Collaborative Testing Services, Inc.

# Paper & Paperboard Testing Program

## Summary Report #3022 G - October 2019


Introduction to the Paper & Paperboard Interlaboratory Program

Explanation of Tables and Definitions of Terms


| Analysis | Analysis Name |
|---|---|
| 350 | Color & Color Difference - Near White Papers - C/2deg obs |
| 351 | Color & Color Difference - Near White Papers - D65/10deg obs |
| 360 | Thickness (Caliper), Printing papers |
| 361 | Thickness (Caliper), Packaging papers |
| 364 | Coefficient of Static Friction - Horizontal Plane Method - Printing Papers |
| 365 | Coefficient of Kinetic Friction - Horizontal Plane Method - Printing Papers |
| 370 | Air Resistance - Gurley Oil Type |
| 372 | Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice |
| 376 | Roughness - Print Surf Method - 0.5 to 4.0 Microns |
| 377 | Roughness - Print Surf Method - 2.5 to 6.0 Microns |
| 378 | Roughness - Sheffield Type |
| 382 | Moisture in Paper |
| 384 | Opacity (89% Reflectance Backing) - Fine Papers |
| 386 | Opacity (Paper Backing) - Fine Papers and Newsprint |
| 390 | Directional Brightness |
| 391 | Directional Brightness of Fluorescent Samples |
| 392 | Diffuse Brightness |
| 394 | Fluorescent Component of Directional Brightness |
| 395 | Specular Gloss at 75 Degrees - High Range |
| 396 | Specular Gloss at 75 Degrees - Low Range |
| 398 | Grammage (Mass per Unit Area) |
| 399 | Sizing Test (Hercules Type) |

## The CTS Paper & Paperboard Interlaboratory 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, color and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality assurance objectives. Labs from the U.S., as well as more than 80 countries, currently participate in CTS programs.

If there are any questions on the report or testing program, please contact:

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

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

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

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

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

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

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

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

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

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

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

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

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**Common Problems Highlighted in Footnotes**

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

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

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

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

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

# Paper & Paperboard Interlaboratory Testing Program

## Analysis 350

## Color & Color Difference - Near White Papers - C/2deg obs

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

| Web Code | Data Flag | Samples | Hunter L, a, b Color Values L | a | b | Color Difference Values ΔL | Δa | Δb | ΔE | Instr Code |
|---|---|---|---|---|---|---|---|---|---|---|
| 2ZVZGU | | GA71 | 94.00 | -0.79 | 3.98 | -0.41 | 0.03 | 0.01 | 0.41 | TS |
| | | GA72 | 93.59 | -0.76 | 3.99 | | | | | |
| 6ZYUPP | | GA71 | 94.49 | -0.72 | 4.12 | -0.40 | -0.02 | 0.11 | 0.41 | HE |
| | | GA72 | 94.10 | -0.74 | 4.23 | | | | | |
| 8AGZT8 | | GA71 | 94.03 | -0.51 | 3.79 | -0.45 | -0.01 | 0.09 | 0.46 | LA |
| | | GA72 | 93.59 | -0.52 | 3.88 | | | | | |
| AQFRRD | | GA71 | 93.26 | -0.31 | 3.51 | -0.41 | 0.03 | 0.08 | 0.42 | TS |
| | | GA72 | 92.85 | -0.28 | 3.59 | | | | | |
| AYDQZE | | GA71 | 95.37 | -0.76 | 3.81 | -0.28 | -0.02 | 0.19 | 0.34 | TC |
| | | GA72 | 95.09 | -0.78 | 3.99 | | | | | |
| FLNTKC | | GA71 | 93.34 | -0.25 | 3.71 | -0.34 | -0.03 | 0.10 | 0.35 | TS |
| | | GA72 | 93.01 | -0.28 | 3.81 | | | | | |
| GFU3T7 | X | GA71 | 112.56 | -5.41 | 10.80 | -0.66 | 0.00 | 0.15 | 0.68 X | TS |
| | | GA72 | 111.90 | -5.41 | 10.96 | | | | | |
| KMZ78U | | GA71 | 95.49 | -0.78 | 3.29 | -0.32 | 0.03 | 0.11 | 0.34 | XS |
| | | GA72 | 95.17 | -0.75 | 3.40 | | | | | |
| NGAQD8 | | GA71 | 95.07 | -0.80 | 3.77 | -0.56 | -0.02 | 0.12 | 0.57 | HE |
| | | GA72 | 94.51 | -0.82 | 3.89 | | | | | |
| QAU49T | | GA71 | 95.36 | -0.85 | 3.93 | -0.32 | -0.02 | 0.14 | 0.35 | LS |
| | | GA72 | 95.03 | -0.87 | 4.07 | | | | | |
| RPQH82 | | GA71 | 95.35 | -0.82 | 3.90 | -0.37 | 0.01 | 0.02 | 0.37 | EH |
| | | GA72 | 94.98 | -0.80 | 3.92 | | | | | |
| TMV8VY | | GA71 | 90.81 | -0.75 | 3.07 | 0.20 | -0.02 | 0.51 | 0.55 | VM |
| | | GA72 | 91.01 | -0.78 | 3.58 | | | | | |
| VGJATW | | GA71 | 94.05 | -0.88 | 4.11 | -0.43 | 0.01 | 0.07 | 0.43 | XX |
| | | GA72 | 93.62 | -0.87 | 4.18 | | | | | |
| WU7UXQ | | GA71 | 94.17 | -1.13 | 3.86 | -0.16 | 0.09 | 0.22 | 0.29 | HG |
| | | GA72 | 94.01 | -1.04 | 4.08 | | | | | |
| YBND3W | | GA71 | 94.84 | -0.59 | 3.72 | -0.38 | -0.03 | 0.07 | 0.38 | HE |
| | | GA72 | 94.46 | -0.62 | 3.79 | | | | | |
| ZUAN6L | | GA71 | 94.12 | -0.84 | 3.93 | -0.43 | -0.01 | 0.10 | 0.44 | TC |
| | | GA72 | 93.69 | -0.85 | 4.02 | | | | | |

# Paper & Paperboard Interlaboratory Testing Program

## Analysis 350

## Color & Color Difference - Near White Papers - C/2deg obs

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

| Web Code | Data Flag | Samples | Hunter L, a, b Color Values L | a | b | Color Difference Values ΔL | Δa | Δb | ΔE | Instr Code |
|---|---|---|---|---|---|---|---|---|---|---|
| ZZHWNC | | GA71 | 95.53 | -0.49 | 3.90 | -0.46 | -0.02 | 0.14 | 0.48 | ND |
| | | GA72 | 95.07 | -0.51 | 4.04 | | | | | |

### Summary Statistics

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Grand Means | | | | | | | |
| GA71 | 94.330 | -0.705 | 3.775 | -0.344 | 0.000 | 0.129 | 0.412 |
| GA72 | 93.986 | -0.705 | 3.904 | | | | |
| Stnd Dev Btwn Labs | | | | | | | |
| GA71 | 1.202 | 0.224 | 0.278 | 0.170 | 0.033 | 0.115 | 0.077 |
| GA72 | 1.097 | 0.211 | 0.226 | | | | |

Statistics based on 16 of 17 reporting participants

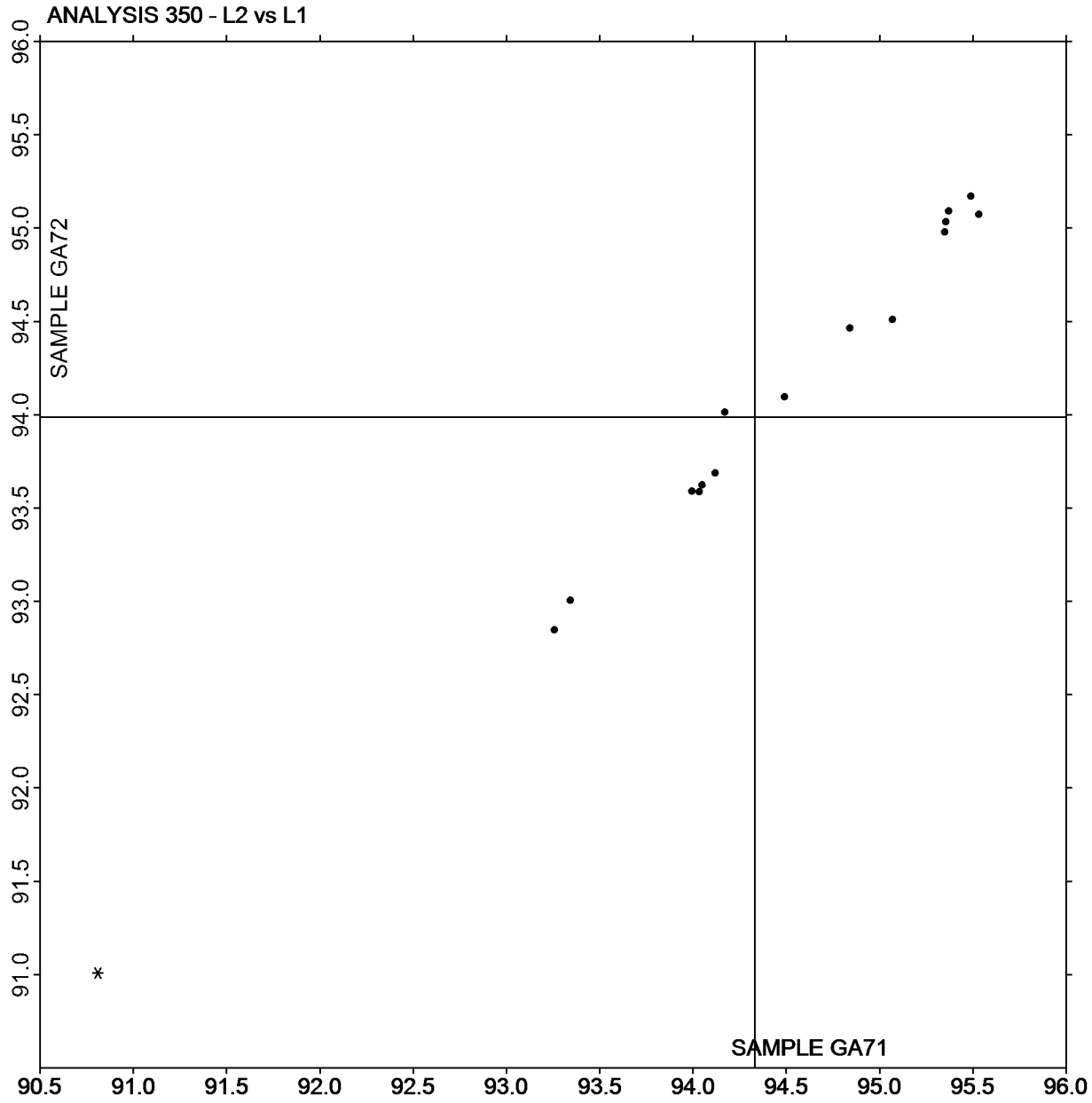
### Comments on Assigned Data Flags for Test #350

GFU3T7 (X) - Extremely high data for both "L" and "b" values. Extremely low data for "a" values. High delta "E" value.

### Key to Instrument Codes Reported by Participants

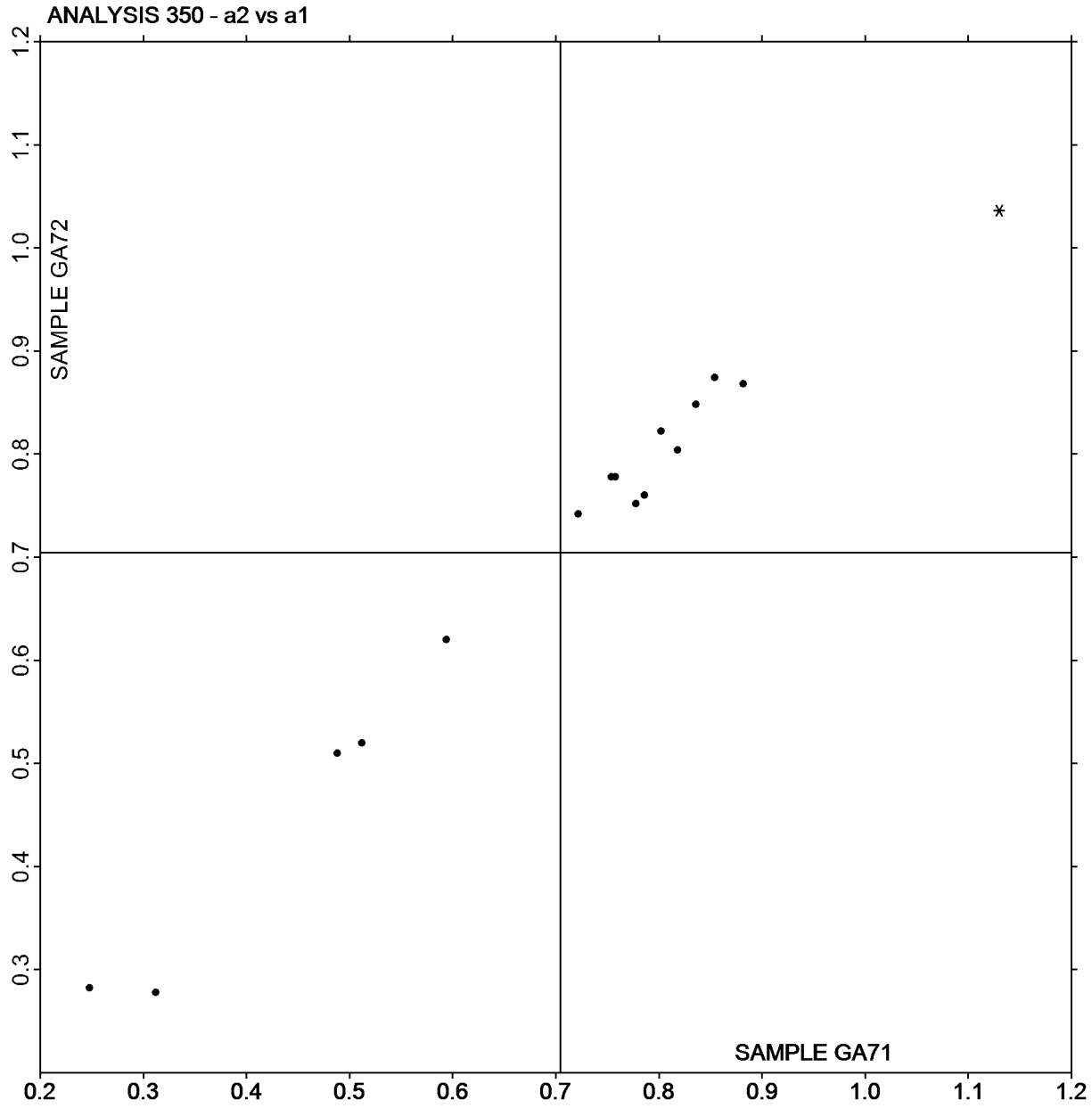
| | | | |
|---|---|---|---|
| EH | Datacolor Elrepho SF450 | HE | Hunter LabScan |
| HG | Hunter ColorQUEST | LA | L & W Elrepho AL300 |
| LS | L & W Elrepho SE 070 | ND | Minolta CM-2500d Spectrophotometer |
| TC | Technidyne Color Touch Series | TS | Technidyne Brightimeter Micro S-5 |
| VM | Valmet PaperLab (was Kajaani/Robotest) | XS | X-Rite 938 Spectrodensitometer |
| XX | Instrument make/model not specified by lab | | |

Plot of L values GA72 vs L values GA71



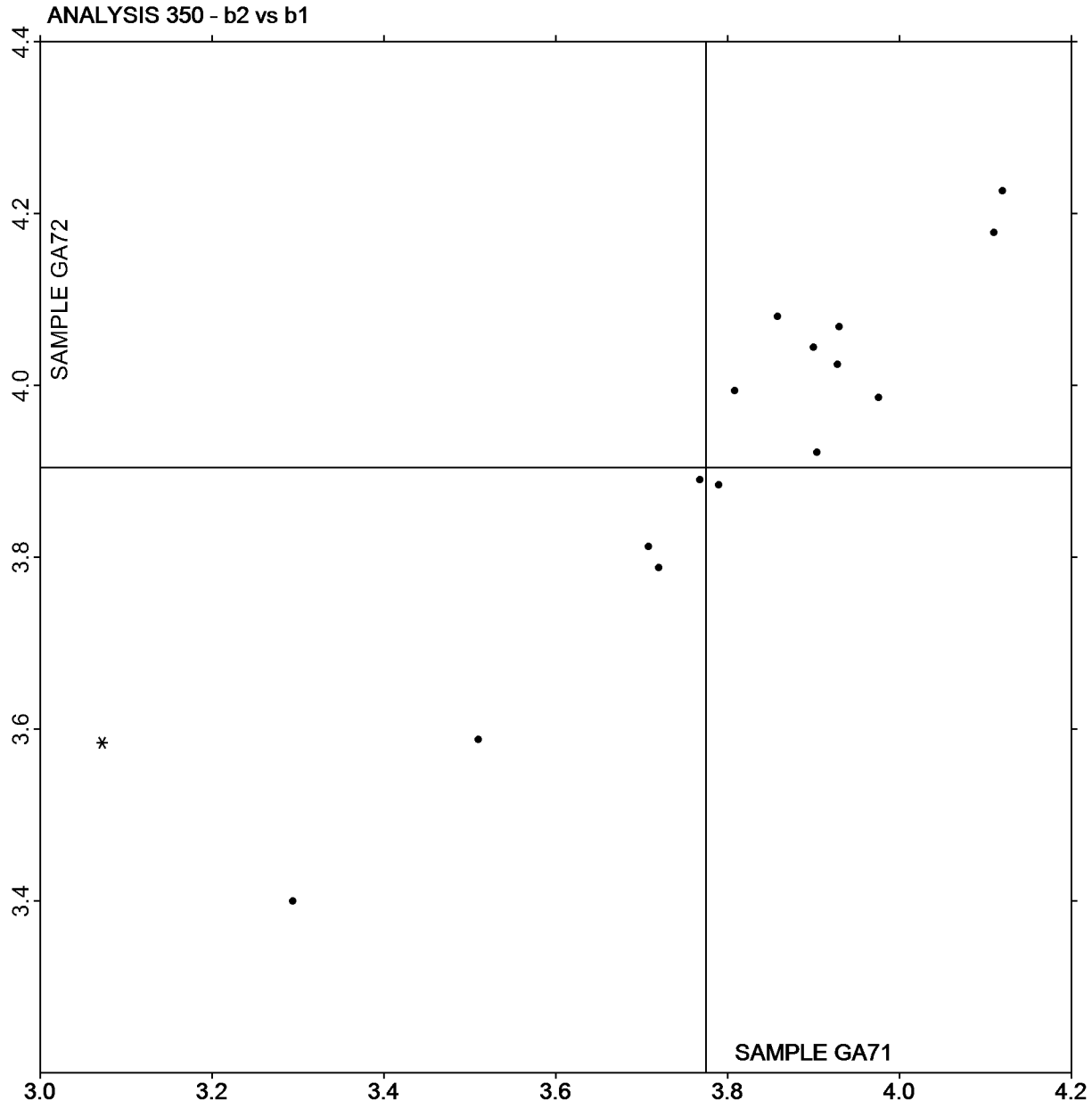

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA72 vs a values GA71




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

Plot of b values GA72 vs b values GA71




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 351

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

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

| Web Code | Data Flag | Samples | CIE L* a* b* Color Values L* | a* | b* | Color Difference Values ΔL* | Δa* | Δb* | ΔE* | InstrCode |
|---|---|---|---|---|---|---|---|---|---|---|
| 38UPYX | | **GA71** | 95.05 | -0.59 | 3.98 | 0.08 | -0.02 | 0.11 | 0.14 | HT |
| | | **GA72** | 95.12 | -0.62 | 4.09 | | | | | |
| 4AUDQT | | **GA71** | 95.56 | -0.53 | 3.96 | -0.28 | -0.02 | 0.12 | 0.31 | NF |
| | | **GA72** | 95.28 | -0.55 | 4.08 | | | | | |
| 638U7P | | **GA71** | 94.63 | -0.76 | 3.29 | 0.10 | -0.01 | 0.49 | 0.50 | NG |
| | | **GA72** | 94.73 | -0.76 | 3.78 | | | | | |
| 7BJBAJ | | **GA71** | 95.44 | -0.60 | 3.98 | -0.33 | -0.02 | 0.12 | 0.36 | LS |
| | | **GA72** | 95.11 | -0.62 | 4.10 | | | | | |
| 7QCZ9M | | **GA71** | 95.45 | -0.61 | 4.21 | -0.31 | -0.03 | 0.11 | 0.33 | NG |
| | | **GA72** | 95.14 | -0.64 | 4.32 | | | | | |
| 8WFJPQ | | **GA71** | 94.49 | -0.79 | 3.22 | 0.08 | 0.00 | 0.50 | 0.51 | EH |
| | | **GA72** | 94.58 | -0.79 | 3.73 | | | | | |
| 9GF4XV | | **GA71** | 95.21 | -0.65 | 3.84 | -0.24 | 0.03 | 0.02 | 0.25 | TC |
| | | **GA72** | 94.97 | -0.63 | 3.86 | | | | | |
| GRQ6DM | | **GA71** | 95.74 | -0.58 | 3.84 | -0.32 | -0.04 | 0.10 | 0.34 | HE |
| | | **GA72** | 95.42 | -0.62 | 3.94 | | | | | |
| JN3EY3 | | **GA71** | 94.82 | -0.54 | 3.65 | -0.54 | -0.03 | 0.10 | 0.55 | HE |
| | | **GA72** | 94.27 | -0.58 | 3.75 | | | | | |
| K2N2R2 | | **GA71** | 95.13 | -0.81 | 3.56 | -0.05 | 0.02 | 0.23 | 0.23 | XC |
| | | **GA72** | 95.08 | -0.79 | 3.79 | | | | | |
| NGAQD8 | | **GA71** | 94.69 | -0.73 | 3.85 | -0.36 | -0.01 | 0.03 | 0.37 | HE |
| | | **GA72** | 94.33 | -0.74 | 3.88 | | | | | |
| PWA2DW | | **GA71** | 94.64 | -0.91 | 3.56 | -0.28 | 0.09 | 0.34 | 0.45 | HE |
| | | **GA72** | 94.36 | -0.82 | 3.90 | | | | | |
| Q88HHR | | **GA71** | 94.08 | -0.47 | 3.42 | -0.37 | -0.02 | 0.17 | 0.41 | XA |
| | | **GA72** | 93.71 | -0.48 | 3.59 | | | | | |
| RNFQ3R | | **GA71** | 95.40 | -0.70 | 3.88 | -0.29 | -0.01 | 0.18 | 0.35 | EF |
| | | **GA72** | 95.11 | -0.70 | 4.07 | | | | | |
| TFVY7Y | | **GA71** | 96.87 | -0.47 | 3.55 | -0.42 | 0.00 | 0.17 | 0.46 | XP |
| | | **GA72** | 96.44 | -0.47 | 3.72 | | | | | |
| WMLJZP | | **GA71** | 95.64 | -0.71 | 3.98 | -0.27 | -0.03 | 0.11 | 0.30 | HT |
| | | **GA72** | 95.37 | -0.74 | 4.09 | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| XYAXJH | GA71 | 93.88 | -0.56 | 3.69 | -0.35 | 0.00 | 0.12 | 0.38 | TC |
| | GA72 | 93.52 | -0.56 | 3.82 | | | | | |

