Collaborative Testing Services, Inc.

Paper & PaperboardTesting Program

Summary Report #278G-October 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:

Collaborative Testing Services, Inc.
21331 Gentry Drive
Sterling, Virginia 20166 USA
+1-571-434-1925
FAX #: +1-571-434-1937
paper@cts-interlab.com

Office Hours: 8:00 a.m. - 4:30 p.m. ET

Key for Web Summary Reports (Page 1 of 2)

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

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

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

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

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

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

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

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

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

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

Key for Web Summary Reports (Page 2 of 2)

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

Common Problems Highlighted in Footnotes

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

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

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

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

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

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	
2U7UU7		GA23	93.90	-0.81	3.45	1.09	0.07	0.21	1.11	EH
		GA24	94.99	-0.74	3.67					
33QDCN		GA23	92.49	-0.88	3.38	1.36	0.07	0.07	1.36	EH
		GA24	93.84	-0.81	3.45					
3QWT4J		GA23	94.17	-0.79	3.39	1.03	0.07	0.07	1.03	TC
		GA24	95.20	-0.72	3.46					
AFCUDF		GA23	92.73	-0.70	3.28	1.42	0.06	0.07	1.42	MK
		GA24	94.15	-0.64	3.35					
ALJURY		GA23	91.55	-0.17	2.86	1.46	0.13	0.21	1.48	TS
		GA24	93.01	-0.04	3.07					
ANMPC3		GA23	92.52	-0.76	3.15	1.35	0.08	0.17	1.36	TC
		GA24	93.87	-0.68	3.32					
APH8D4		GA23	91.88	-0.22	3.16	1.64	-0.03	0.01	1.64	TS
		GA24	93.52	-0.25	3.17					
BJKUMC		GA23	92.37	-0.91	3.44	1.36	0.10	0.09	1.37	LS
		GA24	93.73	-0.82	3.53					
CGGWXP		GA23	91.71	-0.79	2.70	2.00	-0.05	0.22	2.01	NE
		GA24	93.71	-0.84	2.92					
CJYJN4		GA23	92.13	-0.68	2.79	1.99	0.04	0.46	2.04	XX
		GA24	94.12	-0.63	3.25					
CM4KTU		GA23	91.64	-0.51	2.87	1.33	0.06	0.12	1.33	TS
		GA24	92.97	-0.45	2.99					
DVD97T		GA23	92.63	-0.90	3.99	1.16	0.12	-0.44	1.25	LA
		GA24	93.79	-0.78	3.55					
EMHTUU		GA23	91.04	-0.82	1.43	2.60	0.27	1.41	2.97	HH
		GA24	93.65	-0.56	2.84					
FXFT7Y		GA23	92.53	-0.75	3.63	1.54	0.05	0.11	1.54	HH
		GA24	94.07	-0.70	3.74					
GQNMJ3		GA23	94.06	-0.66	3.47	0.83	-0.07	-0.03	0.84	LS
		GA24	94.90	-0.73	3.44					
GX9TA9		GA23	91.27	0.14	2.83	1.52	0.02	0.08	1.53	TS
		GA24	92.79	0.16	2.91					
HCPG9R		GA23	92.69	-0.16	3.22	0.99	-0.03	-0.10	1.00	TM
		GA24	93.68	-0.19	3.12					

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
HVYZ22		GA23	91.88	-1.01	2.83	2.10	0.08	0.74	2.23	TC
		GA24	93.98	-0.93	3.57					
K4KN48		GA23	94.23	0.45	3.03	0.54	-0.35	-0.04	0.65	HE
		GA24	94.77	0.09	2.99					
K9V2K7		GA23	92.53	-0.15	2.83	2.36	-0.09	0.18	2.36	TS
		GA24	94.88	-0.24	3.01					
KHPEWM		GA23	91.77	-0.12	2.92	1.29	0.07	0.07	1.30	TS
		GA24	93.06	-0.04	2.99					
NPRVVH		GA23	93.23	-0.70	2.65	1.69	0.06	0.18	1.70	XS
		GA24	94.91	-0.64	2.83					
QYR86G		GA23	93.40	-0.67	3.45	1.11	0.06	-0.09	1.11	HE
		GA24	94.50	-0.61	3.36					
T743XF		GA23	91.42	-1.46	1.40	2.12	0.21	1.55	2.63	HH
		GA24	93.54	-1.24	2.94					

Summary Statistics

Grand Means							
GA23	92.490	-0.585	3.007	1.495	0.041	0.222	1.553
GA24	93.985	-0.544	3.229				
Stnd Dev Btwn Labs							
GA23	0.936	0.418	0.594	0.496	0.116	0.441	0.567
GA24	0.692	0.350	0.279				

Statistics based on 24 of 24 reporting participants

Instrument Code List as Reported by the Labs

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

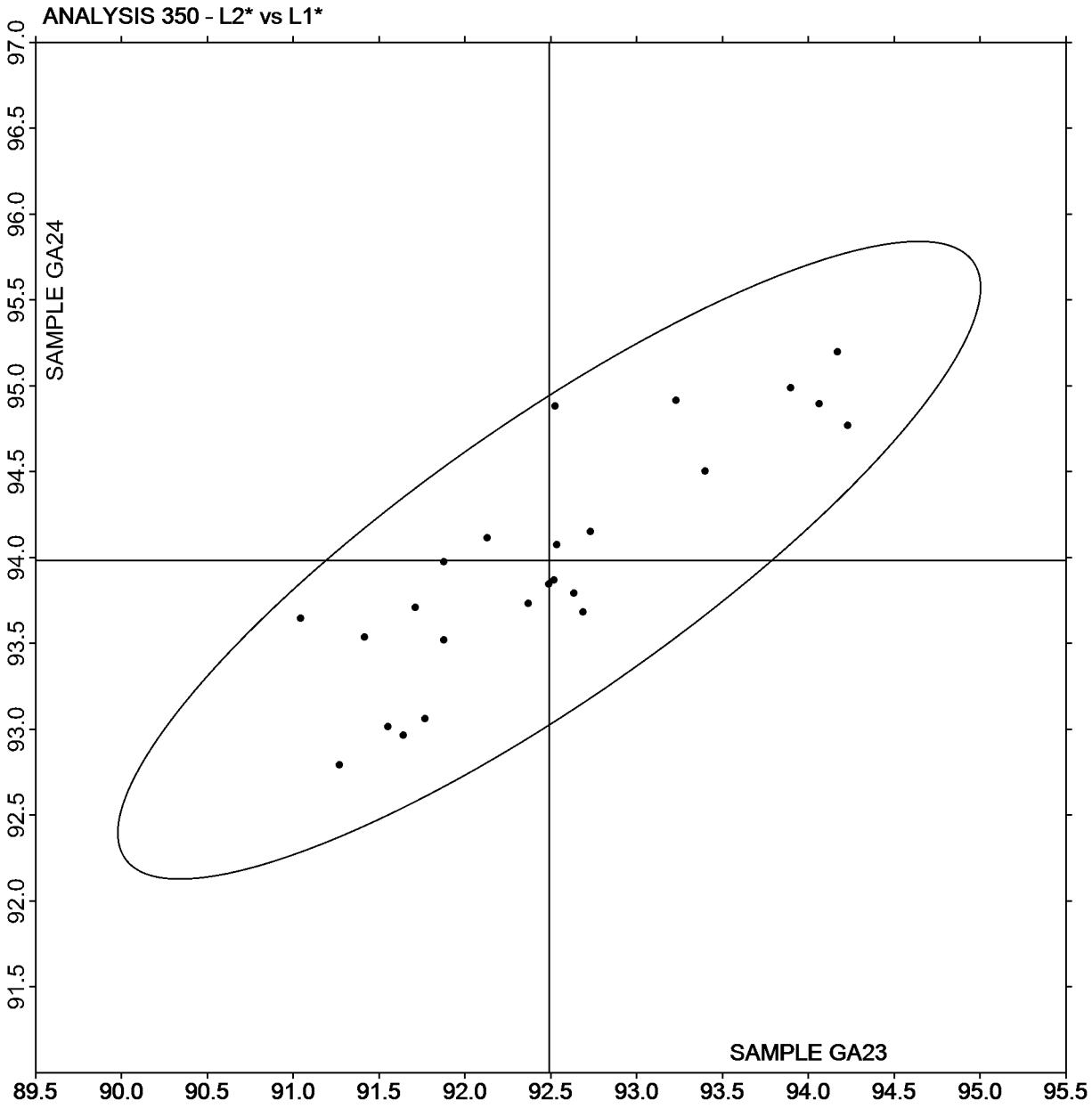
TAPPI-CTS Interlaboratory Testing Program

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 GA24 v L values GA23



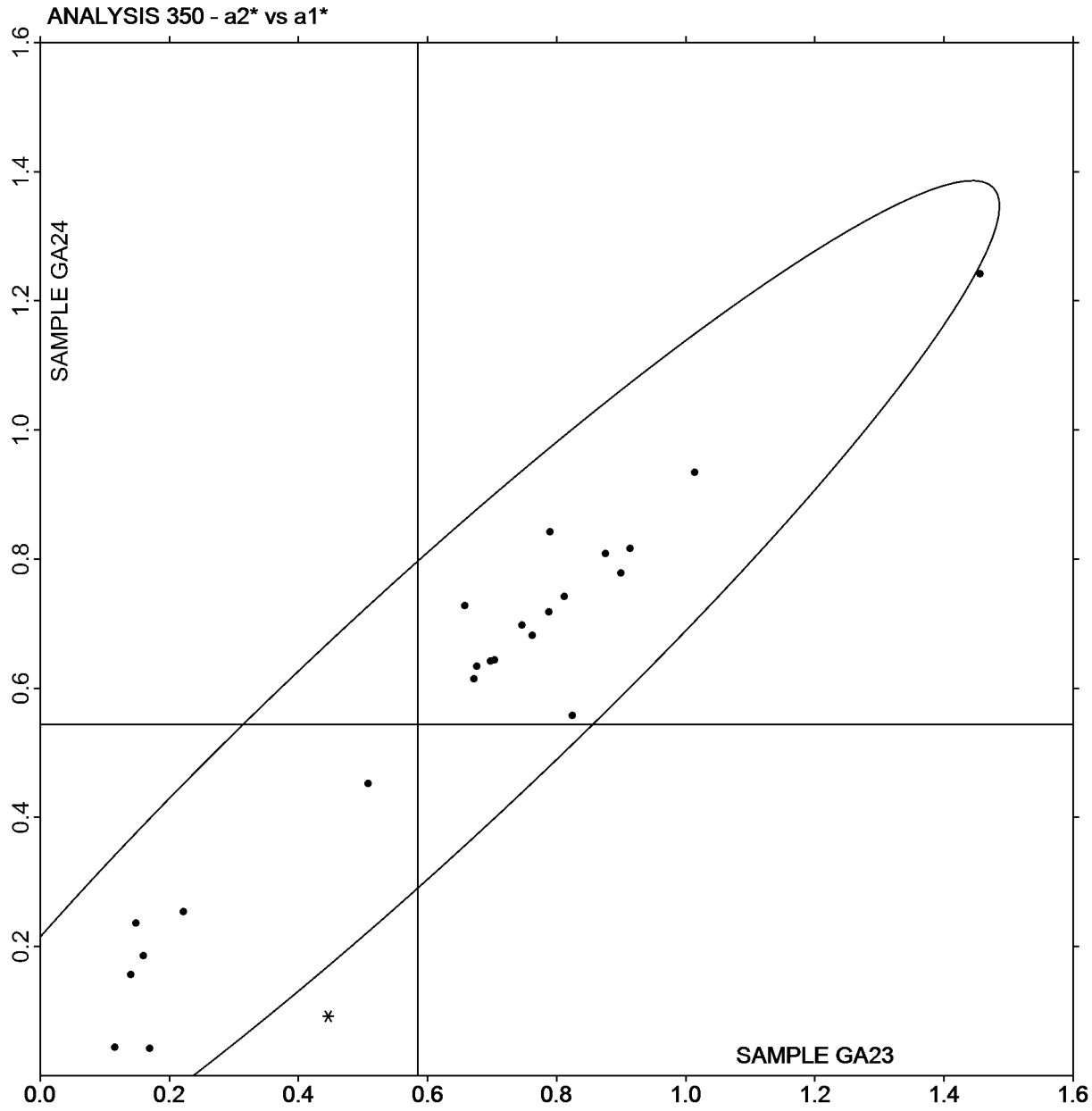
TAPPI-CTS Interlaboratory Testing Program

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 a values GA24 v a values GA23

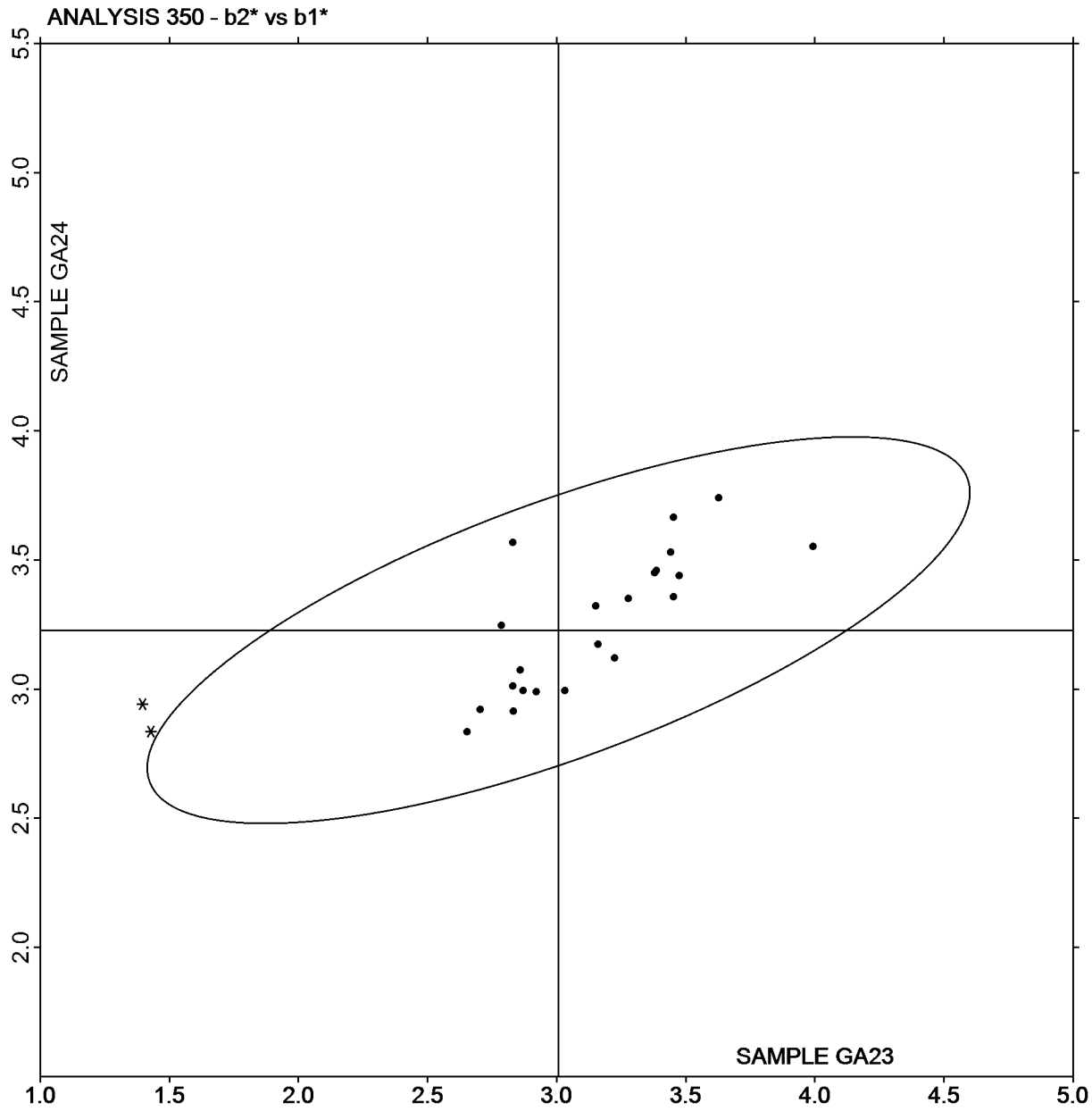


TAPPI-CTS Interlaboratory Testing Program

Analysis 350

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

Plot of b values GA24 v b values GA23



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**

34MXFA	GA23	94.20	-0.80	3.30	1.00	0.10	0.12	1.01		EF
	GA24	95.20	-0.70	3.42						
78RKDB	GA23	93.55	-0.61	3.94	1.03	0.07	0.08	1.04		NG
	GA24	94.58	-0.54	4.02						
7RBNXE	GA23	94.05	-0.73	3.57	1.01	0.06	0.01	1.01		EH
	GA24	95.05	-0.67	3.59						
9CXW9E	GA23	94.04	-0.72	3.67	0.93	0.03	0.26	0.97		LS
	GA24	94.97	-0.69	3.93						
9XENP3	GA23	94.13	-0.73	3.61	1.01	0.06	-0.16	1.03		EH
	GA24	95.14	-0.67	3.45						
DUHTTW	GA23	94.09	-0.84	3.63	1.04	0.10	0.11	1.05		TC
	GA24	95.13	-0.74	3.74						
ELMART	GA23	94.31	-0.71	3.53	1.11	0.12	0.18	1.13		NF
	GA24	95.42	-0.60	3.71						
EXA4Y8	GA23	92.32	-0.65	3.30	1.47	0.10	0.17	1.48		XX
	GA24	93.79	-0.55	3.47						
GQNMJ3	GA23	93.94	-0.76	3.39	0.99	0.02	0.10	1.00		LS
	GA24	94.93	-0.74	3.49						
H2ZCWY	GA23	94.20	-0.72	3.77	1.03	0.09	0.08	1.04		NG
	GA24	95.23	-0.64	3.84						
HX3TVZ	GA23	95.10	-0.59	3.44	0.02	-0.01	0.00	0.02	X	HV
	GA24	95.12	-0.59	3.43						
L8YFHL	GA23	94.01	-0.69	3.74	1.08	0.08	0.08	1.09		NG
	GA24	95.09	-0.61	3.82						
LZYLA8	GA23	92.59	-0.82	3.38	1.18	0.08	0.10	1.19		TC
	GA24	93.78	-0.74	3.48						
NMMURQ X	GA23	90.45	-0.18	-4.02	2.96	-0.54	7.31	7.91	X	XX
	GA24	93.40	-0.72	3.30						
NMPXKP	GA23	92.55	-0.57	3.45	1.57	-0.02	0.13	1.57		XM
	GA24	94.12	-0.59	3.58						
QYR86G	GA23	93.57	-0.65	3.42	0.95	0.02	0.10	0.96		HE
	GA24	94.52	-0.63	3.52						
UW9MLG	GA23	94.07	-0.79	3.60	1.05	0.08	0.06	1.05		TC
	GA24	95.12	-0.71	3.66						
W78W7C	GA23	92.68	-0.79	3.15	1.42	0.12	0.16	1.43		HE
	GA24	94.10	-0.68	3.31						

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**

XHUAEK	GA23	94.52	-0.75	3.76	0.82	0.07	-0.09	0.83	HT
	GA24	95.34	-0.68	3.67					
YKZU3K	GA23	91.39	-0.06	2.92	2.18	-0.61	0.29	2.29 X	TC
	GA24	93.57	-0.67	3.21					
ZZBVCF	GA23	95.12	-0.52	3.18	0.98	0.07	0.06	0.99	XP
	GA24	96.11	-0.45	3.24					

Summary Statistics

Grand Means							
GA23	93.566	-0.652	3.487	1.094	0.031	0.092	1.108
GA24	94.748	-0.648	3.579				
Stnd Dev Btwn Labs							
GA23	1.172	0.197	0.245	0.398	0.155	0.102	0.412
GA24	0.703	0.076	0.221				

Statistics based on 20 of 21 reporting participants

Comments assigned on Data Flags for Test #351

NMMURQ (X) - High L values for Sample GA23. Extreme data for b values, for Sample GA23. Large delta L, delta a, delta b, and delta E values.

