



## Plastics Interlaboratory Testing Program

### Web Summary Report #100, 4th Qtr 2016

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#### Analysis Analysis Name

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## About CTS and the Plastics Interlaboratory Program

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, 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 control objectives. Labs from the U.S., as well as more than 80 countries currently participate in CTS programs.

Collaborative Testing Services initiated the Collaborative Reference Program for PLASTICS in 1992 at the request of industry, ASTM committee D-20 members, and accrediting bodies. Additional test methods are always under review and are incorporated into the program when possible.

The program allows laboratories to compare periodically the level and uniformity of their testing with that of other participating laboratories. It also provides a realistic assessment of the state of plastics testing proficiency.

For each test there is a summary of the statistics for the analysis and a graphical representation of the data. Also shown are notes concerning specific laboratory results, as well as significant findings related to instrument types or other testing variations. Refer to the KEY FOR SUMMARY REPORT for an explanation of terms and guidelines for interpreting the results.

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

|                                       |   |
|---------------------------------------|---|
| <b>WebCode</b>                        | Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Plastics Web Summary Report published on the CTS web site. The WebCode for each analysis can be found in the Performance Analysis Report mailed to each participant.  |
| <b>Lab Mean</b>                       | The average of the test results obtained by the participant.  |
| <b>Grand Mean</b>                     | The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.   |
| <b>Difference from Grand Mean</b>     | The difference of the LAB MEAN from the GRAND MEAN.   |
| <b>Between-Lab Standard Deviation</b> | An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).   |
| <b>Comparative Performance Value</b>  | An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa). The critical value for each CPV will vary depending on the number of labs participating in a test. |
| <b>Inst Code</b>                      | A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section) if instruments are tracked.   |
| <b>Data Flag</b>                      | DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:  |

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

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

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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.



## Plastics Interlaboratory Testing Program

### Results Summary for Report #100, 4th Qtr 2016

#### Analysis 704 - Tensile Stress at Yield

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: HIPS | Sample F39 | 3,179.66 | psi | 3.66% COV |
|                | Sample F40 | 3,183.87 | psi | 3.43% COV |

#### Analysis 705 - Tensile Stress at Break

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: HIPS | Sample F39 | 2,584.17 | psi | 3.66% COV |
|                | Sample F40 | 2,601.42 | psi | 2.93% COV |

#### Analysis 706 - Percent Elongation at Yield

|                |            |        |         |           |
|----------------|------------|--------|---------|-----------|
| Material: HIPS | Sample F39 | 1.3276 | Percent | 5.11% COV |
|                | Sample F40 | 1.3354 | Percent | 5.21% COV |

#### Analysis 708 - Modulus of Elasticity

|                |            |        |     |           |
|----------------|------------|--------|-----|-----------|
| Material: HIPS | Sample F39 | 274.14 | ksi | 6.15% COV |
|                | Sample F40 | 272.89 | ksi | 5.52% COV |

#### Analysis 710 - Deflection Temp. Under Flexural Load (1.82 MPa)

|                |            |        |           |            |
|----------------|------------|--------|-----------|------------|
| Material: HIPS | Sample E39 | 79.868 | Degrees C | 0.952% COV |
|                | Sample E40 | 79.931 | Degrees C | 1.00% COV  |

#### Analysis 711 - Deflection Temp. Under Flexural Load (0.455 MPa)

|              |            |        |           |           |
|--------------|------------|--------|-----------|-----------|
| Material: PP | Sample G39 | 83.178 | Degrees C | 2.45% COV |
|              | Sample G40 | 83.212 | Degrees C | 2.58% COV |

#### Analysis 712 - Temperature of Deflection (1.80 MPa)

|                |            |        |           |           |
|----------------|------------|--------|-----------|-----------|
| Material: HIPS | Sample N39 | 78.063 | Degrees C | 1.27% COV |
|                | Sample N40 | 78.008 | Degrees C | 1.22% COV |

#### Analysis 715 - Vicat Temperature (Rate A)

|                |            |        |           |            |
|----------------|------------|--------|-----------|------------|
| Material: HIPS | Sample H39 | 96.193 | Degrees C | 0.785% COV |
|                | Sample H40 | 96.196 | Degrees C | 0.718% COV |

#### Analysis 716 - Vicat Temperature (Rate B)

|                |            |        |           |            |
|----------------|------------|--------|-----------|------------|
| Material: HIPS | Sample R39 | 98.383 | Degrees C | 0.833% COV |
|                | Sample R40 | 98.392 | Degrees C | 0.822% COV |

#### Analysis 718 - Specific Gravity

|                |            |        |               |            |
|----------------|------------|--------|---------------|------------|
| Material: HIPS | Sample T39 | 1.0491 | sp gr 23/23 C | 0.177% COV |
|                | Sample T40 | 1.0490 | sp gr 23/23 C | 0.189% COV |

#### Analysis 720 - Flexural Modulus

|                |            |        |     |           |
|----------------|------------|--------|-----|-----------|
| Material: HIPS | Sample J39 | 275.64 | ksi | 6.05% COV |
|                | Sample J40 | 275.47 | ksi | 6.07% COV |

#### Analysis 721 - Flexural Stress at 5% Strain

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: HIPS | Sample J39 | 5,004.31 | psi | 4.12% COV |
|                | Sample J40 | 5,008.66 | psi | 4.14% COV |

#### Analysis 722 - Flexural Stress at Yield

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: HIPS | Sample J39 | 5,021.07 | psi | 3.84% COV |
|                | Sample J40 | 5,017.81 | psi | 3.89% COV |

#### Analysis 730 - Tensile Stress at Yield, ISO Method

|                |            |        |     |           |
|----------------|------------|--------|-----|-----------|
| Material: HIPS | Sample C39 | 27.903 | MPa | 2.96% COV |
|                | Sample C40 | 21.024 | MPa | 3.75% COV |

#### Analysis 731 - Tensile Stress at Break, ISO Method

|                |            |        |     |           |
|----------------|------------|--------|-----|-----------|
| Material: HIPS | Sample C39 | 23.231 | MPa | 3.49% COV |
|                | Sample C40 | 16.556 | MPa | 4.59% COV |



# Plastics Interlaboratory Testing Program

## Results Summary for Report #100, 4th Qtr 2016

### Analysis 732 - Strain at Yield, ISO Method

|                |            |        |         |           |
|----------------|------------|--------|---------|-----------|
| Material: HIPS | Sample C39 | 1.4295 | Percent | 6.52% COV |
|                | Sample C40 | 1.2702 | Percent | 6.15% COV |

### Analysis 734 - Modulus of Elasticity, ISO Method

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: HIPS | Sample C39 | 2,204.90 | MPa | 4.03% COV |
|                | Sample C40 | 1,813.54 | MPa | 4.29% COV |

### Analysis 736 - Flexural Modulus

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: HIPS | Sample K39 | 1,852.04 | MPa | 5.20% COV |
|                | Sample K40 | 1,856.79 | MPa | 5.02% COV |

### Analysis 737 - Flexural Stress at 3.5% Strain

|                |            |        |     |           |
|----------------|------------|--------|-----|-----------|
| Material: HIPS | Sample K39 | 33.913 | MPa | 3.91% COV |
|                | Sample K40 | 33.964 | MPa | 3.89% COV |

### Analysis 738 - Flexural Stress at Yield

|                |            |        |     |           |
|----------------|------------|--------|-----|-----------|
| Material: HIPS | Sample K39 | 33.869 | MPa | 3.23% COV |
|                | Sample K40 | 33.954 | MPa | 3.28% COV |

### Analysis 750 - Flow Rate (190C or 230C/2.16 kg)

|                |            |        |               |           |
|----------------|------------|--------|---------------|-----------|
| Material: LDPE | Sample X39 | 6.4083 | grams/10 mins | 4.53% COV |
|                | Sample X40 | 6.4128 | grams/10 mins | 4.21% COV |

### Analysis 755 - Moisture Content

|                |            |         |         |           |
|----------------|------------|---------|---------|-----------|
| Material: HIPS | Sample Y39 | 0.02563 | Percent | 36.9% COV |
|                | Sample Y40 | 0.02886 | Percent | 30.6% COV |

### Analysis 757 - Ash Content

|               |            |        |         |            |
|---------------|------------|--------|---------|------------|
| Material: PBT | Sample L39 | 14.954 | Percent | 0.908% COV |
|               | Sample L40 | 14.944 | Percent | 0.796% COV |

### Analysis 760 - DSC

|               |            |        |                 |           |
|---------------|------------|--------|-----------------|-----------|
| Material: PBT | Sample W39 | 176.30 | Degrees Celsius | 2.06% COV |
|               | Sample W40 | 195.98 | Degrees Celsius | 1.47% COV |

### Analysis 761 - DSC

|               |            |        |                 |            |
|---------------|------------|--------|-----------------|------------|
| Material: PBT | Sample W39 | 224.32 | Degrees Celsius | 0.699% COV |
|               | Sample W40 | 221.53 | Degrees Celsius | 0.785% COV |

### Analysis 762 - DSC

|               |            |        |                 |           |
|---------------|------------|--------|-----------------|-----------|
| Material: PBT | Sample W39 | 47.299 | Joules Per Gram | 9.38% COV |
|               | Sample W40 | 22.753 | Joules Per Gram | 13.1% COV |

### Analysis 763 - DSC

|               |            |        |                 |           |
|---------------|------------|--------|-----------------|-----------|
| Material: PBT | Sample W39 | 40.026 | Joules Per Gram | 12.0% COV |
|               | Sample W40 | 23.046 | Joules Per Gram | 9.43% COV |

### Analysis 764 - DSC

|               |            |        |                 |           |
|---------------|------------|--------|-----------------|-----------|
| Material: PET | Sample V39 | 86.015 | Degrees Celsius | 2.90% COV |
|               | Sample V40 | 86.154 | Degrees Celsius | 2.69% COV |

### Analysis 770 - Tensile Stress at Yield, Films

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: LDPE | Sample B39 | 1,634.36 | psi | 6.29% COV |
|                | Sample B40 | 1,624.28 | psi | 6.61% COV |

### Analysis 771 - Tensile Stress at Break, Films

|                |            |          |     |           |
|----------------|------------|----------|-----|-----------|
| Material: LDPE | Sample B39 | 3,350.01 | psi | 12.5% COV |
|                | Sample B40 | 3,361.51 | psi | 11.7% COV |



# Plastics Interlaboratory Testing Program

## Results Summary for Report #100, 4th Qtr 2016

### Analysis 772 - Elongation at Yield, Films

|                |            |        |         |           |
|----------------|------------|--------|---------|-----------|
| Material: LDPE | Sample B39 | 45.165 | Percent | 53.8% COV |
|                | Sample B40 | 45.079 | Percent | 54.3% COV |

### Analysis 773 - Elongation at Break, Films

|                |            |        |         |           |
|----------------|------------|--------|---------|-----------|
| Material: LDPE | Sample B39 | 757.40 | Percent | 20.3% COV |
|                | Sample B40 | 778.34 | Percent | 23.3% COV |

### Analysis 774 - Thickness of Film Specimens

|                |            |        |      |           |
|----------------|------------|--------|------|-----------|
| Material: LDPE | Sample B39 | 3.8786 | mils | 2.74% COV |
|                | Sample B40 | 3.9148 | mils | 3.60% COV |

### Analysis 775 - Secant Modulus at 1% Strain

|                |            |           |     |           |
|----------------|------------|-----------|-----|-----------|
| Material: LDPE | Sample B39 | 30,419.08 | psi | 16.8% COV |
|                | Sample B40 | 29,760.62 | psi | 18.2% COV |

### Analysis 776 - Secant Modulus at 2% Strain

|                |            |           |     |           |
|----------------|------------|-----------|-----|-----------|
| Material: LDPE | Sample B39 | 26,515.06 | psi | 11.1% COV |
|                | Sample B40 | 25,664.15 | psi | 10.7% COV |

### Analysis 780 - Static Friction

|                |            |         |     |           |
|----------------|------------|---------|-----|-----------|
| Material: LDPE | Sample P39 | 0.13214 | COF | 40.1% COV |
|                | Sample P40 | 0.12631 | COF | 38.6% COV |

### Analysis 781 - Kinetic Friction

|                |            |         |     |           |
|----------------|------------|---------|-----|-----------|
| Material: LDPE | Sample P39 | 0.10492 | COF | 38.6% COV |
|                | Sample P40 | 0.09772 | COF | 35.2% COV |

### Analysis 782 - Tear Resistance of Film

|                |            |        |             |           |
|----------------|------------|--------|-------------|-----------|
| Material: LDPE | Sample Q39 | 480.70 | grams-force | 9.73% COV |
|                | Sample Q40 | 481.75 | grams-force | 6.43% COV |

### Analysis 785 - Percent Haze

|                |            |        |         |           |
|----------------|------------|--------|---------|-----------|
| Material: LDPE | Sample D39 | 12.536 | Percent | 6.98% COV |
|                | Sample D40 | 12.494 | Percent | 5.39% COV |

### Analysis 786 - Total Transmittance

|                |            |        |         |           |
|----------------|------------|--------|---------|-----------|
| Material: LDPE | Sample D39 | 91.800 | Percent | 1.17% COV |
|                | Sample D40 | 91.802 | Percent | 1.17% COV |

### Analysis 790 - Notched Izod Impact

|                |            |        |           |            |
|----------------|------------|--------|-----------|------------|
| Material: HIPS | Sample S39 | 2.8932 | ft.lbf/in | 10.0% COV  |
|                | Sample S40 | 2.8820 | ft.lbf/in | 10.00% COV |

### Analysis 791 - Notched Izod Impact

|                |            |        |                   |           |
|----------------|------------|--------|-------------------|-----------|
| Material: HIPS | Sample Z39 | 21.855 | kJ/m <sup>2</sup> | 5.23% COV |
|                | Sample Z40 | 21.911 | kJ/m <sup>2</sup> | 4.22% COV |

### Analysis 792 - Notched Charpy Impact

|                |            |        |                   |           |
|----------------|------------|--------|-------------------|-----------|
| Material: HIPS | Sample M39 | 11.338 | kJ/m <sup>2</sup> | 4.22% COV |
|                | Sample M40 | 11.370 | kJ/m <sup>2</sup> | 4.23% COV |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 704

4th Qtr 2016

### Tensile Stress at Yield - psi

| WebCode | Data Flag | Sample F39 |                      |       | Sample F40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 3GKU6W  |           | 3,203.4    | 23.7                 | 0.20  | 3,157.6    | -26.3                | -0.24 |
| 3V4EPP  |           | 3,120.4    | -59.3                | -0.51 | 3,136.0    | -47.9                | -0.44 |
| 4A82TZ  |           | 3,161.6    | -18.1                | -0.16 | 3,158.9    | -24.9                | -0.23 |
| 4M88WQ  |           | 3,027.6    | -152.1               | -1.31 | 3,048.0    | -135.9               | -1.24 |
| 4XPJWM  |           | 3,137.7    | -42.0                | -0.36 | 3,153.7    | -30.2                | -0.28 |
| 6PQDGQ  | X         | 2,885.4    | -294.3               | -2.53 | 2,815.6    | -368.3               | -3.37 |
| 7FNBZZ  |           | 3,165.8    | -13.9                | -0.12 | 3,180.0    | -3.9                 | -0.04 |
| 82ZQTC  |           | 3,232.7    | 53.0                 | 0.46  | 3,197.5    | 13.7                 | 0.13  |
| 8JHUBX  |           | 2,970.4    | -209.3               | -1.80 | 3,016.8    | -167.1               | -1.53 |
| 8YU66C  |           | 3,146.3    | -33.4                | -0.29 | 3,163.3    | -20.6                | -0.19 |
| 8Z93LW  |           | 3,100.5    | -79.1                | -0.68 | 3,112.2    | -71.7                | -0.66 |
| 92FADA  |           | 3,260.2    | 80.5                 | 0.69  | 3,207.2    | 23.3                 | 0.21  |
| 9E2DAR  |           | 3,223.6    | 43.9                 | 0.38  | 3,234.0    | 50.1                 | 0.46  |
| 9KQYQ8  |           | 3,162.8    | -16.9                | -0.14 | 3,164.2    | -19.7                | -0.18 |
| 9MC7PU  |           | 3,230.8    | 51.2                 | 0.44  | 3,199.5    | 15.6                 | 0.14  |
| 9N72LX  | *         | 3,471.9    | 292.2                | 2.51  | 3,403.1    | 219.2                | 2.01  |
| A696LF  |           | 3,115.4    | -64.2                | -0.55 | 3,112.5    | -71.3                | -0.65 |
| A7PR8V  |           | 3,335.8    | 156.1                | 1.34  | 3,288.6    | 104.7                | 0.96  |
| AXPMV7  |           | 3,133.8    | -45.9                | -0.39 | 3,178.8    | -5.1                 | -0.05 |
| BBBQRN  |           | 3,195.9    | 16.3                 | 0.14  | 3,241.2    | 57.3                 | 0.52  |
| BTXH22  |           | 3,238.8    | 59.1                 | 0.51  | 3,210.8    | 26.9                 | 0.25  |
| CLT3RK  |           | 3,116.6    | -63.1                | -0.54 | 3,122.6    | -61.3                | -0.56 |
| DFG9YF  |           | 3,076.4    | -103.3               | -0.89 | 3,071.4    | -112.5               | -1.03 |
| DNAEWM  |           | 3,108.8    | -70.9                | -0.61 | 3,087.4    | -96.5                | -0.88 |
| E8YVWA  |           | 2,982.4    | -197.3               | -1.69 | 3,028.2    | -155.7               | -1.42 |
| ECC7ZH  |           | 3,238.0    | 58.3                 | 0.50  | 3,270.0    | 86.1                 | 0.79  |
| EY6MXG  |           | 3,333.8    | 154.1                | 1.32  | 3,328.4    | 144.5                | 1.32  |
| GN2EKC  |           | 3,141.2    | -38.5                | -0.33 | 3,194.6    | 10.7                 | 0.10  |
| H3EUVR  | *         | 2,855.8    | -323.9               | -2.78 | 2,894.4    | -289.5               | -2.65 |
| HMZYPQ  |           | 3,254.3    | 74.6                 | 0.64  | 3,294.7    | 110.8                | 1.01  |
| HWBVHG  |           | 3,215.8    | 36.1                 | 0.31  | 3,153.4    | -30.5                | -0.28 |
| JV8PFD  |           | 3,190.9    | 11.2                 | 0.10  | 3,248.9    | 65.0                 | 0.59  |
| JYCKDH  |           | 3,270.1    | 90.4                 | 0.78  | 3,256.8    | 72.9                 | 0.67  |
| K4GEUB  |           | 3,192.4    | 12.7                 | 0.11  | 3,192.4    | 8.5                  | 0.08  |
| K9UPXL  | X         | 2,655.2    | -524.4               | -4.50 | 2,654.3    | -529.6               | -4.84 |





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 704

4th Qtr 2016

### Tensile Stress at Yield - psi

| WebCode | Data Flag | Sample F39 |                      |       | Sample F40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| KLYFND  |           | 3,127.9    | -51.8                | -0.44 | 3,155.8    | -28.1                | -0.26 |
| KNR4BF  |           | 3,246.5    | 66.8                 | 0.57  | 3,308.0    | 124.2                | 1.14  |
| L6CCLH  | *         | 3,533.0    | 353.3                | 3.03  | 3,503.4    | 319.5                | 2.92  |
| L8ZKNK  |           | 3,187.6    | 7.9                  | 0.07  | 3,141.6    | -42.3                | -0.39 |
| LJ89VN  |           | 3,347.6    | 167.9                | 1.44  | 3,373.0    | 189.1                | 1.73  |
| LQRWHJ  |           | 3,125.0    | -54.7                | -0.47 | 3,164.5    | -19.4                | -0.18 |
| MU8LGM  |           | 3,232.8    | 53.1                 | 0.46  | 3,196.0    | 12.1                 | 0.11  |
| MWVXGR  |           | 3,274.8    | 95.1                 | 0.82  | 3,298.8    | 114.9                | 1.05  |
| NC3977  |           | 3,254.7    | 75.0                 | 0.64  | 3,231.5    | 47.6                 | 0.44  |
| NX48T6  |           | 3,148.0    | -31.7                | -0.27 | 3,134.0    | -49.9                | -0.46 |
| P2E32R  |           | 3,139.2    | -40.5                | -0.35 | 3,101.8    | -82.1                | -0.75 |
| PFJTV7  |           | 3,163.9    | -15.8                | -0.14 | 3,157.5    | -26.4                | -0.24 |
| QHJTJM  |           | 3,167.7    | -11.9                | -0.10 | 3,160.6    | -23.3                | -0.21 |
| QLYTPA  |           | 3,223.8    | 44.1                 | 0.38  | 3,219.4    | 35.5                 | 0.32  |
| QZZ64Z  |           | 3,165.6    | -14.1                | -0.12 | 3,213.6    | 29.7                 | 0.27  |
| R4ZZFV  |           | 3,208.4    | 28.7                 | 0.25  | 3,237.0    | 53.1                 | 0.49  |
| RGMA32  |           | 3,247.4    | 67.7                 | 0.58  | 3,254.2    | 70.3                 | 0.64  |
| RZZPLG  | *         | 2,867.7    | -312.0               | -2.68 | 2,877.7    | -306.2               | -2.80 |
| T2R6D4  |           | 3,340.4    | 160.7                | 1.38  | 3,375.9    | 192.0                | 1.76  |
| T6L7DX  | X         | 3,016.8    | -162.9               | -1.40 | 3,161.9    | -22.0                | -0.20 |
| UFKR4A  | X         | 2,941.4    | -238.3               | -2.05 | 3,077.7    | -106.1               | -0.97 |
| UMJAK7  |           | 3,011.2    | -168.5               | -1.45 | 3,058.6    | -125.3               | -1.15 |
| VXKQKV  |           | 3,193.4    | 13.7                 | 0.12  | 3,220.2    | 36.3                 | 0.33  |
| VYTE68  |           | 3,202.8    | 23.1                 | 0.20  | 3,256.6    | 72.7                 | 0.67  |
| VYWTH9  | X         | 2,970.7    | -209.0               | -1.79 | 3,094.0    | -89.9                | -0.82 |
| WB44MA  |           | 3,341.6    | 161.9                | 1.39  | 3,265.8    | 81.9                 | 0.75  |
| WJVGKN  |           | 3,197.2    | 17.5                 | 0.15  | 3,199.7    | 15.8                 | 0.14  |
| WPGGVU  |           | 3,290.0    | 110.3                | 0.95  | 3,282.6    | 98.7                 | 0.90  |
| WVTKNH  |           | 3,137.8    | -41.9                | -0.36 | 3,150.2    | -33.7                | -0.31 |
| WWHF2X  |           | 3,204.6    | 25.0                 | 0.21  | 3,224.4    | 40.5                 | 0.37  |
| X6CNFW  |           | 3,172.8    | -6.9                 | -0.06 | 3,200.8    | 16.9                 | 0.15  |
| XA2Z2X  |           | 2,953.0    | -226.7               | -1.95 | 2,973.3    | -210.6               | -1.93 |
| XD4U49  |           | 3,180.0    | 0.3                  | 0.00  | 3,181.8    | -2.1                 | -0.02 |
| XLFNJB  |           | 3,268.4    | 88.7                 | 0.76  | 3,229.0    | 45.1                 | 0.41  |
| XLHKQZ  |           | 3,071.6    | -108.1               | -0.93 | 3,073.8    | -110.1               | -1.01 |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 704**

**4th Qtr 2016**

**Tensile Stress at Yield - psi**

| WebCode | Data Flag | Sample F39 |                      |       | Sample F40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| XVZRDB  |           | 3,049.2    | -130.5               | -1.12 | 3,093.7    | -90.2                | -0.83 |
| XZZ92J  |           | 3,117.4    | -62.3                | -0.53 | 3,115.4    | -68.5                | -0.63 |
| YBEMJC  |           | 3,250.9    | 71.2                 | 0.61  | 3,291.2    | 107.4                | 0.98  |
| YXL6MX  |           | 3,030.6    | -149.1               | -1.28 | 3,008.6    | -175.3               | -1.60 |
| Z9KDP2  | *         | 3,069.6    | -110.1               | -0.95 | 3,009.6    | -174.3               | -1.59 |
| ZAXHAY  |           | 3,277.7    | 98.1                 | 0.84  | 3,317.8    | 133.9                | 1.22  |
| ZU2T68  |           | 3,302.4    | 122.7                | 1.05  | 3,274.6    | 90.8                 | 0.83  |

| Summary Statistics                                  |  | Sample F39   | Sample F40   |
|---|--|--------------|--------------|
| <b>Grand Means</b>                                  |  | 3,179.66 psi | 3,183.87 psi |
| <b>Std Dev Btwn Labs</b>                            |  | 116.44 psi   | 109.32 psi   |
| Statistics based on 72 of 77 reporting participants |  |              |              |

Sample F39: HIPS & Sample F40: HIPS

**Comments on Assigned Data Flags for Test #704**

- UFKR4A (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample F39.
- VYWTH9 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample F39.
- 6PQDGG (X) - Data for sample F40 are low. Inconsistent within the determinations of both samples.
- T6L7DX (X) - Inconsistent in testing between samples.
- K9UPXL (X) - Data for both samples are low. Possible Systematic Error.



