



Paper & Paperboard Testing Program

Summary Report #4281 - January 2024

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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 industries including color, rubber, plastics, fasteners and metals, containerboard, paper, agriculture, hemp, 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 100 countries, currently participate in the 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 Website. 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. |
| 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.



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3101 Thickness (Caliper), Printing papers TAPPI Official Test Method T411

| WebCode | Data Flag | Sample CP25 | | | Sample CP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CQFWB | | 3.901 | 0.024 | 0.37 | 3.861 | 0.001 | 0.01 |
| 3PBGR9 | | 3.854 | -0.022 | -0.34 | 3.820 | -0.040 | -0.62 |
| 833WJ6 | | 3.954 | 0.078 | 1.17 | 3.968 | 0.108 | 1.67 |
| 84G46L | | 3.913 | 0.037 | 0.56 | 3.886 | 0.026 | 0.40 |
| 96KEDU | | 3.910 | 0.034 | 0.51 | 3.910 | 0.050 | 0.77 |
| 9J6UGU | | 3.949 | 0.073 | 1.09 | 3.928 | 0.068 | 1.05 |
| 9KKXBL | | 3.898 | 0.022 | 0.32 | 3.828 | -0.032 | -0.50 |
| A9Y9R7 | | 3.930 | 0.053 | 0.81 | 3.906 | 0.045 | 0.70 |
| AGDXTZ | | 3.887 | 0.011 | 0.16 | 3.881 | 0.021 | 0.32 |
| BDP6U3 | | 3.819 | -0.057 | -0.86 | 3.775 | -0.085 | -1.32 |
| BP7PDY | | 3.815 | -0.061 | -0.93 | 3.819 | -0.041 | -0.64 |
| BQGRZX | | 3.853 | -0.023 | -0.35 | 3.862 | 0.001 | 0.02 |
| C9DGT7 | | 3.888 | 0.011 | 0.17 | 3.846 | -0.014 | -0.21 |
| CXTAUG | | 3.878 | 0.002 | 0.02 | 3.862 | 0.002 | 0.03 |
| D722Y6 | | 3.784 | -0.093 | -1.40 | 3.760 | -0.100 | -1.56 |
| DPJZ8N | | 3.882 | 0.005 | 0.08 | 3.906 | 0.045 | 0.70 |
| DQMTY2 | | 3.980 | 0.104 | 1.56 | 3.922 | 0.062 | 0.96 |
| F6KJVQ | | 3.863 | -0.014 | -0.20 | 3.836 | -0.024 | -0.38 |
| FGCD6Y | | 3.897 | 0.021 | 0.31 | 3.867 | 0.007 | 0.10 |
| FU333J | | 3.903 | 0.027 | 0.40 | 3.928 | 0.068 | 1.05 |
| H3PMJ2 | | 4.002 | 0.126 | 1.90 | 3.983 | 0.123 | 1.91 |
| HMRVDQ | | 3.933 | 0.057 | 0.85 | 3.917 | 0.057 | 0.89 |
| K64WMJ | | 3.809 | -0.067 | -1.02 | 3.799 | -0.061 | -0.95 |
| L94RJR | | 3.865 | -0.012 | -0.18 | 3.848 | -0.012 | -0.19 |
| LKE6Y7 | X | 3.474 | -0.402 | -6.07 | 3.473 | -0.387 | -6.00 |
| LPMK9V | | 3.758 | -0.118 | -1.79 | 3.730 | -0.130 | -2.02 |
| MMC3M6 | * | 3.720 | -0.156 | -2.36 | 3.781 | -0.079 | -1.23 |
| QTBQR2 | | 3.844 | -0.032 | -0.49 | 3.838 | -0.022 | -0.34 |
| R4P3MB | | 3.929 | 0.053 | 0.79 | 3.853 | -0.007 | -0.11 |
| RB7JDY | | 3.879 | 0.003 | 0.04 | 3.910 | 0.050 | 0.77 |
| RPP4YE | | 3.882 | 0.006 | 0.08 | 3.862 | 0.002 | 0.03 |
| TT9FCN | | 3.891 | 0.015 | 0.22 | 3.861 | 0.001 | 0.01 |
| U2T7BL | | 3.949 | 0.073 | 1.10 | 3.916 | 0.056 | 0.86 |
| UDNK9X | | 3.931 | 0.055 | 0.82 | 3.873 | 0.013 | 0.20 |
| UTG8GB | | 3.884 | 0.008 | 0.11 | 3.867 | 0.006 | 0.10 |
| V98CKX | | 3.895 | 0.018 | 0.28 | 3.839 | -0.022 | -0.34 |
| VALYWK | X | 3.570 | -0.306 | -4.62 | 3.560 | -0.300 | -4.66 |
| W69FF4 | * | 3.737 | -0.139 | -2.10 | 3.809 | -0.051 | -0.79 |
| Y8PJZ7 | * | 3.719 | -0.157 | -2.37 | 3.694 | -0.166 | -2.58 |
| YAC7TU | | 3.843 | -0.033 | -0.50 | 3.843 | -0.017 | -0.27 |



Paper & Paperboard Interlaboratory Testing Program
Analysis 3101
Thickness (Caliper), Printing papers
TAPPI Official Test Method T411

Report #4281,
January 2024

| WebCode | Data Flag | Sample CP25 | | | Sample CP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| YBPVV7 | | 3.897 | 0.021 | 0.31 | 3.935 | 0.075 | 1.16 |
| YJFDAE | | 3.948 | 0.072 | 1.08 | 3.948 | 0.088 | 1.36 |
| YT66W8 | | 3.807 | -0.069 | -1.05 | 3.734 | -0.126 | -1.96 |
| ZWJYBJ | | 3.931 | 0.054 | 0.82 | 3.920 | 0.059 | 0.92 |

| Summary Statistics | Sample CP25 | Sample CP26 |
|---------------------------|-------------|-------------|
| Grand Means | 3.88 mils | 3.86 mils |
| Stnd Dev Btwn Labs | 0.07 mils | 0.06 mils |

Statistics based on 42 of 44 reporting participants.

Comments on Assigned Data Flags for Test #3101

LKE6Y7 (X) - Extreme Data.

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



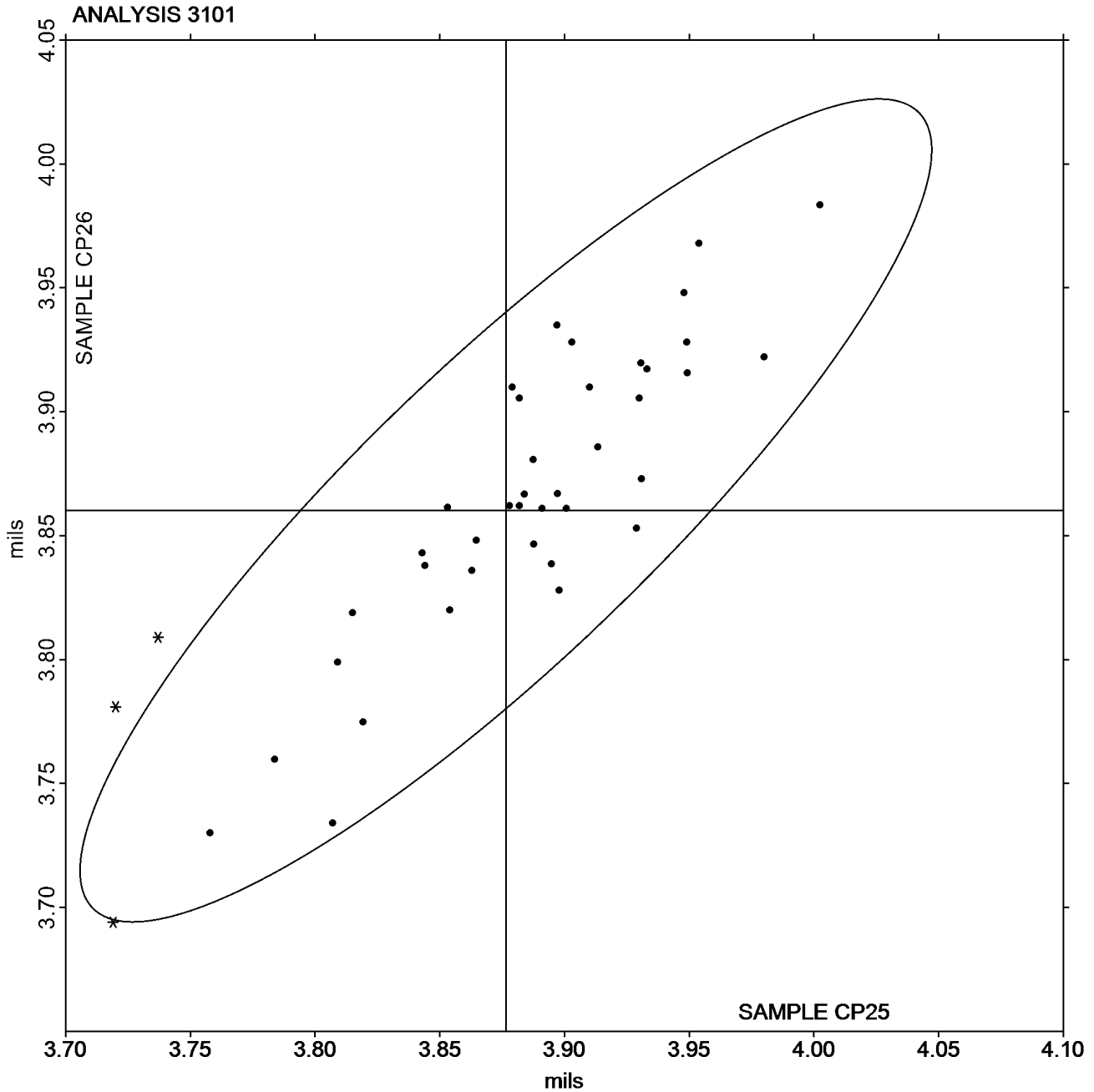
Paper & Paperboard Interlaboratory Testing Program

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January 2024

Analysis 3101 Thickness (Caliper), Printing papers TAPPI Official Test Method T411

Grand Mean Sample CP25 = 3.8765
mils

Grand Mean Sample CP26 = 3.8602
mils





Paper & Paperboard Interlaboratory Testing Program
Analysis 3111
Bursting Strength - Printing Papers
TAPPI Official Test Method T403

Report #4281,
January 2024

| WebCode | Data Flag | Sample BP25 | | | Sample BP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CQFWB | | 23.13 | -0.43 | -0.21 | 23.56 | 0.24 | 0.15 |
| 4H8UDD | | 24.40 | 0.85 | 0.41 | 23.40 | 0.08 | 0.05 |
| 9J6UGU | | 22.60 | -0.95 | -0.46 | 23.15 | -0.17 | -0.11 |
| 9KKXBL | | 26.32 | 2.76 | 1.34 | 26.20 | 2.88 | 1.77 |
| A9Y9R7 | | 21.60 | -1.96 | -0.95 | 22.74 | -0.58 | -0.36 |
| FU333J | | 24.80 | 1.25 | 0.60 | 24.85 | 1.53 | 0.94 |
| GHLHJM | | 21.91 | -1.64 | -0.80 | 20.82 | -2.50 | -1.54 |
| HB2YCT | | 22.31 | -1.25 | -0.61 | 22.80 | -0.52 | -0.32 |
| KRJEUF | | 19.90 | -3.65 | -1.77 | 20.00 | -3.32 | -2.05 |
| LKE6Y7 | | 25.60 | 2.05 | 0.99 | 25.00 | 1.68 | 1.03 |
| LPMK9V | | 21.12 | -2.43 | -1.18 | 20.34 | -2.98 | -1.84 |
| MYTPXQ | | 24.91 | 1.36 | 0.66 | 23.30 | -0.02 | -0.02 |
| QTBQR2 | | 23.50 | -0.05 | -0.03 | 23.60 | 0.28 | 0.17 |
| QVFEAC | | 26.60 | 3.05 | 1.48 | 26.02 | 2.70 | 1.66 |
| RB7JDY | | 22.46 | -1.09 | -0.53 | 21.90 | -1.42 | -0.88 |
| RPP4YE | | 25.44 | 1.89 | 0.91 | 24.68 | 1.36 | 0.84 |
| U2T7BL | | 22.90 | -0.65 | -0.32 | 22.96 | -0.36 | -0.22 |
| UDNK9X | | 21.50 | -2.05 | -1.00 | 22.70 | -0.62 | -0.38 |
| UTG8GB | | 22.90 | -0.65 | -0.32 | 23.02 | -0.30 | -0.18 |
| V98CKX | | 22.87 | -0.68 | -0.33 | 23.16 | -0.16 | -0.10 |
| W69FF4 | * | 28.00 | 4.45 | 2.16 | 24.60 | 1.28 | 0.79 |
| XJHNQR | | 22.95 | -0.60 | -0.29 | 23.29 | -0.03 | -0.02 |
| Y8PJZ7 | | 21.20 | -2.35 | -1.14 | 22.03 | -1.29 | -0.80 |
| Y9XY8C | | 26.40 | 2.85 | 1.38 | 25.60 | 2.28 | 1.40 |

| Summary Statistics | Sample BP25 | Sample BP26 |
|--|-------------|-------------|
| Grand Means | 23.55 psi | 23.32 psi |
| Std Dev Btwn Labs | 2.06 psi | 1.62 psi |
| Statistics based on 24 of 24 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

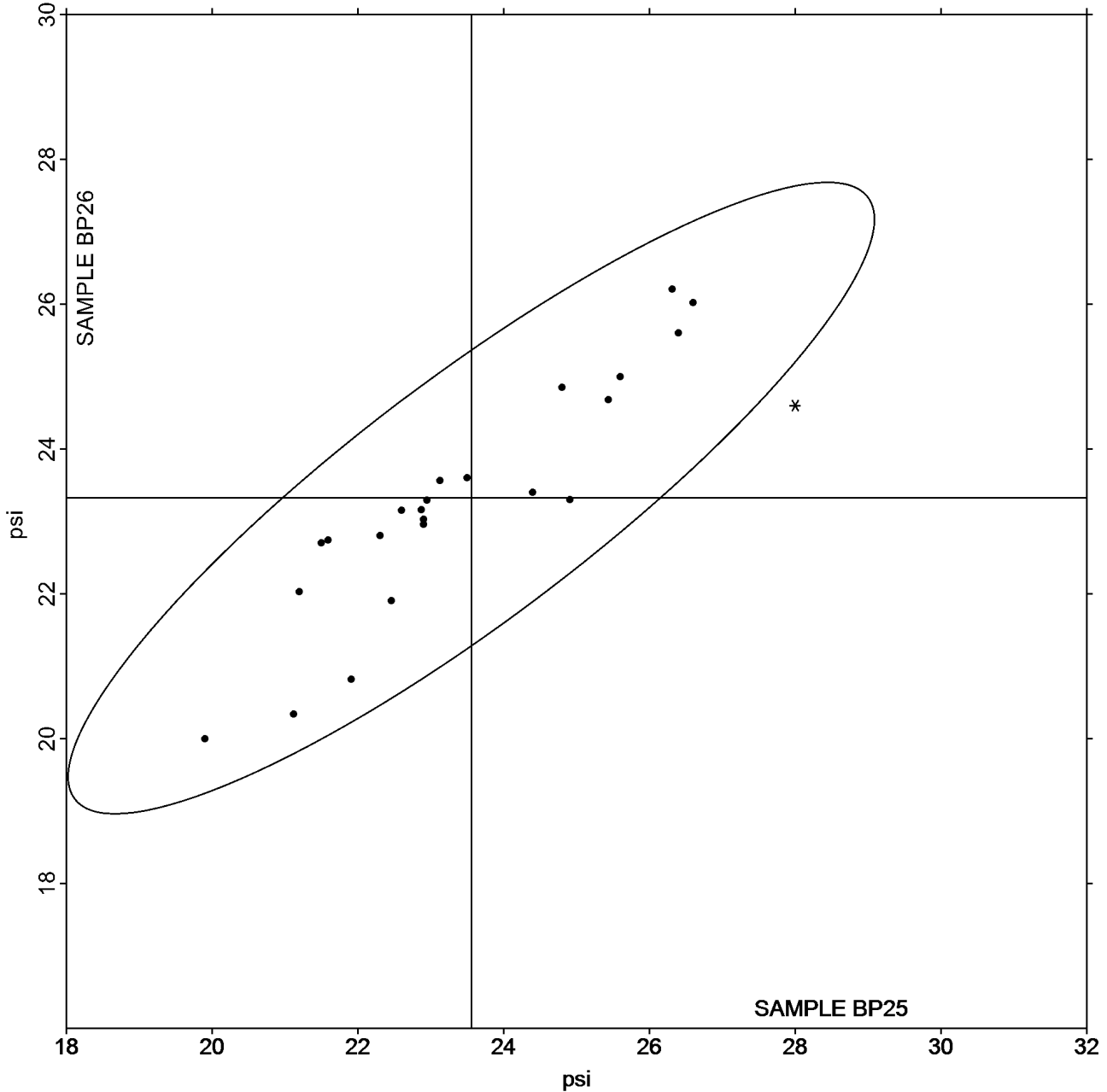
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Analysis 3111 Bursting Strength - Printing Papers TAPPI Official Test Method T403

Grand Mean Sample BP25 = 23.555
psi

Grand Mean Sample BP26 = 23.322
psi

ANALYSIS 3111





Paper & Paperboard Interlaboratory Testing Program
Analysis 3113
Tearing Strength - Printing Papers
TAPPI Official Test Method T414