Instrument Code List as Reported by the Labs

(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

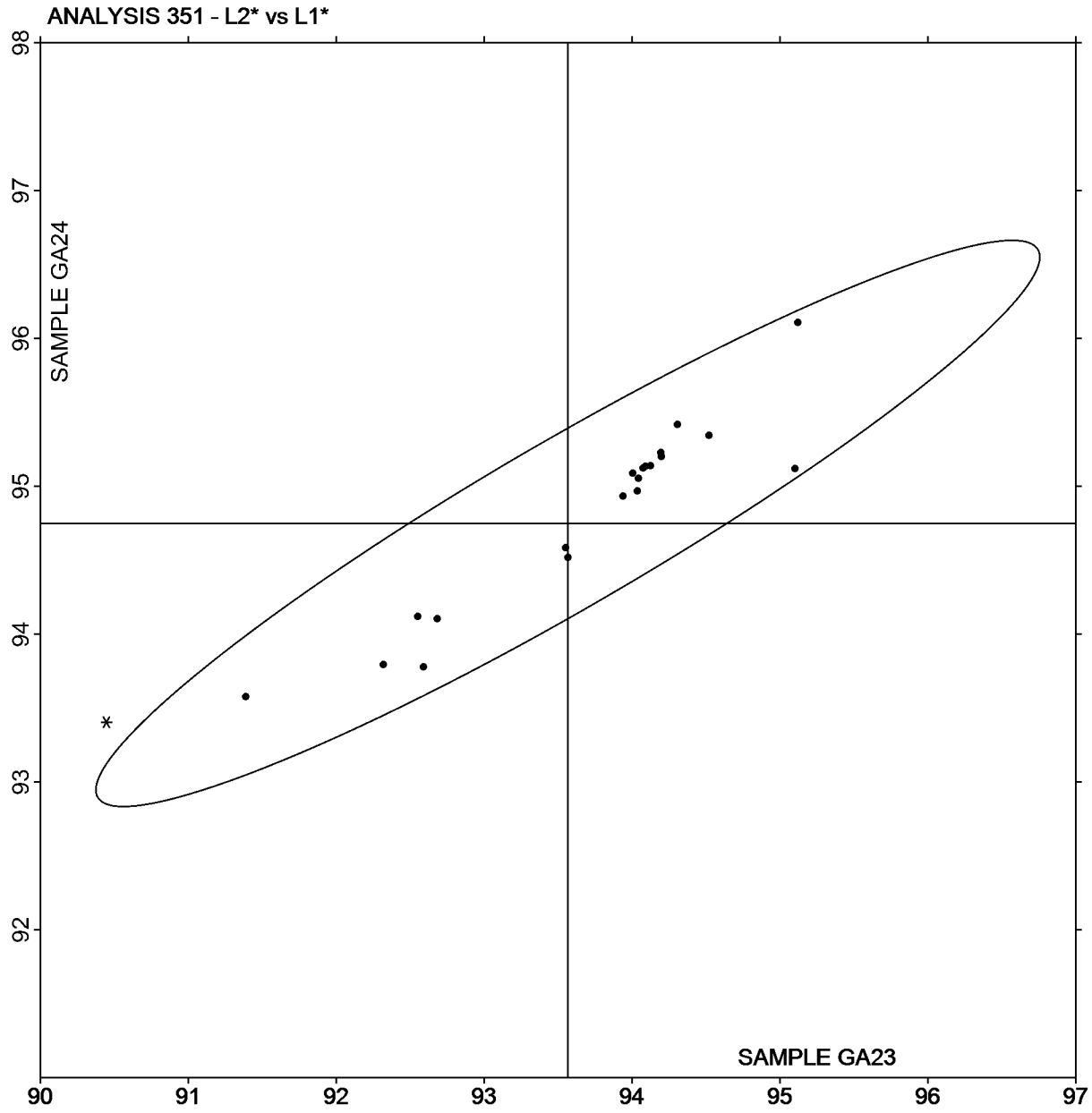
TAPPI-CTS Interlaboratory Testing Program

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 GA24 v L values GA23



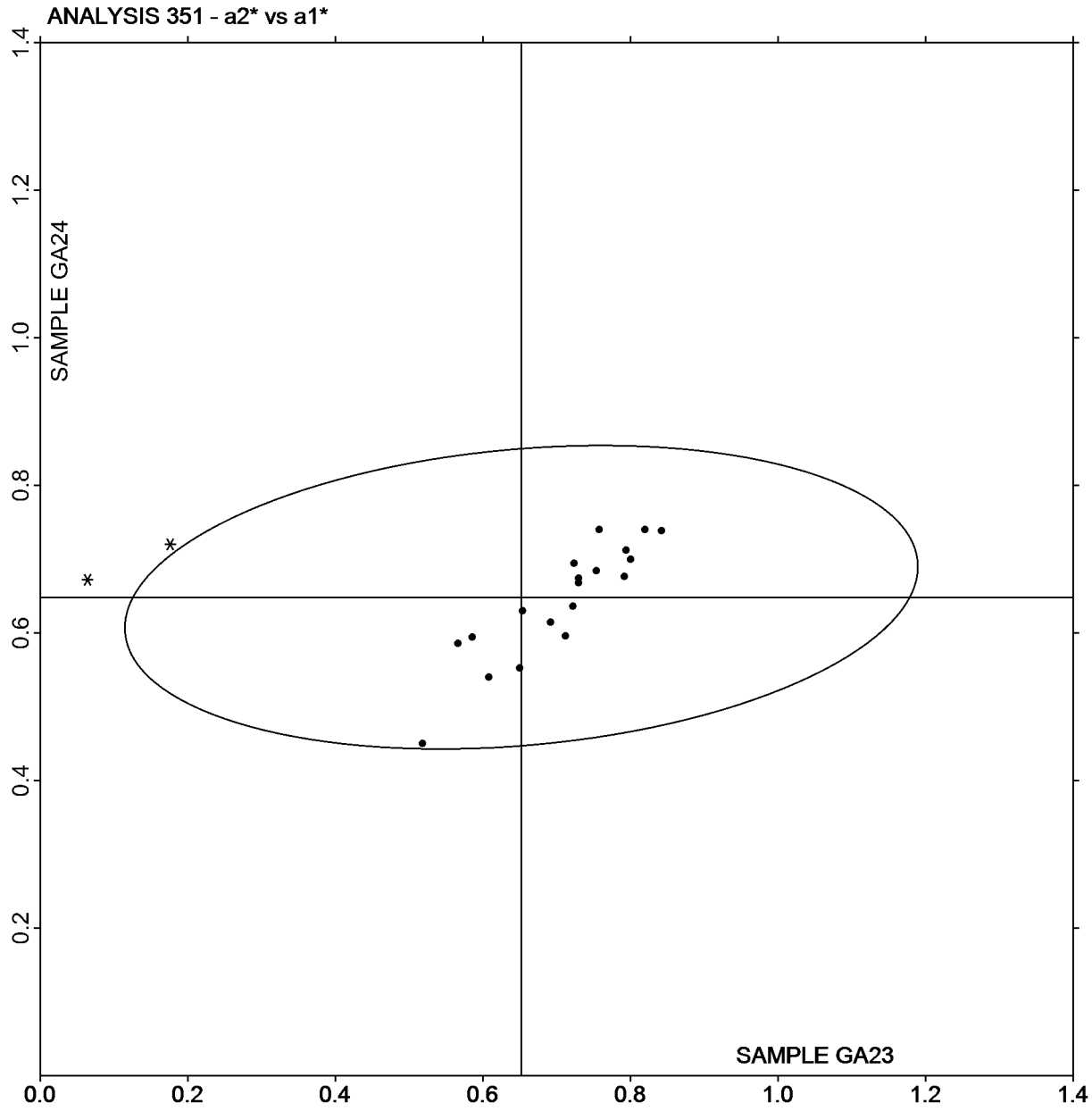
TAPPI-CTS Interlaboratory Testing Program

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 GA24 v a values GA23

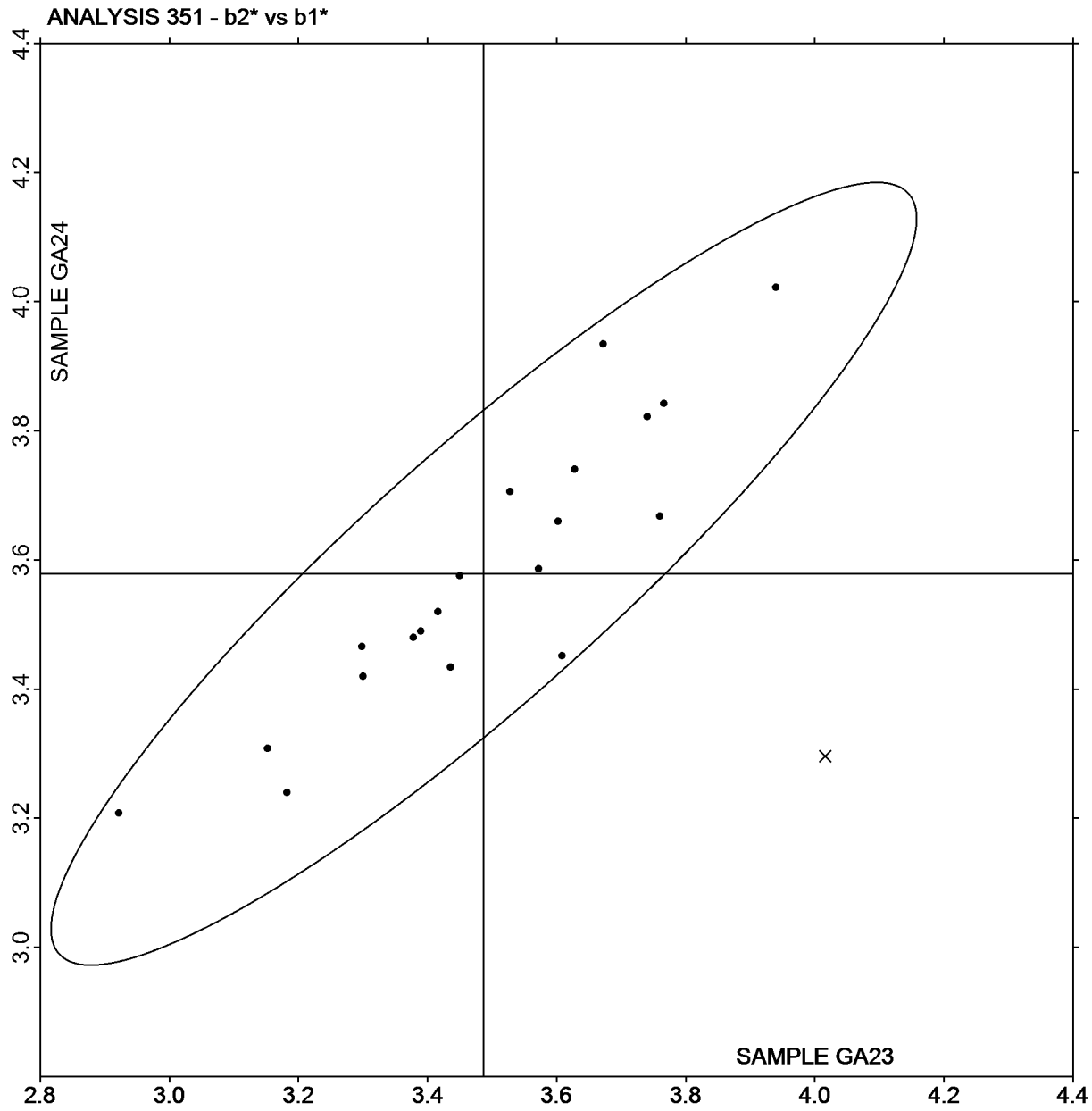


TAPPI-CTS Interlaboratory Testing Program

Analysis 351

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

Plot of b values GA24 v b values GA23



Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

WebCode	Data Flag	Sample GV23 Lab Mean	Sample GV23 Diff from Grand Mean	Sample GV23 CPV	Sample GV24 Lab Mean	Sample GV24 Diff from Grand Mean	Sample GV24 CPV	Instr Code
2U7UU7		3.772	-0.021	-0.28	4.543	-0.042	-0.53	MT
2VC4GN		3.640	-0.153	-2.03	4.440	-0.145	-1.84	TM
2YWWMP		3.801	0.008	0.10	4.654	0.069	0.87	EM
3DDJK9		3.810	0.017	0.22	4.630	0.045	0.57	TM
3QWT4J		3.843	0.050	0.66	4.564	-0.021	-0.27	LA
44G49A		3.783	-0.010	-0.13	4.579	-0.007	-0.08	LW
4G4WGA		3.842	0.049	0.65	4.675	0.090	1.14	XX
4QQXXJ		3.909	0.116	1.53	4.703	0.117	1.49	LW
6UUWZP		3.802	0.009	0.12	4.542	-0.043	-0.55	EM
78RKDB		3.861	0.068	0.90	4.660	0.075	0.95	XX
7KHPP2		3.724	-0.069	-0.91	4.543	-0.042	-0.54	EM
93MVMD		3.701	-0.092	-1.22	4.516	-0.070	-0.88	TA
9ZL7NY	*	3.566	-0.227	-3.00	4.395	-0.190	-2.42	EM
AEXKZA		3.857	0.064	0.84	4.619	0.034	0.43	EM
AFCUDF	*	3.962	0.169	2.23	4.804	0.219	2.77	PP
AFDZX4		3.911	0.118	1.56	4.701	0.115	1.46	LW
ALJURY		3.647	-0.146	-1.93	4.444	-0.141	-1.79	LA
ANMPC3		3.778	-0.015	-0.20	4.581	-0.004	-0.06	TA
APH8D4		3.804	0.011	0.14	4.575	-0.010	-0.13	EM
ARPPCY		3.809	0.016	0.21	4.572	-0.013	-0.17	EM
BJKUMC		3.752	-0.041	-0.54	4.567	-0.019	-0.24	LW
CETPU9	*	3.590	-0.203	-2.69	4.400	-0.185	-2.35	XX
CJYJN4	*	3.951	0.158	2.09	4.790	0.205	2.60	XX
CM4KTU		3.739	-0.054	-0.71	4.576	-0.009	-0.12	TM
D3VHUP		3.780	-0.014	-0.18	4.560	-0.026	-0.32	LW
D7BAHX		3.784	-0.009	-0.12	4.589	0.004	0.05	LA
D7F2ND		3.806	0.013	0.17	4.604	0.019	0.23	LW
DKWNLW		3.845	0.052	0.68	4.575	-0.011	-0.14	EM
DN9W73		3.772	-0.021	-0.28	4.556	-0.029	-0.37	TA
DUHTTW		3.717	-0.077	-1.01	4.504	-0.082	-1.04	LW
DVD97T		3.822	0.029	0.38	4.604	0.019	0.23	LA
EJY79E		3.768	-0.025	-0.33	4.586	0.001	0.01	LW
ELMART		3.870	0.077	1.01	4.671	0.086	1.09	TM
ETXT9Y	*	3.841	0.048	0.63	4.535	-0.050	-0.64	XX
FBZ9AX		3.885	0.092	1.21	4.706	0.121	1.53	LW
FWEKW7		3.840	0.047	0.62	4.605	0.019	0.24	MS
GLGFLR		3.804	0.011	0.14	4.571	-0.015	-0.19	LW
GXAYZX		3.751	-0.042	-0.56	4.580	-0.005	-0.07	PP
H2ZCWY		3.831	0.038	0.50	4.633	0.048	0.60	XX
HCPG9R		3.772	-0.021	-0.28	4.603	0.018	0.22	TA
HX3TVZ		3.830	0.037	0.49	4.643	0.058	0.73	EM
HYXBW2		3.761	-0.032	-0.42	4.510	-0.075	-0.96	PP
JJ3R2J		3.789	-0.004	-0.05	4.599	0.014	0.17	PP

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

WebCode	Data Flag	Sample GV23 Lab Mean	Sample GV23 Diff from Grand Mean	Sample GV23 CPV	Sample GV24 Lab Mean	Sample GV24 Diff from Grand Mean	Sample GV24 CPV	Instr Code
JP3VK3		3.896	0.103	1.36	4.711	0.125	1.59	LW
KHPEWM		3.715	-0.078	-1.03	4.435	-0.150	-1.91	TM
L8YFHL		3.905	0.112	1.48	4.638	0.052	0.66	LW
LA7VPR		3.840	0.047	0.62	4.670	0.085	1.07	LW
LHZ9Z7		3.753	-0.040	-0.53	4.551	-0.034	-0.44	TM
LUD2FM		3.748	-0.045	-0.60	4.531	-0.054	-0.69	TM
LZYLA8		3.757	-0.036	-0.48	4.560	-0.025	-0.32	TA
MVXWDR		3.751	-0.042	-0.56	4.521	-0.064	-0.82	EM
NAJ7HG		3.770	-0.023	-0.31	4.545	-0.040	-0.51	PP
NL7XZR		3.750	-0.043	-0.57	4.537	-0.048	-0.61	TA
NMPXKP	*	3.854	0.061	0.81	4.555	-0.030	-0.38	LW
NNKFMQ	X	3.914	0.120	1.59	4.698	0.112	1.42	LW
NPRVVH		3.670	-0.123	-1.63	4.490	-0.095	-1.21	TM
PGWFJJ		3.760	-0.033	-0.44	4.501	-0.085	-1.07	LW
QDAGNT		3.786	-0.007	-0.10	4.602	0.016	0.20	FR
QLZ3TQ		3.860	0.067	0.88	4.615	0.030	0.38	XX
R4WNRA		3.768	-0.025	-0.34	4.624	0.039	0.49	LW
TKKMCV		3.813	0.020	0.27	4.567	-0.018	-0.23	LW
UHA34K	X	4.276	0.483	6.39	4.522	-0.063	-0.80	EM
VARNGE		3.809	0.016	0.21	4.612	0.027	0.34	TM
VF4DHB		3.778	-0.015	-0.20	4.570	-0.015	-0.19	TM
VMFQZ7		3.700	-0.093	-1.23	4.550	-0.035	-0.45	TM
W78W7C	X	3.836	0.043	0.56	4.613	0.028	0.35	TM
XHUAEK		3.849	0.056	0.74	4.627	0.042	0.53	EM
ZAXU3K		3.858	0.065	0.86	4.662	0.077	0.97	TM
ZZBVCF		3.835	0.042	0.55	4.660	0.075	0.95	TM

Summary Statistics

	Sample GV23	Sample GV24
Grand Means	3.7931 mils	4.5854 mils
SD Btwn Labs	0.0756 mils	0.0788 mils

Statistics based on 66 of 69 reporting participants

Comments on assigned Data Flags for Test #360

NNKFMQ (X) - Data appears to be transposed between Analysis #360 and Analysis #361. Data switched by CTS.

UHA34K (X) - Extreme data for Sample GV23.

W78W7C (X) - Data appear to be off by a factor of 10; data converted by CTS (x.1).

VF4DHB - Data appear to be reported as mm, not micrometers as indicated on datasheet. Units corrected by CTS.

