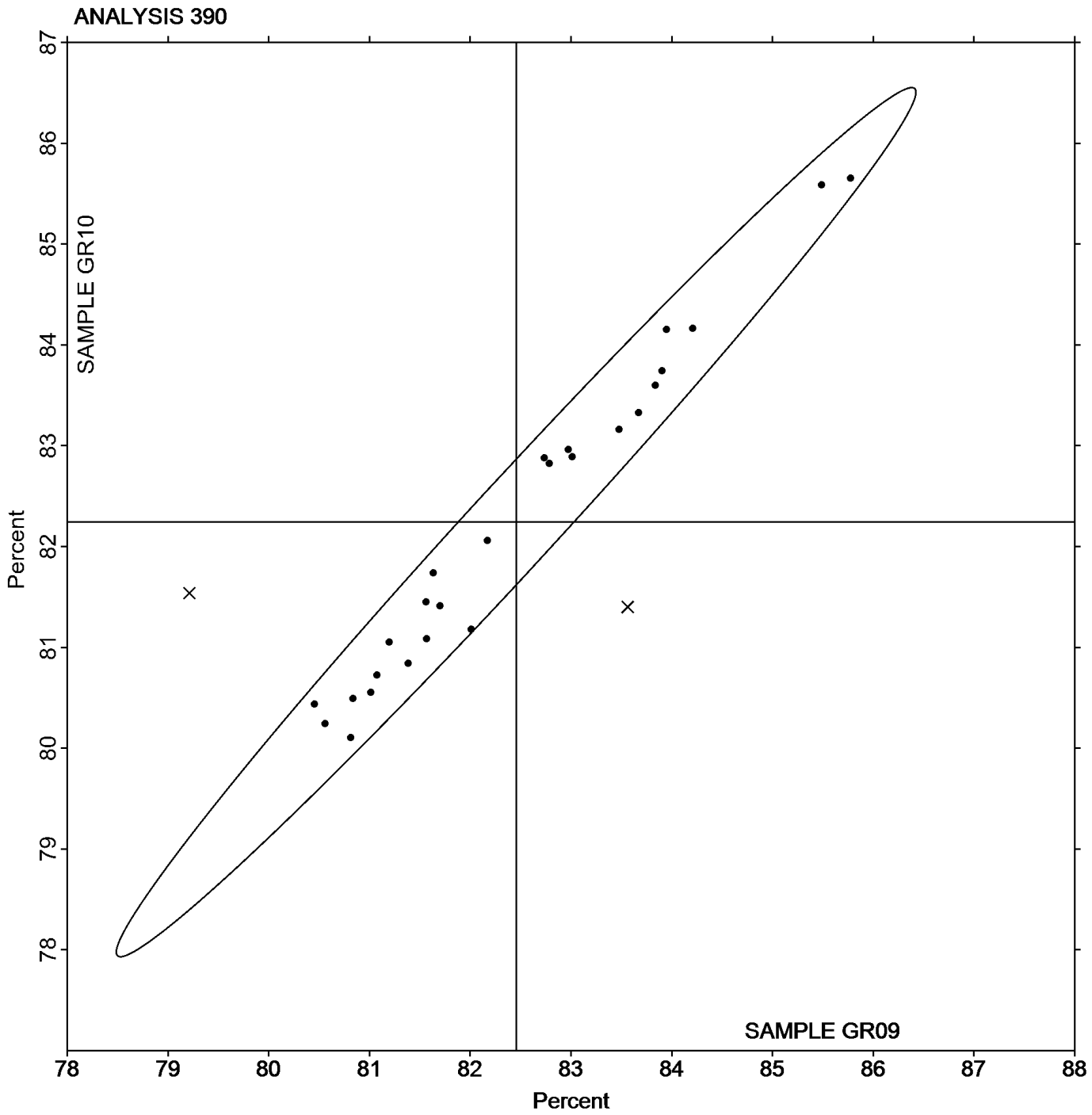
Paper & Paperboard Interlaboratory Testing Program

Analysis 390

Directional Brightness

Grand Mean Sample **GR09** = 82.455 Percent

Grand Mean Sample **GR10** = 82.242 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