# Plastics Interlaboratory Testing Program

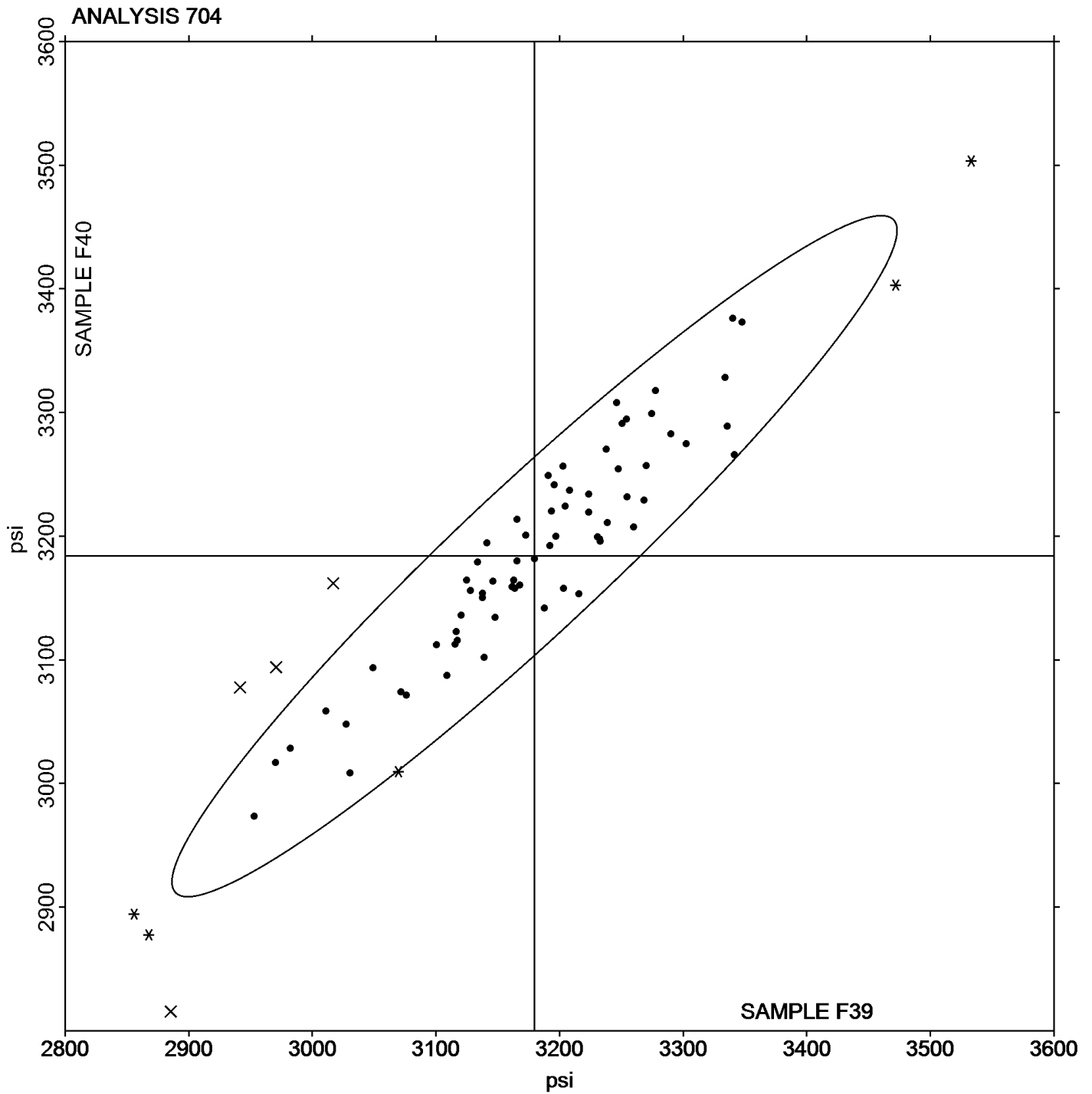
## Analysis 704

### Tensile Stress at Yield - psi

Report #100

4th Qtr 2016

Grand Mean Sample F39: 3,179.66 psi    Grand Mean Sample F40: 3,183.87 psi





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 705

4th Qtr 2016

### Tensile Stress at Break - psi

| WebCode | Data Flag | Sample F39 |                      |       | Sample F40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 3GKU6W  |           | 2,623.6    | 39.4                 | 0.42  | 2,640.0    | 38.6                 | 0.51  |
| 3V4EPP  | *         | 2,302.4    | -281.8               | -2.98 | 2,415.0    | -186.4               | -2.44 |
| 4A82TZ  |           | 2,624.3    | 40.2                 | 0.43  | 2,613.3    | 11.9                 | 0.16  |
| 4M88WQ  |           | 2,508.2    | -76.0                | -0.80 | 2,517.4    | -84.0                | -1.10 |
| 4XPJWM  |           | 2,529.6    | -54.6                | -0.58 | 2,605.8    | 4.3                  | 0.06  |
| 7FNBZZ  |           | 2,622.4    | 38.2                 | 0.40  | 2,647.4    | 46.0                 | 0.60  |
| 82ZQTC  |           | 2,581.8    | -2.4                 | -0.03 | 2,585.3    | -16.1                | -0.21 |
| 8JHUBX  |           | 2,390.0    | -194.2               | -2.06 | 2,446.0    | -155.4               | -2.04 |
| 8YU66C  |           | 2,592.4    | 8.2                  | 0.09  | 2,607.4    | 6.0                  | 0.08  |
| 8Z93LW  | X         | 2,771.6    | 187.5                | 1.98  | 2,546.9    | -54.5                | -0.71 |
| 92FADA  | X         | 2,351.4    | -232.8               | -2.46 | 2,219.8    | -381.6               | -5.00 |
| 9E2DAR  |           | 2,735.2    | 151.0                | 1.60  | 2,696.6    | 95.2                 | 1.25  |
| 9KQYQ8  |           | 2,588.8    | 4.6                  | 0.05  | 2,604.0    | 2.6                  | 0.03  |
| 9MC7PU  | X         | 2,126.6    | -457.6               | -4.84 | 2,250.2    | -351.2               | -4.60 |
| 9N72LX  | X         | 2,928.9    | 344.8                | 3.65  | 2,856.0    | 254.6                | 3.34  |
| A696LF  |           | 2,491.8    | -92.4                | -0.98 | 2,462.8    | -138.7               | -1.82 |
| A7PR8V  |           | 2,708.2    | 124.0                | 1.31  | 2,653.0    | 51.6                 | 0.68  |
| B7YDX9  |           | 2,612.2    | 28.0                 | 0.30  | 2,567.5    | -33.9                | -0.44 |
| BBBQRN  |           | 2,695.7    | 111.5                | 1.18  | 2,660.3    | 58.9                 | 0.77  |
| BTXH22  |           | 2,630.6    | 46.4                 | 0.49  | 2,634.2    | 32.8                 | 0.43  |
| CLT3RK  |           | 2,516.0    | -68.2                | -0.72 | 2,544.2    | -57.2                | -0.75 |
| DFG9YF  |           | 2,483.8    | -100.4               | -1.06 | 2,567.8    | -33.6                | -0.44 |
| DNAEWM  |           | 2,447.4    | -136.8               | -1.45 | 2,536.2    | -65.2                | -0.86 |
| E8YVWA  |           | 2,468.9    | -115.3               | -1.22 | 2,552.6    | -48.8                | -0.64 |
| ECC7ZH  |           | 2,700.0    | 115.8                | 1.23  | 2,690.0    | 88.6                 | 1.16  |
| EY6MXG  |           | 2,621.0    | 36.8                 | 0.39  | 2,685.4    | 84.0                 | 1.10  |
| GN2EKC  |           | 2,634.8    | 50.6                 | 0.54  | 2,659.8    | 58.4                 | 0.77  |
| H3EUVR  | *         | 2,412.0    | -172.2               | -1.82 | 2,397.4    | -204.0               | -2.67 |
| HMZYPQ  |           | 2,586.0    | 1.8                  | 0.02  | 2,645.3    | 43.9                 | 0.58  |
| JV8PFD  |           | 2,639.7    | 55.5                 | 0.59  | 2,668.7    | 67.3                 | 0.88  |
| JYCKDH  |           | 2,632.3    | 48.1                 | 0.51  | 2,640.9    | 39.4                 | 0.52  |
| K4GEUB  | X         | 2,579.4    | -4.8                 | -0.05 | 2,447.8    | -153.6               | -2.01 |
| K9UPXL  | X         | 2,107.8    | -476.3               | -5.04 | 2,098.0    | -503.4               | -6.60 |
| KLYFND  |           | 2,569.8    | -14.4                | -0.15 | 2,556.7    | -44.7                | -0.59 |
| KNR4BF  |           | 2,553.2    | -31.0                | -0.33 | 2,640.6    | 39.2                 | 0.51  |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 705

4th Qtr 2016

### Tensile Stress at Break - psi

| WebCode | Data Flag | Sample F39 |                      |       | Sample F40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| L6CCLH  | X         | 2,998.2    | 414.0                | 4.38  | 2,904.6    | 303.2                | 3.98  |
| L8ZKN   |           | 2,556.4    | -27.8                | -0.29 | 2,531.8    | -69.6                | -0.91 |
| LJ89VN  |           | 2,627.0    | 42.9                 | 0.45  | 2,681.9    | 80.4                 | 1.05  |
| LQRWHJ  |           | 2,630.4    | 46.3                 | 0.49  | 2,533.3    | -68.2                | -0.89 |
| MU8LGM  |           | 2,672.6    | 88.4                 | 0.94  | 2,640.4    | 39.0                 | 0.51  |
| MWVXGR  |           | 2,665.6    | 81.4                 | 0.86  | 2,643.0    | 41.6                 | 0.55  |
| NC3977  |           | 2,657.1    | 72.9                 | 0.77  | 2,645.5    | 44.1                 | 0.58  |
| P2E32R  |           | 2,566.4    | -17.8                | -0.19 | 2,553.2    | -48.2                | -0.63 |
| PFJTV7  |           | 2,542.0    | -42.2                | -0.45 | 2,536.4    | -65.1                | -0.85 |
| QHJTJM  |           | 2,542.0    | -42.1                | -0.45 | 2,525.4    | -76.0                | -1.00 |
| QZZ64Z  |           | 2,498.4    | -85.8                | -0.91 | 2,545.2    | -56.2                | -0.74 |
| R4ZZFV  |           | 2,593.8    | 9.6                  | 0.10  | 2,635.2    | 33.8                 | 0.44  |
| RGMA32  |           | 2,617.0    | 32.8                 | 0.35  | 2,631.4    | 30.0                 | 0.39  |
| RZZPLG  | X         | 2,906.6    | 322.4                | 3.41  | 2,916.7    | 315.3                | 4.13  |
| T2R6D4  |           | 2,764.2    | 180.0                | 1.91  | 2,788.8    | 187.3                | 2.46  |
| T6L7DX  |           | 2,610.7    | 26.5                 | 0.28  | 2,639.7    | 38.3                 | 0.50  |
| UFKR4A  |           | 2,523.7    | -60.5                | -0.64 | 2,604.9    | 3.5                  | 0.05  |
| UMJAK7  |           | 2,459.2    | -125.0               | -1.32 | 2,533.6    | -67.8                | -0.89 |
| VXKQKV  |           | 2,659.4    | 75.2                 | 0.80  | 2,636.4    | 35.0                 | 0.46  |
| VYTE68  |           | 2,740.8    | 156.6                | 1.66  | 2,747.6    | 146.2                | 1.92  |
| VYWTH9  | *         | 2,363.3    | -220.9               | -2.34 | 2,534.7    | -66.7                | -0.87 |
| WB44MA  |           | 2,670.4    | 86.2                 | 0.91  | 2,598.6    | -2.8                 | -0.04 |
| WJVGKN  | X         | 2,647.2    | 63.0                 | 0.67  | 2,449.3    | -152.1               | -1.99 |
| WPGGVU  |           | 2,648.6    | 64.4                 | 0.68  | 2,647.2    | 45.8                 | 0.60  |
| WVTKNH  |           | 2,605.6    | 21.4                 | 0.23  | 2,567.0    | -34.4                | -0.45 |
| WWHF2X  |           | 2,701.0    | 116.8                | 1.24  | 2,705.4    | 104.0                | 1.36  |
| X6CNFW  |           | 2,577.0    | -7.2                 | -0.08 | 2,653.6    | 52.2                 | 0.68  |
| XA2Z2X  |           | 2,488.9    | -95.3                | -1.01 | 2,442.5    | -159.0               | -2.08 |
| XLFNJB  |           | 2,637.7    | 53.5                 | 0.57  | 2,644.3    | 42.8                 | 0.56  |
| XLHKQZ  |           | 2,544.0    | -40.2                | -0.43 | 2,606.2    | 4.8                  | 0.06  |
| XVZRDB  |           | 2,514.4    | -69.8                | -0.74 | 2,604.4    | 2.9                  | 0.04  |
| XZZ92J  |           | 2,442.8    | -141.4               | -1.50 | 2,550.2    | -51.2                | -0.67 |
| YBEMJC  |           | 2,650.2    | 66.0                 | 0.70  | 2,701.5    | 100.1                | 1.31  |
| YXL6MX  |           | 2,613.3    | 29.1                 | 0.31  | 2,580.6    | -20.9                | -0.27 |
| ZAXHAY  |           | 2,655.9    | 71.7                 | 0.76  | 2,616.3    | 14.8                 | 0.19  |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 705

4th Qtr 2016

### Tensile Stress at Break - psi

| WebCode | Data Flag | Sample F39 |                      |      | Sample F40 |                      |      |
|---------|-----------|------------|----------------------|------|------------|----------------------|------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV  | Lab Mean   | Diff from Grand Mean | CPV  |
| ZU2T68  |           | 2,677.1    | 92.9                 | 0.98 | 2,640.7    | 39.3                 | 0.52 |

| Summary Statistics                                  |  | Sample F39   | Sample F40   |
|---|--|--------------|--------------|
| <b>Grand Means</b>                                  |  | 2,584.17 psi | 2,601.42 psi |
| <b>Stnd Dev Btwn Labs</b>                           |  | 94.47 psi    | 76.28 psi    |
| Statistics based on 62 of 71 reporting participants |  |              |              |

Sample F39: HIPS & Sample F40: HIPS

### Comments on Assigned Data Flags for Test #705

- K4GEUB (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample F40.
- L6CCLH (X) - Data for both samples are high.
- 9MC7PU (X) - Data for both samples are low. Inconsistent within the determinations of both samples.
- 92FADA (X) - Data for sample F40 are low. Inconsistent within the determinations of sample F40.
- WJVGKN (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample F40.
- 9N72LX (X) - Data for both samples are high.
- K9UPXL (X) - Data for both samples are low.
- RZZPLG (X) - Data for both samples are high.
- 8Z93LW (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample F39.



# Plastics Interlaboratory Testing Program

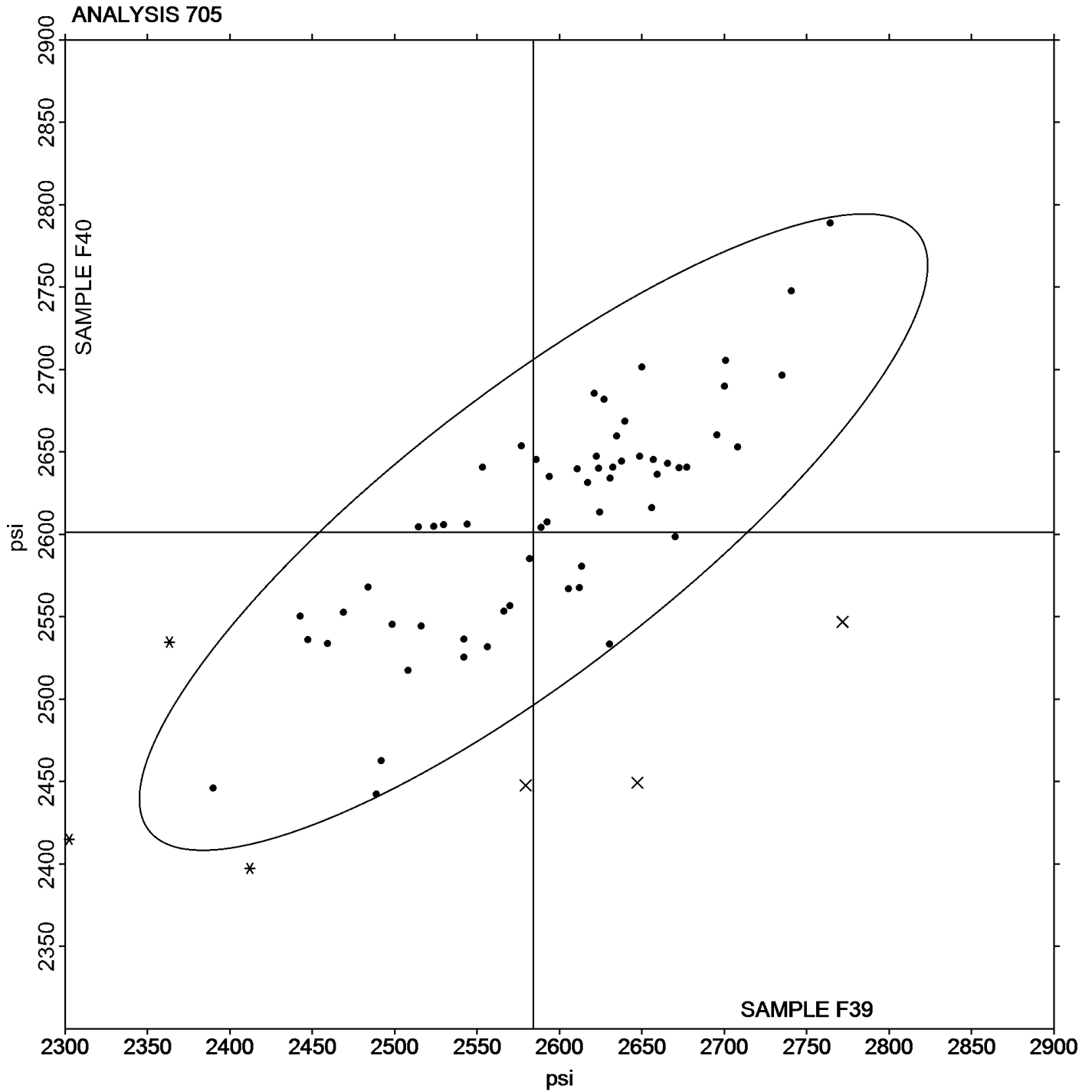
## Analysis 705

### Tensile Stress at Break - psi

Report #100

4th Qtr 2016

Grand Mean Sample F39: 2,584.17 psi    Grand Mean Sample F40: 2,601.42 psi





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 706

4th Qtr 2016

### Percent Elongation at Yield - Percent

| WebCode | Data Flag | Sample F39 |                      |        | Sample F40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| 3GKU6W  |           | 1.272      | -0.056               | -0.82  | 1.326      | -0.009               | -0.14  |
| 3V4EPP  |           | 1.242      | -0.086               | -1.26  | 1.244      | -0.091               | -1.32  |
| 4XPJWM  |           | 1.308      | -0.020               | -0.29  | 1.316      | -0.019               | -0.28  |
| 7FNBZZ  |           | 1.346      | 0.018                | 0.27   | 1.372      | 0.037                | 0.53   |
| 8YU66C  |           | 1.406      | 0.078                | 1.15   | 1.406      | 0.071                | 1.02   |
| 8Z93LW  | X         | 3.520      | 2.192                | 32.29  | 3.580      | 2.245                | 32.29  |
| 92FADA  |           | 1.332      | 0.004                | 0.06   | 1.308      | -0.027               | -0.39  |
| 9E2DAR  |           | 1.304      | -0.024               | -0.35  | 1.306      | -0.029               | -0.42  |
| 9KQYQ8  |           | 1.324      | -0.004               | -0.05  | 1.336      | 0.001                | 0.01   |
| 9MC7PU  | *         | 1.434      | 0.106                | 1.57   | 1.502      | 0.167                | 2.40   |
| 9N72LX  | X         | 1.742      | 0.414                | 6.10   | 1.678      | 0.343                | 4.93   |
| A696LF  |           | 1.300      | -0.028               | -0.41  | 1.300      | -0.035               | -0.51  |
| A7PR8V  |           | 1.384      | 0.056                | 0.83   | 1.346      | 0.011                | 0.15   |
| AXPMV7  |           | 1.274      | -0.054               | -0.79  | 1.302      | -0.033               | -0.48  |
| BBBQRN  |           | 1.274      | -0.054               | -0.79  | 1.336      | 0.001                | 0.01   |
| BTXH22  |           | 1.326      | -0.002               | -0.02  | 1.342      | 0.007                | 0.09   |
| CLT3RK  |           | 1.300      | -0.028               | -0.41  | 1.320      | -0.015               | -0.22  |
| DFG9YF  |           | 1.248      | -0.080               | -1.17  | 1.244      | -0.091               | -1.32  |
| DNAEWM  | X         | 1.550      | 0.222                | 3.27   | 1.590      | 0.255                | 3.66   |
| E8YVWA  | X         | 2.000      | 0.672                | 9.90   | 2.000      | 0.665                | 9.56   |
| ECC7ZH  |           | 1.200      | -0.128               | -1.88  | 1.240      | -0.095               | -1.37  |
| EY6MXG  |           | 1.334      | 0.006                | 0.09   | 1.346      | 0.011                | 0.15   |
| GN2EKC  |           | 1.300      | -0.028               | -0.41  | 1.312      | -0.023               | -0.34  |
| HMZY PQ |           | 1.288      | -0.039               | -0.58  | 1.322      | -0.013               | -0.19  |
| HWBVHG  | *         | 1.326      | -0.002               | -0.02  | 1.262      | -0.073               | -1.06  |
| JV8PFD  |           | 1.352      | 0.024                | 0.36   | 1.348      | 0.013                | 0.18   |
| JYCKDH  |           | 1.264      | -0.064               | -0.94  | 1.276      | -0.059               | -0.86  |
| K4GEUB  |           | 1.350      | 0.022                | 0.33   | 1.334      | -0.001               | -0.02  |
| K9UPXL  | X         | 0.975      | -0.352               | -5.19  | 0.970      | -0.366               | -5.26  |
| KLYFND  |           | 1.282      | -0.046               | -0.67  | 1.268      | -0.067               | -0.97  |
| KNR4BF  |           | 1.350      | 0.022                | 0.33   | 1.380      | 0.045                | 0.64   |
| L6CCLH  | X         | 0.500      | -0.828               | -12.19 | 0.500      | -0.835               | -12.02 |
| L8ZKNK  |           | 1.406      | 0.078                | 1.15   | 1.410      | 0.075                | 1.07   |
| LJ89VN  |           | 1.454      | 0.126                | 1.86   | 1.453      | 0.118                | 1.69   |
| MU8LGM  |           | 1.314      | -0.014               | -0.20  | 1.318      | -0.017               | -0.25  |





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 706

4th Qtr 2016

### Percent Elongation at Yield - Percent

| WebCode | Data Flag | Sample F39 |                      |          | Sample F40 |                      |          |
|---------|-----------|------------|----------------------|----------|------------|----------------------|----------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV      | Lab Mean   | Diff from Grand Mean | CPV      |
| MWVXGR  |           | 1.400      | 0.072                | 1.07     | 1.384      | 0.049                | 0.70     |
| NC3977  |           | 1.352      | 0.024                | 0.36     | 1.350      | 0.015                | 0.21     |
| NX48T6  |           | 1.276      | -0.052               | -0.76    | 1.260      | -0.075               | -1.09    |
| P2E32R  |           | 1.282      | -0.046               | -0.67    | 1.272      | -0.063               | -0.91    |
| PFJTV7  | X         | 0.930      | -0.398               | -5.86    | 0.940      | -0.395               | -5.69    |
| QHJTJM  |           | 1.402      | 0.074                | 1.10     | 1.400      | 0.065                | 0.93     |
| QLYTPA  |           | 1.421      | 0.094                | 1.38     | 1.449      | 0.114                | 1.64     |
| QZZ64Z  |           | 1.334      | 0.006                | 0.09     | 1.376      | 0.041                | 0.58     |
| R4ZZFV  |           | 1.310      | -0.018               | -0.26    | 1.328      | -0.007               | -0.11    |
| RGMA32  |           | 1.414      | 0.086                | 1.27     | 1.408      | 0.073                | 1.04     |
| RZZPLG  | X         | 0.014      | -1.314               | -19.35   | 0.018      | -1.317               | -18.95   |
| T6L7DX  | X         | 1.210      | -0.118               | -1.73    | 1.400      | 0.065                | 0.93     |
| UFKR4A  | X         | 0.486      | -0.842               | -12.39   | 0.704      | -0.631               | -9.08    |
| UMJAK7  | X         | 1.246      | -0.082               | -1.20    | 1.370      | 0.035                | 0.50     |
| VXKQKV  |           | 1.210      | -0.118               | -1.73    | 1.218      | -0.117               | -1.69    |
| VYTE68  |           | 1.342      | 0.014                | 0.21     | 1.358      | 0.023                | 0.32     |
| VYWTH9  |           | 1.270      | -0.058               | -0.85    | 1.310      | -0.025               | -0.37    |
| WB44MA  |           | 1.362      | 0.034                | 0.51     | 1.358      | 0.023                | 0.32     |
| WJVGKN  |           | 1.262      | -0.066               | -0.97    | 1.252      | -0.083               | -1.20    |
| WPGGVU  |           | 1.398      | 0.070                | 1.04     | 1.398      | 0.063                | 0.90     |
| WVTKNH  | X         | 95.920     | 94.592               | 1,393.08 | 88.860     | 87.525               | 1,259.11 |
| WWHF2X  | X         | 7.204      | 5.876                | 86.54    | 7.030      | 5.695                | 81.92    |
| X6CNFW  |           | 1.380      | 0.052                | 0.77     | 1.368      | 0.033                | 0.47     |
| XA2Z2X  |           | 1.166      | -0.162               | -2.38    | 1.168      | -0.167               | -2.41    |
| XD4U49  | X         | 1.620      | 0.292                | 4.31     | 1.520      | 0.185                | 2.66     |
| XLFNJB  |           | 1.474      | 0.146                | 2.16     | 1.474      | 0.139                | 1.99     |
| XLHKQZ  |           | 1.430      | 0.102                | 1.51     | 1.426      | 0.091                | 1.30     |
| XZZ92J  | X         | 4.140      | 2.813                | 41.42    | 4.402      | 3.066                | 44.11    |
| YBEMJC  |           | 1.396      | 0.068                | 1.01     | 1.420      | 0.085                | 1.22     |
| YXL6MX  |           | 1.230      | -0.098               | -1.44    | 1.216      | -0.119               | -1.72    |
| Z9KDP2  |           | 1.304      | -0.024               | -0.35    | 1.338      | 0.003                | 0.04     |
| ZAXHAY  | X         | 1.132      | -0.196               | -2.88    | 1.204      | -0.131               | -1.89    |



Percent Elongation at Yield - Percent

| Summary Statistics       | Sample F39     | Sample F40     |
|--------------------------|----------------|----------------|
| <b>Grand Means</b>       | 1.3276 Percent | 1.3354 Percent |
| <b>Std Dev Btwn Labs</b> | 0.0679 Percent | 0.0695 Percent |

Statistics based on 51 of 67 reporting participants

Sample F39: HIPS & Sample F40: HIPS

**Comments on Assigned Data Flags for Test #706**

- UFKR4A (X) - Data for both samples are low. Possible Systematic Error.
- XD4U49 (X) - Data for sample F39 are high.
- L6CCLH (X) - Data for both samples are low. Possible Systematic Error.
- UMJAK7 (X) - Inconsistent in testing between samples.
- XZZ92J (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- WVTKNH (X) - Extreme data.
- T6L7DX (X) - Inconsistent in testing between samples.
- E8YVWA (X) - Data for both samples are high. Possible Systematic Error.
- PFJTV7 (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample F40.
- WWHF2X (X) - Extreme data.
- 9N72LX (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample F40.
- K9UPXL (X) - Data for both samples are low. Possible Systematic Error.
- RZZPLG (X) - Extreme data.
- ZAXHAY (X) - Data for sample F39 are low.
- DNAEWM (X) - Data for both samples are high. Possible Systematic Error.
- 8Z93LW (X) - Data for both samples are high. Possible Systematic Error.



