

Paper & Paperboard Testing Program

Summary Report #272G-October 2014

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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.

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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FAX #: +1-571-434-1937
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(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)

| | |
|---------------------------------------|---|
| 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: |

| <u>DATA FLAG</u> | <u>STATISTICALLY INCLUDED/EXCLUDED</u> | <u>ACTION REQUIRED</u> |
|------------------|--|--|
| * | 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. |

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.

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.

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

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

Technidyne Corporation

James Bruner/Nicholas Riggs
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 & 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 | ΔL | Δa | Δb | ΔE | |
| 646TFK | | GA11 | 91.19 | -1.11 | 0.99 | -0.02 | -0.01 | -0.02 | 0.03 | HH |
| | | GA12 | 91.17 | -1.12 | 0.97 | | | | | |
| 77RQ63 | | GA11 | 91.95 | -0.68 | 2.33 | 0.02 | 0.02 | -0.09 | 0.09 | EH |
| | | GA12 | 91.97 | -0.66 | 2.24 | | | | | |
| 7GMZGQ | | GA11 | 93.29 | -0.56 | 1.87 | 0.00 | 0.00 | -0.05 | 0.05 | XS |
| | | GA12 | 93.30 | -0.56 | 1.82 | | | | | |
| AAEDGL | | GA11 | 93.69 | -0.73 | 2.00 | 0.01 | 0.00 | -0.07 | 0.07 | EH |
| | | GA12 | 93.70 | -0.73 | 1.93 | | | | | |
| AN2P4G | | GA11 | 90.68 | -0.30 | 2.04 | 0.13 | -0.06 | -0.04 | 0.15 | TS |
| | | GA12 | 90.82 | -0.36 | 1.99 | | | | | |
| AT8GXM | X | GA11 | 83.10 | 0.13 | 0.56 | 0.08 | 0.14 | -0.06 | 0.17 | TS |
| | | GA12 | 83.18 | 0.27 | 0.50 | | | | | |
| FNZDW8 | | GA11 | 93.31 | -0.63 | 3.08 | 0.18 | 0.09 | -0.65 | 0.68 | X MI |
| | | GA12 | 93.49 | -0.54 | 2.44 | | | | | |
| H6JFJ9 | | GA11 | 90.79 | -0.85 | 1.01 | -0.19 | 0.02 | -0.04 | 0.19 | HH |
| | | GA12 | 90.61 | -0.83 | 0.97 | | | | | |
| H7RTXN | | GA11 | 94.54 | -0.39 | 2.09 | 0.05 | -0.01 | -0.19 | 0.19 | HE |
| | | GA12 | 94.58 | -0.40 | 1.91 | | | | | |
| HGWH3K | | GA11 | 90.68 | -0.02 | 1.96 | -0.04 | -0.01 | -0.09 | 0.10 | TS |
| | | GA12 | 90.64 | -0.03 | 1.87 | | | | | |
| K8H9PC | | GA11 | 91.55 | -0.36 | 2.23 | 0.04 | -0.02 | -0.03 | 0.06 | TM |
| | | GA12 | 91.59 | -0.39 | 2.20 | | | | | |
| L9KRUX | | GA11 | 93.51 | -0.70 | 2.39 | 0.00 | 0.01 | -0.09 | 0.09 | EH |
| | | GA12 | 93.51 | -0.69 | 2.30 | | | | | |
| M6ENH2 | | GA11 | 89.40 | -0.38 | 0.52 | 0.13 | -0.01 | -0.05 | 0.14 | XX |
| | | GA12 | 89.54 | -0.38 | 0.47 | | | | | |
| MWN3C3 | | GA11 | 91.68 | -0.70 | 2.34 | 0.01 | -0.03 | -0.02 | 0.04 | LS |
| | | GA12 | 91.68 | -0.73 | 2.32 | | | | | |
| PPDTX7 | | GA11 | 91.71 | -0.46 | 2.32 | 0.06 | 0.00 | -0.15 | 0.16 | TM |
| | | GA12 | 91.76 | -0.46 | 2.17 | | | | | |
| Q2QETC | | GA11 | 93.39 | -1.25 | 2.12 | -0.01 | -0.20 | -0.12 | 0.23 | HH |
| | | GA12 | 93.38 | -1.45 | 2.00 | | | | | |
| RKW6CZ | | GA11 | 92.05 | -0.57 | 2.30 | -0.02 | 0.00 | -0.07 | 0.07 | MK |
| | | GA12 | 92.04 | -0.56 | 2.24 | | | | | |

Analysis 350

Color & 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 | ΔL | Δa | Δb | ΔE | |
| RZRPTM | | GA11 | 93.34 | -0.61 | 2.46 | -0.04 | 0.02 | -0.02 | 0.05 | LS |
| | | GA12 | 93.30 | -0.59 | 2.44 | | | | | |
| U4ZP3J | | GA11 | 91.81 | -0.78 | 2.51 | 0.03 | 0.01 | -0.07 | 0.08 | TC |
| | | GA12 | 91.84 | -0.77 | 2.43 | | | | | |
| UF2Y3F | | GA11 | 92.39 | -0.41 | 1.89 | 0.00 | -0.03 | 0.07 | 0.08 | TS |
| | | GA12 | 92.39 | -0.43 | 1.96 | | | | | |
| VFW28B | | GA11 | 90.90 | -0.54 | 1.99 | -0.14 | -0.13 | -0.01 | 0.19 | TS |
| | | GA12 | 90.76 | -0.67 | 1.98 | | | | | |
| W9TC4B | | GA11 | 92.52 | -1.01 | 0.40 | -0.13 | -0.13 | 0.23 | 0.29 | HG |
| | | GA12 | 92.39 | -1.14 | 0.63 | | | | | |
| XYD9YW | | GA11 | 91.78 | 0.05 | 1.90 | -0.04 | 0.05 | -0.02 | 0.07 | TS |
| | | GA12 | 91.73 | 0.10 | 1.89 | | | | | |
| YYDAW2 | | GA11 | 90.64 | -0.06 | 1.76 | 0.05 | -0.04 | -0.05 | 0.09 | TS |
| | | GA12 | 90.69 | -0.10 | 1.70 | | | | | |

| Grand Means | | | Summary Statistics | | | | | | |
|--------------------|--------|--------|--------------------|-------|--------|--------|-------|--|--|
| GA11 | 92.035 | -0.538 | 1.889 | | | | | | |
| GA12 | 92.038 | -0.550 | 1.831 | 0.004 | -0.018 | -0.072 | 0.139 | | |
| Stnd Dev Btwn Labs | | | | | | | | | |
| GA11 | 1.261 | 0.348 | 0.586 | 0.084 | 0.062 | 0.148 | 0.135 | | |
| GA12 | 1.266 | 0.386 | 0.578 | | | | | | |

Statistics based on 23 of 24 reporting participants

Comments assigned on Data Flags for Test #350

646TFK () -

AT8GXM (X) - Low L values for both samples. Inconsistent within L values for both samples. Inconsistent within a values for Sample GA12. Inconsistent within b values for both samples.

Instrument Code List as Reported by the Labs

(EH) - Datacolor Elrepho SF450

(HE) - Hunter LabScan

(HG) - Hunter ColorQUEST

(HH) - Hunter D25DP - 9000

(LS) - L & W Elrepho SE 070

(MI) - Macbeth Color i 5

(MK) - Macbeth Color-Eye 7000 Spectrophotometer

(TC) - Technidyne Color Touch Series

(TM) - Technidyne Technibrite Micro TB-1C

(TS) - Technidyne Brightimeter Micro S-5

(XS) - X-Rite 938 Spectrodensitometer

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

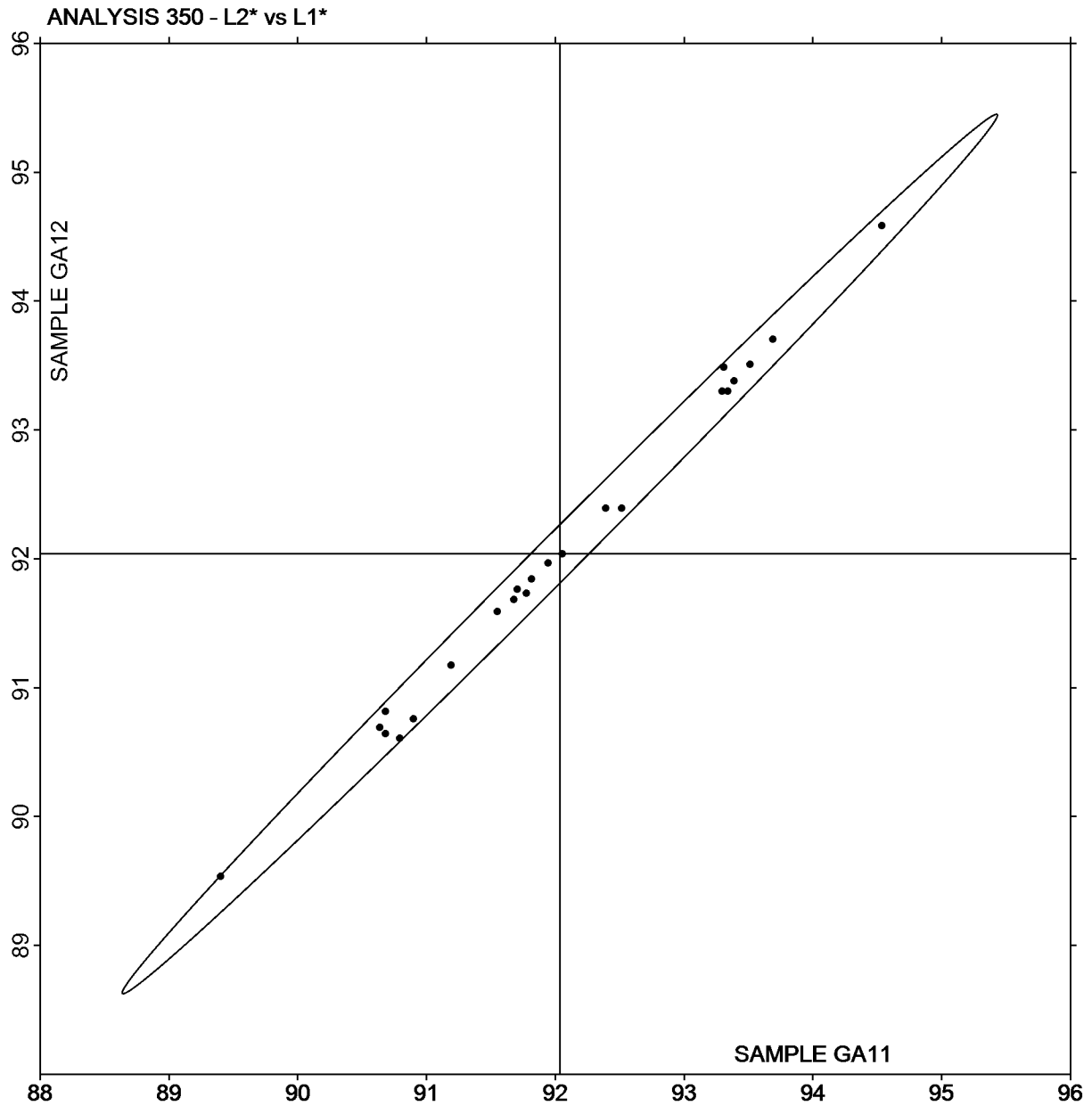
Analysis 350

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

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

| Web Code | Hunter L, a, b Color Values | | | Color Difference Values | | | | Instr Code |
|----------|-----------------------------|---------|---|-------------------------|---|------------|------------|------------|
| | F | Samples | L | a | b | ΔL | Δa | |

Plot of L values GA12 v L values GA11

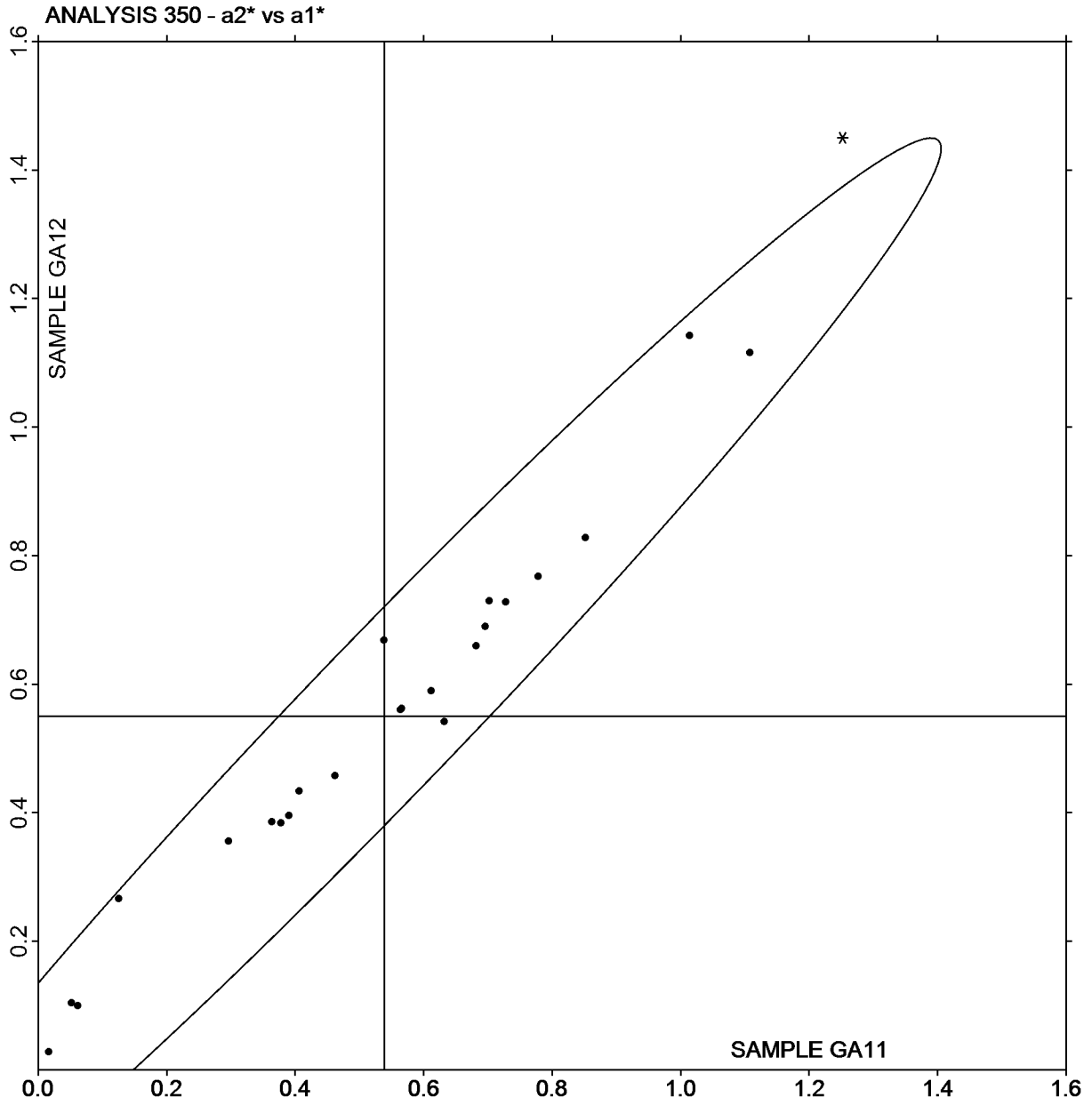


Analysis 350

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

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

Plot of a values GA12 v a values GA11



TAPPI-CTS Interlaboratory Testing Program

Analysis 351

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

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

| 2D3FL8 | GA11 | 93.72 | -0.68 | 2.87 | -0.01 | -0.03 | -0.12 | 0.12 | NG |
|--------|------|-------|-------|------|-------|-------|-------|------|----|
| | GA12 | 93.71 | -0.71 | 2.76 | | | | | |
| 9M8A2D | GA11 | 91.81 | -0.96 | 2.52 | 0.01 | -0.01 | -0.07 | 0.07 | TC |
| | GA12 | 91.82 | -0.96 | 2.45 | | | | | |
| ATTWMP | GA11 | 92.57 | -0.72 | 2.43 | 0.03 | 0.00 | -0.04 | 0.04 | HE |
| | GA12 | 92.60 | -0.72 | 2.39 | | | | | |
| BXJMB8 | GA11 | 93.51 | -0.77 | 2.72 | 0.00 | -0.03 | -0.05 | 0.06 | LS |
| | GA12 | 93.51 | -0.80 | 2.66 | | | | | |
| DX9TGG | GA11 | 93.67 | -0.92 | 2.70 | -0.10 | -0.02 | -0.07 | 0.13 | TC |
| | GA12 | 93.57 | -0.94 | 2.63 | | | | | |
| GH9V8G | GA11 | 94.00 | -0.74 | 2.74 | -0.04 | -0.01 | -0.10 | 0.11 | NF |
| | GA12 | 93.96 | -0.75 | 2.64 | | | | | |
| GHZAZZ | GA11 | 93.70 | -0.46 | 2.63 | -0.08 | 0.04 | -0.14 | 0.17 | XP |
| | GA12 | 93.62 | -0.42 | 2.49 | | | | | |
| L3AVPN | GA11 | 93.65 | -0.74 | 2.72 | 0.04 | -0.02 | -0.07 | 0.09 | NG |
| | GA12 | 93.69 | -0.76 | 2.65 | | | | | |
| L4EZY7 | GA11 | 92.35 | -0.83 | 2.32 | 0.03 | -0.05 | -0.11 | 0.12 | HE |
| | GA12 | 92.38 | -0.88 | 2.21 | | | | | |
| LRCVBX | GA11 | 91.81 | -0.70 | 2.52 | -0.01 | 0.00 | -0.08 | 0.08 | XX |
| | GA12 | 91.80 | -0.70 | 2.44 | | | | | |
| MERJV9 | GA11 | 93.52 | -0.93 | 2.61 | 0.05 | 0.01 | -0.06 | 0.07 | TC |
| | GA12 | 93.56 | -0.93 | 2.55 | | | | | |
| QNGWN3 | GA11 | 93.59 | -0.80 | 2.73 | 0.10 | 0.00 | -0.04 | 0.10 | HT |
| | GA12 | 93.68 | -0.81 | 2.69 | | | | | |
| RACVPR | GA11 | 93.49 | -0.85 | 2.63 | 0.00 | -0.01 | -0.05 | 0.05 | EH |
| | GA12 | 93.49 | -0.86 | 2.59 | | | | | |
| RKX2UB | GA11 | 91.67 | -0.42 | 2.11 | -0.02 | 0.00 | -0.07 | 0.08 | EE |
| | GA12 | 91.65 | -0.42 | 2.04 | | | | | |
| RZRPTM | GA11 | 93.26 | -0.76 | 2.64 | 0.00 | 0.02 | -0.10 | 0.10 | LS |
| | GA12 | 93.26 | -0.74 | 2.55 | | | | | |
| T2ZZG4 | GA11 | 93.73 | -0.73 | 2.86 | -0.04 | -0.03 | -0.12 | 0.13 | NG |
| | GA12 | 93.69 | -0.76 | 2.73 | | | | | |
| VA9CMZ | GA11 | 93.63 | -0.79 | 2.77 | -0.05 | 0.03 | -0.16 | 0.17 | EH |
| | GA12 | 93.58 | -0.76 | 2.61 | | | | | |
| VE2FF6 | GA11 | 93.42 | -0.82 | 2.26 | 0.06 | -0.08 | -0.06 | 0.12 | EF |
| | GA12 | 93.48 | -0.90 | 2.20 | | | | | |

Analysis 351

Color & 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 | ΔL | Δa | Δb | ΔE | |
| Y23J73 | | GA11 | 92.01 | -0.71 | 2.50 | -0.02 | 0.00 | -0.01 | 0.02 | XM |
| | | GA12 | 91.99 | -0.71 | 2.49 | | | | | |

| | | Summary Statistics | | | | | | | | |
|---|------|--------------------|--------|-------|--------|--------|--------|-------|--|--|
| Grand Means | | | | | | | | | | |
| | GA11 | 93.111 | -0.754 | 2.594 | -0.003 | -0.010 | -0.080 | 0.097 | | |
| | GA12 | 93.108 | -0.765 | 2.514 | | | | | | |
| Stnd Dev Btwn Labs | | | | | | | | | | |
| | GA11 | 0.786 | 0.137 | 0.202 | 0.048 | 0.028 | 0.038 | 0.040 | | |
| | GA12 | 0.782 | 0.148 | 0.193 | | | | | | |
| Statistics based on 19 of 19 reporting participants | | | | | | | | | | |

Instrument Code List as Reported by the Labs

(EE) - Datacolor Elrepho 2000

(EF) - Datacolor Elrepho 3000

(EH) - Datacolor Elrepho SF450

(HE) - Hunter LabScan

(HT) - Hunter UltraScan Vis

(LS) - L & W Elrepho SE 070

(NF) - Minolta CM-3600d Spectrophotometer

(NG) - Minolta CM-3700d Spectrophotometer

(TC) - Technidyne Color Touch Series

(XM) - X-Rite CA-22

(XP) - X-Rite Spectrophotometer DTP

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

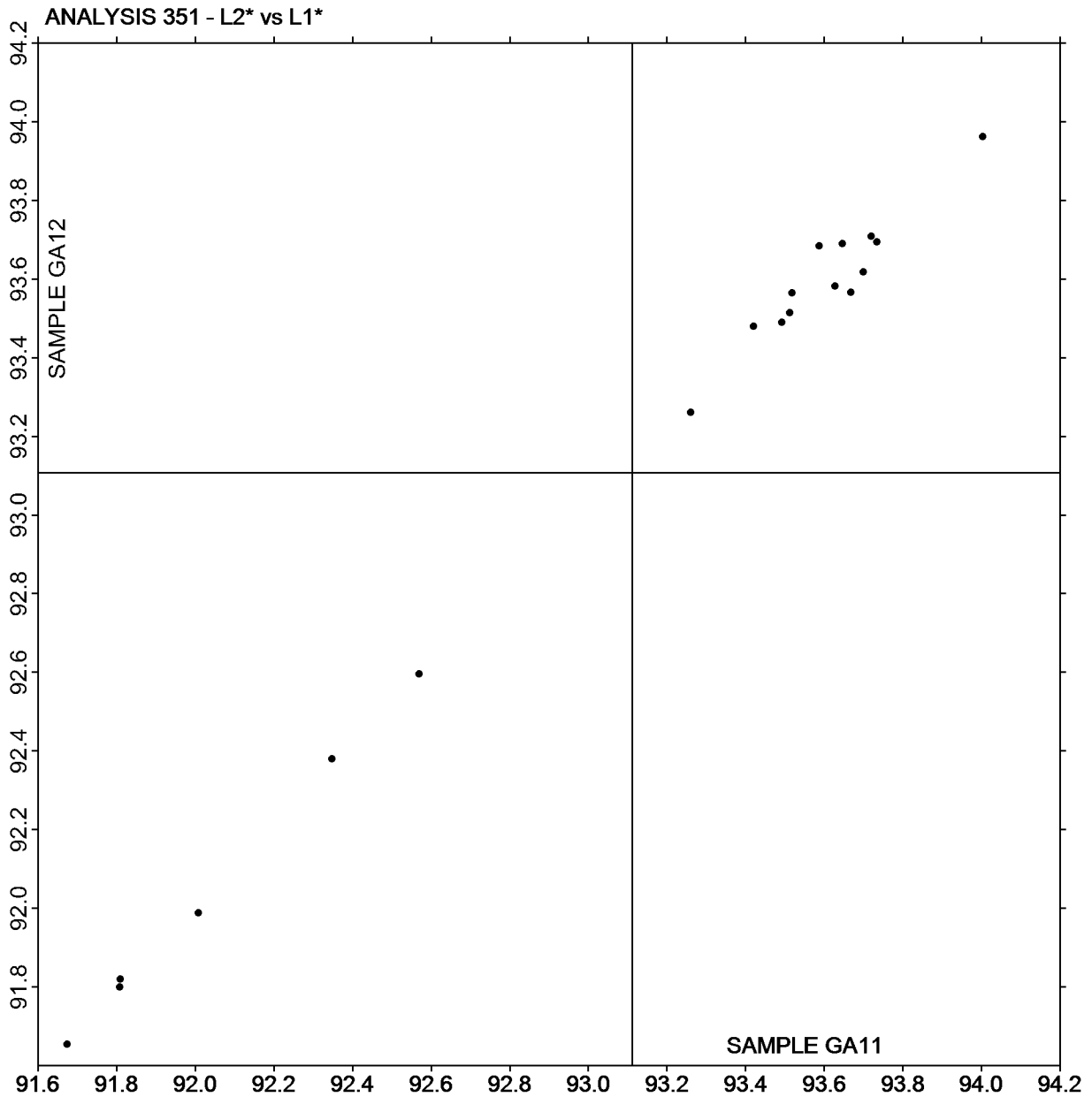
Analysis 351

Color & 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 | ΔL | Δa | Δb | ΔE | |