WebCode	Data Flag	Sample GZ09 Lab Mean	Sample GZ09 Diff from Grand Mean	Sample GZ09 CPV	Sample GZ10 Lab Mean	Sample GZ10 Diff from Grand Mean	Sample GZ10 CPV	Instr Code
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	98.319 Percent
SD Btwn Labs	0.469 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

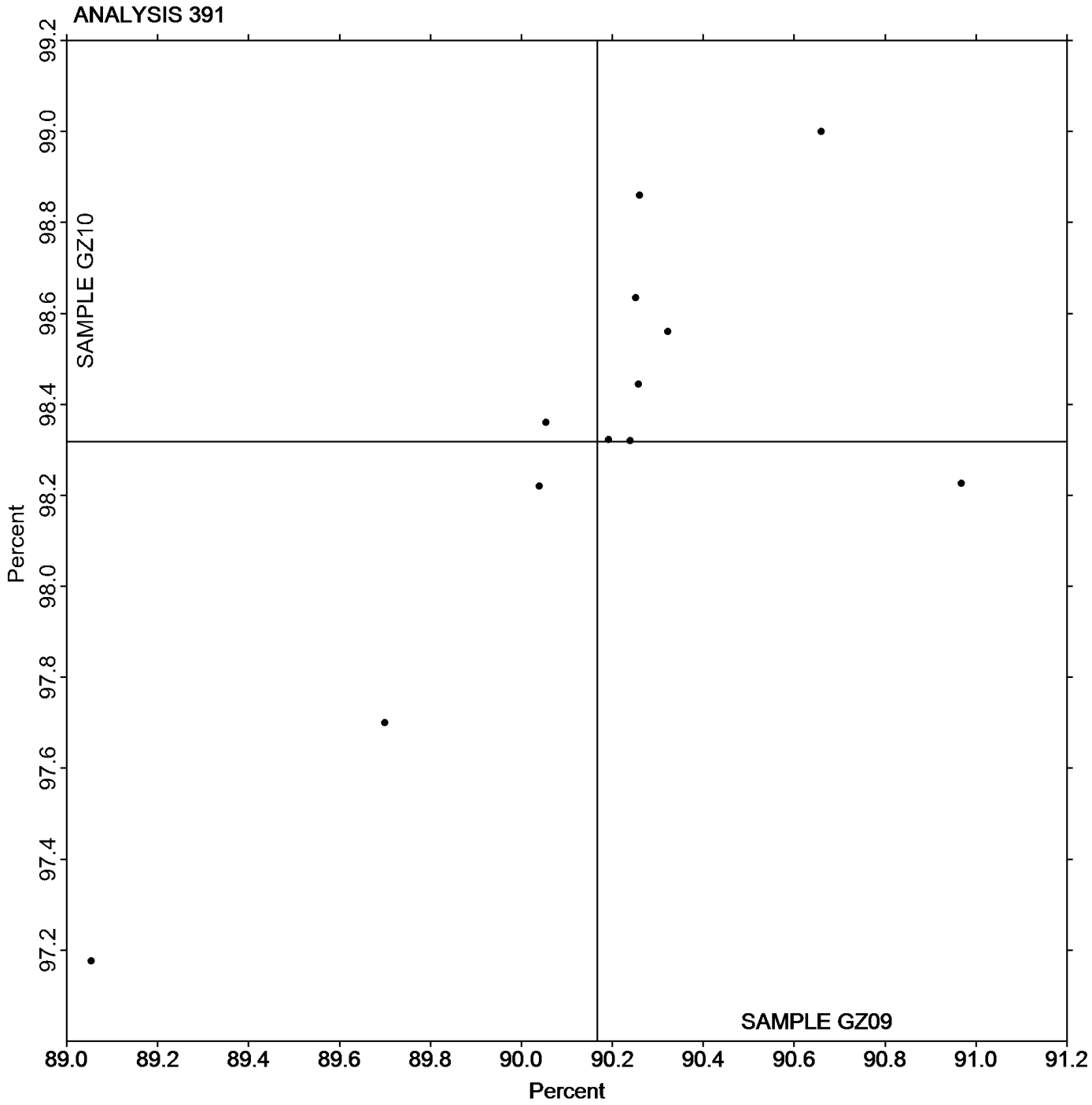
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GR09 Diff from Grand Mean	Sample GR09 CPV	Sample GR10 Lab Mean	Sample GR10 Diff from Grand Mean	Sample GR10 CPV	Instr Code
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

