Collaborative Testing Services, Inc.

Paper & PaperboardTesting Program

Summary Report #275G-April 2015

The CTS Paper, Paperboard & Corrugated Fiberboard Program

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

About CTS

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

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

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Key for Web Summary Reports (Page 1 of 2)

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

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

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

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

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

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

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

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

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

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

Key for Web Summary Reports (Page 2 of 2)

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

Common Problems Highlighted in Footnotes

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

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

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

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

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

TAPPI-CTS Interlaboratory Testing Program

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs **Hunter L,a,b - Illuminant C - 2 Degree Observer**

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	ΔL	Δa	Δb	ΔE	
2B4E9N		GA17	93.74	-0.50	3.38	0.38	-0.09	0.21	0.44	TM
		GA18	94.11	-0.59	3.60					
96XVCH		GA17	95.09	-0.73	3.44	0.29	0.00	0.04	0.29	EH
		GA18	95.38	-0.73	3.48					
9H82DP		GA17	93.84	-0.74	3.36	0.94	-0.01	0.09	0.94 X	TC
		GA18	94.78	-0.75	3.46					
9MZZRK		GA17	93.72	-0.76	3.35	0.40	-0.01	0.14	0.42	EH
		GA18	94.11	-0.77	3.48					
9QWJGJ		GA17	94.65	-0.68	2.99	0.32	-0.04	0.00	0.33	XS
		GA18	94.98	-0.71	2.99					
ABZJ6A		GA17	93.61	-0.84	2.89	-0.35	0.05	-0.39	0.53	NE
		GA18	93.27	-0.79	2.50					
BYKU76		GA17	93.82	-0.79	3.44	0.38	0.00	0.06	0.38	TC
		GA18	94.20	-0.80	3.50					
DFZ4HG		GA17	94.54	-0.60	3.19	0.35	0.04	0.10	0.36	HE
		GA18	94.89	-0.57	3.28					
ERU2FU		GA17	92.80	-0.42	2.86	0.35	-0.07	0.09	0.37	TS
		GA18	93.14	-0.49	2.95					
EUB6RD		GA17	93.38	0.02	2.67	-0.40	-0.06	-0.03	0.40	TS
		GA18	92.98	-0.04	2.64					
FJDJ4T		GA17	93.81	-0.51	2.80	0.10	0.03	0.06	0.12	XX
		GA18	93.91	-0.48	2.86					
FYAJDG		GA17	93.58	-0.82	2.82	-0.35	-0.03	-0.16	0.38	HH
		GA18	93.23	-0.85	2.66					
J6J96D		GA17	93.31	-1.00	2.78	0.22	-0.08	-0.14	0.27	HH
		GA18	93.53	-1.08	2.65					
MPWX9L		GA17	94.06	-0.90	3.48	0.34	0.00	0.04	0.34	TC
		GA18	94.39	-0.90	3.52					
N6MPH7		GA17	93.35	-0.56	2.88	0.45	-0.07	0.03	0.46	TS
		GA18	93.80	-0.63	2.91					
PZA27V		GA17	94.18	-0.63	3.22	0.33	-0.01	0.12	0.35	MK
		GA18	94.51	-0.65	3.34					
QCE9AB		GA17	96.60	-0.88	2.56	-0.16	-0.12	0.22	0.30	HE
		GA18	96.44	-1.00	2.77					

TAPPI-CTS Interlaboratory Testing Program

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs | **Hunter L,a,b - Illuminant C - 2 Degree Observer**

Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
QNBMJ4		GA17	93.01	-0.13	2.85	0.22	-0.06	0.01	0.23	TS
		GA18	93.24	-0.19	2.86					
VGW833		GA17	93.85	-0.28	3.04	0.96	0.00	0.12	0.97 X	TS
		GA18	94.81	-0.28	3.16					
X7MK6M		GA17	93.71	-0.80	3.45	0.34	0.00	0.07	0.35	LS
		GA18	94.05	-0.81	3.52					
XJTTKJ		GA17	95.09	-0.74	3.25	0.23	0.02	0.06	0.24	LS
		GA18	95.32	-0.73	3.30					
ZM3UHY		GA17	94.69	-1.07	2.44	0.36	0.02	0.06	0.37	HH
		GA18	95.05	-1.04	2.51					
ZTBV43		GA17	93.59	-0.31	3.24	0.37	-0.09	0.21	0.44	TM
		GA18	93.97	-0.40	3.45					

Summary Statistics

Grand Means							
GA17	94.001	-0.638	3.060	0.264	-0.025	0.044	0.403
GA18	94.265	-0.664	3.104				
Stnd Dev Btwn Labs							
GA17	0.824	0.273	0.313	0.335	0.047	0.133	0.194
GA18	0.862	0.263	0.373				

Statistics based on 23 of 23 reporting participants

Instrument Code List as Reported by the Labs

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

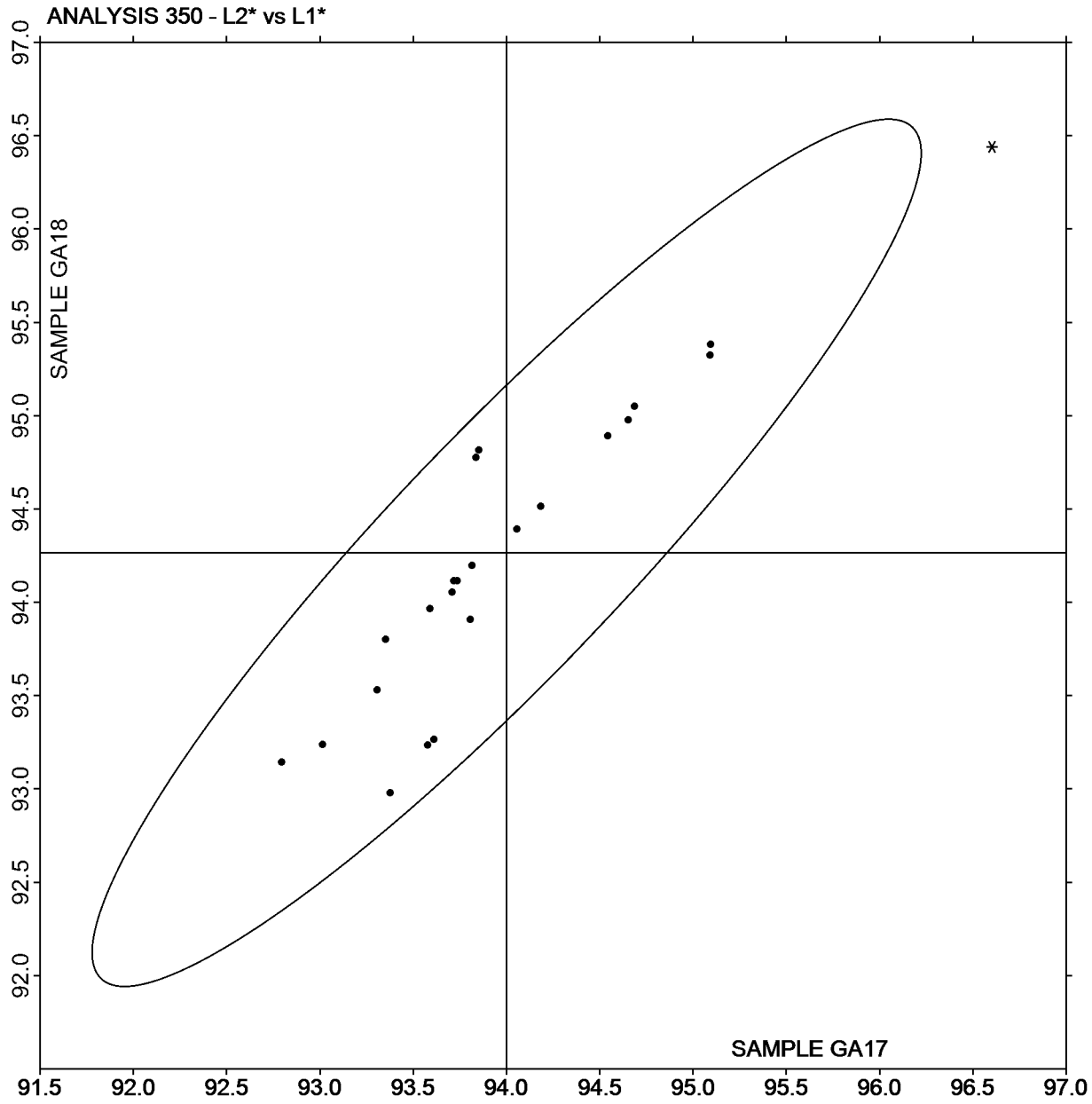
TAPPI-CTS Interlaboratory Testing Program

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs | **Hunter L,a,b - Illuminant C - 2 Degree Observer**

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

Plot of L values GA18 v L values GA17



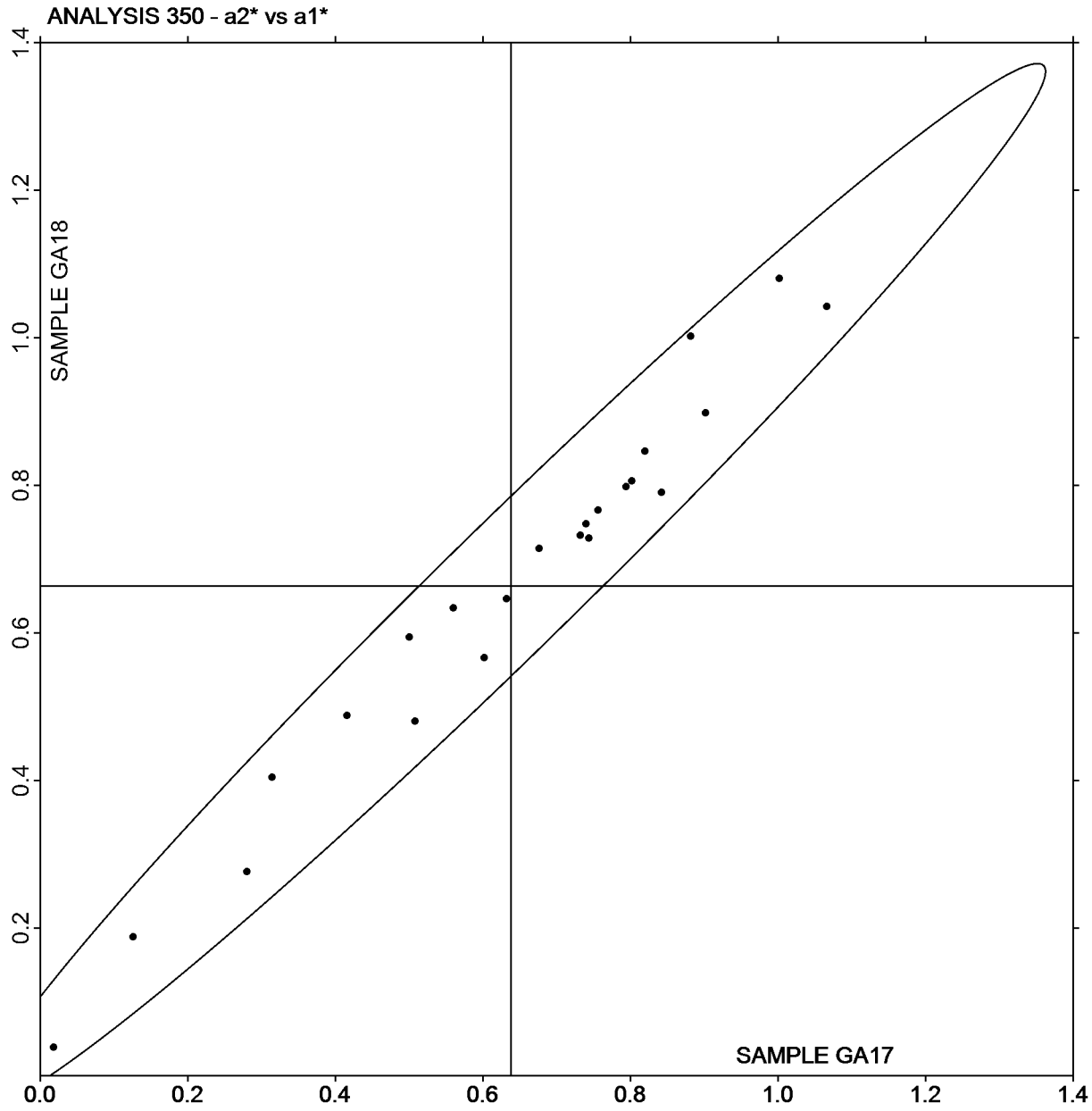
TAPPI-CTS Interlaboratory Testing Program

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs | **Hunter L,a,b - Illuminant C - 2 Degree Observer**

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

Plot of a values GA18 v a values GA17

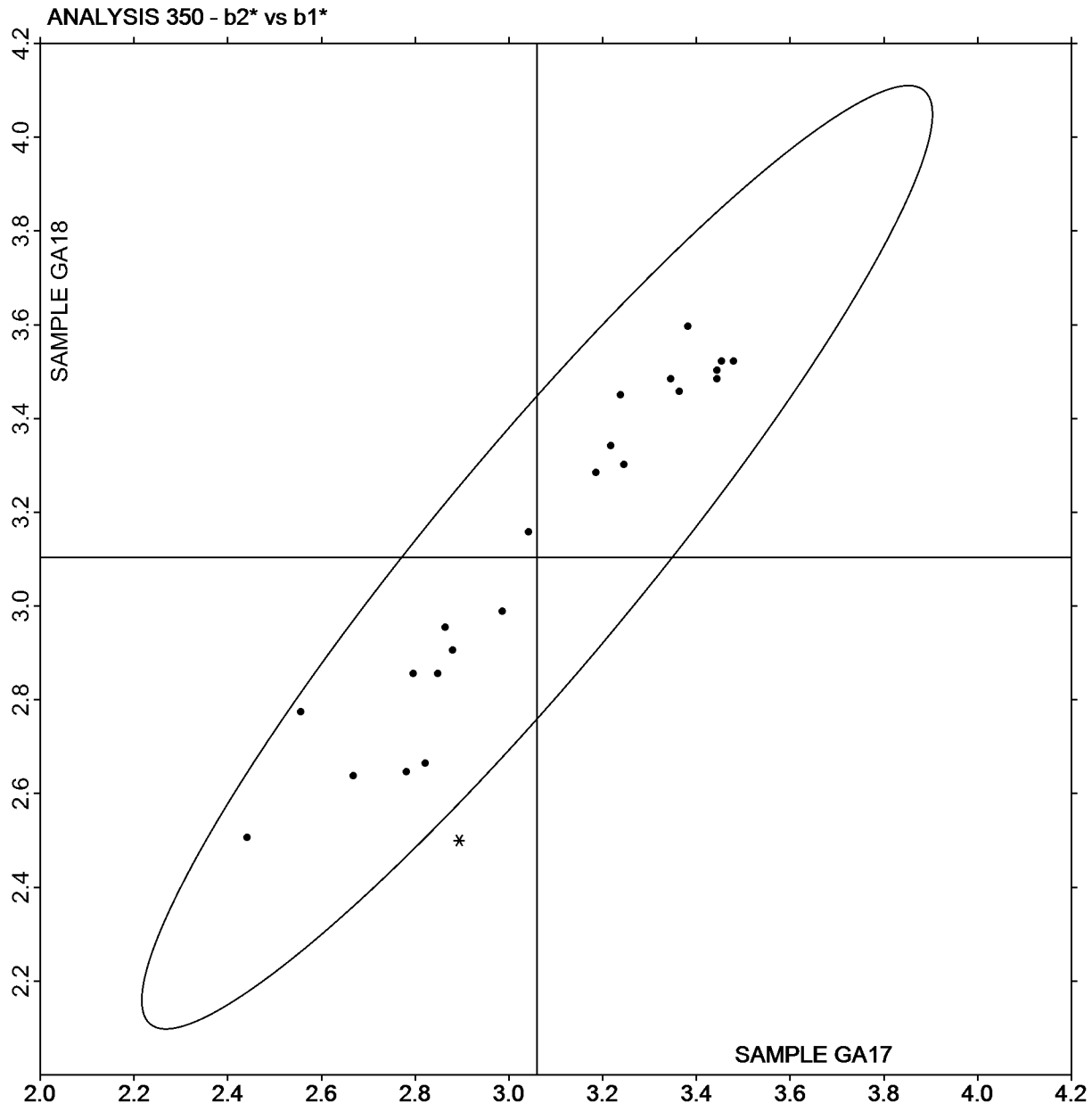


TAPPI-CTS Interlaboratory Testing Program

Analysis 350

Color & Color Difference - Near White Papers - C/2deg obs **Hunter L,a,b - Illuminant C - 2 Degree Observer**

Plot of b values GA18 v b values GA17



TAPPI-CTS Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs **Hunter L,a,b - Illuminant D65 - 10 Degree Observer**

3MKYB3	GA17	93.76	-0.76	3.29	0.31	0.04	0.12	0.33	TC
	GA18	94.07	-0.72	3.40					
3QFA3B	GA17	95.01	-0.68	3.56	0.29	0.04	0.06	0.30	EH
	GA18	95.30	-0.64	3.62					
8L9CK7	GA17	93.83	-0.53	3.32	0.31	0.03	0.11	0.33	XX
	GA18	94.13	-0.51	3.43					
8NC6E4	GA17	94.47	-0.68	3.41	-0.20	0.03	-0.37	0.42	NG
	GA18	94.27	-0.65	3.05					
9QE967	GA17	95.06	-0.63	3.52	0.28	0.02	0.06	0.29	LS
	GA18	95.34	-0.61	3.58					
AR8HBT	GA17	95.18	-0.67	3.44	0.29	0.03	0.08	0.30	TC
	GA18	95.47	-0.64	3.52					
BNF2C4	GA17	94.67	-0.56	2.93	0.36	0.04	0.16	0.39	HV
	GA18	95.02	-0.51	3.09					
DFZ4HG	GA17	94.56	-0.61	3.19	0.34	0.04	0.11	0.36	HE
	GA18	94.91	-0.57	3.31					
DKDHPW	GA17	96.24	-0.44	3.37	0.04	0.01	0.00	0.04 X	XP
	GA18	96.28	-0.43	3.37					
E7C9GG	GA17	95.51	-0.63	3.54	0.27	0.03	0.08	0.29	NF
	GA18	95.78	-0.59	3.62					
EUVL8F	GA17	95.37	-0.63	3.70	0.26	0.05	0.07	0.28	NG
	GA18	95.64	-0.57	3.77					
FBFWA9	GA17	94.44	-0.65	3.14	0.29	0.03	0.13	0.32	HE
	GA18	94.73	-0.62	3.27					
P93E4A	GA17	93.94	-0.44	2.91	0.36	-0.03	0.12	0.38	EE
	GA18	94.29	-0.47	3.04					
UE88DY	GA17	94.12	-0.63	3.55	0.34	0.07	0.02	0.35	XM
	GA18	94.46	-0.57	3.57					
VGEGRW	GA17	95.28	-0.66	3.37	0.27	0.02	0.13	0.30	EH
	GA18	95.55	-0.64	3.50					
XE3QTX	GA17	95.10	-0.70	3.44	0.24	0.08	0.22	0.34	EF
	GA18	95.34	-0.62	3.66					
XJTTKJ	GA17	95.08	-0.75	3.24	0.30	0.04	0.10	0.32	LS
	GA18	95.39	-0.71	3.33					
XTGQA4	GA17	95.23	-0.72	3.61	0.27	0.05	0.03	0.28	TC
	GA18	95.50	-0.67	3.64					

TAPPI-CTS Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs | **Hunter L,a,b - Illuminant D65 - 10 Degree Observer**

Y4DRQE	GA17	95.26	-0.53	3.78	0.29	0.02	0.06	0.29	NG
	GA18	95.55	-0.50	3.84					
ZQ34QF	GA17	95.19	-0.63	3.74	0.30	0.03	0.06	0.30	HT
	GA18	95.49	-0.60	3.80					
ZRWR8P	GA17	95.30	-0.62	3.41	0.26	0.02	0.12	0.29	HT
	GA18	95.57	-0.60	3.53					

Summary Statistics

Grand Means							
GA17	94.836	-0.626	3.402	0.261	0.033	0.070	0.309
GA18	95.133	-0.593	3.494				
Stnd Dev Btwn Labs							
GA17	0.563	0.086	0.241	0.123	0.022	0.112	0.073
GA18	0.542	0.074	0.217				

Statistics based on 21 of 21 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

