



## Paper & Paperboard Testing Program

### Summary Report #246G-June 2010

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## **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.

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

(Toll-free fax within the U.S.: 1-866-fax-2cts)  
Office Hours: 8:00 a.m. - 4:30 p.m. ET

## Key for Web Summary Reports (Page 1 of 2)

<b>WebCode</b>	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.
<b>Lab Mean</b>	The average of the values obtained for each sample by the participant.
<b>Grand Mean</b>	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.
<b>ΔE</b>	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*).
<b>Difference from Grand Mean</b>	The difference of the LAB MEAN from the GRAND MEAN.
<b>Between-Lab Standard Deviation</b>	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).
<b>Comparative Performance Value</b>	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.
<b>Inst Code</b>	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.
<b>Data Flag</b>	DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

<u>DATA FLAG</u>	<u>STATISTICALLY INCLUDED/EXCLUDED</u>	<u>ACTION REQUIRED</u>
*	INCLUDED	<b>CAUTION</b> - 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	<b>STOP</b> - 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	<b>PROCEED</b> - lab was unable to report data for at least one sample.

**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.

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### 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.

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

## Instrument Manufacturer Contacts

If your data results have been flagged with an "X" and you suspect that the problem is with your instrument (and not your testing procedure), CTS urges you to contact the appropriate instrument manufacturer. CTS has asked manufacturers to supply a contact person who is familiar with the Paper, Paperboard & Corrugated Fiberboard Interlaboratory Program. The listed service contact should be able to work with you on evaluating your results and determining possible causes of the problem.

### **Technidyne Corp., Hagerty Div.**

George Hagerty  
287 Dix Ave. P.O. Box 4741  
Queensbury, NY 12804  
Phone: (518) 793-2834  
FAX #: (518) 792-1796

### **Thwing Albert Instrument Co.**

Jack Mirkowski, Service Contact  
David Zarrilli, Sales Contact  
10960 Dutton Road  
Philadelphia, PA 19154  
Phone: (215) 637-0100  
FAX #: (215) 632-8370

### **Huygen Corporation**

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

### **Lorentzen & Wettre USA Inc.**

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

### **Gurley Precision Instruments**

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

### **BYK-Gardner**

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

### **Applied Paper Technology Inc.**

Vann Parker, President  
555 14th Street, NW  
Atlanta, GA 30318  
Phone: (404) 881-9801  
FAX #: (404) 881-0862  
appliedpapertech@mindspring.com

### **Technidyne Corporation**

Jeff Hobbs / Mike Lakins  
100 Quality Avenue  
New Albany, IN 47150-2272 USA  
Phone: (812) 948-2884  
FAX #: (812) 945-6847

### **Testing Machines Inc.**

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

### **Hercules, Inc.**

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

### **Valmet Inc.**

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

### **Hunter Associates Lab, Inc.**

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

### **Emveco Inc.**

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

## Analysis 350

Color &amp; Color Difference - Near White Papers - C/2deg ob

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code	
			L	a	b	$\Delta L$	$\Delta a$	$\Delta b$	$\Delta E$		
3RDJGX	X	GA57	89.17	-0.57	2.96	-0.72	-0.02	-0.15	0.74	X	HH
		GA58	88.44	-0.58	2.80						
4E47PB		GA57	90.22	-0.48	2.99	0.44	1.85	-3.85	4.29		TS
	GA58	90.66	1.36	-0.86							
4MBTJJ		GA57	91.42	-0.57	2.85	-0.16	0.77	-3.19	3.28		EH
	GA58	91.26	0.21	-0.34							
4NZZCM		GA57	89.26	-0.48	2.99	0.77	2.06	-3.75	4.35		TS
	GA58	90.03	1.58	-0.77							
7U466Q		GA57	91.61	-0.68	3.37	0.90	2.19	-4.40	4.99		LA
	GA58	92.51	1.51	-1.02							
94Y3UM		GA57	89.87	-0.74	2.65	0.11	2.83	-6.10	6.72		ET
	GA58	89.98	2.08	-3.44							
9R2JCP		GA57	89.87	-0.73	3.19	0.73	2.24	-4.22	4.84		TM
	GA58	90.59	1.51	-1.03							
9UP48L		GA57	90.88	-1.02	3.02	0.28	2.36	-4.20	4.82		HH
	GA58	91.17	1.34	-1.18							
9WR6WX		GA57	91.99	-0.84	3.20	0.82	3.01	-6.21	6.95		EF
	GA58	92.80	2.17	-3.01							
A8FMEG		GA57	89.88	-0.47	3.07	0.71	2.10	-4.03	4.60		TB
	GA58	90.59	1.63	-0.96							
B3A3LJ		GA57	90.21	-0.44	2.91	0.40	2.11	-3.81	4.37		TS
	GA58	90.61	1.67	-0.90							
CTPMU8		GA57	89.39	-0.23	2.73	0.32	2.07	-3.73	4.28		TS
	GA58	89.71	1.83	-1.00							
D4DJTQ		GA57	89.34	-0.40	2.84	0.76	2.17	-4.03	4.64		TS
	GA58	90.10	1.77	-1.18							
DVYR8W		GA57	89.90	-0.80	3.29	0.78	2.16	-4.12	4.72		TC
	GA58	90.68	1.35	-0.83							
FENQHD		GA57	90.00	-0.85	3.37	0.72	2.18	-4.27	4.85		LS
	GA58	90.72	1.33	-0.90							
FVXF2H		GA57	89.74	-0.80	3.26	0.76	1.90	-3.64	4.18		LS
	GA58	90.50	1.10	-0.38							
GHWRMF		GA57	91.99	-0.77	3.27	0.75	2.01	-4.10	4.63		TC
	GA58	92.74	1.25	-0.83							

## TAPPI-CTS Interlaboratory Testing Program

## Analysis 350

Color &amp; Color Difference - Near White Papers - C/2deg ob

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code	
			L	a	b	$\Delta L$	$\Delta a$	$\Delta b$	$\Delta E$		
JVVWV6		GA57	92.74	-0.36	2.71	0.52	1.71	-4.22	4.58	HE	
		GA58	93.26	1.35	-1.51						
KHYQ4D		GA57	89.65	-0.79	3.11	0.92	2.27	-4.45	5.08	EH	
		GA58	90.58	1.48	-1.33						
L24CYX	X	GA57	90.66	-0.77	3.28	1.21	3.81	-9.16	9.99	X	HV
		GA58	91.87	3.05	-5.88						
LBMXQ2		GA57	89.93	-0.63	3.13	0.86	2.41	-4.77	5.42	MK	
		GA58	90.79	1.78	-1.64						
LJL7WE		GA57	90.43	-0.35	3.22	1.01	1.24	-3.68	4.01	HV	
		GA58	91.44	0.88	-0.46						
N6JY3Z		GA57	92.24	-0.88	3.23	0.52	1.68	-3.06	3.53	MI	
		GA58	92.76	0.80	0.17						
NEFG9P		GA57	89.94	-0.80	3.21	0.76	2.12	-4.19	4.76	TC	
		GA58	90.70	1.32	-0.98						
PG6TJY		GA57	90.20	-0.88	3.32	0.96	1.08	-2.64	3.01	HG	
		GA58	91.16	0.20	0.68						
RXQXBD		GA57	91.72	-0.68	3.27	0.98	1.61	-2.95	3.50	XX	
		GA58	92.70	0.93	0.33						
VD6Y3D	X	GA57	90.47	1.34	-1.43	0.00	0.01	-0.03	0.03	X	HH
		GA58	90.46	1.35	-1.46						
XACV8Y		GA57	90.32	-0.74	3.33	0.80	2.74	-5.82	6.48	TP	
		GA58	91.12	2.01	-2.49						
YBJEN8		GA57	91.97	-0.77	3.20	0.68	2.16	-4.29	4.85	EH	
		GA58	92.65	1.40	-1.09						
YFLP97		GA57	89.89	-0.60	2.77	0.70	2.30	-4.33	4.95	HH	
		GA58	90.58	1.70	-1.56						
YG7HHV	X	GA57	90.95	-0.74	1.94	-1.42	1.82	-4.37	4.94	XS	
		GA58	89.53	1.08	-2.43						
YTF6HF		GA57	89.27	-0.44	2.85	0.86	2.12	-3.97	4.58	TS	
		GA58	90.13	1.68	-1.11						
Z9GDMT		GA57	89.81	-0.54	3.14	0.74	2.04	-3.81	4.39	TM	
		GA58	90.55	1.51	-0.67						
ZMW2GH		GA57	90.40	-0.43	2.89	0.48	1.98	-3.81	4.33	TS	
		GA58	90.88	1.55	-0.92						

## Analysis 350

Color &amp; Color Difference - Near White Papers - C/2deg ob

Hunter L,a,b - Illuminant C - 2 Degree Observer

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	$\Delta L$	$\Delta a$	$\Delta b$	$\Delta E$	

			Summary Statistics						
Grand Means									
	GA57		90.476	-0.586	3.077				
	GA58		91.134	1.387	-0.917	0.662	2.049	-4.121	4.666
Std Dev Btw Labs									
	GA57		0.965	0.388	0.212				
	GA58		0.986	0.625	1.080	0.267	0.463	0.801	0.880
Statistics based on 30 of 34 reporting participants									

## Comments assigned on Data Flags for Test #350

3RDJGX (X) - Low L and a values for Sample GA58; high b values for Sample GA58. Small da, db and dE values.

L24CYX (X) - Low b values for Sample GA58. Large da, db and dE values.

VD6Y3D (X) - High a values for Sample GA57; low b values for Sample GA57. Small da, db and dE values.

YG7HHV (X) - Low b values for Sample GA57. Large dL value. One suspect specimen removed from the averages of Sample GA58.

## Instrument Code List as Reported by the Labs

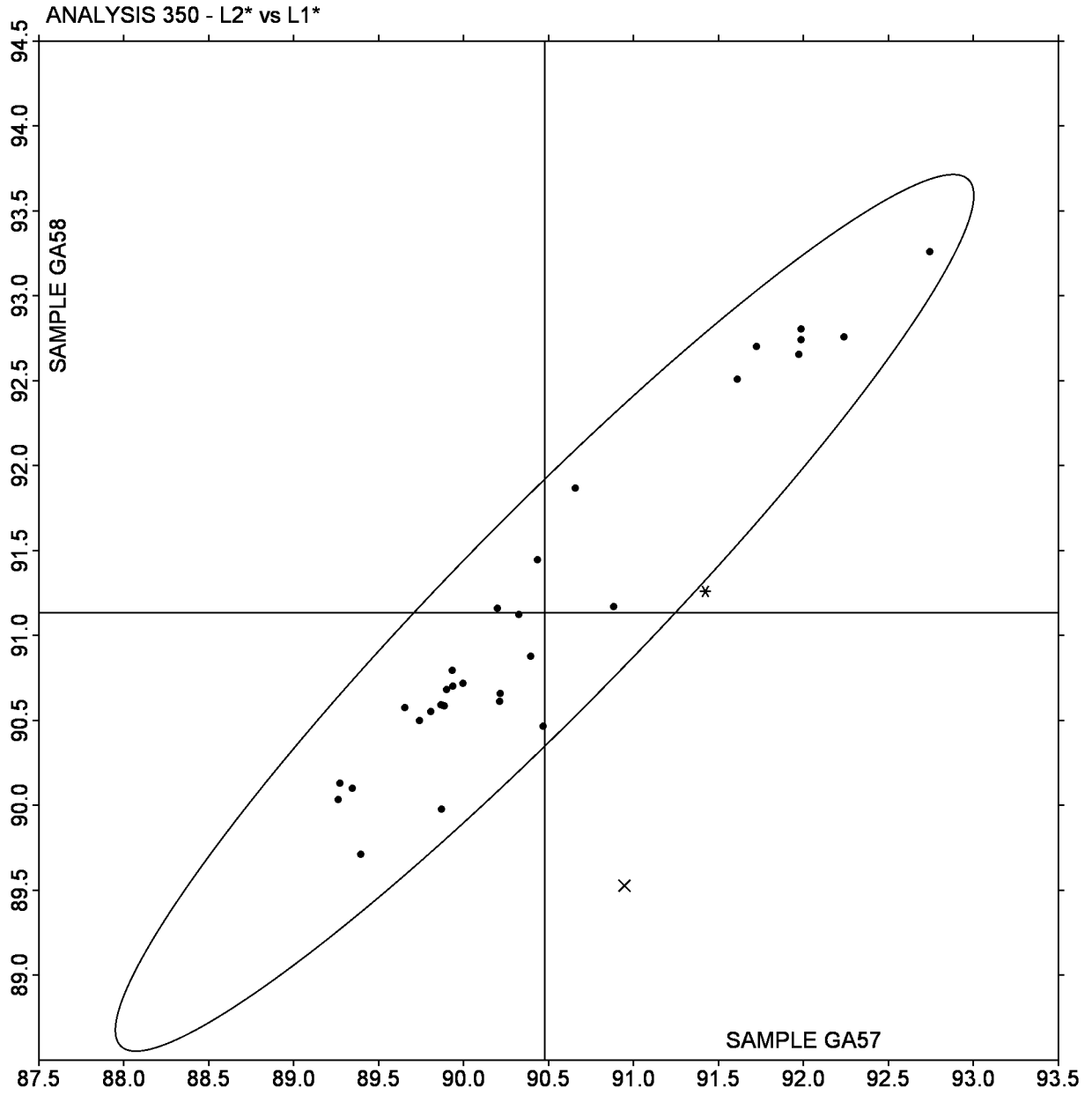
(EF) - Datacolor Elrepho 3000	(EH) - Datacolor Elrepho SF450
(ET) - Datacolor Spectraflash 600	(HE) - Hunter LabScan
(HG) - Hunter ColorQUEST	(HH) - Hunter D25DP - 9000
(HV) - Hunter Ultrascan XE	(LA) - L & W Elrepho AL300
(LS) - L & W Elrepho SE 070	(MI) - Macbeth Color i 5
(MK) - Macbeth Color-Eye 7000 Spectrophotometer	(TB) - Technidyne Technibrite TB-1C
(TC) - Technidyne Color Touch Series	(TM) - Technidyne Technibrite Micro TB-1C
(TP) - Technidyne Spectro Plus	(TS) - Technidyne Brightimeter Micro S-5
(XS) - X-Rite 938 Spectrodensitometer	(XX) - Instrument make/model not specified by lab

Analysis 350

Color & Color Difference - Near White Papers - C/2deg ob

Hunter L,a,b - Illuminant C - 2 Degree Observer

Plot of L values GA58 v L values GA57

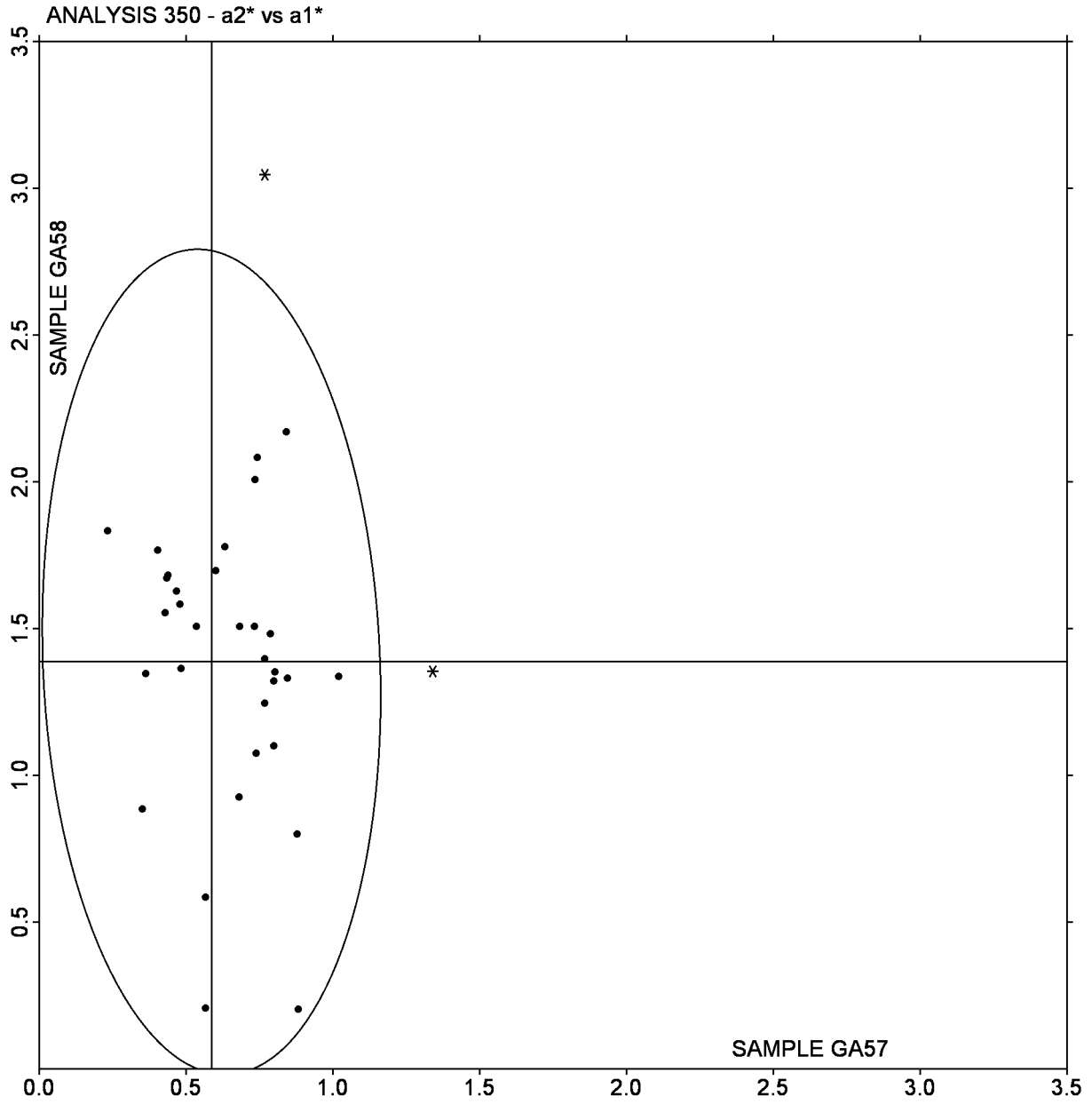


Analysis 350

Color & Color Difference - Near White Papers - C/2deg ob

Hunter L,a,b - Illuminant C - 2 Degree Observer

Plot of a values GA58 v a values GA57





## Analysis 351

Color &amp; Color Difference - Near White Papers - D65/10deg

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	$\Delta L$	$\Delta a$	$\Delta b$	$\Delta E$	
2KMA2A		GA57	92.01	-0.42	3.45	0.58	0.67	-2.26	2.42	NG
		GA58	92.59	0.25	1.20					
6P84AN		GA57	91.94	-0.50	3.36	0.88	1.82	-5.90	6.24	EF
		GA58	92.82	1.32	-2.54					
8WVAVF		GA57	90.09	-0.37	3.14	1.17	1.79	-5.29	5.71	NF
		GA58	91.26	1.43	-2.16					
8ZFYFT		GA57	93.10	-0.26	2.80	0.55	1.44	-4.20	4.47	XU
		GA58	93.65	1.18	-1.40					
9MWB8Z		GA57	91.78	-0.77	3.44	0.95	1.26	-5.47	5.70	HV
		GA58	92.72	0.49	-2.03					
9NAQRT	X	GA57	92.42	-0.46	3.27	1.37	2.23	-8.71	9.09	X
		GA58	93.80	1.77	-5.43					
BHCVTD		GA57	89.89	-0.42	3.03	0.91	1.21	-3.72	4.02	TC
		GA58	90.81	0.79	-0.69					
DJYFAT		GA57	90.36	-0.39	3.32	0.86	1.38	-3.91	4.23	XA
		GA58	91.22	0.99	-0.59					
DUMZ9D		GA57	90.11	-0.41	3.15	1.09	1.58	-4.98	5.34	XX
		GA58	91.21	1.17	-1.83					
F2P99W		GA57	89.85	-0.40	3.12	1.08	1.70	-5.39	5.76	TC
		GA58	90.93	1.31	-2.27					
GMH73N		GA57	92.17	-0.47	3.19	0.77	1.15	-3.87	4.11	XX
		GA58	92.94	0.68	-0.68					
GNUEBT		GA57	90.48	-0.44	3.42	0.82	0.99	-2.95	3.22	MG
		GA58	91.30	0.55	0.47					
MIJZLL7		GA57	89.87	-0.48	2.58	0.25	1.81	-5.65	5.94	ET
		GA58	90.12	1.33	-3.07					
NDVGJ9		GA57	89.27	-0.60	2.97	0.85	2.01	-3.86	4.43	TM
		GA58	90.12	1.41	-0.90					
P2CKKU		GA57	92.24	-0.41	3.39	0.79	1.64	-5.31	5.61	XD
		GA58	93.03	1.23	-1.91					
PQBXTX		GA57	92.30	-0.34	3.52	0.68	1.21	-3.71	3.97	HG
		GA58	92.98	0.87	-0.19					
QFLMFB		GA57	91.87	-0.52	3.34	0.69	0.98	-3.16	3.38	EH
		GA58	92.57	0.47	0.18					

## Analysis 351

Color &amp; Color Difference - Near White Papers - D65/10deg

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Web Code	F	Samples	Hunter L, a, b Color Values			Color Difference Values				Instr Code
			L	a	b	$\Delta L$	$\Delta a$	$\Delta b$	$\Delta E$	
TFXCHE		GA57	90.93	-0.59	2.99	1.12	1.34	-4.47	4.80	HV
		GA58	92.06	0.75	-1.49					
TGHPU6		GA57	89.43	-0.54	3.03	0.85	2.03	-3.89	4.47	TM
		GA58	90.28	1.49	-0.86					
TZAEUW		GA57	90.06	-0.80	3.12	0.79	2.05	-4.08	4.63	PP
		GA58	90.85	1.25	-0.96					
V284RQ		GA57	90.03	-0.40	3.11	0.84	1.13	-3.61	3.87	NF
		GA58	90.87	0.73	-0.50					
VLKY43		GA57	91.55	-0.35	3.38	1.17	1.86	-6.14	6.52	LS
		GA58	92.73	1.51	-2.77					
WLUXF6		GA57	90.50	-0.36	3.19	0.91	1.24	-3.65	3.96	HV
		GA58	91.41	0.87	-0.46					
X7P439		GA57	90.67	-0.48	3.41	0.71	1.00	-3.08	3.32	MG
		GA58	91.38	0.51	0.33					
YD9TCU		GA57	90.25	-0.45	3.11	1.13	1.62	-5.51	5.85	HE
		GA58	91.39	1.16	-2.40					
ZTYD7M		GA57	91.94	-0.53	3.40	0.73	1.39	-4.27	4.55	HV
		GA58	92.68	0.86	-0.88					

Grand Means		Summary Statistics							
	GA57	90.967	-0.468	3.198	0.847	1.452	-4.334	4.661	
	GA58	91.835	1.014	-1.136					
Stnd Dev Btwn Labs					0.215	0.374	1.029	1.059	
	GA57	1.092	0.122	0.226					
	GA58	1.088	0.392	1.099					

Statistics based on 25 of 26 reporting participants

## Comments assigned on Data Flags for Test #351

9NAQRT (X) - Low b values for Sample GA58. Large db and dE values.