Summary Statistics

	Sample GR09	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

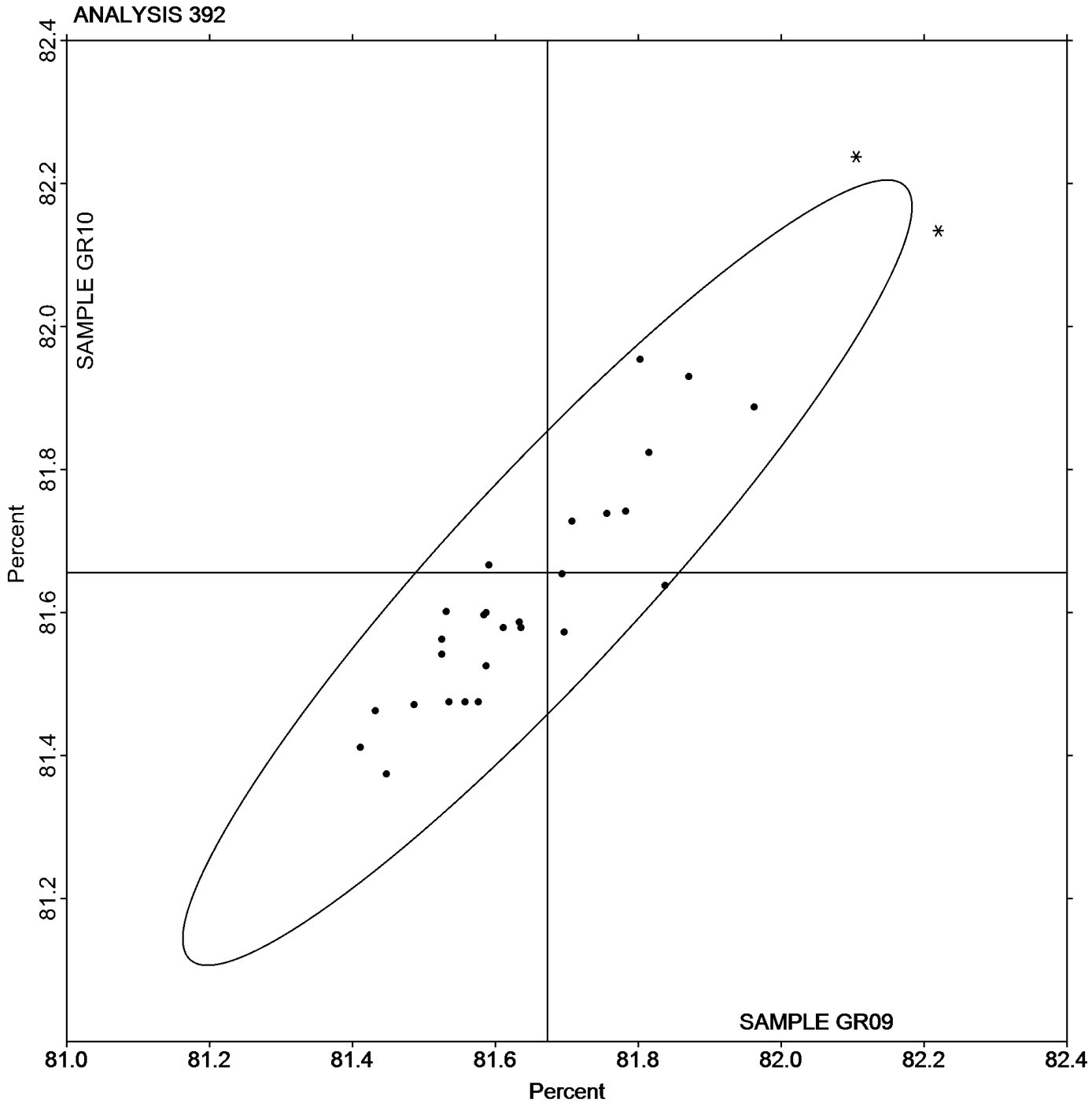
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GZ09 Diff from Grand Mean	Sample GZ09 CPV	Sample GZ10 Lab Mean	Sample GZ10 Diff from Grand Mean	Sample GZ10 CPV	Instr Code
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 Percent
SD Btwn Labs	0.4799 Percent	0.6105 Percent

