Collaborative Testing Services, Inc.

Paper & PaperboardTesting Program

Summary Report #276G-June 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	
26FMXN		GA19	95.40	-0.76	3.21	-0.74	-0.06	-0.23	0.78	LS
		GA20	94.66	-0.82	2.98					
2PNPWT		GA19	94.05	-0.80	3.56	-0.40	0.00	-0.09	0.41	LS
		GA20	93.66	-0.81	3.48					
6YH777		GA19	95.64	-0.63	3.39	-0.20	0.03	-0.15	0.25	MI
		GA20	95.44	-0.60	3.24					
7DGJUG		GA19	93.39	-0.02	2.81	0.58	0.06	-0.02	0.58	TS
		GA20	93.97	0.04	2.80					
EVMT4E		GA19	93.91	-0.43	2.76	-0.33	0.03	0.06	0.33	XX
		GA20	93.58	-0.39	2.82					
FF83NC		GA19	94.03	-0.35	3.05	-0.64	0.04	-0.08	0.65	TS
		GA20	93.39	-0.31	2.97					
GLTF36		GA19	95.33	-0.69	3.54	-0.29	0.01	-0.09	0.30	EH
		GA20	95.05	-0.68	3.45					
GMM4L2		GA19	94.15	-0.77	3.47	-0.36	0.00	-0.11	0.37	EH
		GA20	93.80	-0.76	3.37					
GTBT4P		GA19	94.11	-0.32	3.10	-0.54	0.07	-0.13	0.56	TS
		GA20	93.57	-0.26	2.97					
H8R387		GA19	94.86	-0.70	3.00	0.71	0.05	-0.15	0.73	XS
		GA20	95.58	-0.65	2.84					
HQYHH7		GA19	94.12	-0.80	3.52	-0.33	0.02	-0.15	0.36	TC
		GA20	93.79	-0.78	3.37					
KA8EX8		GA19	94.92	-0.59	3.38	-0.44	-0.01	-0.21	0.48	HE
		GA20	94.49	-0.60	3.17					
M3JC7V		GA19	95.12	-0.95	4.05	-0.14	0.11	0.05	0.19	HG
		GA20	94.98	-0.84	4.10					
MNVFJ4		GA19	94.31	-0.91	3.58	-0.31	-0.02	-0.06	0.32	TC
		GA20	94.00	-0.93	3.52					
N9LVRQ		GA19	96.34	-1.03	2.78	0.26	0.34	-0.16	0.46	HE
		GA20	96.60	-0.68	2.62					
NKWCCG		GA19	94.20	-0.74	3.43	0.38	0.01	-0.10	0.40	TC
		GA20	94.58	-0.72	3.33					
NLRVF4		GA19	95.43	-0.32	3.14	-0.14	0.16	-0.14	0.26	TS
		GA20	95.29	-0.15	3.00					

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
RQRBE3		GA19	94.29	-1.30	2.74	-0.45	0.11	0.04	0.46	HH
		GA20	93.85	-1.19	2.78					
T64CNX		GA19	94.78	-0.72	2.63	0.15	-0.02	0.23	0.27	NE
		GA20	94.94	-0.74	2.86					
TQP3MU		GA19	93.99	-0.44	3.38	-0.37	0.06	-0.06	0.38	TM
		GA20	93.62	-0.38	3.32					
TWCXMD		GA19	94.36	-0.39	3.63	-0.38	-0.29	-0.10	0.49	HH
		GA20	93.98	-0.68	3.53					
UKYV3Z		GA19	94.27	-1.07	2.68	-0.96	0.22	-0.01	0.98 X	HH
		GA20	93.31	-0.85	2.67					
VKWC2J		GA19	93.00	-0.27	2.91	-0.36	0.10	-0.24	0.44	TS
		GA20	92.65	-0.16	2.67					
X9CVY3		GA19	93.92	-0.46	3.44	-0.30	0.11	-0.11	0.34	TM
		GA20	93.62	-0.35	3.33					
XQNPHW		GA19	94.50	-0.65	3.36	-0.22	0.03	-0.16	0.27	MK
		GA20	94.28	-0.62	3.21					
XZWARJ		GA19	94.95	-0.44	2.87	-0.65	0.03	-0.13	0.66	TS
		GA20	94.30	-0.41	2.74					

Summary Statistics

Grand Means							
GA19	94.515	-0.636	3.209	-0.248	0.047	-0.088	0.451
GA20	94.267	-0.589	3.121				
Stnd Dev Btwn Labs							
GA19	0.736	0.288	0.364	0.389	0.108	0.101	0.189
GA20	0.868	0.280	0.354				

Statistics based on 26 of 26 reporting participants

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	

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

(MI) - Macbeth Color i 5

(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

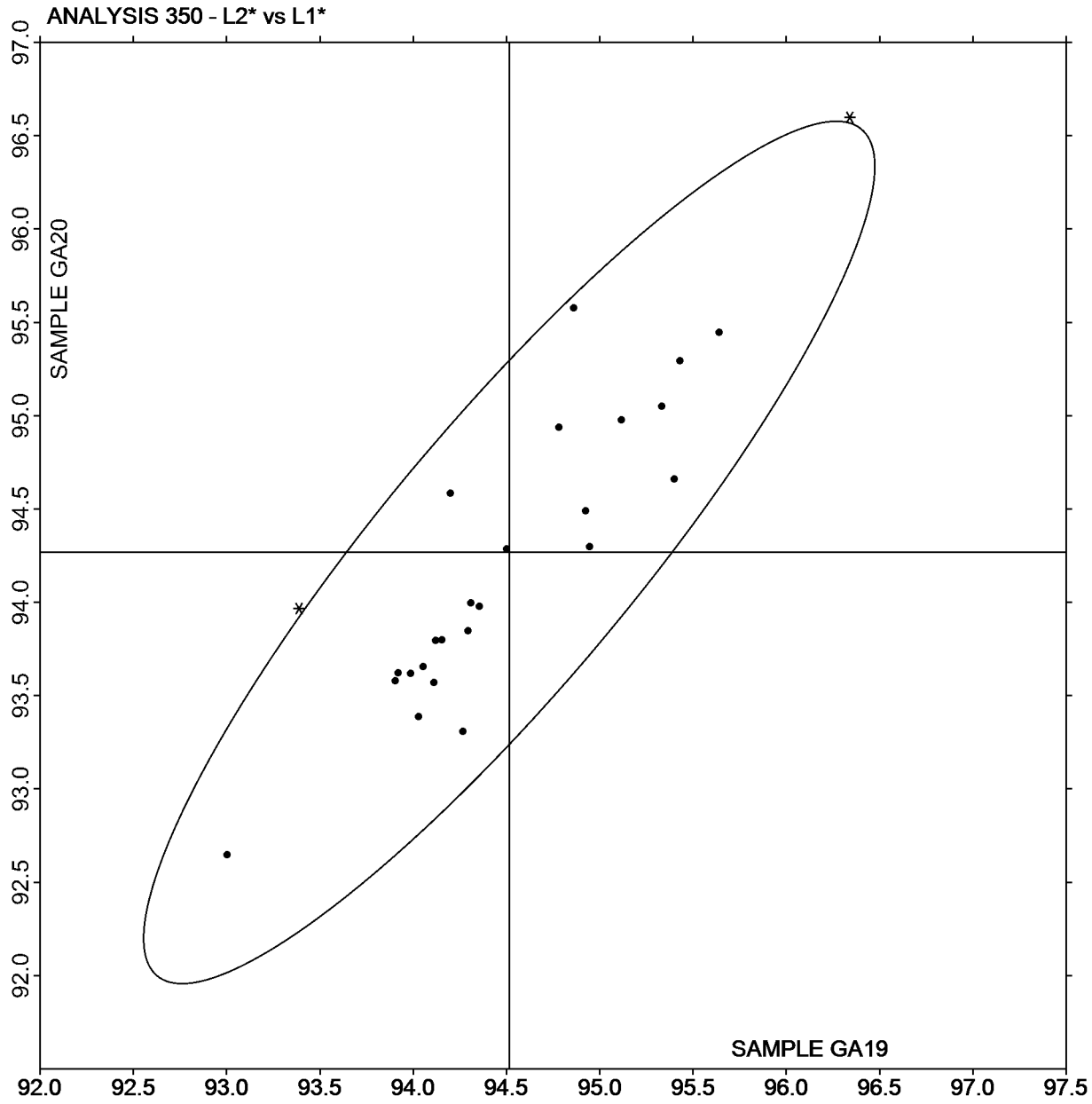
TAPPI-CTS Interlaboratory Testing Program

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

Plot of L values GA20 v L values GA19

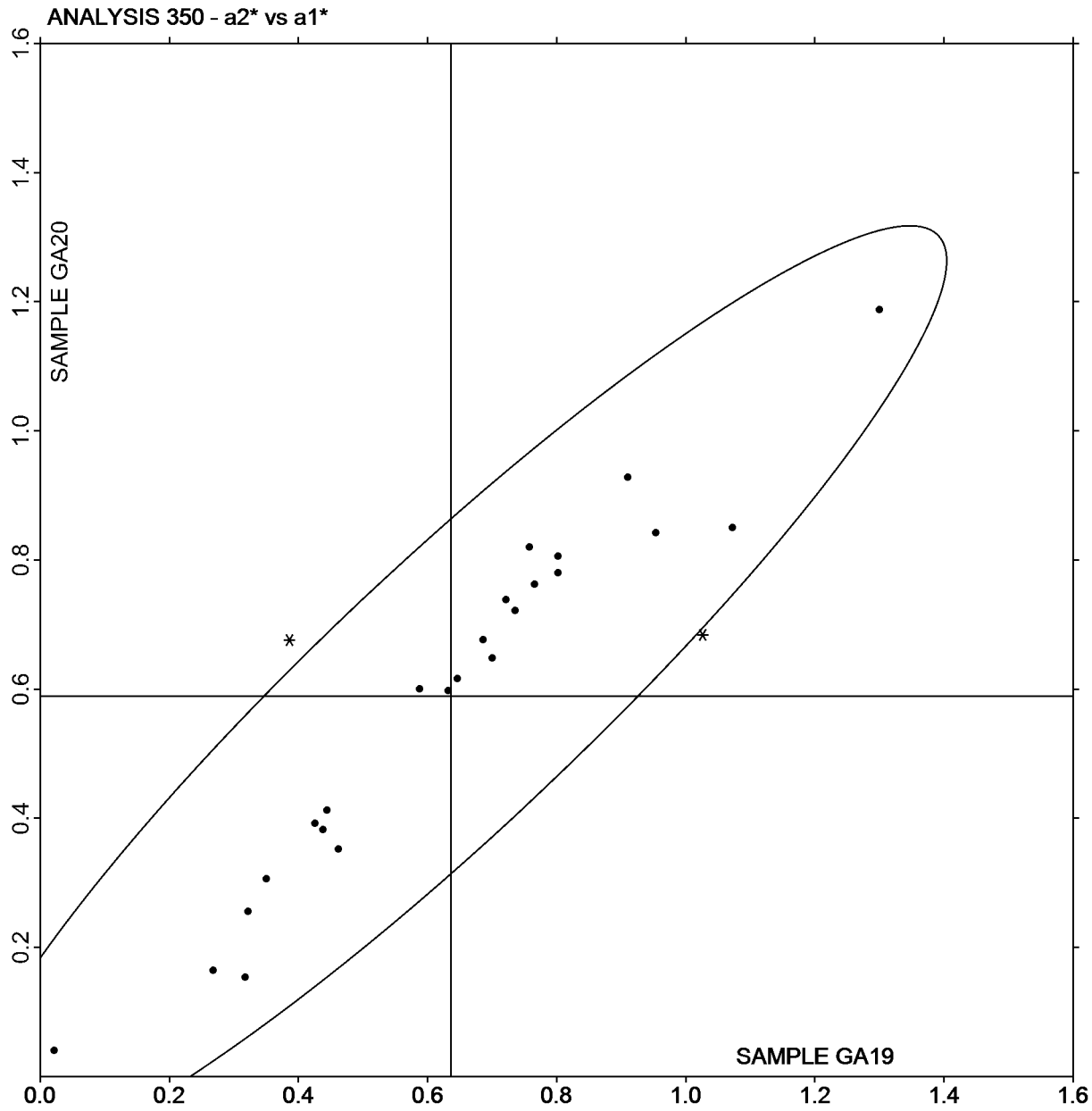


TAPPI-CTS Interlaboratory Testing Program

Analysis 350

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

Plot of a values GA20 v a values GA19

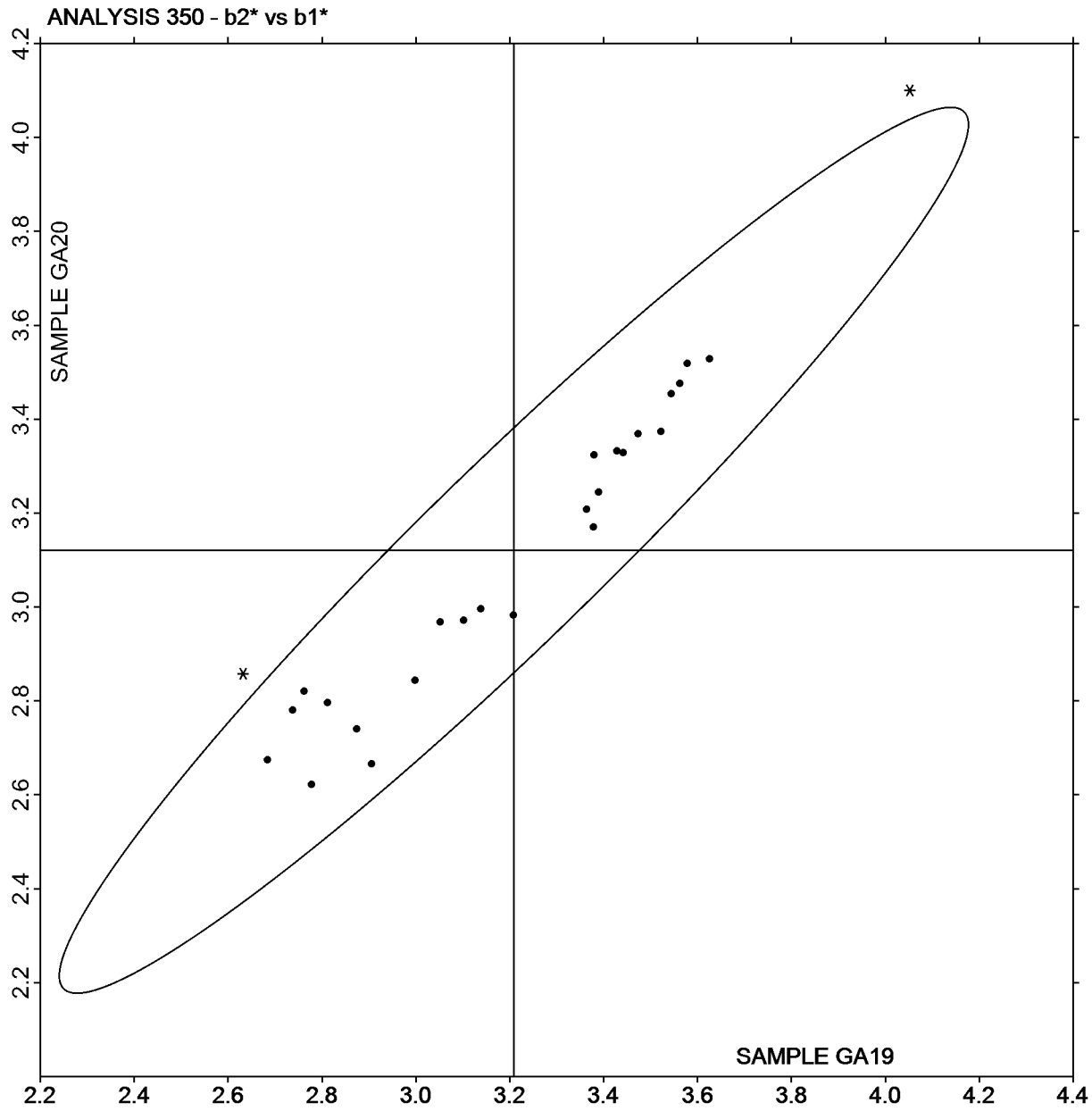


TAPPI-CTS Interlaboratory Testing Program

Analysis 350

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

Plot of b values GA20 v b values GA19



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**

26FMXN	GA19	95.40	-0.68	3.28	-0.30	-0.04	-0.17	0.34	LS
	GA20	95.10	-0.72	3.12					
2KG4FB	GA19	94.13	-0.70	3.38	-0.29	-0.03	-0.10	0.31	TC
	GA20	93.84	-0.73	3.27					
6MN2PU	GA19	95.47	-0.69	3.68	-0.31	-0.06	-0.05	0.32	TC
	GA20	95.16	-0.75	3.63					
72LH7E	GA19	94.28	-0.65	3.02	0.26	-0.03	0.34	0.43	NG
	GA20	94.54	-0.68	3.35					
7C32NQ	GA19	95.36	-0.63	3.62	-0.25	-0.03	-0.10	0.27	EH
	GA20	95.11	-0.65	3.52					
92E3WB	GA19	95.36	-0.68	3.44	-0.26	-0.02	-0.08	0.27	EF
	GA20	95.10	-0.70	3.36					
CW9PH9	GA19	95.43	-0.56	3.80	-0.28	-0.06	-0.04	0.29	NG
	GA20	95.15	-0.62	3.76					
DU2HYG	GA19	94.67	-0.61	3.27	-0.31	-0.06	-0.05	0.32	HE
	GA20	94.36	-0.67	3.22					
JEPVDE	GA19	94.17	-0.51	3.13	-0.33	0.03	-0.15	0.36	EE
	GA20	93.84	-0.48	2.98					
KA8EX8	GA19	94.95	-0.58	3.32	-0.31	-0.04	0.00	0.32	HE
	GA20	94.64	-0.62	3.32					
NW8RAA	GA19	94.18	-0.47	3.45	-0.31	-0.02	-0.12	0.33	XX
	GA20	93.87	-0.49	3.33					
P6YMVB	GA19	94.17	-0.65	3.56	-0.42	-0.04	-0.06	0.43	TC
	GA20	93.75	-0.69	3.50					
QKQLDX	GA19	95.43	-0.59	3.77	-0.18	-0.03	-0.08	0.20	HT
	GA20	95.25	-0.62	3.70					
RA43G6	GA19	95.57	-0.62	3.56	-0.26	-0.04	-0.03	0.26	HT
	GA20	95.31	-0.65	3.53					
RZEJTX	GA19	94.25	-0.46	2.97	0.51	-0.06	-0.10	0.52	HV
	GA20	94.75	-0.52	2.86					
WMD8WM	GA19	94.34	-0.67	3.59	-0.36	0.00	-0.01	0.36	XM
	GA20	93.99	-0.67	3.59					
WZFZ24	GA19	95.66	-0.55	3.69	-0.25	-0.05	-0.03	0.26	NF
	GA20	95.41	-0.60	3.66					
XA32BM	GA19	96.08	-0.39	3.32	-0.25	-0.01	-0.04	0.26	XP
	GA20	95.83	-0.40	3.28					

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
XG2QRQ		GA19	93.72	-0.62	3.09	-0.10	-0.03	0.06	0.12	TC
		GA20	93.62	-0.65	3.15					
XK4NZX		GA19	95.32	-0.65	3.63	-0.30	-0.04	-0.07	0.31	LS
		GA20	95.02	-0.69	3.56					
XMDRWV		GA19	95.70	-0.56	3.93	-0.36	-0.05	-0.26	0.45	NG
		GA20	95.33	-0.61	3.68					
Y2A7U4		GA19	95.40	-0.61	3.47	-0.28	-0.03	-0.10	0.30	EH
		GA20	95.12	-0.64	3.37					

Summary Statistics

Grand Means							
GA19	94.956	-0.597	3.474	-0.225	-0.033	-0.056	0.319
GA20	94.731	-0.630	3.399				
Stnd Dev Btwn Labs							
GA19	0.680	0.083	0.248	0.211	0.021	0.110	0.086
GA20	0.652	0.088	0.245				

Statistics based on 22 of 22 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