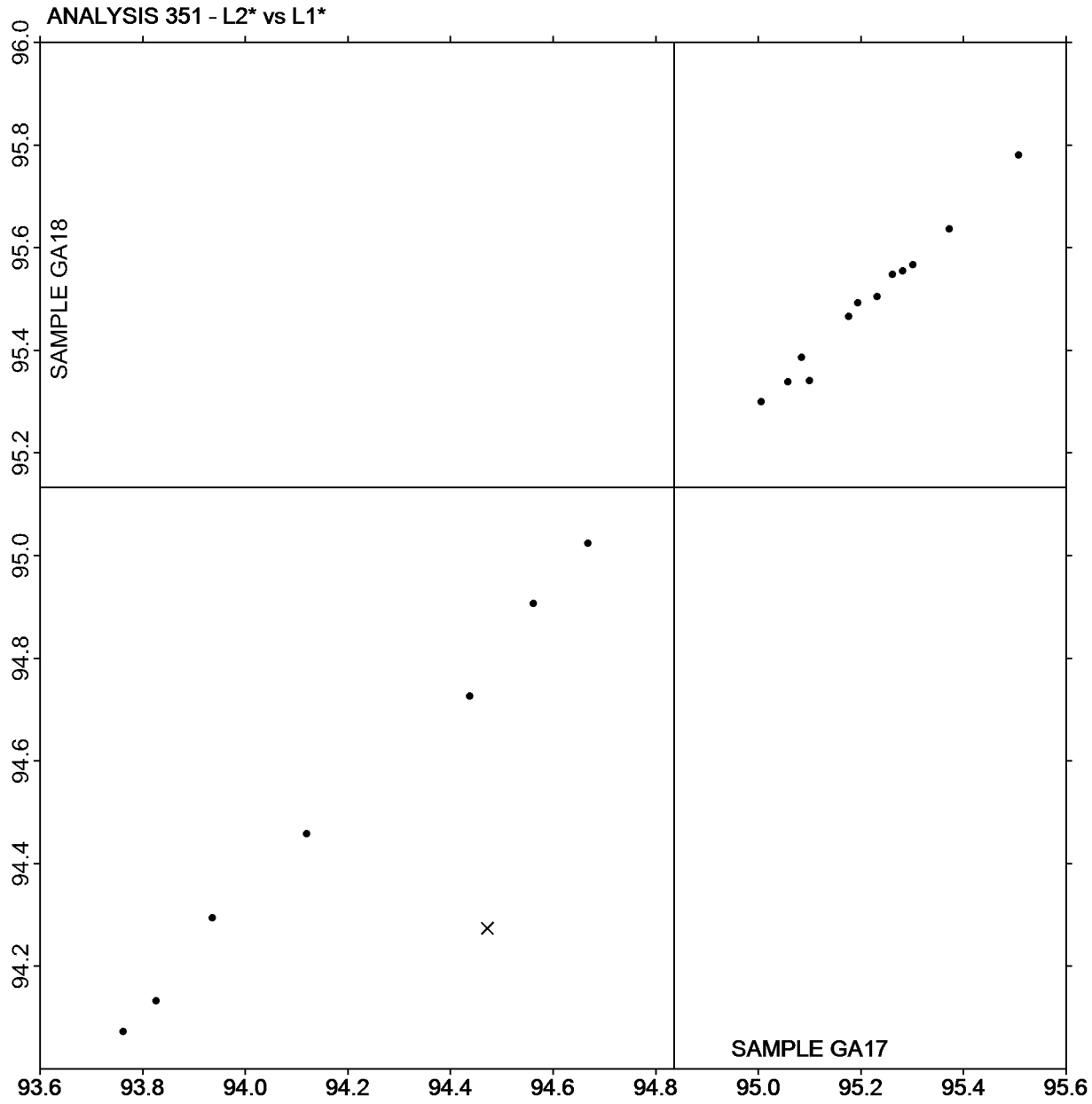
TAPPI-CTS Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs **Hunter L,a,b - Illuminant D65 - 10 Degree Observer**

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

Plot of L values GA18 v L values GA17



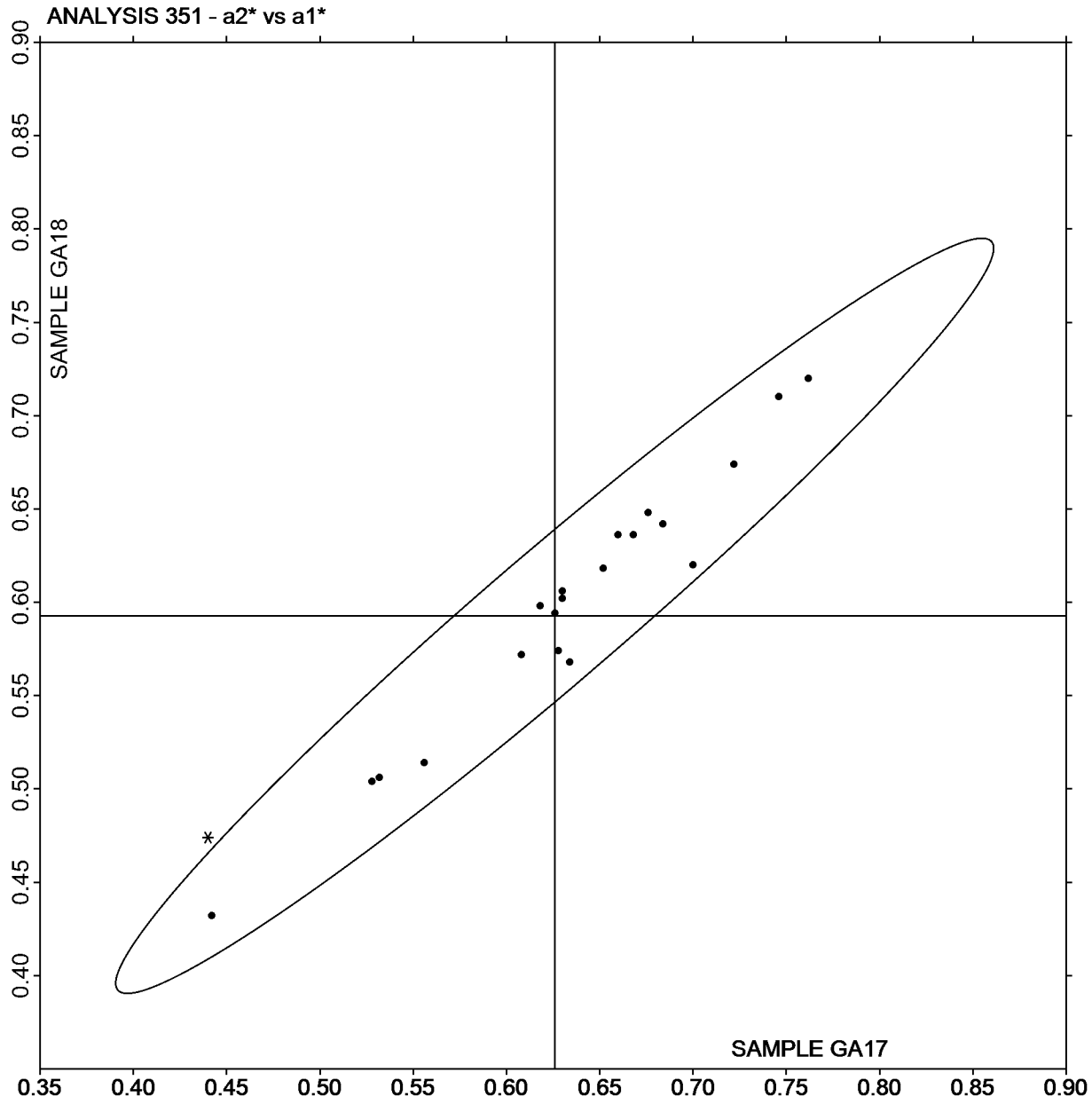
TAPPI-CTS Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs **Hunter L,a,b - Illuminant D65 - 10 Degree Observer**

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

Plot of a values GA18 v a values GA17

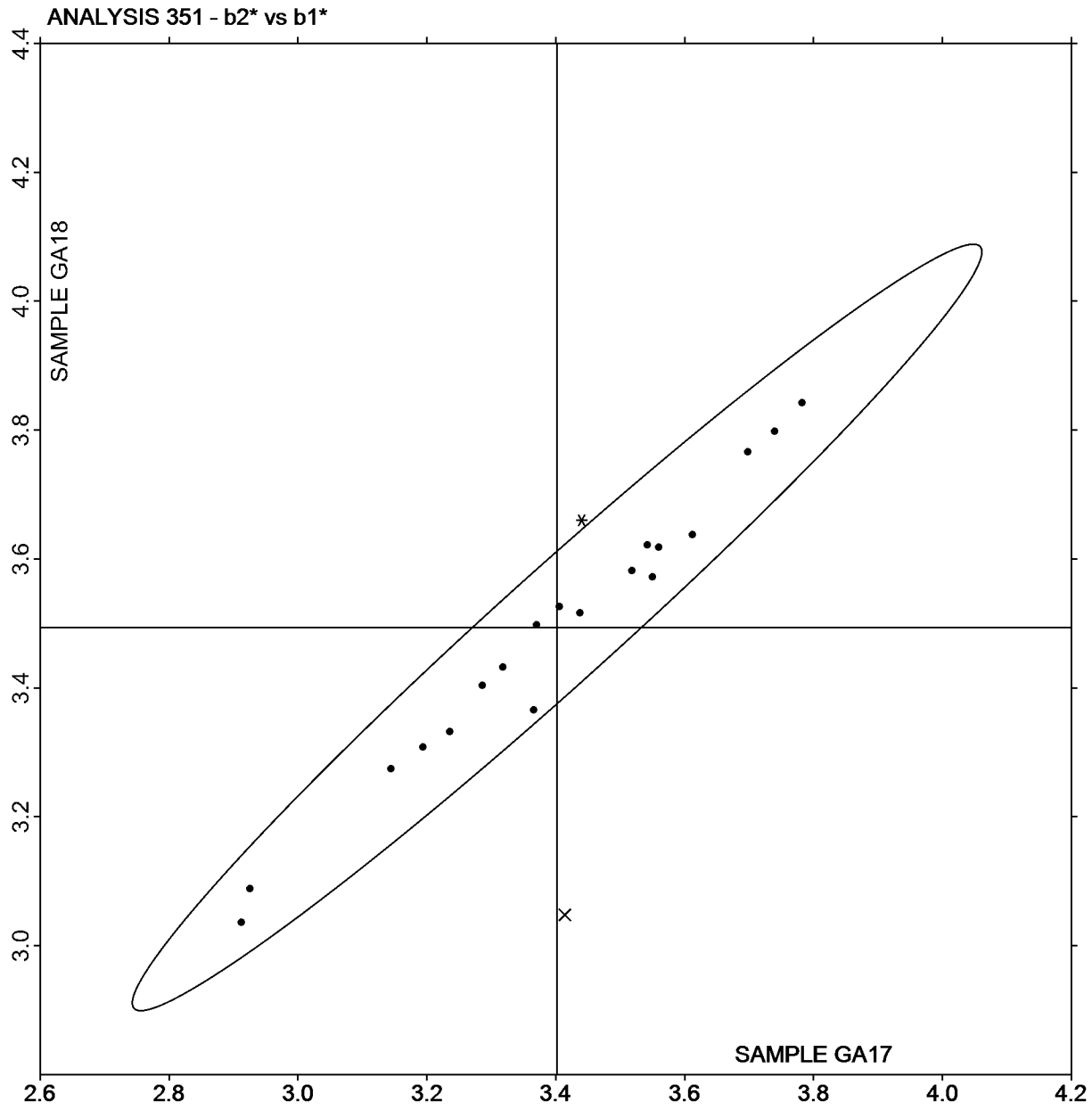


TAPPI-CTS Interlaboratory Testing Program

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg obs **Hunter L,a,b - Illuminant D65 - 10 Degree Observer**

Plot of b values GA18 v b values GA17



Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

WebCode	Data Flag	Sample GV17 Lab Mean	Sample GV17 Diff from Grand Mean	Sample GV17 CPV	Sample GV18 Lab Mean	Sample GV18 Diff from Grand Mean	Sample GV18 CPV	Instr Code
23XC8W		4.630	0.018	0.25	3.800	0.008	0.13	LW
2B4E9N		4.635	0.023	0.32	3.851	0.059	0.95	XX
3MKYB3		4.541	-0.071	-0.97	3.769	-0.023	-0.36	TA
46DN2J		4.563	-0.049	-0.67	3.791	-0.001	-0.01	MS
482XBK		4.644	0.032	0.44	3.807	0.015	0.24	LW
8NC6E4		4.608	-0.004	-0.05	3.830	0.038	0.61	XX
8Q7ADN		4.609	-0.003	-0.04	3.825	0.033	0.53	EM
96XVCH		4.693	0.081	1.11	3.787	-0.004	-0.07	MT
99GDHM		4.640	0.028	0.38	3.806	0.014	0.22	TA
99YNWL		4.618	0.006	0.09	3.807	0.015	0.24	LW
9H82DP		4.706	0.094	1.29	3.867	0.075	1.20	TA
9QWJGJ		4.530	-0.082	-1.12	3.730	-0.062	-0.99	TM
9R9WKF		4.636	0.024	0.34	3.825	0.033	0.53	LW
A2W8A2		4.551	-0.061	-0.83	3.765	-0.027	-0.43	TA
ACWYG8	*	4.420	-0.192	-2.63	3.620	-0.172	-2.74	XX
BNF2C4		4.708	0.096	1.32	3.825	0.033	0.53	EM
BYKU76		4.639	0.027	0.37	3.821	0.029	0.46	PP
C2LE6P		4.576	-0.036	-0.49	3.718	-0.074	-1.18	TM
CJNURB	X	4.619	0.007	0.10	3.654	-0.138	-2.20	TM
CNKLZ8		4.574	-0.038	-0.52	3.722	-0.070	-1.11	LW
CVGHKP		4.628	0.016	0.22	3.780	-0.012	-0.19	EM
CZRQNE		4.547	-0.065	-0.88	3.768	-0.024	-0.39	PP
DKDHPW		4.580	-0.032	-0.44	3.690	-0.102	-1.63	TM
DUZJ4K		4.566	-0.046	-0.63	3.786	-0.006	-0.09	PP
E7C9GG	*	4.801	0.189	2.60	3.892	0.100	1.59	TM
EUB6RD	*	4.455	-0.157	-2.15	3.627	-0.165	-2.63	TM
EUVL8F		4.707	0.095	1.30	3.798	0.006	0.10	LW
FBFWA9		4.737	0.125	1.72	3.921	0.129	2.07	TM
FJDJ4T		4.620	0.008	0.11	3.800	0.008	0.13	XX
FKQV76		4.608	-0.004	-0.05	3.802	0.010	0.16	PP
G68PAV		4.492	-0.120	-1.64	3.724	-0.067	-1.08	TA
GU9W26		4.636	0.024	0.33	3.846	0.054	0.86	LW
HQ7F42		4.712	0.100	1.37	3.794	0.002	0.03	PP
JLQTTA		4.732	0.121	1.65	3.901	0.109	1.73	LW
L6WEJT		4.664	0.052	0.71	3.840	0.048	0.77	LW
LNNMGN	X	4.318	-0.294	-4.03	3.490	-0.302	-4.82	TM
LUURFF		4.579	-0.033	-0.45	3.733	-0.059	-0.94	TM
M6TC9E		4.580	-0.031	-0.43	3.790	-0.002	-0.03	XX
PAARPG		4.490	-0.122	-1.67	3.691	-0.101	-1.61	PP
PZA27V		4.616	0.004	0.06	3.810	0.018	0.29	PP
QDCAKA		4.598	-0.014	-0.19	3.875	0.083	1.33	LW
QEK2D6	X	4.311	-0.301	-4.13	3.536	-0.256	-4.08	EM
QGA9X3		4.579	-0.033	-0.45	3.741	-0.051	-0.81	LA

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

WebCode	Data Flag	Sample GV17 Lab Mean	Sample GV17 Diff from Grand Mean	Sample GV17 CPV	Sample GV18 Lab Mean	Sample GV18 Diff from Grand Mean	Sample GV18 CPV	Instr Code
QJD4G6		4.610	-0.002	-0.02	3.794	0.002	0.03	EM
QNBMJ4		4.464	-0.148	-2.03	3.685	-0.107	-1.71	TM
QTZ39B		4.630	0.019	0.25	3.803	0.011	0.18	EM
QVB4WU		4.520	-0.092	-1.26	3.710	-0.082	-1.31	TM
TWWTM7		4.708	0.096	1.32	3.835	0.043	0.69	EM
UE88DY		4.661	0.050	0.68	3.780	-0.012	-0.20	LW
UEA8NF		4.560	-0.052	-0.71	3.673	-0.119	-1.90	TA
UJ9KAK		4.684	0.072	0.99	3.835	0.044	0.69	LW
UX62WX		4.571	-0.040	-0.56	3.834	0.042	0.68	TM
V3ZHBH		4.578	-0.034	-0.46	3.808	0.016	0.26	LW
VGW833		4.539	-0.073	-1.00	3.775	-0.017	-0.27	LA
VKY7FG		4.605	-0.007	-0.09	3.798	0.006	0.10	XX
X6WDMB		4.594	-0.018	-0.24	3.854	0.062	0.99	EM
X7MK6M		4.633	0.022	0.30	3.835	0.044	0.69	LW
X8WPGP		4.538	-0.074	-1.01	3.778	-0.014	-0.22	TM
XPHDQK		4.600	-0.012	-0.16	3.690	-0.102	-1.63	TM
XTGQA4		4.572	-0.040	-0.55	3.774	-0.018	-0.28	LW
Y4DRQE		4.619	0.007	0.10	3.833	0.041	0.66	XX
Z6LLJJ		4.605	-0.007	-0.10	3.776	-0.015	-0.25	LW
ZQ34QF		4.679	0.067	0.92	3.862	0.070	1.12	EM
ZRWMU3		4.677	0.065	0.89	3.829	0.037	0.59	XX
ZRWR8P		4.635	0.023	0.32	3.813	0.021	0.34	EM
ZTBV43		4.707	0.095	1.31	3.832	0.040	0.64	TA
ZWB6AX		4.715	0.104	1.42	3.896	0.104	1.67	LW

Summary Statistics

	Sample GV17	Sample GV18
Grand Means	4.6118 mils	3.7919 mils
SD Btwn Labs	0.0729 mils	0.0627 mils

Statistics based on 64 of 67 reporting participants

CJNURB (X) - Inconsistent in testing between samples.

LNNMGN (X) - Systematic error (data for both samples are low).

QEK2D6 (X) - Systematic error (data for both samples are low).

Analysis Notes:

8Q7ADN - Data appears to be transposed between samples. Data Switched by CTS.