**Summary Statistics**

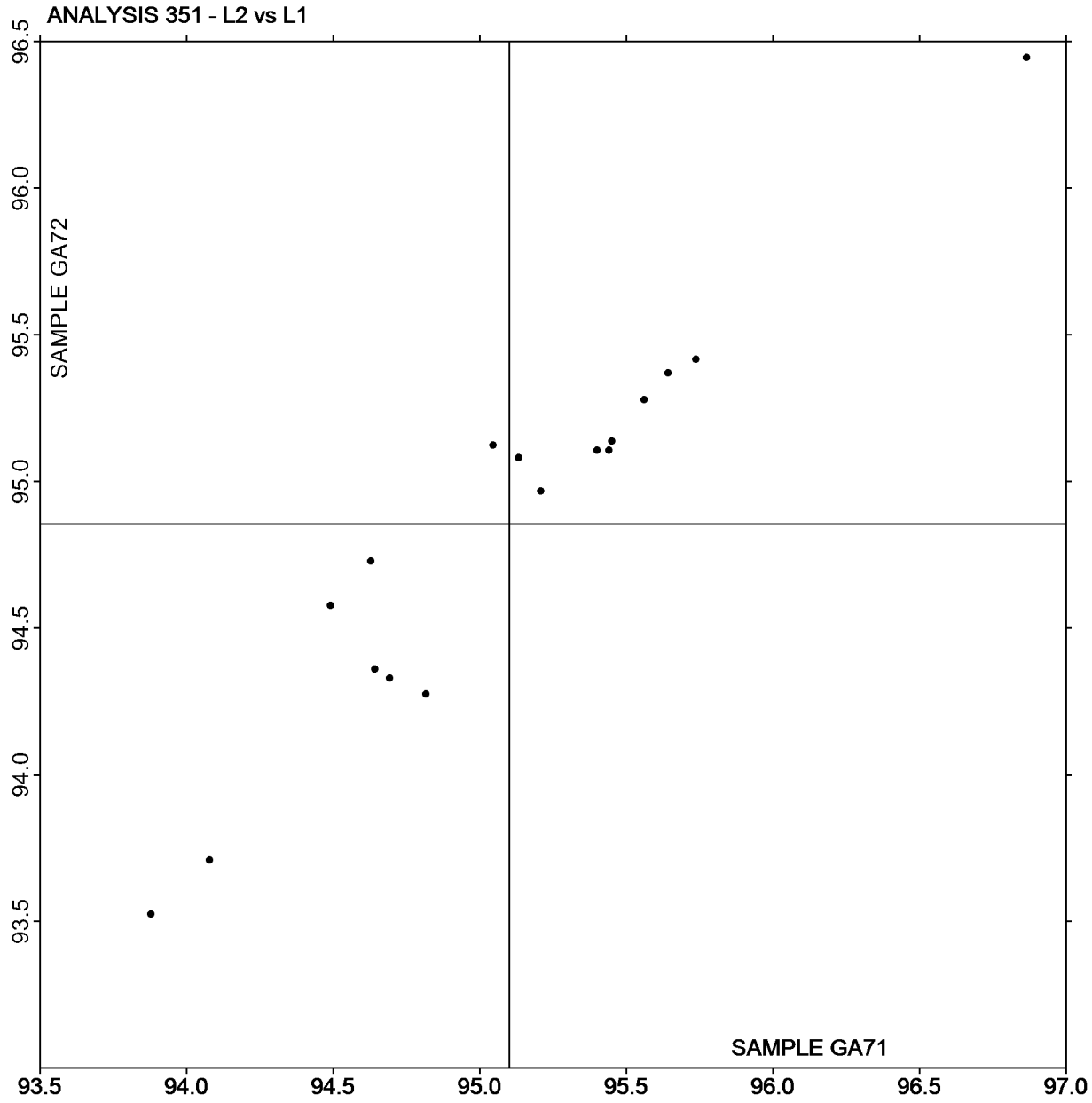
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Grand Means | | | | | | | |
| GA71 | 95.101 | -0.647 | 3.733 | -0.246 | -0.006 | 0.178 | 0.365 |
| GA72 | 94.854 | -0.654 | 3.911 | | | | |
| Stnd Dev Btwn Labs | | | | | | | |
| GA71 | 0.706 | 0.125 | 0.271 | 0.186 | 0.030 | 0.140 | 0.108 |
| GA72 | 0.692 | 0.108 | 0.188 | | | | |

Statistics based on 17 of 17 reporting participants

**Key to Instrument Codes Reported by Participants**

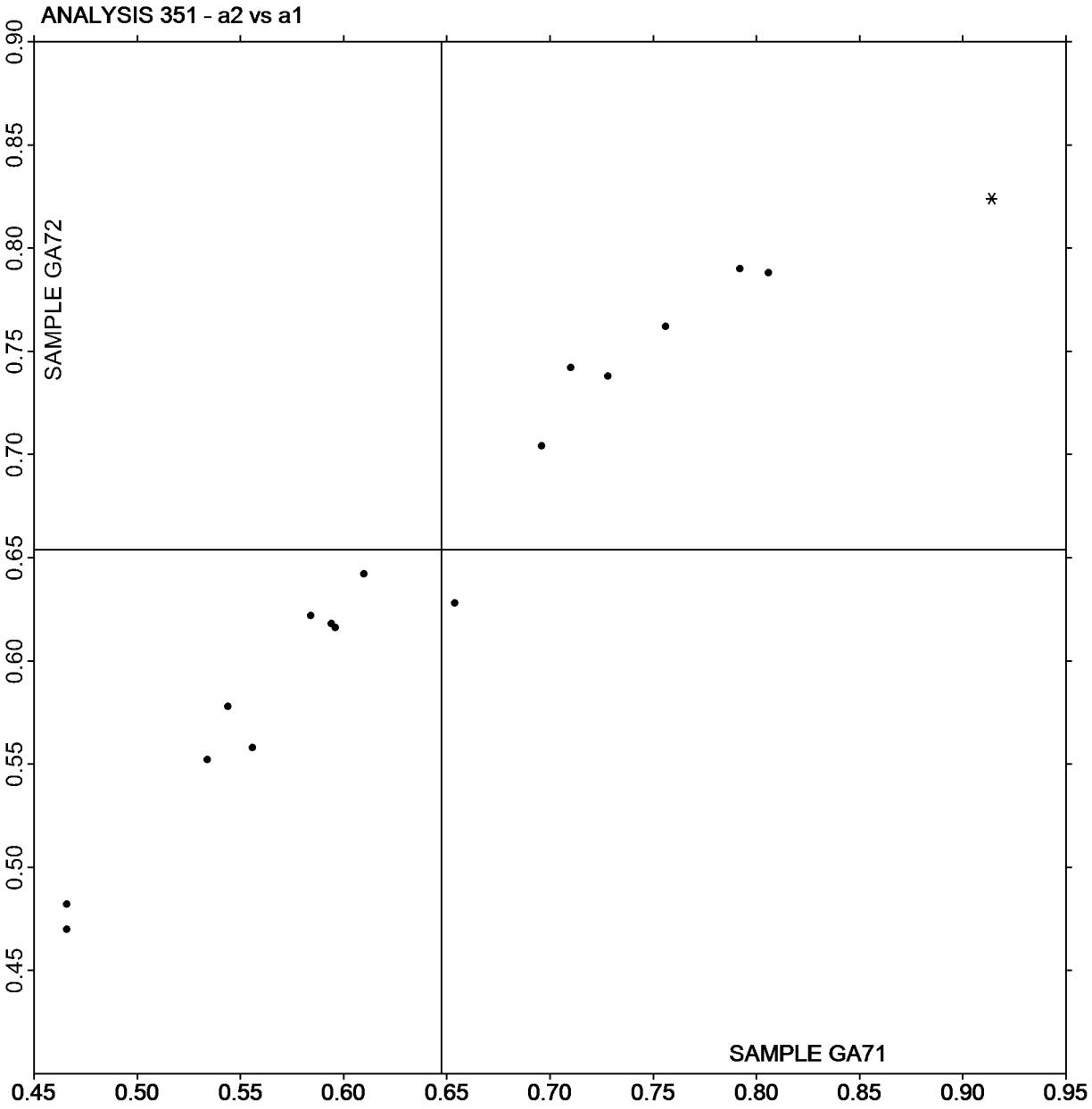
| | | | |
|---|---|---|---|
| EF | Datacolor Elrepho 3000 | EH | Datacolor Elrepho SF450 |
| HE | Hunter LabScan | HT | Hunter UltraScan Vis |
| LS | L & W Elrepho SE 070 | NF | Minolta CM-3600d Spectrophotometer |
| NG | Minolta CM-3700d Spectrophotometer | TC | Technidyne Color Touch Series |
| XA | X-Rite (model not specified) | XC | X-Rite eXact Series |
| XP | X-Rite Spectrophotometer DTP | | |

Plot of L values GA72 vs L values GA71



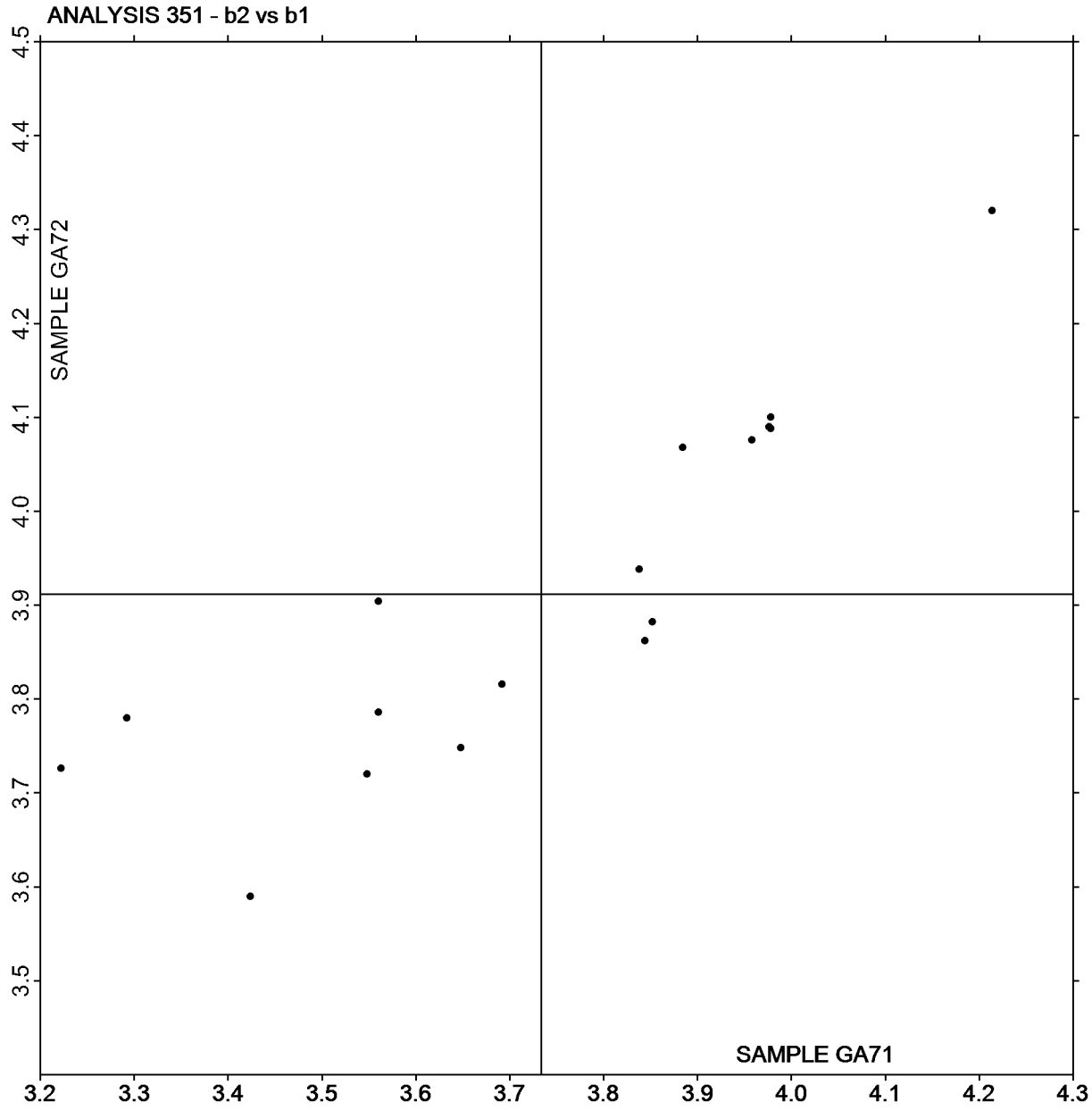

If fewer than 20 laboratories are included in an analysis, a control ellipse will not be drawn on the two-sample plot.

Plot of a values GA72 vs a values GA71




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

Plot of b values GA72 vs b values GA71




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

| WebCode | Data Flag | Sample GV71 Lab Mean | Sample GV71 Diff from Grand Mean | Sample GV71 CPV | Sample GV72 Lab Mean | Sample GV72 Diff from Grand Mean | Sample GV72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2F6WTF | | 4.644 | 0.045 | 0.51 | 4.630 | 0.024 | 0.27 | TM |
| 2ZVZGU | | 4.482 | -0.117 | -1.33 | 4.502 | -0.104 | -1.19 | LA |
| 38TQZJ | | 4.596 | -0.003 | -0.04 | 4.658 | 0.052 | 0.59 | LW |
| 38UPYX | | 4.658 | 0.059 | 0.67 | 4.654 | 0.048 | 0.55 | EM |
| 4AUDQT | | 4.715 | 0.116 | 1.31 | 4.724 | 0.118 | 1.35 | TM |
| 4FG9PC | | 4.497 | -0.102 | -1.16 | 4.511 | -0.095 | -1.09 | PP |
| 638U7P | | 4.608 | 0.009 | 0.10 | 4.611 | 0.005 | 0.06 | EM |
| 7QCZ9M | | 4.567 | -0.032 | -0.37 | 4.577 | -0.029 | -0.33 | PP |
| 8AGZT8 | | 4.655 | 0.055 | 0.63 | 4.617 | 0.010 | 0.12 | EM |
| 8DG7CJ | | 4.638 | 0.039 | 0.44 | 4.654 | 0.048 | 0.55 | LA |
| 8WFJPQ | | 4.746 | 0.147 | 1.66 | 4.742 | 0.136 | 1.56 | XX |
| 9GF4XV | | 4.756 | 0.157 | 1.77 | 4.752 | 0.146 | 1.67 | PP |
| ARBF73 | | 4.611 | 0.012 | 0.13 | 4.589 | -0.017 | -0.19 | LW |
| AYDQZE | | 4.580 | -0.019 | -0.22 | 4.583 | -0.023 | -0.26 | LA |
| B474JH | | 4.566 | -0.033 | -0.38 | 4.585 | -0.021 | -0.24 | TM |
| B9EC38 | | 4.634 | 0.035 | 0.39 | 4.614 | 0.008 | 0.09 | MS |
| BCEHLJ | X | 0.120 | -4.480 | -50.74 | 0.121 | -4.485 | -51.37 | MT |
| CBYXUK | | 4.582 | -0.017 | -0.20 | 4.594 | -0.012 | -0.14 | LA |
| CG77DB | | 4.504 | -0.095 | -1.08 | 4.513 | -0.093 | -1.06 | FR |
| DVH4VF | | 4.522 | -0.077 | -0.88 | 4.494 | -0.112 | -1.28 | PP |
| EAXKLJ | | 4.653 | 0.054 | 0.61 | 4.659 | 0.053 | 0.61 | PP |
| EVYFDL | | 4.554 | -0.045 | -0.51 | 4.548 | -0.058 | -0.67 | TA |
| EZRK66 | | 4.400 | -0.199 | -2.26 | 4.440 | -0.166 | -1.90 | TM |
| FGA3CV | | 4.512 | -0.087 | -0.99 | 4.528 | -0.078 | -0.89 | PP |
| FLNTKC | | 4.589 | -0.010 | -0.12 | 4.622 | 0.016 | 0.18 | EM |
| G42GMB | X | 4.346 | -0.253 | -2.87 | 4.410 | -0.196 | -2.25 | TA |
| G48UB8 | * | 4.617 | 0.018 | 0.20 | 4.683 | 0.077 | 0.88 | EM |
| GRQ6DM | | 4.703 | 0.104 | 1.18 | 4.696 | 0.090 | 1.03 | TM |
| H7Q9CM | | 4.581 | -0.018 | -0.21 | 4.584 | -0.022 | -0.25 | TA |
| HRNR97 | | 4.629 | 0.030 | 0.34 | 4.617 | 0.011 | 0.12 | XX |
| JAJKT6 | | 4.393 | -0.207 | -2.34 | 4.413 | -0.194 | -2.22 | TM |
| JFA23A | | 4.541 | -0.058 | -0.66 | 4.537 | -0.069 | -0.79 | LA |
| JM8QLY | | 4.517 | -0.082 | -0.93 | 4.511 | -0.095 | -1.09 | PP |
| JN3EY3 | | 4.730 | 0.131 | 1.48 | 4.710 | 0.104 | 1.19 | EM |
| JTUG79 | | 4.673 | 0.074 | 0.84 | 4.677 | 0.071 | 0.81 | EM |
| K2N2R2 | | 4.508 | -0.091 | -1.04 | 4.476 | -0.130 | -1.49 | LW |
| KBQLR9 | | 4.440 | -0.159 | -1.80 | 4.450 | -0.156 | -1.79 | LW |
| KMZ78U | | 4.560 | -0.039 | -0.44 | 4.560 | -0.046 | -0.53 | TM |
| KU4AWT | | 4.646 | 0.046 | 0.53 | 4.689 | 0.083 | 0.95 | XX |
| L9GV36 | | 4.645 | 0.046 | 0.52 | 4.620 | 0.014 | 0.16 | TA |
| LAUANT | | 4.639 | 0.039 | 0.45 | 4.649 | 0.043 | 0.49 | TM |

# Paper & Paperboard Interlaboratory Testing Program

**Analysis 360**

**Thickness (Caliper), Printing papers**

**TAPPI Official Test Method T411**

| WebCode | Data Flag | Sample GV71 Lab Mean | Sample GV71 Diff from Grand Mean | Sample GV71 CPV | Sample GV72 Lab Mean | Sample GV72 Diff from Grand Mean | Sample GV72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| LEQ2U4 | | 4.502 | -0.097 | -1.10 | 4.485 | -0.121 | -1.38 | LW |
| MEZJBE | | 4.579 | -0.021 | -0.24 | 4.601 | -0.005 | -0.06 | LW |
| NK7J3W | | 4.644 | 0.045 | 0.51 | 4.683 | 0.077 | 0.88 | LW |
| PHFREW | | 4.717 | 0.118 | 1.34 | 4.732 | 0.126 | 1.44 | LW |
| PWFCA3 | | 4.573 | -0.026 | -0.30 | 4.623 | 0.017 | 0.19 | XX |
| Q6KXGU | | 4.622 | 0.022 | 0.25 | 4.637 | 0.031 | 0.35 | LW |
| Q88HHR | * | 4.828 | 0.229 | 2.59 | 4.832 | 0.226 | 2.59 | LW |
| QAU49T | | 4.693 | 0.094 | 1.06 | 4.664 | 0.058 | 0.66 | LW |
| QYDCPQ | | 4.482 | -0.117 | -1.33 | 4.484 | -0.122 | -1.40 | EM |
| RPQH82 | | 4.627 | 0.028 | 0.31 | 4.633 | 0.027 | 0.31 | EM |
| TFVY7Y | X | 4,488.000 | 4,483.401 | 50,785.80 | 4,500.000 | 4,495.394 | 51,486.04 | TM |
| TVQCNZ | | 4.545 | -0.054 | -0.61 | 4.576 | -0.030 | -0.34 | PP |
| UNMTYA | | 4.577 | -0.023 | -0.25 | 4.594 | -0.012 | -0.14 | LW |
| VGJATW | | 4.640 | 0.041 | 0.46 | 4.650 | 0.044 | 0.50 | XX |
| VWDP4N | | 4.681 | 0.082 | 0.93 | 4.701 | 0.095 | 1.09 | TA |
| W3GWG7 | | 4.545 | -0.054 | -0.62 | 4.547 | -0.059 | -0.68 | TM |
| WMLJZP | | 4.506 | -0.093 | -1.06 | 4.524 | -0.082 | -0.94 | EM |
| WNWEN3 | | 4.719 | 0.120 | 1.36 | 4.744 | 0.138 | 1.58 | XX |
| XYAXJH | | 4.525 | -0.074 | -0.84 | 4.532 | -0.074 | -0.85 | TA |
| ZLWGKC | | 4.663 | 0.064 | 0.73 | 4.639 | 0.033 | 0.38 | LW |

| Summary Statistics | Sample GV71 | Sample GV72 |
|---|---|---|
| **Grand Means** | 4.60 mils | 4.61 mils |
| **Stnd Dev Btwn Labs** | 0.09 mils | 0.09 mils |

Statistics based on 58 of 61 reporting participants.

## Comments on Assigned Data Flags for Test #360

G42GMB (X) - Data for sample GV71 are low.

TFVY7Y (X) - Extreme Data.

BCEHLJ (X) - Extreme Data.

## Analysis Notes:

BCEHLJ - Data appear to be reported as micrometers, not mils as indicated on data entry form.

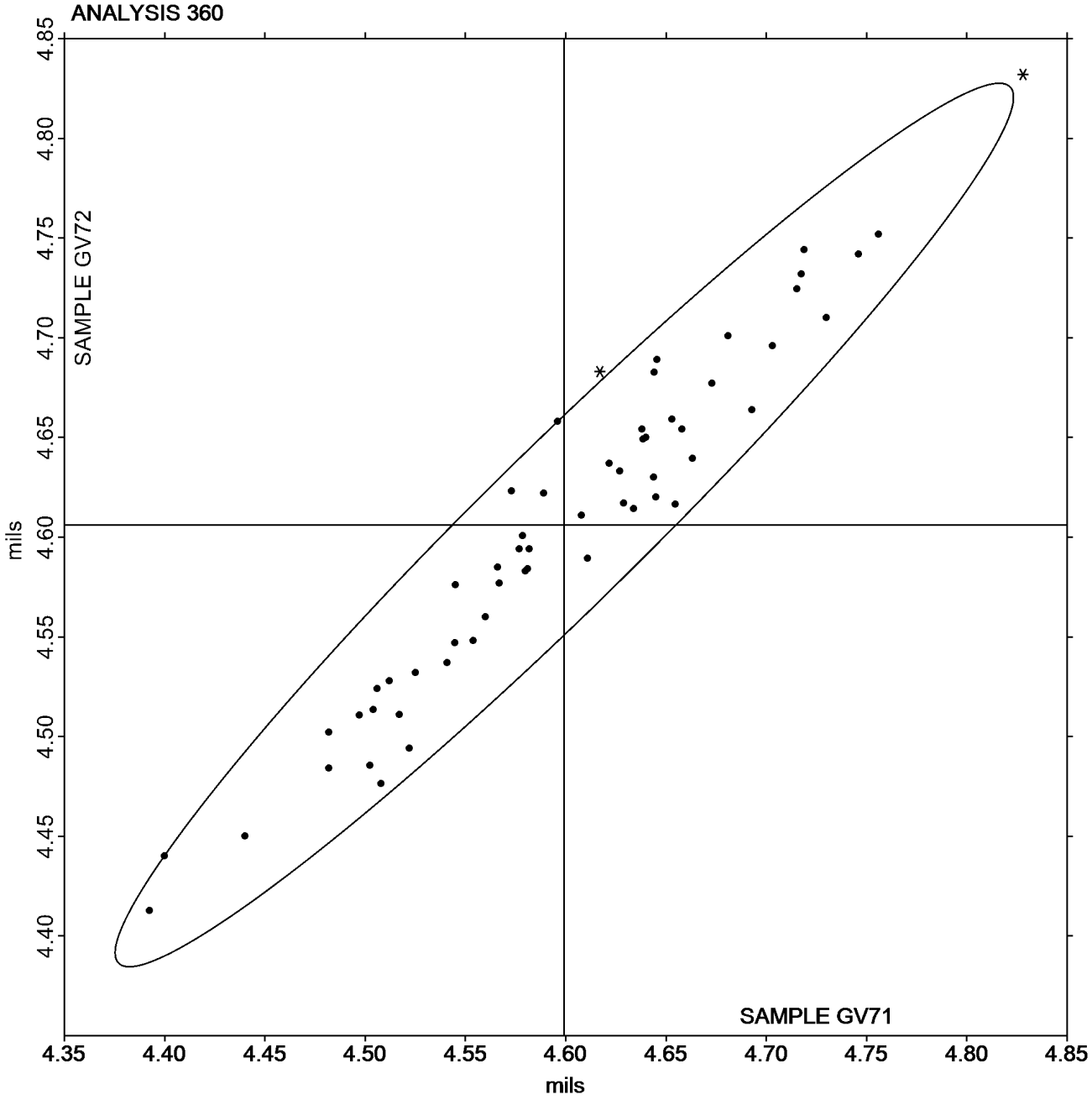
TFVY7Y - Data appear to be reported as mils, not inches as indicated on data entry form.