Report #4281,
January 2024

| WebCode | Data Flag | Sample RP25 | | | Sample RP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CQFWB | | 46.01 | -0.52 | -0.10 | 45.63 | -0.67 | -0.12 |
| 4M2NDZ | | 45.96 | -0.57 | -0.11 | 47.00 | 0.70 | 0.13 |
| 646LA6 | | 42.84 | -3.69 | -0.69 | 41.56 | -4.74 | -0.87 |
| 7EXNNH | | 48.36 | 1.83 | 0.34 | 48.62 | 2.32 | 0.43 |
| 833WJ6 | | 46.10 | -0.43 | -0.08 | 45.30 | -1.00 | -0.18 |
| 84G46L | * | 50.40 | 3.87 | 0.73 | 53.60 | 7.30 | 1.34 |
| 96KEDU | | 39.90 | -6.63 | -1.24 | 37.55 | -8.75 | -1.61 |
| 9KKXBL | X | 40.10 | -6.43 | -1.21 | 47.75 | 1.45 | 0.27 |
| A9Y9R7 | | 49.28 | 2.76 | 0.52 | 48.50 | 2.20 | 0.40 |
| BP7PDY | | 43.43 | -3.10 | -0.58 | 41.19 | -5.11 | -0.94 |
| BQGRZX | | 47.42 | 0.89 | 0.17 | 50.10 | 3.80 | 0.70 |
| BQYH9H | | 40.86 | -5.67 | -1.06 | 40.46 | -5.84 | -1.07 |
| C9DGT7 | | 41.38 | -5.15 | -0.97 | 41.70 | -4.60 | -0.84 |
| DPJZ8N | | 51.41 | 4.89 | 0.92 | 51.06 | 4.76 | 0.87 |
| FU333J | | 51.60 | 5.07 | 0.95 | 50.20 | 3.90 | 0.72 |
| H3PMJ2 | | 46.85 | 0.32 | 0.06 | 46.44 | 0.14 | 0.03 |
| H7QNLJ | | 44.64 | -1.88 | -0.35 | 43.73 | -2.58 | -0.47 |
| HB2YCT | | 54.15 | 7.62 | 1.43 | 55.10 | 8.80 | 1.61 |
| HMRVDQ | | 54.20 | 7.67 | 1.44 | 54.15 | 7.85 | 1.44 |
| L3YVX7 | | 47.88 | 1.35 | 0.25 | 48.52 | 2.22 | 0.41 |
| L94RJR | | 43.50 | -3.03 | -0.57 | 43.82 | -2.48 | -0.45 |
| LKE6Y7 | | 46.20 | -0.33 | -0.06 | 45.50 | -0.80 | -0.15 |
| LPMK9V | | 49.30 | 2.77 | 0.52 | 48.68 | 2.38 | 0.44 |
| M2YBNC | | 37.54 | -8.99 | -1.69 | 36.19 | -10.11 | -1.85 |
| MMC3M6 | | 36.40 | -10.13 | -1.90 | 36.50 | -9.80 | -1.80 |
| MYTPXQ | | 48.26 | 1.73 | 0.33 | 47.90 | 1.60 | 0.29 |
| NRN93B | | 36.95 | -9.58 | -1.80 | 37.29 | -9.02 | -1.65 |
| PC7WMM | | 44.92 | -1.61 | -0.30 | 46.36 | 0.06 | 0.01 |
| QTBQR2 | | 46.00 | -0.53 | -0.10 | 46.40 | 0.10 | 0.02 |
| R4P3MB | | 38.16 | -8.37 | -1.57 | 39.77 | -6.53 | -1.20 |
| RB7JDY | | 46.50 | -0.03 | -0.01 | 45.82 | -0.48 | -0.09 |
| RPP4YE | | 44.40 | -2.13 | -0.40 | 45.20 | -1.10 | -0.20 |
| TT9FCN | | 43.42 | -3.11 | -0.58 | 43.20 | -3.10 | -0.57 |
| U6BQVG | * | 62.24 | 15.71 | 2.95 | 62.51 | 16.21 | 2.97 |
| UDNK9X | | 49.94 | 3.41 | 0.64 | 49.24 | 2.94 | 0.54 |
| UTG8GB | | 46.50 | -0.03 | -0.01 | 46.58 | 0.27 | 0.05 |
| V98CKX | | 46.95 | 0.42 | 0.08 | 45.88 | -0.42 | -0.08 |
| W3GG26 | | 46.50 | -0.03 | -0.01 | 47.34 | 1.03 | 0.19 |
| W69FF4 | | 44.00 | -2.53 | -0.47 | 42.72 | -3.58 | -0.66 |
| Y8PJZ7 | | 51.48 | 4.95 | 0.93 | 49.32 | 3.02 | 0.55 |



Paper & Paperboard Interlaboratory Testing Program

**Report #4281,
January 2024**

**Analysis 3113
Tearing Strength - Printing Papers
TAPPI Official Test Method T414**

| WebCode | Data Flag | <u>Sample RP25</u> | | | <u>Sample RP26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| Y9XY8C | | 56.40 | 9.87 | 1.85 | 55.00 | 8.70 | 1.60 |
| YAC7TU | | 53.60 | 7.07 | 1.33 | 51.60 | 5.30 | 0.97 |
| YJFDAE | | 42.30 | -4.23 | -0.79 | 41.44 | -4.86 | -0.89 |

| Summary Statistics | <u>Sample RP25</u> | <u>Sample RP26</u> |
|--|--------------------|--------------------|
| Grand Means | 46.53 Grams | 46.30 Grams |
| Stnd Dev Btwn Labs | 5.32 Grams | 5.45 Grams |
| Statistics based on 42 of 43 reporting participants. | | |

Comments on Assigned Data Flags for Test #3113

9KKXBL (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample RP26.

Analysis Notes:

FU333J - One determination removed from the Lab Mean of Sample RP25 per Grubb's Test at 1% risk (TAPPI 1205).



Paper & Paperboard Interlaboratory Testing Program

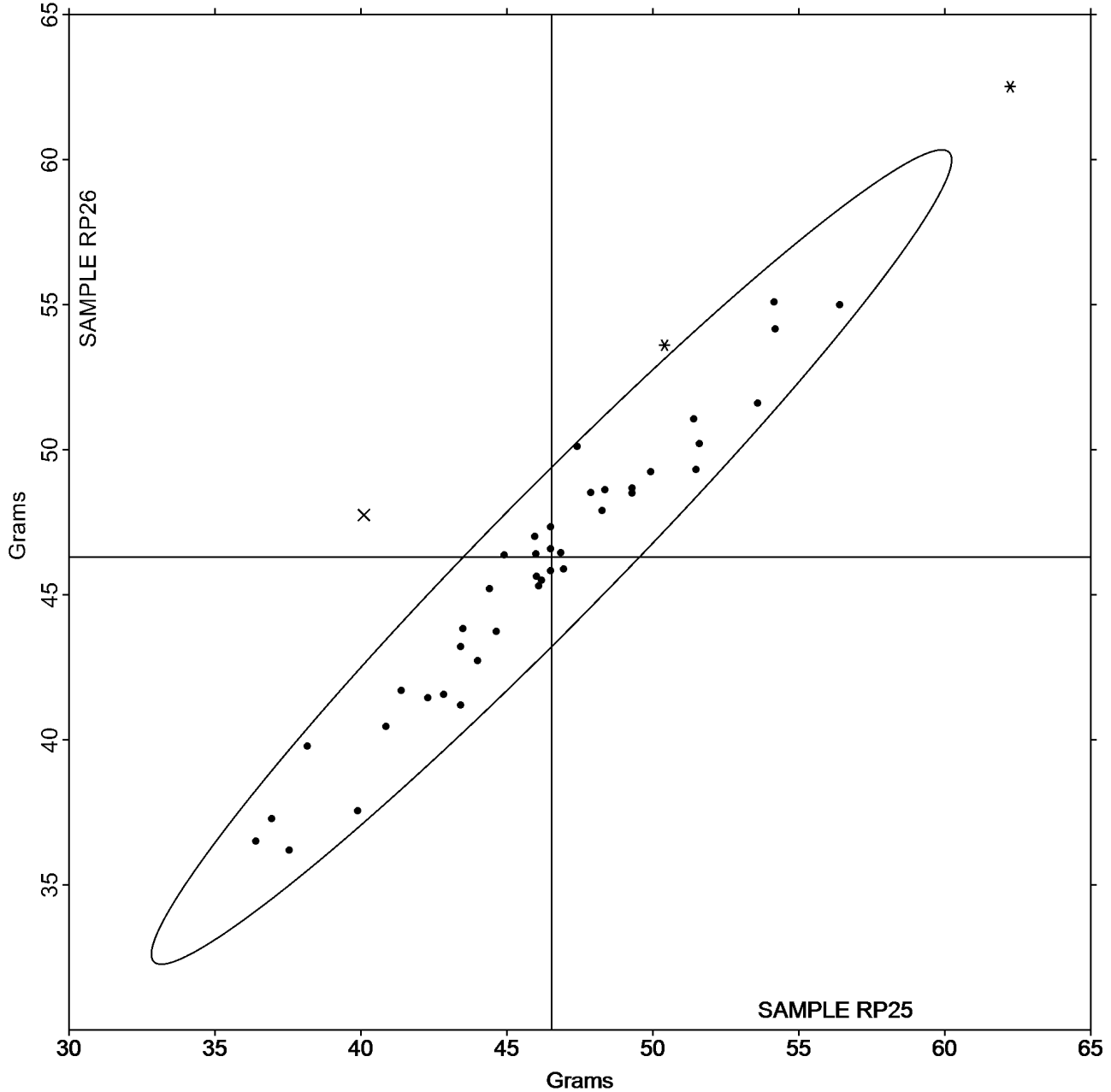
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Analysis 3113 Tearing Strength - Printing Papers TAPPI Official Test Method T414

Grand Mean Sample RP25 = 46.527
Grams

Grand Mean Sample RP26 = 46.301
Grams

ANALYSIS 3113





Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

| WebCode | Data Flag | Sample NP25 | | | Sample NP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 29VNQZ | | 3.906 | -0.367 | -1.20 | 3.902 | -0.419 | -1.34 |
| 2CQFWB | | 4.338 | 0.065 | 0.21 | 4.268 | -0.053 | -0.17 |
| 3PBGR9 | | 3.560 | -0.713 | -2.34 | 3.603 | -0.718 | -2.29 |
| 4E9JHE | | 3.781 | -0.492 | -1.61 | 3.791 | -0.530 | -1.69 |
| 646LA6 | | 4.723 | 0.450 | 1.47 | 4.796 | 0.475 | 1.52 |
| 833WJ6 | | 4.362 | 0.089 | 0.29 | 4.322 | 0.001 | 0.00 |
| 84G46L | | 4.485 | 0.212 | 0.69 | 4.380 | 0.059 | 0.19 |
| 96KEDU | | 4.470 | 0.197 | 0.64 | 4.490 | 0.169 | 0.54 |
| 9KKXBL | | 4.490 | 0.217 | 0.71 | 4.636 | 0.315 | 1.00 |
| A9Y9R7 | | 4.519 | 0.246 | 0.80 | 4.521 | 0.200 | 0.64 |
| AGDXTZ | | 4.723 | 0.450 | 1.47 | 4.586 | 0.265 | 0.85 |
| BP7PDY | | 4.156 | -0.117 | -0.38 | 4.408 | 0.087 | 0.28 |
| BQGRZX | | 4.067 | -0.206 | -0.67 | 4.162 | -0.159 | -0.51 |
| BQYH9H | | 4.619 | 0.346 | 1.13 | 4.696 | 0.375 | 1.20 |
| BZN777 | | 4.289 | 0.016 | 0.05 | 4.364 | 0.043 | 0.14 |
| C9DGT7 | * | 4.697 | 0.424 | 1.39 | 5.033 | 0.712 | 2.27 |
| CXTAUG | | 3.979 | -0.294 | -0.96 | 4.013 | -0.308 | -0.98 |
| DPJZ8N | | 4.056 | -0.217 | -0.71 | 4.173 | -0.148 | -0.47 |
| FGCD6Y | | 3.987 | -0.286 | -0.94 | 4.020 | -0.301 | -0.96 |
| FU333J | | 4.067 | -0.206 | -0.68 | 4.272 | -0.048 | -0.15 |
| H3PMJ2 | | 3.996 | -0.277 | -0.91 | 4.072 | -0.249 | -0.80 |
| H7QNLJ | | 4.210 | -0.063 | -0.21 | 4.220 | -0.101 | -0.32 |
| HB2YCT | | 4.522 | 0.249 | 0.82 | 4.579 | 0.258 | 0.82 |
| HMRVDQ | | 3.937 | -0.336 | -1.10 | 4.039 | -0.281 | -0.90 |
| L3YVX7 | | 3.964 | -0.309 | -1.01 | 4.064 | -0.257 | -0.82 |
| L94RJR | | 4.521 | 0.248 | 0.81 | 4.555 | 0.234 | 0.75 |
| LKE6Y7 | | 4.035 | -0.238 | -0.78 | 4.001 | -0.320 | -1.02 |
| LPMK9V | | 4.233 | -0.040 | -0.13 | 4.302 | -0.019 | -0.06 |
| M2YBNC | | 4.341 | 0.068 | 0.22 | 4.193 | -0.128 | -0.41 |
| MJ2TWV | | 4.497 | 0.224 | 0.73 | 4.287 | -0.033 | -0.11 |
| MMC3M6 | X | 2.189 | -2.084 | -6.83 | 2.576 | -1.745 | -5.57 |
| MYTPXQ | | 4.135 | -0.139 | -0.45 | 4.086 | -0.235 | -0.75 |
| QZVMXC | * | 4.390 | 0.117 | 0.38 | 4.746 | 0.425 | 1.36 |
| R4P3MB | X | 5.278 | 1.004 | 3.29 | 5.042 | 0.721 | 2.30 |
| RB7JDY | | 4.086 | -0.188 | -0.61 | 4.036 | -0.285 | -0.91 |
| RPP4YE | | 4.566 | 0.293 | 0.96 | 4.498 | 0.178 | 0.57 |
| TT9FCN | | 4.138 | -0.135 | -0.44 | 4.090 | -0.231 | -0.74 |
| U2T7BL | | 4.305 | 0.032 | 0.10 | 4.406 | 0.085 | 0.27 |
| U6BQVG | | 4.448 | 0.175 | 0.57 | 4.659 | 0.338 | 1.08 |
| UDNK9X | | 4.169 | -0.105 | -0.34 | 4.160 | -0.161 | -0.51 |



Paper & Paperboard Interlaboratory Testing Program
Analysis 3115
Tensile Breaking Strength - Printing Papers
TAPPI Official Test Method T494

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample NP25</u> | | | <u>Sample NP26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| UTG8GB | | 4.137 | -0.137 | -0.45 | 4.128 | -0.193 | -0.62 |
| V98CKX | | 4.427 | 0.154 | 0.50 | 4.410 | 0.089 | 0.28 |
| W69FF4 | | 4.840 | 0.567 | 1.86 | 4.999 | 0.678 | 2.17 |
| Y8PJZ7 | | 4.823 | 0.549 | 1.80 | 4.781 | 0.460 | 1.47 |
| YAC7TU | | 4.643 | 0.370 | 1.21 | 4.624 | 0.303 | 0.97 |
| YJFDAE | * | 3.659 | -0.615 | -2.01 | 4.038 | -0.283 | -0.90 |
| ZWJYBJ | | 3.998 | -0.275 | -0.90 | 4.034 | -0.287 | -0.92 |

| Summary Statistics | <u>Sample NP25</u> | <u>Sample NP26</u> |
|---------------------------|--------------------|--------------------|
| Grand Means | 4.27 kN/m | 4.32 kN/m |
| Std Dev Btwn Labs | 0.31 kN/m | 0.31 kN/m |

Statistics based on 45 of 47 reporting participants.

Comments on Assigned Data Flags for Test #3115

MMC3M6 (X) - Extreme Data.

R4P3MB (X) - Data for sample NP25 are high.