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

Instrument Code List as Reported by the Labs

(EM) - Emveco

(LA) - L & W Autoline

(LW) - L & W

(MS) - Messmer

(MT) - Mitutoyo

(PP) - Technidyne Profile/Plus

(TA) - Thwing-Albert

(TM) - TMI

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

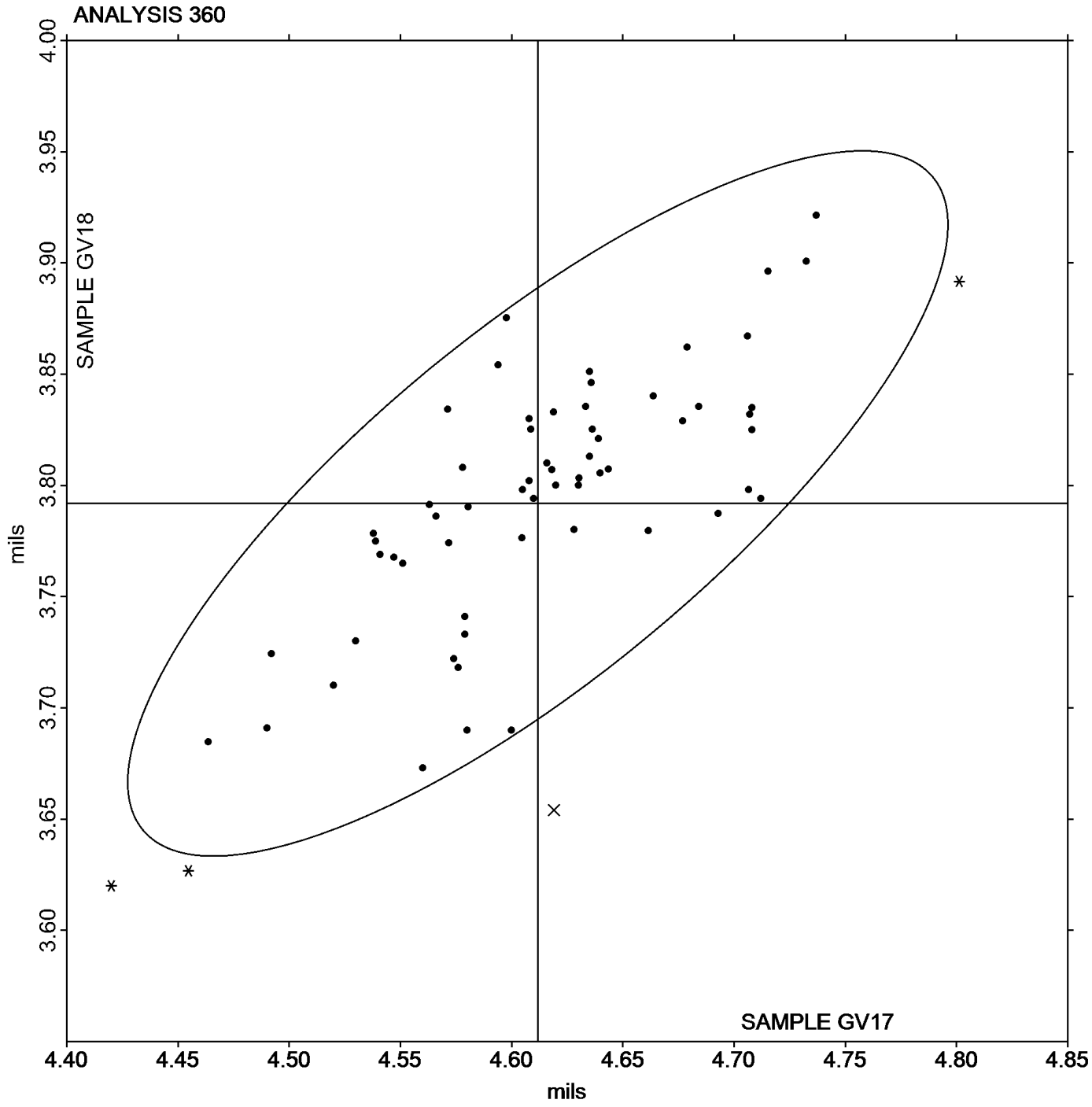
Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

Grand Mean Sample **GV17** = 4.6118 mils

Grand Mean Sample **GV18** = 3.7919 mils



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

WebCode	Data Flag	Sample GY17 Lab Mean	Sample GY17 Diff from Grand Mean	Sample GY17 CPV	Sample GY18 Lab Mean	Sample GY18 Diff from Grand Mean	Sample GY18 CPV	Instr Code
2B4E9N		9.515	0.142	1.24	7.790	0.155	1.28	XX
33TCN9		9.260	-0.114	-1.00	7.610	-0.025	-0.21	TM
34M3UM		9.275	-0.099	-0.86	7.525	-0.110	-0.91	TA
3QFA3B		9.510	0.136	1.20	7.770	0.135	1.11	LA
3ZK2R6		9.283	-0.090	-0.79	7.532	-0.104	-0.85	XX
A2VAZ7		9.180	-0.194	-1.70	7.470	-0.165	-1.36	TM
AXU9Y9		9.303	-0.071	-0.62	7.659	0.024	0.20	TM
BNGYMZ		9.416	0.043	0.37	7.616	-0.019	-0.16	LW
C2LE6P		9.462	0.088	0.78	7.720	0.085	0.70	TM
DFZ4HG		9.310	-0.064	-0.56	7.552	-0.083	-0.68	EM
DZ4MTJ		9.420	0.046	0.41	7.690	0.055	0.45	TM
EDQC7U		9.409	0.035	0.31	7.598	-0.037	-0.31	PP
FWKCV7		9.370	-0.003	-0.03	7.634	-0.001	-0.01	XX
FYAJDG		9.490	0.116	1.02	7.734	0.099	0.81	EM
H8V47P		9.337	-0.037	-0.32	7.578	-0.057	-0.47	PP
J3T6C7		9.410	0.036	0.32	7.715	0.080	0.66	TA
J6J96D		9.428	0.054	0.48	7.634	-0.001	-0.01	EM
LMR84R	*	9.126	-0.248	-2.17	7.290	-0.346	-2.85	TM
N9MTXE		9.264	-0.110	-0.96	7.480	-0.155	-1.27	LA
NZRPRW		9.504	0.130	1.14	7.765	0.130	1.07	TM
PDTLN4		9.486	0.112	0.99	7.779	0.144	1.19	LA
PKV4C9		9.398	0.024	0.21	7.610	-0.025	-0.21	XX
QCE9AB		9.169	-0.204	-1.79	7.488	-0.147	-1.21	LA
QDCAKA		9.378	0.004	0.04	7.606	-0.029	-0.24	LW
QVB4WU		9.260	-0.114	-1.00	7.590	-0.045	-0.37	TM
RBGQYG		9.328	-0.046	-0.40	7.593	-0.042	-0.35	PP
THU2M2		9.270	-0.104	-0.91	7.510	-0.125	-1.03	TM
UEA8NF		9.285	-0.089	-0.78	7.550	-0.085	-0.70	TA
UVFVEL		9.422	0.048	0.42	7.669	0.034	0.28	TA
VGEGRW		9.480	0.106	0.93	7.765	0.130	1.07	EM
XJTTKJ		9.532	0.158	1.39	7.878	0.243	2.00	TM
XPHDQK		9.340	-0.034	-0.29	7.630	-0.005	-0.04	TM
Z6LLJJ		9.543	0.169	1.48	7.711	0.076	0.63	LW
ZM3UHY		9.328	-0.046	-0.40	7.618	-0.017	-0.14	EM
ZWB6AX		9.584	0.211	1.85	7.871	0.235	1.94	XX

Summary Statistics

	Sample GY17	Sample GY18
Grand Means	9.3736 mils	7.6351 mils
SD Btwn Labs	0.1140 mils	0.1214 mils

Statistics based on 35 of 35 reporting participants

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

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

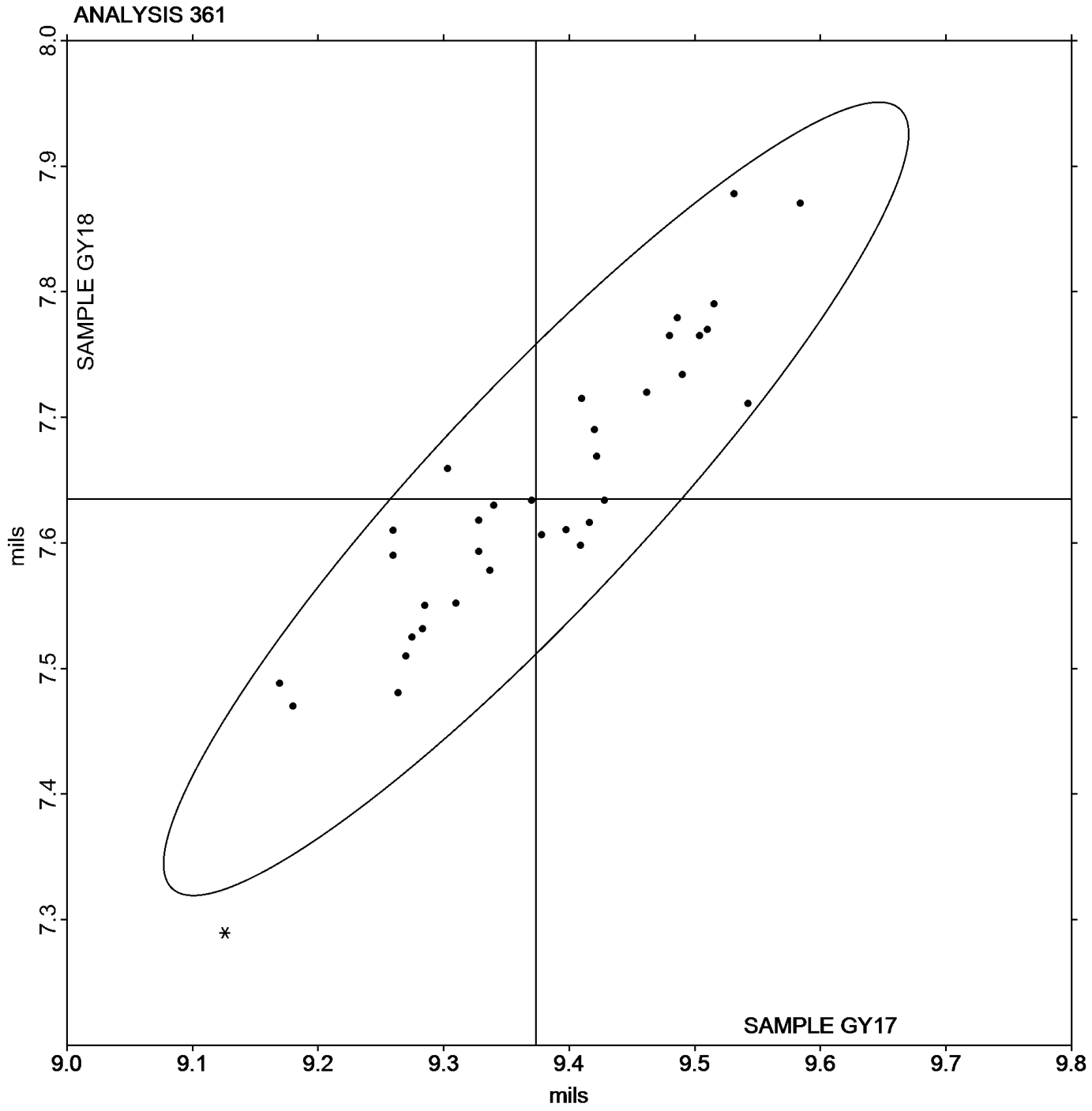
Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample **GY17** = 9.3736 mils

Grand Mean Sample **GY18** = 7.6351 mils



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

WebCode	Data Flag	Sample GD17 Lab Mean	Sample GD17 Diff from Grand Mean	Sample GD17 CPV	Sample GD18 Lab Mean	Sample GD18 Diff from Grand Mean	Sample GD18 CPV	Instr Code
2B4E9N		0.6464	0.0549	1.05	0.5906	0.0237	0.72	TM
9QWJGJ	X	0.4960	-0.0955	-1.83	0.3744	-0.1925	-5.84	XX
EUVL8F		0.6330	0.0415	0.79	0.5826	0.0157	0.48	TM
N9MTXE		0.5002	-0.0913	-1.75	0.5016	-0.0653	-1.98	TA
TWWTM7		0.5982	0.0067	0.13	0.5744	0.0075	0.23	TM
VN3FP4		0.6014	0.0099	0.19	0.5680	0.0011	0.03	IT
ZWB6AX		0.5700	-0.0215	-0.41	0.5840	0.0171	0.52	TL

Summary Statistics

	Sample GD17	Sample GD18
Grand Means	0.59153 COF	0.56687 COF
SD Btwn Labs	0.05230 COF	0.03293 COF

Statistics based on 6 of 7 reporting participants

Comments on assigned Data Flags for Test #364

9QWJGJ (X) - Data for Sample GD18 are low.

Instrument Code List as Reported by the Labs

(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

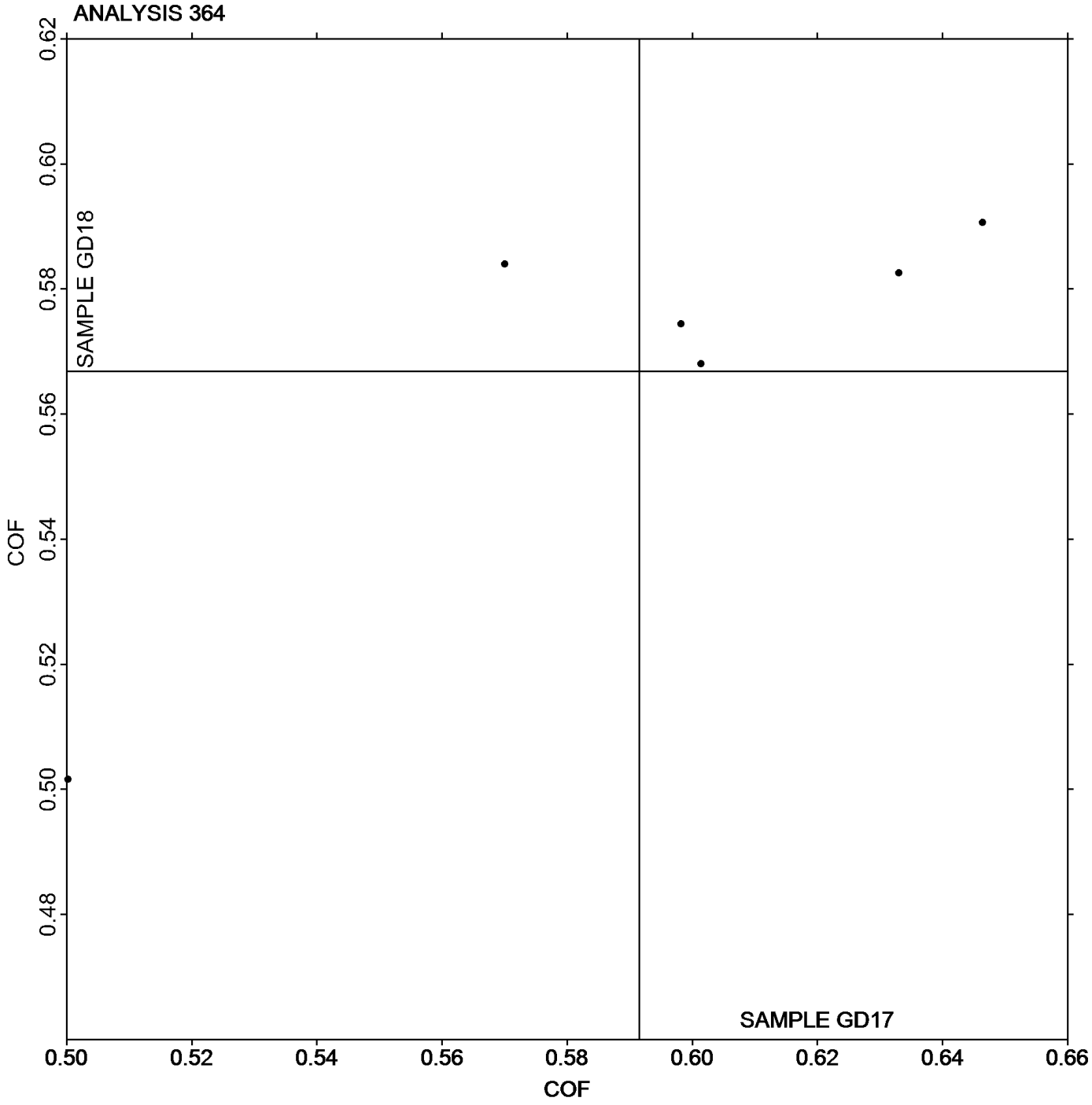
Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD17** = 0.59153 COF

Grand Mean Sample **GD18** = 0.56687 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 GD17 Lab Mean	Sample GD17 Diff from Grand Mean	Sample GD17 CPV	Sample GD18 Lab Mean	Sample GD18 Diff from Grand Mean	Sample GD18 CPV	Instr Code
2B4E9N		0.5698	0.1178	1.73	0.5148	0.0897	1.22	TM
8Q7ADN		0.3672	-0.0848	-1.24	0.3556	-0.0695	-0.94	TA
8RANG3		0.4420	-0.0100	-0.15	0.4098	-0.0153	-0.21	TM
9QWJGJ		0.3466	-0.1054	-1.55	0.2924	-0.1327	-1.80	XX
DX3K73		0.4388	-0.0132	-0.19	0.4093	-0.0158	-0.21	TA
ERU2FU		0.4820	0.0300	0.44	0.4640	0.0389	0.53	TA
EUVL8F		0.4692	0.0172	0.25	0.4500	0.0249	0.34	TM
N9MTXE		0.4642	0.0122	0.18	0.4310	0.0059	0.08	TA
VN3FP4		0.4450	-0.0070	-0.10	0.4242	-0.0009	-0.01	IR
ZTBV43		0.3974	-0.0546	-0.80	0.3672	-0.0579	-0.79	TA
ZWB6AX		0.5500	0.0980	1.44	0.5580	0.1329	1.81	TL

Summary Statistics

	Sample GD17	Sample GD18
Grand Means	0.45202 COF	0.42512 COF
SD Btwn Labs	0.06814 COF	0.07359 COF

Statistics based on 11 of 11 reporting participants

Instrument Code List as Reported by the Labs

(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

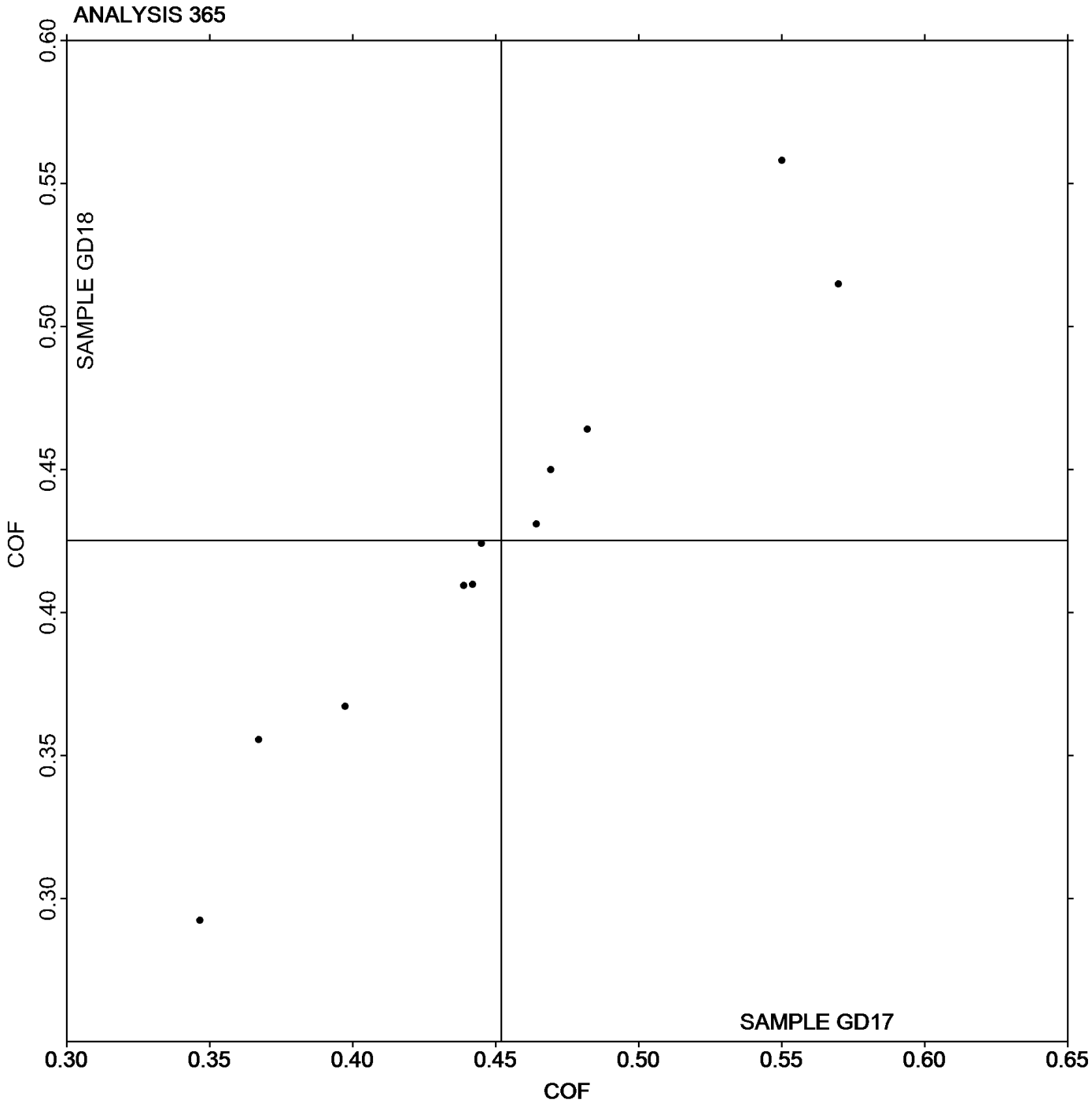
Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD17** = 0.45202 COF