# Plastics Interlaboratory Testing Program

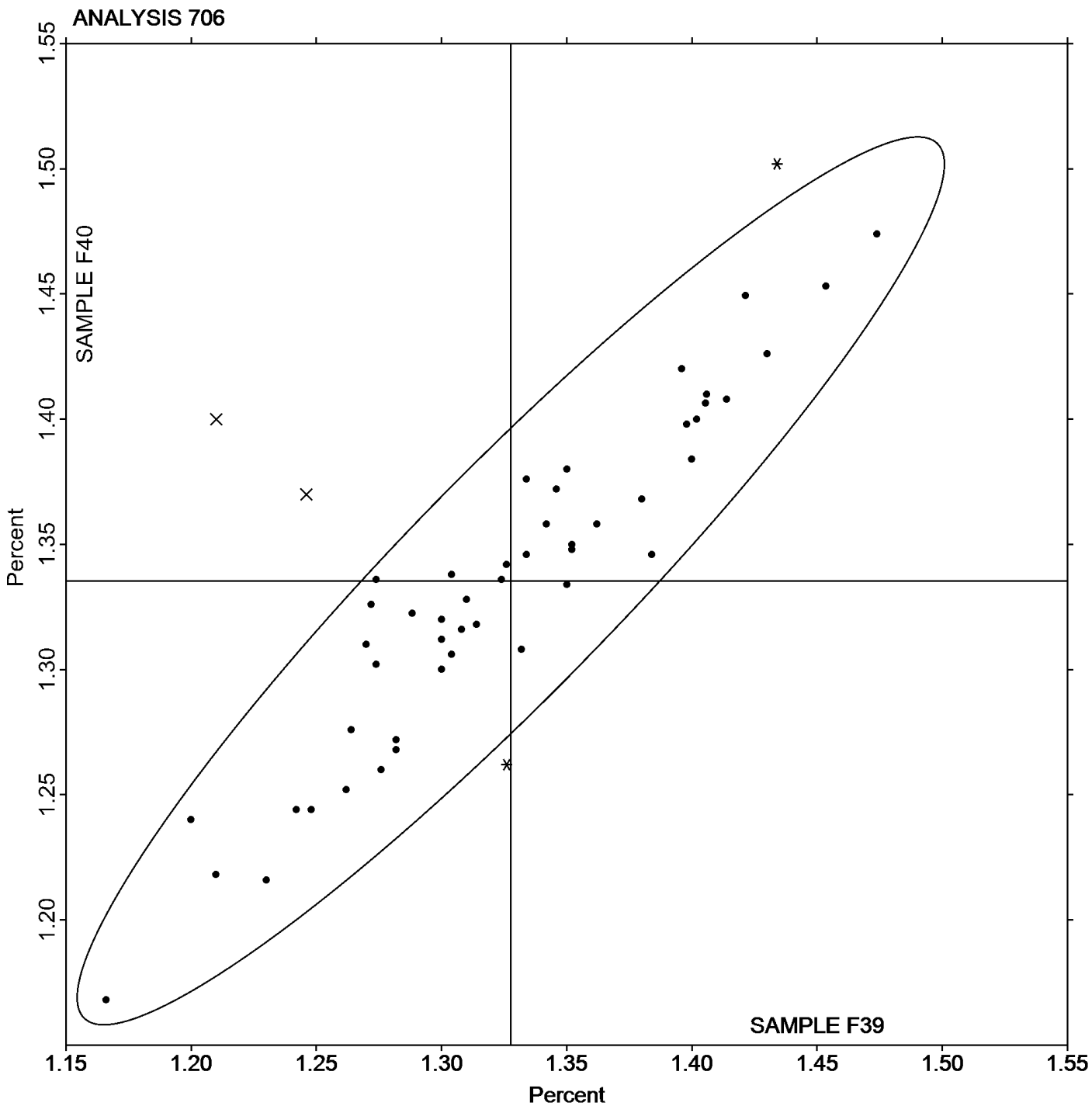
## Analysis 706

### Percent Elongation at Yield - Percent

Report #100

4th Qtr 2016

Grand Mean Sample F39: 1.3276 Percent    Grand Mean Sample F40: 1.3354 Percent





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 708

4th Qtr 2016

### Modulus of Elasticity - ksi

| WebCode | Data Flag | Sample F39 |                      |        | Sample F40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| 3GKU6W  |           | 246.48     | -27.66               | -1.64  | 254.54     | -18.35               | -1.22  |
| 3V4EPP  |           | 281.88     | 7.74                 | 0.46   | 286.12     | 13.23                | 0.88   |
| 4XPJWM  |           | 291.05     | 16.91                | 1.00   | 289.68     | 16.79                | 1.11   |
| 6PQDGQ  |           | 273.96     | -0.19                | -0.01  | 268.88     | -4.01                | -0.27  |
| 7FNBZZ  |           | 274.32     | 0.18                 | 0.01   | 270.18     | -2.71                | -0.18  |
| 8YU66C  |           | 284.76     | 10.62                | 0.63   | 282.27     | 9.38                 | 0.62   |
| 8Z93LW  | X         | 103.42     | -170.72              | -10.13 | 102.94     | -169.95              | -11.28 |
| 92FADA  |           | 276.28     | 2.14                 | 0.13   | 280.76     | 7.87                 | 0.52   |
| 9E2DAR  |           | 275.70     | 1.56                 | 0.09   | 273.74     | 0.85                 | 0.06   |
| 9MC7PU  | X         | 200.64     | -73.50               | -4.36  | 190.86     | -82.03               | -5.44  |
| 9N72LX  | X         | 818.95     | 544.80               | 32.33  | 804.49     | 531.60               | 35.27  |
| A696LF  | *         | 229.39     | -44.75               | -2.66  | 228.35     | -44.54               | -2.96  |
| BBBQRN  |           | 277.10     | 2.96                 | 0.18   | 273.84     | 0.95                 | 0.06   |
| BTXH22  |           | 277.74     | 3.60                 | 0.21   | 277.92     | 5.03                 | 0.33   |
| CLT3RK  |           | 295.30     | 21.16                | 1.26   | 280.68     | 7.79                 | 0.52   |
| DFG9YF  |           | 256.40     | -17.74               | -1.05  | 256.68     | -16.22               | -1.08  |
| DNAEWM  | *         | 295.80     | 21.66                | 1.29   | 306.60     | 33.71                | 2.24   |
| E8YVWA  | X         | 346.81     | 72.66                | 4.31   | 348.10     | 75.21                | 4.99   |
| ECC7ZH  |           | 289.20     | 15.06                | 0.89   | 283.00     | 10.11                | 0.67   |
| EY6MXG  |           | 285.16     | 11.02                | 0.65   | 285.60     | 12.71                | 0.84   |
| GN2EKC  |           | 276.38     | 2.24                 | 0.13   | 276.92     | 4.03                 | 0.27   |
| HMZYPQ  |           | 279.62     | 5.48                 | 0.33   | 280.96     | 8.07                 | 0.54   |
| HWBVHG  |           | 290.02     | 15.88                | 0.94   | 275.12     | 2.23                 | 0.15   |
| JV8PFD  |           | 280.85     | 6.71                 | 0.40   | 282.83     | 9.93                 | 0.66   |
| JYCKDH  |           | 265.70     | -8.44                | -0.50  | 272.93     | 0.03                 | 0.00   |
| K4GEUB  |           | 273.46     | -0.68                | -0.04  | 272.17     | -0.72                | -0.05  |
| K9UPXL  | X         | 327.73     | 53.59                | 3.18   | 327.72     | 54.82                | 3.64   |
| KLYFND  |           | 292.63     | 18.49                | 1.10   | 302.46     | 29.57                | 1.96   |
| KNR4BF  |           | 270.93     | -3.21                | -0.19  | 271.25     | -1.64                | -0.11  |
| L6CCLH  | X         | 68.53      | -205.62              | -12.20 | 61.78      | -211.11              | -14.01 |
| L8ZKNK  |           | 269.53     | -4.61                | -0.27  | 267.14     | -5.75                | -0.38  |
| LJ89VN  |           | 264.51     | -9.63                | -0.57  | 265.86     | -7.03                | -0.47  |
| MU8LGM  |           | 271.50     | -2.64                | -0.16  | 274.12     | 1.23                 | 0.08   |
| MWVXGR  |           | 262.80     | -11.34               | -0.67  | 264.10     | -8.79                | -0.58  |
| NC3977  | *         | 317.32     | 43.17                | 2.56   | 296.31     | 23.42                | 1.55   |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 708

4th Qtr 2016

### Modulus of Elasticity - ksi

| WebCode | Data Flag | Sample F39 |                      |        | Sample F40 |                      |          |
|---------|-----------|------------|----------------------|--------|------------|----------------------|----------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV      |
| NX48T6  |           | 286.20     | 12.06                | 0.72   | 280.00     | 7.11                 | 0.47     |
| P2E32R  |           | 273.81     | -0.34                | -0.02  | 270.53     | -2.36                | -0.16    |
| PFJTV7  | X         | 376.71     | 102.57               | 6.09   | 346.64     | 73.75                | 4.89     |
| QHJTJM  |           | 247.74     | -26.41               | -1.57  | 247.42     | -25.47               | -1.69    |
| QLYTPA  |           | 263.16     | -10.98               | -0.65  | 265.44     | -7.46                | -0.49    |
| QZZ64Z  |           | 272.20     | -1.94                | -0.12  | 260.12     | -12.77               | -0.85    |
| R4ZZFV  |           | 278.50     | 4.36                 | 0.26   | 276.20     | 3.31                 | 0.22     |
| RGMA32  |           | 255.32     | -18.82               | -1.12  | 254.80     | -18.09               | -1.20    |
| RZZPLG  | X         | 11,299.25  | 1,025.11             | 654.17 | 73,317.70  | 73,044.81            | 4,846.65 |
| T6L7DX  | X         | 309.04     | 34.90                | 2.07   | 253.52     | -19.38               | -1.29    |
| UFKR4A  |           | 237.57     | -36.57               | -2.17  | 251.79     | -21.11               | -1.40    |
| UMJAK7  | *         | 269.64     | -4.50                | -0.27  | 252.92     | -19.97               | -1.33    |
| VXKQKV  |           | 283.52     | 9.38                 | 0.56   | 288.30     | 15.41                | 1.02     |
| VYWTH9  |           | 269.48     | -4.66                | -0.28  | 269.80     | -3.09                | -0.21    |
| WB44MA  |           | 280.20     | 6.06                 | 0.36   | 283.20     | 10.31                | 0.68     |
| WJVGKN  | X         | 167.68     | -106.46              | -6.32  | 171.75     | -101.14              | -6.71    |
| WPGGVU  |           | 259.93     | -14.21               | -0.84  | 259.04     | -13.85               | -0.92    |
| WVTKNH  | X         | 106.18     | -167.96              | -9.97  | 105.26     | -167.63              | -11.12   |
| WWHF2X  | X         | 41.50      | -232.64              | -13.80 | 42.63      | -230.26              | -15.28   |
| X6CNFW  |           | 277.58     | 3.44                 | 0.20   | 281.82     | 8.93                 | 0.59     |
| XA2Z2X  |           | 257.53     | -16.61               | -0.99  | 255.53     | -17.36               | -1.15    |
| XD4U49  | X         | 263.96     | -10.18               | -0.60  | 229.88     | -43.01               | -2.85    |
| XLFNJB  |           | 257.31     | -16.84               | -1.00  | 257.30     | -15.60               | -1.03    |
| XLHKQZ  |           | 254.06     | -20.08               | -1.19  | 250.20     | -22.69               | -1.51    |
| XZZ92J  |           | 281.16     | 7.02                 | 0.42   | 272.60     | -0.29                | -0.02    |
| YBEMJC  |           | 287.20     | 13.06                | 0.77   | 286.67     | 13.78                | 0.91     |
| YXL6MX  |           | 269.54     | -4.60                | -0.27  | 278.44     | 5.55                 | 0.37     |
| Z9KDP2  |           | 272.42     | -1.72                | -0.10  | 272.02     | -0.87                | -0.06    |
| ZAXHAY  | *         | 321.40     | 47.26                | 2.80   | 302.40     | 29.51                | 1.96     |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 708

4th Qtr 2016

### Modulus of Elasticity - ksi

| Summary Statistics        | <u>Sample F39</u> | <u>Sample F40</u> |
|---------------------------|-------------------|-------------------|
| <b>Grand Means</b>        | 274.142 ksi       | 272.893 ksi       |
| <b>Stnd Dev Btwn Labs</b> | 16.854 ksi        | 15.071 ksi        |

Statistics based on 51 of 64 reporting participants

Sample F39: HIPS & Sample F40: HIPS

#### **Comments on Assigned Data Flags for Test #708**

- XD4U49 (X) - Data for sample F40 are low. Inconsistent within the determinations of sample F39.
- L6CCLH (X) - Data for both samples are low. Possible Systematic Error.
- 9MC7PU (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- WJVGKN (X) - Data for both samples are low. Possible Systematic Error.
- WVTKNH (X) - Data for both samples are low. Possible Systematic Error.
- T6L7DX (X) - Inconsistent in testing between samples.
- E8YVWA (X) - Data for both samples are high. Possible Systematic Error.
- PFJTV7 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- WWHF2X (X) - Extreme data.
- 9N72LX (X) - Extreme data.
- K9UPXL (X) - Data for both samples are high. Possible Systematic Error.
- RZZPLG (X) - Extreme data.
- 8Z93LW (X) - Data for both samples are low. Possible Systematic Error.



# Plastics Interlaboratory Testing Program

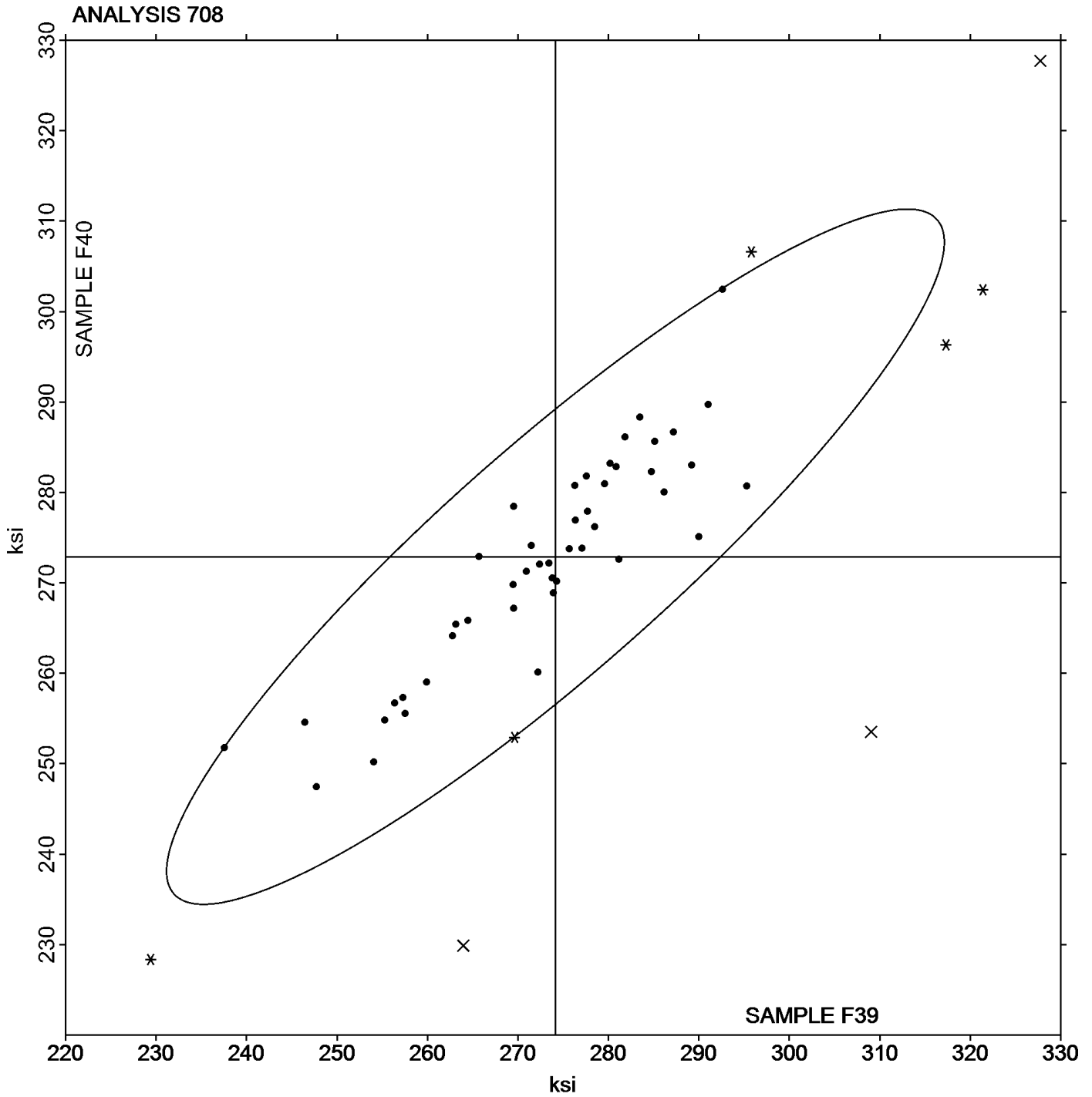
## Analysis 708

### Modulus of Elasticity - ksi

Report #100

4th Qtr 2016

Grand Mean Sample F39: 274.14 ksi    Grand Mean Sample F40: 272.89 ksi





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 710

4th Qtr 2016

### Deflection Temp. Under Flexural Load (1.82 MPa) - Degrees C

| WebCode | Data Flag | Sample E39 |                      |       | Sample E40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 4XPJWM  |           | 79.08      | -0.79                | -1.04 | 78.85      | -1.08                | -1.35 | CE         |
| 67GNJF  |           | 79.83      | -0.04                | -0.06 | 80.00      | 0.07                 | 0.09  | DN         |
| 7FNBZZ  |           | 80.58      | 0.71                 | 0.93  | 80.43      | 0.49                 | 0.62  | TO         |
| 8Z93LW  |           | 80.50      | 0.63                 | 0.83  | 80.35      | 0.42                 | 0.52  | CE         |
| 9MC7PU  |           | 78.53      | -1.34                | -1.77 | 78.58      | -1.36                | -1.69 | XX         |
| A696LF  |           | 80.25      | 0.38                 | 0.50  | 80.30      | 0.37                 | 0.46  | CF         |
| A7PR8V  |           | 80.55      | 0.68                 | 0.90  | 80.65      | 0.72                 | 0.90  | DN         |
| AXPMV7  |           | 78.58      | -1.29                | -1.70 | 78.70      | -1.23                | -1.54 | CE         |
| BPX9TK  |           | 80.13      | 0.26                 | 0.34  | 80.30      | 0.37                 | 0.46  | AT         |
| BTXH22  |           | 80.63      | 0.76                 | 1.00  | 80.50      | 0.57                 | 0.71  | DN         |
| GN2EKC  | *         | 80.58      | 0.71                 | 0.93  | 81.38      | 1.44                 | 1.80  | TO         |
| JV8PFD  |           | 79.15      | -0.72                | -0.95 | 79.15      | -0.78                | -0.97 | RO         |
| K3BRJR  |           | 80.48      | 0.61                 | 0.80  | 80.25      | 0.32                 | 0.40  | AT         |
| K4GEUB  |           | 79.50      | -0.37                | -0.48 | 79.70      | -0.23                | -0.29 | CE         |
| KLYFND  |           | 79.90      | 0.03                 | 0.04  | 79.80      | -0.13                | -0.16 | TO         |
| KNR4BF  |           | 80.05      | 0.18                 | 0.24  | 80.33      | 0.39                 | 0.49  | ZW         |
| L8ZKNK  |           | 79.83      | -0.04                | -0.06 | 80.20      | 0.27                 | 0.34  | CE         |
| MAXNXQ  |           | 79.13      | -0.74                | -0.98 | 79.23      | -0.71                | -0.88 | TO         |
| QZZ64Z  | X         | 82.70      | 2.83                 | 3.72  | 81.60      | 1.67                 | 2.08  | CF         |
| RD2NAD  |           | 80.30      | 0.43                 | 0.57  | 80.97      | 1.04                 | 1.29  | XX         |
| UMJAK7  |           | 79.73      | -0.14                | -0.19 | 80.00      | 0.07                 | 0.09  | CE         |
| VX2D6B  |           | 79.50      | -0.37                | -0.48 | 79.88      | -0.06                | -0.07 | CE         |
| VYTE68  |           | 80.55      | 0.68                 | 0.90  | 80.10      | 0.17                 | 0.21  | AT         |
| VYWTH9  |           | 80.73      | 0.86                 | 1.13  | 80.98      | 1.04                 | 1.30  | AT         |
| WPGGVU  |           | 79.43      | -0.44                | -0.58 | 79.40      | -0.53                | -0.66 | TO         |
| X6CNFW  |           | 79.98      | 0.11                 | 0.14  | 79.88      | -0.06                | -0.07 | DN         |
| XA2Z2X  |           | 80.63      | 0.76                 | 1.00  | 80.53      | 0.59                 | 0.74  | TY         |
| XD4U49  |           | 81.48      | 1.61                 | 2.11  | 81.28      | 1.34                 | 1.68  | CE         |
| XLFNJB  |           | 79.15      | -0.72                | -0.95 | 79.13      | -0.81                | -1.01 | CE         |
| Z9KDP2  |           | 79.00      | -0.87                | -1.14 | 78.55      | -1.38                | -1.72 | TO         |
| ZU2T68  |           | 78.38      | -1.49                | -1.96 | 78.60      | -1.33                | -1.66 | TO         |





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 710

4th Qtr 2016

### Deflection Temp. Under Flexural Load (1.82 MPa) - Degrees C

| Summary Statistics                                  |                   |                   |
|---|-------------------|-------------------|
|   | <u>Sample E39</u> | <u>Sample E40</u> |
| <b>Grand Means</b>                                  | 79.868 Degrees C  | 79.931 Degrees C  |
| <b>Stnd Dev Btwn Labs</b>                           | 0.760 Degrees C   | 0.802 Degrees C   |
| Statistics based on 30 of 31 reporting participants |                   |                   |

Sample E39: HIPS & Sample E40: HIPS

#### **Comments on Assigned Data Flags for Test #710**

QZZ64Z (X) - Data for sample E39 are high. Inconsistent within the determinations of sample E40.

#### **Key to Instrument Codes Reported by Participants**

- |              |   |
|--------------|---|
| AT Atlas     | CE Ceast  |
| CF Coesfeld  | DN DYNISCO                                      |
| RO Rosand    | TO Tinius Olsen                                 |
| TY Toyoseiki | XX Instrument manufacturer not specified by lab |
| ZW Zwick     |   |



# Plastics Interlaboratory Testing Program

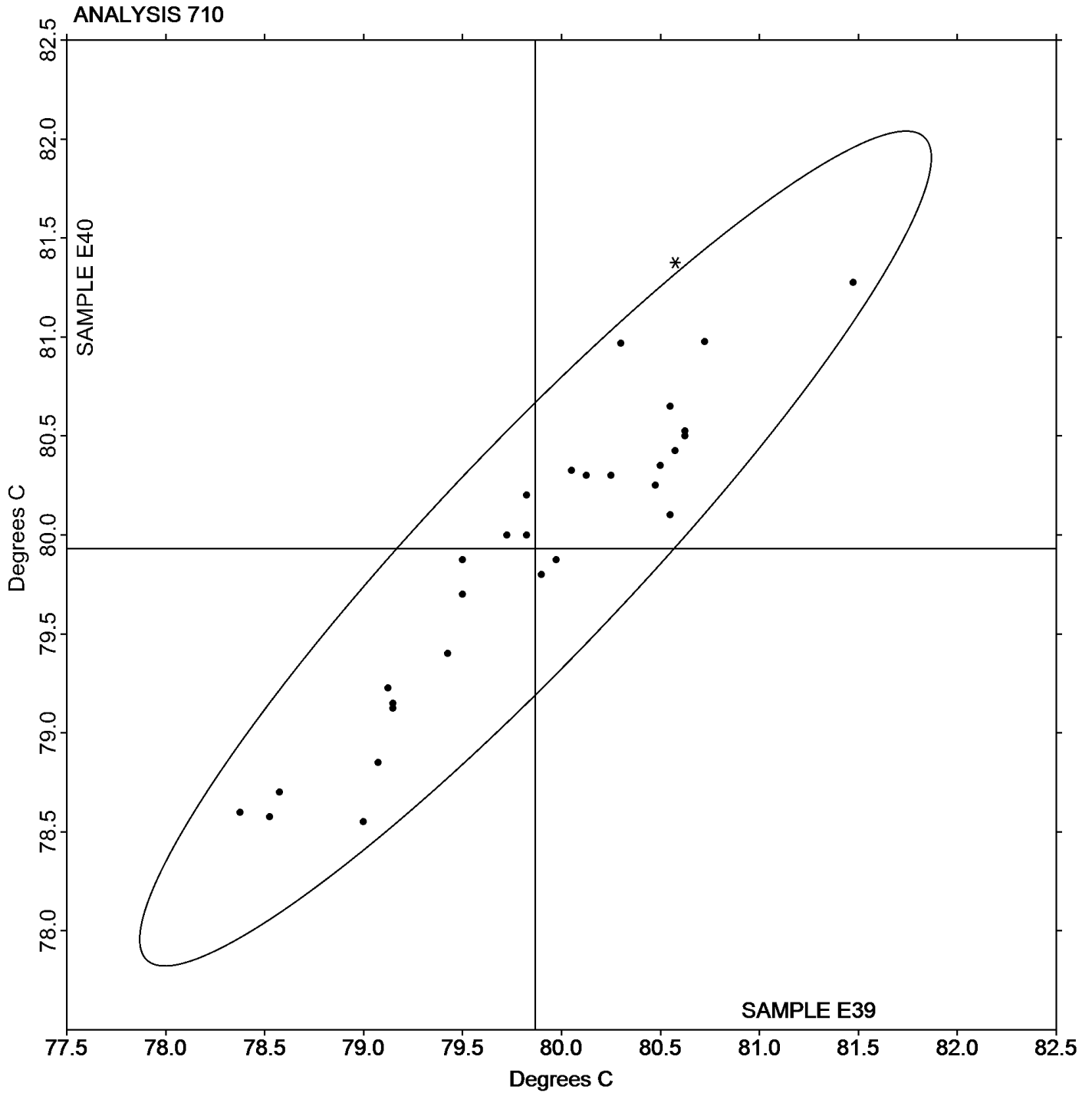
Report #100

## Analysis 710

4th Qtr 2016

Deflection Temp. Under Flexural Load (1.82 MPa) - Degrees C

Grand Mean Sample E39: 79.868 Degrees C    Grand Mean Sample E40: 79.931 Degrees C





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 711**

**4th Qtr 2016**

**Deflection Temp. Under Flexural Load (0.455 MPa) - Degrees C**

| WebCode | Data Flag | Sample G39 |                      |       | Sample G40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 7RFYQT  |           | 82.7       | -0.5                 | -0.22 | 81.3       | -1.9                 | -0.89 | XX         |
| 8Z93LW  |           | 84.7       | 1.5                  | 0.73  | 83.4       | 0.2                  | 0.08  | CE         |
| AXPMV7  |           | 82.5       | -0.7                 | -0.35 | 80.7       | -2.5                 | -1.18 | CE         |
| BGKKTR  |           | 82.8       | -0.4                 | -0.20 | 82.3       | -1.0                 | -0.45 | TO         |
| KLYFND  |           | 81.8       | -1.4                 | -0.70 | 80.0       | -3.2                 | -1.48 | TO         |
| LRMCVF  |           | 87.1       | 3.9                  | 1.94  | 87.1       | 3.8                  | 1.79  | CE         |
| M7HYUG  |           | 83.2       | 0.0                  | 0.01  | 83.4       | 0.2                  | 0.08  | CE         |
| QG9YVA  |           | 84.8       | 1.6                  | 0.80  | 83.8       | 0.5                  | 0.25  | CE         |
| RD2NAD  |           | 86.3       | 3.1                  | 1.52  | 87.8       | 4.6                  | 2.14  | XX         |
| VX2D6B  |           | 81.5       | -1.7                 | -0.81 | 83.2       | -0.1                 | -0.03 | CE         |
| VYTE68  |           | 83.6       | 0.4                  | 0.19  | 83.7       | 0.5                  | 0.23  | AT         |
| WPGGVU  |           | 81.3       | -1.9                 | -0.91 | 81.7       | -1.5                 | -0.70 | TO         |
| XLFNJB  |           | 83.0       | -0.2                 | -0.09 | 84.9       | 1.7                  | 0.80  | CE         |
| Z9KDP2  |           | 83.6       | 0.4                  | 0.21  | 83.2       | 0.0                  | -0.01 | TO         |
| ZU2T68  |           | 78.9       | -4.3                 | -2.12 | 81.9       | -1.3                 | -0.61 | TO         |

| Summary Statistics                                  |                 |                 |
|---|-----------------|-----------------|
|   | Sample G39      | Sample G40      |
| <b>Grand Means</b>                                  | 83.18 Degrees C | 83.21 Degrees C |
| <b>Stnd Dev Btwn Labs</b>                           | 2.04 Degrees C  | 2.15 Degrees C  |
| Statistics based on 15 of 15 reporting participants |                 |                 |

Sample G39: PP & Sample G40: PP

**Key to Instrument Codes Reported by Participants**

- AT Atlas
- TO Tinius Olsen
- CE Ceast
- XX Instrument manufacturer not specified by lab