Plot of L values GA12 v L values GA11



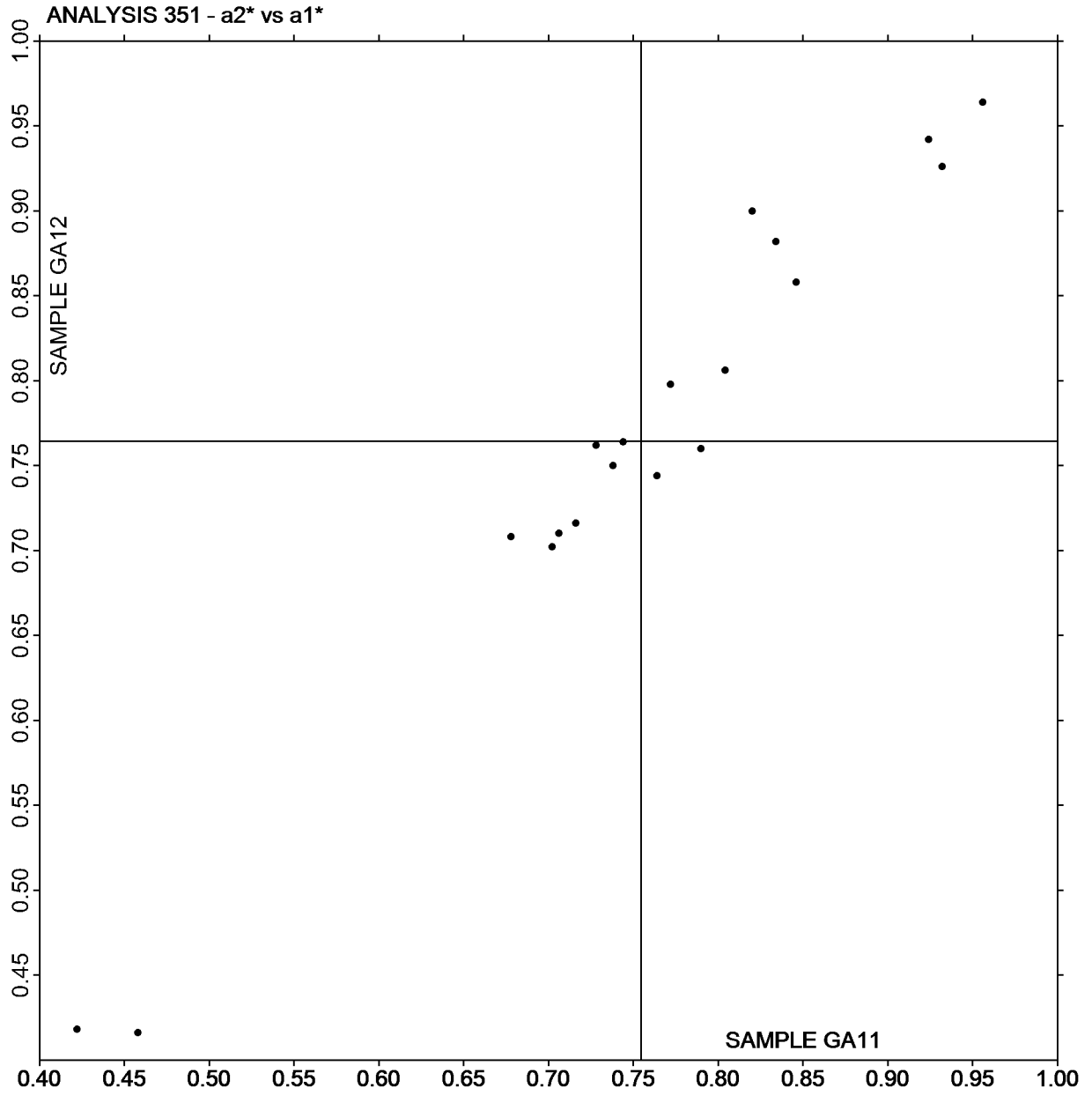
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Analysis 351

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

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

Plot of a values GA12 v a values GA11



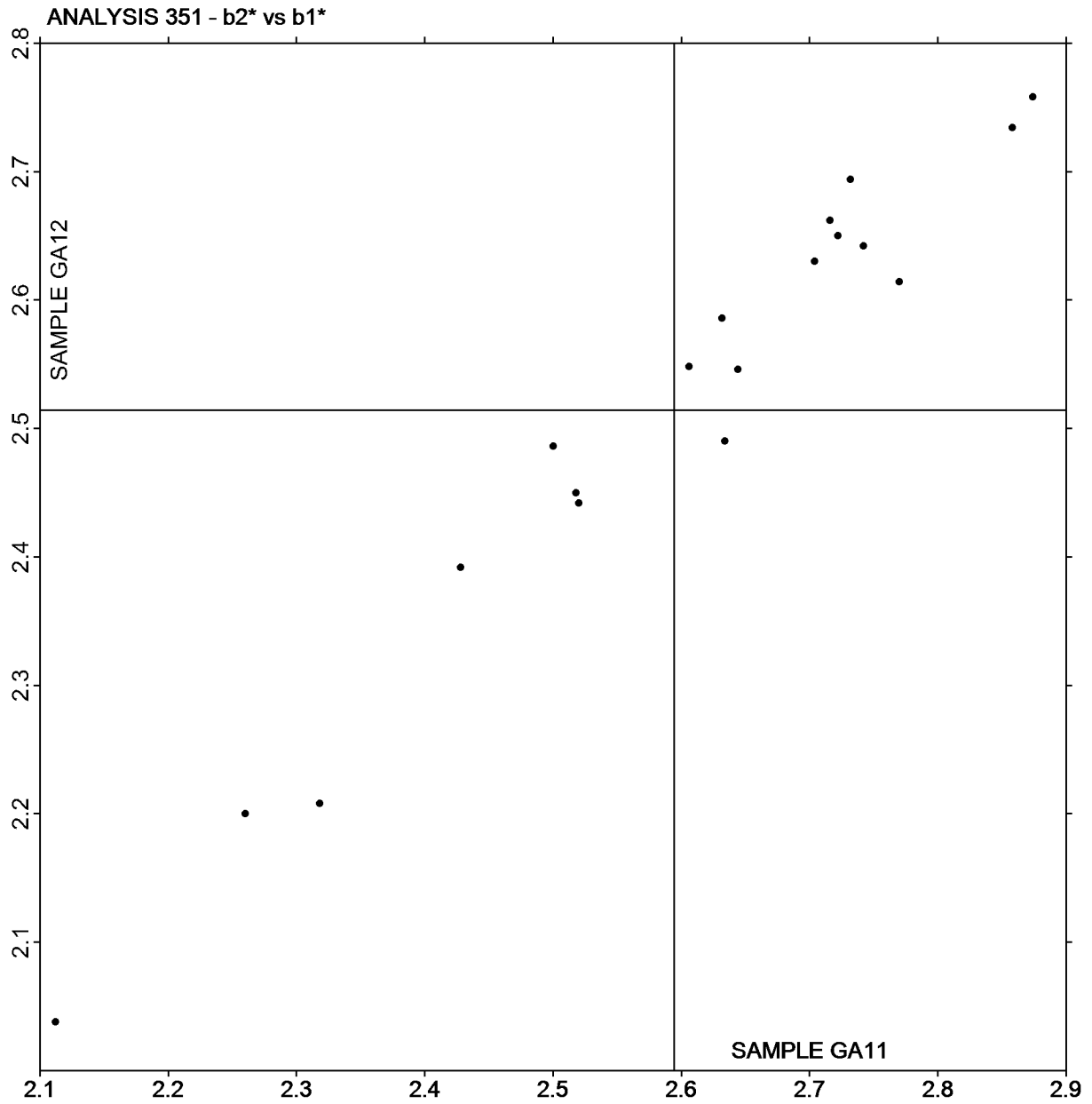
If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Analysis 351

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

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

Plot of b values GA12 v b values GA11



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 360

Thickness (Caliper), Printing papers

| WebCode | Data Flag | Sample GV11 | | | Sample GV12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2CRJB2 | | 3.882 | 0.090 | 1.38 | 4.758 | 0.128 | 1.80 | LW |
| 2D3FL8 | | 3.824 | 0.032 | 0.49 | 4.680 | 0.049 | 0.70 | XX |
| 2MEH38 | | 3.772 | -0.020 | -0.31 | 4.575 | -0.056 | -0.79 | TM |
| 79BKAP | | 3.791 | -0.001 | -0.01 | 4.551 | -0.079 | -1.12 | PP |
| 7GMZGQ | | 3.780 | -0.012 | -0.18 | 4.560 | -0.071 | -1.00 | TM |
| 7LGX7G | | 3.850 | 0.058 | 0.90 | 4.594 | -0.036 | -0.51 | FR |
| 92L49B | | 3.780 | -0.013 | -0.19 | 4.591 | -0.040 | -0.57 | TA |
| 9FME3P | | 3.753 | -0.039 | -0.60 | 4.638 | 0.007 | 0.10 | VM |
| 9M8A2D | | 3.708 | -0.084 | -1.29 | 4.579 | -0.052 | -0.73 | TA |
| 9PUCN8 | | 3.753 | -0.039 | -0.60 | 4.615 | -0.016 | -0.22 | PP |
| 9VG3B3 | * | 3.615 | -0.177 | -2.72 | 4.505 | -0.126 | -1.78 | TM |
| A8RXZQ | | 3.832 | 0.040 | 0.61 | 4.671 | 0.041 | 0.57 | XX |
| AAEDGL | | 3.744 | -0.048 | -0.74 | 4.571 | -0.060 | -0.84 | MT |
| AN2P4G | | 3.811 | 0.019 | 0.29 | 4.597 | -0.034 | -0.48 | LA |
| ANBTGF | | 3.660 | -0.132 | -2.03 | 4.530 | -0.101 | -1.42 | TM |
| AT8E9H | | 3.870 | 0.078 | 1.20 | 4.716 | 0.085 | 1.21 | TM |
| AYWWQZ | | 3.854 | 0.062 | 0.95 | 4.735 | 0.104 | 1.47 | XX |
| BEH2AD | | 3.779 | -0.013 | -0.20 | 4.673 | 0.043 | 0.60 | LW |
| DQPNBA | | 3.844 | 0.052 | 0.80 | 4.756 | 0.125 | 1.77 | PP |
| DX9TGG | | 3.796 | 0.004 | 0.06 | 4.625 | -0.006 | -0.08 | LW |
| E2TFZ9 | | 3.744 | -0.048 | -0.74 | 4.664 | 0.033 | 0.47 | LW |
| E3K2HL | X | 3.667 | -0.125 | -1.92 | 4.765 | 0.134 | 1.90 | TA |
| E6PTCK | | 3.814 | 0.022 | 0.34 | 4.629 | -0.002 | -0.02 | EM |
| EHB4XP | | 3.800 | 0.008 | 0.12 | 4.697 | 0.067 | 0.94 | EM |
| FGWUCH | | 3.832 | 0.040 | 0.61 | 4.629 | -0.002 | -0.02 | TM |
| FNZDW8 | | 3.739 | -0.053 | -0.81 | 4.512 | -0.119 | -1.68 | TA |
| FYFRQG | | 3.734 | -0.058 | -0.89 | 4.619 | -0.012 | -0.16 | LA |
| GGQ3YR | | 3.777 | -0.015 | -0.23 | 4.573 | -0.058 | -0.81 | TA |
| GHZAZZ | | 3.729 | -0.063 | -0.97 | 4.604 | -0.027 | -0.38 | TM |
| GMKZHG | * | 3.735 | -0.057 | -0.88 | 4.461 | -0.170 | -2.40 | EM |
| GVANDK | | 3.697 | -0.095 | -1.46 | 4.560 | -0.071 | -1.00 | PP |
| HGWH3K | | 3.800 | 0.008 | 0.12 | 4.649 | 0.018 | 0.26 | EM |
| K8H9PC | | 3.754 | -0.038 | -0.58 | 4.564 | -0.067 | -0.94 | TA |
| K8J7Z8 | | 3.776 | -0.016 | -0.25 | 4.627 | -0.004 | -0.05 | TM |
| KCPXUD | | 3.746 | -0.046 | -0.70 | 4.650 | 0.020 | 0.28 | LW |
| KFAQ4K | | 3.841 | 0.049 | 0.75 | 4.652 | 0.021 | 0.30 | TM |
| L3AVPN | | 3.831 | 0.039 | 0.60 | 4.627 | -0.004 | -0.05 | XX |
| L4EZY7 | | 3.827 | 0.035 | 0.53 | 4.699 | 0.068 | 0.97 | TM |
| L9KRUX | | 3.759 | -0.033 | -0.51 | 4.608 | -0.023 | -0.32 | TA |
| MWN3C3 | | 3.807 | 0.015 | 0.23 | 4.575 | -0.055 | -0.78 | LW |
| P288W3 | | 3.782 | -0.010 | -0.15 | 4.603 | -0.027 | -0.39 | XX |
| PPDTX7 | | 3.861 | 0.069 | 1.06 | 4.694 | 0.064 | 0.90 | XX |
| PUF4BY | | 3.717 | -0.075 | -1.16 | 4.533 | -0.098 | -1.39 | EM |

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

| WebCode | Data Flag | Sample GV11 | | | Sample GV12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| Q8EYXD | | 3.853 | 0.061 | 0.94 | 4.694 | 0.063 | 0.90 | EM |
| QLAC2M | | 3.820 | 0.028 | 0.43 | 4.669 | 0.038 | 0.54 | EM |
| QNGWN3 | | 3.794 | 0.002 | 0.03 | 4.637 | 0.006 | 0.09 | EM |
| RE8MXN | | 3.742 | -0.050 | -0.77 | 4.634 | 0.003 | 0.05 | TA |
| RKW6CZ | | 3.895 | 0.103 | 1.58 | 4.740 | 0.109 | 1.55 | EM |
| RTCM6Y | | 3.913 | 0.121 | 1.86 | 4.733 | 0.102 | 1.45 | LW |
| T2ZZG4 | | 3.861 | 0.069 | 1.05 | 4.609 | -0.022 | -0.31 | LW |
| U4ZP3J | | 3.806 | 0.014 | 0.21 | 4.638 | 0.007 | 0.10 | PP |
| UHGKFV | | 3.847 | 0.055 | 0.84 | 4.740 | 0.109 | 1.54 | LW |
| URVD6X | | 3.782 | -0.010 | -0.16 | 4.608 | -0.023 | -0.32 | LW |
| V6NK6J | * | 3.620 | -0.172 | -2.64 | 4.490 | -0.141 | -1.99 | XX |
| V7H9KT | | 3.700 | -0.092 | -1.41 | 4.610 | -0.021 | -0.29 | TM |
| VFEFLR | | 3.820 | 0.028 | 0.43 | 4.700 | 0.069 | 0.98 | EM |
| X9NE87 | | 3.790 | -0.002 | -0.03 | 4.580 | -0.051 | -0.72 | TM |
| XLLMUL | | 3.839 | 0.047 | 0.71 | 4.741 | 0.110 | 1.56 | LW |
| XYD9YW | | 3.755 | -0.037 | -0.57 | 4.577 | -0.053 | -0.76 | TM |
| Y23J73 | | 3.827 | 0.035 | 0.53 | 4.673 | 0.043 | 0.60 | LW |
| YYDAW2 | | 3.766 | -0.026 | -0.40 | 4.597 | -0.033 | -0.47 | TM |
| Z8NVJA | | 3.868 | 0.076 | 1.17 | 4.685 | 0.055 | 0.77 | LW |
| ZRU2WN | | 3.824 | 0.032 | 0.49 | 4.626 | -0.004 | -0.06 | LW |
| ZZ8K69 | * | 3.978 | 0.186 | 2.86 | 4.798 | 0.167 | 2.36 | LW |

| Summary Statistics | | | |
|---|-------------|--|-------------|
| | Sample GV11 | | Sample GV12 |
| Grand Means | 3.7920 mils | | 4.6306 mils |
| SD Btw Labs | 0.0652 mils | | 0.0708 mils |
| Statistics based on 63 of 64 reporting participants | | | |

Comments on assigned Data Flags for Test #360

E3K2HL (X) - Inconsistent in testing between samples.

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 |

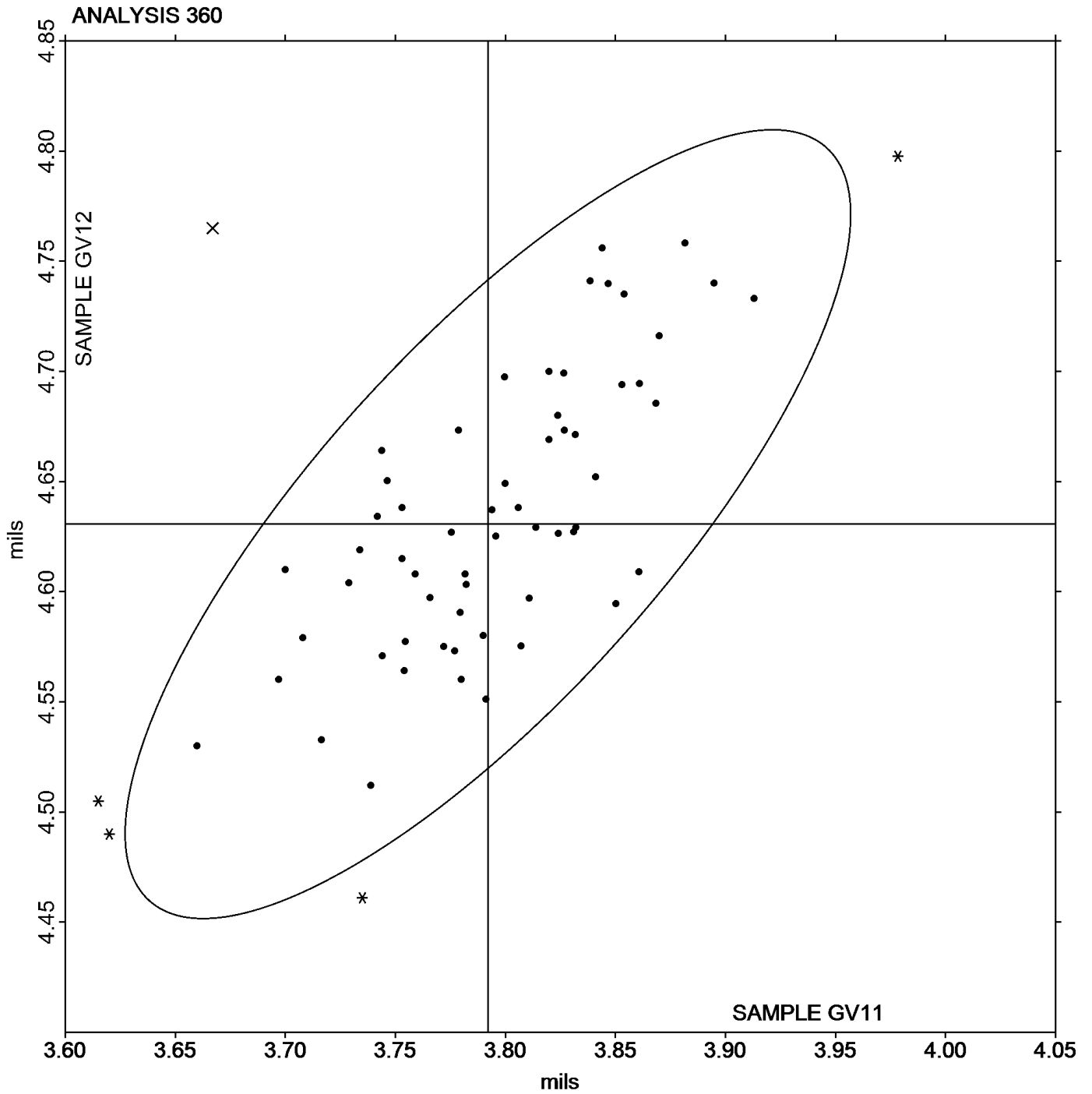
Paper & Paperboard Interlaboratory Testing Program

