



Paper & Paperboard Testing Program

Summary Report #274G-February 2015

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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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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.

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 | |
| 3EN4FV | | GA15 | 92.54 | -0.66 | 2.55 | -0.07 | 0.01 | -0.03 | 0.08 | HE |
| | | GA16 | 92.47 | -0.65 | 2.53 | | | | | |
| 487VRY | | GA15 | 90.59 | 0.17 | 1.94 | -0.10 | -0.02 | 0.02 | 0.11 | TS |
| | | GA16 | 90.49 | 0.15 | 1.96 | | | | | |
| 4ZLRKW | | GA15 | 90.65 | -0.92 | 1.05 | 0.03 | -0.01 | 0.00 | 0.03 | HH |
| | | GA16 | 90.68 | -0.92 | 1.05 | | | | | |
| 6YM9VZ | | GA15 | 91.59 | -0.39 | 2.30 | 0.21 | 0.01 | 0.18 | 0.28 | TM |
| | | GA16 | 91.80 | -0.38 | 2.48 | | | | | |
| AACD7W | | GA15 | 93.43 | -0.66 | 2.62 | 0.18 | 0.06 | 0.15 | 0.24 | EH |
| | | GA16 | 93.60 | -0.60 | 2.77 | | | | | |
| AP2HEP | | GA15 | 92.44 | -0.55 | 1.94 | 0.34 | -0.07 | 0.00 | 0.35 | XX |
| | | GA16 | 92.78 | -0.62 | 1.93 | | | | | |
| F8KHVM | | GA15 | 91.68 | -0.81 | 2.85 | 0.10 | 0.03 | 0.04 | 0.11 | HH |
| | | GA16 | 91.77 | -0.78 | 2.89 | | | | | |
| HVYZ6M | | GA15 | 91.57 | -0.39 | 2.32 | 0.05 | 0.04 | -0.01 | 0.06 | TM |
| | | GA16 | 91.62 | -0.35 | 2.31 | | | | | |
| JTRX3P | | GA15 | 92.10 | -0.35 | 1.95 | 0.14 | -0.13 | 0.01 | 0.19 | TS |
| | | GA16 | 92.25 | -0.48 | 1.97 | | | | | |
| KBAFBF | | GA15 | 91.73 | -0.30 | 2.14 | -0.04 | 0.09 | 0.04 | 0.11 | TS |
| | | GA16 | 91.69 | -0.21 | 2.17 | | | | | |
| LXWHVE | | GA15 | 91.98 | -0.57 | 2.36 | 0.04 | 0.00 | 0.02 | 0.04 | MK |
| | | GA16 | 92.02 | -0.58 | 2.37 | | | | | |
| MEHFKC | | GA15 | 90.43 | -0.05 | 1.80 | -0.04 | 0.01 | 0.00 | 0.04 | TS |
| | | GA16 | 90.39 | -0.04 | 1.80 | | | | | |
| NZV3V3 | | GA15 | 93.40 | -0.07 | 2.58 | 0.00 | -0.63 | 0.01 | 0.63 | X LS |
| | | GA16 | 93.40 | -0.70 | 2.59 | | | | | |
| P884GB | | GA15 | 90.78 | -1.12 | 0.99 | 0.04 | -0.04 | 0.02 | 0.06 | HH |
| | | GA16 | 90.82 | -1.17 | 1.01 | | | | | |
| R6GP3K | | GA15 | 91.72 | -0.66 | 2.38 | 0.01 | 0.00 | 0.03 | 0.03 | TC |
| | | GA16 | 91.73 | -0.66 | 2.41 | | | | | |
| RAANGF | | GA15 | 91.70 | -0.66 | 2.53 | -0.02 | -0.02 | -0.02 | 0.03 | EH |
| | | GA16 | 91.67 | -0.68 | 2.52 | | | | | |
| RFWHA8 | | GA15 | 91.56 | -0.76 | 2.43 | 0.19 | 0.05 | 0.07 | 0.21 | LS |
| | | GA16 | 91.75 | -0.70 | 2.51 | | | | | |

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 | |
| RNQLMG | | GA15 | 92.40 | -1.02 | 0.33 | -0.07 | 0.00 | 0.01 | 0.07 | HG |
| | | GA16 | 92.33 | -1.02 | 0.34 | | | | | |
| RYPNFC | | GA15 | 90.27 | 0.09 | 1.84 | 0.10 | 0.01 | 0.03 | 0.10 | TS |
| | | GA16 | 90.37 | 0.10 | 1.86 | | | | | |
| TCAGNJ | | GA15 | 93.48 | -0.57 | 2.79 | 0.25 | 0.12 | -0.14 | 0.31 | MI |
| | | GA16 | 93.72 | -0.45 | 2.65 | | | | | |
| TG6PYZ | | GA15 | 91.92 | -0.91 | 2.55 | 0.17 | 0.06 | 0.09 | 0.20 | TC |
| | | GA16 | 92.09 | -0.86 | 2.64 | | | | | |
| UTZJ6N | | GA15 | 93.27 | 0.96 | 2.47 | 0.08 | 0.02 | 0.05 | 0.10 | HE |
| | | GA16 | 93.35 | 0.98 | 2.52 | | | | | |
| UVETYZ | | GA15 | 92.48 | -0.35 | 2.00 | 0.32 | 0.08 | 0.21 | 0.39 | XX |
| | | GA16 | 92.80 | -0.27 | 2.21 | | | | | |
| WQKY9J | | GA15 | 91.95 | -0.50 | 2.17 | 0.03 | 0.01 | -0.01 | 0.04 | HC |
| | | GA16 | 91.99 | -0.49 | 2.16 | | | | | |
| XW3XVA | | GA15 | 93.27 | -0.52 | 1.86 | 0.11 | 0.05 | -0.01 | 0.12 | XS |
| | | GA16 | 93.38 | -0.46 | 1.85 | | | | | |

| Grand Means | | Summary Statistics | | | | | | | |
|-------------------|------|--------------------|--------|-------|-------|--------|-------|-------|--|
| | GA15 | 91.957 | -0.479 | 2.109 | 0.081 | -0.010 | 0.030 | 0.157 | |
| | GA16 | 92.038 | -0.464 | 2.140 | | | | | |
| Std Dev Btwn Labs | | | | | 0.120 | 0.139 | 0.070 | 0.144 | |
| | GA15 | 0.955 | 0.443 | 0.590 | | | | | |
| | GA16 | 1.001 | 0.447 | 0.598 | | | | | |

Statistics based on 25 of 25 reporting participants

Instrument Code List as Reported by the Labs

(EH) - Datacolor Elrepho SF450

(HE) - Hunter LabScan

(HH) - Hunter D25DP - 9000

(MI) - Macbeth Color i 5

(TC) - Technidyne Color Touch Series

(TS) - Technidyne Brightimeter Micro S-5

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

(HC) - HunterLab ColorQuest XE

(HG) - Hunter ColorQUEST

(LS) - L & W Elrepho SE 070

(MK) - Macbeth Color-Eye 7000 Spectrophotometer

(TM) - Technidyne Technibrite Micro TB-1C

(XS) - X-Rite 938 Spectrodensitometer

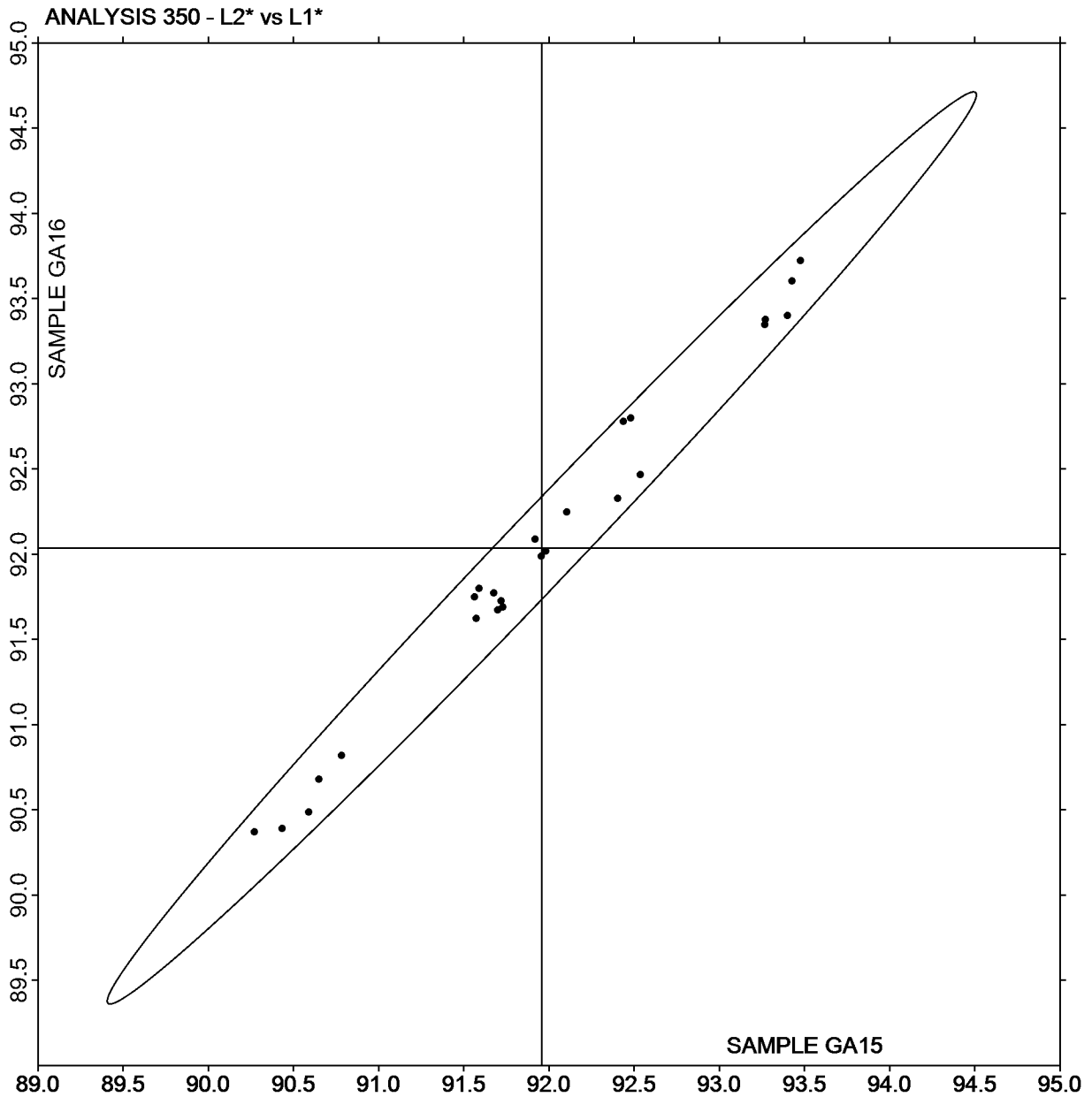
Analysis 350

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

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

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

Plot of L values GA16 v L values GA15



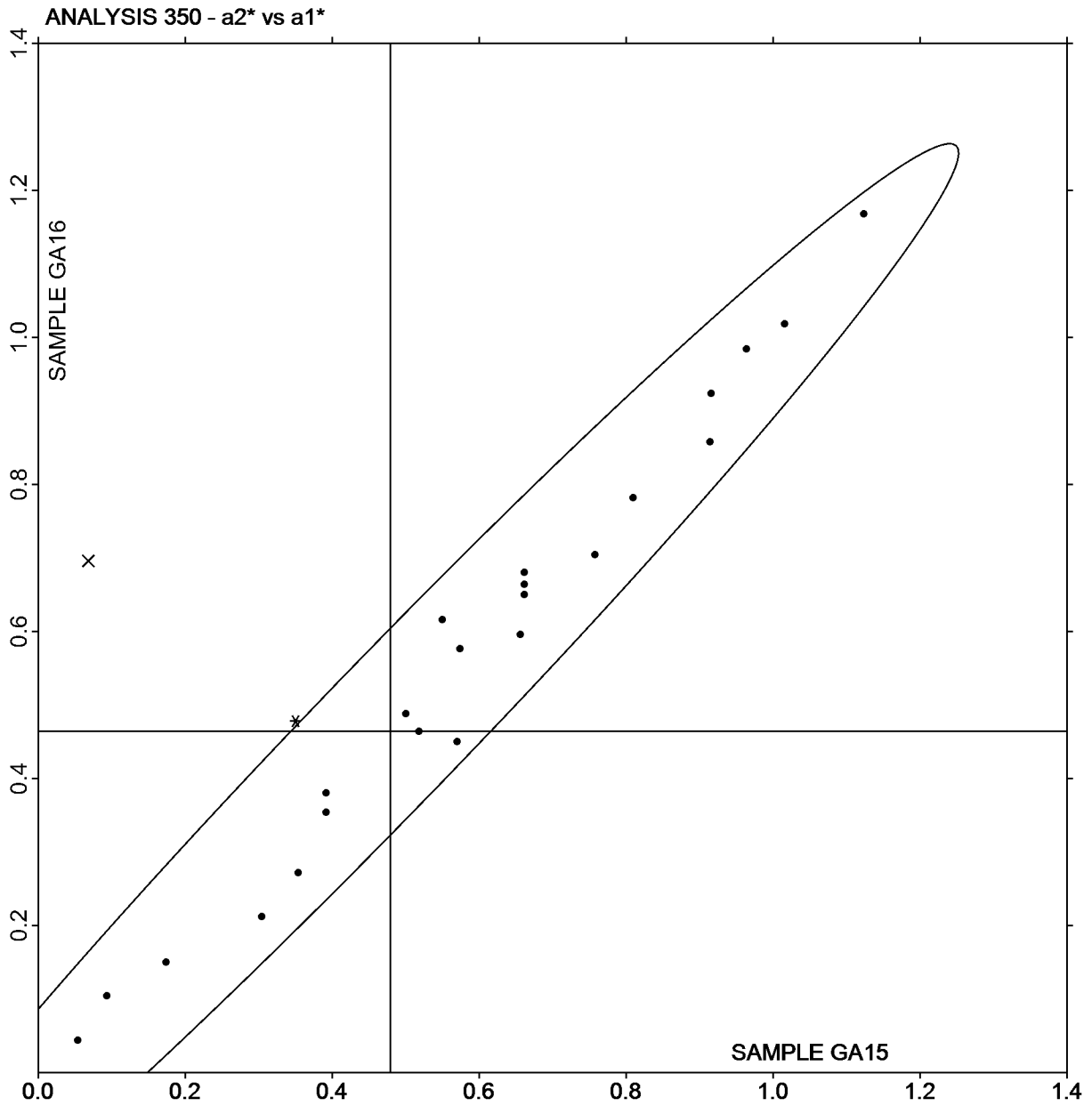
Analysis 350

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 a values GA16 v a values GA15

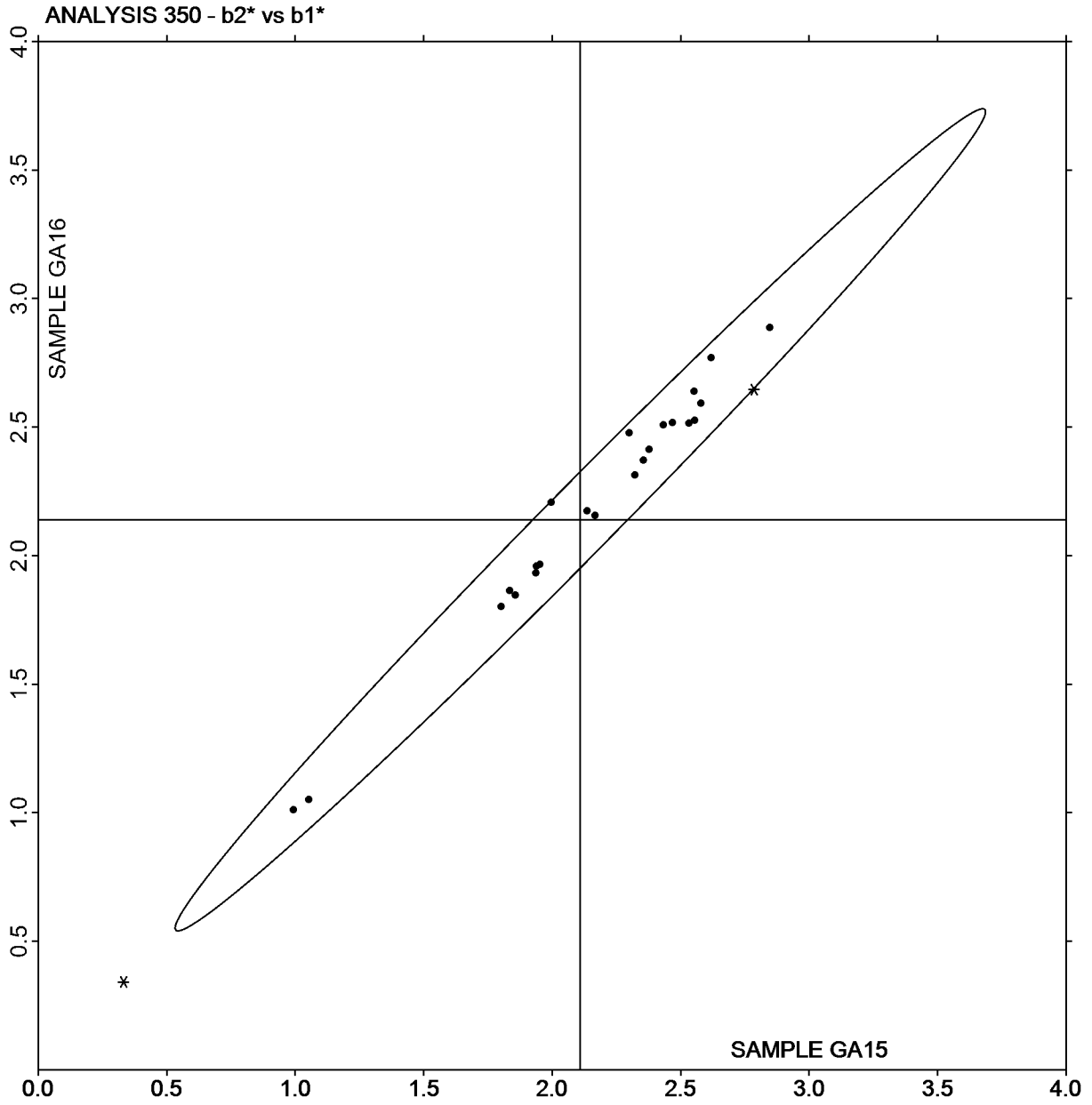


Analysis 350

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

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

Plot of b values GA16 v b values GA15



TAPPI-CTS Interlaboratory Testing Program

Analysis 351

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

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

| 3EN4FV | GA15 | 92.51 | -0.63 | 2.56 | 0.12 | 0.01 | 0.05 | 0.13 | HE | |
|--------|------|-------|-------|-------|-------|-------|-------|------|------|--|
| | GA16 | 92.63 | -0.62 | 2.61 | | | | | | |
| 92X66U | GA15 | 93.47 | -0.82 | 2.77 | -0.02 | 0.01 | 0.00 | 0.02 | EH | |
| | GA16 | 93.45 | -0.82 | 2.77 | | | | | | |
| 9MZ9Q3 | GA15 | 93.56 | -1.51 | -0.33 | 0.08 | 0.03 | 0.05 | 0.10 | LS | |
| | GA16 | 93.64 | -1.48 | -0.28 | | | | | | |
| AAVC9Z | GA15 | 92.26 | -0.78 | 2.42 | 0.14 | 0.02 | 0.04 | 0.15 | EF | |
| | GA16 | 92.40 | -0.76 | 2.46 | | | | | | |
| AK9JZU | GA15 | 93.83 | -0.67 | 2.83 | -0.15 | -0.10 | -0.11 | 0.21 | HT | |
| | GA16 | 93.68 | -0.78 | 2.72 | | | | | | |
| BD9C6R | GA15 | 92.47 | -0.83 | 2.32 | -0.03 | -0.02 | -0.01 | 0.04 | HE | |
| | GA16 | 92.44 | -0.86 | 2.30 | | | | | | |
| E9J2JJ | GA15 | 94.01 | -0.75 | 2.74 | -0.14 | -0.02 | -0.06 | 0.15 | NF | |
| | GA16 | 93.88 | -0.77 | 2.68 | | | | | | |
| F3CX8P | GA15 | 93.49 | -0.94 | 2.68 | 0.04 | 0.01 | 0.03 | 0.05 | TC | |
| | GA16 | 93.53 | -0.93 | 2.71 | | | | | | |
| GNMYJF | GA15 | 93.79 | -0.39 | 2.30 | 0.00 | -0.01 | 0.02 | 0.02 | XP | |
| | GA16 | 93.79 | -0.41 | 2.32 | | | | | | |
| GVN9Q8 | GA15 | 93.55 | -0.54 | 3.16 | -0.09 | 0.00 | -0.21 | 0.23 | NG | |
| | GA16 | 93.46 | -0.54 | 2.95 | | | | | | |
| LDQZTP | GA15 | 93.55 | -1.49 | -0.27 | 0.06 | -0.01 | 0.04 | 0.07 | LS | |
| | GA16 | 93.61 | -1.50 | -0.23 | | | | | | |
| MGM7ML | GA15 | 92.06 | -0.71 | 2.50 | 0.06 | 0.02 | -0.04 | 0.07 | XM | |
| | GA16 | 92.11 | -0.69 | 2.46 | | | | | | |
| NZV3V3 | GA15 | 93.30 | -0.80 | 2.72 | 0.10 | 0.06 | -0.08 | 0.14 | LS | |
| | GA16 | 93.40 | -0.74 | 2.64 | | | | | | |
| QFMEHX | GA15 | 93.47 | -0.70 | 2.59 | 0.13 | 0.11 | 0.10 | 0.20 | XX | |
| | GA16 | 93.60 | -0.59 | 2.69 | | | | | | |
| QX2JT9 | GA15 | 93.39 | -0.71 | 2.94 | 0.16 | 0.09 | 0.10 | 0.21 | NG | |
| | GA16 | 93.55 | -0.61 | 3.04 | | | | | | |
| U9PNCG | GA15 | 93.37 | -1.54 | -0.36 | 0.17 | 0.07 | 0.10 | 0.21 | LS | |
| | GA16 | 93.55 | -1.47 | -0.26 | | | | | | |
| VJJ2Q2 | GA15 | 93.38 | -0.70 | 2.94 | 0.04 | 0.03 | 0.04 | 0.06 | NG | |
| | GA16 | 93.42 | -0.67 | 2.98 | | | | | | |
| VQN2M4 | GA15 | 93.70 | -0.87 | 3.02 | 0.15 | 0.30 | -0.27 | 0.43 | X EH | |
| | GA16 | 93.86 | -0.58 | 2.75 | | | | | | |

Analysis 351

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

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

| W6JDKT | GA15 | 93.66 | -0.76 | 2.90 | 0.02 | -0.02 | 0.02 | 0.04 | HT |
|--------|------|-------|-------|------|-------|-------|-------|------|----|
| | GA16 | 93.68 | -0.78 | 2.92 | | | | | |
| XQXYM6 | GA15 | 93.52 | -0.74 | 2.75 | -0.01 | -0.01 | 0.06 | 0.06 | LS |
| | GA16 | 93.51 | -0.75 | 2.82 | | | | | |
| YKLTJQ | GA15 | 92.50 | -0.62 | 2.36 | 0.11 | -0.02 | -0.04 | 0.12 | HV |
| | GA16 | 92.61 | -0.64 | 2.32 | | | | | |
| ZLVT66 | GA15 | 91.70 | -0.45 | 2.14 | 0.05 | 0.03 | 0.04 | 0.07 | EE |
| | GA16 | 91.74 | -0.43 | 2.18 | | | | | |

Grand Means

Summary Statistics

| | | | | | | | | |
|-------------------|--------|--------|-------|-------|-------|--------|-------|--|
| GA15 | 93.206 | -0.814 | 2.258 | 0.045 | 0.025 | -0.007 | 0.128 | |
| GA16 | 93.251 | -0.802 | 2.252 | | | | | |
| Std Dev Btwn Labs | | | | | | | | |
| GA15 | 0.641 | 0.318 | 1.080 | 0.093 | 0.076 | 0.095 | 0.095 | |
| GA16 | 0.618 | 0.314 | 1.047 | | | | | |