# Plastics Interlaboratory Testing Program

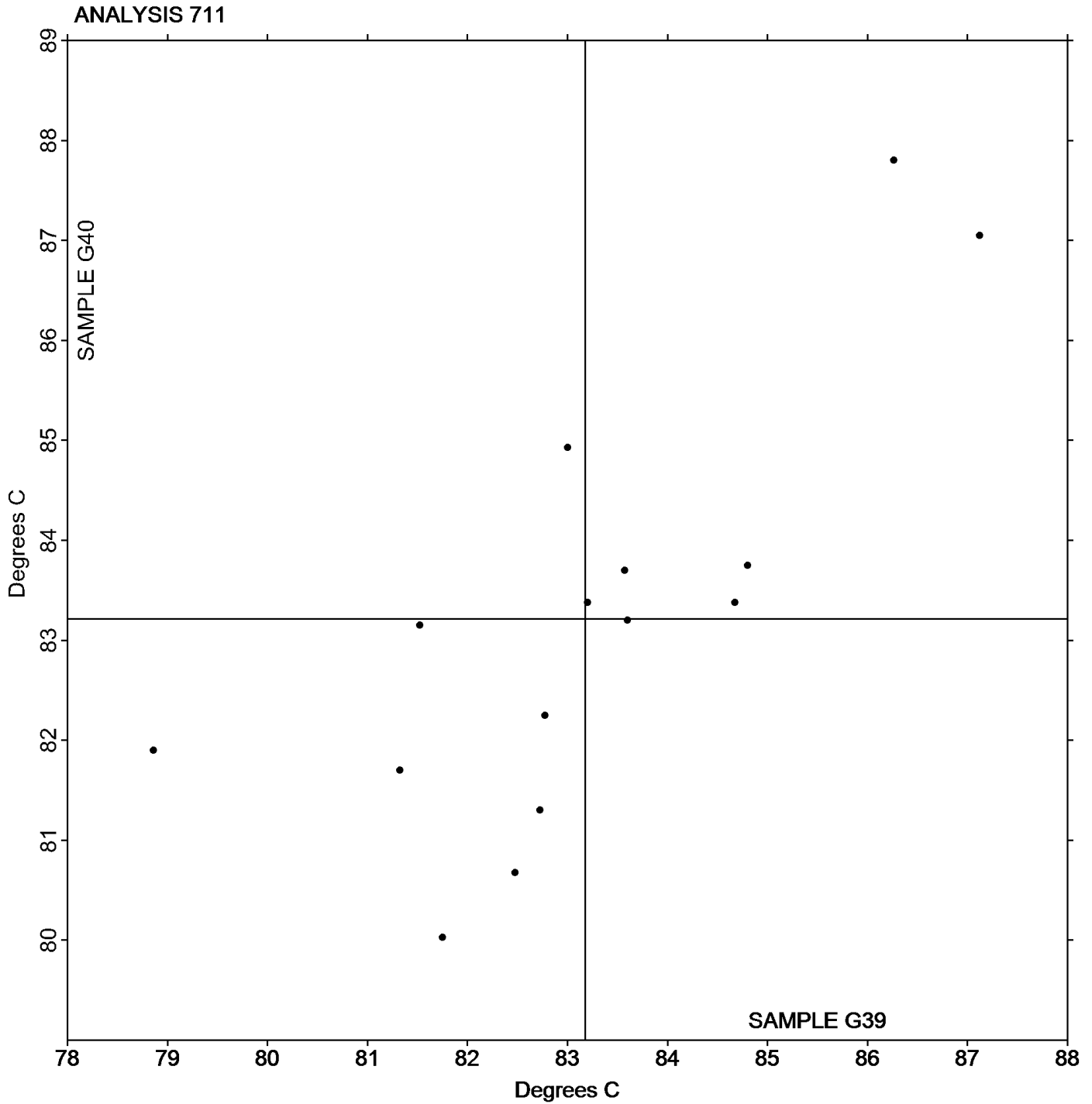
Report #100

## Analysis 711

4th Qtr 2016

Deflection Temp. Under Flexural Load (0.455 MPa) - Degrees C

Grand Mean Sample G39: 83.178 Degrees C    Grand Mean Sample G40: 83.212 Degrees C



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 712**

**4th Qtr 2016**

**Temp. of Deflection Under Flexural Load (1.80 MPa) - Degrees C**

| WebCode | Data Flag | Sample N39                       |                      |       | Sample N40 |                      |       | Instr Code |
|---------|-----------|----------------------------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean                         | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 33PVBV  |           | 77.70                            | -0.36                | -0.37 | 77.90      | -0.11                | -0.11 | CE         |
| 3CUH6T  |           | 78.40                            | 0.34                 | 0.34  | 78.68      | 0.67                 | 0.70  | XX         |
| 67GNJF  |           | 77.63                            | -0.44                | -0.44 | 77.60      | -0.41                | -0.43 | DN         |
| 7GFAAR  |           | 79.00                            | 0.94                 | 0.94  | 78.88      | 0.87                 | 0.91  | AT         |
| 8JHUBX  |           | 79.70                            | 1.64                 | 1.65  | 79.93      | 1.92                 | 2.01  | XX         |
| 8Z93LW  | <b>M</b>  | No data reported for this sample |                      |       | 78.88      | 0.87                 | 0.91  | CE         |
| 9A7RT3  |           | 79.48                            | 1.41                 | 1.42  | 79.45      | 1.44                 | 1.51  | AT         |
| A7PR8V  |           | 78.63                            | 0.56                 | 0.57  | 78.05      | 0.04                 | 0.04  | DN         |
| AXPMV7  |           | 76.43                            | -1.64                | -1.65 | 76.48      | -1.53                | -1.61 | CE         |
| B937R8  |           | 78.30                            | 0.24                 | 0.24  | 78.03      | 0.02                 | 0.02  | AT         |
| BUPLNG  |           | 79.23                            | 1.16                 | 1.17  | 79.53      | 1.52                 | 1.59  | XX         |
| DLN8GD  |           | 77.05                            | -1.01                | -1.02 | 76.73      | -1.28                | -1.35 | CE         |
| E6D94M  |           | 76.65                            | -1.41                | -1.42 | 76.53      | -1.48                | -1.56 | CE         |
| JAR7NJ  |           | 76.48                            | -1.59                | -1.60 | 76.63      | -1.38                | -1.45 | TO         |
| JDDPTM  |           | 76.95                            | -1.11                | -1.12 | 77.00      | -1.01                | -1.06 | CE         |
| KA8TEC  |           | 77.73                            | -0.34                | -0.34 | 77.40      | -0.61                | -0.64 | TO         |
| KFV7LR  |           | 78.63                            | 0.56                 | 0.57  | 78.48      | 0.47                 | 0.49  | CE         |
| KLYFND  |           | 78.03                            | -0.04                | -0.04 | 77.68      | -0.33                | -0.35 | TO         |
| KNR4BF  |           | 77.93                            | -0.14                | -0.14 | 77.70      | -0.31                | -0.32 | ZW         |
| L8ZKNK  |           | 77.38                            | -0.69                | -0.69 | 77.70      | -0.31                | -0.32 | IN         |
| MPC28B  |           | 78.48                            | 0.41                 | 0.41  | 78.55      | 0.54                 | 0.57  | CF         |
| NFMXWA  |           | 77.93                            | -0.14                | -0.14 | 77.88      | -0.13                | -0.14 | CE         |
| NQ4AYR  |           | 79.13                            | 1.06                 | 1.07  | 78.88      | 0.87                 | 0.91  | XX         |
| NU32GJ  |           | 77.20                            | -0.86                | -0.87 | 77.43      | -0.58                | -0.61 | TO         |
| P63E3H  |           | 79.93                            | 1.86                 | 1.87  | 79.78      | 1.77                 | 1.85  | TO         |
| PE7UNG  | <b>*</b>  | 79.55                            | 1.49                 | 1.50  | 78.43      | 0.42                 | 0.44  | CE         |
| QG9YVA  |           | 77.90                            | -0.16                | -0.16 | 77.95      | -0.06                | -0.06 | CF         |
| RD2NAD  |           | 78.70                            | 0.64                 | 0.64  | 78.53      | 0.53                 | 0.55  | XX         |
| VX2D6B  |           | 76.95                            | -1.11                | -1.12 | 77.70      | -0.31                | -0.32 | CE         |
| VYWTH9  |           | 79.13                            | 1.06                 | 1.07  | 78.83      | 0.82                 | 0.86  | AT         |
| WPGGVU  |           | 78.35                            | 0.29                 | 0.29  | 78.38      | 0.37                 | 0.38  | TO         |
| WYNLYR  |           | 76.88                            | -1.19                | -1.20 | 77.03      | -0.98                | -1.03 | TO         |
| XA2Z2X  |           | 78.05                            | -0.01                | -0.01 | 77.98      | -0.03                | -0.03 | TY         |
| XJQJQ4  |           | 77.73                            | -0.34                | -0.34 | 77.45      | -0.56                | -0.59 | TO         |
| YBEMJC  |           | 79.10                            | 1.04                 | 1.04  | 78.95      | 0.94                 | 0.99  | CE         |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 712**

**4th Qtr 2016**

**Temp. of Deflection Under Flexural Load (1.80 MPa) - Degrees C**

| WebCode | Data Flag | Sample N39 |                      |       | Sample N40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| ZPALKD  |           | 76.30      | -1.76                | -1.77 | 75.95      | -2.06                | -2.16 | XX         |
| ZU2T68  |           | 77.73      | -0.33                | -0.34 | 78.32      | 0.31                 | 0.32  | TO         |

| Summary Statistics                                  |                  |  |                  |
|---|------------------|--|------------------|
|   | Sample N39       |  | Sample N40       |
| <b>Grand Means</b>                                  | 78.063 Degrees C |  | 78.008 Degrees C |
| <b>Std Dev Btwn Labs</b>                            | 0.993 Degrees C  |  | 0.953 Degrees C  |
| Statistics based on 36 of 37 reporting participants |                  |  |                  |

Sample N39: HIPS & Sample N40: HIPS

**Comments on Assigned Data Flags for Test #712**

8Z93LW (M) - Participant did not submit data for sample N39.

**Key to Instrument Codes Reported by Participants**

|              |   |
|--------------|---|
| AT Atlas     | CE Ceast  |
| CF Coesfeld  | DN DYNISCO                                      |
| IN Instron   | TO Tinius Olsen                                 |
| TY Toyoseiki | XX Instrument manufacturer not specified by lab |
| ZW Zwick     |   |



# Plastics Interlaboratory Testing Program

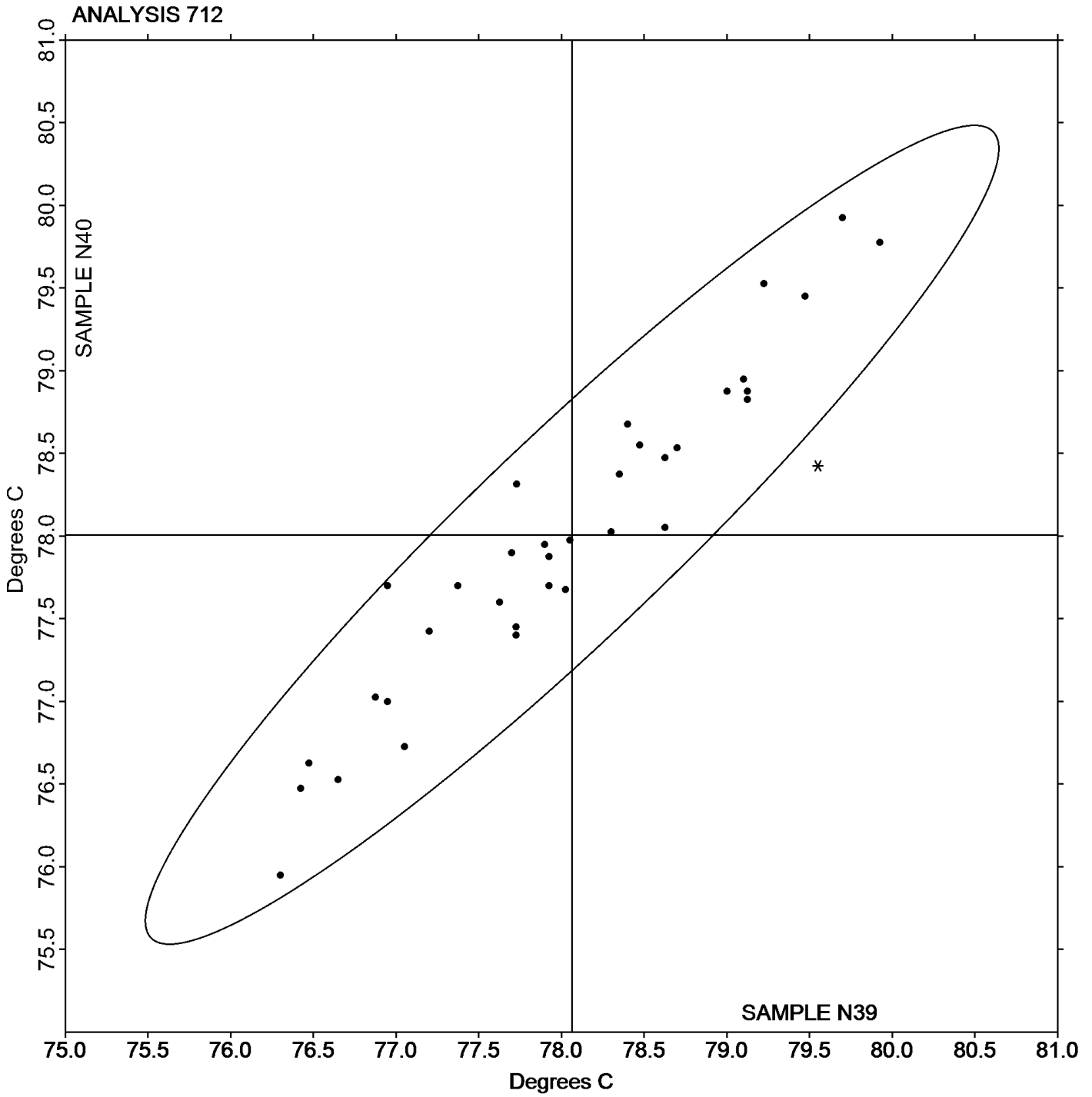
Report #100

## Analysis 712

4th Qtr 2016

Temp. of Deflection Under Flexural Load (1.80 MPa) - Degrees C

Grand Mean Sample N39: 78.063 Degrees C    Grand Mean Sample N40: 78.008 Degrees C





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 715**

**4th Qtr 2016**

**Vicat Softening Temperature (Rate A)**

| WebCode | Data Flag | Sample H39 |                      |        | Sample H40 |                      |        | Instr Code |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |            |
| 4MU9Q2  |           | 95.62      | -0.58                | -0.76  | 95.63      | -0.56                | -0.81  | AT         |
| 6X3ZHM  |           | 97.08      | 0.89                 | 1.18   | 97.07      | 0.87                 | 1.26   | TO         |
| 938AAK  |           | 95.67      | -0.53                | -0.70  | 95.60      | -0.60                | -0.86  | CE         |
| A696LF  |           | 96.40      | 0.21                 | 0.27   | 96.17      | -0.03                | -0.04  | CE         |
| A7PR8V  |           | 95.55      | -0.64                | -0.85  | 95.82      | -0.38                | -0.55  | DN         |
| CYUYNR  |           | 96.08      | -0.11                | -0.15  | 96.12      | -0.08                | -0.11  | CE         |
| JV8PFD  |           | 95.38      | -0.81                | -1.07  | 95.62      | -0.58                | -0.84  | RO         |
| K4GEUB  |           | 95.60      | -0.59                | -0.79  | 95.63      | -0.56                | -0.81  | CE         |
| KFV7LR  |           | 96.80      | 0.61                 | 0.80   | 96.70      | 0.50                 | 0.73   | CF         |
| KNR4BF  |           | 97.42      | 1.22                 | 1.62   | 97.33      | 1.14                 | 1.65   | CF         |
| M7HYUG  |           | 95.96      | -0.23                | -0.31  | 95.97      | -0.23                | -0.33  | CE         |
| MJ44V6  | X         | 85.82      | -10.38               | -13.74 | 85.77      | -10.43               | -15.11 | XX         |
| QG9YVA  |           | 96.57      | 0.37                 | 0.49   | 96.73      | 0.54                 | 0.78   | CF         |
| VX2D6B  |           | 94.62      | -1.58                | -2.09  | 94.60      | -1.60                | -2.31  | CE         |
| VYWTH9  |           | 96.83      | 0.64                 | 0.85   | 96.62      | 0.42                 | 0.61   | AT         |
| WPGGVU  |           | 95.87      | -0.33                | -0.43  | 96.02      | -0.18                | -0.26  | TO         |
| X6CNFW  |           | 97.85      | 1.66                 | 2.19   | 97.62      | 1.42                 | 2.06   | QA         |
| XA2Z2X  |           | 96.02      | -0.18                | -0.23  | 96.03      | -0.16                | -0.24  | TY         |
| YBEMJC  |           | 96.47      | 0.27                 | 0.36   | 96.50      | 0.30                 | 0.44   | CE         |
| YV44N6  |           | 96.02      | -0.18                | -0.23  | 96.02      | -0.18                | -0.26  | CE         |
| Z8ALQT  |           | 96.07      | -0.13                | -0.17  | 96.13      | -0.06                | -0.09  | TO         |

| Summary Statistics                                  |  | Sample H39       | Sample H40       |
|---|--|------------------|------------------|
| <b>Grand Means</b>                                  |  | 96.193 Degrees C | 96.196 Degrees C |
| <b>Std Dev Btwn Labs</b>                            |  | 0.755 Degrees C  | 0.690 Degrees C  |
| Statistics based on 20 of 21 reporting participants |  |                  |                  |

Sample H39: HIPS & Sample H40: HIPS

**Comments on Assigned Data Flags for Test #715**

MJ44V6 (X) - Data for both samples are low. Possible Systematic Error.





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 715

4th Qtr 2016

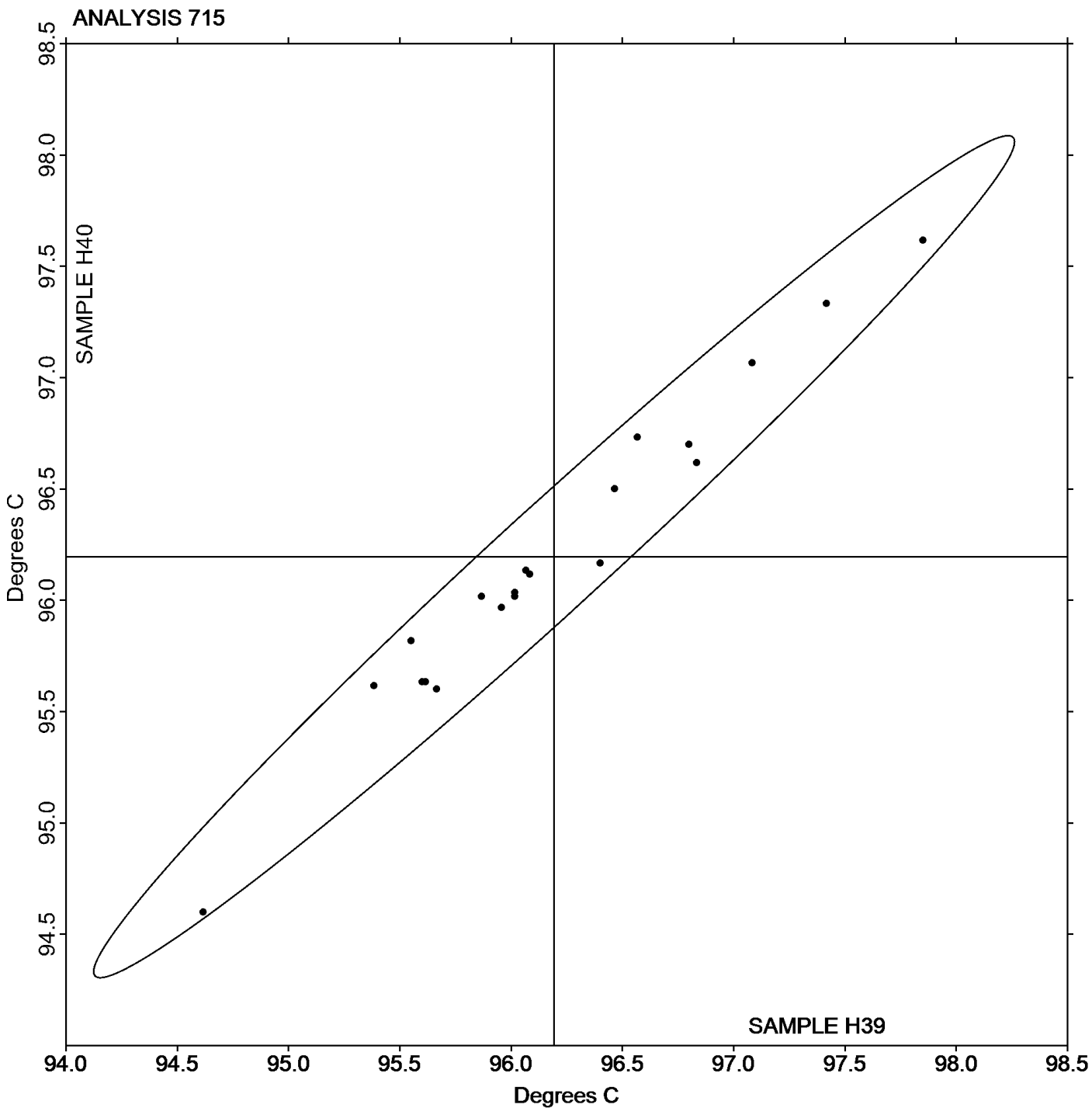
### Vicat Softening Temperature (Rate A)

#### Key to Instrument Codes Reported by Participants

|    |  |    |           |
|----|--|----|-----------|
| AT | Atlas  | CE | Ceast     |
| CF | Coesfeld                                     | DN | DYNISCO   |
| QA | Qualitest                                    | RO | Rosand    |
| TO | Tinius Olsen                                 | TY | Toyoseiki |
| XX | Instrument manufacturer not specified by lab |    |           |



Grand Mean Sample H39: 96.193 Degrees C    Grand Mean Sample H40: 96.196 Degrees C





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 716**

**4th Qtr 2016**

**Vicat Softening Temperature (Rate B)**

| WebCode | Data Flag | Sample R39 |                      |        | Sample R40 |                      |        | Instr Code |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |            |
| 6X3ZHM  |           | 99.12      | 0.73                 | 0.90   | 99.18      | 0.79                 | 0.98   | TO         |
| 938AAK  |           | 97.60      | -0.78                | -0.96  | 97.43      | -0.96                | -1.19  | CE         |
| A696LF  |           | 98.52      | 0.13                 | 0.16   | 98.75      | 0.36                 | 0.44   | CE         |
| A7PR8V  |           | 98.57      | 0.18                 | 0.22   | 98.70      | 0.31                 | 0.38   | DN         |
| CYUYNR  |           | 98.15      | -0.23                | -0.29  | 98.20      | -0.19                | -0.24  | CE         |
| JV8PFD  |           | 97.83      | -0.55                | -0.67  | 97.83      | -0.56                | -0.69  | RO         |
| K4GEUB  |           | 97.50      | -0.88                | -1.08  | 97.57      | -0.83                | -1.02  | CE         |
| KFV7LR  |           | 98.52      | 0.13                 | 0.16   | 98.53      | 0.14                 | 0.17   | CF         |
| KNR4BF  |           | 99.13      | 0.75                 | 0.92   | 98.97      | 0.57                 | 0.71   | CF         |
| KQGF7E  |           | 96.98      | -1.40                | -1.71  | 96.98      | -1.41                | -1.74  | TO         |
| M7HYUG  |           | 97.83      | -0.55                | -0.67  | 97.92      | -0.48                | -0.59  | CE         |
| MJ44V6  | X         | 88.22      | -10.17               | -12.41 | 88.22      | -10.18               | -12.58 | XX         |
| QG9YVA  |           | 98.83      | 0.45                 | 0.55   | 98.63      | 0.24                 | 0.30   | CF         |
| VYWTH9  |           | 99.23      | 0.85                 | 1.04   | 99.25      | 0.86                 | 1.06   | AT         |
| WPGGVU  |           | 97.88      | -0.50                | -0.61  | 97.97      | -0.43                | -0.53  | TO         |
| X6CNFW  |           | 100.48     | 2.10                 | 2.56   | 100.53     | 2.14                 | 2.65   | DN         |
| XA2Z2X  |           | 98.48      | 0.10                 | 0.12   | 98.48      | 0.09                 | 0.11   | TY         |
| YBEMJC  |           | 99.05      | 0.67                 | 0.81   | 98.80      | 0.41                 | 0.50   | CE         |
| Z8ALQT  |           | 98.05      | -0.33                | -0.41  | 98.08      | -0.31                | -0.38  | TO         |
| ZU2T68  |           | 97.52      | -0.86                | -1.05  | 97.63      | -0.76                | -0.94  | TO         |

| Summary Statistics                                  |  | Sample R39       | Sample R40       |
|---|--|------------------|------------------|
| <b>Grand Means</b>                                  |  | 98.383 Degrees C | 98.392 Degrees C |
| <b>Stnd Dev Btwn Labs</b>                           |  | 0.819 Degrees C  | 0.809 Degrees C  |
| Statistics based on 19 of 20 reporting participants |  |                  |                  |

Sample R39: HIPS & Sample R40: HIPS

**Comments on Assigned Data Flags for Test #716**

MJ44V6 (X) - Data for both samples are low. Possible Systematic Error.

