Collaborative Testing Services, Inc.

Paper & Paperboard Testing Program

Summary Report #2892 G-August 2017

Introduction to the Paper & Paperboard Program

Explanation of Tables and Definitions of Terms

Analysis	Analysis Name
350	Color & Color Difference (Near White Papers),
351	Color & Color Difference (Near White Papers),
360	Thickness (Caliper), Printing papers,
361	Thickness (Caliper), Packaging papers,
364	Coefficient of Static Friction-Horizontal Plane,
365	Coefficient of Kinetic Friction-Horizontal Plane,
370	Air Resistance, Gurley Oil Type,
372	Porosity, Sheffield Type,
376	Roughness - Print Surf Method 0.5 to 4.0 Microns,
377	Roughness - Print Surf Method 2.5 to 6.0 Microns,
378	Roughness, Sheffield Type,
382	Moisture Content,
384	Opacity (89% Backing) 82 to 95%,
386	Opacity (Paper Backing) 82 to 95%,
390	Brightness (Directional),
391	Directional Brightness of Fluorescent Samples,
392	Brightness (Diffuse),
394	Fluorescent Component of Directional Brightness,
395	Specular Gloss 75 Degree, 50-95 Units,
396	Specular Gloss 75 Degreee, 10-50 Units,
398	Grammage (Basis Weight),
399	Sizing Test, Hercules Type,

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.

Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code
2Q8ERP		GA45	93.40	-0.51	3.45	0.30	-0.06	0.06	0.31	TS
		GA46	93.70	-0.58	3.51					
32LVZL		GA45	94.30	-0.69	3.52	0.34	0.00	0.05	0.34	MK
		GA46	94.63	-0.69	3.57					
4AX8QR		GA45	94.05	-0.76	3.92	0.45	0.03	0.24	0.51	VM
		GA46	94.51	-0.73	4.16					
8DJKHH		GA45	93.47	-0.97	2.90	0.35	0.00	0.05	0.35	HH
		GA46	93.82	-0.97	2.96					
8TUBEV		GA45	94.98	-0.64	3.66	0.26	0.03	0.08	0.27	LS
		GA46	95.24	-0.61	3.74					
994A6E		GA45	93.06	0.17	2.86	0.30	-0.02	0.03	0.30	TS
		GA46	93.36	0.14	2.89					
DZCM2B		GA45	93.68	-0.69	3.81	0.62	-0.04	0.06	0.63 X	NE
		GA46	94.30	-0.73	3.87					
FM4EGX		GA45	93.76	-0.69	3.75	0.45	0.03	0.04	0.45	TC
		GA46	94.20	-0.66	3.79					
FVT8L4		GA45	95.17	-0.75	3.60	0.31	0.00	0.06	0.31	TC
		GA46	95.47	-0.75	3.67					
J4G622		GA45	92.50	-0.32	2.88	-0.20	-0.12	-0.16	0.28	TS
		GA46	92.30	-0.44	2.72					
KB9YC6		GA45	92.95	-0.29	3.36	0.41	-0.05	0.05	0.41	HH
		GA46	93.36	-0.34	3.42					
LGGMP7		GA45	94.60	-0.68	3.49	0.31	0.05	0.03	0.32	HE
		GA46	94.91	-0.63	3.53					
LUXKNF		GA45	95.10	-0.74	3.72	0.29	0.04	0.08	0.30	EH
		GA46	95.38	-0.70	3.80					
MXHRR9		GA45	94.02	-0.29	3.32	0.38	-0.11	0.11	0.41	TS
		GA46	94.40	-0.39	3.42					
N2VVXG		GA45	93.83	-0.80	3.54	0.38	-0.02	0.13	0.41	XX
		GA46	94.21	-0.82	3.67					
NFVQCW		GA45	96.64	-0.70	2.79	0.36	-0.02	0.00	0.36	XS
		GA46	96.99	-0.72	2.79					

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Paper & Paperboard 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
NT22JJ		GA45	93.81	-0.83	3.68	0.39	-0.01	0.09	0.40	LA
		GA46	94.20	-0.84	3.77					
PCRAKK		GA45	92.85	-0.15	3.38	0.39	-0.11	0.07	0.41	TS
		GA46	93.25	-0.25	3.45					
PMMP2A		GA45	93.72	-0.80	3.60	0.43	-0.02	0.15	0.45	TC
		GA46	94.15	-0.82	3.75					
TAU6CW		GA45	94.99	-0.85	3.65	0.28	0.01	0.03	0.29	LS
		GA46	95.27	-0.84	3.69					
V7ZDYG		GA45	93.84	-0.71	3.58	0.37	-0.02	0.08	0.38	TC
		GA46	94.22	-0.73	3.66					
VKZZJQ		GA45	95.04	-0.74	3.70	0.32	-0.01	0.10	0.33	EH
		GA46	95.36	-0.75	3.80					
Z3QNMA		GA45	95.12	-0.98	3.52	-0.10	0.04	-0.35	0.37	HE
		GA46	95.02	-0.94	3.17					

Summary Statistics

Grand Means							
GA45	94.155	-0.627	3.463	0.321	-0.017	0.046	0.374
GA46	94.520	-0.644	3.528				
Stnd Dev Btwn Labs							
GA45	0.915	0.276	0.326	0.168	0.047	0.111	0.084
GA46	0.889	0.249	0.374				

Statistics based on 23 of 23 reporting participants

Key to Instrument Codes Reported by Participants

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
TS	Technidyne Brightimeter Micro S-5	VM	Valmet PaperLab (was Kajaani/Robotest)
XS	X-Rite 938 Spectrodensitometer	XX	Instrument make/model not specified by lab

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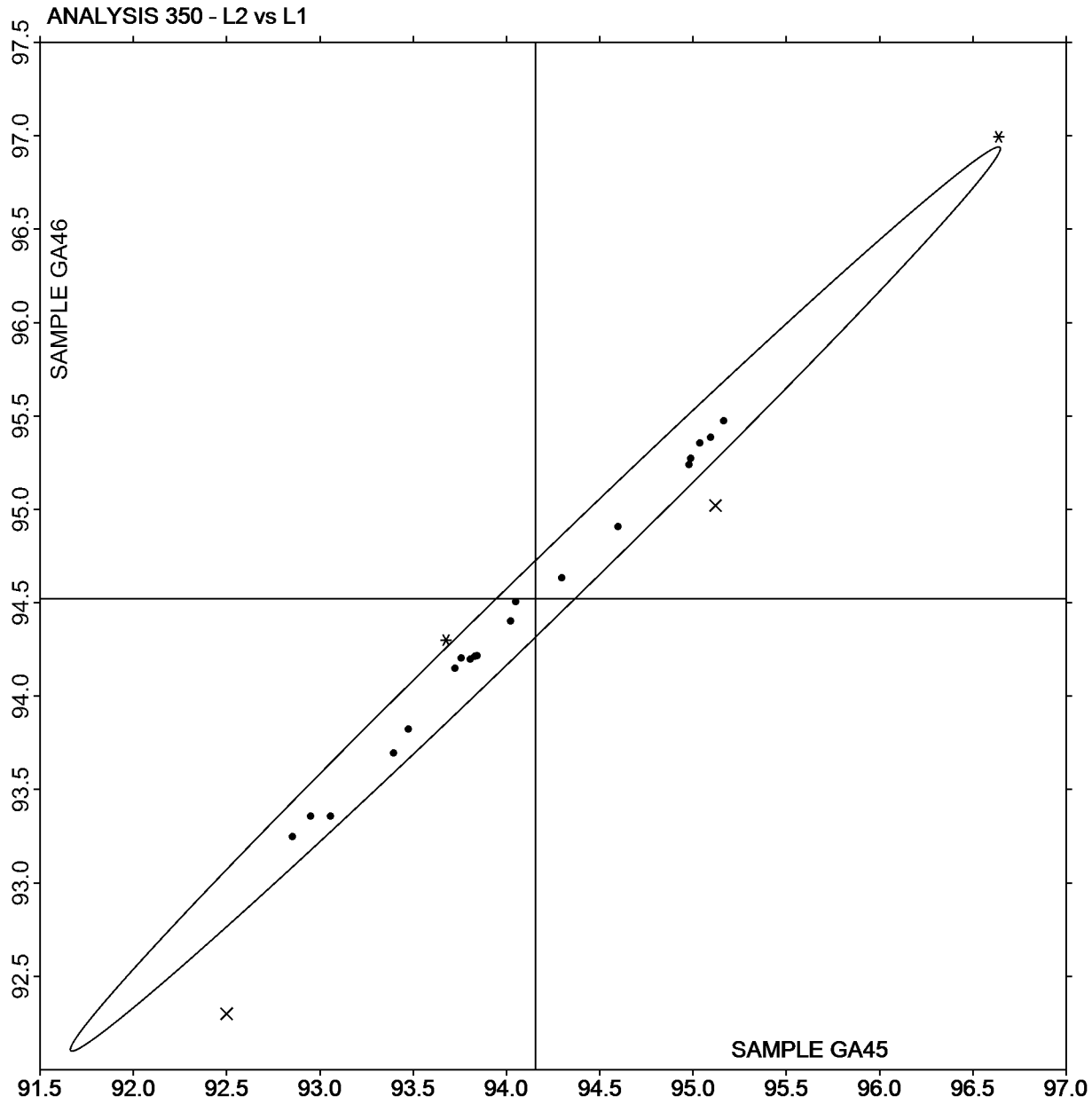
Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of L values GA46 v L values GA45



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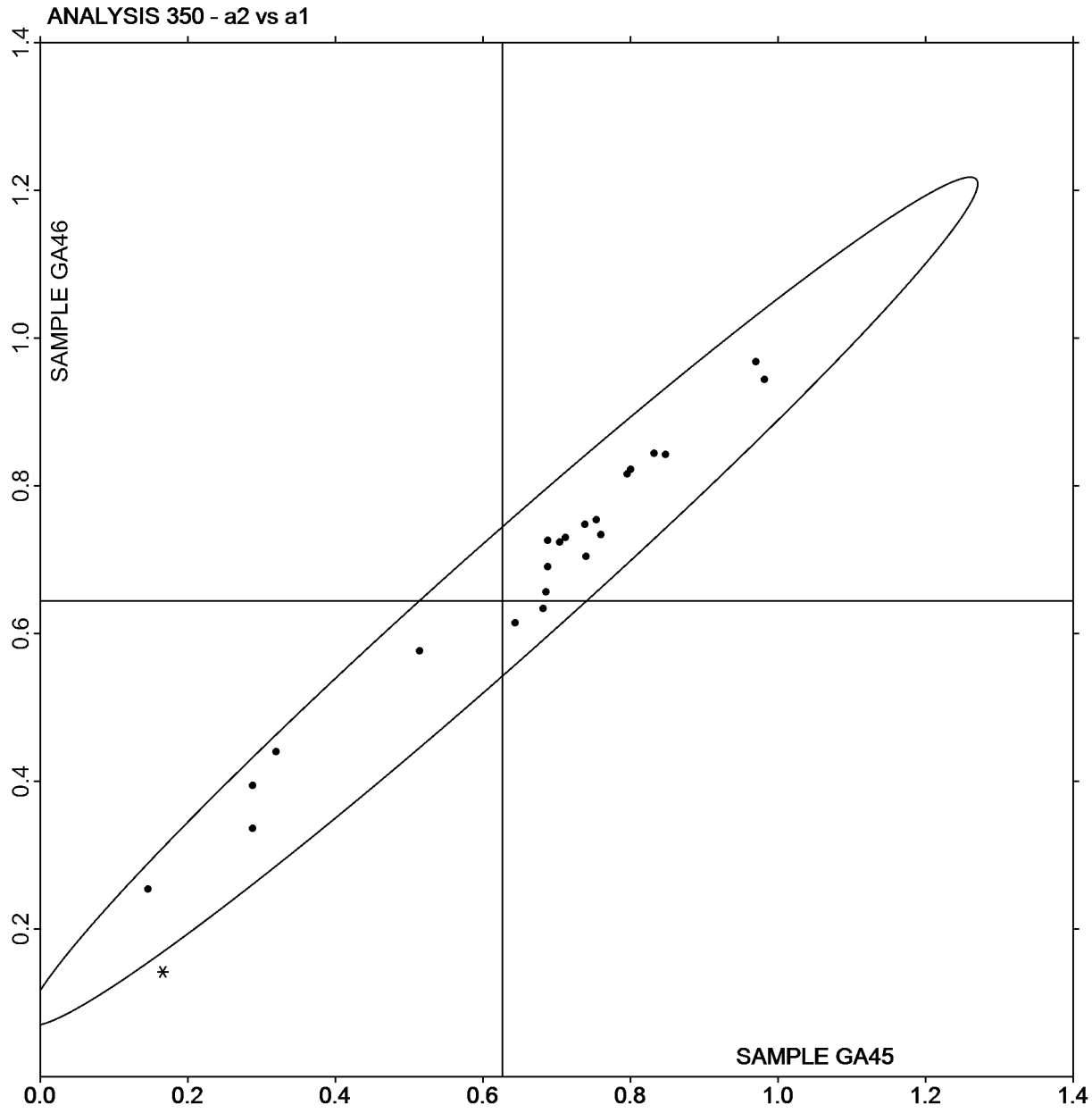
Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of a values GA46 v a values GA45



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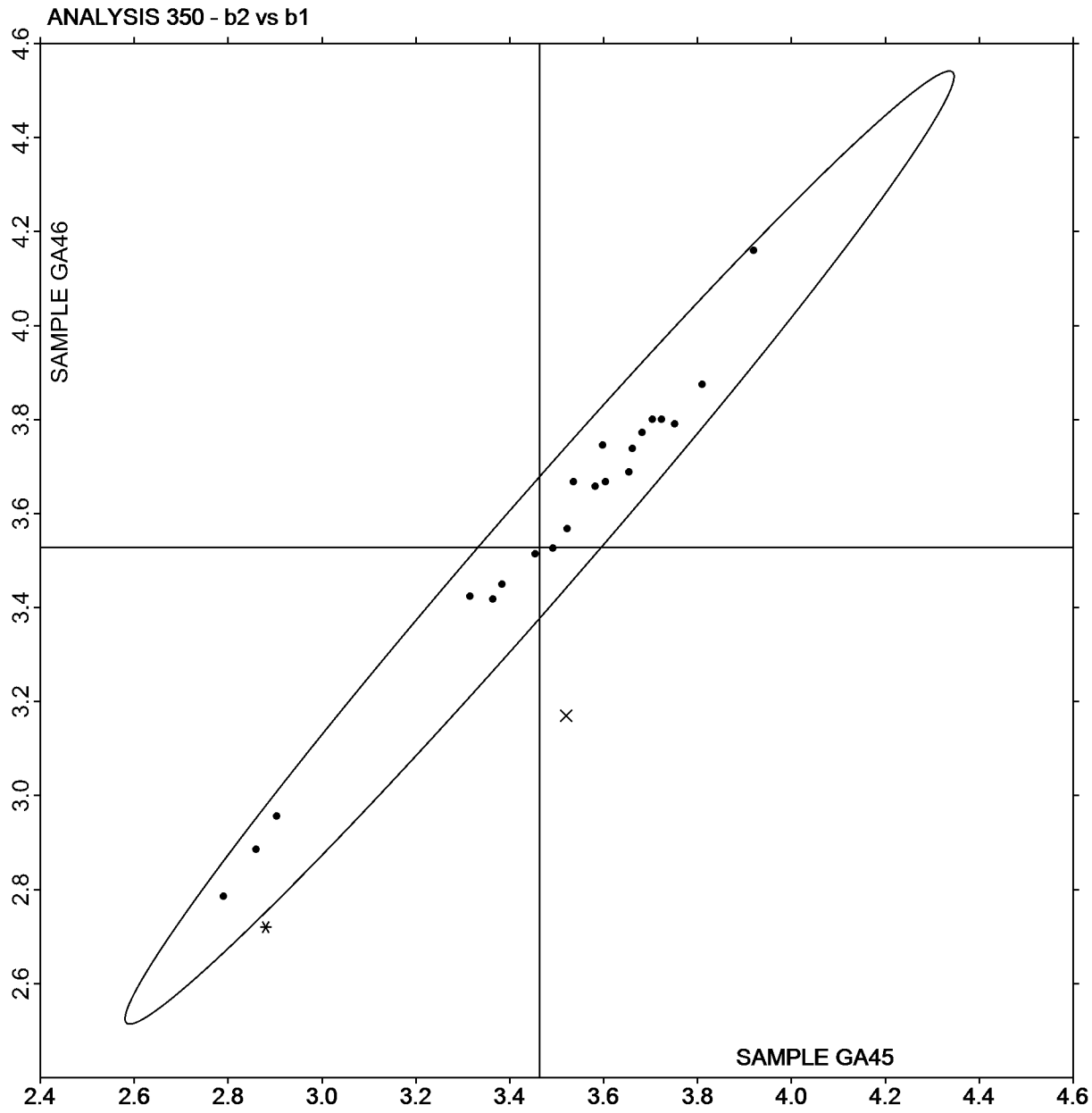
Plot of b values GA46 v b values GA45



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8C9LLN	GA45	94.04	-0.79	3.55	0.34	0.02	0.03	0.34	LS
	GA46	94.38	-0.77	3.58					
8TUBEV	GA45	95.10	-0.77	3.62	0.24	0.01	0.10	0.26	LS
	GA46	95.34	-0.76	3.72					
BFYWAJ	GA45	95.31	-0.64	3.68	0.26	0.02	0.06	0.27	HT
	GA46	95.58	-0.62	3.74					
CTJTQ8	GA45	95.45	-0.67	3.65	0.28	0.03	0.05	0.29	HT
	GA46	95.73	-0.65	3.70					
CV7G4T	GA45	95.15	-0.60	3.95	0.27	0.05	0.05	0.28	NG
	GA46	95.42	-0.55	4.00					
E7XZF4	GA45	93.69	-0.65	3.40	0.37	0.03	0.07	0.38	TC
	GA46	94.06	-0.62	3.48					
EBTP33	GA45	95.38	-0.69	3.47	0.25	0.04	0.04	0.26	XX
	GA46	95.64	-0.65	3.51					
GTPUKV	GA45	95.16	-0.74	3.70	0.28	0.04	0.04	0.29	EF
	GA46	95.44	-0.70	3.74					
HCEAHX	GA45	95.11	-0.63	3.76	0.28	0.04	-0.12	0.31	LS
	GA46	95.39	-0.59	3.64					
J7K4TL	GA45	97.03	-0.67	3.05	0.35	0.06	0.13	0.38	XP
	GA46	97.38	-0.60	3.19					
KJMVBJ	GA45	95.23	-0.61	3.92	0.28	0.06	0.01	0.28	NG
	GA46	95.51	-0.55	3.93					
LGGMP7	GA45	94.54	-0.69	3.49	0.40	0.05	0.04	0.41	HE
	GA46	94.94	-0.63	3.53					
QYYCQZ	GA45	94.76	-0.74	3.55	-0.23	0.03	-0.41	0.47	NG
	GA46	94.53	-0.72	3.14					
R4QY3K	GA45	95.43	-0.62	3.80	0.29	0.03	0.06	0.30	XM
	GA46	95.72	-0.59	3.86					
UXVQP6	GA45	94.65	-0.84	3.43	-0.06	0.01	-0.32	0.33	EH
	GA46	94.59	-0.83	3.11					
WWTZBL	GA45	94.46	-0.55	3.33	0.46	0.03	0.13	0.48	HV
	GA46	94.92	-0.52	3.46					
YUX2AT	GA45	95.33	-0.56	3.74	0.26	0.03	0.09	0.28	NF
	GA46	95.59	-0.53	3.83					
YYBN4X	GA45	95.48	-0.66	3.84	0.25	0.02	0.01	0.25	XV
	GA46	95.73	-0.65	3.84					

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ZBY4MQ	GA45	94.25	-0.65	3.45	0.30	0.05	0.03	0.31	HE
	GA46	94.56	-0.60	3.49					
ZKNUAJ	GA45	95.30	-0.67	3.75	0.25	0.05	0.07	0.27	HT
	GA46	95.55	-0.62	3.82					

Summary Statistics

Grand Means								
GA45	95.043	-0.673	3.606	0.257	0.035	0.009	0.321	
GA46	95.300	-0.638	3.615					
Stnd Dev Btwn Labs								
GA45	0.694	0.074	0.218	0.150	0.015	0.139	0.067	
GA46	0.711	0.081	0.256					

Statistics based on 20 of 20 reporting participants

Key to Instrument Codes Reported by Participants

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	XV	X-Rite SP60 Series
XX	Instrument make/model not specified by lab		