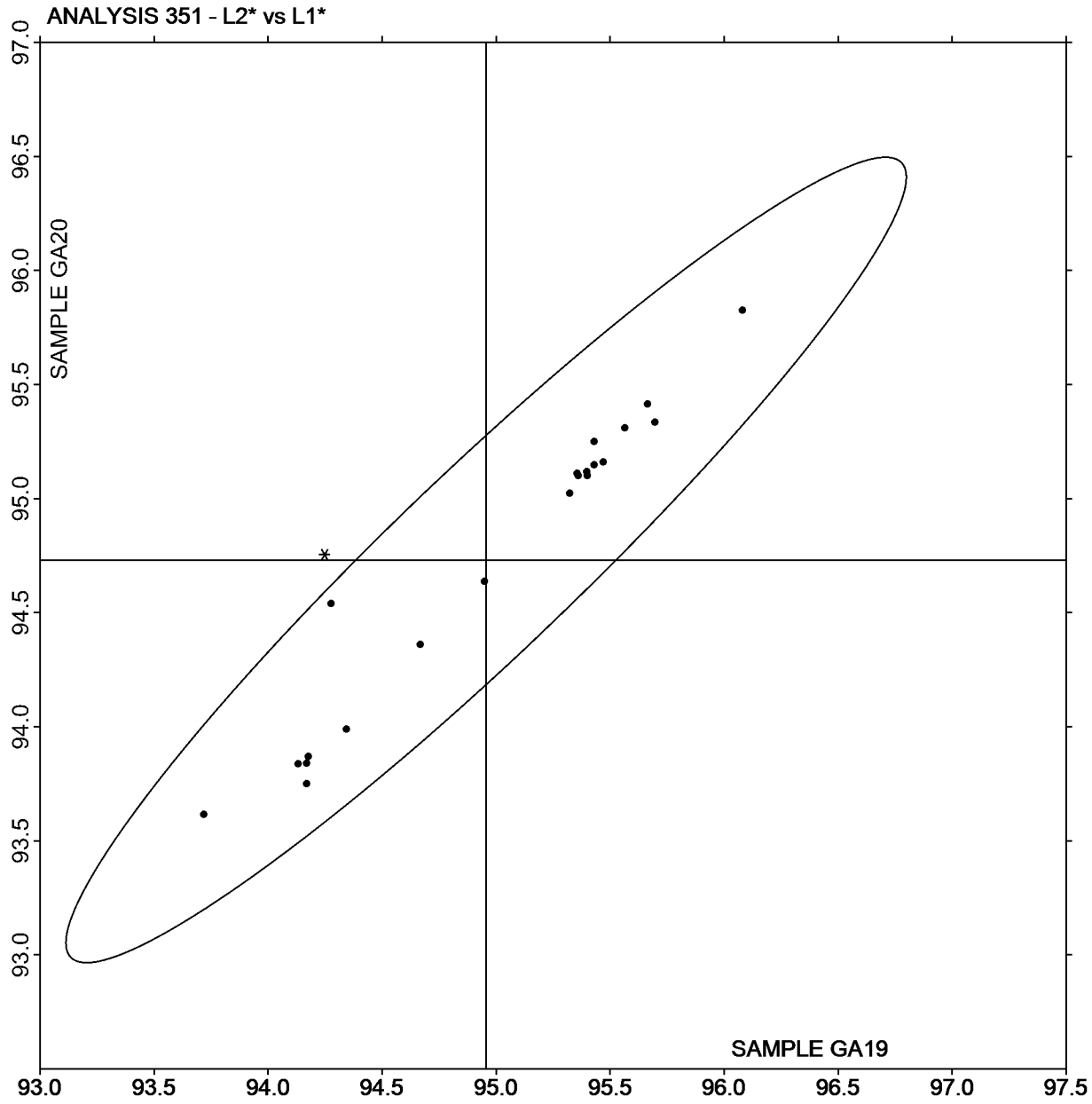
TAPPI-CTS Interlaboratory Testing Program

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 GA20 v L values GA19

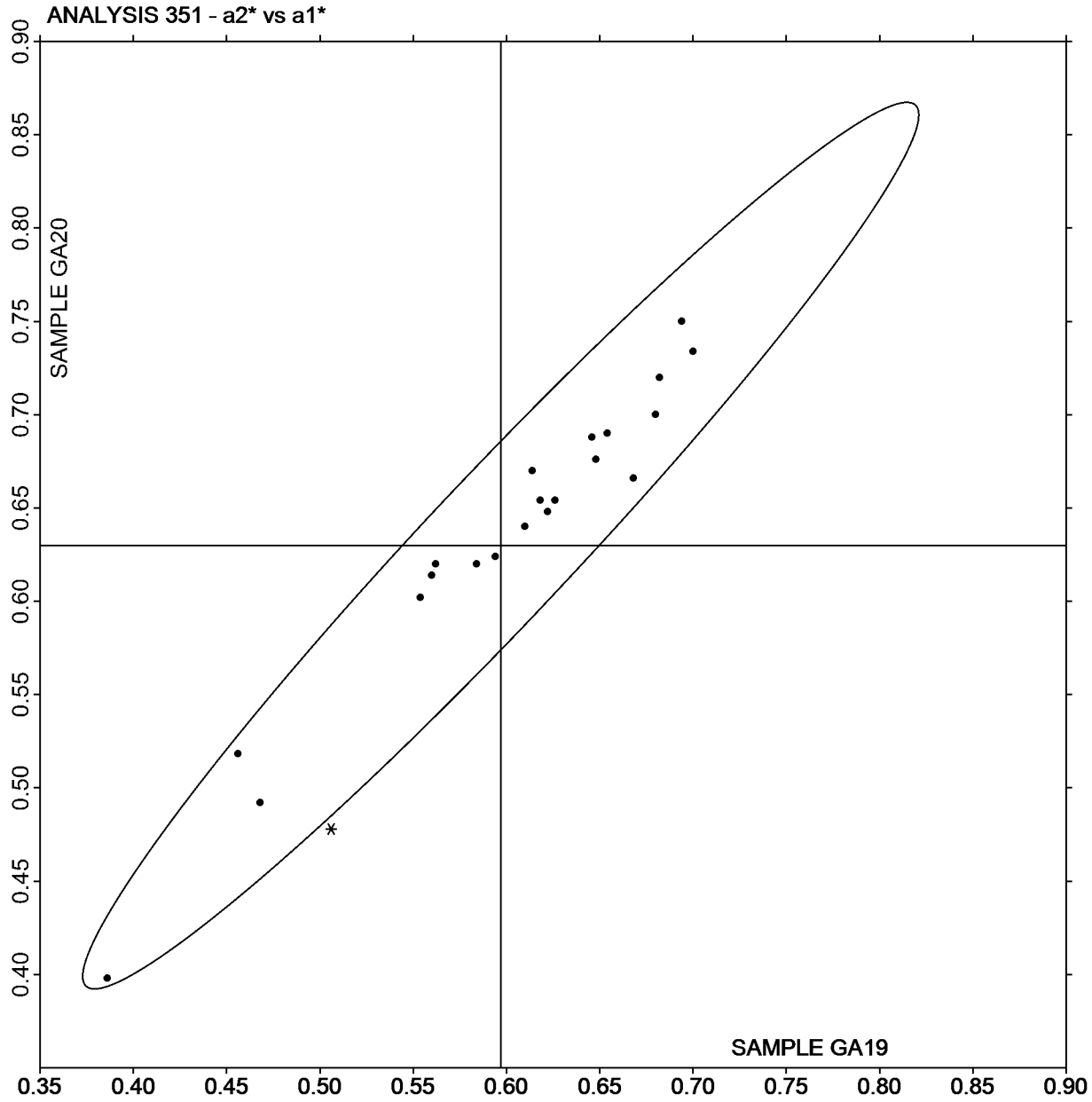


TAPPI-CTS Interlaboratory Testing Program

Analysis 351

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

Plot of a values GA20 v a values GA19

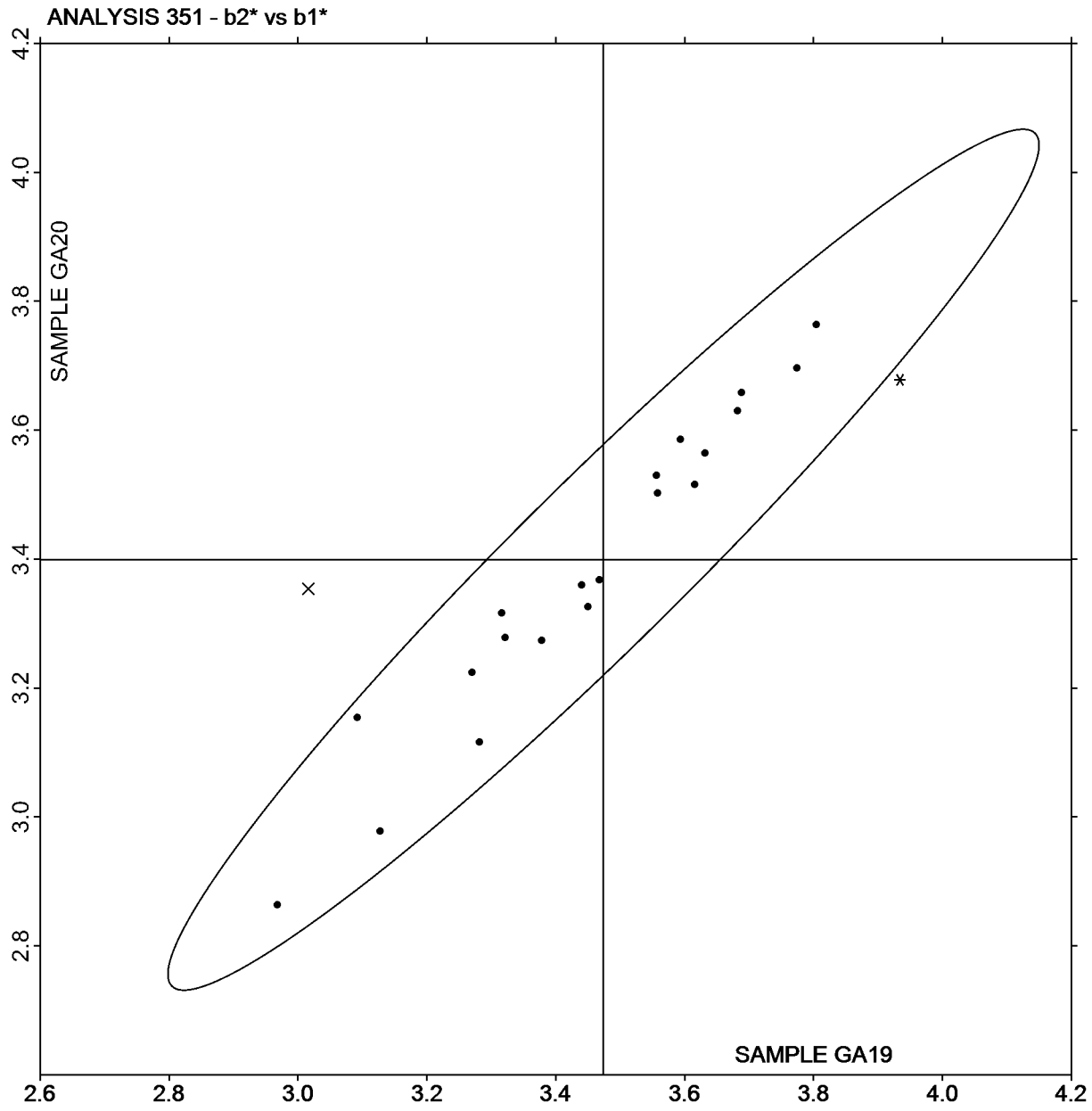


TAPPI-CTS Interlaboratory Testing Program

Analysis 351

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

Plot of b values GA20 v b values GA19



Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

WebCode	Data Flag	Sample GV19 Lab Mean	Sample GV19 Diff from Grand Mean	Sample GV19 CPV	Sample GV20 Lab Mean	Sample GV20 Diff from Grand Mean	Sample GV20 CPV	Instr Code
2EJW3T		3.823	0.018	0.27	4.625	0.002	0.03	LW
2KG4FB		3.819	0.013	0.21	4.678	0.055	0.77	TA
2PNPWT		3.806	0.001	0.01	4.592	-0.031	-0.44	LW
4CFRWB		3.753	-0.053	-0.80	4.589	-0.034	-0.48	TM
4EZNB4		3.785	-0.021	-0.31	4.614	-0.009	-0.13	PP
4FRUMM	*	3.620	-0.186	-2.84	4.460	-0.163	-2.29	XX
6EY4B8		3.815	0.009	0.14	4.667	0.044	0.62	EM
6MN2PU		3.827	0.021	0.32	4.703	0.080	1.12	LW
6YH777	*	3.796	-0.010	-0.15	4.521	-0.102	-1.43	TA
72LH7E		3.722	-0.084	-1.28	4.524	-0.099	-1.39	XX
7DGJUG		3.676	-0.129	-1.98	4.469	-0.154	-2.17	TM
7MKNXQ		3.872	0.066	1.02	4.744	0.121	1.70	TM
7X66CJ		3.811	0.005	0.08	4.617	-0.006	-0.09	TM
9BKPAH		3.760	-0.046	-0.70	4.599	-0.024	-0.33	LW
9FVXAM		3.776	-0.030	-0.46	4.548	-0.075	-1.05	TM
9HL4TX		3.896	0.091	1.38	4.743	0.120	1.68	LW
A2UCV4		3.797	-0.009	-0.13	4.603	-0.020	-0.28	EM
BG4PF9		3.909	0.104	1.59	4.755	0.132	1.86	LW
BK4ZB9		3.853	0.047	0.72	4.708	0.085	1.19	LW
C3WBNA		3.835	0.029	0.45	4.572	-0.051	-0.71	XX
C8QZEF		3.878	0.072	1.11	4.676	0.053	0.75	PP
CW9PH9		3.859	0.053	0.82	4.702	0.079	1.11	XX
DEKUG7		3.812	0.006	0.10	4.638	0.015	0.21	TA
DU2HYG		3.873	0.067	1.03	4.682	0.059	0.83	TM
EJRHV8		3.869	0.063	0.97	4.681	0.058	0.82	XX
EVMT4E		3.850	0.044	0.68	4.700	0.077	1.08	XX
FA376C	*	3.629	-0.177	-2.70	4.477	-0.146	-2.05	EM
FF83NC		3.725	-0.081	-1.23	4.507	-0.115	-1.62	TM
FHGYAG		3.724	-0.081	-1.24	4.591	-0.032	-0.45	TA
GDZ6TA		3.784	-0.021	-0.33	4.667	0.044	0.62	LW
GLTF36		3.752	-0.054	-0.82	4.610	-0.013	-0.18	MT
GNZMJC	X	3.560	-0.246	-3.75	4.380	-0.243	-3.41	TM
GTBT4P		3.809	0.003	0.05	4.654	0.031	0.44	EM
H4RUZB		3.789	-0.017	-0.25	4.566	-0.057	-0.80	LW
H4RWQF		3.826	0.020	0.31	4.674	0.051	0.72	TM
H8R387		3.760	-0.046	-0.70	4.590	-0.033	-0.46	TM
HQYHH7		3.870	0.064	0.99	4.696	0.073	1.03	PP
J4994E		3.838	0.033	0.50	4.673	0.050	0.71	EM
K42RZC		3.953	0.148	2.26	4.731	0.108	1.51	LW
KHL4WF		3.841	0.035	0.54	4.616	-0.007	-0.10	LA
L6QGXX		3.851	0.045	0.69	4.638	0.015	0.21	XX
MGFQ44		3.740	-0.066	-1.00	4.550	-0.073	-1.02	TM
MXMW98		3.870	0.065	0.99	4.630	0.007	0.10	MS

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

WebCode	Data Flag	Sample GV19 Lab Mean	Sample GV19 Diff from Grand Mean	Sample GV19 CPV	Sample GV20 Lab Mean	Sample GV20 Diff from Grand Mean	Sample GV20 CPV	Instr Code
NKWCCG		3.857	0.051	0.79	4.695	0.072	1.01	TA
NLRVF4		3.733	-0.073	-1.11	4.514	-0.109	-1.53	LA
QBDUNZ		3.845	0.039	0.60	4.649	0.026	0.37	EM
QKQLDX		3.819	0.013	0.21	4.664	0.041	0.58	EM
R8XHT4	*	3.675	-0.131	-2.00	4.568	-0.055	-0.77	LW
RA43G6		3.844	0.038	0.59	4.583	-0.040	-0.56	EM
RPH72E		3.790	-0.016	-0.24	4.670	0.047	0.66	LW
RZEJTX		3.825	0.019	0.30	4.656	0.033	0.46	TA
TQP3MU		3.874	0.068	1.05	4.706	0.083	1.16	XX
UMYB6W		3.749	-0.057	-0.86	4.562	-0.061	-0.86	PP
UVCZ46		3.903	0.098	1.49	4.698	0.076	1.06	LW
V4R4MG		3.806	0.000	0.01	4.643	0.020	0.29	LW
VZ84HU		3.787	-0.018	-0.28	4.594	-0.028	-0.40	PP
WKTBEN		3.752	-0.054	-0.82	4.542	-0.081	-1.14	LW
WMD8WM		3.807	0.002	0.02	4.614	-0.009	-0.12	LW
WNQ2CM		3.796	-0.010	-0.15	4.620	-0.003	-0.05	TA
WZFZ24	X	4.740	0.935	14.29	4.750	0.127	1.79	TM
X9CVY3		3.794	-0.012	-0.18	4.549	-0.074	-1.04	TA
XA32BM		3.770	-0.036	-0.54	4.580	-0.043	-0.60	TM
XDKDXV		3.820	0.014	0.22	4.608	-0.015	-0.21	EM
XMDRWV		3.817	0.012	0.18	4.611	-0.012	-0.17	LW
XQNPHW		3.914	0.108	1.66	4.731	0.108	1.52	PP
XRYQ4V		3.724	-0.082	-1.25	4.530	-0.093	-1.31	TA

Summary Statistics

	Sample GV19	Sample GV20
Grand Means	3.8056 mils	4.6229 mils
SD Btwn Labs	0.0654 mils	0.0712 mils

Statistics based on 64 of 66 reporting participants

Comments on assigned Data Flags for Test #360

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

WZFZ24 (X) - Extreme data for Sample GV19.

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

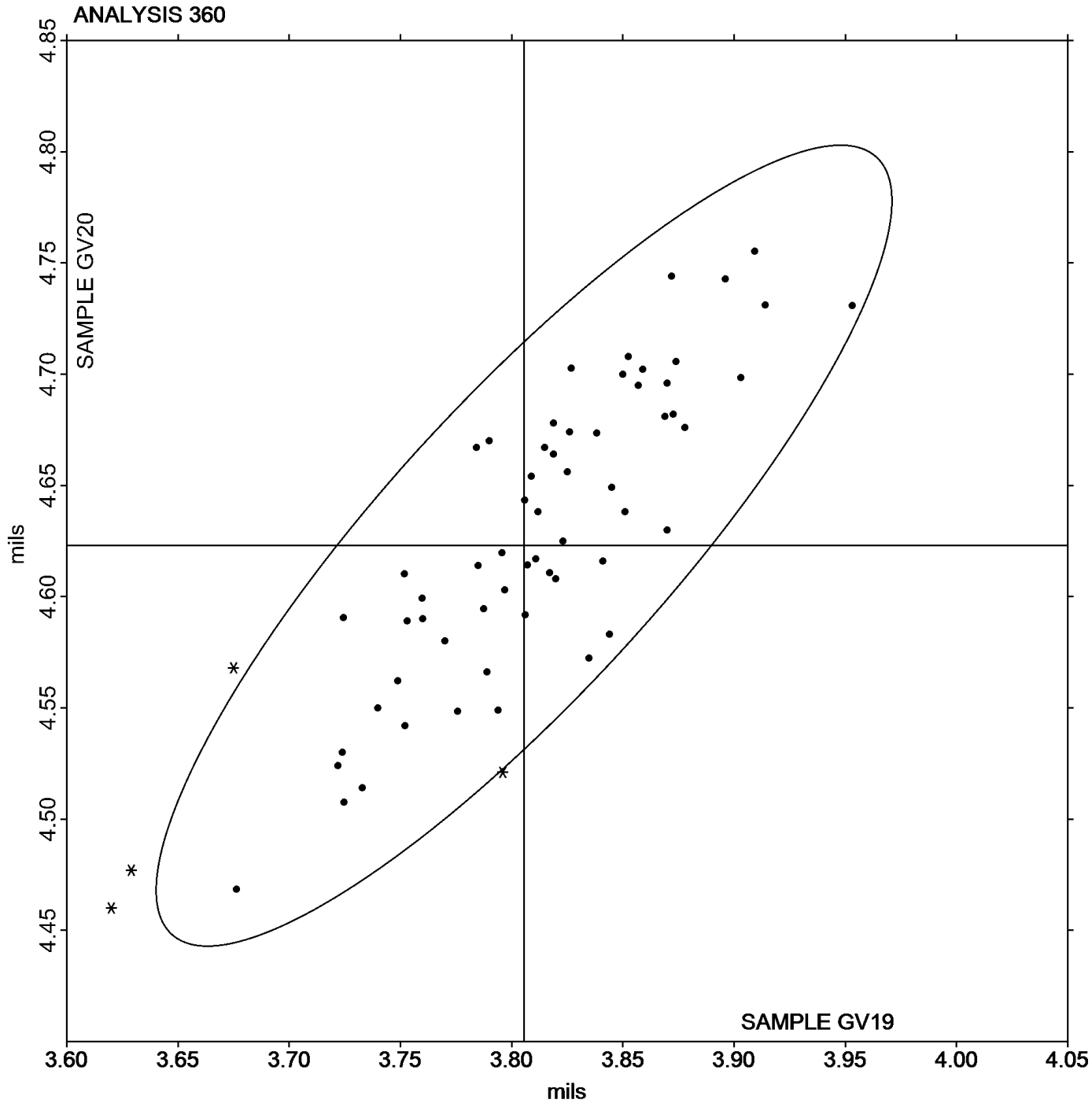
Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