## Key to Instrument Codes Reported by Participants

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

**Grand Mean Sample GV71 = 4.5993 mils**

**Grand Mean Sample GV72 = 4.6061 mils**



# Paper & Paperboard Interlaboratory Testing Program

**Analysis 361**
**Thickness (Caliper), Packaging papers**
**TAPPI Official Test Method T411**

| WebCode | Data Flag | Sample GY71 Lab Mean | Sample GY71 Diff from Grand Mean | Sample GY71 CPV | Sample GY72 Lab Mean | Sample GY72 Diff from Grand Mean | Sample GY72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2HBEVH | | 14.28 | 0.14 | 0.80 | 14.36 | 0.21 | 1.24 | LA |
| 3YZPDE | | 13.96 | -0.18 | -1.04 | 14.02 | -0.13 | -0.76 | TA |
| 4FG9PC | | 14.13 | -0.02 | -0.10 | 14.22 | 0.07 | 0.42 | LW |
| 6UG9ZR | * | 14.14 | 0.00 | -0.01 | 13.95 | -0.20 | -1.19 | LW |
| 6ZYUPP | | 14.01 | -0.13 | -0.75 | 14.09 | -0.06 | -0.33 | EM |
| 7BJBAJ | | 14.13 | -0.01 | -0.07 | 14.11 | -0.04 | -0.23 | LW |
| 7FAVYK | | 14.28 | 0.14 | 0.80 | 14.33 | 0.18 | 1.06 | LW |
| 8AGZT8 | | 14.22 | 0.08 | 0.43 | 14.26 | 0.11 | 0.63 | EM |
| 8WFJPQ | * | 14.60 | 0.46 | 2.61 | 14.58 | 0.43 | 2.52 | EM |
| 92LGR4 | | 14.06 | -0.08 | -0.46 | 14.15 | 0.00 | 0.03 | TM |
| ARBF73 | | 14.05 | -0.09 | -0.54 | 14.04 | -0.11 | -0.66 | LW |
| EZRK66 | | 13.81 | -0.33 | -1.90 | 13.78 | -0.37 | -2.18 | TM |
| F446AG | | 13.90 | -0.24 | -1.38 | 13.96 | -0.19 | -1.12 | TM |
| FAVA4K | | 14.02 | -0.13 | -0.73 | 14.00 | -0.15 | -0.91 | TA |
| G3PZ8C | | 14.08 | -0.06 | -0.36 | 13.99 | -0.16 | -0.94 | TM |
| G42GMB | | 13.88 | -0.26 | -1.50 | 14.00 | -0.15 | -0.87 | TA |
| G6UMQ9 | | 14.24 | 0.10 | 0.58 | 14.39 | 0.24 | 1.40 | TM |
| H7Q9CM | | 14.26 | 0.11 | 0.65 | 14.17 | 0.02 | 0.14 | TA |
| JGGGC2 | | 14.04 | -0.10 | -0.58 | 14.04 | -0.11 | -0.62 | LA |
| KPUK3Z | | 14.15 | 0.01 | 0.06 | 14.15 | 0.00 | -0.01 | LW |
| L9GV36 | | 14.24 | 0.10 | 0.57 | 14.15 | 0.00 | -0.01 | TA |
| LZ4PHU | | 14.05 | -0.09 | -0.52 | 14.03 | -0.12 | -0.68 | TM |
| NGAQD8 | | 14.04 | -0.10 | -0.59 | 14.07 | -0.08 | -0.47 | EM |
| PWA2DW | | 14.19 | 0.05 | 0.27 | 14.13 | -0.02 | -0.11 | EM |
| Q3ZYFR | | 14.09 | -0.05 | -0.28 | 14.23 | 0.08 | 0.47 | LW |
| RGBWXX | | 14.31 | 0.16 | 0.94 | 14.31 | 0.16 | 0.98 | LA |
| TBGGNG | | 14.30 | 0.15 | 0.87 | 14.28 | 0.13 | 0.79 | TM |
| TMV8VY | | 14.20 | 0.06 | 0.34 | 14.09 | -0.06 | -0.38 | VP |
| UQQKT9 | | 14.32 | 0.18 | 1.01 | 14.27 | 0.12 | 0.70 | TM |
| V2MVVN | | 14.14 | -0.01 | -0.04 | 14.17 | 0.02 | 0.15 | TM |
| VQMFR6 | | 13.89 | -0.26 | -1.47 | 13.98 | -0.17 | -1.00 | TA |
| WNWEN3 | | 14.40 | 0.26 | 1.49 | 14.35 | 0.20 | 1.17 | LA |
| YBND3W | | 14.48 | 0.34 | 1.93 | 14.46 | 0.31 | 1.83 | EM |
| YMF4JU | | 13.96 | -0.18 | -1.04 | 13.97 | -0.18 | -1.05 | LW |

| Summary Statistics | Sample GY71 | Sample GY72 |
|---|---|---|
| **Grand Means** | 14.14 mils | 14.15 mils |
| **Stnd Dev Btwn Labs** | 0.18 mils | 0.17 mils |

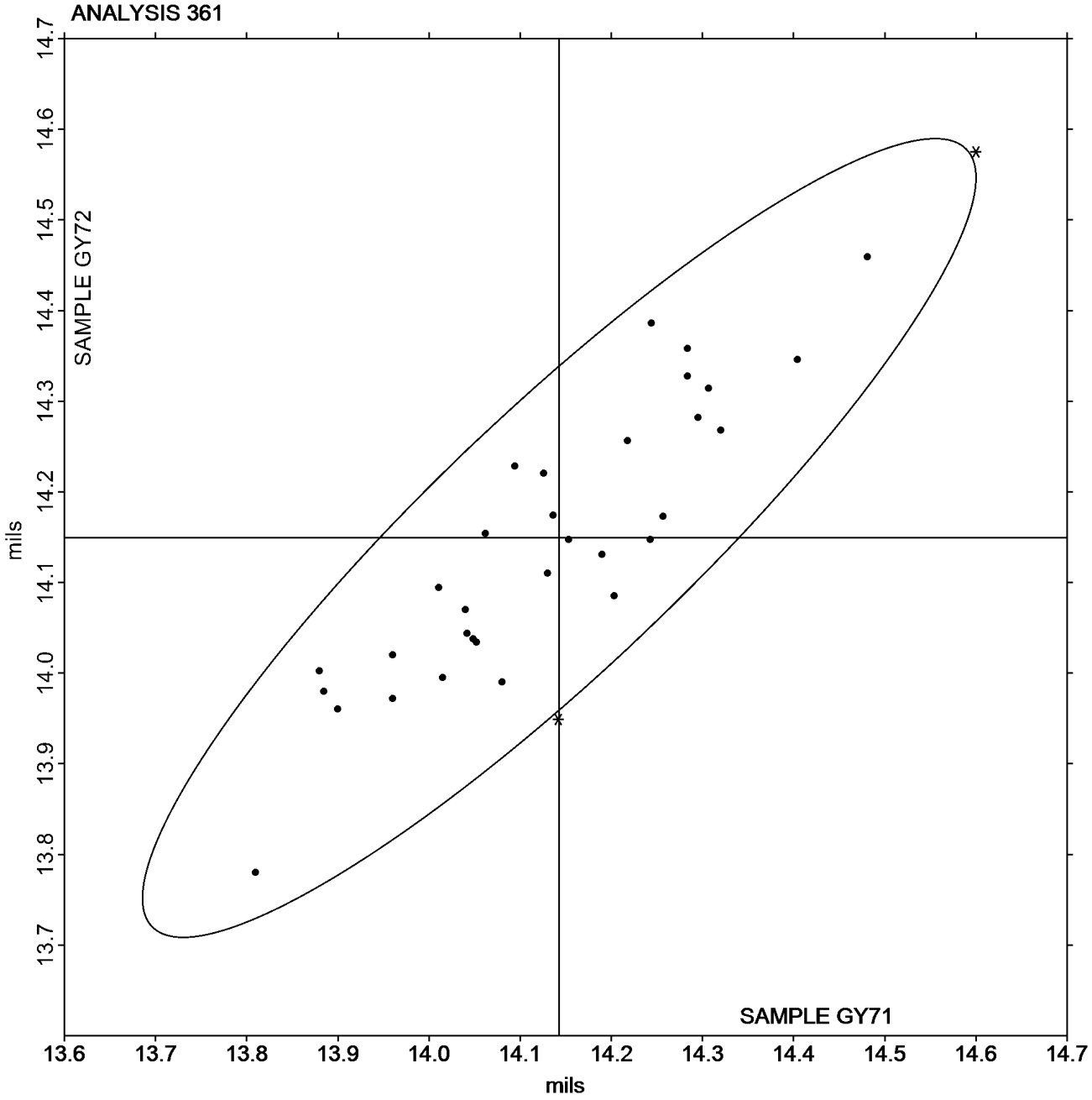
Statistics based on 34 of 34 reporting participants.

## Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| EM | Emveco | LA | L & W Autoline |
| LW | L & W | TA | Thwing-Albert |
| TM | TMI | VP | Valmet Paper Lab |

**Grand Mean Sample GY71 = 14.143 mils**

**Grand Mean Sample GY72 = 14.149 mils**



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 364

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

## TAPPI Official Test Method T549

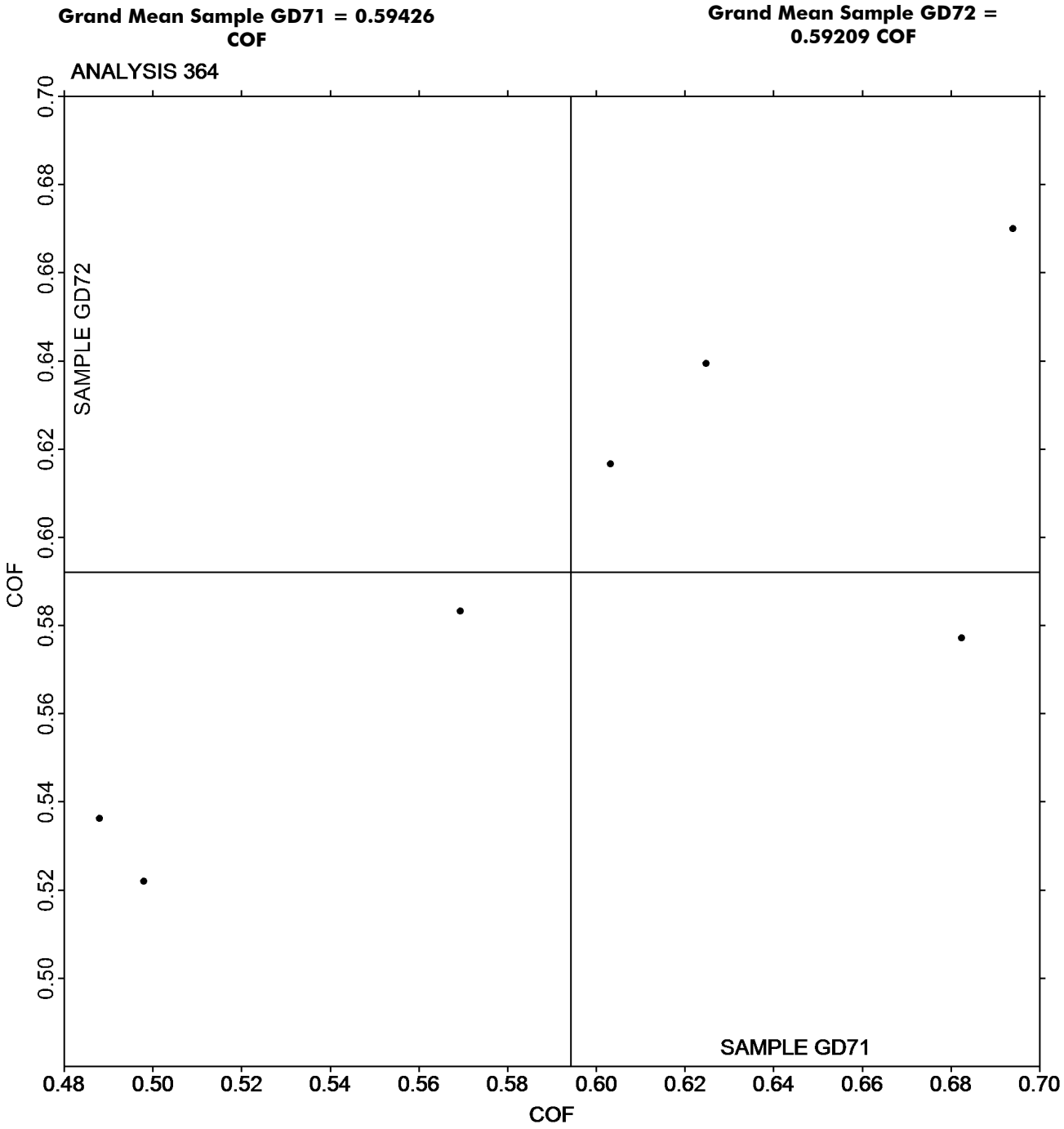
| WebCode | Data Flag | Sample GD71 Lab Mean | Sample GD71 Diff from Grand Mean | Sample GD71 CPV | Sample GD72 Lab Mean | Sample GD72 Diff from Grand Mean | Sample GD72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 7FAVYK | | 0.6248 | 0.0305 | 0.37 | 0.6394 | 0.0473 | 0.88 | TL |
| 8X7KTT | | 0.6824 | 0.0881 | 1.08 | 0.5772 | -0.0149 | -0.28 | TA |
| FLNTKC | | 0.6032 | 0.0089 | 0.11 | 0.6166 | 0.0245 | 0.46 | TA |
| G48UB8 | | 0.6940 | 0.0997 | 1.22 | 0.6700 | 0.0779 | 1.45 | TA |
| JN3EY3 | | 0.4980 | -0.0963 | -1.18 | 0.5220 | -0.0701 | -1.31 | TA |
| KMZ78U | | 0.4880 | -0.1063 | -1.30 | 0.5362 | -0.0559 | -1.04 | XX |
| KT8PAU | | 0.5694 | -0.0249 | -0.30 | 0.5832 | -0.0089 | -0.17 | IT |

| Summary Statistics | Sample GD71 | Sample GD72 |
|---|---|---|
| **Grand Means** | 0.59 COF | 0.59 COF |
| **Stnd Dev Btwn Labs** | 0.08 COF | 0.05 COF |

Statistics based on 7 of 7 reporting participants.

### Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| IT | IMASS SP-2100 | TA | Thwing-Albert Friction Tester |
| TL | TMI 32-90 Lab Master/Slip and Friction | XX | Instrument make/model not specified by lab |




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

## TAPPI Official Test Method T549

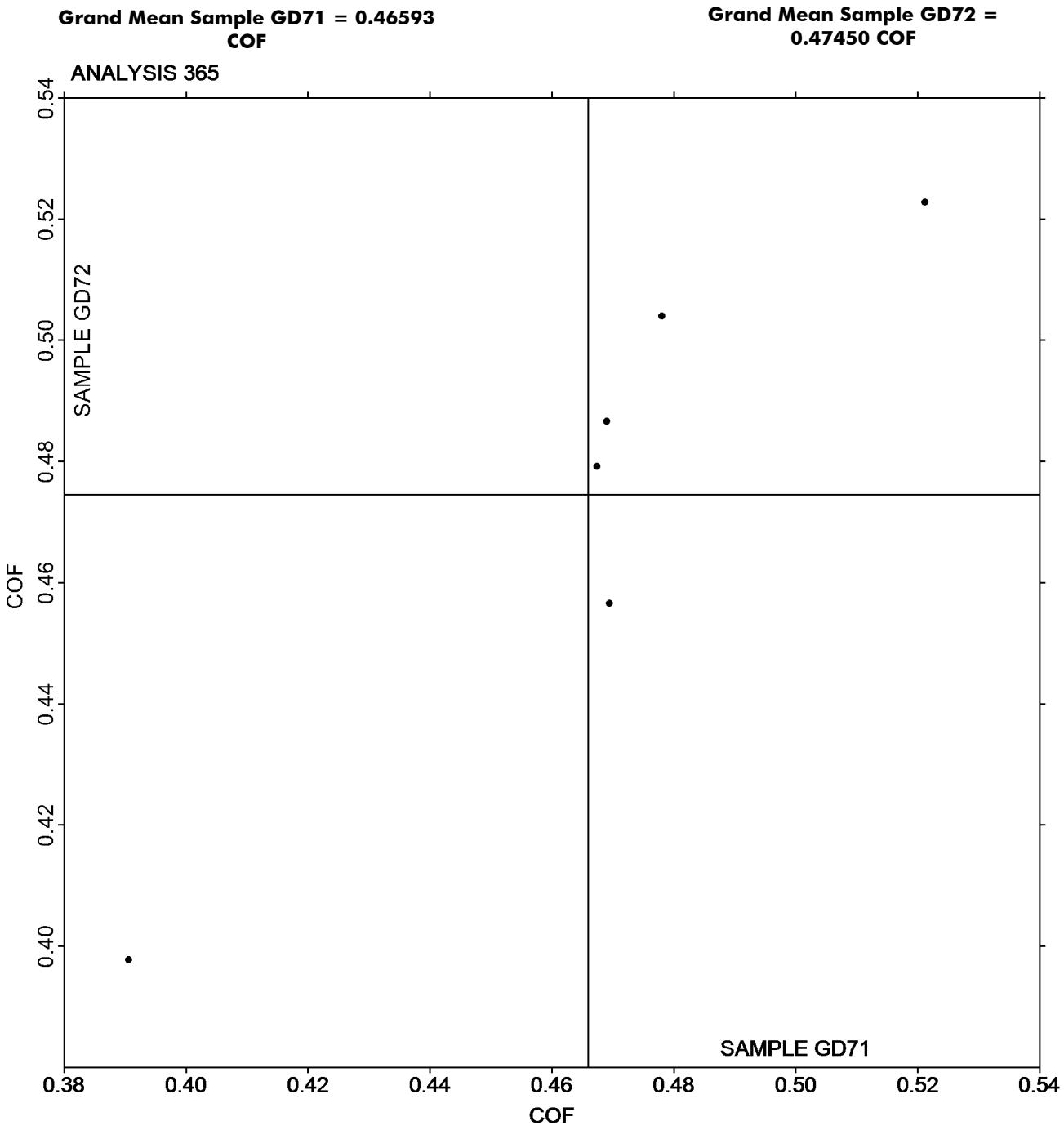
| WebCode | Data Flag | Sample GD71 Lab Mean | Sample GD71 Diff from Grand Mean | Sample GD71 CPV | Sample GD72 Lab Mean | Sample GD72 Diff from Grand Mean | Sample GD72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 8X7KTT | | 0.4694 | 0.0035 | 0.08 | 0.4566 | -0.0179 | -0.41 | TA |
| AQFRRD | | 0.5212 | 0.0553 | 1.31 | 0.5228 | 0.0483 | 1.10 | TA |
| JM8QLY | | 0.4674 | 0.0015 | 0.03 | 0.4792 | 0.0047 | 0.11 | TA |
| KMZ78U | | 0.4690 | 0.0031 | 0.07 | 0.4866 | 0.0121 | 0.28 | XX |
| KT8PAU | | 0.3906 | -0.0753 | -1.79 | 0.3978 | -0.0767 | -1.75 | IR |
| QYDCPQ | | 0.4780 | 0.0121 | 0.29 | 0.5040 | 0.0295 | 0.67 | TA |

| Summary Statistics | Sample GD71 | Sample GD72 |
|---|---|---|
| **Grand Means** | 0.47 COF | 0.47 COF |
| **Stnd Dev Btwn Labs** | 0.04 COF | 0.04 COF |

Statistics based on 6 of 6 reporting participants.

### Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| IR | IMASS SP-2000 | TA | Thwing-Albert Friction Tester |
| XX | Instrument make/model not specified by lab | | |




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

## TAPPI Official Test Method T460

| WebCode | Data Flag | Sample GE71 Lab Mean | Sample GE71 Diff from Grand Mean | Sample GE71 CPV | Sample GE72 Lab Mean | Sample GE72 Diff from Grand Mean | Sample GE72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 28BQYE | | 28.42 | 2.31 | 1.87 | 31.21 | 2.51 | 1.83 | XX |
| 2F6WTF | | 25.59 | -0.52 | -0.42 | 28.48 | -0.22 | -0.16 | HG |
| 2HBEVH | | 27.29 | 1.18 | 0.95 | 29.66 | 0.96 | 0.70 | LA |
| 2ZVZGU | | 25.22 | -0.89 | -0.72 | 28.76 | 0.06 | 0.04 | LA |
| 38UPYX | | 26.15 | 0.04 | 0.03 | 28.31 | -0.40 | -0.29 | PP |
| 4AUDQT | | 24.91 | -1.20 | -0.97 | 27.93 | -0.77 | -0.56 | PR |
| 4FG9PC | | 26.29 | 0.18 | 0.15 | 28.85 | 0.15 | 0.11 | PP |
| 4GRACB | | 26.71 | 0.60 | 0.49 | 30.25 | 1.55 | 1.13 | GL |
| 6UG9ZR | | 24.95 | -1.16 | -0.93 | 26.60 | -2.10 | -1.53 | LP |
| 8X7KTT | | 27.72 | 1.61 | 1.30 | 29.62 | 0.92 | 0.67 | WG |
| 99LY7F | | 25.68 | -0.43 | -0.34 | 29.30 | 0.60 | 0.44 | LP |
| 9GF4XV | | 27.24 | 1.13 | 0.91 | 28.96 | 0.26 | 0.19 | PP |
| ARBE4H | | 27.59 | 1.48 | 1.20 | 30.78 | 2.08 | 1.52 | PP |
| CBYXUK | | 28.29 | 2.18 | 1.76 | 31.53 | 2.83 | 2.07 | LA |
| DVH4VF | | 26.30 | 0.19 | 0.16 | 28.08 | -0.62 | -0.45 | HG |
| F446AG | | 26.53 | 0.42 | 0.34 | 28.90 | 0.20 | 0.15 | TL |
| FGA3CV | | 25.96 | -0.14 | -0.12 | 26.88 | -1.82 | -1.33 | HG |
| G48UB8 | | 26.38 | 0.27 | 0.22 | 28.65 | -0.05 | -0.04 | PP |
| H7Q9CM | X | 29.43 | 3.32 | 2.68 | 28.80 | 0.10 | 0.07 | PP |
| JN3EY3 | | 25.47 | -0.64 | -0.52 | 29.22 | 0.52 | 0.38 | PP |
| JTUG79 | | 27.53 | 1.42 | 1.15 | 28.52 | -0.19 | -0.14 | PP |
| K2N2R2 | | 25.20 | -0.91 | -0.73 | 29.90 | 1.20 | 0.87 | LW |
| KMZ78U | | 24.70 | -1.41 | -1.14 | 26.90 | -1.80 | -1.31 | GS |
| KPUK3Z | | 26.43 | 0.32 | 0.26 | 28.97 | 0.27 | 0.20 | LW |
| L9GV36 | | 27.15 | 1.04 | 0.84 | 30.36 | 1.66 | 1.21 | GA |
| NK7J3W | | 26.03 | -0.08 | -0.06 | 27.46 | -1.24 | -0.90 | LP |
| PWA2DW | | 26.39 | 0.29 | 0.23 | 29.17 | 0.47 | 0.34 | PP |
| Q88HHR | | 25.74 | -0.37 | -0.30 | 29.08 | 0.38 | 0.28 | PP |
| QAU49T | | 25.13 | -0.98 | -0.79 | 26.53 | -2.17 | -1.58 | LP |
| RNFQ3R | | 27.99 | 1.88 | 1.52 | 29.77 | 1.07 | 0.78 | LP |
| RPQH82 | | 24.62 | -1.49 | -1.20 | 27.49 | -1.21 | -0.88 | PP |
| TMV8VY | | 23.50 | -2.61 | -2.10 | 27.89 | -0.81 | -0.59 | VM |
| TTKRWU | | 26.32 | 0.21 | 0.17 | 28.00 | -0.70 | -0.51 | XX |
| TVQCNZ | | 27.87 | 1.76 | 1.42 | 30.06 | 1.36 | 0.99 | PP |
| VEHZ8V | | 23.83 | -2.28 | -1.84 | 26.55 | -2.15 | -1.57 | LP |
| VGJATW | | 24.33 | -1.78 | -1.43 | 26.56 | -2.14 | -1.56 | XX |
| WMLJZP | | 26.87 | 0.76 | 0.62 | 29.88 | 1.18 | 0.86 | HG |
| XDQX8W | | 25.96 | -0.15 | -0.12 | 30.35 | 1.65 | 1.20 | XX |
| XUDDBT | | 26.46 | 0.35 | 0.28 | 27.38 | -1.32 | -0.96 | PP |
| XYAXJH | | 25.70 | -0.41 | -0.33 | 29.00 | 0.30 | 0.22 | PP |
| YMF4JU | | 23.86 | -2.25 | -1.82 | 26.27 | -2.44 | -1.78 | TL |

# Paper & Paperboard Interlaboratory Testing Program

## Analysis 370

## Air Resistance - Gurley Oil Type

## TAPPI Official Test Method T460

| Summary Statistics | Sample GE71 | Sample GE72 |
|---|---|---|
| Grand Means | 26.11 sec/100 cc | 28.70 sec/100 cc |
| Stnd Dev Btwn Labs | 1.24 sec/100 cc | 1.37 sec/100 cc |

Statistics based on 40 of 41 reporting participants.