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

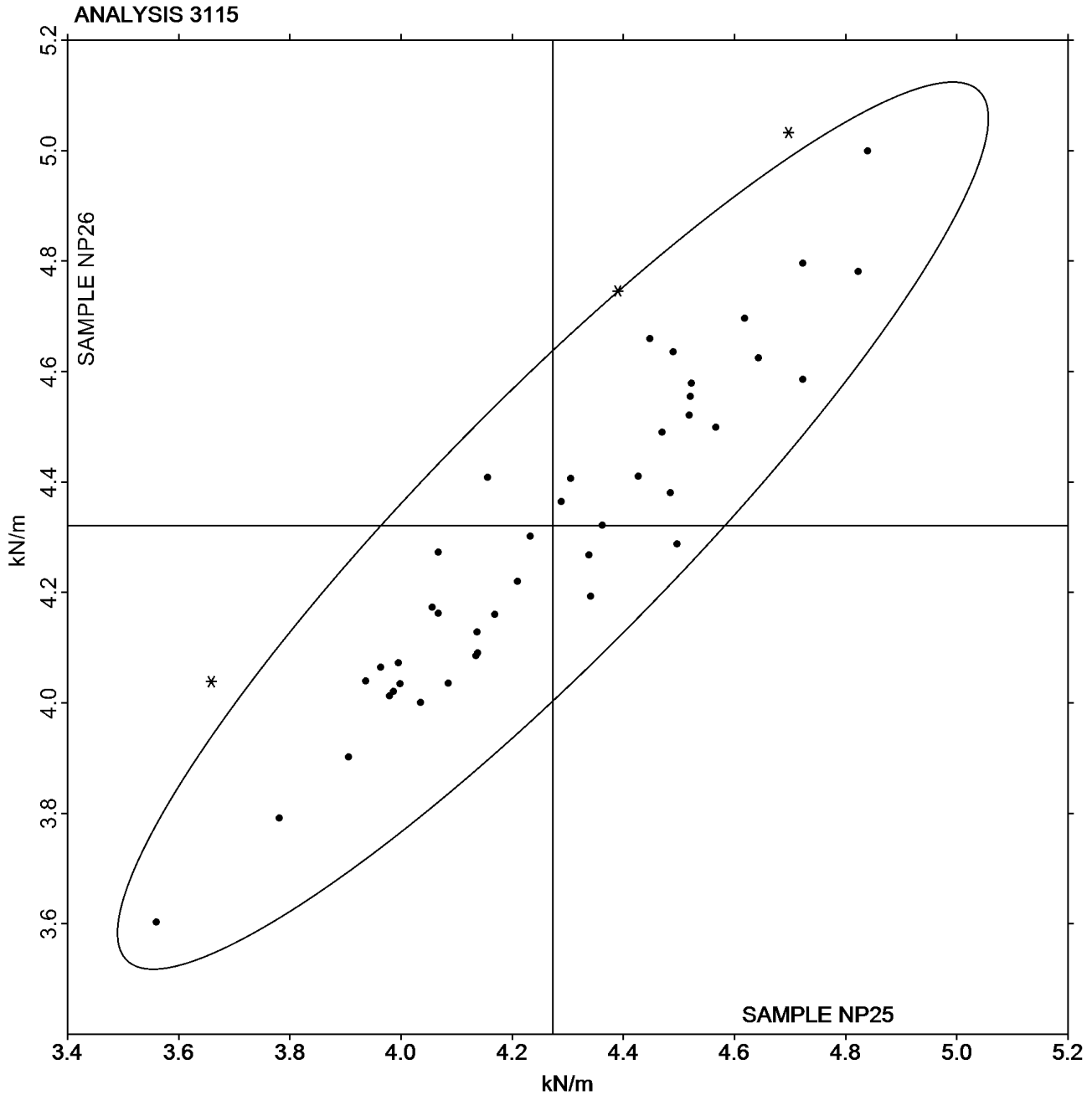
Analysis 3115

Tensile Breaking Strength - Printing Papers

TAPPI Official Test Method T494

Grand Mean Sample NP25 = 4.2732
kN/m

Grand Mean Sample NP26 = 4.3210
kN/m





Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3116

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

| WebCode | Data Flag | Sample NP25 | | | Sample NP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 29VNQZ | | 43.33 | -0.30 | -0.05 | 43.79 | 0.02 | 0.00 |
| 2CQFWB | | 51.33 | 7.70 | 1.29 | 49.70 | 5.93 | 1.27 |
| 3PBGR9 | | 40.21 | -3.42 | -0.57 | 41.75 | -2.02 | -0.43 |
| 4E9JHE | | 42.85 | -0.77 | -0.13 | 44.96 | 1.19 | 0.26 |
| 646LA6 | | 36.22 | -7.41 | -1.24 | 39.64 | -4.13 | -0.88 |
| 833WJ6 | | 47.14 | 3.51 | 0.59 | 45.53 | 1.76 | 0.38 |
| 96KEDU | | 47.35 | 3.72 | 0.62 | 46.90 | 3.13 | 0.67 |
| A9Y9R7 | | 48.82 | 5.19 | 0.87 | 47.89 | 4.12 | 0.88 |
| AGDXTZ | | 51.00 | 7.37 | 1.23 | 49.47 | 5.71 | 1.22 |
| BQGRZX | | 41.77 | -1.86 | -0.31 | 43.52 | -0.25 | -0.05 |
| BQYH9H | | 38.54 | -5.08 | -0.85 | 40.19 | -3.58 | -0.77 |
| BZN777 | | 50.95 | 7.32 | 1.22 | 50.10 | 6.33 | 1.36 |
| C9DGT7 | X | 3.44 | -40.19 | -6.72 | 3.65 | -40.12 | -8.59 |
| CXTAUG | | 45.10 | 1.47 | 0.25 | 46.72 | 2.96 | 0.63 |
| DPJZ8N | | 43.05 | -0.58 | -0.10 | 45.39 | 1.62 | 0.35 |
| FGCD6Y | | 38.89 | -4.73 | -0.79 | 41.63 | -2.14 | -0.46 |
| H3PMJ2 | | 40.79 | -2.84 | -0.47 | 41.87 | -1.90 | -0.41 |
| H7QNLJ | | 45.46 | 1.83 | 0.31 | 43.56 | -0.21 | -0.04 |
| HB2YCT | | 32.03 | -11.59 | -1.94 | 32.97 | -10.80 | -2.31 |
| HMRVDQ | | 37.50 | -6.13 | -1.02 | 42.44 | -1.33 | -0.28 |
| L94RJR | | 38.49 | -5.14 | -0.86 | 36.62 | -7.15 | -1.53 |
| LKE6Y7 | | 39.92 | -3.71 | -0.62 | 39.00 | -4.77 | -1.02 |
| LPMK9V | * | 51.24 | 7.61 | 1.27 | 54.85 | 11.08 | 2.37 |
| MJ2TWV | | 52.92 | 9.30 | 1.55 | 48.35 | 4.58 | 0.98 |
| MMC3M6 | X | 25.97 | -17.66 | -2.95 | 24.53 | -19.24 | -4.12 |
| MYTPXQ | | 44.24 | 0.61 | 0.10 | 44.45 | 0.68 | 0.15 |
| QZVMXC | | 34.60 | -9.02 | -1.51 | 39.42 | -4.35 | -0.93 |
| R4P3MB | | 48.41 | 4.78 | 0.80 | 44.77 | 1.01 | 0.22 |
| RB7JDY | | 46.93 | 3.31 | 0.55 | 44.66 | 0.89 | 0.19 |
| RPP4YE | | 39.49 | -4.14 | -0.69 | 37.80 | -5.96 | -1.28 |
| U2T7BL | | 46.57 | 2.94 | 0.49 | 48.87 | 5.10 | 1.09 |
| U6BQVG | | 28.87 | -14.76 | -2.47 | 32.38 | -11.38 | -2.44 |
| UDNK9X | | 41.72 | -1.90 | -0.32 | 40.95 | -2.82 | -0.60 |
| V98CKX | | 47.53 | 3.90 | 0.65 | 45.49 | 1.72 | 0.37 |
| W69FF4 | | 39.51 | -4.12 | -0.69 | 43.66 | -0.10 | -0.02 |
| Y8PJZ7 | * | 55.15 | 11.52 | 1.93 | 46.10 | 2.33 | 0.50 |
| YAC7TU | | 46.94 | 3.31 | 0.55 | 46.21 | 2.45 | 0.52 |
| ZWJYBJ | | 45.72 | 2.09 | 0.35 | 44.03 | 0.26 | 0.06 |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3116

Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

| Summary Statistics | <u>Sample NP25</u> | <u>Sample NP26</u> |
|--|--------------------|--------------------|
| Grand Means | 43.63 Joules/sq m | 43.77 Joules/sq m |
| Stnd Dev Btwn Labs | 5.98 Joules/sq m | 4.67 Joules/sq m |
| Statistics based on 36 of 38 reporting participants. | | |

Comments on Assigned Data Flags for Test #3116

MMC3M6 (X) - Data for both samples are low.

C9DGT7 (X) - Extreme Data.



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3116

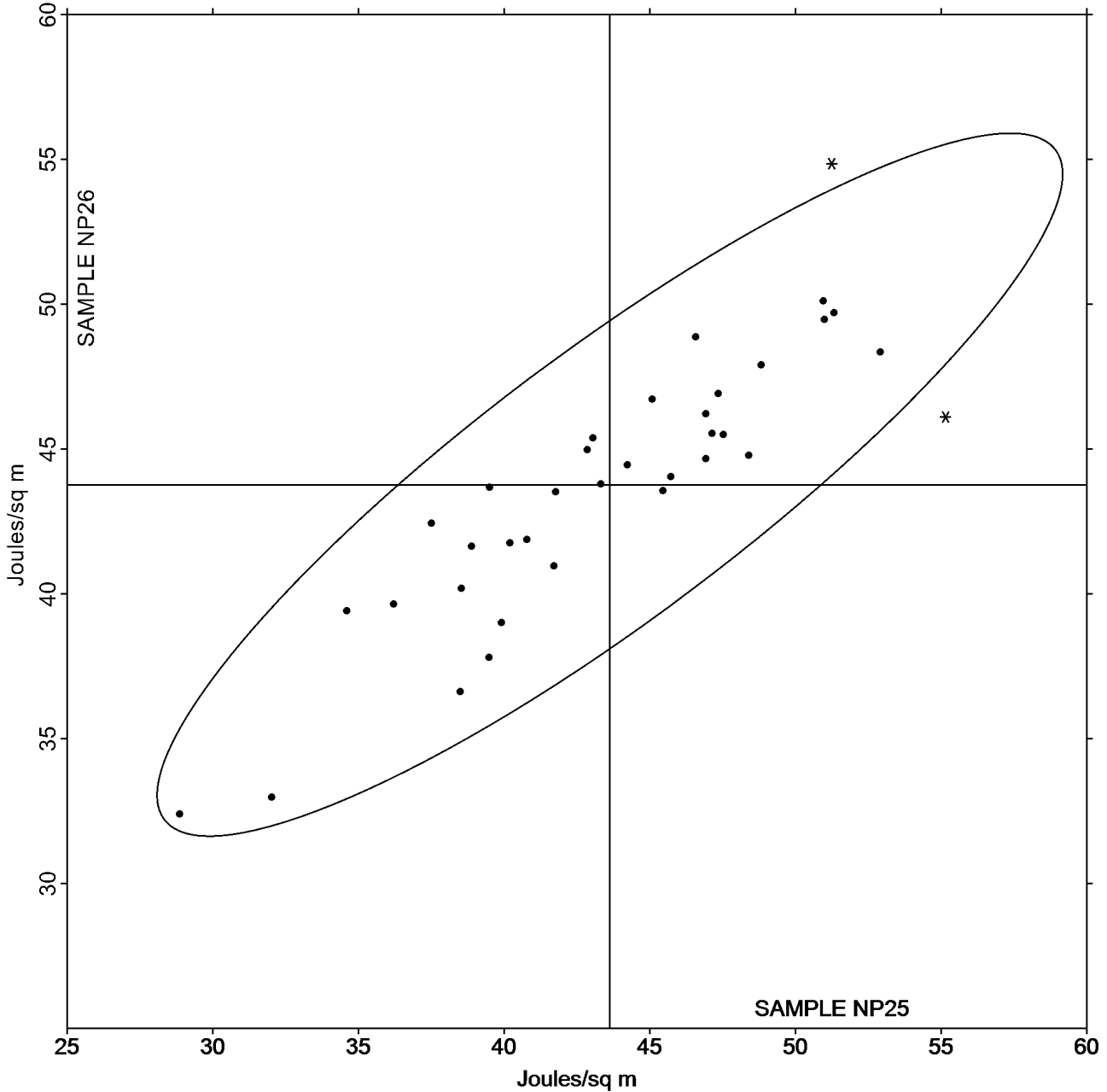
Tensile Energy Absorption - Printing Papers

TAPPI Official Test Method T494

Grand Mean Sample NP25 = 43.627
Joules/sq m

Grand Mean Sample NP26 = 43.768
Joules/sq m

ANALYSIS 3116





Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3117

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

| WebCode | Data Flag | Sample NP25 | | | Sample NP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 29VNQZ | | 1.694 | 0.079 | 0.38 | 1.710 | 0.073 | 0.37 |
| 2CQFWB | * | 1.776 | 0.161 | 0.78 | 1.589 | -0.048 | -0.24 |
| 3PBGR9 | | 1.740 | 0.125 | 0.61 | 1.778 | 0.141 | 0.71 |
| 4E9JHE | | 1.887 | 0.272 | 1.32 | 2.004 | 0.367 | 1.85 |
| 646LA6 | | 1.272 | -0.343 | -1.67 | 1.346 | -0.291 | -1.47 |
| 833WJ6 | | 1.902 | 0.287 | 1.39 | 1.856 | 0.219 | 1.10 |
| 96KEDU | | 1.470 | -0.145 | -0.71 | 1.470 | -0.167 | -0.84 |
| A9Y9R7 | | 1.557 | -0.058 | -0.28 | 1.532 | -0.105 | -0.53 |
| AGDXTZ | | 1.586 | -0.029 | -0.14 | 1.585 | -0.052 | -0.26 |
| BQGRZX | | 1.717 | 0.102 | 0.49 | 1.915 | 0.278 | 1.40 |
| BQYH9H | | 1.366 | -0.249 | -1.21 | 1.391 | -0.246 | -1.24 |
| BZN777 | | 1.850 | 0.235 | 1.14 | 1.813 | 0.176 | 0.89 |
| C9DGT7 | | 1.568 | -0.047 | -0.23 | 1.624 | -0.013 | -0.07 |
| CXTAUG | | 1.744 | 0.129 | 0.63 | 1.787 | 0.150 | 0.76 |
| DPJZ8N | | 1.903 | 0.288 | 1.40 | 1.927 | 0.290 | 1.46 |
| FGCD6Y | | 1.508 | -0.107 | -0.52 | 1.590 | -0.047 | -0.24 |
| FU333J | | 1.639 | 0.024 | 0.12 | 1.758 | 0.121 | 0.61 |
| H3PMJ2 | | 1.567 | -0.048 | -0.23 | 1.576 | -0.061 | -0.31 |
| H7QNLJ | | 1.710 | 0.095 | 0.46 | 1.680 | 0.043 | 0.22 |
| HB2YCT | | 1.368 | -0.247 | -1.20 | 1.391 | -0.246 | -1.24 |
| HMRVDQ | | 1.480 | -0.136 | -0.66 | 1.636 | -0.002 | -0.01 |
| L94RJR | | 1.363 | -0.252 | -1.23 | 1.298 | -0.339 | -1.71 |
| LKE6Y7 | | 1.568 | -0.047 | -0.23 | 1.546 | -0.091 | -0.46 |
| LPMK9V | | 1.989 | 0.374 | 1.82 | 2.091 | 0.454 | 2.28 |
| MJ2TWV | | 1.882 | 0.267 | 1.30 | 1.827 | 0.190 | 0.95 |
| MYTPXQ | | 1.644 | 0.029 | 0.14 | 1.669 | 0.032 | 0.16 |
| QZVMXC | | 1.326 | -0.289 | -1.41 | 1.411 | -0.226 | -1.14 |
| R4P3MB | | 1.483 | -0.132 | -0.64 | 1.411 | -0.226 | -1.14 |
| RB7JDY | | 1.786 | 0.171 | 0.83 | 1.726 | 0.089 | 0.45 |
| RPP4YE | | 2.108 | 0.493 | 2.40 | 2.058 | 0.421 | 2.12 |
| TT9FCN | | 1.476 | -0.139 | -0.68 | 1.450 | -0.187 | -0.94 |
| U2T7BL | | 1.616 | 0.001 | 0.00 | 1.700 | 0.063 | 0.32 |
| U6BQVG | | 1.309 | -0.306 | -1.49 | 1.397 | -0.240 | -1.21 |
| UDNK9X | | 1.546 | -0.069 | -0.34 | 1.527 | -0.110 | -0.55 |
| V98CKX | | 1.645 | 0.030 | 0.14 | 1.616 | -0.021 | -0.11 |
| W69FF4 | | 1.313 | -0.302 | -1.47 | 1.396 | -0.241 | -1.21 |
| Y8PJZ7 | | 1.531 | -0.084 | -0.41 | 1.545 | -0.092 | -0.46 |
| YAC7TU | | 1.608 | -0.007 | -0.04 | 1.600 | -0.037 | -0.19 |
| YJFDAE | | 1.338 | -0.277 | -1.35 | 1.552 | -0.085 | -0.43 |
| ZWJYBJ | | 1.776 | 0.161 | 0.78 | 1.707 | 0.070 | 0.35 |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3117

Elongation to Break - Printing Papers

TAPPI Official Test Method T494

| Summary Statistics | <u>Sample NP25</u> | <u>Sample NP26</u> |
|---------------------------|---------------------------|---------------------------|
| Grand Means | 1.62 Percent | 1.64 Percent |
| Stnd Dev Btwn Labs | 0.21 Percent | 0.20 Percent |

Statistics based on 40 of 40 reporting participants.



Paper & Paperboard Interlaboratory Testing Program

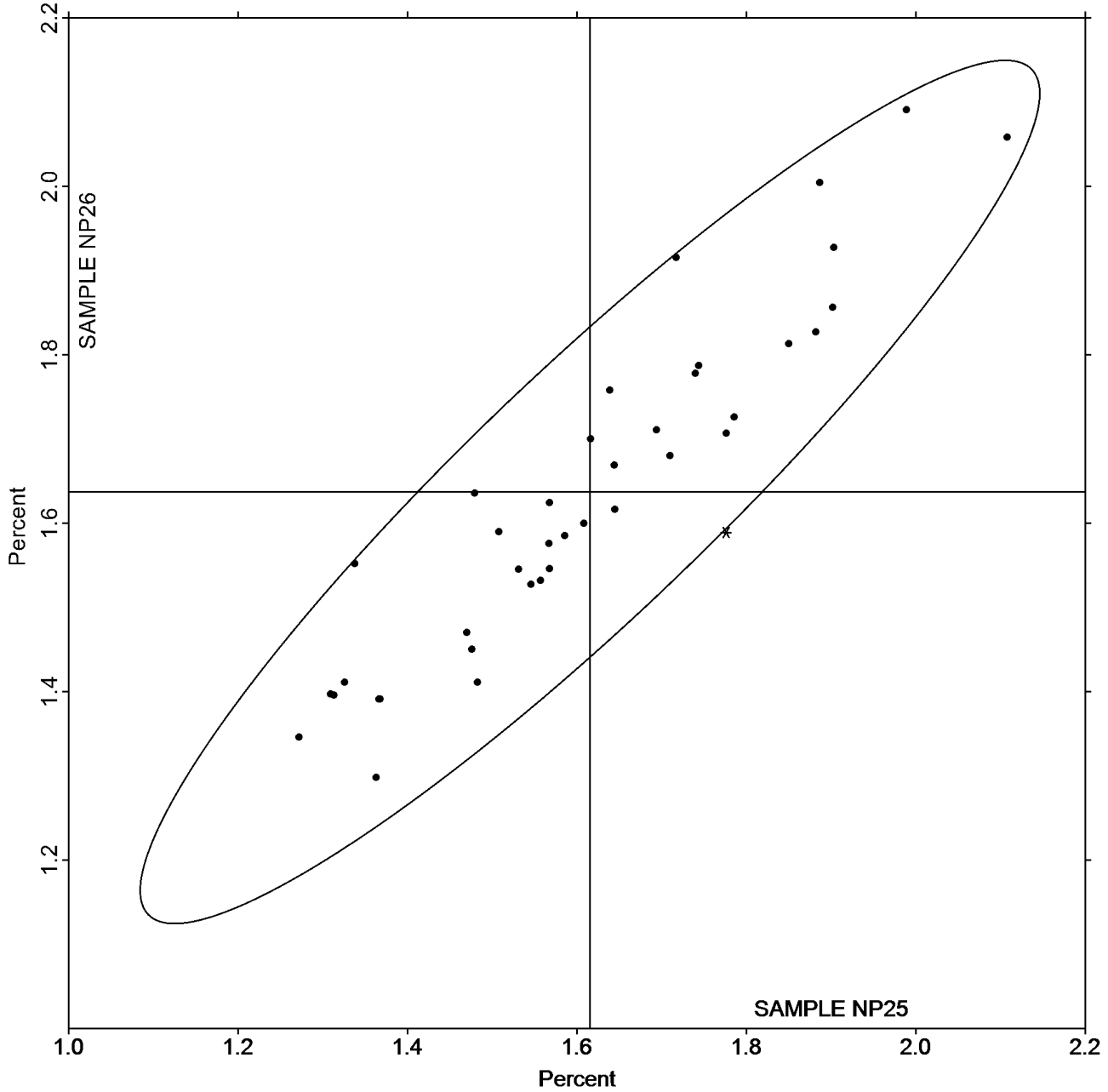
Report #4281,
January 2024

Analysis 3117 Elongation to Break - Printing Papers TAPPI Official Test Method T494