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

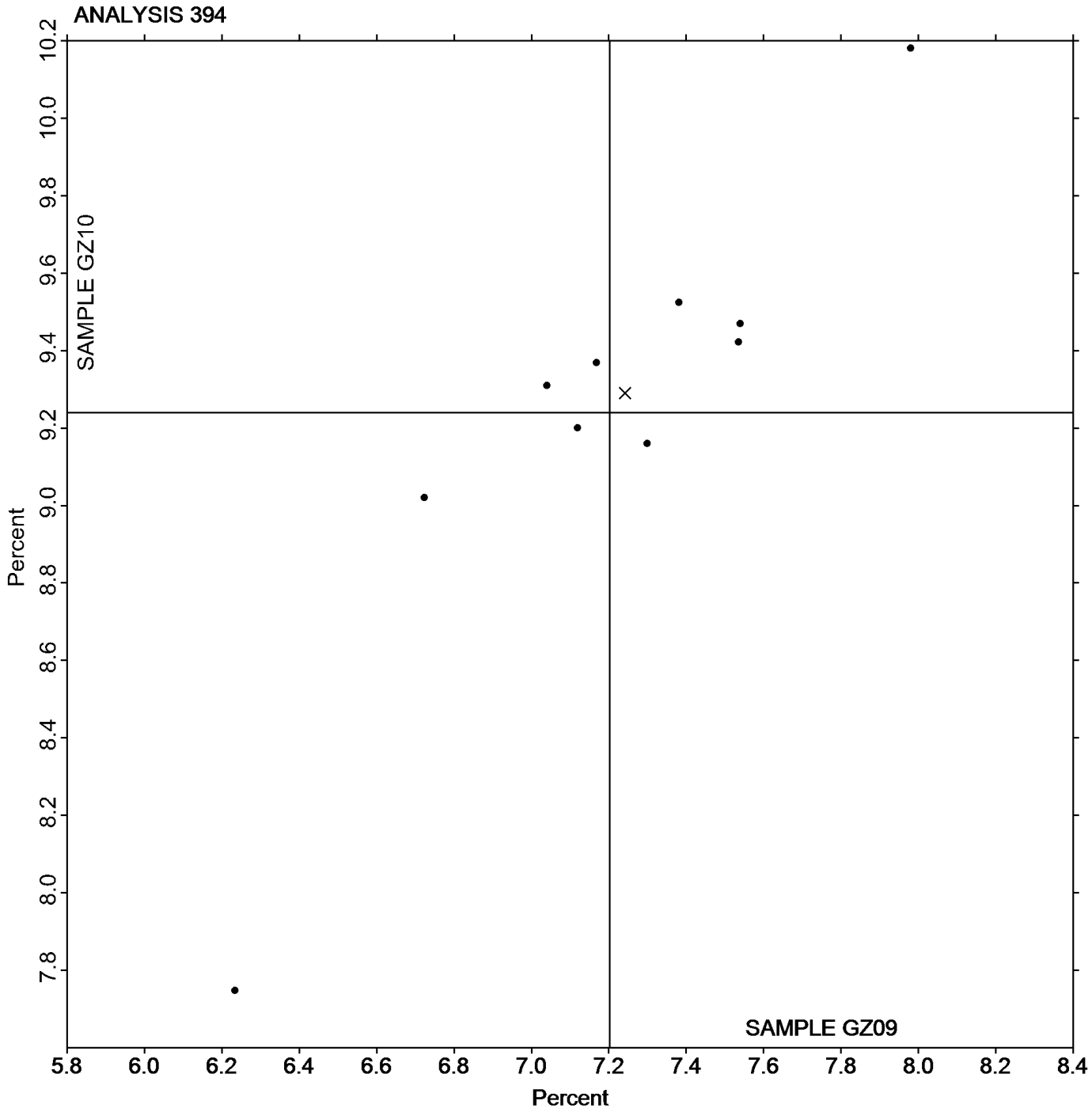
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GT09 Diff from Grand Mean	Sample GT09 CPV	Sample GT10 Lab Mean	Sample GT10 Diff from Grand Mean	Sample GT10 CPV	Instr Code
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