## Analysis 351

Color &amp; Color Difference - Near White Papers - D65/10deg

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

**Instrument Code List as Reported by the Labs**

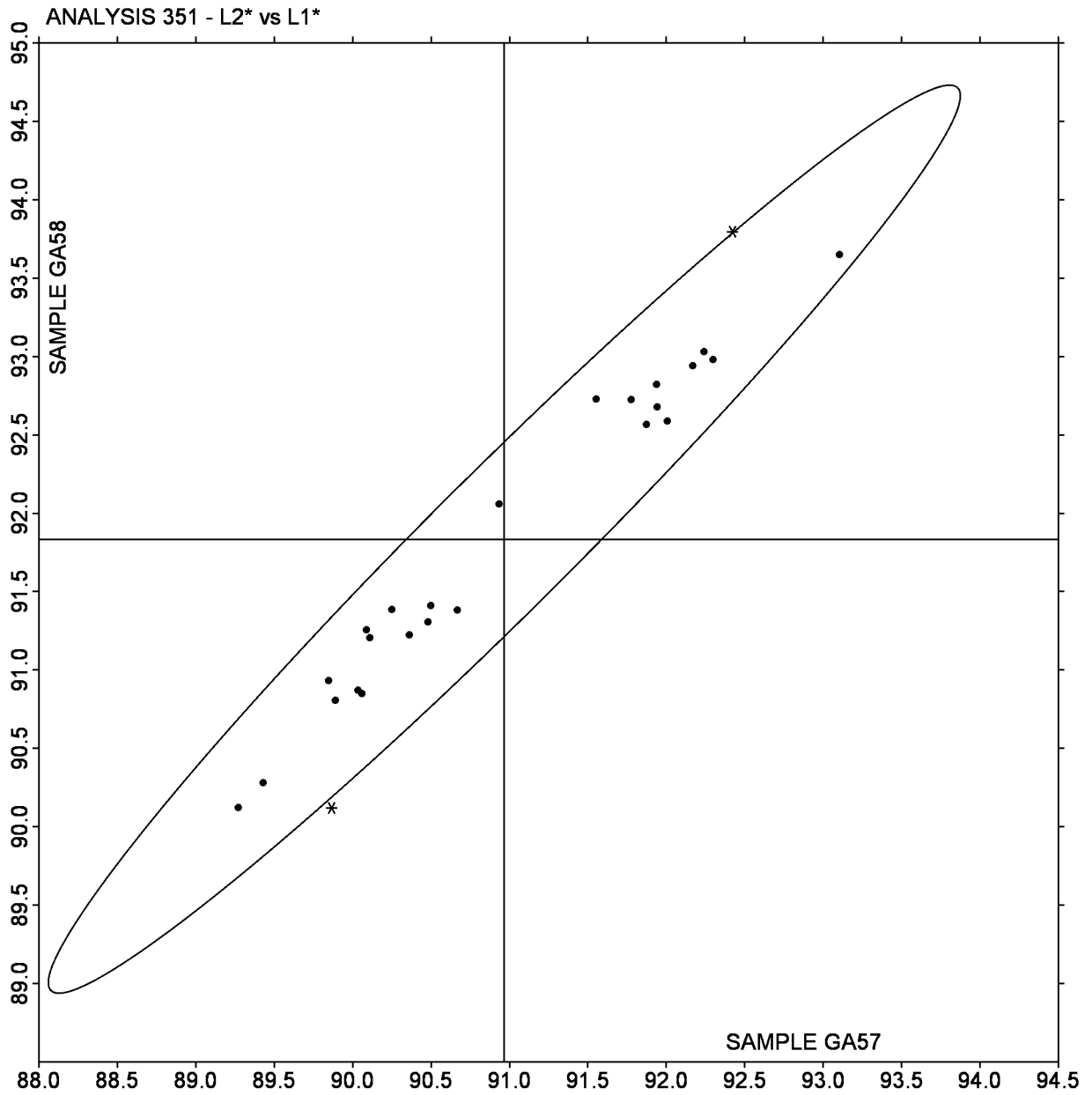
(EF) - Datacolor Elrepho 3000	(EH) - Datacolor Elrepho SF450
(ET) - Datacolor Spectraflash 600	(HE) - Hunter LabScan
(HG) - Hunter ColorQUEST	(HV) - Hunter Ultrascan XE
(LS) - L & W Elrepho SE 070	(MG) - Macbeth 1500/PLUS - 2025+ Color Eye
(NF) - Minolta CM-3600d Spectrophotometer	(NG) - Minolta CM-3700d Spectrophotometer
(PP) - Technidyne Profile/Plus	(TC) - Technidyne Color Touch Series
(TM) - Technidyne Brightimeter Model Micro S-5	(XA) - X-Rite (model not specified)
(XD) - X-Rite 530 SpectroDensitometer	(XU) - X-Rite 968 Spectrophotometer
(XX) - Instrument make/model not specified by lab	

Analysis 351

Color & Color Difference - Near White Papers - D65/10deg

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Plot of L values GA58 v L values GA57

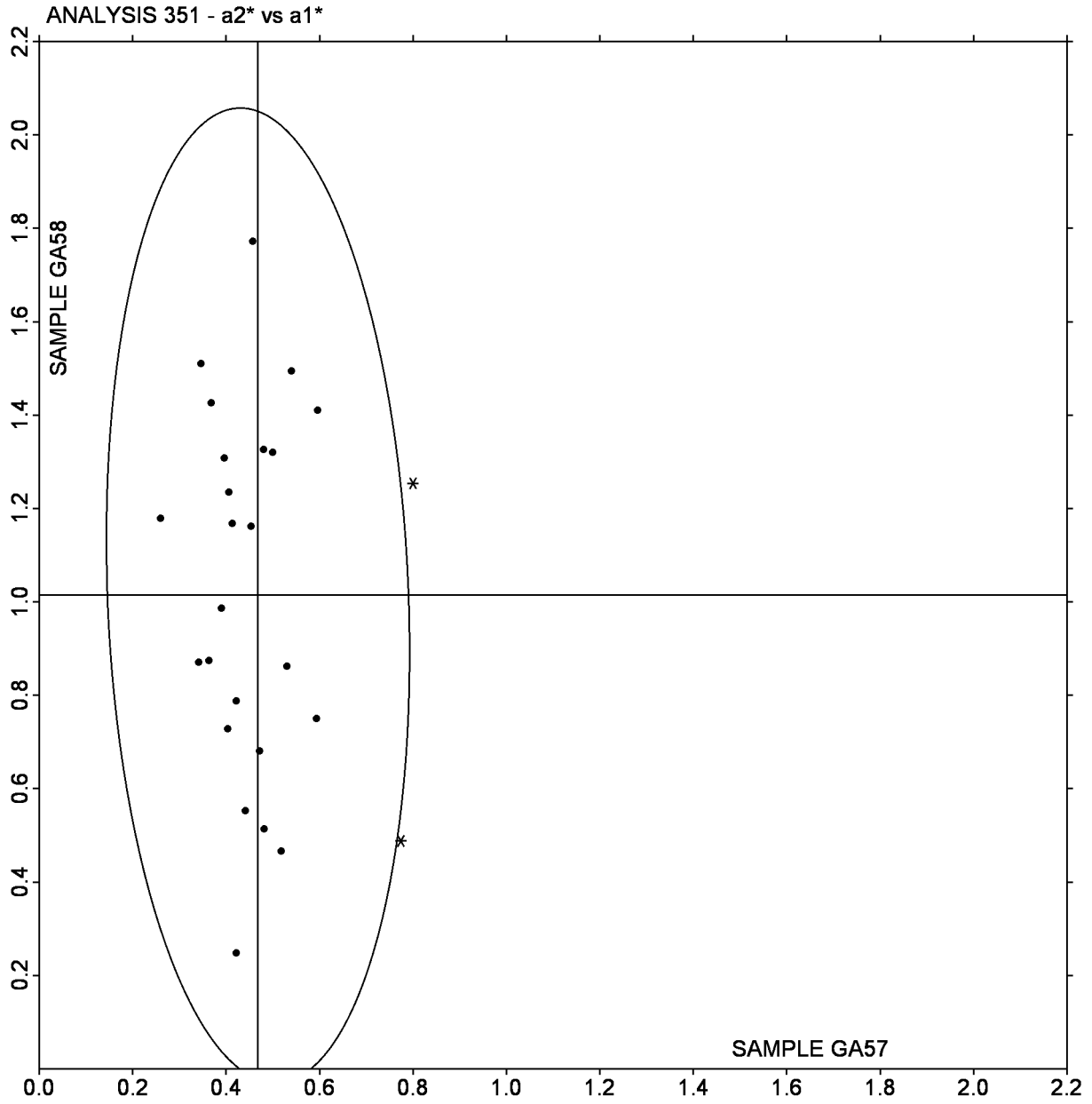


Analysis 351

Color & Color Difference - Near White Papers - D65/10deg

Hunter L,a,b - Illuminant D65 - 10 Degree Observer

Plot of a values GA58 v a values GA57





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

WebCode	Data Flag	Sample GV57			Sample GV58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2L7WWB		4.633	0.063	1.06	4.633	0.022	0.30	LA
2MMMGA		4.600	0.030	0.50	4.670	0.059	0.80	TM
2NXLD4		4.582	0.012	0.20	4.618	0.007	0.09	TA
2VR7ED		4.540	-0.030	-0.51	4.530	-0.081	-1.09	TM
2Z7B2R		4.631	0.061	1.03	4.732	0.121	1.63	TA
38XRQG	*	4.559	-0.011	-0.19	4.693	0.082	1.10	LW
3HJGQ9		4.668	0.098	1.65	4.697	0.086	1.16	EM
4KLZFB	X	4.486	-0.084	-1.42	4.667	0.056	0.76	PP
4WPL6E		4.602	0.032	0.53	4.660	0.049	0.66	LW
63R8CV		4.632	0.062	1.04	4.705	0.094	1.27	LW
6HGF88		4.604	0.034	0.57	4.651	0.040	0.54	LW
8DRLB6		4.479	-0.091	-1.54	4.530	-0.081	-1.09	XX
8W3L27		4.625	0.055	0.92	4.679	0.068	0.92	EM
9G2VKT		4.593	0.023	0.38	4.620	0.009	0.12	EM
9Q6ZBB		4.453	-0.118	-1.99	4.445	-0.166	-2.24	PP
9QDZJ6		4.480	-0.090	-1.53	4.490	-0.121	-1.63	LW
9RL9NJ		4.600	0.030	0.50	4.659	0.048	0.65	EM
9Y7PGY		4.522	-0.048	-0.82	4.530	-0.081	-1.09	LW
9ZCUFA		4.558	-0.012	-0.21	4.598	-0.013	-0.18	TA
A9EJFD		4.603	0.033	0.55	4.614	0.003	0.04	EM
AJUPVN		4.536	-0.034	-0.58	4.548	-0.063	-0.85	PP
AKXGL2		4.656	0.086	1.45	4.773	0.162	2.19	VM
ATCKXN		4.591	0.020	0.34	4.661	0.050	0.68	LW
BAY2HH		4.513	-0.057	-0.96	4.529	-0.082	-1.11	TA
BVH2V6		4.563	-0.007	-0.12	4.677	0.066	0.89	XX
BXPHXG		4.512	-0.058	-0.99	4.500	-0.111	-1.50	PP
C7LAK3		4.604	0.034	0.57	4.689	0.078	1.05	XX
CYHLAN		4.657	0.087	1.46	4.690	0.079	1.07	TA
D2TMAU		4.551	-0.019	-0.32	4.579	-0.032	-0.44	LW
DHBTCB		4.543	-0.027	-0.46	4.618	0.007	0.10	LW
E6WBK9		4.594	0.024	0.41	4.669	0.058	0.79	FR
F7ZGFT		4.598	0.028	0.47	4.633	0.022	0.30	EM
FP7EDC	*	4.488	-0.082	-1.39	4.618	0.007	0.10	TA
FY8RAQ		4.478	-0.092	-1.56	4.511	-0.100	-1.35	TA
GR8MEE		4.577	0.007	0.12	4.591	-0.021	-0.28	LW
GWR6ZB		4.661	0.091	1.54	4.732	0.121	1.64	LW
H62H67		4.627	0.057	0.96	4.676	0.065	0.88	EM
H6MDA9		4.513	-0.057	-0.97	4.621	0.010	0.13	TA
HLHKTT		4.587	0.017	0.28	4.591	-0.020	-0.27	EM
J6CM6N		4.622	0.052	0.87	4.693	0.082	1.10	TM
JKKK9A		4.443	-0.127	-2.14	4.478	-0.133	-1.79	TM
JPL863	X	4.365	-0.205	-3.47	4.335	-0.276	-3.73	TM
JTLCX3		4.515	-0.055	-0.93	4.572	-0.039	-0.53	EM

## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 360

## Thickness (Caliper), Printing papers

WebCode	Data Flag	Sample GV57			Sample GV58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
K8EEUL		4.579	0.008	0.14	4.567	-0.044	-0.60	LW
KT86PR		4.594	0.024	0.41	4.654	0.042	0.57	LW
LEAWM3		4.651	0.081	1.36	4.710	0.099	1.34	TA
LW9DRU		4.510	-0.060	-1.01	4.502	-0.109	-1.48	TM
MATT96		4.542	-0.028	-0.47	4.593	-0.018	-0.24	TM
N7CQ7L	X	4.331	-0.240	-4.05	4.449	-0.162	-2.19	MT
NJDXKJ		4.540	-0.030	-0.51	4.610	-0.001	-0.01	TM
NKJKUH		4.440	-0.130	-2.20	4.480	-0.131	-1.77	TM
PZVJJD		4.522	-0.048	-0.82	4.580	-0.031	-0.42	TM
Q44AYE	X	4.505	-0.065	-1.10	4.695	0.084	1.13	LA
QNHT74		4.557	-0.013	-0.22	4.575	-0.036	-0.49	TM
RJM4D4		4.602	0.032	0.54	4.618	0.007	0.10	LW
RKP9KJ		4.602	0.032	0.54	4.644	0.033	0.44	EM
RKRUGY		4.570	0.000	0.00	4.570	-0.041	-0.55	TM
RVC7QQ		4.543	-0.027	-0.46	4.539	-0.072	-0.97	TM
TG94NA		4.620	0.050	0.84	4.683	0.072	0.98	LW
U4JBU7		4.546	-0.024	-0.41	4.608	-0.003	-0.04	TM
U7TCYD		4.480	-0.090	-1.53	4.545	-0.066	-0.89	LA
UDRF6F		4.626	0.056	0.94	4.697	0.086	1.16	LW
UYL8JZ		4.564	-0.007	-0.11	4.612	0.001	0.02	LW
VE38QP		4.641	0.071	1.19	4.700	0.089	1.20	EM
VEE8X7		4.668	0.098	1.65	4.683	0.072	0.97	VM
VHBWED		4.579	0.008	0.14	4.624	0.013	0.18	TM
VMTQRQ		4.616	0.046	0.77	4.631	0.020	0.27	EM
WEDLZH		4.619	0.049	0.82	4.600	-0.011	-0.15	EM
WTQRAJ		4.430	-0.140	-2.37	4.430	-0.181	-2.44	TM
X2HPDX		4.679	0.109	1.84	4.682	0.071	0.96	PP
X6G4Y2		4.633	0.063	1.06	4.752	0.141	1.91	LW
X83PRP		4.505	-0.065	-1.10	4.507	-0.104	-1.41	XX
XELBGM		4.510	-0.060	-1.02	4.550	-0.061	-0.82	TM
XLCBGM		4.601	0.031	0.52	4.651	0.040	0.54	EM
XNE6GD		4.552	-0.018	-0.31	4.553	-0.058	-0.78	TM
YA9HGU		4.548	-0.022	-0.38	4.583	-0.028	-0.38	TM
YDTPH3		4.648	0.078	1.31	4.653	0.042	0.57	LW
YDWTT8		4.594	0.024	0.41	4.591	-0.021	-0.28	TM
YXEEZ8		4.523	-0.047	-0.80	4.559	-0.052	-0.70	EM
Z6VER4		4.531	-0.039	-0.66	4.566	-0.045	-0.61	LA
Z7VN4F		4.551	-0.020	-0.33	4.547	-0.064	-0.87	LW

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

	Summary Statistics	
	Sample GV57	Sample GV58
Grand Means	4.5703 mils	4.6111 mils
SD Btwn Labs	0.0592 mils	0.0741 mils
Statistics based on 77 of 81 reporting participants		

**Comments on assigned Data Flags for Test #360**

- 4KLZFB (X) - Inconsistent in testing between samples.
- JPL863 (X) - Systematic error (data for both samples are low).
- N7CQ7L (X) - Inconsistent in testing between samples, data for Sample GV57 are low and inconsistent within the determinations for Sample GV58.
- Q44AYE (X) - Inconsistent in testing between samples.
  
- HLHKTT - One determination removed from the Lab Mean of Sample GV58 per Grubb's Test at 1% risk (TAPPI 1205).
- RKRUGY - Data appear to be reported as mils, not inches as indicated on datasheet. Unit changed by CTS.
- RVC7QQ - Data appear to be reported as micrometers, not mm as indicated on datasheet. Unit changed by CTS.
- YDWTT8 - Data appear to be reported as micrometers, not mm as indicated on datasheet. Unit changed by CTS.

**Instrument Code List as Reported by the Labs**

- |   |   |
|---|---|
| (EM) - Emveco                                 | (FR) - Frank Instruments                          |
| (LA) - L & W Autoline                         | (LW) - L & W                                      |
| (MT) - Mitutoyo                               | (PP) - Technidyne Profile/Plus                    |
| (TA) - Thwing-Albert                          | (TM) - TMI  |
| (VM) - Valmet PaperLab (was Kajaani/Robotest) | (XX) - Instrument make/model not specified by lab |

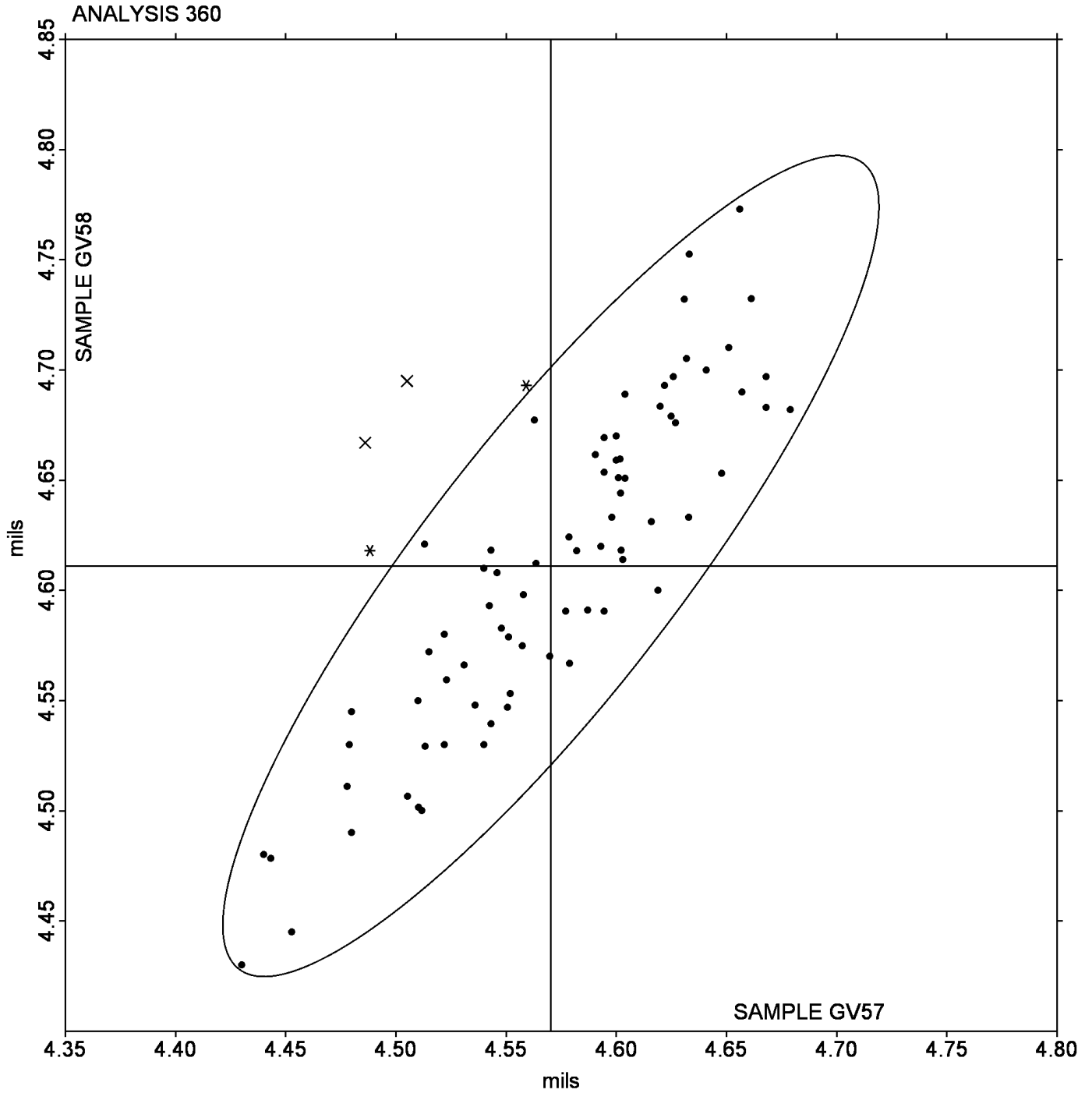
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 360