Grand Mean Sample NP25 = 1.6153
Percent

Grand Mean Sample NP26 = 1.6371
Percent

ANALYSIS 3117





Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3121

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

| WebCode | Data Flag | Sample PP25 | | | Sample PP26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 4ZRLCD | | 12.80 | -0.66 | -1.04 | 14.48 | -1.27 | -1.64 |
| 7QEBZ4 | | 13.61 | 0.15 | 0.24 | 16.46 | 0.71 | 0.92 |
| 833WJ6 | | 12.72 | -0.73 | -1.16 | 15.38 | -0.37 | -0.47 |
| 84G46L | | 14.20 | 0.74 | 1.17 | 16.90 | 1.15 | 1.48 |
| 9KKXBL | | 13.04 | -0.42 | -0.66 | 15.54 | -0.22 | -0.28 |
| A9Y9R7 | | 13.55 | 0.09 | 0.15 | 15.46 | -0.29 | -0.37 |
| BP7PDY | | 14.75 | 1.29 | 2.04 | 16.37 | 0.62 | 0.80 |
| C2RLQG | | 13.73 | 0.27 | 0.43 | 16.12 | 0.37 | 0.48 |
| DPJZ8N | * | 14.82 | 1.37 | 2.16 | 16.07 | 0.32 | 0.41 |
| DQMTY2 | | 12.40 | -1.06 | -1.67 | 14.48 | -1.27 | -1.64 |
| EZTXMC | | 13.12 | -0.34 | -0.53 | 16.72 | 0.97 | 1.25 |
| F6KJVQ | | 13.01 | -0.45 | -0.71 | 14.74 | -1.01 | -1.30 |
| FU333J | | 13.10 | -0.36 | -0.57 | 15.69 | -0.06 | -0.08 |
| GFWELA | | 13.75 | 0.29 | 0.46 | 14.86 | -0.89 | -1.15 |
| GHLHJM | | 13.79 | 0.33 | 0.53 | 15.84 | 0.09 | 0.12 |
| H3PMJ2 | | 13.20 | -0.26 | -0.41 | 15.73 | -0.02 | -0.03 |
| HMRVDQ | | 12.56 | -0.90 | -1.42 | 15.09 | -0.66 | -0.85 |
| KRJEUF | | 13.24 | -0.22 | -0.34 | 15.81 | 0.06 | 0.08 |
| LKE6Y7 | | 13.72 | 0.26 | 0.42 | 16.40 | 0.65 | 0.84 |
| LPMK9V | | 14.13 | 0.67 | 1.06 | 16.12 | 0.37 | 0.48 |
| LXHNA7 | | 12.40 | -1.06 | -1.67 | 15.10 | -0.65 | -0.84 |
| MJ2TWV | | 14.71 | 1.25 | 1.98 | 17.59 | 1.84 | 2.38 |
| MMC3M6 | | 12.50 | -0.96 | -1.52 | 14.71 | -1.04 | -1.34 |
| MYTPXQ | | 14.09 | 0.63 | 1.00 | 17.09 | 1.34 | 1.73 |
| QTBQR2 | | 13.85 | 0.39 | 0.62 | 17.15 | 1.40 | 1.81 |
| QVFEAC | | 13.44 | -0.02 | -0.03 | 15.50 | -0.25 | -0.32 |
| QZC3QJ | | 12.71 | -0.75 | -1.18 | 14.75 | -1.00 | -1.29 |
| R4P3MB | | 13.02 | -0.44 | -0.70 | 15.93 | 0.18 | 0.23 |
| RB7JDY | | 14.21 | 0.76 | 1.20 | 16.61 | 0.86 | 1.11 |
| RPP4YE | | 13.36 | -0.10 | -0.15 | 15.86 | 0.11 | 0.15 |
| TT9FCN | | 13.60 | 0.14 | 0.23 | 15.14 | -0.61 | -0.79 |
| U2T7BL | | 13.53 | 0.07 | 0.12 | 15.30 | -0.45 | -0.58 |
| W69FF4 | | 13.10 | -0.36 | -0.56 | 15.05 | -0.70 | -0.90 |
| WC836H | X | 15.43 | 1.97 | 3.12 | 16.07 | 0.32 | 0.41 |
| XJHNQR | | 13.89 | 0.43 | 0.68 | 16.05 | 0.30 | 0.39 |
| Y8PJZ7 | | 13.30 | -0.16 | -0.25 | 15.68 | -0.07 | -0.09 |
| Y9XY8C | | 13.50 | 0.04 | 0.07 | 15.70 | -0.05 | -0.06 |
| YJFDAE | | 13.46 | 0.00 | 0.00 | 15.29 | -0.46 | -0.59 |



Paper & Paperboard Interlaboratory Testing Program

**Report #4281,
January 2024**

Analysis 3121

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

| Summary Statistics | <u>Sample PP25</u> | <u>Sample PP26</u> |
|--|---------------------------|---------------------------|
| Grand Means | 13.46 sec/100 cc | 15.75 sec/100 cc |
| Stnd Dev Btwn Labs | 0.63 sec/100 cc | 0.77 sec/100 cc |
| Statistics based on 37 of 38 reporting participants. | | |

Comments on Assigned Data Flags for Test #3121

WC836H (X) - Data for sample PP25 are high. Inconsistent within the determinations of sample PP25.



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

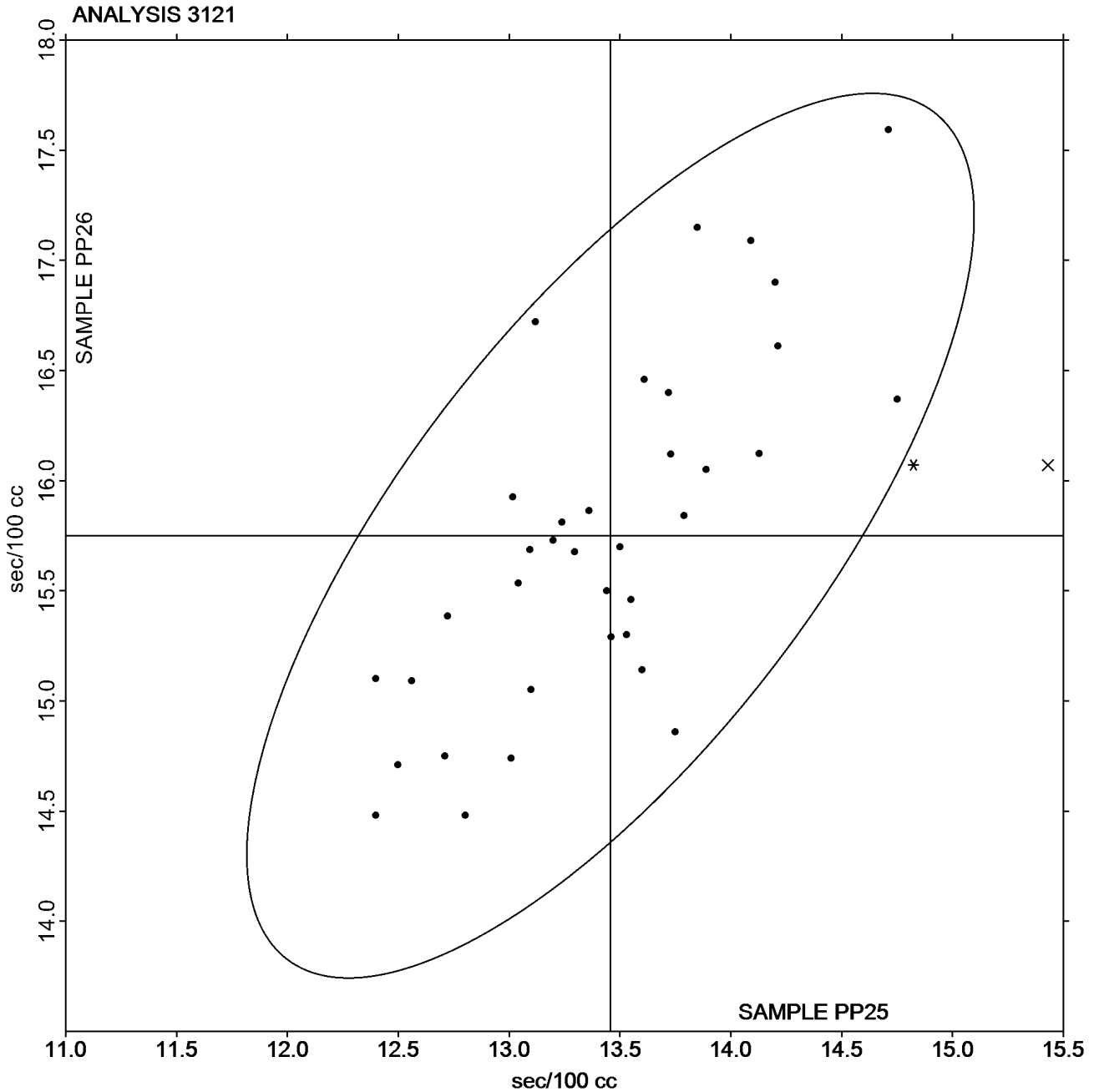
Analysis 3121

Air Resistance - Gurley Oil Type

TAPPI Official Test Method T460

Grand Mean Sample PP25 = 13.457
sec/100 cc

Grand Mean Sample PP26 = 15.750
sec/100 cc





Paper & Paperboard Interlaboratory Testing Program
Analysis 3123
Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice
TAPPI Official Test Method T547

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample PP25</u> | | | <u>Sample PP26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| QTBQR2 | | 186.3 | 2.3 | 0.10 | 165.9 | 2.9 | 0.20 |
| Y9XY8C | | 160.0 | -24.0 | -1.05 | 147.2 | -15.8 | -1.09 |
| YAC7TU | | 205.6 | 21.6 | 0.95 | 175.8 | 12.8 | 0.88 |

| Summary Statistics | <u>Sample PP25</u> | <u>Sample PP26</u> |
|---------------------------|--|------------------------|
| Grand Means | 183.97 Sheffield Units | 162.96 Sheffield Units |
| Stnd Dev Btwn Labs | 22.89 Sheffield Units | 14.52 Sheffield Units |
| | Statistics based on 3 of 3 reporting participants. | |

Analysis Notes:

QTBQR2 - One determination removed from the Lab Mean of Sample PP26 per Grubb's Test at 1% risk (TAPPI 1205).



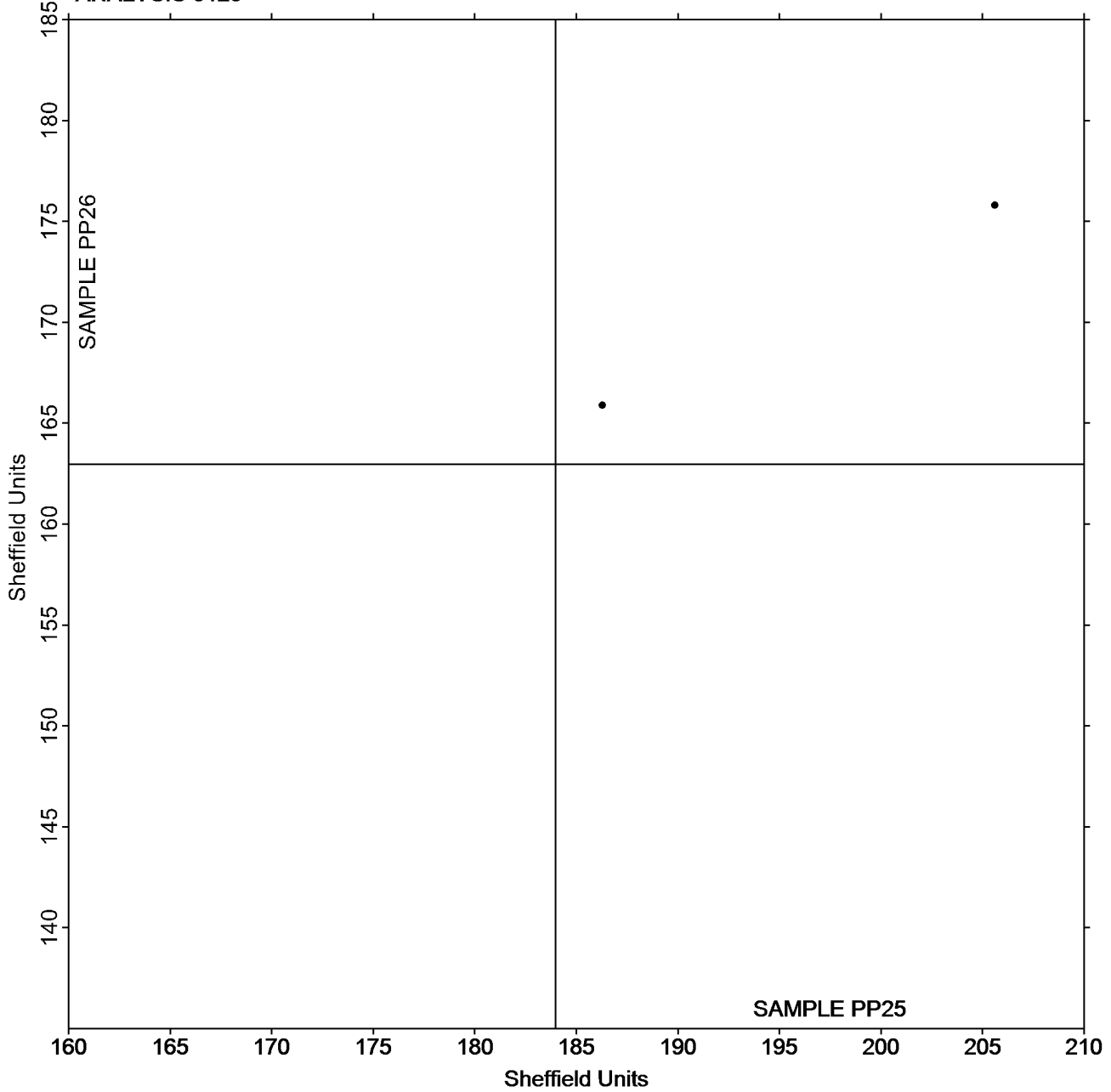
Paper & Paperboard Interlaboratory Testing Program
Analysis 3123
Porosity - Sheffield Type - Sheffield Units for 3/4 inch Diameter Orifice
TAPPI Official Test Method T547

Report #4281,
January 2024

Grand Mean Sample PP25 = 183.97
Sheffield Units

Grand Mean Sample PP26 = 162.96
Sheffield Units

ANALYSIS 3123



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 3131
Roughness - Print Surf Method - 2.5 to 6.0 Microns
TAPPI Official Test Method T555

Report #4281,
January 2024

| WebCode | Data Flag | Sample PH25 | | | Sample PH26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 3EEBWP | | 6.025 | -0.054 | -0.22 | 5.827 | -0.105 | -0.42 |
| 3PBGR9 | | 6.155 | 0.076 | 0.32 | 5.855 | -0.077 | -0.31 |
| 47WGXY | | 6.326 | 0.247 | 1.02 | 6.033 | 0.101 | 0.40 |
| 4ZRLCD | | 6.424 | 0.345 | 1.43 | 6.383 | 0.451 | 1.80 |
| AGDXTZ | | 6.189 | 0.110 | 0.46 | 5.973 | 0.041 | 0.16 |
| BP7PDY | | 5.691 | -0.388 | -1.61 | 5.607 | -0.325 | -1.30 |
| GFWELA | | 5.979 | -0.100 | -0.41 | 5.769 | -0.163 | -0.65 |
| MYTPXQ | | 5.651 | -0.428 | -1.77 | 5.554 | -0.378 | -1.51 |
| RB7JDY | | 6.067 | -0.012 | -0.05 | 6.189 | 0.257 | 1.03 |
| RPP4YE | | 6.086 | 0.007 | 0.03 | 5.898 | -0.034 | -0.13 |
| UDNK9X | | 6.274 | 0.195 | 0.81 | 6.161 | 0.229 | 0.92 |

| Summary Statistics | Sample PH25 | Sample PH26 |
|--|--------------|--------------|
| Grand Means | 6.08 Microns | 5.93 Microns |
| Std Dev Btwn Labs | 0.24 Microns | 0.25 Microns |
| Statistics based on 11 of 11 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

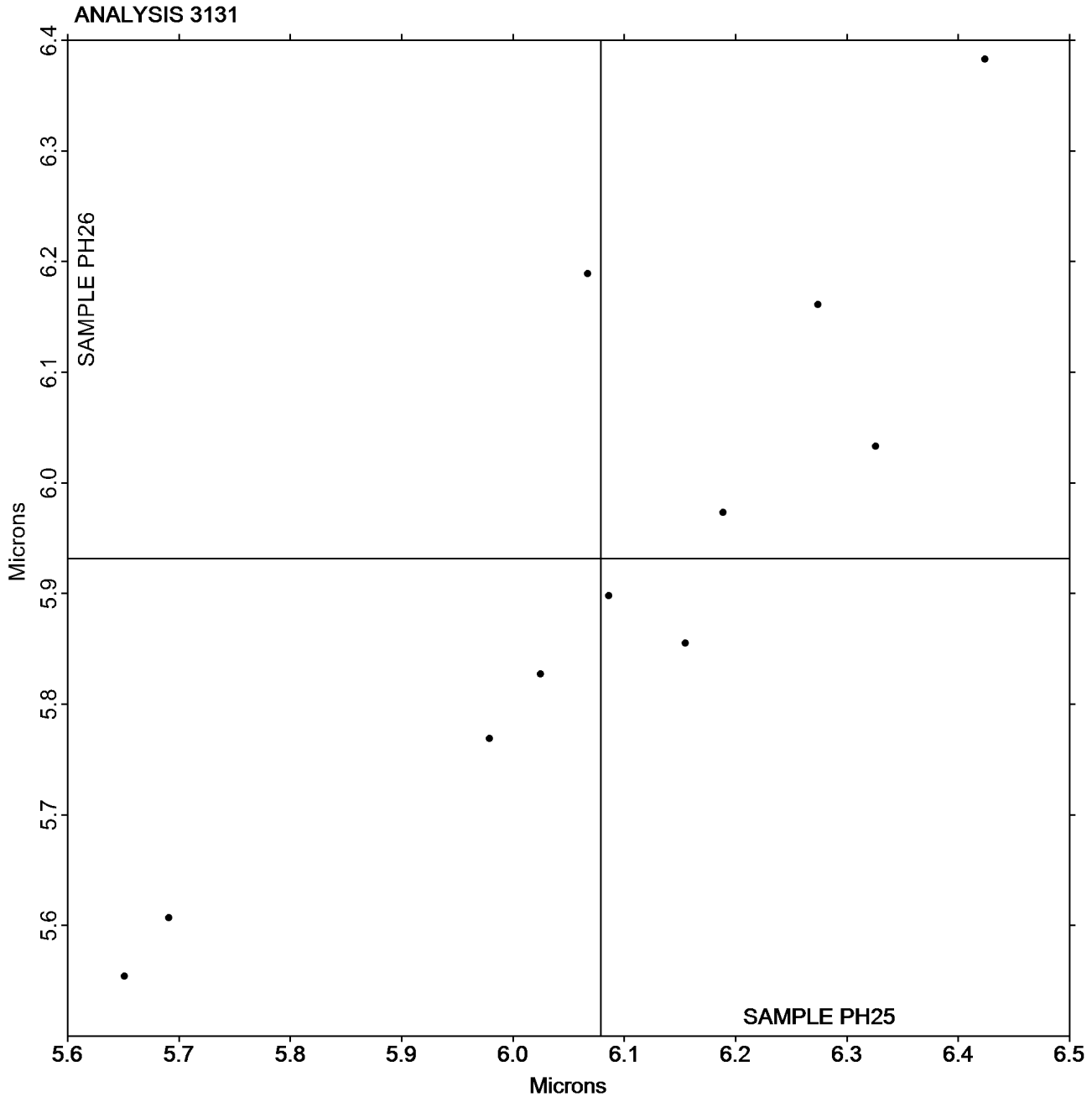
Analysis 3131

Roughness - Print Surf Method - 2.5 to 6.0 Microns

TAPPI Official Test Method T555

Grand Mean Sample PH25 = 6.0788
Microns

Grand Mean Sample PH26 = 5.9317
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 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