Analysis 360

Thickness (Caliper), Printing papers

Grand Mean Sample **GV11** = 3.7920 mils

Grand Mean Sample **GV12** = 4.6306 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

| WebCode | Data Flag | Sample GY11 | | | Sample GY12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 4MM9AN | | 7.585 | -0.045 | -0.29 | 9.333 | -0.127 | -0.90 | TM |
| 646TFK | | 7.781 | 0.151 | 0.98 | 9.655 | 0.194 | 1.37 | EM |
| 6GTVMQ | | 7.379 | -0.251 | -1.63 | 9.199 | -0.262 | -1.84 | EM |
| 7KLCEB | | 7.515 | -0.115 | -0.75 | 9.457 | -0.004 | -0.03 | PP |
| 899CHH | | 7.539 | -0.091 | -0.59 | 9.445 | -0.016 | -0.11 | XX |
| 8BDYVL | | 7.455 | -0.175 | -1.14 | 9.345 | -0.116 | -0.81 | TA |
| ANBTGF | | 7.480 | -0.150 | -0.98 | 9.350 | -0.111 | -0.78 | TM |
| AT8GXM | | 7.504 | -0.126 | -0.82 | 9.315 | -0.146 | -1.02 | EM |
| ATTWMP | | 7.524 | -0.106 | -0.69 | 9.335 | -0.126 | -0.88 | EM |
| B2KRYE | | 7.752 | 0.122 | 0.79 | 9.566 | 0.105 | 0.74 | TM |
| BEH2AD | | 7.626 | -0.005 | -0.03 | 9.545 | 0.084 | 0.59 | LW |
| D8WNLX | | 7.670 | 0.040 | 0.26 | 9.530 | 0.069 | 0.49 | TM |
| E6L39H | | 7.633 | 0.003 | 0.02 | 9.412 | -0.049 | -0.34 | TM |
| FNZDW8 | | 7.421 | -0.209 | -1.36 | 9.203 | -0.258 | -1.81 | TA |
| H6JFJ9 | | 7.886 | 0.256 | 1.66 | 9.669 | 0.208 | 1.46 | EM |
| H7RTXN | | 7.516 | -0.115 | -0.74 | 9.354 | -0.106 | -0.75 | LA |
| HY7QLR | | 7.882 | 0.252 | 1.64 | 9.746 | 0.285 | 2.00 | LA |
| KNFR77 | | 7.761 | 0.131 | 0.85 | 9.542 | 0.081 | 0.57 | TM |
| MBN22K | | 7.550 | -0.080 | -0.52 | 9.410 | -0.051 | -0.36 | TM |
| MZP8ZA | | 7.280 | -0.350 | -2.28 | 9.180 | -0.281 | -1.97 | LA |
| PPDTX7 | | 7.725 | 0.095 | 0.61 | 9.557 | 0.096 | 0.68 | XX |
| Q2QETC | | 7.558 | -0.072 | -0.47 | 9.416 | -0.045 | -0.31 | EM |
| RACVPR | | 7.780 | 0.150 | 0.97 | 9.580 | 0.119 | 0.84 | LA |
| RE8MXN | | 7.670 | 0.040 | 0.26 | 9.501 | 0.040 | 0.28 | TA |
| RYC79Q | | 7.735 | 0.105 | 0.68 | 9.548 | 0.087 | 0.61 | PP |
| RZRPTM | X | 8.307 | 0.677 | 4.40 | 9.945 | 0.484 | 3.40 | TM |
| UDCTK4 | | 7.766 | 0.136 | 0.88 | 9.562 | 0.101 | 0.71 | LA |
| V7H9KT | | 7.690 | 0.060 | 0.39 | 9.510 | 0.049 | 0.35 | TM |
| VA9CMZ | | 7.804 | 0.174 | 1.13 | 9.580 | 0.119 | 0.84 | EM |
| X9NE87 | | 7.690 | 0.060 | 0.39 | 9.490 | 0.029 | 0.21 | TM |
| YDWZV4 | | 7.732 | 0.102 | 0.66 | 9.524 | 0.063 | 0.44 | LW |
| YE4BGL | | 7.463 | -0.167 | -1.09 | 9.258 | -0.203 | -1.42 | TM |
| YGBUCZ | | 7.933 | 0.303 | 1.97 | 9.697 | 0.236 | 1.66 | XX |
| Z2BADJ | | 7.570 | -0.060 | -0.39 | 9.450 | -0.011 | -0.07 | TA |
| ZRU2WN | | 7.575 | -0.055 | -0.36 | 9.398 | -0.063 | -0.44 | LW |

Sample GY11

Summary Statistics

Sample GY12

Grand Means 7.6303 mils
SD Btwn Labs 0.1537 mils

9.4606 mils
0.1423 mils

Statistics based on 34 of 35 reporting participants

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

Comments on assigned Data Flags for Test #361

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

Instrument Code List as Reported by the Labs

(EM) - Emveco

(LA) - L & W Autoline

(LW) - L & W

(PP) - Technidyne Profile/Plus

(TA) - Thwing-Albert

(TM) - TMI

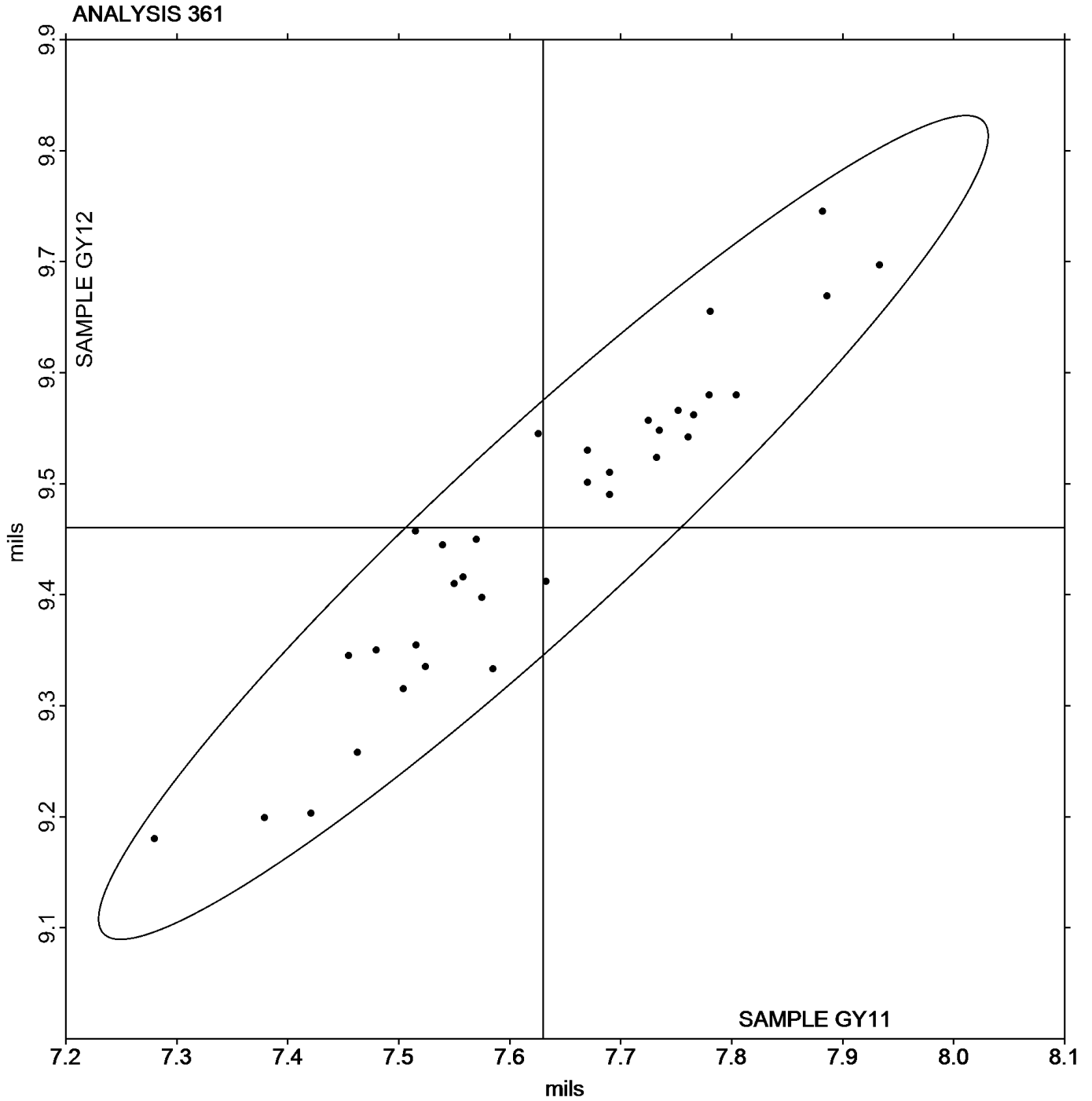
(XX) - Instrument make/model not specified by lab

Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample GY11 = 7.6303 mils

Grand Mean Sample GY12 = 9.4606 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

| WebCode | Data Flag | Sample GD11 | | | Sample GD12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2CRJB2 | | 0.6400 | 0.1060 | 1.28 | 0.6580 | 0.0815 | 1.14 | TL |
| 7GMZGQ | | 0.3542 | -0.1798 | -2.17 | 0.4388 | -0.1377 | -1.92 | XX |
| HGWH3K | | 0.5672 | 0.0332 | 0.40 | 0.5724 | -0.0041 | -0.06 | XX |
| HY7QLR | | 0.4738 | -0.0602 | -0.73 | 0.5224 | -0.0541 | -0.76 | TA |
| L9KRUX | | 0.4900 | -0.0440 | -0.53 | 0.5000 | -0.0765 | -1.07 | XX |
| PPDTX7 | | 0.5618 | 0.0278 | 0.33 | 0.6292 | 0.0527 | 0.73 | TM |
| T2ZZG4 | | 0.6590 | 0.1250 | 1.51 | 0.6328 | 0.0563 | 0.78 | TM |
| UTKC6U | | 0.4998 | -0.0342 | -0.41 | 0.5526 | -0.0239 | -0.33 | IT |
| VFEFLR | | 0.5664 | 0.0324 | 0.39 | 0.6786 | 0.1021 | 1.42 | TM |
| VG8QKV | | 0.5310 | -0.0030 | -0.04 | 0.5762 | -0.0003 | 0.00 | TA |
| WGZ8QN | | 0.5310 | -0.0030 | -0.04 | 0.5810 | 0.0045 | 0.06 | CH |

| Summary Statistics | | | | |
|---|-------------|-----|-------------|-----|
| | Sample GD11 | | Sample GD12 | |
| Grand Means | 0.53402 | COF | 0.57655 | COF |
| SD Btwn Labs | 0.08298 | COF | 0.07167 | COF |
| Statistics based on 11 of 11 reporting participants | | | | |

Instrument Code List as Reported by the Labs

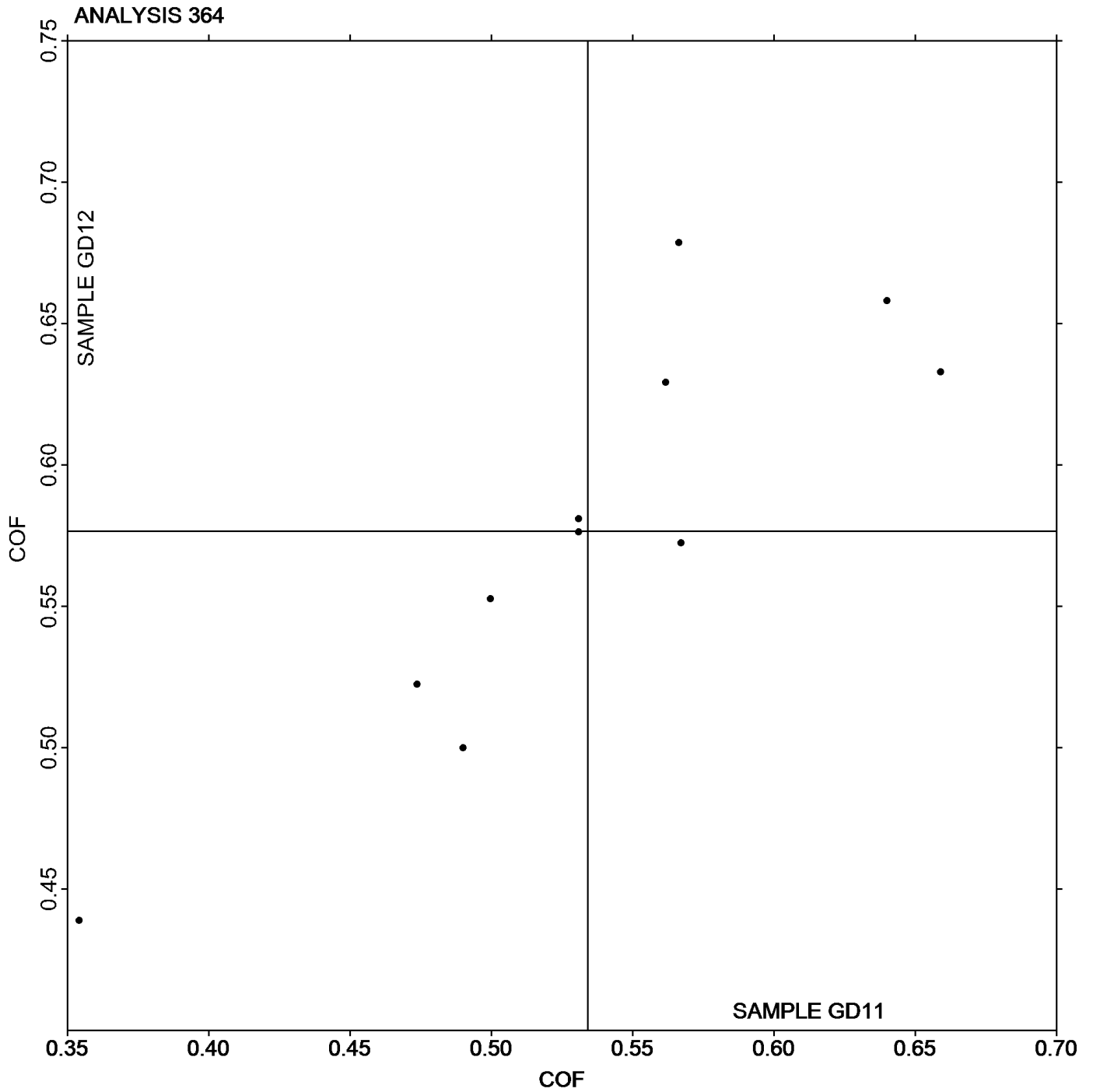
- (CH) - Cheminstruments AR-1000
- (IT) - IMASS SP-2100
- (TA) - Thwing-Albert Friction Tester
- (TL) - TMI 32-90 Lab Master/Slip and Friction
- (TM) - TMI 32-06 Monitor/Slip and Friction
- (XX) - Instrument make/model not specified by lab

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD11** = 0.53402 COF

Grand Mean Sample **GD12** = 0.57655 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 GD11 | | | Sample GD12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2CRJB2 | | 0.5340 | 0.1359 | 1.64 | 0.5460 | 0.0921 | 1.21 | TL |
| 3J9B78 | | 0.3578 | -0.0403 | -0.49 | 0.4686 | 0.0147 | 0.19 | TM |
| 7GMZGQ | | 0.2248 | -0.1733 | -2.09 | 0.2938 | -0.1601 | -2.10 | XX |
| HJHRZ6 | | 0.3698 | -0.0283 | -0.34 | 0.3938 | -0.0601 | -0.79 | TM |
| HY7QLR | | 0.4158 | 0.0177 | 0.21 | 0.4876 | 0.0337 | 0.44 | TA |
| K8H9PC | | 0.3566 | -0.0415 | -0.50 | 0.3908 | -0.0631 | -0.83 | TA |
| L9KRUX | | 0.4420 | 0.0439 | 0.53 | 0.4820 | 0.0281 | 0.37 | XX |
| PPDTX7 | | 0.4874 | 0.0893 | 1.08 | 0.5502 | 0.0963 | 1.26 | TM |
| PUF4BY | | 0.3788 | -0.0193 | -0.23 | 0.4052 | -0.0487 | -0.64 | TA |
| T2ZZG4 | | 0.4434 | 0.0453 | 0.55 | 0.4914 | 0.0375 | 0.49 | TM |
| UTKC6U | | 0.3540 | -0.0441 | -0.53 | 0.3882 | -0.0657 | -0.86 | IR |
| VFW28B | | 0.3110 | -0.0871 | -1.05 | 0.4256 | -0.0283 | -0.37 | TA |
| VG8QKV | | 0.3816 | -0.0165 | -0.20 | 0.4620 | 0.0081 | 0.11 | TA |
| WGZ8QN | | 0.5162 | 0.1181 | 1.43 | 0.5700 | 0.1161 | 1.52 | CH |

| Summary Statistics | | | |
|---|-------------|-----|-------------|
| | Sample GD11 | | Sample GD12 |
| Grand Means | 0.39809 | COF | 0.45394 |
| SD Btwn Labs | 0.08276 | COF | 0.07624 |
| Statistics based on 14 of 14 reporting participants | | | |

Instrument Code List as Reported by the Labs

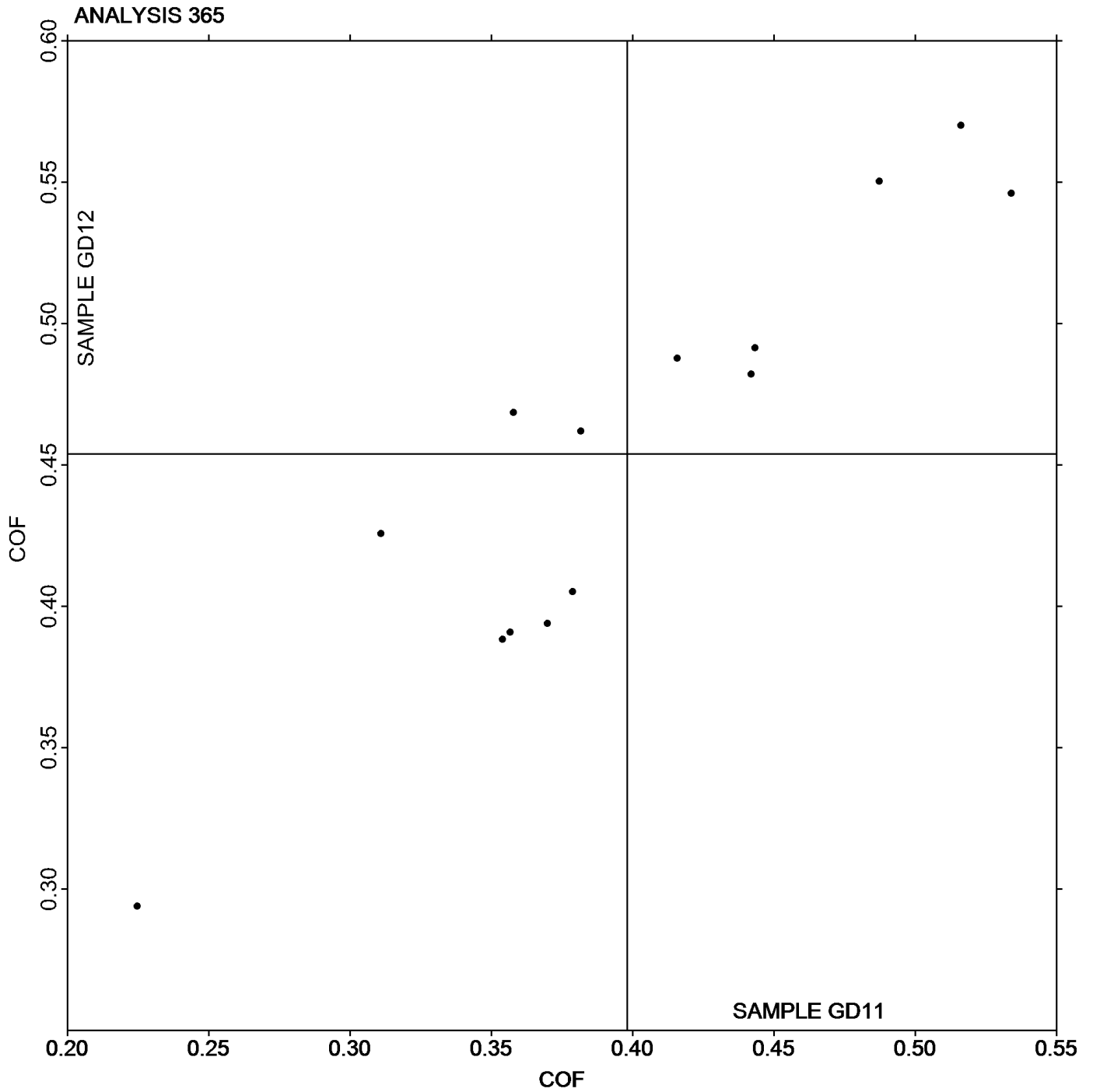
- | | |
|--|---|
| (CH) - Cheminstruments AR-1000 | (IR) - IMASS SP-2000 |
| (TA) - Thwing-Albert Friction Tester | (TL) - TMI 32-90 Lab Master/Slip and Friction |
| (TM) - TMI 32-06 Monitor/Slip and Friction | (XX) - Instrument make/model not specified by lab |

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD11** = 0.39809 COF

Grand Mean Sample **GD12** = 0.45394 COF



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 370

Air Resistance - Gurley Oil Type

| WebCode | Data Flag | Sample GE11 | | | Sample GE12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2CRJB2 | | 10.76 | -0.87 | -1.12 | 12.73 | 0.14 | 0.22 | LP |
| 6VNAMK | | 12.30 | 0.67 | 0.86 | 12.98 | 0.39 | 0.62 | TN |
| 7GMZGQ | | 11.30 | -0.33 | -0.42 | 12.30 | -0.29 | -0.46 | GS |
| 7KLCEB | | 11.00 | -0.63 | -0.81 | 12.27 | -0.32 | -0.50 | PP |
| 9FME3P | * | 9.91 | -1.72 | -2.20 | 10.71 | -1.88 | -2.97 | TL |
| 9M8A2D | | 11.04 | -0.59 | -0.75 | 13.11 | 0.52 | 0.82 | HG |
| AAEDGL | | 11.59 | -0.04 | -0.05 | 11.32 | -1.27 | -2.01 | RE |
| AN2P4G | | 12.49 | 0.86 | 1.10 | 12.98 | 0.39 | 0.62 | LA |
| AT8E9H | | 10.73 | -0.90 | -1.15 | 12.39 | -0.20 | -0.32 | TN |
| CHLVZV | | 12.26 | 0.63 | 0.81 | 13.41 | 0.82 | 1.30 | GA |
| D8WNLX | | 12.08 | 0.45 | 0.58 | 12.24 | -0.35 | -0.55 | GA |
| DBZRGC | | 11.19 | -0.44 | -0.56 | 12.59 | 0.00 | 0.00 | LW |
| DQPNBA | | 11.85 | 0.22 | 0.28 | 12.40 | -0.19 | -0.30 | HG |
| E3K2HL | | 11.65 | 0.02 | 0.03 | 13.12 | 0.53 | 0.84 | HG |
| FYFRQG | X | 16.24 | 4.61 | 5.91 | 17.50 | 4.91 | 7.76 | LA |
| GH9V8G | | 10.83 | -0.80 | -1.02 | 11.89 | -0.70 | -1.11 | XX |
| GVANDK | | 12.11 | 0.48 | 0.61 | 13.13 | 0.54 | 0.85 | PP |
| HY7QLR | | 12.92 | 1.29 | 1.65 | 13.39 | 0.80 | 1.26 | LA |
| L9KRUX | | 12.09 | 0.46 | 0.59 | 13.26 | 0.67 | 1.06 | XX |
| MBN22K | | 11.02 | -0.61 | -0.78 | 13.08 | 0.49 | 0.78 | TL |
| MWN3C3 | | 11.40 | -0.23 | -0.29 | 12.52 | -0.07 | -0.11 | LP |
| MZP8ZA | | 13.10 | 1.47 | 1.89 | 12.90 | 0.31 | 0.49 | LA |
| PMW6W8 | | 11.21 | -0.42 | -0.54 | 11.36 | -1.23 | -1.94 | LP |
| Q2QETC | | 13.04 | 1.41 | 1.81 | 13.03 | 0.44 | 0.70 | PP |
| Q8EYXD | | 10.16 | -1.47 | -1.88 | 11.81 | -0.78 | -1.23 | XX |
| QLAC2M | | 11.96 | 0.33 | 0.42 | 12.91 | 0.32 | 0.51 | PP |
| QNGWN3 | | 12.10 | 0.47 | 0.60 | 12.87 | 0.28 | 0.44 | GS |
| RYC79Q | | 12.28 | 0.65 | 0.83 | 13.81 | 1.22 | 1.92 | PP |
| UHGKfV | | 12.08 | 0.45 | 0.58 | 12.65 | 0.06 | 0.10 | LP |
| V6NK6J | | 13.26 | 1.63 | 2.09 | 12.64 | 0.05 | 0.08 | WG |
| VE2FF6 | | 11.51 | -0.12 | -0.15 | 12.12 | -0.47 | -0.74 | LP |
| VFEFLR | | 10.95 | -0.68 | -0.88 | 12.61 | 0.02 | 0.03 | PP |
| VG8QKV | | 12.24 | 0.61 | 0.78 | 12.68 | 0.09 | 0.14 | WG |
| WZD4QT | | 12.23 | 0.60 | 0.77 | 13.25 | 0.66 | 1.04 | XX |
| X9NE87 | | 11.33 | -0.30 | -0.38 | 12.83 | 0.24 | 0.38 | GA |
| XLLMUL | | 10.83 | -0.79 | -1.02 | 11.81 | -0.78 | -1.23 | LP |
| XYD9YW | | 11.22 | -0.41 | -0.52 | 11.68 | -0.91 | -1.44 | LW |
| Y23J73 | | 11.20 | -0.43 | -0.55 | 12.50 | -0.09 | -0.14 | LW |
| YDWZV4 | | 10.57 | -1.06 | -1.36 | 12.38 | -0.21 | -0.33 | LW |
| YGBUCZ | | 11.24 | -0.39 | -0.50 | 12.70 | 0.11 | 0.17 | LW |
| YYDAW2 | | 11.87 | 0.24 | 0.31 | 12.52 | -0.07 | -0.11 | LP |
| ZRU2WN | | 11.90 | 0.27 | 0.35 | 13.30 | 0.71 | 1.12 | TL |

Analysis 370

Air Resistance - Gurley Oil Type

| | Sample GE11 | Summary Statistics | Sample GE12 |
|---|-------------------|--------------------|-------------------|
| Grand Means | 11.629 sec/100 cc | | 12.590 sec/100 cc |
| SD Btwn Labs | 0.780 sec/100 cc | | 0.633 sec/100 cc |
| Statistics based on 41 of 42 reporting participants | | | |

Comments on assigned Data Flags for Test #370

FYFRQG (X) - Extreme data.