Summary Statistics

	Sample GT09	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

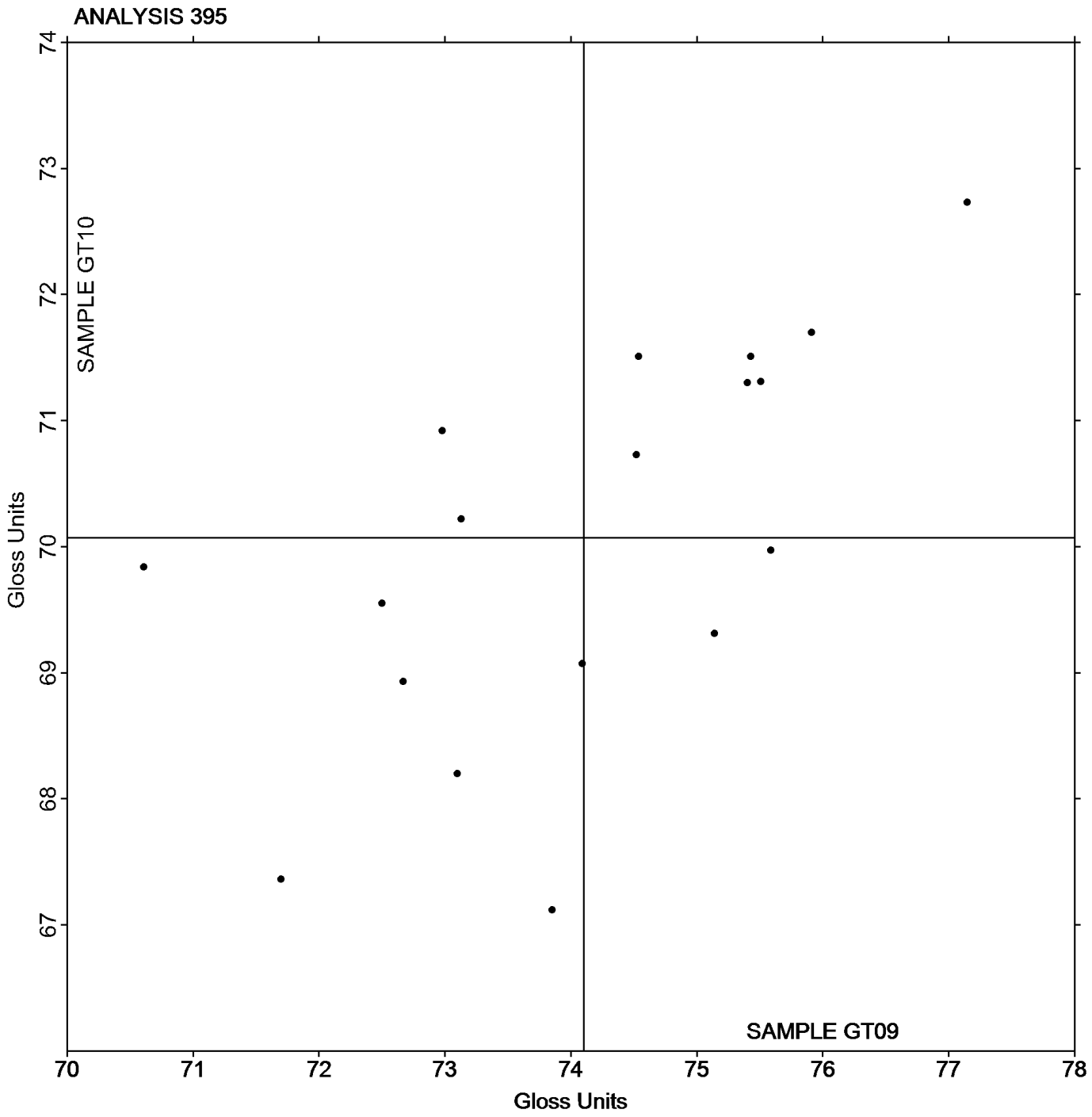
Paper & Paperboard Interlaboratory Testing Program

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



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 Lab Mean	Sample GU09 Diff from Grand Mean	Sample GU09 CPV	Sample GU10 Lab Mean	Sample GU10 Diff from Grand Mean	Sample GU10 CPV	Instr Code
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