Report #4281,
January 2024

| WebCode | Data Flag | Sample SR25 | | | Sample SR26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2UQPF9 | | 128.5 | 11.5 | 1.79 | 125.2 | 8.2 | 1.25 |
| 3PBGR9 | | 119.7 | 2.7 | 0.42 | 123.6 | 6.6 | 1.01 |
| 47WGXY | | 111.0 | -6.0 | -0.93 | 110.6 | -6.3 | -0.97 |
| 4E9GRA | | 124.8 | 7.8 | 1.21 | 126.9 | 10.0 | 1.52 |
| 4ZRLCD | | 118.0 | 1.0 | 0.16 | 113.6 | -3.4 | -0.52 |
| 7EXNNH | | 123.3 | 6.3 | 0.98 | 128.3 | 11.3 | 1.73 |
| 7GPKDC | | 119.8 | 2.8 | 0.44 | 121.4 | 4.4 | 0.68 |
| 833WJ6 | | 107.8 | -9.1 | -1.42 | 108.5 | -8.5 | -1.30 |
| 84G46L | | 118.8 | 1.8 | 0.28 | 118.1 | 1.1 | 0.17 |
| 8JBNLA | | 123.3 | 6.3 | 0.97 | 123.5 | 6.5 | 0.99 |
| 9KKXBL | | 114.7 | -2.3 | -0.35 | 122.4 | 5.4 | 0.83 |
| AGDXTZ | | 117.2 | 0.2 | 0.03 | 115.5 | -1.5 | -0.23 |
| BP7PDY | | 115.6 | -1.4 | -0.22 | 115.4 | -1.6 | -0.24 |
| BQGRZX | | 117.0 | 0.0 | 0.01 | 115.9 | -1.0 | -0.16 |
| C2RLQG | | 109.9 | -7.1 | -1.10 | 106.4 | -10.6 | -1.61 |
| DPJZ8N | | 111.9 | -5.1 | -0.79 | 110.3 | -6.7 | -1.02 |
| DQMTY2 | | 121.8 | 4.8 | 0.75 | 122.2 | 5.2 | 0.80 |
| F6KJVQ | | 124.5 | 7.5 | 1.16 | 121.0 | 4.0 | 0.61 |
| FZRM7Y | | 122.2 | 5.2 | 0.81 | 117.5 | 0.5 | 0.08 |
| GDV7GY | | 120.1 | 3.1 | 0.48 | 123.7 | 6.7 | 1.03 |
| GFWELA | | 125.7 | 8.7 | 1.35 | 123.8 | 6.9 | 1.05 |
| GHLHJM | | 114.4 | -2.6 | -0.40 | 113.4 | -3.6 | -0.55 |
| HEH8ZR | | 106.6 | -10.4 | -1.62 | 110.8 | -6.2 | -0.94 |
| LKE6Y7 | | 123.6 | 6.6 | 1.03 | 120.8 | 3.8 | 0.58 |
| LPMK9V | | 110.5 | -6.5 | -1.01 | 113.9 | -3.0 | -0.46 |
| MJ2TWV | | 108.6 | -8.4 | -1.31 | 110.5 | -6.5 | -0.99 |
| MMC3M6 | X | 140.6 | 23.6 | 3.66 | 133.8 | 16.8 | 2.57 |
| MYTPXQ | | 132.0 | 15.0 | 2.33 | 132.0 | 15.0 | 2.29 |
| PQRCQL | X | 214.0 | 97.0 | 15.03 | 219.0 | 102.0 | 15.57 |
| QTBQR2 | | 108.1 | -8.9 | -1.38 | 107.7 | -9.3 | -1.42 |
| QVFEAC | | 117.8 | 0.8 | 0.13 | 123.9 | 6.9 | 1.06 |
| R4P3MB | | 118.0 | 1.1 | 0.16 | 113.4 | -3.6 | -0.55 |
| RB7JDY | | 117.6 | 0.6 | 0.09 | 117.4 | 0.4 | 0.07 |
| RPP4YE | | 116.5 | -0.5 | -0.07 | 116.6 | -0.4 | -0.05 |
| TT9FCN | | 110.4 | -6.6 | -1.02 | 116.1 | -0.9 | -0.13 |
| U2T7BL | | 118.8 | 1.8 | 0.28 | 115.5 | -1.5 | -0.23 |
| UDNK9X | | 116.7 | -0.3 | -0.04 | 115.3 | -1.7 | -0.26 |
| UJU9Q6 | | 106.8 | -10.2 | -1.58 | 105.9 | -11.1 | -1.69 |
| VALYWK | | 106.0 | -11.0 | -1.70 | 107.0 | -10.0 | -1.52 |
| VVNP7 | | 123.6 | 6.6 | 1.02 | 123.8 | 6.8 | 1.04 |



Paper & Paperboard Interlaboratory Testing Program
Analysis 3133
Roughness - Sheffield Type
TAPPI Official Test Method T538

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample SR25</u> | | | <u>Sample SR26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| Y8PJZ7 | | 116.0 | -1.0 | -0.15 | 110.5 | -6.5 | -1.00 |
| Y9XY8C | | 107.6 | -9.4 | -1.46 | 107.4 | -9.6 | -1.46 |
| YAC7TU | | 115.6 | -1.4 | -0.22 | 117.2 | 0.2 | 0.03 |
| YJFDAE | | 122.7 | 5.7 | 0.88 | 120.1 | 3.1 | 0.48 |

| Summary Statistics | <u>Sample SR25</u> | <u>Sample SR26</u> |
|--|--------------------|--------------------|
| Grand Means | 116.99 Sheffield | 116.98 Sheffield |
| Stnd Dev Btwn Labs | 6.45 Sheffield | 6.55 Sheffield |
| Statistics based on 42 of 44 reporting participants. | | |

Comments on Assigned Data Flags for Test #3133

MMC3M6 (X) - Data for sample SR25 are high.

PQRCQL (X) - Extreme Data.



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3133

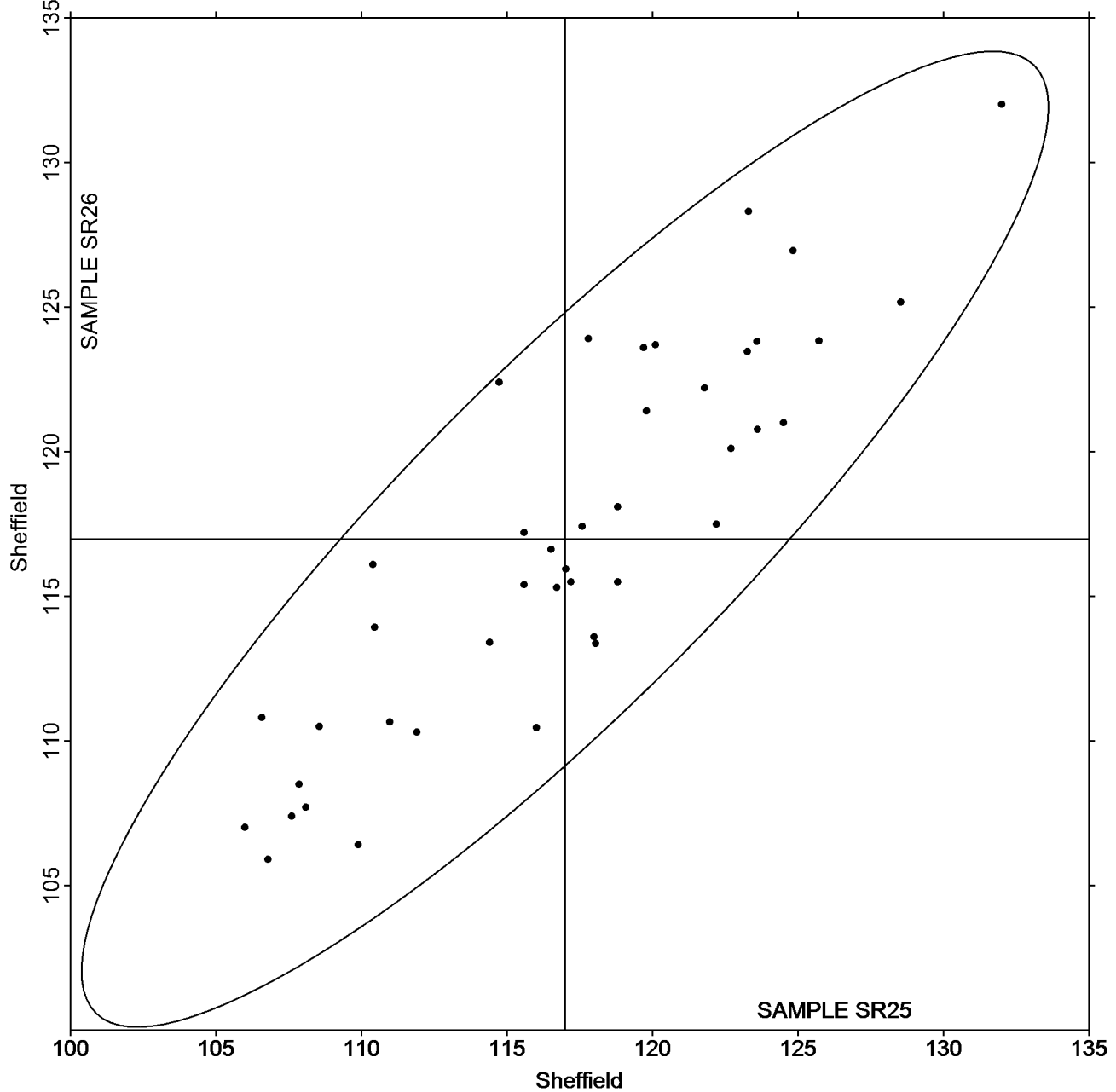
Roughness - Sheffield Type

TAPPI Official Test Method T538

Grand Mean Sample SR25 = 116.99
Sheffield

Grand Mean Sample SR26 = 116.98
Sheffield

ANALYSIS 3133





Paper & Paperboard Interlaboratory Testing Program
Analysis 3135
Grammage (Mass per Unit Area)
TAPPI Official Test Method T410

Report #4281,
January 2024

| WebCode | Data Flag | Sample GM25 | | | Sample GM26 | | |
|---------|-----------|-------------|----------------------|--------|-------------|----------------------|--------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CQFWB | | 75.22 | -0.31 | -0.44 | 75.53 | -0.01 | -0.01 |
| 4E9JHE | | 77.03 | 1.50 | 2.15 | 76.97 | 1.43 | 2.25 |
| 4M2NDZ | | 75.77 | 0.24 | 0.35 | 75.37 | -0.17 | -0.26 |
| 84G46L | | 75.50 | -0.03 | -0.04 | 75.69 | 0.15 | 0.24 |
| 9DFGF7 | | 75.01 | -0.52 | -0.74 | 74.77 | -0.77 | -1.20 |
| 9J6UGU | | 75.88 | 0.35 | 0.50 | 75.85 | 0.31 | 0.49 |
| CXTAUG | | 75.00 | -0.53 | -0.75 | 75.00 | -0.54 | -0.85 |
| DF9YLM | | 75.40 | -0.13 | -0.18 | 75.59 | 0.05 | 0.07 |
| FGCD6Y | | 75.32 | -0.21 | -0.29 | 75.36 | -0.18 | -0.28 |
| FU333J | X | 12.74 | -62.79 | -89.92 | 12.72 | -62.82 | -98.30 |
| HMRVDQ | | 76.20 | 0.67 | 0.97 | 76.42 | 0.88 | 1.37 |
| LKE6Y7 | | 75.35 | -0.18 | -0.25 | 75.72 | 0.18 | 0.28 |
| QFLR2Y | | 75.90 | 0.37 | 0.53 | 76.06 | 0.52 | 0.81 |
| QTBQR2 | | 75.53 | 0.00 | 0.00 | 75.42 | -0.12 | -0.19 |
| TT9FCN | | 74.82 | -0.71 | -1.01 | 75.03 | -0.51 | -0.80 |
| U2T7BL | | 76.40 | 0.87 | 1.25 | 76.10 | 0.56 | 0.88 |
| UTG8GB | | 75.36 | -0.16 | -0.24 | 75.15 | -0.39 | -0.61 |
| W33VPH | X | 74.27 | -1.26 | -1.80 | 75.98 | 0.44 | 0.70 |
| Y2Z8YH | | 75.20 | -0.33 | -0.47 | 75.22 | -0.32 | -0.49 |
| YAC7TU | | 75.91 | 0.38 | 0.55 | 75.54 | 0.00 | 0.00 |
| YJFDAE | | 75.44 | -0.09 | -0.13 | 75.92 | 0.38 | 0.60 |
| YT66W8 | * | 73.56 | -1.97 | -2.82 | 73.83 | -1.71 | -2.68 |
| ZWJYBJ | | 76.29 | 0.76 | 1.08 | 75.79 | 0.25 | 0.39 |

| Summary Statistics | Sample GM25 | Sample GM26 |
|--|--------------|--------------|
| Grand Means | 75.53 g/sq m | 75.54 g/sq m |
| Std Dev Btwn Labs | 0.70 g/sq m | 0.64 g/sq m |
| Statistics based on 21 of 23 reporting participants. | | |

Comments on Assigned Data Flags for Test #3135

W33VPH (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample GM25.

FU333J (X) - Extreme Data.



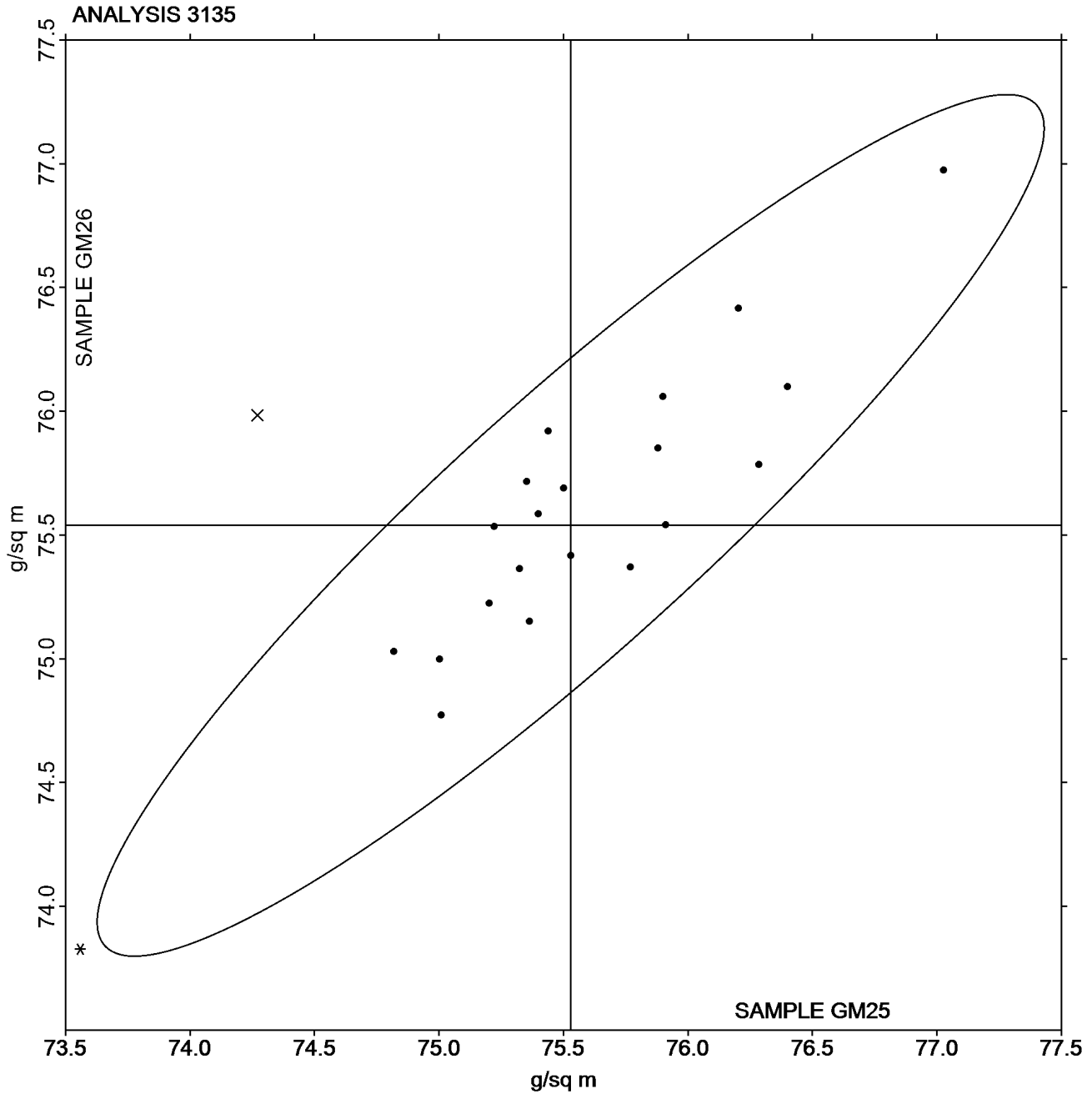
Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

Analysis 3135 Grammage (Mass per Unit Area) TAPPI Official Test Method T410

Grand Mean Sample GM25 = 75.529
g/sq m

Grand Mean Sample GM26 = 75.539
g/sq m





Paper & Paperboard Interlaboratory Testing Program

**Report #4281,
January 2024**

Analysis 3141

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

| WebCode | Data Flag | Sample VR25 | | | Sample VR26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 47WGXY | | 89.50 | 0.27 | 0.67 | 89.29 | 0.10 | 0.20 |
| 7EXNNH | | 90.11 | 0.88 | 2.19 | 90.20 | 1.01 | 2.07 |
| 84G46L | | 89.20 | -0.03 | -0.07 | 88.93 | -0.26 | -0.52 |
| 9KKXBL | | 89.09 | -0.13 | -0.33 | 89.07 | -0.11 | -0.23 |
| BQYH9H | | 89.29 | 0.06 | 0.15 | 89.30 | 0.12 | 0.24 |
| C9DGT7 | | 89.46 | 0.23 | 0.57 | 89.78 | 0.59 | 1.20 |
| DPJZ8N | | 89.14 | -0.09 | -0.23 | 88.79 | -0.40 | -0.81 |
| EZ8JYY | | 88.90 | -0.33 | -0.81 | 89.09 | -0.10 | -0.21 |
| F6KJVQ | | 88.79 | -0.44 | -1.08 | 88.86 | -0.33 | -0.67 |
| HMRVDQ | | 89.13 | -0.10 | -0.24 | 88.84 | -0.35 | -0.71 |
| LKE6Y7 | | 89.43 | 0.20 | 0.50 | 89.26 | 0.07 | 0.15 |
| LPMK9V | | 89.05 | -0.18 | -0.44 | 89.12 | -0.07 | -0.13 |
| QTBQR2 | | 89.11 | -0.12 | -0.29 | 88.90 | -0.29 | -0.59 |
| RB7JDY | | 89.16 | -0.07 | -0.17 | 88.83 | -0.36 | -0.74 |
| RPP4YE | | 88.89 | -0.34 | -0.84 | 88.76 | -0.42 | -0.86 |
| TT9FCN | | 88.87 | -0.36 | -0.88 | 88.85 | -0.34 | -0.69 |
| UDNK9X | | 88.80 | -0.43 | -1.06 | 89.08 | -0.10 | -0.21 |
| VALYWK | * | 90.20 | 0.97 | 2.41 | 90.55 | 1.36 | 2.78 |
| Y8PJZ7 | | 89.69 | 0.46 | 1.15 | 89.56 | 0.37 | 0.76 |
| Y9XY8C | | 89.05 | -0.18 | -0.44 | 89.19 | 0.00 | 0.01 |
| YAC7TU | | 89.65 | 0.42 | 1.05 | 89.66 | 0.47 | 0.97 |
| YJFDAE | | 88.56 | -0.67 | -1.65 | 88.40 | -0.79 | -1.61 |
| YT66W8 | | 89.16 | -0.06 | -0.15 | 88.99 | -0.20 | -0.41 |

| Summary Statistics | <u>Sample VR25</u> | <u>Sample VR26</u> |
|--|--------------------|--------------------|
| Grand Means | 89.23 Percent | 89.19 Percent |
| Std Dev Btwn Labs | 0.40 Percent | 0.49 Percent |
| Statistics based on 23 of 23 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