Grand Mean Sample **GD18** = 0.42512 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 GE17 Lab Mean	Sample GE17 Diff from Grand Mean	Sample GE17 CPV	Sample GE18 Lab Mean	Sample GE18 Diff from Grand Mean	Sample GE18 CPV	Instr Code
33TCN9		12.66	0.92	1.31	11.29	-0.11	-0.14	TL
3MKYB3		11.27	-0.47	-0.68	10.49	-0.91	-1.09	HG
3ZK2R6		10.88	-0.86	-1.23	10.39	-1.01	-1.21	XX
8F3B9V		12.99	1.25	1.78	12.50	1.10	1.31	TL
96XVCH		10.92	-0.82	-1.17	9.95	-1.46	-1.74	RE
9H82DP		11.26	-0.48	-0.69	11.64	0.24	0.28	PP
9KTFQK		10.85	-0.89	-1.28	10.69	-0.71	-0.85	LP
9QWJGJ		11.60	-0.14	-0.21	10.40	-1.00	-1.20	GS
A3QXFF		12.17	0.43	0.61	11.39	-0.01	-0.02	WG
ACWYG8		12.12	0.38	0.54	11.90	0.50	0.59	WG
BNF2C4		11.28	-0.46	-0.66	11.83	0.43	0.51	HG
BNGYMZ		11.65	-0.09	-0.13	11.42	0.02	0.02	GA
C2LE6P		11.21	-0.53	-0.76	11.54	0.14	0.16	HG
CJNURB		11.26	-0.48	-0.69	10.74	-0.66	-0.79	TN
CVGHKP		11.03	-0.71	-1.02	11.07	-0.33	-0.40	XX
DUZJ4K		12.36	0.62	0.89	11.92	0.52	0.62	PP
E7C9GG		10.56	-1.19	-1.70	10.44	-0.96	-1.15	XX
EDQC7U		12.11	0.37	0.53	11.21	-0.19	-0.23	PP
EUB6RD		10.28	-1.46	-2.09	9.29	-2.11	-2.53	LW
FCVT28		11.62	-0.12	-0.18	11.17	-0.23	-0.28	TN
FJDJ4T		11.23	-0.52	-0.74	11.12	-0.29	-0.35	XX
FKQV76		11.70	-0.04	-0.06	11.11	-0.30	-0.36	HG
GU9W26		12.08	0.34	0.48	12.76	1.36	1.62	LP
H8V47P		13.23	1.49	2.12	13.36	1.96	2.34	LA
HQ7F42		11.40	-0.34	-0.49	11.41	0.01	0.01	HG
L6WEJT		11.00	-0.75	-1.06	10.66	-0.74	-0.89	LP
N9MTXE		12.59	0.84	1.20	12.21	0.81	0.96	LA
PAARPG		12.60	0.86	1.22	12.63	1.23	1.47	HG
PKV4C9		12.08	0.34	0.48	11.94	0.54	0.64	LW
QDCAKA		12.70	0.96	1.37	11.20	-0.20	-0.24	PP
QGA9X3		12.35	0.61	0.87	11.31	-0.09	-0.11	LA
QNBMJ4		11.54	-0.20	-0.29	11.50	0.10	0.12	LP
RBGQYG		11.42	-0.32	-0.46	11.43	0.02	0.03	PP
RV9ZEH		12.66	0.92	1.31	11.40	0.00	0.00	XX
THU2M2		13.10	1.36	1.94	13.08	1.68	2.00	TL
TWWTM7		10.77	-0.98	-1.39	10.80	-0.61	-0.73	PP
UE88DY		11.60	-0.14	-0.21	11.20	-0.20	-0.24	LW
UJ9KAK		11.03	-0.71	-1.02	11.02	-0.38	-0.46	LP
UVFVEL		11.94	0.19	0.27	11.24	-0.16	-0.19	PP
VDWKKD		11.97	0.23	0.32	11.66	0.26	0.31	XX
VGW833		12.36	0.62	0.88	12.58	1.18	1.41	LA
X6WDMB		12.13	0.39	0.55	12.45	1.04	1.25	HG
X7MK6M		12.17	0.43	0.61	11.67	0.27	0.32	LP

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

WebCode	Data Flag	Sample GE17 Lab Mean	Sample GE17 Diff from Grand Mean	Sample GE17 CPV	Sample GE18 Lab Mean	Sample GE18 Diff from Grand Mean	Sample GE18 CPV	Instr Code
XE3QTX		12.01	0.27	0.38	11.67	0.27	0.32	LP
ZM3UHY		10.89	-0.85	-1.22	9.69	-1.71	-2.05	PP
ZQ34QF		12.04	0.30	0.42	12.46	1.06	1.26	HG
ZRWMU3	X	30.00	18.26	26.08	30.00	18.60	22.24	XX
ZRWR8P		11.31	-0.43	-0.62	10.90	-0.50	-0.60	PP
ZWB6AX		11.75	0.00	0.00	11.64	0.24	0.29	LP

Summary Statistics

	Sample GE17	Sample GE18
Grand Means	11.744 sec/100 cc	11.404 sec/100 cc
SD Btwn Labs	0.700 sec/100 cc	0.836 sec/100 cc

Statistics based on 48 of 49 reporting participants

Comments on assigned Data Flags for Test #370

ZRWMU3 (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) - Gurley Densometer #4110, Oil Flotation
(TN) - Gurley S-P-S Tester #4190
(WG) - W & LE Gurley Tester
(XX) - Instrument make/model not specified by lab

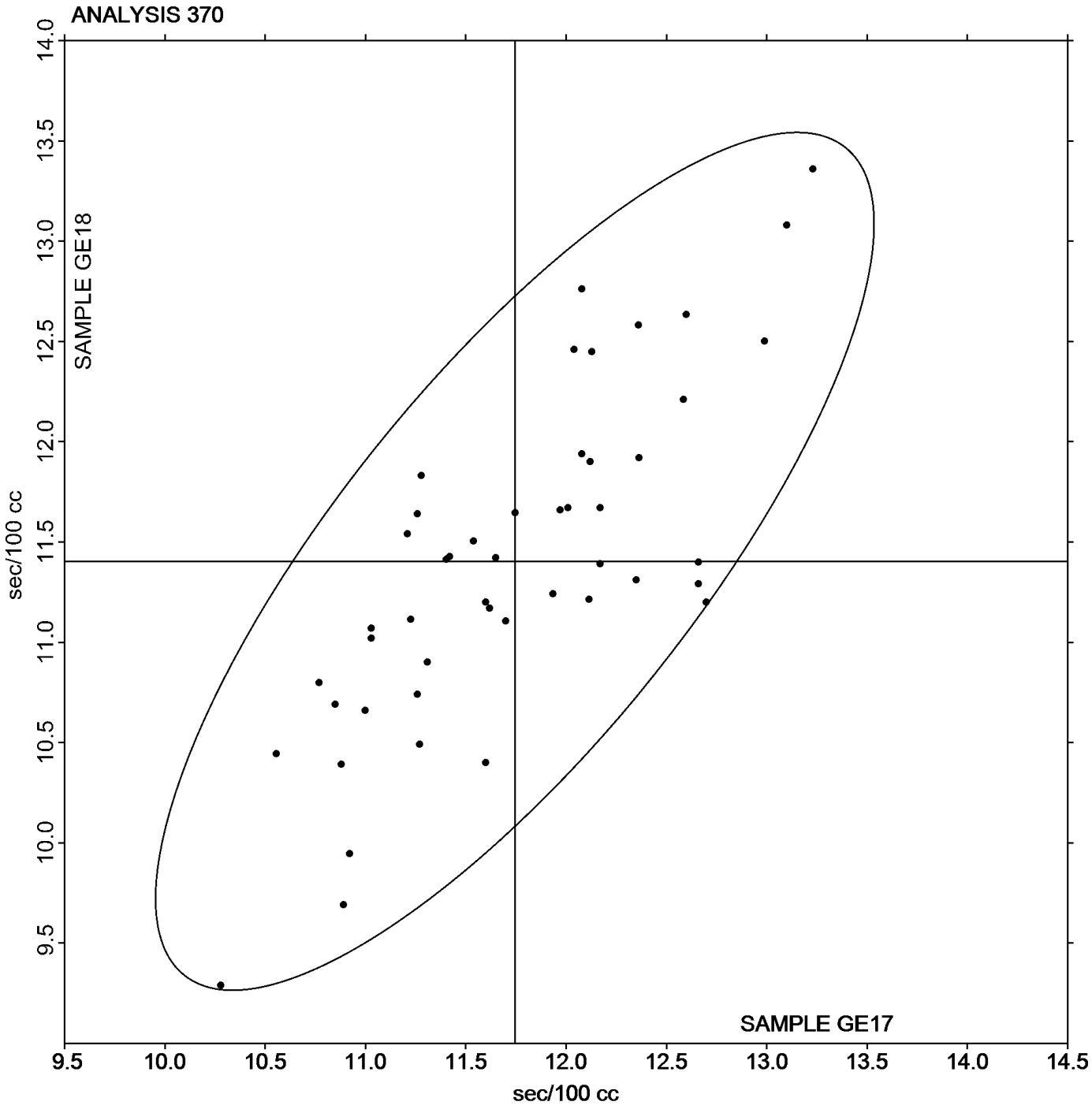
Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

Grand Mean Sample **GE17** = 11.744 sec/100 cc

Grand Mean Sample **GE18** = 11.404 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 GE17 Lab Mean	Sample GE17 Diff from Grand Mean	Sample GE17 CPV	Sample GE18 Lab Mean	Sample GE18 Diff from Grand Mean	Sample GE18 CPV	Instr Code
23XC8W		206.5	-12.3	-0.81	195.0	-17.6	-1.35	LP
3MKYB3		199.1	-19.7	-1.29	193.2	-19.4	-1.49	TT
9H82DP		231.7	12.9	0.85	222.6	10.0	0.77	HM
9QWJGJ	X	118.7	-100.1	-6.58	163.0	-49.6	-3.81	SH
A8XLUG		219.6	0.8	0.06	218.9	6.3	0.48	HM
C2LE6P		219.6	0.8	0.06	217.9	5.3	0.41	HG
DFZABP		199.1	-19.7	-1.29	208.3	-4.3	-0.33	LP
DKDHPW		222.5	3.7	0.25	195.9	-16.7	-1.28	TT
ELMCH2		254.0	35.2	2.32	240.5	27.9	2.14	VM
FJDJ4T		200.5	-18.3	-1.20	199.7	-12.9	-0.99	XX
JKXCQ8		204.6	-14.2	-0.93	205.4	-7.2	-0.55	LP
KMJ2KP		217.7	-1.1	-0.07	220.8	8.2	0.63	GA
NEVTFB		226.6	7.8	0.52	217.3	4.7	0.36	HG
UX62WX		218.0	-0.8	-0.05	218.5	5.9	0.45	TT
XTGQA4		231.8	13.0	0.86	212.4	-0.2	-0.01	HM
ZM3UHY		230.0	11.2	0.74	222.5	9.9	0.76	SH

Summary Statistics

	Sample GE17	Sample GE18
Grand Means	218.75 Sheffield Units	212.59 Sheffield Units
SD Btwn Labs	15.22 Sheffield Units	13.01 Sheffield Units

Statistics based on 15 of 16 reporting participants

Comments on assigned Data Flags for Test #372

9QWJGJ (X) - Extreme data.

Instrument Code List as Reported by the Labs

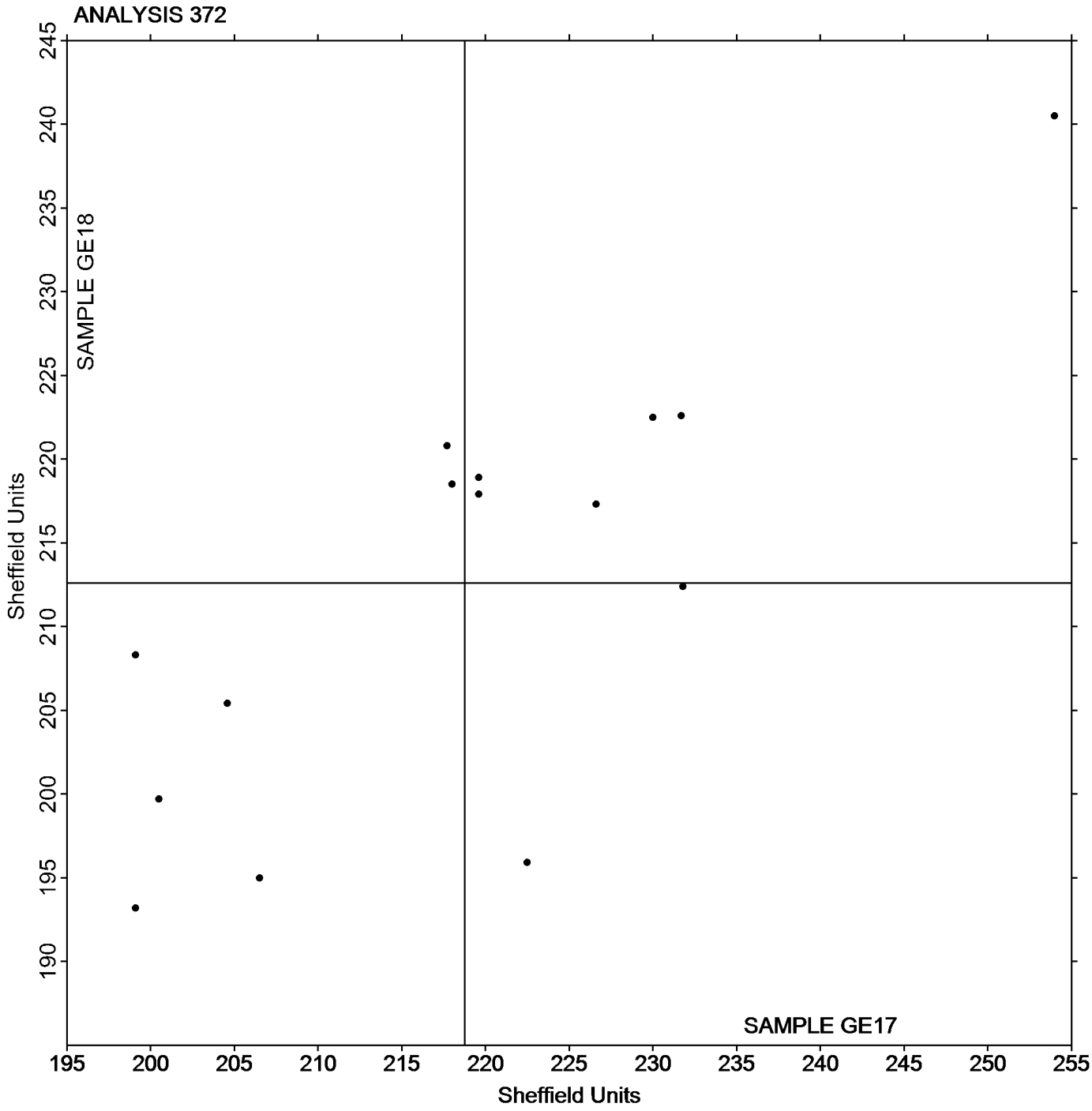
(GA) - Gurley Precision #4340 Automatic Densometer
(HG) - Technidyne - Hagerty Model #1
(HM) - Technidyne - Hagerty Model #538
(LP) - L & W Densometer, Air Permeance
(SH) - Sheffield
(TT) - TMI Monitor/Smoothness II, Model 58-24
(VM) - Valmet PaperLab (was Kajaani/Robotest)
(XX) - Instrument make/model not specified by lab

Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

Grand Mean Sample **GE17** = 218.75 Sheffield Units Grand Mean Sample **GE18** = 212.59 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 GJ17 Lab Mean	Sample GJ17 Diff from Grand Mean	Sample GJ17 CPV	Sample GJ18 Lab Mean	Sample GJ18 Diff from Grand Mean	Sample GJ18 CPV
3MKYB3		0.9770	0.0633	0.64	1.216	0.051	0.51
3QFA3B	X	0.8500	-0.0637	-0.65	1.100	-0.065	-0.65
9MZZRK		0.8590	-0.0547	-0.55	1.125	-0.040	-0.40
9QE967	X	0.8900	-0.0237	-0.24	1.096	-0.069	-0.69
A3QXFF		0.7230	-0.1907	-1.93	1.000	-0.165	-1.65
A8XLUG		0.7640	-0.1497	-1.52	1.009	-0.156	-1.56
BNF2C4		0.7510	-0.1627	-1.65	0.998	-0.167	-1.67
CNKLZ8		1.0710	0.1573	1.59	1.273	0.108	1.08
DFZ4HG		0.8790	-0.0347	-0.35	1.211	0.046	0.46
DKDHPW		1.0520	0.1383	1.40	1.350	0.185	1.85
ECVT4T		1.0140	0.1003	1.02	1.167	0.002	0.02
EDQC7U		0.9090	-0.0047	-0.05	1.111	-0.054	-0.54
ERU2FU		0.7870	-0.1267	-1.28	1.125	-0.040	-0.40
FJW8PU		0.8660	-0.0477	-0.48	1.124	-0.041	-0.41
FYAJDG		0.7950	-0.1187	-1.20	1.105	-0.060	-0.60
H8V47P		0.8980	-0.0157	-0.16	1.233	0.068	0.68
HHAGQU	X	1.3010	0.3873	3.92	1.426	0.261	2.61
J6J96D		0.9150	0.0013	0.01	1.154	-0.011	-0.11
JLQTTA		0.9300	0.0163	0.17	1.176	0.011	0.11
PAARPG		0.9470	0.0333	0.34	1.172	0.007	0.07
PDTLN4		0.8790	-0.0347	-0.35	1.186	0.021	0.21
PZA27V		1.0220	0.1083	1.10	1.244	0.079	0.79
QCE9AB		0.9640	0.0503	0.51	1.091	-0.074	-0.74
QJD4G6		0.9050	-0.0087	-0.09	1.163	-0.002	-0.02
QNBMJ4		1.1450	0.2313	2.34	1.387	0.222	2.22
QTZ39B		0.8780	-0.0357	-0.36	1.175	0.010	0.10
RBGQYG		0.8880	-0.0257	-0.26	1.131	-0.034	-0.34
VGEGRW		0.9580	0.0443	0.45	1.274	0.109	1.09
X6WDMB		0.8570	-0.0567	-0.57	1.051	-0.114	-1.14
XJTTKJ		0.8150	-0.0987	-1.00	0.978	-0.187	-1.87
XPHB2F		0.9800	0.0663	0.67	1.236	0.071	0.71
Z6LLJJ		0.8770	-0.0367	-0.37	1.101	-0.064	-0.64
ZM3UHY		0.8750	-0.0387	-0.39	1.136	-0.029	-0.29
ZRWMU3		1.0510	0.1373	1.39	1.284	0.119	1.19
ZTBV43		1.0070	0.0933	0.95	1.296	0.131	1.31

Summary Statistics

	Sample GJ17	Sample GJ18
Grand Means	0.91369 Microns	1.1651 Microns
SD Btwn Labs	0.09872 Microns	0.1000 Microns

Statistics based on 32 of 35 reporting participants

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

Comments on assigned Data Flags for Test #376

3QFA3B (X) - Data for Sample GJ17 appear to be off by a factor of .1; data converted by CTS (x10).

9QE967 (X) - Data appear to be off by a factor of 100; data converted by CTS (x.01).

HHAGQU (X) - Inconsistent in testing between samples, data for Sample GJ17 are high.