Instrument Code List as Reported by the Labs

(GA) - Gurley Precision #4340 Automatic Densometer

(GS) - Gurley-Hill S-P-S Tester #4190

(HG) - Technidyne - Hagerty Model #1

(LA) - L & W Autoline

(LP) - L & W Densometer, Air Permeance

(LW) - L & W Type Gurley Densometer, Oil Flotation

(PP) - Technidyne Profile/Plus

(RE) - Regmed Gurley Densometer PGH-T

(TL) - Gurley Densometer #4110, Oil Flotation

(TN) - Gurley S-P-S Tester #4190

(WG) - W & LE Gurley Tester

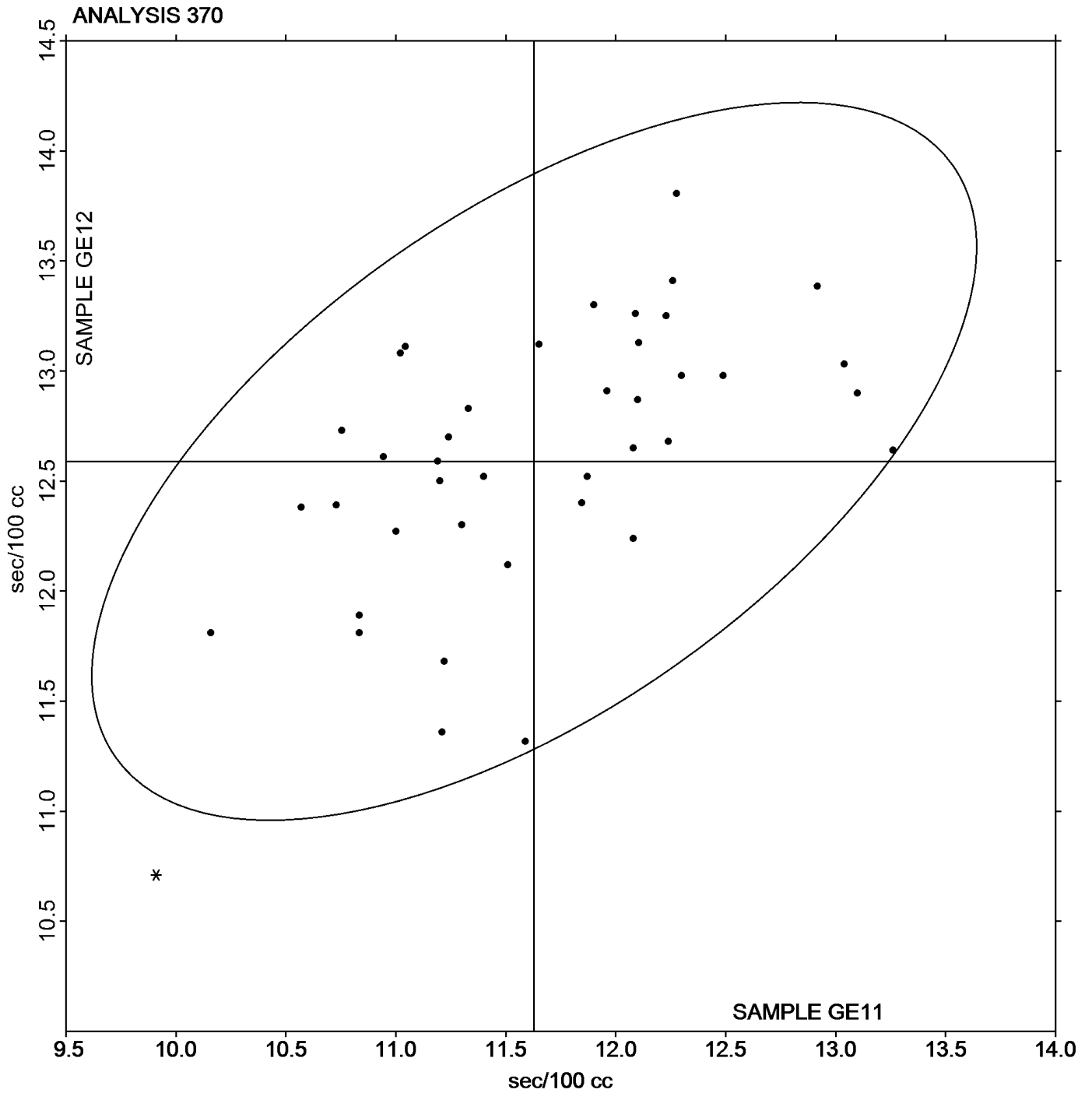
(XX) - Instrument make/model not specified by lab

Analysis 370

Air Resistance - Gurley Oil Type

Grand Mean Sample **GE11** = 11.629 sec/100 cc

Grand Mean Sample **GE12** = 12.590 sec/100 cc



**Paper & Paperboard Interlaboratory Testing Program
Analysis 372**

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

| WebCode | Data Flag | Sample GE11 | | | Sample GE12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|--------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 7GMZGQ | | 182.7 | -35.0 | -2.31 | 179.3 | -20.9 | -2.26 | SH |
| 9M8A2D | | 207.7 | -10.0 | -0.66 | 200.4 | 0.2 | 0.02 | TT |
| DX9TGG | | 226.9 | 9.2 | 0.61 | 207.0 | 6.8 | 0.74 | HM |
| E3K2HL | X | 161.5 | -56.2 | -3.71 | 88.6 | -111.6 | -12.10 | HM |
| ELVVAR | | 209.7 | -8.0 | -0.53 | 188.3 | -11.9 | -1.29 | LP |
| EQTECQ | | 220.0 | 2.3 | 0.15 | 204.9 | 4.7 | 0.51 | PP |
| FGWUCH | | 206.5 | -11.2 | -0.74 | 201.5 | 1.3 | 0.14 | TT |
| FNZDW8 | | 234.2 | 16.5 | 1.09 | 203.8 | 3.6 | 0.39 | XX |
| GHZAZZ | | 221.3 | 3.6 | 0.24 | 209.3 | 9.1 | 0.99 | TT |
| KFAQ4K | | 219.9 | 2.2 | 0.15 | 210.7 | 10.5 | 1.14 | SH |
| M7QKM7 | | 220.1 | 2.4 | 0.16 | 188.5 | -11.7 | -1.27 | LP |
| Q2QETC | | 210.0 | -7.7 | -0.51 | 202.0 | 1.8 | 0.20 | SH |
| Q6B74E | | 221.6 | 3.9 | 0.26 | 197.3 | -2.8 | -0.31 | GA |
| TM4N8E | | 249.5 | 31.8 | 2.10 | 210.3 | 10.1 | 1.10 | TT |
| X9NE87 | | 217.3 | -0.4 | -0.02 | 199.1 | -1.1 | -0.12 | GA |
| ZLK7XF | X | 296.3 | 78.6 | 5.19 | 250.1 | 49.9 | 5.41 | VM |

Summary Statistics

Sample GE11

Sample GE12

Grand Means 217.67 Sheffield Units
SD Btwn Labs 15.16 Sheffield Units

200.17 Sheffield Units
9.22 Sheffield Units

Statistics based on 14 of 16 reporting participants

Comments on assigned Data Flags for Test #372

E3K2HL (X) - Extreme data.

ZLK7XF (X) - Data for both samples are high.

Instrument Code List as Reported by the Labs

(GA) - Gurley Precision #4340 Automatic Densometer

(HM) - Technidyne - Hagerty Model #538

(LP) - L & W Densometer, Air Permeance

(PP) - Technidyne Profile/Plus

(SH) - Sheffield

(TT) - TMI Monitor/Smoothness II, Model 58-24

(VM) - Valmet PaperLab (was Kajaani/Robotest)

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

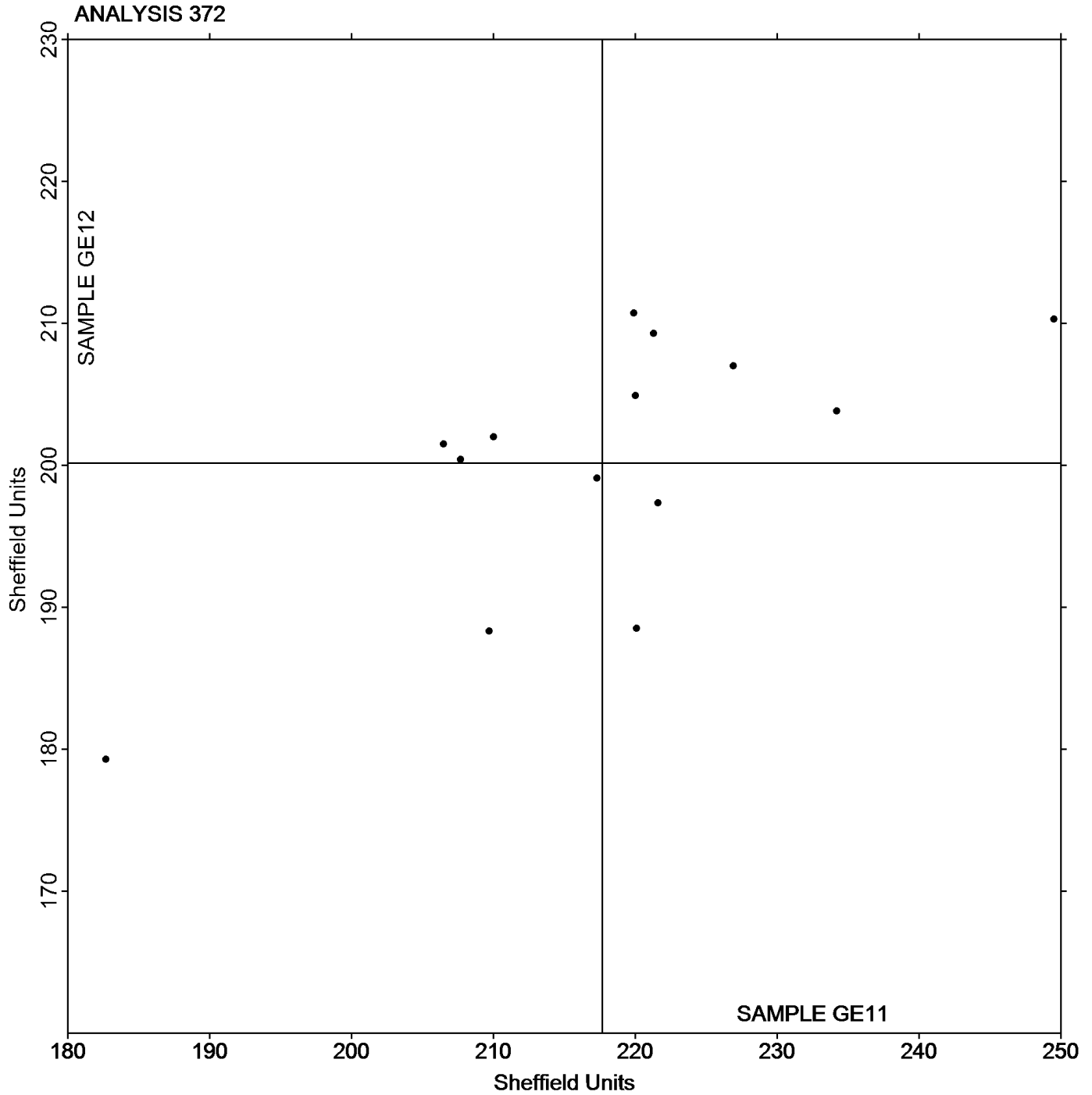
Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

Grand Mean Sample **GE11** = 217.67 Sheffield Units

Grand Mean Sample **GE12** = 200.17 Sheffield Units



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

| WebCode | Data Flag | Sample GJ11 | | | Sample GJ12 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 44P68D | X | 1.5240 | 0.6106 | 5.59 | 1.1780 | 0.4253 | 4.99 |
| 646TFK | | 0.8300 | -0.0834 | -0.76 | 0.7060 | -0.0467 | -0.55 |
| 77RQ63 | | 0.8440 | -0.0694 | -0.64 | 0.6920 | -0.0607 | -0.71 |
| 7BJU2M | | 0.9490 | 0.0356 | 0.33 | 0.8780 | 0.1253 | 1.47 |
| 7KLCEB | | 0.9960 | 0.0826 | 0.76 | 0.7220 | -0.0307 | -0.36 |
| 9M8A2D | | 0.9990 | 0.0856 | 0.78 | 0.7900 | 0.0373 | 0.44 |
| 9PUCN8 | | 0.9230 | 0.0096 | 0.09 | 0.7620 | 0.0093 | 0.11 |
| ATTWMP | | 0.9000 | -0.0134 | -0.12 | 0.7830 | 0.0303 | 0.36 |
| BEH2AD | | 0.8110 | -0.1024 | -0.94 | 0.7120 | -0.0407 | -0.48 |
| BXJMB8 | | 0.9060 | -0.0074 | -0.07 | 0.7750 | 0.0223 | 0.26 |
| E6PTCK | | 1.0180 | 0.1046 | 0.96 | 0.6760 | -0.0767 | -0.90 |
| EHB4XP | | 0.9815 | 0.0681 | 0.62 | 0.9280 | 0.1753 | 2.06 |
| H6JFJ9 | | 0.7960 | -0.1174 | -1.08 | 0.7050 | -0.0477 | -0.56 |
| H7RTXN | | 0.8410 | -0.0724 | -0.66 | 0.7230 | -0.0297 | -0.35 |
| HBHYMY | * | 1.0850 | 0.1716 | 1.57 | 0.9910 | 0.2383 | 2.80 |
| K8H9PC | | 1.0300 | 0.1166 | 1.07 | 0.8180 | 0.0653 | 0.77 |
| KCPXUD | | 0.9070 | -0.0064 | -0.06 | 0.7870 | 0.0343 | 0.40 |
| L9KRUX | | 0.8230 | -0.0904 | -0.83 | 0.6860 | -0.0667 | -0.78 |
| Q2QETC | | 1.0260 | 0.1126 | 1.03 | 0.7610 | 0.0083 | 0.10 |
| QLAC2M | | 0.7380 | -0.1754 | -1.61 | 0.6460 | -0.1067 | -1.25 |
| RACVPR | | 0.9100 | -0.0034 | -0.03 | 0.8300 | 0.0773 | 0.91 |
| RKW6CZ | | 1.0220 | 0.1086 | 0.99 | 0.7600 | 0.0073 | 0.09 |
| RYC79Q | | 0.8430 | -0.0704 | -0.64 | 0.6730 | -0.0797 | -0.94 |
| UDCTK4 | | 0.8810 | -0.0324 | -0.30 | 0.7060 | -0.0467 | -0.55 |
| UTY4ZR | * | 1.2460 | 0.3326 | 3.04 | 0.8750 | 0.1223 | 1.44 |
| VA9CMZ | | 0.7800 | -0.1334 | -1.22 | 0.6640 | -0.0887 | -1.04 |
| VFW28B | | 0.8820 | -0.0314 | -0.29 | 0.7090 | -0.0437 | -0.51 |
| VG8QKV | | 0.7970 | -0.1164 | -1.07 | 0.6300 | -0.1227 | -1.44 |
| YYDAW2 | | 0.8830 | -0.0304 | -0.28 | 0.7490 | -0.0037 | -0.04 |
| Z8NVJA | | 0.8420 | -0.0714 | -0.65 | 0.6920 | -0.0607 | -0.71 |

| Sample GJ11 | | Summary Statistics | Sample GJ12 | |
|---|-----------------|--------------------|-----------------|--|
| Grand Means | 0.91343 Microns | | 0.75272 Microns | |
| SD Btwn Labs | 0.10923 Microns | | 0.08515 Microns | |
| Statistics based on 29 of 30 reporting participants | | | | |

Comments on assigned Data Flags for Test #376

44P68D (X) - Data for both samples are high. Inconsistent within the determinations for Sample GJ12.

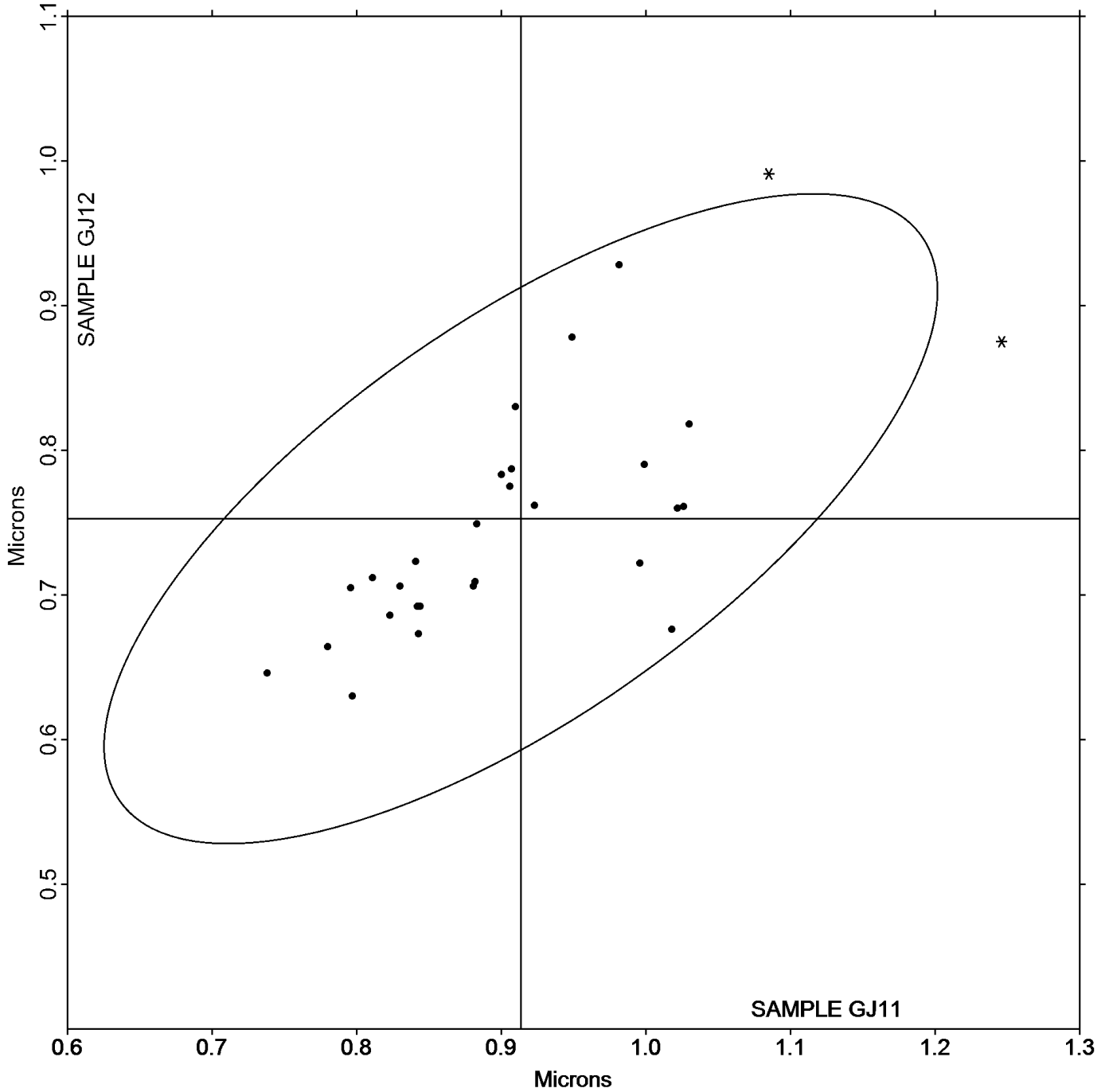
Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample GJ11 = 0.91343 Microns

Grand Mean Sample GJ12 = 0.75272 Microns

ANALYSIS 376



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

| WebCode | Data Flag | Sample GK11 | | | Sample GK12 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CRJB2 | | 0.9140 | -0.0276 | -0.15 | 1.493 | 0.482 | 1.84 |
| AN2P4G | | 0.8140 | -0.1276 | -0.67 | 0.788 | -0.223 | -0.85 |
| HGWH3K | X | 3.6530 | 2.7114 | 14.28 | 4.037 | 3.026 | 11.56 |
| UTY4ZR | | 1.0000 | 0.0584 | 0.31 | 0.949 | -0.062 | -0.24 |
| VFEFLR | | 0.8940 | -0.0476 | -0.25 | 0.885 | -0.126 | -0.48 |
| VG8QKV | | 0.7200 | -0.2216 | -1.17 | 0.754 | -0.257 | -0.98 |
| YE4BGL | | 1.1100 | 0.1684 | 0.89 | 1.120 | 0.109 | 0.42 |
| ZLK7XF | | 1.2980 | 0.3564 | 1.88 | 1.270 | 0.259 | 0.99 |
| ZRU2WN | | 0.7830 | -0.1586 | -0.84 | 0.831 | -0.180 | -0.69 |

| Summary Statistics | | | |
|---|-----------------|--|----------------|
| | Sample GK11 | | Sample GK12 |
| Grand Means | 0.94163 Microns | | 1.0113 Microns |
| SD Btwn Labs | 0.18987 Microns | | 0.2616 Microns |
| Statistics based on 8 of 9 reporting participants | | | |

Comments on assigned Data Flags for Test #377

HGWH3K (X) - Extreme data.