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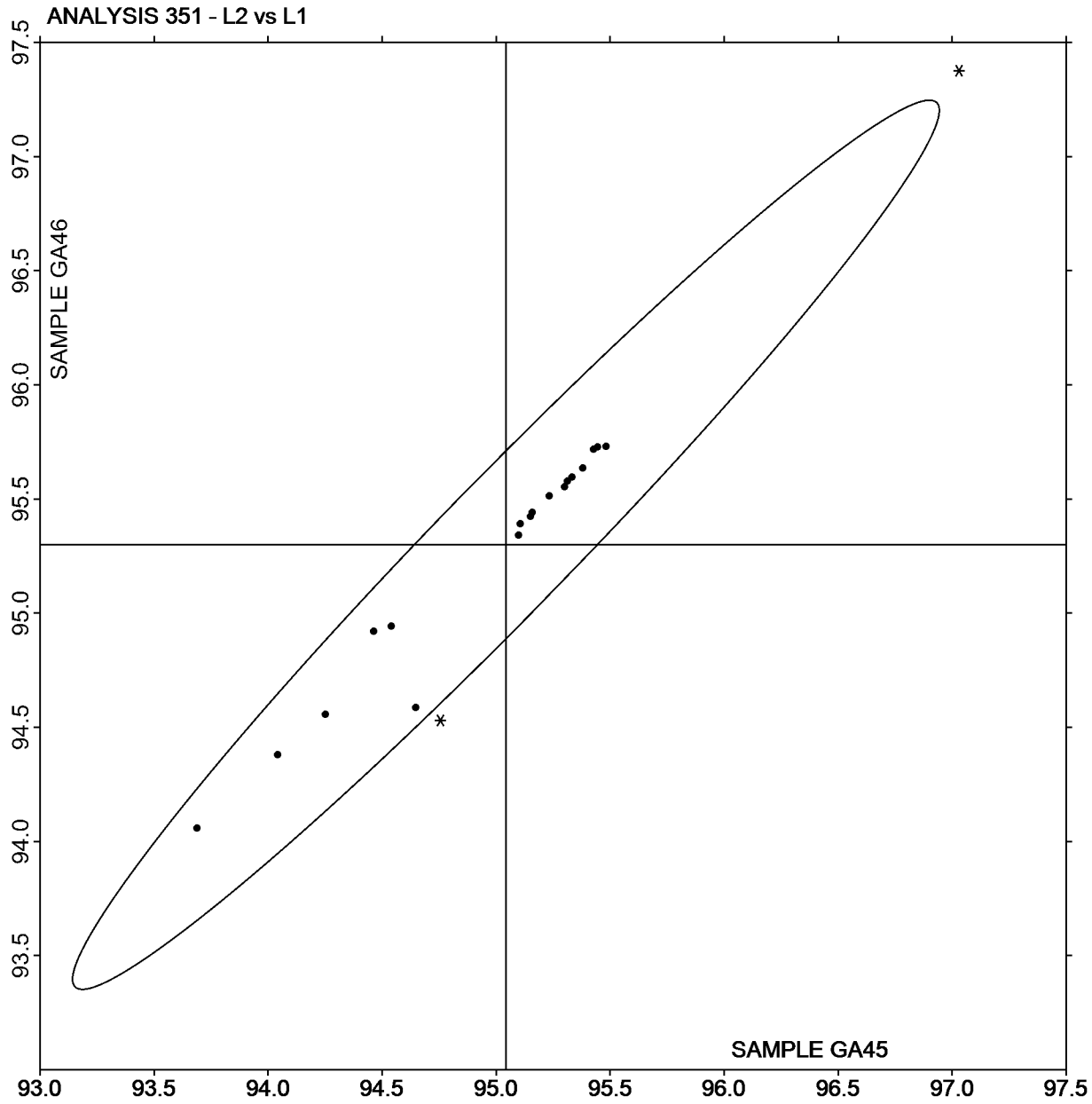
Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of L values GA46 v L values GA45



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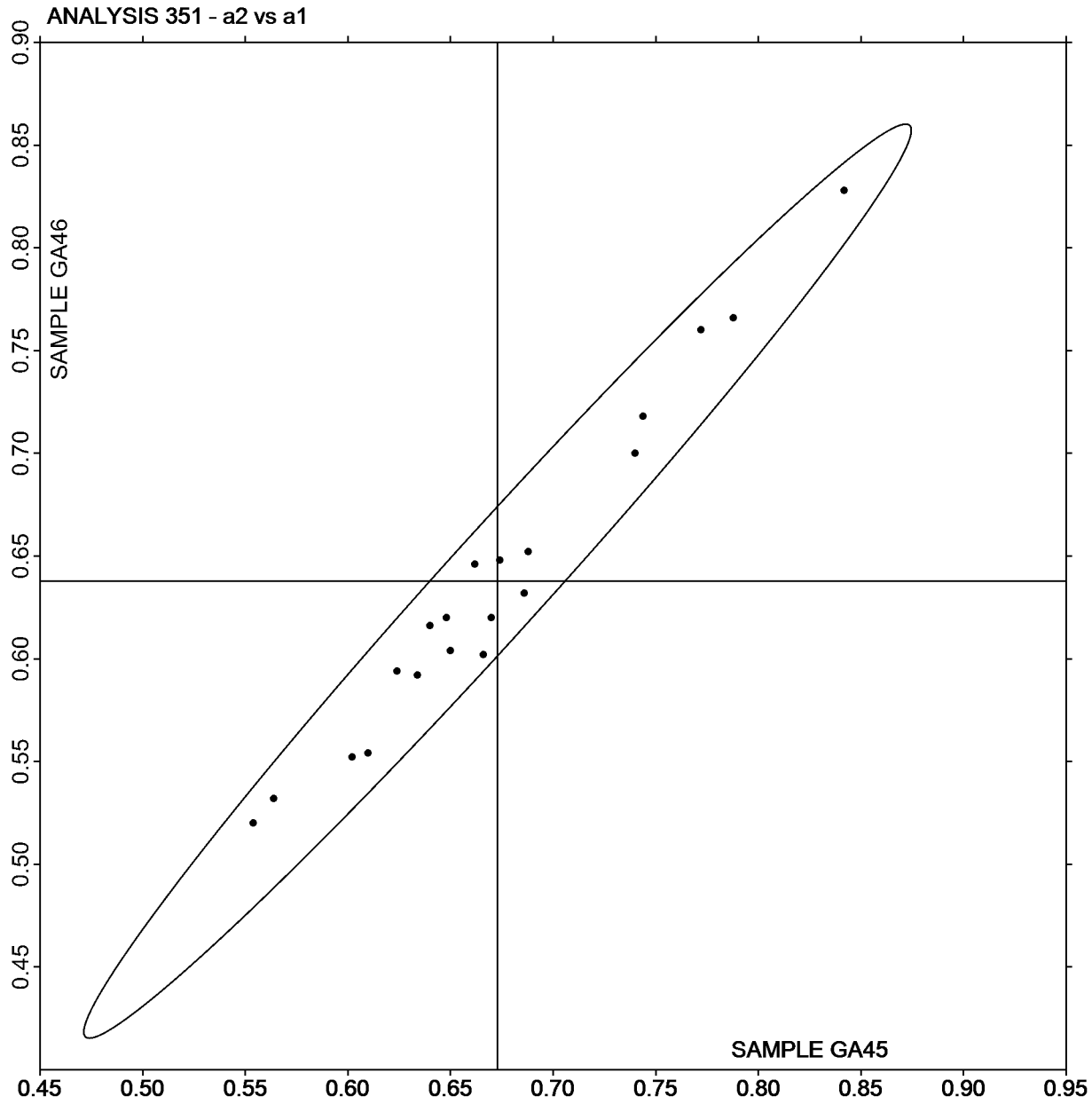
Web Code	F	Samples	Hunter L, a, b Color Values L	a	b	Color Difference Values ΔL	Δa	Δb	ΔE	Instr Code

Plot of a values GA46 v a values GA45



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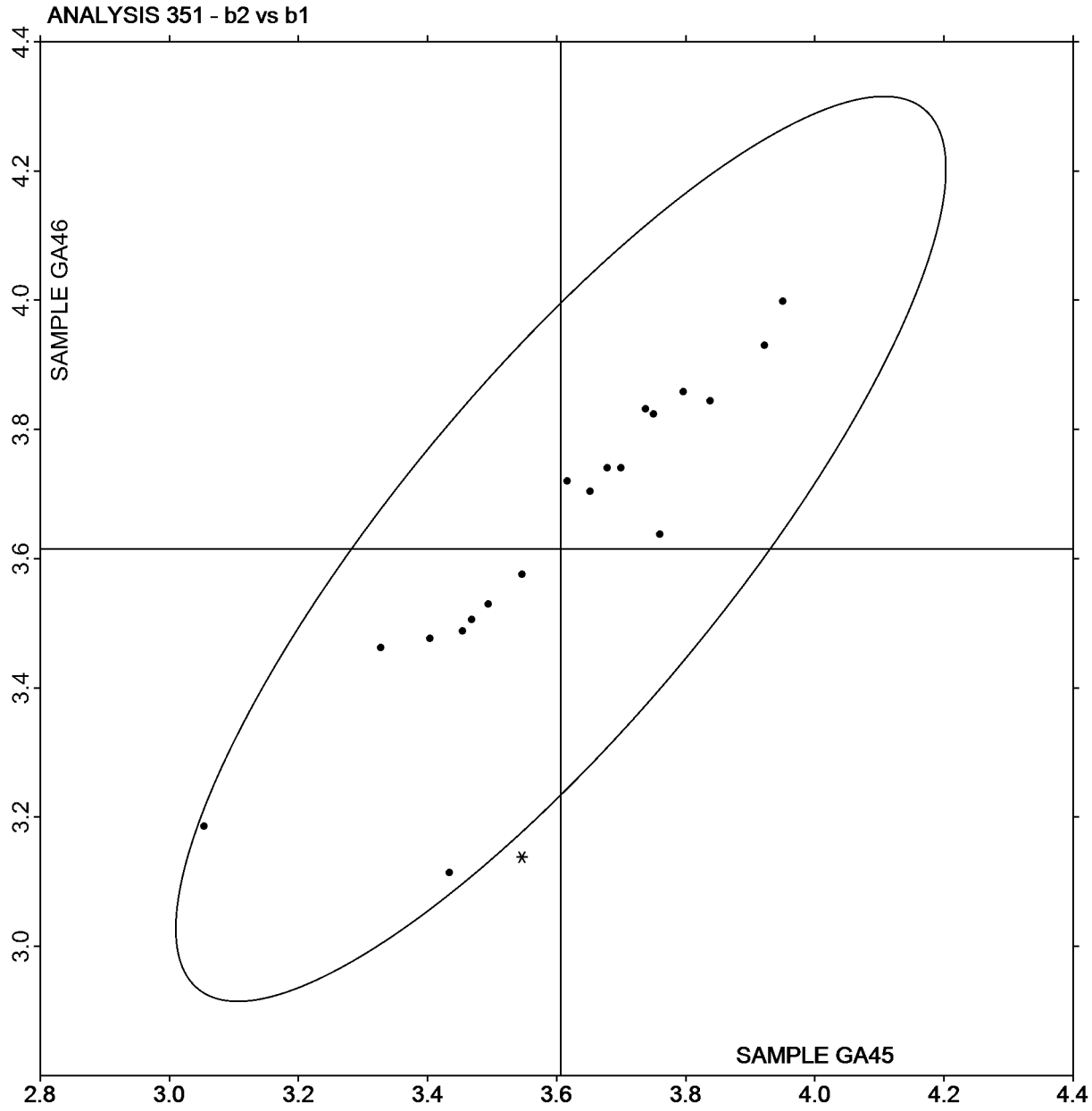
Plot of b values GA46 v b values GA45



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WebCode	Data Flag	Sample GV45 Lab Mean	Sample GV45 Diff from Grand Mean	Sample GV45 CPV	Sample GV46 Lab Mean	Sample GV46 Diff from Grand Mean	Sample GV46 CPV	Instr Code
2MMRVV		4.988	0.010	0.12	5.001	0.019	0.20	LW
2Q8ERP		4.880	-0.098	-1.23	4.922	-0.061	-0.66	LA
32LVZL		4.985	0.007	0.08	4.966	-0.017	-0.18	PP
32NHDU		4.961	-0.017	-0.22	4.986	0.003	0.03	EM
4DDWX9		5.055	0.077	0.96	5.039	0.056	0.61	LW
4JJHXY	X	4.703	-0.275	-3.44	4.933	-0.050	-0.54	TA
4KAW4N		5.042	0.064	0.80	4.942	-0.041	-0.44	EM
4PMJXT		5.087	0.108	1.35	5.083	0.100	1.08	TM
6ZLRYA		5.033	0.054	0.68	5.034	0.051	0.55	LW
73QKQN		5.076	0.097	1.22	5.036	0.053	0.57	LW
76RRQR		5.010	0.032	0.40	4.964	-0.019	-0.20	XX
8HDKWD		4.909	-0.070	-0.87	4.910	-0.073	-0.79	LW
8V3AY6		4.989	0.011	0.13	4.917	-0.066	-0.72	LW
994A6E		4.817	-0.161	-2.01	4.826	-0.156	-1.70	TM
9TVB33		5.000	0.022	0.27	5.020	0.037	0.40	LW
A7CQJ8		4.890	-0.088	-1.10	4.876	-0.107	-1.16	PP
A8Q8QT		4.940	-0.038	-0.48	4.940	-0.043	-0.47	XX
BFYWAJ		4.914	-0.064	-0.80	5.042	0.059	0.64	EM
BYBN7U		5.013	0.035	0.43	5.057	0.074	0.81	LA
CT2W6Z		5.069	0.091	1.13	5.033	0.050	0.55	LW
CV7G4T		4.887	-0.091	-1.14	4.868	-0.115	-1.25	PP
DTC7NJ		4.883	-0.095	-1.19	4.839	-0.144	-1.56	PP
EBTP33		4.924	-0.054	-0.68	4.940	-0.043	-0.47	LW
FVT8L4		4.918	-0.060	-0.75	4.981	-0.002	-0.02	LA
GRDUM2	*	4.880	-0.098	-1.23	4.737	-0.246	-2.67	EM
H8LB43		4.859	-0.119	-1.49	4.895	-0.088	-0.95	FR
HANB2D		4.965	-0.013	-0.17	4.953	-0.030	-0.32	TA
J7K4TL		5.025	0.047	0.58	5.050	0.067	0.73	TM
KJMVBJ		5.044	0.066	0.82	5.018	0.035	0.38	EM
LUXKNF		5.009	0.031	0.38	5.006	0.023	0.25	EM
MFUFYE		4.938	-0.040	-0.51	4.943	-0.040	-0.43	XX
MXHRR9		4.893	-0.085	-1.06	4.996	0.013	0.14	EM
N2ETDN		4.997	0.019	0.23	5.031	0.048	0.52	EM
N2VVXG		5.150	0.172	2.14	5.140	0.157	1.71	XX
ND8G3V		5.043	0.065	0.81	4.976	-0.007	-0.08	LW
NFVQCW		4.950	-0.028	-0.35	4.950	-0.033	-0.36	TM
NT22JJ		5.033	0.054	0.68	5.059	0.076	0.83	LA
PMMP2A		4.974	-0.004	-0.05	5.086	0.103	1.12	TA
PU64Z9		5.107	0.129	1.61	5.156	0.173	1.88	EM
PX8YQ3	*	4.782	-0.196	-2.45	4.762	-0.221	-2.40	EM
Q7HK96		4.996	0.017	0.22	4.979	-0.004	-0.04	EM

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WebCode	Data Flag	Sample GV45 Lab Mean	Sample GV45 Diff from Grand Mean	Sample GV45 CPV	Sample GV46 Lab Mean	Sample GV46 Diff from Grand Mean	Sample GV46 CPV	Instr Code
QNGVXU		5.013	0.034	0.43	5.004	0.022	0.23	TM
QYYCQZ		5.004	0.026	0.32	4.994	0.012	0.13	LW
R4QY3K		4.972	-0.006	-0.07	5.071	0.088	0.96	LW
R8AWPQ		5.012	0.034	0.42	5.134	0.151	1.64	TM
RXJD9W		4.840	-0.138	-1.73	4.800	-0.183	-1.99	TM
TABL64		4.991	0.013	0.16	4.922	-0.061	-0.66	LA
TAU6CW		5.089	0.111	1.39	5.072	0.090	0.97	LW
TZMP6N		4.830	-0.148	-1.85	4.860	-0.123	-1.33	TM
UX9HGL		4.906	-0.073	-0.91	4.941	-0.042	-0.45	LW
V7ZDYG		5.052	0.074	0.92	5.041	0.058	0.63	TA
VU4CDZ		5.072	0.094	1.17	5.069	0.086	0.94	TM
WWTZBL		4.935	-0.043	-0.54	4.927	-0.056	-0.61	TA
XRCUCQ		4.968	-0.010	-0.13	4.998	0.015	0.16	PP
XUHFZQ		4.955	-0.024	-0.29	4.918	-0.065	-0.71	LW
XVWMNT		5.083	0.105	1.31	5.059	0.076	0.82	LW
Y6ELUP		5.020	0.041	0.52	4.985	0.003	0.03	LW
YUX2AT		5.115	0.136	1.70	5.157	0.175	1.90	TM
ZBY4MQ		5.063	0.084	1.05	5.062	0.079	0.86	TM
ZEJWH7		4.925	-0.053	-0.67	4.888	-0.095	-1.03	MT
ZKNUAJ	*	4.939	-0.039	-0.49	5.108	0.125	1.36	EM

Summary Statistics

	Sample GV45	Sample GV46
Grand Means	4.9783 mils	4.9828 mils
SD Btwn Labs	0.0801 mils	0.0921 mils

Statistics based on 60 of 61 reporting participants

4JJHXY (X) - Data for sample GV45 are low.

Analysis Notes:

32NHDU - One determination removed from the Lab Mean of Sample GV46 per Grubb's Test at 1% risk (TAPPI 1205).

Key to Instrument Codes Reported by Participants

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

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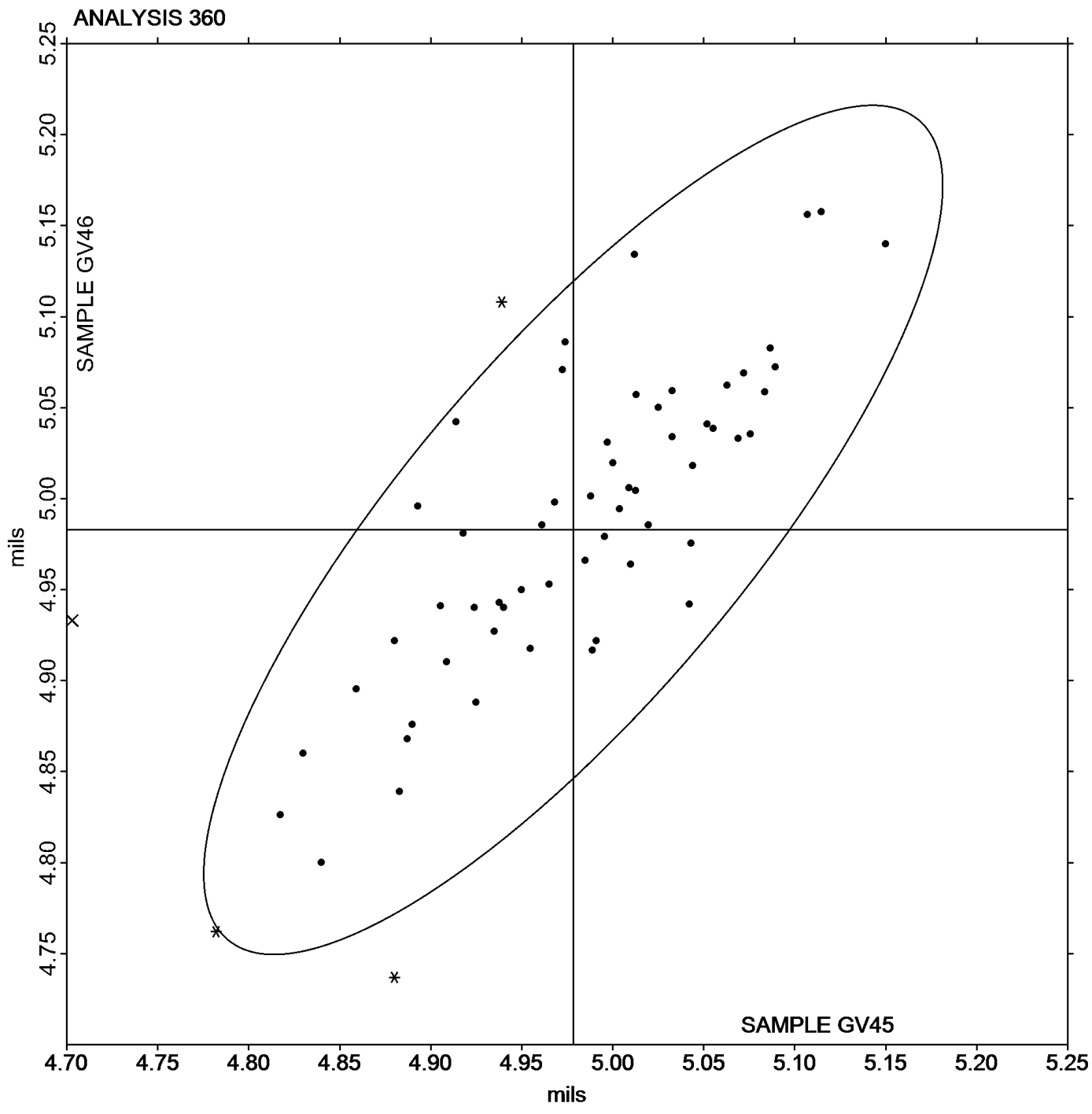
Grand Mean Sample **GV45** = 4.9783 mils