Grand Mean Sample **GV19** = 3.8056 mils

Grand Mean Sample **GV20** = 4.6229 mils



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

WebCode	Data Flag	Sample GY19 Lab Mean	Sample GY19 Diff from Grand Mean	Sample GY19 CPV	Sample GY20 Lab Mean	Sample GY20 Diff from Grand Mean	Sample GY20 CPV	Instr Code
26FMXN		14.15	0.02	0.16	9.406	-0.015	-0.11	TM
6BQ89P		14.27	0.14	1.00	9.560	0.140	1.04	TM
6YH777		14.13	0.00	0.02	9.354	-0.066	-0.49	TA
7C32NQ		14.32	0.19	1.40	9.590	0.170	1.27	LA
8866EP		14.00	-0.13	-1.00	9.175	-0.245	-1.83	TM
9HL4TX		14.39	0.26	1.90	9.648	0.228	1.70	XX
B9KNVP		14.03	-0.10	-0.76	9.300	-0.120	-0.90	LA
GDZ6TA	*	14.11	-0.03	-0.19	9.596	0.176	1.31	LW
GNZMJC		13.88	-0.25	-1.87	9.170	-0.250	-1.86	TM
H4RWQF		14.18	0.05	0.39	9.536	0.116	0.86	TM
HFLBPC		13.87	-0.26	-1.95	9.255	-0.165	-1.23	TA
HLTHPN		14.14	0.01	0.07	9.437	0.017	0.13	XX
JB7ZC9		14.09	-0.04	-0.28	9.392	-0.028	-0.21	TM
JQFVL9		14.08	-0.06	-0.42	9.408	-0.012	-0.09	PP
KA8EX8		14.08	-0.05	-0.39	9.380	-0.040	-0.30	EM
KZZFMK		14.19	0.06	0.42	9.528	0.108	0.80	XX
LX9ZBF		14.35	0.22	1.65	9.617	0.197	1.47	LA
MGFQ44		14.08	-0.05	-0.39	9.410	-0.010	-0.07	TM
MULN4X		14.20	0.06	0.47	9.520	0.100	0.75	LW
N9LVRQ		14.00	-0.13	-0.95	9.307	-0.113	-0.84	LA
RQRBE3		14.29	0.15	1.14	9.577	0.157	1.17	EM
TAE9AY		14.07	-0.07	-0.49	9.393	-0.027	-0.20	PP
TLBCDT		14.15	0.01	0.10	9.394	-0.026	-0.20	LA
TQP3MU		14.29	0.16	1.17	9.477	0.057	0.42	XX
TWCXMD		14.12	-0.02	-0.13	9.342	-0.078	-0.58	EM
UEC3R2	*	14.08	-0.06	-0.42	9.190	-0.230	-1.72	TA
UKYV3Z		14.26	0.12	0.91	9.578	0.158	1.18	EM
UMKM7Q		13.91	-0.22	-1.65	9.270	-0.150	-1.12	TM
V4R4MG		14.10	-0.03	-0.22	9.394	-0.026	-0.20	LW
XG2QRQ		14.12	-0.01	-0.11	9.339	-0.081	-0.60	TA
XRYQ4V		14.18	0.05	0.39	9.468	0.048	0.36	TA
Y2A7U4		14.33	0.20	1.49	9.554	0.134	1.00	EM
YKZGH3		13.88	-0.25	-1.87	9.230	-0.190	-1.42	TM
YPUK3U		14.19	0.05	0.39	9.488	0.068	0.51	XX

Summary Statistics

	Sample GY19	Sample GY20
Grand Means	14.132 mils	9.4201 mils
SD Btwn Labs	0.135 mils	0.1341 mils

Statistics based on 34 of 34 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

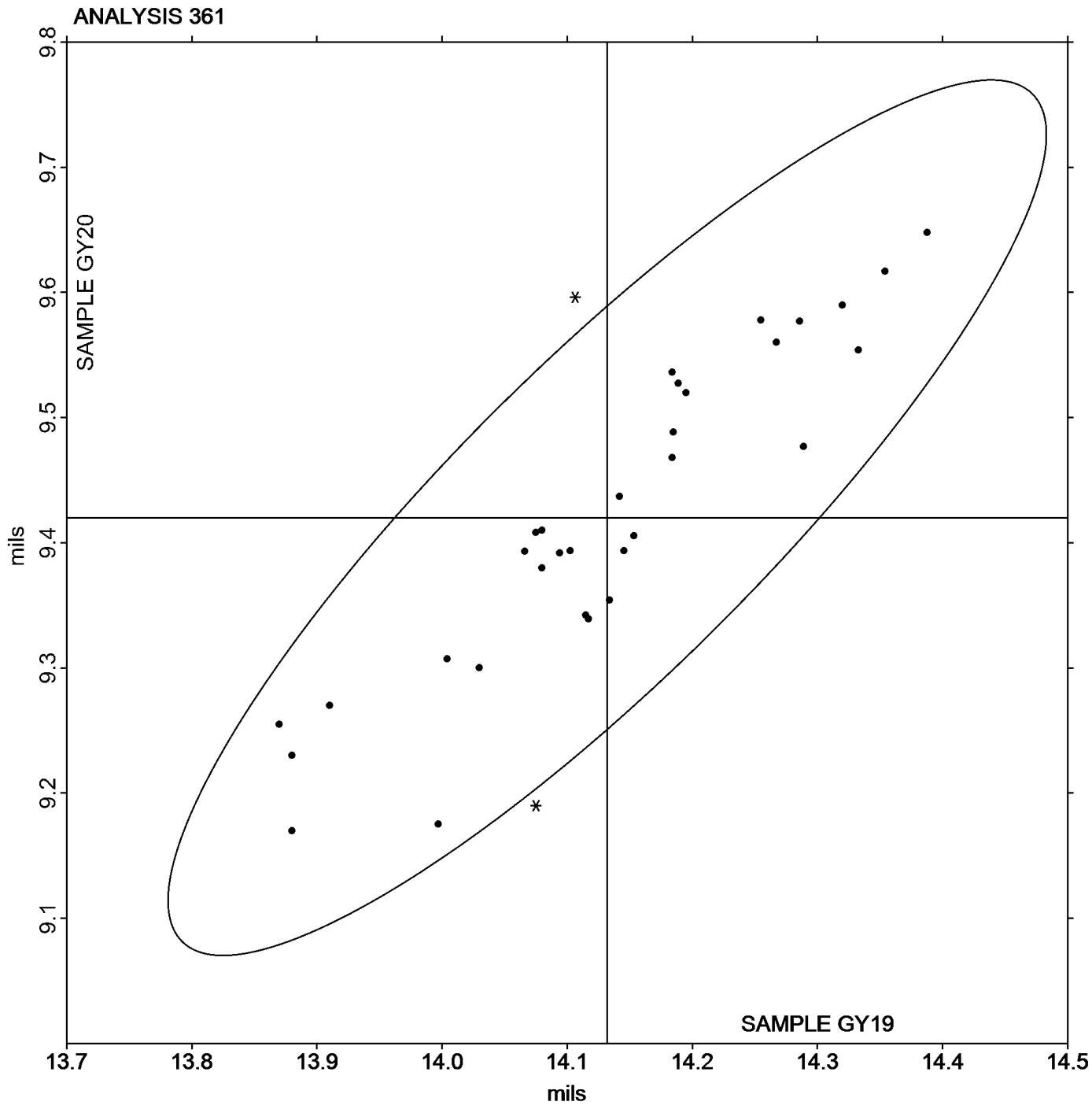
Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample **GY19** = 14.132 mils

Grand Mean Sample **GY20** = 9.4201 mils



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

WebCode	Data Flag	Sample GD19 Lab Mean	Sample GD19 Diff from Grand Mean	Sample GD19 CPV	Sample GD20 Lab Mean	Sample GD20 Diff from Grand Mean	Sample GD20 CPV	Instr Code
6EY4B8		0.4836	-0.0762	-1.16	0.5122	-0.0194	-0.27	TM
9HL4TX		0.6160	0.0562	0.85	0.6000	0.0684	0.96	TL
GTBT4P		0.5604	0.0006	0.01	0.4236	-0.1080	-1.52	XX
H8R387	X	0.3192	-0.2406	-3.65	0.2992	-0.2324	-3.27	XX
JDAVVB		0.5384	-0.0214	-0.33	0.5078	-0.0238	-0.33	TA
TLBCDT		0.4848	-0.0750	-1.14	0.4790	-0.0526	-0.74	TA
TQP3MU		0.5716	0.0118	0.18	0.5752	0.0436	0.61	TM
XMDRWV		0.6638	0.1040	1.58	0.6234	0.0918	1.29	TM

Summary Statistics

	Sample GD19	Sample GD20
Grand Means	0.55980 COF	0.53160 COF
SD Btwn Labs	0.06583 COF	0.07116 COF

Statistics based on 7 of 8 reporting participants

Comments on assigned Data Flags for Test #364

H8R387 (X) - Data for both samples are low.

Instrument Code List as Reported by the Labs

(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

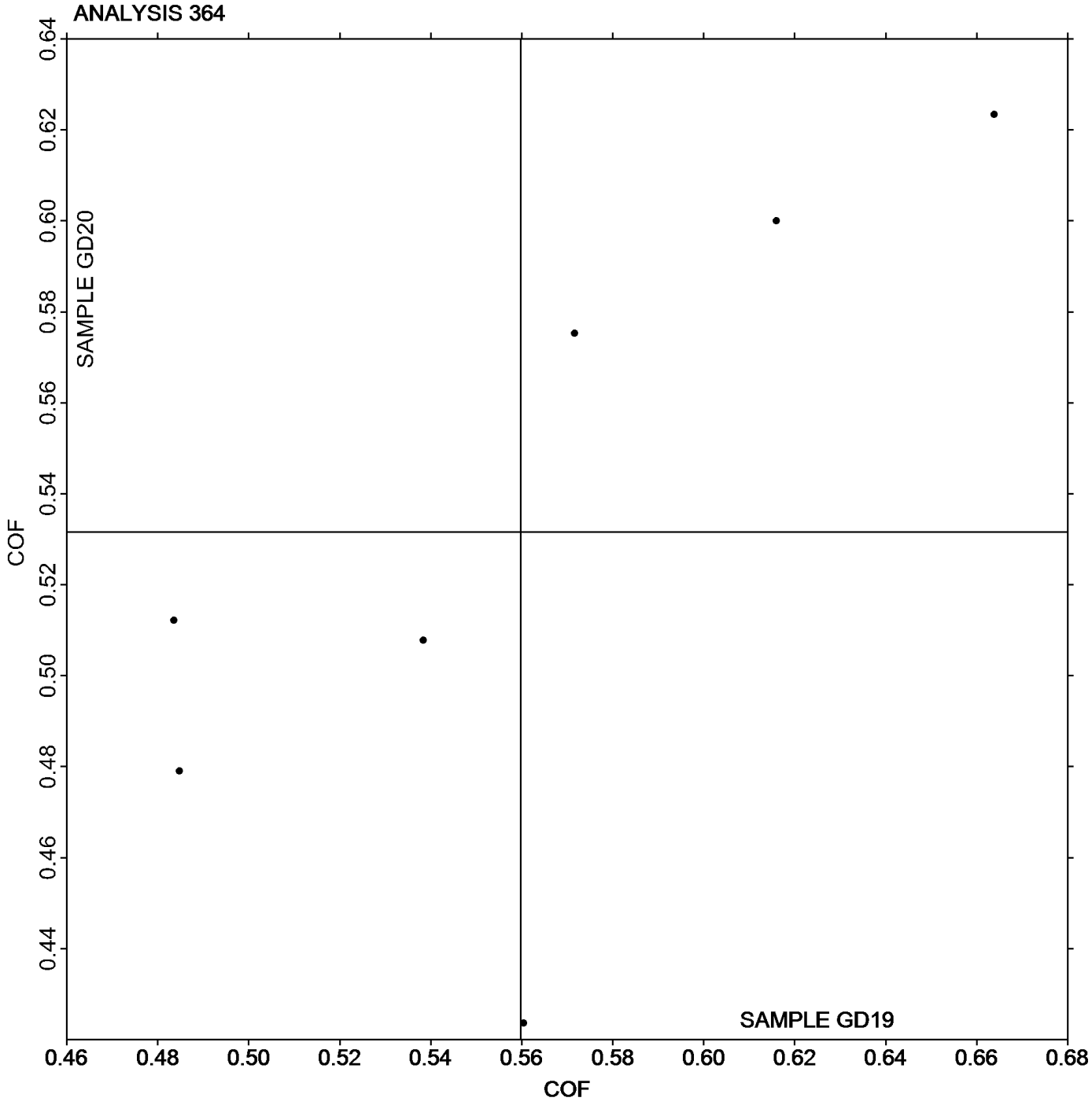
Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD19** = 0.55980 COF

Grand Mean Sample **GD20** = 0.53160 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 GD19 Lab Mean	Sample GD19 Diff from Grand Mean	Sample GD19 CPV	Sample GD20 Lab Mean	Sample GD20 Diff from Grand Mean	Sample GD20 CPV	Instr Code
34QHAB		0.4554	0.0357	0.50	0.3862	-0.0372	-0.51	IR
9HL4TX		0.4920	0.0723	1.02	0.4920	0.0686	0.95	TL
A2UCV4		0.3742	-0.0455	-0.64	0.4056	-0.0178	-0.25	TA
EMFZ66		0.3796	-0.0401	-0.56	0.4204	-0.0030	-0.04	TM
H8R387		0.3034	-0.1163	-1.64	0.2738	-0.1496	-2.06	XX
JDAVVB		0.4238	0.0041	0.06	0.3814	-0.0420	-0.58	TA
TLBCDT		0.4460	0.0263	0.37	0.4606	0.0372	0.51	TA
TQP3MU		0.5052	0.0855	1.20	0.5108	0.0874	1.21	TM
VKWC2J		0.5118	0.0921	1.30	0.5298	0.1064	1.47	TA
X9CVY3		0.3624	-0.0573	-0.81	0.3654	-0.0580	-0.80	TA
XHEK8Q		0.3191	-0.1006	-1.42	0.3855	-0.0379	-0.52	TA
XMDRWV		0.4640	0.0443	0.62	0.4694	0.0460	0.63	TM

Summary Statistics

	Sample GD19	Sample GD20
Grand Means	0.41974 COF	0.42341 COF
SD Btwn Labs	0.07108 COF	0.07250 COF

Statistics based on 12 of 12 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

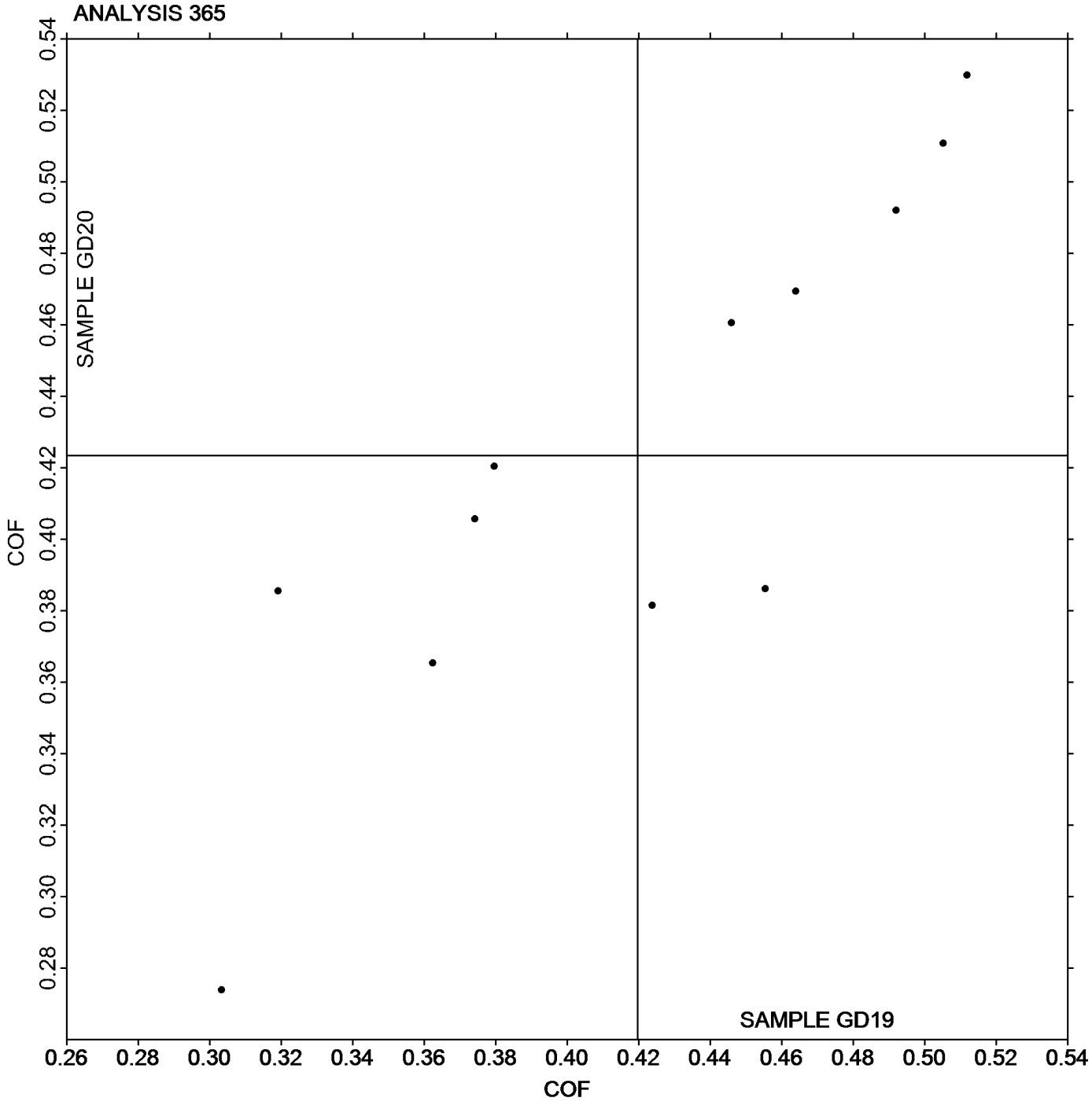
Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD19** = 0.41974 COF

Grand Mean Sample **GD20** = 0.42341 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 GE19 Lab Mean	Sample GE19 Diff from Grand Mean	Sample GE19 CPV	Sample GE20 Lab Mean	Sample GE20 Diff from Grand Mean	Sample GE20 CPV	Instr Code
2EJW3T		35.88	2.93	1.16	25.73	0.45	0.32	LP
2KG4FB		33.70	0.75	0.30	25.95	0.67	0.47	HG
2PNPWT		31.61	-1.34	-0.53	25.17	-0.11	-0.08	LP
4EZNB4		38.77	5.81	2.31	26.17	0.88	0.63	PP
4FRUMM	*	39.52	6.57	2.60	26.73	1.45	1.03	WG
66KBPP		30.96	-1.99	-0.79	24.92	-0.36	-0.26	TN
6EY4B8		30.52	-2.44	-0.97	23.80	-1.48	-1.06	PP
7DGJUG		30.05	-2.90	-1.15	25.06	-0.22	-0.16	LW
7MKNXQ		33.72	0.77	0.30	23.95	-1.33	-0.95	HG
92E3WB		34.46	1.51	0.60	25.65	0.37	0.26	LP
9HL4TX	X	29.85	-3.10	-1.23	15.55	-9.73	-6.94	LP
B9KNVP		31.60	-1.35	-0.54	25.90	0.62	0.44	LA
C8QZEF		34.15	1.20	0.47	24.69	-0.59	-0.42	HG
EJRHV8		35.59	2.64	1.05	27.94	2.66	1.89	XX
EVMT4E		34.42	1.47	0.58	25.56	0.28	0.20	XX
FF83NC		30.73	-2.22	-0.88	24.26	-1.02	-0.73	LP
G8E6MV		32.99	0.04	0.01	24.85	-0.43	-0.31	XX
GLTF36		32.36	-0.60	-0.24	24.66	-0.63	-0.45	RE
H4RWQF		29.00	-3.95	-1.57	24.60	-0.68	-0.49	GA
H8R387		33.70	0.75	0.30	25.30	0.02	0.01	GS
HLTHPN		34.00	1.05	0.41	25.82	0.54	0.38	LW
JDAVVB		34.32	1.37	0.54	24.93	-0.35	-0.25	WG
JQFVL9		33.97	1.01	0.40	26.01	0.73	0.52	PP
K42RZC		30.88	-2.07	-0.82	22.56	-2.72	-1.94	LP
KHL4WF		32.02	-0.93	-0.37	25.71	0.43	0.31	LA
KZZFMK		33.14	0.19	0.07	24.07	-1.21	-0.87	XX
MULN4X		30.19	-2.77	-1.10	23.45	-1.83	-1.31	TL
NKWCCG		32.89	-0.06	-0.03	25.02	-0.27	-0.19	PP
NLRVF4		31.08	-1.87	-0.74	24.64	-0.64	-0.46	LA
QBDUNZ		33.57	0.62	0.24	27.37	2.09	1.49	HG
QKQLDX		38.10	5.15	2.04	28.18	2.90	2.06	HG
RA43G6		31.53	-1.42	-0.56	25.00	-0.28	-0.20	PP
RFV8B9		29.76	-3.19	-1.27	23.11	-2.17	-1.55	LP
RJCK2N		31.04	-1.91	-0.76	26.24	0.96	0.68	TL
RZEJTX		31.49	-1.47	-0.58	22.42	-2.86	-2.04	PP
T3FJTV		32.98	0.03	0.01	27.49	2.21	1.58	GS
TAE9AY		34.20	1.24	0.49	24.92	-0.36	-0.26	PP
TLBCDT		31.22	-1.73	-0.69	27.36	2.08	1.48	LA
TWCXMD		35.41	2.46	0.97	26.73	1.45	1.03	PP
UMKM7Q		33.54	0.59	0.23	26.15	0.87	0.62	TL
UMYB6W		37.49	4.54	1.80	26.04	0.76	0.54	HG
UVCZ46		31.83	-1.12	-0.45	22.84	-2.44	-1.74	LP
V4R4MG		31.74	-1.21	-0.48	24.93	-0.35	-0.25	PP

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

WebCode	Data Flag	Sample GE19 Lab Mean	Sample GE19 Diff from Grand Mean	Sample GE19 CPV	Sample GE20 Lab Mean	Sample GE20 Diff from Grand Mean	Sample GE20 CPV	Instr Code
WMD8WM		29.00	-3.95	-1.57	25.20	-0.08	-0.06	LW
WZFZ24		28.07	-4.88	-1.94	22.61	-2.67	-1.91	XX
XG2QRQ		34.69	1.74	0.69	26.30	1.02	0.72	PP
YKZGH3		34.03	1.08	0.43	27.07	1.79	1.27	TL

Summary Statistics

	Sample GE19	Sample GE20
Grand Means	32.954 sec/100 cc	25.284 sec/100 cc
SD Btwn Labs	2.521 sec/100 cc	1.403 sec/100 cc

Statistics based on 46 of 47 reporting participants

Comments on assigned Data Flags for Test #370

9HL4TX (X) - Extreme data for Sample GE20.