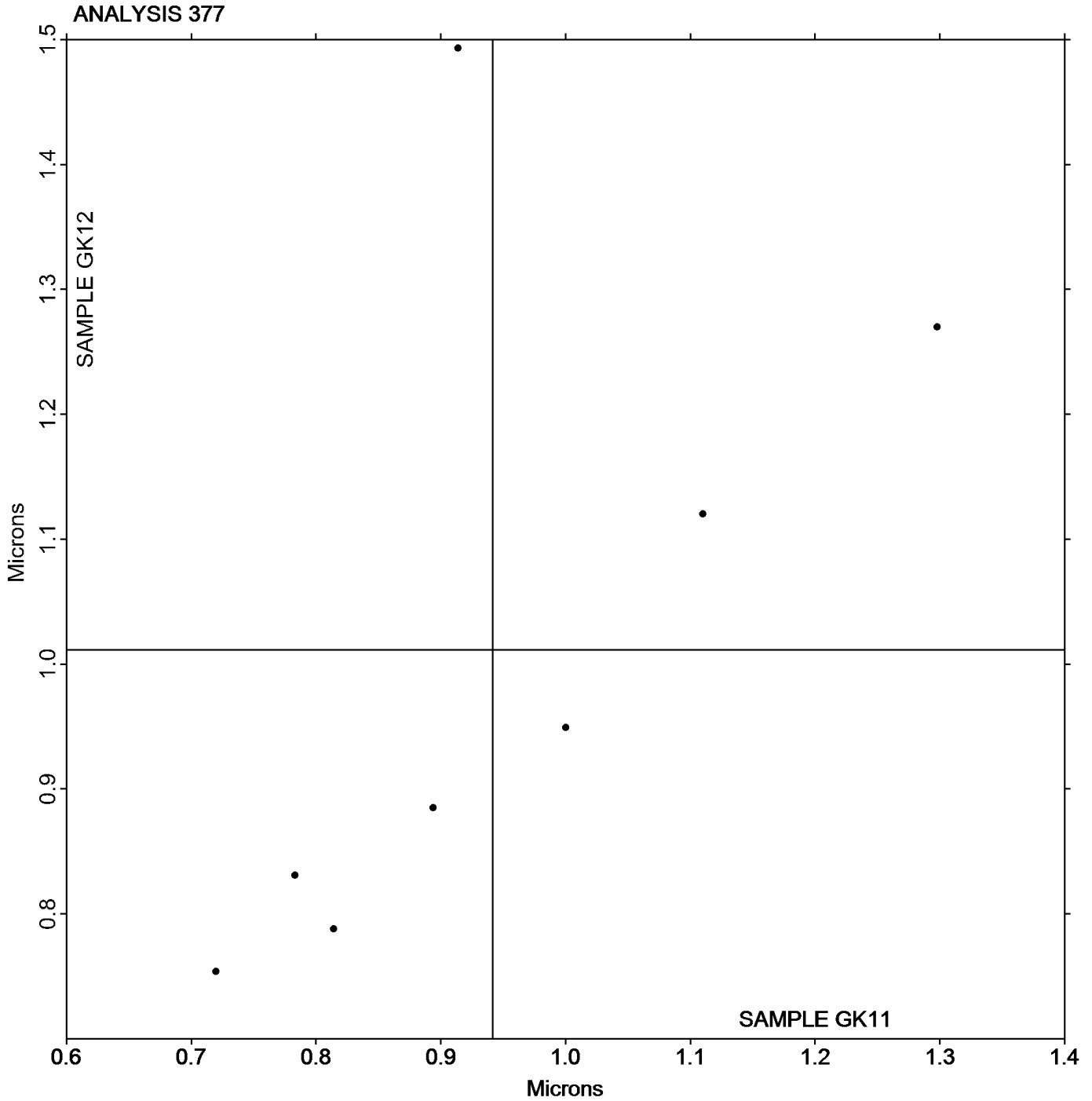
Paper & Paperboard Interlaboratory Testing Program

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK11** = 0.94163 Microns

Grand Mean Sample **GK12** = 1.0113 Microns



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

| WebCode | Data Flag | Sample GL11 | | | Sample GL12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2CRJB2 | | 165.6 | 4.0 | 0.47 | 95.70 | 3.45 | 0.43 | LW |
| 2D3FL8 | | 161.3 | -0.3 | -0.04 | 85.70 | -6.55 | -0.82 | PP |
| 3J9B78 | | 170.3 | 8.7 | 1.04 | 98.30 | 6.05 | 0.76 | TS |
| 646TFK | X | 313.7 | 152.1 | 18.21 | 92.77 | 0.52 | 0.07 | PP |
| 7GMZGQ | X | 171.9 | 10.3 | 1.23 | 126.60 | 34.35 | 4.32 | XX |
| 7KLCEB | | 159.3 | -2.3 | -0.28 | 81.74 | -10.51 | -1.32 | PP |
| 8BDYVL | | 165.2 | 3.6 | 0.43 | 87.51 | -4.73 | -0.60 | PP |
| 9FME3P | | 158.7 | -3.0 | -0.35 | 90.82 | -1.43 | -0.18 | VM |
| 9M8A2D | | 168.7 | 7.1 | 0.85 | 100.60 | 8.35 | 1.05 | SH |
| 9PUCN8 | | 165.9 | 4.3 | 0.51 | 84.30 | -7.95 | -1.00 | HM |
| AEREFX | X | 124.3 | -37.3 | -4.47 | 81.00 | -11.25 | -1.42 | TS |
| AN2P4G | | 176.1 | 14.5 | 1.73 | 94.60 | 2.35 | 0.30 | LA |
| ANBTGF | | 171.1 | 9.5 | 1.13 | 105.30 | 13.05 | 1.64 | GL |
| AT8E9H | | 158.6 | -3.0 | -0.36 | 93.00 | 0.75 | 0.09 | TS |
| AT8GXM | * | 176.5 | 14.9 | 1.78 | 114.00 | 21.75 | 2.74 | TS |
| ATTWMP | | 148.3 | -13.4 | -1.60 | 82.14 | -10.11 | -1.27 | PP |
| AYWWQZ | | 154.4 | -7.2 | -0.87 | 91.00 | -1.25 | -0.16 | LA |
| B2KRYE | | 164.4 | 2.7 | 0.33 | 107.10 | 14.85 | 1.87 | GA |
| BXJMB8 | | 172.9 | 11.3 | 1.35 | 99.60 | 7.35 | 0.93 | TT |
| DQPNBA | | 164.3 | 2.7 | 0.32 | 88.10 | -4.15 | -0.52 | HM |
| DX9TGG | | 169.7 | 8.1 | 0.97 | 92.00 | -0.25 | -0.03 | HM |
| E2TFZ9 | | 151.6 | -10.0 | -1.20 | 96.50 | 4.25 | 0.54 | SH |
| E3K2HL | X | 217.5 | 55.9 | 6.69 | 214.80 | 122.55 | 15.43 | HM |
| EQTECQ | | 166.6 | 5.0 | 0.59 | 88.00 | -4.25 | -0.53 | PP |
| FGWUCH | | 162.5 | 0.9 | 0.10 | 98.00 | 5.75 | 0.72 | TT |
| FNZDW8 | | 161.4 | -0.2 | -0.03 | 83.80 | -8.45 | -1.06 | HM |
| FYFRQG | | 155.9 | -5.7 | -0.69 | 81.51 | -10.74 | -1.35 | LA |
| GHZAZZ | | 146.6 | -15.0 | -1.80 | 90.60 | -1.65 | -0.21 | TT |
| GVANDK | | 177.5 | 15.9 | 1.90 | 91.57 | -0.67 | -0.08 | PP |
| H6JFJ9 | * | 185.1 | 23.5 | 2.81 | 101.93 | 9.68 | 1.22 | PP |
| HGWH3K | | 161.0 | -0.6 | -0.08 | 88.20 | -4.05 | -0.51 | HM |
| K8H9PC | | 159.5 | -2.1 | -0.26 | 88.20 | -4.05 | -0.51 | HM |
| KFAQ4K | | 152.6 | -9.0 | -1.08 | 87.20 | -5.05 | -0.64 | SH |
| KNFR77 | | 158.4 | -3.2 | -0.39 | 89.70 | -2.55 | -0.32 | PP |
| L3AVPN | | 157.7 | -3.9 | -0.47 | 86.40 | -5.85 | -0.74 | XX |
| M7QKM7 | | 164.3 | 2.7 | 0.32 | 87.70 | -4.55 | -0.57 | PP |
| Q2QETC | | 162.5 | 0.9 | 0.10 | 80.20 | -12.05 | -1.52 | PP |
| Q6B74E | | 148.3 | -13.4 | -1.60 | 94.84 | 2.59 | 0.33 | GA |
| Q8EYXD | | 161.8 | 0.2 | 0.02 | 96.30 | 4.05 | 0.51 | PP |
| QLAC2M | | 156.5 | -5.1 | -0.62 | 87.10 | -5.15 | -0.65 | HM |
| QNGWN3 | | 155.5 | -6.1 | -0.74 | 92.50 | 0.25 | 0.03 | SH |
| RACVPR | | 153.1 | -8.5 | -1.02 | 84.67 | -7.58 | -0.95 | LA |
| RYC79Q | | 147.5 | -14.1 | -1.69 | 81.00 | -11.25 | -1.42 | PP |

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

| WebCode | Data Flag | Sample GL11 | | | Sample GL12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| RZRPTM | X | 186.8 | 25.2 | 3.01 | 134.90 | 42.65 | 5.37 | TT |
| T2ZZG4 | | 162.2 | 0.5 | 0.06 | 87.90 | -4.35 | -0.55 | PP |
| UDCTK4 | | 164.3 | 2.7 | 0.32 | 89.60 | -2.65 | -0.33 | LA |
| V6NK6J | | 167.4 | 5.8 | 0.69 | 100.50 | 8.25 | 1.04 | PG |
| VA9CMZ | | 158.2 | -3.4 | -0.41 | 88.30 | -3.95 | -0.50 | LA |
| VE2FF6 | | 151.0 | -10.6 | -1.27 | 87.30 | -4.95 | -0.62 | LW |
| VFEFLR | | 159.6 | -2.1 | -0.25 | 90.10 | -2.15 | -0.27 | PP |
| VFW28B | | 167.5 | 5.9 | 0.70 | 94.80 | 2.55 | 0.32 | HM |
| X8P9UT | | 166.7 | 5.1 | 0.61 | 84.60 | -7.65 | -0.96 | GA |
| X9NE87 | | 155.7 | -5.9 | -0.71 | 88.50 | -3.75 | -0.47 | HM |
| XU24MV | | 173.5 | 11.9 | 1.42 | 108.60 | 16.35 | 2.06 | TS |
| XYD9YW | | 156.5 | -5.1 | -0.62 | 105.50 | 13.25 | 1.67 | TS |
| Y23J73 | | 151.8 | -9.8 | -1.18 | 98.10 | 5.85 | 0.74 | SH |
| Y4J2TR | | 157.4 | -4.3 | -0.51 | 98.69 | 6.44 | 0.81 | PP |
| YYDAW2 | | 148.2 | -13.4 | -1.61 | 98.80 | 6.55 | 0.82 | TS |
| ZFD3KL | | 169.0 | 7.4 | 0.88 | 106.10 | 13.85 | 1.74 | TT |
| ZRU2WN | | 163.9 | 2.3 | 0.27 | 78.79 | -13.46 | -1.69 | PP |

| Sample GL11 | | Summary Statistics | | Sample GL12 | |
|---|------------------|--------------------|--|------------------|--|
| Grand Means | 161.64 Sheffield | | | 92.247 Sheffield | |
| SD Btwn Labs | 8.35 Sheffield | | | 7.944 Sheffield | |
| Statistics based on 55 of 60 reporting participants | | | | | |

Comments on assigned Data Flags for Test #378

- 646TFK (X) - Extreme data.
- 7GMZGQ (X) - Data for Sample GL12 are high.
- AEREFX (X) - Data for Sample GL11 are low.
- E3K2HL (X) - Extreme data.
- RZRPTM (X) - Data for both samples are high.

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 | (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 |

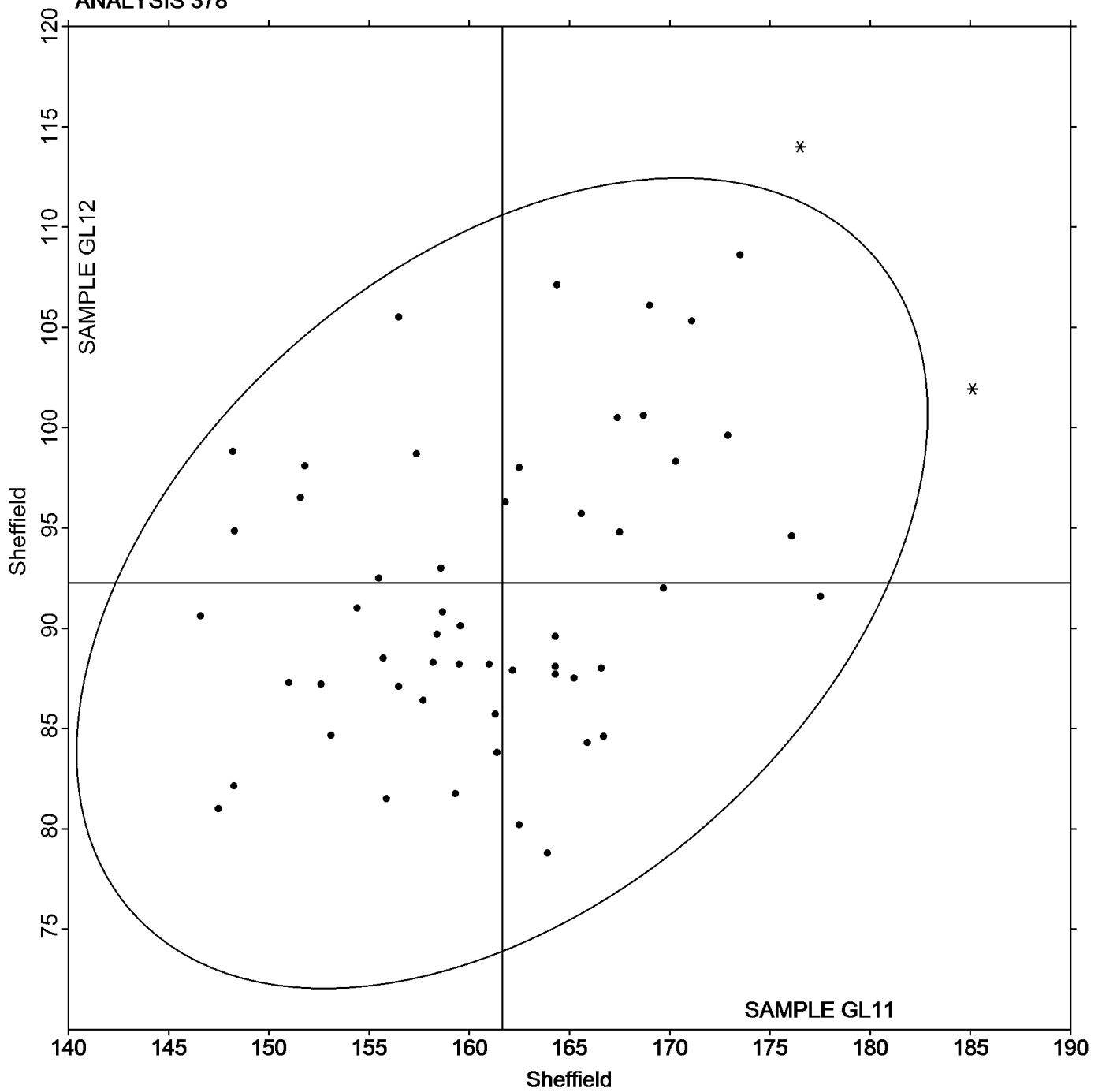
Analysis 378

Roughness - Sheffield Type

Grand Mean Sample GL11 = 161.64 Sheffield

Grand Mean Sample GL12 = 92.247 Sheffield

ANALYSIS 378



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

| WebCode | Data Flag | Sample GM11 | | | Sample GM12 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| AAEDGL | | 4.663 | -0.340 | -0.94 | 4.594 | -0.226 | -0.66 |
| HGWH3K | | 4.940 | -0.063 | -0.18 | 4.510 | -0.309 | -0.91 |
| KCPXUD | | 4.768 | -0.236 | -0.65 | 4.610 | -0.209 | -0.61 |
| KNFR77 | | 5.122 | 0.119 | 0.33 | 5.312 | 0.493 | 1.45 |
| M6ENH2 | | 5.710 | 0.707 | 1.96 | 5.140 | 0.321 | 0.94 |
| MWN3C3 | | 4.576 | -0.427 | -1.19 | 4.455 | -0.364 | -1.07 |
| R9GBYL | | 5.058 | 0.055 | 0.15 | 4.743 | -0.076 | -0.22 |
| RZRPTM | | 5.190 | 0.187 | 0.52 | 5.190 | 0.371 | 1.09 |
| YE4BGL | X | 2.287 | -2.716 | -7.54 | 5.190 | 0.371 | 1.09 |

| Summary Statistics | | | |
|---|-------------|---------|-------------|
| | Sample GM11 | | Sample GM12 |
| Grand Means | 5.0033 | Percent | 4.8192 |
| SD Btwn Labs | 0.3604 | Percent | 0.3406 |
| Statistics based on 8 of 9 reporting participants | | | |

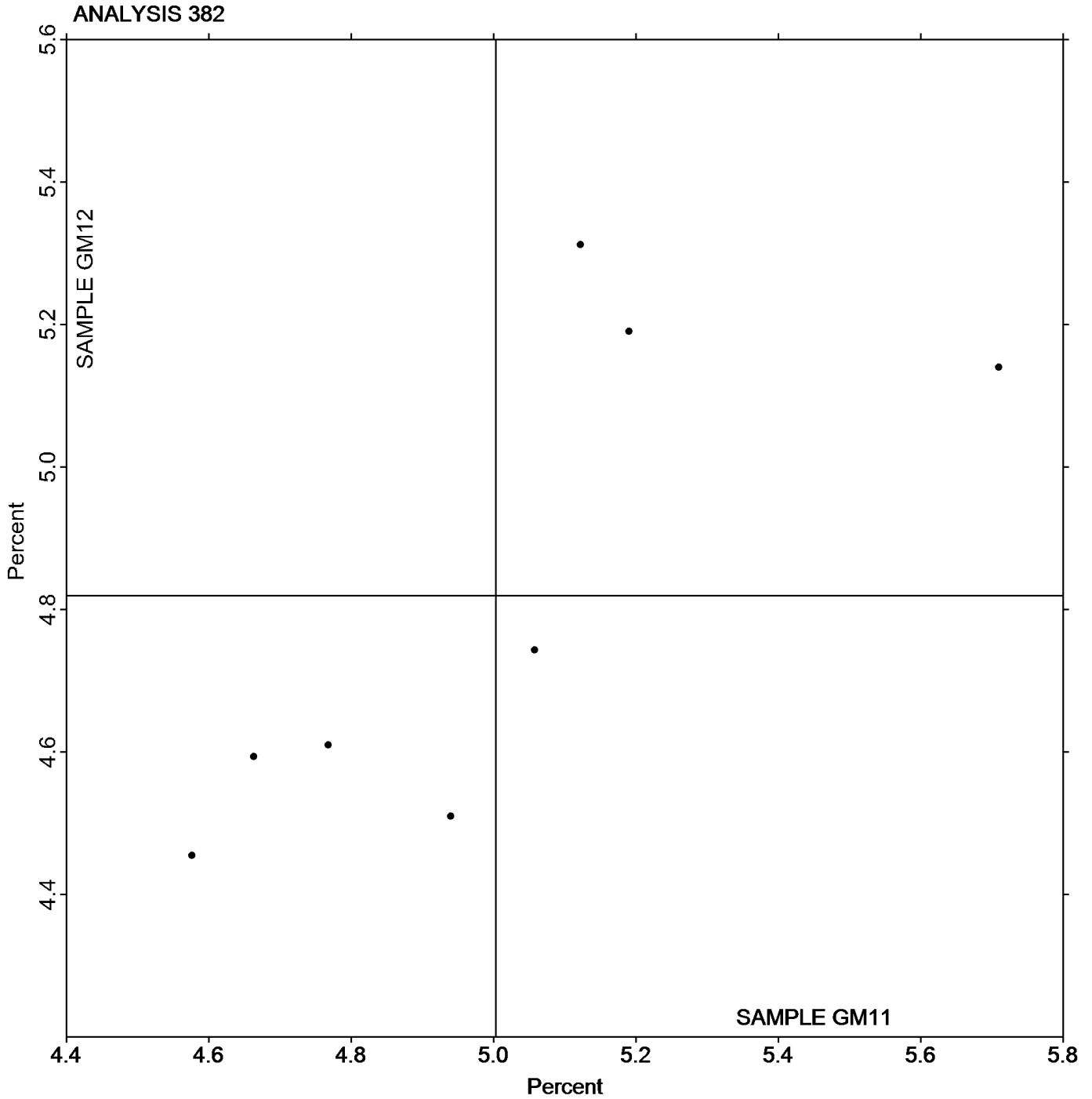
Comments on assigned Data Flags for Test #382

YE4BGL (X) - Extreme data for Sample GM11.