### Thickness (Caliper), Printing papers

Grand Mean Sample **GV57** = 4.5703 mils

Grand Mean Sample **GV58** = 4.6111 mils



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

WebCode	Data Flag	Sample GY57			Sample GY58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
27VZHB		9.225	-0.122	-1.05	7.661	-0.134	-0.97	XX
4WVCJA		9.490	0.143	1.22	8.005	0.210	1.53	TA
94B94Z		9.080	-0.267	-2.29	7.490	-0.305	-2.22	TM
9QPZ3R		9.386	0.039	0.33	7.829	0.034	0.25	EM
9RUETU		9.394	0.047	0.40	7.853	0.058	0.43	LW
9XH9KX		9.497	0.150	1.28	7.903	0.108	0.79	EM
ADWVC8		9.325	-0.022	-0.19	7.755	-0.040	-0.29	TA
C3TPW6		9.291	-0.056	-0.48	7.693	-0.102	-0.74	LW
CYHM3L		9.270	-0.077	-0.66	7.746	-0.049	-0.35	TA
EFP97L	*	9.665	0.318	2.72	8.191	0.396	2.89	EM
GLC24C		9.272	-0.075	-0.65	7.699	-0.096	-0.70	XX
JQLYJP		9.325	-0.022	-0.19	7.782	-0.013	-0.09	EM
KA4TE4	X	8.570	-0.777	-6.65	7.290	-0.505	-3.68	TM
LCRERC		9.457	0.109	0.94	7.862	0.068	0.49	LW
LD3GDB		9.358	0.011	0.09	7.760	-0.035	-0.25	XX
MVBLWZ		9.440	0.093	0.79	7.950	0.155	1.13	EM
N4VCQR	X	8.999	-0.348	-2.98	7.312	-0.483	-3.52	TM
NMH682		9.188	-0.159	-1.36	7.594	-0.201	-1.46	EM
Q7NDB6		9.323	-0.025	-0.21	7.740	-0.055	-0.40	TM
QQAN96		9.398	0.051	0.43	7.829	0.034	0.25	EM
R24WD7		9.437	0.090	0.77	7.906	0.111	0.81	XX
RAXABE	X	9.051	-0.296	-2.54	7.693	-0.102	-0.74	TM
RE723E		9.362	0.015	0.13	7.874	0.079	0.58	TM
T9KZBE		9.242	-0.105	-0.90	7.665	-0.130	-0.94	TM
UVC4K3		9.246	-0.101	-0.87	7.694	-0.101	-0.73	PP
WAWCM2	X	8.898	-0.449	-3.85	7.260	-0.535	-3.89	LW
WM389N		9.330	-0.017	-0.15	7.740	-0.055	-0.40	TM
XCWRT4	X	9.060	-0.287	-2.46	7.650	-0.145	-1.05	TA
XGYLYY		9.433	0.086	0.73	7.854	0.060	0.43	LW
XWJBQ9		9.240	-0.107	-0.92	7.710	-0.085	-0.62	TM
YEMBDE		9.240	-0.107	-0.92	7.750	-0.045	-0.33	TM
Z9F3T6		9.370	0.023	0.19	7.776	-0.019	-0.14	TM
ZQRXNB		9.442	0.095	0.81	7.940	0.145	1.06	EM

**Summary Statistics**

**Sample GY57**

Grand Means            9.3474 mils  
SD Btw Labs            0.1168 mils

**Sample GY58**

7.7947 mils  
0.1373 mils

Statistics based on 28 of 33 reporting participants

## Analysis 361

Thickness (Caliper), Packaging papers

---

KA4TE4 (X) - Extreme data.

N4VCQR (X) - Systematic error (data for both samples are low).

RAXABE (X) - Inconsistent in testing between samples.

WAWCM2 (X) - Systematic error (data for both samples are low).

XCWRT4 (X) - Inconsistent in testing between samples.

**Analysis Notes:**

GLC24C - One determination removed from the Lab Mean of Sample GY58 per Grubb's Test at 1% risk (TAPPI 1205).

**Instrument Code List as Reported by the Labs**

(EM) - Emveco

(LW) - L & W

(PP) - Technidyne Profile/Plus

(TA) - Thwing-Albert

(TM) - TMI

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

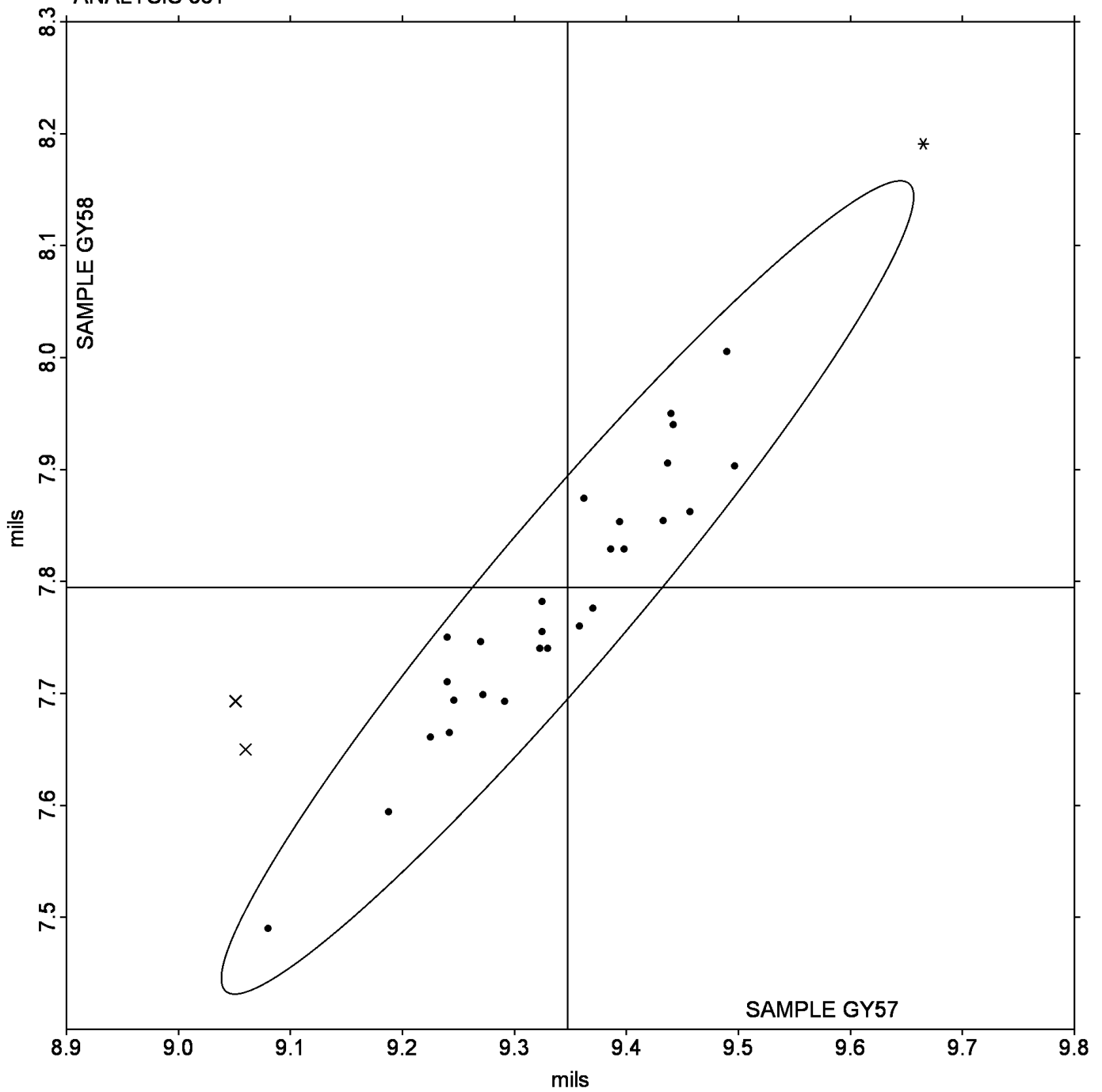
Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample GY57 = 9.3474 mils

Grand Mean Sample GY58 = 7.7947 mils

ANALYSIS 361



**Paper & Paperboard Interlaboratory Testing Program  
Analysis 364**

**Coefficient of Static Friction - Horizontal Plane Method - Printing Papers**

WebCode	Data Flag	Sample GD57			Sample GD58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
222ZCZ		0.5890	0.0162	0.52	0.7206	0.0314	0.60	TM
BHWGM4		0.5496	-0.0232	-0.74	0.6588	-0.0304	-0.58	CH
CGWHG9		0.6070	0.0342	1.09	0.7334	0.0442	0.84	TA
DAXRYP		0.5836	0.0108	0.34	0.7194	0.0302	0.57	TM
DRPUDZ		0.5680	-0.0048	-0.15	0.7096	0.0204	0.39	TM
EMADA9		0.5960	0.0232	0.74	0.7060	0.0168	0.32	TL
G7L9EK	X	0.4430	-0.1298	-4.15	0.5182	-0.1710	-3.25	TN
H3L8Z9	X	0.3178	-0.2550	-8.14	0.4458	-0.2434	-4.63	XX
RF6RTF		0.6364	0.0636	2.03	0.7550	0.0658	1.25	TM
RFVCU8		0.5358	-0.0370	-1.18	0.6190	-0.0702	-1.34	TM
X3LLKU		0.5312	-0.0416	-1.33	0.6256	-0.0636	-1.21	NS
XERCWU		0.5760	0.0032	0.10	0.7040	0.0148	0.28	XX
XRZMDA		0.5514	-0.0214	-0.68	0.6840	-0.0052	-0.10	IT
ZH6UXA		0.5364	-0.0364	-1.16	0.5826	-0.1066	-2.03	TM
ZQKR99		0.5862	0.0134	0.43	0.7418	0.0526	1.00	IX

Summary Statistics			
	Sample GD57		Sample GD58
Grand Means	0.57282	COF	0.68922
SD Btw Labs	0.03131	COF	0.05256
Statistics based on 13 of 15 reporting participants			

**Comments on assigned Data Flags for Test #364**

G7L9EK (X) - Systematic error (data for both samples are low).

H3L8Z9 (X) - Extreme data.

**Instrument Code List as Reported by the Labs**

- |   |   |
|---|---|
| (CH) - Cheminstruments AR-1000                    | (IT) - IMASS SP-2100                          |
| (IX) - Instron (model not specified)              | (NS) - Nomura Shoji NSF-100                   |
| (TA) - Thwing-Albert Friction Tester              | (TL) - TMI 32-90 Lab Master/Slip and Friction |
| (TM) - TMI 32-06 Monitor/Slip and Friction        | (TN) - TMI 32-07 Monitor/Slip and Friction    |
| (XX) - Instrument make/model not specified by lab |   |

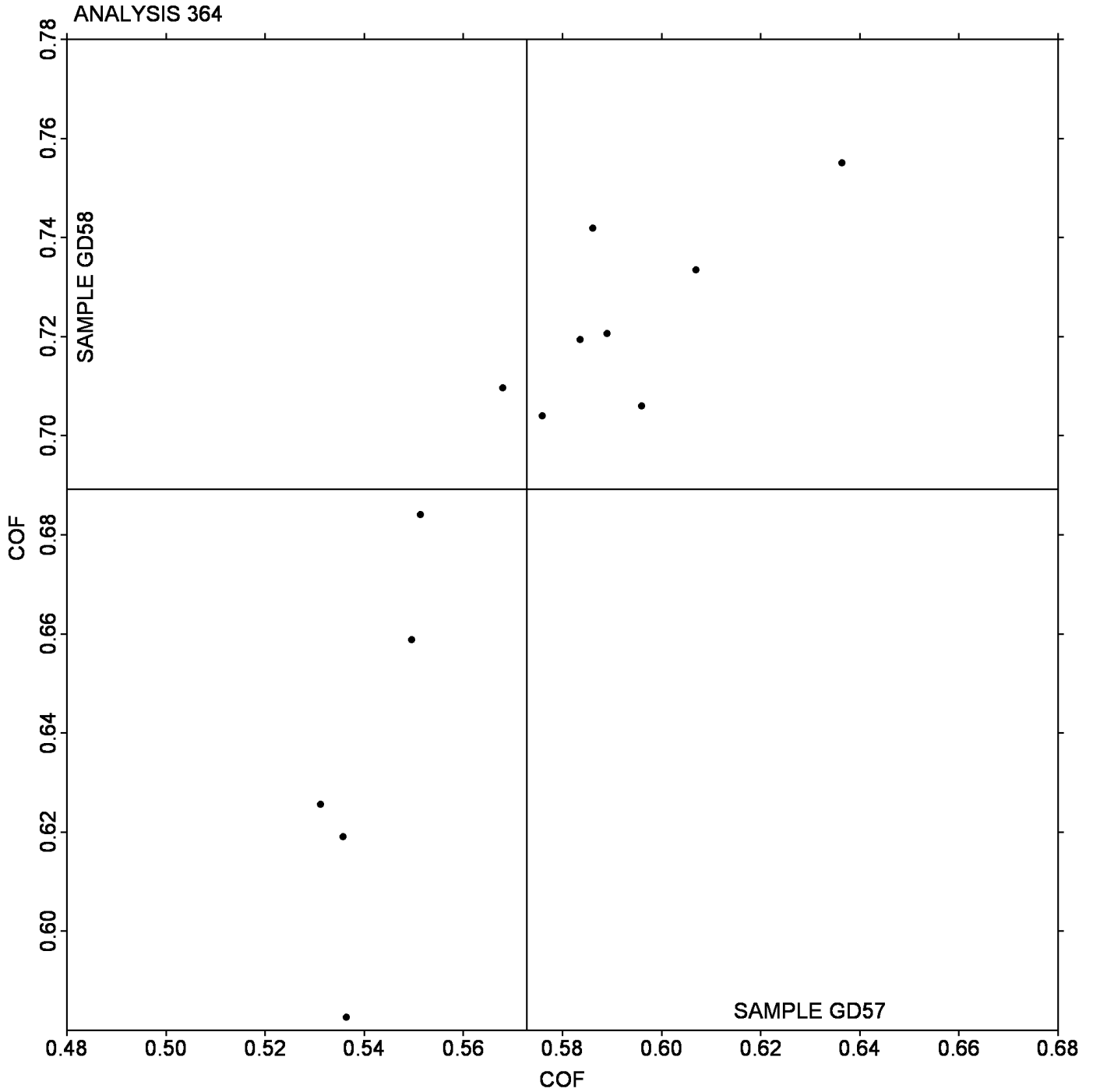
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 364

### Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD57** = 0.57282 COF

Grand Mean Sample **GD58** = 0.68922 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 GD57			Sample GD58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
678PPJ		0.3466	-0.1197	-1.39	0.5170	-0.0500	-0.60	TM
6KR3A6		0.4934	0.0271	0.31	0.4970	-0.0700	-0.83	TM
6TE8LZ		0.5540	0.0877	1.02	0.6962	0.1292	1.54	IX
AECRGD		0.6040	0.1377	1.60	0.7060	0.1390	1.66	TL
D2BP78		0.4994	0.0331	0.38	0.6024	0.0354	0.42	TA
ELDP2K		0.3514	-0.1149	-1.33	0.4228	-0.1442	-1.72	TA
H8P8WR		0.5352	0.0689	0.80	0.6292	0.0622	0.74	TA
K39PCT		0.4234	-0.0429	-0.50	0.4990	-0.0680	-0.81	NS
M2WEAK		0.5470	0.0807	0.94	0.6432	0.0762	0.91	TM
NAVZWJ		0.4116	-0.0547	-0.64	0.5142	-0.0528	-0.63	IR
PQ9FC2	X	19.2200	18.7537	217.73	25.7000	25.1330	299.61	XX
QQX3ZA		0.5174	0.0511	0.59	0.6038	0.0368	0.44	TM
XKMEC8		0.3482	-0.1181	-1.37	0.4992	-0.0678	-0.81	XX
ZCB7Z4		0.5084	0.0421	0.49	0.5906	0.0236	0.28	TM
ZP9BR9		0.3888	-0.0775	-0.90	0.5178	-0.0492	-0.59	TA

Sample GD57		Summary Statistics	Sample GD58	
Grand Means	0.46634 COF		0.56703 COF	
SD Btwn Labs	0.08613 COF		0.08388 COF	
Statistics based on 14 of 15 reporting participants				

**Comments on assigned Data Flags for Test #365**

PQ9FC2 (X) - Extreme data.

**Instrument Code List as Reported by the Labs**

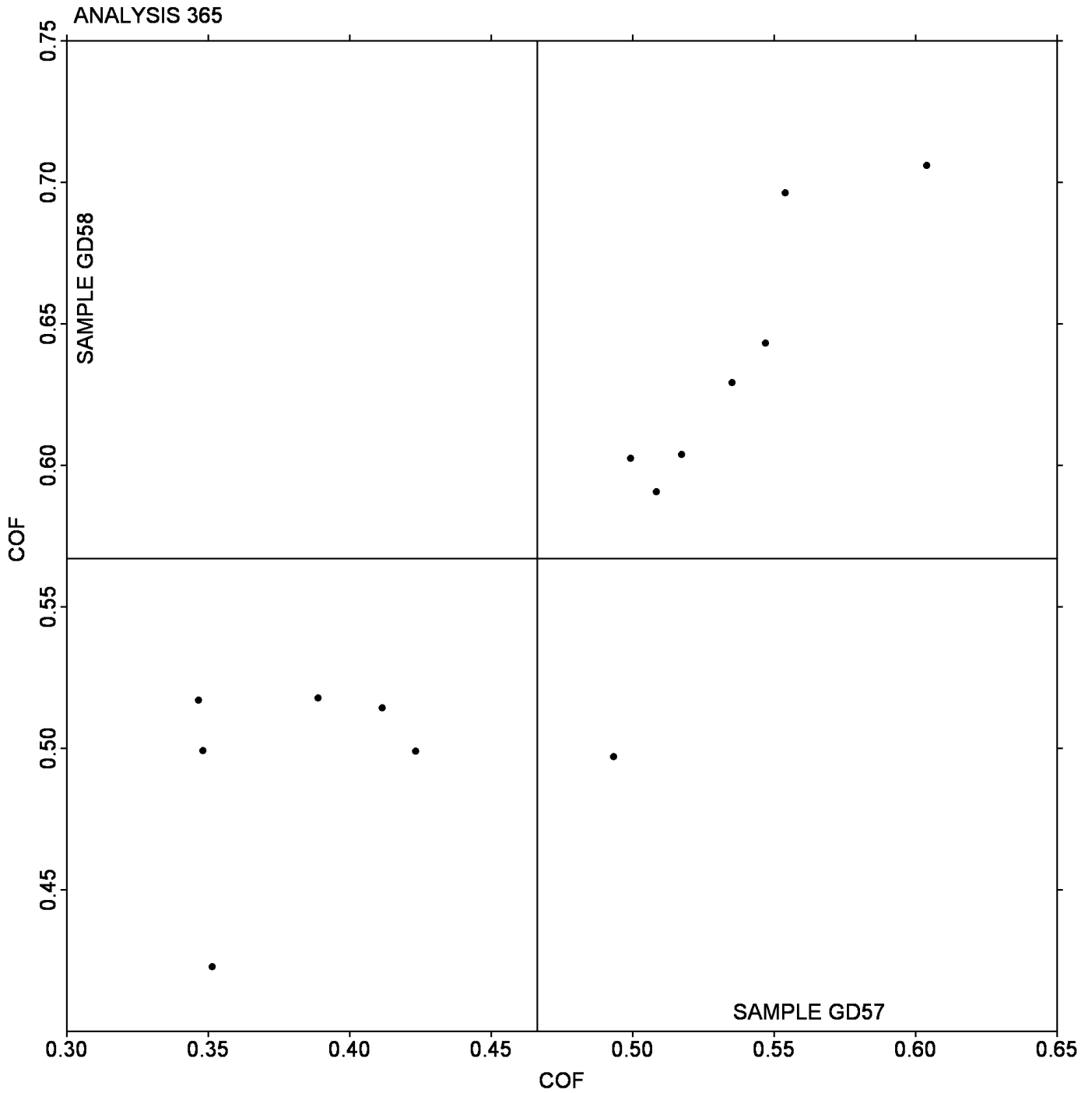
- |   |  |
|---|--|
| (IR) - IMASS SP-2000                              | (IX) - Instron (model not specified)       |
| (NS) - Nomura Shoji NSF-100                       | (TA) - Thwing-Albert Friction Tester       |
| (TL) - TMI 32-90 Lab Master/Slip and Friction     | (TM) - TMI 32-06 Monitor/Slip and Friction |
| (XX) - Instrument make/model not specified by lab |  |