Grand Mean Sample **GV46** = 4.9828 mils



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WebCode	Data Flag	Sample GY45 Lab Mean	Sample GY45 Diff from Grand Mean	Sample GY45 CPV	Sample GY46 Lab Mean	Sample GY46 Diff from Grand Mean	Sample GY46 CPV	Instr Code
2MMRVV		9.621	0.220	1.73	14.27	0.13	0.90	XX
32NHDU		9.531	0.130	1.02	14.36	0.22	1.50	EM
43CEGD		9.447	0.046	0.37	14.14	0.00	-0.01	TM
4AX8QR		9.476	0.075	0.59	14.30	0.17	1.15	EM
4JJHXY		9.193	-0.208	-1.64	13.98	-0.15	-1.04	TA
7N76MN		9.445	0.044	0.35	14.15	0.01	0.10	TA
87J6QP		9.362	-0.039	-0.31	14.03	-0.11	-0.75	LA
8DJKHH		9.344	-0.057	-0.45	14.11	-0.03	-0.20	EM
8TUBEV		9.433	0.032	0.25	14.05	-0.09	-0.61	TM
9TVB33		9.484	0.083	0.66	14.22	0.08	0.55	LW
A47A4N		9.146	-0.255	-2.01	13.92	-0.22	-1.49	LA
E7W369		9.465	0.064	0.50	14.23	0.09	0.63	LW
E7XZF4		9.323	-0.078	-0.61	14.15	0.01	0.08	EM
H9CGFL		9.150	-0.251	-1.97	13.85	-0.29	-1.96	TM
HANB2D		9.422	0.021	0.17	14.23	0.10	0.66	TA
HCEAHX		9.460	0.059	0.47	14.14	0.00	0.03	XX
J4G622	*	9.652	0.251	1.98	14.54	0.41	2.80	EM
JDM2RQ		9.210	-0.191	-1.50	13.97	-0.16	-1.13	PP
K67VL7		9.422	0.021	0.17	14.21	0.07	0.51	TM
KB9YC6		9.472	0.071	0.56	14.25	0.11	0.75	EM
LGGMP7		9.400	-0.001	-0.01	14.08	-0.05	-0.36	EM
NT22JJ		9.470	0.069	0.54	14.23	0.10	0.65	LA
Q3KWXP	*	9.160	-0.241	-1.89	14.05	-0.09	-0.59	TA
QNGT9P		9.460	0.059	0.46	14.16	0.02	0.16	LA
RXJD9W		9.240	-0.161	-1.27	13.85	-0.29	-1.96	TM
ULWZ2C		9.431	0.030	0.24	14.11	-0.02	-0.17	PP
UM83NB		9.410	0.009	0.07	14.09	-0.04	-0.30	PP
UR4LVZ		9.385	-0.016	-0.12	14.02	-0.12	-0.83	TA
UVA3BJ		9.503	0.102	0.80	14.28	0.14	0.95	XX
UXVQP6		9.464	0.063	0.50	14.19	0.06	0.39	EM
V6R9E2		9.563	0.162	1.28	14.30	0.16	1.12	LW
VFTDP3		9.344	-0.057	-0.45	14.13	0.00	-0.02	LW
W969CR		9.416	0.015	0.12	14.19	0.05	0.35	TM
XP7APQ		9.528	0.127	1.00	14.25	0.11	0.77	TM
XUHFZQ		9.468	0.067	0.53	14.14	0.00	0.01	LW
Z3QNMA		9.331	-0.070	-0.55	14.00	-0.14	-0.96	LA
ZFB9YQ		9.200	-0.201	-1.58	13.89	-0.25	-1.69	TM

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Summary Statistics

	Sample GY45	Sample GY46
Grand Means	9.4008 mils	14.136 mils
SD Btwn Labs	0.1271 mils	0.146 mils

Statistics based on 37 of 37 reporting participants

Key to Instrument Codes Reported by Participants

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		

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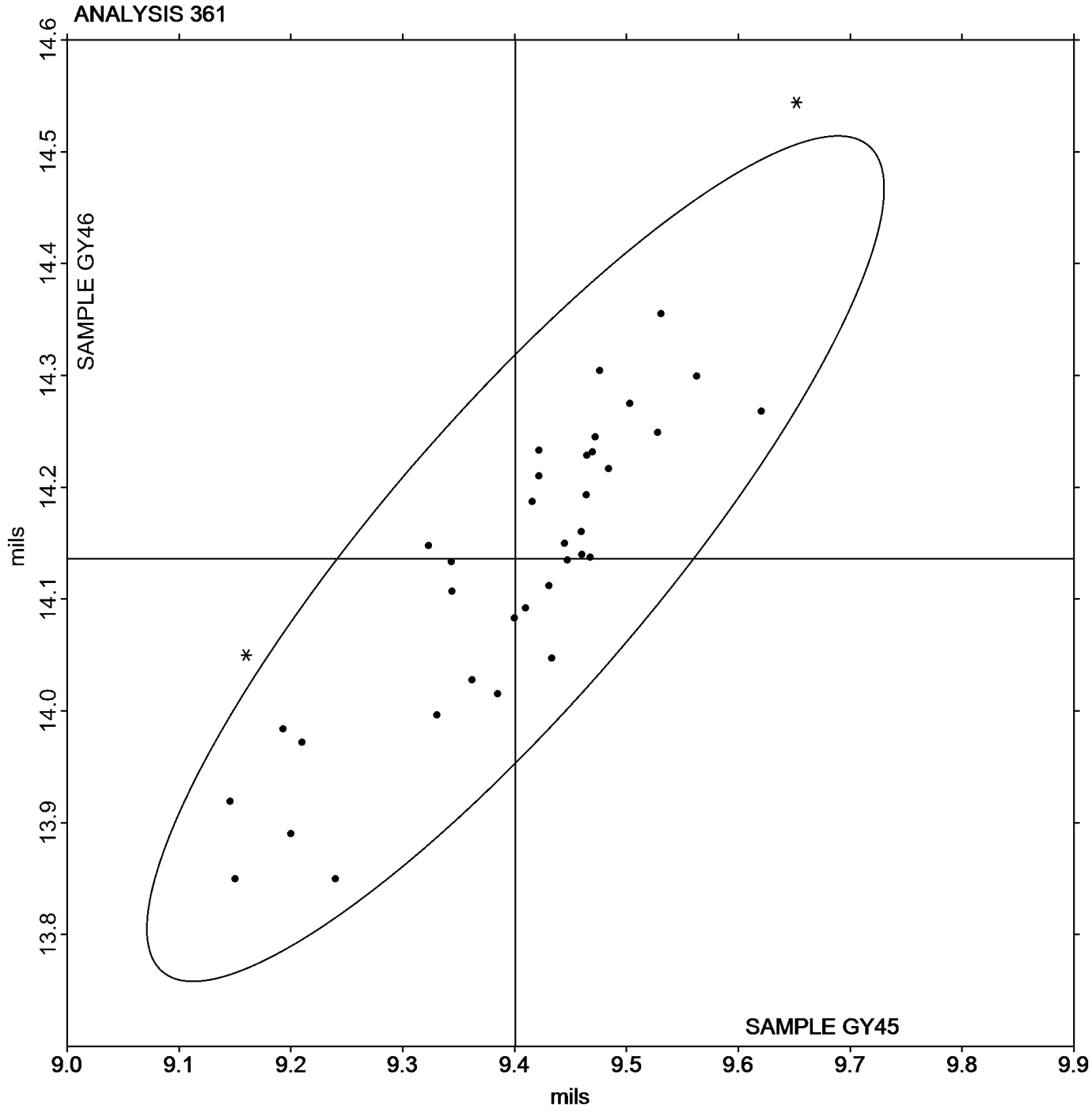
Grand Mean Sample **GY45** = 9.4008 mils

Grand Mean Sample **GY46** = 14.136 mils



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

WebCode	Data Flag	Sample GD45 Lab Mean	Sample GD45 Diff from Grand Mean	Sample GD45 CPV	Sample GD46 Lab Mean	Sample GD46 Diff from Grand Mean	Sample GD46 CPV	Instr Code
2MMRVV		0.4872	-0.0342	-0.43	0.5582	-0.0008	-0.01	TL
87J6QP		0.4894	-0.0320	-0.41	0.5278	-0.0312	-0.36	TA
D3J2P4		0.5852	0.0638	0.81	0.6412	0.0822	0.96	IT
MXHRR9		0.5946	0.0732	0.93	0.5206	-0.0384	-0.45	XX
N2ETDN		0.3820	-0.1394	-1.77	0.4040	-0.1550	-1.81	TA
NFVQCW	X	0.1568	-0.3646	-4.62	0.2694	-0.2896	-3.38	XX
QYYCQZ		0.6000	0.0786	1.00	0.6474	0.0884	1.03	TM
RACWM2		0.5114	-0.0100	-0.13	0.6138	0.0548	0.64	TA

Summary Statistics

	Sample GD45	Sample GD46
Grand Means	0.52140 COF	0.55900 COF
SD Btwn Labs	0.07888 COF	0.08568 COF

Statistics based on 7 of 8 reporting participants

Comments on Assigned Data Flags for Test #364

NFVQCW (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

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		

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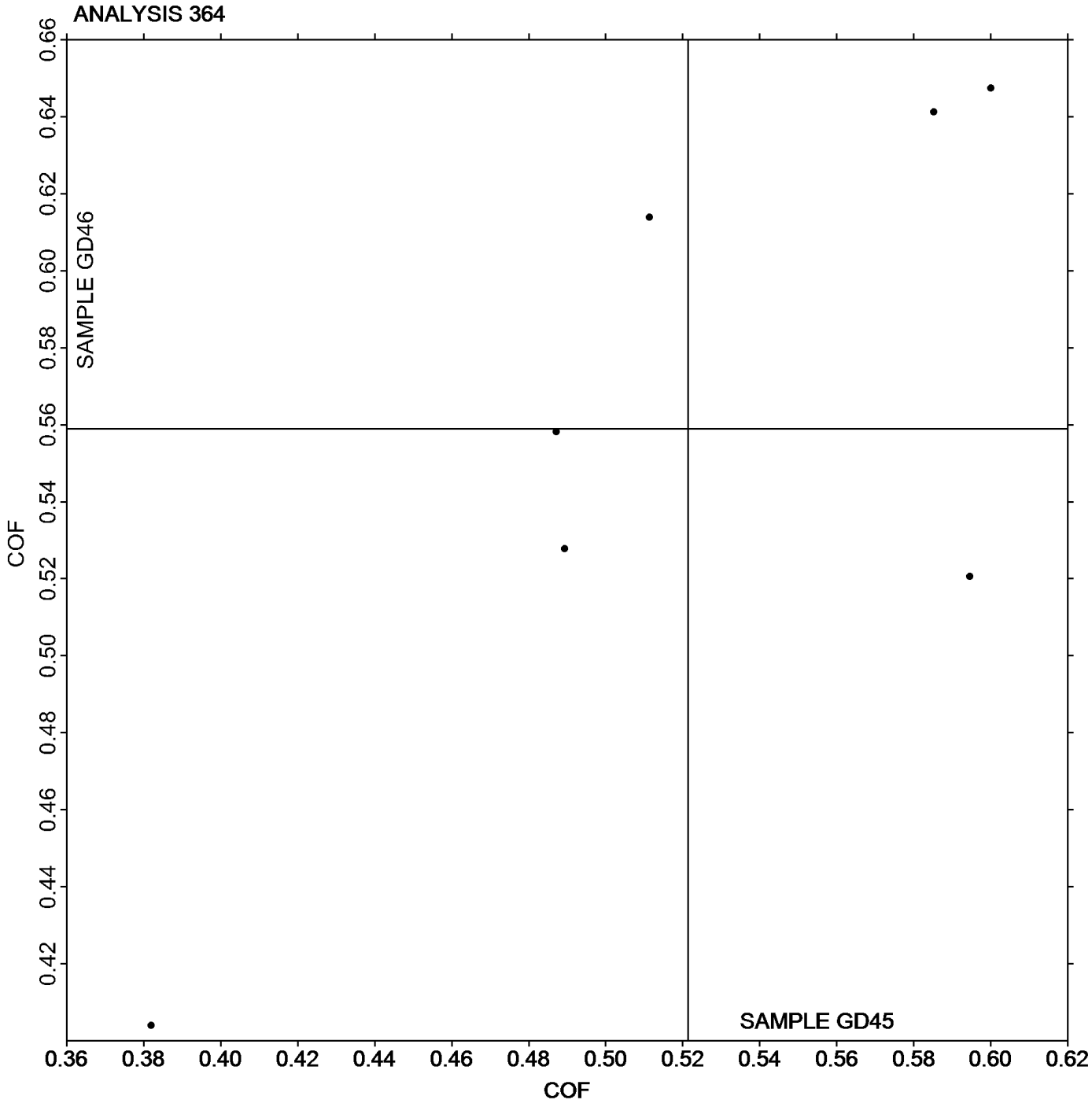
Grand Mean Sample **GD45** = 0.52140 COF

Grand Mean Sample **GD46** = 0.55900 COF



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

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Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

WebCode	Data Flag	Sample GD45 Lab Mean	Sample GD45 Diff from Grand Mean	Sample GD45 CPV	Sample GD46 Lab Mean	Sample GD46 Diff from Grand Mean	Sample GD46 CPV	Instr Code
2MMRVV		0.4376	0.0241	0.38	0.5258	0.0537	0.66	TL
87J6QP		0.3770	-0.0365	-0.57	0.4942	0.0221	0.27	TA
A7CQJ8		0.4442	0.0307	0.48	0.4802	0.0081	0.10	TM
D3J2P4		0.3858	-0.0277	-0.43	0.4598	-0.0123	-0.15	IR
GRDUM2		0.5128	0.0993	1.55	0.5064	0.0343	0.42	TA
N6TFYF		0.3988	-0.0147	-0.23	0.4552	-0.0169	-0.21	TM
NFVQCW		0.3298	-0.0837	-1.31	0.2836	-0.1885	-2.30	XX
NT22JJ		0.4842	0.0707	1.10	0.5348	0.0627	0.77	TM
PCRAKK		0.3808	-0.0327	-0.51	0.4994	0.0273	0.33	TA
PMMP2A		0.3344	-0.0791	-1.23	0.3596	-0.1125	-1.38	TA
QYYCQZ		0.5118	0.0983	1.54	0.5974	0.1253	1.53	TM
RACWM2		0.3644	-0.0491	-0.77	0.4692	-0.0029	-0.04	TA

Summary Statistics

	Sample GD45	Sample GD46
Grand Means	0.41347 COF	0.47213 COF
SD Btwn Labs	0.06403 COF	0.08181 COF

Statistics based on 12 of 12 reporting participants

Key to Instrument Codes Reported by Participants

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

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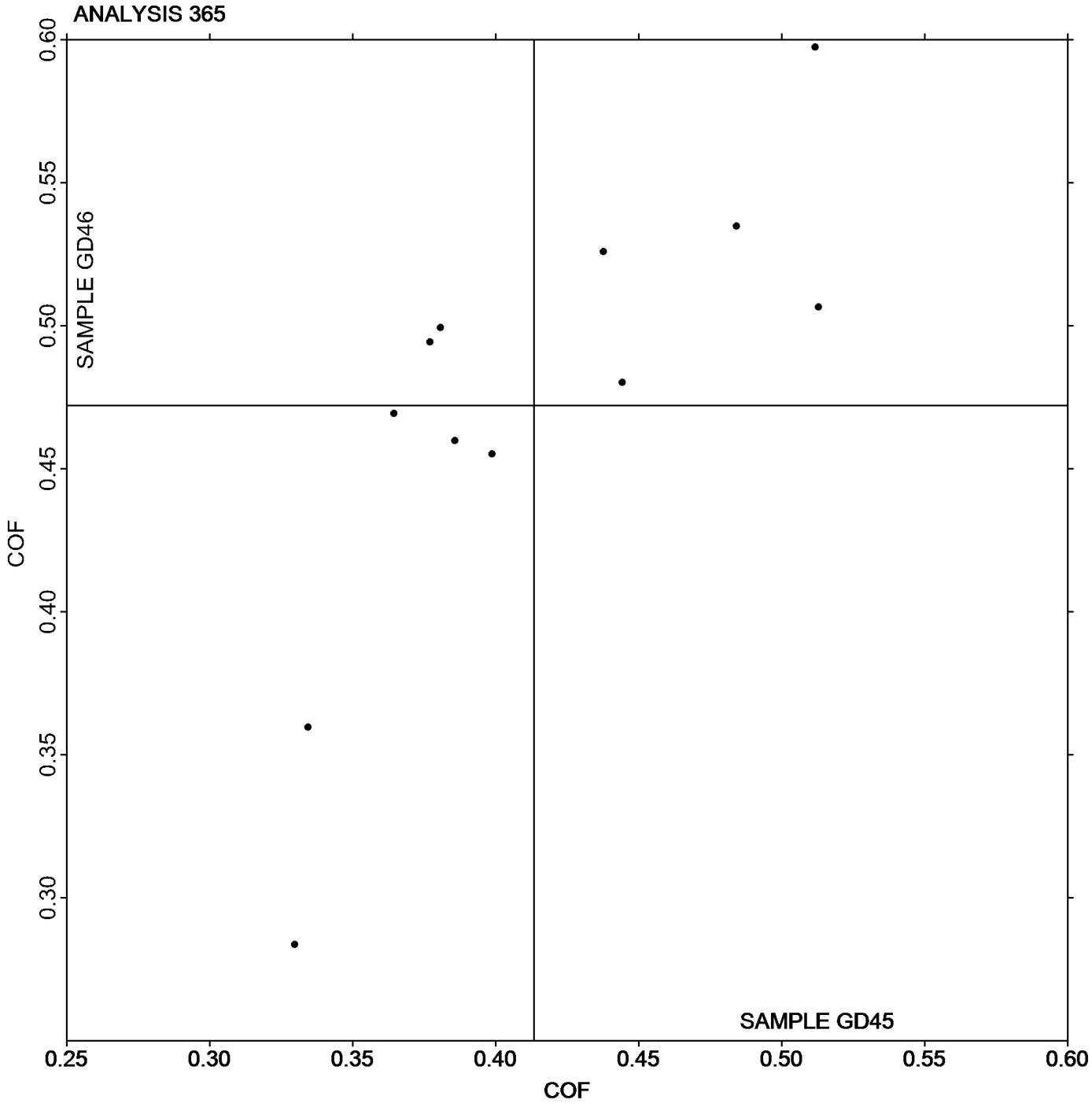
Grand Mean Sample **GD45** = 0.41347 COF

Grand Mean Sample **GD46** = 0.47213 COF



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

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WebCode	Data Flag	Sample GE45 Lab Mean	Sample GE45 Diff from Grand Mean	Sample GE45 CPV	Sample GE46 Lab Mean	Sample GE46 Diff from Grand Mean	Sample GE46 CPV	Instr Code
2MMRVV		20.19	-0.78	-0.55	18.01	-0.23	-0.20	LP
2Q8ERP		20.73	-0.24	-0.17	18.41	0.17	0.14	LA
4AX8QR		18.95	-2.02	-1.43	16.90	-1.34	-1.15	PP
6ZLRYA		19.14	-1.83	-1.30	17.30	-0.94	-0.81	LP
87J6QP		21.53	0.56	0.40	18.32	0.08	0.07	LA
994A6E	X	17.45	-3.52	-2.49	14.16	-4.08	-3.52	LW
9TVB33		20.77	-0.20	-0.14	18.56	0.32	0.27	PP
A8Q8QT		22.15	1.18	0.84	19.30	1.06	0.91	WG
B3QFWM	*	17.04	-3.93	-2.79	14.66	-3.59	-3.09	TN
BFYWAJ		21.01	0.04	0.03	17.93	-0.31	-0.27	PP
DTC7NJ		21.57	0.60	0.42	18.77	0.53	0.46	PP
E7XZF4		22.12	1.15	0.81	19.39	1.15	0.99	PP
GTPUKV		22.98	2.01	1.42	19.68	1.44	1.24	LP
H9CGFL		22.85	1.88	1.33	19.53	1.29	1.11	TL
HANB2D		20.10	-0.87	-0.62	18.10	-0.14	-0.12	PP
JDM2RQ		23.19	2.22	1.57	20.43	2.19	1.88	LA
JR4ZWQ		22.41	1.44	1.02	18.99	0.74	0.64	LA
LUXKNF		21.74	0.77	0.55	18.93	0.69	0.59	HG
N2ETDN	X	13.98	-6.99	-4.96	11.49	-6.76	-5.82	PP
N2VVXG		19.89	-1.08	-0.77	17.99	-0.25	-0.22	XX
ND8G3V		20.58	-0.39	-0.28	18.42	0.18	0.15	LP
NFVQCW		19.80	-1.17	-0.83	17.00	-1.24	-1.07	GS
PFBPNL		20.76	-0.21	-0.15	18.48	0.24	0.20	XX
PU64Z9		21.78	0.81	0.58	18.48	0.23	0.20	XX
QYYB8N	*	24.19	3.22	2.28	21.26	3.02	2.60	GA
R4QY3K		19.40	-1.57	-1.11	16.90	-1.34	-1.16	LW
R8AWPQ		19.65	-1.32	-0.94	17.86	-0.38	-0.33	HG
RACWM2		22.05	1.08	0.77	18.65	0.41	0.35	WG
TABL64		22.94	1.97	1.40	19.63	1.38	1.19	LA
TAU6CW		20.13	-0.84	-0.60	17.73	-0.51	-0.44	LP
TGRWH6		20.76	-0.21	-0.15	17.20	-1.04	-0.90	LP
ULWZ2C		21.56	0.59	0.42	18.03	-0.21	-0.18	PP
UM83NB		20.54	-0.43	-0.30	17.25	-0.99	-0.85	PP
V6R9E2		19.32	-1.65	-1.17	17.96	-0.28	-0.24	LW
V7ZDYG		20.32	-0.65	-0.46	17.76	-0.48	-0.41	PP
VAJAKL		21.89	0.92	0.65	19.33	1.09	0.94	XX
VFTDP3		20.71	-0.26	-0.18	18.03	-0.21	-0.18	TL
VKZZJQ		18.98	-1.99	-1.41	15.88	-2.36	-2.04	RE
WG3TKF		22.21	1.24	0.88	18.09	-0.15	-0.13	LP
WWTZBL		21.16	0.19	0.13	18.07	-0.17	-0.15	PP
XRCUCQ		21.15	0.18	0.13	18.39	0.14	0.12	PP

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

WebCode	Data Flag	Sample GE45 Lab Mean	Sample GE45 Diff from Grand Mean	Sample GE45 CPV	Sample GE46 Lab Mean	Sample GE46 Diff from Grand Mean	Sample GE46 CPV	Instr Code
Y6ELUP		20.63	-0.34	-0.24	18.38	0.14	0.12	LP
YUX2AT		19.40	-1.57	-1.11	16.99	-1.25	-1.08	PR
ZFB9YQ	X	7.51	-13.46	-9.54	7.91	-10.33	-8.91	TL
ZKNUAJ		22.46	1.49	1.06	19.27	1.03	0.88	HG

Summary Statistics

	Sample GE45	Sample GE46
Grand Means	20.970 sec/100 cc	18.244 sec/100 cc
SD Btwn Labs	1.411 sec/100 cc	1.160 sec/100 cc

Statistics based on 42 of 45 reporting participants

Comments on Assigned Data Flags for Test #370

N2ETDN (X) - Data for both samples are low.