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

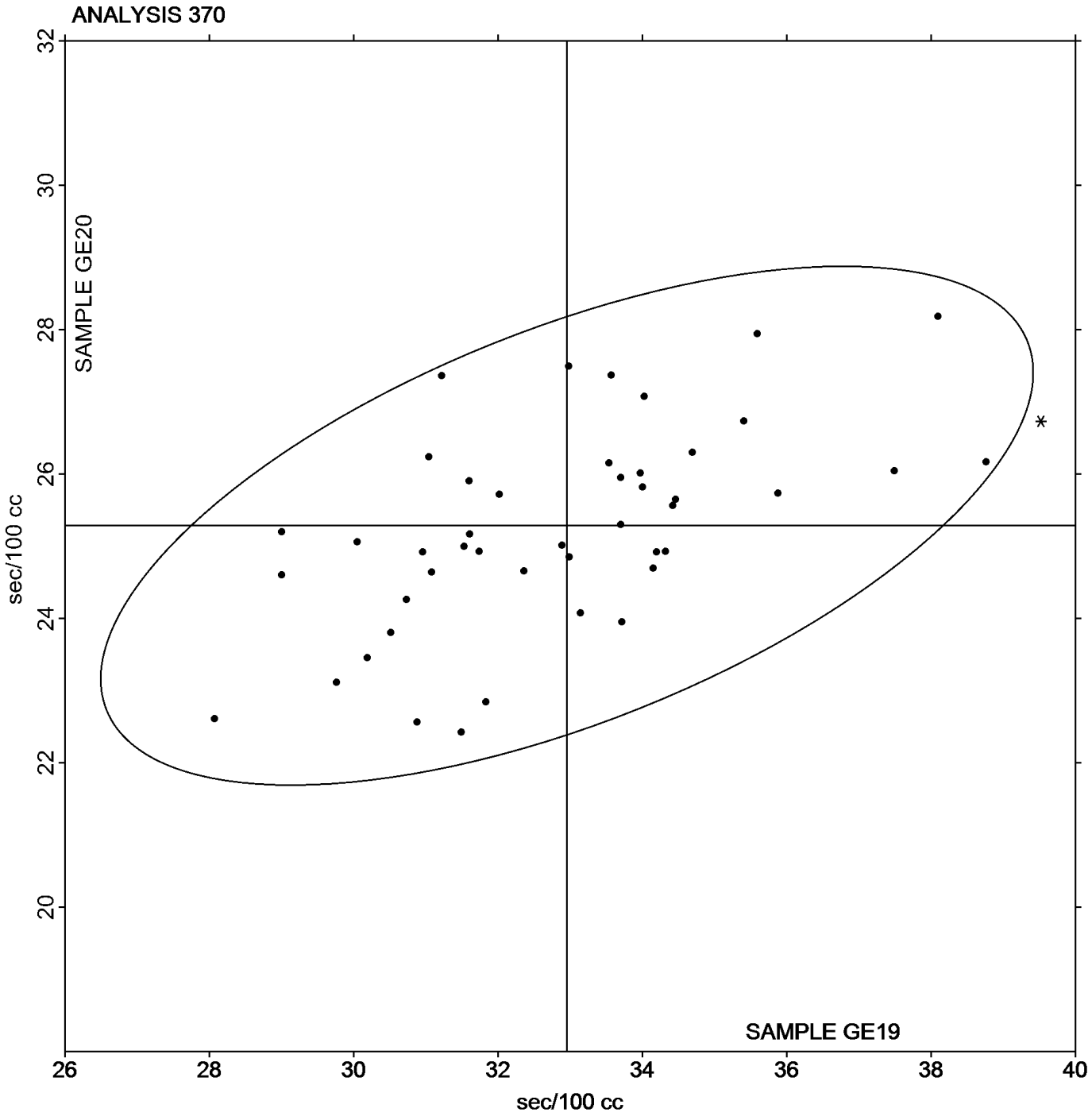
Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

Grand Mean Sample **GE19** = 32.954 sec/100 cc

Grand Mean Sample **GE20** = 25.284 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 GE19 Lab Mean	Sample GE19 Diff from Grand Mean	Sample GE19 CPV	Sample GE20 Lab Mean	Sample GE20 Diff from Grand Mean	Sample GE20 CPV	Instr Code
2KG4FB		93.10	1.30	0.14	112.2	-1.0	-0.13	TT
6MN2PU		93.50	1.70	0.19	117.2	4.0	0.53	HM
6YH777		91.81	0.01	0.00	112.3	-0.8	-0.11	XX
7X66CJ		95.00	3.20	0.36	107.5	-5.7	-0.74	TT
EVMT4E		83.06	-8.74	-0.97	105.4	-7.8	-1.03	XX
H4RWQF		80.60	-11.20	-1.25	110.1	-3.1	-0.40	GA
H8R387		101.70	9.90	1.10	115.2	2.0	0.26	SH
HGV7HV		94.98	3.18	0.35	108.3	-4.9	-0.65	GA
KYABUD		96.21	4.41	0.49	110.9	-2.3	-0.30	HG
LE3GNT		81.21	-10.59	-1.18	106.7	-6.5	-0.85	LP
NKWCCG		89.00	-2.80	-0.31	121.1	7.9	1.04	HM
QQRZYY		102.10	10.30	1.15	132.6	19.4	2.54	VM
RPH72E	X	57.90	-33.90	-3.77	76.8	-36.4	-4.77	LP
TWCXMD		71.20	-20.60	-2.29	103.2	-10.0	-1.31	SH
TZUVGV		96.30	4.50	0.50	107.4	-5.8	-0.76	LP
XA32BM		105.70	13.90	1.55	120.4	7.2	0.94	TT
XD7RNT		93.30	1.50	0.17	120.5	7.3	0.96	HM

Summary Statistics

	Sample GE19	Sample GE20
Grand Means	91.798 Sheffield Units	113.19 Sheffield Units
SD Btwn Labs	8.983 Sheffield Units	7.64 Sheffield Units

Statistics based on 16 of 17 reporting participants

Comments on assigned Data Flags for Test #372

RPH72E (X) - Data for both samples are low.

Instrument Code List as Reported by the Labs

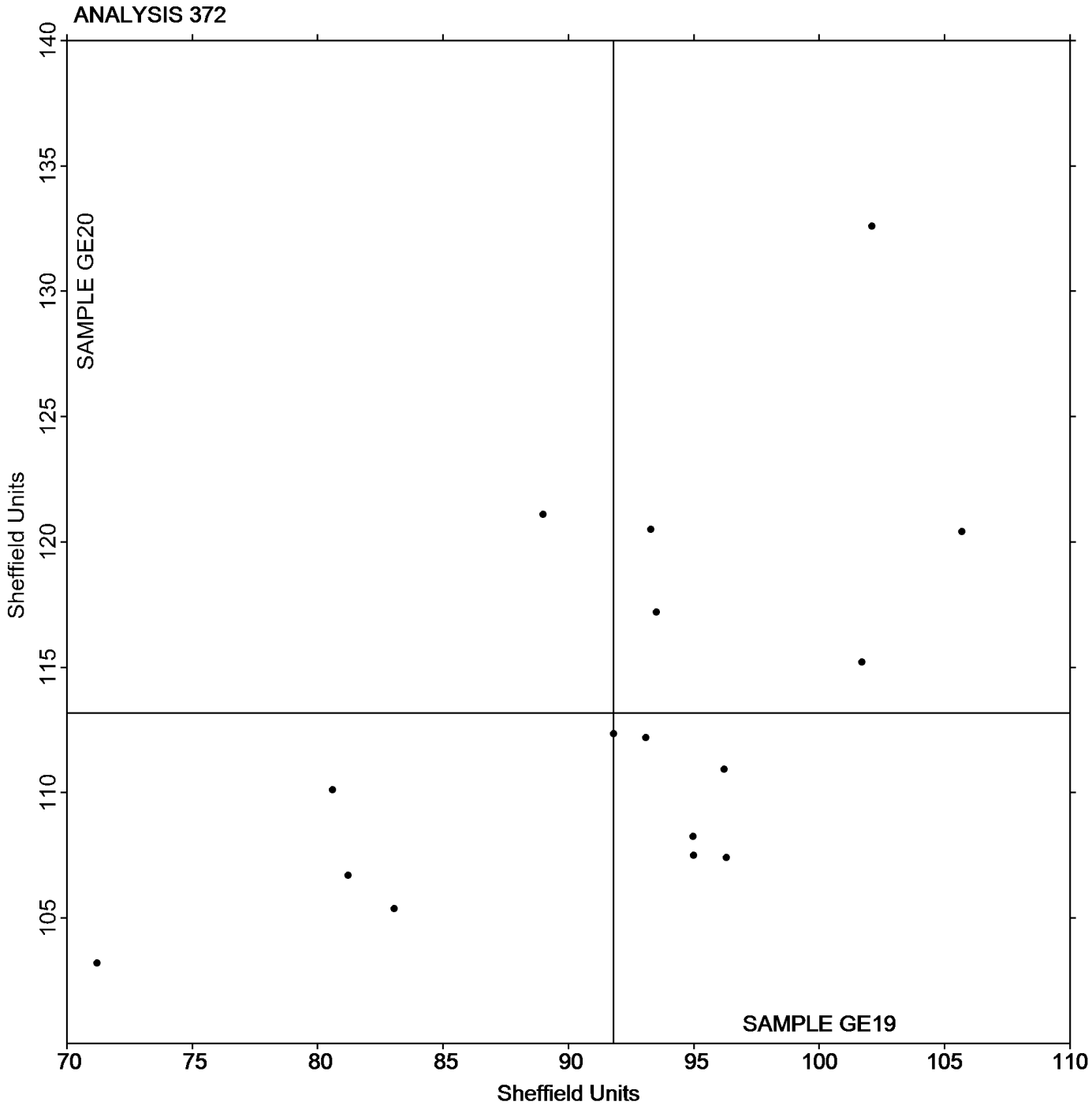
(GA) - Gurley Precision #4340 Automatic Densometer
(HG) - Technidyne - Hagerty Model #1
(HM) - Technidyne - Hagerty Model #538
(LP) - L & W Densometer, Air Permeance
(SH) - Sheffield
(TT) - TMI Monitor/Smoothness II, Model 58-24
(VM) - Valmet PaperLab (was Kajaani/Robotest)
(XX) - Instrument make/model 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 **GE19** = 91.798 Sheffield Units Grand Mean Sample **GE20** = 113.19 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 GJ19 Lab Mean	Sample GJ19 Diff from Grand Mean	Sample GJ19 CPV	Sample GJ20 Lab Mean	Sample GJ20 Diff from Grand Mean	Sample GJ20 CPV
26FMXN		1.123	-0.118	-1.12	0.7940	-0.1535	-1.27
2KG4FB		1.286	0.045	0.43	0.9570	0.0095	0.08
38YYCK		1.114	-0.127	-1.20	0.9040	-0.0435	-0.36
7C32NQ		1.100	-0.141	-1.33	0.9000	-0.0475	-0.39
9BKPAH		1.293	0.052	0.49	1.0560	0.1085	0.90
AMWCVN		1.244	0.003	0.03	1.0180	0.0705	0.58
BK4ZB9		1.254	0.013	0.13	0.9310	-0.0165	-0.14
EJRHV8		1.247	0.006	0.06	0.9400	-0.0075	-0.06
FF83NC	*	1.532	0.291	2.76	1.3220	0.3745	3.10
GDZ6TA		1.239	-0.002	-0.02	0.8350	-0.1125	-0.93
GMM4L2		1.176	-0.065	-0.61	0.7980	-0.1495	-1.24
J4994E		1.256	0.015	0.14	0.9132	-0.0343	-0.28
J9V8CE		1.325	0.084	0.80	1.0600	0.1125	0.93
JDAVVB		1.122	-0.119	-1.12	0.7830	-0.1645	-1.36
JQFVL9		1.179	-0.062	-0.58	0.8630	-0.0845	-0.70
JWLR69		1.175	-0.066	-0.62	0.9590	0.0115	0.09
KA8EX8		1.238	-0.003	-0.03	0.9260	-0.0215	-0.18
LX9ZBF		1.232	-0.009	-0.08	0.9400	-0.0075	-0.06
N9LVRQ		1.114	-0.127	-1.20	0.8700	-0.0775	-0.64
QBDUNZ		1.086	-0.155	-1.47	0.8070	-0.1405	-1.16
RQRBE3		1.247	0.006	0.06	0.8830	-0.0645	-0.53
RZEJTX		1.387	0.146	1.38	1.1110	0.1635	1.35
TAE9AY		1.183	-0.058	-0.55	0.8710	-0.0765	-0.63
TWCXMD		1.219	-0.022	-0.21	0.9680	0.0205	0.17
UKYV3Z		1.271	0.030	0.29	0.9410	-0.0065	-0.05
UMYB6W		1.255	0.014	0.13	1.0630	0.1155	0.96
VKWC2J		1.186	-0.055	-0.52	0.8760	-0.0715	-0.59
X9CVY3		1.318	0.077	0.73	1.0890	0.1415	1.17
XA32BM		1.437	0.196	1.86	1.0860	0.1385	1.15
XD7RNT		1.134	-0.107	-1.01	0.8210	-0.1265	-1.05
XDKDXV	*	1.399	0.158	1.50	0.9060	-0.0415	-0.34
XK4NZX		1.146	-0.095	-0.90	0.8900	-0.0575	-0.48
XQNPHW		1.429	0.188	1.78	1.2130	0.2655	2.20
Y2A7U4		1.241	0.000	0.00	0.9220	-0.0255	-0.21

Summary Statistics

	Sample GJ19	Sample GJ20
Grand Means	1.2408 Microns	0.94754 Microns
SD Btwn Labs	0.1056 Microns	0.12080 Microns

Statistics based on 34 of 34 reporting participants

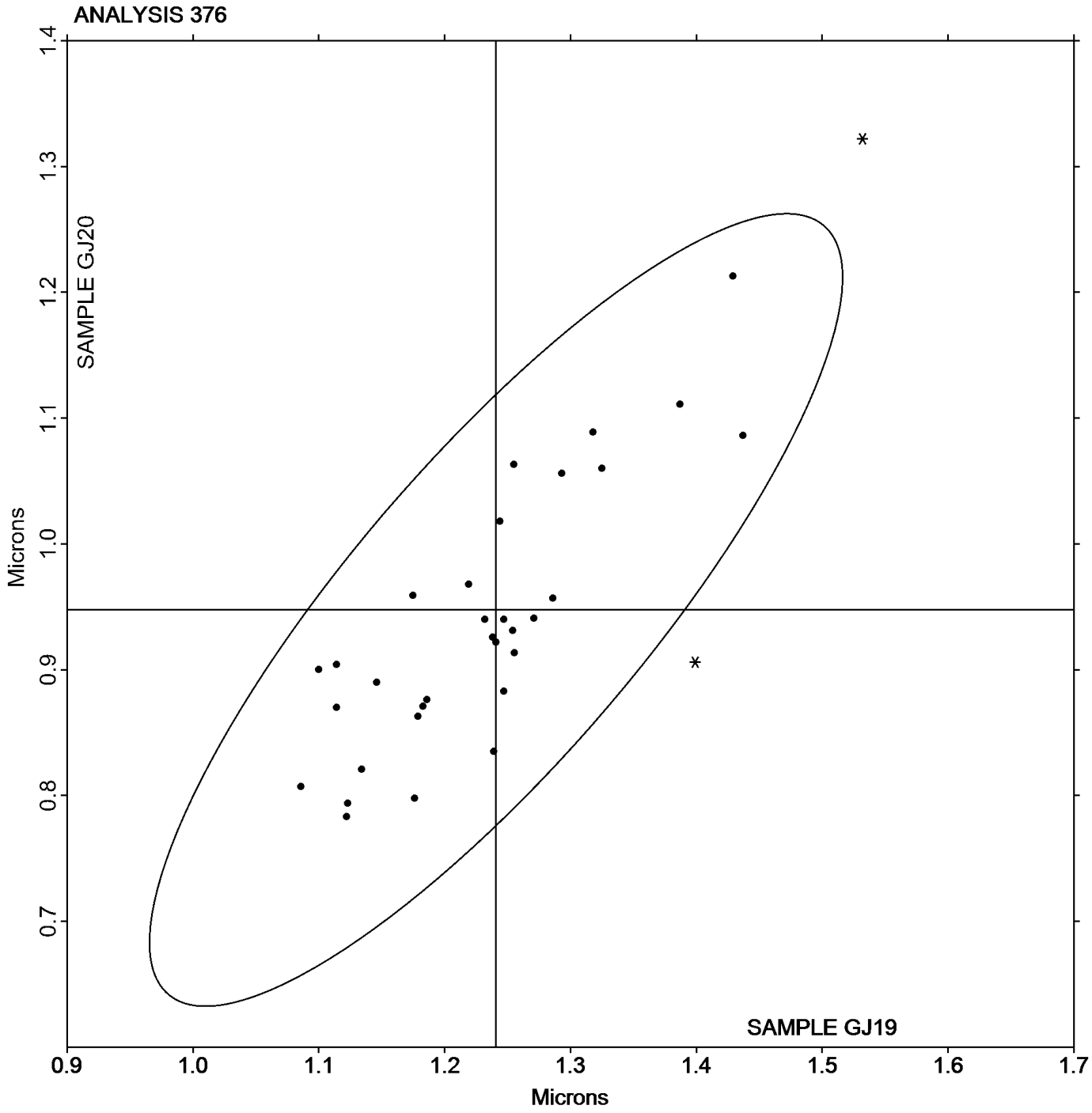
Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample **GJ19** = 1.2408 Microns