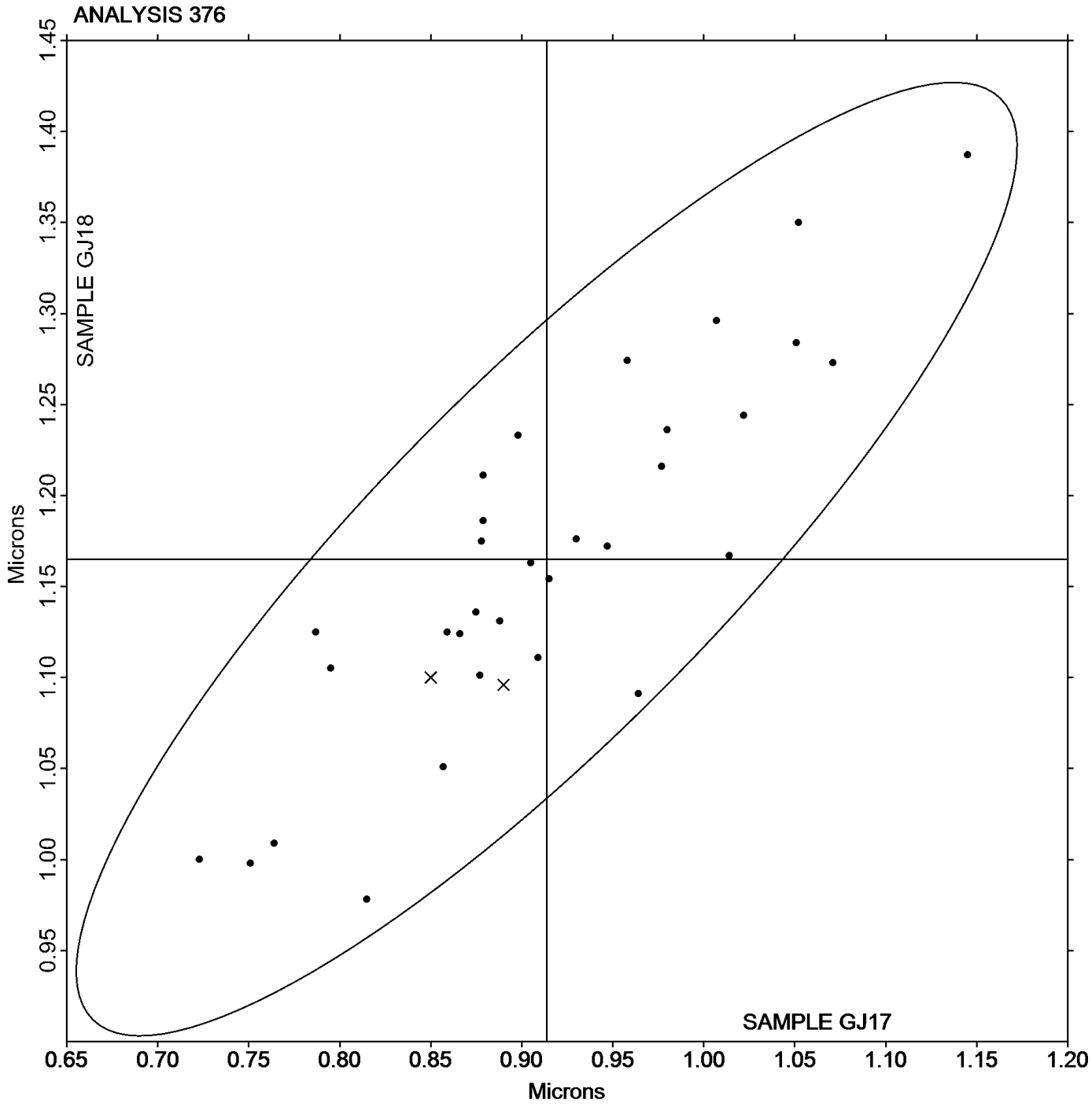
Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample **GJ17** = 0.91369 Microns

Grand Mean Sample **GJ18** = 1.1651 Microns



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

WebCode	Data Flag	Sample GK17 Lab Mean	Sample GK17 Diff from Grand Mean	Sample GK17 CPV	Sample GK18 Lab Mean	Sample GK18 Diff from Grand Mean	Sample GK18 CPV
A2VAZ7		3.200	-1.009	-2.24	3.140	-0.703	-1.91
A3QXFF		4.275	0.066	0.15	3.720	-0.123	-0.33
ELMCH2		4.521	0.312	0.69	4.255	0.412	1.12
QDCAKA		4.193	-0.016	-0.04	3.758	-0.085	-0.23
TWWTM7		4.370	0.161	0.36	4.112	0.269	0.73
UVFVEL		4.257	0.048	0.11	3.802	-0.041	-0.11
VGW833		4.002	-0.207	-0.46	3.553	-0.290	-0.79
XPHB2F		4.870	0.661	1.47	4.320	0.477	1.30
ZWB6AX		4.192	-0.017	-0.04	3.924	0.081	0.22

Summary Statistics

	Sample GK17	Sample GK18
Grand Means	4.2089 Microns	3.8427 Microns
SD Btwn Labs	0.4512 Microns	0.3672 Microns

Statistics based on 9 of 9 reporting participants

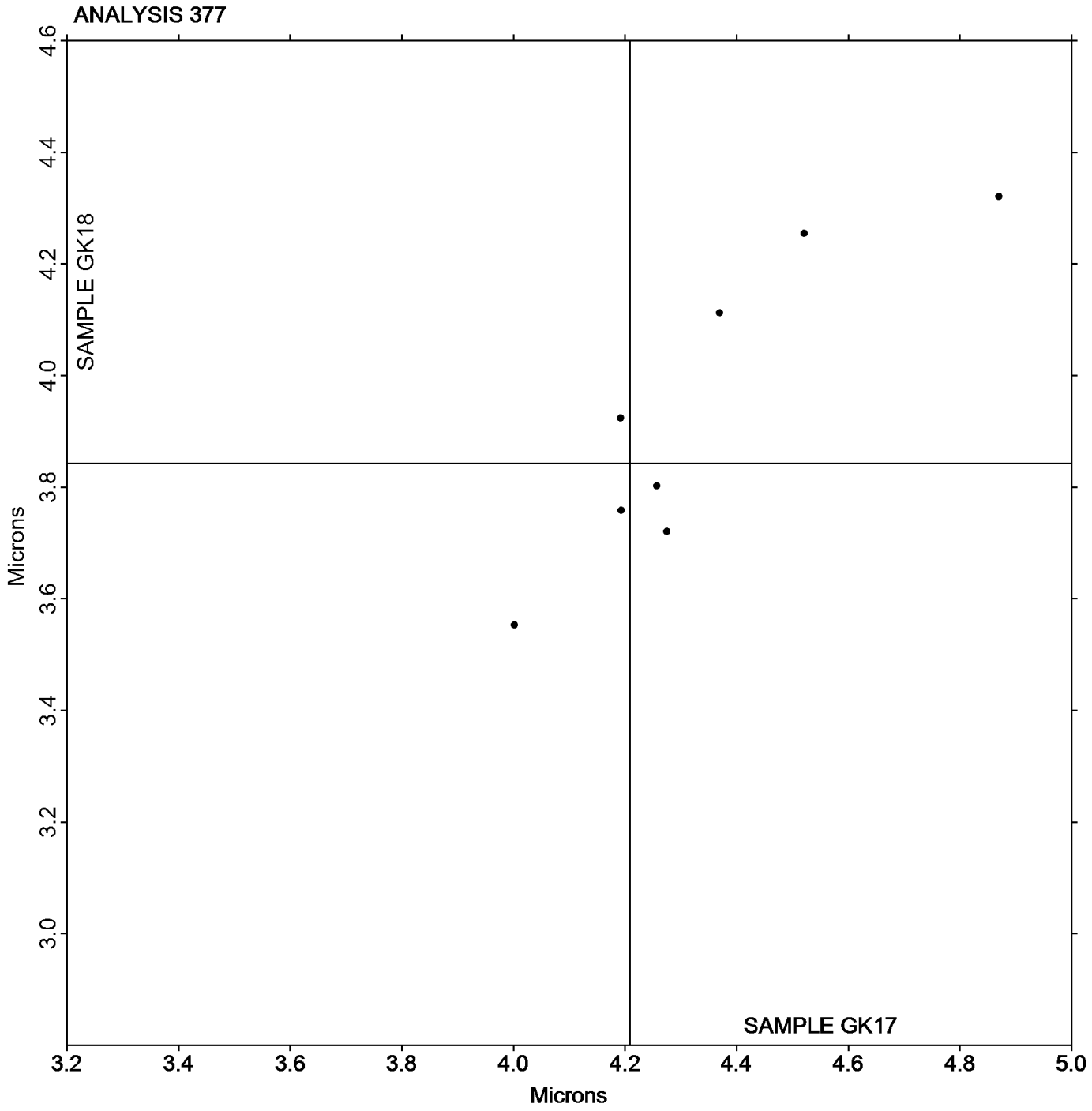
Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK17** = 4.2089 Microns

Grand Mean Sample **GK18** = 3.8427 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 GL17 Lab Mean	Sample GL17 Diff from Grand Mean	Sample GL17 CPV	Sample GL18 Lab Mean	Sample GL18 Diff from Grand Mean	Sample GL18 CPV	Instr Code
23XC8W		107.60	13.69	1.66	157.1	5.2	0.57	LW
2NRHFK		102.48	8.57	1.04	143.8	-8.2	-0.90	MP
34M3UM		99.70	5.79	0.70	155.1	3.2	0.35	PG
3MKYB3		94.80	0.89	0.11	160.1	8.2	0.89	SH
3QCPF8		86.40	-7.51	-0.91	131.1	-20.8	-2.29	TS
3QFA3B		92.38	-1.53	-0.19	143.8	-8.1	-0.89	LA
6EUPVJ	*	114.90	20.99	2.55	164.8	12.9	1.41	TS
8NC6E4		82.50	-11.41	-1.39	147.0	-4.9	-0.54	XX
9H82DP		95.56	1.65	0.20	149.3	-2.6	-0.29	PP
9QE967		94.50	0.59	0.07	150.3	-1.6	-0.18	TT
9QWJGJ	X	196.70	102.79	12.48	195.5	43.6	4.78	XX
A3QXFF		109.00	15.09	1.83	162.6	10.7	1.17	XX
ACWYG8		104.20	10.29	1.25	163.8	11.9	1.30	PG
BNF2C4		92.10	-1.81	-0.22	147.8	-4.1	-0.45	HM
C2LE6P		90.10	-3.81	-0.46	142.2	-9.7	-1.07	HM
CJNURB		89.90	-4.01	-0.49	147.3	-4.6	-0.51	TS
CVGHKP		87.40	-6.51	-0.79	152.6	0.7	0.07	PP
DFZ4HG	X	3.86	-90.05	-10.94	3.9	-148.0	-16.24	PP
DKDHPW		98.10	4.19	0.51	156.8	4.9	0.53	TT
DUZJ4K		90.75	-3.16	-0.38	166.5	14.6	1.60	PP
DZ4MTJ	X	121.34	27.43	3.33	157.9	5.9	0.65	GA
E7C9GG		109.40	15.49	1.88	165.2	13.3	1.45	XX
EDQC7U		83.82	-10.09	-1.23	156.7	4.7	0.52	PP
EEKZL6		91.40	-2.51	-0.30	159.9	8.0	0.87	GA
ERU2FU		100.80	6.89	0.84	154.0	2.1	0.23	HM
EUB6RD		104.90	10.99	1.33	156.0	4.1	0.45	SH
EUVL8F		101.37	7.46	0.91	158.2	6.2	0.68	PP
FJDJ4T		93.90	-0.01	0.00	151.6	-0.3	-0.04	XX
FKQV76		88.10	-5.81	-0.71	156.4	4.5	0.49	HM
FYAJDG		95.30	1.39	0.17	149.1	-2.9	-0.32	PP
H8V47P		99.13	5.22	0.63	159.5	7.6	0.83	PP
HQ7F42		96.10	2.19	0.27	146.9	-5.0	-0.55	GL
J3T6C7		84.45	-9.46	-1.15	141.1	-10.8	-1.19	PP
J6J96D		93.90	-0.01	0.00	154.0	2.1	0.23	PP
JKXCQ8		89.60	-4.31	-0.52	155.9	4.0	0.43	PP
KMJ2KP		100.00	6.09	0.74	136.3	-15.6	-1.72	GA
M6TC9E		99.80	5.89	0.72	157.5	5.6	0.61	XX
NEVTFB	X	205.40	111.49	13.54	220.0	68.1	7.47	PP
NZRPRW		93.40	-0.51	-0.06	155.0	3.1	0.34	PP
PAARPG		86.90	-7.01	-0.85	146.2	-5.7	-0.63	HM
PDTLN4		98.60	4.69	0.57	153.7	1.8	0.19	LA
QDCAKA		80.52	-13.39	-1.63	150.6	-1.4	-0.15	PP
QGA9X3		87.38	-6.53	-0.79	138.6	-13.3	-1.46	LA

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

WebCode	Data Flag	Sample GL17 Lab Mean	Sample GL17 Diff from Grand Mean	Sample GL17 CPV	Sample GL18 Lab Mean	Sample GL18 Diff from Grand Mean	Sample GL18 CPV	Instr Code
QNBMJ4		96.40	2.49	0.30	141.3	-10.6	-1.17	TS
QTZ39B		94.10	0.19	0.02	154.0	2.1	0.23	XX
QVB4WU	*	111.00	17.09	2.08	174.0	22.1	2.42	GL
RBGQYG		86.78	-7.12	-0.87	155.6	3.6	0.40	PP
RK4PPM		110.40	16.49	2.00	165.7	13.8	1.51	TT
TWWTM7		92.77	-1.14	-0.14	163.0	11.1	1.21	PP
UE88DY		94.40	0.49	0.06	138.6	-13.3	-1.46	TS
UVFVEL		81.98	-11.93	-1.45	137.3	-14.7	-1.61	PP
UX62WX		88.50	-5.41	-0.66	155.5	3.6	0.39	TT
V3ZHBH		89.00	-4.91	-0.60	137.8	-14.1	-1.55	SH
VGEGRW		89.80	-4.11	-0.50	140.5	-11.4	-1.26	LA
VGW833		95.00	1.09	0.13	154.1	2.2	0.24	LA
VKY7FG		90.60	-3.31	-0.40	138.8	-13.1	-1.44	LA
XE3QTX		84.80	-9.11	-1.11	149.5	-2.4	-0.27	LW
XJTTKJ		109.70	15.79	1.92	162.1	10.2	1.11	TT
XTGQA4		81.60	-12.31	-1.49	157.3	5.4	0.59	HM
Y4DRQE		82.60	-11.31	-1.37	144.9	-7.0	-0.77	PP
ZM3UHY		86.60	-7.31	-0.89	153.9	2.0	0.21	PP
ZQ34QF		87.30	-6.61	-0.80	162.5	10.6	1.16	HM
ZRWMU3		86.30	-7.61	-0.92	143.9	-8.0	-0.88	XX
ZRWR8P		92.90	-1.01	-0.12	135.6	-16.3	-1.79	SH
ZTBV43		88.70	-5.21	-0.63	157.2	5.3	0.58	HM
ZWB6AX		89.90	-4.01	-0.49	152.9	1.0	0.11	LW

Summary Statistics

	Sample GL17	Sample GL18
Grand Means	93.908 Sheffield	151.94 Sheffield
SD Btwn Labs	8.235 Sheffield	9.12 Sheffield

Statistics based on 62 of 66 reporting participants

Comments on assigned Data Flags for Test #378

9QWJGJ (X) - Extreme data.

DFZ4HG (X) - Extreme data.

DZ4MTJ (X) - Data for Sample GL17 are high.

NEVTFB (X) - Extreme data.

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

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

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

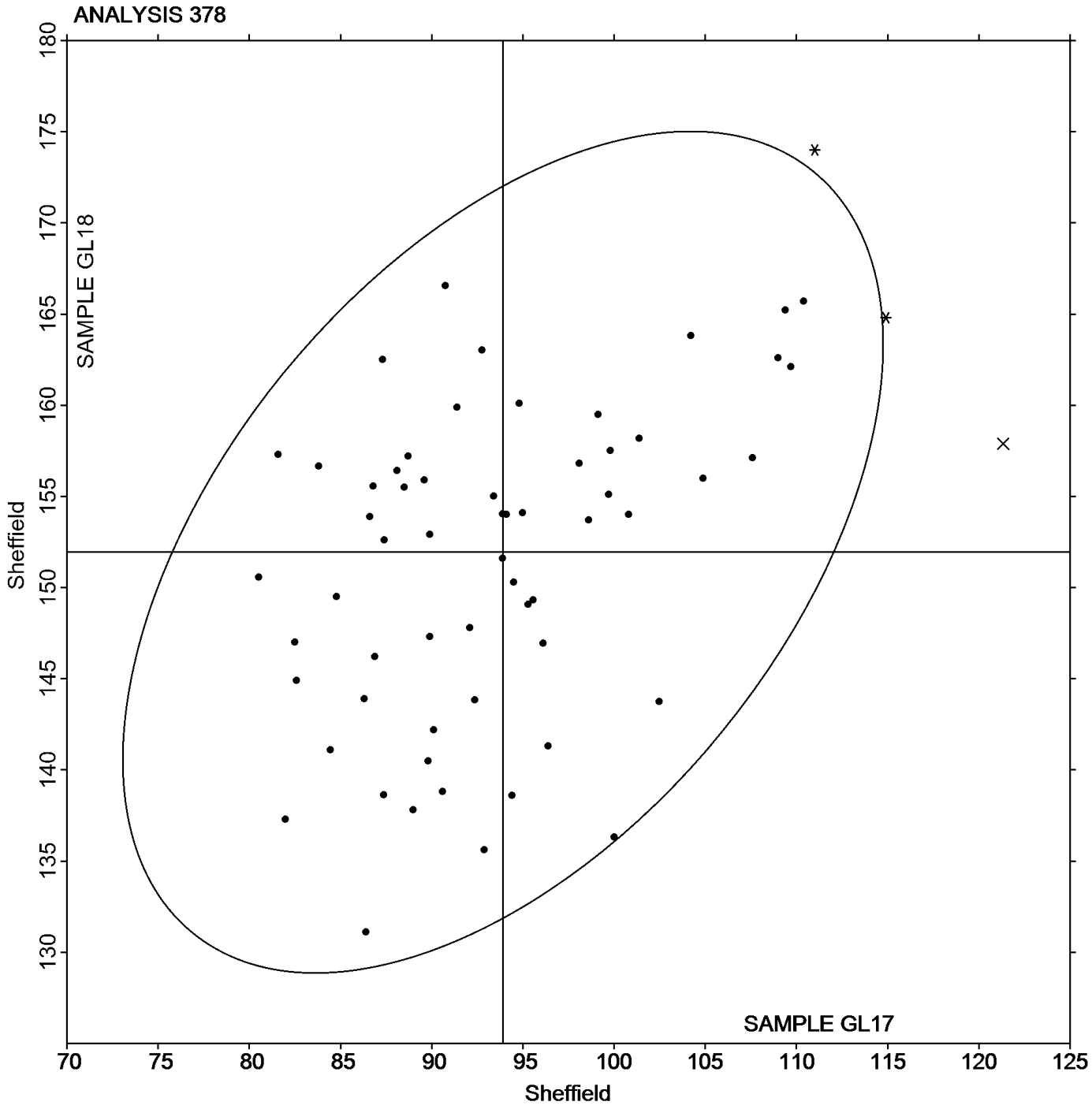
Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL17** = 93.908 Sheffield

Grand Mean Sample **GL18** = 151.94 Sheffield



Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

WebCode	Data Flag	Sample GM17 Lab Mean	Sample GM17 Diff from Grand Mean	Sample GM17 CPV	Sample GM18 Lab Mean	Sample GM18 Diff from Grand Mean	Sample GM18 CPV
46DN2J		3.920	-0.273	-0.64	3.790	-0.299	-0.71
96XVCH		3.766	-0.426	-0.99	3.719	-0.370	-0.88
A2VAZ7		4.684	0.491	1.14	4.536	0.447	1.06
ABZJ6A		4.290	0.097	0.23	3.990	-0.099	-0.23
CNKLZ8		3.743	-0.450	-1.05	3.648	-0.441	-1.05
NZRPRW		4.313	0.120	0.28	4.279	0.190	0.45
TWWTM7		4.152	-0.040	-0.09	4.353	0.264	0.63
X7MK6M		3.871	-0.322	-0.75	3.679	-0.410	-0.97
XJTTKJ		4.996	0.803	1.87	4.805	0.716	1.70

Summary Statistics

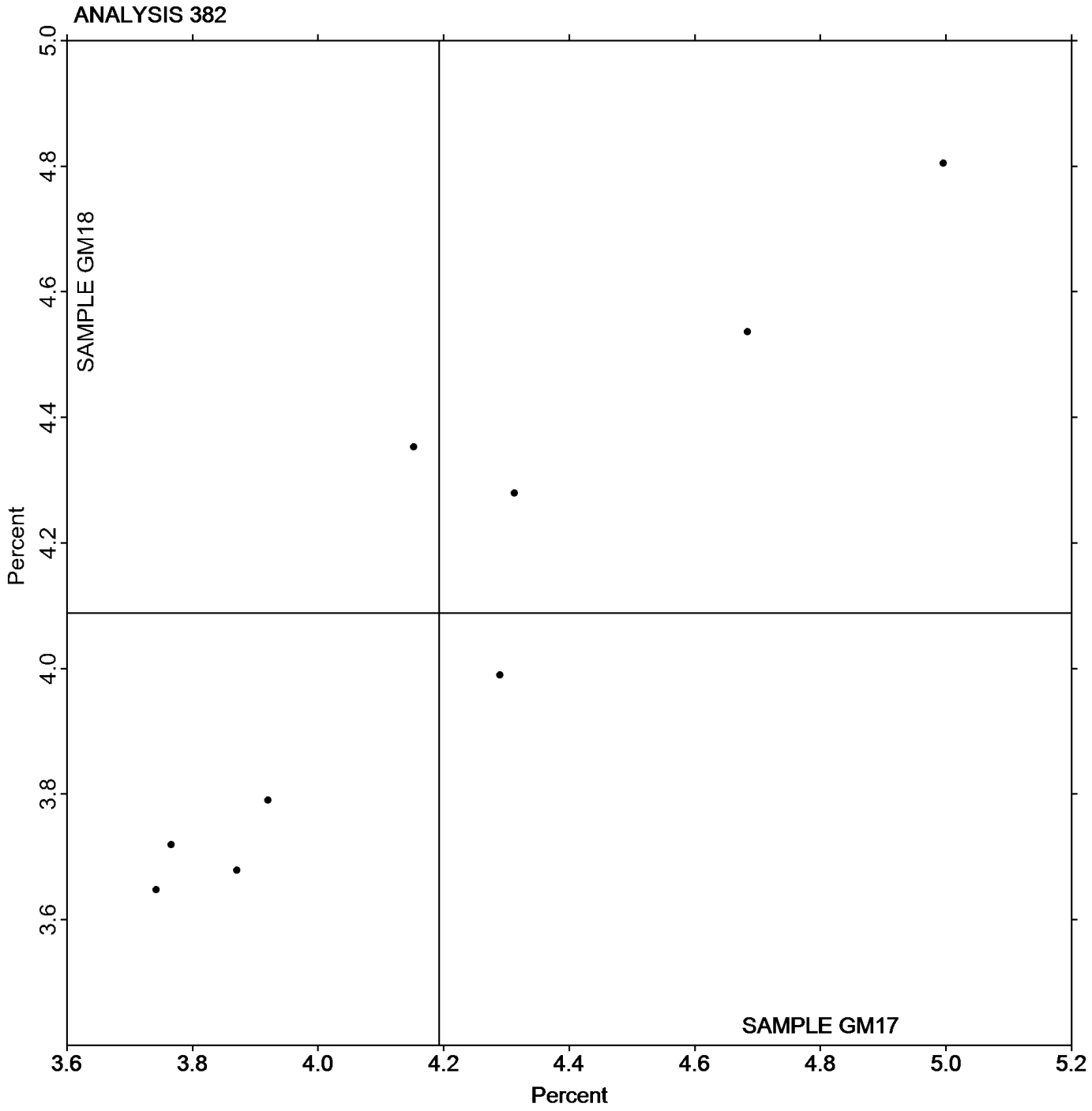
	Sample GM17	Sample GM18
Grand Means	4.1928 Percent	4.0887 Percent
SD Btwn Labs	0.4293 Percent	0.4209 Percent