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD57** = 0.46634 COF

Grand Mean Sample **GD58** = 0.56703 COF



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

## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 370

## Air Resistance - Gurley Oil Type

WebCode	Data Flag	Sample GE57			Sample GE58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23WLAD		32.18	1.57	1.05	48.16	4.94	1.55	TN
28TANY		29.65	-0.96	-0.64	44.70	1.48	0.46	LP
2CJJYX		30.49	-0.12	-0.08	40.19	-3.03	-0.95	LP
33C6RP		31.98	1.37	0.92	43.84	0.62	0.19	HG
3G6XZJ	X	31.04	0.43	0.29	45.85	2.63	0.82	HG
3ME2UC		32.40	1.79	1.20	44.20	0.98	0.31	TL
3P8ZH2		29.84	-0.77	-0.51	38.81	-4.41	-1.38	LA
3QCKYW		30.72	0.11	0.08	43.91	0.69	0.22	XX
4922ZQ		31.20	0.59	0.40	46.42	3.20	1.00	LP
4CPWXW		31.21	0.60	0.40	40.81	-2.41	-0.76	HG
4LHFRT	*	33.65	3.04	2.04	42.58	-0.64	-0.20	PP
4RCYEF		30.03	-0.58	-0.39	41.87	-1.35	-0.42	LW
4XFXML		31.53	0.92	0.62	45.45	2.23	0.70	LP
6QCHAJ		31.16	0.55	0.37	42.65	-0.58	-0.18	XX
7CT6JV		28.84	-1.77	-1.19	43.03	-0.20	-0.06	VM
7L2KNV		30.24	-0.37	-0.25	40.62	-2.60	-0.81	XX
8D3E8L		31.16	0.55	0.37	39.57	-3.65	-1.14	LW
8GLGAX		28.90	-1.71	-1.14	38.10	-5.12	-1.60	LA
8JKUPX		30.90	0.29	0.20	47.63	4.41	1.38	XX
8PNWGQ		30.67	0.06	0.04	46.18	2.96	0.93	PP
8TFTPW		30.30	-0.31	-0.21	42.70	-0.52	-0.16	HG
93M98V		28.90	-1.71	-1.14	42.30	-0.92	-0.29	LW
9HXG2Q		31.97	1.37	0.92	47.21	3.98	1.25	PP
AUETEU		29.21	-1.40	-0.94	45.52	2.30	0.72	LA
B2C2CK		28.74	-1.87	-1.25	39.32	-3.90	-1.22	LP
B88FWZ		29.30	-1.31	-0.88	35.80	-7.42	-2.32	LW
D8Y9D4		28.80	-1.81	-1.21	41.17	-2.05	-0.64	LP
E6QUK9		30.10	-0.51	-0.34	43.20	-0.02	-0.01	XX
EH9GB3		32.13	1.52	1.02	47.79	4.57	1.43	HG
EPYAP8		31.52	0.91	0.61	44.48	1.26	0.39	TL
H3TBZT		31.01	0.40	0.27	44.27	1.05	0.33	LW
HK2PKT	X	25.02	-5.59	-3.74	36.92	-6.30	-1.97	TN
JAC9GK		28.98	-1.63	-1.09	41.98	-1.24	-0.39	LW
KGLKZ4		30.15	-0.46	-0.31	42.55	-0.67	-0.21	HG
LD2J62		31.00	0.39	0.26	46.21	2.99	0.94	HG
LUTB6G		32.90	2.29	1.54	46.68	3.46	1.08	WG
M9V4QP		34.35	3.74	2.51	49.13	5.91	1.85	TL
TMAG9K		30.95	0.34	0.23	45.99	2.77	0.87	PP
U4E8ZG		32.10	1.49	1.00	43.50	0.28	0.09	WG
UT89LE		29.63	-0.98	-0.65	39.04	-4.18	-1.31	XX
WETXKV		31.20	0.59	0.40	45.00	1.78	0.56	GS
XKD7X8		27.08	-3.53	-2.37	37.84	-5.38	-1.69	RE
XZX6AL		28.08	-2.53	-1.69	40.42	-2.80	-0.88	LP

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

WebCode	Data Flag	Sample GE57			Sample GE58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
Y328F2		30.59	-0.02	-0.01	45.37	2.15	0.67	PP
YYXCWY		31.54	0.93	0.63	47.87	4.65	1.46	GG
Z2DU6N		29.01	-1.60	-1.07	43.53	0.31	0.10	LP
ZGBHGU		30.79	0.18	0.12	38.93	-4.29	-1.34	LP
ZPNCRP		32.73	2.12	1.42	45.98	2.76	0.86	GA
ZVTPGU		28.70	-1.91	-1.28	38.96	-4.26	-1.33	LW

Summary Statistics			
	Sample GE57		Sample GE58
Grand Means	30.606 sec/100 cc		43.222 sec/100 cc
SD Btwn Labs	1.492 sec/100 cc		3.193 sec/100 cc
Statistics based on 47 of 49 reporting participants			

**Comments on assigned Data Flags for Test #370**

3G6XZJ (X) - Results moved from Analysis #372 (Porosity, Sheffield Type).

HK2PKT (X) - Inconsistent in testing between samples, data for Sample GE57 are low.

**Instrument Code List as Reported by the Labs**

- |  |  |
|--|--|
| (GA) - Gurley Precision #4340 Automatic Densometer | (GG) - Gurley Precision Model #4320                    |
| (GS) - Gurley-Hill S-P-S Tester #4190              | (HG) - Technidyne - Hagerty Model #1                   |
| (LA) - L & W Autoline                              | (LP) - L & W Densometer, Air Permeance                 |
| (LW) - L & W Type Gurley Densometer, Oil Flotation | (PP) - Technidyne Profile/Plus                         |
| (RE) - Regmed Gurley Densometer PGH-T              | (TL) - Teledyne Gurley Densometer #4110, Oil Flotation |
| (TN) - Teledyne Gurley S-P-S Tester #4190          | (VM) - Valmet PaperLab (was Kajaani/Robotest)          |
| (WG) - W & LE Gurley Tester                        | (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

WebCode	Data Flag	Sample GE57			Sample GE58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2C7ZBR		92.02	-2.32	-0.46	76.54	1.47	0.21	PP
6E67M4		94.80	0.46	0.09	73.80	-1.27	-0.18	PP
8XTFEV		87.50	-6.84	-1.35	73.40	-1.67	-0.24	HM
A962WZ		107.20	12.86	2.55	88.20	13.13	1.88	VM
AEB3XN		90.30	-4.04	-0.80	68.20	-6.87	-0.99	TT
AET33Y		95.90	1.56	0.31	74.80	-0.27	-0.04	SH
D7JXR		95.20	0.86	0.17	77.50	2.43	0.35	HM
DKP79Z		92.20	-2.14	-0.42	71.10	-3.97	-0.57	LP
EJMWEG	X	55.70	-38.64	-7.65	49.70	-25.37	-3.64	TS
EKJ7XY	X	100.50	6.16	1.22	273.40	198.33	28.47	HG
EN6UM6		91.82	-2.52	-0.50	78.94	3.87	0.55	TA
FFN947		91.26	-3.08	-0.61	66.63	-8.44	-1.21	LP
H2KXKC		98.60	4.26	0.84	75.90	0.83	0.12	SH
HP2RWA	*	102.10	7.76	1.54	95.70	20.63	2.96	SH
K8W3UA		88.46	-5.88	-1.16	70.27	-4.80	-0.69	LP
LCQHJ3		88.30	-6.04	-1.20	70.70	-4.37	-0.63	TT
LFM7XN		98.10	3.76	0.74	81.50	6.43	0.92	SH
PX8W3J		87.00	-7.34	-1.45	65.50	-9.57	-1.37	SH
Q983CC		98.64	4.29	0.85	74.08	-1.00	-0.14	SH
QHHHLB		94.80	0.46	0.09	69.70	-5.37	-0.77	HM
RMNYNR		97.81	3.47	0.69	73.24	-1.83	-0.26	LA
UBA3XZ		93.11	-1.23	-0.24	76.42	1.35	0.19	HG
VM2843		96.03	1.69	0.33	74.42	-0.65	-0.09	XX

Summary Statistics			
	Sample GE57		Sample GE58
Grand Means	94.340 Sheffield Units		75.073 Sheffield Units
SD Btwn Labs	5.051 Sheffield Units		6.967 Sheffield Units
Statistics based on 21 of 23 reporting participants			

**Comments on assigned Data Flags for Test #372**

EJMWEG (X) - Extreme data.

EKJ7XY (X) - Extreme data for Sample GE58.

**Instrument Code List as Reported by the Labs**

- (HG) - Technidyne - Hagerty Model #1
- (LA) - L & W Roughness Sheffield - Autoline
- (PP) - Technidyne Profile/Plus
- (TA) - Thwing-Albert Porosity Tester
- (TT) - TMI Monitor/Smoothness II, Model 58-24
- (XX) - Instrument make/model not specified by lab
- (HM) - Technidyne - Hagerty Model #538
- (LP) - L & W Densometer, Air Permeance
- (SH) - Sheffield
- (TS) - TMI Monitor/Smoothness, Model 58-02
- (VM) - Valmet PaperLab (was Kajaani/Robotest)

# Paper & Paperboard Interlaboratory Testing Program

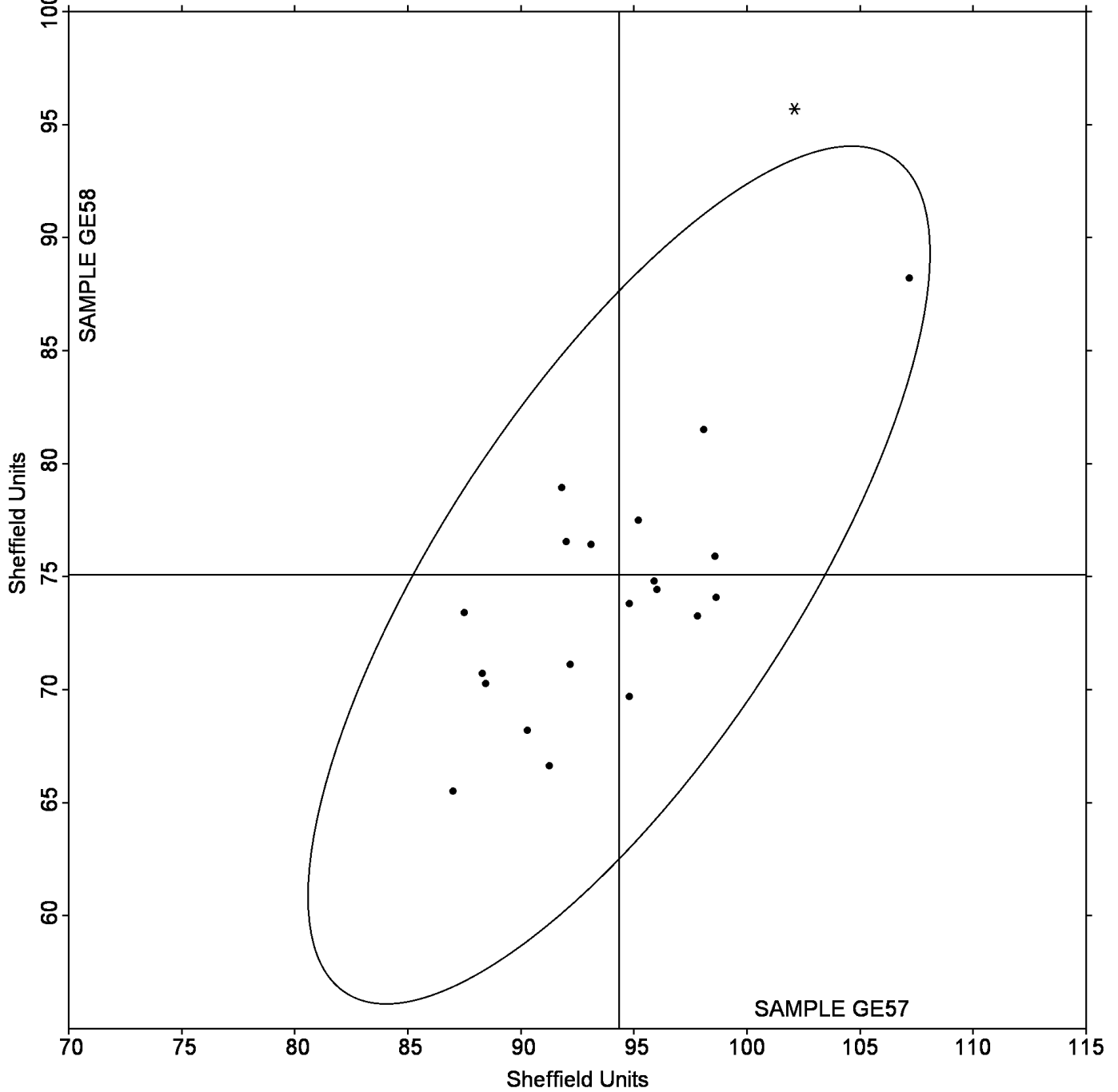
## Analysis 372

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

Grand Mean Sample **GE57** = 94.340 Sheffield Units

Grand Mean Sample **GE58** = 75.073 Sheffield Units

ANALYSIS 372



## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 376

## Roughness - Print Surf Method - 0.5 to 4.0 Microns

WebCode	Data Flag	Sample GJ57			Sample GJ58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
42DGQ6		0.5710	-0.1377	-1.23	0.8350	-0.1537	-1.39
4HM2T4	X	1.7000	0.9913	8.85	1.6880	0.6993	6.31
4WDGV2	X	0.8370	0.1283	1.15	1.0520	0.0633	0.57
7LE7Z6		0.7460	0.0373	0.33	1.0140	0.0253	0.23
8HBR2Q		0.9630	0.2543	2.27	1.2650	0.2763	2.49
8K74BX		0.7245	0.0158	0.14	0.9640	-0.0247	-0.22
8U7XXW		0.8590	0.1503	1.34	1.1130	0.1243	1.12
9RBLMP	X	2.2640	1.5553	13.89	2.3280	1.3393	12.08
AKW7QC	X	0.9300	0.2213	1.98	1.0790	0.0903	0.81
ARHY3C	*	0.9750	0.2663	2.38	1.2020	0.2133	1.92
AULYWH		0.6750	-0.0337	-0.30	0.9490	-0.0397	-0.36
EWAXG4		0.6820	-0.0267	-0.24	0.9720	-0.0167	-0.15
FBWDEE		0.6440	-0.0647	-0.58	0.9160	-0.0727	-0.66
FHTDBU		0.6990	-0.0097	-0.09	1.0020	0.0133	0.12
JCRJM4		0.6080	-0.1007	-0.90	0.8570	-0.1317	-1.19
JQMXNJ		0.6430	-0.0657	-0.59	0.9220	-0.0667	-0.60
K7P2C3		0.6350	-0.0737	-0.66	0.9010	-0.0877	-0.79
KCWN2D		0.5580	-0.1507	-1.35	0.8210	-0.1677	-1.51
KRAZT7		0.5300	-0.1787	-1.60	0.8000	-0.1887	-1.70
L3GYGD		0.8000	0.0913	0.82	1.0940	0.1053	0.95
MD9XQG		0.5870	-0.1217	-1.09	0.8970	-0.0917	-0.83
NTA63W		0.7750	0.0663	0.59	1.0720	0.0833	0.75
P28ZWR		0.6180	-0.0907	-0.81	0.8790	-0.1097	-0.99
PGYXTH		0.7060	-0.0027	-0.02	0.9870	-0.0017	-0.02
PL7MY4		0.8240	0.1153	1.03	1.0980	0.1093	0.99
PLH2ZQ		0.6020	-0.1067	-0.95	0.8770	-0.1117	-1.01
PQ7UGK		0.7110	0.0023	0.02	0.9580	-0.0307	-0.28
PUYR4B		0.7470	0.0383	0.34	1.0660	0.0773	0.70
QBYFE9	*	0.8860	0.1773	1.58	1.0740	0.0853	0.77
QFKVM8		0.8670	0.1583	1.41	1.2020	0.2133	1.92
QJBYPF		0.6440	-0.0647	-0.58	0.9560	-0.0327	-0.29
T7F2KY		0.6260	-0.0827	-0.74	0.9290	-0.0597	-0.54
TCRREL		0.7230	0.0143	0.13	1.0270	0.0383	0.35
TGTR4W		0.8580	0.1493	1.33	1.1260	0.1373	1.24
U24B4B		0.7600	0.0513	0.46	1.0180	0.0293	0.26
VVNQAP		0.7090	0.0003	0.00	1.0050	0.0163	0.15
X4CYMX		0.7000	-0.0087	-0.08	1.0340	0.0453	0.41
XLNCU9		0.6230	-0.0857	-0.77	0.9390	-0.0497	-0.45
YX4UTC		0.6040	-0.1047	-0.93	0.9430	-0.0457	-0.41
ZMEL68		0.6290	-0.0797	-0.71	0.8790	-0.1097	-0.99

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

	<b>Sample GJ57</b>	<b>Summary Statistics</b>	<b>Sample GJ58</b>
Grand Means	0.70865 Microns		0.98869 Microns
SD Btwn Labs	0.11196 Microns		0.11084 Microns
Statistics based on 36 of 40 reporting participants			

**Comments on assigned Data Flags for Test #376**

4HM2T4 (X) - Extreme data.

4WDGV2 (X) - Data appears to be transposed between samples. Data switched by CTS.

9RBLMP (X) - Extreme data.

AKW7QC (X) - Inconsistent in testing between samples.

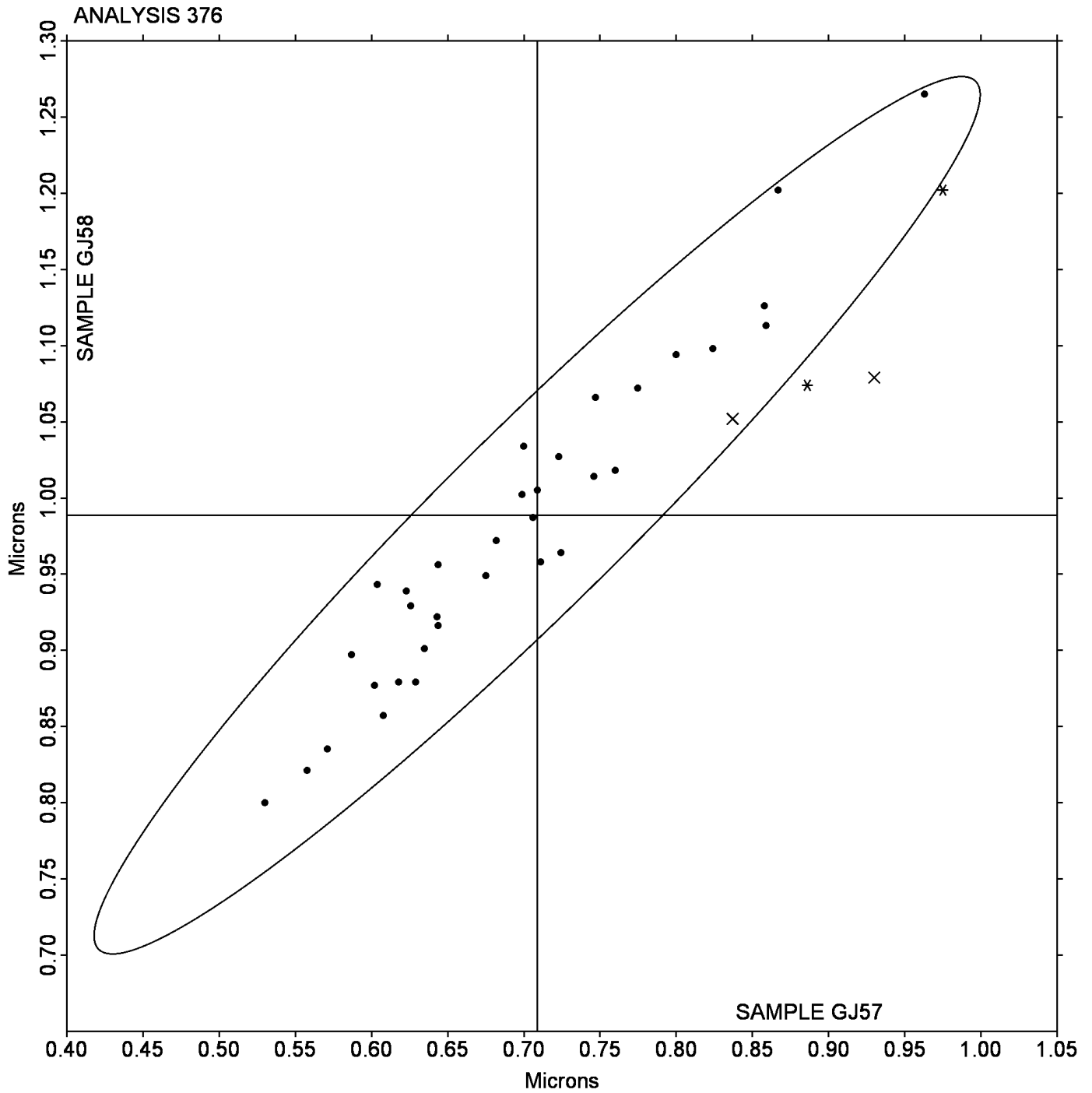
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 376

### Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample **GJ57** = 0.70865 Microns

Grand Mean Sample **GJ58** = 0.98869 Microns



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

WebCode	Data Flag	Sample GK57			Sample GK58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
3AMAW9		6.423	-0.089	-0.25	5.754	-0.256	-0.86
499YJ3		6.648	0.137	0.39	5.983	-0.027	-0.09
4X9ZYN		6.938	0.427	1.22	6.229	0.219	0.73
9AFXP2		6.608	0.097	0.28	6.143	0.133	0.45
A7HMNC		6.557	0.046	0.13	6.042	0.032	0.11
BVY6DX		6.408	-0.104	-0.30	5.869	-0.141	-0.47
DMYJ42		6.689	0.178	0.51	5.760	-0.250	-0.84
KNHKXH	*	6.111	-0.401	-1.15	6.397	0.387	1.30
LDR92J		5.763	-0.749	-2.14	5.348	-0.662	-2.21
M8FXWU		7.249	0.738	2.11	6.606	0.596	1.99
NNHVTX	X	4.565	-1.947	-5.57	4.216	-1.794	-6.00
PBZQX8		6.309	-0.203	-0.58	6.018	0.008	0.03
QCR42B		6.371	-0.141	-0.40	5.975	-0.035	-0.12
RUCYDD		6.550	0.039	0.11	6.037	0.027	0.09
XXM4L8		6.537	0.026	0.07	5.977	-0.033	-0.11
Y3WKRF	X	6.236	-0.276	-0.79	7.177	1.167	3.90

		Summary Statistics			
		Sample GK57		Sample GK58	
Grand Means		6.5115 Microns		6.0099 Microns	
SD Btwn Labs		0.3497 Microns		0.2989 Microns	
Statistics based on 14 of 16 reporting participants					

**Comments on assigned Data Flags for Test #377**

NNHVTX (X) - Extreme data.