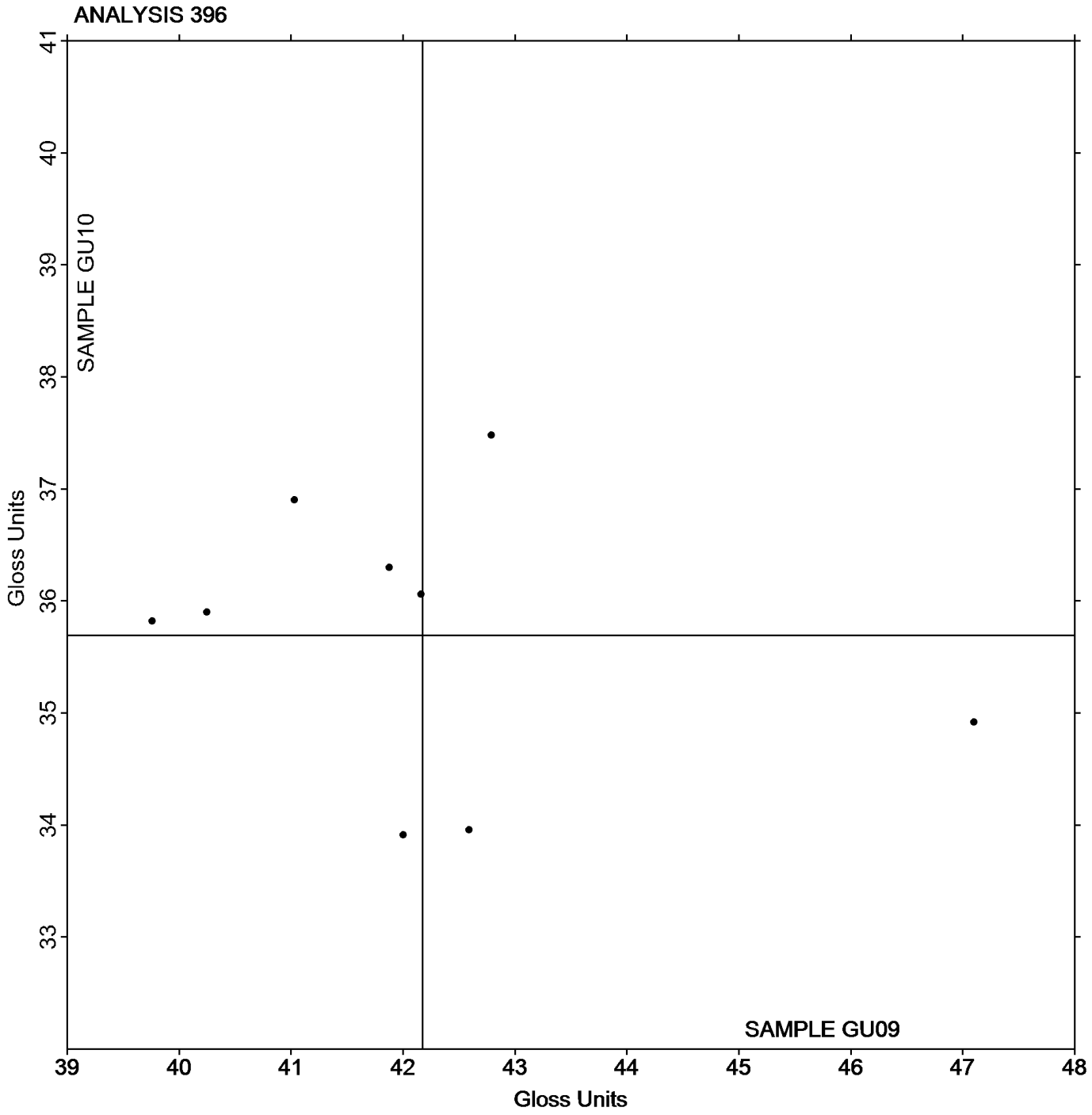
Paper & Paperboard Interlaboratory Testing Program

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



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 Lab Mean	Sample GW09 Diff from Grand Mean	Sample GW09 CPV	Sample GW10 Lab Mean	Sample GW10 Diff from Grand Mean	Sample GW10 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

Summary Statistics

	Sample GW09	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.