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

Instrument Code List as Reported by the Labs

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

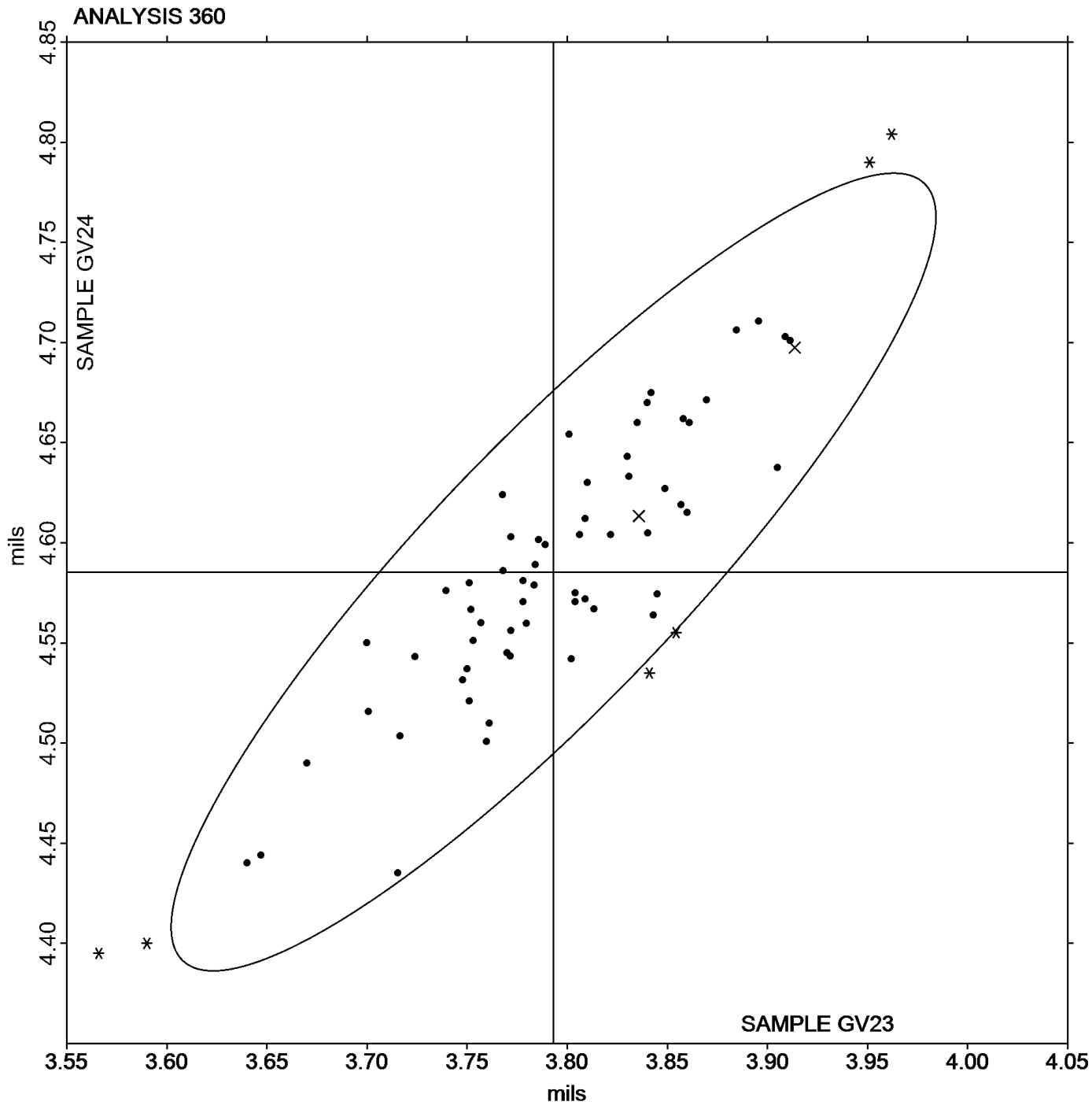
Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

Grand Mean Sample **GV23** = 3.7931 mils

Grand Mean Sample **GV24** = 4.5854 mils



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

WebCode	Data Flag	Sample GY23 Lab Mean	Sample GY23 Diff from Grand Mean	Sample GY23 CPV	Sample GY24 Lab Mean	Sample GY24 Diff from Grand Mean	Sample GY24 CPV	Instr Code
2VC4GN		13.77	-0.32	-1.88	9.320	-0.201	-1.41	TM
3DDJK9		14.29	0.20	1.18	9.624	0.103	0.73	TM
68BKY9		13.78	-0.31	-1.82	9.280	-0.241	-1.69	LA
68F2W8		14.22	0.13	0.74	9.669	0.149	1.04	XX
77W2BA		14.12	0.02	0.14	9.434	-0.087	-0.61	PP
77XAL2		14.38	0.29	1.68	9.771	0.250	1.76	LA
7RBNXE		14.22	0.13	0.76	9.620	0.099	0.70	LA
9XENP3		14.37	0.28	1.64	9.696	0.175	1.23	EM
AKNDF3		13.87	-0.22	-1.27	9.283	-0.237	-1.67	XX
BTUYZ3		13.91	-0.18	-1.06	9.398	-0.123	-0.87	LA
BX2RTD		14.22	0.13	0.76	9.581	0.060	0.42	TM
CUNNZX		14.26	0.17	1.00	9.600	0.079	0.56	TM
D7F2ND		14.13	0.04	0.25	9.508	-0.013	-0.09	LW
DVD97T		14.25	0.16	0.95	9.543	0.023	0.16	LA
EMHTUU		14.28	0.19	1.12	9.705	0.184	1.30	EM
F77ECW	X	13.48	-0.61	-3.58	8.900	-0.621	-4.37	LA
FCC97R		14.05	-0.04	-0.24	9.480	-0.041	-0.29	TM
FXFT7Y		14.39	0.30	1.75	9.757	0.236	1.66	EM
GQNMJ3	*	14.28	0.18	1.08	9.807	0.286	2.01	TM
JN8CJ2		13.93	-0.16	-0.94	9.450	-0.071	-0.50	TA
K4KN48		14.04	-0.05	-0.28	9.421	-0.099	-0.70	LA
MGYR92		14.12	0.03	0.18	9.583	0.062	0.44	XX
MVXWDR		13.93	-0.16	-0.92	9.410	-0.111	-0.78	EM
NL7XZR		14.00	-0.09	-0.51	9.499	-0.022	-0.15	TA
NM2F2T		13.87	-0.22	-1.30	9.410	-0.111	-0.78	TM
NNKFMQ	X	14.30	0.21	1.25	9.657	0.136	0.96	XX
NZDY4G		13.98	-0.12	-0.68	9.385	-0.136	-0.95	TA
PH2RXQ		14.04	-0.05	-0.29	9.481	-0.040	-0.28	LW
PW4XCV		13.96	-0.13	-0.79	9.396	-0.125	-0.88	TM
QYR86G		14.04	-0.05	-0.29	9.424	-0.097	-0.68	EM
R4WNRA		14.14	0.05	0.28	9.584	0.063	0.44	LW
T743XF		14.16	0.07	0.42	9.699	0.178	1.25	EM
UVZ8FB		14.11	0.02	0.11	9.500	-0.021	-0.15	TA
VMFQZ7		14.07	-0.02	-0.12	9.580	0.059	0.42	TM
VWQTL8		14.04	-0.05	-0.28	9.487	-0.034	-0.24	TM
YBTC6M		13.86	-0.23	-1.35	9.320	-0.201	-1.41	TM
YKZU3K	X	13.67	-0.42	-2.49	9.000	-0.521	-3.66	TA

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

Summary Statistics

	Sample GY23	Sample GY24
Grand Means	14.091 mils	9.5207 mils
SD Btwn Labs	0.170 mils	0.1422 mils

Statistics based on 34 of 37 reporting participants

Comments on assigned Data Flags for Test #361

F77ECW (X) - Systematic error (data for both samples are low).

NNKFMQ (X) - Data appears to be transposed between Analysis #361 and Analysis #360. Data switched by CTS.

YKZU3K (X) - Inconsistent in testing between samples, data for Sample GY24 are low.

K4KN48 - Data appear to be reported as micrometers, not mils as indicated on datasheet. Units corrected by CTS.

Instrument Code List as Reported by the Labs

(EM) - Emveco

(LW) - L & W

(TA) - Thwing-Albert

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

(LA) - L & W Autoline

(PP) - Technidyne Profile/Plus

(TM) - TMI

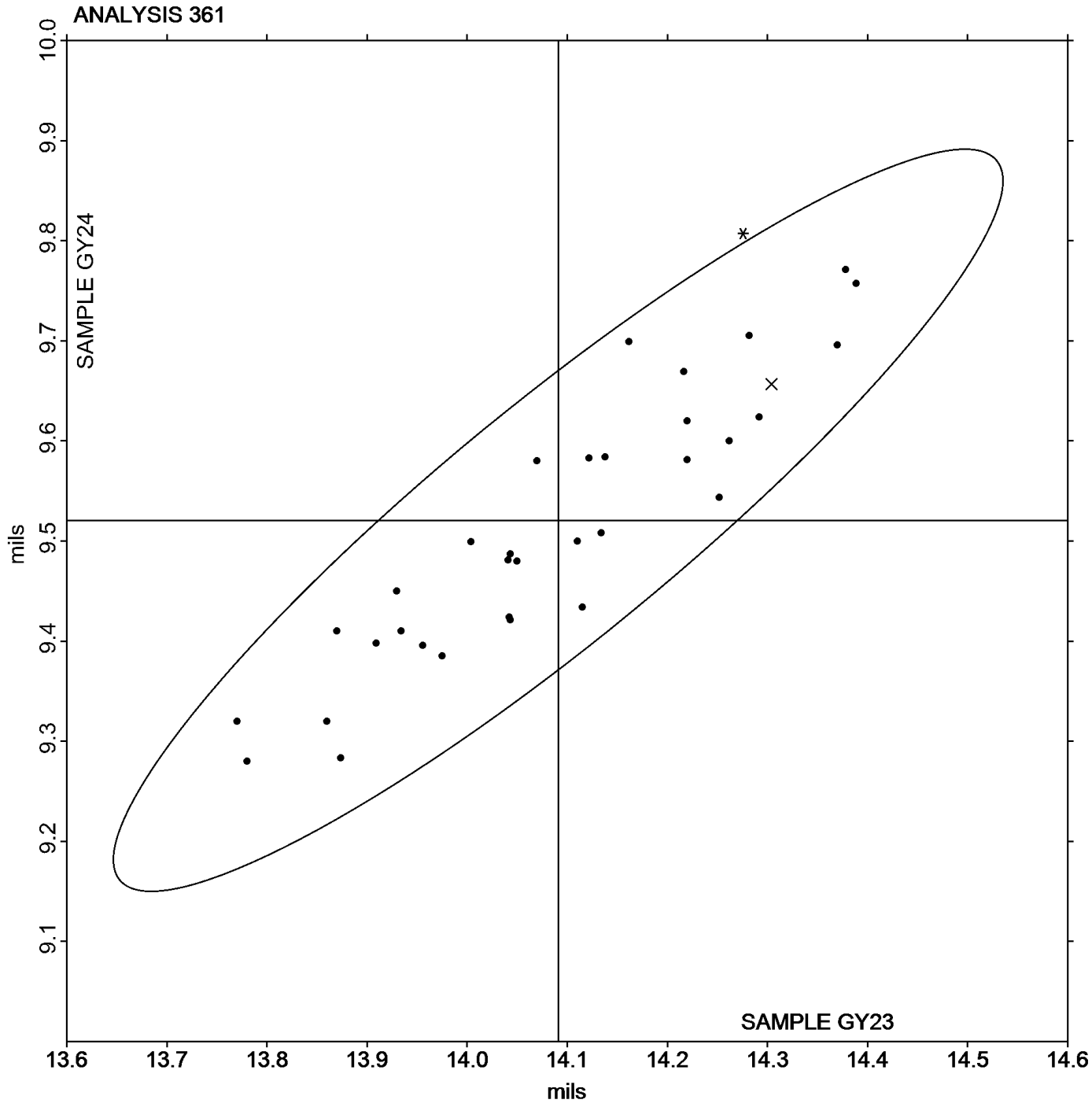
Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample **GY23** = 14.091 mils

Grand Mean Sample **GY24** = 9.5207 mils



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

WebCode	Data Flag	Sample GD23 Lab Mean	Sample GD23 Diff from Grand Mean	Sample GD23 CPV	Sample GD24 Lab Mean	Sample GD24 Diff from Grand Mean	Sample GD24 CPV	Instr Code
2YWWMP		0.5466	0.0044	0.06	0.5648	0.0193	0.31	TM
68BKY9	X	21.1894	20.6472	257.35	20.8758	20.3303	323.30	TA
APH8D4		0.5802	0.0380	0.47	0.5362	-0.0093	-0.15	XX
BTUYZ3		0.4650	-0.0772	-0.96	0.4642	-0.0813	-1.29	TA
DVD97T		0.5692	0.0270	0.34	0.6008	0.0553	0.88	TM
GPY6WA		0.5662	0.0240	0.30	0.5500	0.0045	0.07	IT
L8YFHL		0.5936	0.0514	0.64	0.6186	0.0731	1.16	TM
M9N2PH		0.5996	0.0574	0.72	0.5468	0.0013	0.02	TA
NNKFMQ		0.6000	0.0578	0.72	0.5980	0.0525	0.84	TL
NPRVVH		0.3592	-0.1830	-2.28	0.4298	-0.1157	-1.84	XX

Summary Statistics

	Sample GD23	Sample GD24
Grand Means	0.54218 COF	0.54547 COF
SD Btwn Labs	0.08023 COF	0.06288 COF

Statistics based on 9 of 10 reporting participants

Comments on assigned Data Flags for Test #364

68BKY9 (X) - Extreme data.

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

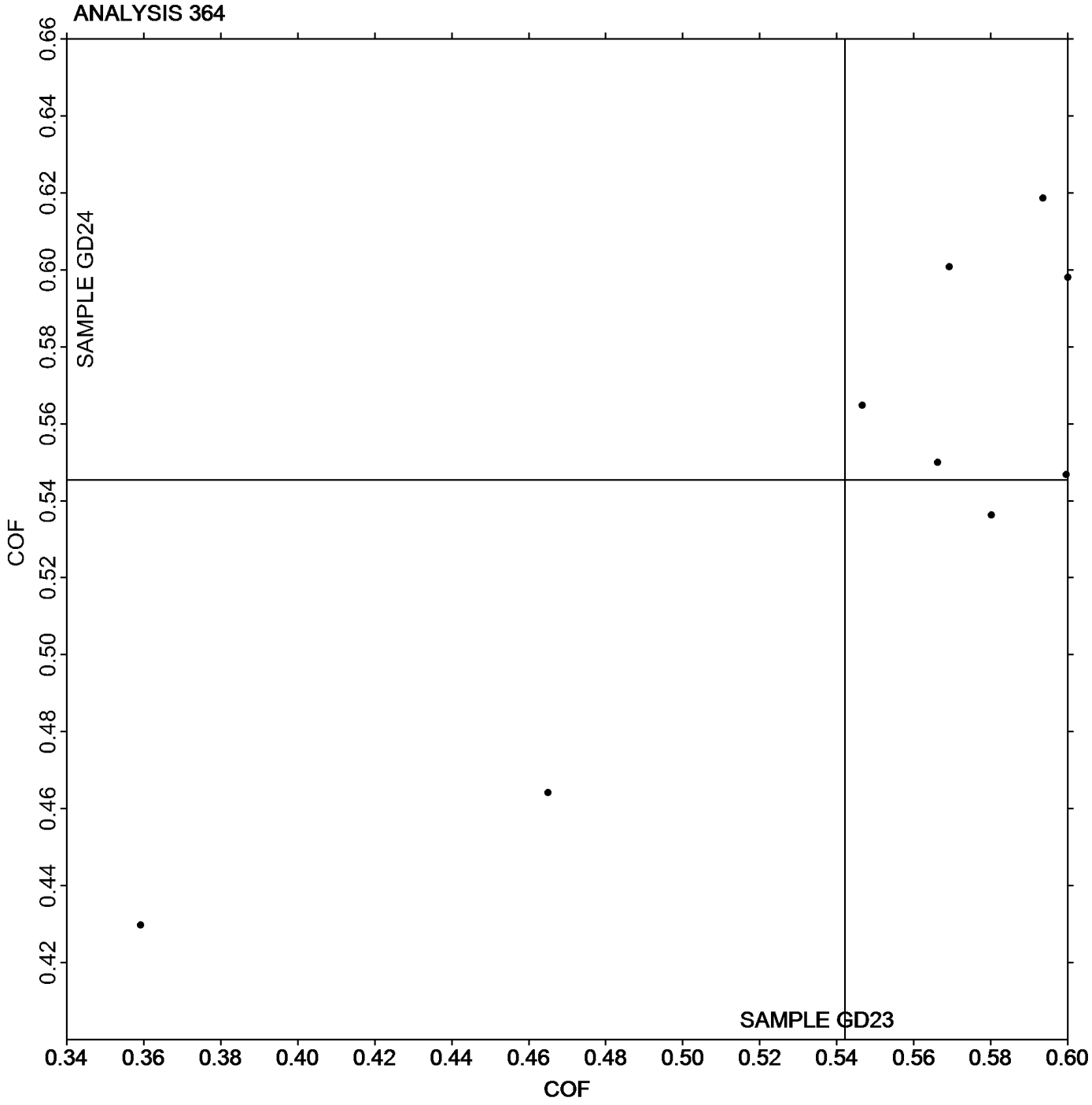
Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD23** = 0.54218 COF

Grand Mean Sample **GD24** = 0.54547 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 GD23 Lab Mean	Sample GD23 Diff from Grand Mean	Sample GD23 CPV	Sample GD24 Lab Mean	Sample GD24 Diff from Grand Mean	Sample GD24 CPV	Instr Code
6UUWZP		0.3488	-0.0600	-0.61	0.3248	-0.0966	-1.08	TA
AMN778		0.3998	-0.0090	-0.09	0.4134	-0.0080	-0.09	TM
BTUYZ3		0.3766	-0.0322	-0.33	0.4276	0.0062	0.07	TA
DVD97T		0.4962	0.0874	0.89	0.5358	0.1144	1.28	TM
DVXH4G		0.4266	0.0178	0.18	0.4316	0.0102	0.11	TM
GPY6WA		0.4378	0.0290	0.29	0.3888	-0.0326	-0.36	IR
GX9TA9		0.5174	0.1086	1.10	0.5426	0.1212	1.35	TA
HCPG9R		0.3308	-0.0780	-0.79	0.3664	-0.0550	-0.61	TA
L8YFHL		0.4664	0.0576	0.58	0.5070	0.0856	0.96	TM
M9N2PH		0.4228	0.0140	0.14	0.4190	-0.0024	-0.03	TA
MKFCTV		0.2260	-0.1828	-1.85	0.2800	-0.1414	-1.58	TA
NNKFMQ		0.5860	0.1772	1.80	0.5380	0.1166	1.30	TL
NPRVVH		0.2788	-0.1300	-1.32	0.3038	-0.1176	-1.31	XX

Summary Statistics

	Sample GD23	Sample GD24
Grand Means	0.40877 COF	0.42145 COF
SD Btwn Labs	0.09858 COF	0.08951 COF

Statistics based on 13 of 13 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

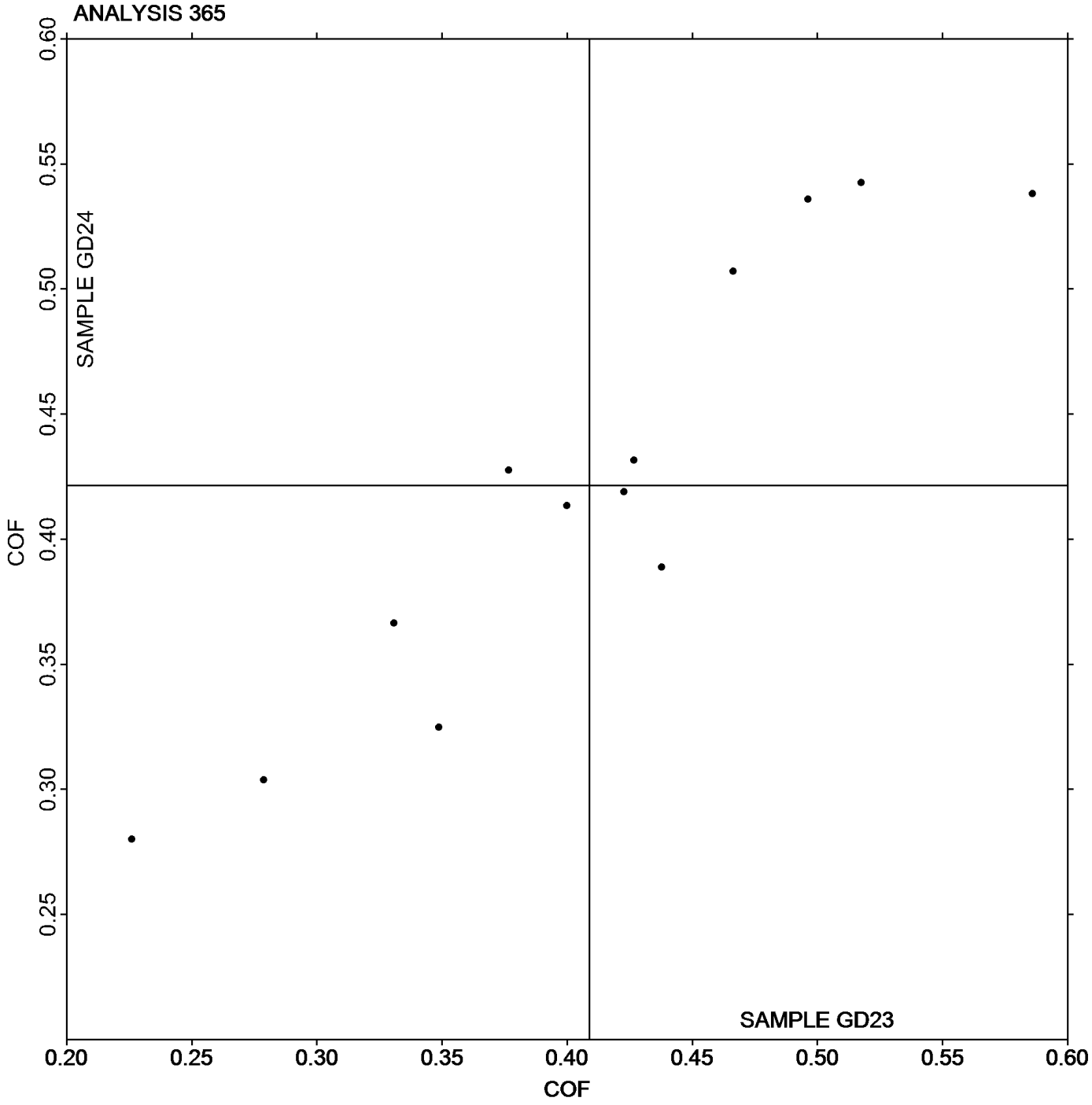
Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD23** = 0.40877 COF