Statistics based on 22 of 22 reporting participants

Instrument Code List as Reported by the Labs

| | |
|---|---|
| (EE) - Datacolor Elrepho 2000 | (EF) - Datacolor Elrepho 3000 |
| (EH) - Datacolor Elrepho SF450 | (HE) - Hunter LabScan |
| (HT) - Hunter UltraScan Vis | (HV) - Hunter Ultrascan XE |
| (LS) - L & W Elrepho SE 070 | (NF) - Minolta CM-3600d Spectrophotometer |
| (NG) - Minolta CM-3700d Spectrophotometer | (TC) - Technidyne Color Touch Series |
| (XM) - X-Rite CA-22 | (XP) - X-Rite Spectrophotometer DTP |
| (XX) - Instrument make/model not specified by lab | |

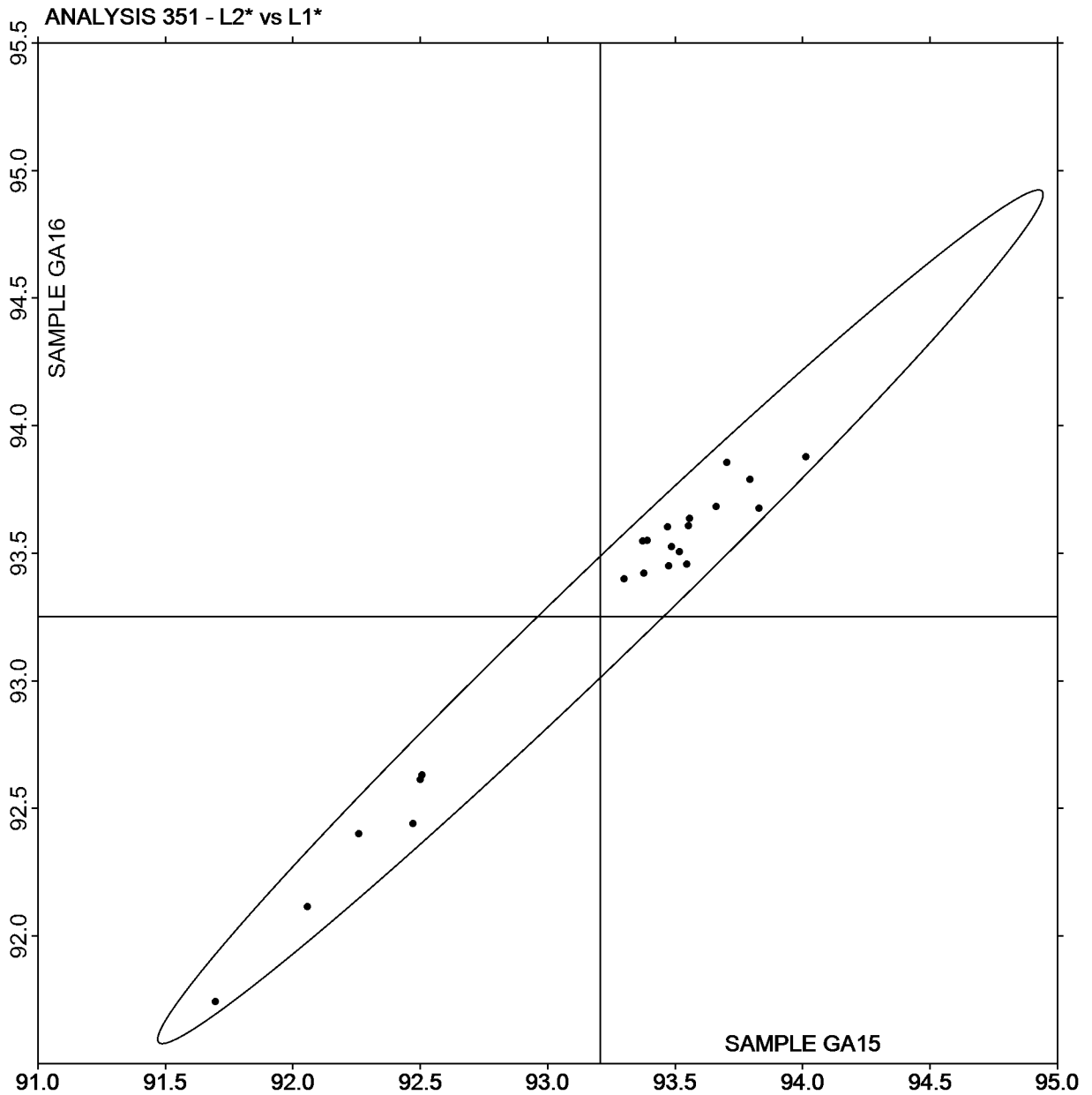
Analysis 351

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

Hunter L,a,b - Illuminant D65 - 10 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 GA16 v L values GA15



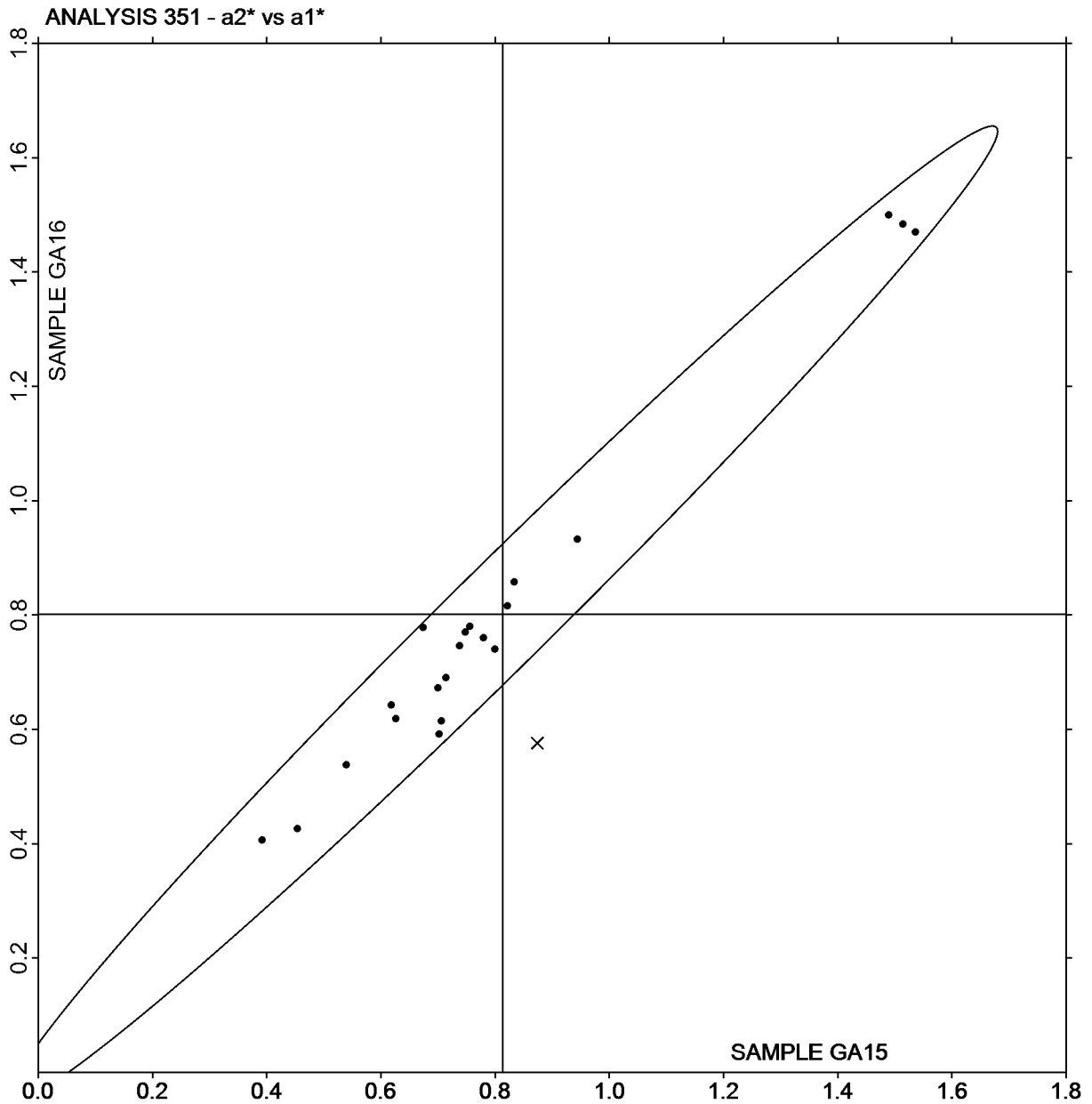
Analysis 351

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

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

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

Plot of a values GA16 v a values GA15

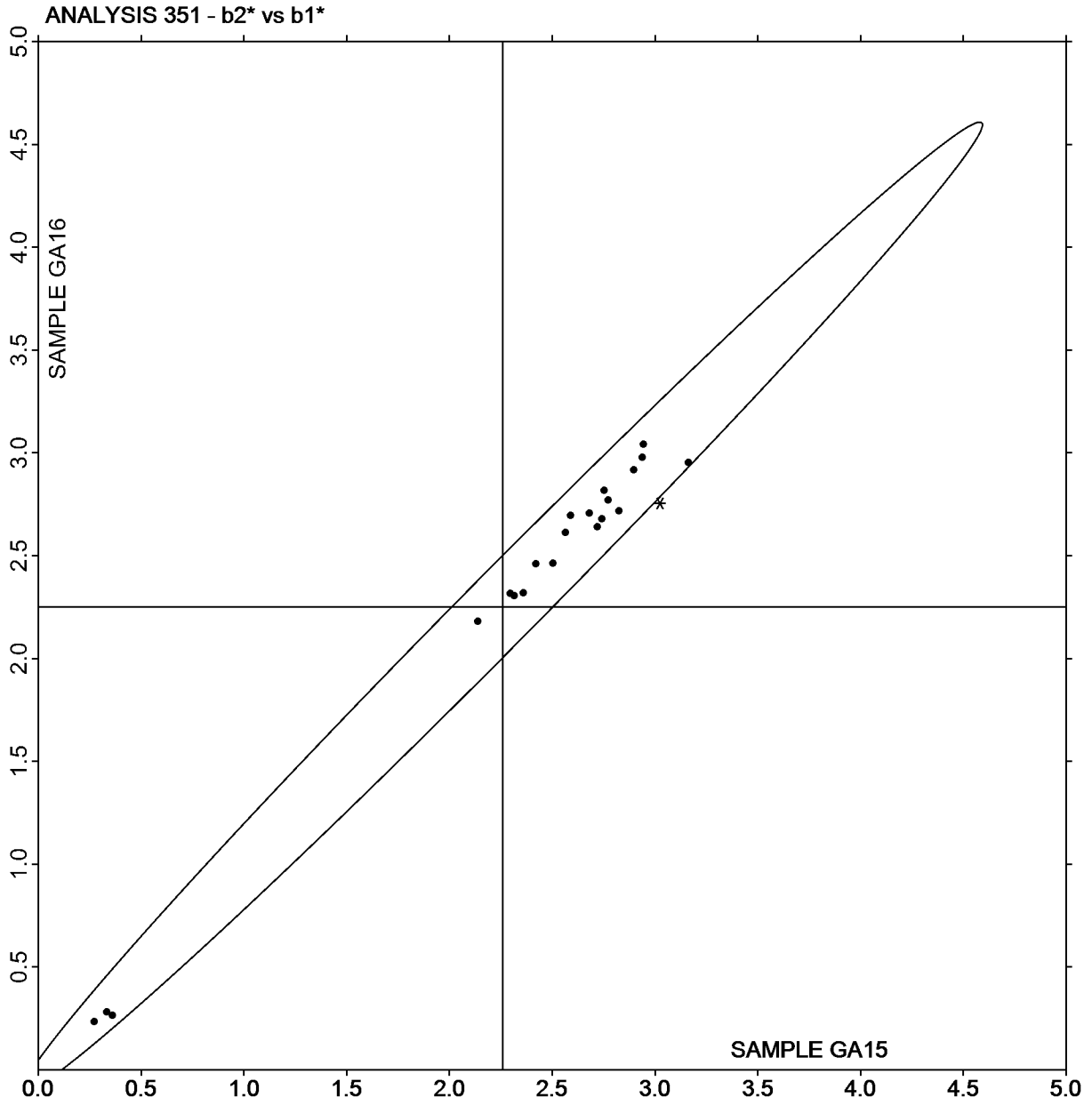


Analysis 351

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

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

Plot of b values GA16 v b values GA15



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

| WebCode | Data Flag | Sample GV15 | | | Sample GV16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 24WVH3 | | 3.794 | 0.020 | 0.27 | 4.182 | 0.047 | 0.59 | TM |
| 2F8XRL | | 3.837 | 0.063 | 0.85 | 4.224 | 0.088 | 1.11 | LW |
| 3AEM78 | | 3.921 | 0.147 | 2.00 | 4.307 | 0.172 | 2.14 | LW |
| 42DK7M | | 3.610 | -0.164 | -2.24 | 4.000 | -0.135 | -1.69 | XX |
| 487VRY | | 3.725 | -0.049 | -0.67 | 4.220 | 0.085 | 1.06 | EM |
| 4UJK39 | | 3.825 | 0.051 | 0.69 | 4.255 | 0.120 | 1.50 | LW |
| 4WLL47 | | 3.800 | 0.025 | 0.34 | 4.193 | 0.058 | 0.72 | XX |
| 6YM9VZ | | 3.876 | 0.102 | 1.38 | 4.135 | 0.000 | 0.00 | TA |
| 7BFRA7 | | 3.660 | -0.114 | -1.56 | 4.000 | -0.135 | -1.69 | TM |
| 7R6Z84 | | 3.889 | 0.115 | 1.56 | 4.233 | 0.098 | 1.22 | LW |
| 863DWZ | | 3.837 | 0.063 | 0.86 | 4.155 | 0.020 | 0.25 | TM |
| 8ECCHG | | 3.777 | 0.003 | 0.04 | 4.124 | -0.011 | -0.14 | XX |
| 8F8X9M | | 3.863 | 0.089 | 1.21 | 4.214 | 0.079 | 0.98 | EM |
| 8Q3RFV | | 3.733 | -0.042 | -0.57 | 4.038 | -0.097 | -1.21 | LW |
| 9MZ9Q3 | | 3.746 | -0.028 | -0.39 | 3.994 | -0.141 | -1.76 | VM |
| AACD7W | | 3.713 | -0.062 | -0.84 | 4.079 | -0.056 | -0.71 | MT |
| AK9JZU | | 3.752 | -0.022 | -0.31 | 4.148 | 0.013 | 0.16 | EM |
| ANPWM3 | | 3.800 | 0.026 | 0.35 | 4.067 | -0.068 | -0.85 | LW |
| AUJ4JD | | 3.895 | 0.120 | 1.64 | 4.193 | 0.058 | 0.73 | LW |
| AYT2TX | | 3.775 | 0.000 | 0.01 | 4.207 | 0.072 | 0.90 | LW |
| BD9C6R | | 3.860 | 0.086 | 1.17 | 4.198 | 0.063 | 0.79 | TM |
| CEZZZR | | 3.818 | 0.043 | 0.59 | 4.149 | 0.014 | 0.17 | EM |
| CVKMZP | * | 3.854 | 0.080 | 1.08 | 4.050 | -0.085 | -1.06 | TM |
| E9J2JJ | | 3.904 | 0.130 | 1.77 | 4.273 | 0.138 | 1.73 | TM |
| F2WABC | | 3.820 | 0.046 | 0.62 | 4.221 | 0.086 | 1.07 | XX |
| F3CX8P | | 3.772 | -0.002 | -0.03 | 4.123 | -0.012 | -0.15 | LW |
| FVPNME | | 3.694 | -0.080 | -1.10 | 4.117 | -0.018 | -0.23 | PP |
| G8ENNL | | 3.722 | -0.052 | -0.71 | 4.163 | 0.028 | 0.35 | PP |
| GG6M7E | | 3.770 | -0.004 | -0.06 | 4.123 | -0.012 | -0.15 | TA |
| GNAMEJF | | 3.695 | -0.079 | -1.08 | 4.145 | 0.010 | 0.12 | TM |
| GVN9Q8 | | 3.744 | -0.030 | -0.41 | 4.058 | -0.077 | -0.96 | XX |
| H4VAND | | 3.725 | -0.049 | -0.67 | 4.124 | -0.011 | -0.14 | TA |
| HUU6UW | | 3.700 | -0.074 | -1.01 | 4.033 | -0.102 | -1.27 | LW |
| HVYZ6M | | 3.814 | 0.039 | 0.54 | 4.124 | -0.011 | -0.13 | XX |
| JP86QM | | 3.782 | 0.008 | 0.10 | 4.105 | -0.030 | -0.38 | EM |
| K23NXE | | 3.911 | 0.137 | 1.86 | 4.283 | 0.148 | 1.85 | PP |
| KBAFBF | | 3.740 | -0.034 | -0.47 | 4.110 | -0.025 | -0.31 | LA |
| LDQZTP | | 3.723 | -0.051 | -0.70 | 4.070 | -0.065 | -0.81 | XX |
| LGVZ63 | * | 3.760 | -0.015 | -0.20 | 4.276 | 0.140 | 1.75 | FR |
| LXWHVE | | 3.796 | 0.022 | 0.29 | 4.261 | 0.126 | 1.57 | PP |
| M4HWYC | | 3.827 | 0.053 | 0.72 | 4.217 | 0.082 | 1.03 | LW |
| MEHFKC | | 3.652 | -0.122 | -1.66 | 4.056 | -0.079 | -0.99 | TM |
| MFT8Q8 | | 3.752 | -0.022 | -0.31 | 4.055 | -0.080 | -1.00 | TA |

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

| WebCode | Data Flag | Sample GV15 | | | Sample GV16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| MGM7ML | | 3.827 | 0.052 | 0.71 | 4.169 | 0.034 | 0.43 | LW |
| MQA6DQ | | 3.868 | 0.094 | 1.28 | 4.262 | 0.127 | 1.58 | EM |
| NNGK4C | | 3.630 | -0.144 | -1.97 | 4.000 | -0.135 | -1.69 | TM |
| NUP4ZK | | 3.749 | -0.026 | -0.35 | 4.076 | -0.059 | -0.73 | LW |
| P8UEFJ | | 3.740 | -0.034 | -0.47 | 4.118 | -0.017 | -0.21 | TM |
| PVXDRG | | 3.692 | -0.082 | -1.12 | 4.079 | -0.056 | -0.70 | PP |
| QCZ4YX | | 3.805 | 0.031 | 0.42 | 4.142 | 0.007 | 0.09 | XX |
| QFZNCB | | 3.765 | -0.010 | -0.13 | 4.114 | -0.021 | -0.26 | XX |
| QX2JT9 | | 3.719 | -0.056 | -0.76 | 4.060 | -0.075 | -0.94 | LW |
| R6GP3K | | 3.905 | 0.131 | 1.78 | 4.244 | 0.109 | 1.36 | TA |
| R7QUGA | | 3.902 | 0.127 | 1.74 | 4.238 | 0.103 | 1.28 | LW |
| RFWHA8 | | 3.707 | -0.067 | -0.92 | 4.161 | 0.026 | 0.32 | LW |
| RYPNFC | | 3.666 | -0.108 | -1.48 | 4.027 | -0.108 | -1.35 | TM |
| TCAGNJ | | 3.751 | -0.023 | -0.32 | 4.068 | -0.067 | -0.84 | TA |
| U9PNCG | | 3.849 | 0.075 | 1.02 | 4.174 | 0.039 | 0.49 | LW |
| UVETYZ | | 3.770 | -0.004 | -0.06 | 4.160 | 0.025 | 0.31 | XX |
| UZCXP6 | | 3.753 | -0.021 | -0.29 | 4.097 | -0.038 | -0.48 | EM |
| VAZV6C | | 3.713 | -0.062 | -0.84 | 4.039 | -0.096 | -1.20 | PP |
| VJJ2Q2 | | 3.803 | 0.029 | 0.39 | 4.111 | -0.024 | -0.30 | XX |
| VRWD3J | | 3.685 | -0.090 | -1.22 | 4.005 | -0.130 | -1.62 | EM |
| VRX9NB | | 3.786 | 0.012 | 0.16 | 4.129 | -0.006 | -0.08 | LA |
| W6JDKT | | 3.845 | 0.071 | 0.96 | 4.180 | 0.045 | 0.56 | EM |
| XCWD72 | X | 3.478 | -0.296 | -4.04 | 3.842 | -0.293 | -3.66 | EM |
| XW3XVA | | 3.670 | -0.104 | -1.42 | 4.030 | -0.105 | -1.31 | TM |
| YG9JH2 | | 3.791 | 0.016 | 0.22 | 4.150 | 0.015 | 0.19 | LW |
| YKLTJQ | | 3.734 | -0.040 | -0.55 | 4.172 | 0.037 | 0.46 | TA |
| YWERBA | | 3.690 | -0.084 | -1.15 | 4.060 | -0.075 | -0.94 | TM |
| ZWVFW2 | | 3.733 | -0.041 | -0.56 | 4.094 | -0.042 | -0.52 | TM |

| | Sample GV15 | Summary Statistics | Sample GV16 |
|---|-------------|--------------------|-------------|
| Grand Means | 3.7744 mils | | 4.1352 mils |
| SD Btwn Labs | 0.0734 mils | | 0.0800 mils |
| Statistics based on 70 of 71 reporting participants | | | |

Comments on assigned Data Flags for Test #360

XCWD72 (X) - Systematic error (data for both samples are low).