Analysis 382
Moisture in Paper

Grand Mean Sample **GM11** = 5.0033 Percent

Grand Mean Sample **GM12** = 4.8192 Percent



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

| WebCode | Data Flag | Sample GN11 | | | Sample GN12 | | |
|---------|-----------|-------------|----------------------|--------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2D3FL8 | | 86.96 | 0.19 | 0.39 | 93.27 | -0.17 | -0.66 |
| 77RQ63 | | 87.23 | 0.46 | 0.95 | 93.44 | 0.00 | -0.01 |
| 7GMZGQ | X | 81.39 | -5.38 | -11.01 | 92.16 | -1.28 | -4.87 |
| 9FME3P | * | 87.58 | 0.81 | 1.67 | 93.07 | -0.37 | -1.41 |
| 9M8A2D | | 86.90 | 0.13 | 0.27 | 93.64 | 0.20 | 0.75 |
| AN2P4G | * | 85.71 | -1.06 | -2.17 | 92.69 | -0.75 | -2.86 |
| ANBTGF | | 86.78 | 0.01 | 0.03 | 93.25 | -0.19 | -0.73 |
| AT8E9H | | 86.51 | -0.26 | -0.53 | 93.56 | 0.12 | 0.44 |
| E2TFZ9 | | 86.36 | -0.41 | -0.83 | 93.61 | 0.17 | 0.63 |
| E3K2HL | | 86.86 | 0.09 | 0.18 | 93.36 | -0.08 | -0.30 |
| EHB4XP | | 86.81 | 0.04 | 0.09 | 93.12 | -0.32 | -1.23 |
| EZFD6G | | 86.82 | 0.05 | 0.11 | 93.44 | 0.00 | -0.01 |
| FGWUCH | X | 90.81 | 4.04 | 8.28 | 95.67 | 2.23 | 8.45 |
| FNZDW8 | | 86.76 | -0.01 | -0.02 | 93.27 | -0.17 | -0.66 |
| FYFRQG | | 86.75 | -0.02 | -0.05 | 93.29 | -0.16 | -0.59 |
| GH9V8G | | 86.98 | 0.21 | 0.43 | 93.70 | 0.26 | 0.97 |
| GHZAZZ | | 87.66 | 0.89 | 1.83 | 93.97 | 0.53 | 2.00 |
| GVANDK | | 86.89 | 0.12 | 0.25 | 93.52 | 0.08 | 0.29 |
| HGWH3K | | 86.57 | -0.20 | -0.40 | 93.33 | -0.11 | -0.43 |
| K8H9PC | | 87.47 | 0.70 | 1.43 | 94.04 | 0.59 | 2.26 |
| KFAQ4K | | 86.83 | 0.06 | 0.12 | 93.51 | 0.07 | 0.25 |
| L3AVPN | | 86.77 | 0.00 | 0.00 | 93.59 | 0.15 | 0.56 |
| L4EZY7 | | 86.28 | -0.49 | -1.00 | 93.61 | 0.17 | 0.63 |
| L9KRUX | | 86.45 | -0.32 | -0.65 | 93.47 | 0.03 | 0.10 |
| MBN22K | | 87.67 | 0.90 | 1.85 | 93.33 | -0.11 | -0.43 |
| Q8EYXD | | 86.32 | -0.45 | -0.92 | 93.59 | 0.15 | 0.56 |
| QLAC2M | | 86.57 | -0.20 | -0.40 | 93.63 | 0.19 | 0.71 |
| QNGWN3 | | 86.90 | 0.13 | 0.27 | 93.42 | -0.02 | -0.09 |
| RKW6CZ | | 86.63 | -0.14 | -0.28 | 93.53 | 0.09 | 0.33 |
| T2ZZG4 | | 86.67 | -0.10 | -0.20 | 93.25 | -0.19 | -0.73 |
| U4ZP3J | | 87.15 | 0.38 | 0.78 | 93.46 | 0.02 | 0.06 |
| V6NK6J | | 86.02 | -0.75 | -1.53 | 93.03 | -0.41 | -1.57 |
| VFEFLR | | 87.22 | 0.45 | 0.93 | 93.57 | 0.13 | 0.49 |
| VFW28B | | 86.95 | 0.18 | 0.37 | 93.91 | 0.47 | 1.77 |
| X9NE87 | * | 85.42 | -1.35 | -2.76 | 93.26 | -0.18 | -0.70 |
| Y23J73 | | 87.05 | 0.28 | 0.58 | 93.48 | 0.04 | 0.14 |
| ZRU2WN | | 86.38 | -0.39 | -0.79 | 93.30 | -0.14 | -0.53 |

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

| | Sample GN11 | Summary Statistics | Sample GN12 |
|---|--------------------|---------------------------|--------------------|
| Grand Means | 86.768 Percent | | 93.443 Percent |
| SD Btwn Labs | 0.488 Percent | | 0.264 Percent |
| Statistics based on 35 of 37 reporting participants | | | |

Comments on assigned Data Flags for Test #384

7GMZGQ (X) - Extreme data.

FGWUCH (X) - Extreme data.

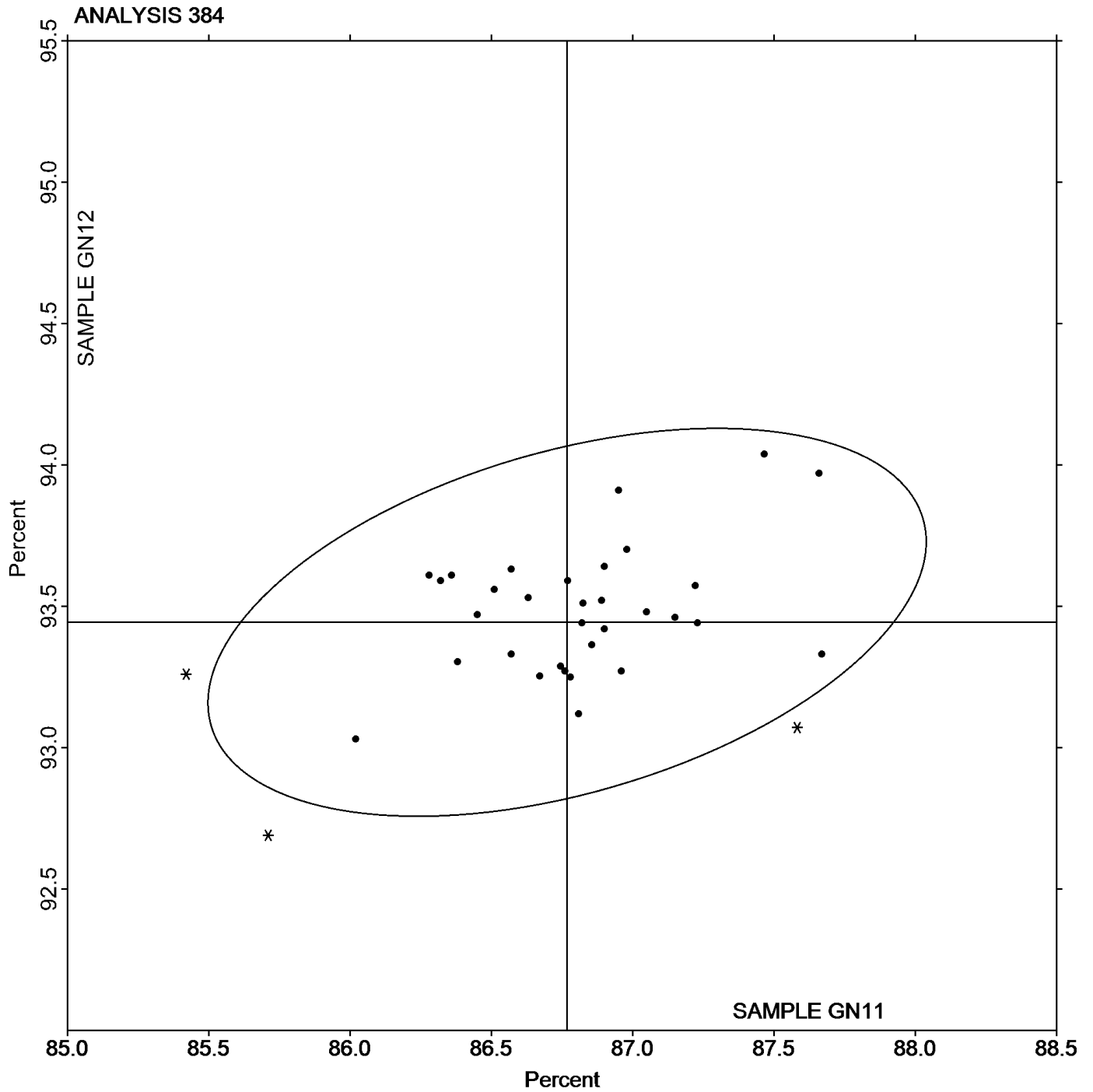
Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample **GN11** = 86.768 Percent

Grand Mean Sample **GN12** = 93.443 Percent



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

| WebCode | Data Flag | Sample GP11 | | | Sample GP12 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 79BKAP | | 89.11 | 0.18 | 1.06 | 93.47 | 0.07 | 0.71 |
| 7LGX7G | * | 88.81 | -0.12 | -0.72 | 93.07 | -0.33 | -3.21 |
| A8RXZQ | | 89.13 | 0.20 | 1.16 | 93.40 | 0.00 | 0.02 |
| AAEDGL | | 89.01 | 0.08 | 0.45 | 93.46 | 0.06 | 0.57 |
| BEH2AD | | 89.01 | 0.08 | 0.44 | 93.32 | -0.08 | -0.76 |
| DX9TGG | | 89.00 | 0.07 | 0.40 | 93.34 | -0.06 | -0.58 |
| EHB4XP | | 88.90 | -0.03 | -0.19 | 93.39 | -0.01 | -0.09 |
| HY7QLR | | 88.94 | 0.01 | 0.07 | 93.55 | 0.15 | 1.51 |
| K8H9PC | | 88.51 | -0.42 | -2.47 | 93.35 | -0.04 | -0.43 |
| MERJV9 | | 89.15 | 0.22 | 1.30 | 93.47 | 0.07 | 0.71 |
| MWN3C3 | | 88.93 | 0.00 | 0.01 | 93.43 | 0.03 | 0.28 |
| P288W3 | | 88.97 | 0.04 | 0.24 | 93.52 | 0.12 | 1.18 |
| PPDTX7 | | 89.11 | 0.18 | 1.07 | 93.41 | 0.02 | 0.15 |
| URVD6X | | 89.01 | 0.08 | 0.48 | 93.43 | 0.03 | 0.34 |
| XLLMUL | | 88.88 | -0.05 | -0.32 | 93.39 | -0.01 | -0.10 |
| YDWZV4 | | 88.87 | -0.06 | -0.37 | 93.40 | 0.00 | 0.04 |
| YGBUCZ | | 88.62 | -0.31 | -1.83 | 93.42 | 0.02 | 0.22 |
| ZZ8K69 | | 88.80 | -0.13 | -0.78 | 93.34 | -0.06 | -0.57 |

| Summary Statistics | | |
|---|----------------|----------------|
| | Sample GP11 | Sample GP12 |
| Grand Means | 88.930 Percent | 93.398 Percent |
| SD Btwn Labs | 0.170 Percent | 0.102 Percent |
| Statistics based on 18 of 18 reporting participants | | |

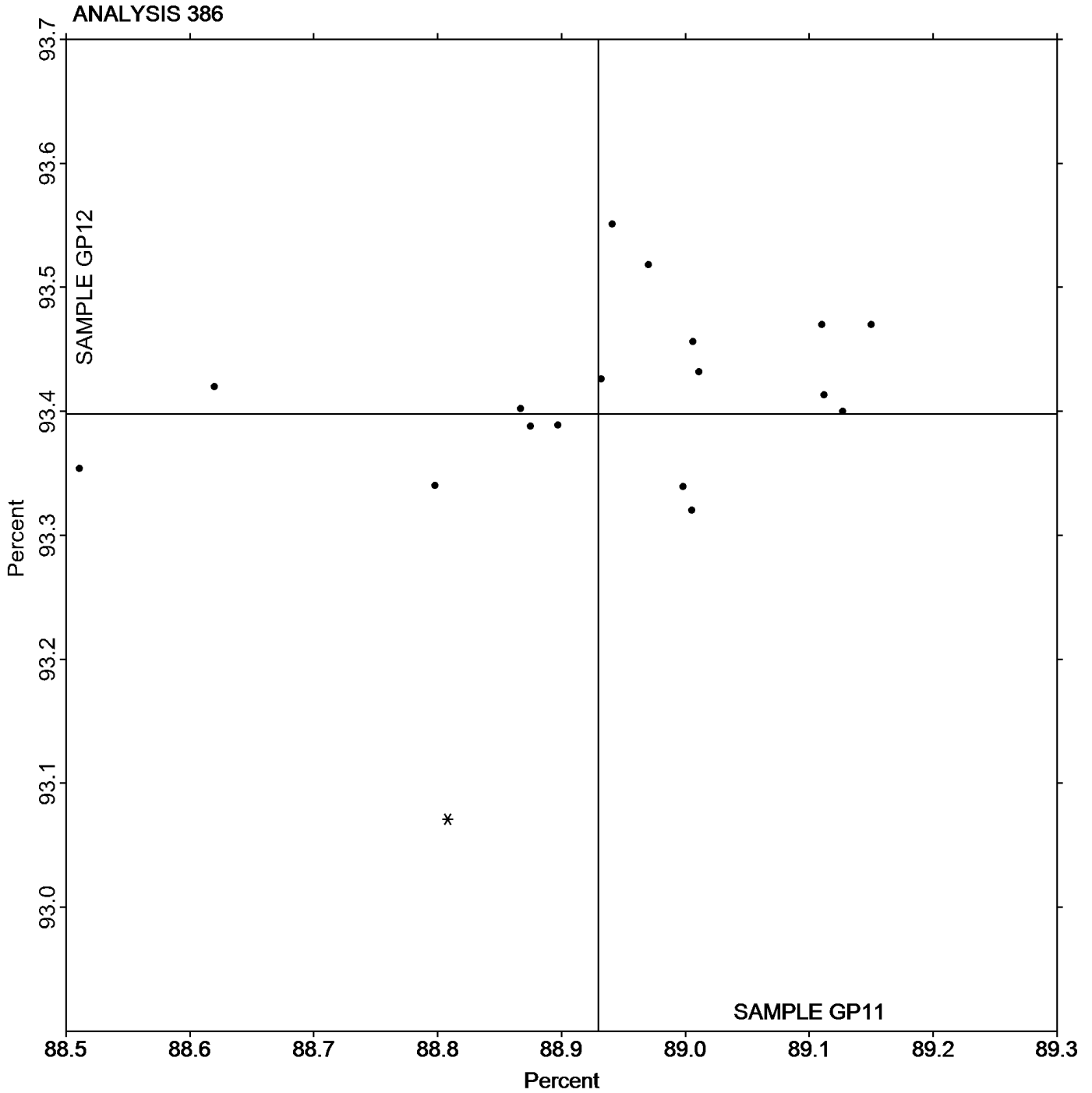
Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample **GP11** = 88.930 Percent

Grand Mean Sample **GP12** = 93.398 Percent



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

Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

| WebCode | Data Flag | Sample GR11 | | | Sample GR12 | | | Instr Code |
|---------|-----------|-------------|----------------------|--------|-------------|----------------------|--------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2D3FL8 | | 82.84 | 1.07 | 0.71 | 83.01 | 1.13 | 0.76 | XX |
| 2MEH38 | | 83.79 | 2.02 | 1.34 | 83.90 | 2.02 | 1.35 | HG |
| 646TFK | | 83.10 | 1.34 | 0.88 | 83.10 | 1.22 | 0.82 | HD |
| 7GMZGQ | | 85.56 | 3.80 | 2.51 | 85.64 | 3.76 | 2.52 | PE |
| 8BDYVL | | 80.09 | -1.68 | -1.11 | 80.09 | -1.79 | -1.20 | TS |
| AN2P4G | | 80.70 | -1.06 | -0.70 | 80.48 | -1.40 | -0.94 | TS |
| AT8E9H | | 80.98 | -0.79 | -0.52 | 81.09 | -0.79 | -0.53 | PE |
| AT8GXM | X | 69.56 | -12.20 | -8.05 | 68.74 | -13.14 | -8.80 | TS |
| ATTWMP | | 82.98 | 1.21 | 0.80 | 82.85 | 0.97 | 0.65 | TT |
| BXJMB8 | | 83.61 | 1.85 | 1.22 | 83.61 | 1.73 | 1.16 | TT |
| E2TFZ9 | | 80.96 | -0.80 | -0.53 | 81.05 | -0.83 | -0.55 | TA |
| E3K2HL | | 80.71 | -1.05 | -0.70 | 80.69 | -1.19 | -0.79 | TS |
| EHB4XP | | 79.80 | -1.96 | -1.29 | 79.66 | -2.22 | -1.49 | TT |
| FGWUCH | | 82.96 | 1.20 | 0.79 | 83.19 | 1.31 | 0.88 | TT |
| FNZDW8 | * | 80.15 | -1.62 | -1.07 | 81.14 | -0.74 | -0.49 | GM |
| GH9V8G | | 82.83 | 1.06 | 0.70 | 83.06 | 1.18 | 0.79 | TS |
| GVANDK | | 81.51 | -0.25 | -0.17 | 81.50 | -0.38 | -0.25 | TT |
| H6JFJ9 | | 83.63 | 1.86 | 1.23 | 83.77 | 1.89 | 1.26 | HD |
| K8H9PC | | 80.05 | -1.72 | -1.13 | 80.07 | -1.81 | -1.21 | TS |
| L3AVPN | | 80.89 | -0.88 | -0.58 | 81.26 | -0.62 | -0.41 | XX |
| L9KRUX | | 80.98 | -0.79 | -0.52 | 80.84 | -1.04 | -0.70 | TT |
| MBN22K | X | 83.51 | 1.75 | 1.15 | 81.60 | -0.28 | -0.19 | TS |
| RKW6CZ | | 82.02 | 0.26 | 0.17 | 82.03 | 0.15 | 0.10 | MK |
| U4ZP3J | | 80.59 | -1.18 | -0.78 | 80.51 | -1.37 | -0.91 | TT |
| V6NK6J | | 82.49 | 0.72 | 0.48 | 82.40 | 0.52 | 0.35 | TS |
| VFW28B | | 80.63 | -1.14 | -0.75 | 80.90 | -0.98 | -0.66 | TT |
| X9NE87 | * | 80.26 | -1.50 | -0.99 | 81.14 | -0.74 | -0.50 | XX |
| YE4BGL | X | 6.35 | -75.41 | -49.78 | 6.44 | -75.44 | -50.50 | TS |

| Summary Statistics | | |
|---|----------------|----------------|
| | Sample GR11 | Sample GR12 |
| Grand Means | 81.763 Percent | 81.879 Percent |
| SD Btwn Labs | 1.515 Percent | 1.494 Percent |
| Statistics based on 25 of 28 reporting participants | | |

Comments on assigned Data Flags for Test #390

AT8GXM (X) - Extreme data.

MBN22K (X) - Inconsistent in testing between samples.

YE4BGL (X) - Extreme data.

Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

Instrument Code List as Reported by the Labs

(GM) - Gretag Macbeth Color i5

(HD) - Hunter D25DP - 9000

(HG) - Hunter Labscan / XE

(MK) - Macbeth Color-Eye 7000 Spectrophotometer

(PE) - Photovolt 577

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

(TS) - Technidyne Brightimeter Micro S-5

(TT) - Technidyne Brightimeter Micro S4-M

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

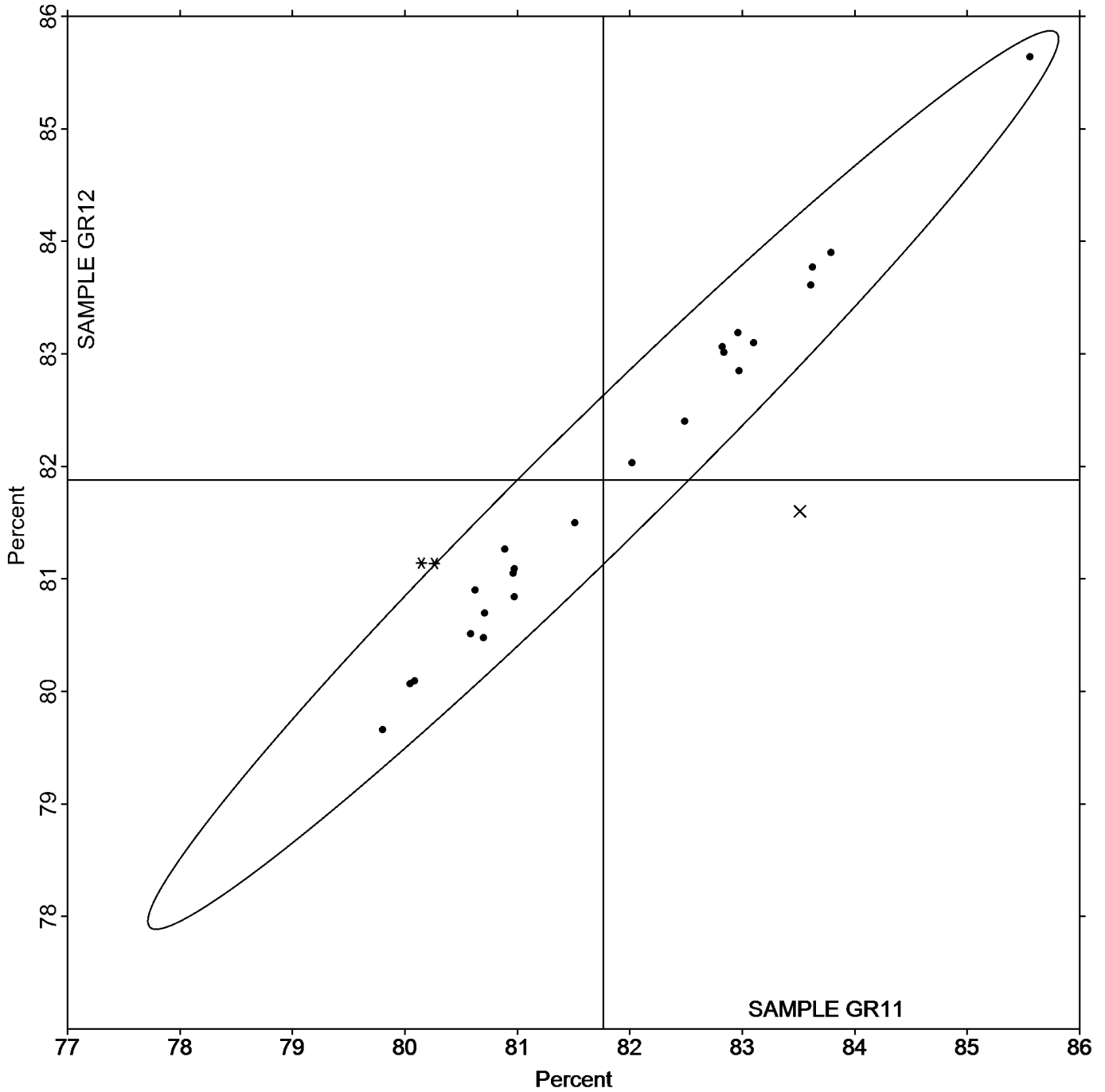
Analysis 390

Directional Brightness

Grand Mean Sample GR11 = 81.763 Percent

Grand Mean Sample GR12 = 81.879 Percent

ANALYSIS 390



Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

| WebCode | Data Flag | Sample GZ11 | | | Sample GZ12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 77RQ63 | | 90.19 | 0.32 | 0.32 | 98.37 | 0.24 | 0.24 | PP |
| AT8E9H | | 90.17 | 0.30 | 0.30 | 98.50 | 0.37 | 0.38 | TS |
| FNZDW8 | | 87.29 | -2.58 | -2.60 | 95.63 | -2.50 | -2.52 | GM |
| FYFRQG | | 90.28 | 0.41 | 0.41 | 98.74 | 0.61 | 0.61 | TT |
| GHZAZZ | | 90.58 | 0.71 | 0.71 | 98.14 | 0.01 | 0.01 | TT |
| QNGWN3 | | 88.21 | -1.66 | -1.67 | 96.50 | -1.63 | -1.65 | HT |
| QYZ7CV | | 90.26 | 0.39 | 0.39 | 98.55 | 0.41 | 0.42 | TS |
| RACVPR | | 89.92 | 0.05 | 0.05 | 98.10 | -0.03 | -0.03 | TT |
| T2ZZG4 | | 90.18 | 0.31 | 0.31 | 98.74 | 0.61 | 0.62 | TS |
| U4ZP3J | | 89.96 | 0.09 | 0.09 | 98.00 | -0.13 | -0.13 | TT |
| UF2Y3F | X | 90.78 | 0.91 | 0.92 | 99.56 | 1.43 | 1.45 | TS |
| VFEFLR | | 90.14 | 0.27 | 0.27 | 98.49 | 0.36 | 0.36 | TS |
| Y23J73 | | 90.92 | 1.05 | 1.06 | 99.28 | 1.15 | 1.16 | TS |
| ZRU2WN | | 90.22 | 0.35 | 0.35 | 98.66 | 0.53 | 0.53 | TS |

| Summary Statistics | | | |
|---|----------------|--|----------------|
| | Sample GZ11 | | Sample GZ12 |
| Grand Means | 89.870 Percent | | 98.131 Percent |
| SD Btwn Labs | 0.993 Percent | | 0.990 Percent |
| Statistics based on 13 of 14 reporting participants | | | |

Comments on assigned Data Flags for Test #391

UF2Y3F (X) - Data appears to be transposed between Analysis #391 and Analysis #394. Data switched by CTS.