Statistics based on 9 of 9 reporting participants

Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

Grand Mean Sample **GM17** = 4.1928 Percent

Grand Mean Sample **GM18** = 4.0887 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 GN17 Lab Mean	Sample GN17 Diff from Grand Mean	Sample GN17 CPV	Sample GN18 Lab Mean	Sample GN18 Diff from Grand Mean	Sample GN18 CPV
33TCN9		93.13	-0.05	-0.12	87.68	0.79	1.16
8NC6E4		93.32	0.14	0.32	86.94	0.05	0.08
9H82DP		93.06	-0.13	-0.29	86.46	-0.43	-0.63
9MZZRK		92.96	-0.22	-0.51	86.55	-0.34	-0.50
9QWJGJ		92.49	-0.69	-1.58	86.27	-0.62	-0.91
ACWYG8		92.80	-0.38	-0.87	86.10	-0.79	-1.16
BNF2C4		93.41	0.23	0.52	87.11	0.22	0.33
BYKU76		93.12	-0.06	-0.14	87.12	0.23	0.34
C2LE6P		93.09	-0.09	-0.21	86.42	-0.47	-0.69
CJNURB		93.10	-0.08	-0.19	87.29	0.40	0.59
CVGHKP		92.97	-0.21	-0.48	86.23	-0.66	-0.96
DKDHPW		93.83	0.65	1.48	87.99	1.10	1.62
DUZJ4K		93.33	0.15	0.34	87.20	0.31	0.46
E7C9GG		93.23	0.05	0.11	86.47	-0.42	-0.61
ERU2FU		93.39	0.21	0.48	87.32	0.43	0.63
EUVL8F		92.66	-0.52	-1.19	85.70	-1.19	-1.75
FBFWA9		93.40	0.22	0.50	86.20	-0.69	-1.01
FJDJ4T	*	91.92	-1.26	-2.88	85.46	-1.43	-2.09
HQ7F42		93.37	0.18	0.42	87.63	0.74	1.09
M6TC9E		93.62	0.44	1.00	87.91	1.02	1.50
MPWX9L	X	93.39	0.20	0.47	89.31	2.43	3.56
PZA27V		93.09	-0.09	-0.21	86.82	-0.07	-0.10
QDCAKA		94.13	0.95	2.17	88.13	1.24	1.82
QGA9X3		92.46	-0.72	-1.65	85.79	-1.10	-1.61
QTZ39B		93.06	-0.12	-0.28	87.21	0.32	0.47
QVB4WU		93.75	0.57	1.30	86.94	0.05	0.08
TWWTM7		94.07	0.89	2.03	87.94	1.06	1.55
UE88DY		93.29	0.11	0.25	86.93	0.04	0.06
UX62WX	X	93.69	0.51	1.16	89.15	2.26	3.32
V3ZHBH		93.50	0.32	0.73	86.79	-0.10	-0.14
VGW833		92.67	-0.51	-1.17	86.06	-0.83	-1.21
X6WDMB		92.89	-0.29	-0.67	86.41	-0.48	-0.70
XBZKZT		93.17	-0.02	-0.04	87.30	0.41	0.60
Y4DRQE		93.22	0.04	0.09	86.88	-0.01	-0.01
ZQ34QF		93.23	0.05	0.11	86.96	0.07	0.11
ZRWR8P		93.31	0.13	0.29	87.24	0.35	0.52
ZTBV43		93.33	0.14	0.33	87.63	0.75	1.09

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

Summary Statistics

	Sample GN17	Sample GN18
Grand Means	93.181 Percent	86.888 Percent
SD Btwn Labs	0.437 Percent	0.682 Percent

Statistics based on 35 of 37 reporting participants

Comments on assigned Data Flags for Test #384

MPWX9L (X) - Data for Sample GN18 are high.

UX62WX (X) - Data for Sample GN18 are high.

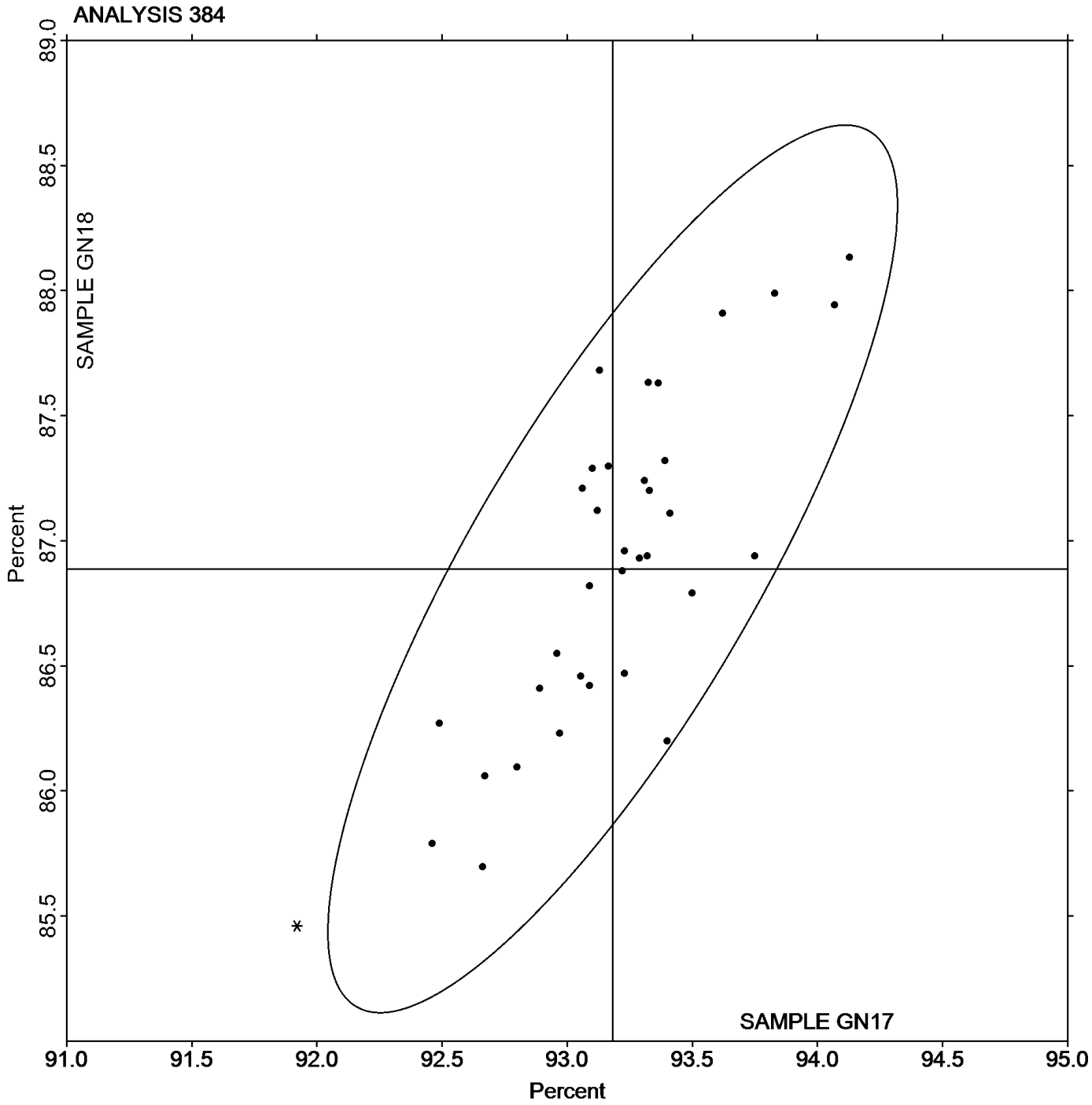
Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN17** = 93.181 Percent

Grand Mean Sample **GN18** = 86.888 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

WebCode	Data Flag	Sample GP17 Lab Mean	Sample GP17 Diff from Grand Mean	Sample GP17 CPV	Sample GP18 Lab Mean	Sample GP18 Diff from Grand Mean	Sample GP18 CPV
23XC8W		93.28	0.06	0.81	88.88	-0.17	-1.02
2B4E9N		93.30	0.09	1.13	89.35	0.30	1.85
3ZK2R6	*	92.98	-0.23	-3.07	89.37	0.32	1.98
96XVCH		93.23	0.01	0.18	88.90	-0.15	-0.92
99GDHM		93.19	-0.02	-0.28	89.02	-0.03	-0.17
99YNWL		93.18	-0.04	-0.48	89.16	0.11	0.69
9H82DP		93.15	-0.07	-0.86	88.87	-0.17	-1.05
9R9WKF		93.19	-0.02	-0.32	89.15	0.10	0.63
AR8HBT		93.25	0.03	0.43	88.90	-0.15	-0.91
CZRQNE		93.25	0.04	0.47	88.90	-0.15	-0.89
L6WEJT		93.24	0.03	0.39	89.29	0.25	1.51
PKV4C9		93.28	0.07	0.87	88.91	-0.14	-0.83
QTZ39B		93.14	-0.07	-0.98	88.94	-0.11	-0.65
THU2M2		93.30	0.09	1.13	89.07	0.02	0.15
UJ9KAK		93.14	-0.08	-1.03	89.06	0.01	0.09
X7MK6M		93.22	0.00	0.01	88.90	-0.15	-0.92
XTGQA4		93.24	0.03	0.38	89.08	0.04	0.22
YEEG7U		93.27	0.05	0.72	89.18	0.13	0.80
Z6LLJJ		93.18	-0.04	-0.51	89.12	0.07	0.45
ZTBV43		93.29	0.07	0.97	88.88	-0.16	-0.99

Summary Statistics

	Sample GP17	Sample GP18
Grand Means	93.214 Percent	89.046 Percent
SD Btwn Labs	0.076 Percent	0.164 Percent

Statistics based on 20 of 20 reporting participants

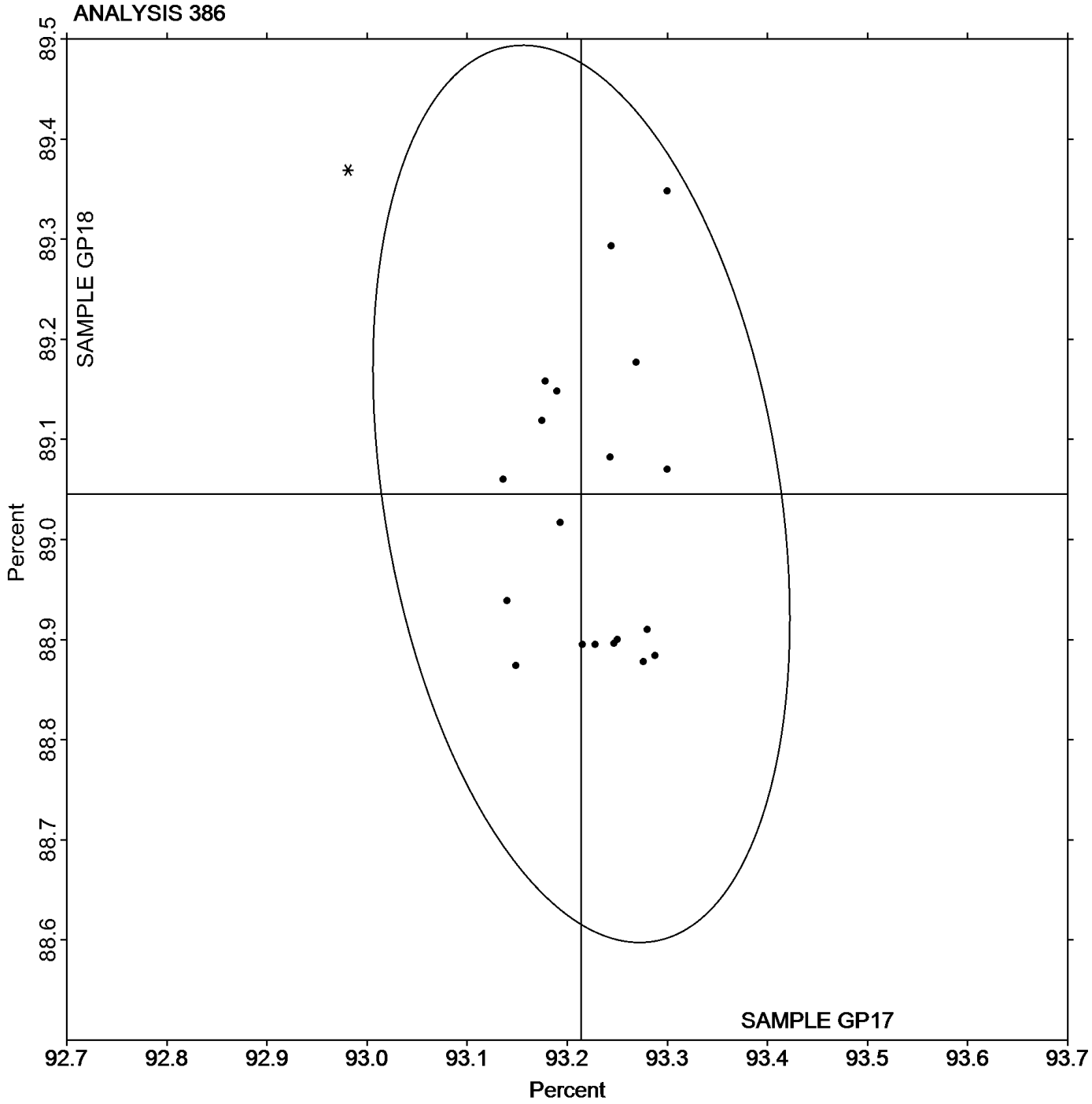
Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample **GP17** = 93.214 Percent

Grand Mean Sample **GP18** = 89.046 Percent



Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

WebCode	Data Flag	Sample GR17 Lab Mean	Sample GR17 Diff from Grand Mean	Sample GR17 CPV	Sample GR18 Lab Mean	Sample GR18 Diff from Grand Mean	Sample GR18 CPV	Instr Code
33TCN9		87.29	2.62	2.24	87.41	2.23	2.07	TS
34M3UM		83.58	-1.09	-0.93	84.00	-1.18	-1.10	TS
46DN2J		84.29	-0.38	-0.32	84.83	-0.36	-0.33	XX
8NC6E4		84.39	-0.28	-0.24	84.99	-0.19	-0.18	XX
9H82DP		83.57	-1.10	-0.94	84.47	-0.72	-0.66	TS
9QE967		86.40	1.73	1.48	86.61	1.43	1.33	TT
9QWJGJ	X	86.74	2.07	1.77	89.58	4.39	4.08	PE
A2VAZ7		84.74	0.07	0.06	84.94	-0.24	-0.23	TS
BYKU76		83.59	-1.08	-0.92	84.25	-0.93	-0.86	TT
C2LE6P		84.66	-0.01	-0.01	84.82	-0.36	-0.33	XS
CJNURB		84.34	-0.33	-0.28	85.24	0.06	0.05	TS
CYX3AP		85.73	1.07	0.91	86.14	0.96	0.89	TS
DFZ4HG		83.81	-0.85	-0.73	84.61	-0.57	-0.53	TT
DUZJ4K	X	85.98	1.31	1.12	84.04	-1.14	-1.06	TT
E7C9GG		83.90	-0.77	-0.65	84.61	-0.57	-0.53	TS
ERU2FU		83.40	-1.27	-1.08	83.62	-1.56	-1.45	TS
FJDJ4T		86.64	1.97	1.68	87.24	2.06	1.91	XX
FYAJDG		85.68	1.01	0.87	86.29	1.10	1.03	HD
H8V47P		83.16	-1.50	-1.28	83.71	-1.47	-1.36	PP
J3T6C7		83.44	-1.22	-1.05	84.48	-0.70	-0.65	TS
J6J96D		84.91	0.25	0.21	85.68	0.50	0.46	HD
LUURFF		85.56	0.90	0.76	86.13	0.94	0.88	HG
M6TC9E		86.03	1.36	1.16	85.76	0.58	0.54	XX
PZA27V		84.75	0.08	0.07	85.17	-0.01	-0.01	MK
QTZ39B		83.10	-1.56	-1.34	83.41	-1.77	-1.64	TT
UX62WX		86.71	2.05	1.75	87.28	2.09	1.94	TT
V3ZHBH		83.41	-1.25	-1.07	84.19	-0.99	-0.92	TA
VGW833		84.46	-0.20	-0.17	85.06	-0.12	-0.11	TS
X6WDMB		84.73	0.06	0.05	84.85	-0.33	-0.31	TT
Y4DRQE		85.24	0.57	0.49	85.45	0.27	0.25	XX
ZTBV43		83.85	-0.82	-0.70	85.02	-0.16	-0.15	TS

Summary Statistics

	Sample GR17	Sample GR18
Grand Means	84.667 Percent	85.181 Percent
SD Btwn Labs	1.172 Percent	1.077 Percent

Statistics based on 29 of 31 reporting participants

Comments on assigned Data Flags for Test #390

9QWJGJ (X) - Inconsistent in testing between samples, data for Sample GR18 are high.

DUZJ4K (X) - Inconsistent in testing between samples.

Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

Instrument Code List as Reported by the Labs

(HD) - Hunter D25DP - 9000

(HG) - Hunter Labscan / XE

(MK) - Macbeth Color-Eye 7000 Spectrophotometer

(PE) - Photovolt 577

(PP) - Technidyne Profile/Plus

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

(TS) - Technidyne Brightimeter Micro S-5

(TT) - Technidyne Brightimeter Micro S4-M

(XS) - X-Rite 938 Spectrodensitometer

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

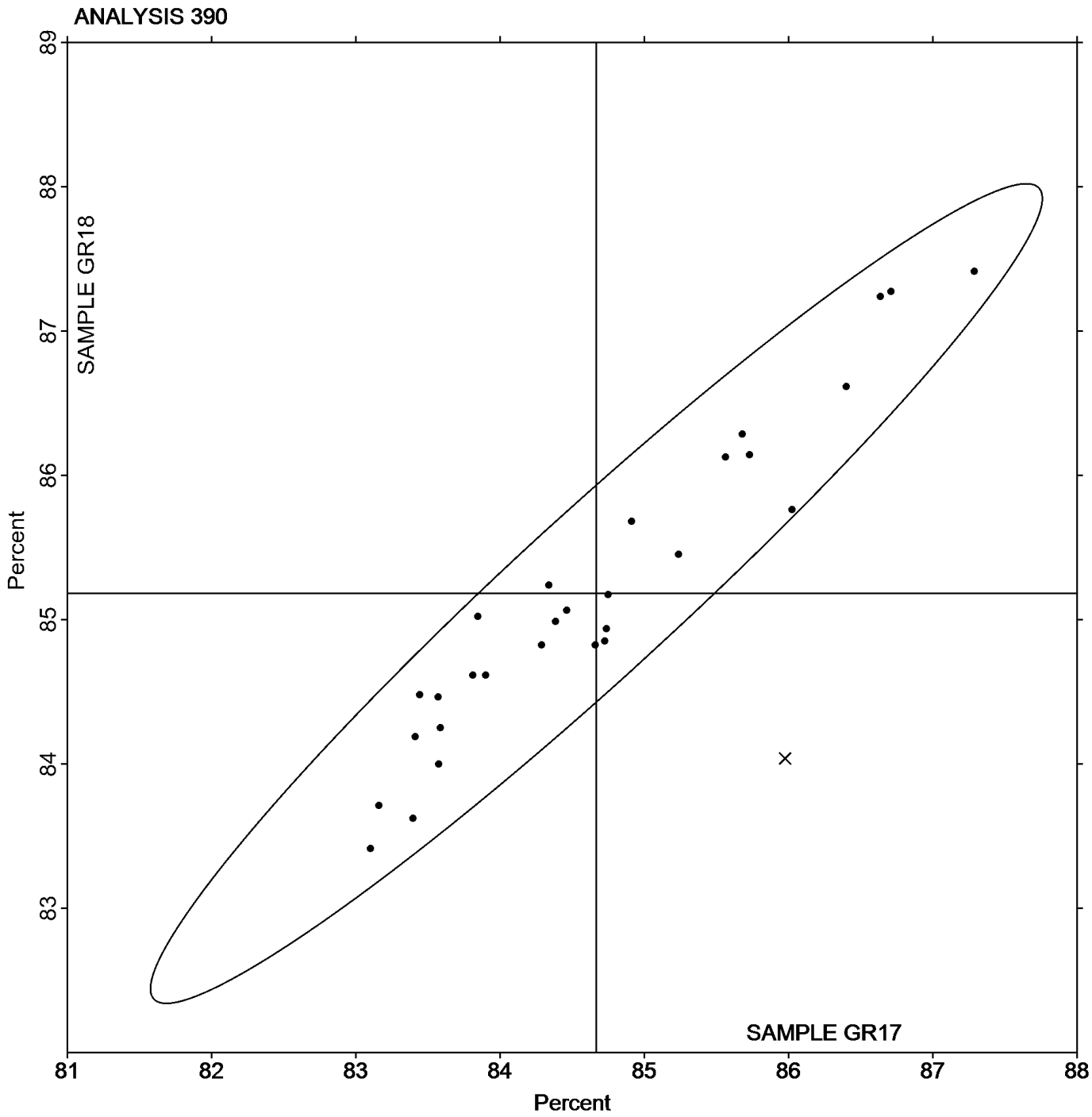
Paper & Paperboard Interlaboratory Testing Program

Analysis 390

Directional Brightness

Grand Mean Sample **GR17** = 84.667 Percent

Grand Mean Sample **GR18** = 85.181 Percent



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

WebCode	Data Flag	Sample GZ17 Lab Mean	Sample GZ17 Diff from Grand Mean	Sample GZ17 CPV	Sample GZ18 Lab Mean	Sample GZ18 Diff from Grand Mean	Sample GZ18 CPV	Instr Code
3QFA3B		97.78	-0.07	-0.09	90.08	0.11	0.15	TT
9MZZRK		97.97	0.12	0.15	90.15	0.17	0.25	PP
BYKU76		97.28	-0.57	-0.70	89.58	-0.39	-0.56	TT
CJNURB		98.24	0.39	0.48	90.18	0.21	0.29	TS
DKDHPW		99.12	1.27	1.56	91.04	1.07	1.51	TT
DX3K73		98.12	0.27	0.33	90.40	0.43	0.61	TS
EUVL8F	X	91.39	-6.46	-7.94	81.18	-8.80	-12.48	TS
M6TC9E		98.71	0.86	1.06	90.50	0.53	0.75	XX
N6MPH7		97.98	0.13	0.17	90.35	0.38	0.53	TS
QDCAKA		97.90	0.05	0.07	89.87	-0.10	-0.14	TS
QGA9X3		97.76	-0.09	-0.11	90.06	0.09	0.12	TT
TWWTM7		98.05	0.20	0.24	90.11	0.14	0.19	TS
UE88DY		98.26	0.41	0.50	90.22	0.25	0.35	TS
XJTTKJ	X	96.14	-1.71	-2.10	93.53	3.55	5.04	EF
ZQ34QF		97.06	-0.79	-0.98	88.93	-1.04	-1.48	HT
ZRWR8P		95.66	-2.19	-2.70	88.16	-1.82	-2.58	HT

Summary Statistics

	Sample GZ17	Sample GZ18
Grand Means	97.849 Percent	89.975 Percent
SD Btwn Labs	0.814 Percent	0.705 Percent

Statistics based on 14 of 16 reporting participants

Comments on assigned Data Flags for Test #391

EUVL8F (X) - Extreme data.

XJTTKJ (X) - Data for Sample GZ18 are high.

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

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

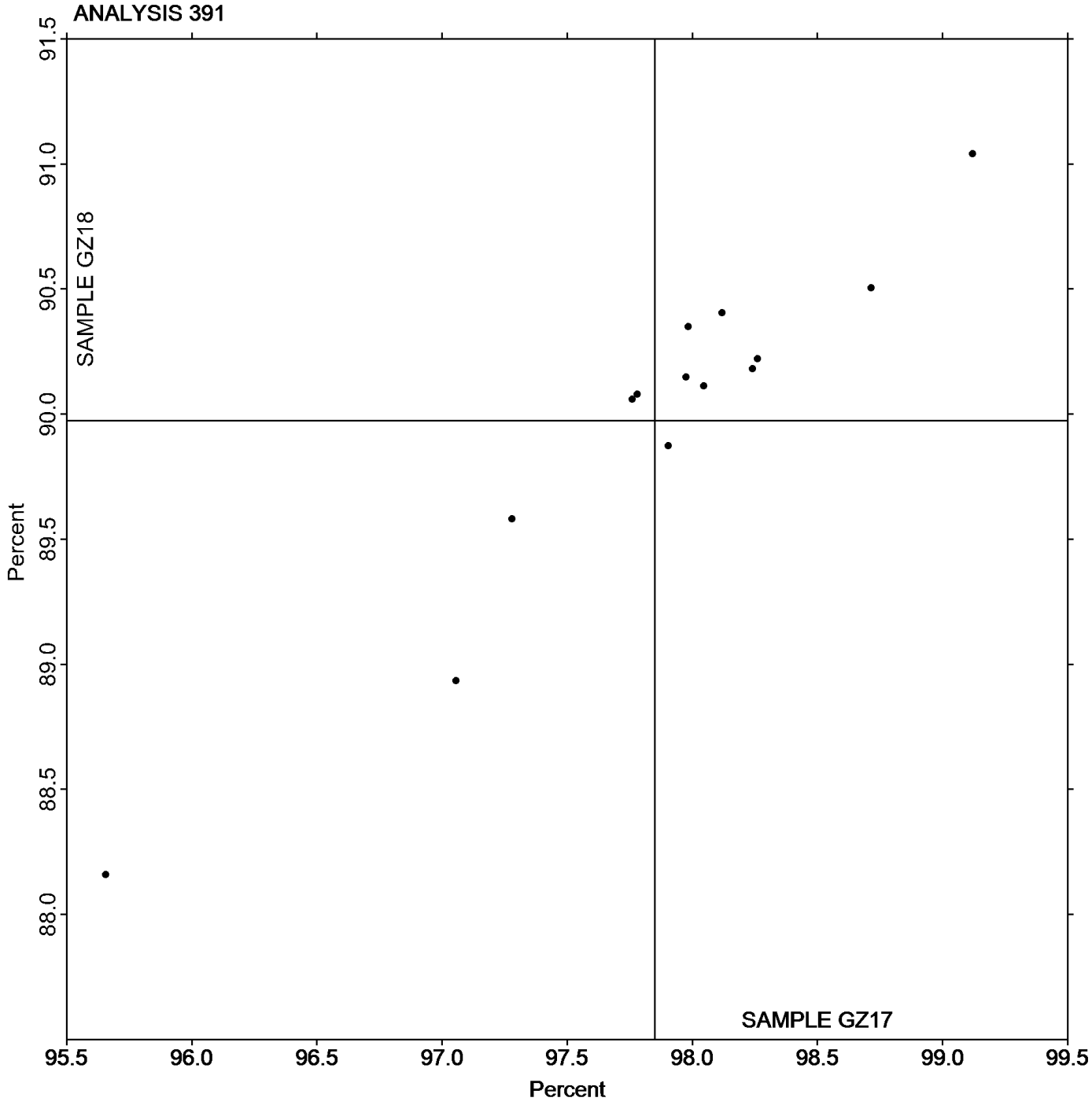
Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ17** = 97.849 Percent

Grand Mean Sample **GZ18** = 89.975 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 GR17 Lab Mean	Sample GR17 Diff from Grand Mean	Sample GR17 CPV	Sample GR18 Lab Mean	Sample GR18 Diff from Grand Mean	Sample GR18 CPV	Instr Code
23XC8W		84.04	0.18	1.07	84.46	0.05	0.33	TC
2B4E9N		83.74	-0.12	-0.68	84.26	-0.15	-0.88	TM
3MKYB3		84.04	0.19	1.11	84.48	0.07	0.45	TC
3P6A4V		84.01	0.15	0.89	84.54	0.14	0.84	TC
46DN2J		84.11	0.25	1.47	84.59	0.19	1.11	EE
8Q7ADN		83.83	-0.02	-0.13	84.43	0.03	0.18	TC
96XVCH		83.65	-0.20	-1.19	84.18	-0.22	-1.33	EG
9QE967		83.69	-0.16	-0.96	84.23	-0.18	-1.07	EG
9R9WKF		83.75	-0.11	-0.63	84.16	-0.24	-1.46	TM
AR8HBT		84.05	0.19	1.13	84.60	0.20	1.20	TC
BYKU76		83.89	0.03	0.19	84.43	0.02	0.15	TC
CYX3AP		83.68	-0.18	-1.03	84.29	-0.12	-0.70	TM
DFZ4HG	X	86.49	2.64	15.37	84.19	-0.22	-1.29	TL
EDQC7U		83.89	0.04	0.21	84.45	0.05	0.28	PP
G68PAV		83.71	-0.14	-0.84	84.39	-0.02	-0.11	TC
JLQTTA	*	84.31	0.46	2.68	84.74	0.34	2.02	TC
P93E4A	X	84.85	1.00	5.80	85.26	0.86	5.14	EE
QEK2D6		83.77	-0.09	-0.51	84.16	-0.24	-1.45	TC
QJD4G6	*	83.61	-0.24	-1.39	84.57	0.16	0.97	TC
QTZ39B	X	85.32	1.47	8.57	86.05	1.65	9.89	TM
RBGQYG		83.98	0.13	0.74	84.54	0.14	0.84	TC
THU2M2		83.64	-0.21	-1.25	84.10	-0.30	-1.82	TM
VDWKKD		83.86	0.01	0.04	84.58	0.18	1.05	TC
VGW833		83.89	0.04	0.23	84.48	0.07	0.44	TC
X7MK6M		83.57	-0.29	-1.68	84.17	-0.24	-1.43	LS
XE3QTX		83.84	-0.01	-0.09	84.38	-0.03	-0.17	EF
XJTTKJ		83.97	0.12	0.69	84.51	0.11	0.63	LA
XPHB2F		83.77	-0.08	-0.48	84.37	-0.03	-0.18	TC
XTGQA4		83.88	0.03	0.17	84.59	0.19	1.11	TC
YEEG7U	X	83.29	-0.57	-3.30	83.30	-1.10	-6.61	TC
Z6LLJJ		83.93	0.07	0.43	84.27	-0.13	-0.78	LS
ZTBV43		83.82	-0.03	-0.20	84.36	-0.04	-0.24	TM

Summary Statistics

	Sample GR17	Sample GR18
Grand Means	83.852 Percent	84.403 Percent
SD Btwn Labs	0.171 Percent	0.167 Percent

Statistics based on 28 of 32 reporting participants

Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

Comments on assigned Data Flags for Test #392

DFZ4HG (X) - Extreme data.

P93E4A (X) - Systematic error (data for both samples are high). Inconsistent within the determinations for Sample GR18.

QTZ39B (X) - Extreme data.

YEEG7U (X) - Extreme data.

Instrument Code List as Reported by the Labs

(EE) - Datacolor Elrepho 2000

(EF) - Datacolor Elrepho 3000

(EG) - Datacolor Elrepho 450X

(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

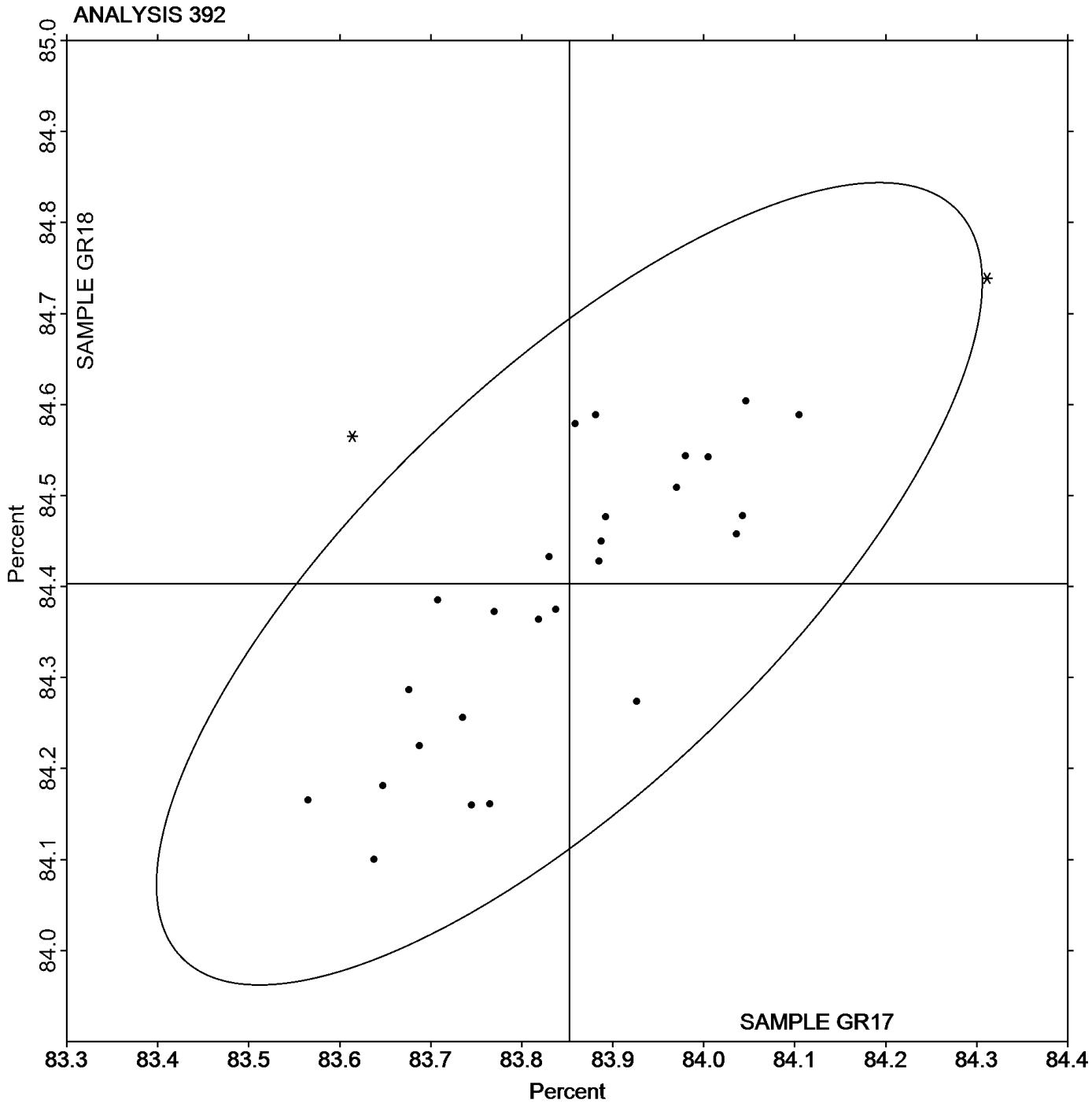
Paper & Paperboard Interlaboratory Testing Program

Analysis 392

Diffuse Brightness

Grand Mean Sample **GR17** = 83.852 Percent

Grand Mean Sample **GR18** = 84.403 Percent



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

WebCode	Data Flag	Sample GZ17 Lab Mean	Sample GZ17 Diff from Grand Mean	Sample GZ17 CPV	Sample GZ18 Lab Mean	Sample GZ18 Diff from Grand Mean	Sample GZ18 CPV	Instr Code
3QFA3B		9.440	0.601	1.00	7.360	0.479	1.01	TT
9MZZRK		9.260	0.421	0.70	7.298	0.417	0.88	PP
BYKU76		8.700	-0.139	-0.23	6.860	-0.021	-0.04	TT
CJNURB		9.020	0.181	0.30	6.760	-0.121	-0.26	TS
DX3K73		9.090	0.251	0.42	7.126	0.245	0.52	TS
EUVL8F		7.894	-0.945	-1.58	6.000	-0.881	-1.86	TS
M6TC9E		8.882	0.043	0.07	6.860	-0.021	-0.04	XX
N6MPH7		8.612	-0.227	-0.38	6.800	-0.081	-0.17	TS
QDCAKA		9.498	0.659	1.10	7.308	0.427	0.90	TS
QGA9X3		8.820	-0.019	-0.03	7.100	0.219	0.46	TT
TWWTM7		9.164	0.325	0.54	7.092	0.211	0.45	TS
XJTTKJ	X	13.496	4.657	7.77	10.314	3.433	7.25	EF
ZQ34QF		9.128	0.289	0.48	7.066	0.185	0.39	HT
ZRWR8P		7.396	-1.443	-2.41	5.824	-1.057	-2.23	HT

Summary Statistics

	Sample GZ17	Sample GZ18
Grand Means	8.8388 Percent	6.8811 Percent
SD Btwn Labs	0.5990 Percent	0.4733 Percent

Statistics based on 13 of 14 reporting participants

Comments on assigned Data Flags for Test #394

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

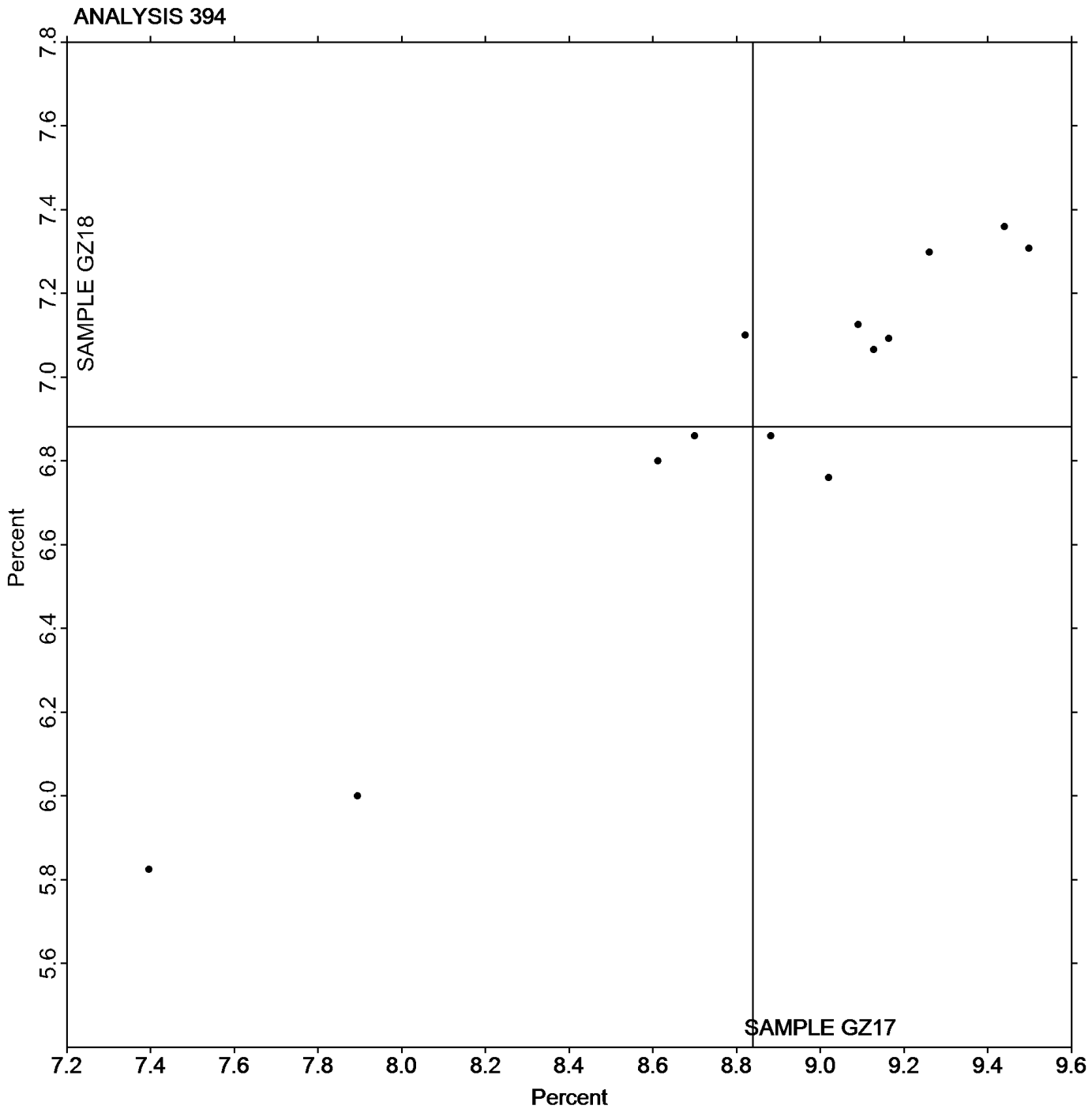
Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ17** = 8.8388 Percent