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

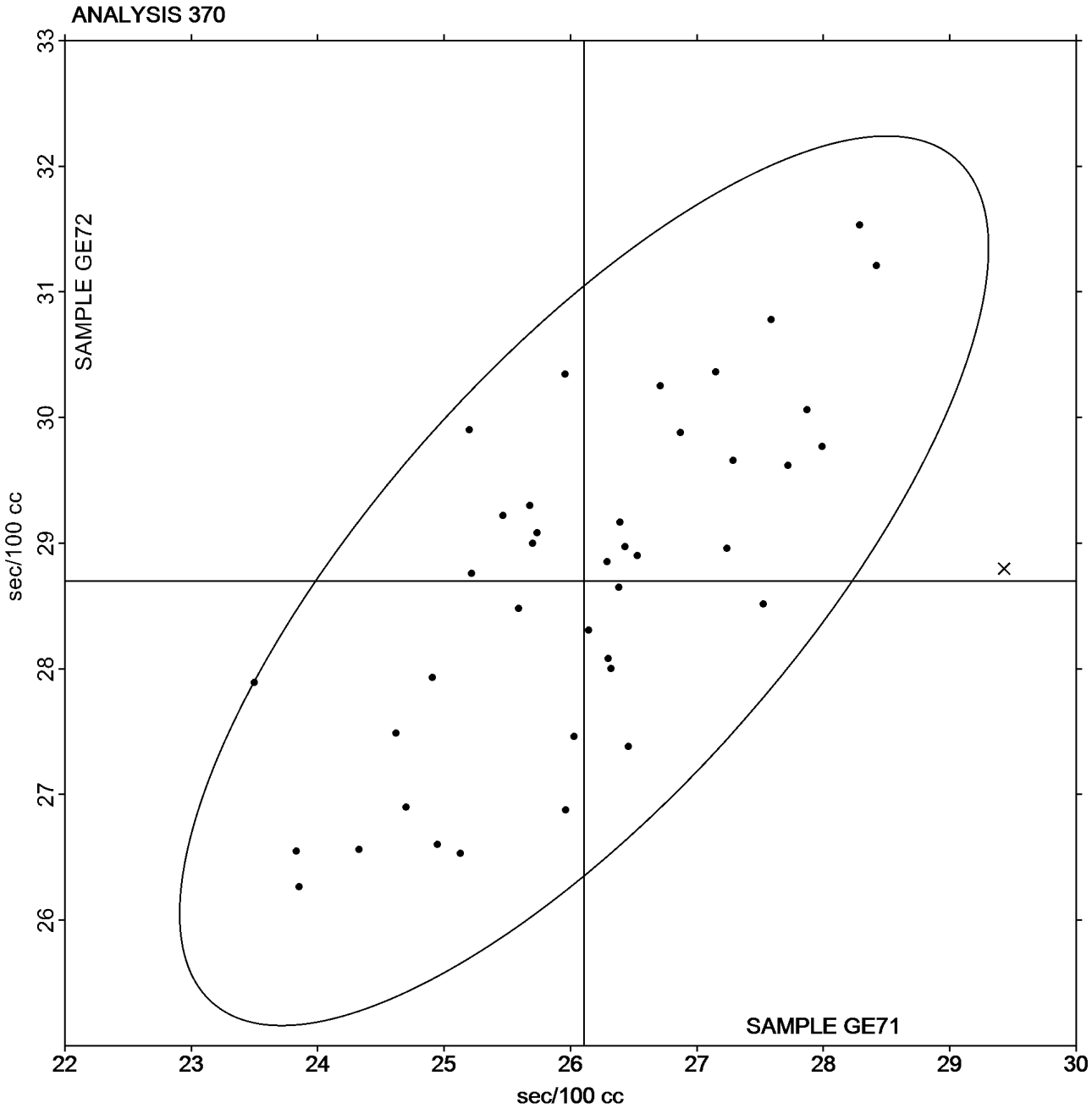
H7Q9CM (X) - Inconsistent in testing between samples.

**Key to Instrument Codes Reported by Participants**

| | | | |
|---|---|---|---|
| GA | Gurley Precision #4340 Automatic Densometer | GL | Gurley #4110 |
| GS | Gurley-Hill S-P-S Tester #4190 | HG | Technidyne - Hagerty Model #1 |
| LA | L & W Autoline | LP | L & W Densometer, Air Permeance |
| LW | L & W Type Gurley Densometer, Oil Flotation | PP | Technidyne Profile/Plus |
| PR | Parker Print-Surf (PPS) Model M590 | TL | Gurley Densometer #4110, Oil Flotation |
| VM | Valmet PaperLab (was Kajaani/Robotest) | WG | W & LE Gurley Tester |
| XX | Instrument make/model not specified by lab | | |

**Grand Mean Sample GE71 = 26.107 sec/100 cc**

**Grand Mean Sample GE72 = 28.701 sec/100 cc**



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 372

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

## TAPPI Official Test Method T547

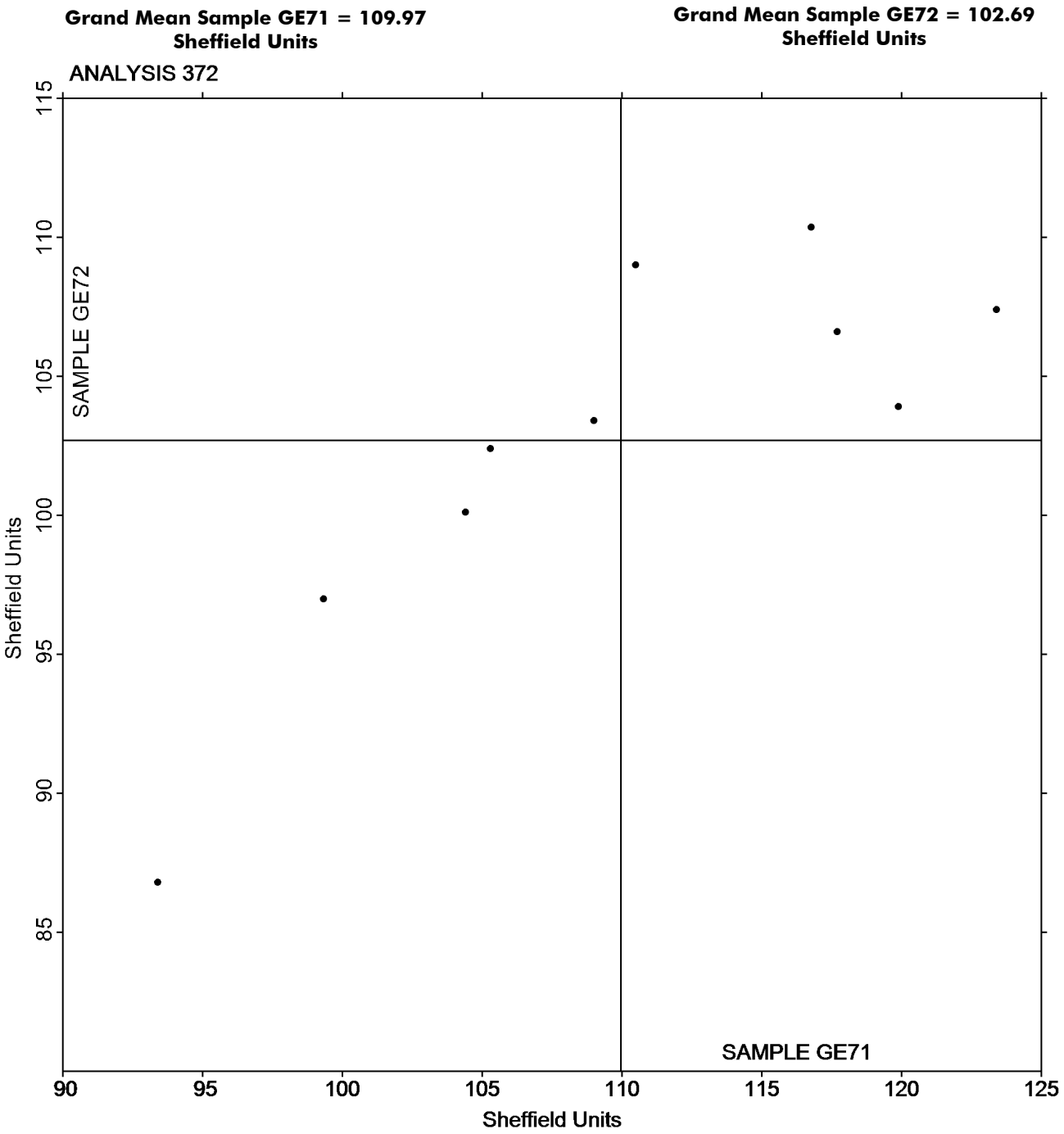
| WebCode | Data Flag | Sample GE71 Lab Mean | Sample GE71 Diff from Grand Mean | Sample GE71 CPV | Sample GE72 Lab Mean | Sample GE72 Diff from Grand Mean | Sample GE72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 78WNJG | | 93.4 | -16.6 | -1.73 | 86.8 | -15.9 | -2.30 | GA |
| HRNR97 | | 119.9 | 9.9 | 1.04 | 103.9 | 1.2 | 0.17 | LA |
| KMZ78U | | 117.7 | 7.7 | 0.81 | 106.6 | 3.9 | 0.57 | SH |
| L9GV36 | | 99.3 | -10.6 | -1.11 | 97.0 | -5.7 | -0.83 | GA |
| LAUANT | | 110.5 | 0.5 | 0.06 | 109.0 | 6.3 | 0.91 | TT |
| MCFEXB | | 123.4 | 13.4 | 1.40 | 107.4 | 4.7 | 0.68 | LP |
| TFVY7Y | | 105.3 | -4.7 | -0.49 | 102.4 | -0.3 | -0.04 | TT |
| TMV8VY | | 116.8 | 6.8 | 0.71 | 110.4 | 7.7 | 1.11 | PP |
| VWDP4N | | 104.4 | -5.6 | -0.58 | 100.1 | -2.6 | -0.38 | HM |
| XYAXJH | | 109.0 | -1.0 | -0.10 | 103.4 | 0.7 | 0.10 | PP |

| Summary Statistics | Sample GE71 | Sample GE72 |
|---|---|---|
| **Grand Means** | 109.97 Sheffield Units | 102.69 Sheffield Units |
| **Stnd Dev Btwn Labs** | 9.58 Sheffield Units | 6.91 Sheffield Units |

Statistics based on 10 of 10 reporting participants.

### Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| GA | Gurley Precision #4340 Automatic Densometer | HM | Technidyne - Hagerty Model #538 |
| LA | L & W Roughness Sheffield - Autoline | LP | L & W Densometer, Air Permeance |
| PP | Technidyne Profile/Plus | SH | Sheffield |
| TT | TMI Monitor/Smoothness II, Model 58-24 | | |




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

## TAPPI Official Test Method T555

| WebCode | Data Flag | Sample GJ71 Lab Mean | Sample GJ71 Diff from Grand Mean | Sample GJ71 CPV | Sample GJ72 Lab Mean | Sample GJ72 Diff from Grand Mean | Sample GJ72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 6ZYUPP | | 0.8090 | -0.0364 | -0.46 | 0.8110 | -0.0456 | -0.56 | ZZ |
| 7BJBAJ | | 0.8950 | 0.0496 | 0.63 | 0.8850 | 0.0284 | 0.35 | ZZ |
| 8DG7CJ | | 0.7780 | -0.0674 | -0.85 | 0.7870 | -0.0696 | -0.85 | ZZ |
| 8WFJPQ | | 0.8530 | 0.0076 | 0.10 | 0.8700 | 0.0134 | 0.16 | ZZ |
| 8X7KTT | | 0.7650 | -0.0804 | -1.02 | 0.7690 | -0.0876 | -1.08 | ZZ |
| AQFRRD | | 0.8210 | -0.0244 | -0.31 | 0.7840 | -0.0726 | -0.89 | ZZ |
| ARBF73 | | 0.8030 | -0.0424 | -0.54 | 0.8380 | -0.0186 | -0.23 | ZZ |
| AVCHXP | X | 1.3780 | 0.5326 | 6.73 | 1.3680 | 0.5114 | 6.28 | ZZ |
| AYDQZE | | 0.9060 | 0.0606 | 0.77 | 0.8760 | 0.0194 | 0.24 | ZZ |
| DVH4VF | | 0.8180 | -0.0274 | -0.35 | 0.8480 | -0.0086 | -0.11 | ZZ |
| EAXKLJ | | 0.8150 | -0.0304 | -0.38 | 0.7790 | -0.0776 | -0.95 | ZZ |
| H7Q9CM | | 1.0010 | 0.1556 | 1.97 | 1.0230 | 0.1664 | 2.04 | ZZ |
| JN3EY3 | | 0.8340 | -0.0114 | -0.14 | 0.8460 | -0.0106 | -0.13 | ZZ |
| JTUG79 | | 0.8720 | 0.0266 | 0.34 | 0.9000 | 0.0434 | 0.53 | ZZ |
| K2MBGC | X | 119.8000 | 118.9546 | 1,503.17 | 124.8000 | 123.9434 | 1,521.07 | ZZ |
| LXDMD7 | | 0.8710 | 0.0256 | 0.32 | 0.9650 | 0.1084 | 1.33 | ZZ |
| NGAQD8 | | 0.8050 | -0.0404 | -0.51 | 0.8220 | -0.0346 | -0.43 | ZZ |
| PHFREW | | 0.8140 | -0.0314 | -0.40 | 0.8590 | 0.0024 | 0.03 | ZZ |
| RGBWXX | | 0.9560 | 0.1106 | 1.40 | 1.0040 | 0.1474 | 1.81 | ZZ |
| RPQH82 | | 0.8110 | -0.0344 | -0.44 | 0.7480 | -0.1086 | -1.33 | ZZ |
| TFVY7Y | * | 1.0550 | 0.2096 | 2.65 | 0.9260 | 0.0694 | 0.85 | ZZ |
| TMV8VY | | 0.7830 | -0.0624 | -0.79 | 0.7820 | -0.0746 | -0.92 | ZZ |
| WDHJ93 | | 0.7510 | -0.0944 | -1.19 | 0.6960 | -0.1606 | -1.97 | ZZ |
| WNWEN3 | | 0.9640 | 0.1186 | 1.50 | 0.9490 | 0.0924 | 1.13 | ZZ |
| XYAXJH | | 0.8270 | -0.0184 | -0.23 | 0.8160 | -0.0406 | -0.50 | ZZ |
| YBND3W | | 0.7940 | -0.0514 | -0.65 | 0.8850 | 0.0284 | 0.35 | ZZ |
| ZUAN6L | * | 0.7350 | -0.1104 | -1.40 | 0.9480 | 0.0914 | 1.12 | ZZ |

| Summary Statistics | Sample GJ71 | Sample GJ72 |
|---|---|---|
| **Grand Means** | 0.85 Microns | 0.86 Microns |
| **Stnd Dev Btwn Labs** | 0.08 Microns | 0.08 Microns |

Statistics based on 25 of 27 reporting participants.

### Comments on Assigned Data Flags for Test #376

AVCHXP (X) - Extreme Data.

K2MBGC (X) - Extreme Data.

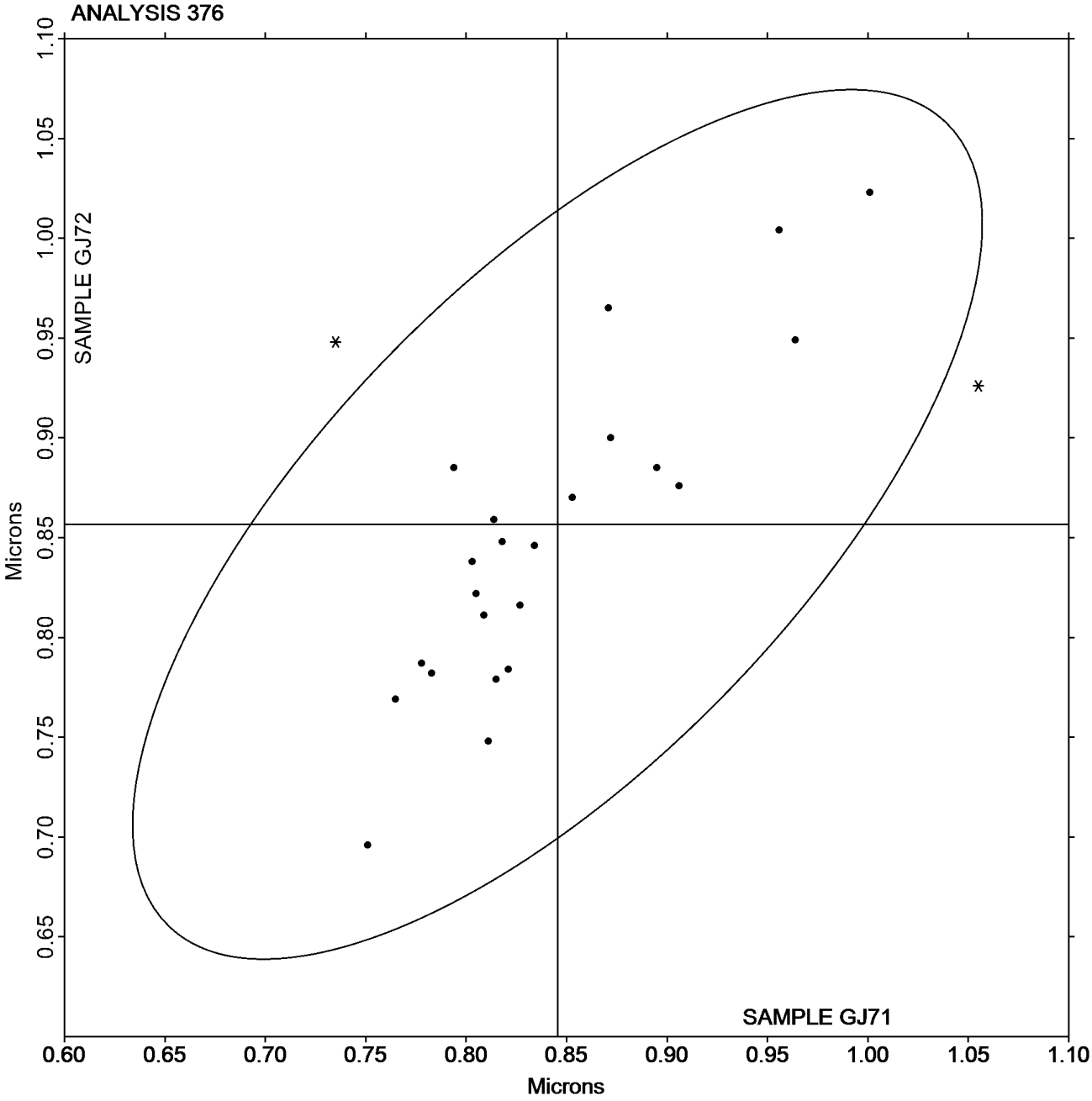
## Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

**Grand Mean Sample GJ71 = 0.84544 Microns**

**Grand Mean Sample GJ72 = 0.85664 Microns**



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 377

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

## TAPPI Official Test Method T555

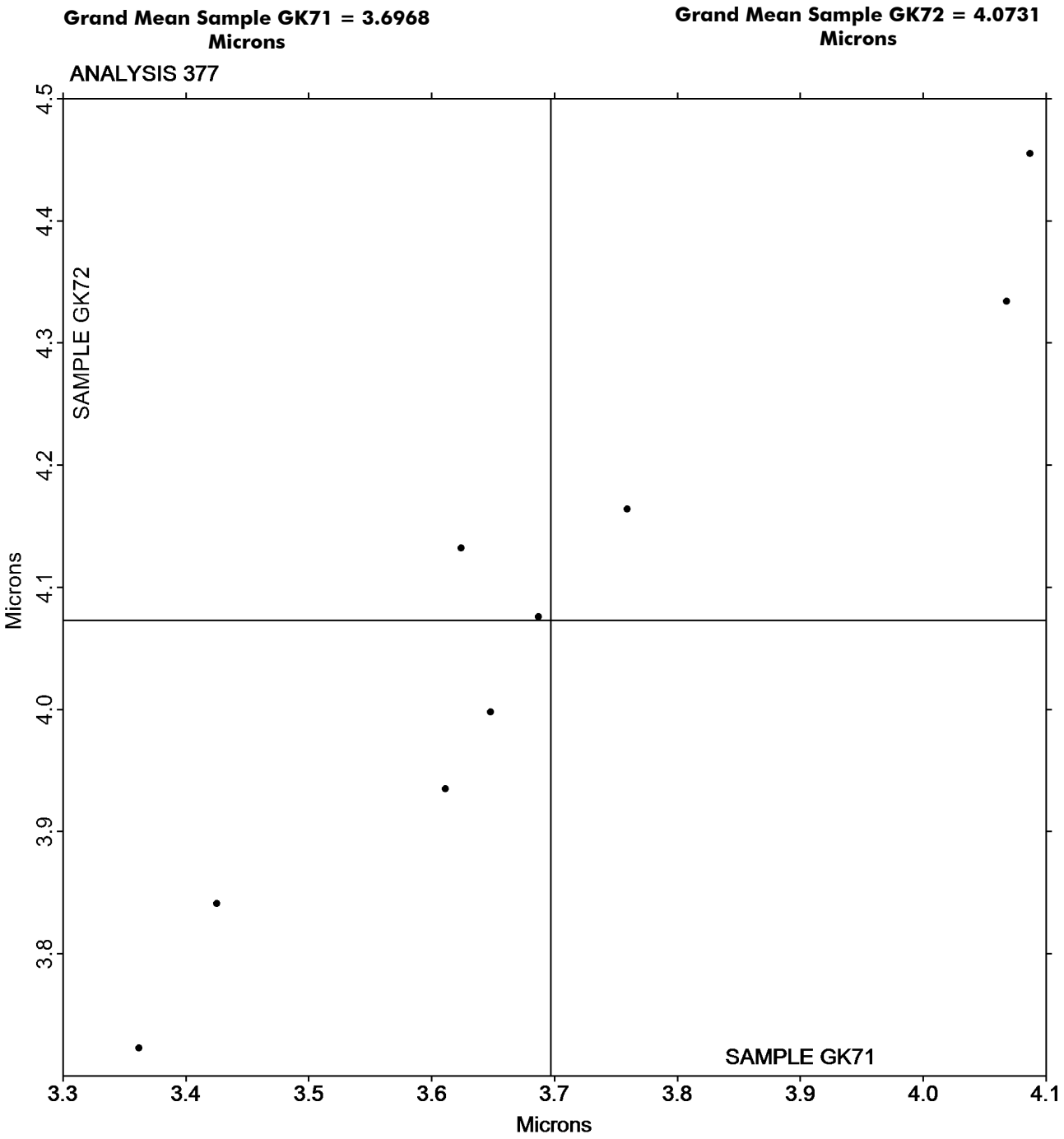
| WebCode | Data Flag | Sample GK71 Lab Mean | Sample GK71 Diff from Grand Mean | Sample GK71 CPV | Sample GK72 Lab Mean | Sample GK72 Diff from Grand Mean | Sample GK72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2ZVZGU | | 3.362 | -0.335 | -1.35 | 3.723 | -0.350 | -1.52 | ZZ |
| 4FG9PC | | 3.611 | -0.086 | -0.34 | 3.935 | -0.138 | -0.60 | ZZ |
| 7FAVYK | | 3.648 | -0.049 | -0.20 | 3.998 | -0.075 | -0.33 | ZZ |
| 8WFJPQ | | 4.068 | 0.371 | 1.49 | 4.334 | 0.261 | 1.13 | ZZ |
| 8X7KTT | | 3.425 | -0.272 | -1.09 | 3.841 | -0.232 | -1.00 | ZZ |
| FLNTKC | | 3.624 | -0.073 | -0.29 | 4.132 | 0.059 | 0.25 | ZZ |
| G48UB8 | | 3.687 | -0.010 | -0.04 | 4.076 | 0.003 | 0.01 | ZZ |
| PWA2DW | | 4.087 | 0.390 | 1.57 | 4.455 | 0.382 | 1.65 | ZZ |
| WNWEN3 | | 3.759 | 0.062 | 0.25 | 4.164 | 0.091 | 0.39 | ZZ |

| Summary Statistics | Sample GK71 | Sample GK72 |
|---|---|---|
| **Grand Means** | 3.70 Microns | 4.07 Microns |
| **Stnd Dev Btwn Labs** | 0.25 Microns | 0.23 Microns |

Statistics based on 9 of 9 reporting participants.

### Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked




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

## TAPPI Official Test Method T538

| WebCode | Data Flag | Sample GL71 Lab Mean | Sample GL71 Diff from Grand Mean | Sample GL71 CPV | Sample GL72 Lab Mean | Sample GL72 Diff from Grand Mean | Sample GL72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2F6WTF | | 119.1 | 1.5 | 0.21 | 116.8 | -1.7 | -0.24 | TS |
| 2ZVZGU | | 119.9 | 2.3 | 0.33 | 122.4 | 3.9 | 0.55 | LA |
| 38UPYX | | 110.0 | -7.6 | -1.05 | 108.5 | -10.0 | -1.41 | SH |
| 4FG9PC | | 115.2 | -2.3 | -0.32 | 122.3 | 3.8 | 0.54 | PP |
| 4J3UFD | | 111.7 | -5.8 | -0.81 | 110.0 | -8.5 | -1.21 | MP |
| 638U7P | | 116.8 | -0.7 | -0.10 | 120.3 | 1.8 | 0.26 | PP |
| 6ZYUPP | | 117.4 | -0.2 | -0.02 | 123.4 | 4.9 | 0.69 | PP |
| 78WNJG | | 122.5 | 4.9 | 0.69 | 124.1 | 5.6 | 0.79 | GA |
| 7BJBAJ | | 120.1 | 2.5 | 0.35 | 121.1 | 2.6 | 0.37 | PP |
| 7QCZ9M | | 113.0 | -4.6 | -0.63 | 115.0 | -3.5 | -0.50 | PP |
| 8WFJPQ | | 120.4 | 2.8 | 0.39 | 121.1 | 2.6 | 0.37 | LW |
| 8X7KTT | | 126.2 | 8.6 | 1.20 | 131.2 | 12.7 | 1.79 | XX |
| 9GF4XV | | 115.3 | -2.2 | -0.31 | 115.7 | -2.8 | -0.40 | PP |
| AQFRRD | | 122.8 | 5.2 | 0.73 | 124.9 | 6.4 | 0.90 | HM |
| ARBE4H | | 119.5 | 1.9 | 0.27 | 116.0 | -2.6 | -0.36 | PP |
| CBYXUK | | 100.9 | -16.7 | -2.31 | 105.0 | -13.5 | -1.91 | LA |
| D2NV9K | | 114.8 | -2.8 | -0.38 | 119.8 | 1.3 | 0.18 | LA |
| DVH4VF | | 110.4 | -7.2 | -0.99 | 116.9 | -1.6 | -0.23 | HM |
| EZRK66 | * | 136.0 | 18.4 | 2.56 | 132.5 | 14.0 | 1.98 | GL |
| FAVA4K | | 106.1 | -11.5 | -1.59 | 108.4 | -10.1 | -1.43 | PP |
| FGA3CV | | 115.2 | -2.4 | -0.33 | 109.6 | -8.9 | -1.26 | HM |
| FLNTKC | | 110.0 | -7.6 | -1.05 | 115.4 | -3.1 | -0.44 | PP |
| G48UB8 | | 110.8 | -6.7 | -0.93 | 116.1 | -2.4 | -0.35 | PP |
| HRNR97 | | 117.6 | 0.0 | 0.01 | 113.6 | -4.9 | -0.69 | LA |
| JFA23A | | 124.5 | 6.9 | 0.96 | 125.2 | 6.7 | 0.95 | LA |
| JN3EY3 | | 110.7 | -6.9 | -0.95 | 111.8 | -6.7 | -0.95 | PP |
| JPUDC2 | | 114.9 | -2.7 | -0.37 | 117.3 | -1.2 | -0.17 | GA |
| JTUG79 | | 109.8 | -7.7 | -1.07 | 113.6 | -4.9 | -0.70 | PP |
| K2MBGC | | 119.8 | 2.2 | 0.31 | 124.8 | 6.3 | 0.89 | LW |
| K2N2R2 | | 122.8 | 5.2 | 0.73 | 124.5 | 6.0 | 0.85 | TS |
| KMZ78U | | 114.4 | -3.2 | -0.44 | 114.6 | -3.9 | -0.55 | XX |
| L9GV36 | | 115.7 | -1.9 | -0.26 | 117.9 | -0.6 | -0.09 | PP |
| LAUANT | * | 137.5 | 19.9 | 2.77 | 137.0 | 18.5 | 2.61 | TT |
| MCFEXB | * | 122.8 | 5.2 | 0.73 | 112.9 | -5.6 | -0.79 | LW |
| NGAQD8 | | 109.9 | -7.6 | -1.06 | 110.7 | -7.8 | -1.10 | PP |
| PWA2DW | | 121.4 | 3.8 | 0.53 | 120.5 | 2.0 | 0.28 | LW |
| PWFCA3 | | 125.5 | 7.9 | 1.10 | 129.5 | 11.0 | 1.55 | XX |
| Q88HHR | | 106.1 | -11.4 | -1.58 | 105.6 | -12.9 | -1.83 | PP |
| QZTGGW | | 110.3 | -7.3 | -1.01 | 112.6 | -5.9 | -0.84 | TT |
| RGBWXX | | 120.1 | 2.5 | 0.35 | 126.2 | 7.7 | 1.09 | LA |
| RJGCF3 | | 124.2 | 6.6 | 0.92 | 122.7 | 4.2 | 0.59 | XX |

# Paper & Paperboard Interlaboratory Testing Program

## Analysis 378

## Roughness - Sheffield Type

## TAPPI Official Test Method T538

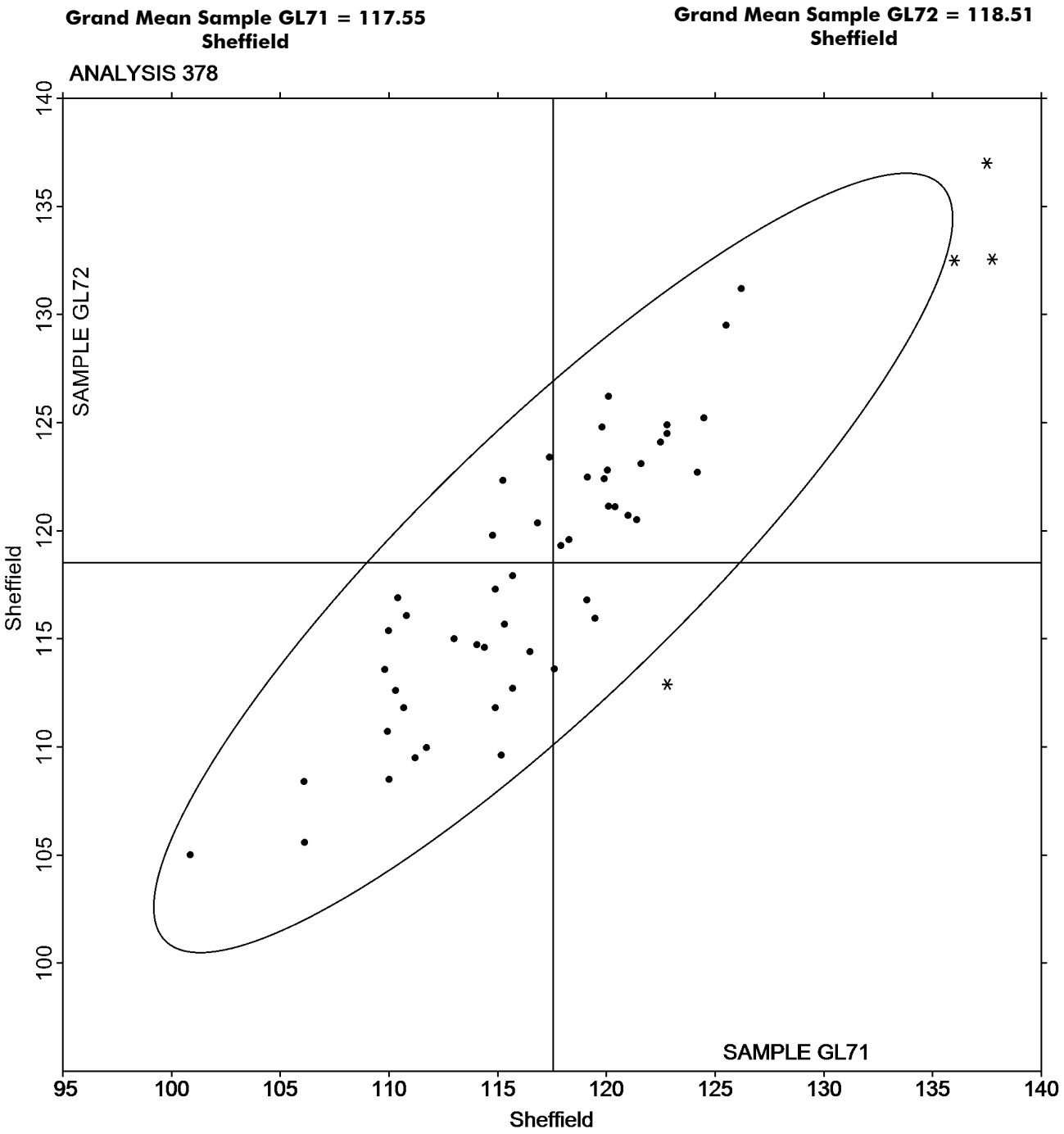
| WebCode | Data Flag | Sample GL71 Lab Mean | Sample GL71 Diff from Grand Mean | Sample GL71 CPV | Sample GL72 Lab Mean | Sample GL72 Diff from Grand Mean | Sample GL72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| RNFQ3R | | 111.2 | -6.4 | -0.88 | 109.5 | -9.0 | -1.27 | LW |
| TFVY7Y | | 121.0 | 3.4 | 0.48 | 120.7 | 2.2 | 0.31 | TT |
| TMV8VY | | 114.9 | -2.7 | -0.37 | 111.8 | -6.7 | -0.95 | VM |
| TVQCNZ | | 120.1 | 2.5 | 0.35 | 122.8 | 4.3 | 0.61 | PP |
| UQQKT9 | * | 137.7 | 20.2 | 2.80 | 132.6 | 14.0 | 1.99 | GA |
| VGJATW | | 116.5 | -1.1 | -0.15 | 114.4 | -4.1 | -0.58 | XX |
| VQMFR6 | | 114.1 | -3.5 | -0.48 | 114.7 | -3.8 | -0.53 | PP |
| WMLJZP | | 115.7 | -1.9 | -0.26 | 112.7 | -5.8 | -0.82 | HM |
| WNWEN3 | | 121.6 | 4.0 | 0.56 | 123.1 | 4.6 | 0.65 | LA |
| XUDDBT | | 118.3 | 0.7 | 0.10 | 119.6 | 1.1 | 0.15 | PP |
| XYAXJH | | 117.9 | 0.3 | 0.05 | 119.3 | 0.8 | 0.11 | PP |
| YBND3W | | 119.1 | 1.6 | 0.22 | 122.5 | 4.0 | 0.56 | PP |

| Summary Statistics | Sample GL71 | Sample GL72 |
|---|---|---|
| **Grand Means** | 117.55 Sheffield | 118.51 Sheffield |
| **Stnd Dev Btwn Labs** | 7.21 Sheffield | 7.08 Sheffield |

Statistics based on 53 of 53 reporting participants.

### Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| GA | Gurley Precision #4340 Automatic Densometer | GL | Giddings and Lewis Sheffield |
| HM | Technidyne - Hagerty Model #538 | LA | L & W Roughness Sheffield - Autoline |
| LW | L & W Roughness Tester | MP | Metso Paperlab |
| 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 |



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 382
## Moisture in Paper
## TAPPI Official Test Method T412

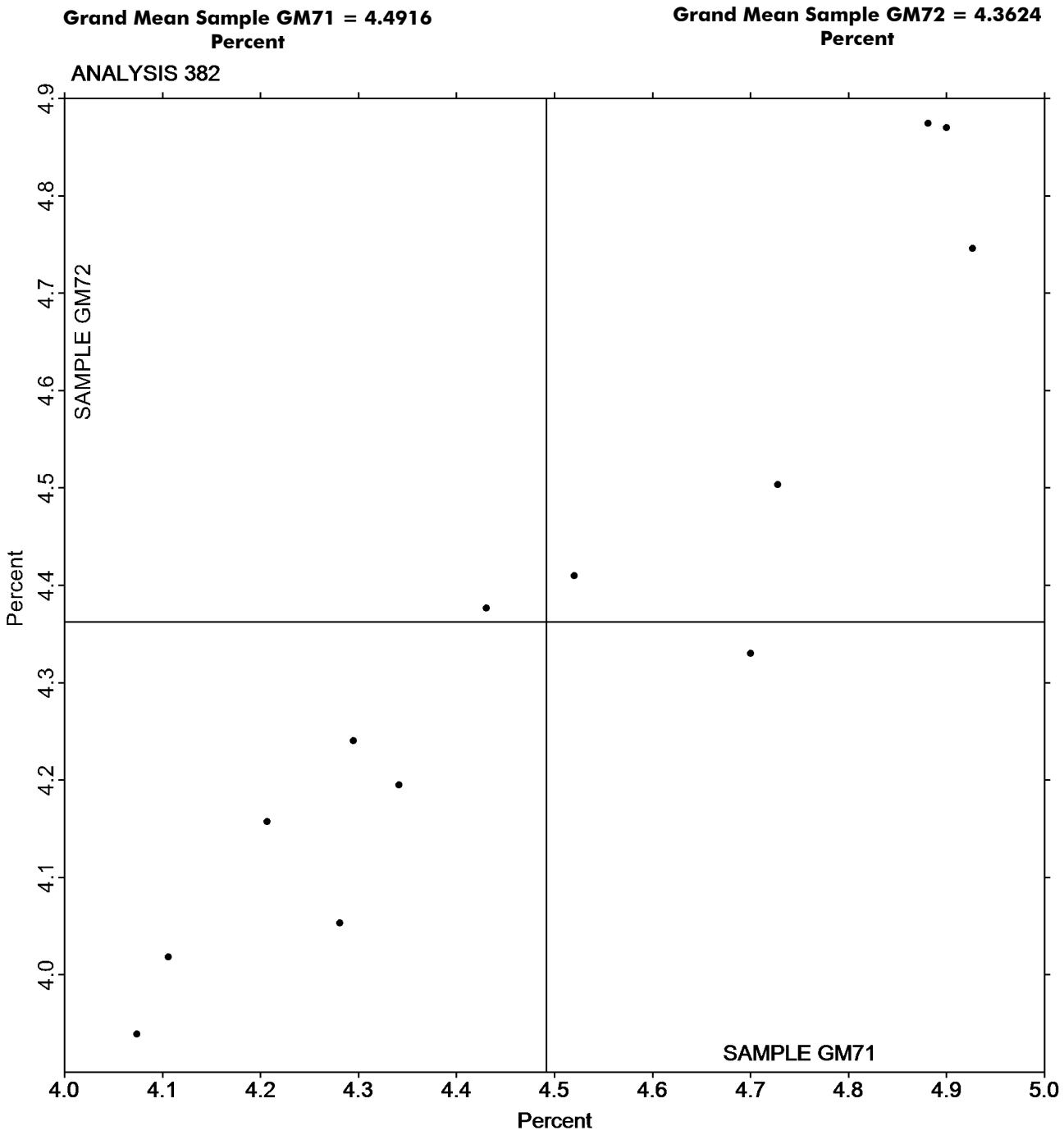
| WebCode | Data Flag | Sample GM71 Lab Mean | Sample GM71 Diff from Grand Mean | Sample GM71 CPV | Sample GM72 Lab Mean | Sample GM72 Diff from Grand Mean | Sample GM72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 8GGH8J | | 4.207 | -0.285 | -0.93 | 4.157 | -0.205 | -0.66 | ZZ |
| B9EC38 | | 4.295 | -0.197 | -0.64 | 4.240 | -0.122 | -0.39 | ZZ |
| CWHKWT | | 4.728 | 0.236 | 0.77 | 4.503 | 0.141 | 0.45 | ZZ |
| G48UB8 | | 4.881 | 0.390 | 1.27 | 4.874 | 0.512 | 1.64 | ZZ |
| GRTW74 | | 4.281 | -0.211 | -0.69 | 4.053 | -0.309 | -0.99 | ZZ |
| KB9GAA | | 4.927 | 0.435 | 1.42 | 4.746 | 0.383 | 1.23 | ZZ |
| KU4AWT | | 4.520 | 0.029 | 0.09 | 4.410 | 0.047 | 0.15 | ZZ |
| QAU49T | | 4.106 | -0.386 | -1.26 | 4.018 | -0.344 | -1.10 | ZZ |
| QGD349 | | 4.900 | 0.408 | 1.34 | 4.870 | 0.508 | 1.63 | ZZ |
| R6J976 | | 4.431 | -0.061 | -0.20 | 4.377 | 0.014 | 0.05 | ZZ |
| V2MVVN | | 4.074 | -0.418 | -1.37 | 3.939 | -0.423 | -1.36 | ZZ |
| ZLWGKC | | 4.341 | -0.150 | -0.49 | 4.195 | -0.167 | -0.54 | ZZ |
| ZZHWNC | | 4.700 | 0.208 | 0.68 | 4.330 | -0.032 | -0.10 | ZZ |

| Summary Statistics | Sample GM71 | Sample GM72 |
|---|---|---|
| **Grand Means** | 4.49 Percent | 4.36 Percent |
| **Stnd Dev Btwn Labs** | 0.31 Percent | 0.31 Percent |

Statistics based on 13 of 13 reporting participants.

**Key to Instrument Codes Reported by Participants**

ZZ Instruments No Longer Tracked




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

## TAPPI Official Test Method T425

| | | Sample GN71 | | | Sample GN72 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2F6WTF | X | 95.51 | -0.71 | -1.87 | 96.06 | -0.17 | -0.47 | ZZ |
| 2ZVZGU | | 95.86 | -0.36 | -0.95 | 96.14 | -0.09 | -0.26 | ZZ |
| 38UPYX | | 95.99 | -0.23 | -0.61 | 96.05 | -0.18 | -0.50 | ZZ |
| 4AUDQT | | 96.19 | -0.04 | -0.10 | 96.39 | 0.16 | 0.43 | ZZ |
| 4FG9PC | | 95.92 | -0.31 | -0.81 | 95.82 | -0.41 | -1.12 | ZZ |
| 638U7P | | 96.34 | 0.12 | 0.31 | 96.35 | 0.12 | 0.33 | ZZ |
| 7QCZ9M | | 96.14 | -0.08 | -0.22 | 96.19 | -0.04 | -0.12 | ZZ |
| 8DG7CJ | | 96.16 | -0.06 | -0.17 | 96.02 | -0.21 | -0.58 | ZZ |
| 9GF4XV | | 96.04 | -0.19 | -0.49 | 95.96 | -0.27 | -0.73 | ZZ |
| AQFRRD | | 96.42 | 0.20 | 0.51 | 96.47 | 0.24 | 0.64 | ZZ |
| AVCHXP | * | 97.41 | 1.18 | 3.09 | 97.29 | 1.06 | 2.87 | ZZ |
| AYDQZE | | 96.19 | -0.03 | -0.08 | 96.23 | 0.00 | -0.01 | ZZ |
| CBYXUK | X | 92.12 | -4.10 | -10.73 | 92.05 | -4.18 | -11.34 | ZZ |
| DVH4VF | | 96.19 | -0.03 | -0.09 | 96.12 | -0.11 | -0.31 | ZZ |
| ECNLPL | | 96.61 | 0.39 | 1.01 | 96.48 | 0.24 | 0.66 | ZZ |
| EZRK66 | X | 99.87 | 3.65 | 9.54 | 99.75 | 3.52 | 9.53 | ZZ |
| FLNTKC | | 96.02 | -0.21 | -0.54 | 96.04 | -0.19 | -0.52 | ZZ |
| G48UB8 | | 96.63 | 0.40 | 1.06 | 96.68 | 0.45 | 1.22 | ZZ |
| G6UMQ9 | | 95.82 | -0.41 | -1.06 | 95.73 | -0.50 | -1.35 | ZZ |
| GRQ6DM | | 96.30 | 0.08 | 0.20 | 96.30 | 0.07 | 0.18 | ZZ |
| H7Q9CM | * | 96.22 | -0.01 | -0.02 | 96.58 | 0.35 | 0.95 | ZZ |
| HRNR97 | | 95.93 | -0.29 | -0.77 | 95.98 | -0.25 | -0.69 | ZZ |
| JN3EY3 | | 96.68 | 0.46 | 1.19 | 96.63 | 0.39 | 1.06 | ZZ |
| K2N2R2 | | 96.25 | 0.03 | 0.07 | 96.16 | -0.07 | -0.20 | ZZ |
| KMZ78U | X | 96.32 | 0.10 | 0.25 | 95.18 | -1.05 | -2.86 | ZZ |
| L9GV36 | | 95.87 | -0.35 | -0.93 | 95.97 | -0.26 | -0.71 | ZZ |
| LAUANT | | 95.78 | -0.44 | -1.16 | 95.75 | -0.48 | -1.31 | ZZ |
| PWFCA3 | | 96.24 | 0.01 | 0.03 | 96.22 | -0.01 | -0.03 | ZZ |
| Q88HHR | | 96.44 | 0.22 | 0.57 | 96.37 | 0.14 | 0.37 | ZZ |
| RPQH82 | | 96.00 | -0.22 | -0.59 | 96.19 | -0.04 | -0.12 | ZZ |
| TFVY7Y | | 96.23 | 0.01 | 0.02 | 96.26 | 0.03 | 0.07 | ZZ |
| TVQCNZ | | 95.93 | -0.29 | -0.77 | 95.79 | -0.44 | -1.20 | ZZ |
| VGJATW | * | 97.35 | 1.13 | 2.96 | 97.27 | 1.03 | 2.80 | ZZ |
| WMLJZP | | 95.95 | -0.27 | -0.72 | 95.91 | -0.32 | -0.88 | ZZ |
| XYAXJH | | 96.12 | -0.10 | -0.27 | 96.09 | -0.14 | -0.39 | ZZ |
| ZUAN6L | | 95.97 | -0.25 | -0.66 | 96.03 | -0.21 | -0.56 | ZZ |

| Summary Statistics | Sample GN71 | Sample GN72 |
|---|---|---|
| Grand Means | 96.22 Percent | 96.23 Percent |
| Stnd Dev Btwn Labs | 0.38 Percent | 0.37 Percent |

Statistics based on 32 of 36 reporting participants.