**Key to Instrument Codes Reported by Participants**

|              |   |
|--------------|---|
| AT Atlas     | CE Ceast  |
| CF Coesfeld  | DN DYNISCO                                      |
| RO Rosand    | TO Tinius Olsen                                 |
| TY Toyoseiki | XX Instrument manufacturer not specified by lab |



# Plastics Interlaboratory Testing Program

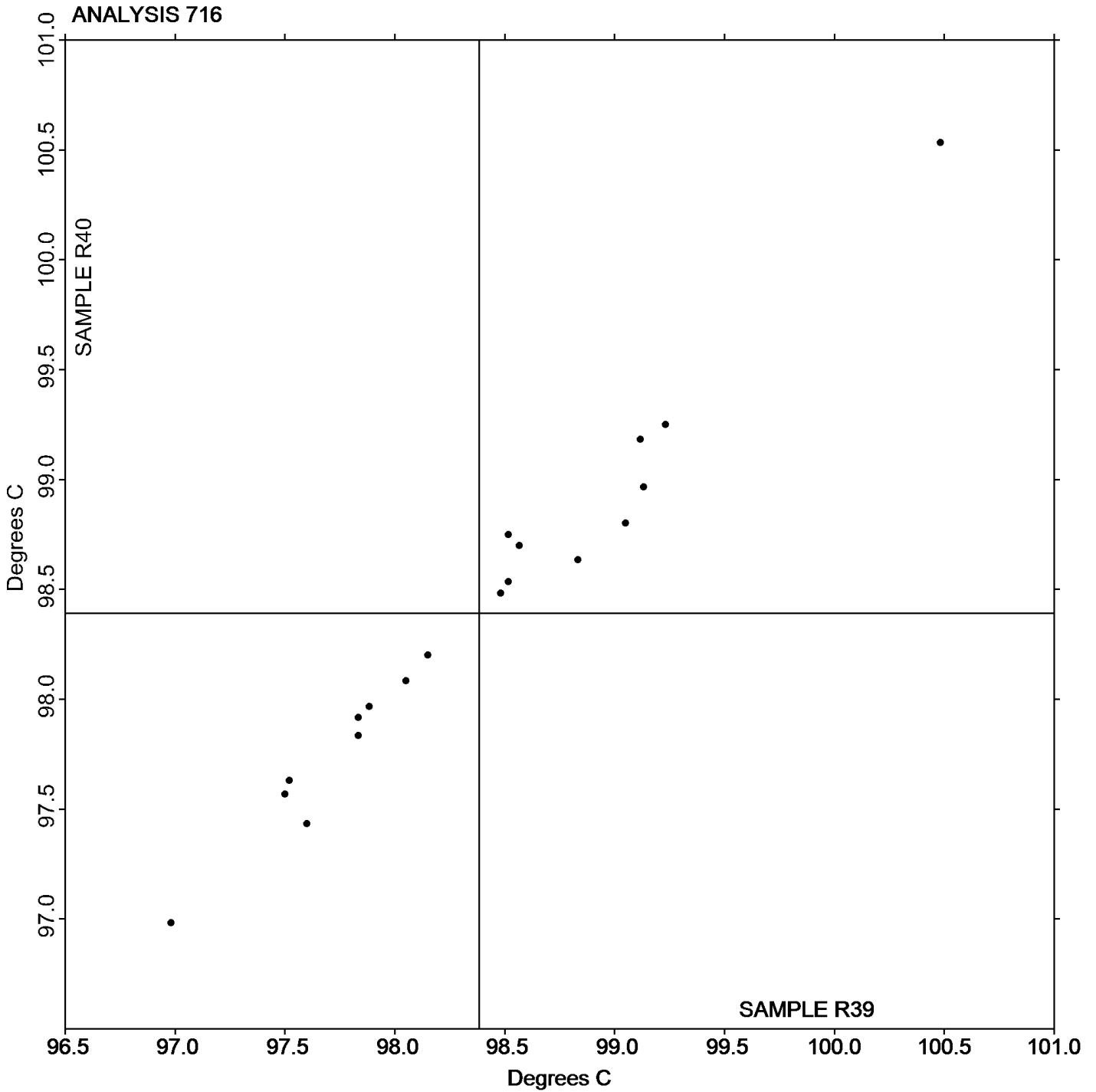
## Analysis 716

### Vicat Softening Temperature (Rate B)

Report #100

4th Qtr 2016

Grand Mean Sample R39: 98.383 Degrees C    Grand Mean Sample R40: 98.392 Degrees C



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



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 718

4th Qtr 2016

### Specific Gravity - sp gr 23/23 C

| WebCode | Data Flag | Sample T39 |                      |        | Sample T40 |                      |       |
|---------|-----------|------------|----------------------|--------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV   |
| 27RQMX  |           | 1.04957    | 0.00044              | 0.23   | 1.04967    | 0.00070              | 0.35  |
| 2H67AW  |           | 1.04977    | 0.00064              | 0.34   | 1.05070    | 0.00174              | 0.88  |
| 2HLVNP  | *         | 1.04467    | -0.00446             | -2.40  | 1.04533    | -0.00363             | -1.83 |
| 2JYVWX  |           | 1.04667    | -0.00246             | -1.33  | 1.04763    | -0.00133             | -0.67 |
| 33PVBV  |           | 1.04500    | -0.00413             | -2.22  | 1.04533    | -0.00363             | -1.83 |
| 3GCF4H  |           | 1.04667    | -0.00246             | -1.33  | 1.04567    | -0.00330             | -1.67 |
| 3RRUXQ  |           | 1.05023    | 0.00110              | 0.59   | 1.05120    | 0.00224              | 1.13  |
| 3UG48R  |           | 1.04743    | -0.00170             | -0.91  | 1.04743    | -0.00153             | -0.77 |
| 46UN6U  |           | 1.05033    | 0.00120              | 0.65   | 1.05100    | 0.00204              | 1.03  |
| 4MU9Q2  |           | 1.05103    | 0.00190              | 1.02   | 1.05100    | 0.00204              | 1.03  |
| 4XPJWM  |           | 1.04793    | -0.00120             | -0.64  | 1.04930    | 0.00034              | 0.17  |
| 67GNJF  |           | 1.04800    | -0.00113             | -0.61  | 1.04667    | -0.00230             | -1.16 |
| 6CQETU  | X         | 1.03033    | -0.01880             | -10.11 | 1.02970    | -0.01926             | -9.73 |
| 7FNBZZ  |           | 1.04867    | -0.00046             | -0.25  | 1.04900    | 0.00004              | 0.02  |
| 7GFAAR  |           | 1.05033    | 0.00120              | 0.65   | 1.05000    | 0.00104              | 0.52  |
| 7RFYQT  |           | 1.04940    | 0.00027              | 0.14   | 1.04960    | 0.00064              | 0.32  |
| 7TANDV  |           | 1.04800    | -0.00113             | -0.61  | 1.04767    | -0.00130             | -0.66 |
| 82ZQTC  |           | 1.05183    | 0.00270              | 1.45   | 1.05167    | 0.00270              | 1.36  |
| 8CWVLA  |           | 1.04973    | 0.00060              | 0.32   | 1.04920    | 0.00024              | 0.12  |
| 8JHUBX  |           | 1.04600    | -0.00313             | -1.68  | 1.04600    | -0.00296             | -1.50 |
| 8Z93LW  |           | 1.04797    | -0.00116             | -0.63  | 1.04637    | -0.00260             | -1.31 |
| 9A7RT3  |           | 1.04773    | -0.00140             | -0.75  | 1.04807    | -0.00090             | -0.45 |
| 9E2DAR  |           | 1.04567    | -0.00346             | -1.86  | 1.04533    | -0.00363             | -1.83 |
| 9MC7PU  |           | 1.04850    | -0.00063             | -0.34  | 1.04887    | -0.00010             | -0.05 |
| 9R4AHX  |           | 1.04983    | 0.00070              | 0.38   | 1.04963    | 0.00067              | 0.34  |
| A696LF  |           | 1.04807    | -0.00106             | -0.57  | 1.04820    | -0.00076             | -0.39 |
| A7PR8V  |           | 1.04800    | -0.00113             | -0.61  | 1.04867    | -0.00030             | -0.15 |
| AGLTN7  |           | 1.05000    | 0.00087              | 0.47   | 1.05033    | 0.00137              | 0.69  |
| AXPMV7  | *         | 1.04703    | -0.00210             | -1.13  | 1.04453    | -0.00443             | -2.24 |
| B937R8  |           | 1.05200    | 0.00287              | 1.54   | 1.05200    | 0.00304              | 1.53  |
| BTXH22  |           | 1.05047    | 0.00134              | 0.72   | 1.05050    | 0.00154              | 0.78  |
| BUPLNG  |           | 1.04797    | -0.00116             | -0.63  | 1.04797    | -0.00100             | -0.50 |
| C94X9A  |           | 1.04861    | -0.00052             | -0.28  | 1.04802    | -0.00095             | -0.48 |
| CDTB8C  | X         | 1.04667    | -0.00246             | -1.33  | 1.04333    | -0.00563             | -2.84 |
| CLT3RK  | X         | 1.04610    | -0.00303             | -1.63  | 1.04997    | 0.00100              | 0.51  |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 718

4th Qtr 2016

### Specific Gravity - sp gr 23/23 C

| WebCode | Data Flag | Sample T39 |                      |          | Sample T40 |                      |          |
|---------|-----------|------------|----------------------|----------|------------|----------------------|----------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV      | Lab Mean   | Diff from Grand Mean | CPV      |
| CX39VE  |           | 1.05067    | 0.00154              | 0.83     | 1.05067    | 0.00170              | 0.86     |
| DFG9YF  |           | 1.04933    | 0.00020              | 0.11     | 1.04900    | 0.00004              | 0.02     |
| DJW6UX  |           | 1.05037    | 0.00124              | 0.66     | 1.05040    | 0.00144              | 0.72     |
| DMGRRR  |           | 1.05020    | 0.00107              | 0.58     | 1.04830    | -0.00066             | -0.34    |
| E4GVE9  |           | 1.04907    | -0.00006             | -0.03    | 1.04770    | -0.00127             | -0.64    |
| EQTVM7  |           | 1.04896    | -0.00017             | -0.09    | 1.04856    | -0.00040             | -0.20    |
| GBE63D  |           | 1.05073    | 0.00160              | 0.86     | 1.05137    | 0.00240              | 1.21     |
| GHAWYQ  |           | 1.04703    | -0.00210             | -1.13    | 1.04740    | -0.00156             | -0.79    |
| GN2EKC  |           | 1.04883    | -0.00030             | -0.16    | 1.04730    | -0.00166             | -0.84    |
| GPE4PA  |           | 1.05193    | 0.00280              | 1.50     | 1.05288    | 0.00391              | 1.98     |
| HDYFC3  |           | 1.04900    | -0.00013             | -0.07    | 1.04900    | 0.00004              | 0.02     |
| HWAXCR  |           | 1.04833    | -0.00080             | -0.43    | 1.04833    | -0.00063             | -0.32    |
| HWBVHG  |           | 1.05123    | 0.00210              | 1.13     | 1.05117    | 0.00220              | 1.11     |
| JAR7NJ  |           | 1.05087    | 0.00174              | 0.93     | 1.05077    | 0.00180              | 0.91     |
| JDDPTM  | X         | 6.00780    | 4.95867              | 2,666.76 | 6.00787    | 4.95890              | 2,504.23 |
| JWNAEC  |           | 1.05169    | 0.00256              | 1.38     | 1.05159    | 0.00262              | 1.32     |
| K4GEUB  |           | 1.05013    | 0.00100              | 0.54     | 1.04847    | -0.00050             | -0.25    |
| KLYFND  |           | 1.05083    | 0.00170              | 0.92     | 1.05090    | 0.00194              | 0.98     |
| KNR4BF  |           | 1.05133    | 0.00220              | 1.18     | 1.05137    | 0.00240              | 1.21     |
| KXBAVJ  |           | 1.05190    | 0.00277              | 1.49     | 1.05167    | 0.00270              | 1.36     |
| L6CCLH  |           | 1.04763    | -0.00150             | -0.81    | 1.04730    | -0.00166             | -0.84    |
| L8ZKNK  |           | 1.04750    | -0.00163             | -0.88    | 1.04833    | -0.00063             | -0.32    |
| LQRWHJ  |           | 1.04530    | -0.00383             | -2.06    | 1.04510    | -0.00386             | -1.95    |
| LYK62P  | X         | 1.03887    | -0.01026             | -5.52    | 1.02437    | -0.02460             | -12.42   |
| M7HYUG  |           | 1.04740    | -0.00173             | -0.93    | 1.04770    | -0.00126             | -0.64    |
| NCNKB7  |           | 1.05040    | 0.00127              | 0.68     | 1.05087    | 0.00190              | 0.96     |
| NDG44C  |           | 1.04763    | -0.00150             | -0.81    | 1.04910    | 0.00014              | 0.07     |
| NFMXWA  |           | 1.04600    | -0.00313             | -1.68    | 1.04467    | -0.00430             | -2.17    |
| NU32GJ  |           | 1.04833    | -0.00080             | -0.43    | 1.04900    | 0.00004              | 0.02     |
| NX48T6  | X         | 1.05577    | 0.00664              | 3.57     | 1.04830    | -0.00066             | -0.34    |
| P39T87  |           | 1.04697    | -0.00216             | -1.16    | 1.04720    | -0.00176             | -0.89    |
| PE7UNG  |           | 1.05073    | 0.00160              | 0.86     | 1.04900    | 0.00004              | 0.02     |
| QG9YVA  |           | 1.04550    | -0.00363             | -1.95    | 1.04500    | -0.00396             | -2.00    |
| RWZ7C9  |           | 1.04710    | -0.00203             | -1.09    | 1.04747    | -0.00150             | -0.76    |
| UFKR4A  |           | 1.04717    | -0.00196             | -1.06    | 1.04730    | -0.00166             | -0.84    |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 718**

**4th Qtr 2016**

**Specific Gravity - sp gr 23/23 C**

| WebCode | Data Flag | Sample T39 |                      |       | Sample T40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| UMJAK7  |           | 1.04933    | 0.00020              | 0.11  | 1.04733    | -0.00163             | -0.82 |
| URVUET  |           | 1.04967    | 0.00054              | 0.29  | 1.05000    | 0.00104              | 0.52  |
| V2W9J4  |           | 1.04967    | 0.00054              | 0.29  | 1.04940    | 0.00044              | 0.22  |
| VX2D6B  |           | 1.04957    | 0.00044              | 0.23  | 1.05010    | 0.00114              | 0.57  |
| VYTE68  |           | 1.05133    | 0.00220              | 1.18  | 1.05013    | 0.00117              | 0.59  |
| VYWTH9  |           | 1.05020    | 0.00107              | 0.58  | 1.04983    | 0.00087              | 0.44  |
| W2CR42  |           | 1.04900    | -0.00013             | -0.07 | 1.04800    | -0.00096             | -0.49 |
| WB3BKV  |           | 1.05110    | 0.00197              | 1.06  | 1.05077    | 0.00180              | 0.91  |
| WB44MA  |           | 1.05100    | 0.00187              | 1.01  | 1.05100    | 0.00204              | 1.03  |
| WFU7EV  |           | 1.04977    | 0.00064              | 0.34  | 1.05127    | 0.00230              | 1.16  |
| WGB36A  |           | 1.05093    | 0.00180              | 0.97  | 1.05093    | 0.00197              | 0.99  |
| WJVGKN  |           | 1.05240    | 0.00327              | 1.76  | 1.05070    | 0.00174              | 0.88  |
| WPGGVU  |           | 1.05147    | 0.00234              | 1.26  | 1.05027    | 0.00130              | 0.66  |
| WWHF2X  |           | 1.04733    | -0.00180             | -0.97 | 1.04733    | -0.00163             | -0.82 |
| XA2Z2X  |           | 1.04833    | -0.00080             | -0.43 | 1.04927    | 0.00030              | 0.15  |
| XD4U49  |           | 1.05010    | 0.00097              | 0.52  | 1.04993    | 0.00097              | 0.49  |
| XVZRDB  |           | 1.04696    | -0.00217             | -1.17 | 1.04610    | -0.00287             | -1.45 |
| XXTB93  |           | 1.04763    | -0.00150             | -0.81 | 1.04560    | -0.00336             | -1.70 |
| YBEMJC  |           | 1.05057    | 0.00144              | 0.77  | 1.05090    | 0.00194              | 0.98  |
| Z68H6X  |           | 1.05033    | 0.00120              | 0.65  | 1.05103    | 0.00207              | 1.04  |
| Z9KDP2  | X         | 1.05063    | 0.00150              | 0.81  | 1.04707    | -0.00190             | -0.96 |
| ZGHF3T  |           | 1.04933    | 0.00020              | 0.11  | 1.04967    | 0.00070              | 0.35  |
| ZH9E26  | *         | 1.05257    | 0.00344              | 1.85  | 1.05080    | 0.00184              | 0.93  |
| ZPALKD  |           | 1.05103    | 0.00190              | 1.02  | 1.05087    | 0.00190              | 0.96  |
| ZU2T68  |           | 1.05063    | 0.00150              | 0.81  | 1.05023    | 0.00127              | 0.64  |

| Summary Statistics                                  |                        |                        |
|---|------------------------|------------------------|
|   | Sample T39             | Sample T40             |
| <b>Grand Means</b>                                  | 1.049131 sp gr 23/23 C | 1.048964 sp gr 23/23 C |
| <b>Std Dev Btwn Labs</b>                            | 0.001859 sp gr 23/23 C | 0.001980 sp gr 23/23 C |
| Statistics based on 88 of 95 reporting participants |                        |                        |

Sample T39: HIPS & Sample T40: HIPS



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**Comments on Assigned Data Flags for Test #718**

CLT3RK (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample T39.

JDDPTM (X) - Extreme data.

Z9KDP2 (X) - Inconsistent in testing between samples.

LYK62P (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

6CQETU (X) - Data for both samples are low. Possible Systematic Error.

NX48T6 (X) - Data for sample T39 are high.

CDTB8C (X) - Data for sample T40 are low. Inconsistent within the determinations of both samples.





# Plastics Interlaboratory Testing Program

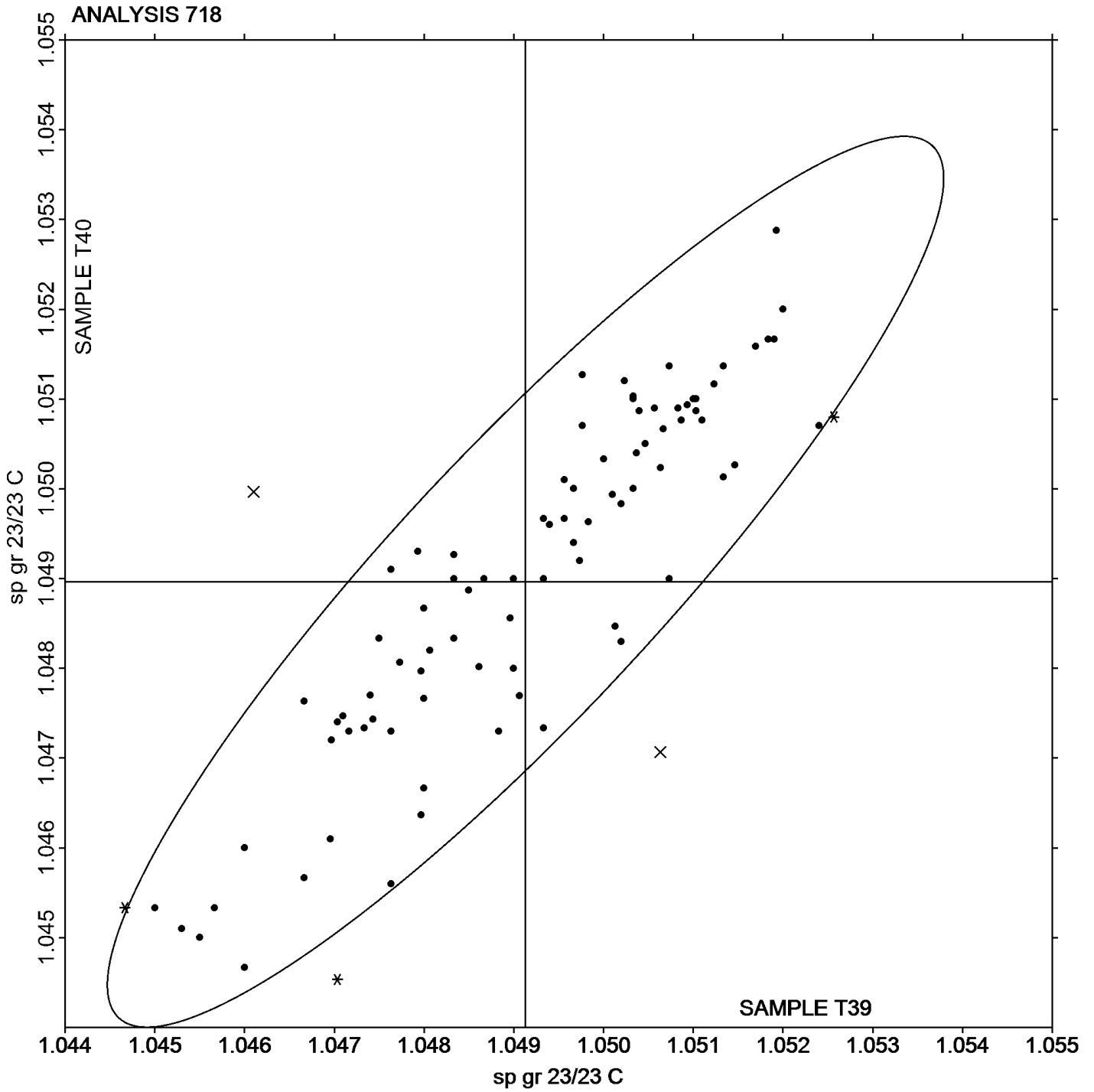
## Analysis 718

### Specific Gravity - sp gr 23/23 C

Report #100

4th Qtr 2016

Grand Mean Sample T39: 1.0491 sp gr 23/23 C    Grand Mean Sample T40: 1.0490 sp gr 23/23 C





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 720

4th Qtr 2016

### Flexural Modulus- ksi

| WebCode | Data Flag | Sample J39 |                      |        | Sample J40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| 4M88WQ  |           | 273.2      | -2.4                 | -0.14  | 274.5      | -0.9                 | -0.06  |
| 4XPJWM  |           | 260.1      | -15.6                | -0.93  | 257.4      | -18.0                | -1.08  |
| 67GNJF  |           | 269.5      | -6.2                 | -0.37  | 272.0      | -3.5                 | -0.21  |
| 6FML8J  |           | 273.4      | -2.2                 | -0.13  | 269.6      | -5.9                 | -0.35  |
| 6PQDGQ  |           | 271.6      | -4.1                 | -0.25  | 276.5      | 1.0                  | 0.06   |
| 7FNBZZ  | *         | 227.3      | -48.3                | -2.90  | 224.7      | -50.7                | -3.04  |
| 7GDEDM  |           | 286.8      | 11.1                 | 0.67   | 285.0      | 9.6                  | 0.57   |
| 82ZQTC  |           | 286.2      | 10.6                 | 0.63   | 281.0      | 5.5                  | 0.33   |
| 8JHUBX  | *         | 245.0      | -30.6                | -1.84  | 251.2      | -24.2                | -1.45  |
| 8YU66C  |           | 286.2      | 10.6                 | 0.63   | 286.6      | 11.1                 | 0.67   |
| 8Z93LW  |           | 298.7      | 23.1                 | 1.38   | 298.4      | 23.0                 | 1.37   |
| 92FADA  | *         | 284.3      | 8.7                  | 0.52   | 276.0      | 0.5                  | 0.03   |
| 9E2DAR  |           | 262.4      | -13.2                | -0.79  | 260.3      | -15.2                | -0.91  |
| 9MC7PU  |           | 295.7      | 20.1                 | 1.21   | 294.9      | 19.4                 | 1.16   |
| A696LF  |           | 250.0      | -25.7                | -1.54  | 252.5      | -23.0                | -1.37  |
| A7PR8V  |           | 269.1      | -6.5                 | -0.39  | 271.5      | -4.0                 | -0.24  |
| ATF8N3  |           | 295.0      | 19.3                 | 1.16   | 295.4      | 19.9                 | 1.19   |
| AXPMV7  |           | 295.0      | 19.3                 | 1.16   | 297.7      | 22.2                 | 1.33   |
| B7YDX9  |           | 279.0      | 3.4                  | 0.20   | 278.1      | 2.6                  | 0.15   |
| BTXH22  |           | 287.7      | 12.1                 | 0.72   | 287.9      | 12.4                 | 0.74   |
| BZRCNL  |           | 269.6      | -6.1                 | -0.36  | 272.0      | -3.5                 | -0.21  |
| CLT3RK  |           | 269.4      | -6.3                 | -0.38  | 272.1      | -3.3                 | -0.20  |
| DDQ679  |           | 279.3      | 3.7                  | 0.22   | 279.9      | 4.5                  | 0.27   |
| DFG9YF  | X         | 35.5       | -240.2               | -14.40 | 35.4       | -240.1               | -14.37 |
| E8YVWA  |           | 255.9      | -19.8                | -1.18  | 258.2      | -17.3                | -1.03  |
| ECC7ZH  |           | 290.4      | 14.8                 | 0.89   | 285.2      | 9.7                  | 0.58   |
| EY6MXG  |           | 278.8      | 3.2                  | 0.19   | 280.0      | 4.6                  | 0.27   |
| GN2EKC  |           | 284.3      | 8.7                  | 0.52   | 289.6      | 14.1                 | 0.85   |
| HMZYPQ  |           | 301.7      | 26.0                 | 1.56   | 296.6      | 21.1                 | 1.26   |
| HWBVHG  |           | 304.1      | 28.4                 | 1.70   | 305.4      | 29.9                 | 1.79   |
| JV8PFD  |           | 268.4      | -7.2                 | -0.43  | 269.9      | -5.6                 | -0.33  |
| K3BRJR  |           | 281.9      | 6.2                  | 0.37   | 281.9      | 6.5                  | 0.39   |
| K4GEUB  |           | 260.1      | -15.6                | -0.93  | 259.2      | -16.2                | -0.97  |
| K9UPXL  |           | 249.5      | -26.1                | -1.57  | 249.6      | -25.9                | -1.55  |
| KLYFND  |           | 264.4      | -11.3                | -0.68  | 263.8      | -11.7                | -0.70  |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 720

4th Qtr 2016

### Flexural Modulus- ksi

| WebCode | Data Flag | Sample J39 |                      |       | Sample J40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| KNR4BF  |           | 265.0      | -10.6                | -0.64 | 264.3      | -11.2                | -0.67 |
| L8ZKN   |           | 291.0      | 15.4                 | 0.92  | 288.8      | 13.3                 | 0.80  |
| LJ89VN  |           | 303.8      | 28.2                 | 1.69  | 305.2      | 29.7                 | 1.78  |
| LRMCVF  |           | 264.1      | -11.6                | -0.69 | 261.2      | -14.2                | -0.85 |
| LVL4BM  |           | 289.1      | 13.5                 | 0.81  | 288.7      | 13.3                 | 0.79  |
| MU8LGM  |           | 293.7      | 18.1                 | 1.09  | 294.1      | 18.6                 | 1.11  |
| MWVXGR  |           | 279.2      | 3.6                  | 0.21  | 280.3      | 4.8                  | 0.29  |
| N3CZV9  |           | 278.9      | 3.3                  | 0.20  | 277.9      | 2.5                  | 0.15  |
| NX48T6  |           | 264.0      | -11.6                | -0.70 | 263.0      | -12.5                | -0.75 |
| P2E32R  |           | 254.7      | -20.9                | -1.25 | 255.1      | -20.3                | -1.22 |
| QHJTJM  | X         | 248.6      | -27.1                | -1.62 | 267.2      | -8.3                 | -0.50 |
| QLYTPA  |           | 285.6      | 9.9                  | 0.60  | 280.7      | 5.3                  | 0.31  |
| QZZ64Z  |           | 272.5      | -3.1                 | -0.19 | 272.4      | -3.0                 | -0.18 |
| R4ZZFV  |           | 302.4      | 26.8                 | 1.61  | 301.7      | 26.2                 | 1.57  |
| T6L7DX  |           | 270.2      | -5.5                 | -0.33 | 266.7      | -8.8                 | -0.52 |
| TPWWQV  |           | 285.3      | 9.7                  | 0.58  | 280.8      | 5.4                  | 0.32  |
| UFKR4A  |           | 253.8      | -21.9                | -1.31 | 250.7      | -24.8                | -1.48 |
| ULPXUT  |           | 280.5      | 4.9                  | 0.29  | 279.8      | 4.4                  | 0.26  |
| UMJAK7  |           | 260.6      | -15.1                | -0.90 | 261.3      | -14.2                | -0.85 |
| UX6FHB  |           | 296.9      | 21.3                 | 1.28  | 303.0      | 27.6                 | 1.65  |
| VL4CQL  |           | 272.2      | -3.4                 | -0.21 | 271.5      | -4.0                 | -0.24 |
| VYTE68  |           | 282.8      | 7.1                  | 0.43  | 283.3      | 7.9                  | 0.47  |
| VYWTH9  |           | 280.4      | 4.7                  | 0.28  | 280.4      | 4.9                  | 0.29  |
| WB44MA  | *         | 279.2      | 3.6                  | 0.21  | 288.0      | 12.5                 | 0.75  |
| WB62TY  |           | 276.6      | 1.0                  | 0.06  | 271.4      | -4.1                 | -0.24 |
| WJVGKN  |           | 237.9      | -37.8                | -2.26 | 237.1      | -38.3                | -2.29 |
| WPGGVU  |           | 277.5      | 1.9                  | 0.11  | 274.9      | -0.6                 | -0.04 |
| WVTKNH  |           | 259.9      | -15.8                | -0.95 | 262.8      | -12.7                | -0.76 |
| X6CNFW  |           | 265.2      | -10.4                | -0.63 | 265.5      | -9.9                 | -0.60 |
| XA2Z2X  |           | 267.8      | -7.8                 | -0.47 | 268.0      | -7.4                 | -0.45 |
| XD4U49  |           | 311.7      | 36.0                 | 2.16  | 310.7      | 35.2                 | 2.11  |
| XLHKQZ  | X         | 243.7      | -31.9                | -1.92 | 223.6      | -51.8                | -3.10 |
| XVZRDB  |           | 300.5      | 24.8                 | 1.49  | 299.2      | 23.7                 | 1.42  |
| XZZ92J  |           | 271.8      | -3.8                 | -0.23 | 270.0      | -5.5                 | -0.33 |
| YBEMJC  |           | 255.8      | -19.8                | -1.19 | 258.6      | -16.9                | -1.01 |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 720**

**4th Qtr 2016**

**Flexural Modulus- ksi**

| WebCode | Data Flag | Sample J39 |                      |       | Sample J40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| Z68H6X  |           | 282.5      | 6.8                  | 0.41  | 282.9      | 7.4                  | 0.44  |
| Z9KDP2  |           | 268.3      | -7.4                 | -0.44 | 260.9      | -14.6                | -0.87 |
| ZAXHAY  |           | 280.0      | 4.4                  | 0.26  | 287.0      | 11.5                 | 0.69  |
| ZFJ376  | X         | 280.5      | 4.8                  | 0.29  | 269.2      | -6.3                 | -0.38 |
| ZPALKD  |           | 254.9      | -20.7                | -1.24 | 255.7      | -19.7                | -1.18 |
| ZU2T68  | X         | 295.4      | 19.7                 | 1.18  | 278.8      | 3.3                  | 0.20  |

| Summary Statistics                                  |  | Sample J39 | Sample J40 |
|---|--|------------|------------|
| <b>Grand Means</b>                                  |  | 275.64 ksi | 275.47 ksi |
| <b>Stnd Dev Btwn Labs</b>                           |  | 16.68 ksi  | 16.71 ksi  |
| Statistics based on 71 of 76 reporting participants |  |            |            |

Sample J39: HIPS & Sample J40: HIPS

**Comments on Assigned Data Flags for Test #720**

- XLHKQZ (X) - Data for sample J40 are low.
- ZFJ376 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J40.
- ZU2T68 (X) - Inconsistent in testing between samples.
- QHJTJM (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J39.
- DFG9YF (X) - Extreme data.