ZFB9YQ (X) - Extreme Data.

994A6E (X) - Data for sample GE46 are low.

Key to Instrument Codes Reported by Participants

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	PR	Parker Print-Surf (PPS) Model M590
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		

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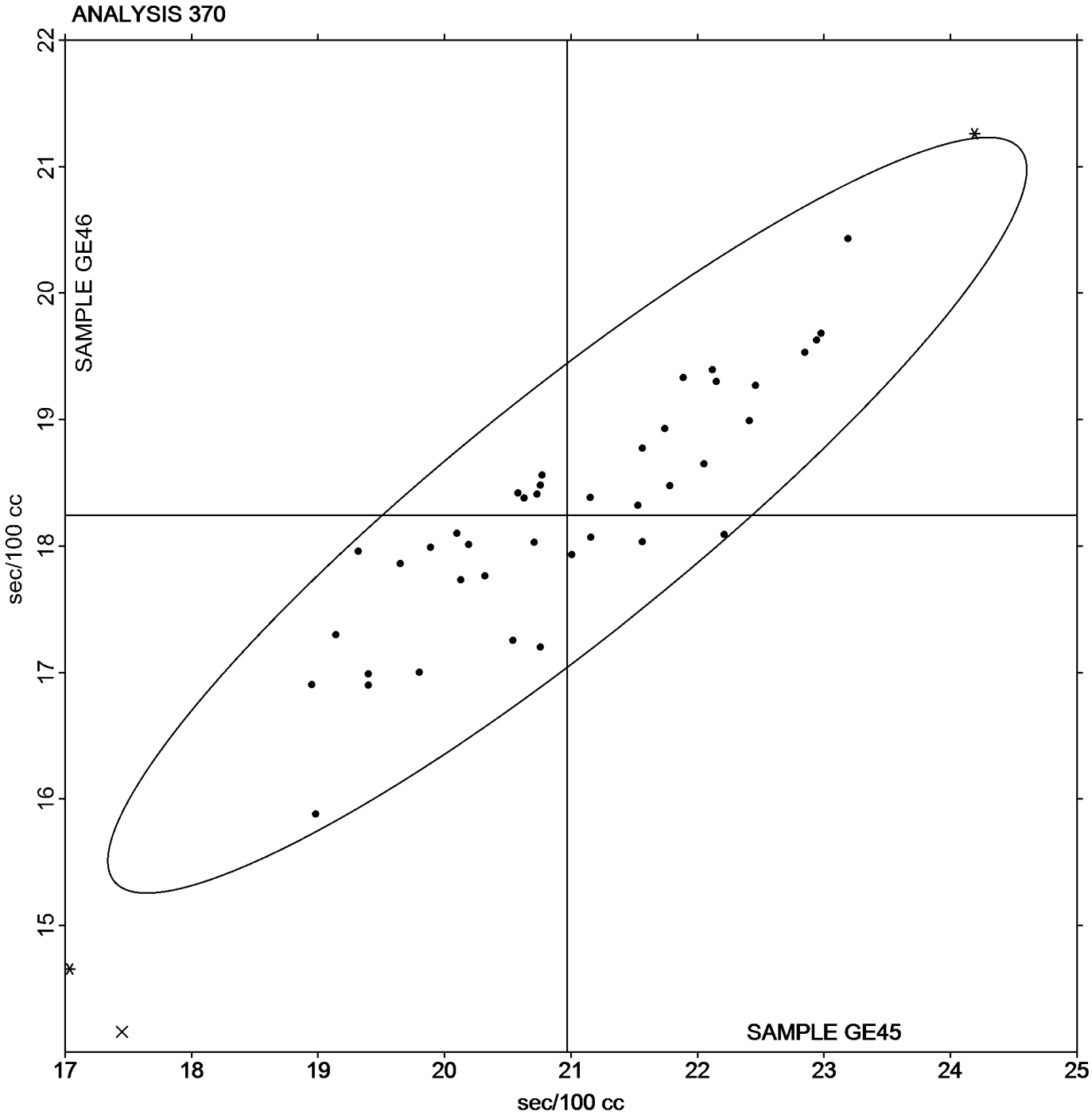
Grand Mean Sample **GE45** = 20.970 sec/100 cc

Grand Mean Sample **GE46** = 18.244 sec/100 cc



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Paper & Paperboard Interlaboratory Testing Program
Analysis 372
Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice

WebCode	Data Flag	Sample GE45 Lab Mean	Sample GE45 Diff from Grand Mean	Sample GE45 CPV	Sample GE46 Lab Mean	Sample GE46 Diff from Grand Mean	Sample GE46 CPV	Instr Code
4AX8QR		138.8	6.0	0.58	160.5	11.9	0.90	PP
BHND8X		130.4	-2.4	-0.23	148.9	0.3	0.03	GA
G9HBLM		154.9	22.2	2.13	173.4	24.8	1.87	VM
HANB2D		125.5	-7.2	-0.70	147.7	-0.9	-0.07	PP
J7K4TL		126.7	-6.0	-0.58	141.7	-6.9	-0.52	TT
N2VVXG		132.0	-0.7	-0.07	146.2	-2.4	-0.18	XX
NFVQCW		115.5	-17.2	-1.66	121.5	-27.1	-2.04	SH
QNGVXU		135.5	2.8	0.27	145.0	-3.6	-0.27	TT
V7ZDYG		129.4	-3.3	-0.32	147.1	-1.5	-0.11	HM
VU4CDZ		138.7	6.0	0.57	153.8	5.2	0.39	SH

Summary Statistics

	Sample GE45	Sample GE46
Grand Means	132.73 Sheffield Units	148.58 Sheffield Units
SD Btwn Labs	10.40 Sheffield Units	13.28 Sheffield Units

Statistics based on 10 of 10 reporting participants

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	HM	Technidyne - Hagerty Model #538
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		

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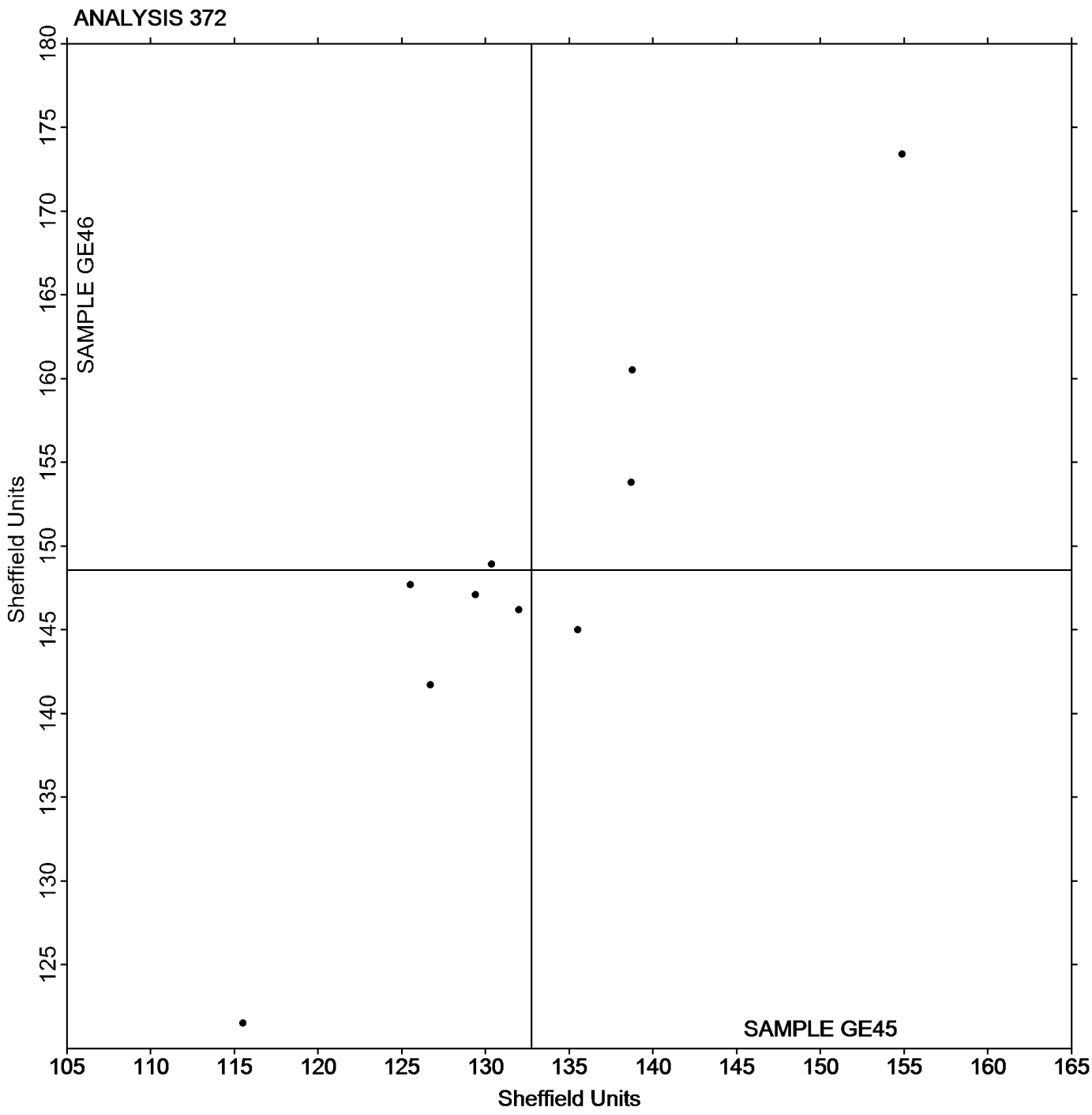
Grand Mean Sample **GE45** = 132.73 Sheffield Units

Grand Mean Sample **GE46** = 148.58 Sheffield Units



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

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

WebCode	Data Flag	Sample GJ45 Lab Mean	Sample GJ45 Diff from Grand Mean	Sample GJ45 CPV	Sample GJ46 Lab Mean	Sample GJ46 Diff from Grand Mean	Sample GJ46 CPV
32LVZL		0.8650	0.0112	0.13	0.8280	0.0309	0.34
32NHDU	X	1.4340	0.5802	6.94	1.4000	0.6029	6.63
4AX8QR	X	1.0500	0.1962	2.35	0.2980	-0.4991	-5.49
4KAW4N		0.9020	0.0482	0.58	0.8550	0.0579	0.64
8DJKHH		0.8090	-0.0448	-0.54	0.7670	-0.0301	-0.33
8HDKWD	X	0.9110	0.0572	0.68	0.9690	0.1719	1.89
8TUBEV		1.0240	0.1702	2.03	0.9680	0.1709	1.88
8V3AY6		0.8040	-0.0498	-0.59	0.7420	-0.0551	-0.61
A47A4N		0.7710	-0.0828	-0.99	0.7400	-0.0571	-0.63
CFT7EK		1.0260	0.1722	2.06	0.9580	0.1609	1.77
FM4EGX		0.8360	-0.0178	-0.21	0.7660	-0.0311	-0.34
HCEAHX		0.8800	0.0262	0.31	0.8260	0.0289	0.32
HHD48J		0.9860	0.1322	1.58	0.9410	0.1439	1.58
J4G622		0.7760	-0.0778	-0.93	0.7190	-0.0781	-0.86
JDM2RQ		0.8730	0.0192	0.23	0.8110	0.0139	0.15
KB9YC6		0.8130	-0.0408	-0.49	0.7330	-0.0641	-0.71
KDUT7K		0.8450	-0.0088	-0.10	0.8020	0.0049	0.05
LGGMP7		0.8310	-0.0228	-0.27	0.7690	-0.0281	-0.31
LUXKNF		0.8290	-0.0248	-0.30	0.7830	-0.0141	-0.16
LVWKU8		0.7910	-0.0628	-0.75	0.7240	-0.0731	-0.80
PCRAKK		0.7600	-0.0938	-1.12	0.6930	-0.1041	-1.15
PMMP2A		0.9810	0.1272	1.52	0.9210	0.1239	1.36
PU64Z9		0.8170	-0.0368	-0.44	0.7520	-0.0451	-0.50
Q7HK96		0.8040	-0.0498	-0.59	0.7570	-0.0401	-0.44
QNGT9P	*	0.7250	-0.1288	-1.54	0.5940	-0.2031	-2.24
RACWM2		0.7180	-0.1358	-1.62	0.6360	-0.1611	-1.77
TZMP6N	*	0.7780	-0.0758	-0.91	0.7770	-0.0201	-0.22
ULWZ2C		0.8630	0.0092	0.11	0.8070	0.0099	0.11
UM83NB		0.8540	0.0002	0.00	0.7860	-0.0111	-0.12
UXVQP6		1.0170	0.1632	1.95	0.9510	0.1539	1.69
WWTZBL		0.8650	0.0112	0.13	0.7800	-0.0171	-0.19
XUHFZQ		0.8700	0.0162	0.19	0.8250	0.0279	0.31
Z3QNMA		0.9000	0.0462	0.55	0.9030	0.1059	1.16

Summary Statistics

	Sample GJ45	Sample GJ46
Grand Means	0.85377 Microns	0.79713 Microns
SD Btwn Labs	0.08366 Microns	0.09088 Microns

Statistics based on 30 of 33 reporting participants

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Comments on Assigned Data Flags for Test #376

4AX8QR (X) - Data for sample GJ46 are low.

32NHDU (X) - Extreme Data.

8HDKWD (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample GJ46.

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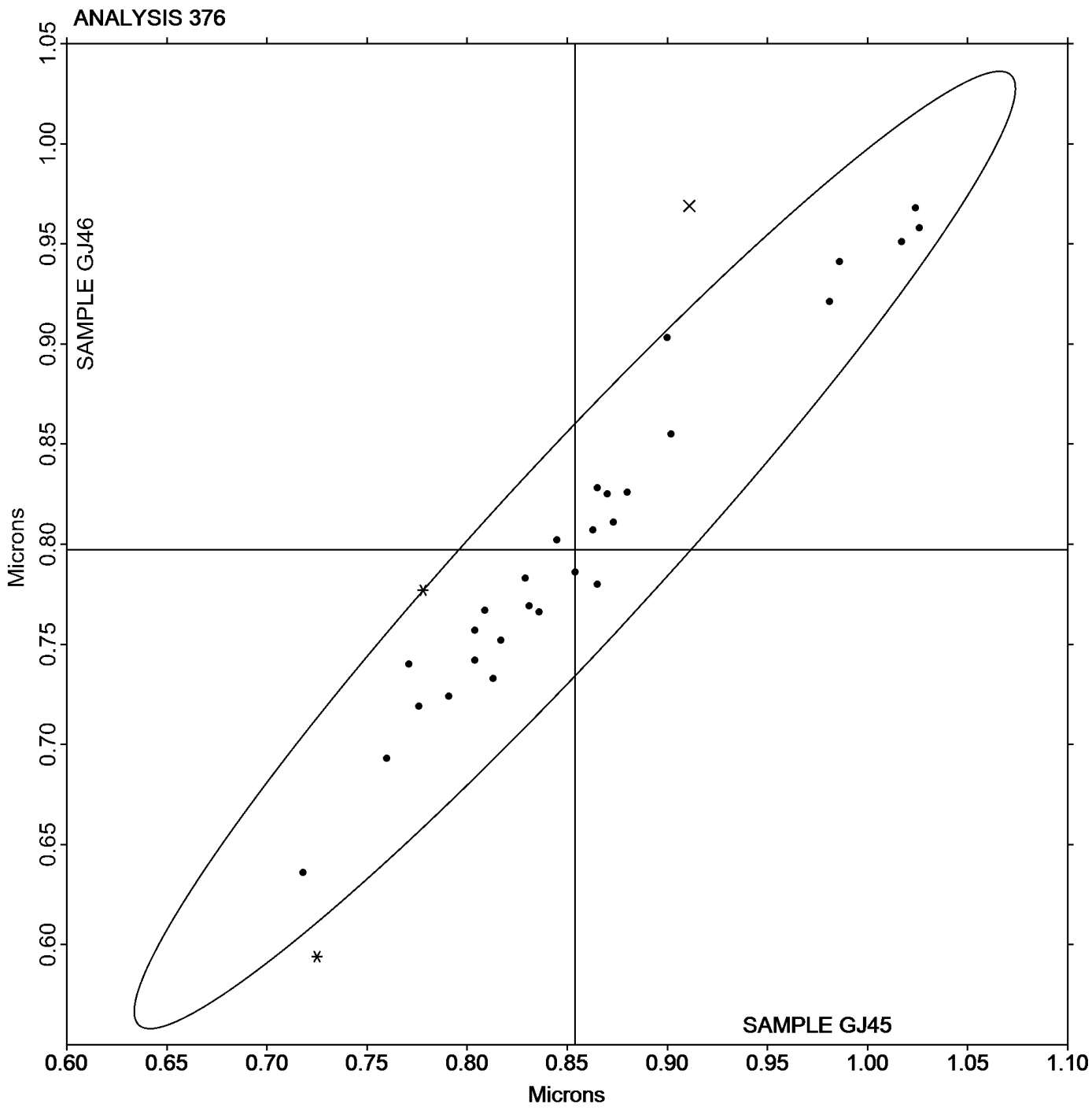
Grand Mean Sample **GJ45** = 0.85377 Microns

Grand Mean Sample **GJ46** = 0.79713 Microns



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

WebCode	Data Flag	Sample GK45 Lab Mean	Sample GK45 Diff from Grand Mean	Sample GK45 CPV	Sample GK46 Lab Mean	Sample GK46 Diff from Grand Mean	Sample GK46 CPV
2MMRVV		4.226	0.026	0.14	3.921	0.008	0.04
2Q8ERP		4.131	-0.069	-0.38	3.710	-0.203	-1.18
9TVB33		4.129	-0.071	-0.39	3.823	-0.090	-0.53
E7XZF4		4.344	0.144	0.79	3.897	-0.016	-0.09
G9HBLM		3.900	-0.300	-1.65	4.234	0.321	1.86
LUXKNF		3.973	-0.227	-1.25	3.776	-0.137	-0.80
MXHRR9		4.430	0.230	1.27	4.095	0.182	1.06
N2ETDN		4.368	0.168	0.93	4.005	0.092	0.53
RACWM2		4.299	0.099	0.55	3.759	-0.154	-0.90

Summary Statistics

	Sample GK45	Sample GK46
Grand Means	4.2000 Microns	3.9133 Microns
SD Btwn Labs	0.1815 Microns	0.1720 Microns