## Comments on Assigned Data Flags for Test #384

CBYXUK (X) - Extreme Data.

KMZ78U (X) - Data for sample GN72 are low.

EZRK66 (X) - Extreme Data.

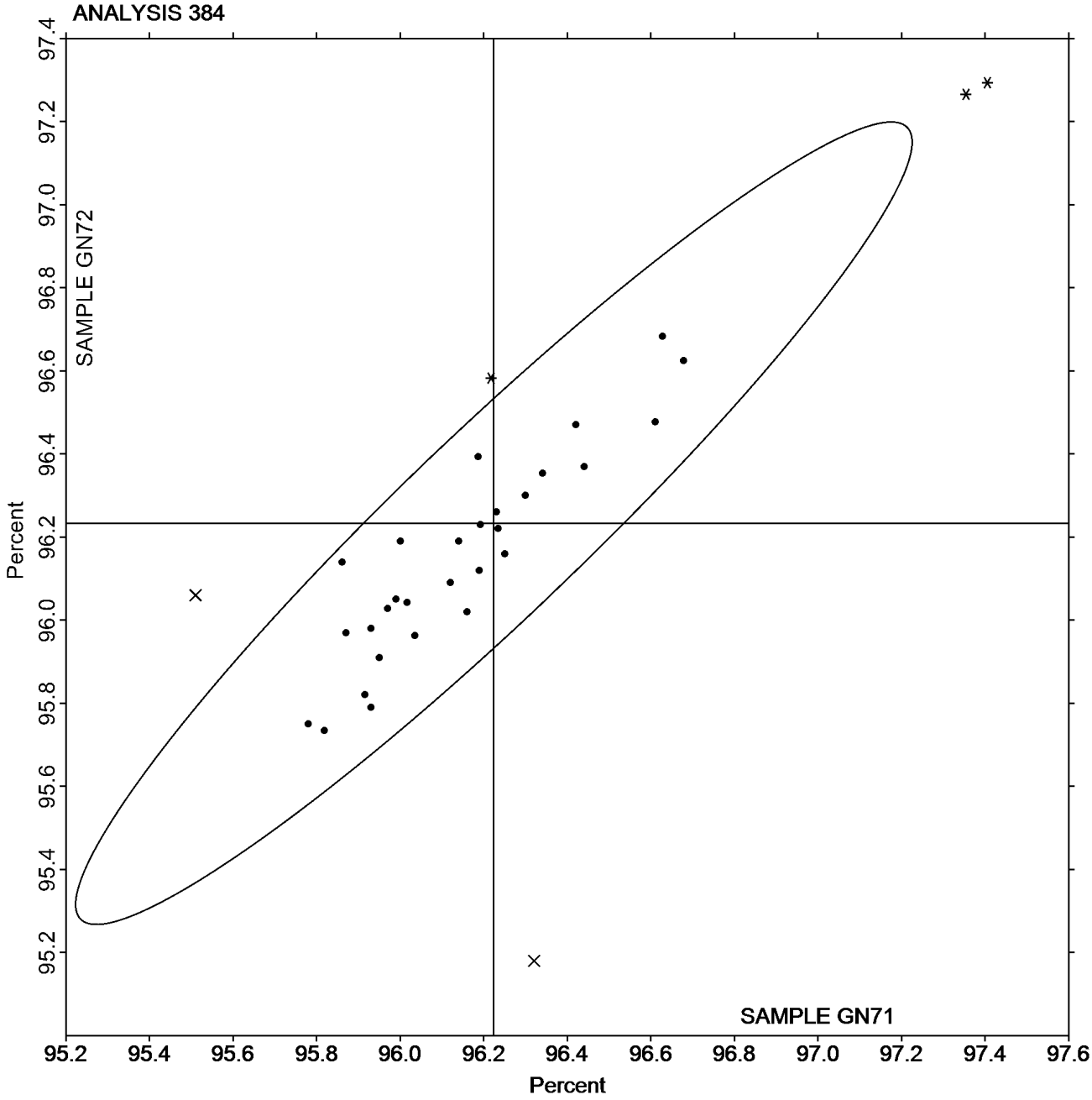
2F6WTF (X) - Inconsistent in testing between samples.

## Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

**Grand Mean Sample GN71 = 96.224 Percent**

**Grand Mean Sample GN72 = 96.234 Percent**



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 386

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

## TAPPI Official Test Method T519

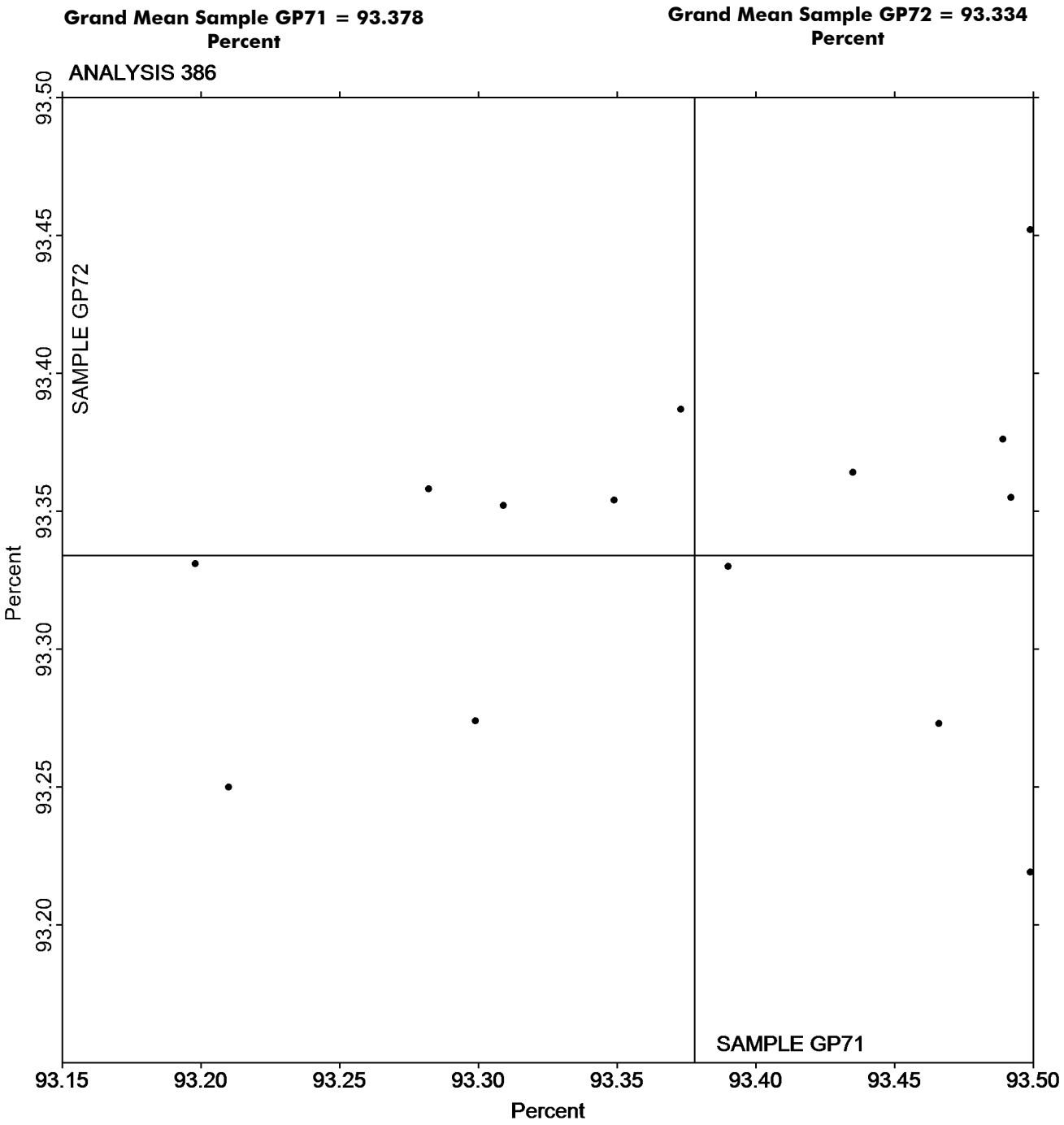
| WebCode | Data Flag | Sample GP71 Lab Mean | Sample GP71 Diff from Grand Mean | Sample GP71 CPV | Sample GP72 Lab Mean | Sample GP72 Diff from Grand Mean | Sample GP72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 38TQZJ | | 93.49 | 0.11 | 1.07 | 93.36 | 0.02 | 0.34 | ZZ |
| 6UG9ZR | | 93.49 | 0.11 | 1.04 | 93.38 | 0.04 | 0.69 | ZZ |
| 8AGZT8 | | 93.21 | -0.17 | -1.58 | 93.25 | -0.08 | -1.37 | ZZ |
| 99LY7F | | 93.31 | -0.07 | -0.65 | 93.35 | 0.02 | 0.30 | ZZ |
| ARBF73 | | 93.47 | 0.09 | 0.83 | 93.27 | -0.06 | -0.99 | ZZ |
| B474JH | | 93.50 | 0.12 | 1.14 | 93.45 | 0.12 | 1.93 | ZZ |
| F446AG | | 93.39 | 0.01 | 0.11 | 93.33 | 0.00 | -0.06 | ZZ |
| KPUK3Z | | 93.37 | 0.00 | -0.05 | 93.39 | 0.05 | 0.87 | ZZ |
| KU4AWT | | 93.44 | 0.06 | 0.54 | 93.36 | 0.03 | 0.49 | ZZ |
| Q6KXGU | | 93.30 | -0.08 | -0.74 | 93.27 | -0.06 | -0.98 | ZZ |
| QAU49T | | 93.35 | -0.03 | -0.27 | 93.35 | 0.02 | 0.33 | ZZ |
| UNMTYA | | 93.28 | -0.10 | -0.90 | 93.36 | 0.02 | 0.39 | ZZ |
| V8FVC6 | | 93.20 | -0.18 | -1.69 | 93.33 | 0.00 | -0.05 | ZZ |
| XDQX8W | | 93.50 | 0.12 | 1.14 | 93.22 | -0.11 | -1.88 | ZZ |

| Summary Statistics | Sample GP71 | Sample GP72 |
|---|---|---|
| **Grand Means** | 93.38 Percent | 93.33 Percent |
| **Stnd Dev Btwn Labs** | 0.11 Percent | 0.06 Percent |

Statistics based on 14 of 14 reporting participants.

**Key to Instrument Codes Reported by Participants**

ZZ Instruments No Longer Tracked




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
## TAPPI Official Test Method T452

| WebCode | Data Flag | Sample GR71 Lab Mean | Sample GR71 Diff from Grand Mean | Sample GR71 CPV | Sample GR72 Lab Mean | Sample GR72 Diff from Grand Mean | Sample GR72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2F6WTF | | 83.40 | -0.77 | -0.66 | 82.49 | -0.92 | -0.76 | TS |
| 2ZVZGU | | 83.90 | -0.28 | -0.24 | 82.89 | -0.52 | -0.43 | TS |
| 638U7P | | 83.15 | -1.02 | -0.88 | 82.39 | -1.02 | -0.84 | TS |
| 6ZYUPP | | 84.11 | -0.06 | -0.05 | 83.40 | -0.01 | -0.01 | HG |
| 7BJBAJ | | 83.55 | -0.62 | -0.54 | 82.54 | -0.87 | -0.72 | PP |
| 7QCZ9M | | 83.39 | -0.79 | -0.67 | 82.35 | -1.06 | -0.87 | XX |
| 8DG7CJ | | 85.22 | 1.04 | 0.90 | 84.42 | 1.02 | 0.84 | TS |
| 8WFJPQ | | 82.00 | -2.17 | -1.87 | 81.54 | -1.87 | -1.55 | TT |
| AQFRRD | | 83.21 | -0.96 | -0.83 | 82.35 | -1.06 | -0.87 | TS |
| AVCHXP | | 84.77 | 0.60 | 0.52 | 84.03 | 0.62 | 0.51 | VM |
| B9EC38 | | 84.25 | 0.08 | 0.07 | 83.65 | 0.24 | 0.20 | XX |
| C6U27E | | 85.23 | 1.06 | 0.91 | 84.35 | 0.94 | 0.78 | TS |
| FAVA4K | | 83.46 | -0.71 | -0.61 | 82.53 | -0.88 | -0.72 | TS |
| G6UMQ9 | | 85.11 | 0.94 | 0.81 | 84.17 | 0.77 | 0.64 | TS |
| JAJKT6 | | 84.50 | 0.33 | 0.28 | 83.76 | 0.36 | 0.29 | HG |
| JN3EY3 | | 83.38 | -0.80 | -0.69 | 82.80 | -0.61 | -0.50 | TT |
| K2MBGC | X | 86.53 | 2.35 | 2.02 | 86.89 | 3.49 | 2.88 | HZ |
| KMZ78U | * | 87.36 | 3.18 | 2.74 | 86.70 | 3.29 | 2.72 | PE |
| L9GV36 | | 84.62 | 0.44 | 0.38 | 84.08 | 0.67 | 0.55 | XC |
| LAUANT | | 85.66 | 1.49 | 1.28 | 85.35 | 1.94 | 1.61 | TS |
| NGAQD8 | | 85.24 | 1.06 | 0.91 | 84.43 | 1.02 | 0.84 | TT |
| PWA2DW | | 85.03 | 0.86 | 0.74 | 84.18 | 0.77 | 0.64 | HG |
| PWFCA3 | | 84.78 | 0.61 | 0.52 | 84.24 | 0.84 | 0.69 | XX |
| Q88HHR | | 82.94 | -1.24 | -1.06 | 82.16 | -1.24 | -1.03 | TT |
| RPQH82 | | 83.10 | -1.07 | -0.92 | 81.96 | -1.44 | -1.19 | TT |
| TVQCNZ | | 82.69 | -1.49 | -1.28 | 82.19 | -1.22 | -1.01 | TT |
| VGJATW | X | 69.53 | -14.64 | -12.58 | 68.12 | -15.29 | -12.65 | XX |
| VQMFR6 | | 83.22 | -0.95 | -0.82 | 82.37 | -1.03 | -0.86 | TS |
| YBND3W | | 85.42 | 1.24 | 1.07 | 84.65 | 1.24 | 1.03 | HG |

| Summary Statistics | Sample GR71 | Sample GR72 |
|---|---|---|
| **Grand Means** | 84.17 Percent | 83.41 Percent |
| **Stnd Dev Btwn Labs** | 1.16 Percent | 1.21 Percent |

Statistics based on 27 of 29 reporting participants.

### Comments on Assigned Data Flags for Test #390

VGJATW (X) - Extreme Data.

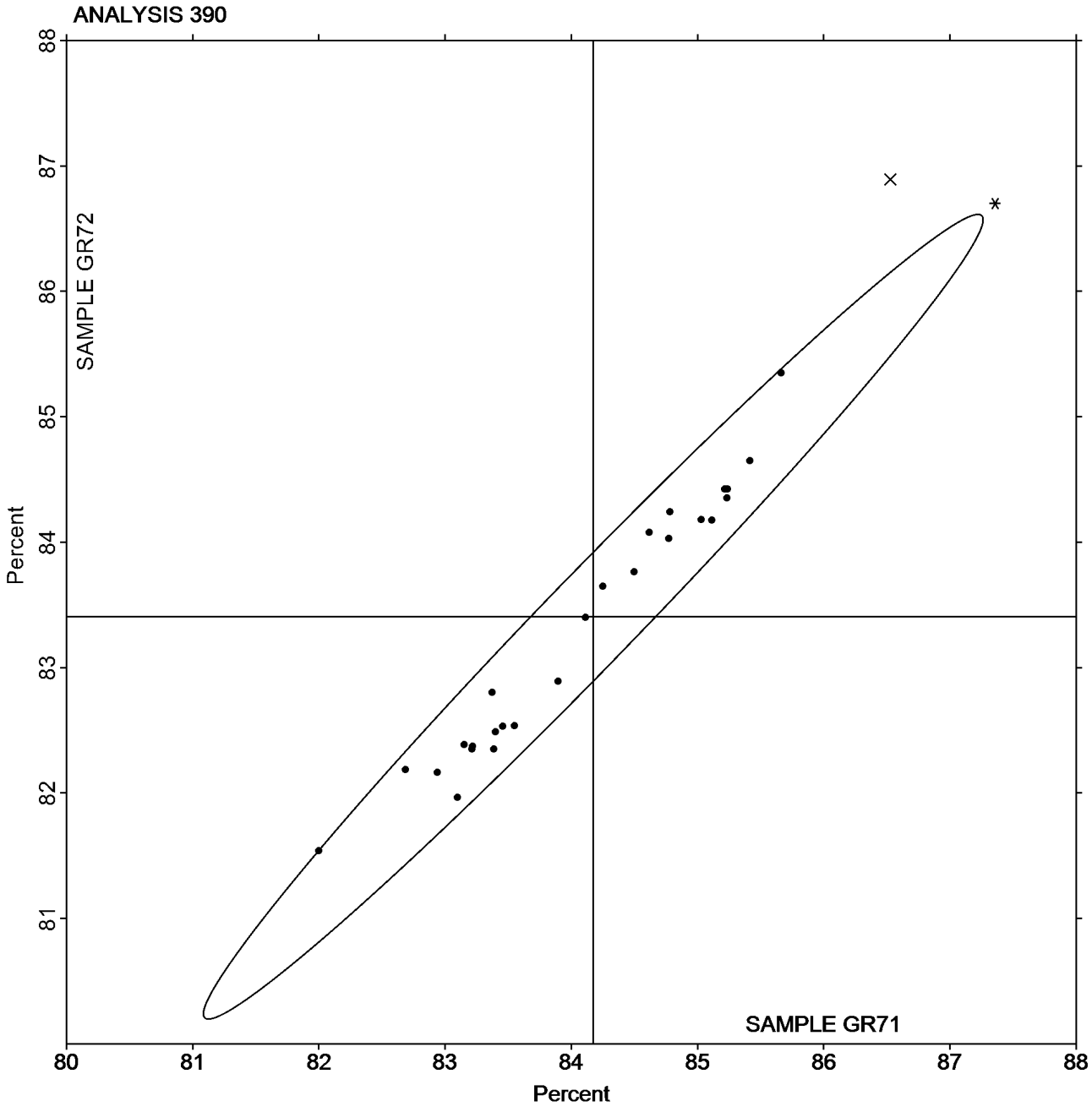
K2MBGC (X) - Data for sample GR72 are high.

## Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| HG | Hunter Labscan / XE | HZ | Hunter Lab ColorFlex EZ Series |
| PE | Photovolt 577 | PP | Technidyne Profile/Plus |
| TS | Technidyne Brightimeter Micro S-5 | TT | Technidyne Brightimeter Micro S4-M |
| VM | Valmet PaperLab (was Kajaani/Robotest) | XC | X-Rite Color i5 |
| XX | Instrument make/model not specified by lab | | |

**Grand Mean Sample GR71 = 84.173 Percent**

**Grand Mean Sample GR72 = 83.406 Percent**



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 391

## Directional Brightness of Fluorescent Samples

## TAPPI Official Test Method T452

| WebCode | Data Flag | Sample GZ71 Lab Mean | Sample GZ71 Diff from Grand Mean | Sample GZ71 CPV | Sample GZ72 Lab Mean | Sample GZ72 Diff from Grand Mean | Sample GZ72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2F6WTF | | 95.18 | -0.20 | -0.29 | 95.17 | -0.22 | -0.34 | TS |
| 38UPYX | | 93.70 | -1.69 | -2.44 | 93.76 | -1.64 | -2.48 | HT |
| 4AUDQT | | 96.45 | 1.06 | 1.53 | 96.45 | 1.05 | 1.60 | TS |
| 4FG9PC | | 95.74 | 0.35 | 0.51 | 95.82 | 0.43 | 0.65 | TS |
| AYDQZE | | 95.42 | 0.03 | 0.04 | 95.42 | 0.03 | 0.04 | TS |
| CBYXUK | | 95.12 | -0.27 | -0.39 | 95.20 | -0.20 | -0.30 | TT |
| DVH4VF | | 95.75 | 0.36 | 0.52 | 96.24 | 0.84 | 1.28 | TT |
| G48UB8 | | 95.07 | -0.32 | -0.46 | 95.22 | -0.18 | -0.27 | TS |
| H7Q9CM | | 95.21 | -0.18 | -0.25 | 94.99 | -0.40 | -0.61 | PP |
| K2N2R2 | | 95.20 | -0.19 | -0.27 | 95.24 | -0.16 | -0.24 | TS |
| PWFCA3 | | 96.14 | 0.75 | 1.09 | 96.13 | 0.74 | 1.12 | XX |
| TFVY7Y | * | 96.56 | 1.17 | 1.69 | 95.94 | 0.54 | 0.83 | TT |
| V8FVC6 | | 95.15 | -0.23 | -0.34 | 95.17 | -0.22 | -0.34 | TS |
| WMLJZP | | 95.08 | -0.31 | -0.44 | 95.08 | -0.32 | -0.48 | HT |
| ZUAN6L | | 95.04 | -0.35 | -0.50 | 95.09 | -0.31 | -0.47 | PP |

| Summary Statistics | Sample GZ71 | Sample GZ72 |
|---|---|---|
| **Grand Means** | 95.39 Percent | 95.40 Percent |
| **Stnd Dev Btwn Labs** | 0.69 Percent | 0.66 Percent |

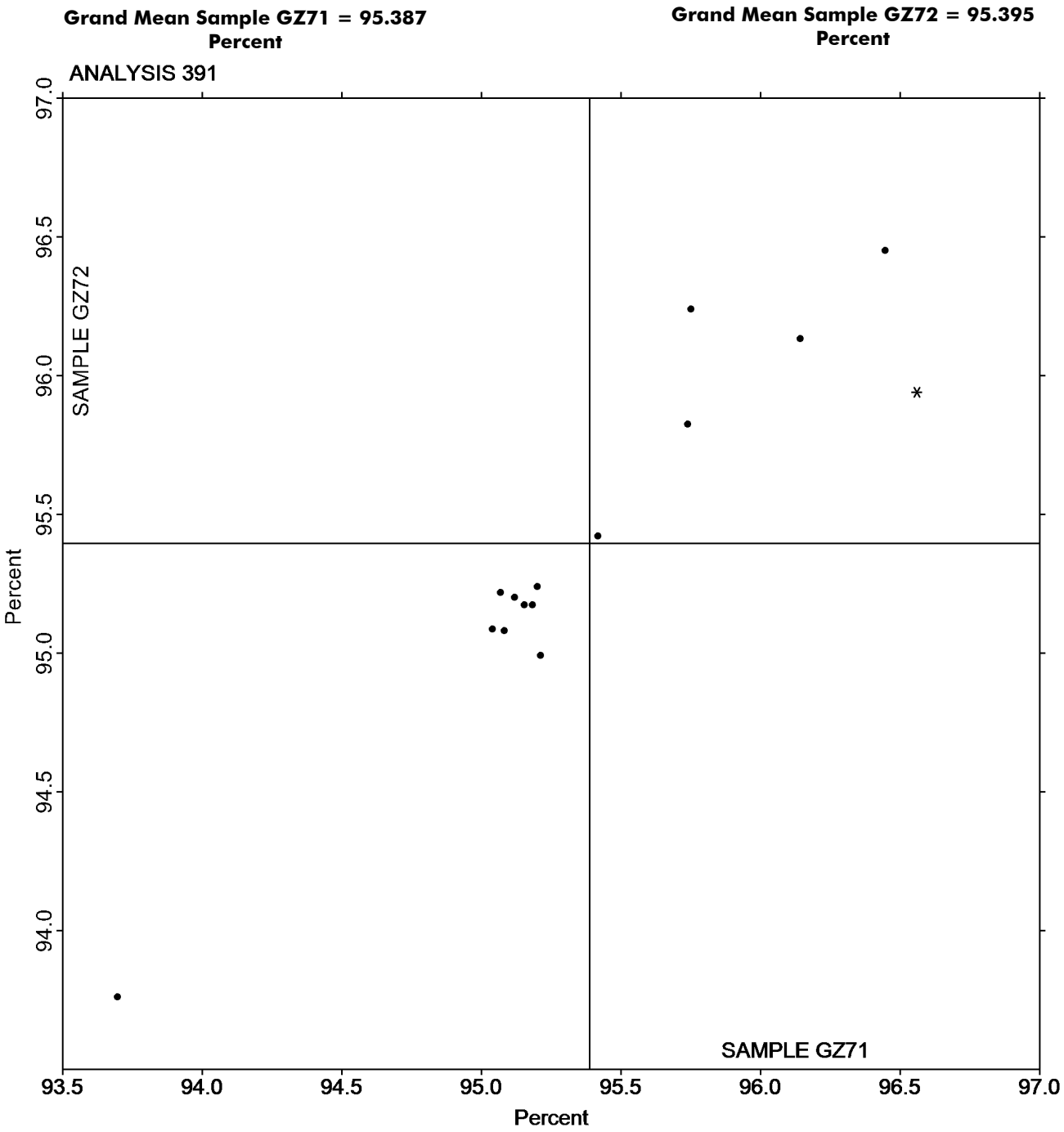
Statistics based on 15 of 15 reporting participants.