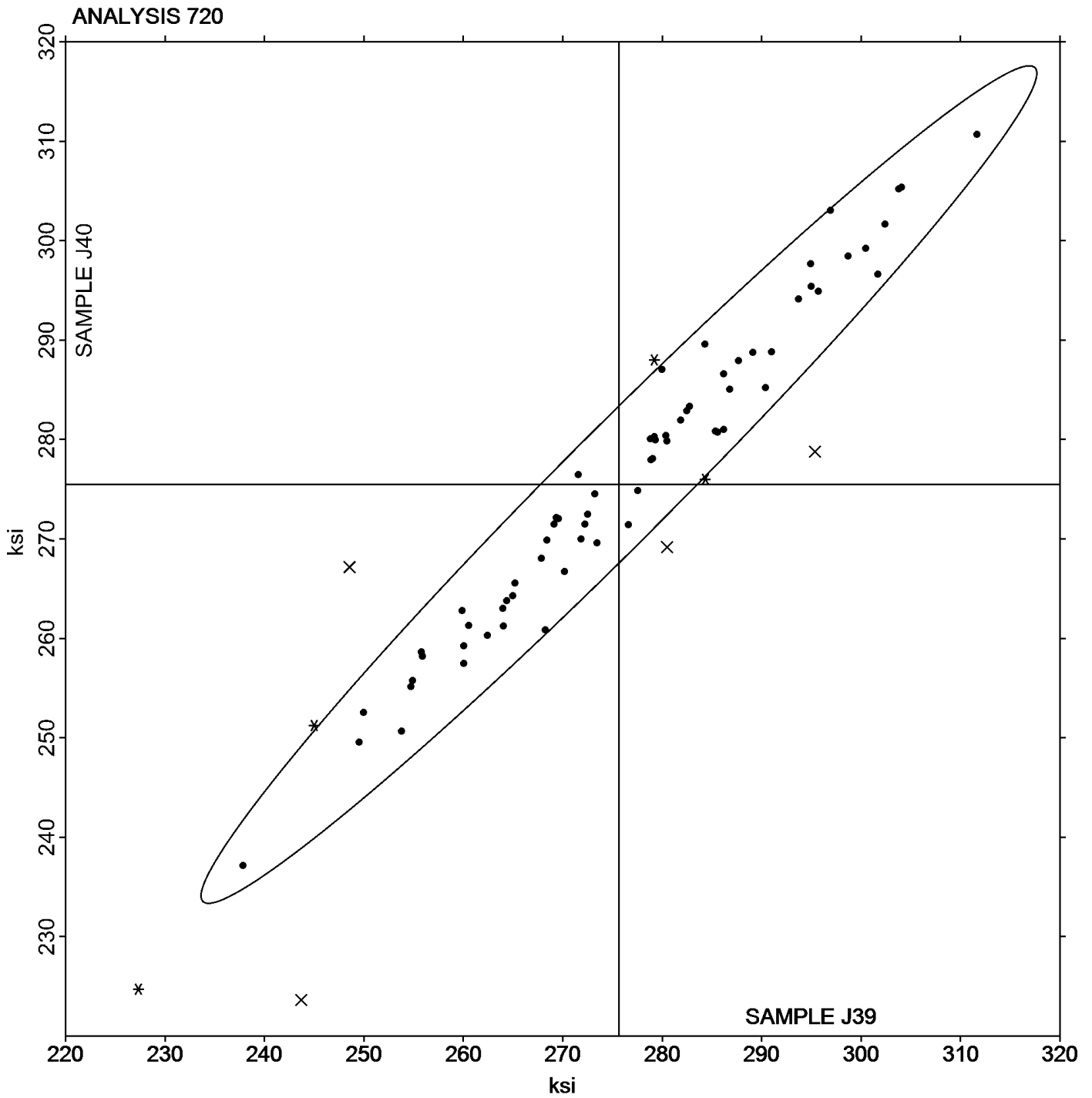
# Plastics Interlaboratory Testing Program

## Analysis 720 Flexural Modulus- ksi

Report #100

4th Qtr 2016

Grand Mean Sample J39: 275.64 ksi    Grand Mean Sample J40: 275.47 ksi





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 721

4th Qtr 2016

### Flexural Stress at 5% Strain - psi

| WebCode | Data Flag | Sample J39 |                      |        | Sample J40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| 4XPJWM  |           | 5,060      | 56                   | 0.27   | 5,073      | 65                   | 0.31   |
| 67GNJF  |           | 4,821      | -183                 | -0.89  | 4,842      | -166                 | -0.80  |
| 6FML8J  |           | 4,914      | -90                  | -0.44  | 4,965      | -43                  | -0.21  |
| 6PQDGQ  |           | 4,929      | -75                  | -0.36  | 4,939      | -70                  | -0.34  |
| 7FNBZZ  |           | 4,613      | -392                 | -1.90  | 4,649      | -359                 | -1.73  |
| 7GDEDM  |           | 5,133      | 129                  | 0.62   | 5,151      | 142                  | 0.68   |
| 82ZQTC  |           | 4,914      | -90                  | -0.44  | 4,944      | -65                  | -0.31  |
| 8YU66C  |           | 4,872      | -132                 | -0.64  | 4,880      | -129                 | -0.62  |
| 8Z93LW  |           | 5,172      | 168                  | 0.81   | 5,160      | 151                  | 0.73   |
| 92FADA  |           | 5,077      | 73                   | 0.35   | 4,993      | -16                  | -0.08  |
| 9E2DAR  |           | 4,892      | -113                 | -0.55  | 4,918      | -90                  | -0.44  |
| 9MC7PU  |           | 5,307      | 302                  | 1.46   | 5,270      | 261                  | 1.26   |
| A696LF  |           | 4,795      | -209                 | -1.01  | 4,856      | -153                 | -0.74  |
| A7PR8V  |           | 5,247      | 243                  | 1.18   | 5,260      | 251                  | 1.21   |
| ATF8N3  |           | 5,099      | 94                   | 0.46   | 5,106      | 98                   | 0.47   |
| B7YDX9  |           | 4,991      | -13                  | -0.06  | 5,078      | 70                   | 0.34   |
| BZRCNL  |           | 4,835      | -170                 | -0.82  | 4,863      | -145                 | -0.70  |
| CLT3RK  |           | 5,151      | 147                  | 0.71   | 5,159      | 151                  | 0.73   |
| DDQ679  |           | 5,126      | 122                  | 0.59   | 5,126      | 117                  | 0.57   |
| DFG9YF  | X         | 1,720      | -3,284               | -15.91 | 1,744      | -3,265               | -15.75 |
| E8YVWA  |           | 4,546      | -458                 | -2.22  | 4,506      | -503                 | -2.43  |
| ECC7ZH  |           | 5,265      | 260                  | 1.26   | 5,154      | 145                  | 0.70   |
| EY6MXG  |           | 4,894      | -110                 | -0.53  | 4,944      | -65                  | -0.31  |
| GN2EKC  |           | 4,981      | -23                  | -0.11  | 4,997      | -11                  | -0.06  |
| HMZYPQ  | X         | 5,619      | 615                  | 2.98   | 5,907      | 898                  | 4.33   |
| K3BRJR  |           | 5,271      | 267                  | 1.29   | 5,294      | 286                  | 1.38   |
| K4GEUB  |           | 5,106      | 102                  | 0.49   | 5,046      | 37                   | 0.18   |
| K9UPXL  |           | 4,536      | -468                 | -2.27  | 4,532      | -476                 | -2.30  |
| KLYFND  |           | 5,076      | 72                   | 0.35   | 5,076      | 68                   | 0.33   |
| KNR4BF  |           | 5,090      | 85                   | 0.41   | 5,090      | 82                   | 0.39   |
| L8ZNKN  |           | 5,140      | 135                  | 0.66   | 5,130      | 121                  | 0.58   |
| LJ89VN  | *         | 5,535      | 531                  | 2.57   | 5,537      | 528                  | 2.55   |
| LRMCVF  |           | 4,846      | -158                 | -0.77  | 4,857      | -151                 | -0.73  |
| LVL4BM  |           | 5,100      | 96                   | 0.46   | 5,162      | 154                  | 0.74   |
| MU8LGM  |           | 5,156      | 152                  | 0.74   | 5,164      | 156                  | 0.75   |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 721

4th Qtr 2016

### Flexural Stress at 5% Strain - psi

| WebCode | Data Flag | Sample J39 |                      |       | Sample J40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| MWVXGR  |           | 5,139      | 134                  | 0.65  | 5,140      | 132                  | 0.64  |
| N3CZV9  |           | 5,040      | 35                   | 0.17  | 5,037      | 28                   | 0.14  |
| P2E32R  |           | 4,848      | -156                 | -0.76 | 4,895      | -114                 | -0.55 |
| QHJTJM  |           | 4,952      | -52                  | -0.25 | 4,975      | -34                  | -0.16 |
| QLYTPA  |           | 5,182      | 178                  | 0.86  | 5,212      | 204                  | 0.98  |
| QZZ64Z  |           | 4,962      | -42                  | -0.20 | 4,933      | -76                  | -0.37 |
| R4ZZFV  |           | 5,212      | 207                  | 1.01  | 5,244      | 236                  | 1.14  |
| T6L7DX  |           | 5,047      | 43                   | 0.21  | 5,134      | 126                  | 0.61  |
| TPWWQV  |           | 5,511      | 506                  | 2.45  | 5,468      | 459                  | 2.21  |
| UFKR4A  |           | 4,757      | -247                 | -1.20 | 4,711      | -298                 | -1.44 |
| ULPXUT  |           | 5,229      | 224                  | 1.09  | 5,142      | 133                  | 0.64  |
| UMJAK7  |           | 4,636      | -368                 | -1.78 | 4,631      | -378                 | -1.82 |
| UX6FHB  |           | 4,926      | -78                  | -0.38 | 5,044      | 36                   | 0.17  |
| VYTE68  |           | 5,039      | 34                   | 0.17  | 5,109      | 101                  | 0.49  |
| VYWTH9  |           | 5,002      | -3                   | -0.01 | 5,004      | -5                   | -0.02 |
| WB44MA  | *         | 4,988      | -17                  | -0.08 | 5,147      | 138                  | 0.67  |
| WB62TY  |           | 4,850      | -154                 | -0.75 | 4,874      | -135                 | -0.65 |
| WPGGVU  |           | 5,049      | 45                   | 0.22  | 4,964      | -45                  | -0.22 |
| WVTKNH  |           | 4,724      | -281                 | -1.36 | 4,713      | -295                 | -1.42 |
| X6CNFW  |           | 4,959      | -45                  | -0.22 | 4,976      | -33                  | -0.16 |
| XA2Z2X  |           | 4,798      | -206                 | -1.00 | 4,841      | -167                 | -0.81 |
| XLHKQZ  | *         | 4,589      | -415                 | -2.01 | 4,478      | -531                 | -2.56 |
| XZZ92J  |           | 4,991      | -13                  | -0.06 | 5,012      | 3                    | 0.02  |
| YBEMJC  |           | 5,120      | 116                  | 0.56  | 5,092      | 83                   | 0.40  |
| Z68H6X  |           | 5,084      | 79                   | 0.39  | 5,103      | 94                   | 0.45  |
| Z9KDP2  | *         | 5,010      | 6                    | 0.03  | 4,846      | -163                 | -0.78 |
| ZAXHAY  | X         | 4,769      | -235                 | -1.14 | 4,579      | -429                 | -2.07 |
| ZFJ376  |           | 5,124      | 120                  | 0.58  | 5,071      | 62                   | 0.30  |

#### Summary Statistics

|                          | Sample J39  | Sample J40  |
|--------------------------|-------------|-------------|
| <b>Grand Means</b>       | 5,004.3 psi | 5,008.7 psi |
| <b>Std Dev Btwn Labs</b> | 206.4 psi   | 207.3 psi   |

Statistics based on 60 of 63 reporting participants

Sample J39: HIPS & Sample J40: HIPS



## Plastics Interlaboratory Testing Program

### Analysis 721

#### Flexural Stress at 5% Strain - psi

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Report #100

4th Qtr 2016

#### **Comments on Assigned Data Flags for Test #721**

DFG9YF (X) - Data for both samples are low. Possible Systematic Error.

HMZYPQ (X) - Data for both samples are high. Possible Systematic Error.

ZAXHAY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J40.





# Plastics Interlaboratory Testing Program

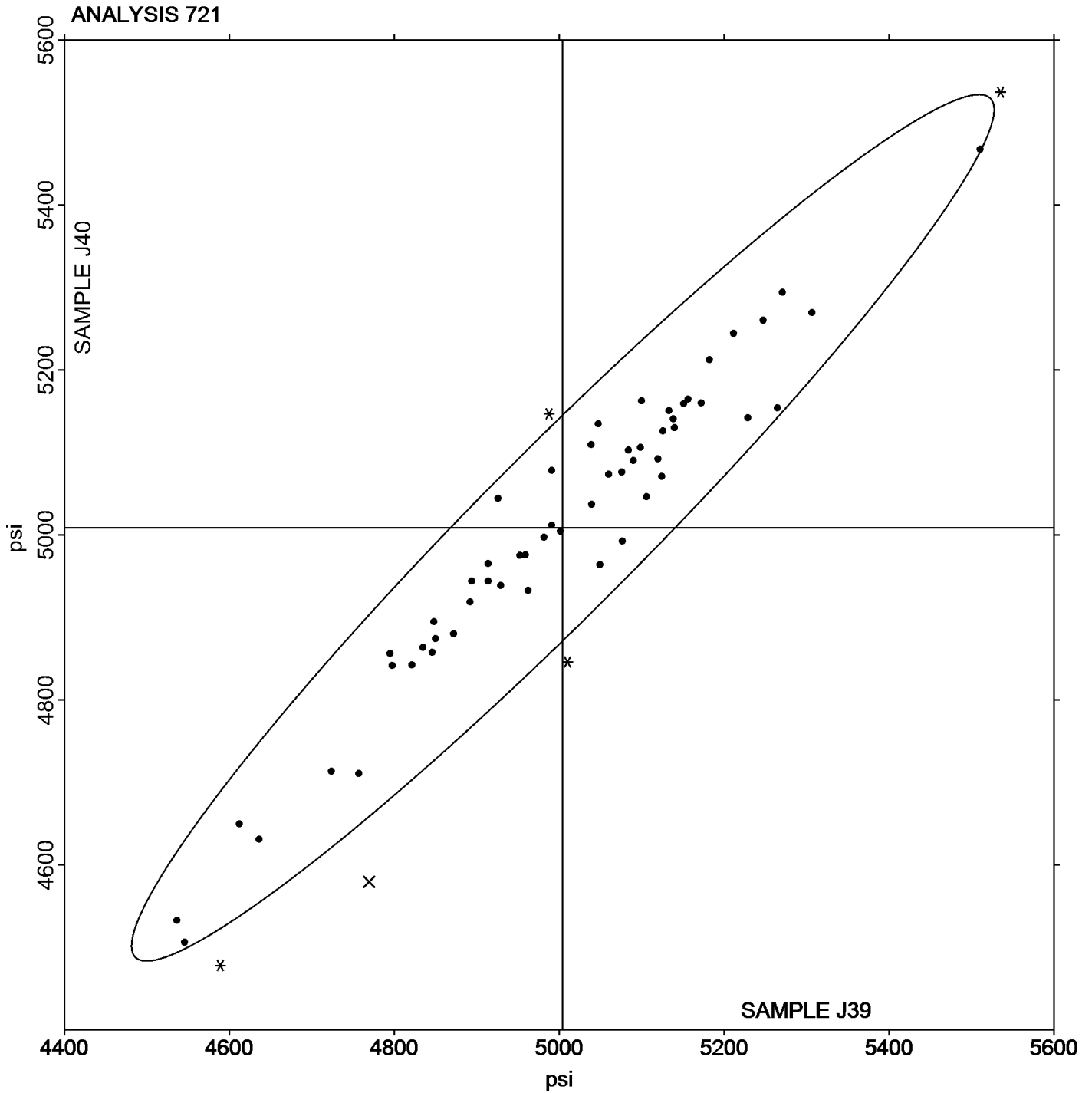
Report #100

## Analysis 721

4th Qtr 2016

Flexural Stress at 5% Strain - psi

Grand Mean Sample J39: 5,004.31 psi    Grand Mean Sample J40: 5,008.66 psi





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 722

4th Qtr 2016

### Flexural Stress at Yield - psi

| WebCode | Data Flag | Sample J39 |                      |        | Sample J40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| 4M88WQ  |           | 4,847      | -174                 | -0.90  | 4,808      | -209                 | -1.07  |
| 67GNJF  |           | 4,796      | -226                 | -1.17  | 4,811      | -207                 | -1.06  |
| 6FML8J  |           | 5,014      | -7                   | -0.04  | 5,063      | 45                   | 0.23   |
| 7FNBZZ  |           | 4,657      | -364                 | -1.89  | 4,687      | -331                 | -1.69  |
| 7GDEDM  |           | 5,198      | 177                  | 0.92   | 5,228      | 210                  | 1.08   |
| 82ZQTC  |           | 4,988      | -33                  | -0.17  | 5,016      | -2                   | -0.01  |
| 8YU66C  |           | 4,942      | -79                  | -0.41  | 4,950      | -68                  | -0.35  |
| 8Z93LW  | X         | 58         | -4,963               | -25.75 | 58         | -4,960               | -25.40 |
| 92FADA  |           | 5,084      | 63                   | 0.32   | 5,006      | -12                  | -0.06  |
| 9E2DAR  |           | 4,919      | -102                 | -0.53  | 4,942      | -76                  | -0.39  |
| 9MC7PU  |           | 5,307      | 286                  | 1.48   | 5,270      | 252                  | 1.29   |
| ATF8N3  |           | 5,135      | 114                  | 0.59   | 5,126      | 108                  | 0.55   |
| AXPMV7  |           | 5,153      | 131                  | 0.68   | 5,208      | 190                  | 0.97   |
| B7YDX9  |           | 4,808      | -213                 | -1.11  | 4,885      | -132                 | -0.68  |
| BTXH22  |           | 4,996      | -25                  | -0.13  | 5,013      | -5                   | -0.03  |
| BZRCNL  |           | 4,844      | -177                 | -0.92  | 4,875      | -143                 | -0.73  |
| CLT3RK  |           | 5,165      | 144                  | 0.75   | 5,169      | 151                  | 0.77   |
| DDQ679  |           | 5,076      | 55                   | 0.29   | 5,078      | 60                   | 0.31   |
| DFG9YF  | X         | 1,720      | -3,301               | -17.13 | 1,744      | -3,274               | -16.76 |
| E8YVWA  | *         | 4,549      | -472                 | -2.45  | 4,507      | -510                 | -2.61  |
| ECC7ZH  |           | 5,320      | 299                  | 1.55   | 5,198      | 180                  | 0.92   |
| EY6MXG  |           | 4,946      | -75                  | -0.39  | 4,993      | -25                  | -0.13  |
| GN2EKC  |           | 4,986      | -35                  | -0.18  | 5,018      | 0                    | 0.00   |
| HMZY PQ | X         | 5,710      | 689                  | 3.57   | 5,971      | 953                  | 4.88   |
| HWBVHG  |           | 5,238      | 217                  | 1.13   | 5,238      | 221                  | 1.13   |
| JV8PFD  |           | 5,076      | 55                   | 0.29   | 5,076      | 59                   | 0.30   |
| K3BRJR  |           | 5,253      | 232                  | 1.20   | 5,265      | 248                  | 1.27   |
| K4GEUB  |           | 5,133      | 112                  | 0.58   | 5,072      | 55                   | 0.28   |
| K9UPXL  | X         | 3,646      | -1,375               | -7.14  | 3,645      | -1,373               | -7.03  |
| KNR4BF  |           | 5,062      | 41                   | 0.21   | 5,065      | 47                   | 0.24   |
| L8ZNKN  |           | 5,143      | 122                  | 0.63   | 5,134      | 116                  | 0.59   |
| LJ89VN  | *         | 5,542      | 521                  | 2.70   | 5,549      | 531                  | 2.72   |
| LRMCVF  |           | 4,853      | -168                 | -0.87  | 4,866      | -152                 | -0.78  |
| LVL4BM  |           | 5,126      | 105                  | 0.54   | 5,198      | 180                  | 0.92   |
| MU8LGM  |           | 5,150      | 129                  | 0.67   | 5,147      | 129                  | 0.66   |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 722

4th Qtr 2016

### Flexural Stress at Yield - psi

| WebCode | Data Flag | Sample J39 |                      |       | Sample J40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| MWVXGR  |           | 5,144      | 123                  | 0.64  | 5,143      | 125                  | 0.64  |
| NX48T6  |           | 4,834      | -187                 | -0.97 | 4,819      | -199                 | -1.02 |
| P2E32R  |           | 4,864      | -157                 | -0.82 | 4,914      | -103                 | -0.53 |
| QHJTJM  |           | 4,959      | -62                  | -0.32 | 4,985      | -33                  | -0.17 |
| QLYTPA  |           | 5,182      | 161                  | 0.84  | 5,214      | 196                  | 1.00  |
| QZZ64Z  |           | 4,968      | -53                  | -0.28 | 4,939      | -79                  | -0.40 |
| R4ZZFV  |           | 5,202      | 181                  | 0.94  | 5,222      | 204                  | 1.04  |
| T6L7DX  |           | 4,902      | -119                 | -0.62 | 4,931      | -86                  | -0.44 |
| TPWWQV  | *         | 5,516      | 495                  | 2.57  | 5,471      | 453                  | 2.32  |
| UFKR4A  |           | 4,780      | -241                 | -1.25 | 4,734      | -284                 | -1.45 |
| ULPXUT  |           | 5,237      | 216                  | 1.12  | 5,152      | 135                  | 0.69  |
| UMJAK7  |           | 4,695      | -326                 | -1.69 | 4,687      | -331                 | -1.70 |
| UX6FHB  |           | 4,983      | -38                  | -0.20 | 5,092      | 74                   | 0.38  |
| VYTE68  |           | 5,075      | 54                   | 0.28  | 5,153      | 136                  | 0.69  |
| VYWTH9  |           | 5,024      | 3                    | 0.01  | 5,021      | 3                    | 0.02  |
| WB44MA  |           | 5,023      | 2                    | 0.01  | 5,159      | 142                  | 0.73  |
| WB62TY  |           | 4,882      | -139                 | -0.72 | 4,910      | -108                 | -0.55 |
| WJVGKN  |           | 5,024      | 3                    | 0.02  | 4,960      | -58                  | -0.30 |
| WPGGVU  |           | 5,064      | 43                   | 0.22  | 4,979      | -39                  | -0.20 |
| WVTKNH  |           | 4,733      | -288                 | -1.50 | 4,735      | -283                 | -1.45 |
| X6CNFW  |           | 4,975      | -46                  | -0.24 | 4,983      | -35                  | -0.18 |
| XA2Z2X  |           | 4,833      | -188                 | -0.98 | 4,850      | -168                 | -0.86 |
| XLHKQZ  | *         | 4,609      | -412                 | -2.14 | 4,489      | -529                 | -2.71 |
| XVZRDB  |           | 5,005      | -16                  | -0.08 | 4,979      | -39                  | -0.20 |
| XZZ92J  |           | 4,996      | -25                  | -0.13 | 5,012      | -5                   | -0.03 |
| YBEMJC  |           | 5,134      | 113                  | 0.59  | 5,114      | 96                   | 0.49  |
| Z68H6X  |           | 5,101      | 80                   | 0.42  | 5,110      | 93                   | 0.47  |
| Z9KDP2  |           | 4,992      | -29                  | -0.15 | 4,858      | -160                 | -0.82 |
| ZAXHAY  | X         | 4,742      | -279                 | -1.45 | 4,422      | -596                 | -3.05 |
| ZFJ376  |           | 5,140      | 119                  | 0.62  | 5,077      | 59                   | 0.30  |
| ZU2T68  | *         | 5,104      | 83                   | 0.43  | 4,932      | -86                  | -0.44 |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 722

4th Qtr 2016

### Flexural Stress at Yield - psi

| Summary Statistics                                  |                   |                   |
|---|-------------------|-------------------|
|   | <u>Sample J39</u> | <u>Sample J40</u> |
| <b>Grand Means</b>                                  | 5,021.1 psi       | 5,017.8 psi       |
| <b>Std Dev Btwn Labs</b>                            | 192.7 psi         | 195.3 psi         |
| Statistics based on 61 of 66 reporting participants |                   |                   |

Sample J39: HIPS & Sample J40: HIPS

#### **Comments on Assigned Data Flags for Test #722**

DFG9YF (X) - Data for both samples are low. Possible Systematic Error.

K9UPXL (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

HMZYPQ (X) - Data for both samples are high. Possible Systematic Error.

ZAXHAY (X) - Data for sample J40 are low. Inconsistent within the determinations of sample J40.

8Z93LW (X) - Extreme data.