Grand Mean Sample **GD24** = 0.42145 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 GE23 Lab Mean	Sample GE23 Diff from Grand Mean	Sample GE23 CPV	Sample GE24 Lab Mean	Sample GE24 Diff from Grand Mean	Sample GE24 CPV	Instr Code
2U7UU7	X	4.23	-30.05	-12.69	7.38	-11.07	-11.16	RE
2YWWMP		33.23	-1.05	-0.44	17.95	-0.49	-0.50	PP
34MXFA		35.61	1.33	0.56	19.24	0.79	0.80	LP
3DDJK9		35.70	1.42	0.60	17.00	-1.45	-1.46	GA
4G4WGA		38.61	4.33	1.83	18.94	0.49	0.50	XX
4QQXXJ		30.10	-4.18	-1.77	17.22	-1.23	-1.24	LP
68BKY9		31.59	-2.69	-1.13	15.97	-2.48	-2.50	LA
68F2W8		32.58	-1.70	-0.72	16.82	-1.63	-1.64	XX
77W2BA		36.21	1.93	0.82	17.92	-0.53	-0.53	PP
AEXKZA		34.88	0.60	0.25	19.41	0.96	0.97	HG
AKNDF3		36.40	2.12	0.90	18.52	0.07	0.08	LW
ALJURY		34.87	0.59	0.25	18.12	-0.33	-0.33	LA
ANMPC3		31.42	-2.86	-1.21	18.14	-0.31	-0.31	PP
ARPPCY		31.79	-2.49	-1.05	17.38	-1.07	-1.07	GL
BJKUMC		32.69	-1.59	-0.67	18.72	0.27	0.28	LP
BTUYZ3		35.53	1.25	0.53	19.09	0.64	0.65	LA
CETPU9		38.28	4.00	1.69	19.17	0.72	0.73	WG
CJYJN4		35.69	1.41	0.60	19.41	0.96	0.97	XX
CM4KTU		32.74	-1.54	-0.65	17.50	-0.95	-0.95	LP
D7BAHX		32.36	-1.92	-0.81	19.89	1.45	1.46	LA
D7F2ND		33.40	-0.88	-0.37	18.40	-0.05	-0.05	PP
D8BKPE		35.79	1.51	0.64	18.37	-0.08	-0.08	TL
ELMART		29.28	-5.00	-2.11	17.05	-1.40	-1.41	XX
F77ECW		33.20	-1.08	-0.46	19.10	0.65	0.66	LA
FCC97R		36.98	2.70	1.14	18.92	0.47	0.48	TL
FXFT7Y		31.89	-2.39	-1.01	18.77	0.32	0.33	PP
GXAYZX		35.62	1.34	0.56	18.74	0.30	0.30	PP
HX3TVZ		33.90	-0.38	-0.16	18.14	-0.31	-0.31	PP
HYXBW2		35.87	1.59	0.67	18.79	0.34	0.35	HG
JJ3R2J		33.90	-0.38	-0.16	20.19	1.74	1.76	HG
JP3VK3		29.58	-4.70	-1.98	17.61	-0.84	-0.84	LP
KHPEWM	X	146.00	111.72	47.18	133.20	114.75	115.72	LW
LZYLA8		39.12	4.84	2.04	20.38	1.93	1.95	HG
M9N2PH		35.19	0.91	0.38	18.93	0.48	0.49	WG
NAJ7HG		34.57	0.29	0.12	19.34	0.89	0.90	HG
NJ76AM		31.05	-3.23	-1.36	17.44	-1.01	-1.01	LP
NM2F2T		35.99	1.71	0.72	19.25	0.80	0.81	TL
NMPXKP		34.30	0.02	0.01	18.80	0.35	0.36	LW
NNKFMQ		34.74	0.46	0.19	18.67	0.22	0.23	LP
NPRVVH		32.90	-1.38	-0.58	16.10	-2.35	-2.37	GS
PH2RXQ		34.37	0.09	0.04	17.40	-1.05	-1.06	TL
TKKMCV		32.57	-1.71	-0.72	18.91	0.46	0.47	LP
W9UZVP		34.01	-0.27	-0.11	18.01	-0.44	-0.44	TN

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

WebCode	Data Flag	Sample GE23 Lab Mean	Sample GE23 Diff from Grand Mean	Sample GE23 CPV	Sample GE24 Lab Mean	Sample GE24 Diff from Grand Mean	Sample GE24 CPV	Instr Code
X98BNE	X	20.29	-13.99	-5.91	9.82	-8.63	-8.70	TN
XHUAEK		36.60	2.32	0.98	19.42	0.97	0.98	HG
YKZU3K		36.40	2.12	0.89	19.00	0.56	0.56	PP
ZAXU3K		32.45	-1.83	-0.77	18.68	0.23	0.24	HG
ZY3RTP		38.65	4.37	1.85	19.23	0.78	0.79	XX

Summary Statistics

	Sample GE23	Sample GE24
Grand Means	34.280 sec/100 cc	18.446 sec/100 cc
SD Btwn Labs	2.368 sec/100 cc	0.992 sec/100 cc

Statistics based on 45 of 48 reporting participants

Comments on assigned Data Flags for Test #370

2U7UU7 (X) - Extreme data.

KHPEWM (X) - Extreme data.

X98BNE (X) - Extreme data.

Instrument Code List as Reported by the Labs

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

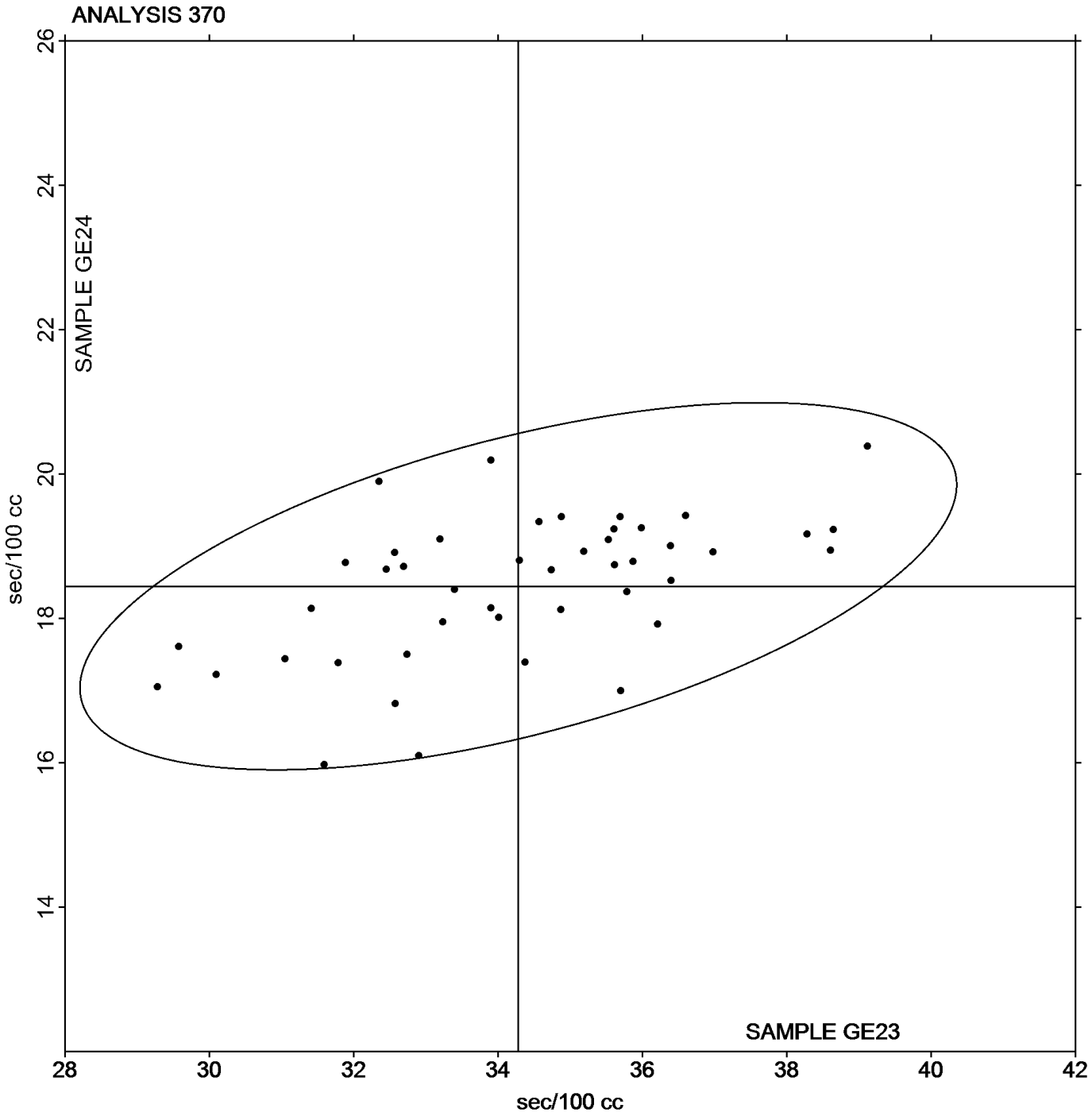
Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

Grand Mean Sample **GE23** = 34.280 sec/100 cc

Grand Mean Sample **GE24** = 18.446 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 GE23 Lab Mean	Sample GE23 Diff from Grand Mean	Sample GE23 CPV	Sample GE24 Lab Mean	Sample GE24 Diff from Grand Mean	Sample GE24 CPV	Instr Code
3DDJK9		82.20	-6.00	-0.85	149.2	2.1	0.24	GA
ANMPC3		90.10	1.90	0.27	141.8	-5.3	-0.60	HM
CJYJN4		81.55	-6.65	-0.95	143.5	-3.6	-0.40	XX
DF27VD		100.10	11.90	1.69	153.4	6.3	0.71	TT
DUHTTW		92.10	3.90	0.56	154.4	7.3	0.82	HM
ETPRED		78.33	-9.87	-1.40	138.3	-8.8	-0.99	LP
FXFT7Y		89.00	0.80	0.11	151.0	3.9	0.44	SH
G4FRUT		83.64	-4.56	-0.65	147.1	0.0	-0.01	PP
GUAHE9		78.85	-9.35	-1.33	145.7	-1.4	-0.16	GA
H9LLPN		77.89	-10.31	-1.47	134.3	-12.8	-1.44	LP
LZYLA8		86.70	-1.50	-0.21	142.0	-5.1	-0.57	TT
MLBUVW		94.40	6.20	0.88	171.0	23.9	2.69	VM
NPRVVH		100.60	12.40	1.77	134.4	-12.7	-1.43	SH
UGFRCC		90.90	2.70	0.38	148.4	1.3	0.15	HM
VARNGE		88.40	0.20	0.03	156.8	9.7	1.09	SH
VF4DHB		93.00	4.80	0.68	144.0	-3.1	-0.35	TT
ZZBVCF		91.60	3.40	0.48	145.4	-1.7	-0.19	TT

Summary Statistics

	Sample GE23	Sample GE24
Grand Means	88.198 Sheffield Units	147.10 Sheffield Units
SD Btwn Labs	7.025 Sheffield Units	8.89 Sheffield Units

Statistics based on 17 of 17 reporting participants

Instrument Code List as Reported by the Labs

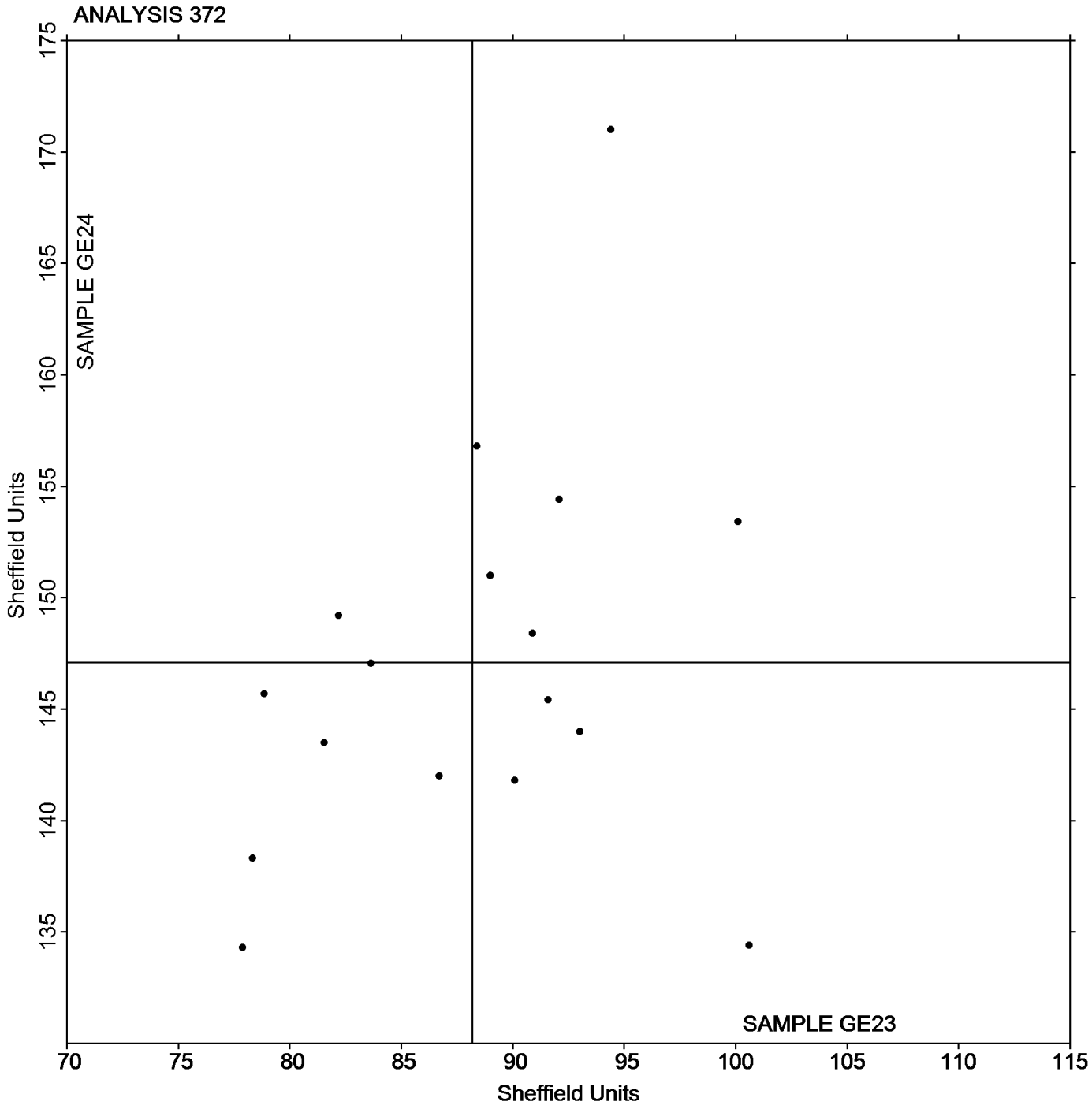
(GA) - Gurley Precision #4340 Automatic Densometer
(HM) - Technidyne - Hagerty Model #538
(LP) - L & W Densometer, Air Permeance
(PP) - Technidyne Profile/Plus
(SH) - Sheffield
(TT) - TMI Monitor/Smoothness II, Model 58-24
(VM) - Valmet PaperLab (was Kajaani/Robotest)
(XX) - Instrument make/model not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

Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

Grand Mean Sample **GE23** = 88.198 Sheffield Units Grand Mean Sample **GE24** = 147.10 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 GJ23 Lab Mean	Sample GJ23 Diff from Grand Mean	Sample GJ23 CPV	Sample GJ24 Lab Mean	Sample GJ24 Diff from Grand Mean	Sample GJ24 CPV
33QDCN		0.9170	-0.0063	-0.06	0.7020	-0.0649	-0.59
4G4WGA	*	1.2210	0.2977	2.69	1.0910	0.3241	2.96
6TE62Z		0.9400	0.0167	0.15	0.8620	0.0951	0.87
77W2BA		0.9570	0.0337	0.30	0.7330	-0.0339	-0.31
77XAL2		0.8240	-0.0993	-0.90	0.6870	-0.0799	-0.73
7KHPP2		1.0280	0.1047	0.95	0.8490	0.0821	0.75
7RBNXE		0.9200	-0.0033	-0.03	0.7600	-0.0069	-0.06
9CXW9E		0.9320	0.0087	0.08	0.7950	0.0281	0.26
9XENP3		0.9200	-0.0033	-0.03	0.7710	0.0041	0.04
A8W96C		0.9510	0.0277	0.25	0.7470	-0.0199	-0.18
AEXKZA		0.8390	-0.0843	-0.76	0.6730	-0.0939	-0.86
AFCUDF		0.9310	0.0077	0.07	0.7510	-0.0159	-0.14
AFDZX4		1.0680	0.1447	1.31	0.9150	0.1481	1.35
CM4KTU		0.9670	0.0437	0.40	0.7745	0.0076	0.07
D3VHUP		0.9660	0.0427	0.39	0.8410	0.0741	0.68
DKWNLW		0.9150	-0.0083	-0.08	0.7375	-0.0294	-0.27
EMHTUU		0.8500	-0.0733	-0.66	0.7070	-0.0599	-0.55
FXFT7Y		1.0490	0.1257	1.14	0.8360	0.0691	0.63
GQNMJ3		0.7890	-0.1343	-1.22	0.6900	-0.0769	-0.70
GX9TA9		1.0910	0.1677	1.52	0.9370	0.1701	1.56
HBQW3W	*	1.1270	0.2037	1.84	1.0240	0.2571	2.35
HCPG9R		1.0140	0.0907	0.82	0.7890	0.0221	0.20
HX3TVZ		0.7190	-0.2043	-1.85	0.5960	-0.1709	-1.56
HYXBW2		0.8450	-0.0783	-0.71	0.6950	-0.0719	-0.66
K4KN48		0.8050	-0.1183	-1.07	0.6680	-0.0989	-0.90
LZYLA8		0.8230	-0.1003	-0.91	0.6650	-0.1019	-0.93
M9N2PH		0.7460	-0.1773	-1.60	0.6180	-0.1489	-1.36
MVXWDR		0.9830	0.0597	0.54	0.7920	0.0251	0.23
QYR86G		0.9060	-0.0173	-0.16	0.7810	0.0141	0.13
R4WNRA		0.8690	-0.0543	-0.49	0.7090	-0.0579	-0.53
T743XF		0.9130	-0.0103	-0.09	0.7480	-0.0189	-0.17
UGFRCC		0.7520	-0.1713	-1.55	0.5980	-0.1689	-1.54
UHA34K		0.9410	0.0177	0.16	0.8100	0.0431	0.39
WTWBEJ		0.8740	-0.0493	-0.45	0.7210	-0.0459	-0.42

Summary Statistics

	Sample GJ23	Sample GJ24
Grand Means	0.92329 Microns	0.76685 Microns
SD Btwn Labs	0.11052 Microns	0.10938 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

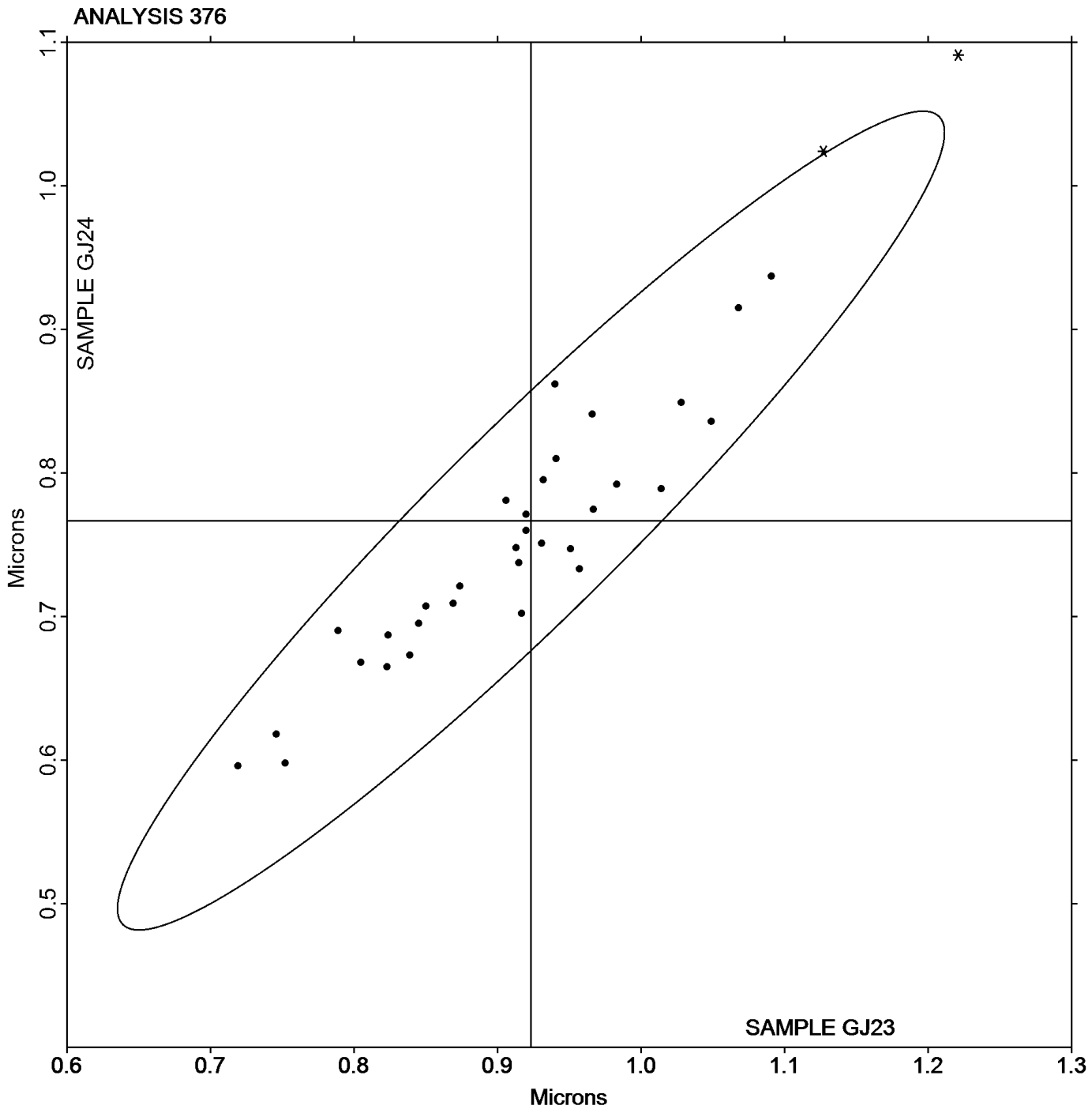
Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample **GJ23** = 0.92329 Microns