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

Instrument Code List as Reported by the Labs

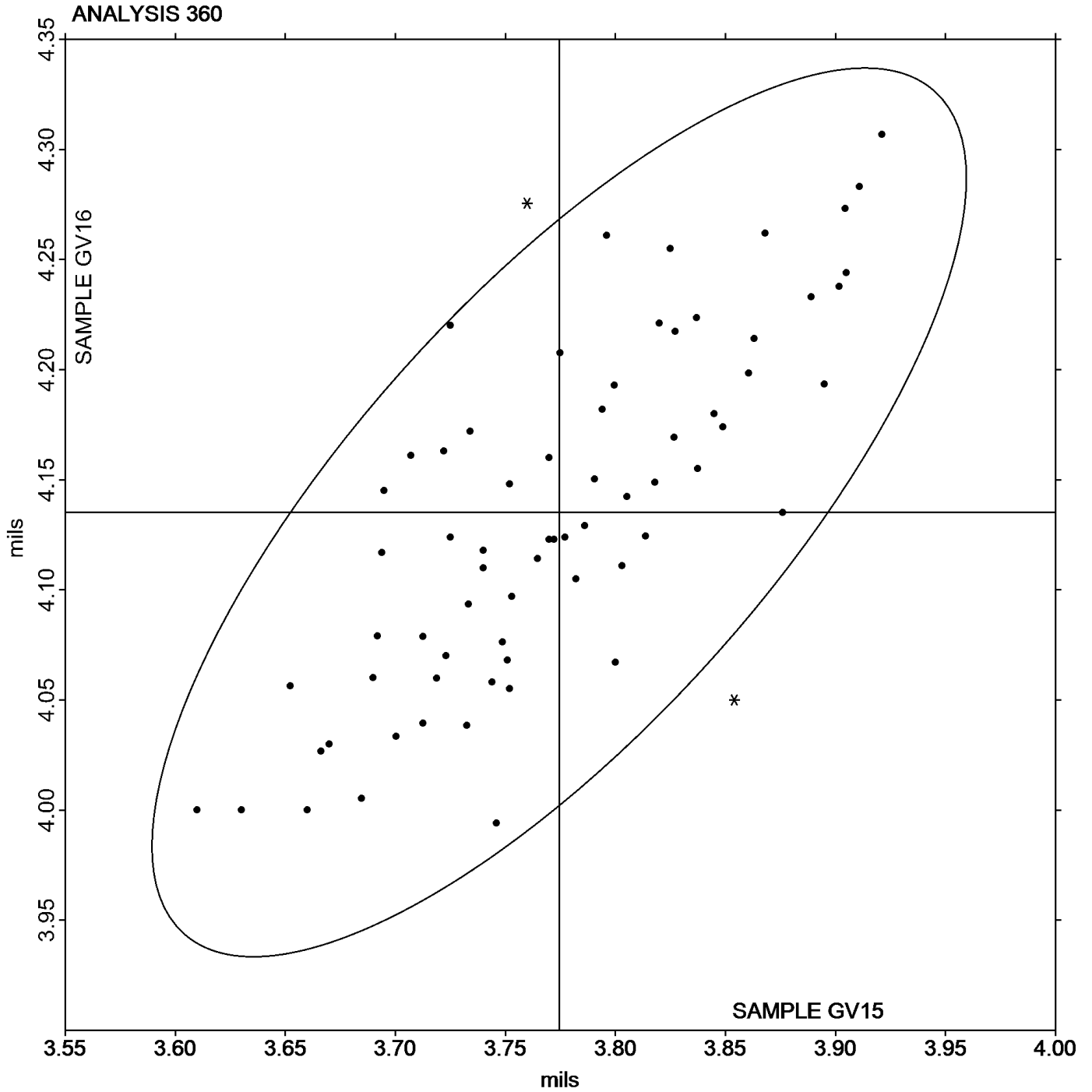
| | |
|---|---|
| (EM) - Emveco | (FR) - Frank Instruments |
| (LA) - L & W Autoline | (LW) - L & W |
| (MT) - Mitutoyo | (PP) - Technidyne Profile/Plus |
| (TA) - Thwing-Albert | (TM) - TMI |
| (VM) - Valmet PaperLab (was Kajaani/Robotest) | (XX) - Instrument make/model not specified by lab |

Analysis 360

Thickness (Caliper), Printing papers

Grand Mean Sample **GV15** = 3.7744 mils

Grand Mean Sample **GV16** = 4.1352 mils



Paper & Paperboard Interlaboratory Testing Program

Analysis 361

Thickness (Caliper), Packaging papers

| WebCode | Data Flag | Sample GY15 | | | Sample GY16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 24WVH3 | | 7.764 | 0.170 | 1.41 | 9.512 | 0.147 | 1.09 | TM |
| 3E64C7 | | 7.574 | -0.020 | -0.16 | 9.328 | -0.037 | -0.27 | TM |
| 3EN4FV | | 7.554 | -0.040 | -0.33 | 9.264 | -0.101 | -0.75 | EM |
| 4MWX93 | | 7.330 | -0.264 | -2.19 | 9.090 | -0.275 | -2.03 | LA |
| 4ZLRKW | | 7.737 | 0.143 | 1.19 | 9.559 | 0.194 | 1.43 | EM |
| 8Q3RFV | | 7.544 | -0.050 | -0.41 | 9.278 | -0.087 | -0.65 | XX |
| 92X66U | | 7.670 | 0.076 | 0.63 | 9.510 | 0.145 | 1.07 | LA |
| 9C43ZP | | 7.620 | 0.026 | 0.22 | 9.390 | 0.025 | 0.19 | LA |
| AYT2TX | | 7.766 | 0.172 | 1.43 | 9.526 | 0.161 | 1.19 | LW |
| EDAKEL | | 7.508 | -0.086 | -0.71 | 9.319 | -0.046 | -0.34 | XX |
| F8KHVM | | 7.548 | -0.046 | -0.38 | 9.306 | -0.059 | -0.44 | EM |
| FUU3W9 | | 7.540 | -0.053 | -0.44 | 9.354 | -0.011 | -0.08 | LW |
| FVQYFG | | 7.680 | 0.086 | 0.72 | 9.400 | 0.035 | 0.26 | TM |
| GFTQZA | | 7.830 | 0.237 | 1.96 | 9.567 | 0.202 | 1.49 | LA |
| H4VAND | * | 7.584 | -0.010 | -0.08 | 9.478 | 0.113 | 0.84 | TA |
| HAKMNG | | 7.490 | -0.104 | -0.86 | 9.280 | -0.085 | -0.63 | TM |
| HMB3MU | | 7.728 | 0.135 | 1.12 | 9.575 | 0.210 | 1.55 | XX |
| HNG4DE | | 7.538 | -0.056 | -0.46 | 9.329 | -0.036 | -0.27 | PP |
| HUU6UW | | 7.382 | -0.212 | -1.76 | 9.130 | -0.235 | -1.74 | LW |
| HVYZ6M | | 7.653 | 0.059 | 0.49 | 9.457 | 0.092 | 0.68 | XX |
| JBVE6G | | 7.649 | 0.055 | 0.46 | 9.456 | 0.091 | 0.67 | TM |
| JETLJ7 | | 7.587 | -0.007 | -0.06 | 9.353 | -0.012 | -0.09 | TA |
| LZ2KUB | | 7.620 | 0.026 | 0.22 | 9.390 | 0.025 | 0.19 | PP |
| MUPLPG | | 7.411 | -0.183 | -1.52 | 9.083 | -0.282 | -2.09 | TM |
| NNGK4C | | 7.460 | -0.134 | -1.11 | 9.200 | -0.165 | -1.22 | TM |
| NZV3V3 | | 7.535 | -0.058 | -0.48 | 9.311 | -0.054 | -0.40 | TM |
| P884GB | | 7.735 | 0.141 | 1.17 | 9.466 | 0.101 | 0.75 | EM |
| RYV2JV | | 7.540 | -0.054 | -0.45 | 9.240 | -0.125 | -0.92 | TM |
| TCAGNJ | | 7.622 | 0.028 | 0.24 | 9.379 | 0.014 | 0.10 | TA |
| UPVX9B | | 7.490 | -0.104 | -0.86 | 9.235 | -0.130 | -0.96 | TA |
| UTZJ6N | | 7.480 | -0.113 | -0.94 | 9.228 | -0.137 | -1.01 | LA |
| VC3V69 | | 7.415 | -0.179 | -1.48 | 9.230 | -0.135 | -1.00 | TA |
| VQN2M4 | | 7.780 | 0.186 | 1.55 | 9.554 | 0.189 | 1.40 | EM |
| W3EC9F | | 7.630 | 0.036 | 0.30 | 9.402 | 0.037 | 0.27 | XX |
| WYCCB4 | | 7.698 | 0.104 | 0.87 | 9.488 | 0.123 | 0.91 | TM |
| YWERBA | | 7.680 | 0.086 | 0.72 | 9.470 | 0.105 | 0.78 | TM |

Sample GY15

Summary Statistics

Sample GY16

Grand Means 7.5937 mils
SD Btwn Labs 0.1205 mils

9.3649 mils
0.1353 mils

Statistics based on 36 of 36 reporting participants

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

Instrument Code List as Reported by the Labs

(EM) - Emveco

(LA) - L & W Autoline

(LW) - L & W

(PP) - Technidyne Profile/Plus

(TA) - Thwing-Albert

(TM) - TMI

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

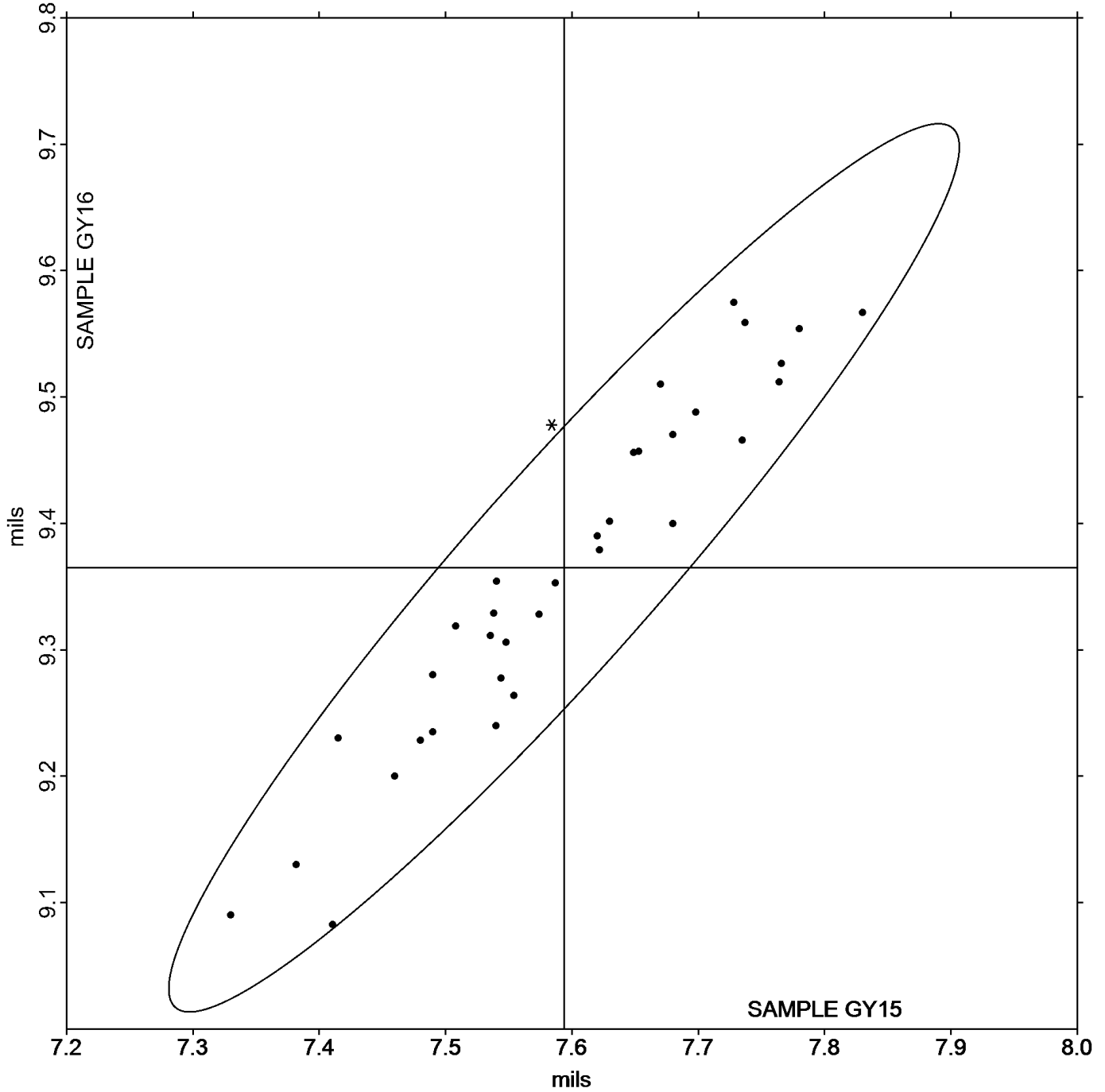
Analysis 361

Thickness (Caliper), Packaging papers

Grand Mean Sample GY15 = 7.5937 mils

Grand Mean Sample GY16 = 9.3649 mils

ANALYSIS 361



Paper & Paperboard Interlaboratory Testing Program

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

| WebCode | Data Flag | Sample GD15 | | | Sample GD16 | | | Instr Code |
|---------|-----------|-------------|----------------------|----------|-------------|----------------------|----------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 487VRY | | 0.5402 | 0.0049 | 0.08 | 0.5624 | -0.0449 | -0.90 | XX |
| 49E6HB | | 0.4380 | -0.0973 | -1.51 | 0.6078 | 0.0006 | 0.01 | IT |
| 7R7UTV | | 0.5452 | 0.0099 | 0.15 | 0.6240 | 0.0168 | 0.34 | TA |
| 8Q3RFV | | 0.6040 | 0.0687 | 1.07 | 0.6040 | -0.0033 | -0.07 | TL |
| EW94NB | X | 107.1000 | 106.5647 | 1,659.14 | 124.6800 | 124.0728 | 2,490.36 | CH |
| GFTQZA | | 0.4366 | -0.0987 | -1.54 | 0.5232 | -0.0841 | -1.69 | TA |
| HVYZ6M | | 0.5848 | 0.0495 | 0.77 | 0.6100 | 0.0028 | 0.06 | TM |
| MQA6DQ | | 0.5528 | 0.0175 | 0.27 | 0.6340 | 0.0268 | 0.54 | TM |
| QX2JT9 | | 0.5808 | 0.0455 | 0.71 | 0.6926 | 0.0854 | 1.71 | TM |
| XW3XVA | X | 0.3788 | -0.1565 | -2.44 | 0.3376 | -0.2697 | -5.41 | XX |

| Summary Statistics | | | |
|--|-------------|-----|-------------|
| | Sample GD15 | | Sample GD16 |
| Grand Means | 0.53530 | COF | 0.60725 |
| SD Btwn Labs | 0.06423 | COF | 0.04982 |
| Statistics based on 8 of 10 reporting participants | | | |

Comments on assigned Data Flags for Test #364

EW94NB (X) - Extreme data.

XW3XVA (X) - Data for both samples are low.

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

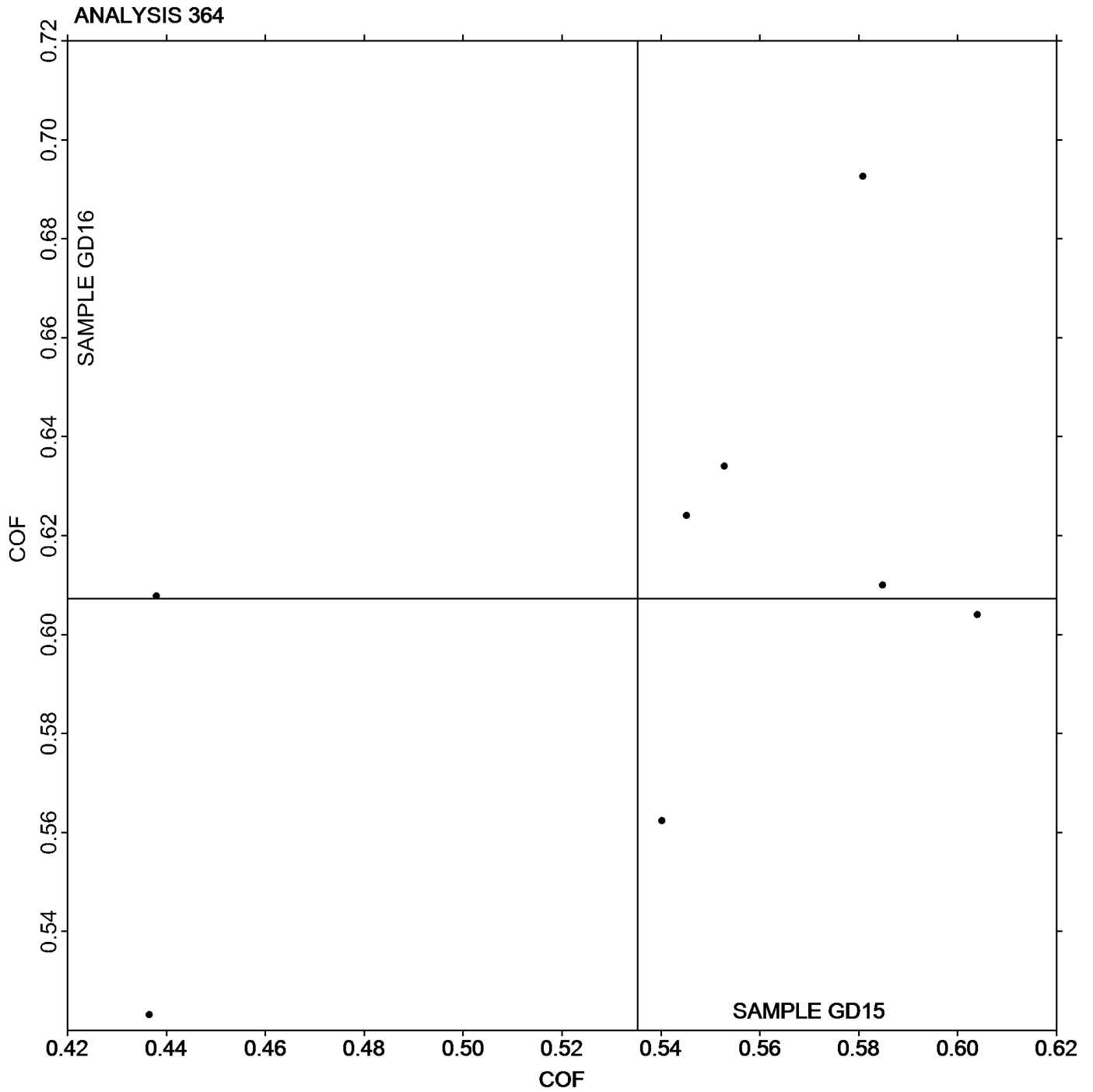
(XX) - Instrument make/model not specified by lab

Analysis 364

Coefficient of Static Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD15** = 0.53530 COF

Grand Mean Sample **GD16** = 0.60725 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 GD15 | | | Sample GD16 | | | Instr Code |
|---------|-----------|-------------|----------------------|----------|-------------|----------------------|----------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 3GU66U | | 0.3330 | -0.0785 | -0.86 | 0.4242 | -0.0423 | -0.54 | TM |
| 49E6HB | | 0.3488 | -0.0627 | -0.68 | 0.4870 | 0.0205 | 0.26 | IR |
| 6YM9VZ | | 0.3150 | -0.0965 | -1.05 | 0.3782 | -0.0883 | -1.12 | TA |
| 7R7UTV | | 0.4120 | 0.0005 | 0.01 | 0.4834 | 0.0169 | 0.22 | TA |
| 8Q3RFV | | 0.5660 | 0.1545 | 1.68 | 0.5860 | 0.1195 | 1.52 | TL |
| DBRYDZ | | 0.3290 | -0.0825 | -0.90 | 0.3574 | -0.1091 | -1.39 | TM |
| EW94NB | X | 97.5800 | 97.1685 | 1,059.34 | 114.4800 | 114.0135 | 1,449.54 | CH |
| GFTQZA | | 0.3986 | -0.0129 | -0.14 | 0.4874 | 0.0209 | 0.27 | TA |
| HVYZ6M | | 0.4988 | 0.0873 | 0.95 | 0.5114 | 0.0449 | 0.57 | TM |
| QX2JT9 | | 0.4280 | 0.0165 | 0.18 | 0.4646 | -0.0019 | -0.02 | TM |
| R387VV | | 0.5568 | 0.1453 | 1.58 | 0.5684 | 0.1019 | 1.30 | XX |
| U9PNCG | | 0.5084 | 0.0969 | 1.06 | 0.5396 | 0.0731 | 0.93 | TA |
| VRWD3J | | 0.3810 | -0.0305 | -0.33 | 0.4062 | -0.0603 | -0.77 | TA |
| WQKY9J | | 0.4150 | 0.0035 | 0.04 | 0.5118 | 0.0453 | 0.58 | TA |
| XW3XVA | | 0.2708 | -0.1407 | -1.53 | 0.3248 | -0.1417 | -1.80 | XX |

| Summary Statistics | | | |
|---|-------------|--|-------------|
| | Sample GD15 | | Sample GD16 |
| Grand Means | 0.41151 COF | | 0.46646 COF |
| SD Btwn Labs | 0.09173 COF | | 0.07865 COF |
| Statistics based on 14 of 15 reporting participants | | | |

Comments on assigned Data Flags for Test #365

EW94NB (X) - Extreme data.

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 |

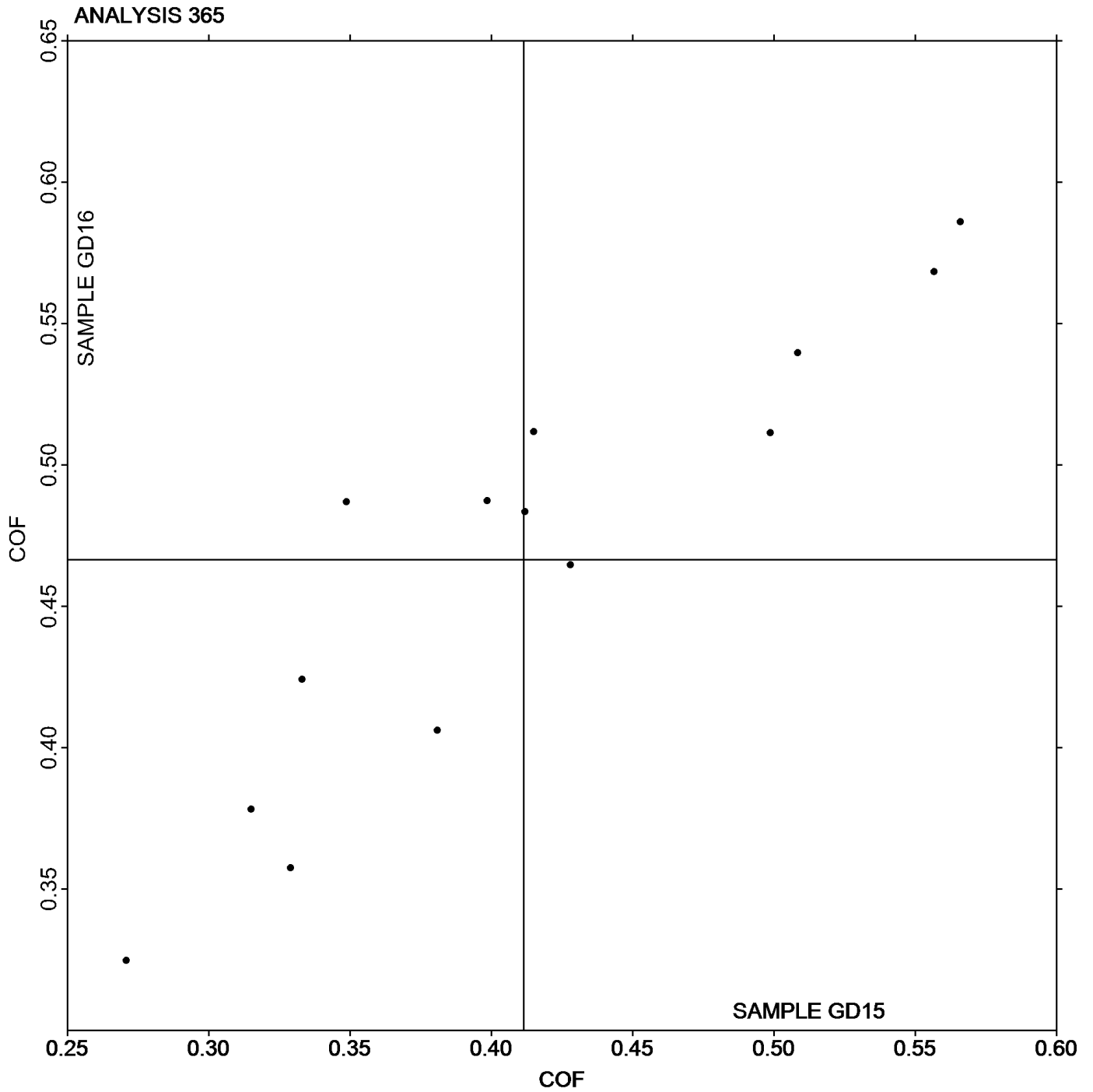
Paper & Paperboard Interlaboratory Testing Program