Y3WKRF (X) - Inconsistent in testing between samples, data for Sample GK58 are high.

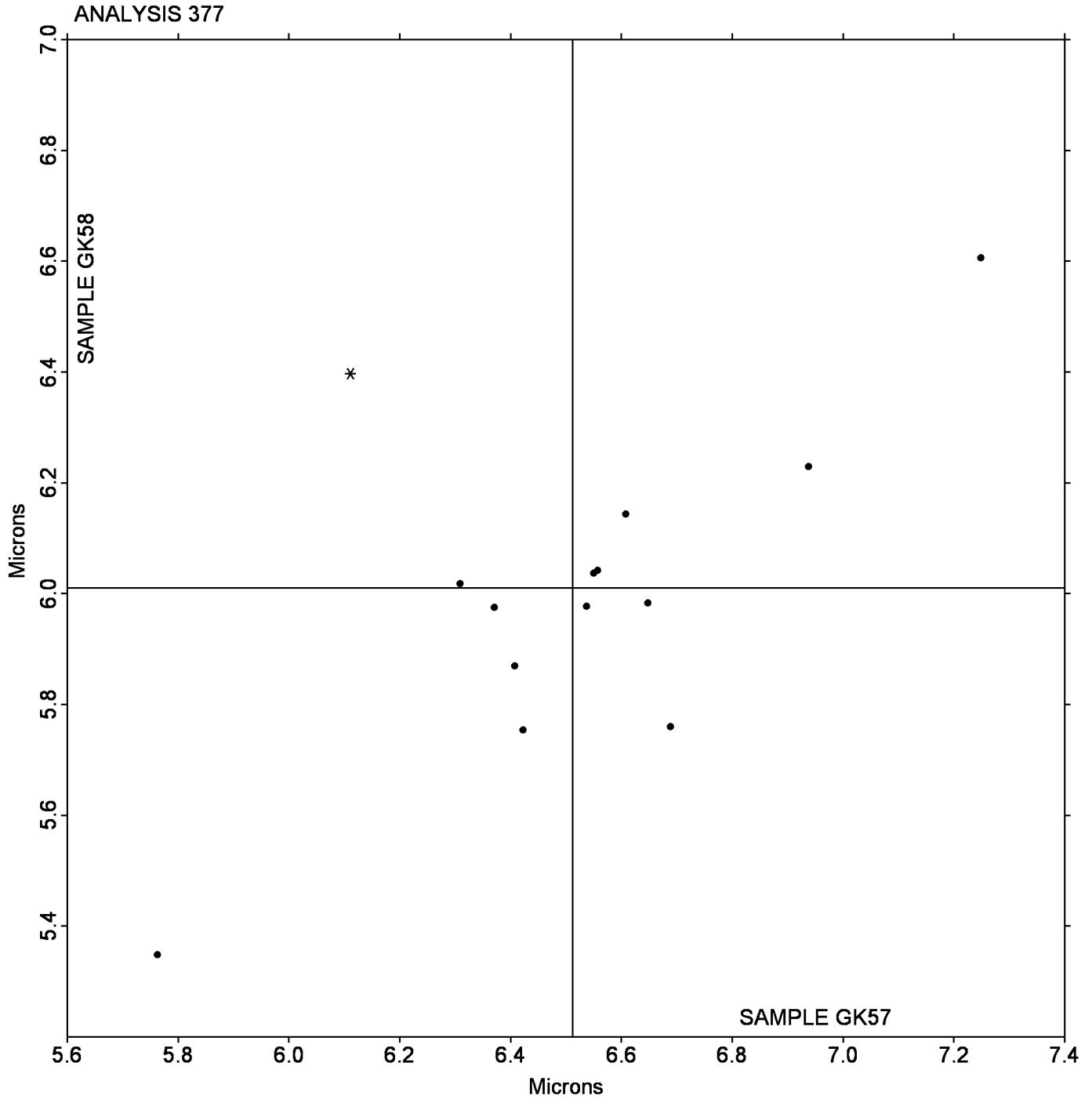
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 377

### Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK57** = 6.5115 Microns

Grand Mean Sample **GK58** = 6.0099 Microns



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

## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 378

## Roughness - Sheffield Type

WebCode	Data Flag	Sample GL57			Sample GL58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2DMXZB		169.9	17.3	1.62	112.7	7.0	0.61	LW
2TU2A7		162.0	9.4	0.88	108.8	3.1	0.27	HM
3688YW		153.2	0.6	0.06	97.5	-8.2	-0.72	HM
36F6LU		146.2	-6.4	-0.60	95.3	-10.4	-0.91	LA
3DHWGW		156.8	4.2	0.40	96.2	-9.5	-0.83	HM
3HCVPZ		179.3	26.7	2.50	125.7	20.0	1.75	LA
3M6XW7		156.5	3.9	0.37	113.5	7.8	0.68	SH
4HAJPB	*	133.7	-18.9	-1.77	110.1	4.4	0.38	TS
686V9X		134.0	-18.6	-1.74	96.1	-9.6	-0.84	HM
6DMD9E		139.0	-13.6	-1.27	106.0	0.3	0.03	SH
6PXT77		165.1	12.5	1.17	127.1	21.4	1.87	TS
7JKLPL		165.2	12.6	1.18	115.9	10.2	0.89	HM
7NZ3DW		153.5	0.9	0.09	114.3	8.6	0.75	TT
84EGJ2	X	117.8	-34.7	-3.25	75.4	-30.3	-2.65	VM
864U2J		152.2	-0.4	-0.03	101.9	-3.8	-0.33	HM
8BJCRE		149.2	-3.4	-0.32	100.7	-5.0	-0.44	HM
8KLK47		146.4	-6.2	-0.58	97.4	-8.3	-0.72	HM
933MGQ		155.0	2.4	0.23	87.7	-18.0	-1.57	PP
9A2D3V		141.8	-10.7	-1.00	92.3	-13.4	-1.17	PP
9EX76Q		142.7	-9.9	-0.93	110.9	5.2	0.45	PP
9GVRG2		134.5	-18.1	-1.69	100.5	-5.2	-0.46	PP
A66DB7		158.2	5.6	0.53	92.5	-13.2	-1.15	HM
AHF4EK		153.4	0.8	0.08	98.1	-7.6	-0.66	HM
BKLWVQ	X	186.2	33.6	3.15	151.9	46.2	4.04	PG
BQHETH		148.2	-4.4	-0.41	99.6	-6.1	-0.53	LW
DEXZDK		140.9	-11.7	-1.09	93.3	-12.4	-1.08	TT
E6DCLP		135.4	-17.2	-1.61	91.0	-14.7	-1.28	TT
EZB6H7		139.2	-13.4	-1.25	88.1	-17.6	-1.54	HM
FRQAZP		160.3	7.7	0.72	104.0	-1.7	-0.15	SH
FW9LXJ		157.7	5.1	0.48	114.2	8.5	0.74	PP
FXD9D7		151.0	-1.6	-0.15	114.5	8.8	0.77	GL
GGGALU		150.8	-1.8	-0.17	106.1	0.4	0.04	XX
GU87L8		163.2	10.6	1.00	108.9	3.2	0.28	XX
H69TQB		148.4	-4.2	-0.39	103.4	-2.3	-0.20	GA
H84T8E		141.9	-10.7	-1.00	99.8	-5.9	-0.52	VM
HPLRFX		153.8	1.2	0.11	117.7	12.0	1.04	PP
HTQTQB		140.4	-12.2	-1.14	91.4	-14.3	-1.25	SH
J999U6		161.1	8.5	0.80	114.8	9.1	0.79	TS
JCPLH2		176.5	23.9	2.24	121.5	15.8	1.38	GL
JCQKVF		142.2	-10.4	-0.97	106.8	1.1	0.10	PP
JLUTW2		175.0	22.4	2.10	127.2	21.5	1.88	GL
KEK4NR		154.0	1.4	0.13	91.1	-14.6	-1.27	XX
KVBWKL		159.5	6.9	0.65	104.0	-1.7	-0.15	GA

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

WebCode	Data Flag	Sample GL57			Sample GL58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
M6M8H3		148.8	-3.8	-0.35	101.8	-3.9	-0.34	HM
N272YY	X	187.0	34.4	3.22	106.8	1.1	0.10	HM
NL9X2M		167.8	15.2	1.43	110.5	4.8	0.42	SH
NTDQMJ		140.2	-12.4	-1.16	94.6	-11.1	-0.97	HM
P82E28		166.3	13.7	1.29	121.2	15.5	1.35	SH
PLY6JK		158.7	6.1	0.57	101.2	-4.5	-0.39	SH
PPMYXE		155.6	3.0	0.28	106.8	1.1	0.10	HM
QFMQ6T	*	167.5	14.9	1.40	139.6	33.9	2.96	TS
QHGTGU		138.2	-14.4	-1.35	88.3	-17.4	-1.52	TT
QQ3HQG		163.5	10.9	1.02	102.1	-3.6	-0.31	PP
R287M7		144.1	-8.5	-0.79	100.3	-5.4	-0.47	HM
RYAJDG		152.6	0.0	0.00	105.3	-0.4	-0.03	MP
TPKB7Y		157.4	4.8	0.45	121.8	16.1	1.41	XX
TX737B		149.9	-2.7	-0.25	110.5	4.8	0.42	TS
U9W8JF		139.1	-13.5	-1.26	95.8	-9.9	-0.86	HM
UEET9Z		157.4	4.8	0.45	122.6	16.9	1.48	SH
ULF2QY		165.7	13.2	1.23	120.9	15.2	1.32	GA
UMFZ2L		142.1	-10.5	-0.98	95.0	-10.7	-0.93	HM
VLQ7H4		149.1	-3.5	-0.32	108.9	3.2	0.28	HM
WUCUQC		156.0	3.4	0.32	116.5	10.8	0.94	SH
X2KBAD	X	199.0	46.4	4.35	150.0	44.3	3.87	TS
XENWC3		150.3	-2.3	-0.21	93.7	-12.0	-1.05	HM
Y79KU9	X	441.1	288.5	27.02	390.5	284.8	24.87	PP
YKGLR6		149.5	-3.1	-0.29	121.5	15.8	1.38	SH
YMQM7P		151.4	-1.2	-0.11	101.3	-4.4	-0.38	XX
YNGV28		153.4	0.8	0.08	99.0	-6.7	-0.58	LW
ZTHWDF		145.1	-7.5	-0.70	92.7	-13.0	-1.14	PP

Sample GL57		Summary Statistics	Sample GL58	
Grand Means	152.57 Sheffield		105.70 Sheffield	
SD Btwn Labs	10.68 Sheffield		11.45 Sheffield	
Statistics based on 65 of 70 reporting participants				

**Comments on assigned Data Flags for Test #378**

84EGJ2 (X) - Systematic error (data for both samples are low).

BKLWVQ (X) - Systematic error (data for both samples are high).

N272YY (X) - Inconsistent in testing between samples, data for Sample GL57 are high.

X2KBAD (X) - Systematic error (data for both samples are high).

Y79KU9 (X) - Extreme data.

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

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**Instrument Code List as Reported by the Labs**

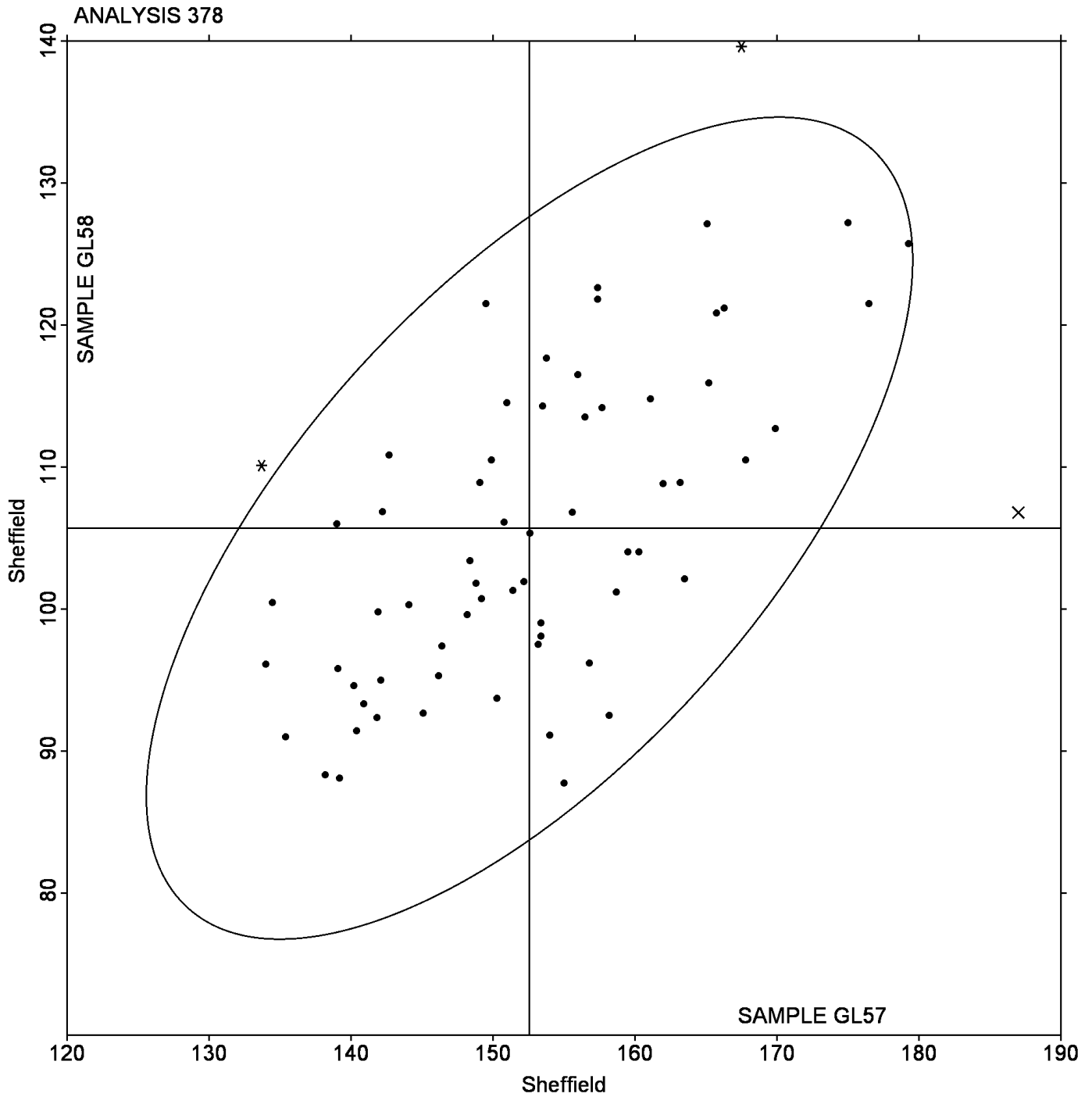
(GA) - Gurley Precision #4340 Automatic Densometer	(GL) - Giddings and Lewis Sheffield
(HM) - Technidyne - Hagerty Model #538	(LA) - L & W Roughness Sheffield - Autoline
(LW) - L & W Roughness Tester	(MP) - Metso Paperlab
(PG) - Precision Gage Smoothcheck	(PP) - Technidyne Profile/Plus
(SH) - Sheffield (Bendix Precisionaire)	(TS) - TMI Monitor/Smoothness, Model 58-02
(TT) - TMI Monitor/Smoothness II, Model 58-24	(VM) - Valmet PaperLab (was Kajaani\Robotest)
(XX) - Instrument make/model not specified by lab	

Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL57** = 152.57 Sheffield

Grand Mean Sample **GL58** = 105.70 Sheffield



**Paper & Paperboard Interlaboratory Testing Program  
Analysis 382  
Moisture in Paper**

WebCode	Data Flag	Sample GM57			Sample GM58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4799Y3		4.806	0.315	0.96	4.351	0.312	0.96
BP9C7J		4.900	0.409	1.24	4.290	0.251	0.77
FNQY6P		4.450	-0.041	-0.12	3.980	-0.059	-0.18
JWNB9V		3.893	-0.598	-1.82	3.591	-0.448	-1.38
KL8PZK		4.455	-0.036	-0.11	3.790	-0.249	-0.77
N6AWH3	X	3.600	-0.891	-2.71	3.411	-0.628	-1.93
NC2CRE		4.816	0.325	0.99	4.537	0.498	1.53
TGMM98		4.085	-0.406	-1.23	3.616	-0.423	-1.30
V2FGTZ		4.441	-0.050	-0.15	4.055	0.016	0.05
V7B7HK		4.340	-0.151	-0.46	3.835	-0.204	-0.63
XGEU28		4.863	0.372	1.13	4.434	0.395	1.21
YU3FXE		4.350	-0.141	-0.43	3.950	-0.089	-0.27

		Summary Statistics	
	Sample GM57		Sample GM58
Grand Means	4.4908 Percent		4.0390 Percent
SD Btwn Labs	0.3288 Percent		0.3255 Percent
Statistics based on 11 of 12 reporting participants			

**Comments on assigned Data Flags for Test #382**

N6AWH3 (X) - Inconsistent in testing between samples, data for Sample GM57 are low.

**Analysis Notes:**

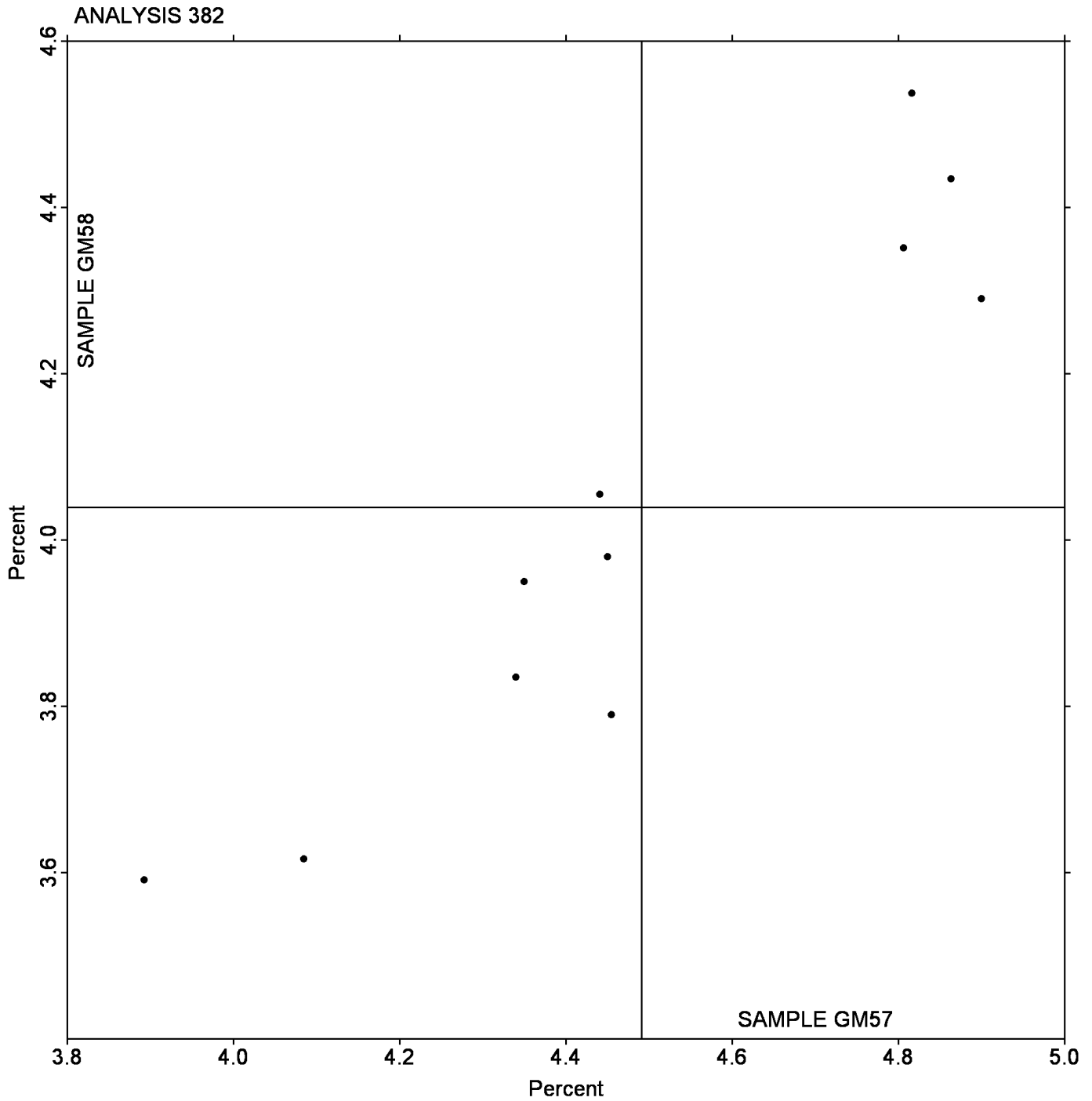
N6AWH3 - One determination removed from the Lab Mean of Sample GM58 per Grubb's Test at 1% risk (TAPPI 1205).