**Analysis Notes:**

DVH4VF - One determination removed from the Lab Mean of Sample GZ71 per Grubb's Test at 1% risk (TAPPI 1205).

**Key to Instrument Codes Reported by Participants**

| | | | |
|---|---|---|---|
| HT | Hunter UltraScan Vis | PP | Technidyne Profile/Plus |
| TS | Technidyne Brightimeter Micro S-5 | TT | Technidyne Brightimeter Micro S4-M |
| XX | Instrument make/model not specified by lab | | |




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
## TAPPI Official Test Method T525

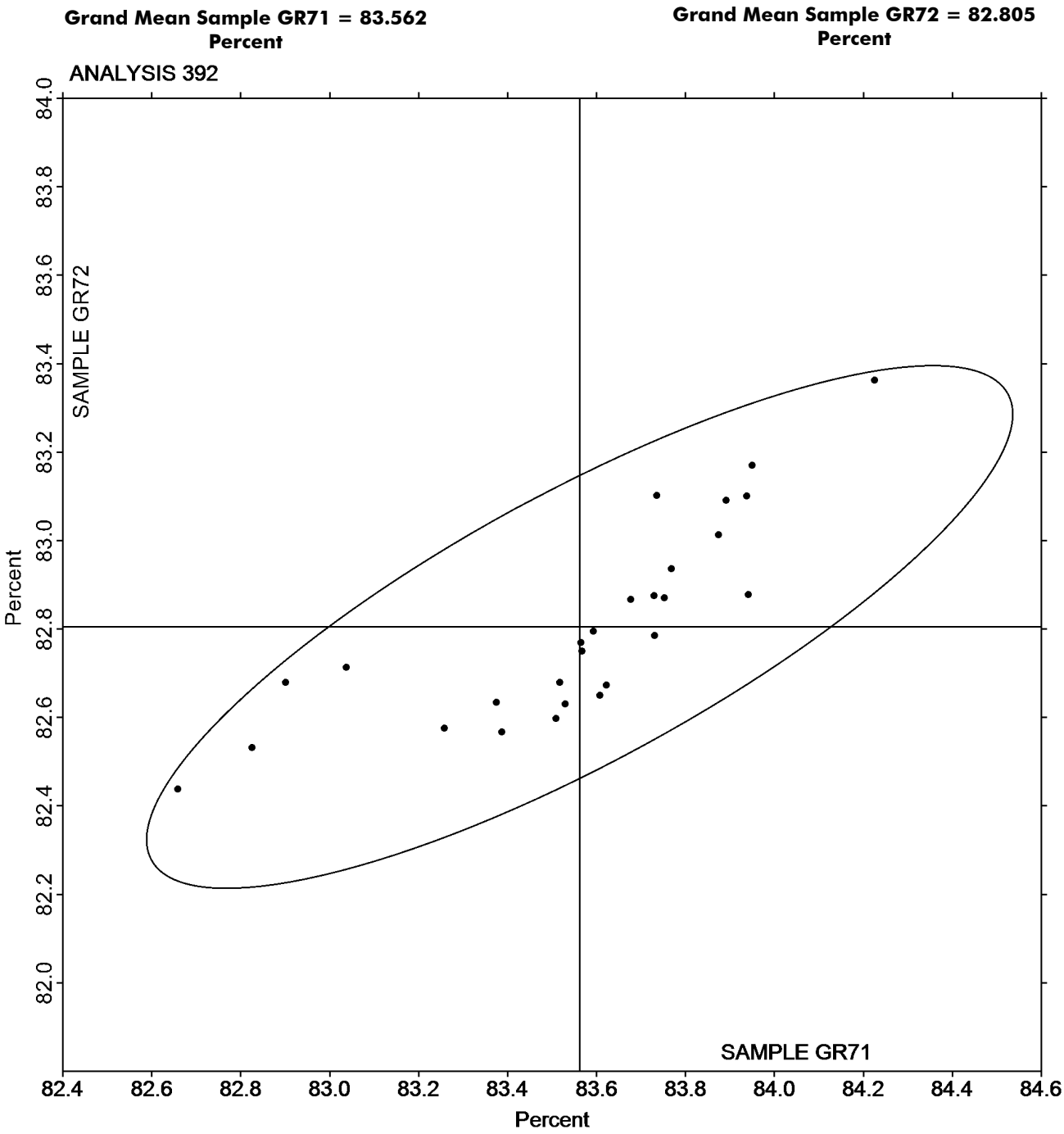
| WebCode | Data Flag | Sample GR71 Lab Mean | Sample GR71 Diff from Grand Mean | Sample GR71 CPV | Sample GR72 Lab Mean | Sample GR72 Diff from Grand Mean | Sample GR72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2ZVZGU | | 83.68 | 0.12 | 0.31 | 82.87 | 0.06 | 0.28 | TC |
| 7BJBAJ | | 83.95 | 0.39 | 1.06 | 83.17 | 0.37 | 1.64 | LT |
| 8AGZT8 | | 83.51 | -0.05 | -0.15 | 82.60 | -0.21 | -0.93 | LA |
| 8WFJPQ | | 82.90 | -0.66 | -1.80 | 82.68 | -0.13 | -0.57 | EG |
| 99LY7F | | 83.77 | 0.21 | 0.56 | 82.94 | 0.13 | 0.59 | TC |
| AQFRRD | | 83.38 | -0.19 | -0.51 | 82.63 | -0.17 | -0.77 | LT |
| ARBF73 | | 83.74 | 0.17 | 0.47 | 83.10 | 0.30 | 1.33 | AC |
| B474JH | | 83.73 | 0.17 | 0.46 | 82.79 | -0.02 | -0.09 | TC |
| B7RPC6 | | 83.04 | -0.52 | -1.43 | 82.71 | -0.09 | -0.41 | TZ |
| B9EC38 | | 83.75 | 0.19 | 0.52 | 82.87 | 0.07 | 0.29 | EE |
| C6U27E | | 83.61 | 0.05 | 0.12 | 82.65 | -0.15 | -0.69 | TC |
| EAXKLJ | | 83.62 | 0.06 | 0.16 | 82.67 | -0.13 | -0.59 | TC |
| F446AG | | 84.23 | 0.66 | 1.81 | 83.36 | 0.56 | 2.51 | TM |
| KBQLR9 | | 82.66 | -0.90 | -2.46 | 82.44 | -0.37 | -1.65 | TC |
| KU4AWT | | 83.39 | -0.17 | -0.48 | 82.57 | -0.24 | -1.07 | EG |
| LEQ2U4 | | 83.52 | -0.04 | -0.12 | 82.68 | -0.13 | -0.57 | TC |
| NGAQD8 | | 83.94 | 0.38 | 1.02 | 83.10 | 0.30 | 1.33 | TL |
| PHFREW | | 83.94 | 0.38 | 1.03 | 82.88 | 0.07 | 0.33 | TC |
| PWA2DW | | 82.83 | -0.74 | -2.01 | 82.53 | -0.27 | -1.23 | TC |
| QAU49T | | 83.57 | 0.01 | 0.02 | 82.75 | -0.05 | -0.25 | LE |
| QYDCPQ | | 83.59 | 0.03 | 0.09 | 82.80 | -0.01 | -0.04 | TC |
| RNFQ3R | | 83.89 | 0.33 | 0.90 | 83.09 | 0.29 | 1.29 | EF |
| RUG3W4 | | 83.57 | 0.00 | 0.01 | 82.77 | -0.04 | -0.16 | TC |
| UNMTYA | | 83.73 | 0.17 | 0.46 | 82.88 | 0.07 | 0.32 | LE |
| V8FVC6 | | 83.53 | -0.03 | -0.09 | 82.63 | -0.17 | -0.78 | TC |
| XUDDBT | | 83.88 | 0.31 | 0.85 | 83.01 | 0.21 | 0.93 | TC |
| XYAXJH | | 83.26 | -0.30 | -0.83 | 82.58 | -0.23 | -1.03 | TC |

| Summary Statistics | Sample GR71 | Sample GR72 |
|---|---|---|
| **Grand Means** | 83.56 Percent | 82.80 Percent |
| **Stnd Dev Btwn Labs** | 0.37 Percent | 0.22 Percent |

Statistics based on 27 of 27 reporting participants.

## Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| AC | ACS Spectro-Sensor II | EE | Datacolor Elrepho 2000 |
| EF | Datacolor Elrepho 3000 | EG | Datacolor Elrepho 450X |
| LA | L & W Elrepho - Autoline | LE | L & W Elrepho |
| LT | L & W Elrepho SE 071 | TC | Technidyne Color Touch Series |
| TL | Technidyne Technibrite TB-1 | TM | Technidyne Technibrite Micro TB-1C |
| TZ | Technibrite Model TB-1 | | |



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 394

## Fluorescent Component of Directional Brightness

## TAPPI Official Test Method T452

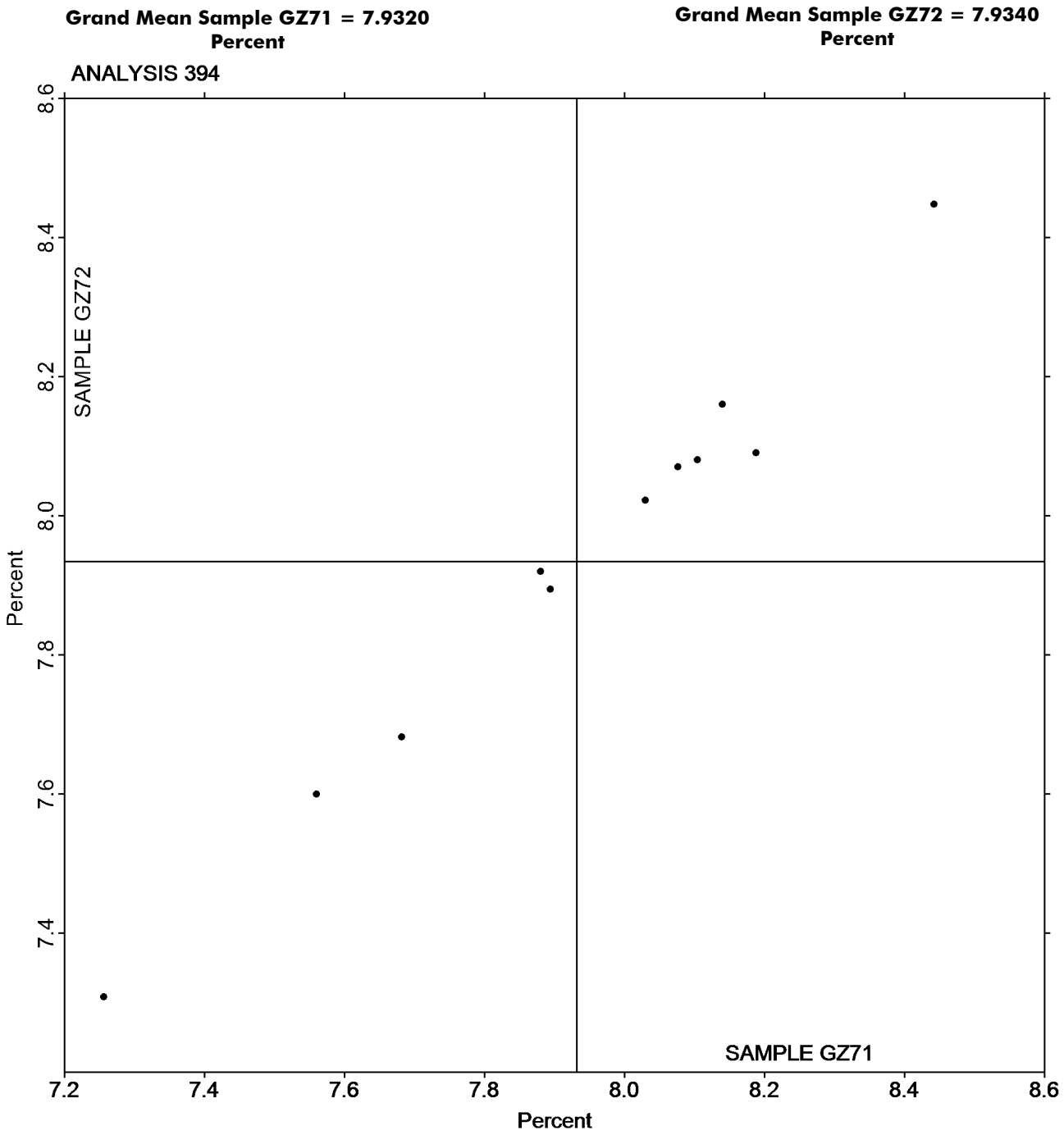
| WebCode | Data Flag | Sample GZ71 Lab Mean | Sample GZ71 Diff from Grand Mean | Sample GZ71 CPV | Sample GZ72 Lab Mean | Sample GZ72 Diff from Grand Mean | Sample GZ72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2F6WTF | | 8.188 | 0.256 | 0.78 | 8.090 | 0.156 | 0.50 | TS |
| 4AUDQT | | 7.880 | -0.052 | -0.16 | 7.920 | -0.014 | -0.05 | TS |
| 4FG9PC | | 8.442 | 0.510 | 1.54 | 8.448 | 0.514 | 1.66 | TS |
| AYDQZE | | 8.076 | 0.144 | 0.44 | 8.070 | 0.136 | 0.44 | TS |
| CBYXUK | | 7.560 | -0.372 | -1.13 | 7.600 | -0.334 | -1.08 | TT |
| DVH4VF | | 8.140 | 0.208 | 0.63 | 8.160 | 0.226 | 0.73 | TT |
| G48UB8 | | 8.104 | 0.172 | 0.52 | 8.080 | 0.146 | 0.47 | TS |
| H7Q9CM | | 7.894 | -0.038 | -0.12 | 7.894 | -0.040 | -0.13 | PP |
| PWFCA3 | | 7.256 | -0.676 | -2.05 | 7.308 | -0.626 | -2.02 | XX |
| V8FVC6 | | 7.682 | -0.250 | -0.76 | 7.682 | -0.252 | -0.82 | TS |
| ZUAN6L | | 8.030 | 0.098 | 0.30 | 8.022 | 0.088 | 0.28 | PP |

| Summary Statistics | Sample GZ71 | Sample GZ72 |
|---|---|---|
| **Grand Means** | 7.93 Percent | 7.93 Percent |
| **Stnd Dev Btwn Labs** | 0.33 Percent | 0.31 Percent |

Statistics based on 11 of 11 reporting participants.

### Key to Instrument Codes Reported by Participants

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




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

**Report #3022G, October 2019**

**Analysis 395**

**Specular Gloss at 75 Degrees - High Range**

**TAPPI Official Test Method T480**

| WebCode | Data Flag | Sample GT71 Lab Mean | Sample GT71 Diff from Grand Mean | Sample GT71 CPV | Sample GT72 Lab Mean | Sample GT72 Diff from Grand Mean | Sample GT72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 6ZYUPP | | 82.44 | 4.08 | 2.12 | 83.61 | 5.39 | 2.04 | TH |
| 7BJBAJ | | 77.23 | -1.13 | -0.59 | 77.30 | -0.92 | -0.35 | GA |
| 8DG7CJ | | 75.72 | -2.64 | -1.37 | 76.04 | -2.18 | -0.83 | LA |
| 8WFJPQ | | 79.32 | 0.96 | 0.50 | 78.69 | 0.47 | 0.18 | TH |
| ARBF73 | | 77.66 | -0.70 | -0.37 | 77.79 | -0.43 | -0.16 | LB |
| AVCHXP | | 79.23 | 0.87 | 0.45 | 79.21 | 0.99 | 0.38 | VM |
| AYDQZE | | 78.23 | -0.13 | -0.07 | 78.29 | 0.07 | 0.03 | LA |
| DVH4VF | | 75.07 | -3.29 | -1.71 | 74.97 | -3.25 | -1.23 | PP |
| H7Q9CM | | 79.14 | 0.78 | 0.40 | 79.60 | 1.38 | 0.52 | PP |
| NGAQD8 | | 77.55 | -0.81 | -0.42 | 77.86 | -0.36 | -0.14 | GM |
| RGBWXX | * | 77.38 | -0.98 | -0.51 | 72.51 | -5.71 | -2.16 | LF |
| RPQH82 | X | 66.08 | -12.28 | -6.38 | 66.07 | -12.15 | -4.61 | TH |
| TMV8VY | | 79.51 | 1.15 | 0.59 | 79.78 | 1.56 | 0.59 | GM |
| V8FVC6 | | 76.58 | -1.78 | -0.93 | 76.38 | -1.84 | -0.70 | LA |
| WNWEN3 | | 81.33 | 2.97 | 1.54 | 81.82 | 3.60 | 1.37 | LA |
| YBND3W | | 79.70 | 1.34 | 0.69 | 80.17 | 1.95 | 0.74 | TH |
| ZUAN6L | | 77.74 | -0.62 | -0.32 | 77.48 | -0.74 | -0.28 | PP |

| Summary Statistics | Sample GT71 | Sample GT72 |
|---|---|---|
| **Grand Means** | 78.36 Gloss Units | 78.22 Gloss Units |
| **Stnd Dev Btwn Labs** | 1.93 Gloss Units | 2.64 Gloss Units |

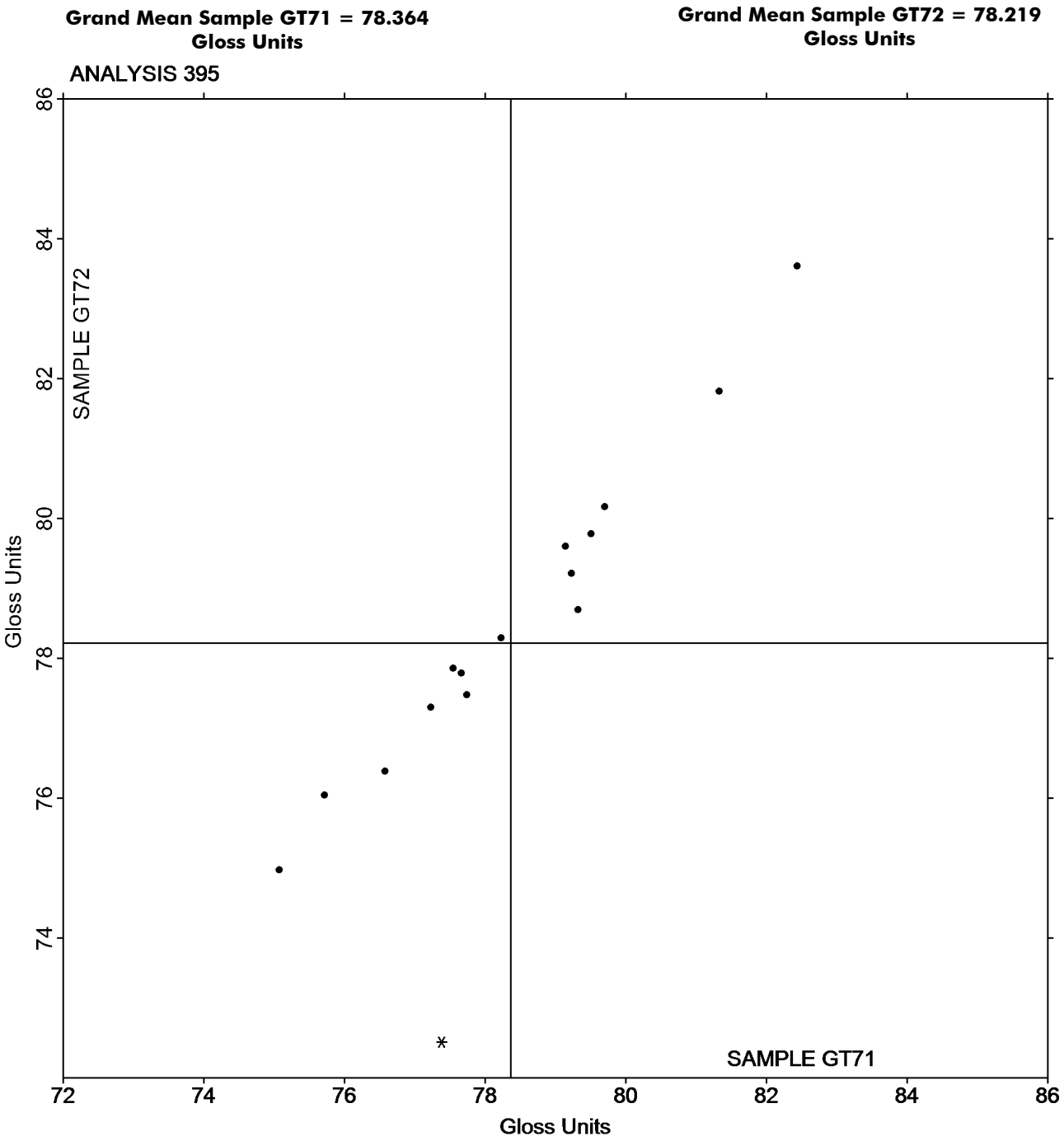
Statistics based on 16 of 17 reporting participants.