Statistics based on 9 of 9 reporting participants

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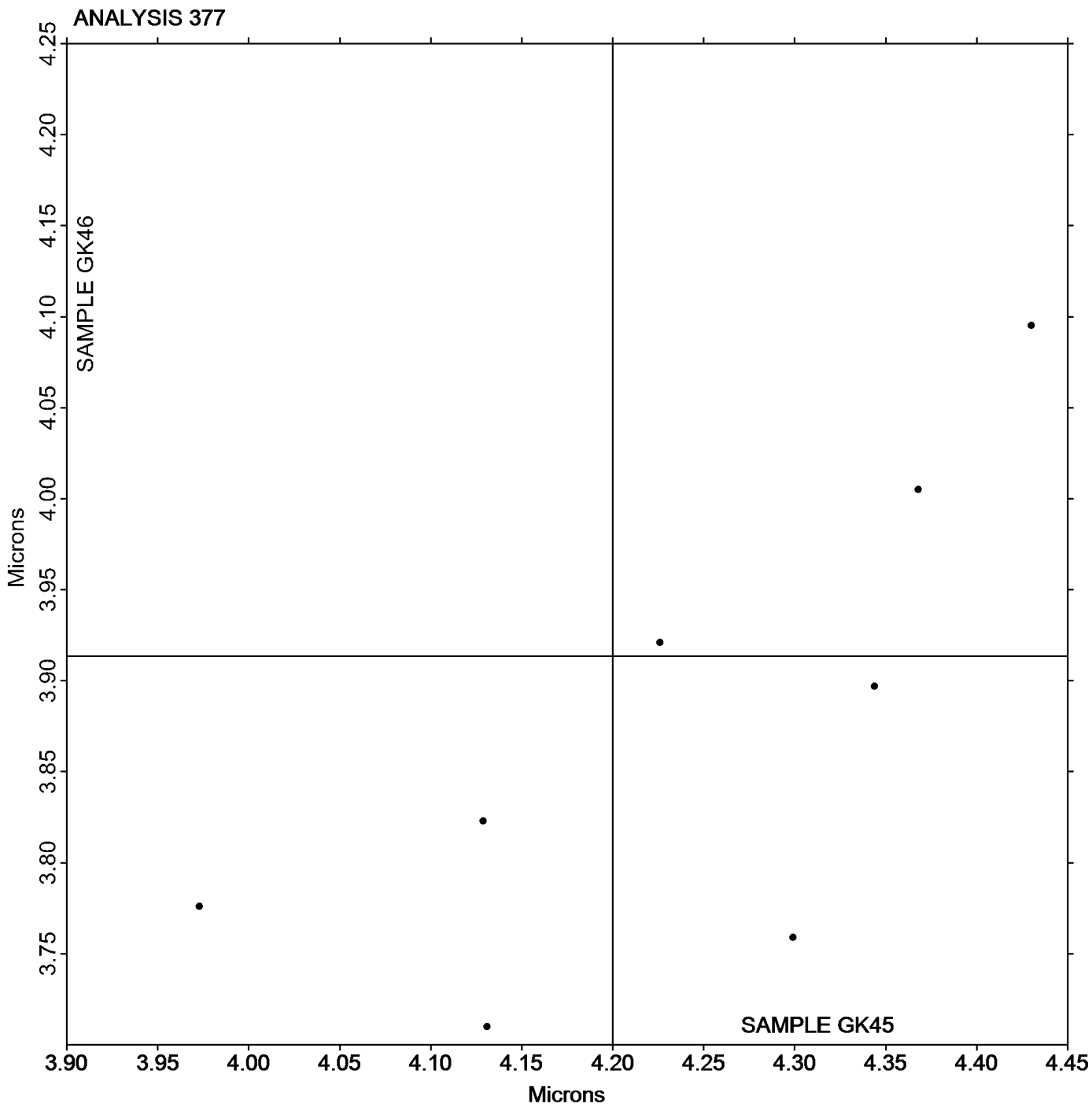
Grand Mean Sample **GK45** = 4.2000 Microns

Grand Mean Sample **GK46** = 3.9133 Microns



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

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WebCode	Data Flag	Sample GL45 Lab Mean	Sample GL45 Diff from Grand Mean	Sample GL45 CPV	Sample GL46 Lab Mean	Sample GL46 Diff from Grand Mean	Sample GL46 CPV	Instr Code
2MMRVV		255.8	15.6	0.97	242.8	-0.2	-0.01	LW
2Q8ERP		263.1	22.9	1.42	267.7	24.7	1.55	LA
32NHDU		252.5	12.3	0.77	256.8	13.8	0.87	HM
4AX8QR		210.0	-30.2	-1.87	218.0	-25.0	-1.58	VM
76RRQR	X	53.0	-187.2	-11.61	58.4	-184.6	-11.63	XX
7N76MN		243.0	2.8	0.17	244.5	1.5	0.09	PP
8DJKHH		252.3	12.1	0.75	256.4	13.4	0.84	PP
8TUBEV	X	297.7	57.5	3.57	304.0	61.0	3.84	TT
994A6E	X	248.1	7.9	0.49	172.0	-71.0	-4.47	SH
9PAETQ		237.4	-2.8	-0.17	240.2	-2.8	-0.18	XX
9TVB33		245.4	5.3	0.33	261.6	18.6	1.17	PP
A47A4N		212.8	-27.4	-1.70	215.6	-27.4	-1.73	LA
A8Q8QT		263.3	23.1	1.44	257.5	14.5	0.91	PG
BFYWAJ	*	219.0	-21.2	-1.31	204.0	-39.0	-2.46	SH
BHND8X		255.0	14.8	0.92	252.8	9.8	0.62	GA
BYBN7U		241.8	1.6	0.10	241.3	-1.7	-0.11	LA
CV7G4T		257.0	16.8	1.04	255.5	12.5	0.79	PP
DTC7NJ		263.6	23.4	1.45	263.2	20.2	1.27	PP
E7XZF4		239.5	-0.7	-0.04	245.6	2.6	0.16	PP
EBTP33		230.4	-9.7	-0.60	242.8	-0.3	-0.02	SH
EKHFJ4		241.4	1.2	0.08	247.2	4.2	0.26	TT
GTPUKV		226.0	-14.2	-0.88	227.7	-15.3	-0.97	LW
HANB2D		251.0	10.8	0.67	242.5	-0.5	-0.03	PP
HCEAHX		219.9	-20.3	-1.26	216.4	-26.6	-1.68	TT
HHD48J		201.9	-38.3	-2.37	208.4	-34.6	-2.18	TS
J4G622		225.5	-14.7	-0.91	225.0	-18.0	-1.14	GL
J7K4TL		225.2	-15.0	-0.93	224.1	-18.9	-1.19	TT
JDM2RQ		244.6	4.4	0.27	256.6	13.5	0.85	PP
K67VL7	X	257.1	16.9	1.05	224.5	-18.5	-1.17	GA
KB9YC6		240.5	0.3	0.02	236.7	-6.3	-0.40	PP
LGGMP7		228.9	-11.3	-0.70	238.4	-4.6	-0.29	PP
LX36H8		232.7	-7.5	-0.46	234.5	-8.5	-0.54	TS
MCE7R3		265.4	25.2	1.57	270.4	27.4	1.72	GA
MXHRR9		240.3	0.1	0.01	256.6	13.6	0.85	HM
N2ETDN		235.5	-4.7	-0.29	243.0	-0.1	0.00	PP
N2VVXG		229.3	-10.9	-0.67	237.5	-5.5	-0.35	XX
N6TFYF		232.1	-8.1	-0.50	235.2	-7.8	-0.49	TS
NFVQCW		226.3	-13.9	-0.86	230.6	-12.4	-0.78	XX
PCRAKK		244.5	4.3	0.27	238.8	-4.2	-0.27	HM
PMMP2A		253.0	12.8	0.80	246.7	3.7	0.23	PP
PU64Z9		242.3	2.1	0.13	246.6	3.6	0.23	HM

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

WebCode	Data Flag	Sample GL45 Lab Mean	Sample GL45 Diff from Grand Mean	Sample GL45 CPV	Sample GL46 Lab Mean	Sample GL46 Diff from Grand Mean	Sample GL46 CPV	Instr Code
QNGT9P		233.8	-6.4	-0.39	248.5	5.5	0.34	LA
QNGVXU		200.0	-40.2	-2.49	211.0	-32.0	-2.02	TT
QYYCQZ		259.8	19.6	1.22	250.8	7.8	0.49	PP
R4QY3K		237.0	-3.2	-0.20	245.4	2.4	0.15	TS
R8AWPQ		263.2	23.0	1.43	256.1	13.1	0.82	TS
RACWM2		248.3	8.1	0.50	249.3	6.3	0.39	XX
RXJD9W		277.0	36.8	2.29	280.0	37.0	2.33	GL
TABL64		230.5	-9.7	-0.60	236.3	-6.7	-0.42	LA
ULWZ2C		246.3	6.1	0.38	245.2	2.2	0.14	PP
UM83NB		249.2	9.0	0.56	250.9	7.9	0.50	PP
UR4LVZ		235.6	-4.6	-0.28	236.5	-6.6	-0.41	PP
UXVQP6		238.8	-1.4	-0.08	255.0	12.0	0.75	LW
V7ZDYG		237.9	-2.3	-0.14	246.8	3.8	0.24	PP
VU4CDZ		223.8	-16.4	-1.01	220.8	-22.2	-1.40	SH
WWTZBL		252.7	12.5	0.78	253.5	10.5	0.66	PP
XRCUCQ	X	431.8	191.6	11.89	236.8	-6.3	-0.39	PP
Z3QNMA		235.6	-4.6	-0.28	252.6	9.6	0.60	LW
ZKNUAJ		251.3	11.1	0.69	255.5	12.5	0.79	HM

Summary Statistics

	Sample GL45	Sample GL46
Grand Means	240.16 Sheffield	243.03 Sheffield
SD Btwn Labs	16.12 Sheffield	15.88 Sheffield

Statistics based on 54 of 59 reporting participants

Comments on Assigned Data Flags for Test #378

K67VL7 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample GL45.

994A6E (X) - Data for sample GL46 are low.

XRCUCQ (X) - Extreme Data for Sample GL45.

8TUBEV (X) - Data for both samples are high. Possible Systematic Error.

76RRQR (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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	PG	Precision Gage Smoothcheck
PP	Technidyne Profile/Plus	SH	Sheffield (Bendix Precisionaire)
TS	TMI Monitor/Smoothness, Model 58-02	TT	TMI Monitor/Smoothness II, Model 58-24
VM	Valmet PaperLab (was Kajaani\Robotest)	XX	Instrument make/model not specified by lab

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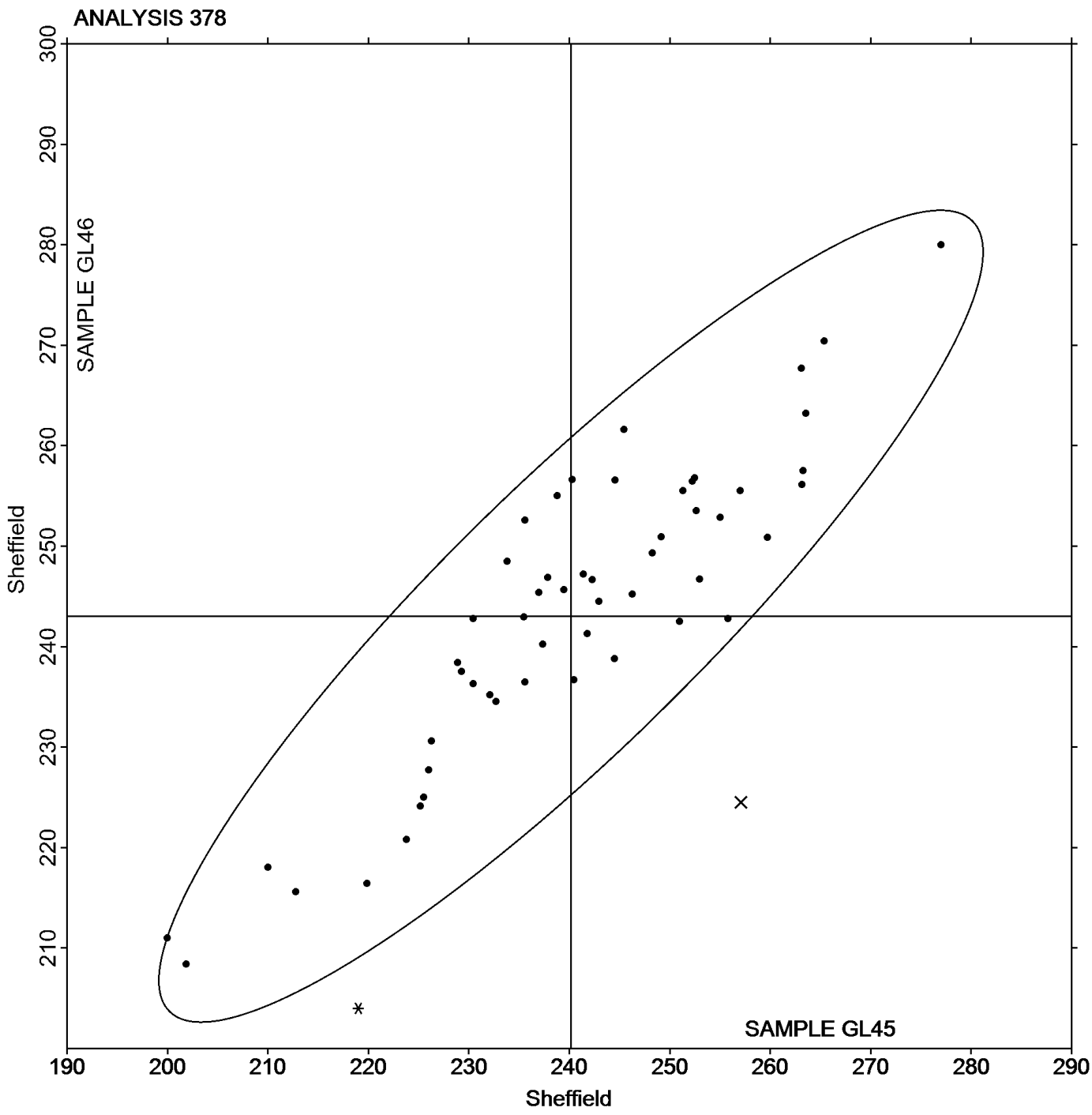
Analysis 378
Roughness - Sheffield Type

Grand Mean Sample **GL45** = 240.16 Sheffield

Grand Mean Sample **GL46** = 243.03 Sheffield



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WebCode	Data Flag	Sample GM45 Lab Mean	Sample GM45 Diff from Grand Mean	Sample GM45 CPV	Sample GM46 Lab Mean	Sample GM46 Diff from Grand Mean	Sample GM46 CPV
8HDKWD		4.685	-0.083	-0.20	4.608	-0.021	-0.07
8TUBEV		5.410	0.642	1.51	5.250	0.620	1.97
9EVCF7		4.087	-0.681	-1.60	4.238	-0.392	-1.24
DZCM2B		5.140	0.372	0.87	4.730	0.100	0.32
K92NDF		5.350	0.582	1.37	4.890	0.260	0.82
MXHRR9		5.040	0.272	0.64	4.820	0.190	0.60
N2ETDN		4.878	0.110	0.26	4.802	0.172	0.55
TAU6CW		4.235	-0.533	-1.25	4.361	-0.269	-0.85
TKCU4A		4.874	0.106	0.25	4.691	0.061	0.19
TUV7H9		4.602	-0.166	-0.39	4.674	0.044	0.14
WGEGXZ		4.330	-0.438	-1.03	4.102	-0.528	-1.67
XP7APQ		4.584	-0.184	-0.43	4.391	-0.239	-0.76

Summary Statistics

	Sample GM45	Sample GM46
Grand Means	4.7679 Percent	4.6297 Percent
SD Btwn Labs	0.4258 Percent	0.3156 Percent

Statistics based on 12 of 12 reporting participants

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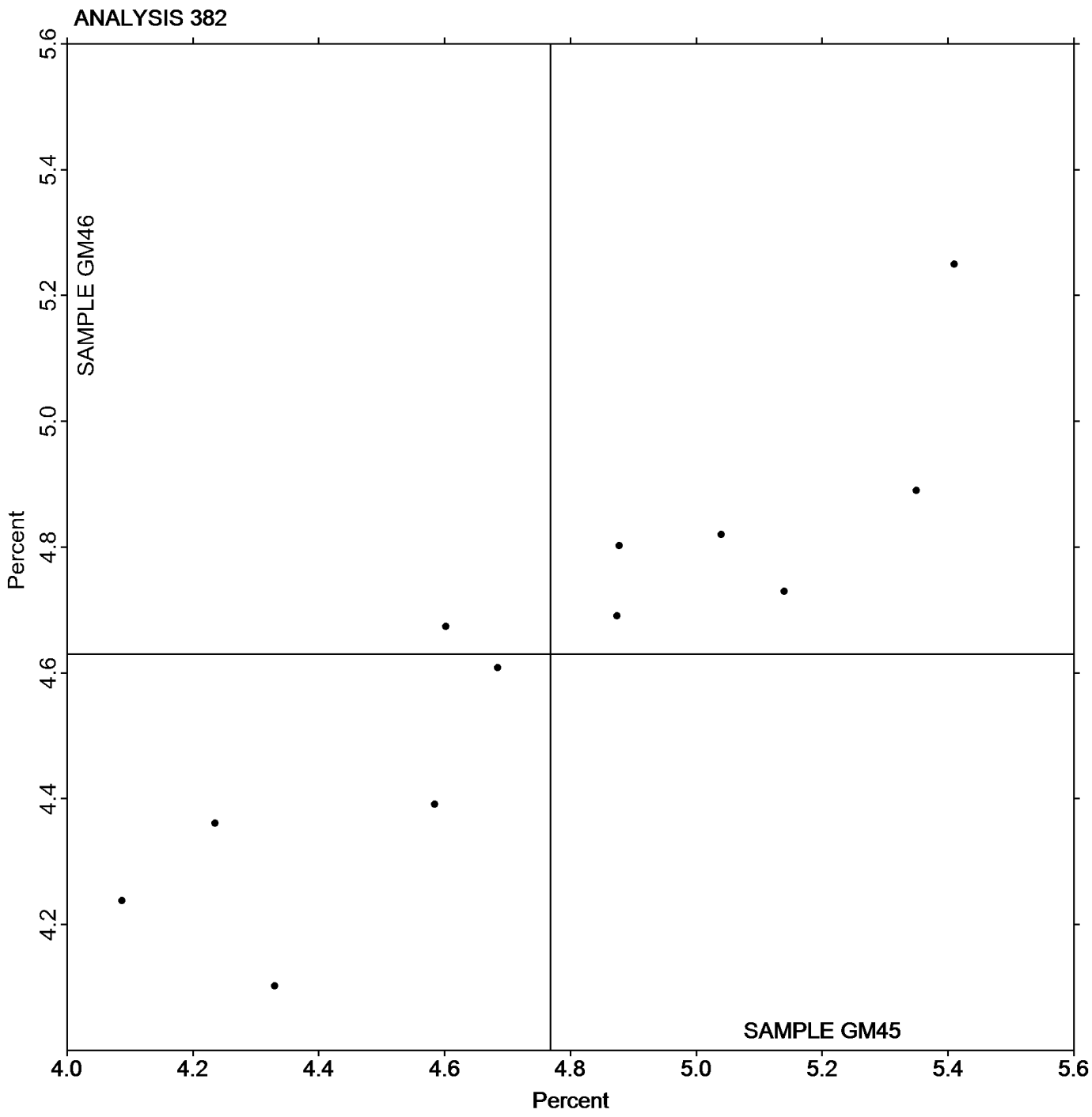
Grand Mean Sample **GM45** = 4.7679 Percent

Grand Mean Sample **GM46** = 4.6297 Percent



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

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WebCode	Data Flag	Sample GN45 Lab Mean	Sample GN45 Diff from Grand Mean	Sample GN45 CPV	Sample GN46 Lab Mean	Sample GN46 Diff from Grand Mean	Sample GN46 CPV
2Q8ERP		93.62	0.08	0.24	93.37	-0.09	-0.25
32LVZL		94.06	0.52	1.55	93.36	-0.10	-0.28
32NHDU		92.80	-0.74	-2.19	92.83	-0.63	-1.80
76RRQR		93.53	-0.01	-0.03	93.36	-0.10	-0.29
9TVB33		93.22	-0.31	-0.93	92.98	-0.48	-1.37
A8Q8QT		93.65	0.12	0.34	93.16	-0.30	-0.85
BFYWAJ		93.07	-0.47	-1.39	92.75	-0.71	-2.03
CFT7EK		93.29	-0.25	-0.73	93.47	0.01	0.04
CV7G4T		93.56	0.02	0.07	93.52	0.06	0.19
DTC7NJ		93.44	-0.10	-0.29	93.64	0.18	0.51
EBTP33		93.72	0.18	0.54	93.82	0.36	1.04
FM4EGX		93.92	0.38	1.13	93.60	0.14	0.41
FVT8L4		93.56	0.02	0.06	93.59	0.13	0.37
H9CGFL		93.48	-0.06	-0.17	93.63	0.17	0.50
HANB2D		93.13	-0.41	-1.21	93.18	-0.28	-0.79
J7K4TL		93.95	0.41	1.22	94.15	0.69	1.99
KJMVBJ		93.66	0.12	0.36	93.96	0.50	1.44
LUXKNF		93.95	0.41	1.22	93.59	0.13	0.38
MXHRR9		93.68	0.14	0.43	93.44	-0.02	-0.05
N2ETDN		93.77	0.24	0.70	93.57	0.11	0.31
N2VVXG	X	94.99	1.45	4.30	95.05	1.59	4.57
NFVQCW	X	87.79	-5.75	-17.04	88.31	-5.15	-14.76
P32TN4		93.47	-0.07	-0.20	93.82	0.36	1.04
PCRAKK		93.46	-0.08	-0.23	93.23	-0.23	-0.65
PMMP2A	*	94.53	0.99	2.93	94.10	0.64	1.83
Q7HK96		93.58	0.04	0.13	93.75	0.29	0.84
QNGVXU		93.14	-0.40	-1.18	93.49	0.03	0.09
QYYCQZ		93.53	-0.01	-0.02	93.18	-0.28	-0.80
R4QY3K		93.97	0.43	1.28	93.51	0.05	0.15
R8AWPQ		93.46	-0.08	-0.23	93.81	0.35	1.01
RXJD9W	X	90.89	-2.65	-7.85	90.61	-2.85	-8.16
TABL64		93.25	-0.29	-0.85	92.88	-0.58	-1.65
VU4CDZ		93.09	-0.45	-1.33	93.52	0.06	0.18
WWTZBL		93.48	-0.06	-0.17	93.43	-0.03	-0.08
YUX2AT		93.65	0.11	0.32	93.12	-0.34	-0.98
ZBY4MQ		93.32	-0.22	-0.65	93.80	0.34	0.98
ZKNUAJ		93.29	-0.25	-0.73	92.96	-0.50	-1.43

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Summary Statistics

	Sample GN45	Sample GN46
Grand Means	93.538 Percent	93.457 Percent
SD Btwn Labs	0.337 Percent	0.349 Percent

Statistics based on 34 of 37 reporting participants

Comments on Assigned Data Flags for Test #384

NFVQCW (X) - Extreme Data.