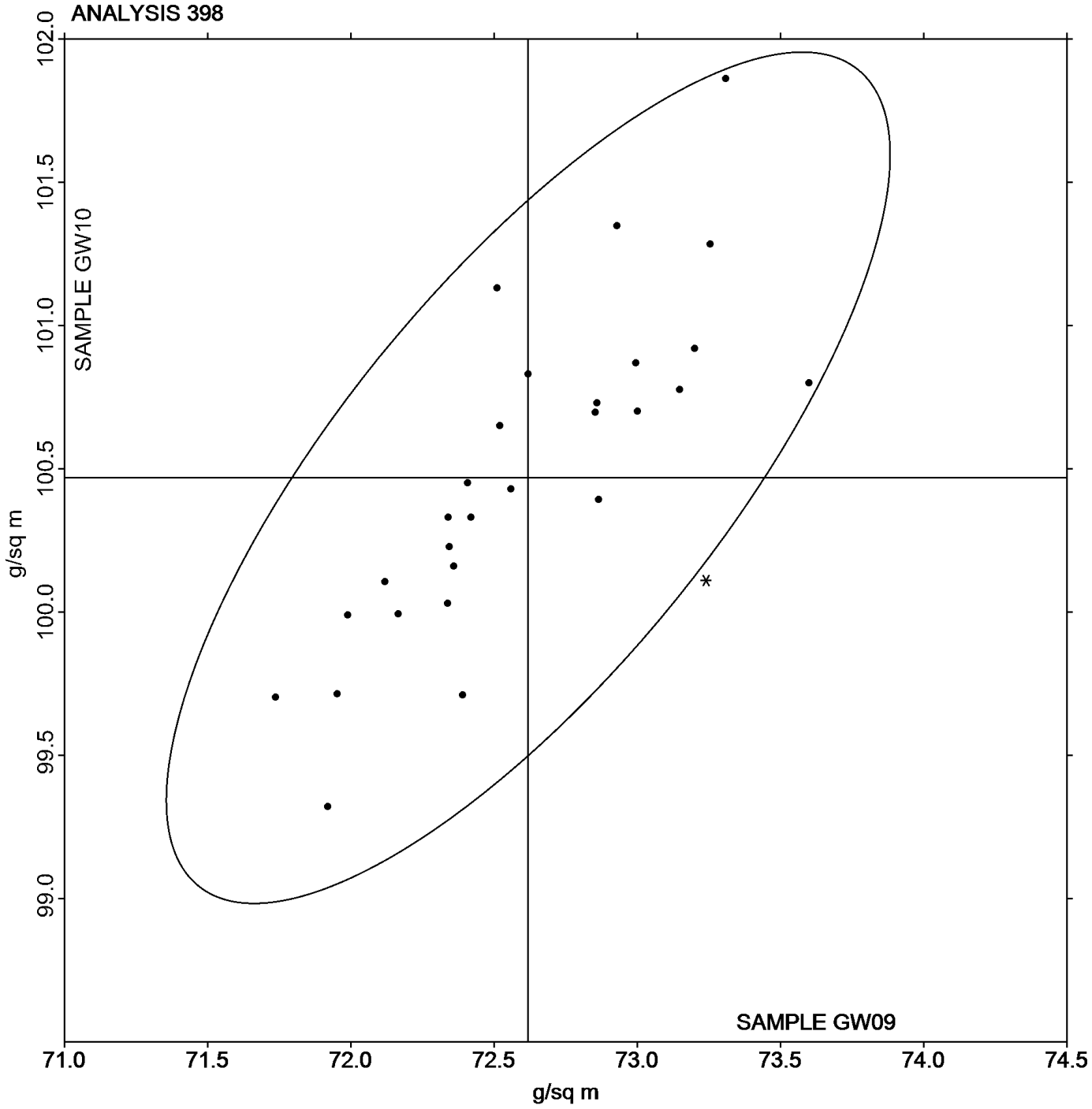
Paper & Paperboard Interlaboratory Testing Program

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 Lab Mean	Sample GX09 Diff from Grand Mean	Sample GX09 CPV	Sample GX10 Lab Mean	Sample GX10 Diff from Grand Mean	Sample GX10 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

Summary Statistics

	Sample GX09	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

Paper & Paperboard Interlaboratory Testing Program
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.

Paper & Paperboard Interlaboratory Testing Program

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample **GX09** = 7.5318 Seconds

Grand Mean Sample **GX10** = 57.301 Seconds