Analysis 365

Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers

Grand Mean Sample **GD15** = 0.41151 COF

Grand Mean Sample **GD16** = 0.46646 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 GE15 | | | Sample GE16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| | | 10.45 | -1.09 | -1.48 | 23.99 | -1.13 | -0.85 | XX |
| 24WVH3 | | 11.52 | -0.02 | -0.03 | 24.80 | -0.32 | -0.24 | GA |
| 2F8XRL | | 10.47 | -1.07 | -1.46 | 22.17 | -2.95 | -2.23 | LP |
| 42DK7M | | 11.36 | -0.18 | -0.24 | 26.38 | 1.26 | 0.96 | WG |
| 4MWX93 | | 11.00 | -0.54 | -0.73 | 24.80 | -0.32 | -0.24 | LA |
| 69A6W2 | | 10.71 | -0.83 | -1.13 | 22.67 | -2.45 | -1.85 | LP |
| 73XQJV | | 11.13 | -0.41 | -0.56 | 24.00 | -1.12 | -0.84 | TN |
| 7R7UTV | | 11.50 | -0.04 | -0.05 | 25.87 | 0.75 | 0.57 | WG |
| 8F8X9M | * | 13.62 | 2.08 | 2.82 | 26.07 | 0.95 | 0.72 | HG |
| 8Q3RFV | | 12.19 | 0.65 | 0.88 | 25.27 | 0.15 | 0.12 | LP |
| AACD7W | | 11.03 | -0.51 | -0.69 | 23.93 | -1.18 | -0.89 | RE |
| AAVC9Z | | 11.95 | 0.41 | 0.56 | 24.33 | -0.79 | -0.59 | LP |
| AK9JZU | | 11.77 | 0.23 | 0.31 | 26.54 | 1.42 | 1.08 | HG |
| AUJ4JD | | 11.28 | -0.26 | -0.35 | 22.96 | -2.16 | -1.63 | LP |
| CVKMZP | | 11.21 | -0.33 | -0.45 | 26.22 | 1.10 | 0.83 | HG |
| DHDUE4 | | 11.46 | -0.08 | -0.11 | 25.20 | 0.08 | 0.06 | TL |
| E9J2JJ | X | 28.43 | 16.89 | 22.92 | 72.74 | 47.62 | 35.99 | XX |
| F2WABC | | 12.78 | 1.24 | 1.68 | 25.50 | 0.38 | 0.29 | XX |
| F8KHVM | | 12.38 | 0.84 | 1.14 | 27.22 | 2.10 | 1.59 | PP |
| FUU3W9 | | 11.77 | 0.23 | 0.31 | 27.30 | 2.18 | 1.65 | GA |
| FVPNME | | 11.99 | 0.45 | 0.61 | 26.57 | 1.45 | 1.10 | HG |
| FVQ24Z | | 11.14 | -0.40 | -0.54 | 24.99 | -0.13 | -0.09 | XX |
| FVQYFG | | 12.98 | 1.44 | 1.95 | 26.99 | 1.87 | 1.42 | TL |
| G8ENNL | | 12.59 | 1.05 | 1.43 | 26.09 | 0.97 | 0.74 | PP |
| GFTQZA | | 12.23 | 0.69 | 0.94 | 27.99 | 2.87 | 2.17 | LA |
| HAKMNG | | 12.12 | 0.58 | 0.79 | 25.79 | 0.67 | 0.51 | TL |
| HMB3MU | | 11.12 | -0.42 | -0.57 | 24.58 | -0.54 | -0.40 | LW |
| HNG4DE | | 10.73 | -0.81 | -1.10 | 24.42 | -0.70 | -0.53 | PP |
| HUU6UW | | 12.25 | 0.71 | 0.96 | 24.87 | -0.25 | -0.19 | PP |
| JETLJ7 | | 10.35 | -1.19 | -1.61 | 22.34 | -2.78 | -2.10 | GA |
| JP86QM | | 10.02 | -1.52 | -2.06 | 22.94 | -2.18 | -1.64 | XX |
| K23NXE | | 10.68 | -0.86 | -1.17 | 25.57 | 0.45 | 0.34 | HG |
| KBAFBF | | 11.84 | 0.30 | 0.40 | 26.14 | 1.02 | 0.77 | LA |
| LZ2KUB | | 12.20 | 0.66 | 0.90 | 25.49 | 0.38 | 0.28 | PP |
| M4HWYC | | 12.18 | 0.64 | 0.87 | 25.39 | 0.27 | 0.21 | LP |
| MEHFKC | | 10.79 | -0.75 | -1.02 | 24.05 | -1.07 | -0.80 | LP |
| MGM7ML | | 11.10 | -0.44 | -0.60 | 24.40 | -0.72 | -0.54 | LW |
| MQA6DQ | | 11.25 | -0.29 | -0.40 | 24.39 | -0.73 | -0.55 | PP |
| PVXDRG | | 11.40 | -0.14 | -0.19 | 24.89 | -0.23 | -0.17 | HG |
| R6GP3K | | 11.40 | -0.14 | -0.18 | 24.25 | -0.87 | -0.66 | HG |
| RFWHA8 | | 11.83 | 0.29 | 0.39 | 24.69 | -0.43 | -0.32 | LP |
| RYPNFC | | 11.71 | 0.17 | 0.23 | 25.05 | -0.07 | -0.05 | LW |
| UVETYZ | | 11.81 | 0.27 | 0.37 | 25.56 | 0.44 | 0.34 | XX |

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

| WebCode | Data Flag | Sample GE15 | | | Sample GE16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| VRX9NB | | 12.41 | 0.87 | 1.18 | 26.89 | 1.77 | 1.34 | LA |
| W6JDKT | | 10.99 | -0.55 | -0.75 | 26.61 | 1.49 | 1.13 | HG |
| XW3XVA | | 11.02 | -0.52 | -0.70 | 25.74 | 0.62 | 0.47 | GS |
| YKLTJQ | | 11.03 | -0.51 | -0.69 | 23.96 | -1.16 | -0.88 | PP |
| ZFTLMG | | 11.62 | 0.08 | 0.11 | 24.57 | -0.55 | -0.41 | XX |

| Summary Statistics | | | |
|---|-------------------|--|-------------------|
| | Sample GE15 | | Sample GE16 |
| Grand Means | 11.540 sec/100 cc | | 25.115 sec/100 cc |
| SD Btwn Labs | 0.737 sec/100 cc | | 1.323 sec/100 cc |
| Statistics based on 47 of 48 reporting participants | | | |

Comments on assigned Data Flags for Test #370

E9J2JJ (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 |

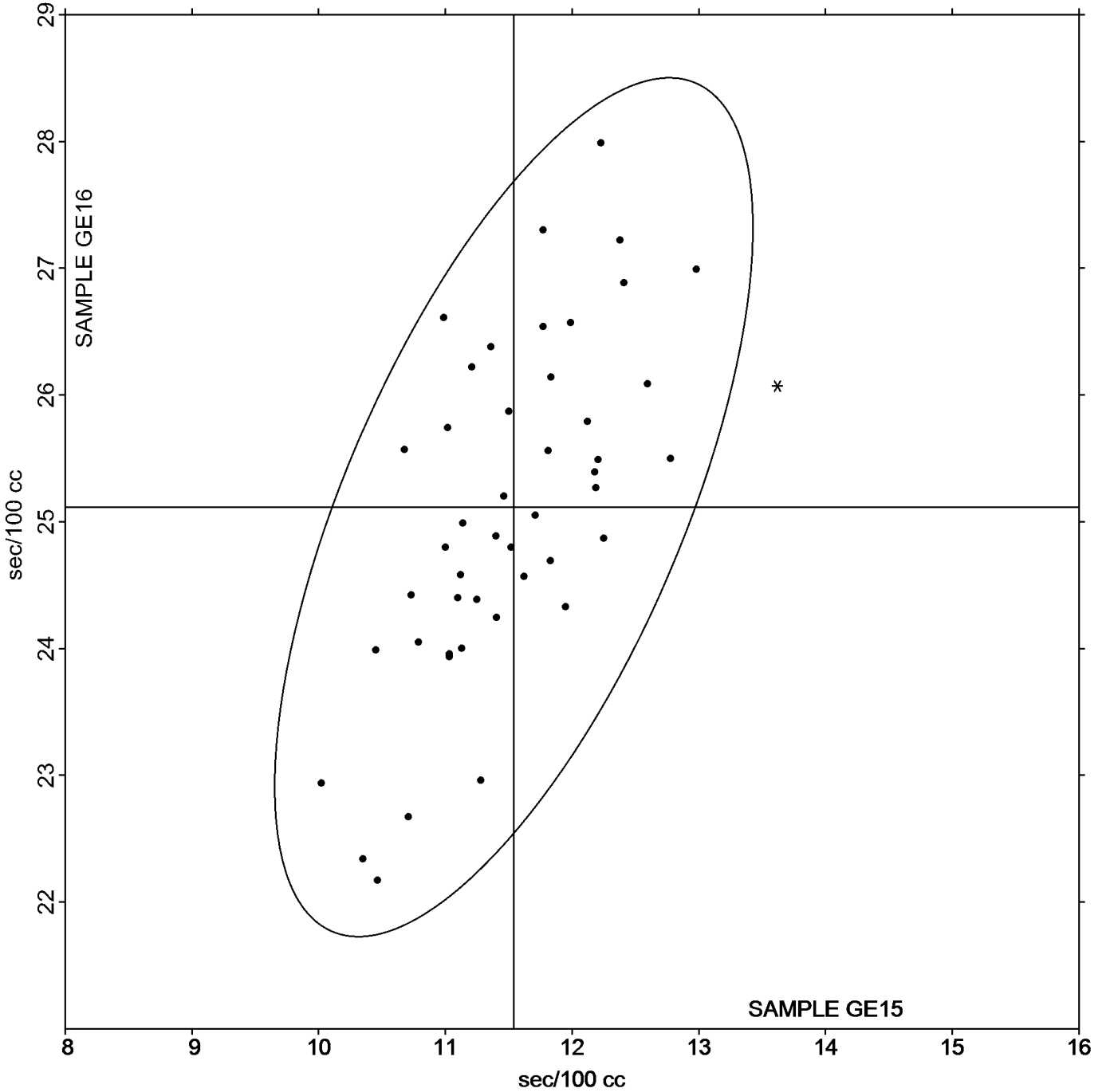
Analysis 370

Air Resistance - Gurley Oil Type

Grand Mean Sample **GE15** = 11.540 sec/100 cc

Grand Mean Sample **GE16** = 25.115 sec/100 cc

ANALYSIS 370



Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

| WebCode | Data Flag | Sample GE15 | | | Sample GE16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 24WVH3 | | 213.1 | -2.8 | -0.17 | 105.9 | -7.3 | -0.84 | GA |
| 4UJK39 | | 215.3 | -0.6 | -0.03 | 127.8 | 14.6 | 1.68 | LP |
| 863DWZ | | 206.0 | -9.9 | -0.59 | 117.0 | 3.8 | 0.44 | TT |
| 8UMGZ9 | | 217.3 | 1.4 | 0.08 | 105.9 | -7.3 | -0.84 | GA |
| 9MZ9Q3 | | 247.9 | 32.0 | 1.92 | 126.6 | 13.4 | 1.54 | VM |
| DT9AVT | | 206.8 | -9.1 | -0.54 | 104.3 | -8.9 | -1.02 | LP |
| F3CX8P | | 213.0 | -2.9 | -0.17 | 107.3 | -5.9 | -0.68 | HM |
| F8KHVM | | 207.5 | -8.4 | -0.50 | 105.8 | -7.4 | -0.85 | SH |
| GNMYJF | | 233.4 | 17.5 | 1.05 | 122.4 | 9.2 | 1.06 | TT |
| KDTZ67 | X | 287.1 | 71.2 | 4.26 | 160.0 | 46.8 | 5.38 | VM |
| LDQZTP | | 241.1 | 25.2 | 1.51 | 126.9 | 13.7 | 1.58 | XX |
| R6GP3K | X | 156.3 | -59.6 | -3.56 | 59.4 | -53.8 | -6.19 | HM |
| RJT8QE | | 221.2 | 5.3 | 0.32 | 114.8 | 1.6 | 0.19 | HM |
| RUWFGC | | 215.2 | -0.7 | -0.04 | 105.4 | -7.8 | -0.90 | HG |
| RXG6ZP | | 206.4 | -9.5 | -0.57 | 106.1 | -7.1 | -0.82 | LP |
| TCAGNJ | | 236.3 | 20.4 | 1.22 | 115.9 | 2.7 | 0.31 | XX |
| TZGUHN | | 179.9 | -36.0 | -2.15 | 104.9 | -8.3 | -0.95 | TT |
| UVETYZ | | 213.5 | -2.4 | -0.14 | 107.9 | -5.3 | -0.61 | XX |
| XW3XVA | | 195.8 | -20.1 | -1.20 | 119.3 | 6.1 | 0.70 | SH |

| Summary Statistics | | | |
|---|------------------------|--|------------------------|
| | Sample GE15 | | Sample GE16 |
| Grand Means | 215.86 Sheffield Units | | 113.19 Sheffield Units |
| SD Btwn Labs | 16.73 Sheffield Units | | 8.70 Sheffield Units |
| Statistics based on 17 of 19 reporting participants | | | |

Comments on assigned Data Flags for Test #372

KDTZ67 (X) - Data for both samples are high. Inconsistent within the determinations for Sample GE16.

R6GP3K (X) - Extreme data.

Instrument Code List as Reported by the Labs

- (GA) - Gurley Precision #4340 Automatic Densometer
- (HM) - Technidyne - Hagerty Model #538
- (SH) - Sheffield
- (VM) - Valmet PaperLab (was Kajaani/Robotest)
- (HG) - Technidyne - Hagerty Model #1
- (LP) - L & W Densometer, Air Permeance
- (TT) - TMI Monitor/Smoothness II, Model 58-24
- (XX) - Instrument make/model not specified by lab

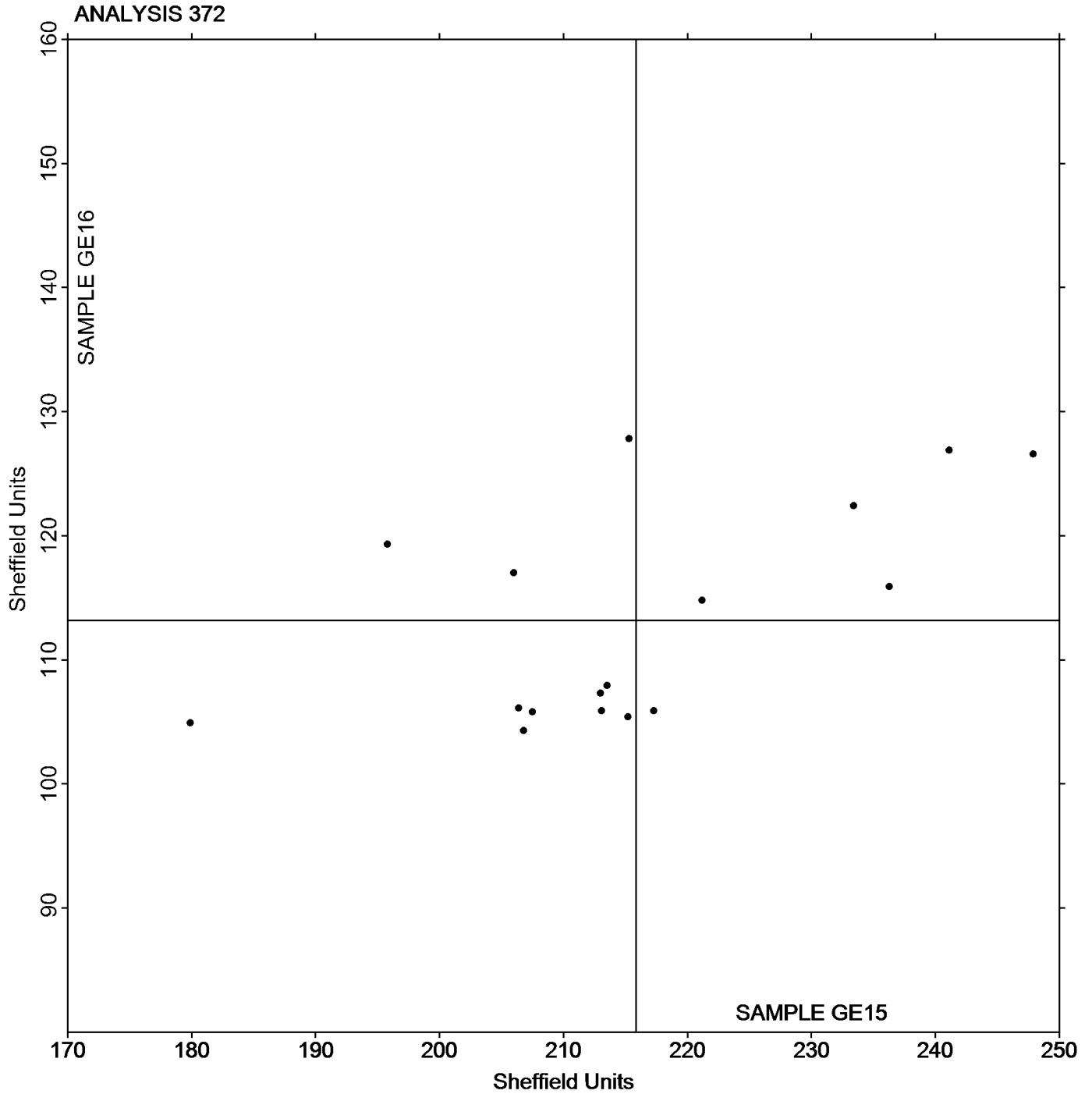
Paper & Paperboard Interlaboratory Testing Program

Analysis 372

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

Grand Mean Sample **GE15** = 215.86 Sheffield Units

Grand Mean Sample **GE16** = 113.19 Sheffield Units



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

Paper & Paperboard Interlaboratory Testing Program

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

| WebCode | Data Flag | Sample GJ15 | | | Sample GJ16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 3EN4FV | | 0.7630 | 0.0059 | 0.06 | 0.9140 | -0.0008 | -0.01 |
| 3YE2V3 | | 0.7120 | -0.0451 | -0.45 | 0.8640 | -0.0508 | -0.58 |
| 4ZLRKW | | 0.6940 | -0.0631 | -0.63 | 0.8970 | -0.0178 | -0.20 |
| 6YM9VZ | | 0.8450 | 0.0879 | 0.87 | 1.0080 | 0.0932 | 1.06 |
| 7R6Z84 | | 0.8600 | 0.1029 | 1.02 | 0.9230 | 0.0082 | 0.09 |
| 7R7UTV | | 0.6350 | -0.1221 | -1.21 | 0.7170 | -0.1978 | -2.25 |
| 8F8X9M | | 0.7580 | 0.0009 | 0.01 | 0.9060 | -0.0088 | -0.10 |
| 92X66U | | 0.7700 | 0.0129 | 0.13 | 1.0500 | 0.1352 | 1.54 |
| 9C43ZP | | 0.8230 | 0.0659 | 0.65 | 0.9190 | 0.0042 | 0.05 |
| AYT2TX | | 0.7700 | 0.0129 | 0.13 | 0.9020 | -0.0128 | -0.15 |
| CEZZZR | | 0.7930 | 0.0359 | 0.36 | 0.9040 | -0.0108 | -0.12 |
| F2WABC | | 0.8400 | 0.0829 | 0.82 | 1.0030 | 0.0882 | 1.00 |
| F8KHVM | | 0.7660 | 0.0089 | 0.09 | 0.8540 | -0.0608 | -0.69 |
| FVPNME | | 0.8070 | 0.0499 | 0.50 | 0.9910 | 0.0762 | 0.87 |
| GNYMYJF | | 1.0130 | 0.2559 | 2.54 | 1.1230 | 0.2082 | 2.37 |
| HNG4DE | | 0.7350 | -0.0221 | -0.22 | 0.8610 | -0.0538 | -0.61 |
| JKEMFB | | 0.6700 | -0.0871 | -0.87 | 0.9400 | 0.0252 | 0.29 |
| JUN396 | | 0.7560 | -0.0011 | -0.01 | 0.9900 | 0.0752 | 0.86 |
| LXWHVE | | 0.9550 | 0.1979 | 1.97 | 1.1030 | 0.1882 | 2.14 |
| LZ2KUB | | 0.7290 | -0.0281 | -0.28 | 0.9070 | -0.0078 | -0.09 |
| MEHFKC | | 0.7380 | -0.0191 | -0.19 | 0.8800 | -0.0348 | -0.40 |
| NUP4ZK | X | 1.1770 | 0.4199 | 4.17 | 1.2900 | 0.3752 | 4.27 |
| NZV3V3 | | 0.5840 | -0.1731 | -1.72 | 0.8110 | -0.1038 | -1.18 |
| P884GB | | 0.7700 | 0.0129 | 0.13 | 0.8900 | -0.0248 | -0.28 |
| RAANGF | | 0.6870 | -0.0701 | -0.70 | 0.9160 | 0.0012 | 0.01 |
| RJT8QE | * | 0.5110 | -0.2461 | -2.44 | 0.8300 | -0.0848 | -0.96 |
| TFA49U | X | 1.1870 | 0.4299 | 4.27 | 1.2410 | 0.3262 | 3.71 |
| UTZJ6N | | 0.6710 | -0.0861 | -0.86 | 0.8300 | -0.0848 | -0.96 |
| UZCXP6 | X | 0.6890 | -0.0681 | -0.68 | 1.1050 | 0.1902 | 2.16 |
| VQN2M4 | | 0.6700 | -0.0871 | -0.87 | 0.8040 | -0.1108 | -1.26 |
| WQKY9J | | 0.7250 | -0.0321 | -0.32 | 0.8510 | -0.0638 | -0.73 |
| XQXYM6 | | 0.7960 | 0.0389 | 0.39 | 0.8740 | -0.0408 | -0.46 |
| YKLTJQ | | 0.8680 | 0.1109 | 1.10 | 0.9820 | 0.0672 | 0.76 |

Sample GJ15

Summary Statistics

Sample GJ16

Grand Means 0.75713 Microns
SD Btwn Labs 0.10069 Microns

0.91480 Microns
0.08793 Microns

Statistics based on 30 of 33 reporting participants

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

Comments on assigned Data Flags for Test #376

NUP4ZK (X) - Data for both samples are high.

TFA49U (X) - Data for both samples are high.

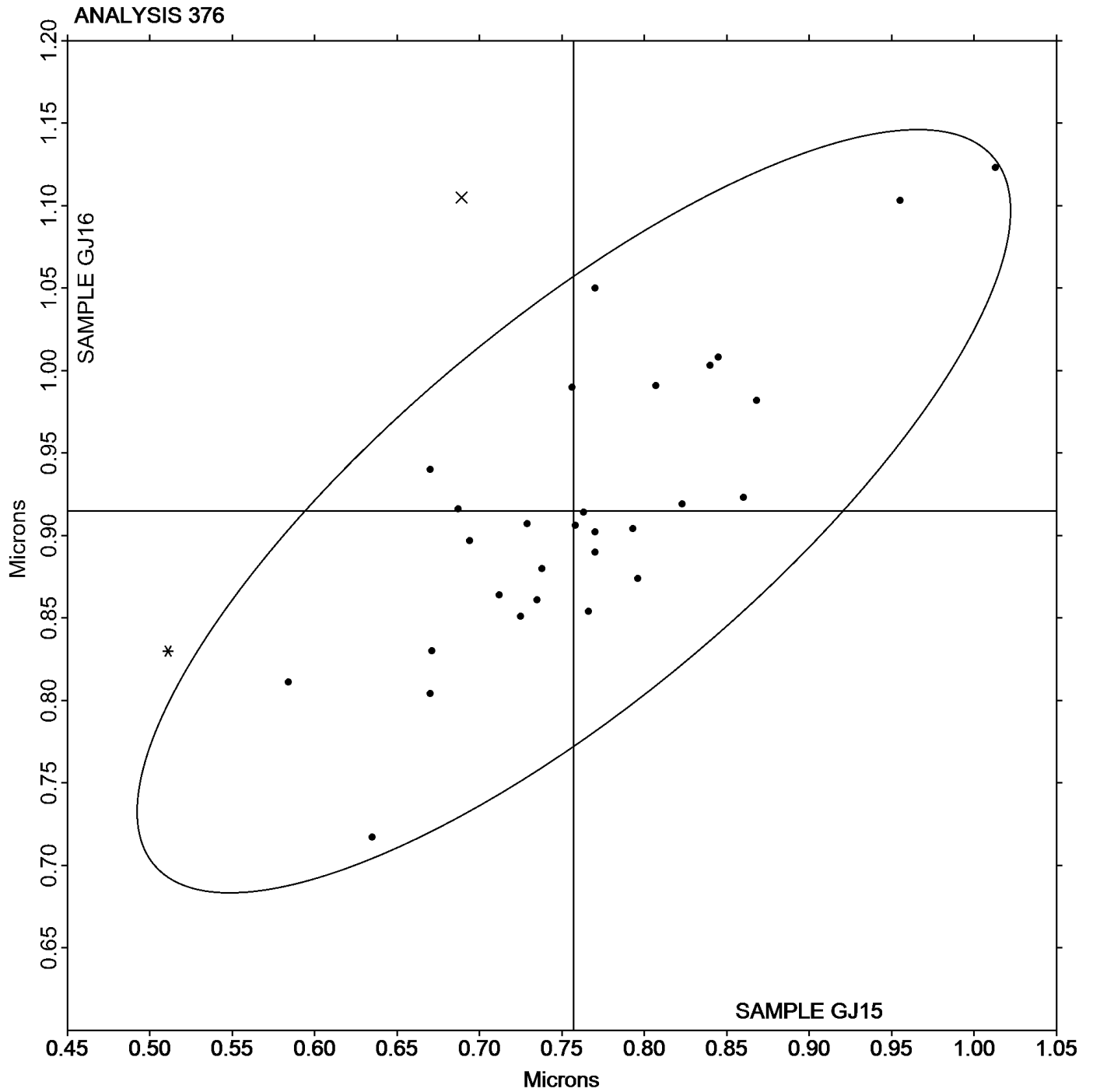
UZCXP6 (X) - Inconsistent in testing between samples.