RXJD9W (X) - Extreme Data.

N2VVXG (X) - Data for both samples are high.

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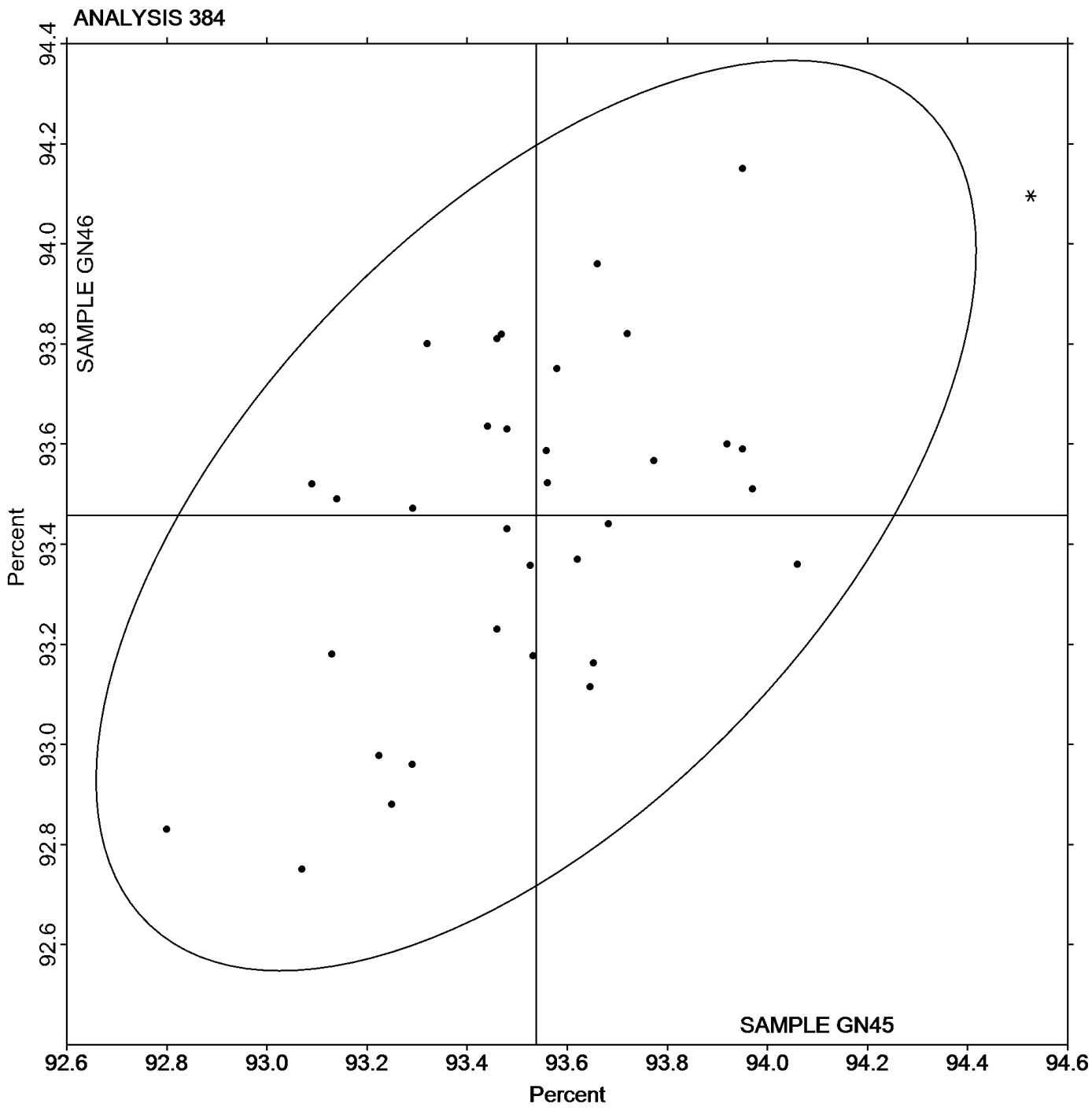
Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN45** = 93.538 Percent

Grand Mean Sample **GN46** = 93.457 Percent



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

WebCode	Data Flag	Sample GP45 Lab Mean	Sample GP45 Diff from Grand Mean	Sample GP45 CPV	Sample GP46 Lab Mean	Sample GP46 Diff from Grand Mean	Sample GP46 CPV
32NHDU		95.11	-0.09	-0.67	93.39	-0.04	-0.32
4DDWX9		95.25	0.05	0.34	93.40	-0.03	-0.21
4PMJXT		95.10	-0.11	-0.78	93.34	-0.09	-0.69
6ZLRYA		95.08	-0.12	-0.86	93.29	-0.15	-1.15
CT2W6Z		95.22	0.01	0.10	93.42	-0.02	-0.12
ND8G3V		95.13	-0.07	-0.50	93.42	-0.02	-0.12
NT22JJ		95.24	0.03	0.24	93.49	0.06	0.50
PMMP2A		95.24	0.03	0.24	93.39	-0.04	-0.31
TAU6CW		95.15	-0.05	-0.37	93.40	-0.03	-0.27
TZMP6N	*	95.68	0.47	3.44	93.87	0.44	3.49
V6R9E2		95.21	0.01	0.08	93.41	-0.03	-0.20
V7ZDYG		95.20	0.00	-0.03	93.45	0.02	0.15
VKZZJQ		95.19	-0.02	-0.13	93.37	-0.06	-0.45
XUHFZQ		95.14	-0.06	-0.44	93.41	-0.02	-0.13
XVWMNT		95.10	-0.10	-0.71	93.45	0.02	0.14
ZFB9YQ		95.21	0.01	0.05	93.39	-0.04	-0.32

Summary Statistics

	Sample GP45	Sample GP46
Grand Means	95.203 Percent	93.430 Percent
SD Btwn Labs	0.138 Percent	0.126 Percent

Statistics based on 16 of 16 reporting participants

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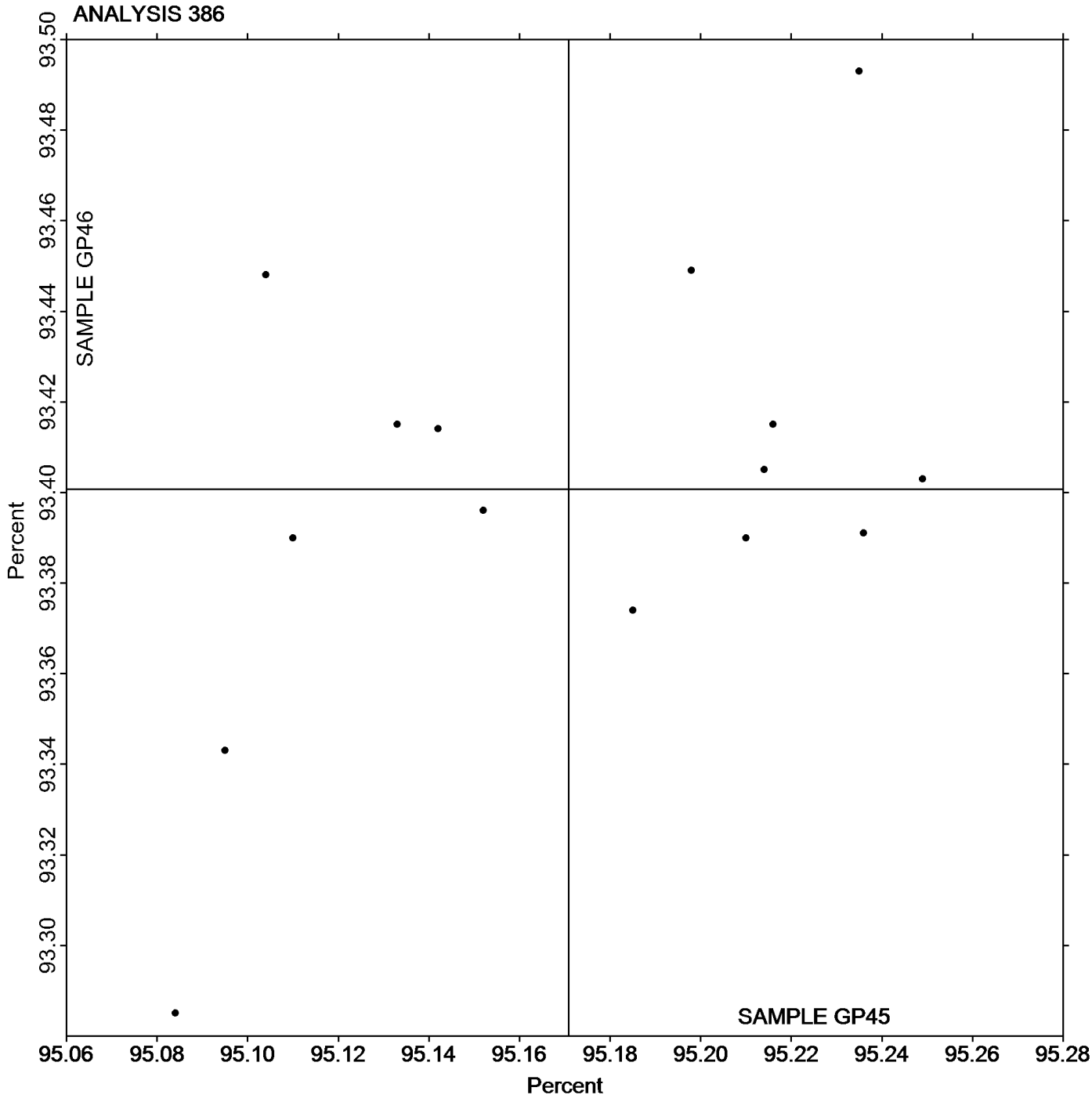
Grand Mean Sample **GP45** = 95.203 Percent

Grand Mean Sample **GP46** = 93.430 Percent



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

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WebCode	Data Flag	Sample GR45 Lab Mean	Sample GR45 Diff from Grand Mean	Sample GR45 CPV	Sample GR46 Lab Mean	Sample GR46 Diff from Grand Mean	Sample GR46 CPV	Instr Code
2Q8ERP		83.28	-0.54	-0.56	84.00	-0.33	-0.33	TS
32LVZL		84.38	0.56	0.59	84.92	0.59	0.59	MK
32NHDU		82.84	-0.98	-1.04	83.40	-0.93	-0.92	TS
463KTX		83.19	-0.63	-0.66	83.64	-0.69	-0.68	TS
76RRQR		85.61	1.79	1.89	85.98	1.65	1.64	XX
7N76MN		83.45	-0.37	-0.39	84.26	-0.07	-0.07	TS
8DJKHH		84.44	0.62	0.66	85.04	0.71	0.70	HD
8UPRRT		83.34	-0.48	-0.51	84.07	-0.26	-0.26	TS
A8Q8QT		85.20	1.38	1.45	85.74	1.41	1.40	TS
ALMLQM		83.40	-0.42	-0.45	84.09	-0.24	-0.24	TS
CFT7EK		85.48	1.66	1.75	86.06	1.73	1.72	TS
CV7G4T		84.99	1.17	1.23	85.43	1.09	1.09	XX
DTC7NJ		83.15	-0.67	-0.71	83.24	-1.09	-1.08	TS
E7XZF4		83.31	-0.51	-0.53	83.98	-0.36	-0.35	TS
EBTP33		83.10	-0.72	-0.76	83.69	-0.64	-0.64	TA
H9CGFL		84.85	1.03	1.09	85.66	1.33	1.32	TS
HANB2D		84.25	0.43	0.45	84.66	0.33	0.33	XS
HCEAHX		85.01	1.19	1.26	85.39	1.06	1.05	TT
J4G622	*	82.61	-1.21	-1.27	82.54	-1.79	-1.78	TS
JDM2RQ	X	79.34	-4.48	-4.73	80.78	-3.55	-3.53	PP
KB9YC6		83.83	0.01	0.01	84.48	0.15	0.15	HD
KJMVBJ		83.53	-0.29	-0.31	84.18	-0.16	-0.15	TS
LGGMP7		85.54	1.72	1.81	85.98	1.64	1.63	TT
LUXKNF		83.65	-0.17	-0.18	84.11	-0.22	-0.22	TT
N2VVXG	X	87.61	3.79	4.00	96.23	11.89	11.81	XX
NFVQCW	X	90.67	6.85	7.22	91.27	6.94	6.89	PE
PCRAKK		82.78	-1.04	-1.10	83.33	-1.01	-1.00	TT
PMMP2A		82.88	-0.94	-0.99	83.50	-0.83	-0.82	TS
PNH7FR		82.96	-0.86	-0.91	83.45	-0.88	-0.87	TS
QNGVXU		84.96	1.14	1.21	85.48	1.14	1.14	TS
R8AWPQ		83.44	-0.38	-0.40	84.24	-0.09	-0.09	TS
UR4LVZ		82.77	-1.05	-1.11	83.13	-1.20	-1.19	TS
UXVQP6		83.33	-0.49	-0.52	84.00	-0.33	-0.33	TT
WWTZBL	*	82.86	-0.96	-1.01	82.60	-1.73	-1.72	TT

Summary Statistics

	Sample GR45	Sample GR46
Grand Means	83.819 Percent	84.331 Percent
SD Btwn Labs	0.948 Percent	1.007 Percent

Statistics based on 31 of 34 reporting participants

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Comments on Assigned Data Flags for Test #390

JDM2RQ (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

NFVQCW (X) - Extreme Data.

N2VVXG (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

HD	Hunter D25DP - 9000	MK	Macbeth Color-Eye 7000 Spectrophotometer
PE	Photovolt 577	PP	Technidyne Profile/Plus
TA	Technidyne, Diano, M.S. S-4	TS	Technidyne Brightimeter Micro S-5
TT	Technidyne Brightimeter Micro S4-M	XS	X-Rite 938 Spectrodensitometer
XX	Instrument make/model not specified by lab		

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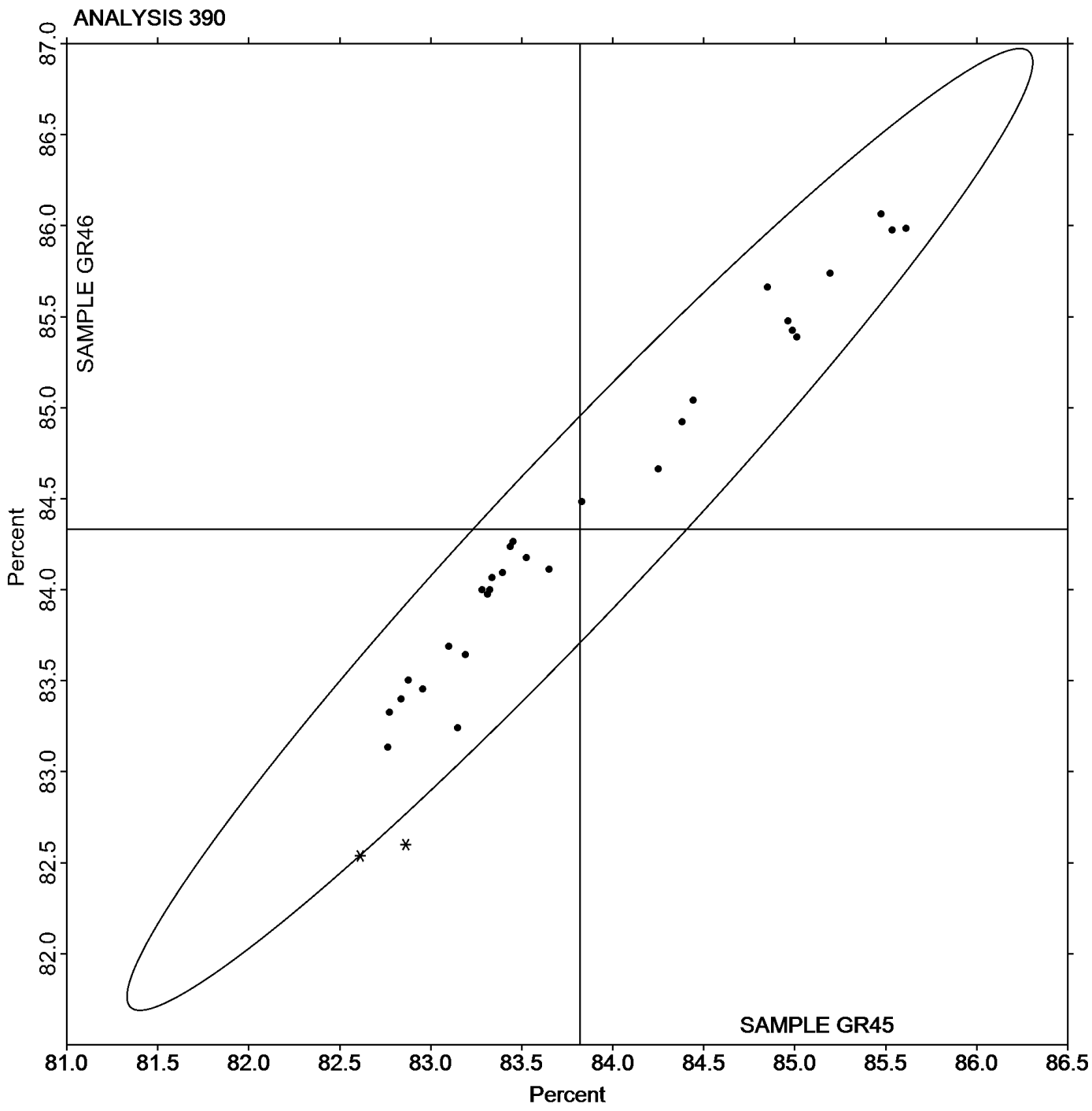
Analysis 390
Directional Brightness

Grand Mean Sample **GR45** = 83.819 Percent

Grand Mean Sample **GR46** = 84.331 Percent



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

WebCode	Data Flag	Sample GZ45 Lab Mean	Sample GZ45 Diff from Grand Mean	Sample GZ45 CPV	Sample GZ46 Lab Mean	Sample GZ46 Diff from Grand Mean	Sample GZ46 CPV	Instr Code
4JX2HV		98.29	0.16	0.25	97.67	0.33	0.41	TS
76RRQR		99.32	1.19	1.84	98.90	1.55	1.94	XX
8TUBEV	*	98.08	-0.05	-0.08	95.84	-1.51	-1.88	EF
9TVB33		98.65	0.52	0.80	97.96	0.62	0.77	TS
BFYWAJ		96.68	-1.45	-2.25	96.01	-1.34	-1.67	HT
FM4EGX		97.66	-0.47	-0.72	97.01	-0.34	-0.42	PP
FVT8L4		98.27	0.14	0.22	97.57	0.23	0.28	TS
J7K4TL		98.48	0.35	0.54	97.68	0.34	0.42	TT
N2ETDN		97.47	-0.66	-1.02	96.79	-0.55	-0.69	TS
Q7HK96		98.26	0.13	0.20	97.72	0.38	0.47	TT
QYYCQZ		98.75	0.62	0.95	98.02	0.68	0.84	TS
R4QY3K		98.82	0.69	1.07	98.18	0.84	1.04	TS
R8AWPQ		97.92	-0.21	-0.33	97.09	-0.25	-0.32	TS
TABL64		98.02	-0.11	-0.17	97.12	-0.23	-0.28	TT
YUX2AT		98.14	0.01	0.01	97.42	0.08	0.09	TS
ZKNUAJ		97.28	-0.85	-1.31	96.54	-0.80	-1.00	HT

Summary Statistics

	Sample GZ45	Sample GZ46
Grand Means	98.131 Percent	97.345 Percent
SD Btwn Labs	0.644 Percent	0.800 Percent