Grand Mean Sample **GJ24** = 0.76685 Microns



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

WebCode	Data Flag	Sample GK23 Lab Mean	Sample GK23 Diff from Grand Mean	Sample GK23 CPV	Sample GK24 Lab Mean	Sample GK24 Diff from Grand Mean	Sample GK24 CPV
2YWWMP		4.143	0.091	0.24	3.171	0.077	0.36
A8W96C		4.744	0.692	1.83	3.453	0.359	1.68
ALJURY		3.691	-0.361	-0.96	2.871	-0.223	-1.05
APH8D4		4.025	-0.027	-0.07	3.035	-0.059	-0.28
D7F2ND		4.009	-0.043	-0.11	3.013	-0.081	-0.38
M9N2PH		3.898	-0.154	-0.41	2.809	-0.285	-1.34
MLBUVW		4.446	0.394	1.04	3.448	0.354	1.66
NNKFMQ		3.939	-0.113	-0.30	3.019	-0.076	-0.35
YBTC6M		3.390	-0.662	-1.75	3.090	-0.004	-0.02
YKZU3K		4.237	0.185	0.49	3.035	-0.059	-0.28

Summary Statistics

	Sample GK23	Sample GK24
Grand Means	4.0522 Microns	3.0944 Microns
SD Btwn Labs	0.3777 Microns	0.2135 Microns

Statistics based on 10 of 10 reporting participants

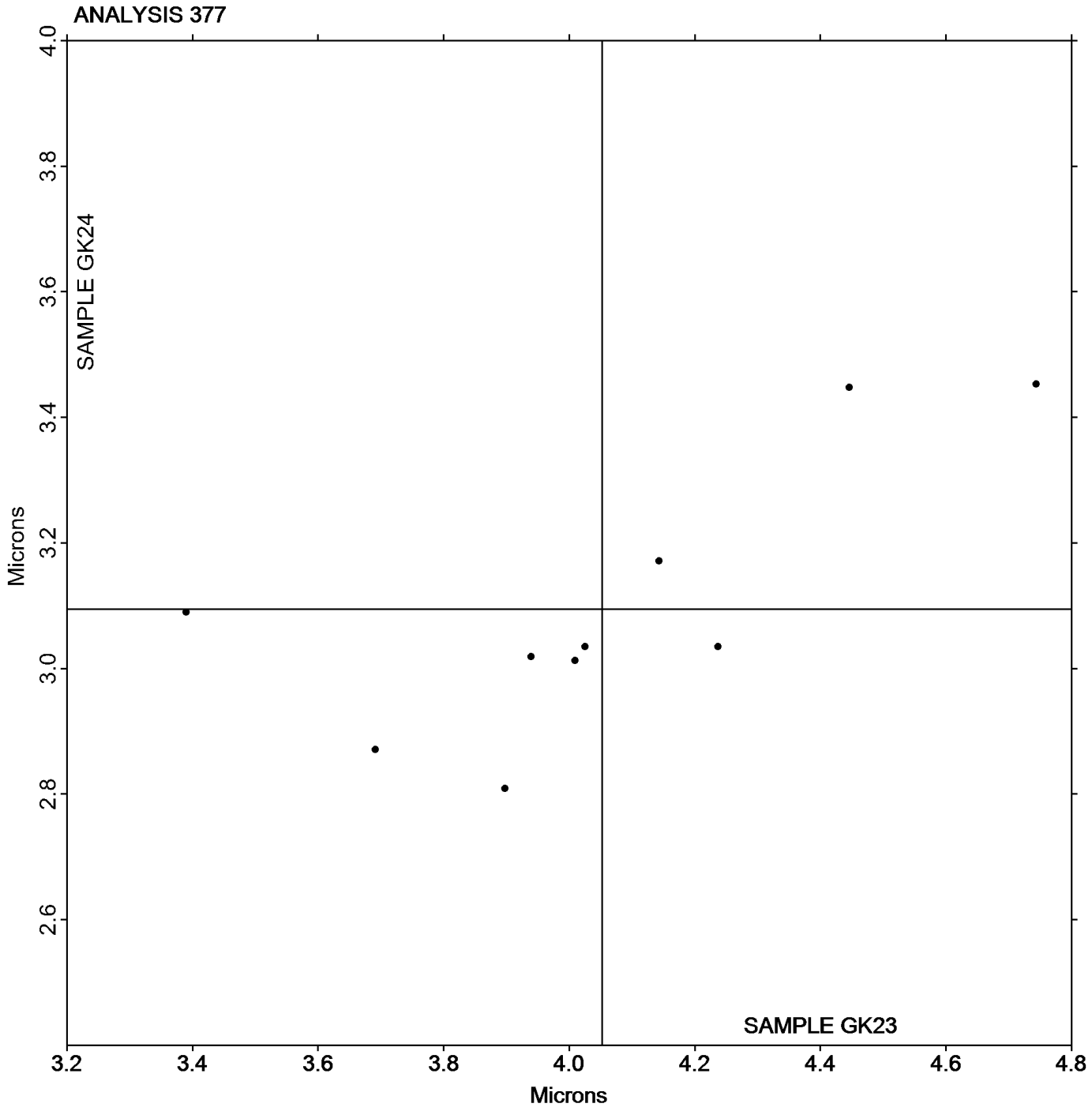
Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK23** = 4.0522 Microns

Grand Mean Sample **GK24** = 3.0944 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 GL23 Lab Mean	Sample GL23 Diff from Grand Mean	Sample GL23 CPV	Sample GL24 Lab Mean	Sample GL24 Diff from Grand Mean	Sample GL24 CPV	Instr Code
2VC4GN		174.0	21.9	2.50	148.5	17.0	1.77	GL
2YWWMP		156.3	4.2	0.48	138.3	6.7	0.70	PP
34MXFA		141.8	-10.3	-1.17	124.2	-7.3	-0.76	LW
3DDJK9		153.6	1.5	0.17	128.1	-3.4	-0.36	HM
4G4WGA		156.2	4.1	0.47	132.9	1.4	0.14	XX
4WWRRE	*	176.0	23.9	2.73	146.3	14.8	1.54	TT
77W2BA		153.2	1.1	0.12	121.7	-9.8	-1.02	PP
77XAL2		158.0	5.9	0.67	152.9	21.4	2.22	LA
78RKDB		145.8	-6.3	-0.72	129.1	-2.4	-0.25	XX
7RBNXE		147.7	-4.4	-0.51	119.6	-12.0	-1.24	LA
8KTFAH		146.9	-5.2	-0.59	128.8	-2.7	-0.28	MP
9CXW9E		145.5	-6.6	-0.75	133.0	1.5	0.15	TT
9XENP3		159.2	7.1	0.81	145.6	14.1	1.46	LW
ALJURY		165.4	13.3	1.52	140.7	9.2	0.95	LA
ANMPC3		148.6	-3.5	-0.40	132.6	1.1	0.12	PP
APH8D4		147.3	-4.8	-0.55	128.6	-2.9	-0.30	HM
ARPPCY		152.8	0.7	0.08	125.4	-6.2	-0.64	PP
BX2RTD		151.7	-0.4	-0.04	129.9	-1.6	-0.17	PP
CETPU9		160.5	8.4	0.96	137.5	6.0	0.62	PG
CJYJN4		139.7	-12.4	-1.41	114.0	-17.5	-1.82	XX
CM4KTU		139.0	-13.1	-1.49	125.4	-6.1	-0.64	TS
CUNNZX		151.0	-1.1	-0.12	137.8	6.2	0.65	GA
D7BAHX		145.8	-6.3	-0.71	131.6	0.1	0.01	LA
D7F2ND		151.0	-1.1	-0.13	126.3	-5.3	-0.55	PP
DKWNLW		160.7	8.6	0.98	129.0	-2.6	-0.27	XX
DUHTTW		153.0	0.9	0.10	118.4	-13.1	-1.37	HM
EMHTUU		161.7	9.6	1.10	137.0	5.5	0.57	PP
ETXT9Y		153.2	1.1	0.13	136.9	5.4	0.56	XX
FXFT7Y		156.2	4.1	0.47	130.4	-1.1	-0.12	PP
G4FRUT		139.9	-12.2	-1.39	118.1	-13.4	-1.39	PP
GQNMJ3		167.0	14.9	1.70	150.2	18.7	1.94	TT
GUAHE9		139.5	-12.6	-1.44	124.1	-7.4	-0.77	GA
GX9TA9		157.8	5.7	0.65	142.9	11.4	1.18	HM
GXAYZX		158.1	6.0	0.69	127.5	-4.0	-0.42	PP
H2ZCWY		155.1	3.0	0.34	125.1	-6.4	-0.67	PP
H9LLPN		150.4	-1.7	-0.19	128.7	-2.8	-0.29	PP
HCPG9R		148.8	-3.3	-0.38	129.0	-2.5	-0.26	HM
HX3TVZ		145.7	-6.4	-0.73	131.3	-0.2	-0.02	HM
HYXBW2		148.3	-3.8	-0.43	122.7	-8.8	-0.92	HM
JJ3R2J		159.6	7.5	0.86	131.9	0.4	0.04	HM
KB7CPJ		173.6	21.5	2.46	147.2	15.7	1.63	TS
KHPEWM	X	31.9	-120.2	-13.72	18.1	-113.4	-11.80	SH
L8YFHL	X	431.5	279.4	31.89	434.0	302.5	31.49	PP

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

WebCode	Data Flag	Sample GL23 Lab Mean	Sample GL23 Diff from Grand Mean	Sample GL23 CPV	Sample GL24 Lab Mean	Sample GL24 Diff from Grand Mean	Sample GL24 CPV	Instr Code
LU8B8V		137.7	-14.4	-1.64	118.2	-13.3	-1.39	TS
LZYLA8		148.5	-3.6	-0.41	130.8	-0.7	-0.08	SH
M9N2PH	*	160.5	8.4	0.96	155.2	23.7	2.46	XX
NAJ7HG		156.9	4.8	0.55	127.2	-4.3	-0.45	PP
NMPXKP		142.4	-9.7	-1.11	128.8	-2.7	-0.28	TS
NNKFMQ		144.0	-8.1	-0.92	134.7	3.2	0.33	LW
NPRVVH		161.2	9.1	1.04	152.1	20.6	2.14	XX
NZDY4G		145.0	-7.1	-0.81	121.8	-9.7	-1.01	PP
PBPNGD		151.3	-0.8	-0.09	127.3	-4.2	-0.44	GA
QLZ3TQ		145.6	-6.5	-0.74	131.6	0.1	0.01	LA
QYR86G		149.6	-2.5	-0.29	117.4	-14.1	-1.47	PP
T743XF		148.7	-3.4	-0.39	142.3	10.8	1.13	PP
UVZ8FB		146.8	-5.3	-0.60	125.7	-5.8	-0.60	PP
VARNGE	X	150.7	-1.4	-0.16	155.4	23.9	2.48	SH
VF4DHB		149.0	-3.1	-0.35	133.0	1.5	0.15	TT
XHUAEK		156.5	4.4	0.50	123.3	-8.2	-0.86	HM
YKZU3K		137.1	-15.0	-1.72	119.9	-11.6	-1.21	PP
ZAXU3K		152.7	0.6	0.07	127.1	-4.4	-0.46	TS
ZZBVCF		144.4	-7.7	-0.88	134.6	3.1	0.32	TT

Summary Statistics

	Sample GL23	Sample GL24
Grand Means	152.09 Sheffield	131.53 Sheffield
SD Btwn Labs	8.76 Sheffield	9.61 Sheffield

Statistics based on 59 of 62 reporting participants

Comments on assigned Data Flags for Test #378

KHPEWM (X) - Extreme data.

L8YFHL (X) - Extreme data.

VARNGE (X) - Inconsistent in testing between samples and within the determinations for Sample GL24.

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

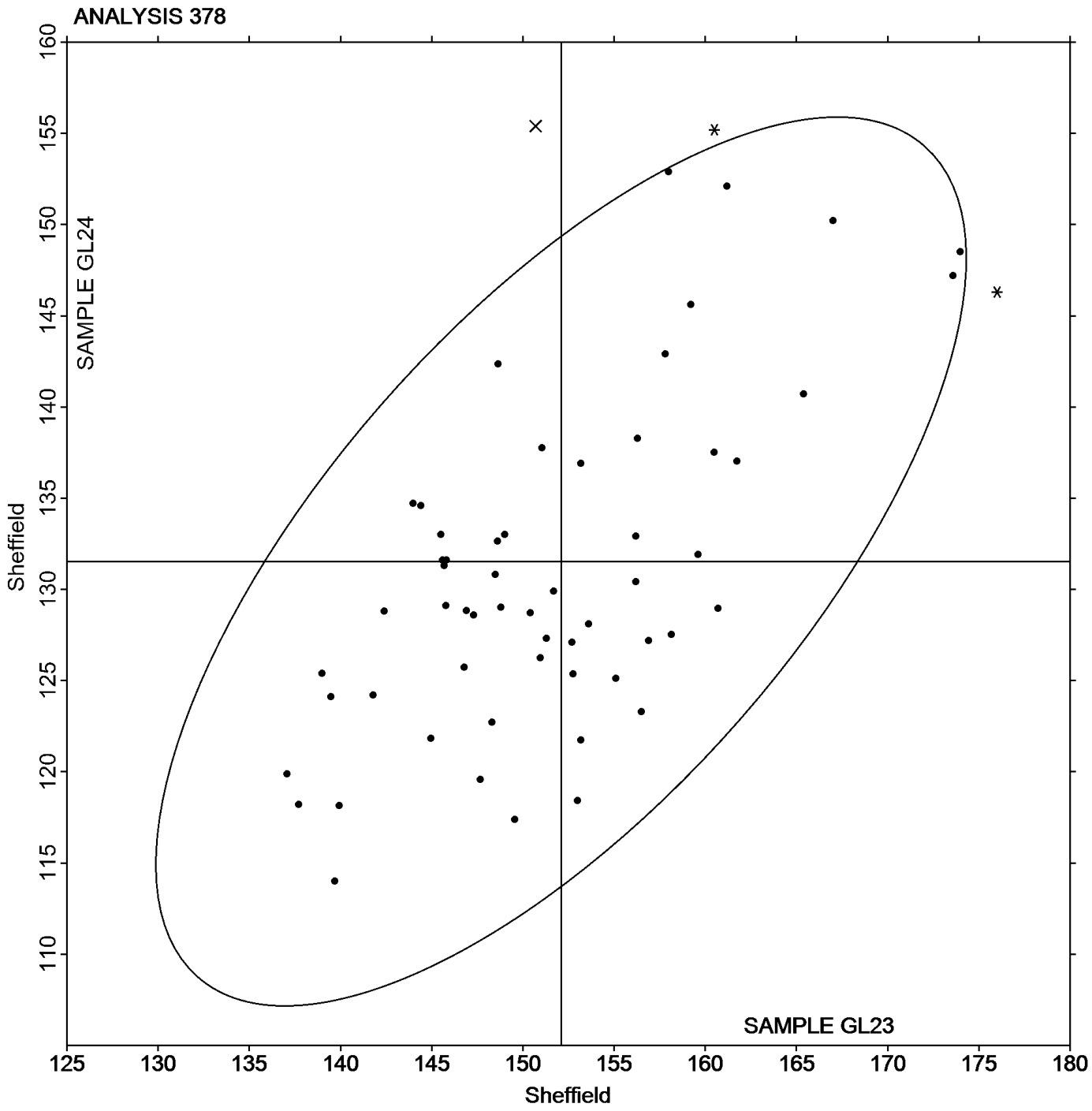
Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL23** = 152.09 Sheffield

Grand Mean Sample **GL24** = 131.53 Sheffield



Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

WebCode	Data Flag	Sample GM23 Lab Mean	Sample GM23 Diff from Grand Mean	Sample GM23 CPV	Sample GM24 Lab Mean	Sample GM24 Diff from Grand Mean	Sample GM24 CPV
2U7UU7		4.539	-0.017	-0.05	4.453	0.087	0.27
2YWWMP		4.669	0.114	0.37	4.526	0.160	0.49
APH8D4		4.430	-0.125	-0.41	4.310	-0.056	-0.17
BJKUMC		4.211	-0.344	-1.13	4.034	-0.332	-1.02
BX2RTD		4.931	0.376	1.23	4.845	0.479	1.48
BX6CH2		4.353	-0.202	-0.66	4.013	-0.353	-1.09
CGGWXP		4.940	0.385	1.26	4.780	0.414	1.28
D3VHUP		4.515	-0.040	-0.13	4.433	0.067	0.21
FWEKW7		4.820	0.265	0.86	4.545	0.179	0.55
GQNMJ3	X	6.780	2.225	7.27	6.880	2.514	7.75
VMZTPM		4.740	0.184	0.60	4.304	-0.062	-0.19
YBTC6M		3.962	-0.593	-1.94	3.783	-0.583	-1.80

Summary Statistics

	Sample GM23	Sample GM24
Grand Means	4.5555 Percent	4.3660 Percent
SD Btwn Labs	0.3058 Percent	0.3244 Percent

Statistics based on 11 of 12 reporting participants

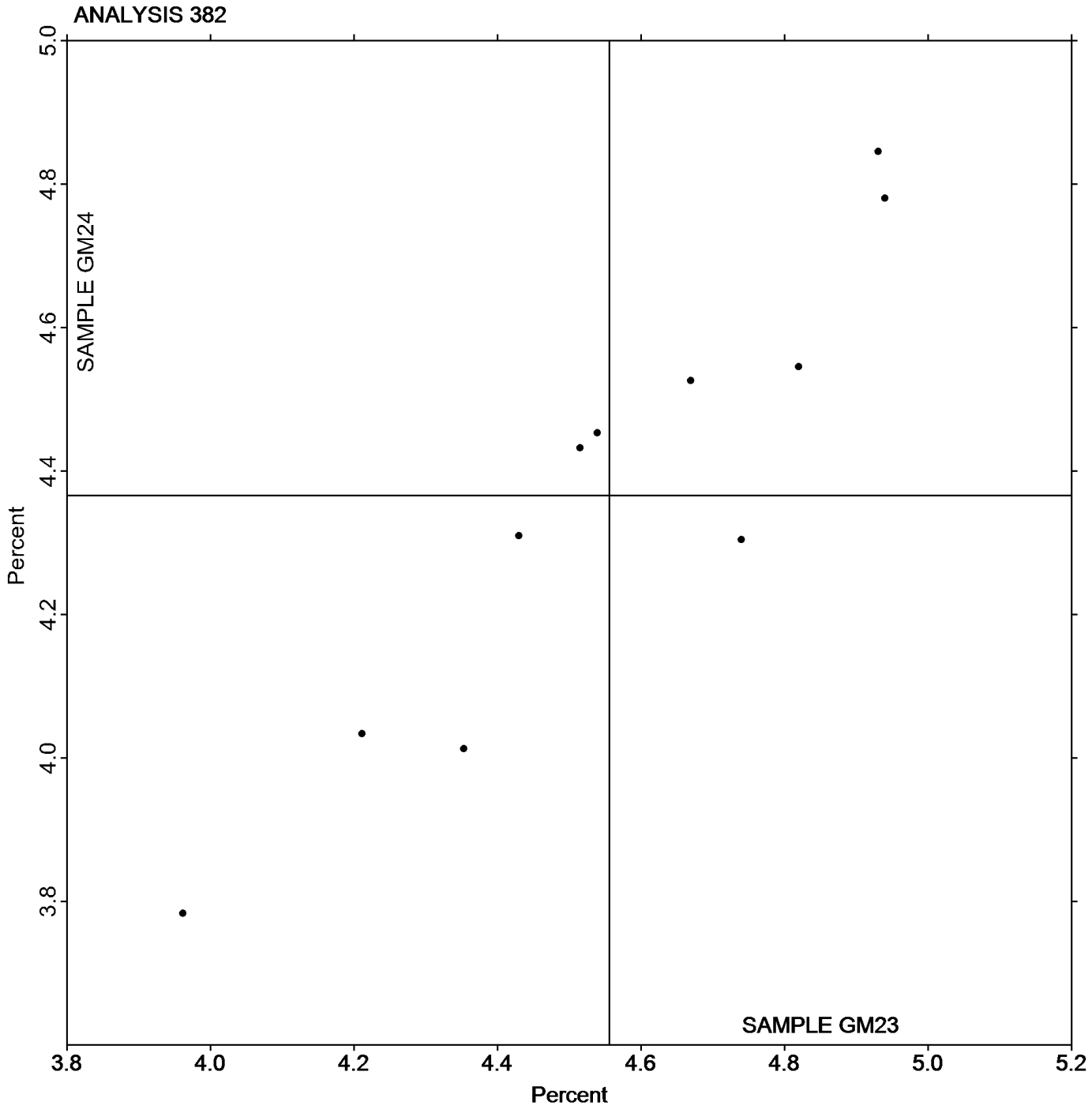
Comments on assigned Data Flags for Test #382

GQNMJ3 (X) - Extreme data.