Paper & Paperboard Interlaboratory Testing Program

Analysis 382  
Moisture in Paper

Grand Mean Sample **GM57** = 4.4908 Percent

Grand Mean Sample **GM58** = 4.0390 Percent



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

## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 384

## Opacity (89% Reflectance Backing) - Fine Papers

WebCode	Data Flag	Sample GN57			Sample GN58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2LDKT3	X	97.18	1.10	4.13	93.21	1.11	3.12
2R3WUQ		96.42	0.34	1.28	92.36	0.26	0.74
2YQCH3		96.23	0.15	0.58	92.25	0.15	0.43
4H7424	*	96.70	0.62	2.35	92.06	-0.04	-0.10
7KD2VA		96.30	0.22	0.83	92.71	0.61	1.72
868EVR		95.51	-0.57	-2.15	91.80	-0.30	-0.83
93GM9M		96.53	0.45	1.70	92.74	0.64	1.81
94HNKR		96.03	-0.05	-0.18	91.82	-0.28	-0.79
984EZN		96.05	-0.03	-0.11	92.10	0.00	0.01
9RCKNX		96.11	0.03	0.11	92.09	-0.01	-0.02
A4LJYW		96.22	0.14	0.53	92.56	0.46	1.30
BJB623	X	97.04	0.96	3.62	91.24	-0.86	-2.40
BTBHZP		96.04	-0.04	-0.15	92.16	0.06	0.18
BWRKHM		95.81	-0.27	-1.02	91.98	-0.12	-0.33
C2Y7TH		95.91	-0.17	-0.64	92.04	-0.05	-0.14
CLWZFU		95.71	-0.37	-1.39	91.92	-0.18	-0.49
CNN2HB		95.93	-0.15	-0.56	91.83	-0.27	-0.75
E9UNKY		96.23	0.15	0.57	92.67	0.57	1.60
EETNF4		95.96	-0.12	-0.45	92.11	0.01	0.04
EML422		96.37	0.29	1.09	92.51	0.41	1.16
EW988D		96.00	-0.08	-0.30	92.00	-0.10	-0.27
EZRECU		96.23	0.15	0.57	92.17	0.07	0.21
G68UPB		96.18	0.10	0.38	92.09	-0.01	-0.02
GLTD9B		96.52	0.44	1.67	92.58	0.49	1.37
GM3DDH		96.23	0.15	0.55	92.47	0.37	1.05
GQHCNL		95.83	-0.25	-0.94	92.08	-0.02	-0.05
GQM3XV		95.93	-0.15	-0.56	92.02	-0.08	-0.21
GZCUKM		96.07	-0.01	-0.04	91.91	-0.19	-0.52
H4RTDM	X	96.09	0.01	0.04	92.20	0.10	0.29
H4RU6L		96.08	0.00	-0.01	91.87	-0.23	-0.65
L22GHD		96.24	0.16	0.60	92.71	0.61	1.72
L4TUKB		95.92	-0.16	-0.60	91.47	-0.63	-1.76
QCN3XJ		95.88	-0.20	-0.76	91.72	-0.37	-1.04
R27QBD	X	95.37	-0.71	-2.69	91.05	-1.04	-2.92
TNMU8F	*	96.46	0.38	1.43	91.42	-0.68	-1.90
U4NABU		96.09	0.01	0.04	92.38	0.29	0.81
U83NET		96.24	0.16	0.60	92.22	0.12	0.35
UEPFX9	X	95.02	-1.06	-4.01	90.13	-1.96	-5.51
VDJJPJ		96.21	0.13	0.50	91.77	-0.33	-0.93
VHE7TH		96.14	0.06	0.23	92.31	0.21	0.60
VPHQUY		95.77	-0.31	-1.17	91.54	-0.56	-1.56
VV3AUM		96.21	0.13	0.49	92.35	0.25	0.70
XDH4VV		95.97	-0.11	-0.42	91.53	-0.57	-1.60

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

WebCode	Data Flag	Sample GN57			Sample GN58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
XFD79X		96.03	-0.05	-0.19	91.54	-0.56	-1.56
Y3R6HV		96.00	-0.08	-0.29	92.50	0.41	1.14
YX7DWU		95.55	-0.53	-1.98	92.15	0.06	0.16
YYZEGC		96.14	0.06	0.23	91.80	-0.30	-0.83
ZLRDCD		95.44	-0.64	-2.41	91.82	-0.28	-0.77

		Summary Statistics	
	Sample GN57		Sample GN58
Grand Means	96.080 Percent		92.096 Percent
SD Btwn Labs	0.265 Percent		0.356 Percent
Statistics based on 43 of 48 reporting participants			

**Comments on assigned Data Flags for Test #384**

2LDKT3 (X) - Systematic error (data for both samples are high).

BJB623 (X) - Inconsistent in testing between samples, data for Sample GN57 are high, and inconsistent within the determinations for Sample GN57.

H4RTDM (X) - Data appears to be transposed between samples. Data switched by CTS.

R27QBD (X) - Systematic error (data for both samples are low).

UEPFX9 (X) - Extreme data.

C2Y7TH - One determination removed from the Lab Mean of Sample GN58 per Grubb's Test at 1% risk (TAPPI 1205).

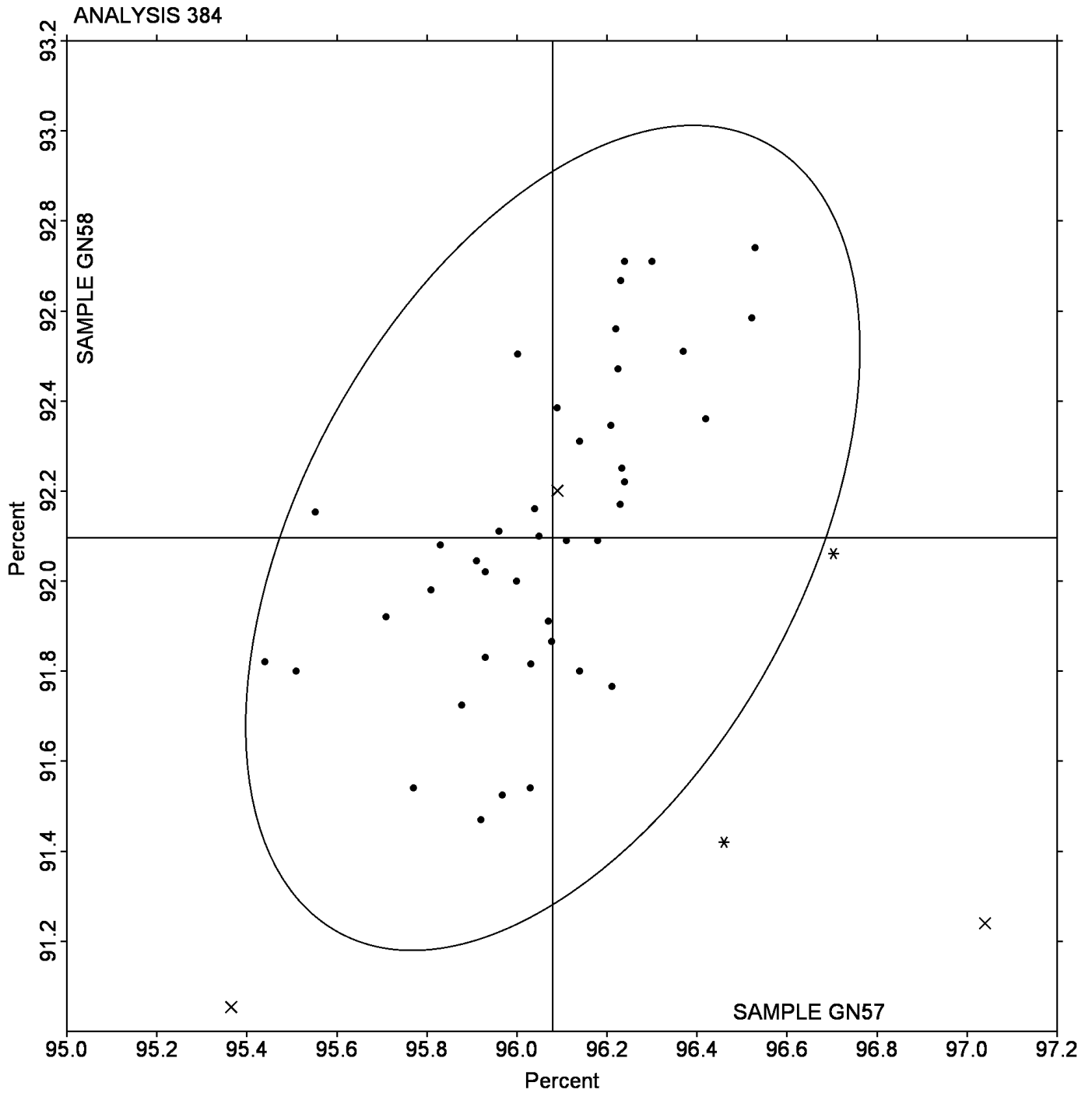
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 384

### Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN57** = 96.080 Percent

Grand Mean Sample **GN58** = 92.096 Percent



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

WebCode	Data Flag	Sample GP57			Sample GP58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
3QM62M		97.07	-0.04	-0.24	93.00	0.00	-0.02
4WNRNT		97.11	0.00	0.01	93.08	0.07	0.43
7YLW3D		97.07	-0.03	-0.23	93.17	0.17	0.96
9YACZD		97.01	-0.09	-0.61	93.04	0.04	0.24
APLTBK		97.03	-0.08	-0.51	93.23	0.23	1.32
B429Z2		97.18	0.08	0.51	93.04	0.04	0.21
BQ39GY		97.23	0.13	0.87	92.69	-0.31	-1.78
D6NNZA		97.23	0.12	0.84	92.84	-0.16	-0.95
DGW9K3		96.99	-0.12	-0.80	93.13	0.13	0.72
DHDE9T		97.35	0.25	1.66	92.84	-0.16	-0.93
DL2JDW		96.90	-0.21	-1.40	93.06	0.06	0.32
E6B2ZL		97.17	0.07	0.45	93.30	0.30	1.71
EVL6KJ		97.03	-0.07	-0.47	92.88	-0.13	-0.73
GFJUTC		96.82	-0.28	-1.91	92.93	-0.07	-0.42
HENBNP		97.33	0.22	1.51	93.15	0.14	0.83
KGCV3J		96.87	-0.24	-1.59	92.79	-0.22	-1.24
N9Q2FC		97.25	0.14	0.97	92.68	-0.32	-1.85
NGQ9PK		97.33	0.22	1.50	93.22	0.22	1.25
PATHUT		97.18	0.08	0.51	92.94	-0.06	-0.37
QGG99E		97.11	0.01	0.04	92.97	-0.03	-0.18
T23MZ9		97.32	0.22	1.47	92.86	-0.14	-0.83
TLUCET		96.88	-0.22	-1.50	92.77	-0.24	-1.35
WCJVNY		97.05	-0.06	-0.37	93.15	0.15	0.85
XC6N9M		97.12	0.01	0.09	93.26	0.26	1.47
XF6Z4M	X	96.26	-0.84	-5.64	92.09	-0.91	-5.22
XH67JF		97.04	-0.06	-0.41	93.02	0.02	0.10
YENNZT		97.05	-0.06	-0.37	93.05	0.05	0.27

Summary Statistics		
	Sample GP57	Sample GP58
Grand Means	97.104 Percent	93.003 Percent
SD Btwn Labs	0.149 Percent	0.174 Percent
Statistics based on 26 of 27 reporting participants		

**Comments on assigned Data Flags for Test #386**

XF6Z4M (X) - Extreme data.

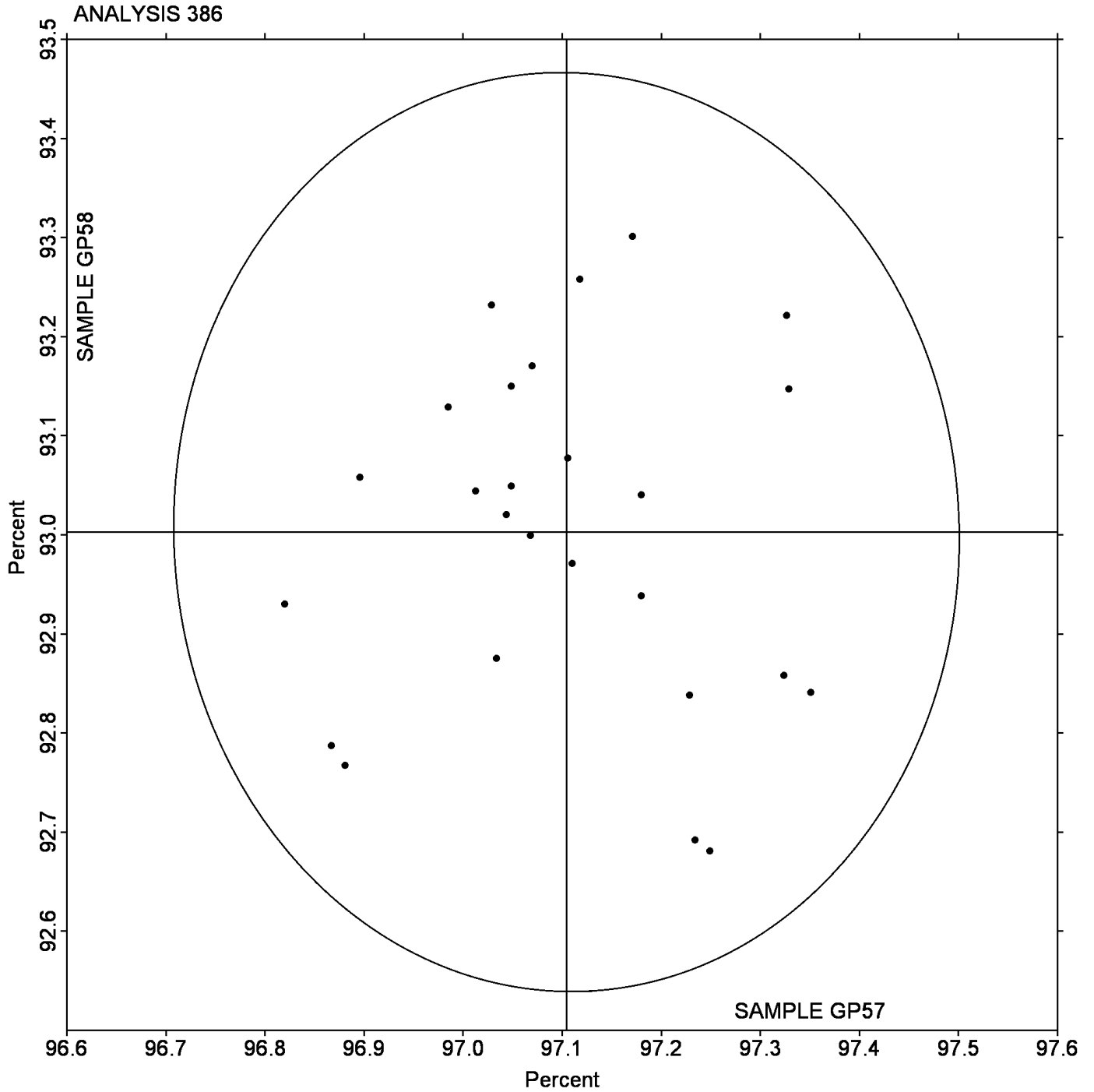
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 386

### Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample GP57 = 97.104 Percent

Grand Mean Sample GP58 = 93.003 Percent



**Paper & Paperboard Interlaboratory Testing Program**  
**Analysis 390**  
**Directional Brightness**

WebCode	Data Flag	Sample GR57			Sample GR58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3T6HLA	X	79.26	2.23	3.87	81.55	-1.70	-3.12	PE
3VBUE6		77.21	0.18	0.31	84.31	1.06	1.95	PE
43GVEC		77.11	0.08	0.13	83.44	0.19	0.36	TS
4KEBGN		76.35	-0.68	-1.19	82.90	-0.35	-0.64	TS
4PXMZK	*	78.60	1.57	2.72	84.50	1.25	2.30	PE
6LW2M8		76.98	-0.06	-0.10	83.76	0.51	0.94	TA
6TXYR4		77.96	0.93	1.61	83.65	0.40	0.74	TT
89FUUP		77.35	0.32	0.55	82.60	-0.65	-1.19	GM
9AF6PK		76.56	-0.48	-0.83	83.13	-0.12	-0.22	TS
9VNJQQ		76.68	-0.35	-0.61	83.16	-0.09	-0.16	TS
9ZBZYP		76.72	-0.31	-0.54	83.18	-0.07	-0.14	TS
ACHHQ7		76.73	-0.31	-0.54	82.15	-1.10	-2.02	XX
AQPMKW	X	76.88	-0.16	-0.28	79.59	-3.66	-6.73	TA
BB2DYZ		76.38	-0.66	-1.14	82.73	-0.52	-0.96	TS
BB3AGV		77.55	0.51	0.89	83.97	0.72	1.32	HD
BGV7HT		76.71	-0.33	-0.57	82.97	-0.28	-0.51	TS
BNQDP3		78.05	1.02	1.76	83.81	0.56	1.04	TS
CKT72W		76.71	-0.32	-0.56	83.26	0.01	0.02	TT
DD2KZN		76.84	-0.20	-0.34	83.04	-0.21	-0.39	TS
HC7MHH		76.67	-0.36	-0.63	82.98	-0.27	-0.49	TS
J87BWJ		76.36	-0.67	-1.17	82.59	-0.66	-1.20	TS
K3ZHQQ		77.69	0.66	1.14	83.86	0.61	1.13	XX
KD6TQ8		77.36	0.33	0.57	82.38	-0.87	-1.60	XX
LBYURK		76.68	-0.36	-0.62	83.20	-0.05	-0.09	TA
NG6RYH		77.14	0.10	0.18	83.41	0.16	0.30	TT
PCG2FC		77.21	0.18	0.30	83.24	-0.01	-0.02	HD
QH32V4		76.66	-0.38	-0.66	83.15	-0.10	-0.18	PP
TTYXWW		76.64	-0.40	-0.69	82.94	-0.31	-0.57	TT
V7XE2P		76.36	-0.67	-1.17	83.23	-0.02	-0.04	TT
VN8P9Z		78.07	1.03	1.79	83.34	0.09	0.16	MG
W4YDTH		76.48	-0.56	-0.97	82.91	-0.34	-0.62	TA
W9VXW2		76.91	-0.12	-0.21	82.56	-0.69	-1.26	TT
WFND7D	X	78.97	1.94	3.36	84.20	0.95	1.75	HD
XG3GZQ		76.78	-0.26	-0.45	83.69	0.44	0.81	TS
ZD7HUW		77.63	0.59	1.03	83.93	0.68	1.24	TT

**Summary Statistics**

**Sample GR57**

Grand Means            77.034 Percent  
SD Btwn Labs            0.576 Percent

**Sample GR58**

83.249 Percent  
0.544 Percent

Statistics based on 32 of 35 reporting participants

**Paper & Paperboard Interlaboratory Testing Program**  
**Analysis 390**  
**Directional Brightness**

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**Comments on assigned Data Flags for Test #390**

3T6HLA (X) - Inconsistent in testing between samples, data for Sample GR57 are high and data for Sample GR58 are low; and inconsistent within the determinations for Sample GR58.

AQPMKW (X) - Extreme data for Sample GR58.

WFND7D (X) - Inconsistent in testing between samples, data for Sample GR57 are high.

J87BWJ - One determination removed from the Lab Mean of Sample GR58 per Grubb's Test at 1% risk (TAPPI 1205).

**Instrument Code List as Reported by the Labs**

(GM) - Gretag Macbeth Color i5

(HD) - Hunter D25DP - 9000

(MG) - Macbeth 1500/PLUS - 2025+ Color Eye

(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

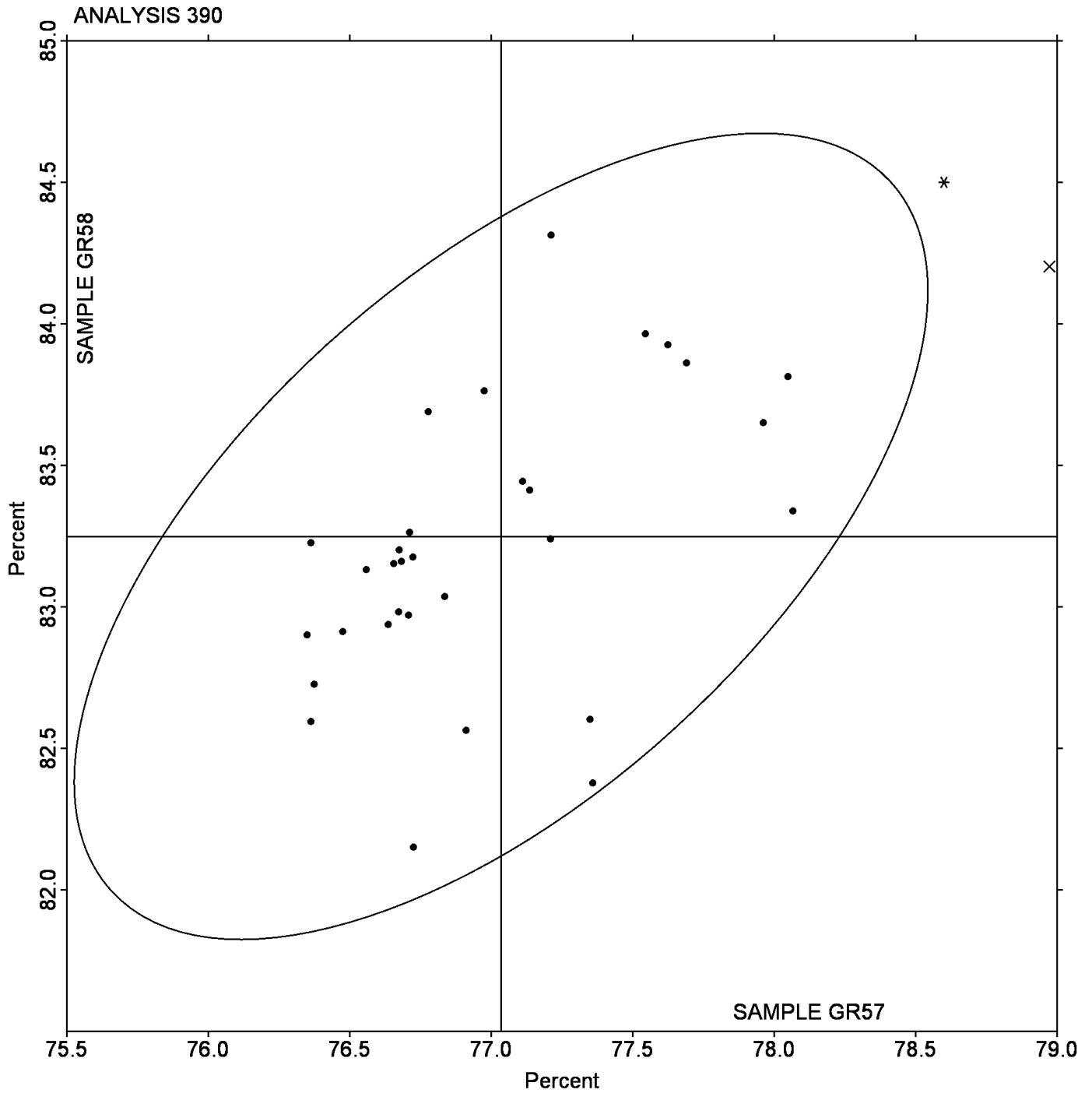
(XX) - Instrument make/model not specified by lab

Analysis 390

Directional Brightness

Grand Mean Sample GR57 = 77.034 Percent

Grand Mean Sample GR58 = 83.249 Percent



**Paper & Paperboard Interlaboratory Testing Program**

**Analysis 391**

**Directional Brightness of Fluorescent Samples**

WebCode	Data Flag	Sample GZ57			Sample GZ58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3RCJJ6		100.84	3.71	2.41	95.82	3.55	1.57	TS
72EEBJ		97.57	0.43	0.28	92.99	0.72	0.32	TS
7D9TG8		96.51	-0.63	-0.41	92.23	-0.04	-0.02	TS
7XC3DD	*	96.23	-0.91	-0.59	87.10	-5.16	-2.28	TS
CHFVHK		96.70	-0.43	-0.28	92.62	0.35	0.15	TT
EXET8L		97.01	-0.13	-0.08	92.77	0.50	0.22	TS
FWW9RF	X	88.71	-8.42	-5.46	85.80	-6.47	-2.85	PP
G7ZLRV		96.50	-0.63	-0.41	92.07	-0.20	-0.09	TS
GPAP9D		95.78	-1.35	-0.88	86.92	-5.35	-2.36	EF
GZZBQX		96.64	-0.49	-0.32	92.40	0.13	0.06	TT
JTZEDH		96.71	-0.43	-0.28	92.38	0.11	0.05	TS
K64Z3Z		100.27	3.13	2.03	95.02	2.76	1.22	HV
LUUYTL		97.41	0.28	0.18	93.57	1.30	0.57	TS
MDEDHF		96.53	-0.60	-0.39	92.38	0.11	0.05	TS
N932WE		99.63	2.50	1.62	95.49	3.23	1.42	EF
QE7HQK	X	111.42	14.29	9.27	105.30	13.03	5.75	HV
U2PVYB		96.92	-0.21	-0.14	92.36	0.09	0.04	MG
UQ6HUZ		97.29	0.16	0.10	92.71	0.45	0.20	PP
Y7H8K4		96.72	-0.41	-0.27	92.43	0.16	0.07	TS
ZEUZQX		95.27	-1.86	-1.21	91.09	-1.18	-0.52	GM
ZRFC6T		95.00	-2.13	-1.38	90.75	-1.51	-0.67	XX

Summary Statistics			
	Sample GZ57		Sample GZ58
Grand Means	97.133 Percent		92.269 Percent
SD Btw Labs	1.541 Percent		2.267 Percent
Statistics based on 19 of 21 reporting participants			

**Comments on assigned Data Flags for Test #391**

FWW9RF (X) - Extreme data.