Instrument Code List as Reported by the Labs

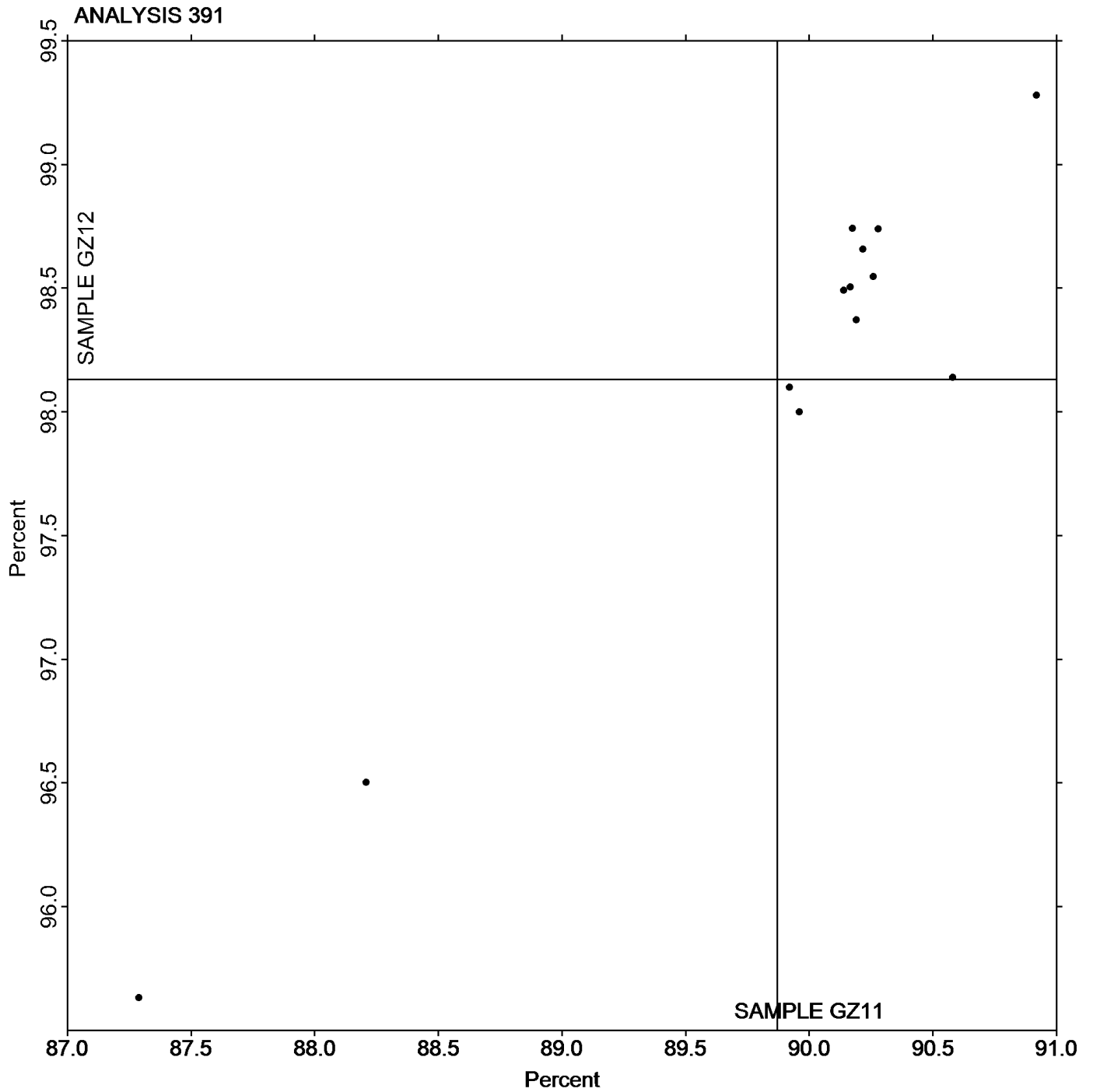
- (GM) - Gretag Macbeth Color i5
- (HT) - Hunter UltraScan Vis
- (PP) - Technidyne Profile/Plus
- (TS) - Technidyne Brightimeter Micro S-5
- (TT) - Technidyne Brightimeter Micro S4-M

Analysis 391

Directional Brightness of Fluorescent Samples

Grand Mean Sample GZ11 = 89.870 Percent

Grand Mean Sample GZ12 = 98.131 Percent



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

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

| WebCode | Data Flag | Sample GR11 | | | Sample GR12 | | | Instr Code |
|---------|-----------|-------------|----------------------|--------|-------------|----------------------|--------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 7KLCEB | | 81.52 | 0.10 | 0.48 | 81.53 | 0.05 | 0.24 | TC |
| 7LGX7G | | 81.21 | -0.21 | -1.00 | 81.47 | -0.01 | -0.08 | FR |
| 92L49B | | 81.20 | -0.22 | -1.03 | 81.49 | 0.00 | 0.02 | TC |
| 9M8A2D | | 81.44 | 0.02 | 0.08 | 81.49 | 0.01 | 0.05 | TC |
| AAEDGL | X | 82.45 | 1.03 | 4.84 | 82.39 | 0.90 | 4.69 | EG |
| AN2P4G | | 81.22 | -0.20 | -0.93 | 81.31 | -0.18 | -0.92 | TC |
| ATTWMP | | 81.51 | 0.09 | 0.44 | 81.59 | 0.11 | 0.55 | TL |
| BEH2AD | | 81.49 | 0.08 | 0.35 | 81.59 | 0.10 | 0.54 | LS |
| BXJMB8 | | 81.24 | -0.18 | -0.85 | 81.35 | -0.13 | -0.69 | EG |
| DBZRG | | 81.54 | 0.12 | 0.58 | 81.62 | 0.14 | 0.72 | TC |
| DX9TGG | | 81.42 | 0.00 | -0.01 | 81.58 | 0.10 | 0.50 | TC |
| E6PTCK | | 81.32 | -0.10 | -0.47 | 81.39 | -0.09 | -0.46 | TC |
| EHB4XP | X | 82.36 | 0.94 | 4.41 | 82.43 | 0.94 | 4.90 | TM |
| GMKZHG | X | 71.47 | -9.95 | -46.72 | 71.39 | -10.09 | -52.41 | TC |
| K8H9PC | | 81.34 | -0.08 | -0.37 | 81.34 | -0.14 | -0.73 | TM |
| MERJV9 | | 81.55 | 0.13 | 0.62 | 81.51 | 0.03 | 0.13 | TC |
| MWN3C3 | | 81.28 | -0.14 | -0.64 | 81.32 | -0.16 | -0.85 | LS |
| P288W3 | | 81.28 | -0.14 | -0.63 | 81.28 | -0.20 | -1.03 | XX |
| PPDTX7 | | 81.61 | 0.19 | 0.90 | 81.63 | 0.15 | 0.75 | TM |
| PUF4BY | | 81.70 | 0.28 | 1.31 | 81.55 | 0.07 | 0.37 | TC |
| Q22CQ2 | | 81.29 | -0.13 | -0.60 | 81.40 | -0.08 | -0.41 | TC |
| RKX2UB | | 81.76 | 0.34 | 1.61 | 81.86 | 0.37 | 1.94 | EE |
| RYC79Q | | 81.50 | 0.08 | 0.37 | 81.56 | 0.07 | 0.38 | PP |
| RZRPTM | * | 80.76 | -0.66 | -3.08 | 80.90 | -0.58 | -3.02 | LA |
| U4ZP3J | | 81.44 | 0.02 | 0.09 | 81.47 | -0.01 | -0.05 | TC |
| URVD6X | | 81.65 | 0.23 | 1.09 | 81.60 | 0.11 | 0.59 | TM |
| UTY4ZR | | 81.34 | -0.08 | -0.38 | 81.27 | -0.21 | -1.10 | TC |
| VE2FF6 | | 81.73 | 0.31 | 1.44 | 81.86 | 0.38 | 1.98 | EF |
| Z8NVJA | | 81.55 | 0.14 | 0.63 | 81.59 | 0.11 | 0.58 | TC |

| Summary Statistics | | |
|---|----------------|----------------|
| | Sample GR11 | Sample GR12 |
| Grand Means | 81.419 Percent | 81.482 Percent |
| SD Btwn Labs | 0.213 Percent | 0.192 Percent |
| Statistics based on 26 of 29 reporting participants | | |

Comments on assigned Data Flags for Test #392

- AAEDGL (X) - Systematic error (data for both samples are high).
- EHB4XP (X) - Systematic error (data for both samples are high).
- GMKZHG (X) - Extreme data.

Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

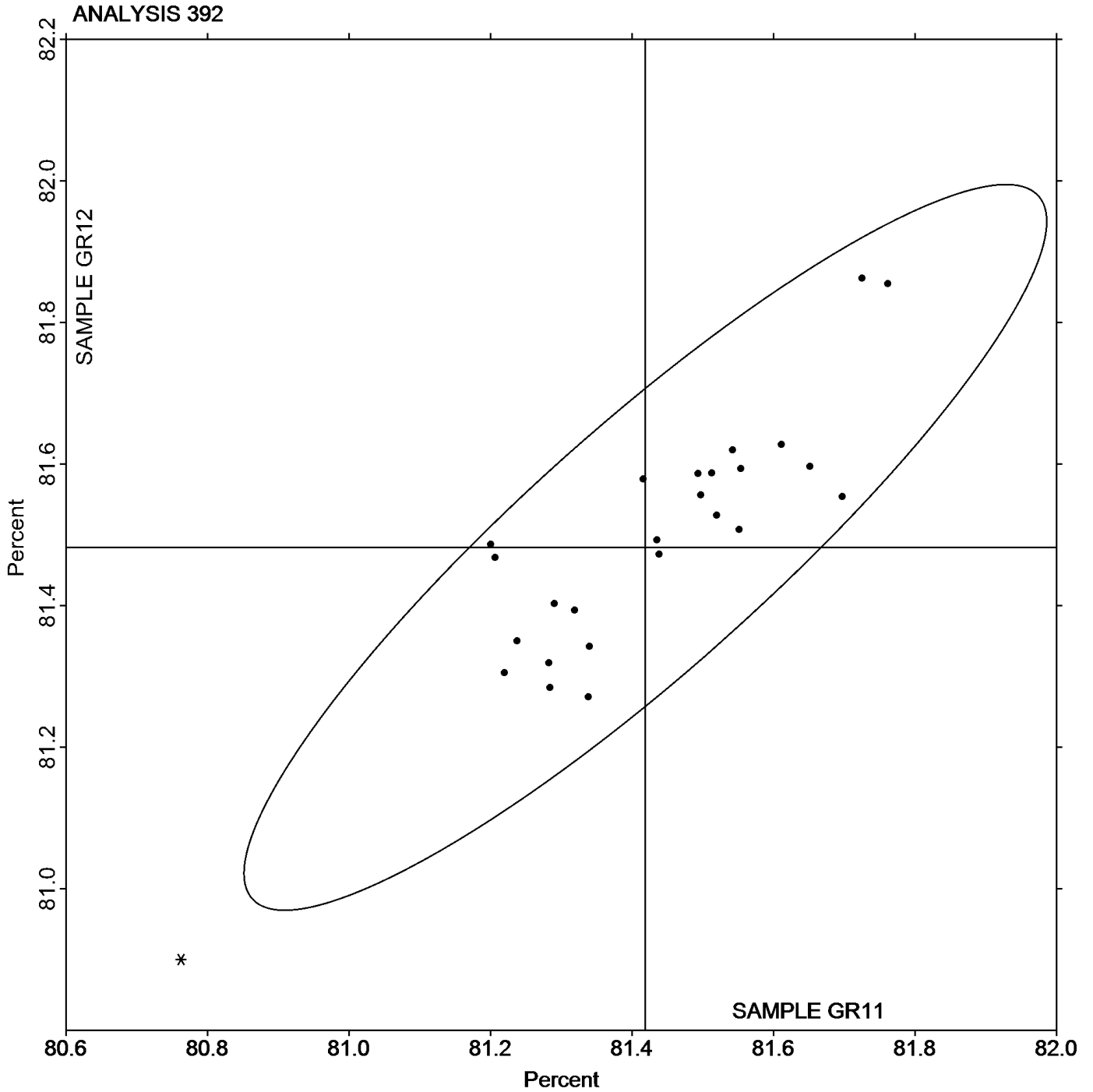
Instrument Code List as Reported by the Labs

| | |
|---|---|
| (EE) - Datacolor Elrepho 2000 | (EF) - Datacolor Elrepho 3000 |
| (EG) - Datacolor Elrepho 450X | (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 | |

Analysis 392
Diffuse Brightness

Grand Mean Sample GR11 = 81.419 Percent

Grand Mean Sample GR12 = 81.482 Percent



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

| WebCode | Data Flag | Sample GZ11 | | | Sample GZ12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 77RQ63 | | 7.200 | 0.134 | 0.22 | 9.380 | 0.111 | 0.14 | PP |
| AT8E9H | | 6.732 | -0.334 | -0.55 | 9.144 | -0.125 | -0.16 | TS |
| FNZDW8 | | 8.446 | 1.380 | 2.28 | 11.054 | 1.785 | 2.26 | GM |
| FYFRQG | | 7.540 | 0.474 | 0.78 | 9.820 | 0.551 | 0.70 | TT |
| QNGWN3 | | 5.910 | -1.156 | -1.91 | 7.688 | -1.581 | -2.00 | HT |
| QYZ7CV | | 6.998 | -0.068 | -0.11 | 9.162 | -0.107 | -0.14 | TS |
| RACVPR | | 6.880 | -0.186 | -0.31 | 9.000 | -0.269 | -0.34 | TT |
| T2ZZG4 | | 6.924 | -0.142 | -0.24 | 9.146 | -0.123 | -0.16 | TS |
| U4ZP3J | | 7.020 | -0.046 | -0.08 | 8.900 | -0.369 | -0.47 | TT |
| UF2Y3F | X | 6.888 | -0.178 | -0.29 | 9.048 | -0.221 | -0.28 | TS |
| VFEFLR | | 6.998 | -0.068 | -0.11 | 9.304 | 0.035 | 0.04 | TS |
| ZRU2WN | | 7.082 | 0.016 | 0.03 | 9.362 | 0.093 | 0.12 | TS |

| Summary Statistics | | | |
|---|-------------|---------|-------------|
| | Sample GZ11 | | Sample GZ12 |
| Grand Means | 7.0664 | Percent | 9.2691 |
| SD Btwn Labs | 0.6051 | Percent | 0.7913 |
| Statistics based on 11 of 12 reporting participants | | | |

Comments on assigned Data Flags for Test #394

UF2Y3F (X) - Data appears to be transposed between Analysis #394 and Analysis #391. Data switched by CTS.

Instrument Code List as Reported by the Labs

- | | |
|---|--|
| (GM) - Gretag Macbeth Color i5 | (HT) - Hunter UltraScan Vis |
| (PP) - Technidyne Profile/Plus | (TS) - Technidyne Brightimeter Micro S-5 |
| (TT) - Technidyne Brightimeter Micro S4-M | |

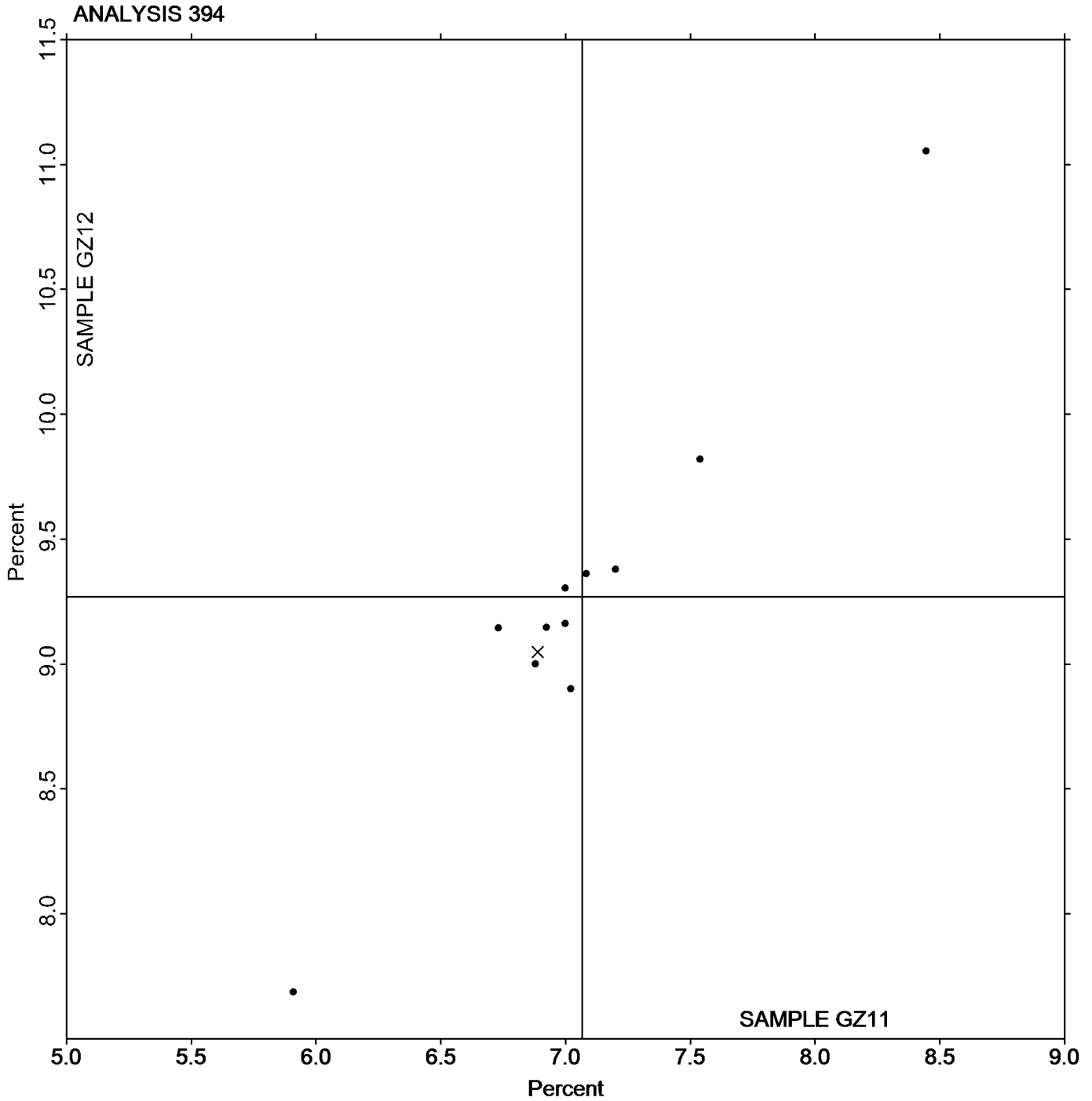
Paper & Paperboard Interlaboratory Testing Program

Analysis 394

Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ11** = 7.0664 Percent

Grand Mean Sample **GZ12** = 9.2691 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 GT11 | | | Sample GT12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 646TFK | | 68.41 | 1.29 | 0.49 | 75.29 | 1.15 | 0.60 | TH |
| 77RQ63 | | 66.21 | -0.91 | -0.34 | 73.62 | -0.52 | -0.28 | PP |
| 79BKAP | | 69.20 | 2.08 | 0.79 | 74.00 | -0.14 | -0.08 | GA |
| AAEDGL | * | 59.77 | -7.35 | -2.79 | 69.05 | -5.09 | -2.68 | TH |
| AT8GXM | | 64.36 | -2.76 | -1.05 | 73.57 | -0.57 | -0.30 | TH |
| ATTWMP | | 65.99 | -1.13 | -0.43 | 72.12 | -2.02 | -1.06 | GS |
| BEH2AD | | 68.39 | 1.27 | 0.48 | 73.30 | -0.84 | -0.44 | LB |
| BXJMB8 | | 62.51 | -4.61 | -1.75 | 73.58 | -0.56 | -0.30 | GM |
| EHB4XP | | 70.06 | 2.94 | 1.12 | 77.64 | 3.50 | 1.84 | TG |
| H6JFJ9 | | 68.53 | 1.41 | 0.54 | 74.68 | 0.54 | 0.28 | TH |
| K8H9PC | | 65.22 | -1.90 | -0.72 | 75.03 | 0.89 | 0.47 | TH |
| L9KRUX | | 69.11 | 1.99 | 0.76 | 74.61 | 0.47 | 0.25 | TG |
| P288W3 | | 68.60 | 1.48 | 0.56 | 74.36 | 0.22 | 0.11 | XX |
| Q2QETC | | 67.95 | 0.83 | 0.32 | 73.88 | -0.26 | -0.14 | GM |
| RACVPR | X | 78.20 | 11.08 | 4.21 | 86.50 | 12.36 | 6.50 | LA |
| RKW6CZ | | 67.43 | 0.31 | 0.12 | 76.52 | 2.38 | 1.25 | PP |
| UDCTK4 | | 69.31 | 2.19 | 0.83 | 77.32 | 3.18 | 1.67 | LA |
| UTY4ZR | | 66.92 | -0.20 | -0.08 | 72.83 | -1.31 | -0.69 | ZH |
| VA9CMZ | | 67.76 | 0.64 | 0.24 | 74.14 | 0.00 | 0.00 | TH |
| YYDAW2 | | 69.52 | 2.40 | 0.91 | 73.18 | -0.96 | -0.51 | TH |

| Sample GT11 | | Summary Statistics | Sample GT12 | |
|---|--------------------|--------------------|--------------------|--|
| Grand Means | 67.118 Gloss Units | | 74.143 Gloss Units | |
| SD Btwn Labs | 2.633 Gloss Units | | 1.901 Gloss Units | |
| Statistics based on 19 of 20 reporting participants | | | | |

Comments on assigned Data Flags for Test #395

RACVPR (X) - Extreme data.