Paper & Paperboard Interlaboratory Testing Program
Analysis 382
Moisture in Paper

Grand Mean Sample **GM23** = 4.5555 Percent

Grand Mean Sample **GM24** = 4.3660 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 GN23 Lab Mean	Sample GN23 Diff from Grand Mean	Sample GN23 CPV	Sample GN24 Lab Mean	Sample GN24 Diff from Grand Mean	Sample GN24 CPV
2VC4GN	*	87.97	1.03	1.28	94.01	1.05	2.38
2YWWMP		86.83	-0.10	-0.13	92.80	-0.16	-0.36
33QDCN		87.08	0.14	0.18	93.07	0.11	0.26
3DDJK9		86.47	-0.47	-0.58	93.14	0.18	0.41
3QWT4J		87.19	0.25	0.31	92.95	-0.01	-0.01
78RKDB		87.62	0.68	0.85	93.12	0.16	0.37
AEXKZA		86.48	-0.46	-0.56	92.57	-0.39	-0.87
AFCUDF		87.23	0.29	0.36	92.88	-0.08	-0.17
ALJURY		87.32	0.38	0.48	92.93	-0.03	-0.06
ANMPC3		88.87	1.94	2.40	93.62	0.66	1.49
APH8D4		86.90	-0.04	-0.04	92.90	-0.06	-0.13
ARPPCY		85.52	-1.42	-1.75	92.68	-0.28	-0.62
CETPU9		87.02	0.09	0.11	92.99	0.03	0.07
CJYJN4		85.72	-1.22	-1.51	92.08	-0.88	-1.98
D7BAHX		85.19	-1.75	-2.16	92.35	-0.61	-1.37
D7F2ND		86.14	-0.80	-0.99	93.06	0.10	0.24
DKWNLW		86.24	-0.70	-0.86	92.13	-0.83	-1.86
EJY79E		87.01	0.07	0.09	93.29	0.33	0.75
ELMART		87.18	0.24	0.30	93.34	0.38	0.87
ETXT9Y		87.68	0.74	0.92	93.23	0.28	0.63
GNMXKN	*	85.02	-1.92	-2.38	91.70	-1.26	-2.85
GX9TA9		87.23	0.29	0.36	93.12	0.16	0.37
GXAYZX		86.91	-0.03	-0.03	93.09	0.13	0.30
H2ZCWY		87.01	0.07	0.09	93.22	0.26	0.59
HBQW3W		86.89	-0.05	-0.06	93.05	0.09	0.21
HCPG9R		87.05	0.12	0.15	93.19	0.24	0.53
HVYZ22	*	89.25	2.32	2.87	93.89	0.94	2.11
HX3TVZ		86.17	-0.77	-0.95	92.67	-0.29	-0.65
L8YFHL		86.83	-0.11	-0.13	93.11	0.15	0.35
LZYLA8		87.33	0.39	0.49	93.35	0.39	0.89
MVXWDR		87.18	0.24	0.30	92.98	0.02	0.05
NM2F2T		86.48	-0.46	-0.56	92.59	-0.37	-0.83
NMPXKP		87.12	0.18	0.23	92.84	-0.12	-0.26
NPRVVH		86.80	-0.14	-0.17	92.30	-0.66	-1.48
UHA34K		86.81	-0.13	-0.16	92.84	-0.12	-0.26
VARNGE		87.19	0.25	0.31	92.97	0.01	0.03
VF4DHB	X	88.13	1.19	1.48	92.13	-0.83	-1.86
W78W7C		86.89	-0.05	-0.06	92.84	-0.12	-0.26
XHUAEK		86.67	-0.27	-0.33	93.13	0.17	0.39
ZAXU3K		87.20	0.26	0.33	93.23	0.27	0.62
ZZBVCF		87.75	0.81	1.01	93.01	0.05	0.12

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

Summary Statistics

	Sample GN23	Sample GN24
Grand Means	86.936 Percent	92.956 Percent
SD Btwn Labs	0.807 Percent	0.443 Percent

Statistics based on 40 of 41 reporting participants

Comments on assigned Data Flags for Test #384

VF4DHB (X) - Inconsistent in testing between samples.

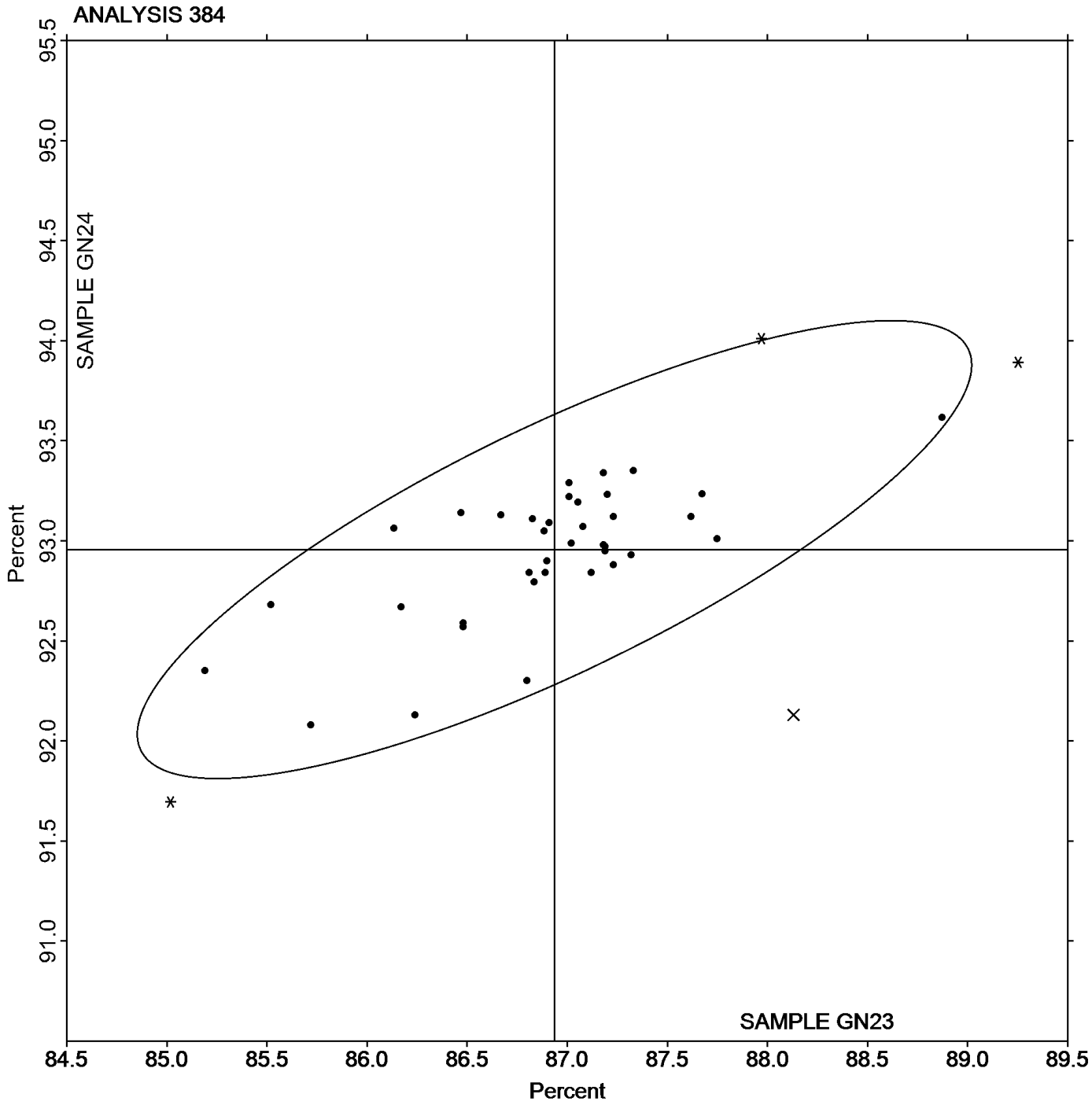
Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN23** = 86.936 Percent

Grand Mean Sample **GN24** = 92.956 Percent



Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

WebCode	Data Flag	Sample GP23 Lab Mean	Sample GP23 Diff from Grand Mean	Sample GP23 CPV	Sample GP24 Lab Mean	Sample GP24 Diff from Grand Mean	Sample GP24 CPV
2U7UU7		89.17	-0.03	-0.21	93.52	-0.18	-1.28
44G49A		89.01	-0.19	-1.11	93.60	-0.10	-0.72
4QQXXJ		89.30	0.10	0.61	93.47	-0.23	-1.65
68F2W8	*	89.71	0.51	3.01	93.90	0.20	1.43
AKNDF3		89.25	0.05	0.30	93.81	0.11	0.80
ANMPC3		89.14	-0.06	-0.36	93.71	0.01	0.07
BJKUMC		89.13	-0.07	-0.43	93.68	-0.02	-0.15
DKWNLW		88.94	-0.26	-1.55	93.74	0.04	0.32
DLR8NX		89.26	0.06	0.38	93.74	0.04	0.30
DUHTTW		89.10	-0.10	-0.56	93.72	0.02	0.12
DVD97T		89.32	0.12	0.68	93.72	0.02	0.16
FBZ9AX		89.16	-0.04	-0.22	93.98	0.28	2.00
FCC97R		89.04	-0.16	-0.94	93.56	-0.14	-0.99
HCPG9R		89.41	0.21	1.22	93.42	-0.28	-2.03
JP3VK3		89.10	-0.10	-0.60	93.71	0.01	0.08
LA7VPR		89.12	-0.08	-0.49	93.74	0.05	0.33
PGWFJJ		89.19	-0.01	-0.05	93.68	-0.01	-0.10
R4WNRA		89.14	-0.06	-0.33	93.75	0.05	0.37
UW9MLG		89.31	0.11	0.64	93.83	0.13	0.93

Summary Statistics

	Sample GP23	Sample GP24
Grand Means	89.200 Percent	93.698 Percent
SD Btwn Labs	0.170 Percent	0.140 Percent

Statistics based on 19 of 19 reporting participants

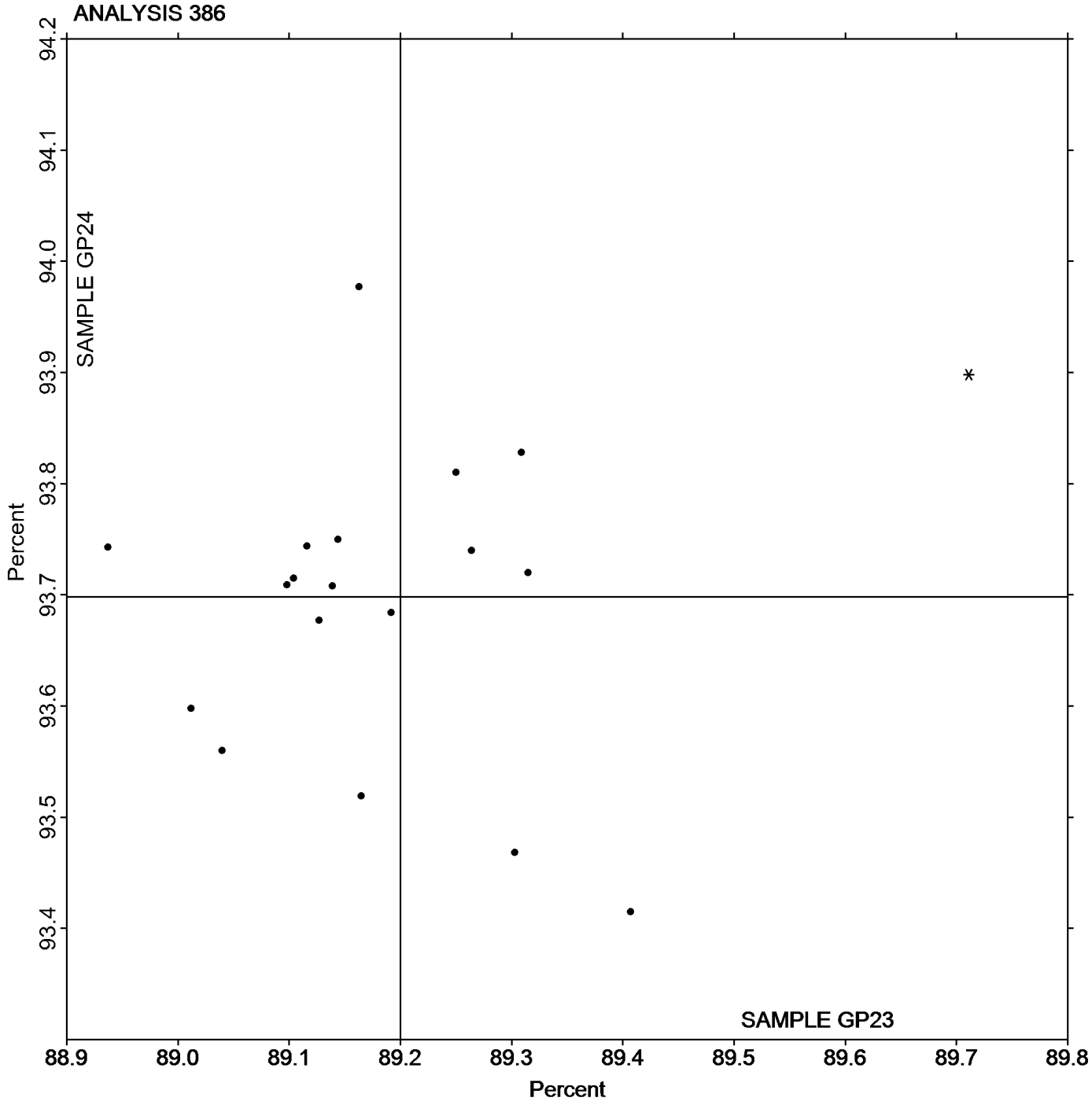
Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample **GP23** = 89.200 Percent

Grand Mean Sample **GP24** = 93.698 Percent



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

Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

WebCode	Data Flag	Sample GR23 Lab Mean	Sample GR23 Diff from Grand Mean	Sample GR23 CPV	Sample GR24 Lab Mean	Sample GR24 Diff from Grand Mean	Sample GR24 CPV	Instr Code
3DDJK9		84.95	-0.35	-0.35	84.59	-0.06	-0.06	XS
78RKDB		85.93	0.63	0.63	84.33	-0.32	-0.31	XX
9CXW9E		84.10	-1.20	-1.21	83.36	-1.28	-1.22	TT
9XENP3		83.81	-1.49	-1.50	83.43	-1.22	-1.16	TT
AEXKZA		85.13	-0.17	-0.18	84.30	-0.35	-0.33	TT
AFCUDF		85.10	-0.20	-0.20	84.51	-0.14	-0.13	MK
ALJURY		85.19	-0.11	-0.11	83.16	-1.49	-1.41	TS
ANMPC3		85.03	-0.27	-0.27	83.89	-0.75	-0.71	TS
CETPU9		83.47	-1.83	-1.84	85.57	0.92	0.87	TS
CJYJN4	X	89.40	4.10	4.13	88.94	4.29	4.06	XX
DKWNLW		85.33	0.03	0.03	83.65	-0.99	-0.94	TT
EJY79E		85.25	-0.05	-0.05	84.80	0.15	0.14	TA
ELMART		84.43	-0.87	-0.88	84.20	-0.45	-0.42	TS
EMHTUU		86.54	1.24	1.25	85.13	0.48	0.45	HD
ETXT9Y		85.24	-0.06	-0.06	86.53	1.88	1.78	XX
FWEKW7		86.64	1.34	1.35	84.90	0.25	0.24	XX
GX9TA9		83.85	-1.45	-1.46	83.35	-1.30	-1.23	TS
GXAYZX		85.98	0.68	0.68	83.10	-1.55	-1.46	TT
H2ZCWY		84.61	-0.69	-0.69	85.23	0.58	0.55	XX
HBQW3W	M	84.48	-0.82	-0.83	No data reported for this sample			TS
HCPG9R		85.56	0.26	0.26	84.52	-0.13	-0.12	TS
LHZ9Z7		86.79	1.49	1.50	85.86	1.22	1.15	HG
NM2F2T		83.91	-1.39	-1.40	84.56	-0.08	-0.08	TS
NPRVVH		87.00	1.70	1.71	86.88	2.23	2.11	PE
NZDY4G		85.42	0.12	0.13	83.81	-0.84	-0.80	TS
QYR86G		84.34	-0.96	-0.97	84.48	-0.17	-0.16	TT
T743XF		87.25	1.95	1.97	85.28	0.63	0.60	HD
UVZ8FB		85.95	0.65	0.65	84.82	0.17	0.16	TS
VF4DHB		85.39	0.09	0.09	86.66	2.02	1.91	TT
YBTC6M		86.04	0.74	0.74	86.15	1.50	1.42	TS
ZAXU3K		85.46	0.16	0.16	83.75	-0.90	-0.85	TS

Summary Statistics

	Sample GR23	Sample GR24
Grand Means	85.299 Percent	84.647 Percent
SD Btwn Labs	0.994 Percent	1.056 Percent

Statistics based on 29 of 31 reporting participants

Comments on assigned Data Flags for Test #390

CJYJN4 (X) - Data for both samples are high.

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

(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

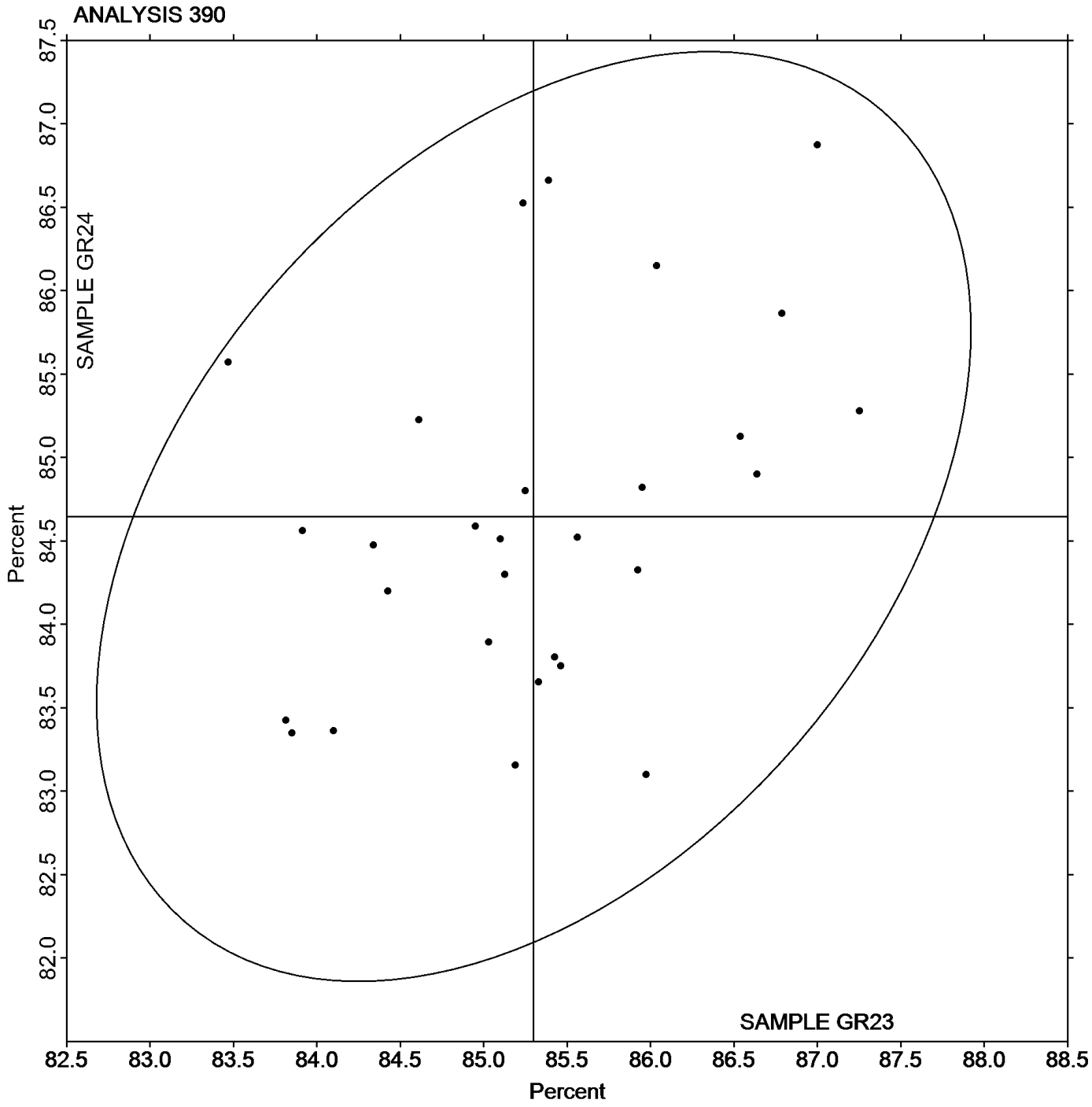
Paper & Paperboard Interlaboratory Testing Program