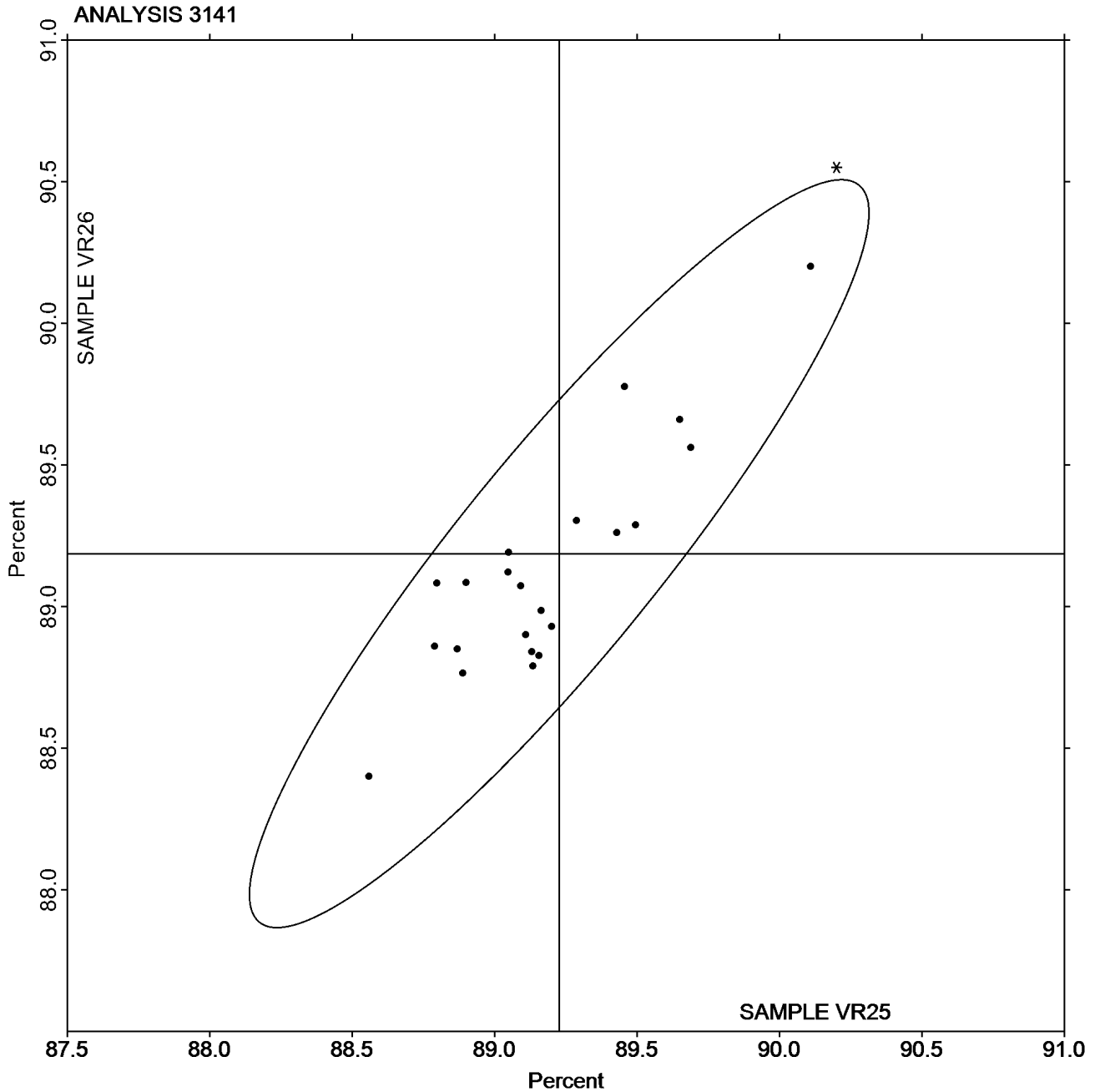
Analysis 3141

Opacity (89% Reflectance Backing) - Fine Papers

TAPPI Official Test Method T425

Grand Mean Sample VR25 = 89.226
Percent

Grand Mean Sample VR26 = 89.187
Percent





Paper & Paperboard Interlaboratory Testing Program

**Report #4281,
January 2024**

Analysis 3143

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

| WebCode | Data Flag | <u>Sample VP25</u> | | | <u>Sample VP26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2CQFWB | | 90.10 | 0.07 | 0.86 | 90.12 | -0.03 | -0.34 |
| H3PMJ2 | | 89.95 | -0.08 | -1.10 | 90.08 | -0.08 | -0.79 |
| U2T7BL | | 90.05 | 0.02 | 0.23 | 90.26 | 0.11 | 1.13 |

| Summary Statistics | <u>Sample VP25</u> | <u>Sample VP26</u> |
|--|--------------------|--------------------|
| Grand Means | 90.03 Percent | 90.15 Percent |
| Std Dev Btwn Labs | 0.08 Percent | 0.10 Percent |
| Statistics based on 3 of 3 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

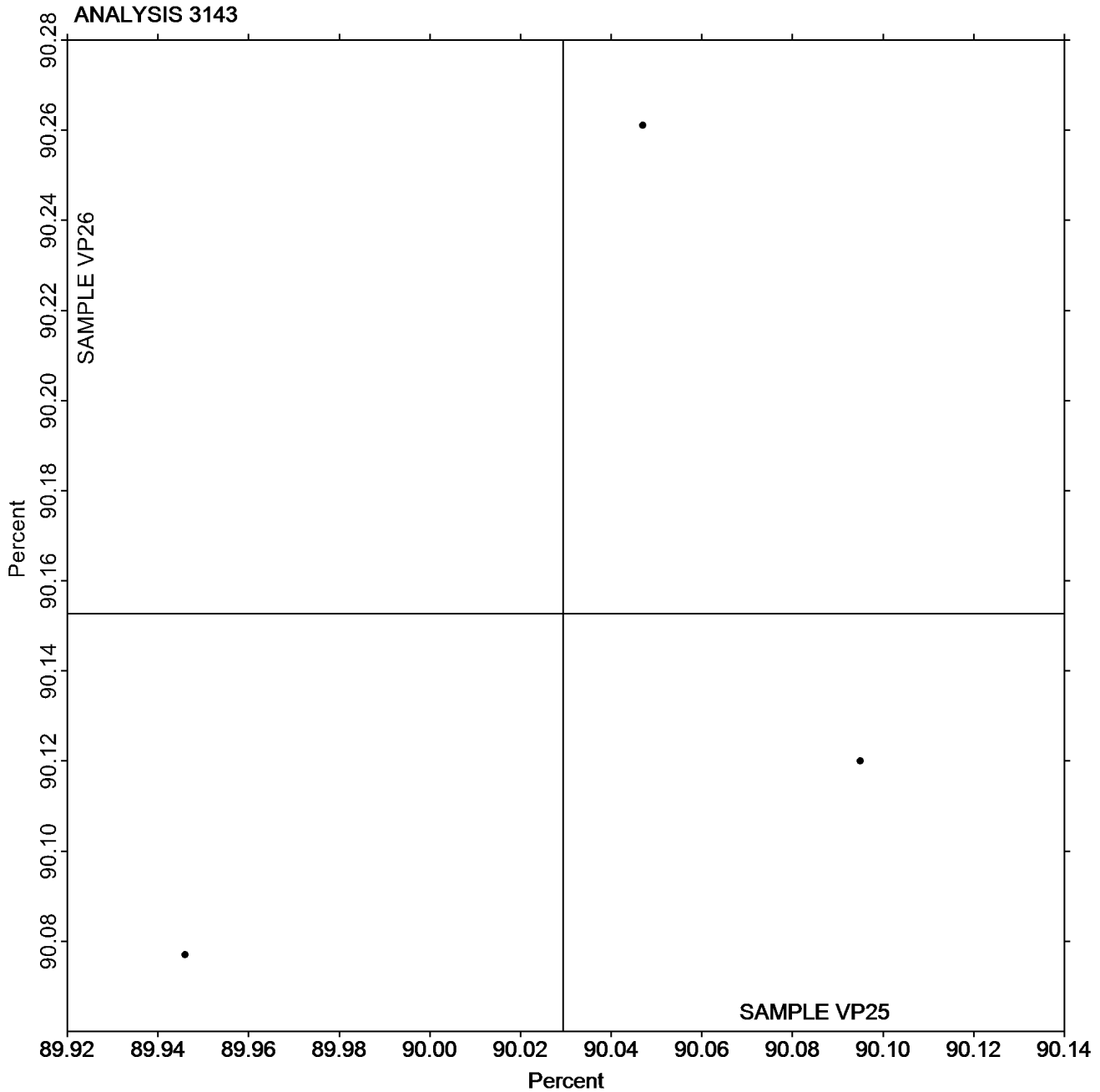
Analysis 3143

Opacity (Paper Backing) - Fine Papers and Newsprint

TAPPI Official Test Method T519

Grand Mean Sample VP25 = 90.029
Percent

Grand Mean Sample VP26 = 90.153
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 3145
Directional Brightness of Fluorescent Samples
TAPPI Official Test Method T452

Report #4281,
January 2024

| WebCode | Data Flag | Sample BF25 | | | Sample BF26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 29VNQZ | | 96.24 | 2.84 | 1.20 | 96.07 | 2.73 | 1.14 |
| 47WGXY | | 94.51 | 1.11 | 0.47 | 94.55 | 1.20 | 0.50 |
| 84G46L | | 94.02 | 0.63 | 0.26 | 94.08 | 0.74 | 0.31 |
| 9KKXBL | | 93.37 | -0.02 | -0.01 | 92.98 | -0.36 | -0.15 |
| BQGRZX | | 93.05 | -0.35 | -0.15 | 93.06 | -0.28 | -0.12 |
| BQYH9H | | 93.13 | -0.26 | -0.11 | 92.87 | -0.47 | -0.20 |
| C9DGT7 | | 93.00 | -0.40 | -0.17 | 93.02 | -0.32 | -0.13 |
| DPJZ8N | | 93.54 | 0.15 | 0.06 | 94.28 | 0.93 | 0.39 |
| DQMTY2 | | 93.90 | 0.51 | 0.21 | 93.84 | 0.50 | 0.21 |
| LKE6Y7 | | 95.83 | 2.44 | 1.03 | 95.39 | 2.04 | 0.86 |
| RB7JDY | | 93.24 | -0.15 | -0.06 | 93.21 | -0.13 | -0.05 |
| RPP4YE | | 94.58 | 1.19 | 0.50 | 94.56 | 1.22 | 0.51 |
| Y8PJZ7 | * | 86.00 | -7.39 | -3.13 | 85.78 | -7.56 | -3.17 |
| YT66W8 | | 93.11 | -0.28 | -0.12 | 93.11 | -0.23 | -0.10 |

| Summary Statistics | Sample BF25 | Sample BF26 |
|--|---------------|---------------|
| Grand Means | 93.39 Percent | 93.34 Percent |
| Stnd Dev Btwn Labs | 2.36 Percent | 2.39 Percent |
| Statistics based on 14 of 14 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program
Analysis 3146
Fluorescent Component of Directional Brightness
TAPPI Official Test Method T452

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample BF25</u> | | | <u>Sample BF26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 29VNQZ | | 8.062 | 1.622 | 1.70 | 8.006 | 1.544 | 1.63 |
| 47WGXY | | 6.182 | -0.258 | -0.27 | 6.140 | -0.322 | -0.34 |
| 9KKXBL | | 6.334 | -0.106 | -0.11 | 6.320 | -0.142 | -0.15 |
| BQYH9H | | 5.562 | -0.878 | -0.92 | 5.512 | -0.950 | -1.00 |
| C9DGT7 | | 6.640 | 0.200 | 0.21 | 6.704 | 0.242 | 0.26 |
| DPJZ8N | | 6.576 | 0.136 | 0.14 | 6.810 | 0.348 | 0.37 |
| DQMTY2 | | 6.180 | -0.260 | -0.27 | 6.180 | -0.282 | -0.30 |
| LKE6Y7 | | 8.444 | 2.004 | 2.10 | 8.428 | 1.966 | 2.07 |
| RB7JDY | | 6.030 | -0.410 | -0.43 | 6.066 | -0.396 | -0.42 |
| RPP4YE | | 6.300 | -0.140 | -0.15 | 6.320 | -0.142 | -0.15 |
| Y8PJZ7 | | 5.040 | -1.400 | -1.47 | 5.060 | -1.402 | -1.48 |
| YT66W8 | | 5.934 | -0.506 | -0.53 | 5.996 | -0.466 | -0.49 |

| Summary Statistics | <u>Sample BF25</u> | <u>Sample BF26</u> |
|---------------------------|---------------------------|---------------------------|
| Grand Means | 6.44 Percent | 6.46 Percent |
| Stnd Dev Btwn Labs | 0.95 Percent | 0.95 Percent |

Statistics based on 12 of 12 reporting participants.



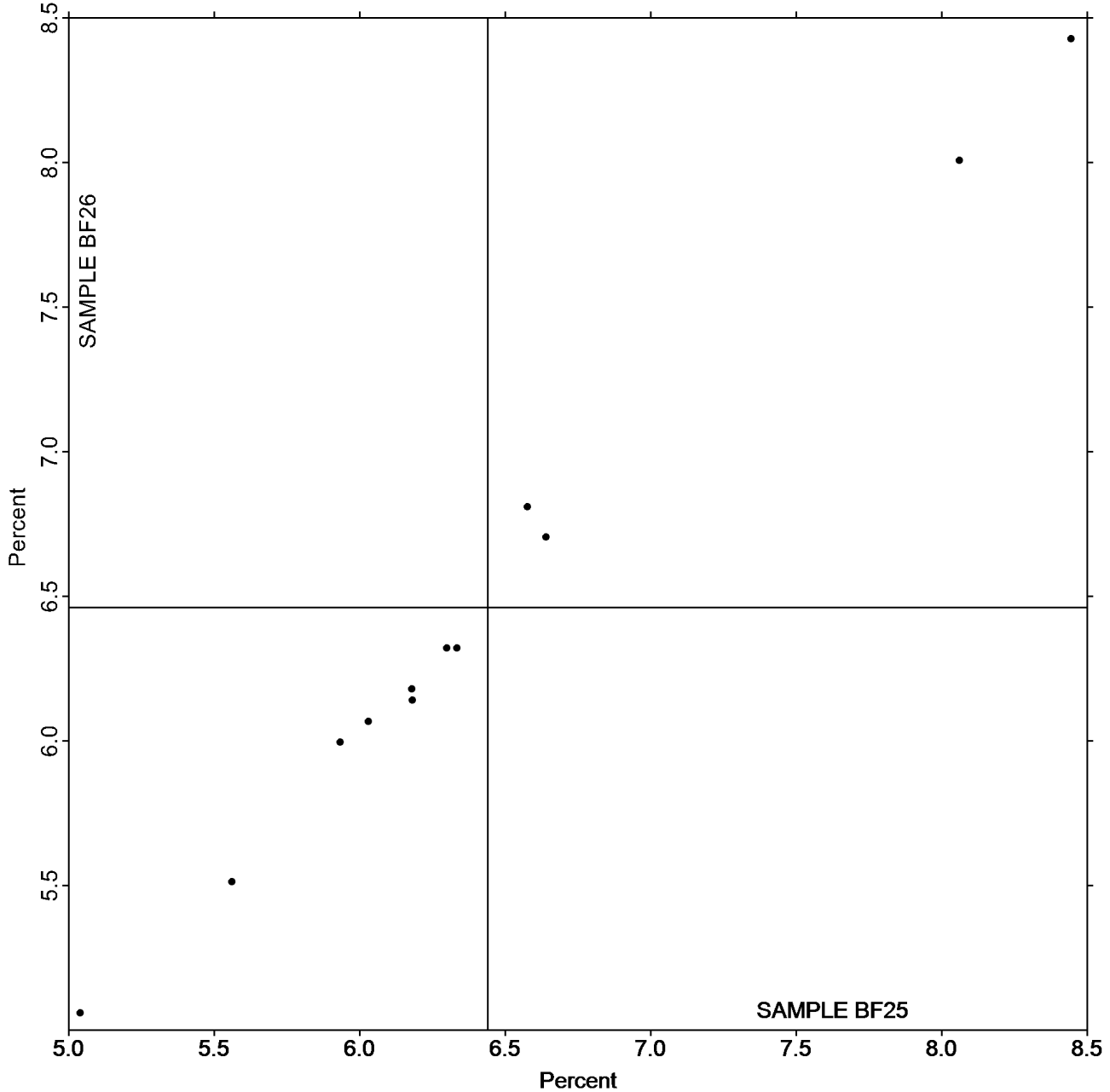
Paper & Paperboard Interlaboratory Testing Program
Analysis 3146
Fluorescent Component of Directional Brightness
TAPPI Official Test Method T452

Report #4281,
January 2024

Grand Mean Sample BF25 = 6.4403
Percent

Grand Mean Sample BF26 = 6.4618
Percent

ANALYSIS 3146



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 #4281,
January 2024**

Analysis 3201

Bending Resistance, Taber Type - 0 to 10 Units

TAPPI Official Test Method T566

| WebCode | Data Flag | <u>Sample TP25</u> | | | <u>Sample TP26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 9KKXBL | | 2.102 | -0.186 | -0.55 | 1.912 | -0.361 | -0.88 |
| C2RLQG | | 1.940 | -0.347 | -1.03 | 2.014 | -0.259 | -0.63 |
| DPJZ8N | | 2.022 | -0.265 | -0.78 | 2.091 | -0.182 | -0.44 |
| RB7JDY | | 2.057 | -0.231 | -0.68 | 2.061 | -0.212 | -0.52 |
| RPP4YE | | 2.099 | -0.188 | -0.56 | 1.973 | -0.300 | -0.73 |
| V98CKX | | 2.536 | 0.249 | 0.73 | 2.422 | 0.149 | 0.37 |
| Y8PJZ7 | | 2.240 | -0.047 | -0.14 | 2.120 | -0.153 | -0.37 |
| Y9XY8C | | 2.690 | 0.403 | 1.19 | 2.760 | 0.487 | 1.19 |
| YAC7TU | | 2.902 | 0.615 | 1.81 | 3.101 | 0.828 | 2.03 |

| Summary Statistics | <u>Sample TP25</u> | <u>Sample TP26</u> |
|--|--------------------|--------------------|
| Grand Means | 2.29 Taber Units | 2.27 Taber Units |
| Stnd Dev Btwn Labs | 0.34 Taber Units | 0.41 Taber Units |
| Statistics based on 9 of 9 reporting participants. | | |

Analysis Notes:

DPJZ8N - Data appear to be reported as g-cm, not mN-m as indicated on data entry form. CTS will not correct the Units going forward.