QE7HQK (X) - Extreme data.

**Instrument Code List as Reported by the Labs**

(EF) - L & W Datacolor Elrepho

(GM) - Gretag Macbeth Color i5

(HV) - Hunter Ultrascan XE

(MG) - Macbeth 1500/Plus - 2025+ Color Eye

(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

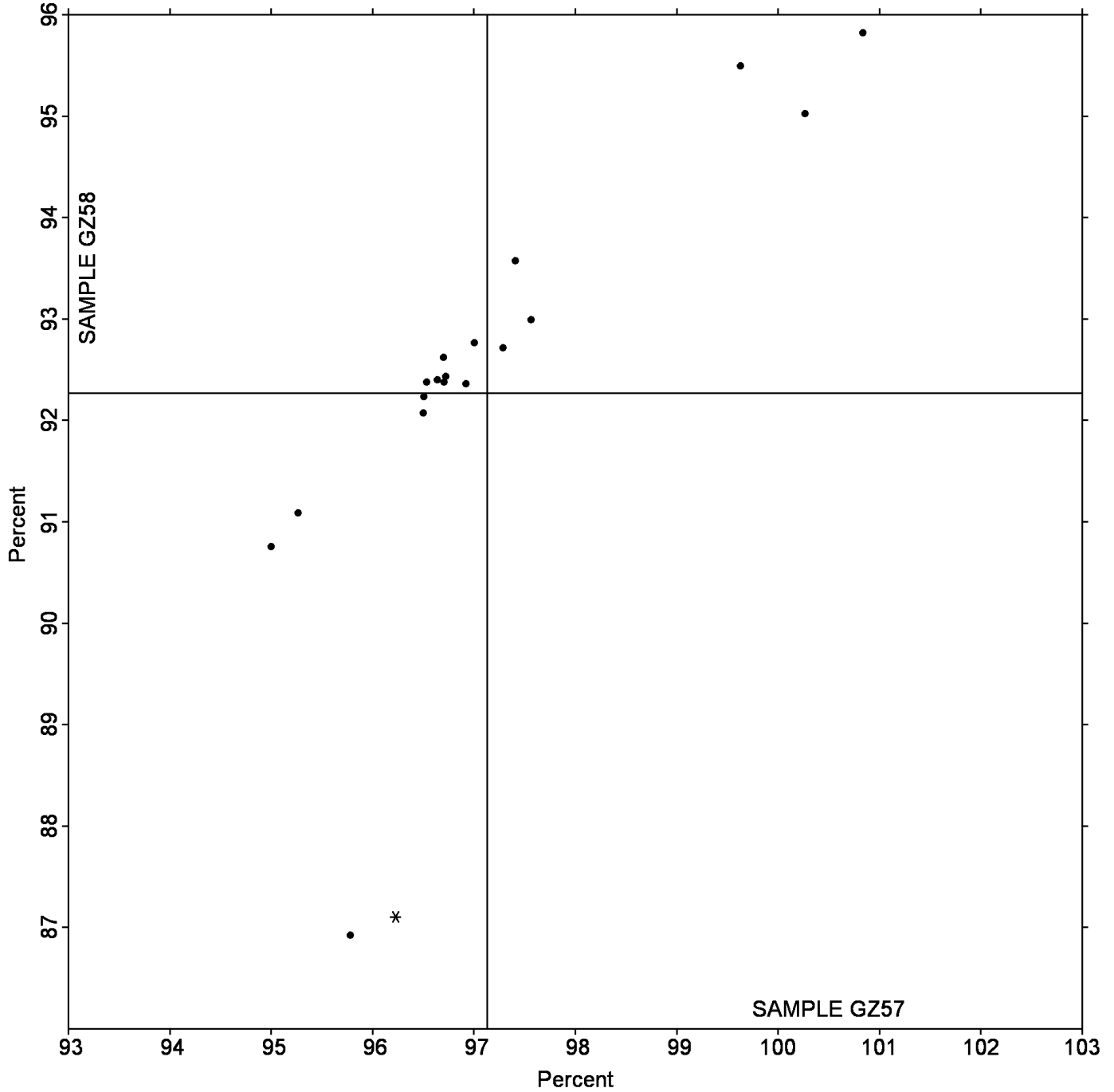
## Analysis 391

### Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ57** = 97.133 Percent

Grand Mean Sample **GZ58** = 92.269 Percent

ANALYSIS 391



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

## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 392

## Diffuse Brightness

WebCode	Data Flag	Sample GR57			Sample GR58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BU986		76.86	-0.11	-0.45	83.51	-0.02	-0.09	TM
2V83RP		77.03	0.06	0.25	83.47	-0.06	-0.22	TM
36YNTM		76.59	-0.38	-1.54	82.90	-0.63	-2.22	TM
3VH2M7		76.90	-0.07	-0.27	82.95	-0.58	-2.05	TL
6JHV6R		77.12	0.15	0.62	83.55	0.02	0.07	TM
6Y9Z9E		77.09	0.13	0.51	83.29	-0.25	-0.87	TM
737R3W		76.79	-0.18	-0.73	83.76	0.23	0.81	TC
9AKXQK	X	76.96	-0.01	-0.04	85.86	2.33	8.18	TC
BV78G3	X	76.97	0.01	0.03	81.99	-1.54	-5.43	EF
BZYAJ4	*	77.53	0.56	2.28	84.30	0.77	2.70	EG
C34CQK		76.89	-0.08	-0.33	83.62	0.09	0.32	LS
CQW6E8		77.16	0.19	0.79	83.66	0.12	0.43	TM
DXRM7N		76.69	-0.28	-1.13	83.63	0.09	0.33	LS
DYRXGR		76.49	-0.47	-1.93	83.20	-0.33	-1.18	LA
FC9MAD		77.13	0.16	0.66	83.68	0.15	0.52	TM
JEJU8N		76.99	0.03	0.10	83.60	0.06	0.22	TC
K2BB89	X	76.81	-0.15	-0.62	86.03	2.49	8.77	EF
K737LF		77.38	0.42	1.69	84.10	0.57	2.00	TC
KUBGZG		76.79	-0.18	-0.72	83.34	-0.19	-0.67	TC
LEBTVD		76.89	-0.08	-0.32	83.18	-0.35	-1.25	TM
LEV6ZD		76.88	-0.09	-0.37	83.39	-0.14	-0.51	TC
LU6KYG		77.04	0.07	0.28	83.57	0.04	0.13	TC
LUJ4K2		77.42	0.45	1.84	83.94	0.41	1.43	TM
LUWYGT		76.61	-0.36	-1.46	83.41	-0.13	-0.44	XX
M22YXN		77.14	0.17	0.70	83.31	-0.22	-0.77	TM
M77P32	X	77.67	0.70	2.85	83.50	-0.03	-0.12	EE
PY63LY		76.81	-0.16	-0.64	83.39	-0.14	-0.51	TC
QHT26P		76.96	-0.01	-0.03	83.48	-0.05	-0.17	XX
RB93EU	X	64.57	-12.40	-50.32	66.77	-16.76	-58.94	LA
REL8FJ		77.07	0.11	0.44	83.56	0.03	0.09	TC
T6PQAL		77.33	0.36	1.48	83.90	0.37	1.30	PP
TFWCQY		77.26	0.29	1.19	83.36	-0.18	-0.62	TM
TJLKD8		76.92	-0.05	-0.19	83.31	-0.23	-0.80	TC
TYNDPA		76.51	-0.45	-1.85	83.38	-0.15	-0.52	LS
U8TZJU	*	76.78	-0.19	-0.77	83.99	0.45	1.59	FR
UKE9K2		77.06	0.10	0.39	83.54	0.00	0.01	TC
VBCEXF		76.77	-0.19	-0.79	83.42	-0.11	-0.39	TC
VPQFJK		76.90	-0.07	-0.29	83.46	-0.07	-0.25	TC
VQLZF6	X	76.84	-0.13	-0.52	86.11	2.58	9.06	TC
VZRPVH		77.04	0.07	0.29	83.56	0.03	0.11	TC
WT4LMX		77.07	0.10	0.40	83.64	0.11	0.37	XX
ZBMVNA		77.18	0.21	0.87	83.75	0.22	0.77	TC
ZJU7P3		76.73	-0.24	-0.97	83.63	0.09	0.33	TC

**Paper & Paperboard Interlaboratory Testing Program**  
**Analysis 392**  
**Diffuse Brightness**

	<b>Sample GR57</b>	<b>Summary Statistics</b>	<b>Sample GR58</b>
Grand Means	76.966 Percent		83.532 Percent
SD Btwn Labs	0.246 Percent		0.284 Percent
Statistics based on 37 of 43 reporting participants			

**Comments on assigned Data Flags for Test #392**

- 9AKXQK (X) - Extreme data for Sample GR58.
- BV78G3 (X) - Extreme data for Sample GR58.
- K2BB89 (X) - Extreme data for Sample GR58.
- M77P32 (X) - Inconsistent in testing between samples, data for Sample GR57 are high.
- RB93EU (X) - Extreme data.
- VQLZF6 (X) - Extreme data for Sample GR58.

**Instrument Code List as Reported by the Labs**

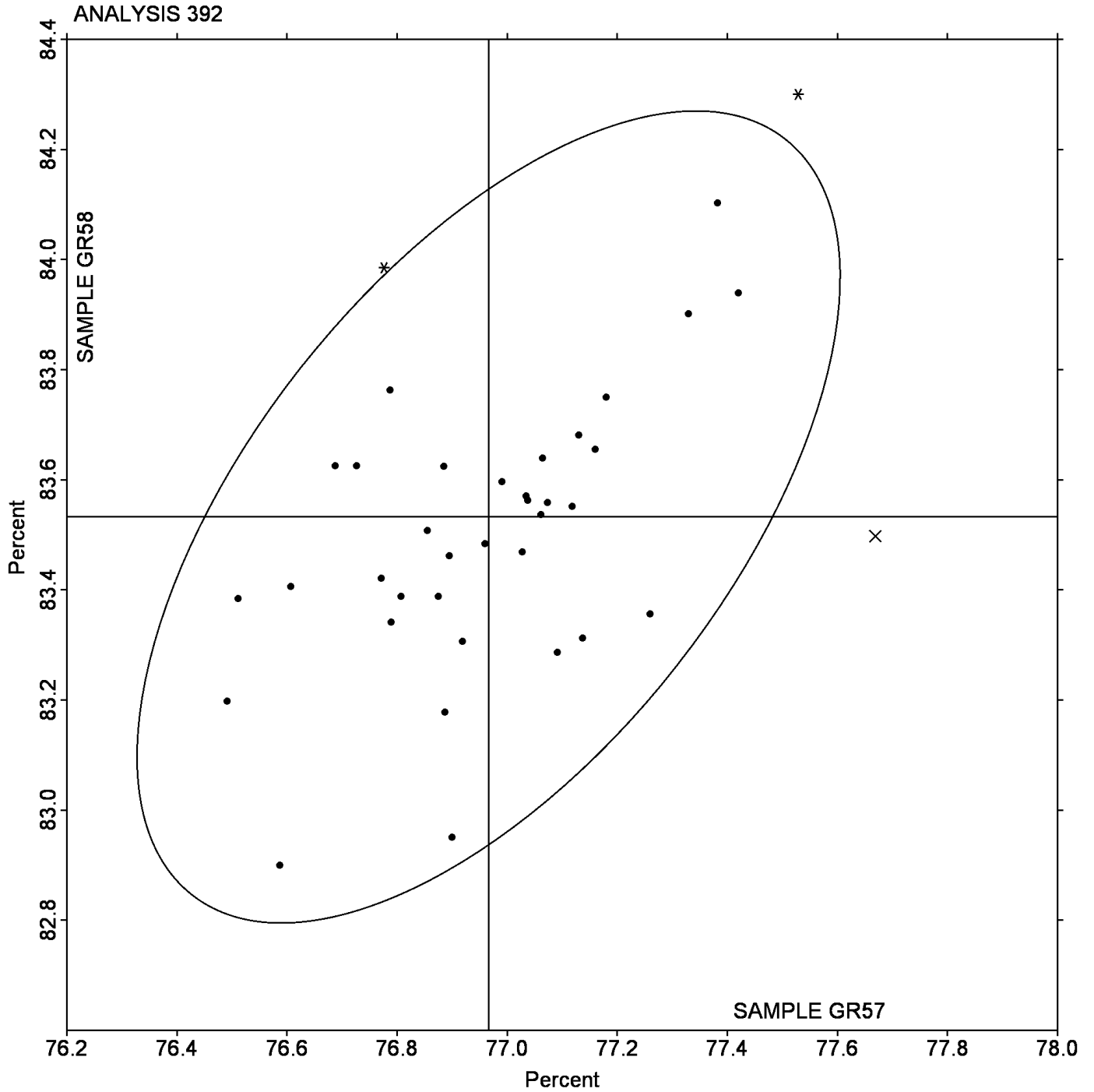
- |   |   |
|---|---|
| (EE) - Datacolor Elrepho 2000                     | (EF) - Datacolor Elrepho 3000             |
| (EG) - Datacolor Elrepho 450X                     | (FR) - Frank Instruments                  |
| (LA) - L & W Elrepho - Autoline                   | (LS) - L & W Elrepho SE 070               |
| (PP) - Technidyne Profile/Plus                    | (TC) - Technidyne Color Touch Series      |
| (TL) - Technidyne Technibrite TB-1                | (TM) - Technidyne Technibrite Micro TB-1C |
| (XX) - Instrument make/model not specified by lab |   |

# Paper & Paperboard Interlaboratory Testing Program

## Analysis 392 Diffuse Brightness

Grand Mean Sample **GR57** = 76.966 Percent

Grand Mean Sample **GR58** = 83.532 Percent



**Paper & Paperboard Interlaboratory Testing Program**

**Analysis 394**

**Fluorescent Component of Directional Brightness**

WebCode	Data Flag	Sample GZ57			Sample GZ58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2KCETN		7.978	-0.169	-0.30	6.506	-0.158	-0.29	TS
3J9RG2	X	11.386	3.239	5.76	9.128	2.464	4.47	EF
4FAPAZ		7.240	-0.907	-1.61	5.824	-0.840	-1.52	TS
8LEFKA		8.000	-0.147	-0.26	6.500	-0.164	-0.30	TT
AV3C3K		8.198	0.051	0.09	6.772	0.108	0.20	PP
CHC4FJ	X	96.520	88.373	157.13	87.722	81.058	147.05	TT
GE99KG		8.150	0.003	0.01	6.756	0.092	0.17	TS
J37UBU		7.684	-0.463	-0.82	6.230	-0.434	-0.79	TS
JYURGC		9.708	1.561	2.78	8.178	1.514	2.75	GM
LU9L6A		8.550	0.403	0.72	6.888	0.224	0.41	PP
NR8D6U	*	7.992	-0.155	-0.28	6.044	-0.620	-1.12	TS
PNNWQ2		8.520	0.373	0.66	7.040	0.376	0.68	TS
QH2F4H		8.080	-0.067	-0.12	6.700	0.036	0.07	TS
RVFHPT	X	11.354	3.207	5.70	9.118	2.454	4.45	HV
VAJ8V4		7.640	-0.507	-0.90	6.280	-0.384	-0.70	TT
VGYZW3	X	22.960	14.813	26.34	19.720	13.056	23.69	HV
XJRZMA		8.016	-0.131	-0.23	6.598	-0.066	-0.12	TS
Y3JWN4		8.602	0.455	0.81	7.150	0.486	0.88	TS
ZKW9XQ	X	18.092	9.945	17.68	15.196	8.532	15.48	XX
ZUK7TC		7.846	-0.301	-0.54	6.490	-0.174	-0.32	TS

Summary Statistics		
	Sample GZ57	Sample GZ58
Grand Means	8.1469 Percent	6.6637 Percent
SD Btw Labs	0.5624 Percent	0.5512 Percent
Statistics based on 15 of 20 reporting participants		

**Comments on assigned Data Flags for Test #394**

3J9RG2 (X) - Extreme data.

CHC4FJ (X) - Extreme data.

RVFHPT (X) - Extreme data.

VGYZW3 (X) - Extreme data.

ZKW9XQ (X) - Extreme data.

PNNWQ2 - One determination removed from the Lab Mean of Sample GZ57 per Grubb's Test at 1% risk (TAPPI 1205).