Analysis 390

Directional Brightness

Grand Mean Sample **GR23** = 85.299 Percent

Grand Mean Sample **GR24** = 84.647 Percent



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

WebCode	Data Flag	Sample GZ23 Lab Mean	Sample GZ23 Diff from Grand Mean	Sample GZ23 CPV	Sample GZ24 Lab Mean	Sample GZ24 Diff from Grand Mean	Sample GZ24 CPV	Instr Code
2YWWMP		89.37	-0.51	-0.36	92.90	-0.75	-0.74	TS
33QDCN		90.06	0.18	0.13	93.80	0.15	0.15	PP
3QWT4J		89.93	0.05	0.03	93.17	-0.49	-0.48	TS
7RBNXE		89.92	0.04	0.02	93.64	-0.01	-0.01	TT
D7BAHX		90.08	0.20	0.14	93.48	-0.17	-0.17	TT
D7F2ND		89.74	-0.15	-0.10	93.69	0.03	0.03	TS
ETXT9Y	*	85.59	-4.29	-3.00	92.15	-1.50	-1.47	XX
GQNMJ3		92.46	2.58	1.80	95.85	2.20	2.16	EF
K9V2K7		92.36	2.48	1.73	96.09	2.44	2.40	TS
L8YFHL		89.52	-0.37	-0.26	93.24	-0.42	-0.41	TS
MKFCTV		90.35	0.47	0.33	93.56	-0.09	-0.09	TS
MVXWDR		90.12	0.24	0.16	93.82	0.17	0.17	TT
NMPXKP		89.92	0.04	0.02	93.98	0.33	0.32	TS
UHA34K		89.94	0.06	0.04	93.74	0.09	0.09	TT
XHUAEK		89.08	-0.81	-0.56	92.28	-1.37	-1.35	HT
ZAXU3K		89.91	0.02	0.02	93.70	0.05	0.05	TS
ZZBVCF		89.68	-0.20	-0.14	92.98	-0.67	-0.66	TT

Summary Statistics

	Sample GZ23	Sample GZ24
Grand Means	89.884 Percent	93.651 Percent
SD Btwn Labs	1.429 Percent	1.016 Percent

Statistics based on 17 of 17 reporting participants

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

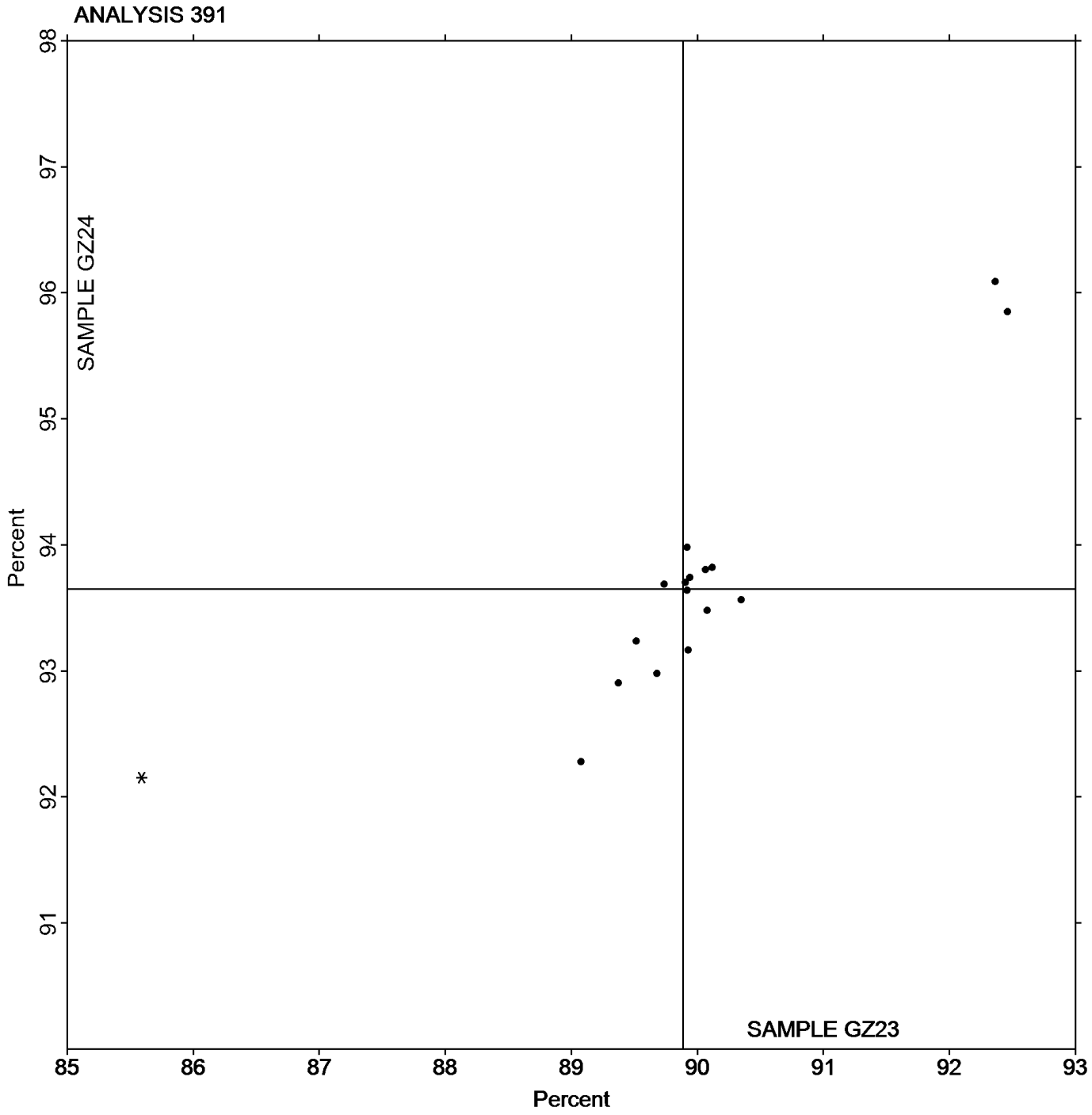
Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ23** = 89.884 Percent

Grand Mean Sample **GZ24** = 93.651 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 GR23 Lab Mean	Sample GR23 Diff from Grand Mean	Sample GR23 CPV	Sample GR24 Lab Mean	Sample GR24 Diff from Grand Mean	Sample GR24 CPV	Instr Code
2U7UU7		83.71	-0.56	-1.47	83.18	-0.56	-1.60	EG
34MXFA		84.69	0.42	1.09	84.13	0.39	1.11	EF
6UUWZP		84.29	0.02	0.06	83.75	0.01	0.03	TC
6XPFQ9		84.52	0.25	0.64	84.07	0.33	0.95	TC
77W2BA		84.49	0.22	0.57	83.74	0.00	0.01	TC
7KHPP2		84.36	0.09	0.22	83.58	-0.16	-0.47	TC
93MVMD	*	83.92	-0.35	-0.92	83.94	0.20	0.57	TC
9CXW9E		84.11	-0.16	-0.41	83.36	-0.38	-1.08	EG
9XENP3		84.60	0.33	0.86	84.30	0.56	1.61	EG
9ZL7NY	*	83.61	-0.66	-1.73	83.61	-0.13	-0.38	TC
A8W96C		84.26	-0.01	-0.03	83.53	-0.21	-0.61	TC
AFDZX4		84.37	0.10	0.27	83.86	0.12	0.34	TC
ALJURY		84.32	0.05	0.14	83.64	-0.10	-0.29	TC
ANMPC3		84.55	0.28	0.72	83.91	0.17	0.48	TC
BJKUMC		84.20	-0.07	-0.17	83.54	-0.20	-0.58	LS
DKWNLW	*	85.42	1.15	2.99	84.75	1.02	2.93	TM
DLR8NX	*	83.23	-1.04	-2.70	82.96	-0.78	-2.26	TC
DUHTTW		84.23	-0.04	-0.12	83.77	0.04	0.10	TC
DVD97T		84.08	-0.19	-0.50	83.46	-0.28	-0.80	LA
FCC97R		84.30	0.03	0.08	83.64	-0.10	-0.29	TM
FWEKW7		84.32	0.05	0.14	83.69	-0.05	-0.15	EE
GQNMJ3		83.86	-0.41	-1.07	83.23	-0.50	-1.46	LA
HCPG9R		84.62	0.35	0.91	84.09	0.35	1.01	TM
LA7VPR		84.54	0.27	0.71	83.98	0.24	0.70	TC
LZYLA8		84.29	0.02	0.04	83.69	-0.05	-0.14	TC
PGWFJJ		84.17	-0.10	-0.25	83.58	-0.16	-0.45	TM
QYR86G		84.26	-0.01	-0.02	83.91	0.17	0.50	TL
R4WNRA		84.35	0.08	0.20	83.85	0.11	0.33	LS
UW9MLG		84.37	0.10	0.27	83.78	0.04	0.12	TC
YKZU3K		84.07	-0.20	-0.53	83.66	-0.08	-0.23	TC

Summary Statistics

	Sample GR23	Sample GR24
Grand Means	84.269 Percent	83.739 Percent
SD Btwn Labs	0.383 Percent	0.347 Percent

Statistics based on 30 of 30 reporting participants

Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

Instrument Code List as Reported by the Labs

(EE) - Datacolor Elrepho 2000

(EF) - Datacolor Elrepho 3000

(EG) - Datacolor Elrepho 450X

(LA) - L & W Elrepho - Autoline

(LS) - L & W Elrepho SE 070

(TC) - Technidyne Color Touch Series

(TL) - Technidyne Technibrite TB-1

(TM) - Technidyne Technibrite Micro TB-1C

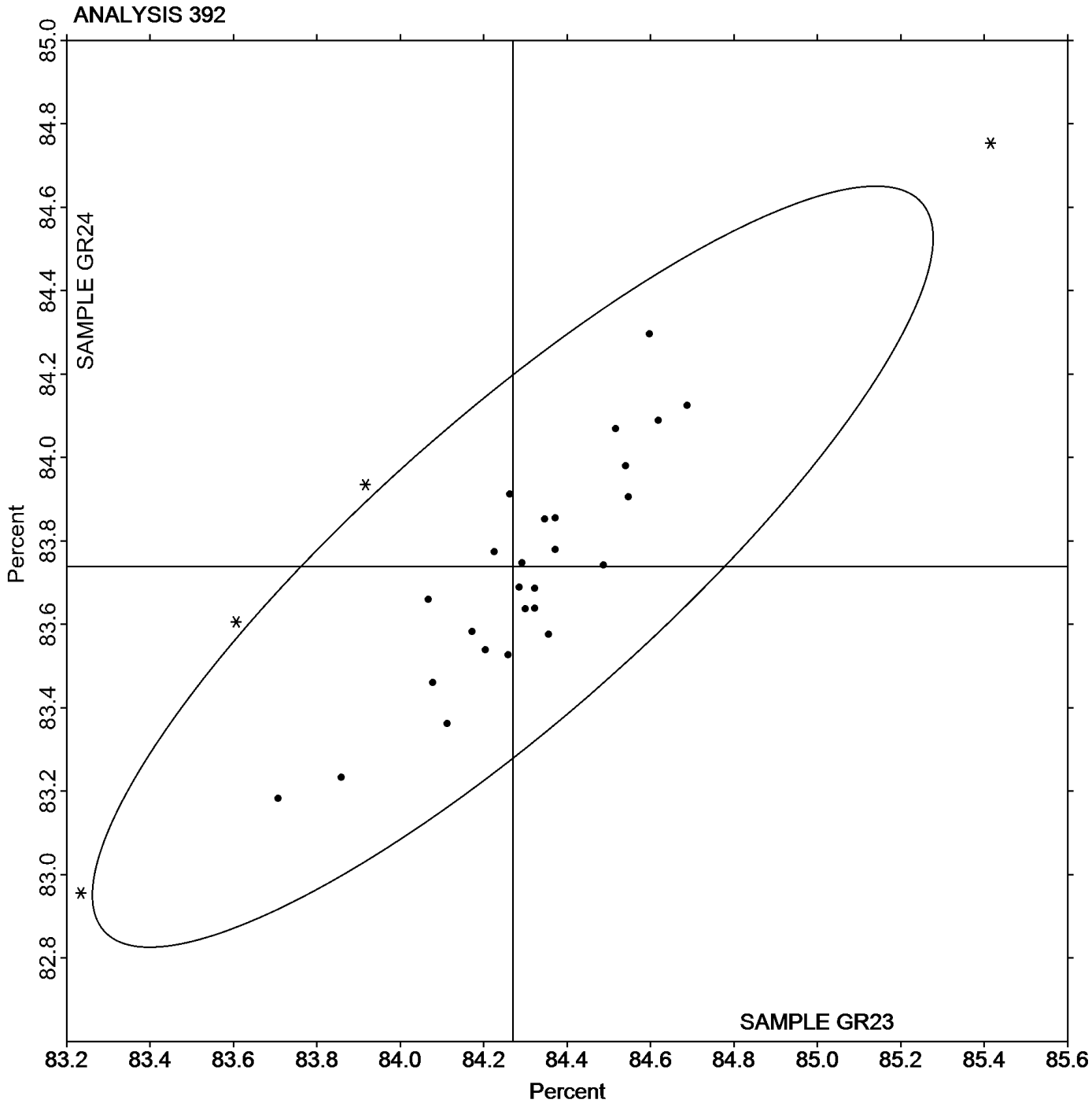
Paper & Paperboard Interlaboratory Testing Program

Analysis 392

Diffuse Brightness

Grand Mean Sample **GR23** = 84.269 Percent

Grand Mean Sample **GR24** = 83.739 Percent



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

WebCode	Data Flag	Sample GZ23 Lab Mean	Sample GZ23 Diff from Grand Mean	Sample GZ23 CPV	Sample GZ24 Lab Mean	Sample GZ24 Diff from Grand Mean	Sample GZ24 CPV	Instr Code
2YWWMP		7.028	-0.084	-0.23	6.112	-0.120	-0.37	TS
33QDCN		7.218	0.106	0.29	6.150	-0.082	-0.25	PP
3QWT4J		6.868	-0.244	-0.67	6.028	-0.204	-0.63	TS
7RBNXE		7.260	0.148	0.41	6.280	0.048	0.15	TT
D7BAHX		7.420	0.308	0.84	6.460	0.228	0.71	TT
D7F2ND		7.234	0.122	0.33	6.344	0.112	0.35	TS
ETXT9Y	*	6.084	-1.028	-2.82	5.840	-0.392	-1.22	XX
GQNMJ3	X	9.818	2.706	7.41	9.152	2.920	9.07	EF
K9V2K7		7.156	0.044	0.12	5.922	-0.310	-0.96	TS
L8YFHL		7.400	0.288	0.79	6.328	0.096	0.30	TS
MKFCTV		7.140	0.028	0.08	6.216	-0.016	-0.05	TS
MVXWDR		7.020	-0.092	-0.25	6.300	0.068	0.21	TT
XHUAEK		7.594	0.482	1.32	7.104	0.872	2.71	HT
ZAXU3K		7.034	-0.078	-0.21	5.930	-0.302	-0.94	TS

Summary Statistics

	Sample GZ23	Sample GZ24
Grand Means	7.1120 Percent	6.2318 Percent
SD Btwn Labs	0.3650 Percent	0.3221 Percent

Statistics based on 13 of 14 reporting participants

Comments on assigned Data Flags for Test #394

GQNMJ3 (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

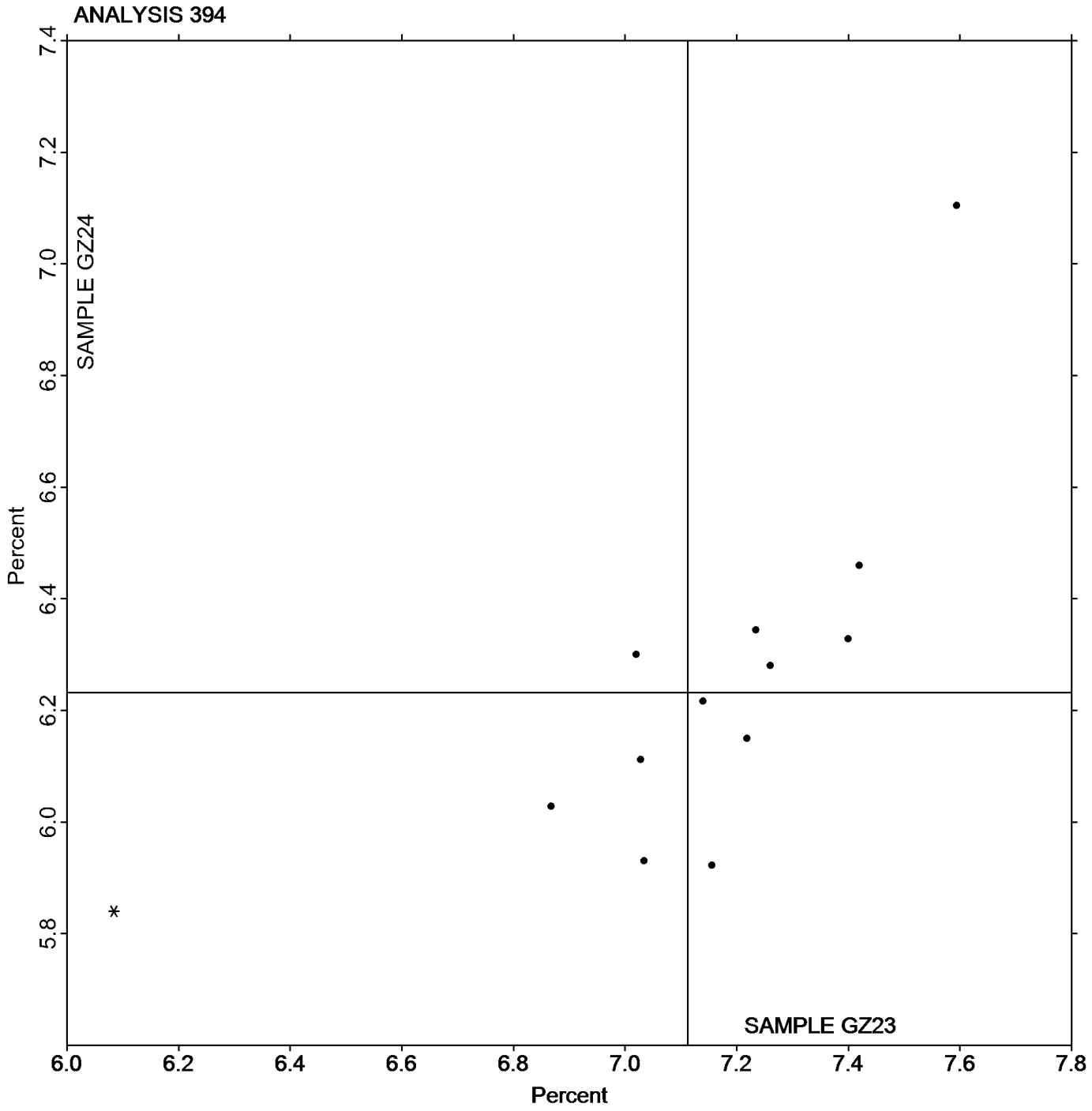
Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ23** = 7.1120 Percent

Grand Mean Sample **GZ24** = 6.2318 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 GT23 Lab Mean	Sample GT23 Diff from Grand Mean	Sample GT23 CPV	Sample GT24 Lab Mean	Sample GT24 Diff from Grand Mean	Sample GT24 CPV	Instr Code
2U7UU7		73.32	-0.63	-0.34	74.59	-0.62	-0.38	TH
33QDCN		75.33	1.38	0.76	75.69	0.48	0.30	PP
3QWT4J		72.65	-1.30	-0.71	76.24	1.03	0.64	LA
77XAL2		72.04	-1.91	-1.05	75.07	-0.14	-0.09	LA
7RBNXE		75.05	1.10	0.61	76.43	1.22	0.76	LA
9CXW9E	*	74.63	0.68	0.38	72.15	-3.06	-1.89	GM
9XENP3		74.24	0.29	0.16	75.94	0.73	0.45	TH
A8W96C		71.90	-2.05	-1.13	75.40	0.19	0.12	ZH
AEXKZA		74.50	0.56	0.31	76.55	1.34	0.83	TH
AFCUDF		76.00	2.05	1.13	75.46	0.25	0.16	PP
CM4KTU		73.38	-0.57	-0.31	74.73	-0.48	-0.30	XX
DKWNLW		77.05	3.11	1.71	77.86	2.65	1.64	TG
EMHTUU		73.92	-0.03	-0.01	74.52	-0.69	-0.43	TH
FXFT7Y		73.06	-0.89	-0.49	75.33	0.12	0.08	GM
HBQW3W	*	68.87	-5.08	-2.79	70.38	-4.83	-2.99	LA
HCPG9R		74.79	0.84	0.46	74.27	-0.94	-0.58	TH
MVXWDR		75.75	1.80	0.99	75.88	0.67	0.42	TH
QYR86G		73.59	-0.36	-0.20	74.95	-0.26	-0.16	GS
R4WNRA		72.31	-1.64	-0.90	75.33	0.12	0.08	LB
T743XF		76.07	2.12	1.17	77.40	2.19	1.36	TH
UHA34K		74.40	0.45	0.25	75.19	-0.02	-0.01	TG