Statistics based on 16 of 16 reporting participants

Key to Instrument Codes Reported by Participants

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

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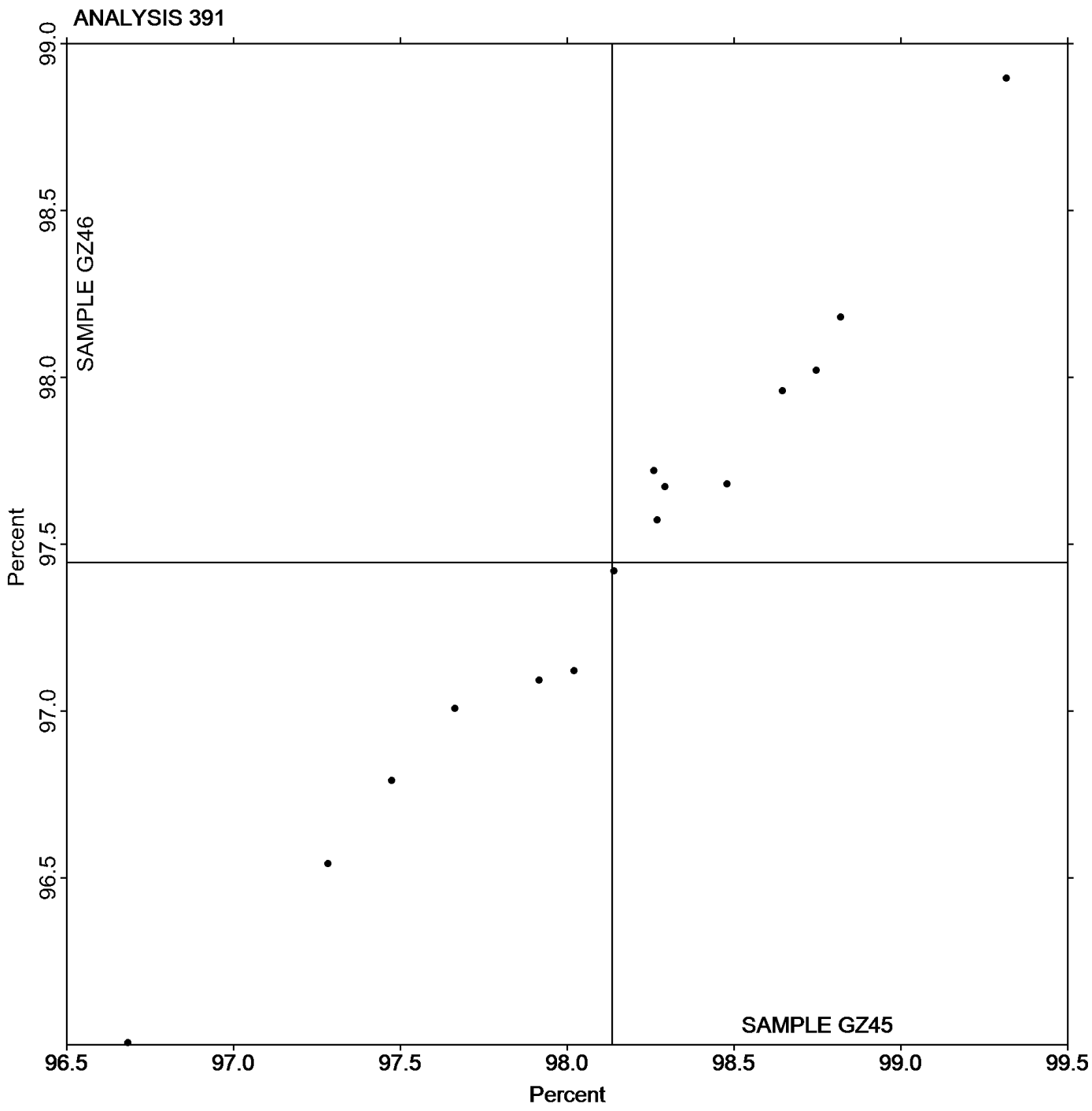
Analysis 391
Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ45** = 98.131 Percent

Grand Mean Sample **GZ46** = 97.345 Percent



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

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Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

WebCode	Data Flag	Sample GR45 Lab Mean	Sample GR45 Diff from Grand Mean	Sample GR45 CPV	Sample GR46 Lab Mean	Sample GR46 Diff from Grand Mean	Sample GR46 CPV	Instr Code
2Q8ERP		83.58	0.13	0.48	84.20	0.17	0.73	TC
32NHDU		83.79	0.34	1.26	84.30	0.27	1.14	TC
4JX2HV		83.68	0.23	0.86	84.20	0.17	0.72	TC
4KAW4N		83.43	-0.02	-0.08	84.10	0.07	0.29	TC
8C9LLN	*	84.08	0.63	2.35	84.69	0.66	2.79	LA
8TUBEV		83.19	-0.26	-0.99	83.76	-0.27	-1.14	LA
8V3AY6		83.57	0.12	0.46	84.13	0.10	0.41	TC
ALMLQM		83.32	-0.14	-0.51	83.98	-0.06	-0.24	TM
E7XZF4	*	83.71	0.26	0.98	84.00	-0.03	-0.13	TC
GRDUM2		83.18	-0.27	-1.02	83.87	-0.17	-0.70	TC
GTPUKV		83.66	0.21	0.79	84.24	0.21	0.87	EF
HCEAHX	*	82.84	-0.61	-2.31	83.66	-0.37	-1.56	EG
LGGMP7	X	85.53	2.07	7.80	86.18	2.14	9.06	TL
NT22JJ		83.50	0.05	0.17	84.11	0.08	0.34	LA
PCRAKK		83.44	-0.02	-0.06	84.09	0.05	0.23	LT
PMMP2A		83.43	-0.02	-0.08	84.05	0.02	0.08	TC
PNH7FR		83.78	0.33	1.24	84.20	0.17	0.72	TC
PX8YQ3		83.25	-0.21	-0.78	83.80	-0.23	-0.96	TC
QTAX2T		83.34	-0.11	-0.41	83.88	-0.16	-0.65	TC
TAU6CW		83.14	-0.31	-1.17	83.70	-0.33	-1.38	LS
ULWZ2C		83.50	0.05	0.18	83.96	-0.07	-0.29	PP
UM83NB		83.57	0.12	0.46	84.12	0.09	0.37	TC
UX9HGL		83.33	-0.12	-0.44	84.07	0.04	0.15	TC
UXVQP6	X	83.12	-0.33	-1.26	83.23	-0.81	-3.41	EG
V7ZDYG		83.77	0.32	1.20	84.33	0.30	1.27	TC
VKZZJQ		83.12	-0.33	-1.23	83.69	-0.35	-1.46	EG
WG3TKF		83.60	0.15	0.55	84.27	0.24	1.01	TC
XUHFZQ		83.46	0.01	0.02	83.87	-0.16	-0.69	LS
XVWMNT		83.11	-0.34	-1.27	83.71	-0.32	-1.36	TM
ZFB9YQ		83.28	-0.18	-0.66	83.90	-0.13	-0.55	TM

Summary Statistics

	Sample GR45	Sample GR46
Grand Means	83.451 Percent	84.031 Percent
SD Btwn Labs	0.266 Percent	0.237 Percent

Statistics based on 28 of 30 reporting participants

Comments on Assigned Data Flags for Test #392

UXVQP6 (X) - Data for sample GR46 are low.

LGGMP7 (X) - Extreme Data.

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Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho 3000	EG	Datacolor Elrepho 450X
LA	L & W Elrepho - Autoline	LS	L & W Elrepho SE 070
LT	L & W Elrepho SE 071	PP	Technidyne Profile/Plus
TC	Technidyne Color Touch Series	TL	Technidyne Technibrite TB-1
TM	Technidyne Technibrite Micro TB-1C		

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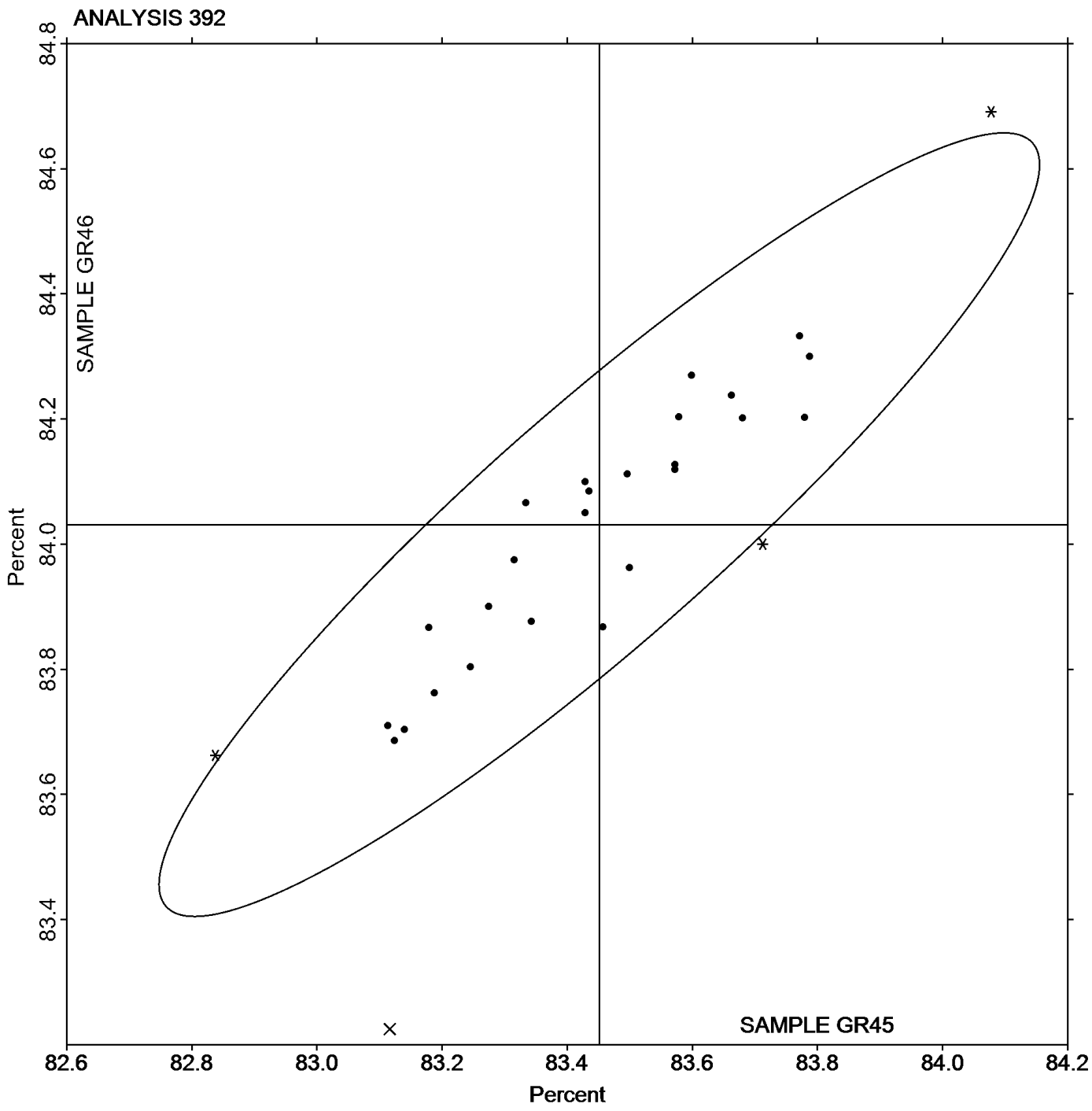
Analysis 392
Diffuse Brightness

Grand Mean Sample **GR45** = 83.451 Percent

Grand Mean Sample **GR46** = 84.031 Percent



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

WebCode	Data Flag	Sample GZ45 Lab Mean	Sample GZ45 Diff from Grand Mean	Sample GZ45 CPV	Sample GZ46 Lab Mean	Sample GZ46 Diff from Grand Mean	Sample GZ46 CPV	Instr Code
4JX2HV		8.568	-0.241	-0.64	7.756	-0.472	-1.19	TS
76RRQR		8.712	-0.097	-0.26	8.288	0.060	0.15	XX
8TUBEV	X	11.280	2.471	6.57	10.420	2.192	5.52	EF
9TVB33		9.400	0.591	1.57	8.746	0.518	1.30	TS
FM4EGX		8.342	-0.467	-1.24	7.872	-0.356	-0.90	PP
FVT8L4		8.632	-0.177	-0.47	8.030	-0.198	-0.50	TS
N2ETDN		8.860	0.051	0.14	8.346	0.118	0.30	TS
QYYCQZ		9.434	0.625	1.66	8.830	0.602	1.52	TS
R8AWPQ		8.362	-0.447	-1.19	7.656	-0.572	-1.44	TS
TABL64		8.920	0.111	0.30	8.440	0.212	0.53	TT
YUX2AT		8.860	0.051	0.14	8.320	0.092	0.23	TS

Summary Statistics

	Sample GZ45	Sample GZ46
Grand Means	8.8090 Percent	8.2284 Percent
SD Btwn Labs	0.3763 Percent	0.3969 Percent

Statistics based on 10 of 11 reporting participants

Comments on Assigned Data Flags for Test #394

8TUBEV (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

EF	Datacolor Elrepho 3000	PP	Technidyne Profile/Plus
TS	Technidyne Brightimeter Micro S-5	TT	Technidyne Brightimeter Micro S4-M
XX	Instrument make/model not specified by lab		

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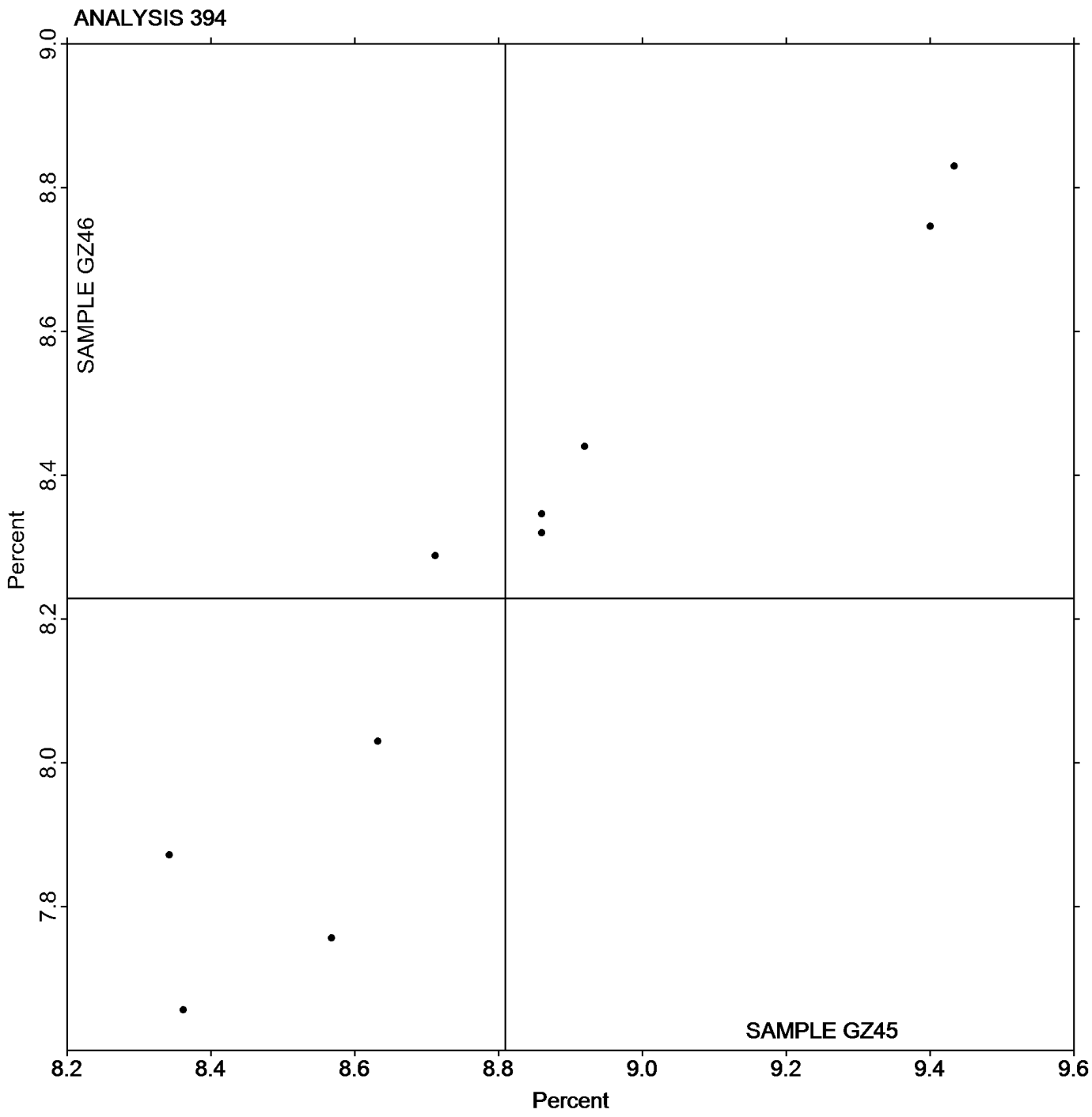
Analysis 394

Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ45** = 8.8090 Percent

Grand Mean Sample **GZ46** = 8.2284 Percent



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

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

WebCode	Data Flag	Sample GT45 Lab Mean	Sample GT45 Diff from Grand Mean	Sample GT45 CPV	Sample GT46 Lab Mean	Sample GT46 Diff from Grand Mean	Sample GT46 CPV	Instr Code
32LVZL		76.48	0.06	0.01	77.82	-0.09	-0.02	PP
32NHDU		77.38	0.95	0.21	79.12	1.21	0.25	TG
4AX8QR	*	91.37	14.95	3.24	94.40	16.49	3.36	VM
4PMJXT		73.87	-2.55	-0.55	76.21	-1.70	-0.35	GM
8DJKHH		78.65	2.23	0.48	80.59	2.68	0.55	TH
A47A4N		74.56	-1.86	-0.40	76.13	-1.78	-0.36	LA
CFT7EK		72.94	-3.48	-0.76	74.95	-2.96	-0.60	LA
FM4EGX		75.44	-0.98	-0.21	77.31	-0.60	-0.12	PP
FVT8L4		76.79	0.37	0.08	76.68	-1.23	-0.25	LA
HCEAHX		74.84	-1.58	-0.34	76.57	-1.34	-0.27	GM
KB9YC6		77.16	0.74	0.16	78.51	0.60	0.12	TH
LGGMP7		82.15	5.73	1.24	82.10	4.19	0.85	GS
LUXKNF		76.28	-0.14	-0.03	77.53	-0.38	-0.08	TH
PMMP2A		75.26	-1.16	-0.25	76.17	-1.74	-0.36	TH
Q7HK96		76.56	0.13	0.03	79.80	1.89	0.38	TG
QNGT9P		68.98	-7.44	-1.62	69.29	-8.62	-1.76	XX
QTAX2T		70.33	-6.09	-1.32	72.05	-5.86	-1.20	ZH
UXVQP6		76.51	0.09	0.02	77.19	-0.72	-0.15	TH
XUHFZQ		76.53	0.11	0.02	77.96	0.05	0.01	LB

Summary Statistics

	Sample GT45	Sample GT46
Grand Means	76.425 Gloss Units	77.915 Gloss Units
SD Btwn Labs	4.609 Gloss Units	4.904 Gloss Units

Statistics based on 19 of 19 reporting participants

Key to Instrument Codes Reported by Participants

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	VM	Valmet PaperLab (was Kajaani/Robotest)
XX	Instrument make/model not specified by lab	ZH	Zehntner ZLR 1050