# Plastics Interlaboratory Testing Program

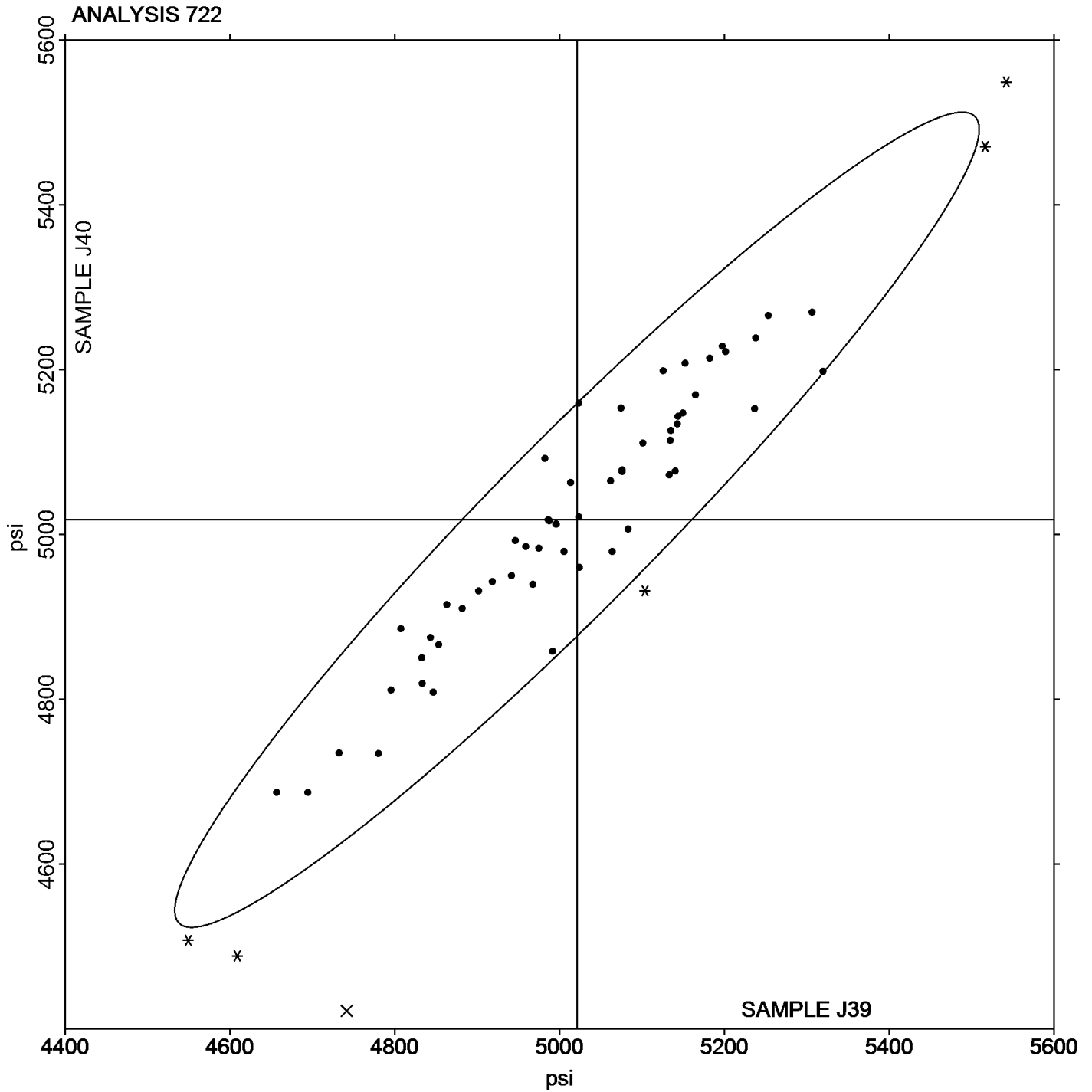
## Analysis 722

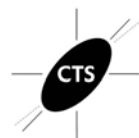
### Flexural Stress at Yield - psi

Report #100

4th Qtr 2016

Grand Mean Sample J39: 5,021.07 psi    Grand Mean Sample J40: 5,017.81 psi





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 730

4th Qtr 2016

### Tensile Stress at Yield - MPa

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 26ZN2H  |           | 28.17      | 0.27                 | 0.33  | 21.57      | 0.55                 | 0.70  |
| 2BNZQR  |           | 27.81      | -0.09                | -0.11 | 20.90      | -0.12                | -0.15 |
| 33PVBV  |           | 27.92      | 0.02                 | 0.02  | 21.32      | 0.30                 | 0.38  |
| 3K7YWM  |           | 26.15      | -1.75                | -2.13 | 19.27      | -1.75                | -2.22 |
| 3UG48R  |           | 28.78      | 0.88                 | 1.07  | 22.42      | 1.40                 | 1.77  |
| 3V4EPP  |           | 27.38      | -0.52                | -0.63 | 19.69      | -1.33                | -1.69 |
| 4MU9Q2  |           | 27.11      | -0.79                | -0.96 | 20.36      | -0.67                | -0.84 |
| 4XPJWM  |           | 27.65      | -0.26                | -0.31 | 20.81      | -0.21                | -0.27 |
| 67GNJF  |           | 27.94      | 0.03                 | 0.04  | 21.33      | 0.30                 | 0.39  |
| 7GFAAR  |           | 27.67      | -0.23                | -0.28 | 20.13      | -0.89                | -1.13 |
| 7M4L2M  |           | 27.72      | -0.18                | -0.22 | 21.44      | 0.41                 | 0.52  |
| 7NGL8A  |           | 29.62      | 1.71                 | 2.08  | 22.85      | 1.83                 | 2.32  |
| 7RFYQT  |           | 27.45      | -0.45                | -0.55 | 21.02      | 0.00                 | -0.01 |
| 7VEDCX  |           | 29.58      | 1.67                 | 2.03  | 22.17      | 1.14                 | 1.45  |
| 8CWWLA  |           | 28.09      | 0.19                 | 0.23  | 21.03      | 0.00                 | 0.00  |
| 8JHUBX  |           | 26.78      | -1.12                | -1.36 | 20.42      | -0.60                | -0.77 |
| 8Z93LW  |           | 26.96      | -0.94                | -1.14 | 20.02      | -1.00                | -1.27 |
| 9A7RT3  |           | 27.42      | -0.48                | -0.59 | 21.24      | 0.22                 | 0.27  |
| 9E2DAR  |           | 28.00      | 0.10                 | 0.12  | 21.16      | 0.14                 | 0.17  |
| 9R4AHX  |           | 27.51      | -0.39                | -0.48 | 20.83      | -0.19                | -0.24 |
| A7PR8V  |           | 28.95      | 1.05                 | 1.27  | 22.35      | 1.33                 | 1.69  |
| ATF8N3  |           | 29.26      | 1.36                 | 1.65  | 21.72      | 0.69                 | 0.88  |
| AXPMV7  |           | 28.28      | 0.38                 | 0.46  | 20.93      | -0.09                | -0.12 |
| B937R8  |           | 27.24      | -0.66                | -0.81 | 20.18      | -0.84                | -1.07 |
| BUPLNG  |           | 28.94      | 1.04                 | 1.26  | 22.62      | 1.60                 | 2.02  |
| E6D94M  |           | 27.56      | -0.34                | -0.42 | 21.18      | 0.16                 | 0.20  |
| ECC7ZH  |           | 28.46      | 0.56                 | 0.68  | 21.34      | 0.32                 | 0.40  |
| EFWPU9  |           | 27.67      | -0.23                | -0.28 | 20.66      | -0.36                | -0.46 |
| FXTZ7V  |           | 28.72      | 0.82                 | 0.99  | 21.40      | 0.38                 | 0.48  |
| GN2EKC  |           | 27.16      | -0.75                | -0.91 | 20.45      | -0.58                | -0.73 |
| GPUVPY  |           | 27.96      | 0.06                 | 0.07  | 21.24      | 0.21                 | 0.27  |
| H3FYLG  |           | 26.76      | -1.14                | -1.38 | 20.54      | -0.48                | -0.61 |
| HDYFC3  |           | 28.30      | 0.40                 | 0.48  | 20.50      | -0.52                | -0.66 |
| JAR7NJ  |           | 28.54      | 0.64                 | 0.78  | 21.62      | 0.60                 | 0.76  |
| JDDPTM  |           | 27.69      | -0.22                | -0.26 | 20.62      | -0.40                | -0.51 |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 730

4th Qtr 2016

### Tensile Stress at Yield - MPa

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| KCT3G6  |           | 28.04      | 0.14                 | 0.17  | 21.36      | 0.34                 | 0.43  |
| KFV7LR  |           | 29.42      | 1.52                 | 1.84  | 21.90      | 0.88                 | 1.11  |
| KLYFND  |           | 27.53      | -0.37                | -0.45 | 20.96      | -0.06                | -0.08 |
| KNR4BF  |           | 27.55      | -0.36                | -0.43 | 21.50      | 0.47                 | 0.60  |
| KXBAVJ  |           | 28.26      | 0.36                 | 0.43  | 21.30      | 0.28                 | 0.35  |
| L8ZKNK  |           | 27.31      | -0.59                | -0.72 | 20.85      | -0.18                | -0.22 |
| LRMCVF  |           | 27.61      | -0.29                | -0.35 | 21.00      | -0.02                | -0.03 |
| M7HYUG  |           | 26.55      | -1.35                | -1.64 | 19.28      | -1.74                | -2.21 |
| MAXNXQ  |           | 27.40      | -0.50                | -0.61 | 19.65      | -1.37                | -1.74 |
| MJ44V6  |           | 27.42      | -0.48                | -0.58 | 21.04      | 0.02                 | 0.02  |
| MPC28B  |           | 29.50      | 1.59                 | 1.93  | 21.73      | 0.71                 | 0.90  |
| MU8LGM  |           | 28.24      | 0.34                 | 0.41  | 21.11      | 0.08                 | 0.11  |
| N3V2GB  |           | 26.71      | -1.19                | -1.45 | 20.12      | -0.91                | -1.15 |
| NFMXWA  |           | 28.41      | 0.51                 | 0.62  | 21.08      | 0.06                 | 0.07  |
| NQ4AYR  |           | 28.16      | 0.26                 | 0.31  | 20.94      | -0.09                | -0.11 |
| NU32GJ  | X         | 31.58      | 3.68                 | 4.46  | 20.80      | -0.23                | -0.29 |
| P63E3H  |           | 26.78      | -1.12                | -1.36 | 19.70      | -1.32                | -1.68 |
| PE7UNG  |           | 27.95      | 0.05                 | 0.06  | 21.11      | 0.08                 | 0.10  |
| PVAXZE  |           | 29.29      | 1.39                 | 1.68  | 21.79      | 0.77                 | 0.97  |
| QG9YVA  |           | 28.96      | 1.06                 | 1.28  | 22.18      | 1.16                 | 1.47  |
| RA7UEX  |           | 28.09      | 0.19                 | 0.23  | 20.66      | -0.36                | -0.46 |
| RD2NAD  |           | 28.18      | 0.27                 | 0.33  | 21.30      | 0.28                 | 0.35  |
| UL84V4  |           | 26.86      | -1.05                | -1.27 | 19.54      | -1.49                | -1.88 |
| VL4CQL  |           | 26.84      | -1.06                | -1.29 | 20.82      | -0.20                | -0.25 |
| VYWTH9  |           | 27.20      | -0.71                | -0.86 | 19.97      | -1.05                | -1.34 |
| WB3BKV  |           | 28.28      | 0.38                 | 0.46  | 21.45      | 0.42                 | 0.53  |
| WJVGKN  |           | 29.07      | 1.17                 | 1.42  | 21.98      | 0.95                 | 1.21  |
| WYNLYR  |           | 27.83      | -0.07                | -0.08 | 20.73      | -0.29                | -0.37 |
| X9B38T  |           | 28.58      | 0.68                 | 0.82  | 21.97      | 0.95                 | 1.20  |
| XA2Z2X  |           | 26.28      | -1.62                | -1.97 | 20.30      | -0.72                | -0.92 |
| YBEMJC  |           | 28.61      | 0.71                 | 0.86  | 21.73      | 0.71                 | 0.90  |
| ZPALKD  |           | 27.00      | -0.91                | -1.10 | 20.38      | -0.64                | -0.81 |
| ZU2T68  |           | 28.36      | 0.46                 | 0.56  | 21.83      | 0.80                 | 1.02  |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 730

4th Qtr 2016

### Tensile Stress at Yield - MPa

#### Summary Statistics

|                           | <u>Sample C39</u> | <u>Sample C40</u> |
|---------------------------|-------------------|-------------------|
| <b>Grand Means</b>        | 27.903 MPa        | 21.024 MPa        |
| <b>Stnd Dev Btwn Labs</b> | 0.825 MPa         | 0.789 MPa         |

Statistics based on 67 of 68 reporting participants

Sample C39: HIPS & Sample C40: HIPS

#### **Comments on Assigned Data Flags for Test #730**

NU32GJ (X) - Data for sample C39 are high.





# Plastics Interlaboratory Testing Program

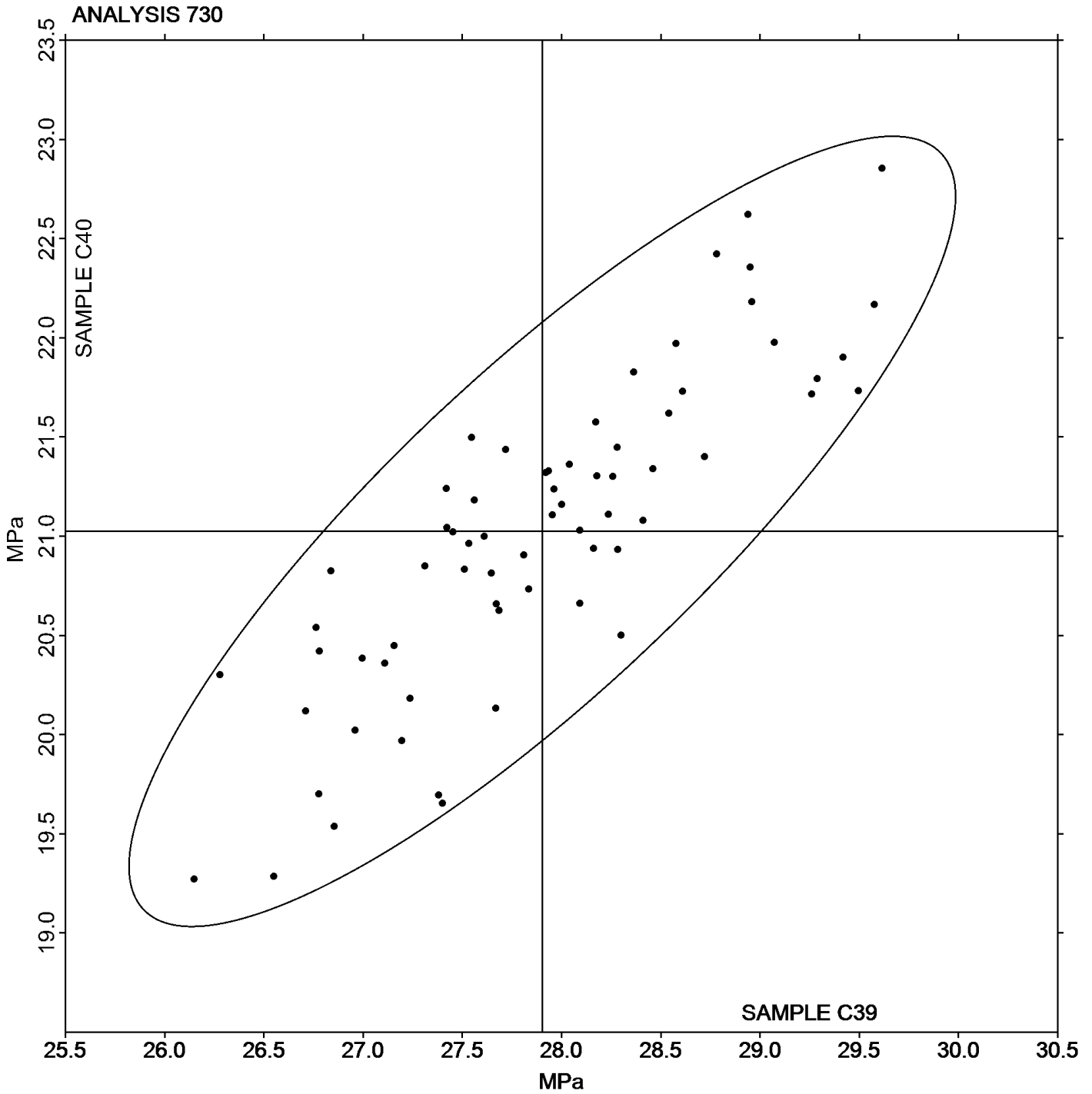
Report #100

Analysis 730

4th Qtr 2016

Tensile Stress at Yield - MPa

Grand Mean Sample C39: 27.903 MPa    Grand Mean Sample C40: 21.024 MPa





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 731

4th Qtr 2016

### Tensile Stress at Break - MPa

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 26ZN2H  |           | 22.89      | -0.34                | -0.42 | 16.97      | 0.41                 | 0.54  |
| 2BNZQR  | X         | 20.36      | -2.87                | -3.53 | 14.60      | -1.95                | -2.57 |
| 33PVBV  |           | 24.07      | 0.84                 | 1.03  | 17.74      | 1.18                 | 1.55  |
| 3K7YWM  |           | 21.97      | -1.26                | -1.56 | 15.87      | -0.69                | -0.91 |
| 3V4EPP  |           | 22.37      | -0.86                | -1.06 | 14.86      | -1.70                | -2.24 |
| 4XPJWM  |           | 23.04      | -0.19                | -0.23 | 16.53      | -0.03                | -0.03 |
| 67GNJF  |           | 23.41      | 0.18                 | 0.22  | 16.57      | 0.02                 | 0.02  |
| 7GFAAR  |           | 23.21      | -0.02                | -0.03 | 16.72      | 0.17                 | 0.22  |
| 7M4L2M  |           | 22.77      | -0.46                | -0.57 | 17.13      | 0.58                 | 0.76  |
| 7NGL8A  |           | 24.28      | 1.05                 | 1.29  | 17.45      | 0.89                 | 1.17  |
| 7RFYQT  |           | 22.98      | -0.25                | -0.31 | 16.19      | -0.36                | -0.48 |
| 7VEDCX  |           | 24.52      | 1.29                 | 1.59  | 17.38      | 0.82                 | 1.08  |
| 8JHUBX  |           | 22.02      | -1.21                | -1.49 | 15.93      | -0.62                | -0.82 |
| 8Z93LW  |           | 23.32      | 0.09                 | 0.11  | 15.46      | -1.10                | -1.44 |
| 9A7RT3  |           | 22.20      | -1.03                | -1.27 | 16.72      | 0.16                 | 0.22  |
| 9E2DAR  |           | 23.68      | 0.45                 | 0.56  | 17.15      | 0.59                 | 0.78  |
| A7PR8V  |           | 23.81      | 0.58                 | 0.72  | 17.58      | 1.02                 | 1.35  |
| ATF8N3  |           | 23.99      | 0.76                 | 0.94  | 17.25      | 0.70                 | 0.92  |
| B937R8  |           | 22.94      | -0.29                | -0.36 | 16.25      | -0.30                | -0.40 |
| BUPLNG  |           | 24.18      | 0.95                 | 1.17  | 17.56      | 1.00                 | 1.32  |
| E6D94M  |           | 22.58      | -0.65                | -0.80 | 16.32      | -0.24                | -0.31 |
| ECC7ZH  |           | 23.32      | 0.09                 | 0.11  | 16.56      | 0.00                 | 0.01  |
| EFWPU9  |           | 22.77      | -0.46                | -0.56 | 16.37      | -0.19                | -0.25 |
| FXTZ7V  |           | 23.06      | -0.17                | -0.21 | 16.94      | 0.38                 | 0.51  |
| GN2EKC  |           | 23.63      | 0.40                 | 0.50  | 16.18      | -0.37                | -0.49 |
| GPUVPY  |           | 23.18      | -0.05                | -0.06 | 16.86      | 0.30                 | 0.40  |
| H3FYLG  |           | 21.58      | -1.65                | -2.04 | 14.98      | -1.58                | -2.08 |
| HDYFC3  | *         | 25.00      | 1.77                 | 2.18  | 16.94      | 0.38                 | 0.51  |
| KCT3G6  |           | 22.92      | -0.31                | -0.38 | 16.62      | 0.06                 | 0.08  |
| KFV7LR  |           | 24.08      | 0.85                 | 1.05  | 16.88      | 0.32                 | 0.43  |
| KLYFND  |           | 23.15      | -0.08                | -0.09 | 16.32      | -0.23                | -0.31 |
| KNR4BF  |           | 23.67      | 0.44                 | 0.54  | 16.99      | 0.44                 | 0.57  |
| KXBAVJ  |           | 22.83      | -0.40                | -0.49 | 16.74      | 0.18                 | 0.24  |
| L8ZKNK  |           | 22.65      | -0.58                | -0.72 | 16.51      | -0.05                | -0.07 |
| LRMCVF  |           | 23.09      | -0.14                | -0.17 | 16.16      | -0.39                | -0.52 |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 731

4th Qtr 2016

### Tensile Stress at Break - MPa

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| M7HYUG  | *         | 21.86      | -1.37                | -1.69 | 14.63      | -1.92                | -2.53 |
| MAXNXQ  |           | 23.00      | -0.23                | -0.28 | 16.76      | 0.20                 | 0.27  |
| MJ44V6  |           | 23.89      | 0.66                 | 0.81  | 16.59      | 0.03                 | 0.05  |
| MPC28B  |           | 24.20      | 0.97                 | 1.19  | 16.97      | 0.41                 | 0.55  |
| MU8LGM  |           | 24.25      | 1.02                 | 1.25  | 17.10      | 0.55                 | 0.72  |
| N3V2GB  |           | 21.84      | -1.39                | -1.71 | 14.89      | -1.67                | -2.19 |
| NFMXWA  |           | 24.55      | 1.32                 | 1.63  | 17.90      | 1.34                 | 1.76  |
| NQ4AYR  |           | 23.70      | 0.47                 | 0.58  | 16.18      | -0.38                | -0.50 |
| NU32GJ  | X         | 27.11      | 3.88                 | 4.78  | 14.49      | -2.06                | -2.72 |
| P63E3H  |           | 23.00      | -0.23                | -0.29 | 16.44      | -0.12                | -0.16 |
| P7U6XH  |           | 22.21      | -1.02                | -1.25 | 15.26      | -1.30                | -1.71 |
| PE7UNG  |           | 23.91      | 0.68                 | 0.84  | 16.32      | -0.24                | -0.31 |
| PVAXZE  |           | 24.45      | 1.22                 | 1.50  | 17.75      | 1.19                 | 1.57  |
| QG9YVA  |           | 23.86      | 0.63                 | 0.78  | 17.12      | 0.56                 | 0.74  |
| RA7UEX  |           | 21.77      | -1.46                | -1.80 | 15.40      | -1.15                | -1.52 |
| RD2NAD  |           | 22.80      | -0.43                | -0.53 | 16.45      | -0.11                | -0.14 |
| UL84V4  |           | 22.74      | -0.49                | -0.61 | 15.95      | -0.61                | -0.80 |
| VL4CQL  |           | 23.73      | 0.50                 | 0.61  | 16.73      | 0.17                 | 0.22  |
| VYWTH9  |           | 22.67      | -0.56                | -0.69 | 16.14      | -0.42                | -0.55 |
| WB3BKV  |           | 23.49      | 0.26                 | 0.31  | 16.73      | 0.18                 | 0.23  |
| WJVGKN  |           | 23.11      | -0.12                | -0.15 | 16.58      | 0.03                 | 0.04  |
| WYNLYR  |           | 23.48      | 0.25                 | 0.30  | 16.56      | 0.00                 | 0.00  |
| X9B38T  |           | 23.02      | -0.21                | -0.26 | 16.64      | 0.08                 | 0.11  |
| XA2Z2X  |           | 22.12      | -1.11                | -1.37 | 16.08      | -0.48                | -0.63 |
| YBEMJC  |           | 22.43      | -0.80                | -0.99 | 16.19      | -0.36                | -0.48 |
| ZPALKD  | *         | 24.81      | 1.58                 | 1.95  | 18.59      | 2.03                 | 2.68  |
| ZU2T68  |           | 23.80      | 0.57                 | 0.70  | 16.74      | 0.19                 | 0.24  |

#### Summary Statistics

|                          | Sample C39 | Sample C40 |
|--------------------------|------------|------------|
| <b>Grand Means</b>       | 23.231 MPa | 16.556 MPa |
| <b>Std Dev Btwn Labs</b> | 0.811 MPa  | 0.759 MPa  |

Statistics based on 60 of 62 reporting participants

Sample C39: HIPS & Sample C40: HIPS



## Plastics Interlaboratory Testing Program

### Analysis 731

#### Tensile Stress at Break - MPa

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Report #100

4th Qtr 2016

#### **Comments on Assigned Data Flags for Test #731**

2BNZQR (X) - Data for sample C39 are low.

NU32GJ (X) - Data for sample C39 are high.