Summary Statistics

	Sample GT23	Sample GT24
Grand Means	73.945 Gloss Units	75.208 Gloss Units
SD Btwn Labs	1.818 Gloss Units	1.617 Gloss Units

Statistics based on 21 of 21 reporting participants

Instrument Code List as Reported by the Labs

(GM) - BYK-Gardner micro-gloss
(LA) - L & W Gloss - Autoline 300
(PP) - Technidyne Profile/Plus
(TH) - Technidyne T480A
(ZH) - Zehntner ZLR 1050
(GS) - BYK-Gardner Glossgard II
(LB) - L & W Gloss Tester Code 224
(TG) - Technidyne T480
(XX) - Instrument make/model not specified by lab

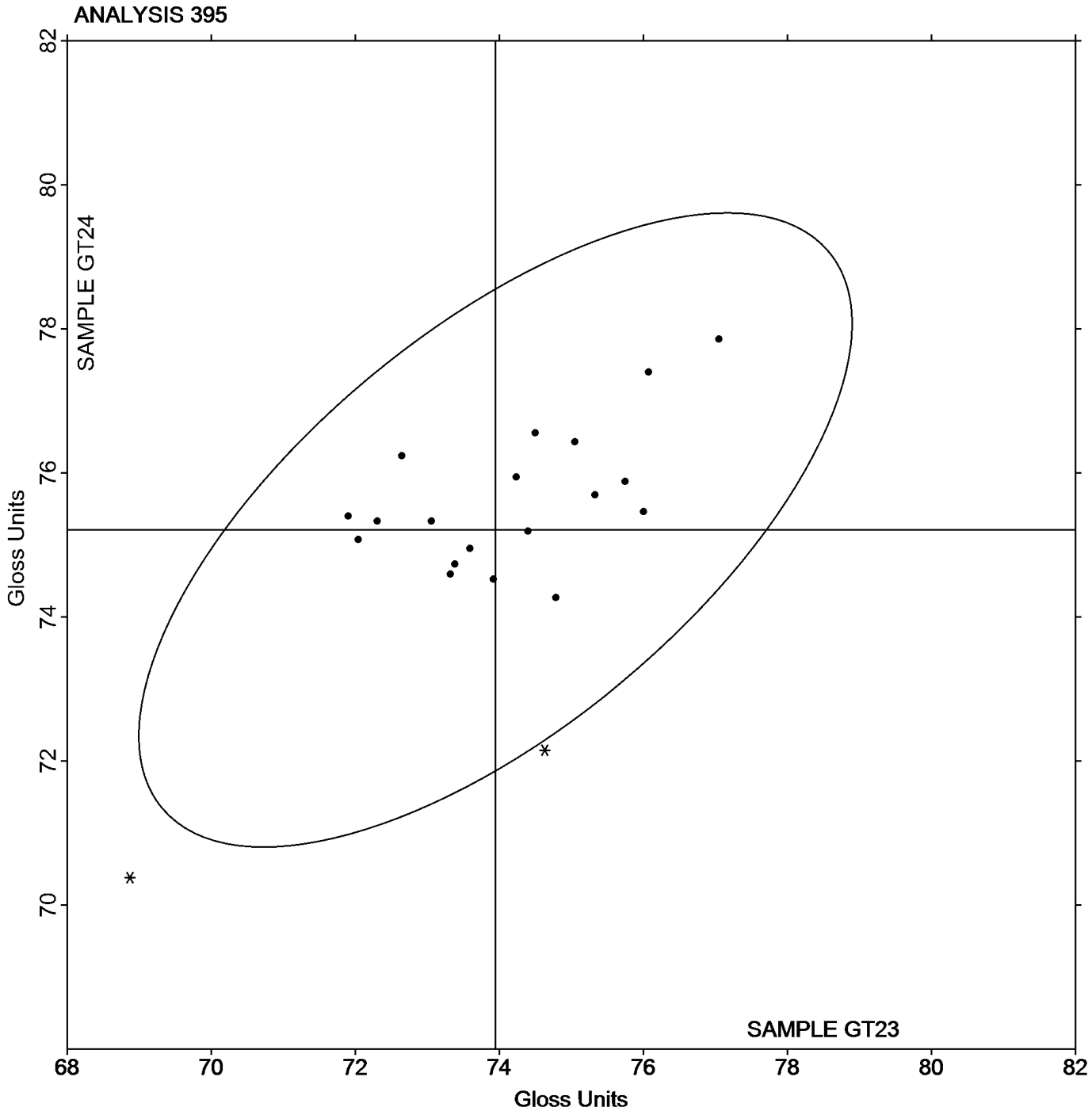
Paper & Paperboard Interlaboratory Testing Program

Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT23** = 73.945 Gloss Units

Grand Mean Sample **GT24** = 75.208 Gloss Units



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

WebCode	Data Flag	Sample GU23 Lab Mean	Sample GU23 Diff from Grand Mean	Sample GU23 CPV	Sample GU24 Lab Mean	Sample GU24 Diff from Grand Mean	Sample GU24 CPV	Instr Code
3DDJK9		27.10	0.78	0.86	45.48	0.60	0.47	TH
APH8D4		26.23	-0.09	-0.10	44.91	0.03	0.03	PP
D3VHUP		26.05	-0.27	-0.30	44.34	-0.54	-0.41	XX
DKWNLW		26.41	0.09	0.10	44.92	0.04	0.03	TG
EJY79E		25.09	-1.23	-1.37	45.06	0.18	0.14	TH
GQNMJ3		25.84	-0.48	-0.53	43.23	-1.65	-1.27	TG
LZYLA8		27.34	1.02	1.13	46.51	1.63	1.26	TH
MVXWDR		26.86	0.54	0.59	44.84	-0.04	-0.03	TH
R4WNRA		24.83	-1.49	-1.65	42.61	-2.27	-1.75	LA
YKZU3K		27.48	1.16	1.28	46.86	1.98	1.53	TH

Summary Statistics

	Sample GU23	Sample GU24
Grand Means	26.323 Gloss Units	44.876 Gloss Units
SD Btwn Labs	0.903 Gloss Units	1.297 Gloss Units

Statistics based on 10 of 10 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

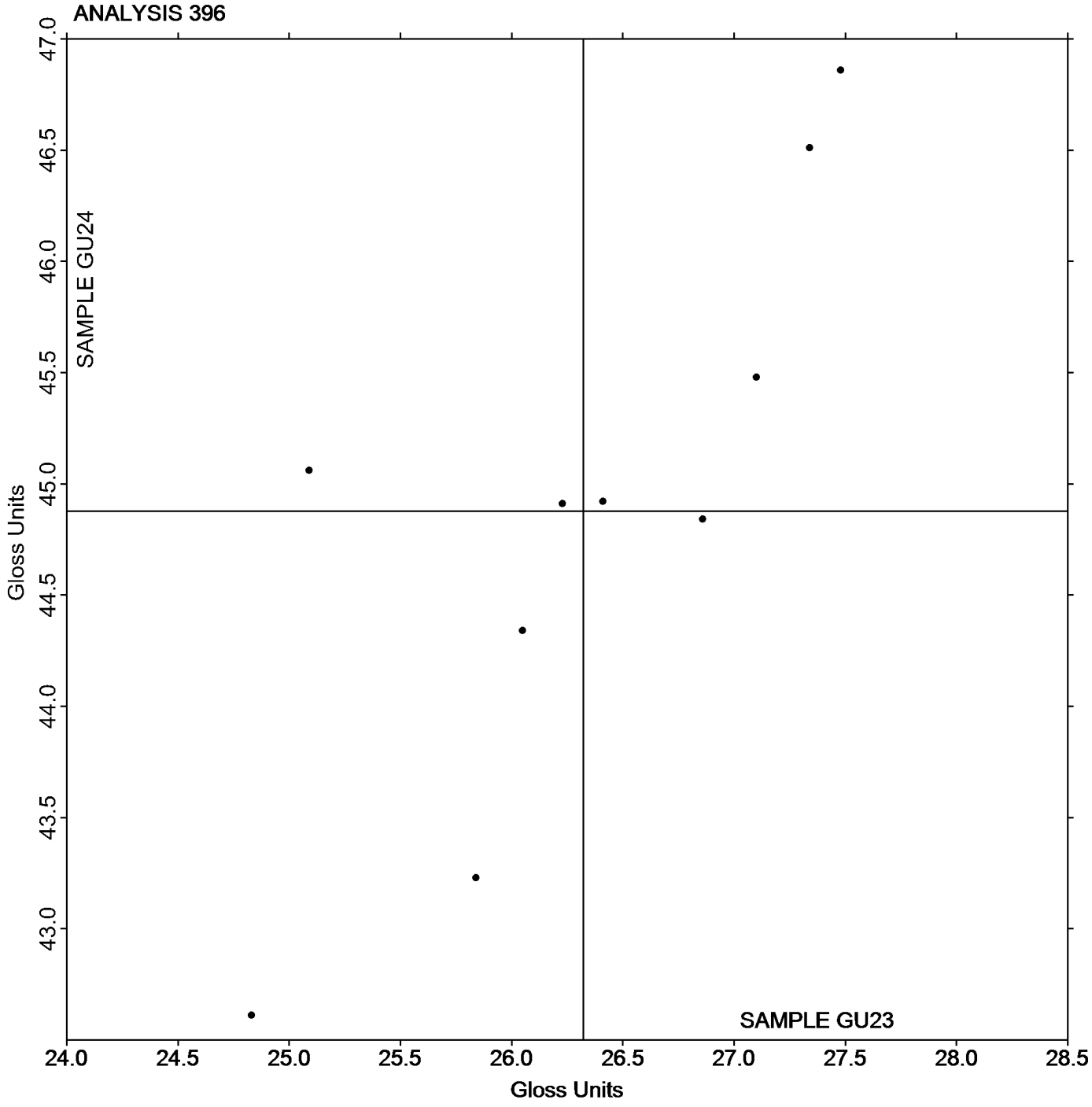
Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU23** = 26.323 Gloss Units

Grand Mean Sample **GU24** = 44.876 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 GW23 Lab Mean	Sample GW23 Diff from Grand Mean	Sample GW23 CPV	Sample GW24 Lab Mean	Sample GW24 Diff from Grand Mean	Sample GW24 CPV
2U7UU7		85.71	-0.39	-0.63	100.0	-0.4	-0.55
3DDJK9		86.61	0.52	0.84	100.6	0.2	0.35
4VKVMA		86.48	0.39	0.63	100.8	0.5	0.74
68F2W8		85.73	-0.37	-0.59	99.5	-0.9	-1.37
78RKDB		86.62	0.53	0.86	99.8	-0.6	-0.95
AKNDF3		85.99	-0.10	-0.17	100.0	-0.3	-0.55
BJKUMC		86.07	-0.02	-0.04	100.5	0.1	0.13
BTUYZ3		85.60	-0.49	-0.80	100.0	-0.4	-0.58
BX2RTD		85.98	-0.12	-0.19	99.9	-0.5	-0.73
D3VHUP		85.92	-0.18	-0.29	100.2	-0.1	-0.23
DUHTTW		86.55	0.45	0.73	100.4	0.1	0.09
EJY79E		85.37	-0.72	-1.17	100.0	-0.4	-0.63
ELMART		85.47	-0.62	-1.01	100.2	-0.1	-0.20
EXA4Y8		85.47	-0.63	-1.01	100.1	-0.3	-0.44
FBZ9AX		86.00	-0.09	-0.14	101.0	0.6	0.97
FWEKW7		87.02	0.93	1.50	101.4	1.0	1.60
GQNMJ3		86.70	0.61	0.98	101.0	0.6	0.99
GYYN64		87.17	1.07	1.74	101.6	1.3	1.99
H2ZCWY		85.69	-0.41	-0.66	100.8	0.4	0.61
LHZ9Z7		85.60	-0.49	-0.80	99.6	-0.8	-1.24
LZYLA8		85.19	-0.90	-1.46	99.1	-1.3	-1.99
MGYR92		86.67	0.58	0.93	100.9	0.5	0.78
NMPXKP		85.29	-0.80	-1.30	100.0	-0.3	-0.53
PW4XCV		86.10	0.00	0.00	100.0	-0.3	-0.55
QDAGNT	*	86.86	0.76	1.24	99.9	-0.4	-0.67
QLZ3TQ		87.40	1.31	2.11	101.7	1.4	2.12
R4WNRA		85.94	-0.16	-0.25	100.6	0.3	0.40
V9H4PK		85.94	-0.16	-0.25	100.7	0.3	0.48
VMFQZ7		86.94	0.85	1.37	101.2	0.9	1.33
W78W7C		85.66	-0.43	-0.70	100.4	0.0	-0.02
XHUAEK		85.18	-0.91	-1.48	99.5	-0.9	-1.36

Summary Statistics

	Sample GW23	Sample GW24
Grand Means	86.093 g/sq m	100.37 g/sq m
SD Btwn Labs	0.618 g/sq m	0.64 g/sq m

Statistics based on 31 of 31 reporting participants

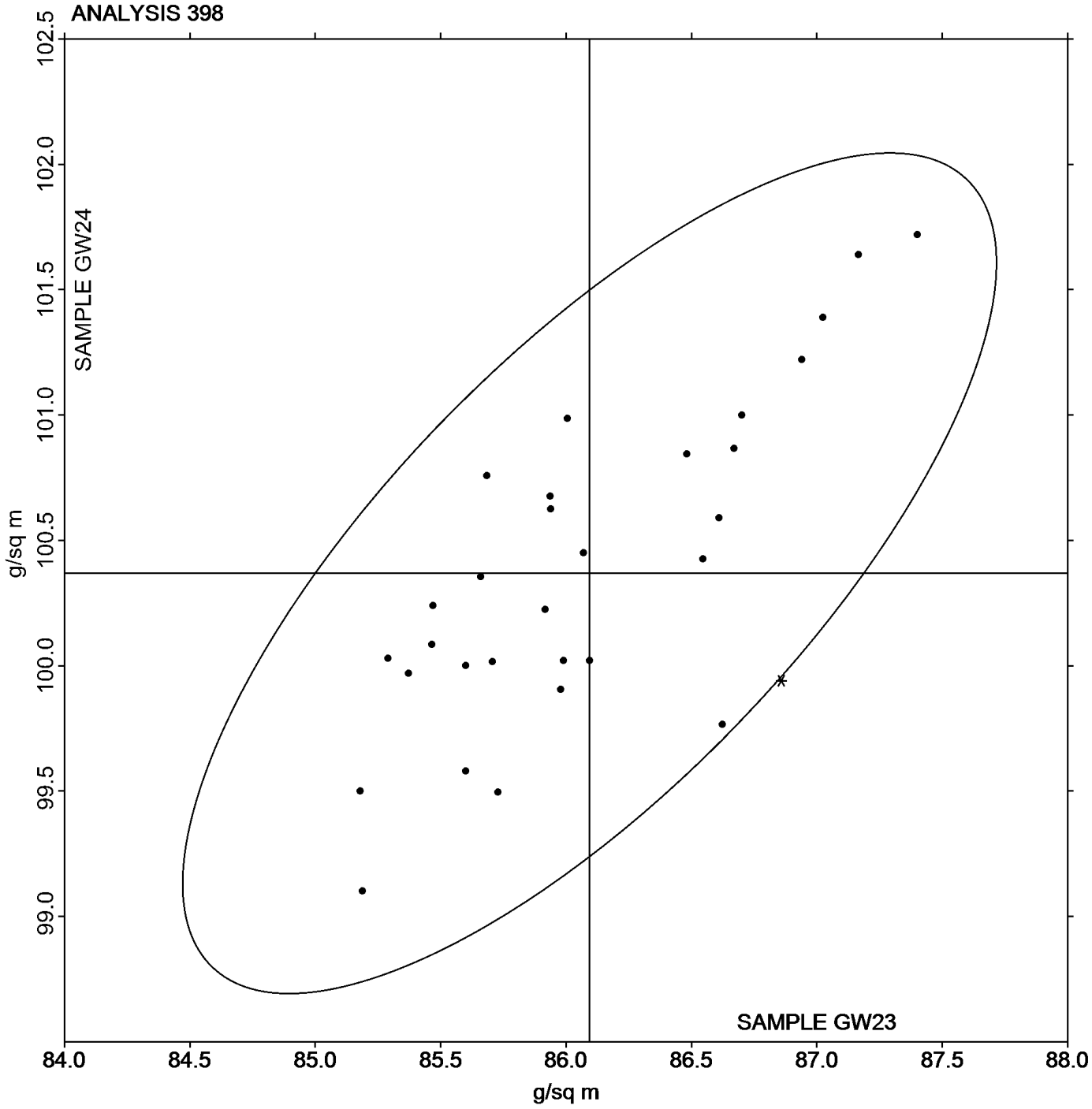
Paper & Paperboard Interlaboratory Testing Program

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW23** = 86.093 g/sq m

Grand Mean Sample **GW24** = 100.37 g/sq m



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

WebCode	Data Flag	Sample GX23 Lab Mean	Sample GX23 Diff from Grand Mean	Sample GX23 CPV	Sample GX24 Lab Mean	Sample GX24 Diff from Grand Mean	Sample GX24 CPV
2VC4GN		39.30	8.33	0.61	37.00	6.85	0.70
2YWWMP		16.93	-14.04	-1.03	16.50	-13.65	-1.39
3QWT4J		21.56	-9.41	-0.69	24.55	-5.60	-0.57
78RKDB		52.50	21.53	1.58	45.90	15.75	1.61
8JXZRJ		19.41	-11.56	-0.85	22.57	-7.58	-0.77
AFCUDF		20.33	-10.65	-0.78	23.43	-6.71	-0.69
ALJURY		44.86	13.89	1.02	40.18	10.03	1.03
APH8D4		13.29	-17.68	-1.30	17.01	-13.14	-1.34
ARPPCY		45.04	14.07	1.03	43.38	13.23	1.35
CJYJN4		16.72	-14.25	-1.04	20.54	-9.61	-0.98
D7F2ND		14.13	-16.84	-1.23	16.99	-13.16	-1.34
DVXH4G		23.44	-7.53	-0.55	29.82	-0.33	-0.03
FXFT7Y		29.70	-1.27	-0.09	31.90	1.75	0.18
G4FRUT		23.80	-7.17	-0.53	29.24	-0.91	-0.09
GX9TA9		20.91	-10.06	-0.74	23.60	-6.55	-0.67
GXAYZX	*	76.19	45.22	3.31	59.43	29.28	2.99
H2ZCWY		46.57	15.60	1.14	36.08	5.93	0.61
HBQW3W	M	14.12	-16.85	-1.23	No data reported for this sample		
HCPG9R		23.95	-7.02	-0.51	24.34	-5.81	-0.59
HX3TVZ		30.84	-0.13	-0.01	24.68	-5.47	-0.56
L8YFHL		39.31	8.34	0.61	29.46	-0.69	-0.07
LZYLA8		39.48	8.51	0.62	39.41	9.26	0.95
NAJ7HG		39.93	8.96	0.66	29.67	-0.48	-0.05
NL7XZR		26.90	-4.07	-0.30	29.90	-0.25	-0.03
NMPXKP		27.70	-3.27	-0.24	20.00	-10.15	-1.04
NNKFMQ		16.14	-14.83	-1.09	22.06	-8.09	-0.83
NPRVVH		28.80	-2.17	-0.16	34.20	4.05	0.41
NZDY4G		33.12	2.15	0.16	42.42	12.27	1.25
UGFRCC		20.60	-10.37	-0.76	30.40	0.25	0.03
UVZ8FB		36.21	5.24	0.38	40.25	10.10	1.03
VARNGE		36.98	6.01	0.44	21.99	-8.16	-0.83
ZAXU3K		45.78	14.81	1.08	33.49	3.34	0.34
ZZBVCF		20.72	-10.25	-0.75	24.26	-5.89	-0.60

Summary Statistics

	Sample GX23	Sample GX24
Grand Means	30.973 Seconds	30.145 Seconds
SD Btwn Labs	13.653 Seconds	9.786 Seconds

Statistics based on 32 of 33 reporting participants

Comments on assigned Data Flags for Test #399

HBQW3W (M) - No data for Sample GX24.

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

Paper & Paperboard Interlaboratory Testing Program

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample **GX23** = 30.973 Seconds

Grand Mean Sample **GX24** = 30.145 Seconds