Paper & Paperboard Interlaboratory Testing Program
Analysis 3203
Bending Resistance, Taber Type - 10 to 100 Taber Units
TAPPI Official Test Method T489

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample TC25</u> | | | <u>Sample TC26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2UQPF9 | | 32.87 | 2.99 | 2.15 | 21.92 | 2.69 | 2.23 |
| 3EEBWP | | 28.83 | -1.05 | -0.76 | 17.34 | -1.89 | -1.57 |
| 3PBGR9 | | 29.44 | -0.44 | -0.32 | 18.90 | -0.33 | -0.28 |
| 4E9GRA | | 32.17 | 2.29 | 1.65 | 21.13 | 1.90 | 1.57 |
| AGDXTZ | | 30.56 | 0.68 | 0.49 | 19.36 | 0.13 | 0.11 |
| BP7PDY | | 28.48 | -1.40 | -1.01 | 19.21 | -0.03 | -0.02 |
| FU333J | | 30.30 | 0.42 | 0.30 | 18.83 | -0.40 | -0.34 |
| GFWELA | | 29.05 | -0.83 | -0.60 | 19.15 | -0.08 | -0.07 |
| LKE6Y7 | | 29.22 | -0.66 | -0.47 | 18.85 | -0.38 | -0.32 |
| MYTPXQ | | 29.73 | -0.15 | -0.11 | 19.11 | -0.13 | -0.11 |
| RPP4YE | | 29.30 | -0.58 | -0.42 | 18.32 | -0.91 | -0.76 |
| XC28Z3 | | 28.60 | -1.28 | -0.92 | 18.70 | -0.53 | -0.44 |

| Summary Statistics | <u>Sample TC25</u> | <u>Sample TC26</u> |
|--|---------------------------|---------------------------|
| Grand Means | 29.88 Taber Units | 19.23 Taber Units |
| Stnd Dev Btwn Labs | 1.39 Taber Units | 1.21 Taber Units |
| Statistics based on 12 of 12 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

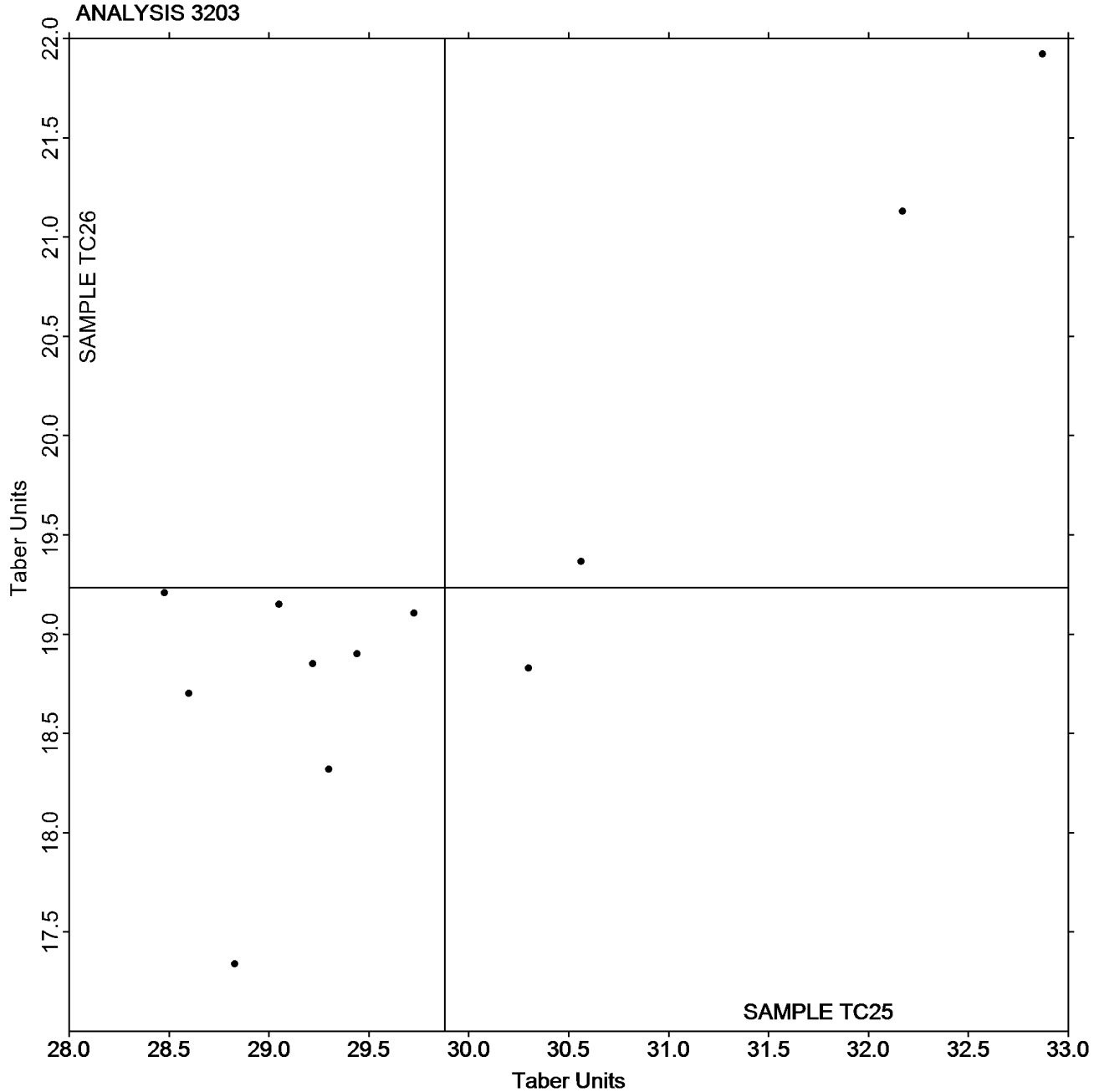
Analysis 3203

Bending Resistance, Taber Type - 10 to 100 Taber Units

TAPPI Official Test Method T489

Grand Mean Sample TC25 = 29.879
Taber Units

Grand Mean Sample TC26 = 19.235
Taber 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

**Report #4281,
January 2024**

Analysis 3205

Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard

TAPPI Official Test Method T489

| WebCode | Data Flag | <u>Sample TR25</u> | | | <u>Sample TR26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 3PBGR9 | | 173.5 | -3.7 | -0.44 | 176.8 | 0.2 | 0.07 |
| 4ZRLCD | | 168.0 | -9.3 | -1.09 | 169.8 | -6.8 | -2.13 |
| 7EXNNH | | 175.8 | -1.5 | -0.17 | 175.8 | -0.7 | -0.24 |
| AGDXTZ | | 176.5 | -0.7 | -0.09 | 179.2 | 2.7 | 0.84 |
| FZRM7Y | | 179.1 | 1.8 | 0.22 | 179.6 | 3.0 | 0.96 |
| HEH8ZR | | 171.4 | -5.9 | -0.69 | 175.7 | -0.9 | -0.27 |
| MYTPXQ | | 175.9 | -1.3 | -0.16 | 175.3 | -1.2 | -0.39 |
| PQRCQL | | 199.5 | 22.2 | 2.62 | 181.3 | 4.7 | 1.48 |
| Q8QPYM | | 178.5 | 1.2 | 0.15 | 177.3 | 0.7 | 0.23 |
| VVNP7 | | 174.3 | -3.0 | -0.35 | 174.8 | -1.8 | -0.55 |

| Summary Statistics | <u>Sample TR25</u> | <u>Sample TR26</u> |
|--|---------------------------|---------------------------|
| Grand Means | 177.25 Taber Units | 176.56 Taber Units |
| Std Dev Btwn Labs | 8.48 Taber Units | 3.17 Taber Units |
| Statistics based on 10 of 10 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

Report #4281,
January 2024

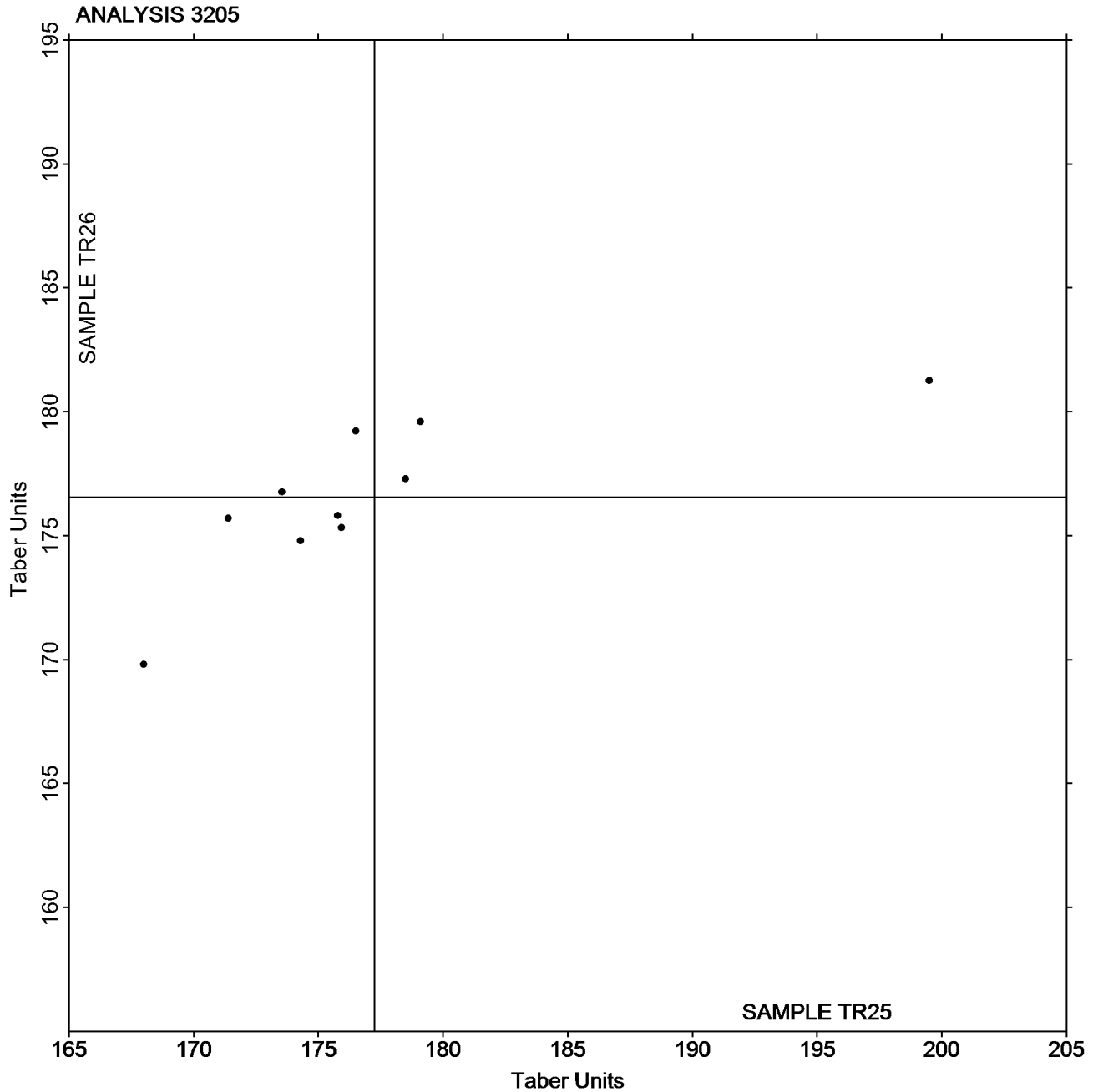
Analysis 3205

Bending Resistance, Taber Type - 50 to 500 Taber Units - Recycled Paperboard

TAPPI Official Test Method T489

Grand Mean Sample TR25 = 177.25
Taber Units

Grand Mean Sample TR26 = 176.56
Taber 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 3207
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

Report #4281,
January 2024

| WebCode | Data Flag | Sample ZR25 | | | Sample ZR26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 3PBGR9 | | 65.04 | 2.19 | 0.49 | 66.60 | 4.12 | 0.79 |
| 4ZRLCD | X | 105.60 | 42.75 | 9.68 | 66.20 | 3.72 | 0.71 |
| 6DRMPE | | 64.86 | 2.01 | 0.45 | 65.00 | 2.52 | 0.48 |
| 7EXNNH | | 63.48 | 0.63 | 0.14 | 68.68 | 6.20 | 1.18 |
| 83MBA3 | | 65.60 | 2.75 | 0.62 | 65.40 | 2.92 | 0.56 |
| BDP6U3 | | 67.60 | 4.75 | 1.07 | 70.60 | 8.12 | 1.55 |
| D6A7BB | | 59.00 | -3.85 | -0.87 | 58.00 | -4.48 | -0.85 |
| EZTXMC | | 72.24 | 9.39 | 2.12 | 66.28 | 3.80 | 0.72 |
| EZWK4P | | 62.30 | -0.55 | -0.13 | 61.52 | -0.96 | -0.18 |
| HEH8ZR | | 59.32 | -3.53 | -0.80 | 59.76 | -2.72 | -0.52 |
| MYTPXQ | | 60.94 | -1.91 | -0.43 | 62.20 | -0.28 | -0.05 |
| PQRCQL | | 56.76 | -6.09 | -1.38 | 57.36 | -5.12 | -0.98 |
| Q8QPYM | | 62.06 | -0.79 | -0.18 | 62.02 | -0.46 | -0.09 |
| R8BPEX | * | 60.34 | -2.51 | -0.57 | 48.60 | -13.88 | -2.65 |
| UJU9Q6 | | 64.80 | 1.95 | 0.44 | 64.40 | 1.92 | 0.37 |
| VRPBRG | | 66.32 | 3.47 | 0.78 | 62.52 | 0.04 | 0.01 |
| VVNPF7 | | 64.54 | 1.69 | 0.38 | 65.90 | 3.42 | 0.65 |
| WC836H | | 53.33 | -9.53 | -2.16 | 57.32 | -5.16 | -0.98 |

| Summary Statistics | Sample ZR25 | Sample ZR26 |
|--|-------------|-------------|
| Grand Means | 62.85 psi | 62.48 psi |
| Std Dev Btwn Labs | 4.42 psi | 5.25 psi |
| Statistics based on 17 of 18 reporting participants. | | |

Comments on Assigned Data Flags for Test #3207

4ZRLCD (X) - Extreme Data for Sample ZR25.



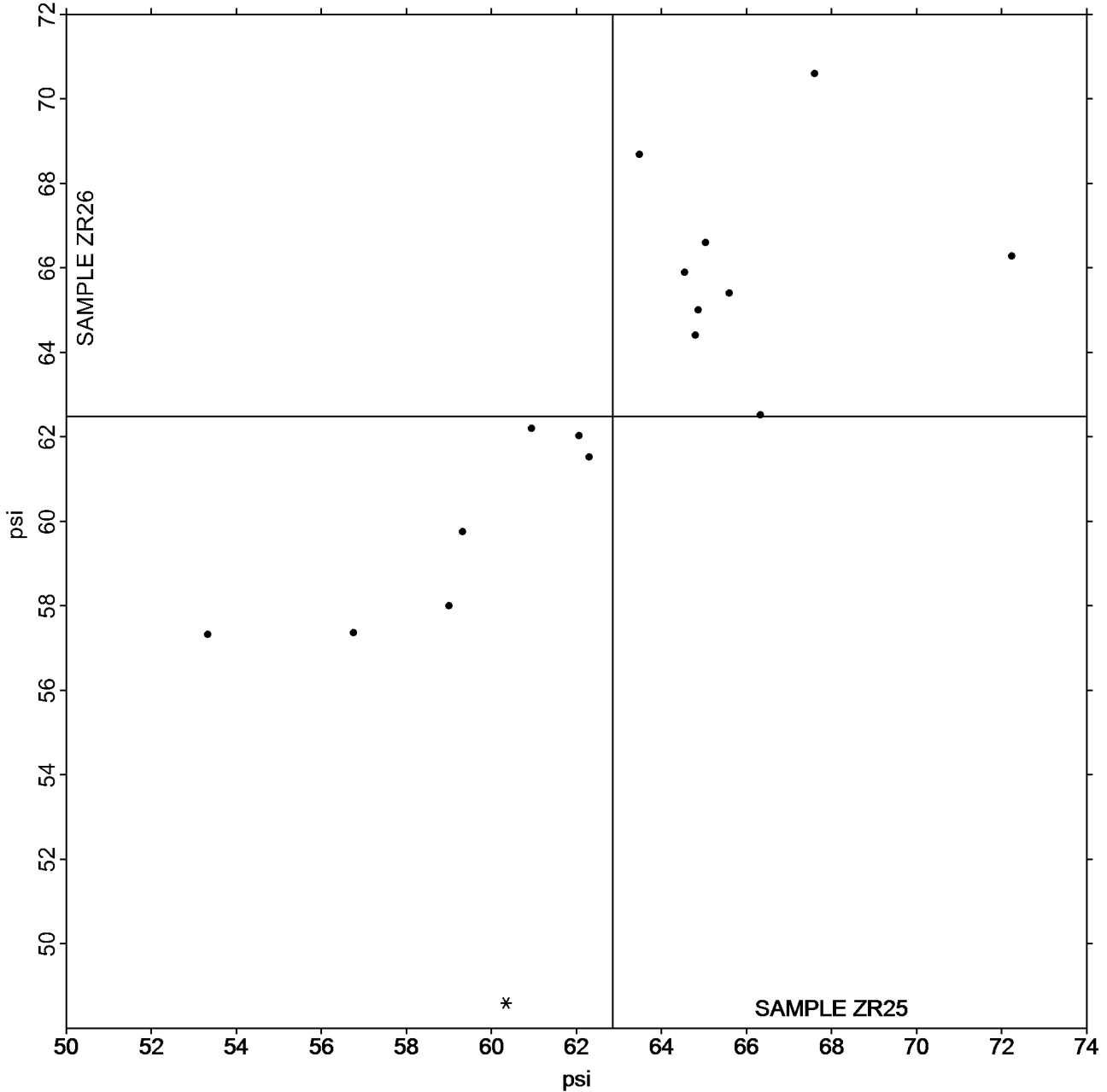
Paper & Paperboard Interlaboratory Testing Program
Analysis 3207
Z-Direction Tensile, Recycled Paperboard
TAPPI Official Test Method T541