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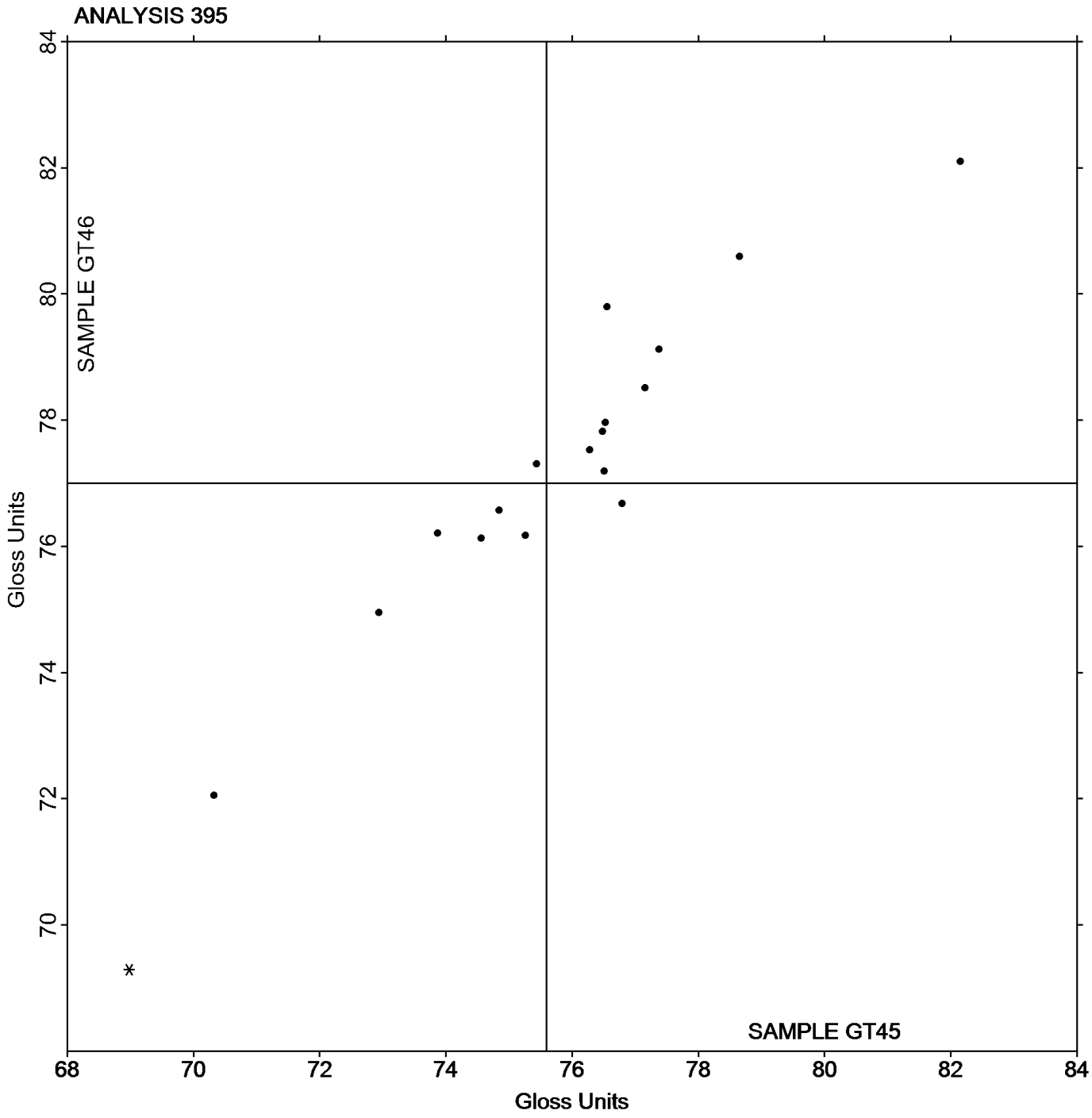
Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT45** = 76.425 Gloss Units

Grand Mean Sample **GT46** = 77.915 Gloss Units



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

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

WebCode	Data Flag	Sample GU45 Lab Mean	Sample GU45 Diff from Grand Mean	Sample GU45 CPV	Sample GU46 Lab Mean	Sample GU46 Diff from Grand Mean	Sample GU46 CPV	Instr Code
32NHDU		47.21	5.52	1.58	39.55	5.06	2.02	TG
8HDKWD		41.06	-0.63	-0.18	34.06	-0.43	-0.17	XX
8TUBEV		34.63	-7.06	-2.02	30.81	-3.68	-1.47	TG
E7XZF4		42.88	1.19	0.34	35.82	1.33	0.53	TH
EBTP33		43.32	1.63	0.47	34.18	-0.31	-0.13	TH
HANB2D		41.00	-0.69	-0.20	33.93	-0.56	-0.22	TH
MXHRR9		41.61	-0.08	-0.02	32.91	-1.58	-0.63	PP
XUHFZQ		41.79	0.10	0.03	34.66	0.17	0.07	LA

Summary Statistics

	Sample GU45	Sample GU46
Grand Means	41.687 Gloss Units	34.489 Gloss Units
SD Btwn Labs	3.489 Gloss Units	2.508 Gloss Units

Statistics based on 8 of 8 reporting participants

Key to Instrument Codes Reported by Participants

LA	L & W Gloss - Autoline 300	PP	Technidyne Profile/Plus
TG	Technidyne T480	TH	Technidyne T480A
XX	Instrument make/model not specified by lab		

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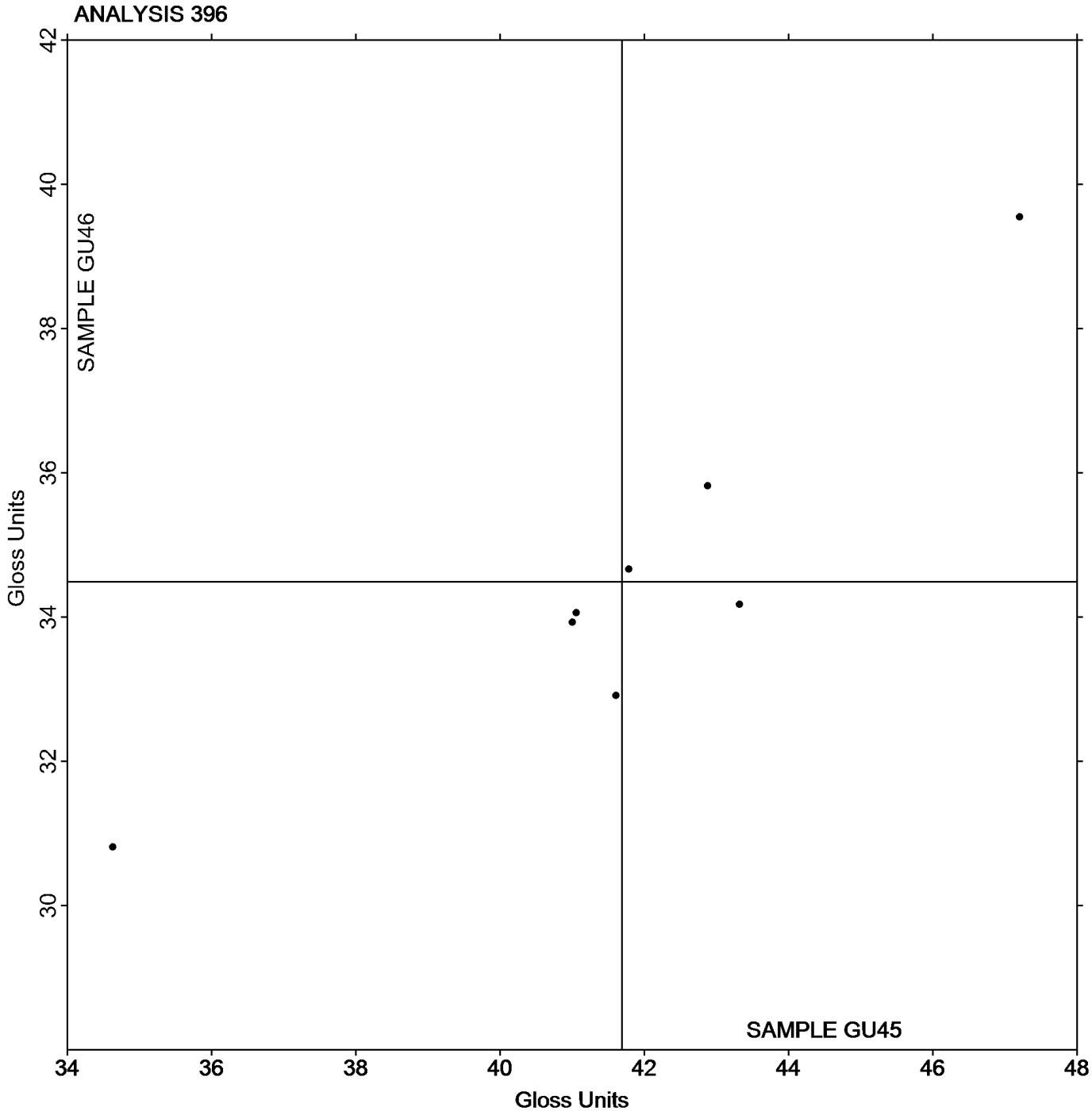
Grand Mean Sample **GU45** = 41.687 Gloss Units

Grand Mean Sample **GU46** = 34.489 Gloss Units



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

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

WebCode	Data Flag	Sample GW45 Lab Mean	Sample GW45 Diff from Grand Mean	Sample GW45 CPV	Sample GW46 Lab Mean	Sample GW46 Diff from Grand Mean	Sample GW46 CPV
43CEGD		90.12	0.83	1.41	104.0	0.3	0.37
4DDWX9		89.12	-0.17	-0.29	104.1	0.4	0.49
4PMJXT		88.62	-0.67	-1.14	103.0	-0.6	-0.68
87J6QP		89.61	0.32	0.54	105.0	1.4	1.58
8HDKWD		89.06	-0.23	-0.39	103.5	-0.2	-0.21
8TUBEV		88.50	-0.79	-1.35	101.5	-2.1	-2.42
BFYWAJ		89.94	0.65	1.11	104.9	1.3	1.43
BYBN7U		89.44	0.15	0.25	104.2	0.6	0.65
CV7G4T		89.07	-0.22	-0.38	103.2	-0.4	-0.48
E7W369		89.39	0.09	0.16	103.5	-0.1	-0.15
EBTP33		88.35	-0.94	-1.61	103.2	-0.4	-0.46
FJX72L		88.96	-0.33	-0.56	103.3	-0.3	-0.34
H8LB43		88.81	-0.48	-0.81	102.8	-0.8	-0.95
HANB2D		88.64	-0.65	-1.11	103.0	-0.7	-0.75
KJMVBJ		88.84	-0.45	-0.77	103.0	-0.6	-0.70
PNH7FR		89.97	0.68	1.16	103.8	0.2	0.18
R4QY3K		89.28	-0.01	-0.02	103.6	0.0	-0.05
TAU6CW		89.03	-0.26	-0.45	103.4	-0.3	-0.29
TKCU4A	*	90.42	1.13	1.93	106.0	2.4	2.69
UVA3BJ	*	90.35	1.06	1.81	103.2	-0.5	-0.56
V6R9E2		89.38	0.09	0.15	104.5	0.9	1.00
VU4CDZ		89.31	0.02	0.03	103.1	-0.6	-0.67
XP7APQ		88.62	-0.67	-1.14	103.2	-0.5	-0.54
XUHFZQ		88.82	-0.47	-0.81	103.7	0.0	0.04
YUX2AT		89.35	0.06	0.10	103.4	-0.2	-0.23
ZBY4MQ		90.25	0.96	1.64	104.9	1.3	1.46
ZKNUAJ		89.60	0.31	0.53	103.3	-0.3	-0.39

Summary Statistics

	Sample GW45	Sample GW46
Grand Means	89.291 g/sq m	103.64 g/sq m
SD Btwn Labs	0.586 g/sq m	0.88 g/sq m

Statistics based on 27 of 27 reporting participants

Analysis Notes:

ZKNUAJ - One determination removed from the Lab Mean of Sample GW46 per Grubb's Test at 1% risk (TAPPI 1205).

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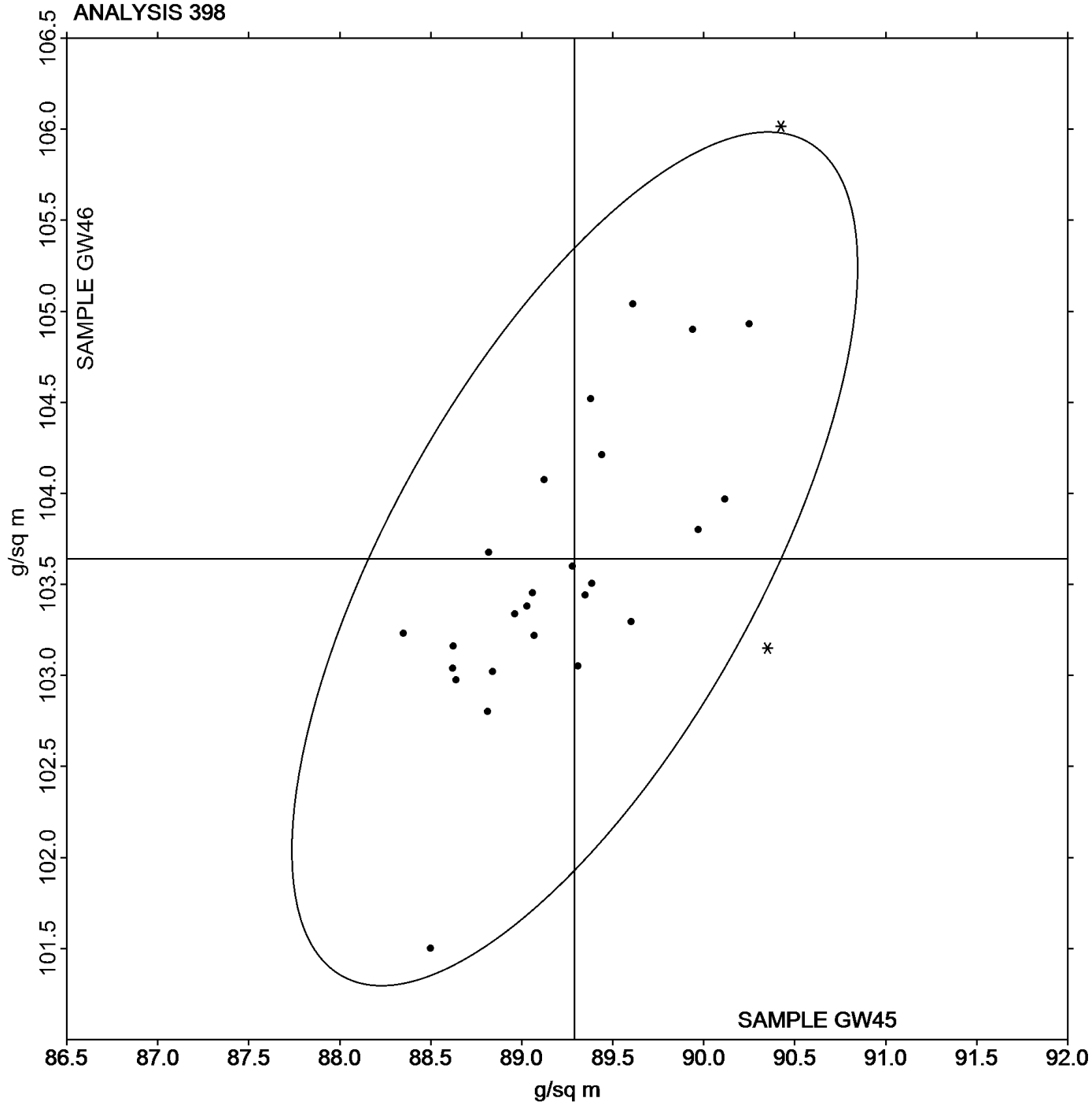
Grand Mean Sample **GW45** = 89.291 g/sq m

Grand Mean Sample **GW46** = 103.64 g/sq m



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

WebCode	Data Flag	Sample GX45 Lab Mean	Sample GX45 Diff from Grand Mean	Sample GX45 CPV	Sample GX46 Lab Mean	Sample GX46 Diff from Grand Mean	Sample GX46 CPV
2MMRVV		13.46	-1.99	-0.40	13.80	-0.56	-0.13
2Q8ERP		22.76	7.31	1.48	18.82	4.46	1.05
32LVZL		12.26	-3.18	-0.64	14.72	0.36	0.08
4AX8QR		11.80	-3.65	-0.74	11.76	-2.60	-0.61
4JJHXY		14.80	-0.65	-0.13	17.20	2.84	0.67
7N76MN		13.55	-1.90	-0.38	14.50	0.14	0.03
9TVB33		11.99	-3.46	-0.70	12.40	-1.96	-0.46
A7CQJ8		13.27	-2.18	-0.44	12.83	-1.53	-0.36
CFT7EK		10.46	-4.99	-1.01	10.68	-3.68	-0.87
CV7G4T	*	23.21	7.76	1.57	27.12	12.76	3.01
DTC7NJ		22.15	6.70	1.36	21.10	6.74	1.59
FVT8L4		15.59	0.14	0.03	13.76	-0.60	-0.14
HV3Z9G		13.39	-2.06	-0.42	11.00	-3.36	-0.79
J7K4TL		9.31	-6.14	-1.24	13.76	-0.60	-0.14
JR4ZWQ		18.57	3.12	0.63	11.01	-3.35	-0.79
KJMVBJ		23.70	8.25	1.67	15.90	1.54	0.36
LUXKNF		28.00	12.55	2.54	21.50	7.14	1.69
MXHRR9		13.91	-1.54	-0.31	12.23	-2.13	-0.50
N2ETDN		12.23	-3.22	-0.65	13.43	-0.93	-0.22
N2VVXG		9.44	-6.01	-1.21	7.93	-6.43	-1.52
NFVQCW		17.50	2.05	0.42	13.89	-0.47	-0.11
PCRAKK		15.86	0.41	0.08	15.78	1.42	0.34
QNGVXU		11.40	-4.05	-0.82	12.30	-2.06	-0.49
QYYB8N		13.17	-2.28	-0.46	10.37	-3.99	-0.94
QYYCQZ		13.66	-1.79	-0.36	13.45	-0.91	-0.22
R4QY3K		10.60	-4.85	-0.98	9.20	-5.16	-1.22
R8AWPQ		16.28	0.83	0.17	13.95	-0.41	-0.10
RXJD9W		24.50	9.05	1.83	24.40	10.04	2.37
UR4LVZ		11.35	-4.10	-0.83	12.30	-2.06	-0.49
VU4CDZ	*	21.04	5.59	1.13	10.76	-3.60	-0.85
WWTZBL		12.38	-3.07	-0.62	13.35	-1.01	-0.24
X7R383		12.68	-2.77	-0.56	14.37	0.01	0.00

Summary Statistics

	Sample GX45	Sample GX46
Grand Means	15.446 Seconds	14.362 Seconds
SD Btwn Labs	4.946 Seconds	4.233 Seconds

Statistics based on 32 of 32 reporting participants

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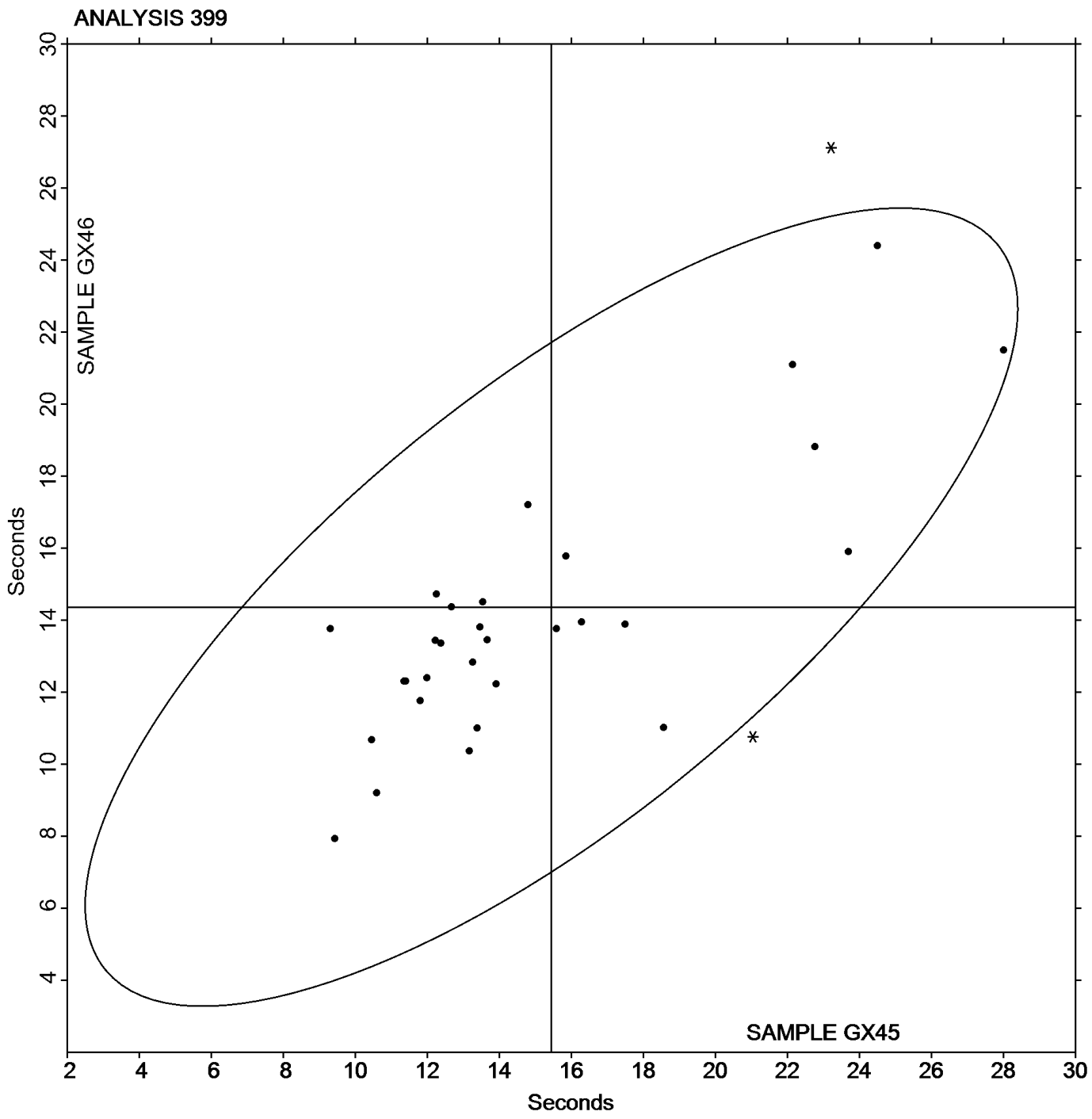
Analysis 399
Sizing Test (Hercules Type)

Grand Mean Sample **GX45** = 15.446 Seconds

Grand Mean Sample **GX46** = 14.362 Seconds



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