Instrument Code List as Reported by the Labs

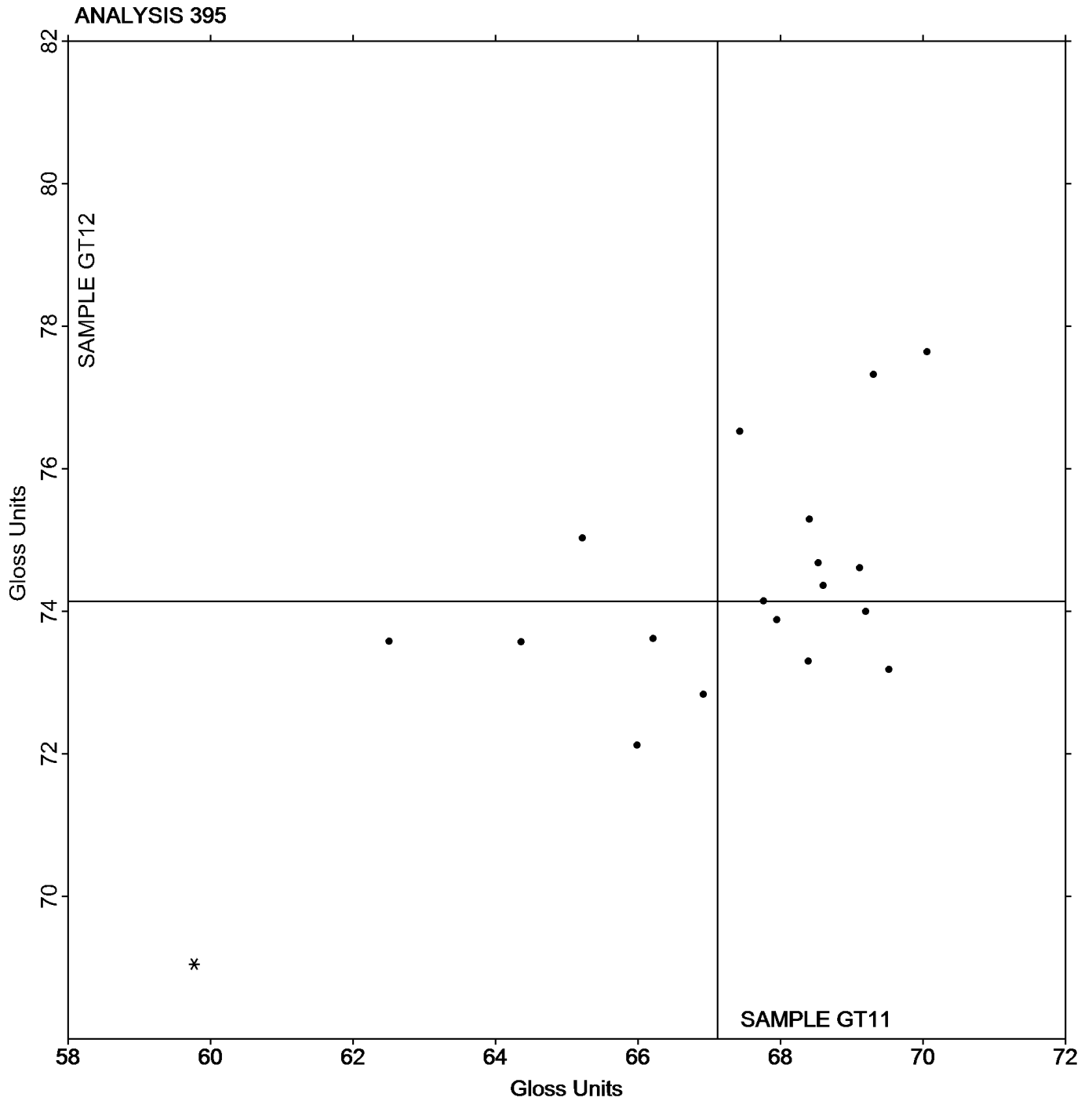
| | |
|---|-----------------------------------|
| (GA) - BYK-Gardner (model not specified) | (GM) - BYK-Gardner micro-gloss |
| (GS) - BYK-Gardner Glossgard II | (LA) - L & W Gloss - Autoline 300 |
| (LB) - L & W Gloss Tester Code 224 | (PP) - Technidyne Profile/Plus |
| (TG) - Technidyne T480 | (TH)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

Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample GT11 = 67.118 Gloss Units

Grand Mean Sample GT12 = 74.143 Gloss Units



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 396

Specular Gloss at 75 Degrees - Low Range

| WebCode | Data Flag | Sample GU11 | | | Sample GU12 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 9M8A2D | | 37.19 | 1.92 | 0.98 | 45.54 | 3.55 | 1.76 | TH |
| BEH2AD | | 36.04 | 0.77 | 0.39 | 41.03 | -0.96 | -0.48 | LA |
| E2TFZ9 | | 36.18 | 0.90 | 0.46 | 41.41 | -0.58 | -0.29 | TH |
| EHB4XP | | 36.63 | 1.36 | 0.69 | 42.75 | 0.76 | 0.38 | TG |
| EZFD6G | | 34.25 | -1.02 | -0.52 | 44.55 | 2.56 | 1.27 | TG |
| HGWH3K | | 35.11 | -0.16 | -0.08 | 40.32 | -1.67 | -0.83 | PP |
| KCPXUD | | 33.59 | -1.68 | -0.86 | 41.13 | -0.86 | -0.43 | XX |
| RZRPTM | | 31.27 | -4.00 | -2.05 | 39.18 | -2.81 | -1.40 | TG |
| X9NE87 | | 37.20 | 1.93 | 0.99 | 42.00 | 0.01 | 0.01 | HN |

Summary Statistics

Sample GU11

Sample GU12

Grand Means 35.273 Gloss Units
SD Btwn Labs 1.955 Gloss Units

41.989 Gloss Units
2.013 Gloss Units

Statistics based on 9 of 9 reporting participants

Instrument Code List as Reported by the Labs

(HN) - Hunter D-48

(LA) - L & W Gloss - Autoline 300

(PP) - Technidyne Profile/Plus

(TG) - Technidyne T480

(TH) - Technidyne T480A

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

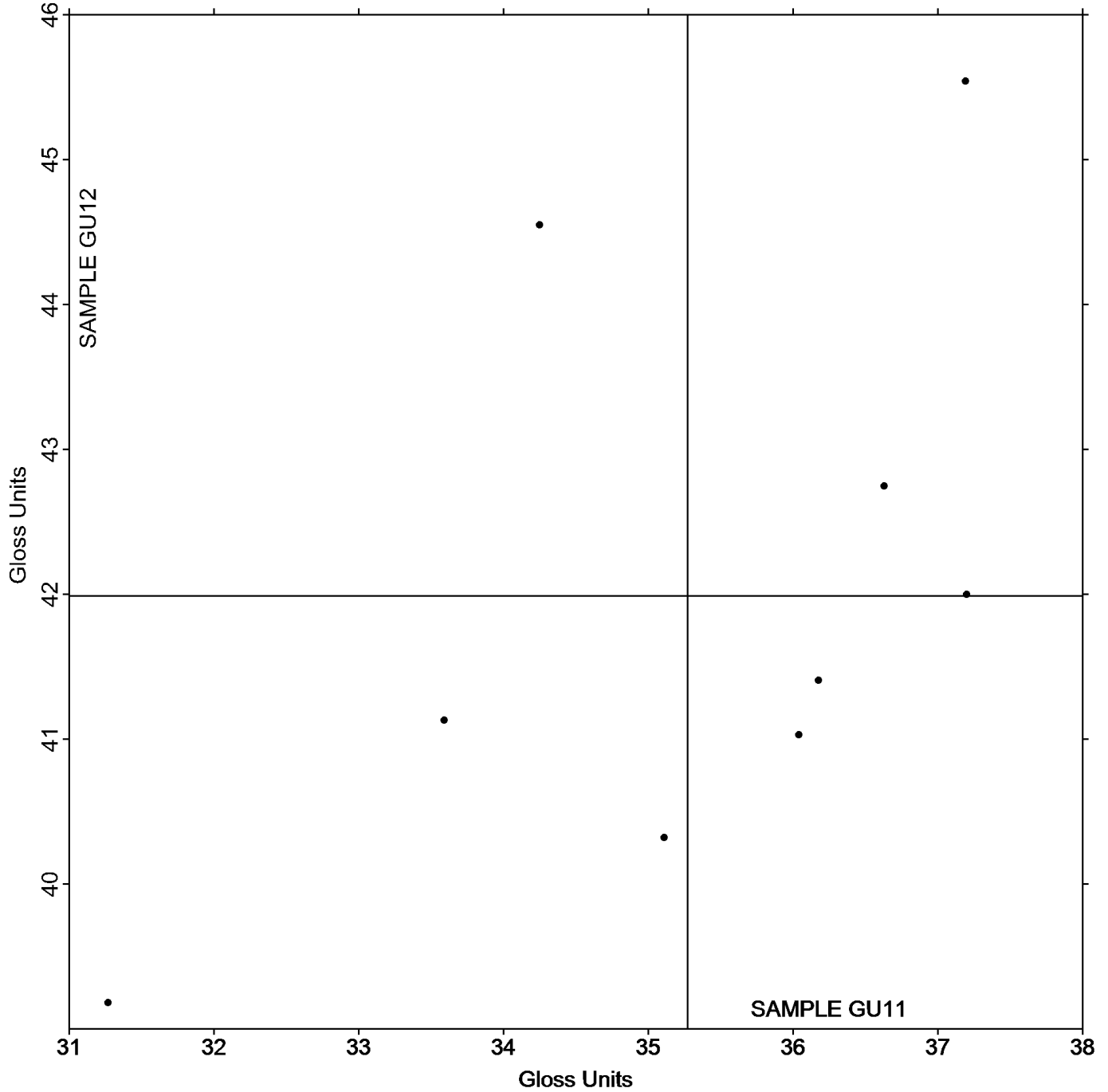
Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU11** = 35.273 Gloss Units

Grand Mean Sample **GU12** = 41.989 Gloss Units

ANALYSIS 396



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

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

| WebCode | Data Flag | Sample GW11 | | | Sample GW12 | | |
|---------|-----------|-------------|----------------------|--------|-------------|----------------------|--------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2D3FL8 | | 85.73 | -0.34 | -0.54 | 73.15 | 0.42 | 0.89 |
| 2MEH38 | | 85.42 | -0.64 | -1.04 | 72.49 | -0.24 | -0.50 |
| 4MM9AN | | 86.67 | 0.61 | 0.99 | 73.12 | 0.39 | 0.83 |
| 7LGX7G | * | 84.44 | -1.62 | -2.63 | 71.81 | -0.92 | -1.94 |
| 899CHH | | 86.26 | 0.20 | 0.33 | 73.09 | 0.36 | 0.76 |
| 9M8A2D | | 85.84 | -0.22 | -0.36 | 71.98 | -0.74 | -1.57 |
| AAEDGL | | 85.32 | -0.75 | -1.21 | 72.17 | -0.56 | -1.18 |
| AYWWQZ | * | 86.55 | 0.49 | 0.79 | 71.95 | -0.78 | -1.64 |
| BEH2AD | | 85.69 | -0.37 | -0.60 | 72.57 | -0.15 | -0.32 |
| CTJVH2 | | 85.91 | -0.15 | -0.25 | 72.50 | -0.23 | -0.48 |
| DX9TGG | | 86.60 | 0.54 | 0.88 | 72.83 | 0.10 | 0.22 |
| E2TFZ9 | | 85.28 | -0.78 | -1.26 | 72.39 | -0.34 | -0.72 |
| FNZDW8 | | 84.97 | -1.09 | -1.77 | 72.49 | -0.24 | -0.50 |
| GH9V8G | | 85.82 | -0.24 | -0.39 | 72.13 | -0.60 | -1.26 |
| HY7QLR | | 86.70 | 0.64 | 1.04 | 73.40 | 0.67 | 1.42 |
| KCPXUD | | 86.08 | 0.02 | 0.03 | 73.35 | 0.62 | 1.31 |
| KNFR77 | X | 171.12 | 85.06 | 137.88 | 144.22 | 71.49 | 150.94 |
| L3AVPN | | 85.76 | -0.30 | -0.48 | 72.12 | -0.60 | -1.28 |
| L4EZY7 | | 86.48 | 0.42 | 0.68 | 73.03 | 0.30 | 0.64 |
| LRCVBX | | 85.46 | -0.60 | -0.97 | 72.49 | -0.24 | -0.51 |
| MWN3C3 | | 86.43 | 0.37 | 0.60 | 72.68 | -0.05 | -0.10 |
| P288W3 | | 86.34 | 0.28 | 0.45 | 72.93 | 0.20 | 0.43 |
| Q22CQ2 | | 86.32 | 0.26 | 0.42 | 72.83 | 0.10 | 0.22 |
| QNGWN3 | | 85.88 | -0.18 | -0.29 | 73.17 | 0.44 | 0.93 |
| RZRPTM | | 87.20 | 1.14 | 1.85 | 73.40 | 0.67 | 1.42 |
| V7H9KT | | 86.70 | 0.64 | 1.04 | 73.28 | 0.55 | 1.17 |
| X9NE87 | | 86.67 | 0.61 | 0.99 | 72.62 | -0.11 | -0.22 |
| Y23J73 | | 85.98 | -0.08 | -0.13 | 72.66 | -0.07 | -0.14 |
| YDWZV4 | | 86.00 | -0.06 | -0.10 | 72.59 | -0.14 | -0.29 |
| YGBUCZ | | 86.92 | 0.86 | 1.39 | 73.25 | 0.52 | 1.10 |
| ZZ8K69 | | 86.41 | 0.34 | 0.56 | 73.36 | 0.63 | 1.33 |

| Sample GW11 | | Summary Statistics | Sample GW12 | |
|---|---------------|--------------------|---------------|--|
| Grand Means | 86.060 g/sq m | | 72.728 g/sq m | |
| SD Btwn Labs | 0.617 g/sq m | | 0.474 g/sq m | |
| Statistics based on 30 of 31 reporting participants | | | | |

Comments on assigned Data Flags for Test #398

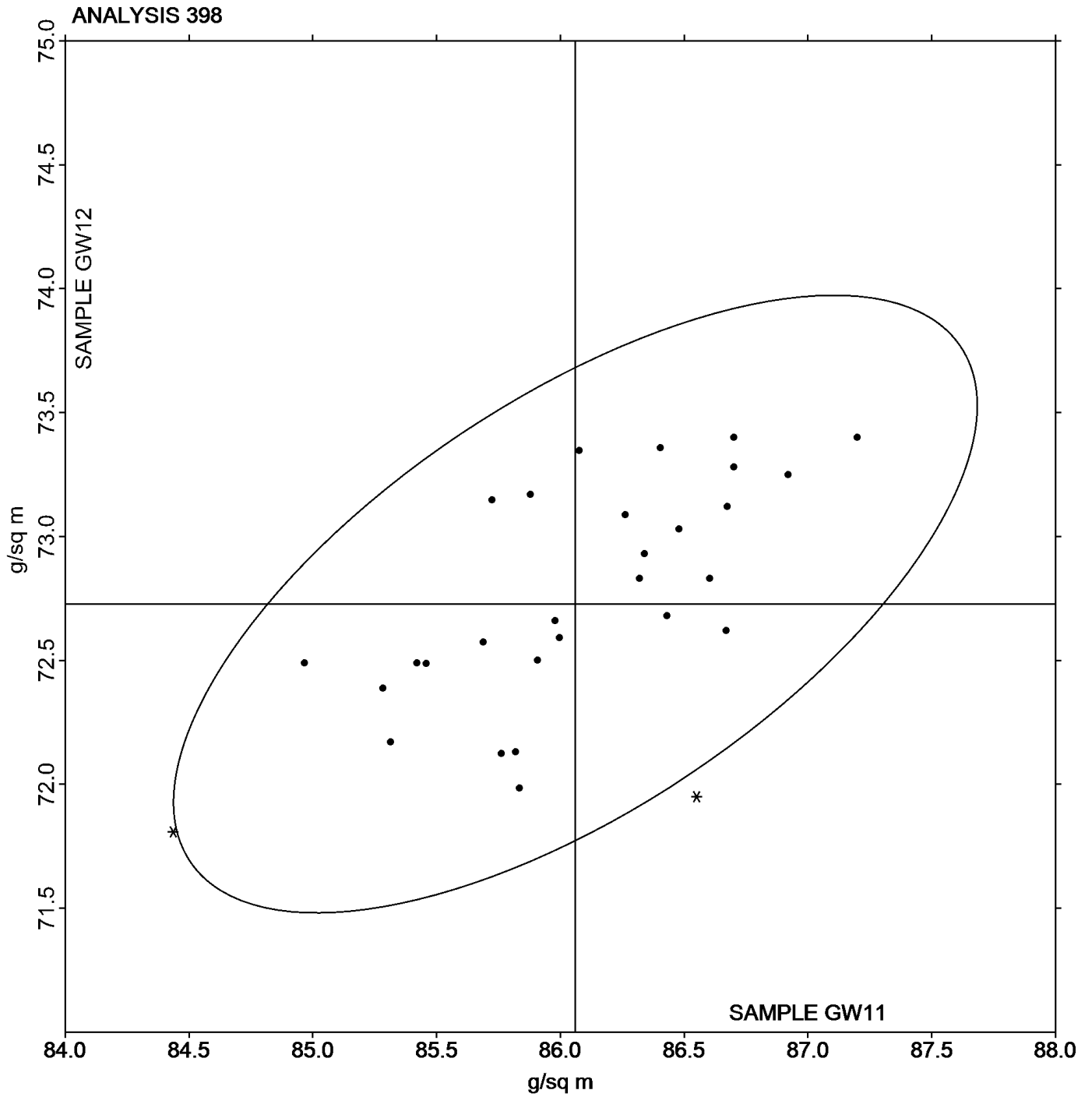
KNFR77 (X) - Extreme data.

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW11** = 86.060 g/sq m

Grand Mean Sample **GW12** = 72.728 g/sq m



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

| WebCode | Data Flag | Sample GX11 | | | Sample GX12 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CRJB2 | | 9.98 | -2.84 | -0.96 | 28.97 | -22.57 | -0.86 |
| 2D3FL8 | | 13.11 | 0.29 | 0.10 | 78.11 | 26.57 | 1.01 |
| 7GMZGQ | X | 20.19 | 7.37 | 2.49 | 186.91 | 135.37 | 5.13 |
| 8BDYVL | | 9.55 | -3.27 | -1.11 | 28.58 | -22.96 | -0.87 |
| 9FME3P | | 8.67 | -4.15 | -1.40 | 27.80 | -23.74 | -0.90 |
| 9M8A2D | | 18.24 | 5.42 | 1.83 | 70.17 | 18.63 | 0.71 |
| AN2P4G | | 15.41 | 2.59 | 0.88 | 77.44 | 25.90 | 0.98 |
| ANBTGF | X | 16.64 | 3.82 | 1.29 | 253.81 | 202.27 | 7.66 |
| AT8E9H | * | 16.70 | 3.88 | 1.31 | 116.10 | 64.56 | 2.45 |
| CHLVZV | | 10.09 | -2.73 | -0.92 | 31.61 | -19.93 | -0.76 |
| EQTECQ | | 7.85 | -4.97 | -1.68 | 33.22 | -18.32 | -0.69 |
| FNZDW8 | | 11.85 | -0.97 | -0.33 | 41.88 | -9.66 | -0.37 |
| GHZAZZ | | 12.24 | -0.58 | -0.20 | 34.30 | -17.24 | -0.65 |
| GVANDK | | 19.68 | 6.86 | 2.32 | 100.00 | 48.46 | 1.84 |
| HGWH3K | | 10.86 | -1.96 | -0.66 | 32.58 | -18.96 | -0.72 |
| HJHRZ6 | | 14.35 | 1.53 | 0.52 | 78.94 | 27.40 | 1.04 |
| K8H9PC | | 14.15 | 1.33 | 0.45 | 70.05 | 18.51 | 0.70 |
| KFAQ4K | | 12.10 | -0.72 | -0.24 | 38.30 | -13.24 | -0.50 |
| L3AVPN | | 13.40 | 0.58 | 0.20 | 32.30 | -19.24 | -0.73 |
| Q2QETC | | 11.30 | -1.52 | -0.51 | 28.10 | -23.44 | -0.89 |
| Q8EYXD | | 9.02 | -3.80 | -1.28 | 20.43 | -31.11 | -1.18 |
| QLAC2M | | 16.38 | 3.56 | 1.21 | 65.86 | 14.32 | 0.54 |
| QYZ7CV | | 15.41 | 2.59 | 0.88 | 93.51 | 41.97 | 1.59 |
| T2ZZG4 | | 12.52 | -0.30 | -0.10 | 41.84 | -9.70 | -0.37 |
| U4ZP3J | | 13.72 | 0.90 | 0.31 | 65.68 | 14.14 | 0.54 |
| VFEFLR | | 10.39 | -2.43 | -0.82 | 23.28 | -28.26 | -1.07 |
| VFW28B | | 12.78 | -0.04 | -0.01 | 38.37 | -13.17 | -0.50 |
| Y23J73 | | 15.10 | 2.28 | 0.77 | 60.40 | 8.86 | 0.34 |
| ZRU2WN | | 11.23 | -1.59 | -0.54 | 33.75 | -17.79 | -0.67 |

| Summary Statistics | | |
|---|----------------|----------------|
| | Sample GX11 | Sample GX12 |
| Grand Means | 12.818 Seconds | 51.540 Seconds |
| SD Btwn Labs | 2.956 Seconds | 26.390 Seconds |
| Statistics based on 27 of 29 reporting participants | | |

Comments on assigned Data Flags for Test #399

7GMZGQ (X) - Data for Sample GX12 are high. Inconsistent in testing within the determinations for both samples.

ANBTGF (X) - Extreme data.

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample **GX11** = 12.818 Seconds

Grand Mean Sample **GX12** = 51.540 Seconds