Grand Mean Sample **GJ20** = 0.94754 Microns



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

WebCode	Data Flag	Sample GK19 Lab Mean	Sample GK19 Diff from Grand Mean	Sample GK19 CPV	Sample GK20 Lab Mean	Sample GK20 Diff from Grand Mean	Sample GK20 CPV
6EY4B8		4.050	0.236	1.44	4.441	0.051	0.16
9HL4TX		3.927	0.113	0.69	4.080	-0.310	-0.96
GTBT4P		3.943	0.129	0.79	4.311	-0.079	-0.24
J9V8CE		3.870	0.056	0.34	4.914	0.524	1.62
JDAVVB		3.781	-0.033	-0.20	4.059	-0.331	-1.02
NLRVF4		3.585	-0.229	-1.39	4.156	-0.234	-0.72
QQRZYY		3.743	-0.071	-0.43	4.919	0.529	1.64
V4R4MG		3.868	0.054	0.33	4.295	-0.095	-0.29
XG2QRQ		3.555	-0.259	-1.57	4.336	-0.054	-0.17

Summary Statistics

	Sample GK19	Sample GK20
Grand Means	3.8136 Microns	4.3901 Microns
SD Btwn Labs	0.1646 Microns	0.3232 Microns

Statistics based on 9 of 9 reporting participants

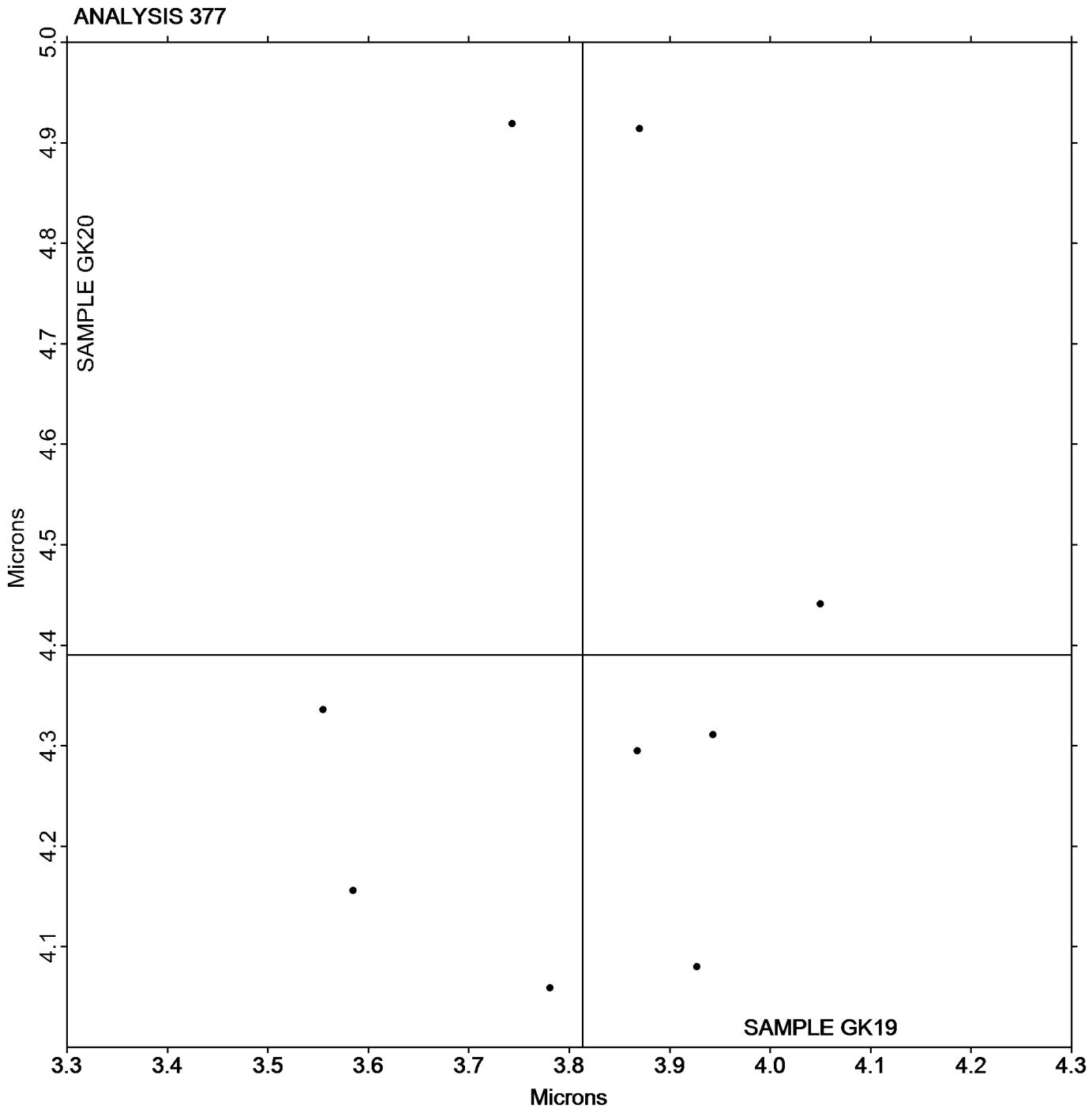
Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK19** = 3.8136 Microns

Grand Mean Sample **GK20** = 4.3901 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 GL19 Lab Mean	Sample GL19 Diff from Grand Mean	Sample GL19 CPV	Sample GL20 Lab Mean	Sample GL20 Diff from Grand Mean	Sample GL20 CPV	Instr Code
26FMXN		38.00	-0.49	-0.10	161.8	12.2	1.12	TT
2KG4FB		42.40	3.91	0.78	156.4	6.8	0.63	SH
4EZNB4		40.23	1.74	0.35	158.2	8.6	0.79	PP
4FRUMM		45.40	6.91	1.39	168.5	18.9	1.74	PG
4QABGF	*	36.40	-2.09	-0.42	117.4	-32.2	-2.98	TS
6BQ89P		38.10	-0.39	-0.08	156.8	7.2	0.66	PP
6EY4B8		36.34	-2.15	-0.43	154.1	4.5	0.41	PP
6MN2PU		40.50	2.01	0.40	151.1	1.5	0.13	HM
6YH777		32.30	-6.19	-1.24	131.9	-17.7	-1.64	HM
72LH7E		32.20	-6.29	-1.26	124.9	-24.7	-2.29	XX
7C32NQ		31.26	-7.23	-1.45	140.8	-8.8	-0.82	LA
7DGJUG		47.60	9.11	1.83	144.7	-4.9	-0.46	SH
7MKNXQ		37.80	-0.69	-0.14	152.7	3.1	0.28	TS
7X66CJ		42.00	3.51	0.70	153.0	3.4	0.31	TT
92E3WB		34.40	-4.09	-0.82	141.9	-7.7	-0.72	LW
9HL4TX		40.70	2.21	0.44	157.2	7.6	0.70	LW
ALENAM	X	59.90	21.41	4.29	161.1	11.5	1.06	TS
C3WBNA		35.70	-2.79	-0.56	154.0	4.4	0.40	XX
C8QZEF		39.70	1.21	0.24	141.1	-8.5	-0.79	HM
CW9PH9		40.40	1.91	0.38	136.9	-12.7	-1.18	PP
EJRHV8		32.10	-6.39	-1.28	148.2	-1.4	-0.13	XX
EVMT4E		42.90	4.41	0.88	146.9	-2.7	-0.25	XX
FF83NC		47.20	8.71	1.75	139.5	-10.1	-0.94	TS
GNZMJC		45.40	6.91	1.39	165.3	15.7	1.45	GL
GTBT4P		40.40	1.91	0.38	152.6	3.0	0.27	HM
H4RWQF		38.70	0.21	0.04	150.4	0.8	0.07	HM
H8R387		45.10	6.61	1.32	158.6	9.0	0.83	XX
HFLBPC		47.00	8.51	1.71	168.6	19.0	1.75	PG
HGV7HV	*	49.00	10.51	2.11	144.1	-5.6	-0.52	GA
J4994E		45.00	6.51	1.30	161.2	11.6	1.07	XX
JDAVVB		46.30	7.81	1.57	168.8	19.2	1.77	XX
JQFVL9		32.24	-6.25	-1.25	138.1	-11.5	-1.07	PP
KA8EX8		31.23	-7.26	-1.46	136.9	-12.7	-1.18	PP
KHL4WF		33.39	-5.10	-1.02	147.7	-2.0	-0.18	LA
KYABUD		38.72	0.23	0.05	134.1	-15.6	-1.44	PP
L6QGXX		35.70	-2.79	-0.56	152.8	3.2	0.29	LA
LPYJV3	X	80.00	41.51	8.32	165.3	15.7	1.45	TT
LX9ZBF		40.90	2.41	0.48	147.5	-2.1	-0.20	LA
NKWCCG		38.82	0.33	0.07	147.6	-2.1	-0.19	PP
NLRVF4		29.70	-8.79	-1.76	154.1	4.5	0.41	LA
QKQLDX		30.90	-7.59	-1.52	156.1	6.5	0.60	HM
QMUJM6	X	62.87	24.38	4.89	144.9	-4.7	-0.44	MP
RA43G6		36.70	-1.79	-0.36	146.8	-2.8	-0.26	SH

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

WebCode	Data Flag	Sample GL19 Lab Mean	Sample GL19 Diff from Grand Mean	Sample GL19 CPV	Sample GL20 Lab Mean	Sample GL20 Diff from Grand Mean	Sample GL20 CPV	Instr Code
RPH72E	X	112.70	74.21	14.88	170.8	21.2	1.96	LW
RQRBE3		40.86	2.37	0.47	152.3	2.6	0.24	PP
RZEJTX		39.10	0.61	0.12	151.2	1.5	0.14	PP
TAE9AY		34.80	-3.70	-0.74	146.1	-3.6	-0.33	PP
TWCXMD		33.54	-4.95	-0.99	159.8	10.2	0.94	PP
TZUVGV		34.60	-3.89	-0.78	158.5	8.9	0.82	PP
UEC3R2		35.53	-2.96	-0.59	144.3	-5.3	-0.49	PP
UKYV3Z		39.99	1.50	0.30	148.1	-1.5	-0.14	PP
UMYB6W		34.80	-3.69	-0.74	154.2	4.6	0.42	HM
V4R4MG		30.02	-8.47	-1.70	156.9	7.3	0.68	PP
VKWC2J		39.40	0.91	0.18	153.2	3.6	0.33	HM
WKTBEN		37.40	-1.09	-0.22	141.8	-7.8	-0.73	SH
WMD8WM		42.20	3.71	0.74	152.9	3.3	0.30	TS
WZFZ24	*	45.60	7.11	1.43	177.7	28.1	2.59	XX
X9CVY3		36.37	-2.12	-0.43	138.5	-11.1	-1.03	HM
XA32BM		47.00	8.51	1.71	147.8	-1.8	-0.17	TT
XG2QRQ		36.50	-2.00	-0.40	157.4	7.7	0.71	PP
XK4NZX		35.10	-3.39	-0.68	134.9	-14.7	-1.36	TT
XMDRWV		36.30	-2.19	-0.44	151.8	2.2	0.20	PP
Y2A7U4		37.60	-0.89	-0.18	144.9	-4.7	-0.44	LA
Y2QJZR		33.90	-4.59	-0.92	137.0	-12.6	-1.17	GA

Summary Statistics

	Sample GL19	Sample GL20
Grand Means	38.491 Sheffield	149.64 Sheffield
SD Btwn Labs	4.988 Sheffield	10.81 Sheffield

Statistics based on 60 of 64 reporting participants

Comments on assigned Data Flags for Test #378

ALENAM (X) - Data for Sample GL19 are high.

LPYJV3 (X) - Extreme data for Sample GL19.

QMUJM6 (X) - Data for Sample GL19 are high.

RPH72E (X) - Extreme data for Sample GL19.

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

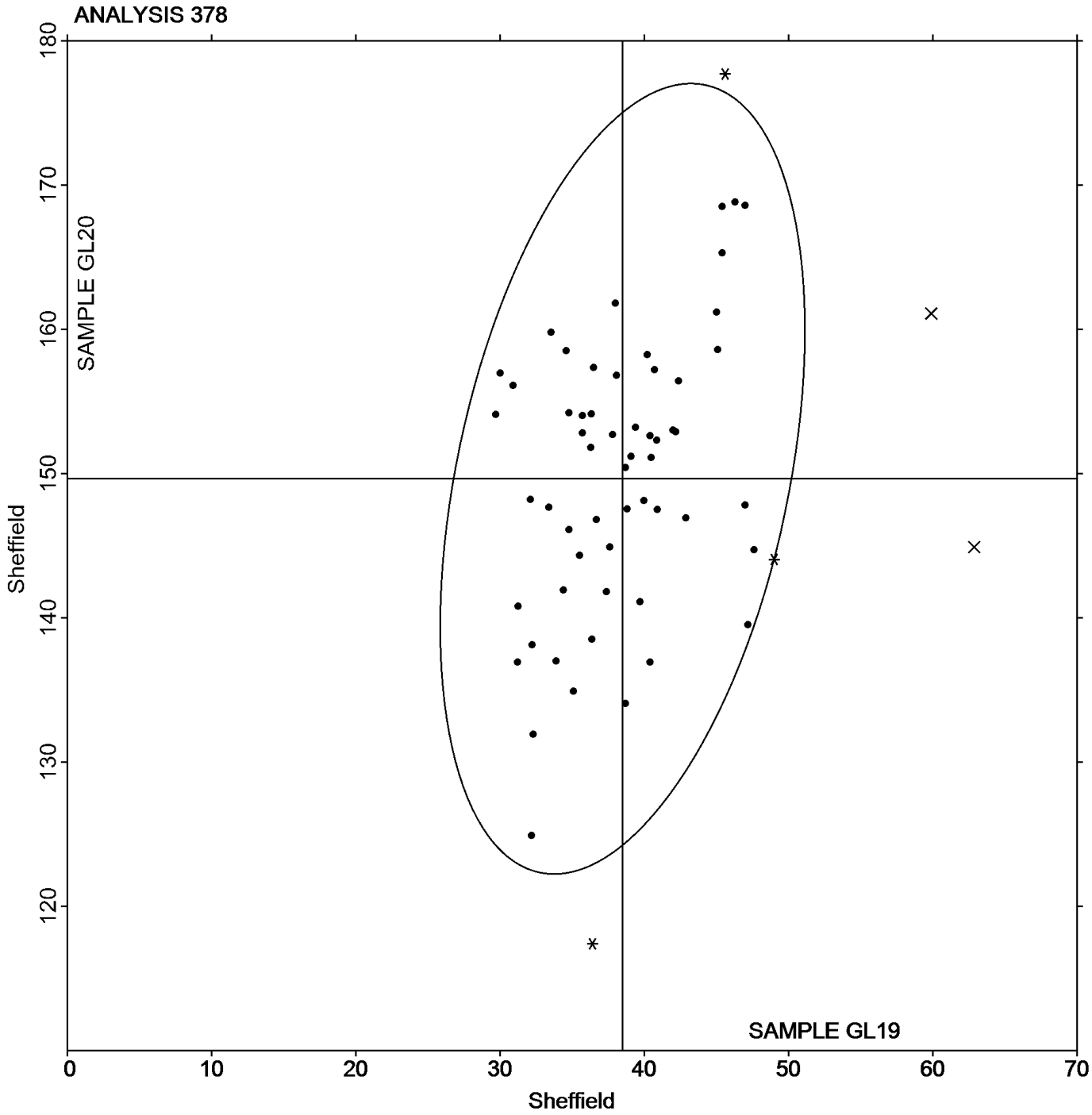
Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL19** = 38.491 Sheffield

Grand Mean Sample **GL20** = 149.64 Sheffield



Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

WebCode	Data Flag	Sample GM19 Lab Mean	Sample GM19 Diff from Grand Mean	Sample GM19 CPV	Sample GM20 Lab Mean	Sample GM20 Diff from Grand Mean	Sample GM20 CPV
26FMXN		5.020	0.502	1.59	4.930	0.454	1.53
2PNPWT		4.019	-0.499	-1.58	4.032	-0.444	-1.50
6BQ89P		4.602	0.084	0.27	4.624	0.148	0.50
6EY4B8		4.626	0.109	0.34	4.546	0.071	0.24
9BKPAH		4.280	-0.238	-0.75	4.305	-0.171	-0.58
GLTF36		4.492	-0.026	-0.08	4.401	-0.075	-0.25
GTBT4P		4.450	-0.068	-0.21	4.290	-0.186	-0.63
MXMW98		4.260	-0.258	-0.81	4.275	-0.201	-0.68
T64CNX		4.910	0.392	1.24	4.880	0.404	1.36
YU8ZWR	X	5.768	1.250	3.95	5.336	0.860	2.90

Summary Statistics

	Sample GM19	Sample GM20
Grand Means	4.5177 Percent	4.4760 Percent
SD Btwn Labs	0.3166 Percent	0.2965 Percent

Statistics based on 9 of 10 reporting participants

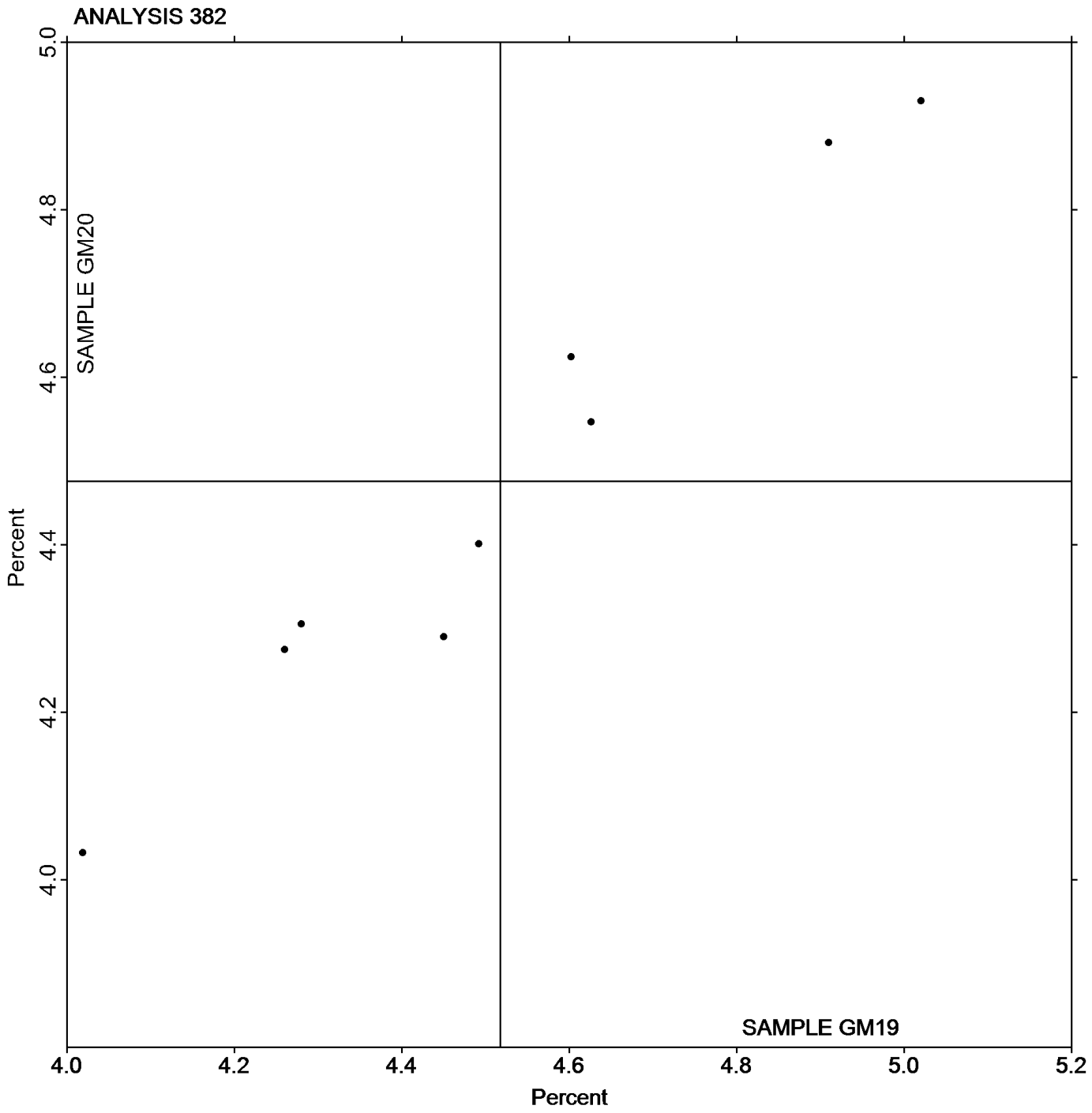
Comments on assigned Data Flags for Test #382

YU8ZWR (X) - Data for both samples are high. Inconsistent within the determinations for Sample GM19.

Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

Grand Mean Sample **GM19** = 4.5177 Percent

Grand Mean Sample **GM20** = 4.4760 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 GN19 Lab Mean	Sample GN19 Diff from Grand Mean	Sample GN19 CPV	Sample GN20 Lab Mean	Sample GN20 Diff from Grand Mean	Sample GN20 CPV
2KG4FB		87.11	0.09	0.21	92.60	-0.01	-0.02
4EZNB4		86.89	-0.13	-0.30	92.39	-0.21	-0.63
4FRUMM	X	85.27	-1.74	-4.03	92.11	-0.49	-1.48
6EY4B8		86.90	-0.12	-0.29	92.94	0.34	1.03
6YH777		86.57	-0.45	-1.04	92.55	-0.05	-0.15
72LH7E		87.03	0.01	0.03	92.45	-0.15	-0.45
7MKNXQ		87.52	0.50	1.16	92.54	-0.06	-0.18
7X66CJ	X	89.17	2.15	4.97	92.96	0.36	1.08
C3WBNA	X	89.81	2.79	6.46	94.76	2.16	6.51
CW9PH9		86.76	-0.26	-0.60	92.56	-0.04	-0.12
DU2HYG		86.06	-0.96	-2.21	91.98	-0.62	-1.87
EVMT4E	X	85.31	-1.71	-3.95	91.18	-1.42	-4.28
GMM4L2		87.43	0.41	0.95	92.38	-0.22	-0.66
GNZMJC	*	88.12	1.10	2.54	93.52	0.92	2.77
GTBT4P		87.07	0.05	0.12	92.30	-0.30	-0.91
H4RWQF		86.50	-0.52	-1.20	92.37	-0.23	-0.69
H8R387		86.87	-0.15	-0.34	92.33	-0.27	-0.81
HQYHH7		87.17	0.15	0.35	92.59	-0.01	-0.03
J4994E		87.17	0.15	0.35	92.47	-0.13	-0.39
JRRLUD		86.66	-0.36	-0.84	92.34	-0.27	-0.80
KHL4WF	*	85.87	-1.15	-2.65	91.97	-0.63	-1.90
MNVFJ4	X	88.95	1.93	4.46	91.96	-0.64	-1.93
NKWCCG	X	88.50	1.48	3.43	91.77	-0.83	-2.50
NLRVF4		87.55	0.53	1.23	92.93	0.32	0.98
QBDUNZ		87.11	0.09	0.21	92.58	-0.02	-0.06
QKQLDX		86.88	-0.14	-0.32	92.54	-0.06	-0.18
RA43G6		87.42	0.40	0.93	92.68	0.08	0.24
RZEJTX		86.71	-0.31	-0.71	92.60	0.00	0.00
UMKM7Q		87.41	0.39	0.90	92.62	0.02	0.06
V4R4MG		87.23	0.21	0.49	93.17	0.57	1.72
VKWC2J		87.24	0.22	0.51	92.88	0.28	0.84
WKTBEN		86.91	-0.11	-0.25	92.73	0.13	0.39
WMD8WM		87.28	0.26	0.60	92.53	-0.07	-0.21
WZFZ24		87.01	-0.01	-0.02	92.64	0.04	0.13
X9CVY3		87.26	0.25	0.57	93.27	0.66	2.00
XA32BM		87.31	0.29	0.67	93.00	0.40	1.20
XMDRWV		86.71	-0.31	-0.72	92.32	-0.28	-0.85
XQNPHW		86.87	-0.15	-0.34	92.46	-0.14	-0.42

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

Summary Statistics

	Sample GN19	Sample GN20
Grand Means	87.019 Percent	92.600 Percent
SD Btwn Labs	0.433 Percent	0.332 Percent

Statistics based on 32 of 38 reporting participants

Comments on assigned Data Flags for Test #384

4FRUMM (X) - Data for Sample GN19 are low.

7X66CJ (X) - Data for Sample GN19 are high.

C3WBNA (X) - Extreme data.

EVMT4E (X) - Data for both samples are low.

MNVFJ4 (X) - Data for Sample GN19 are high.

NKWCCG (X) - Data for Sample GN19 are high.

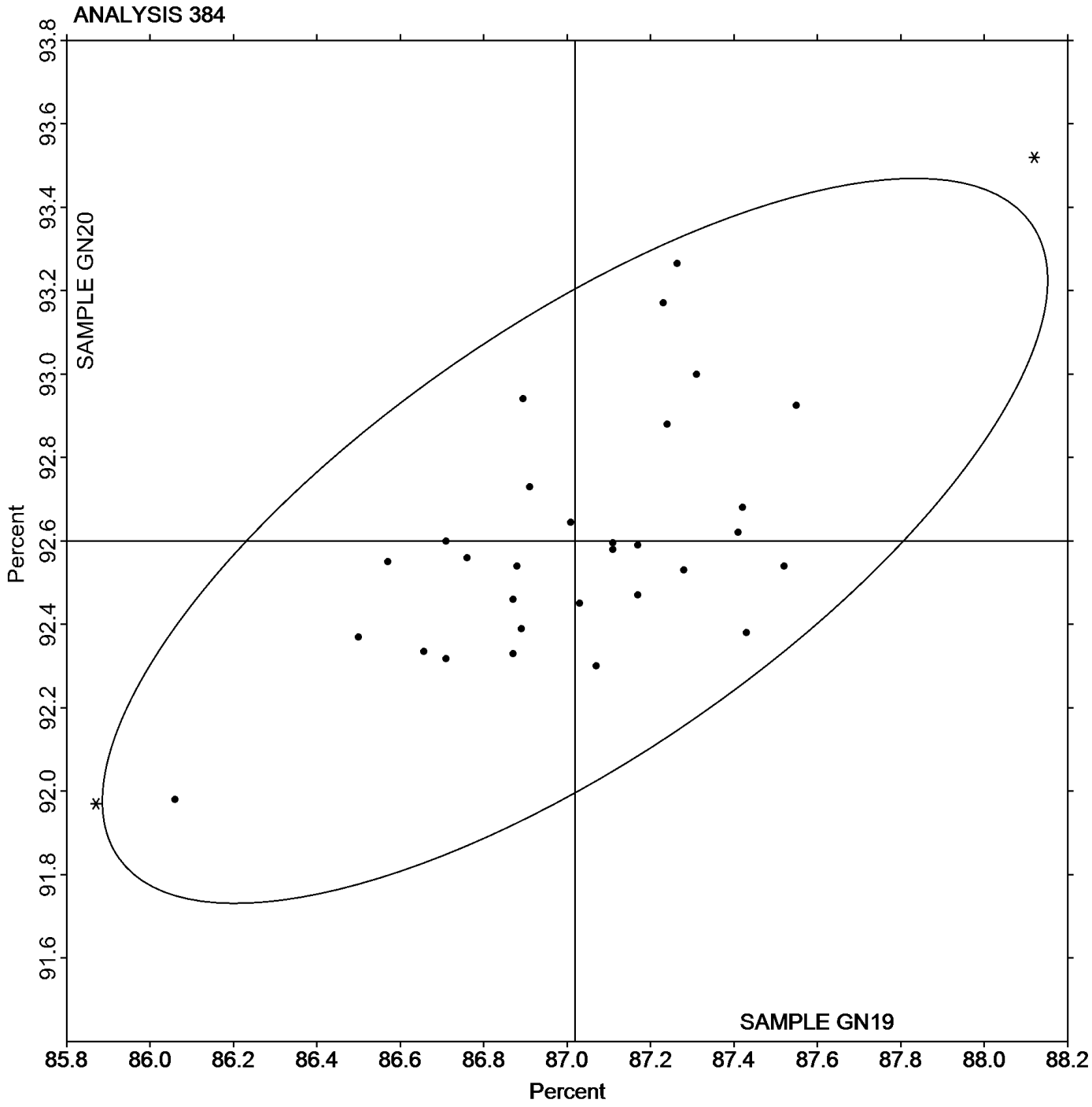
Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN19** = 87.019 Percent

Grand Mean Sample **GN20** = 92.600 Percent



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

WebCode	Data Flag	Sample GP19 Lab Mean	Sample GP19 Diff from Grand Mean	Sample GP19 CPV	Sample GP20 Lab Mean	Sample GP20 Diff from Grand Mean	Sample GP20 CPV
2PNPWT		88.82	-0.20	-1.00	92.05	-0.12	-0.87
6MN2PU		89.09	0.07	0.36	92.24	0.07	0.47
BG4PF9		88.74	-0.28	-1.44	92.30	0.12	0.87
GDZ6TA		89.11	0.08	0.43	92.08	-0.09	-0.66
GLTF36		89.03	0.01	0.07	92.33	0.16	1.11
H4RUZB		89.30	0.28	1.44	92.22	0.05	0.33
HLTHPN		89.21	0.19	0.97	92.27	0.10	0.68
J4994E		88.99	-0.03	-0.14	92.12	-0.06	-0.41
K42RZC		88.97	-0.06	-0.28	92.00	-0.17	-1.20
KZZFMK		89.15	0.13	0.67	92.16	-0.01	-0.08
NKWCCG		89.13	0.11	0.54	92.36	0.19	1.34
P6YMVB		88.93	-0.09	-0.46	92.38	0.20	1.41
RPH72E		88.99	-0.04	-0.18	92.17	0.00	-0.03
TQP3MU		89.11	0.09	0.44	91.94	-0.24	-1.67
UVCZ46		88.83	-0.19	-0.96	92.14	-0.04	-0.25
VZ84HU		89.48	0.46	2.35	92.45	0.28	1.94
WNQ2CM		88.62	-0.40	-2.06	92.16	-0.01	-0.09
X9CVY3		88.97	-0.05	-0.26	91.98	-0.19	-1.36
YF6MK2		89.06	0.04	0.22	92.06	-0.11	-0.80
YKZGH3		88.88	-0.14	-0.72	92.07	-0.10	-0.73

Summary Statistics

	Sample GP19	Sample GP20
Grand Means	89.020 Percent	92.173 Percent
SD Btwn Labs	0.195 Percent	0.142 Percent

Statistics based on 20 of 20 reporting participants

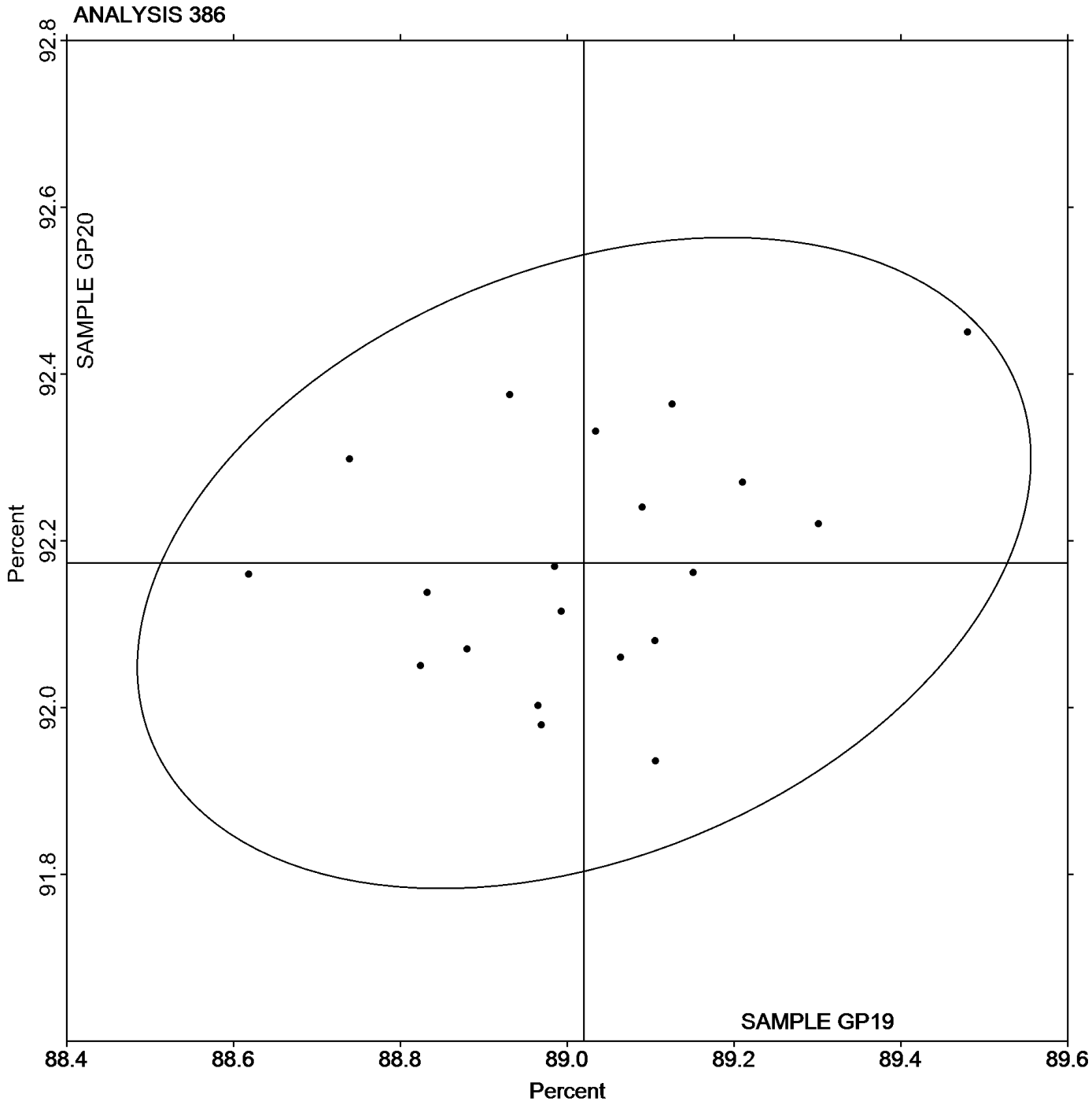
Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample **GP19** = 89.020 Percent

Grand Mean Sample **GP20** = 92.173 Percent



Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

WebCode	Data Flag	Sample GR19 Lab Mean	Sample GR19 Diff from Grand Mean	Sample GR19 CPV	Sample GR20 Lab Mean	Sample GR20 Diff from Grand Mean	Sample GR20 CPV	Instr Code
4CFRWB		86.00	0.52	0.52	85.64	0.68	0.63	HG
4EZNB4		84.78	-0.70	-0.70	83.98	-0.98	-0.91	TT
4FRUMM		84.42	-1.06	-1.06	84.65	-0.31	-0.29	TS
6YH777		85.12	-0.35	-0.35	84.71	-0.25	-0.23	GM
72LH7E		85.73	0.25	0.25	84.79	-0.17	-0.16	XX
7MKNXQ		85.20	-0.28	-0.28	84.94	-0.02	-0.02	TS
7X66CJ		86.06	0.59	0.59	85.84	0.88	0.81	TT
C3WBNA		85.08	-0.40	-0.40	84.13	-0.83	-0.77	XX
CW9PH9		85.20	-0.28	-0.28	84.98	0.02	0.02	XX
EVMT4E		86.80	1.32	1.32	86.83	1.87	1.72	XX
GCLMP6		85.11	-0.37	-0.37	84.70	-0.26	-0.24	TS
H4RWQF		85.28	-0.20	-0.20	84.98	0.02	0.02	XS
H8R387	*	88.35	2.87	2.87	87.98	3.02	2.78	PE
HFLBPC		84.94	-0.54	-0.54	83.84	-1.11	-1.03	TS
HQYHH7		85.41	-0.06	-0.06	84.41	-0.55	-0.50	TT
J4994E		84.81	-0.67	-0.67	83.71	-1.25	-1.15	TT
KA8EX8		86.08	0.60	0.60	85.54	0.58	0.53	TT
MXMW98		84.89	-0.59	-0.59	84.38	-0.58	-0.54	XX
NKWCCG		84.39	-1.09	-1.09	83.75	-1.21	-1.11	TS
NLRVF4		87.26	1.79	1.78	86.16	1.20	1.11	TS
QBDUNZ		84.66	-0.81	-0.81	84.26	-0.70	-0.64	TT
RQRBE3		86.08	0.60	0.60	85.92	0.96	0.88	HD
UEC3R2		85.00	-0.47	-0.47	84.63	-0.33	-0.31	TS
UKYV3Z		86.77	1.29	1.29	85.82	0.86	0.79	HD
UMKM7Q		87.33	1.85	1.85	87.39	2.43	2.24	TS
VKWC2J		83.54	-1.93	-1.93	83.14	-1.82	-1.68	TS
WKTBEN		85.18	-0.30	-0.30	84.16	-0.80	-0.73	TA
WZFZ24		84.69	-0.79	-0.78	84.12	-0.84	-0.77	TS
X9CVY3		85.67	0.19	0.19	84.78	-0.18	-0.16	TS
XK4NZX		84.85	-0.63	-0.63	84.95	-0.01	-0.01	TT
XQNPHW		85.12	-0.36	-0.35	84.64	-0.32	-0.29	MK

Summary Statistics

	Sample GR19	Sample GR20
Grand Means	85.476 Percent	84.958 Percent
SD Btwn Labs	1.001 Percent	1.085 Percent

Statistics based on 31 of 31 reporting participants

Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

Instrument Code List as Reported by the Labs

(GM) - Gretag Macbeth Color i5

(HG) - Hunter Labscan / XE

(PE) - Photovolt 577

(TS) - Technidyne Brightimeter Micro S-5

(XS) - X-Rite 938 Spectrodensitometer

(HD) - Hunter D25DP - 9000

(MK) - Macbeth Color-Eye 7000 Spectrophotometer

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

(TT) - Technidyne Brightimeter Micro S4-M

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

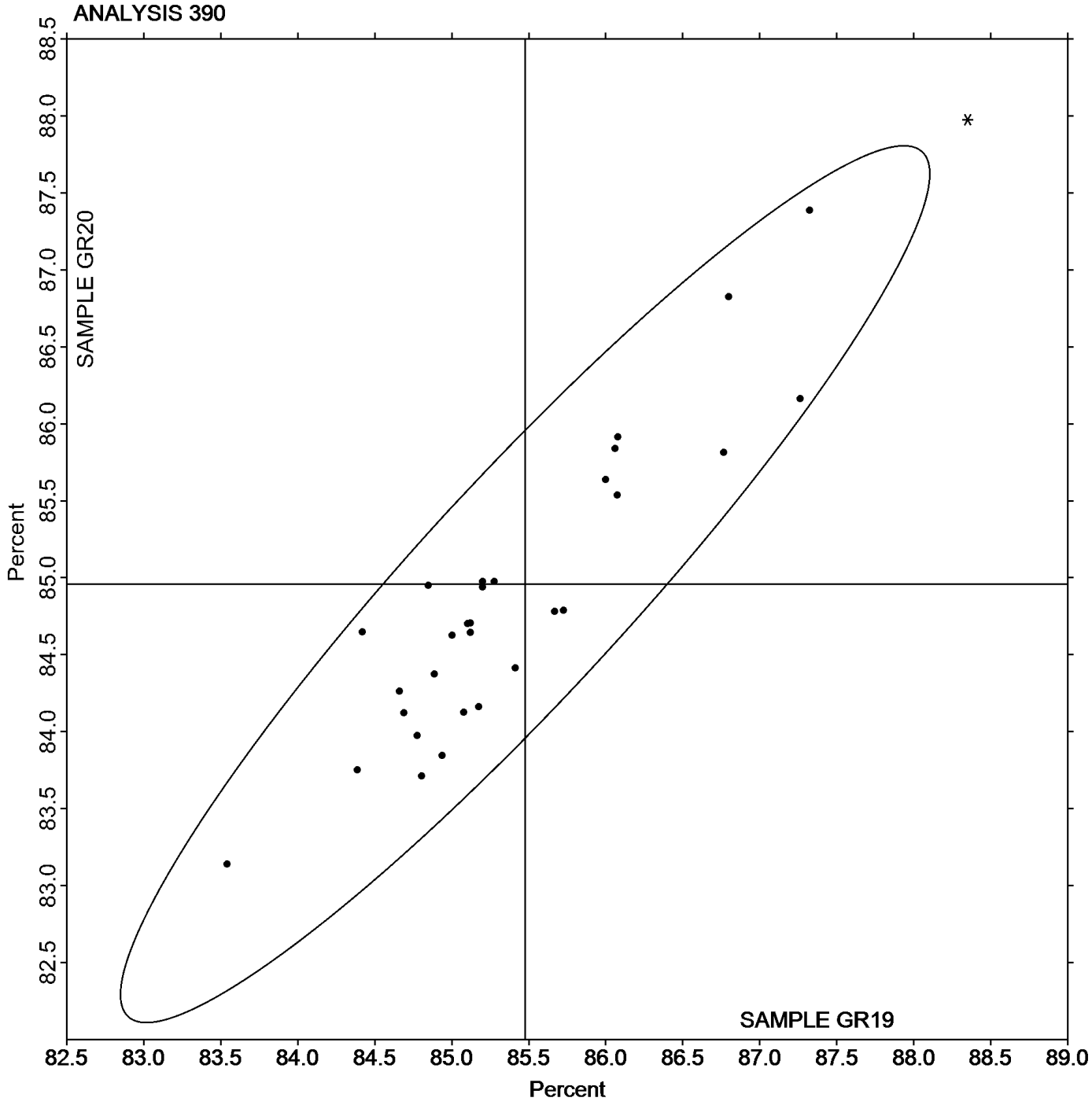
Paper & Paperboard Interlaboratory Testing Program