Analysis 376

Roughness - Print Surf Method - 0.5 to 4.0 Microns

Grand Mean Sample GJ15 = 0.75713 Microns

Grand Mean Sample GJ16 = 0.91480 Microns



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

| WebCode | Data Flag | Sample GK15 | | | Sample GK16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 487VRY | | 4.344 | 0.122 | 0.34 | 4.414 | 0.166 | 0.40 |
| 7R7UTV | | 4.218 | -0.004 | -0.01 | 4.156 | -0.092 | -0.22 |
| 8Q3RFV | | 4.078 | -0.144 | -0.39 | 4.133 | -0.115 | -0.28 |
| 9MZ9Q3 | | 4.240 | 0.018 | 0.05 | 4.076 | -0.172 | -0.41 |
| HUU6UW | | 4.177 | -0.045 | -0.12 | 4.173 | -0.075 | -0.18 |
| JETLJ7 | | 4.192 | -0.030 | -0.08 | 4.310 | 0.062 | 0.15 |
| JUN396 | | 4.806 | 0.584 | 1.61 | 4.977 | 0.729 | 1.76 |
| KBAFBF | | 4.060 | -0.162 | -0.44 | 3.970 | -0.278 | -0.67 |
| KDTZ67 | | 4.650 | 0.428 | 1.18 | 4.797 | 0.549 | 1.32 |
| LDQZTP | | 4.181 | -0.041 | -0.11 | 4.174 | -0.074 | -0.18 |
| MQA6DQ | | 4.379 | 0.157 | 0.43 | 4.405 | 0.157 | 0.38 |
| RYV2JV | | 3.240 | -0.982 | -2.70 | 3.240 | -1.008 | -2.43 |
| U9PNCG | | 4.315 | 0.093 | 0.26 | 4.394 | 0.146 | 0.35 |

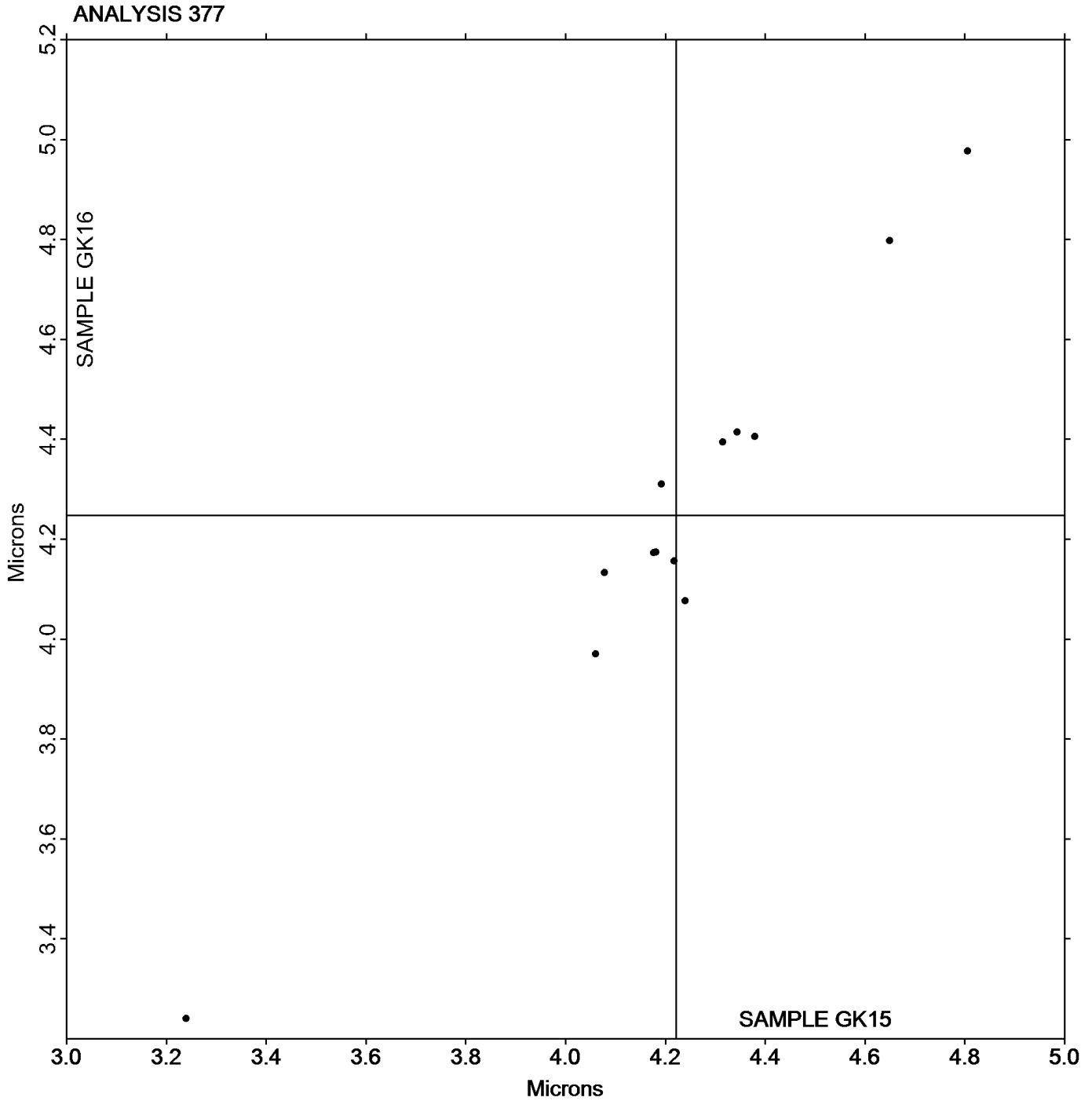
| Summary Statistics | | | |
|---|----------------|--|----------------|
| | Sample GK15 | | Sample GK16 |
| Grand Means | 4.2215 Microns | | 4.2476 Microns |
| SD Btwn Labs | 0.3639 Microns | | 0.4149 Microns |
| Statistics based on 13 of 13 reporting participants | | | |

Analysis 377

Roughness - Print Surf Method - 2.5 to 6.0 Microns

Grand Mean Sample **GK15** = 4.2215 Microns

Grand Mean Sample **GK16** = 4.2476 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 GL15 | | | Sample GL16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 24WVH3 | | 89.90 | -5.25 | -0.50 | 58.00 | -2.99 | -0.31 | HM |
| 3EN4FV | | 84.40 | -10.75 | -1.03 | 49.20 | -11.79 | -1.24 | PP |
| 3GU66U | | 90.70 | -4.45 | -0.42 | 55.80 | -5.19 | -0.55 | TS |
| 42DK7M | | 100.90 | 5.75 | 0.55 | 67.90 | 6.91 | 0.73 | PG |
| 487VRY | | 93.90 | -1.25 | -0.12 | 52.50 | -8.49 | -0.89 | HM |
| 4UJK39 | | 100.40 | 5.25 | 0.50 | 67.60 | 6.61 | 0.69 | LW |
| 4ZLRKW | | 101.95 | 6.80 | 0.65 | 60.97 | -0.02 | 0.00 | PP |
| 6YM9VZ | | 85.60 | -9.55 | -0.91 | 56.70 | -4.29 | -0.45 | HM |
| 6ZWKNH | * | 127.90 | 32.75 | 3.12 | 87.00 | 26.01 | 2.73 | TT |
| 74V9VR | | 79.20 | -15.95 | -1.52 | 56.70 | -4.29 | -0.45 | TS |
| 7R7UTV | | 108.90 | 13.75 | 1.31 | 70.70 | 9.71 | 1.02 | XX |
| 863DWZ | | 101.00 | 5.85 | 0.56 | 69.50 | 8.51 | 0.89 | TT |
| 8ECCHG | | 82.00 | -13.15 | -1.25 | 51.90 | -9.09 | -0.96 | LA |
| 8Q3RFV | | 87.30 | -7.85 | -0.75 | 54.20 | -6.79 | -0.71 | LW |
| 8UMGZ9 | | 102.91 | 7.76 | 0.74 | 63.55 | 2.56 | 0.27 | GA |
| 92X66U | | 85.21 | -9.94 | -0.95 | 55.01 | -5.98 | -0.63 | LA |
| 9C43ZP | | 98.30 | 3.15 | 0.30 | 59.40 | -1.59 | -0.17 | LA |
| 9MZ9Q3 | | 90.40 | -4.75 | -0.45 | 51.30 | -9.69 | -1.02 | VM |
| AAVC9Z | | 89.40 | -5.75 | -0.55 | 50.90 | -10.09 | -1.06 | LW |
| AK9JZU | | 91.50 | -3.65 | -0.35 | 69.00 | 8.01 | 0.84 | SH |
| ANPWM3 | | 92.90 | -2.25 | -0.21 | 64.90 | 3.91 | 0.41 | SH |
| CA2K6P | | 97.89 | 2.74 | 0.26 | 72.41 | 11.42 | 1.20 | MP |
| CEZZZR | | 90.70 | -4.45 | -0.42 | 56.60 | -4.39 | -0.46 | XX |
| CVKMZP | | 83.90 | -11.25 | -1.07 | 47.10 | -13.89 | -1.46 | TS |
| DT9AVT | | 94.20 | -0.95 | -0.09 | 56.20 | -4.79 | -0.50 | PP |
| E9J2JJ | | 120.20 | 25.05 | 2.39 | 78.00 | 17.01 | 1.79 | XX |
| F2WABC | | 84.60 | -10.55 | -1.01 | 52.00 | -8.99 | -0.94 | XX |
| F3CX8P | | 95.10 | -0.05 | 0.00 | 59.80 | -1.19 | -0.13 | HM |
| F8KHVM | | 92.10 | -3.05 | -0.29 | 54.50 | -6.49 | -0.68 | PP |
| FVPNME | | 88.40 | -6.75 | -0.64 | 53.80 | -7.19 | -0.76 | HM |
| G8ENNL | | 100.77 | 5.62 | 0.54 | 60.10 | -0.89 | -0.09 | PP |
| GCUZJH | | 89.70 | -5.45 | -0.52 | 56.80 | -4.19 | -0.44 | GA |
| GNMYJF | | 100.00 | 4.85 | 0.46 | 65.00 | 4.01 | 0.42 | TT |
| GVN9Q8 | | 85.00 | -10.15 | -0.97 | 50.20 | -10.79 | -1.13 | PP |
| HNG4DE | | 85.29 | -9.86 | -0.94 | 58.18 | -2.82 | -0.30 | PP |
| HUU6UW | | 82.16 | -12.99 | -1.24 | 53.74 | -7.26 | -0.76 | PP |
| JBVE6G | | 116.30 | 21.15 | 2.02 | 75.20 | 14.21 | 1.49 | PP |
| JETLJ7 | | 83.38 | -11.77 | -1.12 | 53.69 | -7.30 | -0.77 | PP |
| JP86QM | | 87.84 | -7.31 | -0.70 | 54.70 | -6.29 | -0.66 | PP |
| K23NXE | | 99.30 | 4.15 | 0.40 | 64.90 | 3.91 | 0.41 | HM |
| KBAFBF | | 108.90 | 13.75 | 1.31 | 70.00 | 9.01 | 0.95 | LA |
| LDQZTP | | 89.90 | -5.25 | -0.50 | 54.50 | -6.49 | -0.68 | XX |
| LZ2KUB | | 83.78 | -11.36 | -1.08 | 50.63 | -10.36 | -1.09 | PP |

Paper & Paperboard Interlaboratory Testing Program

Analysis 378

Roughness - Sheffield Type

| WebCode | Data Flag | Sample GL15 | | | Sample GL16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| MEHFKC | | 93.60 | -1.55 | -0.15 | 68.30 | 7.31 | 0.77 | TS |
| MGM7ML | | 95.30 | 0.15 | 0.01 | 64.30 | 3.31 | 0.35 | SH |
| MNLHYH | | 108.50 | 13.35 | 1.27 | 80.60 | 19.61 | 2.06 | TS |
| MQA6DQ | | 99.72 | 4.57 | 0.44 | 57.68 | -3.31 | -0.35 | PP |
| NNGK4C | | 103.50 | 8.35 | 0.80 | 67.50 | 6.51 | 0.68 | GL |
| NZV3V3 | | 109.60 | 14.45 | 1.38 | 76.70 | 15.71 | 1.65 | TT |
| P884GB | | 99.13 | 3.99 | 0.38 | 62.51 | 1.52 | 0.16 | PP |
| PVXDRG | X | 4.59 | -90.56 | -8.64 | 4.23 | -56.76 | -5.96 | GL |
| QCZ4YX | | 96.00 | 0.85 | 0.08 | 57.00 | -3.99 | -0.42 | XX |
| QX2JT9 | | 90.18 | -4.97 | -0.47 | 52.32 | -8.67 | -0.91 | PP |
| R6GP3K | X | 222.80 | 127.65 | 12.18 | 121.10 | 60.11 | 6.31 | HM |
| RUWFGC | | 79.00 | -16.15 | -1.54 | 52.20 | -8.79 | -0.92 | HM |
| RYPNFC | | 104.40 | 9.25 | 0.88 | 76.30 | 15.31 | 1.61 | SH |
| TCAGNJ | | 88.60 | -6.55 | -0.62 | 50.10 | -10.89 | -1.14 | HM |
| UPVX9B | | 106.60 | 11.45 | 1.09 | 68.60 | 7.61 | 0.80 | PG |
| UVETYZ | | 114.50 | 19.35 | 1.85 | 82.40 | 21.41 | 2.25 | XX |
| VC3V69 | | 83.10 | -12.05 | -1.15 | 58.34 | -2.65 | -0.28 | PP |
| VJJ2Q2 | | 85.40 | -9.75 | -0.93 | 48.60 | -12.39 | -1.30 | XX |
| VQN2M4 | | 95.80 | 0.65 | 0.06 | 57.50 | -3.49 | -0.37 | LA |
| VRX9NB | | 87.19 | -7.96 | -0.76 | 56.79 | -4.20 | -0.44 | LA |
| W6JDKT | | 90.90 | -4.25 | -0.41 | 55.10 | -5.89 | -0.62 | HM |
| WQKY9J | | 91.60 | -3.55 | -0.34 | 64.00 | 3.01 | 0.32 | HM |
| WYCCB4 | | 118.74 | 23.59 | 2.25 | 84.79 | 23.80 | 2.50 | GA |
| XQXYM6 | | 93.00 | -2.15 | -0.20 | 54.20 | -6.79 | -0.71 | TT |
| XW3XVA | X | 129.40 | 34.25 | 3.27 | 106.30 | 45.31 | 4.76 | XX |
| YKLTJQ | | 101.30 | 6.15 | 0.59 | 58.86 | -2.13 | -0.22 | PP |

| Summary Statistics | | | |
|---|------------------|--|------------------|
| | Sample GL15 | | Sample GL16 |
| Grand Means | 95.147 Sheffield | | 60.992 Sheffield |
| SD Btwn Labs | 10.484 Sheffield | | 9.520 Sheffield |
| Statistics based on 66 of 69 reporting participants | | | |

Comments on assigned Data Flags for Test #378

PVXDRG (X) - Extreme data.

R6GP3K (X) - Extreme data.

XW3XVA (X) - Systematic error (data for both samples are high).

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

Instrument Code List as Reported by the Labs

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

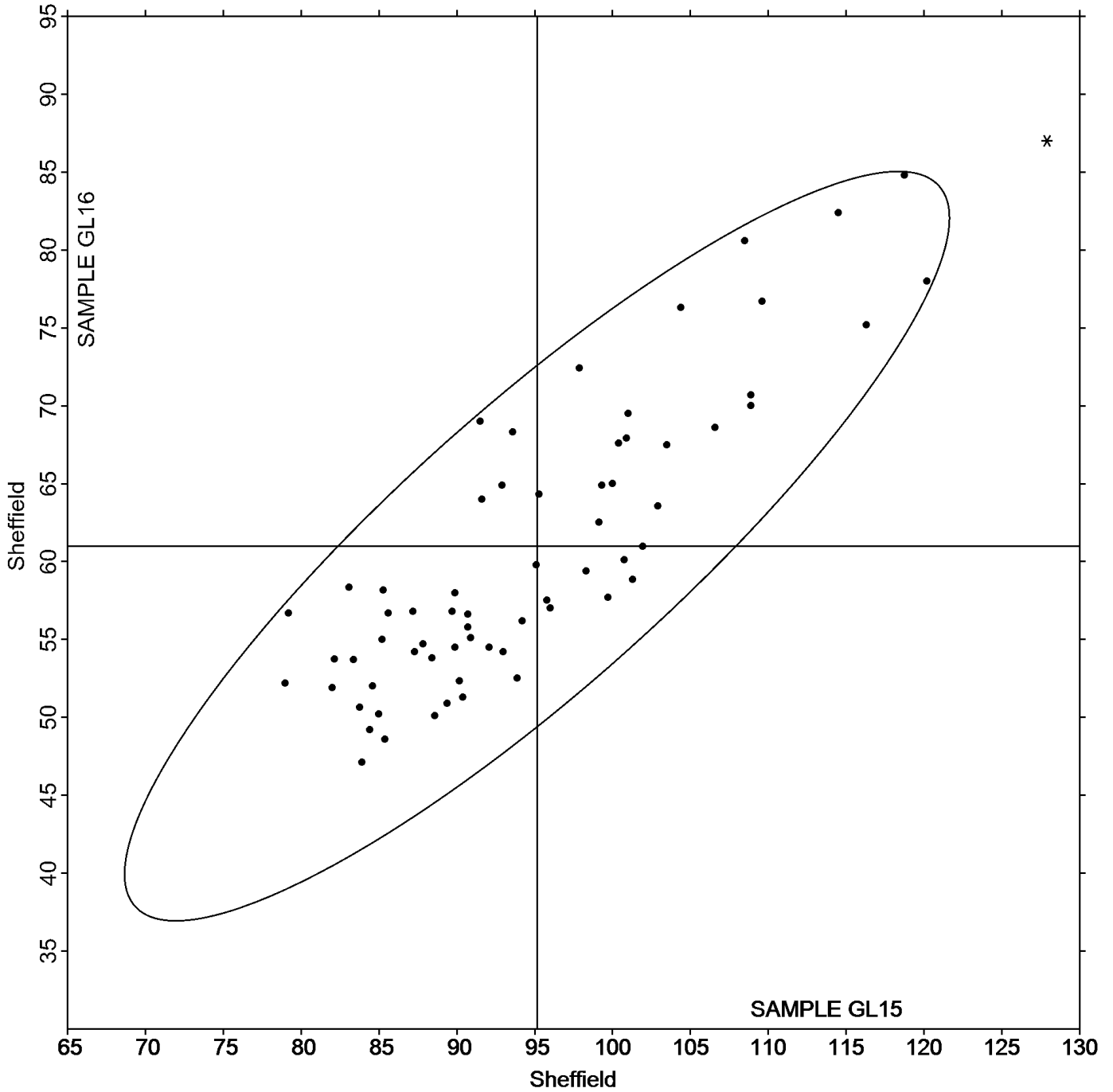
Analysis 378

Roughness - Sheffield Type

Grand Mean Sample **GL15** = 95.147 Sheffield

Grand Mean Sample **GL16** = 60.992 Sheffield

ANALYSIS 378



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

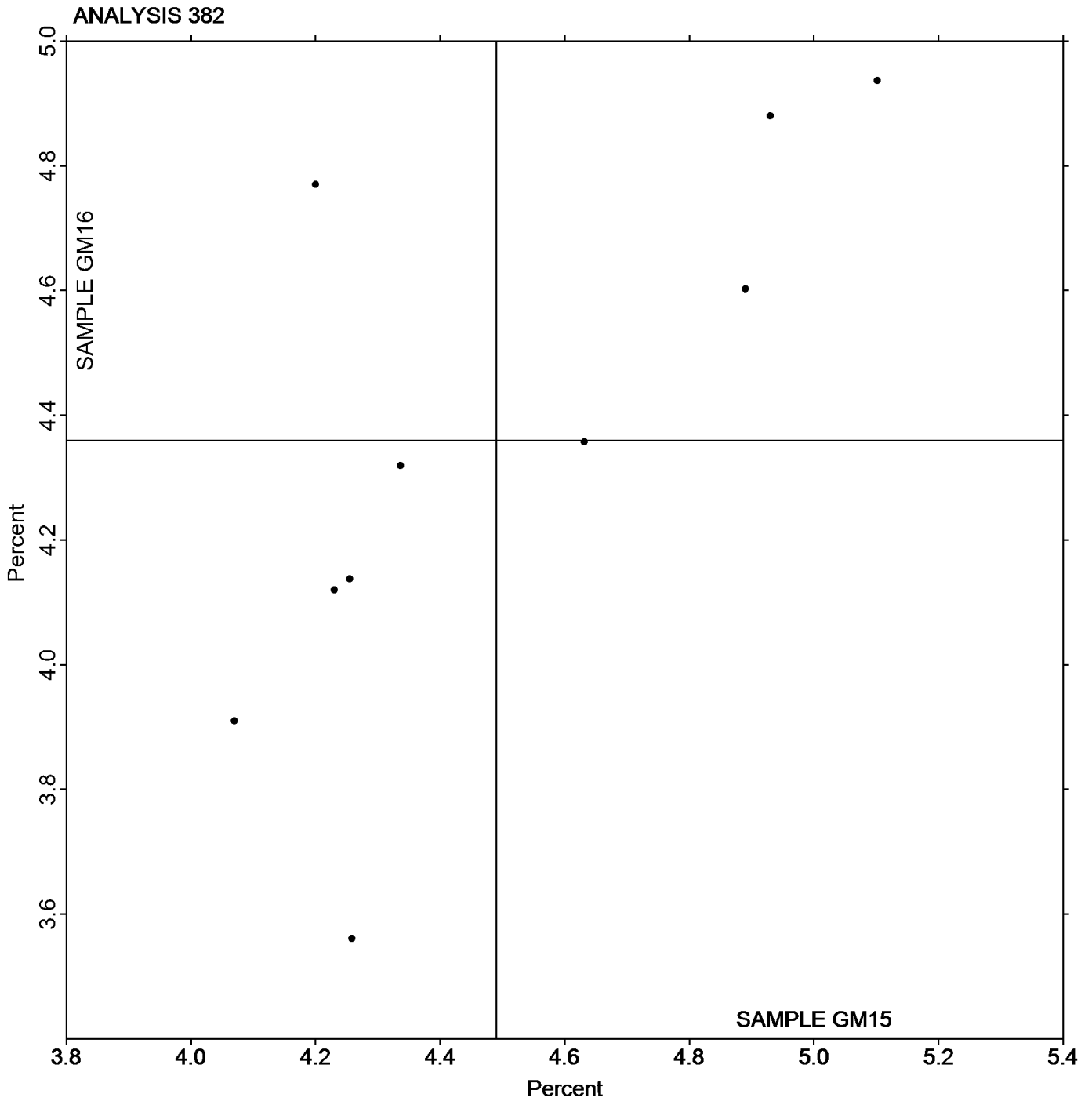
| WebCode | Data Flag | Sample GM15 | | | Sample GM16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 487VRY | | 4.230 | -0.260 | -0.71 | 4.120 | -0.239 | -0.54 |
| AACD7W | | 4.631 | 0.141 | 0.38 | 4.357 | -0.002 | -0.01 |
| AP2HEP | | 4.930 | 0.440 | 1.20 | 4.880 | 0.521 | 1.17 |
| JBVE6G | | 4.890 | 0.400 | 1.09 | 4.603 | 0.244 | 0.55 |
| MQA6DQ | | 4.336 | -0.154 | -0.42 | 4.319 | -0.040 | -0.09 |
| NUP4ZK | | 4.255 | -0.235 | -0.64 | 4.138 | -0.222 | -0.50 |
| NZV3V3 | | 4.200 | -0.290 | -0.79 | 4.770 | 0.411 | 0.92 |
| PYY8LY | | 4.259 | -0.232 | -0.63 | 3.561 | -0.799 | -1.80 |
| RFWHA8 | | 4.070 | -0.420 | -1.15 | 3.910 | -0.449 | -1.01 |
| RYV2JV | | 5.102 | 0.612 | 1.67 | 4.937 | 0.578 | 1.30 |

| | | Summary Statistics | |
|---|--------------------|---------------------------|--------------------|
| | Sample GM15 | | Sample GM16 |
| Grand Means | 4.4903 | Percent | 4.3594 |
| SD Btwn Labs | 0.3665 | Percent | 0.4448 |
| Statistics based on 10 of 10 reporting participants | | | |