## Comments on Assigned Data Flags for Test #395

RPQH82 (X) - Extreme Data.

## Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| GA | BYK-Gardner (model not specified) | GM | BYK-Gardner micro-gloss |
| LA | L & W Gloss - Autoline 300 | LB | L & W Gloss Tester Code 224 |
| LF | L & W Autoline 400 | PP | Technidyne Profile/Plus |
| TH | Technidyne T480A | VM | Valmet PaperLab (was Kajaani/Robotest) |




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

## TAPPI Official Test Method T480

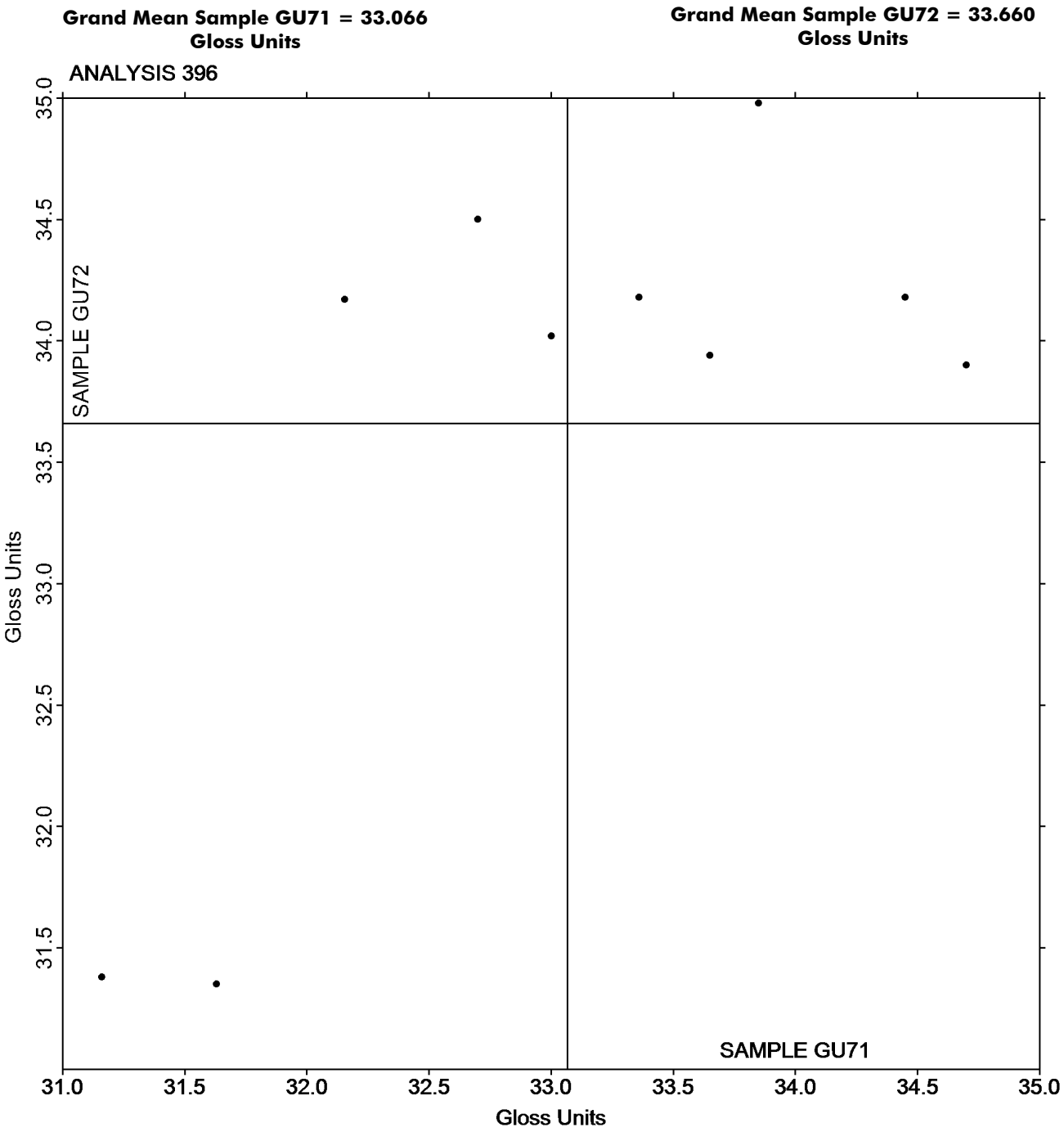
| WebCode | Data Flag | Sample GU71 Lab Mean | Sample GU71 Diff from Grand Mean | Sample GU71 CPV | Sample GU72 Lab Mean | Sample GU72 Diff from Grand Mean | Sample GU72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| ARBF73 | | 33.36 | 0.29 | 0.25 | 34.18 | 0.52 | 0.42 | LA |
| FLNTKC | | 33.00 | -0.07 | -0.06 | 34.02 | 0.36 | 0.29 | PP |
| H7Q9CM | | 33.85 | 0.78 | 0.67 | 34.98 | 1.32 | 1.06 | PP |
| K2MBGC | | 33.65 | 0.58 | 0.50 | 33.94 | 0.28 | 0.22 | GS |
| L9GV36 | | 32.70 | -0.37 | -0.31 | 34.50 | 0.84 | 0.67 | TH |
| PWA2DW | | 34.45 | 1.38 | 1.18 | 34.18 | 0.52 | 0.42 | PP |
| Q88HHR | | 32.16 | -0.91 | -0.78 | 34.17 | 0.51 | 0.41 | TH |
| V8FVC6 | | 31.16 | -1.91 | -1.63 | 31.38 | -2.28 | -1.82 | LA |
| XYAXJH | | 34.70 | 1.63 | 1.40 | 33.90 | 0.24 | 0.19 | TH |
| ZLWGKC | | 31.63 | -1.44 | -1.23 | 31.35 | -2.31 | -1.85 | ZT |

| Summary Statistics | Sample GU71 | Sample GU72 |
|---|---|---|
| **Grand Means** | 33.07 Gloss Units | 33.66 Gloss Units |
| **Stnd Dev Btwn Labs** | 1.17 Gloss Units | 1.25 Gloss Units |

Statistics based on 10 of 10 reporting participants.

### Key to Instrument Codes Reported by Participants

| | | | |
|---|---|---|---|
| GS | BYK-Gardner Glossgard II | LA | L & W Gloss - Autoline 300 |
| PP | Technidyne Profile/Plus | TH | Technidyne T480A |
| ZT | Zehntner ZLR 1020 | | |




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)

## TAPPI Official Test Method T410

| WebCode | Data Flag | Sample GW71 Lab Mean | Sample GW71 Diff from Grand Mean | Sample GW71 CPV | Sample GW72 Lab Mean | Sample GW72 Diff from Grand Mean | Sample GW72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 38UPYX | | 89.32 | -0.09 | -0.17 | 102.8 | -0.7 | -1.29 | ZZ |
| 4AUDQT | | 89.90 | 0.49 | 0.95 | 104.6 | 1.0 | 1.81 | ZZ |
| 638U7P | X | 88.75 | -0.66 | -1.28 | 1.0 | -102.5 | -183.81 | ZZ |
| 6UG9ZR | | 89.29 | -0.12 | -0.23 | 103.4 | -0.2 | -0.33 | ZZ |
| 7QCZ9M | | 88.81 | -0.60 | -1.17 | 103.6 | 0.1 | 0.13 | ZZ |
| ARBF73 | | 88.89 | -0.52 | -1.01 | 103.5 | -0.1 | -0.10 | ZZ |
| B9EC38 | | 89.44 | 0.03 | 0.05 | 103.9 | 0.4 | 0.70 | ZZ |
| CG77DB | | 89.91 | 0.50 | 0.96 | 103.9 | 0.4 | 0.66 | ZZ |
| CWHKWT | | 88.65 | -0.76 | -1.48 | 103.6 | 0.1 | 0.11 | ZZ |
| GRQ6DM | | 88.86 | -0.55 | -1.07 | 102.6 | -0.9 | -1.69 | ZZ |
| HRNR97 | | 90.23 | 0.82 | 1.59 | 104.5 | 1.0 | 1.76 | ZZ |
| JAJKT6 | * | 89.44 | 0.03 | 0.06 | 102.4 | -1.1 | -2.01 | ZZ |
| JFA23A | | 90.20 | 0.79 | 1.54 | 103.8 | 0.2 | 0.38 | ZZ |
| JGGGC2 | | 88.93 | -0.48 | -0.93 | 103.2 | -0.3 | -0.54 | ZZ |
| K2N2R2 | | 88.96 | -0.45 | -0.87 | 103.2 | -0.4 | -0.68 | ZZ |
| KB9GAA | | 90.65 | 1.24 | 2.41 | 104.3 | 0.8 | 1.38 | ZZ |
| KPUK3Z | | 89.35 | -0.06 | -0.12 | 103.3 | -0.3 | -0.52 | ZZ |
| KU4AWT | | 89.19 | -0.22 | -0.43 | 103.7 | 0.2 | 0.36 | ZZ |
| L9GV36 | | 89.80 | 0.39 | 0.77 | 103.4 | -0.2 | -0.32 | ZZ |
| LZ4PHU | | 89.39 | -0.02 | -0.05 | 103.4 | -0.1 | -0.24 | ZZ |
| N4UXJ7 | | 89.66 | 0.25 | 0.49 | 104.1 | 0.6 | 1.02 | ZZ |
| Q3ZYFR | | 89.52 | 0.11 | 0.22 | 103.5 | -0.1 | -0.11 | ZZ |
| Q6KXGU | | 89.57 | 0.16 | 0.31 | 103.9 | 0.3 | 0.59 | ZZ |
| Q88HHR | | 89.76 | 0.35 | 0.68 | 103.9 | 0.3 | 0.58 | ZZ |
| QAU49T | | 89.75 | 0.34 | 0.66 | 104.1 | 0.5 | 0.95 | ZZ |
| RMEZR3 | | 90.03 | 0.62 | 1.20 | 104.2 | 0.7 | 1.24 | ZZ |
| V2MVVN | | 89.09 | -0.32 | -0.62 | 102.8 | -0.8 | -1.40 | ZZ |
| WMLJZP | | 88.72 | -0.69 | -1.34 | 103.7 | 0.1 | 0.22 | ZZ |
| XYAXJH | | 89.04 | -0.37 | -0.72 | 102.8 | -0.8 | -1.38 | ZZ |
| XZ7H4W | | 88.54 | -0.87 | -1.69 | 102.8 | -0.7 | -1.25 | ZZ |
| ZLWGKC | | 89.41 | 0.00 | 0.00 | 103.5 | 0.0 | -0.03 | ZZ |

| Summary Statistics | Sample GW71 | Sample GW72 |
|---|---|---|
| **Grand Means** | 89.41 g/sq m | 103.54 g/sq m |
| **Stnd Dev Btwn Labs** | 0.51 g/sq m | 0.56 g/sq m |

Statistics based on 30 of 31 reporting participants.

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

638U7P (X) - Extreme Data for Sample GW72.

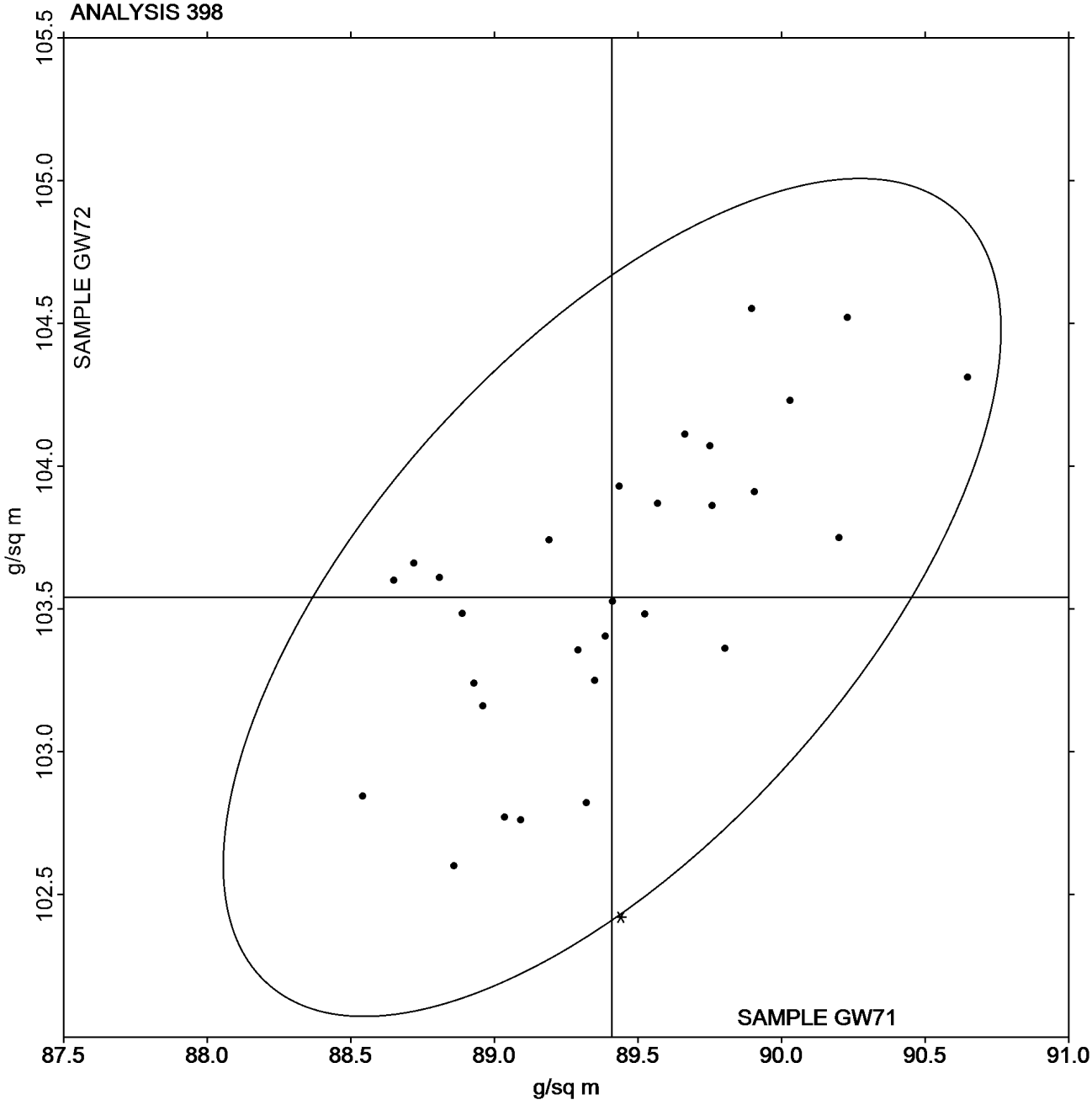
## Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

**Grand Mean Sample GW71 = 89.410 g/sq m**

**Grand Mean Sample GW72 = 103.54 g/sq m**



# Paper & Paperboard Interlaboratory Testing Program

## Analysis 399

## Sizing Test (Hercules Type)

## TAPPI Official Test Method T530

| WebCode | Data Flag | Sample GX71 Lab Mean | Sample GX71 Diff from Grand Mean | Sample GX71 CPV | Sample GX72 Lab Mean | Sample GX72 Diff from Grand Mean | Sample GX72 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2F6WTF | | 11.17 | 0.66 | 0.25 | 11.030 | 1.209 | 0.42 | HE |
| 2HBEVH | | 8.93 | -1.58 | -0.59 | 8.350 | -1.471 | -0.51 | HE |
| 2ZVZGU | X | 15.80 | 5.29 | 1.98 | 9.710 | -0.111 | -0.04 | XX |
| 4FG9PC | | 8.59 | -1.92 | -0.72 | 8.410 | -1.411 | -0.49 | HE |
| 638U7P | | 11.30 | 0.79 | 0.30 | 11.100 | 1.279 | 0.44 | HE |
| 7FAVYK | | 9.78 | -0.73 | -0.27 | 9.150 | -0.671 | -0.23 | HE |
| 7QCZ9M | X | 29.78 | 19.27 | 7.22 | 26.360 | 16.539 | 5.70 | XX |
| 9GF4XV | | 9.29 | -1.22 | -0.46 | 8.330 | -1.491 | -0.51 | HE |
| AQFRRD | | 8.78 | -1.73 | -0.65 | 6.910 | -2.911 | -1.00 | HE |
| AYDQZE | | 9.74 | -0.77 | -0.29 | 9.700 | -0.121 | -0.04 | HE |
| EZRK66 | | 13.25 | 2.74 | 1.03 | 13.660 | 3.839 | 1.32 | HE |
| FAVA4K | | 7.37 | -3.14 | -1.17 | 6.610 | -3.211 | -1.11 | HE |
| FLNTKC | | 16.60 | 6.09 | 2.28 | 15.820 | 5.999 | 2.07 | HE |
| G42GMB | * | 11.01 | 0.50 | 0.19 | 8.130 | -1.691 | -0.58 | HE |
| G48UB8 | | 8.94 | -1.57 | -0.59 | 8.360 | -1.461 | -0.50 | HE |
| GFU3T7 | | 9.45 | -1.06 | -0.40 | 9.750 | -0.071 | -0.02 | HE |
| H7Q9CM | | 6.69 | -3.82 | -1.43 | 6.450 | -3.371 | -1.16 | HE |
| HRNR97 | | 14.09 | 3.58 | 1.34 | 12.910 | 3.089 | 1.06 | HE |
| JN3EY3 | | 12.10 | 1.59 | 0.60 | 9.810 | -0.011 | 0.00 | HE |
| K2N2R2 | | 11.40 | 0.89 | 0.33 | 10.900 | 1.079 | 0.37 | HE |
| KMZ78U | X | 19.15 | 8.64 | 3.24 | 11.910 | 2.089 | 0.72 | HE |
| LAUANT | | 10.50 | -0.01 | 0.00 | 9.500 | -0.321 | -0.11 | HE |
| MCFEXB | | 9.19 | -1.32 | -0.49 | 7.800 | -2.021 | -0.70 | HE |
| QF3MA8 | | 10.09 | -0.42 | -0.16 | 8.710 | -1.111 | -0.38 | HE |
| TFVY7Y | | 10.96 | 0.45 | 0.17 | 10.260 | 0.439 | 0.15 | HE |
| TMV8VY | | 10.07 | -0.44 | -0.16 | 10.360 | 0.539 | 0.19 | HE |
| TVQCNZ | | 17.30 | 6.79 | 2.54 | 17.330 | 7.509 | 2.59 | HE |
| VGJATW | | 6.03 | -4.48 | -1.68 | 4.620 | -5.201 | -1.79 | XX |
| VQMFR6 | | 7.80 | -2.71 | -1.01 | 7.300 | -2.521 | -0.87 | HE |
| XYAXJH | | 13.30 | 2.79 | 1.05 | 13.900 | 4.079 | 1.41 | HE |

| Summary Statistics | Sample GX71 | Sample GX72 |
|---|---|---|
| **Grand Means** | 10.51 Seconds | 9.82 Seconds |
| **Stnd Dev Btwn Labs** | 2.67 Seconds | 2.90 Seconds |

Statistics based on 27 of 30 reporting participants.

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

2ZVZGU (X) - Inconsistent in testing between samples.

KMZ78U (X) - Data for sample GX71 are high. Inconsistent within the determinations of sample GX71.

7QCZ9M (X) - Extreme Data.

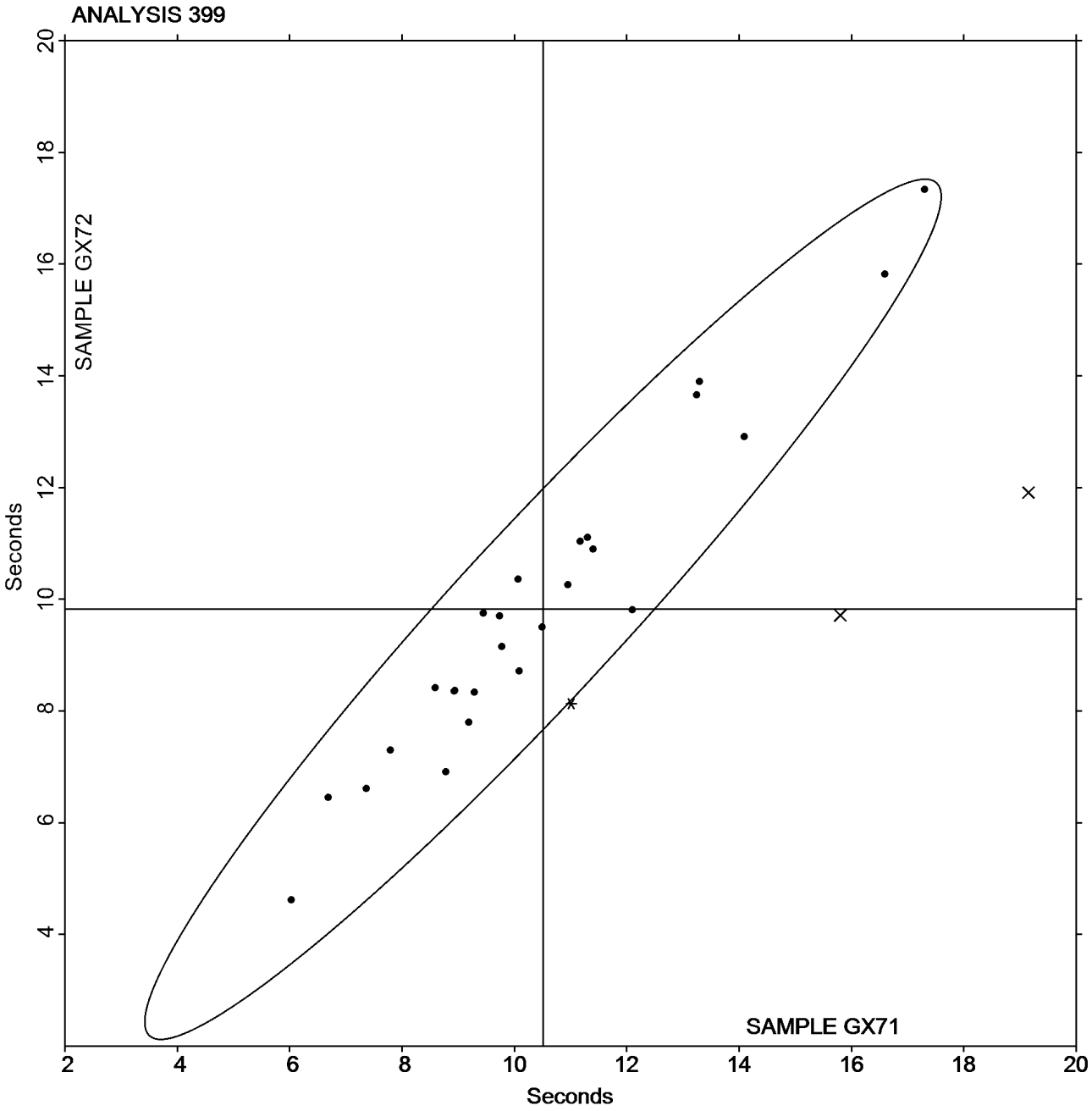
**Key to Instrument Codes Reported by Participants**

| | | | |
|---|---|---|---|
| HE | Hercules Sizing Tester | XX | Instrument make/model not specified by lab |

**Grand Mean Sample GX71 = 10.508 Seconds**

**Grand Mean Sample GX72 = 9.8207 Seconds**



-End of Report-