**Paper & Paperboard Interlaboratory Testing Program**

**Analysis 394**

**Fluorescent Component of Directional Brightness**

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**Instrument Code List as Reported by the Labs**

(EF) - Datacolor Elrepho 3000

(GM) - Gretag Macbeth Color i5

(HV) - Hunter Ultrascan XE

(PP) - Technidyne Profile/Plus

(TS) - Technidyne Brightimeter Micro S-5

(TT) - Technidyne Brightimeter Micro S4-M

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

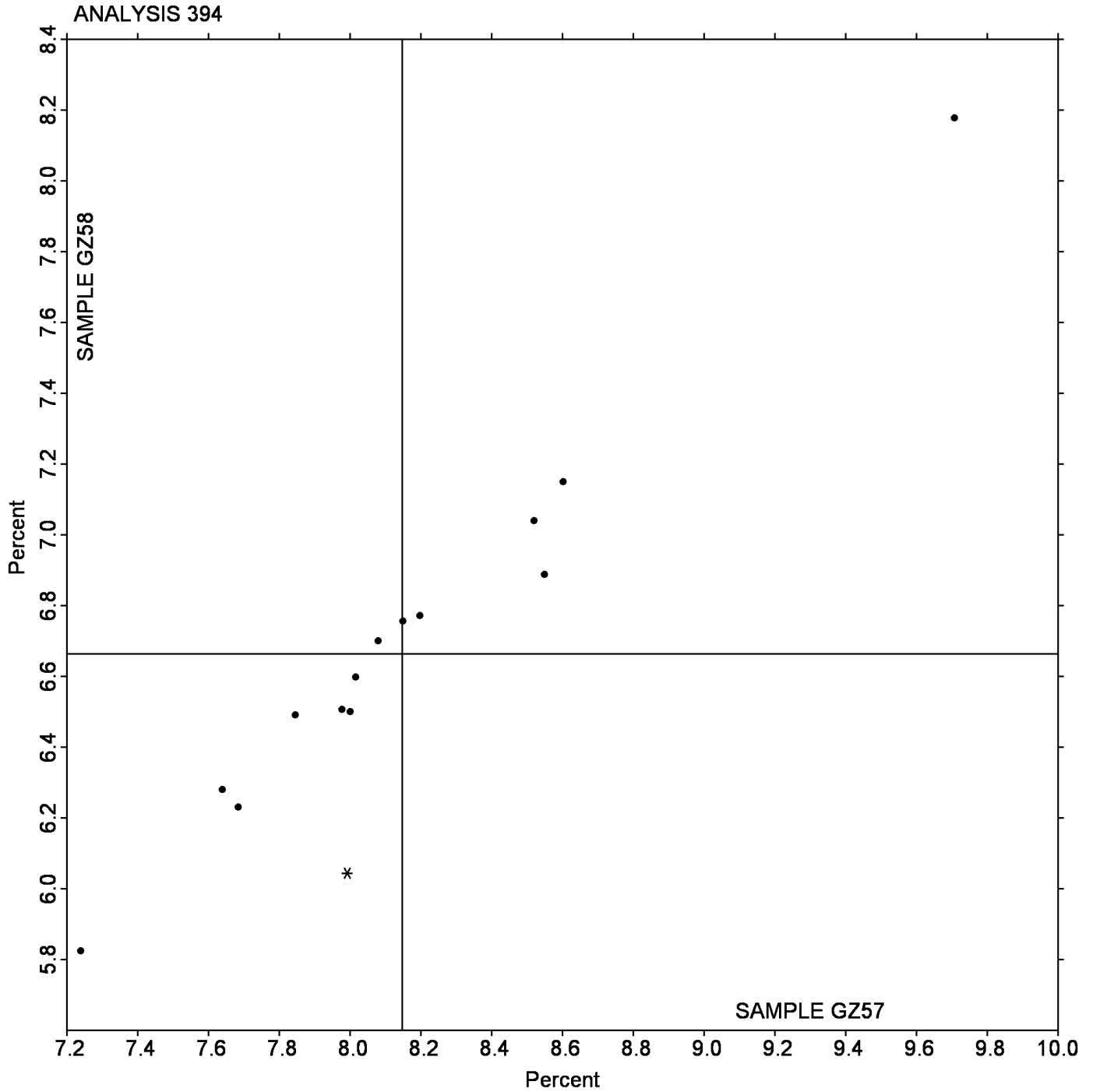
# Paper & Paperboard Interlaboratory Testing Program

## Analysis 394

### Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ57** = 8.1469 Percent

Grand Mean Sample **GZ58** = 6.6637 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 GT57			Sample GT58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2RLYHE		70.62	-1.34	-1.21	66.58	-2.11	-1.69	TH
43MMT9		72.17	0.21	0.19	69.03	0.35	0.28	XX
6GUMRA		73.26	1.30	1.17	70.49	1.81	1.45	TG
6QHEFM		70.64	-1.32	-1.19	67.59	-1.10	-0.88	GM
7B226F		72.97	1.01	0.91	69.12	0.44	0.35	TH
7BKHL4	*	69.22	-2.74	-2.47	67.16	-1.53	-1.23	GS
CJAGEW		71.04	-0.92	-0.83	68.10	-0.59	-0.47	XX
DFTCMR		73.22	1.26	1.14	69.61	0.92	0.74	TG
DGAELD		71.60	-0.36	-0.32	68.06	-0.63	-0.50	GM
EZ7ME3		72.54	0.58	0.52	70.75	2.07	1.66	XX
FKQ4XM		72.90	0.94	0.85	69.43	0.75	0.60	TG
FN34YE		72.92	0.96	0.87	68.49	-0.20	-0.16	PP
JH8BHW		71.37	-0.59	-0.53	67.14	-1.55	-1.24	ZH
JHE4UR		73.16	1.20	1.08	69.05	0.37	0.29	TH
JYCKPN		74.13	2.17	1.96	71.23	2.55	2.05	TH
LYAP4L		70.77	-1.19	-1.07	69.50	0.82	0.66	TH
M2CRVX		71.40	-0.56	-0.50	67.80	-0.89	-0.71	GA
P2LL3A		72.20	0.24	0.22	68.92	0.24	0.19	HG
P6NDJM		72.24	0.28	0.25	69.06	0.38	0.30	TH
QTYEK3		71.62	-0.34	-0.31	68.12	-0.56	-0.45	TH
QW7EEA		73.14	1.18	1.06	69.07	0.39	0.31	VM
RT6R3X		70.68	-1.28	-1.16	65.89	-2.80	-2.25	GM
T6WL8D	X	76.47	4.51	4.07	73.09	4.41	3.54	TH
TZFJT8		71.69	-0.27	-0.24	68.91	0.23	0.18	TH
XRVRPD		72.31	0.35	0.31	69.52	0.84	0.67	TG
XZKJVH		71.91	-0.05	-0.04	69.30	0.62	0.49	PP
YBLABW		71.24	-0.72	-0.65	67.89	-0.80	-0.64	TH

Summary Statistics			
	Sample GT57		Sample GT58
Grand Means	71.959 Gloss Units		68.685 Gloss Units
SD Btwn Labs	1.109 Gloss Units		1.243 Gloss Units
Statistics based on 26 of 27 reporting participants			

**Comments on assigned Data Flags for Test #395**

T6WL8D (X) - Systematic error (data for both samples are high).

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

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**Instrument Code List as Reported by the Labs**

(GA) - BYK-Gardner (model not specified)	(GM) - BYK-Gardner micro-gloss
(GS) - BYK-Gardner Glossgard II	(HG) - Hunter ProGloss 75
(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



## Paper &amp; Paperboard Interlaboratory Testing Program

## Analysis 396

## Specular Gloss at 75 Degrees - Low Range

WebCode	Data Flag	Sample GU57			Sample GU58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4CT7J4		35.10	0.01	0.01	26.20	0.00	0.00	TH
68JGKK		35.39	0.30	0.23	26.71	0.51	0.40	TG
7KYB9K		34.43	-0.66	-0.50	25.95	-0.25	-0.20	GM
D8A7HV		34.45	-0.64	-0.49	26.66	0.46	0.36	GM
E2HH2U		35.31	0.22	0.17	26.75	0.55	0.43	TH
GMCZBE		36.74	1.65	1.26	27.90	1.70	1.34	PP
H6H8FQ		34.26	-0.83	-0.63	25.07	-1.13	-0.89	TH
MVTNPG	X	20.31	-14.78	-11.28	41.75	15.55	12.24	TH
NWWNG2		32.61	-2.48	-1.89	23.34	-2.86	-2.25	WG
RXYPRN		36.50	1.41	1.08	27.75	1.55	1.22	PP
U7ME7F		36.50	1.41	1.08	27.74	1.53	1.21	XX
UFJ2TK		35.20	0.11	0.09	25.38	-0.82	-0.65	PP
UFVRPH		34.07	-1.02	-0.78	25.95	-0.25	-0.20	HN
XC9MZ4		36.63	1.54	1.18	26.31	0.11	0.08	TG
YMKXC7		36.22	1.13	0.86	26.97	0.77	0.60	TG
ZRHAE4		32.89	-2.20	-1.68	24.38	-1.82	-1.44	XX

## Summary Statistics

## Sample GU57

## Sample GU58

Grand Means 35.086 Gloss Units  
SD Btwn Labs 1.310 Gloss Units

26.204 Gloss Units  
1.270 Gloss Units

Statistics based on 15 of 16 reporting participants

Comments on assigned Data Flags for Test #396

MVTNPG (X) - Extreme data.

## Instrument Code List as Reported by the Labs

(GM) - BYK-Gardner micro-gloss

(HN) - Hunter D-48

(PP) - Technidyne Profile/Plus

(TG) - Technidyne T480

(TH) - Technidyne T480A

(WG) - Zehntner ZLR 1050M

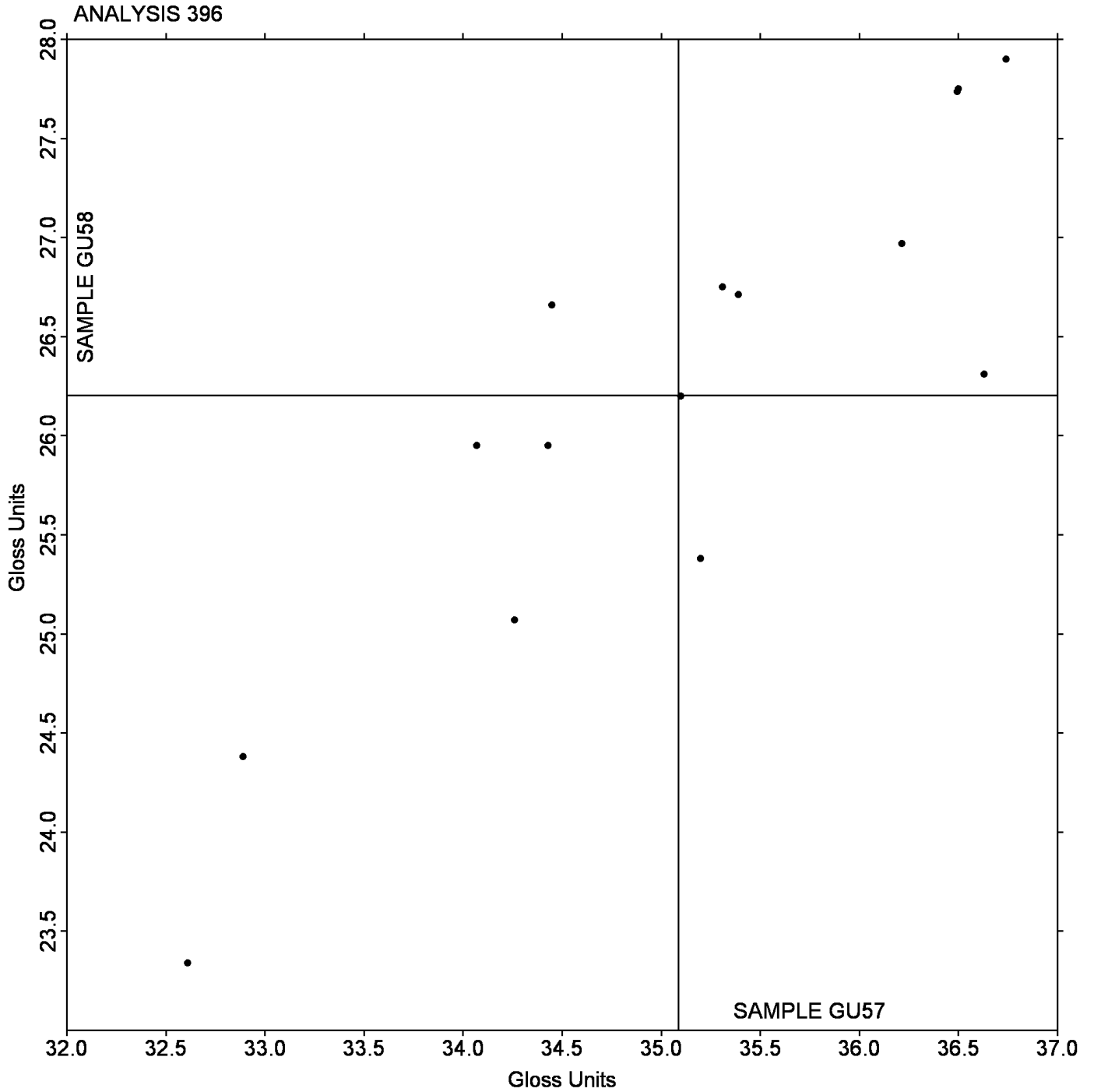
(XX) - Instrument make/model not specified by lab

Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU57** = 35.086 Gloss Units

Grand Mean Sample **GU58** = 26.204 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 &amp; Paperboard Interlaboratory Testing Program

## Analysis 398

## Grammage (Mass per Unit Area)

WebCode	Data Flag	Sample GW57			Sample GW58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2UE9VL	*	87.80	-0.86	-2.02	91.86	-0.01	-0.02
47TPE6		88.76	0.10	0.23	91.89	0.02	0.04
6MC6V7		88.75	0.09	0.20	91.64	-0.23	-0.48
6VH8F6		89.00	0.34	0.79	92.01	0.14	0.30
7E337X		88.10	-0.56	-1.32	91.17	-0.70	-1.47
829Z83		88.92	0.25	0.59	92.35	0.48	1.02
ANJUDY		88.74	0.08	0.18	91.51	-0.36	-0.75
ATGR7G		88.88	0.21	0.50	92.26	0.39	0.83
BEYBW6		88.77	0.11	0.26	92.15	0.28	0.60
DVBRKH	X	92.65	3.99	9.33	94.64	2.77	5.84
DW386T		89.10	0.44	1.02	91.80	-0.06	-0.13
EFU8JN		88.30	-0.36	-0.85	91.15	-0.72	-1.51
G9PYAE		88.58	-0.08	-0.19	91.87	0.00	0.00
H27XYV		89.33	0.67	1.56	92.65	0.78	1.65
H6RWYC		87.96	-0.70	-1.65	90.70	-1.17	-2.46
JF2UGK		88.87	0.20	0.47	92.24	0.37	0.79
KBRVNR		88.86	0.20	0.46	92.03	0.16	0.34
L47A97		88.59	-0.08	-0.18	91.57	-0.30	-0.63
L9FFNJ		88.30	-0.36	-0.85	92.30	0.43	0.91
LNRW2T		88.23	-0.43	-1.01	91.56	-0.31	-0.65
NB3N9X		88.59	-0.08	-0.18	91.74	-0.13	-0.27
NFQCUH		88.57	-0.10	-0.23	91.61	-0.25	-0.53
P43NNM		89.31	0.65	1.51	92.34	0.48	1.00
PAPEXC		88.24	-0.42	-0.99	91.78	-0.08	-0.18
PPR96X		88.48	-0.18	-0.43	91.75	-0.11	-0.24
QWQAKH		88.81	0.14	0.33	91.50	-0.37	-0.78
RBUD92		88.79	0.13	0.30	92.22	0.35	0.75
T8A4GA		88.35	-0.31	-0.73	91.35	-0.52	-1.09
U7RMPE	X	14.96	-73.71	-172.30	15.47	-76.40	-161.13
VKVP78	X	80.34	-8.32	-19.45	83.23	-8.63	-18.21
VRZE6F		89.14	0.48	1.12	92.33	0.46	0.97
WAPBAY		88.24	-0.42	-0.99	90.94	-0.93	-1.96
WHMWTY		88.68	0.02	0.04	92.02	0.15	0.32
XP6PG4		89.04	0.38	0.88	92.57	0.70	1.48
Y84XHN		89.18	0.51	1.20	92.48	0.61	1.28
YCTJ3V		89.56	0.89	2.09	92.68	0.81	1.71
YXLUP2		88.30	-0.36	-0.85	91.70	-0.17	-0.35
Z7ZUXW		87.79	-0.88	-2.05	91.47	-0.40	-0.84
ZJPP7W		89.00	0.34	0.79	92.04	0.17	0.36

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

	Sample GW57	Summary Statistics	Sample GW58
Grand Means	88.664 g/sq m		91.867 g/sq m
SD Btwn Labs	0.428 g/sq m		0.474 g/sq m
Statistics based on 36 of 39 reporting participants			

**Comments on assigned Data Flags for Test #398**

DVBRKH (X) - Extreme data.

U7RMPE (X) - Extreme data.

VKVP78 (X) - Extreme data.

L47A97 - One determination removed from the Lab Mean of Sample GW58 per Grubb's Test at 1% risk (TAPPI 1205).

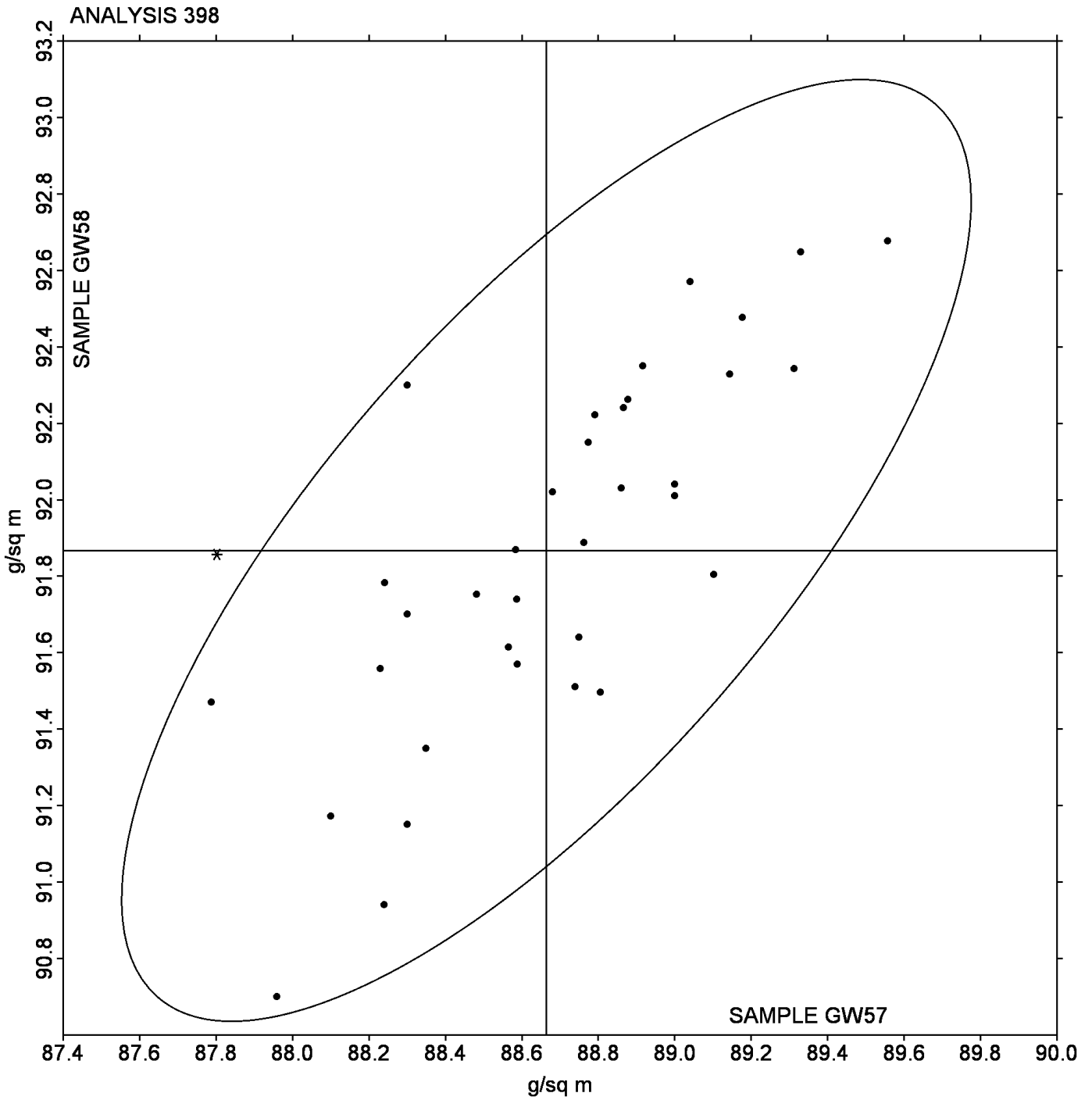
ZJPP7W - One determination removed from the Lab Mean of Sample GW57 per Grubb's Test at 1% risk (TAPPI 1205).

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW57** = 88.664 g/sq m

Grand Mean Sample **GW58** = 91.867 g/sq m



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

WebCode	Data Flag	Sample GX57			Sample GX58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
43E2XR	X	58.45	6.83	0.52	45.94	-6.74	-0.49
6D9W8U	*	90.81	39.19	2.98	95.98	43.30	3.16
6NYULX		40.66	-10.96	-0.83	39.46	-13.22	-0.97
8847HR		39.82	-11.80	-0.90	40.67	-12.01	-0.88
9R3WX4	X	111.93	60.31	4.58	102.61	49.93	3.65
A8Q39Q		44.85	-6.77	-0.51	39.86	-12.82	-0.94
ADU2UM		65.30	13.68	1.04	71.13	18.45	1.35
ANBQPL		44.17	-7.45	-0.57	41.29	-11.39	-0.83
C876D3		67.09	15.47	1.17	71.45	18.77	1.37
D77J49		40.16	-11.46	-0.87	41.33	-11.35	-0.83
E2EATB	X	120.97	69.35	5.27	110.47	57.79	4.22
E2RJNA		62.42	10.80	0.82	59.48	6.80	0.50
G4HA4R		68.40	16.78	1.27	64.40	11.72	0.86
HDGH3A		30.90	-20.72	-1.57	35.47	-17.21	-1.26
J2GTKT		30.64	-20.98	-1.59	35.98	-16.70	-1.22
JR9CKM	X	9.50	-42.12	-3.20	9.30	-43.38	-3.17
K23Y2H		44.76	-6.86	-0.52	46.21	-6.47	-0.47
KWGZTH		55.63	4.01	0.30	53.76	1.08	0.08
LRGAUA	X	96.30	44.68	3.39	85.40	32.72	2.39
LTDP88		46.60	-5.02	-0.38	47.80	-4.88	-0.36
QE7JJH		48.72	-2.90	-0.22	48.50	-4.18	-0.31
QYT9TB		38.02	-13.60	-1.03	41.09	-11.59	-0.85
QZ283X		43.15	-8.47	-0.64	45.57	-7.11	-0.52
RZ3FZP		54.00	2.38	0.18	55.93	3.25	0.24
T6WPPG		48.57	-3.05	-0.23	50.93	-1.75	-0.13
TP7UD4		52.05	0.43	0.03	52.62	-0.06	0.00
TZ9DAJ		69.30	17.68	1.34	68.80	16.12	1.18
UZ8VQE		45.89	-5.73	-0.44	50.04	-2.64	-0.19
V8PUM6		48.80	-2.82	-0.21	51.39	-1.29	-0.09
VTPXTY		56.50	4.88	0.37	57.60	4.92	0.36
WDX3FK		48.51	-3.11	-0.24	49.91	-2.77	-0.20
WPN6FF		65.88	14.26	1.08	74.52	21.84	1.60
XL9WRF		39.69	-11.93	-0.91	38.44	-14.24	-1.04
YFXBG2		70.72	19.10	1.45	68.00	15.32	1.12
YQZFHP		50.35	-1.27	-0.10	47.10	-5.58	-0.41
ZWPRCV		47.90	-3.72	-0.28	48.29	-4.39	-0.32

Sample GX57		Summary Statistics	Sample GX58	
Grand Means	51.621 Seconds		52.677 Seconds	
SD Btwn Labs	13.170 Seconds		13.682 Seconds	
Statistics based on 31 of 36 reporting participants				

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

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**Comments on assigned Data Flags for Test #399**

43E2XR (X) - Inconsistent in testing between samples.

9R3WX4 (X) - Systematic error (data for both samples are high).

E2EATB (X) - Extreme data.

JR9CKM (X) - Systematic error (data for both samples are low).

LRGAUA (X) - Inconsistent in testing between samples, data for Sample GX57 are high; and inconsistent within the determinations for Sample GX57.

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample GX57 = 51.621 Seconds

Grand Mean Sample GX58 = 52.677 Seconds