Analysis 390

Directional Brightness

Grand Mean Sample **GR19** = 85.476 Percent

Grand Mean Sample **GR20** = 84.958 Percent



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

WebCode	Data Flag	Sample GZ19 Lab Mean	Sample GZ19 Diff from Grand Mean	Sample GZ19 CPV	Sample GZ20 Lab Mean	Sample GZ20 Diff from Grand Mean	Sample GZ20 CPV	Instr Code
26FMXN	*	93.54	3.17	2.72	99.52	1.66	1.62	EF
6EY4B8		90.20	-0.17	-0.14	97.77	-0.10	-0.09	TS
6YH777		88.94	-1.43	-1.22	95.97	-1.89	-1.84	GM
7C32NQ		90.02	-0.35	-0.30	97.56	-0.30	-0.29	TT
7MKNXQ		90.51	0.14	0.12	98.16	0.30	0.29	TS
C3WBNA		91.02	0.66	0.56	98.74	0.88	0.86	XX
GMM4L2		90.08	-0.29	-0.24	97.78	-0.08	-0.08	PP
HQYHH7		90.50	0.13	0.11	98.06	0.20	0.19	TT
KHL4WF		90.18	-0.19	-0.16	97.58	-0.28	-0.27	TT
QKQLDX		89.11	-1.26	-1.08	96.78	-1.09	-1.06	HT
RA43G6		88.63	-1.74	-1.49	96.04	-1.82	-1.77	HT
V4R4MG		90.06	-0.31	-0.26	97.83	-0.03	-0.03	TS
WMD8WM		89.92	-0.45	-0.38	97.80	-0.06	-0.06	TS
XA32BM		91.18	0.81	0.70	99.00	1.14	1.11	TT
XHEK8Q		90.91	0.54	0.46	98.47	0.61	0.59	TS
XMDRWV		89.53	-0.84	-0.72	97.08	-0.78	-0.76	TS
XZWARJ		91.92	1.55	1.33	99.50	1.64	1.60	TS

Summary Statistics

	Sample GZ19	Sample GZ20
Grand Means	90.367 Percent	97.861 Percent
SD Btwn Labs	1.168 Percent	1.026 Percent

Statistics based on 17 of 17 reporting participants

Instrument Code List as Reported by the Labs

(EF) - L & W Datacolor Elrepho
(GM) - Gretag Macbeth Color i5
(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

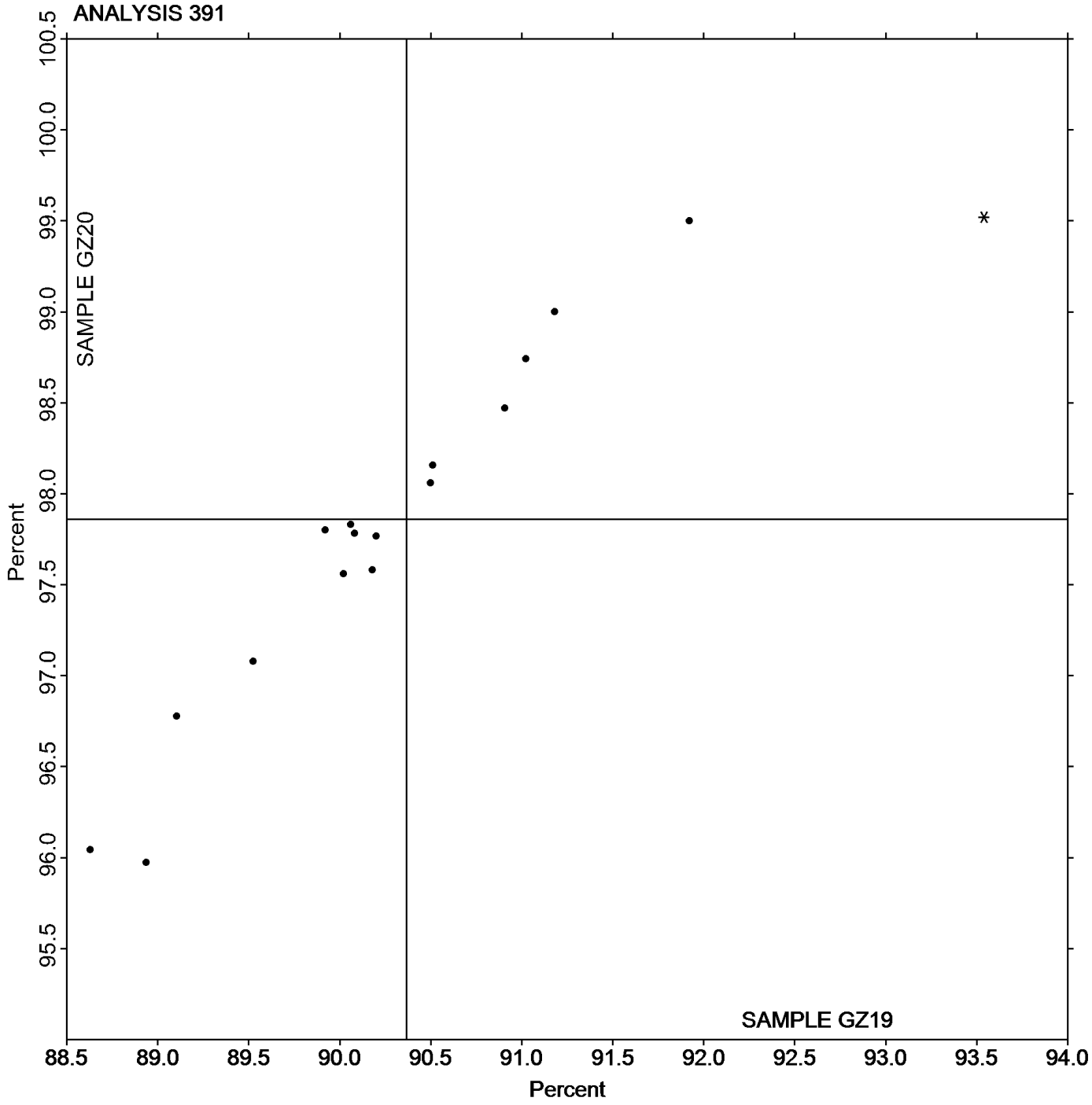
Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ19** = 90.367 Percent

Grand Mean Sample **GZ20** = 97.861 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 GR19 Lab Mean	Sample GR19 Diff from Grand Mean	Sample GR19 CPV	Sample GR20 Lab Mean	Sample GR20 Diff from Grand Mean	Sample GR20 CPV	Instr Code
26FMXN		84.63	0.30	1.65	84.10	0.25	1.28	LA
2KG4FB		84.36	0.03	0.18	84.09	0.23	1.20	TC
2PNPWT		84.05	-0.28	-1.52	83.57	-0.29	-1.50	LS
434PFQ		84.17	-0.15	-0.84	83.75	-0.10	-0.53	TC
6MN2PU		84.38	0.06	0.31	83.77	-0.09	-0.45	TC
92E3WB		84.28	-0.05	-0.26	83.81	-0.04	-0.22	EF
A2UCV4		84.28	-0.04	-0.21	83.77	-0.09	-0.45	TC
BK4ZB9		84.47	0.15	0.82	83.93	0.07	0.38	TC
FA376C	*	84.40	0.08	0.44	83.67	-0.19	-0.98	TC
FHGYAG		84.14	-0.18	-0.99	83.76	-0.10	-0.50	TC
G8E6MV		84.56	0.23	1.28	84.13	0.27	1.43	TC
GCLMP6		84.00	-0.33	-1.78	83.63	-0.22	-1.15	TM
GDZ6TA		84.09	-0.23	-1.28	83.82	-0.04	-0.20	LS
GLTF36		84.01	-0.32	-1.74	83.54	-0.31	-1.63	EG
H4RUZB		84.12	-0.20	-1.10	83.69	-0.17	-0.87	TM
HQYHH7		84.29	-0.03	-0.19	83.83	-0.02	-0.13	TC
J4994E	X	85.52	1.20	6.56	85.03	1.18	6.12	TM
J9V8CE		84.25	-0.08	-0.41	83.56	-0.29	-1.51	TC
JEPVDE		84.45	0.13	0.70	83.98	0.12	0.65	LA
JQFVL9		84.51	0.19	1.02	84.04	0.19	0.96	PP
KA8EX8		84.26	-0.06	-0.33	83.71	-0.14	-0.74	TL
MXMW98		84.61	0.28	1.56	84.17	0.31	1.62	EE
NKWCCG		84.56	0.24	1.30	84.02	0.17	0.88	TC
NLRVF4		84.55	0.23	1.24	84.03	0.18	0.93	TC
P6YMVB		84.43	0.10	0.57	83.97	0.12	0.60	TC
RPH72E		84.52	0.20	1.09	84.13	0.28	1.43	TC
TAE9AY		84.39	0.07	0.37	83.95	0.09	0.47	TC
TQP3MU		84.18	-0.14	-0.76	83.68	-0.17	-0.89	TM
X9CVY3		84.30	-0.03	-0.14	83.85	-0.01	-0.03	TM
XDKDXV		84.29	-0.03	-0.17	83.85	0.00	-0.01	TC
XG2QRQ		84.17	-0.15	-0.84	83.87	0.01	0.07	TC
XK4NZX		84.03	-0.30	-1.63	83.48	-0.38	-1.97	EG
Y9KPR8		84.47	0.14	0.79	84.17	0.31	1.62	TC
YF6MK2		84.47	0.15	0.81	83.96	0.10	0.54	TC
YKZGH3		84.34	0.01	0.08	83.80	-0.05	-0.28	TM

Summary Statistics

	Sample GR19	Sample GR20
Grand Means	84.323 Percent	83.855 Percent
SD Btwn Labs	0.183 Percent	0.192 Percent

Statistics based on 34 of 35 reporting participants

Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

Comments on assigned Data Flags for Test #392

J4994E (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

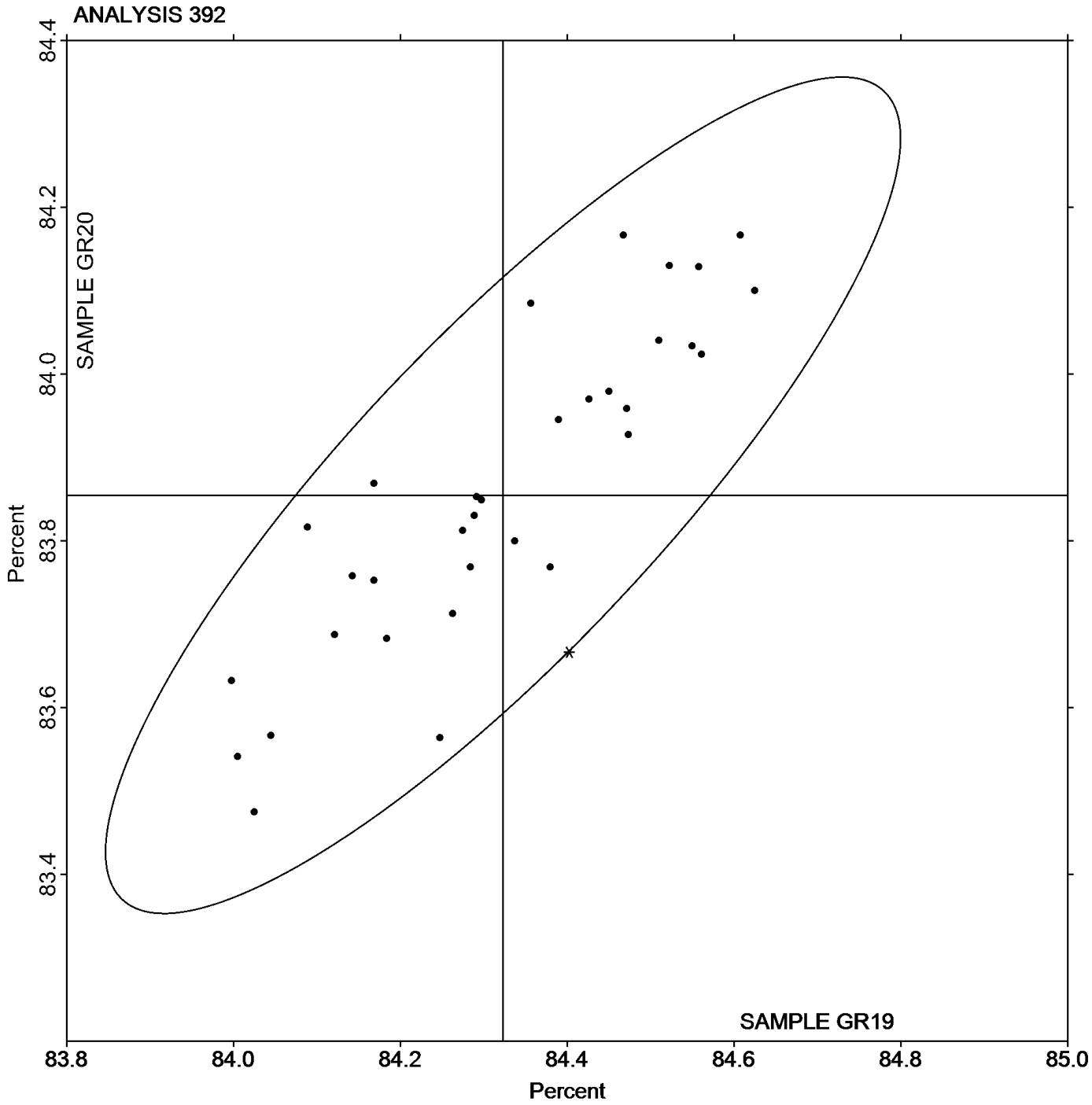
Paper & Paperboard Interlaboratory Testing Program

Analysis 392

Diffuse Brightness

Grand Mean Sample **GR19** = 84.323 Percent

Grand Mean Sample **GR20** = 83.855 Percent



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

WebCode	Data Flag	Sample GZ19 Lab Mean	Sample GZ19 Diff from Grand Mean	Sample GZ19 CPV	Sample GZ20 Lab Mean	Sample GZ20 Diff from Grand Mean	Sample GZ20 CPV	Instr Code
26FMXN	X	10.480	3.089	4.55	13.440	4.371	5.47	EF
6EY4B8		7.412	0.021	0.03	9.182	0.113	0.14	TS
6YH777		9.272	1.881	2.77	11.212	2.143	2.68	GM
7C32NQ		7.640	0.249	0.37	9.300	0.231	0.29	TT
7MKNXQ		7.386	-0.005	-0.01	9.076	0.007	0.01	TS
C3WBNA		6.942	-0.449	-0.66	8.864	-0.205	-0.26	XX
GMM4L2		7.446	0.055	0.08	9.098	0.029	0.04	PP
HQYHH7		7.240	-0.151	-0.22	8.800	-0.269	-0.34	TT
KHL4WF		7.580	0.189	0.28	9.020	-0.049	-0.06	TT
QKQLDX		6.942	-0.449	-0.66	8.868	-0.201	-0.25	HT
RA43G6		6.206	-1.185	-1.75	7.426	-1.643	-2.06	HT
V4R4MG		7.456	0.065	0.10	9.276	0.207	0.26	TS
XHEK8Q		7.384	-0.007	-0.01	9.034	-0.035	-0.04	TS
XMDRWV	X	89.516	82.125	121.11	97.132	88.063	110.16	TS
XZWARJ		7.182	-0.209	-0.31	8.740	-0.329	-0.41	TS

Summary Statistics

	Sample GZ19	Sample GZ20
Grand Means	7.3914 Percent	9.0689 Percent
SD Btwn Labs	0.6781 Percent	0.7994 Percent

Statistics based on 13 of 15 reporting participants

Comments on assigned Data Flags for Test #394

26FMXN (X) - Data for both samples are high.

XMDRWV (X) - Extreme data.

Instrument Code List as Reported by the Labs

(EF) - Datacolor Elrepho 3000

(GM) - Gretag Macbeth Color i5

(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

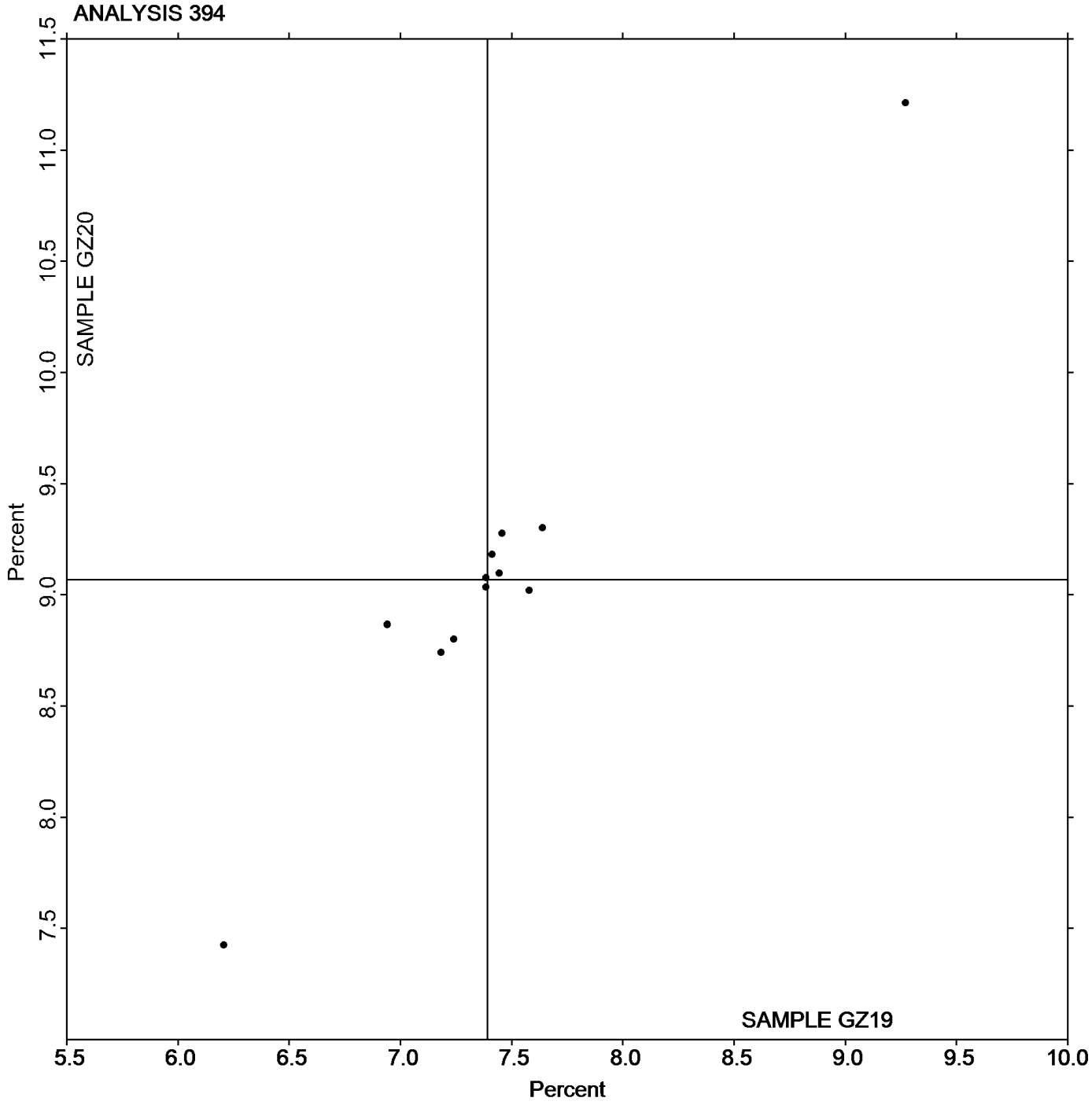
Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ19** = 7.3914 Percent

Grand Mean Sample **GZ20** = 9.0689 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 GT19 Lab Mean	Sample GT19 Diff from Grand Mean	Sample GT19 CPV	Sample GT20 Lab Mean	Sample GT20 Diff from Grand Mean	Sample GT20 CPV	Instr Code
7C32NQ		75.10	1.27	0.89	72.20	2.32	1.20	LA
FF83NC		73.02	-0.81	-0.56	68.85	-1.03	-0.53	XX
GDZ6TA		73.58	-0.25	-0.17	70.81	0.93	0.48	LB
GLTF36	X	67.18	-6.65	-4.63	60.36	-9.52	-4.91	TH
GMM4L2		72.97	-0.86	-0.60	70.34	0.46	0.24	PP
J4994E		76.64	2.82	1.96	73.60	3.72	1.92	TG
J9V8CE		73.48	-0.35	-0.24	67.34	-2.54	-1.31	ZH
KA8EX8		74.21	0.38	0.27	69.50	-0.38	-0.19	GS
LX9ZBF		70.04	-3.79	-2.64	66.57	-3.31	-1.71	LA
QBDUNZ		74.73	0.90	0.63	70.75	0.88	0.45	TH
RQRBE3		73.36	-0.47	-0.32	71.87	1.99	1.03	TH
TWCXMD		74.16	0.33	0.23	70.61	0.73	0.38	GM
UKYV3Z		72.54	-1.29	-0.90	68.94	-0.94	-0.48	TH
VZ84HU		72.90	-0.93	-0.64	68.60	-1.28	-0.66	GA
X9CVY3		75.26	1.43	1.00	69.94	0.06	0.03	TH
XK4NZX		73.60	-0.23	-0.16	66.44	-3.44	-1.77	GM
XQNPHW		74.76	0.93	0.65	70.71	0.83	0.43	PP
Y2A7U4		74.69	0.86	0.60	70.81	0.93	0.48	TH

Summary Statistics

	Sample GT19	Sample GT20
Grand Means	73.826 Gloss Units	69.875 Gloss Units
SD Btwn Labs	1.435 Gloss Units	1.937 Gloss Units

Statistics based on 17 of 18 reporting participants

Comments on assigned Data Flags for Test #395

GLTF36 (X) - Data for both samples are low. Inconsistent within the determinations for Sample GT19.