Analysis 382
Moisture in Paper

Grand Mean Sample **GM15** = 4.4903 Percent

Grand Mean Sample **GM16** = 4.3594 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 GN15 | | | Sample GN16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 24WVH3 | | 86.49 | -0.36 | -0.68 | 92.01 | -0.54 | -0.98 |
| 42DK7M | | 87.03 | 0.17 | 0.33 | 93.28 | 0.73 | 1.31 |
| 487VRY | | 87.11 | 0.26 | 0.48 | 92.12 | -0.43 | -0.78 |
| 6YM9VZ | | 87.37 | 0.51 | 0.96 | 93.24 | 0.68 | 1.23 |
| 7R6XHY | | 86.56 | -0.30 | -0.56 | 92.65 | 0.10 | 0.18 |
| 863DWZ | X | 89.17 | 2.32 | 4.33 | 93.23 | 0.68 | 1.22 |
| 8F8X9M | | 86.92 | 0.07 | 0.12 | 92.68 | 0.13 | 0.23 |
| 9MZ9Q3 | X | 89.03 | 2.18 | 4.07 | 92.35 | -0.20 | -0.36 |
| AK9JZU | | 86.73 | -0.12 | -0.23 | 92.71 | 0.16 | 0.28 |
| ANPWM3 | | 87.07 | 0.22 | 0.40 | 92.88 | 0.33 | 0.59 |
| BD9C6R | | 86.50 | -0.35 | -0.66 | 92.50 | -0.05 | -0.10 |
| CEZZZR | | 86.87 | 0.02 | 0.03 | 92.26 | -0.29 | -0.53 |
| CVKMZP | | 86.61 | -0.24 | -0.46 | 92.94 | 0.39 | 0.70 |
| E9J2JJ | | 87.25 | 0.40 | 0.74 | 92.63 | 0.08 | 0.14 |
| G8ENNL | | 86.40 | -0.45 | -0.85 | 92.73 | 0.18 | 0.32 |
| GNMYJF | | 87.61 | 0.76 | 1.41 | 92.91 | 0.36 | 0.64 |
| GVN9Q8 | | 86.70 | -0.15 | -0.29 | 92.20 | -0.35 | -0.63 |
| HAKMNG | | 87.27 | 0.42 | 0.78 | 93.13 | 0.58 | 1.04 |
| HUU6UW | | 87.30 | 0.45 | 0.83 | 93.13 | 0.58 | 1.04 |
| JP86QM | | 86.29 | -0.56 | -1.06 | 92.40 | -0.15 | -0.28 |
| KBAFBF | | 87.73 | 0.88 | 1.64 | 92.92 | 0.36 | 0.65 |
| LDQZTP | | 86.35 | -0.51 | -0.95 | 92.13 | -0.42 | -0.75 |
| LXWHVE | | 87.14 | 0.29 | 0.53 | 92.50 | -0.05 | -0.10 |
| MGM7ML | | 87.28 | 0.43 | 0.80 | 92.91 | 0.36 | 0.64 |
| MQA6DQ | | 87.20 | 0.35 | 0.65 | 92.78 | 0.22 | 0.40 |
| NNGK4C | | 87.63 | 0.78 | 1.45 | 93.17 | 0.62 | 1.11 |
| PVXDRG | * | 86.65 | -0.20 | -0.38 | 91.41 | -1.15 | -2.06 |
| QCZ4YX | | 87.34 | 0.49 | 0.91 | 93.04 | 0.49 | 0.88 |
| QX2JT9 | | 86.10 | -0.75 | -1.41 | 92.07 | -0.48 | -0.86 |
| R6GP3K | | 86.97 | 0.11 | 0.21 | 92.70 | 0.15 | 0.27 |
| RAANGF | | 86.50 | -0.35 | -0.66 | 92.03 | -0.52 | -0.94 |
| TCAGNJ | | 86.52 | -0.33 | -0.63 | 92.36 | -0.19 | -0.35 |
| TG6PYZ | X | 89.17 | 2.31 | 4.33 | 92.47 | -0.08 | -0.15 |
| U9PNCG | X | 89.26 | 2.40 | 4.49 | 92.18 | -0.37 | -0.67 |
| UVETYZ | * | 85.59 | -1.26 | -2.37 | 91.06 | -1.49 | -2.68 |
| VJJ2Q2 | | 87.40 | 0.55 | 1.02 | 93.18 | 0.63 | 1.13 |
| VRX9NB | | 86.51 | -0.34 | -0.65 | 92.34 | -0.21 | -0.38 |
| W6JDKT | | 87.18 | 0.33 | 0.61 | 92.83 | 0.28 | 0.50 |
| WQKY9J | | 87.32 | 0.47 | 0.87 | 93.00 | 0.45 | 0.80 |
| XW3XVA | * | 85.32 | -1.53 | -2.87 | 91.02 | -1.53 | -2.76 |
| YKLTJQ | | 86.82 | -0.03 | -0.07 | 92.61 | 0.06 | 0.10 |

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

| | Sample GN15 | Summary Statistics | Sample GN16 |
|---|----------------|--------------------|----------------|
| Grand Means | 86.855 Percent | | 92.553 Percent |
| SD Btwn Labs | 0.534 Percent | | 0.556 Percent |
| Statistics based on 37 of 41 reporting participants | | | |

Comments on assigned Data Flags for Test #384

863DWZ (X) - Inconsistent in testing between samples, data for Sample GN15 are high.

9MZ9Q3 (X) - Inconsistent in testing between samples, data for Sample GN15 are high.

TG6PYZ (X) - Inconsistent in testing between samples, data for Sample GN15 are high.

U9PNCG (X) - Inconsistent in testing between samples, data for Sample GN15 are high.

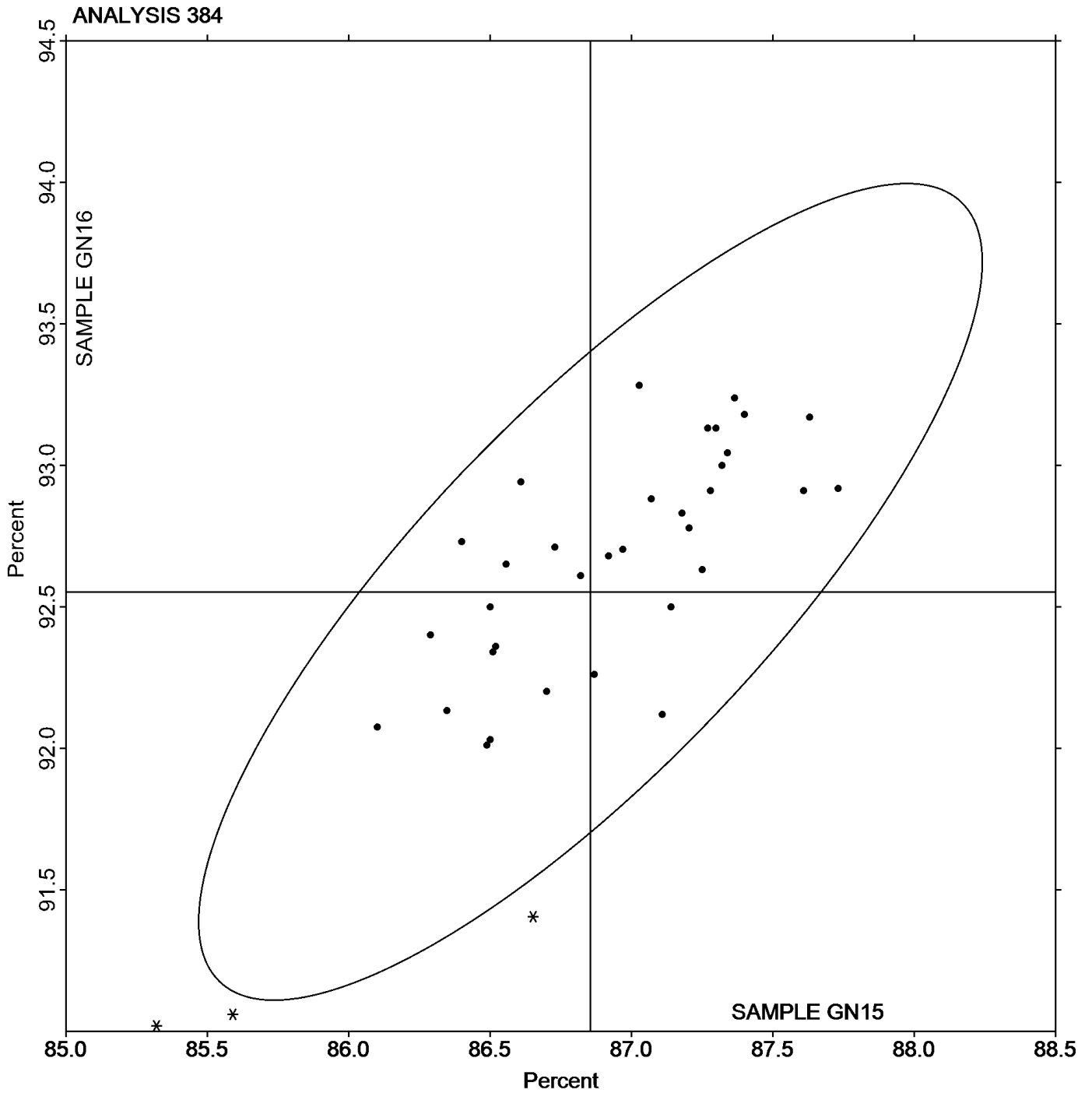
Paper & Paperboard Interlaboratory Testing Program

Analysis 384

Opacity (89% Reflectance Backing) - Fine Papers

Grand Mean Sample GN15 = 86.855 Percent

Grand Mean Sample GN16 = 92.553 Percent



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

| WebCode | Data Flag | Sample GP15 | | | Sample GP16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 27ZQ27 | | 89.15 | 0.11 | 0.57 | 92.13 | -0.06 | -0.39 |
| 2F8XRL | | 88.80 | -0.23 | -1.16 | 92.34 | 0.15 | 1.06 |
| 3AEM78 | | 89.13 | 0.10 | 0.48 | 92.08 | -0.10 | -0.69 |
| 4UJK39 | | 89.09 | 0.06 | 0.31 | 92.56 | 0.38 | 2.62 |
| 6YM9VZ | | 89.07 | 0.04 | 0.21 | 92.10 | -0.08 | -0.55 |
| AACD7W | | 88.99 | -0.05 | -0.23 | 92.15 | -0.03 | -0.23 |
| AUJ4JD | | 89.10 | 0.07 | 0.34 | 92.24 | 0.06 | 0.41 |
| AYT2TX | | 88.99 | -0.04 | -0.21 | 92.02 | -0.17 | -1.17 |
| CEZZR | | 89.11 | 0.07 | 0.37 | 92.25 | 0.07 | 0.47 |
| F3CX8P | | 88.84 | -0.20 | -0.98 | 92.30 | 0.12 | 0.81 |
| FVQYFG | | 89.31 | 0.28 | 1.40 | 92.06 | -0.12 | -0.86 |
| HMB3MU | | 88.89 | -0.14 | -0.71 | 92.24 | 0.06 | 0.39 |
| HVYZ6M | | 89.33 | 0.30 | 1.51 | 92.24 | 0.06 | 0.40 |
| LGVZ63 | * | 88.57 | -0.46 | -2.30 | 91.98 | -0.20 | -1.38 |
| QFZNCB | | 89.41 | 0.38 | 1.92 | 92.07 | -0.12 | -0.82 |
| R6GP3K | | 88.87 | -0.16 | -0.80 | 92.10 | -0.08 | -0.56 |
| RFWHA8 | | 89.03 | -0.01 | -0.03 | 92.26 | 0.07 | 0.51 |
| VAZV6C | | 88.83 | -0.20 | -1.01 | 92.20 | 0.02 | 0.11 |
| W3EC9F | | 89.13 | 0.10 | 0.51 | 91.99 | -0.20 | -1.36 |
| YG9JH2 | | 88.99 | -0.04 | -0.20 | 92.36 | 0.18 | 1.24 |

| | | Summary Statistics | |
|---|----------------|--------------------|----------------|
| | Sample GP15 | | Sample GP16 |
| Grand Means | 89.031 Percent | | 92.184 Percent |
| SD Btwn Labs | 0.199 Percent | | 0.145 Percent |
| Statistics based on 20 of 20 reporting participants | | | |

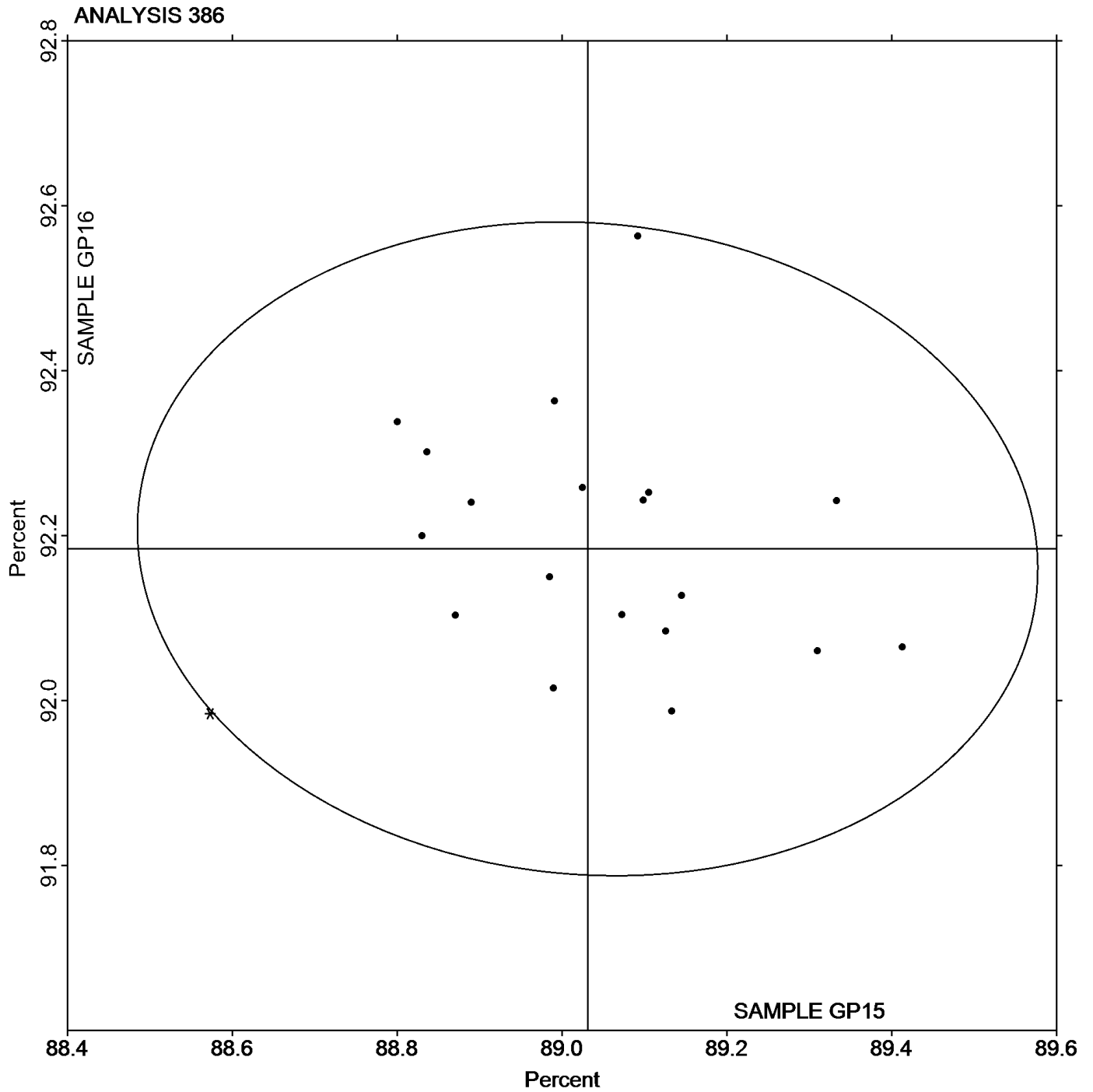
Paper & Paperboard Interlaboratory Testing Program

Analysis 386

Opacity (Paper Backing) - Fine Papers and Newsprint

Grand Mean Sample GP15 = 89.031 Percent

Grand Mean Sample GP16 = 92.184 Percent



Paper & Paperboard Interlaboratory Testing Program
Analysis 390
Directional Brightness

| WebCode | Data Flag | Sample GR15 | | | Sample GR16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 24WVH3 | X | 80.54 | -1.33 | -0.95 | 82.00 | -0.07 | -0.06 | XS |
| 2M2AGN | | 83.01 | 1.15 | 0.82 | 83.33 | 1.25 | 0.96 | TS |
| 3EN4FV | | 82.48 | 0.61 | 0.44 | 82.43 | 0.35 | 0.27 | TT |
| 42DK7M | | 80.42 | -1.45 | -1.04 | 80.69 | -1.38 | -1.06 | TS |
| 4ZLRKW | | 83.64 | 1.78 | 1.27 | 83.61 | 1.54 | 1.18 | HD |
| 6YM9VZ | | 80.19 | -1.67 | -1.20 | 80.31 | -1.77 | -1.36 | TS |
| 863DWZ | X | 83.90 | 2.03 | 1.46 | 82.43 | 0.35 | 0.27 | TT |
| 8F8X9M | | 80.28 | -1.59 | -1.14 | 80.68 | -1.40 | -1.08 | TT |
| ANPWM3 | | 82.85 | 0.98 | 0.71 | 83.13 | 1.05 | 0.81 | TA |
| CEZZR | | 80.24 | -1.63 | -1.17 | 80.61 | -1.46 | -1.13 | TT |
| CVKMZP | | 80.96 | -0.90 | -0.65 | 81.64 | -0.44 | -0.34 | TS |
| E9J2JJ | | 80.50 | -1.36 | -0.98 | 80.52 | -1.55 | -1.20 | TS |
| G8ENNL | | 80.29 | -1.58 | -1.13 | 80.65 | -1.42 | -1.10 | TT |
| GVN9Q8 | | 82.83 | 0.96 | 0.69 | 82.84 | 0.76 | 0.59 | XX |
| HAKMNG | | 83.43 | 1.56 | 1.12 | 83.46 | 1.39 | 1.07 | TS |
| KBAFBF | | 82.18 | 0.31 | 0.22 | 82.89 | 0.81 | 0.62 | TS |
| LXWHVE | | 81.94 | 0.07 | 0.05 | 82.06 | -0.01 | -0.01 | MK |
| P884GB | | 82.75 | 0.88 | 0.63 | 83.00 | 0.92 | 0.71 | HD |
| P8UEFJ | | 83.71 | 1.85 | 1.32 | 84.00 | 1.93 | 1.48 | HG |
| QCZ4YX | | 82.67 | 0.80 | 0.57 | 82.49 | 0.42 | 0.32 | TS |
| R6GP3K | | 80.31 | -1.56 | -1.12 | 80.61 | -1.47 | -1.13 | TS |
| RYV2JV | | 83.23 | 1.36 | 0.97 | 83.04 | 0.96 | 0.74 | TS |
| TCAGNJ | | 80.81 | -1.06 | -0.76 | 81.36 | -0.72 | -0.55 | GM |
| UPVX9B | | 80.23 | -1.64 | -1.17 | 80.64 | -1.44 | -1.10 | TS |
| UVETYZ | | 83.58 | 1.71 | 1.23 | 83.69 | 1.61 | 1.24 | XX |
| VC3V69 | | 80.29 | -1.58 | -1.13 | 80.64 | -1.44 | -1.11 | TS |
| VJJ2Q2 | | 80.66 | -1.20 | -0.86 | 80.81 | -1.26 | -0.97 | XX |
| WQKY9J | | 81.31 | -0.55 | -0.40 | 81.58 | -0.50 | -0.38 | TT |
| XQXYM6 | | 83.18 | 1.31 | 0.94 | 82.91 | 0.84 | 0.64 | TT |
| XW3XVA | | 84.35 | 2.48 | 1.78 | 84.51 | 2.44 | 1.87 | PE |

| | | Summary Statistics | | | |
|---|--|--------------------|---------|-------------|---------|
| | | Sample GR15 | | Sample GR16 | |
| Grand Means | | 81.867 | Percent | 82.075 | Percent |
| SD Btwn Labs | | 1.394 | Percent | 1.300 | Percent |
| Statistics based on 28 of 30 reporting participants | | | | | |

Comments on assigned Data Flags for Test #390

24WVH3 (X) - Inconsistent in testing between samples and within the determinations for Sample GR15.

863DWZ (X) - Inconsistent in testing between samples.