Grand Mean Sample **GZ18** = 6.8811 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 GT17 Lab Mean	Sample GT17 Diff from Grand Mean	Sample GT17 CPV	Sample GT18 Lab Mean	Sample GT18 Diff from Grand Mean	Sample GT18 CPV	Instr Code
3QFA3B	*	80.20	6.01	2.41	83.30	8.29	2.99	LA
96XVCH		70.77	-3.42	-1.37	69.70	-5.31	-1.92	TH
9MZZRK		72.28	-1.91	-0.76	75.11	0.10	0.03	PP
9QE967		75.80	1.61	0.65	72.40	-2.61	-0.94	GM
CZRQNE		74.90	0.71	0.29	72.60	-2.41	-0.87	GA
DFZ4HG		72.83	-1.36	-0.54	74.64	-0.37	-0.14	GS
FYAJDG		73.34	-0.85	-0.34	75.58	0.57	0.20	TH
J6J96D		72.37	-1.82	-0.73	76.50	1.49	0.54	TH
PDTLN4		69.94	-4.25	-1.70	72.05	-2.96	-1.07	LA
PZA27V		73.42	-0.77	-0.31	74.29	-0.72	-0.26	PP
QNBMJ4		72.79	-1.40	-0.56	76.28	1.27	0.46	XX
QTZ39B		75.96	1.77	0.71	77.27	2.25	0.81	TG
VGEGRW		75.42	1.23	0.49	75.20	0.19	0.07	TH
X6WDMB		76.34	2.15	0.86	74.33	-0.68	-0.25	TH
XPHB2F		75.99	1.80	0.72	75.13	0.12	0.04	ZH
Z6LLJJ		72.76	-1.43	-0.57	76.35	1.34	0.48	LB
ZM3UHY		73.09	-1.10	-0.44	74.86	-0.15	-0.06	GM
ZTBV43		77.19	3.00	1.20	74.67	-0.34	-0.12	TH

Summary Statistics

	Sample GT17	Sample GT18
Grand Means	74.188 Gloss Units	75.014 Gloss Units
SD Btwn Labs	2.495 Gloss Units	2.772 Gloss Units

Statistics based on 18 of 18 reporting participants

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

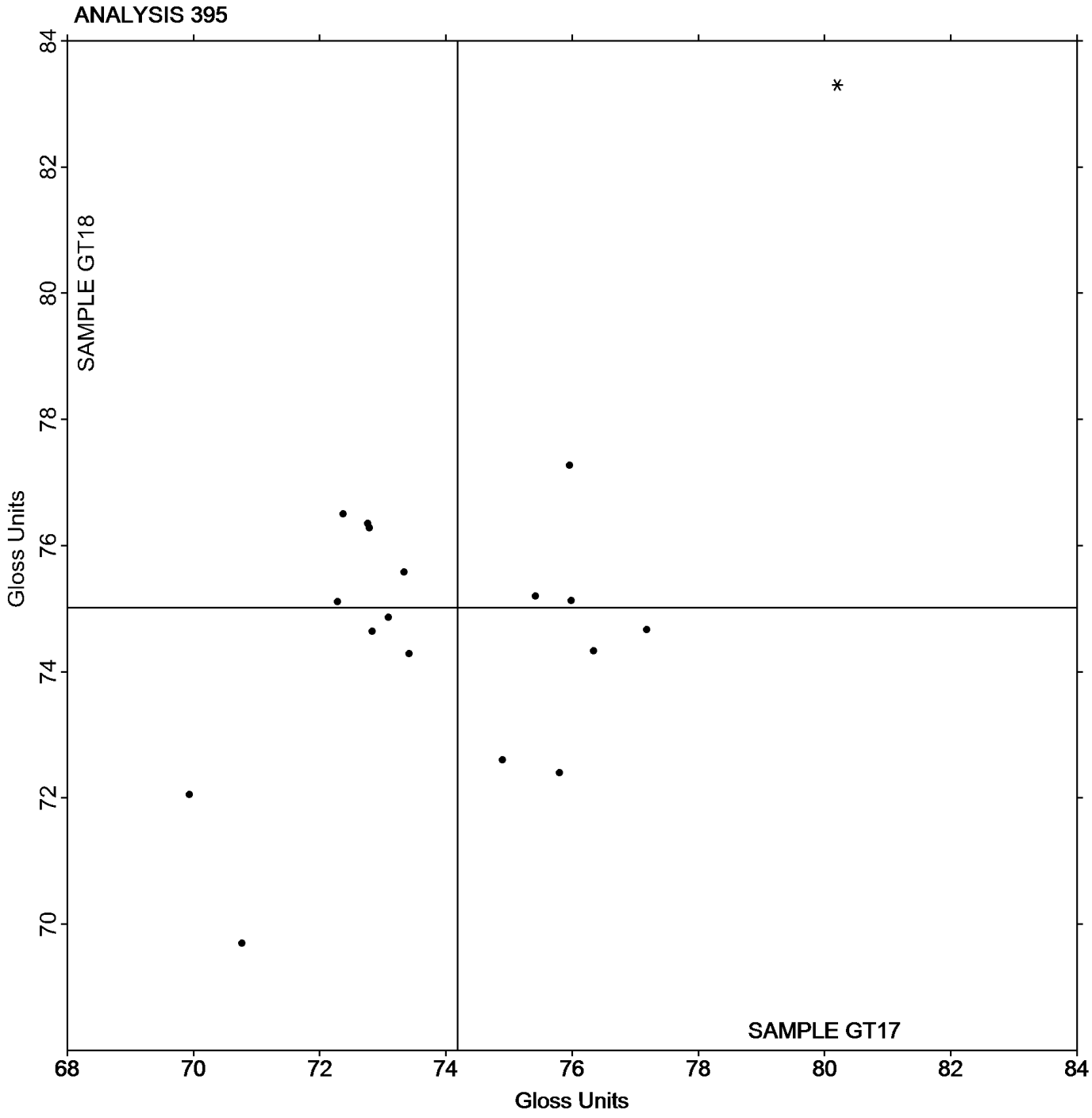
Paper & Paperboard Interlaboratory Testing Program

Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT17** = 74.188 Gloss Units

Grand Mean Sample **GT18** = 75.014 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 GU17 Lab Mean	Sample GU17 Diff from Grand Mean	Sample GU17 CPV	Sample GU18 Lab Mean	Sample GU18 Diff from Grand Mean	Sample GU18 CPV	Instr Code
3MKYB3		45.76	2.21	1.72	28.21	1.69	1.40	TH
C2LE6P		43.38	-0.17	-0.13	26.24	-0.28	-0.23	TH
CNKLZ8		42.87	-0.68	-0.53	25.54	-0.98	-0.81	XX
QTZ39B		43.69	0.14	0.11	26.89	0.37	0.31	TG
V3ZHBH		42.31	-1.24	-0.97	25.45	-1.07	-0.89	TH
XJTTKJ		44.63	1.08	0.84	27.98	1.46	1.21	TG
Z6LLJJ		42.20	-1.35	-1.05	25.31	-1.21	-1.00	LA

Summary Statistics

	Sample GU17	Sample GU18
Grand Means	43.548 Gloss Units	26.516 Gloss Units
SD Btwn Labs	1.287 Gloss Units	1.210 Gloss Units

Statistics based on 7 of 7 reporting participants

Instrument Code List as Reported by the Labs

(LA) - L & W Gloss - Autoline 300

(TG) - Technidyne T480

(TH) - Technidyne T480A

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

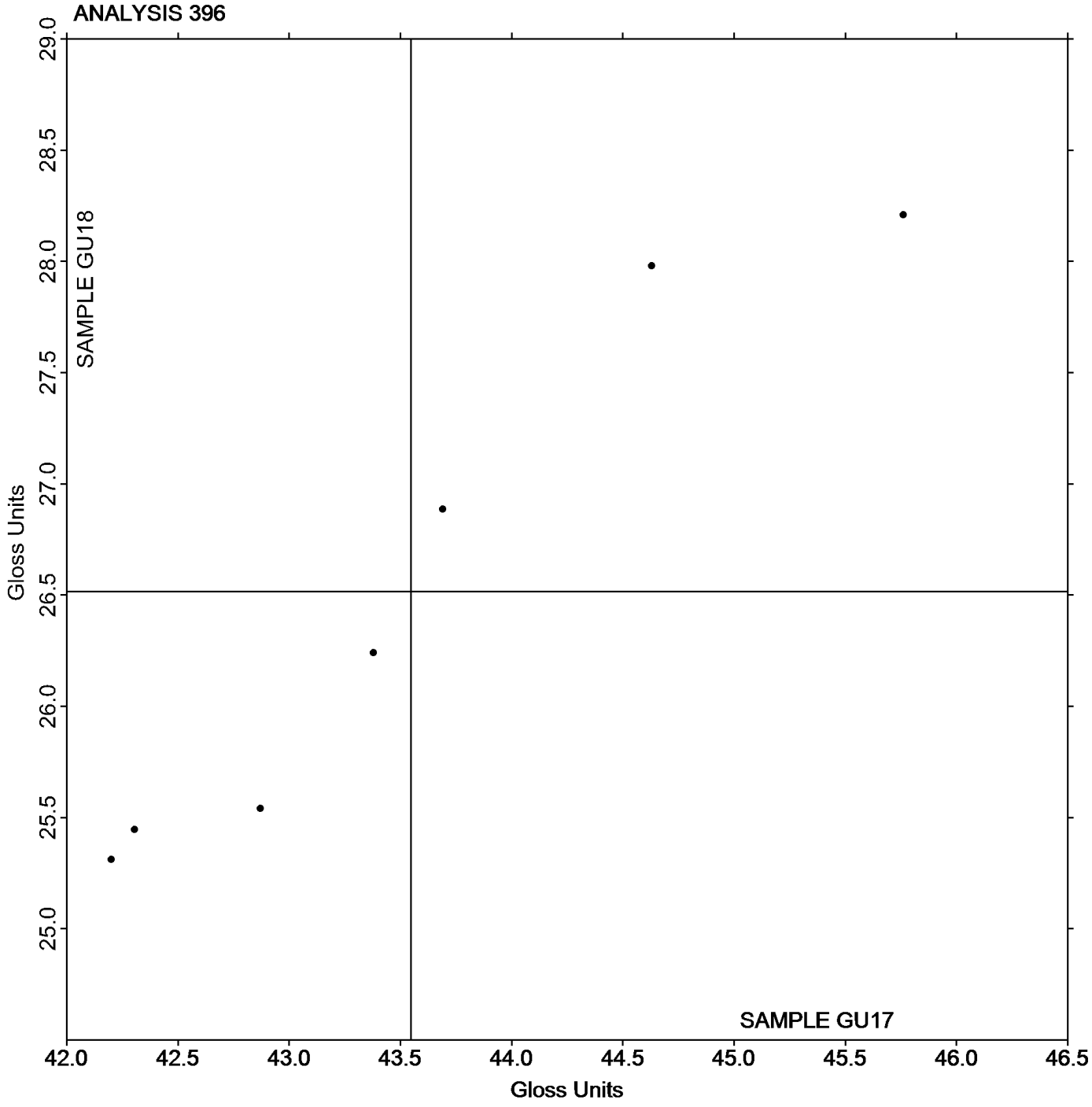
Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU17** = 43.548 Gloss Units

Grand Mean Sample **GU18** = 26.516 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 GW17 Lab Mean	Sample GW17 Diff from Grand Mean	Sample GW17 CPV	Sample GW18 Lab Mean	Sample GW18 Diff from Grand Mean	Sample GW18 CPV
3MKYB3		99.6	-0.8	-1.09	84.54	-1.25	-1.98
3ZK2R6		100.4	0.0	-0.02	85.39	-0.40	-0.63
46DN2J		100.3	0.0	-0.05	86.20	0.42	0.66
8L9CK7		98.8	-1.5	-2.09	84.61	-1.17	-1.86
8NC6E4		100.8	0.4	0.58	86.22	0.44	0.70
96XVCH		101.4	1.0	1.37	86.44	0.66	1.04
99YNWL		101.4	1.0	1.40	86.64	0.85	1.35
9P2V3U		101.1	0.7	0.97	86.42	0.64	1.01
C2LE6P		100.5	0.2	0.22	85.66	-0.12	-0.19
CNKLZ8		100.6	0.2	0.32	85.79	0.01	0.02
E7C9GG		100.1	-0.3	-0.43	85.54	-0.24	-0.38
FBFWA9		101.7	1.3	1.78	86.94	1.16	1.83
FWKCV7		100.7	0.4	0.48	85.80	0.01	0.02
GF6QLZ		101.3	0.9	1.20	86.48	0.70	1.10
LMR84R	X	100.5	0.1	0.13	80.96	-4.82	-7.64
LUURFF		99.9	-0.5	-0.68	85.31	-0.47	-0.75
N9MTXE		100.0	-0.4	-0.58	85.97	0.19	0.29
NZRPRW		99.9	-0.5	-0.63	85.29	-0.49	-0.78
PKV4C9		100.1	-0.3	-0.39	85.86	0.08	0.12
UE88DY		100.0	-0.4	-0.54	85.44	-0.34	-0.55
V3ZHBH		99.5	-0.8	-1.14	85.29	-0.49	-0.78
VKY7FG		101.9	1.6	2.13	86.63	0.85	1.34
X7MK6M		100.0	-0.4	-0.48	85.88	0.10	0.15
XJTTKJ		99.8	-0.6	-0.77	86.11	0.33	0.52
XPHDQK		100.1	-0.2	-0.33	86.26	0.48	0.75
XTGQA4		101.1	0.8	1.05	85.77	-0.02	-0.03
Y4DRQE		100.1	-0.2	-0.32	86.15	0.36	0.58
Z6LLJJ		100.5	0.1	0.15	85.61	-0.17	-0.28
ZQ34QF		99.9	-0.5	-0.69	84.75	-1.04	-1.65
ZRWR8P		99.3	-1.0	-1.42	84.75	-1.04	-1.64

Summary Statistics

	Sample GW17	Sample GW18
Grand Means	100.38 g/sq m	85.784 g/sq m
SD Btwn Labs	0.73 g/sq m	0.631 g/sq m

Statistics based on 29 of 30 reporting participants

Comments on assigned Data Flags for Test #398

LMR84R (X) - Extreme data for Sample GW18.

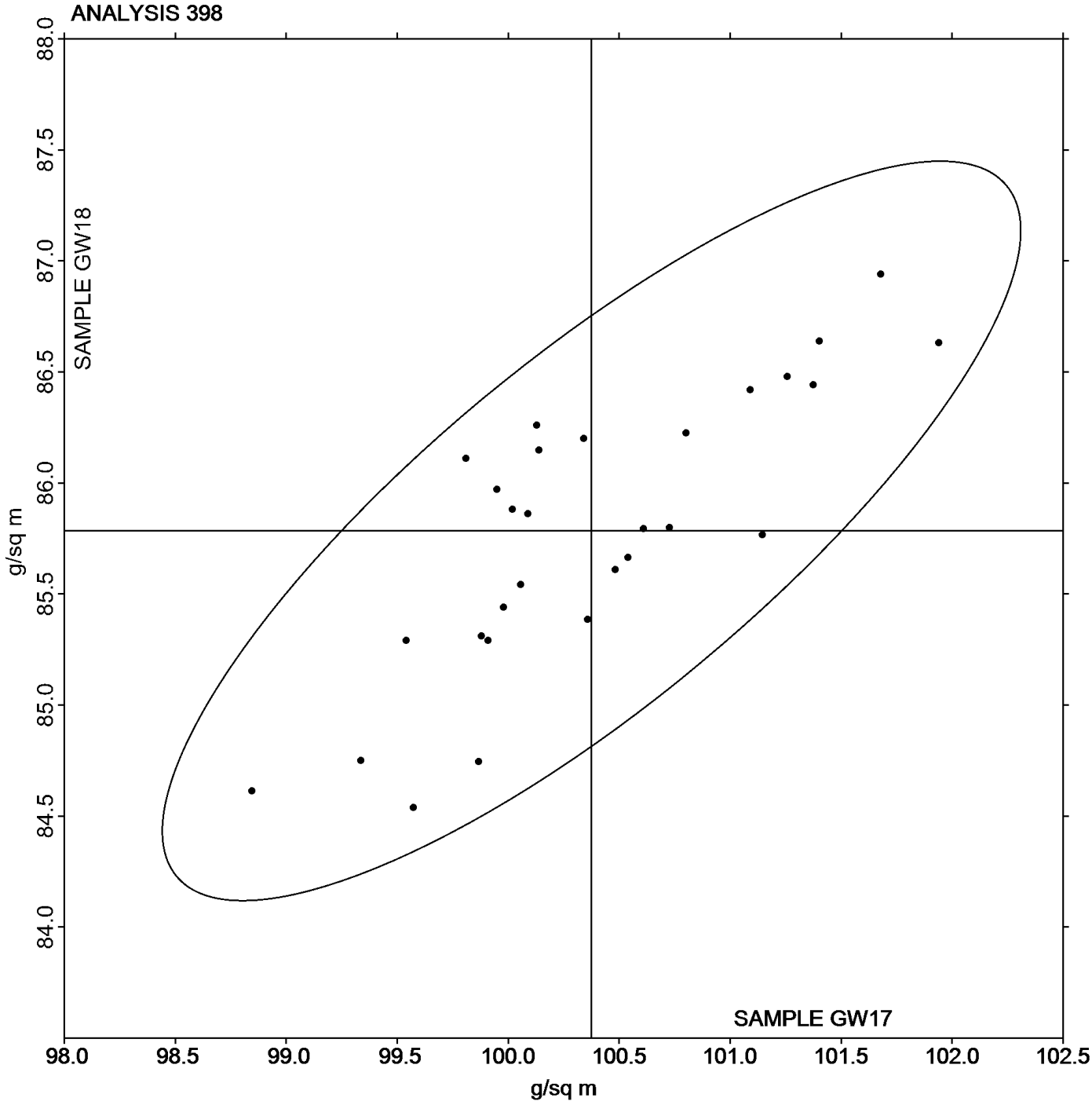
Paper & Paperboard Interlaboratory Testing Program

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW17** = 100.38 g/sq m

Grand Mean Sample **GW18** = 85.784 g/sq m



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

WebCode	Data Flag	Sample GX17 Lab Mean	Sample GX17 Diff from Grand Mean	Sample GX17 CPV	Sample GX18 Lab Mean	Sample GX18 Diff from Grand Mean	Sample GX18 CPV
34M3UM		9.550	1.275	0.47	7.200	-0.042	-0.02
3MKYB3		6.630	-1.645	-0.60	5.620	-1.622	-0.73
8NC6E4		12.600	4.325	1.58	11.500	4.258	1.91
A8XLUG		7.120	-1.155	-0.42	5.870	-1.372	-0.62
BNF2C4		7.250	-1.025	-0.37	6.810	-0.432	-0.19
BYKU76		11.590	3.315	1.21	10.810	3.568	1.60
CJNURB		8.700	0.425	0.16	6.700	-0.542	-0.24
CVGHKP		12.600	4.325	1.58	9.400	2.158	0.97
DKDHPW		6.540	-1.735	-0.63	6.440	-0.802	-0.36
DUZJ4K		11.140	2.865	1.05	9.260	2.018	0.91
ERU2FU		4.490	-3.785	-1.38	3.680	-3.562	-1.60
EUVL8F		12.260	3.985	1.46	10.830	3.588	1.61
FJDJ4T		5.850	-2.425	-0.89	4.910	-2.332	-1.05
HQ7F42		11.420	3.145	1.15	10.240	2.998	1.35
J3T6C7		7.460	-0.815	-0.30	7.370	0.128	0.06
NEVTFB		12.660	4.385	1.60	9.350	2.108	0.95
PZA27V		6.716	-1.559	-0.57	7.652	0.410	0.18
QDCAKA		6.720	-1.555	-0.57	5.680	-1.562	-0.70
QVB4WU		5.690	-2.585	-0.94	5.590	-1.652	-0.74
TWWTM7		5.940	-2.335	-0.85	5.940	-1.302	-0.59
UE88DY		7.900	-0.375	-0.14	6.100	-1.142	-0.51
VGW833		5.680	-2.595	-0.95	5.110	-2.132	-0.96
Y4DRQE	X	12.870	4.595	1.68	15.160	7.918	3.56
ZM3UHY		10.100	1.825	0.67	9.100	1.858	0.83
ZTBV43		5.560	-2.715	-0.99	6.020	-1.222	-0.55
ZWB6AX		4.710	-3.565	-1.30	3.870	-3.372	-1.52

Summary Statistics

	Sample GX17	Sample GX18
Grand Means	8.2750 Seconds	7.2421 Seconds
SD Btwn Labs	2.7360 Seconds	2.2256 Seconds

Statistics based on 25 of 26 reporting participants

Comments on assigned Data Flags for Test #399

Y4DRQE (X) - Data for Sample GX18 are high. Inconsistent in testing within the determinations for both samples.

Paper & Paperboard Interlaboratory Testing Program

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample **GX17** = 8.2750 Seconds

Grand Mean Sample **GX18** = 7.2421 Seconds