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

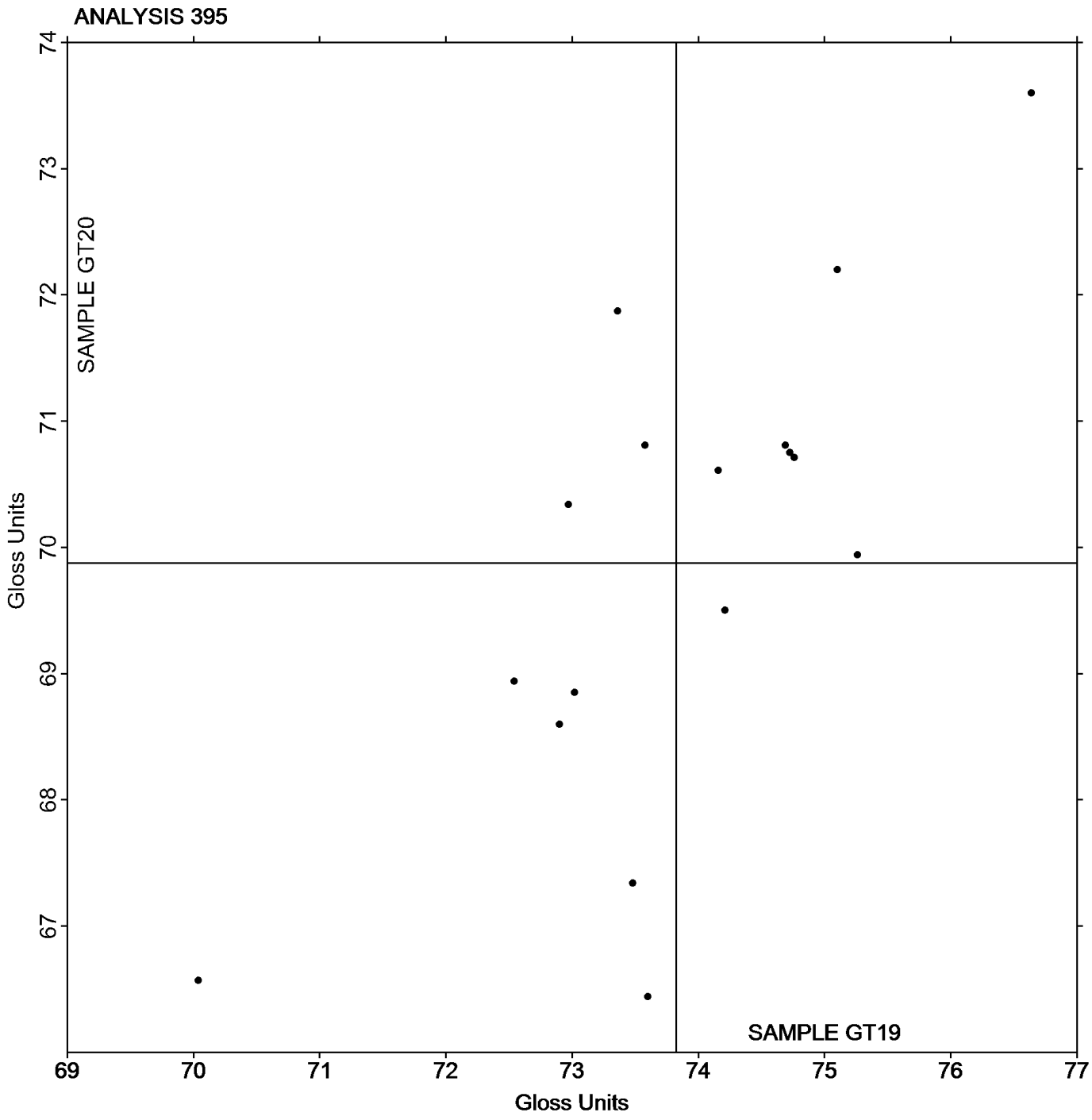
Paper & Paperboard Interlaboratory Testing Program

Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT19** = 73.826 Gloss Units

Grand Mean Sample **GT20** = 69.875 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 GU19 Lab Mean	Sample GU19 Diff from Grand Mean	Sample GU19 CPV	Sample GU20 Lab Mean	Sample GU20 Diff from Grand Mean	Sample GU20 CPV	Instr Code
26FMXN		28.79	2.04	1.62	46.51	3.37	1.98	TG
2KG4FB		27.87	1.12	0.89	44.62	1.48	0.87	TH
9BKPAH		25.34	-1.41	-1.12	42.58	-0.56	-0.33	XX
GDZ6TA		25.27	-1.48	-1.17	41.01	-2.13	-1.25	LA
GTBT4P		26.79	0.04	0.03	42.37	-0.77	-0.45	PP
H4RWQF		26.90	0.15	0.12	42.84	-0.30	-0.18	TH
J4994E		27.43	0.68	0.54	43.63	0.49	0.29	TG
WKTBEN		25.19	-1.56	-1.24	41.21	-1.93	-1.13	TH
XG2QRQ		27.14	0.39	0.31	43.50	0.36	0.21	TH

Summary Statistics

	Sample GU19	Sample GU20
Grand Means	26.746 Gloss Units	43.141 Gloss Units
SD Btwn Labs	1.259 Gloss Units	1.702 Gloss Units

Statistics based on 9 of 9 reporting participants

Instrument Code List as Reported by the Labs

(LA) - L & W Gloss - Autoline 300

(PP) - Technidyne Profile/Plus

(TG) - Technidyne T480

(TH) - Technidyne T480A

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

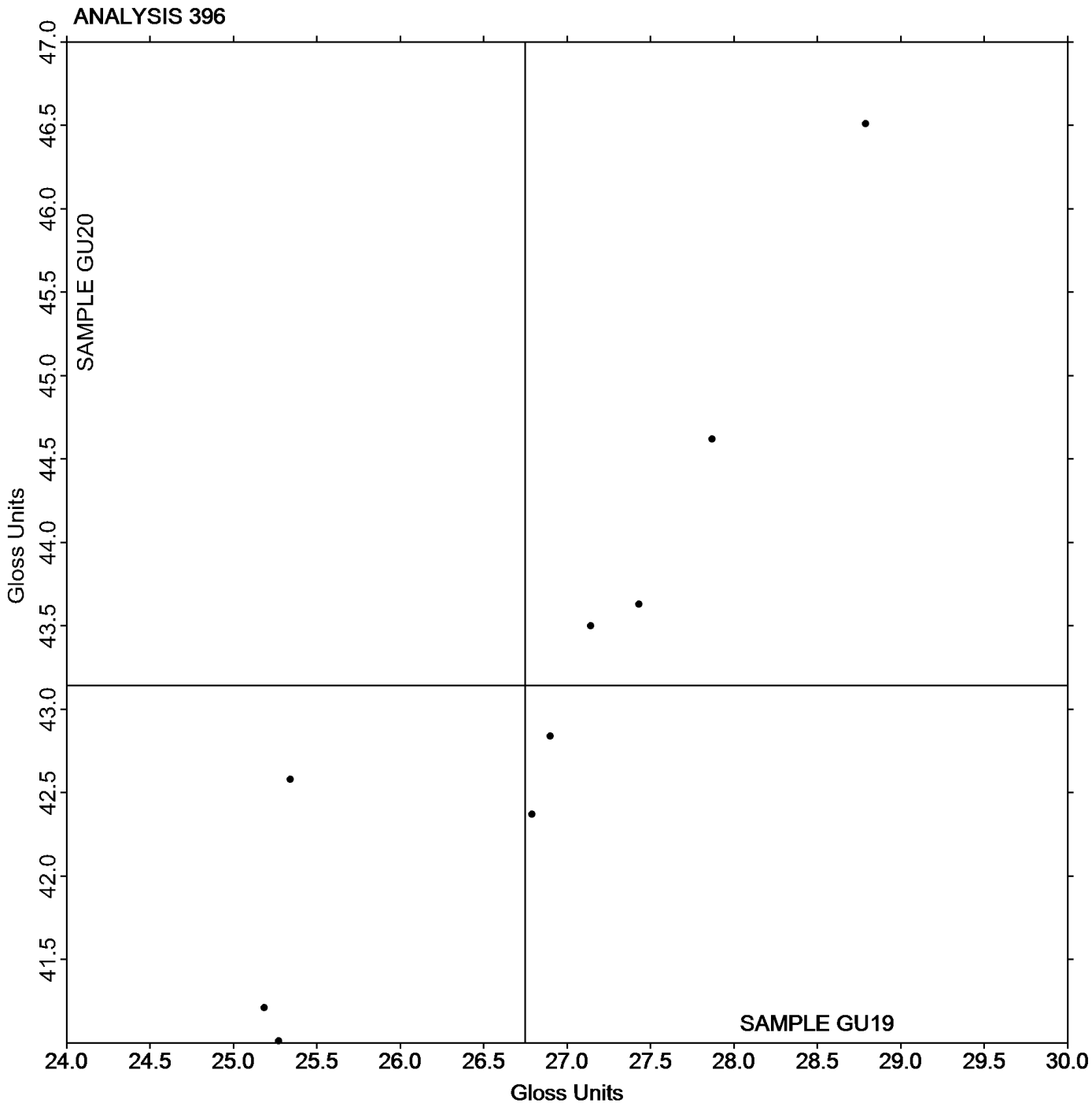
Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU19** = 26.746 Gloss Units

Grand Mean Sample **GU20** = 43.141 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 GW19 Lab Mean	Sample GW19 Diff from Grand Mean	Sample GW19 CPV	Sample GW20 Lab Mean	Sample GW20 Diff from Grand Mean	Sample GW20 CPV
26FMXN		85.90	-0.22	-0.37	101.1	0.3	0.48
2KG4FB		86.43	0.31	0.52	101.5	0.7	1.13
2PNPWT		85.88	-0.24	-0.40	100.2	-0.6	-0.88
3ZGQNN		86.00	-0.12	-0.20	101.1	0.3	0.41
434PFQ		85.92	-0.20	-0.33	100.8	0.0	0.04
4CFRWB		85.39	-0.73	-1.21	100.3	-0.5	-0.74
6BQ89P		85.97	-0.15	-0.25	100.7	0.0	-0.07
6MN2PU		86.67	0.55	0.91	101.4	0.6	0.89
6YH777		85.60	-0.52	-0.86	100.4	-0.4	-0.57
72LH7E		86.07	-0.05	-0.09	100.4	-0.4	-0.65
8866EP	*	87.84	1.72	2.86	102.2	1.4	2.10
9BKPAH		86.07	-0.05	-0.08	100.5	-0.3	-0.39
ANZEDC		87.24	1.12	1.86	101.8	1.1	1.61
BG4PF9		85.58	-0.54	-0.89	100.8	0.1	0.10
CW9PH9		85.93	-0.19	-0.31	100.7	-0.1	-0.14
DU2HYG		86.12	0.00	0.00	100.8	0.1	0.08
GDZ6TA		86.39	0.27	0.45	100.6	-0.1	-0.22
GLTF36		85.20	-0.92	-1.52	100.0	-0.8	-1.22
H4RWQF		86.13	0.01	0.02	100.2	-0.6	-0.95
HLTHPN		85.63	-0.49	-0.81	100.5	-0.2	-0.37
KZZFMK		85.55	-0.57	-0.95	100.2	-0.6	-0.89
L6QGXX		87.31	1.19	1.98	102.3	1.6	2.38
MGFQ44		85.81	-0.31	-0.51	100.9	0.1	0.19
MXMW98		87.04	0.92	1.53	101.6	0.8	1.29
NW8RAA		86.21	0.09	0.16	100.8	0.0	0.03
QKQLDX		85.74	-0.38	-0.63	99.9	-0.9	-1.41
RA43G6	*	85.96	-0.16	-0.27	99.6	-1.1	-1.75
TLBCDT		86.26	0.14	0.23	100.9	0.2	0.24
WKTBEN		85.52	-0.60	-0.99	99.9	-0.9	-1.38
WMD8WM		85.65	-0.47	-0.78	100.8	0.0	-0.05
WZFZ24	X	14.44	-71.68	-119.12	16.8	-84.0	-128.33
YPUK3U		86.70	0.58	0.97	101.3	0.5	0.72

Summary Statistics

	Sample GW19	Sample GW20
Grand Means	86.120 g/sq m	100.79 g/sq m
SD Btwn Labs	0.602 g/sq m	0.65 g/sq m

Statistics based on 31 of 32 reporting participants

WZFZ24 (X) - Extreme data.

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

Analysis Notes:

MXMW98 - Data appears to be transposed between samples. Data Switched by CTS.

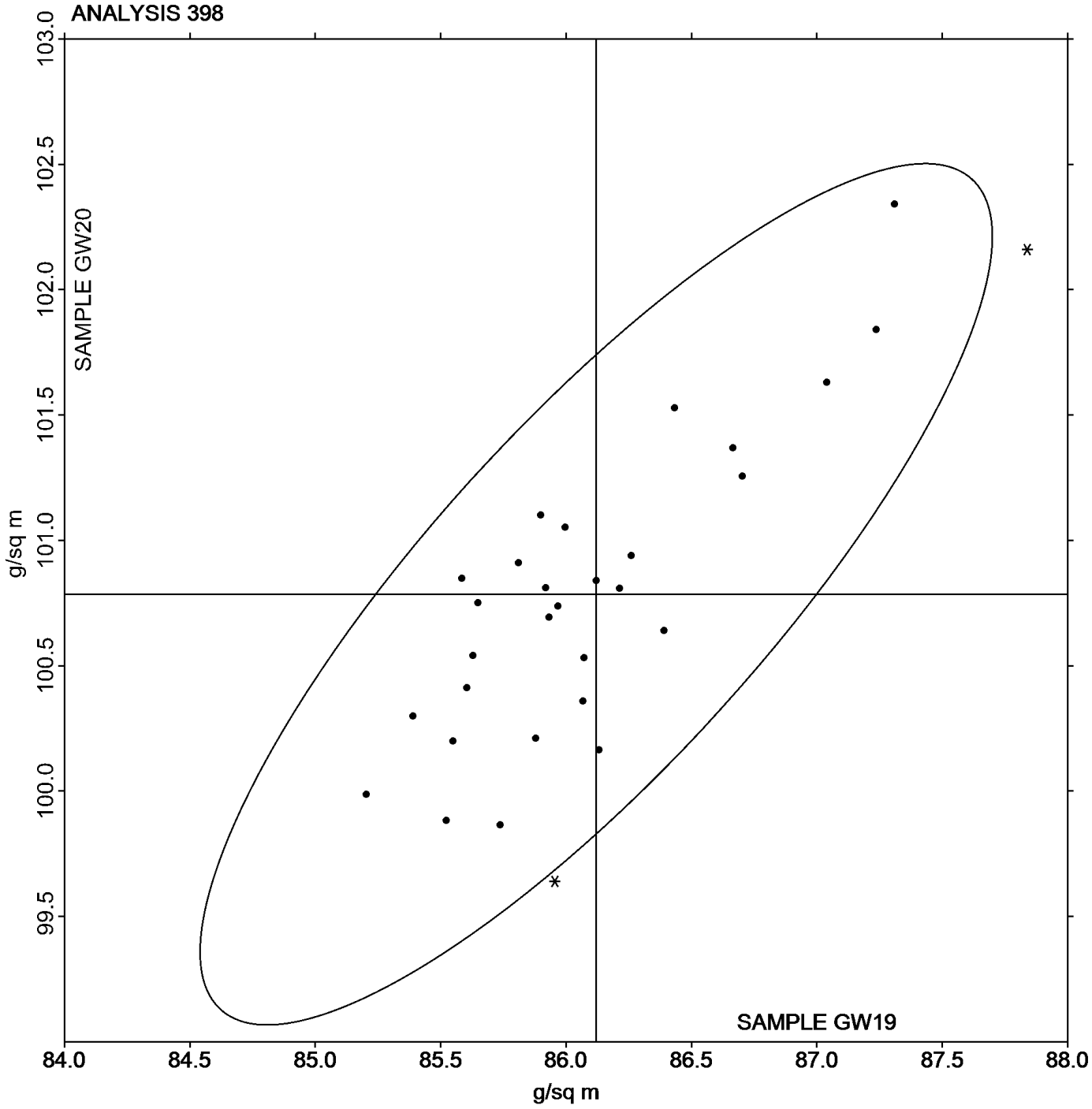
Paper & Paperboard Interlaboratory Testing Program

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW19** = 86.120 g/sq m

Grand Mean Sample **GW20** = 100.79 g/sq m



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

WebCode	Data Flag	Sample GX19 Lab Mean	Sample GX19 Diff from Grand Mean	Sample GX19 CPV	Sample GX20 Lab Mean	Sample GX20 Diff from Grand Mean	Sample GX20 CPV
2KG4FB		47.47	9.60	0.79	49.14	10.50	0.77
4EZNB4	X	90.50	52.63	4.31	79.58	40.94	3.00
6EY4B8		26.30	-11.57	-0.95	26.50	-12.14	-0.89
6YH777		53.20	15.33	1.26	49.70	11.06	0.81
72LH7E		44.70	6.83	0.56	39.30	0.66	0.05
7MKNXQ		31.66	-6.21	-0.51	36.86	-1.78	-0.13
9HL4TX		25.73	-12.14	-1.00	25.57	-13.07	-0.96
CW9PH9		44.76	6.89	0.56	44.60	5.96	0.44
EMFZ66		27.95	-9.92	-0.81	25.28	-13.36	-0.98
EVMT4E		22.93	-14.94	-1.22	21.01	-17.63	-1.29
GNZMJC		40.35	2.48	0.20	49.59	10.95	0.80
GTBT4P		22.41	-15.46	-1.27	23.37	-15.27	-1.12
HFLBPC		27.38	-10.49	-0.86	37.97	-0.67	-0.05
HQYHH7		51.72	13.85	1.13	53.60	14.96	1.09
KYABUD		37.57	-0.30	-0.02	33.90	-4.74	-0.35
NLRVF4		46.90	9.03	0.74	55.44	16.80	1.23
RZEJTX		31.63	-6.24	-0.51	37.52	-1.12	-0.08
TWCXMD		45.50	7.63	0.63	48.40	9.76	0.71
UEC3R2		28.70	-9.17	-0.75	24.96	-13.68	-1.00
V4R4MG		35.71	-2.16	-0.18	38.24	-0.40	-0.03
VKWC2J		23.53	-14.34	-1.18	19.56	-19.08	-1.40
WMD8WM		46.50	8.63	0.71	44.10	5.46	0.40
X9CVY3		38.19	0.32	0.03	35.11	-3.53	-0.26
XA32BM		34.63	-3.24	-0.27	33.04	-5.60	-0.41
XMDRWV	*	75.31	37.44	3.07	80.61	41.97	3.07
XQNPHW		36.09	-1.78	-0.15	32.62	-6.02	-0.44

Summary Statistics

	Sample GX19	Sample GX20
Grand Means	37.873 Seconds	38.640 Seconds
SD Btwn Labs	12.201 Seconds	13.663 Seconds

Statistics based on 25 of 26 reporting participants

Comments on assigned Data Flags for Test #399

4EZNB4 (X) - Systematic error (data for both samples 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 **GX19** = 37.873 Seconds

Grand Mean Sample **GX20** = 38.640 Seconds