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 |
| (XS) - X-Rite 938 Spectrodensitometer | (XX) - Instrument make/model not specified by lab |

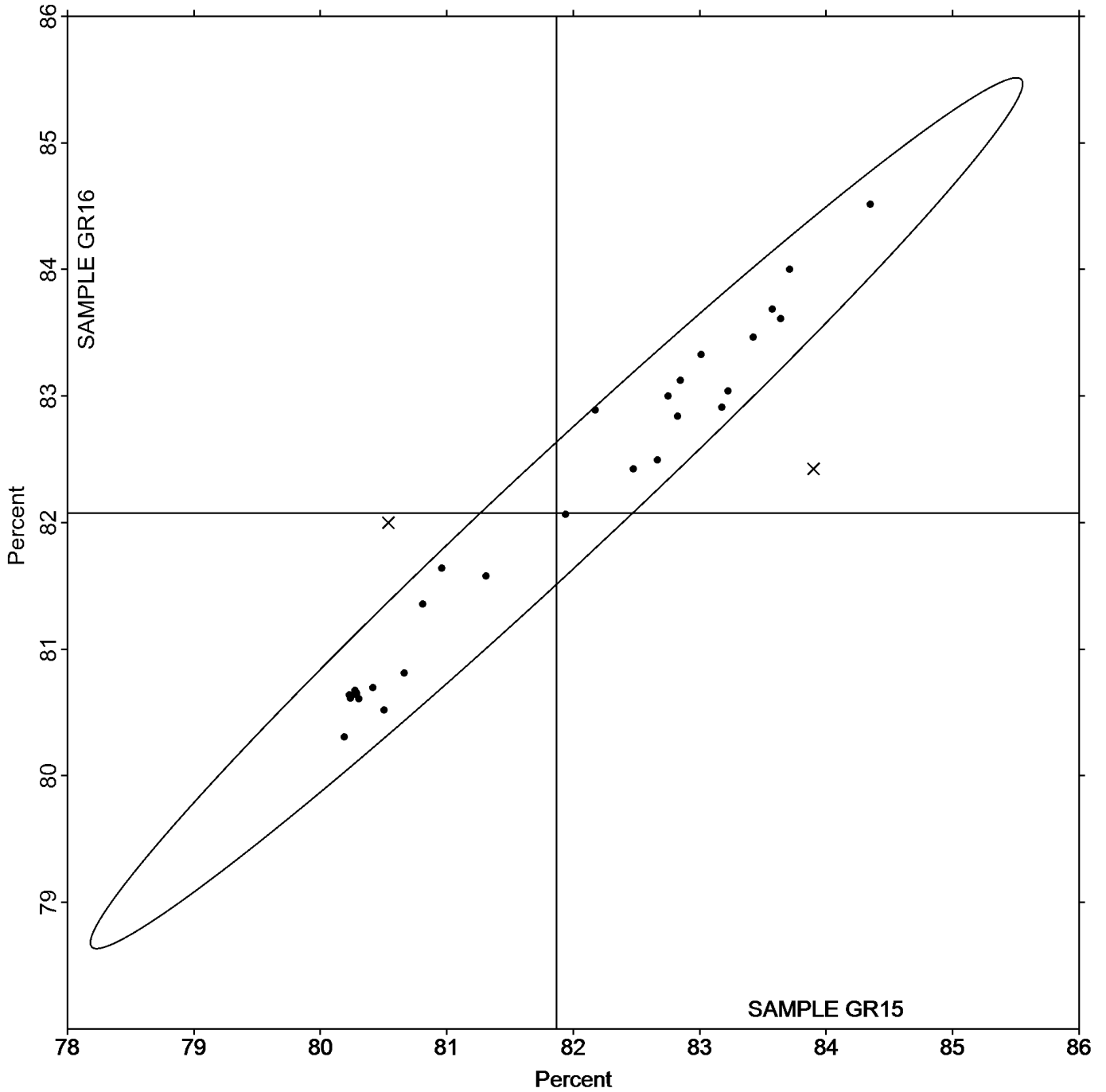
Analysis 390

Directional Brightness

Grand Mean Sample GR15 = 81.867 Percent

Grand Mean Sample GR16 = 82.075 Percent

ANALYSIS 390



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

| WebCode | Data Flag | Sample GZ15 | | | Sample GZ16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 92X66U | | 90.20 | 0.01 | 0.01 | 97.16 | 0.13 | 0.13 | TT |
| AK9JZU | X | 99.91 | 9.72 | 12.50 | 108.10 | 11.07 | 10.69 | HT |
| CVKMZP | | 90.35 | 0.15 | 0.20 | 97.20 | 0.17 | 0.16 | TS |
| GNMYJF | | 90.66 | 0.47 | 0.60 | 97.70 | 0.67 | 0.65 | TT |
| HUU6UW | | 90.09 | -0.10 | -0.13 | 97.19 | 0.16 | 0.15 | TS |
| JTRX3P | | 90.87 | 0.68 | 0.87 | 98.16 | 1.13 | 1.09 | TS |
| MGM7ML | | 89.68 | -0.51 | -0.66 | 96.54 | -0.49 | -0.47 | TS |
| MQA6DQ | | 89.84 | -0.35 | -0.45 | 95.72 | -1.31 | -1.26 | TS |
| NZV3V3 | | 92.26 | 2.07 | 2.66 | 99.36 | 2.33 | 2.25 | EF |
| QCZ4YX | X | 83.46 | -6.73 | -8.66 | 89.80 | -7.23 | -6.99 | TS |
| QX2JT9 | | 89.33 | -0.86 | -1.11 | 95.99 | -1.04 | -1.00 | TS |
| R387VV | | 90.25 | 0.06 | 0.07 | 97.28 | 0.25 | 0.24 | TS |
| RAANGF | | 89.89 | -0.30 | -0.38 | 96.90 | -0.13 | -0.13 | PP |
| TCAGNJ | X | 85.97 | -4.22 | -5.42 | 94.71 | -2.32 | -2.24 | GM |
| VRX9NB | | 89.84 | -0.35 | -0.45 | 96.72 | -0.31 | -0.30 | TT |
| W6JDKT | | 89.23 | -0.96 | -1.24 | 95.47 | -1.56 | -1.51 | HT |

| Summary Statistics | | | |
|---|-------------|---------|-------------|
| | Sample GZ15 | | Sample GZ16 |
| Grand Means | 90.191 | Percent | 97.030 |
| SD Btwn Labs | 0.778 | Percent | 1.035 |
| Statistics based on 13 of 16 reporting participants | | | |

Comments on assigned Data Flags for Test #391

AK9JZU (X) - Extreme data.

QCZ4YX (X) - Extreme data.

TCAGNJ (X) - Data for Sample GZ15 are low.

Instrument Code List as Reported by the Labs

(EF) - L & W Datacolor Elrepho

(GM) - Gretag Macbeth Color i5

(HT) - Hunter UltraScan Vis

(PP) - Technidyne Profile/Plus

(TS) - Technidyne Brightimeter Micro S-5

(TT) - Technidyne Brightimeter Micro S4-M

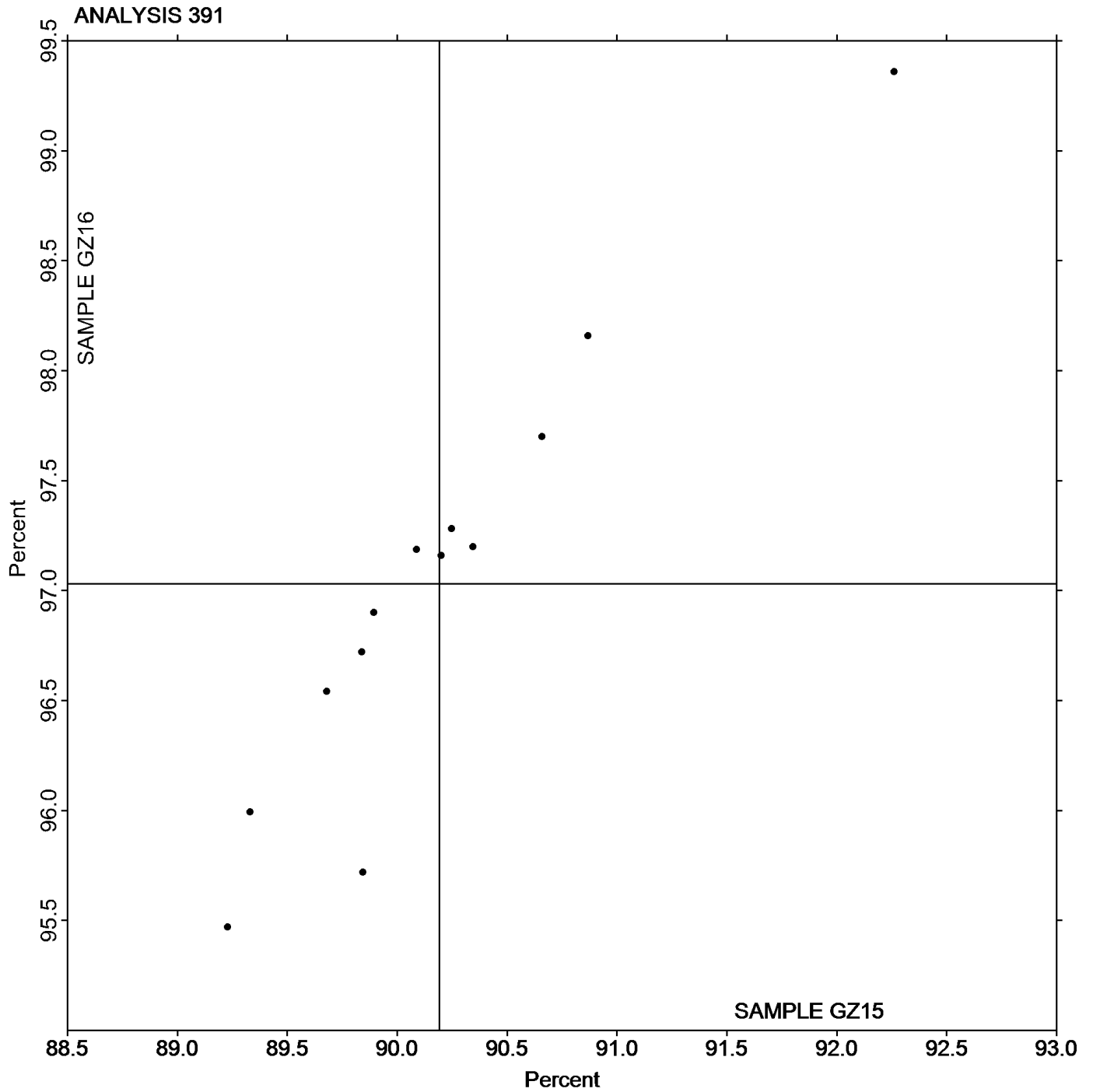
Paper & Paperboard Interlaboratory Testing Program

Analysis 391

Directional Brightness of Fluorescent Samples

Grand Mean Sample **GZ15** = 90.191 Percent

Grand Mean Sample **GZ16** = 97.030 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 GR15 | | | Sample GR16 | | | Instr Code |
|---------|-----------|-------------|----------------------|--------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 27ZQ27 | | 81.11 | -0.24 | -0.88 | 81.35 | -0.15 | -0.52 | TC |
| 2M2AGN | | 81.28 | -0.07 | -0.28 | 81.48 | -0.03 | -0.09 | TM |
| 3EN4FV | | 81.71 | 0.36 | 1.35 | 81.91 | 0.41 | 1.40 | TL |
| 4UJK39 | | 81.66 | 0.31 | 1.17 | 81.86 | 0.36 | 1.21 | TC |
| 6YM9VZ | | 81.31 | -0.04 | -0.15 | 81.46 | -0.04 | -0.14 | TM |
| 7BFRA7 | | 81.61 | 0.26 | 0.98 | 81.76 | 0.26 | 0.87 | TC |
| 7R6Z84 | X | 80.75 | -0.60 | -2.24 | 81.53 | 0.03 | 0.11 | TC |
| 9MZ9Q3 | | 81.44 | 0.09 | 0.32 | 81.51 | 0.01 | 0.02 | LS |
| AACD7W | | 81.16 | -0.19 | -0.71 | 81.24 | -0.26 | -0.90 | EG |
| AAVC9Z | X | 78.40 | -2.95 | -10.99 | 79.20 | -2.30 | -7.82 | EF |
| AYT2TX | | 81.40 | 0.05 | 0.19 | 81.53 | 0.02 | 0.08 | LS |
| CEZZZR | X | 82.82 | 1.47 | 5.46 | 82.93 | 1.43 | 4.85 | TM |
| F3CX8P | | 81.28 | -0.07 | -0.24 | 81.39 | -0.11 | -0.37 | TC |
| FVQ24Z | | 81.63 | 0.28 | 1.04 | 81.75 | 0.25 | 0.85 | TC |
| FVQYFG | | 81.66 | 0.31 | 1.17 | 81.76 | 0.26 | 0.89 | TM |
| HNG4DE | | 81.42 | 0.07 | 0.27 | 81.54 | 0.04 | 0.13 | TC |
| HVYZ6M | | 81.24 | -0.11 | -0.41 | 81.50 | 0.00 | 0.00 | TM |
| JUN396 | | 81.49 | 0.14 | 0.53 | 81.61 | 0.11 | 0.39 | TC |
| KBAFBF | * | 81.21 | -0.14 | -0.51 | 81.58 | 0.08 | 0.26 | TC |
| LDQZTP | | 81.66 | 0.31 | 1.16 | 81.76 | 0.26 | 0.88 | LS |
| LGVZ63 | * | 80.64 | -0.71 | -2.66 | 80.70 | -0.80 | -2.72 | FR |
| LZ2KUB | | 81.30 | -0.05 | -0.19 | 81.36 | -0.14 | -0.47 | PP |
| MFT8Q8 | | 81.26 | -0.09 | -0.33 | 81.52 | 0.02 | 0.07 | TC |
| NZV3V3 | | 80.74 | -0.61 | -2.28 | 80.75 | -0.75 | -2.55 | LA |
| QFZNCB | | 81.21 | -0.14 | -0.53 | 81.28 | -0.22 | -0.74 | XX |
| R6GP3K | | 81.54 | 0.19 | 0.72 | 81.84 | 0.34 | 1.15 | TC |
| RFWHA8 | | 81.10 | -0.25 | -0.92 | 81.29 | -0.21 | -0.71 | LS |
| U9PNCG | | 81.28 | -0.07 | -0.28 | 81.30 | -0.21 | -0.70 | LS |
| UZCXP6 | | 81.33 | -0.02 | -0.08 | 81.57 | 0.07 | 0.22 | TC |
| VRWD3J | | 81.46 | 0.11 | 0.39 | 81.72 | 0.22 | 0.75 | TC |
| XCWD72 | | 81.34 | -0.01 | -0.04 | 81.45 | -0.05 | -0.17 | TC |
| XQXYM6 | | 81.15 | -0.20 | -0.74 | 81.25 | -0.25 | -0.85 | EG |
| YG9JH2 | | 81.28 | -0.07 | -0.25 | 81.45 | -0.05 | -0.16 | TM |
| ZLVT66 | | 81.94 | 0.59 | 2.18 | 82.06 | 0.56 | 1.91 | EE |

Summary Statistics

Sample GR15

Grand Means 81.349 Percent
SD Btw Labs 0.268 Percent

Sample GR16

81.500 Percent
0.294 Percent

Statistics based on 31 of 34 reporting participants

Paper & Paperboard Interlaboratory Testing Program
Analysis 392
Diffuse Brightness

Comments on assigned Data Flags for Test #392

7R6Z84 (X) - Inconsistent in testing between samples and within the determinations for Sample GR15.

AAVC9Z (X) - Extreme data.

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

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

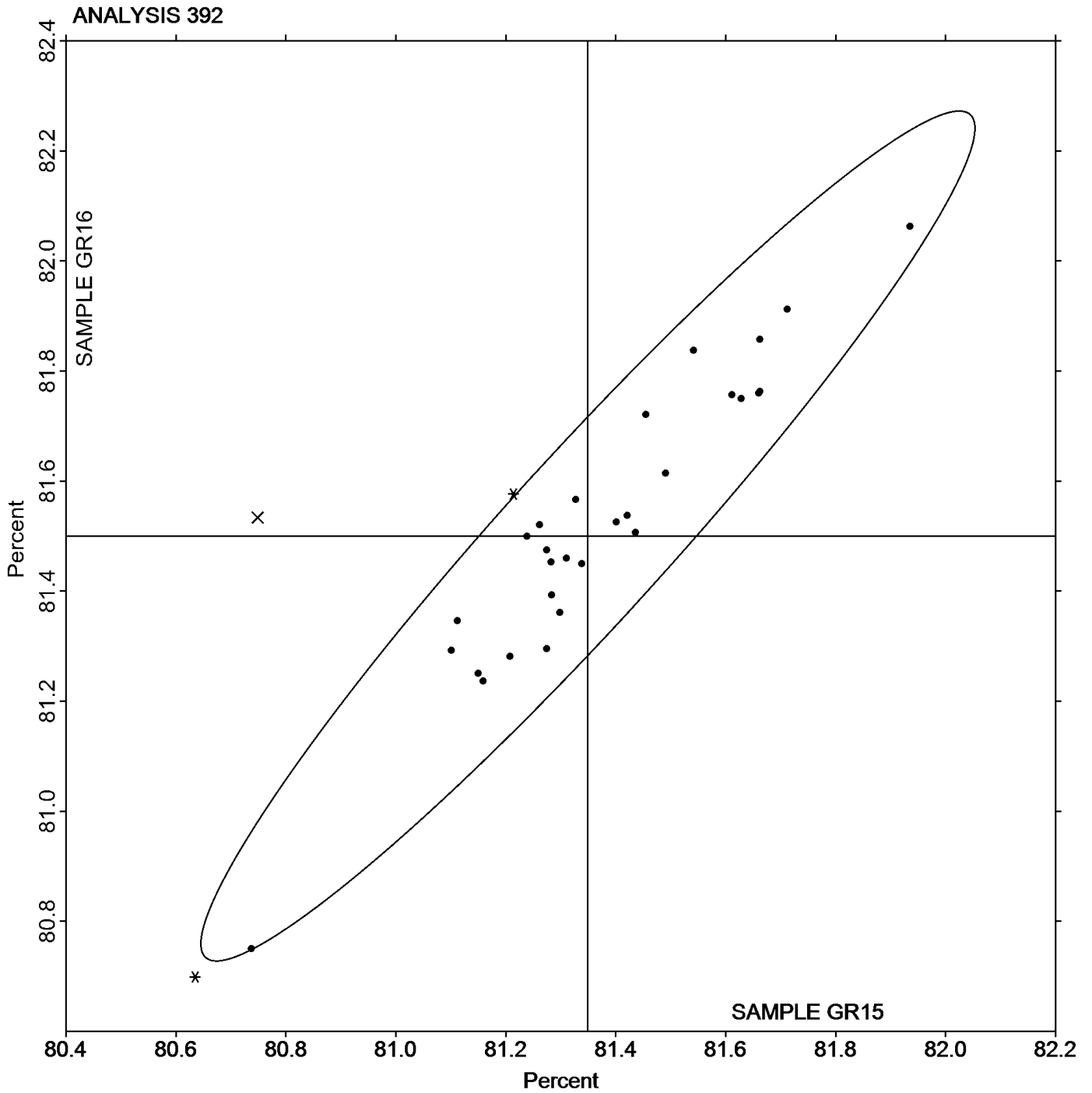
(TM) - Technidyne Technibrite Micro TB-1C

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

Analysis 392
Diffuse Brightness

Grand Mean Sample GR15 = 81.349 Percent

Grand Mean Sample GR16 = 81.500 Percent



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

| WebCode | Data Flag | Sample GZ15 | | | Sample GZ16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 92X66U | | 7.560 | 0.665 | 1.44 | 8.100 | 0.536 | 1.11 | TT |
| AK9JZU | | 5.882 | -1.013 | -2.19 | 6.618 | -0.946 | -1.96 | HT |
| CVKMZP | | 7.034 | 0.139 | 0.30 | 7.718 | 0.154 | 0.32 | TS |
| HUU6UW | | 7.084 | 0.189 | 0.41 | 7.980 | 0.416 | 0.86 | TS |
| JTRX3P | | 6.870 | -0.025 | -0.05 | 7.486 | -0.078 | -0.16 | TS |
| MQA6DQ | | 7.242 | 0.347 | 0.75 | 7.728 | 0.164 | 0.34 | TS |
| NZV3V3 | X | 10.060 | 3.165 | 6.83 | 10.460 | 2.896 | 5.99 | EF |
| QCZ4YX | | 6.270 | -0.625 | -1.35 | 6.792 | -0.772 | -1.60 | TS |
| QX2JT9 | | 6.700 | -0.195 | -0.42 | 7.280 | -0.284 | -0.59 | TS |
| R387VV | | 7.114 | 0.219 | 0.47 | 7.970 | 0.406 | 0.84 | TS |
| RAANGF | | 7.074 | 0.179 | 0.39 | 7.782 | 0.218 | 0.45 | PP |
| TCAGNJ | X | 8.502 | 1.607 | 3.47 | 9.760 | 2.196 | 4.54 | GM |
| VRX9NB | | 6.640 | -0.255 | -0.55 | 7.300 | -0.264 | -0.55 | TT |
| W6JDKT | | 7.270 | 0.375 | 0.81 | 8.014 | 0.450 | 0.93 | HT |

| Summary Statistics | | | |
|---|-------------|---------|-------------|
| | Sample GZ15 | | Sample GZ16 |
| Grand Means | 6.8950 | Percent | 7.5640 |
| SD Btwn Labs | 0.4631 | Percent | 0.4837 |
| Statistics based on 12 of 14 reporting participants | | | |

Comments on assigned Data Flags for Test #394

NZV3V3 (X) - Data for both samples are high. Inconsistent within the determinations for Sample GZ15.

TCAGNJ (X) - Data for both samples are high. Inconsistent within the determinations for Sample GZ15.

Instrument Code List as Reported by the Labs

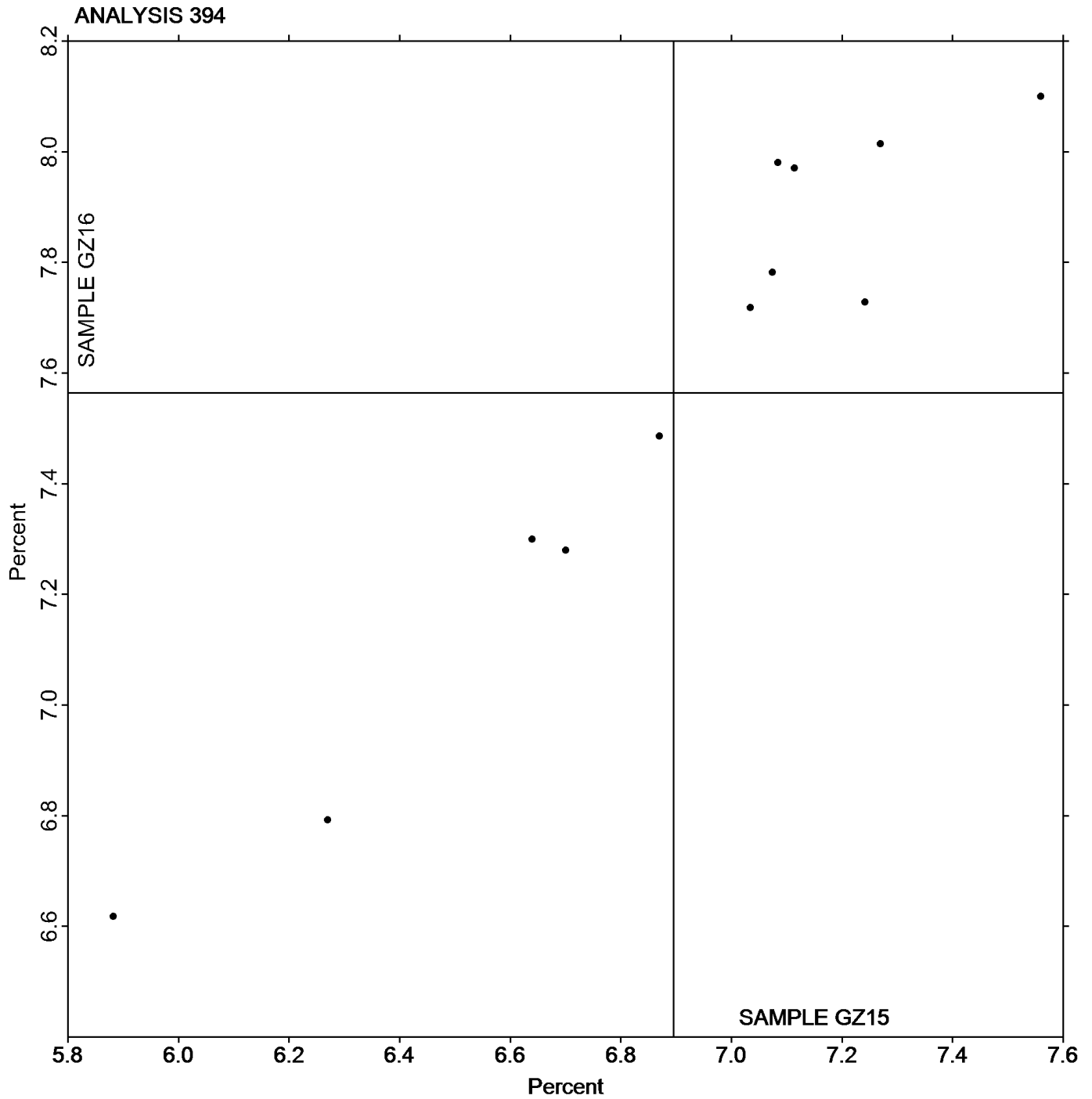
- | | |
|--|---|
| (EF) - Datacolor Elrepho 3000 | (GM) - Gretag Macbeth Color i5 |
| (HT) - Hunter UltraScan Vis | (PP) - Technidyne Profile/Plus |
| (TS) - Technidyne Brightimeter Micro S-5 | (TT) - Technidyne Brightimeter Micro S4-M |

Analysis 394

Fluorescent Component of Directional Brightness

Grand Mean Sample **GZ15** = 6.8950 Percent

Grand Mean Sample **GZ16** = 7.5640 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 GT15 | | | Sample GT16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 3EN4FV | | 76.00 | 0.77 | 0.59 | 73.20 | -0.27 | -0.21 | GS |
| 4ZLRKW | | 75.26 | 0.03 | 0.02 | 74.87 | 1.40 | 1.09 | TH |
| 6YM9VZ | | 74.42 | -0.81 | -0.62 | 73.33 | -0.14 | -0.11 | TH |
| 8F8X9M | | 75.46 | 0.23 | 0.18 | 74.98 | 1.51 | 1.18 | TH |
| 92X66U | X | 85.90 | 10.67 | 8.19 | 80.20 | 6.73 | 5.25 | LA |
| 9C43ZP | | 76.07 | 0.84 | 0.65 | 72.17 | -1.30 | -1.01 | LA |
| AACD7W | X | 70.16 | -5.07 | -3.89 | 66.14 | -7.33 | -5.71 | TH |
| AYT2TX | | 75.44 | 0.21 | 0.16 | 74.41 | 0.94 | 0.73 | LB |
| CEZZZR | | 76.98 | 1.75 | 1.34 | 75.28 | 1.81 | 1.41 | TG |
| F8KHVM | | 75.70 | 0.47 | 0.36 | 72.82 | -0.65 | -0.51 | GM |
| JUN396 | | 73.86 | -1.37 | -1.05 | 70.80 | -2.67 | -2.08 | ZH |
| LXWHVE | | 75.36 | 0.13 | 0.10 | 73.74 | 0.27 | 0.21 | PP |
| MEHFKC | | 73.61 | -1.62 | -1.24 | 72.85 | -0.62 | -0.48 | XX |
| P884GB | | 76.90 | 1.67 | 1.28 | 75.14 | 1.67 | 1.30 | TH |
| QFZNCB | | 76.93 | 1.70 | 1.31 | 74.36 | 0.89 | 0.70 | XX |
| RAANGF | | 75.62 | 0.39 | 0.30 | 72.75 | -0.72 | -0.56 | PP |
| VAZV6C | | 73.35 | -1.88 | -1.44 | 71.47 | -2.00 | -1.56 | GA |
| VQN2M4 | | 75.50 | 0.27 | 0.21 | 73.43 | -0.04 | -0.03 | TH |
| XQXYM6 | | 72.42 | -2.81 | -2.15 | 73.36 | -0.11 | -0.08 | GM |

| Summary Statistics | | | |
|---|--------------------|--|--------------------|
| | Sample GT15 | | Sample GT16 |
| Grand Means | 75.228 Gloss Units | | 73.468 Gloss Units |
| SD Btwn Labs | 1.303 Gloss Units | | 1.282 Gloss Units |
| Statistics based on 17 of 19 reporting participants | | | |

Comments on assigned Data Flags for Test #395

92X66U (X) - Extreme data.