Report #4281,
January 2024

Grand Mean Sample ZR25 = 62.855
psi

Grand Mean Sample ZR26 = 62.480
psi

ANALYSIS 3207



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 3209
Z-Direction Tensile
TAPPI Official Test Method T541

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample ZP25</u> | | | <u>Sample ZP26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2UQPF9 | | 94.00 | 9.22 | 0.77 | 68.60 | 2.16 | 0.29 |
| 38V9R9 | | 78.10 | -6.68 | -0.55 | 58.92 | -7.52 | -1.01 |
| 3EEBWP | | 75.00 | -9.78 | -0.81 | 66.04 | -0.40 | -0.05 |
| 3PBGR9 | | 104.46 | 19.68 | 1.63 | 70.66 | 4.22 | 0.56 |
| 3REAKL | | 66.60 | -18.18 | -1.51 | 51.30 | -15.14 | -2.02 |
| 4E9GRA | | 89.56 | 4.78 | 0.40 | 64.44 | -2.00 | -0.27 |
| 83MBA3 | | 79.44 | -5.34 | -0.44 | 72.48 | 6.04 | 0.81 |
| BP7PDY | | 77.26 | -7.52 | -0.62 | 63.21 | -3.23 | -0.43 |
| FZRM7Y | | 102.34 | 17.56 | 1.46 | 75.58 | 9.14 | 1.22 |
| HEH8ZR | | 83.80 | -0.98 | -0.08 | 71.00 | 4.56 | 0.61 |
| U2T7BL | | 72.61 | -12.17 | -1.01 | 58.89 | -7.56 | -1.01 |
| XC28Z3 | | 94.20 | 9.42 | 0.78 | 76.20 | 9.76 | 1.30 |

| Summary Statistics | <u>Sample ZP25</u> | <u>Sample ZP26</u> |
|--|--------------------|--------------------|
| Grand Means | 84.78 psi | 66.44 psi |
| Stnd Dev Btwn Labs | 12.05 psi | 7.48 psi |
| Statistics based on 12 of 12 reporting participants. | | |



Paper & Paperboard Interlaboratory Testing Program

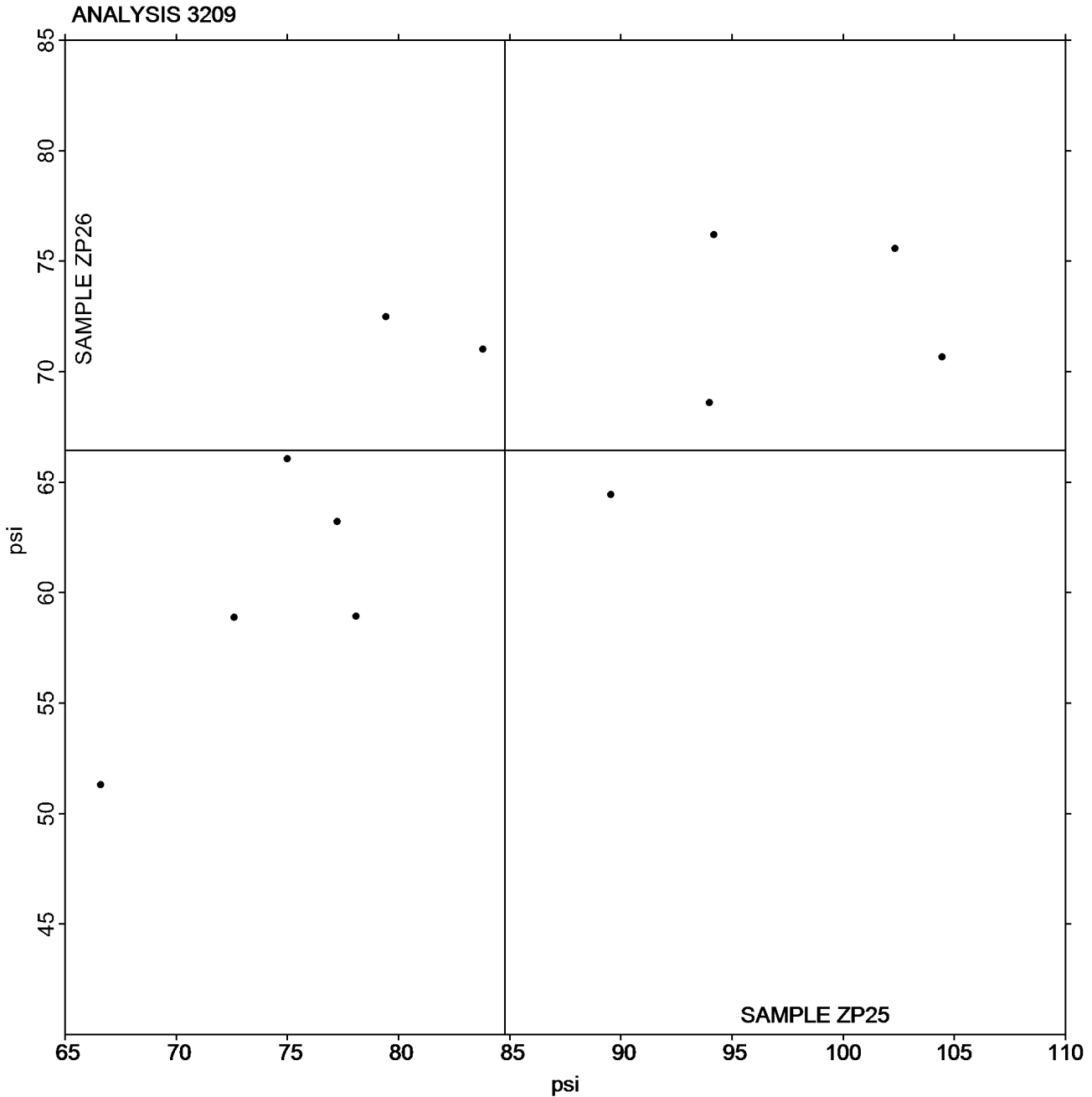
Report #4281,
January 2024

Analysis 3209 Z-Direction Tensile

TAPPI Official Test Method T541

Grand Mean Sample ZP25 = 84.780
psi

Grand Mean Sample ZP26 = 66.443
psi



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 3211
Internal Bond Strength - Modified Scott Mechanics
TAPPI Provisional Test Method T569

Report #4281,
January 2024

| WebCode | Data Flag | Sample SM25 | | | Sample SM26 | | |
|---------|-----------|-------------|----------------------|-------|-------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 2UQPF9 | | 129.8 | 6.4 | 0.62 | 131.6 | 7.1 | 0.71 |
| 3PBGR9 | | 132.0 | 8.6 | 0.83 | 133.2 | 8.7 | 0.87 |
| 3REAKL | | 106.6 | -16.8 | -1.62 | 107.8 | -16.7 | -1.67 |
| 4E9GRA | | 125.6 | 2.2 | 0.21 | 128.8 | 4.3 | 0.43 |
| 4ZRLCD | | 142.6 | 19.2 | 1.85 | 136.6 | 12.1 | 1.21 |
| 7EXNNH | | 125.8 | 2.4 | 0.23 | 127.4 | 2.9 | 0.29 |
| 833WJ6 | | 121.0 | -2.4 | -0.23 | 121.0 | -3.5 | -0.35 |
| FZRM7Y | | 114.6 | -8.8 | -0.85 | 117.6 | -6.9 | -0.69 |
| LPMK9V | | 114.6 | -8.8 | -0.85 | 117.2 | -7.3 | -0.73 |
| MMC3M6 | | 116.2 | -7.2 | -0.69 | 122.4 | -2.1 | -0.21 |
| V98CKX | | 112.1 | -11.3 | -1.09 | 110.4 | -14.1 | -1.41 |
| W69FF4 | | 136.2 | 12.8 | 1.24 | 141.8 | 17.3 | 1.73 |
| XC28Z3 | | 126.8 | 3.4 | 0.33 | 122.4 | -2.1 | -0.21 |

| Summary Statistics | Sample SM25 | Sample SM26 |
|--|----------------------|----------------------|
| Grand Means | 123.38 1000th ft-lbs | 124.47 1000th ft-lbs |
| Stnd Dev Btwn Labs | 10.37 1000th ft-lbs | 9.99 1000th ft-lbs |
| Statistics based on 13 of 13 reporting participants. | | |



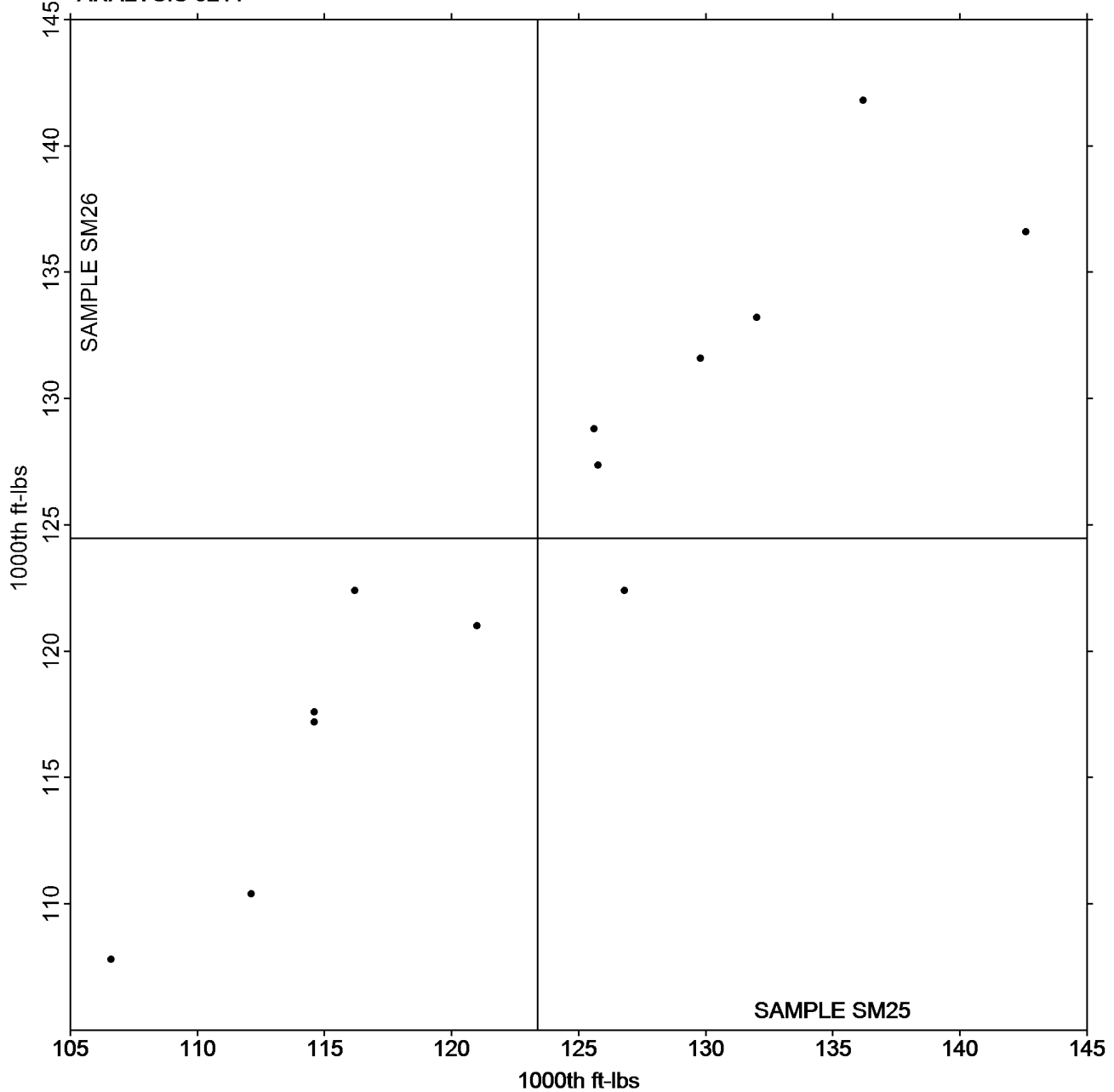
Paper & Paperboard Interlaboratory Testing Program
Analysis 3211
Internal Bond Strength - Modified Scott Mechanics
TAPPI Provisional Test Method T569

Report #4281,
January 2024

Grand Mean Sample SM25 = 123.38
1000th ft-lbs

Grand Mean Sample SM26 = 124.47
1000th ft-lbs

ANALYSIS 3211



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 3213
Internal Bond Strength - Scott Bond Models
TAPPI Provisional Test Method T569

Report #4281,
January 2024

| WebCode | Data Flag | <u>Sample SB25</u> | | | <u>Sample SB26</u> | | |
|---------|-----------|--------------------|----------------------|-------|--------------------|----------------------|-------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV |
| 29VNQZ | | 105.4 | -13.3 | -0.80 | 106.1 | -11.6 | -0.79 |
| 2CQFWB | | 112.6 | -6.1 | -0.36 | 113.2 | -4.5 | -0.31 |
| 8JBNLA | | 98.6 | -20.0 | -1.21 | 99.8 | -17.9 | -1.22 |
| 96KEDU | | 130.6 | 12.0 | 0.72 | 129.6 | 11.9 | 0.81 |
| DPJZ8N | | 103.0 | -15.6 | -0.94 | 105.0 | -12.7 | -0.87 |
| GFWELA | | 122.6 | 4.0 | 0.24 | 120.4 | 2.7 | 0.19 |
| GHLHJM | | 158.0 | 39.4 | 2.37 | 151.8 | 34.1 | 2.33 |
| LKTRBU | | 102.2 | -16.4 | -0.99 | 103.9 | -13.8 | -0.94 |
| LPMK9V | | 129.2 | 10.6 | 0.63 | 127.8 | 10.1 | 0.69 |
| QVFEAC | | 134.6 | 16.0 | 0.96 | 122.0 | 4.3 | 0.30 |
| RB7JDY | | 108.0 | -10.6 | -0.64 | 103.2 | -14.5 | -0.99 |
| RPP4YE | | 117.6 | -1.0 | -0.06 | 119.4 | 1.7 | 0.12 |
| WC836H | | 120.0 | 1.4 | 0.08 | 127.6 | 9.9 | 0.68 |

| Summary Statistics | <u>Sample SB25</u> | <u>Sample SB26</u> |
|--|----------------------|----------------------|
| Grand Means | 118.65 1000th ft-lbs | 117.68 1000th ft-lbs |
| Stnd Dev Btwn Labs | 16.63 1000th ft-lbs | 14.63 1000th ft-lbs |
| Statistics based on 13 of 13 reporting participants. | | |



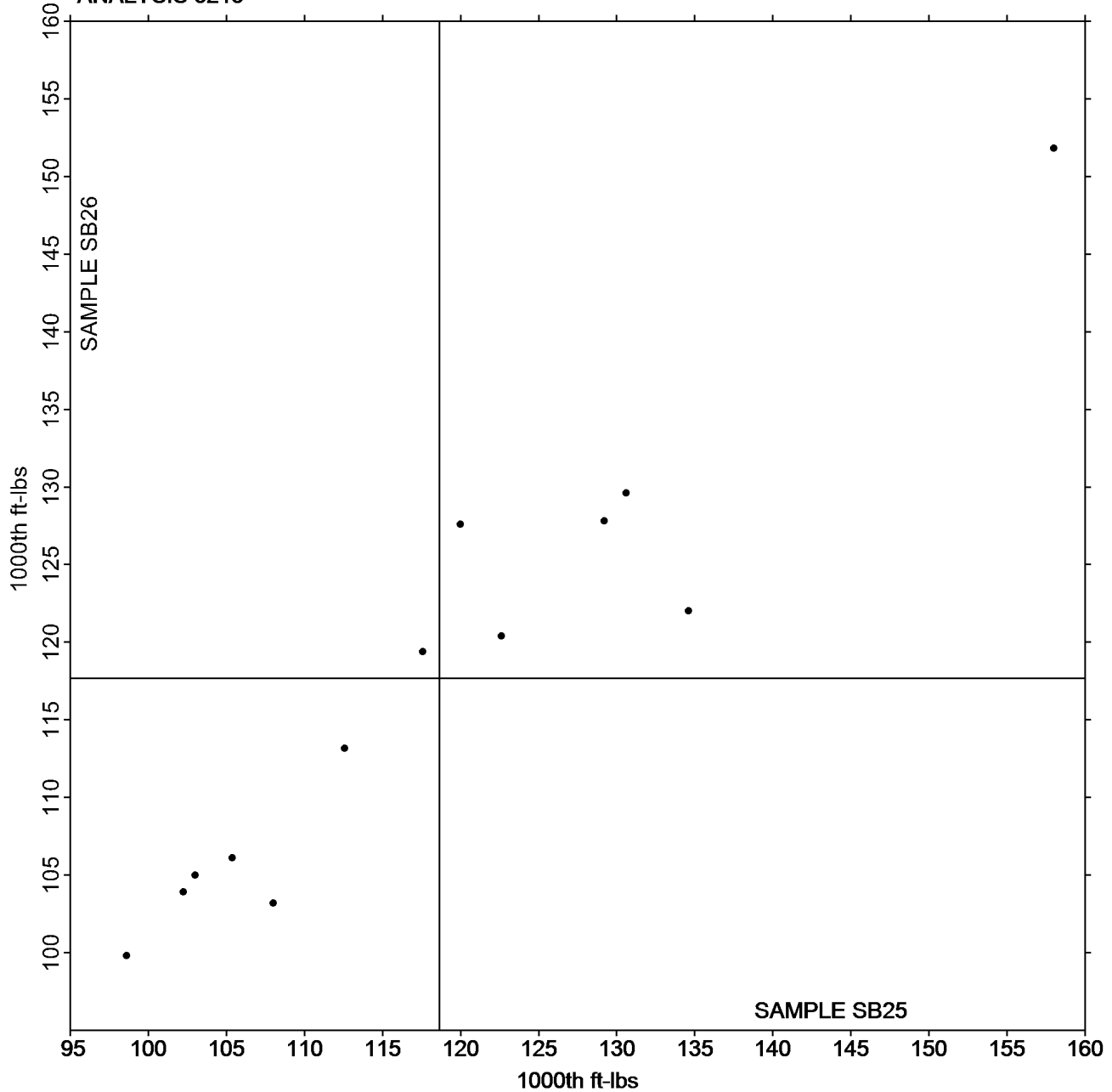
Paper & Paperboard Interlaboratory Testing Program
Analysis 3213
Internal Bond Strength - Scott Bond Models
TAPPI Provisional Test Method T569

Report #4281,
January 2024

Grand Mean Sample SB25 = 118.65
1000th ft-lbs

Grand Mean Sample SB26 = 117.68
1000th ft-lbs

ANALYSIS 3213



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

-End of Report-