AACD7W (X) - Data for both samples are low.

Instrument Code List as Reported by the Labs

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

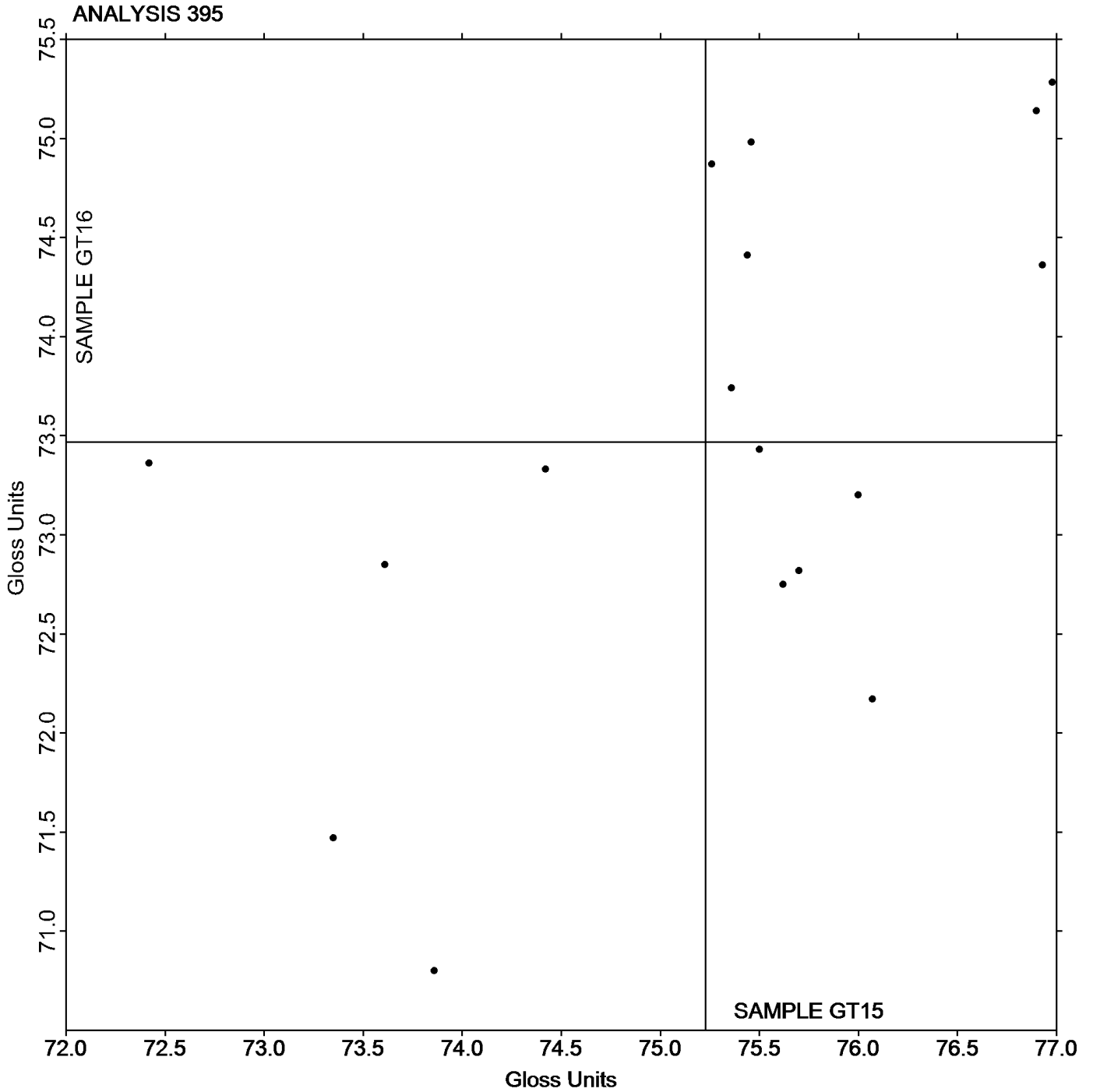
Paper & Paperboard Interlaboratory Testing Program

Analysis 395

Specular Gloss at 75 Degrees - High Range

Grand Mean Sample **GT15** = 75.228 Gloss Units

Grand Mean Sample **GT16** = 73.468 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 GU15 | | | Sample GU16 | | | Instr Code |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 24WVH3 | | 36.30 | 0.49 | 0.64 | 43.30 | 1.11 | 1.02 | TH |
| 487VRY | | 35.07 | -0.74 | -0.98 | 42.17 | -0.02 | -0.02 | PP |
| 7R6XHY | | 34.89 | -0.92 | -1.22 | 43.38 | 1.19 | 1.09 | TG |
| ANPWM3 | | 35.66 | -0.15 | -0.20 | 42.80 | 0.61 | 0.56 | TH |
| AYT2TX | | 35.72 | -0.09 | -0.12 | 40.90 | -1.29 | -1.18 | LA |
| CEZZR | | 37.15 | 1.34 | 1.76 | 42.15 | -0.03 | -0.03 | TG |
| NUP4ZK | | 35.91 | 0.10 | 0.13 | 40.61 | -1.58 | -1.44 | XX |
| NZV3V3 | X | 49.97 | 14.16 | 18.61 | 50.51 | 8.32 | 7.61 | TG |

| Summary Statistics | | | |
|---|--------------------|--|--------------------|
| | Sample GU15 | | Sample GU16 |
| Grand Means | 35.814 Gloss Units | | 42.188 Gloss Units |
| SD Btwn Labs | 0.761 Gloss Units | | 1.094 Gloss Units |
| Statistics based on 7 of 8 reporting participants | | | |

Comments on assigned Data Flags for Test #396

NZV3V3 (X) - Extreme data.

Instrument Code List as Reported by the Labs

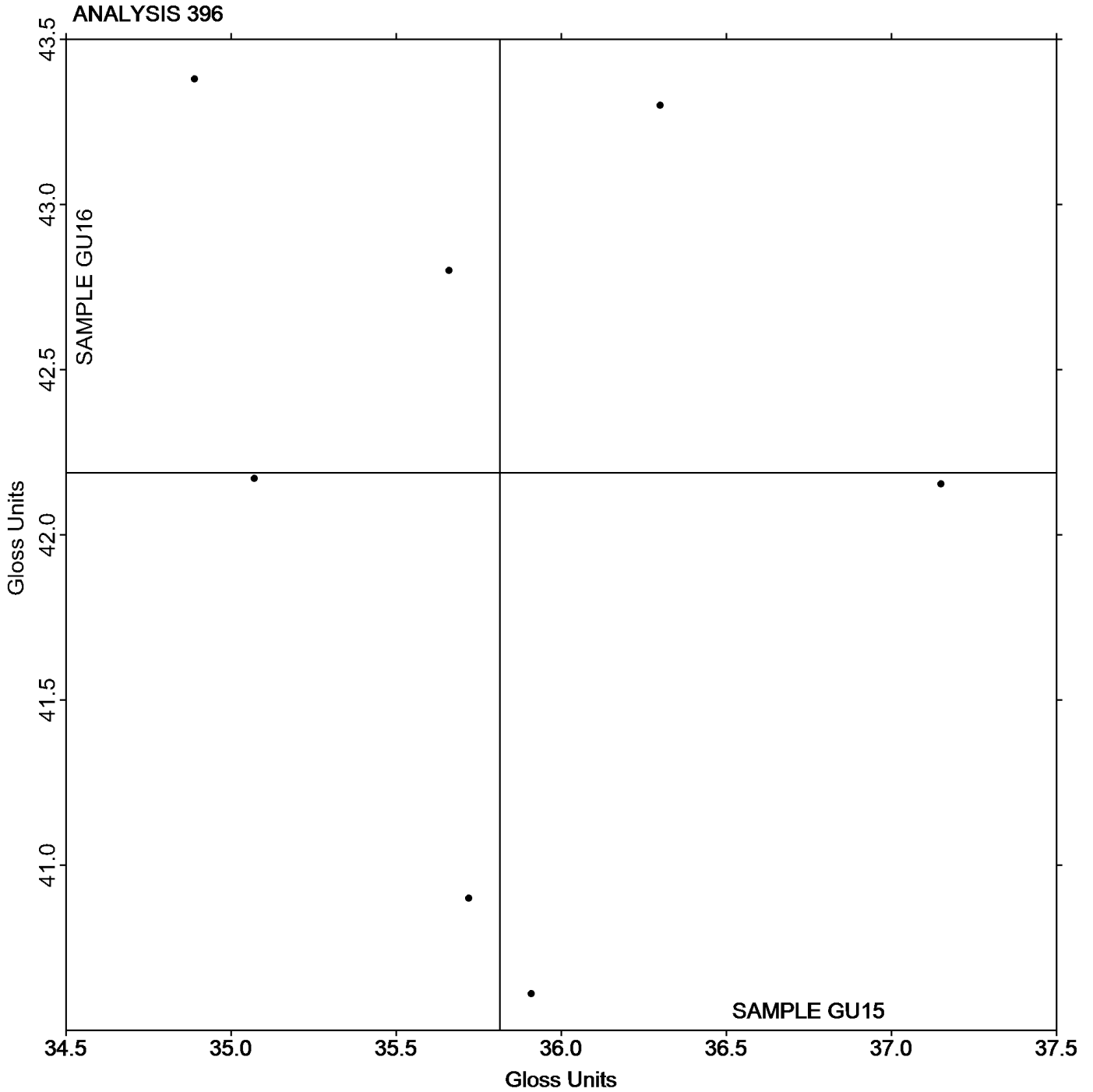
- | | |
|---|--------------------------------|
| (LA) - L & W Gloss - Autoline 300 | (PP) - Technidyne Profile/Plus |
| (TG) - Technidyne T480 | (TH) - Technidyne T480A |
| (XX) - Instrument make/model not specified by lab | |

Analysis 396

Specular Gloss at 75 Degrees - Low Range

Grand Mean Sample **GU15** = 35.814 Gloss Units

Grand Mean Sample **GU16** = 42.188 Gloss Units



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

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

| WebCode | Data Flag | Sample GW15 | | | Sample GW16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| | | 85.96 | 0.17 | 0.30 | 72.34 | -0.12 | -0.28 |
| 24WVH3 | | 85.90 | 0.11 | 0.19 | 72.21 | -0.25 | -0.55 |
| 3AEM78 | | 86.25 | 0.46 | 0.82 | 73.36 | 0.90 | 1.99 |
| 8ECCHG | | 85.72 | -0.07 | -0.13 | 72.30 | -0.16 | -0.36 |
| AACD7W | | 85.43 | -0.36 | -0.65 | 72.22 | -0.24 | -0.53 |
| AK9JZU | | 85.05 | -0.75 | -1.33 | 71.89 | -0.57 | -1.27 |
| AKQT9H | | 85.96 | 0.17 | 0.30 | 72.40 | -0.06 | -0.14 |
| ANPWM3 | | 84.57 | -1.22 | -2.18 | 71.82 | -0.65 | -1.43 |
| AYT2TX | | 85.98 | 0.18 | 0.33 | 72.53 | 0.07 | 0.15 |
| BD9C6R | | 86.46 | 0.66 | 1.19 | 72.71 | 0.25 | 0.56 |
| E9J2JJ | | 85.65 | -0.14 | -0.25 | 72.63 | 0.17 | 0.37 |
| EDAKEL | | 86.53 | 0.74 | 1.32 | 72.85 | 0.39 | 0.86 |
| F3CX8P | | 86.36 | 0.57 | 1.01 | 73.28 | 0.82 | 1.81 |
| GFTQZA | | 84.76 | -1.03 | -1.84 | 72.24 | -0.22 | -0.50 |
| GVN9Q8 | | 86.04 | 0.25 | 0.44 | 72.33 | -0.14 | -0.30 |
| H3ZPX9 | | 85.00 | -0.79 | -1.42 | 72.48 | 0.01 | 0.03 |
| HMB3MU | | 85.64 | -0.15 | -0.27 | 72.93 | 0.47 | 1.04 |
| JBVE6G | | 85.91 | 0.12 | 0.21 | 72.42 | -0.05 | -0.10 |
| LGVZ63 | | 86.39 | 0.60 | 1.06 | 72.43 | -0.04 | -0.08 |
| MGM7ML | | 86.69 | 0.90 | 1.60 | 72.56 | 0.10 | 0.21 |
| MUPLPG | | 85.56 | -0.23 | -0.41 | 71.68 | -0.79 | -1.75 |
| NUP4ZK | | 86.58 | 0.79 | 1.40 | 73.01 | 0.54 | 1.21 |
| NZV3V3 | | 86.40 | 0.61 | 1.09 | 73.20 | 0.74 | 1.63 |
| P8UEFJ | | 85.83 | 0.04 | 0.07 | 72.22 | -0.24 | -0.54 |
| QFMEHX | | 84.78 | -1.01 | -1.80 | 71.71 | -0.75 | -1.67 |
| QFZNCB | | 85.46 | -0.33 | -0.59 | 72.24 | -0.22 | -0.50 |
| RFWHA8 | | 85.91 | 0.12 | 0.21 | 72.61 | 0.15 | 0.33 |
| TCAGNJ | | 85.68 | -0.11 | -0.20 | 71.97 | -0.50 | -1.10 |
| VJJ2Q2 | | 85.27 | -0.52 | -0.93 | 72.84 | 0.38 | 0.84 |
| W6JDKT | | 85.69 | -0.10 | -0.18 | 71.93 | -0.54 | -1.19 |
| YWERBA | | 86.17 | 0.38 | 0.67 | 73.04 | 0.58 | 1.28 |

Summary Statistics

Sample GW15

Grand Means 85.792 g/sq m
SD Btwn Labs 0.560 g/sq m

Sample GW16

72.463 g/sq m
0.451 g/sq m

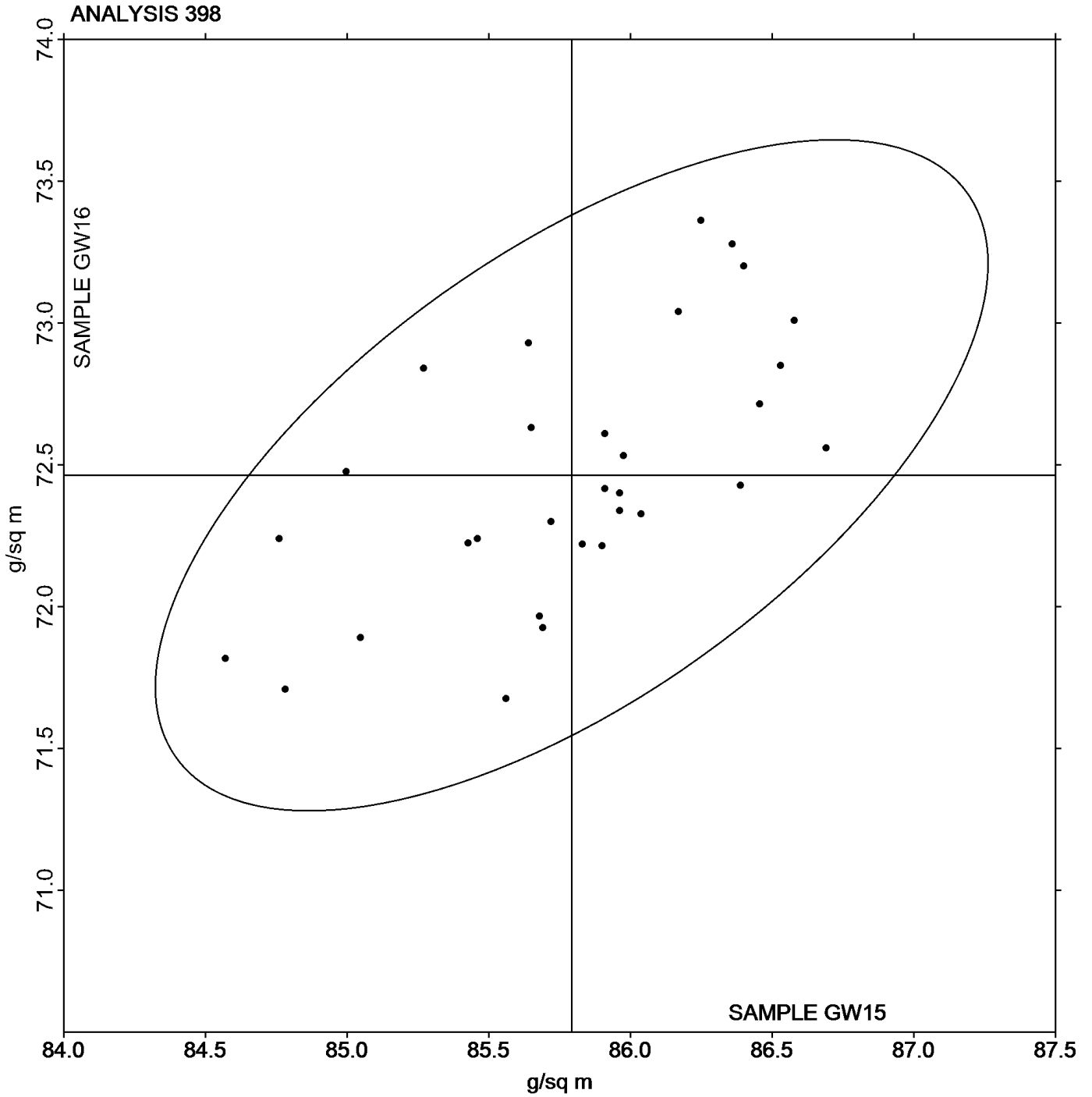
Statistics based on 31 of 31 reporting participants

Analysis 398

Grammage (Mass per Unit Area)

Grand Mean Sample **GW15** = 85.792 g/sq m

Grand Mean Sample **GW16** = 72.463 g/sq m



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

| WebCode | Data Flag | Sample GX15 | | | Sample GX16 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 487VRY | | 11.62 | -6.27 | -0.89 | 12.66 | -4.67 | -0.79 |
| 6YM9VZ | | 16.65 | -1.24 | -0.18 | 15.32 | -2.01 | -0.34 |
| 8Q3RFV | | 15.69 | -2.20 | -0.31 | 15.27 | -2.06 | -0.35 |
| CVKMZP | * | 37.20 | 19.31 | 2.74 | 35.50 | 18.17 | 3.07 |
| DBRYDZ | | 11.46 | -6.43 | -0.91 | 14.45 | -2.88 | -0.49 |
| F8KHVM | | 19.70 | 1.81 | 0.26 | 18.60 | 1.27 | 0.21 |
| G8ENNL | X | 41.16 | 23.27 | 3.30 | 25.67 | 8.34 | 1.41 |
| GNMYJF | | 12.97 | -4.92 | -0.70 | 14.77 | -2.56 | -0.43 |
| GVN9Q8 | * | 34.55 | 16.66 | 2.36 | 27.78 | 10.45 | 1.76 |
| HUU6UW | | 20.37 | 2.48 | 0.35 | 17.13 | -0.20 | -0.03 |
| JP86QM | | 24.65 | 6.76 | 0.96 | 23.41 | 6.08 | 1.03 |
| KBAFBF | | 24.59 | 6.70 | 0.95 | 26.88 | 9.55 | 1.61 |
| LXWHVE | | 14.00 | -3.89 | -0.55 | 12.49 | -4.84 | -0.82 |
| MGM7ML | | 26.70 | 8.81 | 1.25 | 21.10 | 3.77 | 0.64 |
| MQA6DQ | | 10.41 | -7.48 | -1.06 | 10.61 | -6.72 | -1.13 |
| NNGK4C | | 17.84 | -0.05 | -0.01 | 17.57 | 0.24 | 0.04 |
| PVXDRG | | 13.23 | -4.66 | -0.66 | 13.98 | -3.35 | -0.56 |
| QX2JT9 | | 21.32 | 3.43 | 0.49 | 21.44 | 4.11 | 0.69 |
| RJT8QE | | 17.39 | -0.50 | -0.07 | 16.92 | -0.41 | -0.07 |
| RUWFGC | X | 97.23 | 79.34 | 11.25 | 103.20 | 85.87 | 14.49 |
| TCAGNJ | | 17.00 | -0.89 | -0.13 | 16.30 | -1.03 | -0.17 |
| UPVX9B | | 16.61 | -1.28 | -0.18 | 15.46 | -1.87 | -0.31 |
| UVETYZ | | 11.30 | -6.59 | -0.93 | 11.39 | -5.94 | -1.00 |
| VC3V69 | | 15.33 | -2.56 | -0.36 | 17.11 | -0.22 | -0.04 |
| VJJ2Q2 | | 12.20 | -5.69 | -0.81 | 13.70 | -3.63 | -0.61 |
| WQKY9J | | 13.13 | -4.76 | -0.67 | 11.03 | -6.30 | -1.06 |
| XW3XVA | X | 525.30 | 507.41 | 71.93 | 533.90 | 516.57 | 87.14 |
| YKLTJQ | | 11.35 | -6.54 | -0.93 | 12.29 | -5.04 | -0.85 |

| | | Summary Statistics | | | |
|---|--|--------------------|--|----------------|--|
| | | Sample GX15 | | Sample GX16 | |
| Grand Means | | 17.890 Seconds | | 17.326 Seconds | |
| SD Btwn Labs | | 7.054 Seconds | | 5.928 Seconds | |
| Statistics based on 25 of 28 reporting participants | | | | | |

Comments on assigned Data Flags for Test #399

G8ENNL (X) - Inconsistent in testing between samples, data for Sample GX15 are high. Inconsistent within the determinations for Sample GX15.

RUWFGC (X) - Extreme data.

XW3XVA (X) - Extreme data.

Analysis 399

Sizing Test (Hercules Type)

Grand Mean Sample GX15 = 17.890 Seconds

Grand Mean Sample GX16 = 17.326 Seconds

ANALYSIS 399