# Plastics Interlaboratory Testing Program

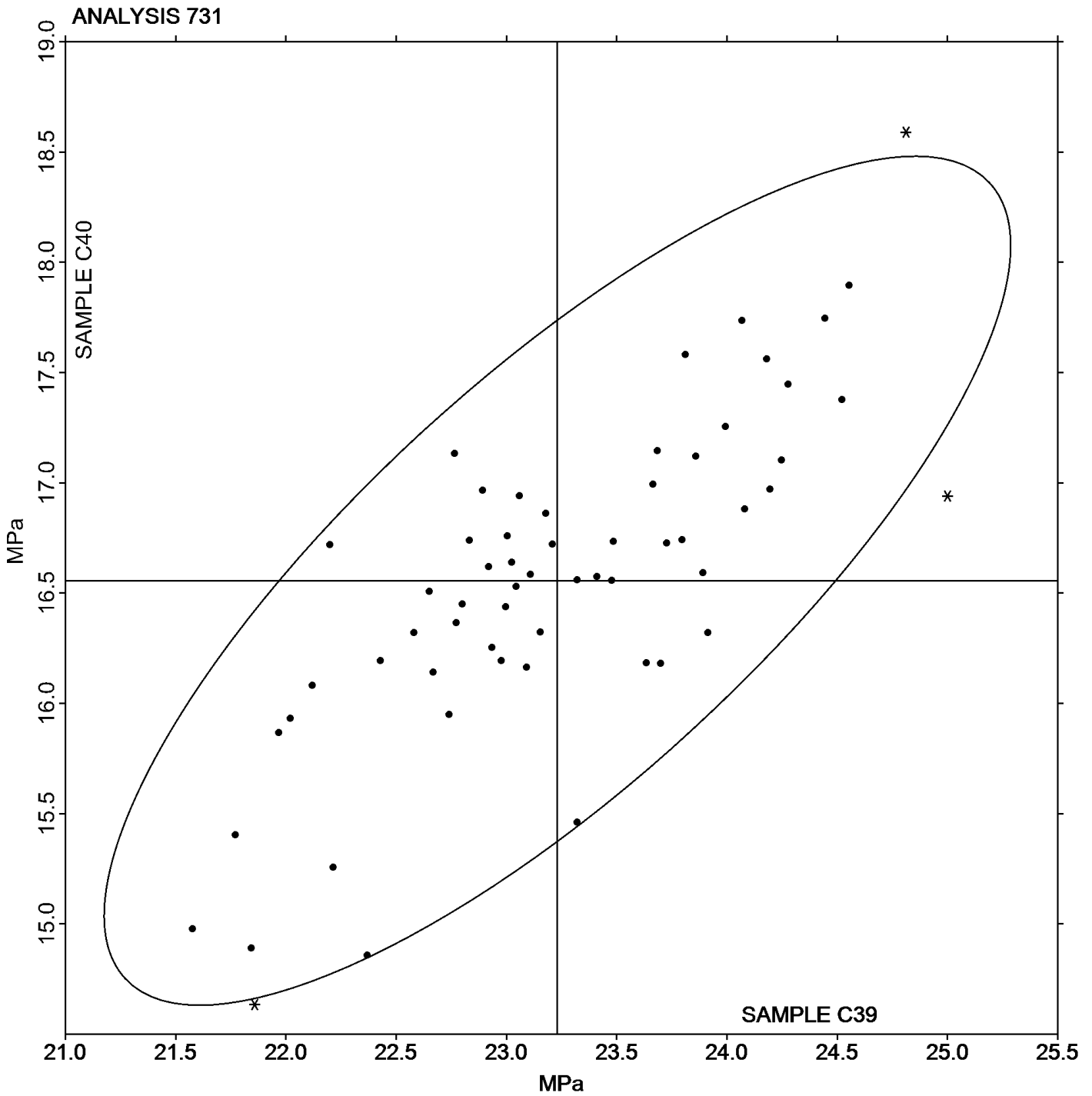
## Analysis 731

### Tensile Stress at Break - MPa

Report #100

4th Qtr 2016

Grand Mean Sample C39: 23.231 MPa    Grand Mean Sample C40: 16.556 MPa





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 732

4th Qtr 2016

### Percent Strain at Yield

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 26ZN2H  |           | 1.428      | -0.001               | -0.02 | 1.264      | -0.006               | -0.08 |
| 2BNZQR  |           | 1.436      | 0.007                | 0.07  | 1.288      | 0.018                | 0.23  |
| 33PVBV  | X         | 0.716      | -0.713               | -7.66 | 0.502      | -0.768               | -9.84 |
| 3K7YWM  |           | 1.326      | -0.103               | -1.11 | 1.160      | -0.110               | -1.41 |
| 3UG48R  |           | 1.509      | 0.079                | 0.85  | 1.369      | 0.099                | 1.27  |
| 3V4EPP  | *         | 1.282      | -0.147               | -1.58 | 1.074      | -0.196               | -2.51 |
| 4XPJWM  |           | 1.384      | -0.045               | -0.49 | 1.264      | -0.006               | -0.08 |
| 67GNJF  |           | 1.506      | 0.077                | 0.82  | 1.334      | 0.064                | 0.82  |
| 7GFAAR  |           | 1.486      | 0.057                | 0.61  | 1.320      | 0.050                | 0.64  |
| 7M4L2M  |           | 1.488      | 0.059                | 0.63  | 1.260      | -0.010               | -0.13 |
| 7NGL8A  |           | 1.510      | 0.080                | 0.86  | 1.370      | 0.100                | 1.28  |
| 7RFYQT  | *         | 1.372      | -0.057               | -0.62 | 1.340      | 0.070                | 0.89  |
| 7VEDCX  |           | 1.560      | 0.131                | 1.40  | 1.348      | 0.078                | 1.00  |
| 8CWVLA  |           | 1.404      | -0.025               | -0.27 | 1.228      | -0.042               | -0.54 |
| 8Z93LW  |           | 1.400      | -0.029               | -0.32 | 1.220      | -0.050               | -0.64 |
| 9A7RT3  |           | 1.400      | -0.029               | -0.32 | 1.280      | 0.010                | 0.13  |
| 9E2DAR  |           | 1.395      | -0.035               | -0.37 | 1.222      | -0.048               | -0.61 |
| 9R4AHX  |           | 1.368      | -0.061               | -0.66 | 1.248      | -0.022               | -0.28 |
| A7PR8V  |           | 1.370      | -0.059               | -0.64 | 1.286      | 0.016                | 0.20  |
| ATF8N3  |           | 1.454      | 0.025                | 0.26  | 1.276      | 0.006                | 0.07  |
| AXPMV7  |           | 1.366      | -0.063               | -0.68 | 1.224      | -0.046               | -0.59 |
| B937R8  |           | 1.442      | 0.013                | 0.13  | 1.344      | 0.074                | 0.95  |
| BUPLNG  |           | 1.422      | -0.007               | -0.08 | 1.308      | 0.038                | 0.48  |
| E6D94M  | X         | 0.920      | -0.509               | -5.47 | 0.880      | -0.390               | -5.00 |
| ECC7ZH  |           | 1.300      | -0.129               | -1.39 | 1.180      | -0.090               | -1.16 |
| EFWPU9  |           | 1.612      | 0.183                | 1.96  | 1.396      | 0.126                | 1.61  |
| FXTZ7V  | *         | 1.696      | 0.267                | 2.86  | 1.414      | 0.144                | 1.84  |
| GN2EKC  | X         | 1.868      | 0.439                | 4.71  | 1.712      | 0.442                | 5.66  |
| GPUVPY  |           | 1.460      | 0.031                | 0.33  | 1.366      | 0.096                | 1.23  |
| H3FYLG  |           | 1.402      | -0.027               | -0.29 | 1.246      | -0.024               | -0.31 |
| HDYFC3  |           | 1.420      | -0.009               | -0.10 | 1.280      | 0.010                | 0.13  |
| JDDPTM  |           | 1.598      | 0.169                | 1.81  | 1.400      | 0.130                | 1.66  |
| KCT3G6  |           | 1.492      | 0.063                | 0.67  | 1.346      | 0.076                | 0.97  |
| KFV7LR  |           | 1.420      | -0.009               | -0.10 | 1.300      | 0.030                | 0.38  |
| KLYFND  |           | 1.370      | -0.059               | -0.64 | 1.196      | -0.074               | -0.95 |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 732

4th Qtr 2016

### Percent Strain at Yield

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| KNR4BF  |           | 1.394      | -0.035               | -0.38 | 1.272      | 0.002                | 0.02  |
| KXBAVJ  |           | 1.414      | -0.015               | -0.17 | 1.276      | 0.006                | 0.07  |
| L8ZKNK  |           | 1.438      | 0.009                | 0.09  | 1.302      | 0.032                | 0.41  |
| LRMCVF  |           | 1.378      | -0.051               | -0.55 | 1.248      | -0.022               | -0.28 |
| M7HYUG  |           | 1.352      | -0.077               | -0.83 | 1.188      | -0.082               | -1.05 |
| MAXNXQ  |           | 1.398      | -0.031               | -0.34 | 1.184      | -0.086               | -1.10 |
| MJ44V6  | X         | 2.470      | 1.041                | 11.17 | 2.368      | 1.098                | 14.06 |
| MPC28B  |           | 1.474      | 0.045                | 0.48  | 1.316      | 0.046                | 0.59  |
| MU8LGM  |           | 1.442      | 0.013                | 0.13  | 1.276      | 0.006                | 0.07  |
| N3V2GB  |           | 1.328      | -0.101               | -1.09 | 1.196      | -0.074               | -0.95 |
| NFMXWA  | *         | 1.598      | 0.169                | 1.81  | 1.282      | 0.012                | 0.15  |
| NQ4AYR  |           | 1.450      | 0.020                | 0.22  | 1.285      | 0.015                | 0.19  |
| NU32GJ  | *         | 1.632      | 0.203                | 2.17  | 1.320      | 0.050                | 0.64  |
| P63E3H  |           | 1.232      | -0.197               | -2.12 | 1.100      | -0.170               | -2.18 |
| PE7UNG  |           | 1.344      | -0.085               | -0.92 | 1.152      | -0.118               | -1.51 |
| PVAXZE  |           | 1.500      | 0.071                | 0.76  | 1.369      | 0.098                | 1.26  |
| QG9YVA  |           | 1.500      | 0.071                | 0.76  | 1.300      | 0.030                | 0.38  |
| RA7UEX  |           | 1.474      | 0.045                | 0.48  | 1.286      | 0.016                | 0.20  |
| RD2NAD  |           | 1.403      | -0.027               | -0.29 | 1.240      | -0.030               | -0.39 |
| UL84V4  |           | 1.382      | -0.047               | -0.51 | 1.246      | -0.024               | -0.31 |
| VYWTH9  |           | 1.380      | -0.049               | -0.53 | 1.230      | -0.040               | -0.51 |
| WB3BKV  |           | 1.474      | 0.045                | 0.48  | 1.346      | 0.076                | 0.97  |
| WJVGKN  | X         | 1.618      | 0.189                | 2.02  | 1.662      | 0.392                | 5.02  |
| WYNLYR  |           | 1.258      | -0.171               | -1.84 | 1.076      | -0.194               | -2.49 |
| X9B38T  |           | 1.478      | 0.049                | 0.52  | 1.348      | 0.078                | 1.00  |
| XA2Z2X  |           | 1.230      | -0.199               | -2.14 | 1.128      | -0.142               | -1.82 |
| YBEMJC  |           | 1.450      | 0.021                | 0.22  | 1.284      | 0.014                | 0.18  |

#### Summary Statistics

|                          | Sample C39     | Sample C40     |
|--------------------------|----------------|----------------|
| <b>Grand Means</b>       | 1.4295 Percent | 1.2702 Percent |
| <b>Std Dev Btwn Labs</b> | 0.0931 Percent | 0.0781 Percent |

Statistics based on 57 of 62 reporting participants

Sample C39: HIPS & Sample C40: HIPS



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**Comments on Assigned Data Flags for Test #732**

- WJVGKN (X) - Data for sample C40 are high. Inconsistent within the determinations of sample C39.
- GN2EKC (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- 33PVBV (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- MJ44V6 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- E6D94M (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.





Plastics Interlaboratory Testing Program

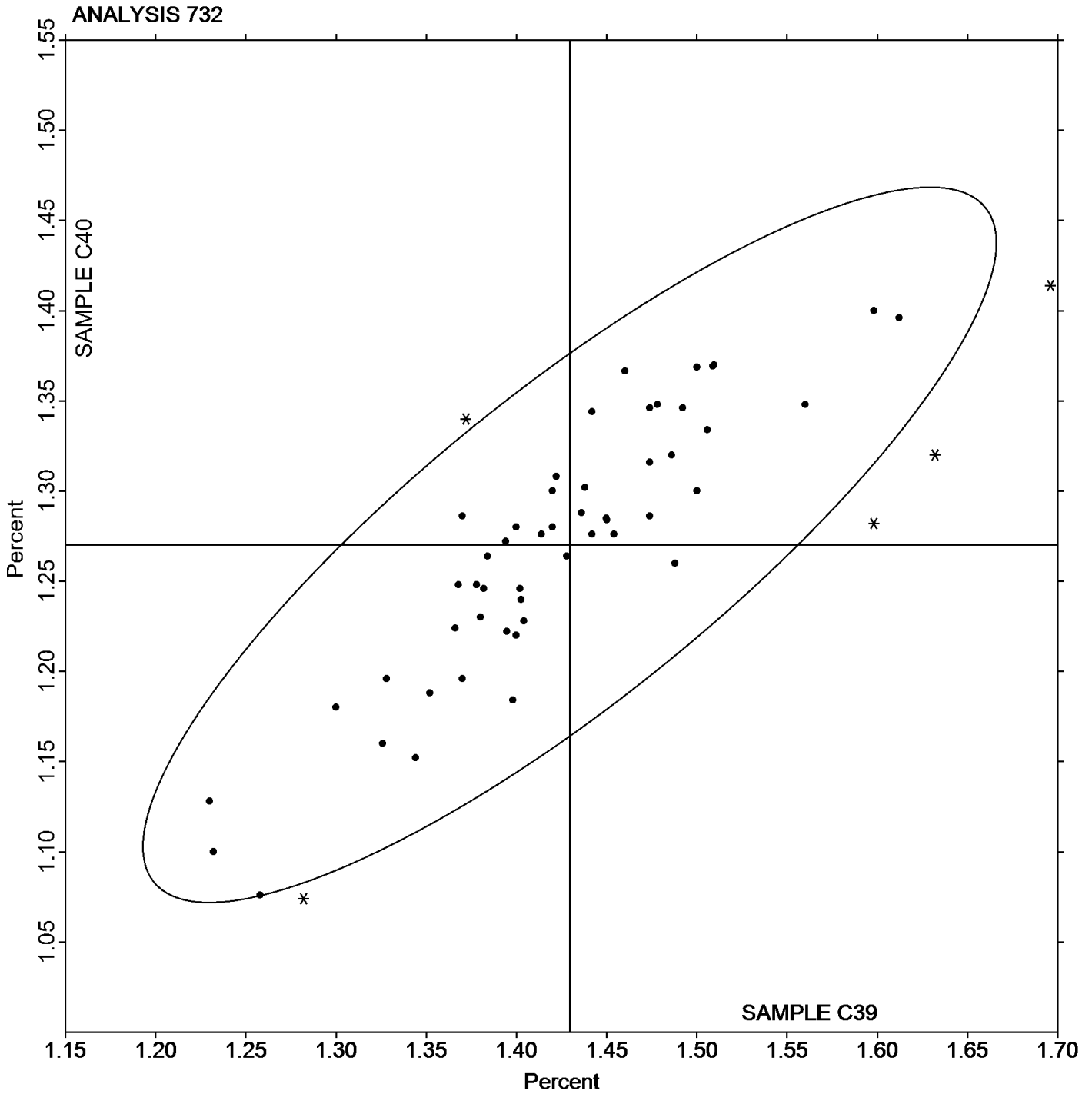
Analysis 732

Percent Strain at Yield

Report #100

4th Qtr 2016

Grand Mean Sample C39: 1.4295 Percent Grand Mean Sample C40: 1.2702 Percent





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 734

4th Qtr 2016

### Modulus of Elasticity - MPa

| WebCode | Data Flag | Sample C39 |                      |        | Sample C40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| 26ZN2H  |           | 2,181      | -24                  | -0.27  | 1,849      | 35                   | 0.45   |
| 27RQMX  |           | 2,258      | 54                   | 0.60   | 1,857      | 44                   | 0.56   |
| 2BNZQR  |           | 2,144      | -61                  | -0.69  | 1,792      | -22                  | -0.28  |
| 33PVBV  |           | 2,165      | -40                  | -0.45  | 1,692      | -121                 | -1.56  |
| 3K7YWM  |           | 2,161      | -44                  | -0.50  | 1,812      | -2                   | -0.02  |
| 3V4EPP  |           | 2,332      | 128                  | 1.44   | 1,897      | 83                   | 1.07   |
| 4MU9Q2  | X         | 2          | -2,203               | -24.80 | 2          | -1,812               | -23.28 |
| 4XPJWM  |           | 2,309      | 104                  | 1.17   | 1,915      | 102                  | 1.31   |
| 67GNJF  |           | 2,077      | -128                 | -1.44  | 1,738      | -76                  | -0.97  |
| 7M4L2M  |           | 2,310      | 105                  | 1.18   | 1,964      | 151                  | 1.94   |
| 7NGL8A  |           | 2,117      | -88                  | -0.99  | 1,797      | -17                  | -0.22  |
| 7RFYQT  | *         | 2,176      | -29                  | -0.33  | 1,675      | -139                 | -1.78  |
| 7VEDCX  |           | 2,209      | 4                    | 0.04   | 1,763      | -50                  | -0.64  |
| 8CWWLA  |           | 2,274      | 70                   | 0.78   | 1,965      | 151                  | 1.95   |
| 8Z93LW  | X         | 2,709      | 504                  | 5.68   | 1,089      | -725                 | -9.31  |
| 9A7RT3  |           | 2,198      | -7                   | -0.08  | 1,831      | 17                   | 0.22   |
| 9E2DAR  | *         | 2,454      | 249                  | 2.80   | 1,957      | 143                  | 1.84   |
| 9R4AHX  |           | 2,341      | 136                  | 1.53   | 1,862      | 48                   | 0.62   |
| ATF8N3  |           | 2,233      | 28                   | 0.31   | 1,811      | -2                   | -0.03  |
| B937R8  |           | 1,986      | -219                 | -2.47  | 1,652      | -162                 | -2.08  |
| BUPLNG  |           | 2,306      | 101                  | 1.13   | 1,944      | 131                  | 1.68   |
| E6D94M  | X         | 1,507      | -698                 | -7.86  | 1,751      | -63                  | -0.81  |
| ECC7ZH  | X         | 2,218      | 13                   | 0.15   | 2,054      | 240                  | 3.09   |
| EFWPU9  |           | 2,272      | 67                   | 0.75   | 1,826      | 12                   | 0.16   |
| FXTZ7V  |           | 2,227      | 22                   | 0.24   | 1,742      | -72                  | -0.92  |
| GN2EKC  |           | 2,282      | 77                   | 0.87   | 1,824      | 10                   | 0.13   |
| GPUVPY  |           | 2,169      | -36                  | -0.41  | 1,788      | -25                  | -0.32  |
| H3FYLG  |           | 2,309      | 104                  | 1.17   | 1,911      | 97                   | 1.25   |
| HDYFC3  |           | 2,212      | 7                    | 0.08   | 1,874      | 60                   | 0.78   |
| JDDPTM  |           | 2,046      | -159                 | -1.79  | 1,709      | -105                 | -1.35  |
| KCT3G6  |           | 2,087      | -118                 | -1.33  | 1,692      | -122                 | -1.56  |
| KFV7LR  |           | 2,201      | -4                   | -0.04  | 1,795      | -19                  | -0.24  |
| KLYFND  |           | 2,212      | 8                    | 0.08   | 1,850      | 36                   | 0.46   |
| KNR4BF  |           | 2,184      | -21                  | -0.24  | 1,841      | 27                   | 0.35   |
| KXBAVJ  |           | 2,144      | -61                  | -0.68  | 1,769      | -44                  | -0.57  |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 734**

**4th Qtr 2016**

**Modulus of Elasticity - MPa**

| WebCode | Data Flag | Sample C39 |                      |       | Sample C40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| L8ZKNK  |           | 2,152      | -52                  | -0.59 | 1,814      | 1                    | 0.01  |
| LRMCVF  |           | 2,186      | -18                  | -0.21 | 1,828      | 14                   | 0.19  |
| M7HYUG  |           | 2,169      | -36                  | -0.41 | 1,783      | -31                  | -0.40 |
| MAXNXQ  |           | 2,009      | -196                 | -2.21 | 1,679      | -134                 | -1.72 |
| MJ44V6  |           | 2,056      | -149                 | -1.68 | 1,722      | -91                  | -1.17 |
| MPC28B  |           | 2,231      | 26                   | 0.29  | 1,805      | -8                   | -0.11 |
| MU8LGM  |           | 2,195      | -10                  | -0.12 | 1,810      | -3                   | -0.04 |
| N3V2GB  |           | 2,234      | 30                   | 0.33  | 1,840      | 26                   | 0.34  |
| NFMXWA  | X         | 1,508      | -697                 | -7.85 | 3,953      | 2,139                | 27.49 |
| NQ4AYR  |           | 2,205      | 0                    | 0.00  | 1,786      | -28                  | -0.36 |
| NU32GJ  |           | 2,173      | -32                  | -0.36 | 1,773      | -41                  | -0.52 |
| P63E3H  | X         | 2,605      | 400                  | 4.50  | 2,208      | 394                  | 5.07  |
| PE7UNG  |           | 2,184      | -21                  | -0.24 | 1,806      | -7                   | -0.09 |
| PVAXZE  |           | 2,186      | -19                  | -0.21 | 1,794      | -20                  | -0.25 |
| QG9YVA  |           | 2,250      | 45                   | 0.51  | 1,890      | 76                   | 0.98  |
| RA7UEX  |           | 2,225      | 20                   | 0.23  | 1,813      | -1                   | -0.01 |
| RD2NAD  |           | 2,254      | 50                   | 0.56  | 1,852      | 38                   | 0.49  |
| UL84V4  |           | 2,129      | -75                  | -0.85 | 1,683      | -131                 | -1.68 |
| VYWTH9  |           | 2,296      | 92                   | 1.03  | 1,792      | -22                  | -0.28 |
| WB3BKV  |           | 2,173      | -32                  | -0.36 | 1,755      | -59                  | -0.75 |
| WYNLYR  | X         | 2,497      | 292                  | 3.28  | 1,946      | 132                  | 1.70  |
| X9B38T  |           | 2,143      | -62                  | -0.70 | 1,869      | 56                   | 0.72  |
| XA2Z2X  |           | 2,176      | -29                  | -0.33 | 1,783      | -31                  | -0.40 |
| YBEMJC  |           | 2,310      | 106                  | 1.19  | 1,893      | 79                   | 1.02  |
| ZU2T68  |           | 2,351      | 146                  | 1.64  | 1,957      | 143                  | 1.84  |

| Summary Statistics                                  |             |             |
|---|-------------|-------------|
|   | Sample C39  | Sample C40  |
| <b>Grand Means</b>                                  | 2,204.9 MPa | 1,813.5 MPa |
| <b>Stnd Dev Btwn Labs</b>                           | 88.8 MPa    | 77.8 MPa    |
| Statistics based on 53 of 60 reporting participants |             |             |

Sample C39: HIPS & Sample C40: HIPS



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**Comments on Assigned Data Flags for Test #734**

4MU9Q2 (X) - Extreme data.

ECC7ZH (X) - Data for sample C40 are high. Inconsistent within the determinations of sample C40.

P63E3H (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

WYNLYR (X) - Data for sample C39 are high. Inconsistent within the determinations of sample C39.

NFMXWA (X) - Data for sample C39 are low and data for sample C40 are high. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

E6D94M (X) - Data for sample C39 are low. Inconsistent within the determinations of both samples.

8Z93LW (X) - Data for sample C39 are high and data for sample C40 are low. Inconsistent in testing between samples. Inconsistent within the determinations of both samples.





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 736

4th Qtr 2016

### Flexural Modulus - MPa

| WebCode | Data Flag | Sample K39 |                      |       | Sample K40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 27RQMX  |           | 1,724      | -128                 | -1.33 | 1,723      | -133                 | -1.43 |
| 33PVBV  |           | 1,946      | 94                   | 0.97  | 1,951      | 94                   | 1.01  |
| 3UG48R  |           | 1,804      | -48                  | -0.50 | 1,808      | -49                  | -0.53 |
| 4XPJWM  |           | 1,794      | -58                  | -0.60 | 1,795      | -62                  | -0.67 |
| 67GNJF  |           | 1,725      | -127                 | -1.32 | 1,735      | -121                 | -1.30 |
| 7GFAAR  |           | 1,879      | 27                   | 0.28  | 1,870      | 13                   | 0.14  |
| 7NGL8A  | *         | 2,090      | 238                  | 2.47  | 2,096      | 239                  | 2.56  |
| 7RFYQT  |           | 1,762      | -90                  | -0.94 | 1,757      | -100                 | -1.07 |
| 8CWWLA  |           | 1,831      | -21                  | -0.22 | 1,807      | -50                  | -0.53 |
| 8Z93LW  |           | 1,882      | 30                   | 0.31  | 1,902      | 45                   | 0.48  |
| 9A7RT3  |           | 1,942      | 90                   | 0.94  | 1,927      | 71                   | 0.76  |
| 9E2DAR  | *         | 1,633      | -219                 | -2.28 | 1,688      | -169                 | -1.81 |
| 9KQYQ8  |           | 1,927      | 75                   | 0.78  | 1,938      | 81                   | 0.87  |
| 9R4AHX  |           | 1,893      | 41                   | 0.42  | 1,889      | 32                   | 0.34  |
| A7PR8V  |           | 1,918      | 66                   | 0.69  | 1,906      | 49                   | 0.53  |
| ATF8N3  |           | 1,905      | 53                   | 0.55  | 1,919      | 62                   | 0.67  |
| AXPMV7  |           | 1,835      | -17                  | -0.17 | 1,843      | -14                  | -0.14 |
| B937R8  |           | 1,809      | -43                  | -0.45 | 1,803      | -54                  | -0.57 |
| BUPLNG  |           | 1,959      | 107                  | 1.11  | 1,984      | 128                  | 1.37  |
| BYHMTG  |           | 1,807      | -45                  | -0.47 | 1,816      | -41                  | -0.44 |
| DDQ679  |           | 1,861      | 9                    | 0.10  | 1,877      | 21                   | 0.22  |
| DLN8GD  |           | 1,723      | -129                 | -1.34 | 1,723      | -133                 | -1.43 |
| E6D94M  |           | 1,863      | 11                   | 0.12  | 1,856      | -1                   | -0.01 |
| ECC7ZH  |           | 1,794      | -58                  | -0.60 | 1,832      | -25                  | -0.27 |
| EFWPU9  | *         | 1,705      | -147                 | -1.52 | 1,673      | -184                 | -1.97 |
| FXTZ7V  | X         | 1,721      | -131                 | -1.36 | 1,848      | -9                   | -0.10 |
| GN2EKC  |           | 1,889      | 37                   | 0.38  | 1,886      | 29                   | 0.31  |
| GPUVPY  |           | 1,800      | -52                  | -0.54 | 1,814      | -43                  | -0.46 |
| JAR7NJ  |           | 1,853      | 1                    | 0.01  | 1,842      | -14                  | -0.16 |
| JDDPTM  | X         | 1,851      | -1                   | -0.01 | 1,755      | -102                 | -1.09 |
| KA8TEC  |           | 1,966      | 114                  | 1.19  | 1,956      | 99                   | 1.07  |
| KCT3G6  |           | 1,792      | -60                  | -0.62 | 1,803      | -54                  | -0.58 |
| KFV7LR  |           | 1,936      | 84                   | 0.87  | 1,900      | 43                   | 0.47  |
| KLYFND  |           | 1,856      | 4                    | 0.04  | 1,885      | 28                   | 0.30  |
| KNR4BF  |           | 1,896      | 44                   | 0.46  | 1,897      | 40                   | 0.43  |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 736

4th Qtr 2016

### Flexural Modulus - MPa

| WebCode | Data Flag | Sample K39 |                      |        | Sample K40 |                      |        |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |
| KXBAVJ  | X         | 1,029      | -823                 | -8.55  | 1,016      | -840                 | -9.01  |
| L8ZKNK  | *         | 1,688      | -164                 | -1.70  | 1,660      | -197                 | -2.11  |
| LRG8AC  | *         | 2,097      | 245                  | 2.55   | 2,077      | 221                  | 2.37   |
| M7HYUG  |           | 1,820      | -32                  | -0.33  | 1,812      | -45                  | -0.48  |
| MAXNXQ  | X         | 34         | -1,818               | -18.88 | 35         | -1,822               | -19.53 |
| MPC28B  |           | 1,869      | 17                   | 0.18   | 1,873      | 16                   | 0.18   |
| MU8LGM  |           | 2,043      | 191                  | 1.99   | 2,029      | 172                  | 1.85   |
| NFMXWA  |           | 1,894      | 42                   | 0.43   | 1,909      | 52                   | 0.56   |
| NQ4AYR  | *         | 1,752      | -100                 | -1.04  | 1,814      | -42                  | -0.45  |
| NU32GJ  |           | 1,759      | -93                  | -0.96  | 1,811      | -46                  | -0.49  |
| P63E3H  |           | 1,781      | -71                  | -0.73  | 1,794      | -63                  | -0.67  |
| PE7UNG  |           | 1,864      | 12                   | 0.12   | 1,842      | -15                  | -0.16  |
| QG9YVA  |           | 1,958      | 106                  | 1.10   | 1,970      | 113                  | 1.21   |
| RD2NAD  |           | 1,804      | -48                  | -0.50  | 1,819      | -38                  | -0.41  |
| VYWTH9  |           | 1,782      | -70                  | -0.73  | 1,797      | -60                  | -0.64  |
| WB3BKV  |           | 1,888      | 36                   | 0.37   | 1,921      | 65                   | 0.69   |
| WJVGKN  | X         | 551        | -1,301               | -13.51 | 528        | -1,329               | -14.25 |
| WYNLYR  | X         | 1,576      | -276                 | -2.87  | 1,642      | -215                 | -2.30  |
| XA2Z2X  |           | 1,815      | -37                  | -0.38  | 1,801      | -56                  | -0.60  |
| YBEMJC  |           | 1,832      | -20                  | -0.20  | 1,848      | -8                   | -0.09  |
| ZU2T68  |           | 1,956      | 104                  | 1.08   | 1,960      | 103                  | 1.10   |

#### Summary Statistics

|                           | Sample K39  | Sample K40  |
|---------------------------|-------------|-------------|
| <b>Grand Means</b>        | 1,852.0 MPa | 1,856.8 MPa |
| <b>Stnd Dev Btwn Labs</b> | 96.3 MPa    | 93.3 MPa    |

Statistics based on 50 of 56 reporting participants

Sample K39: HIPS & Sample K40: HIPS



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**Comments on Assigned Data Flags for Test #736**

JDDPTM (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

WJVGKN (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

FXTZ7V (X) - Inconsistent in testing between samples.

MAXNXQ (X) - Extreme data.

WYNLYR (X) - Data for sample K39 are low. Inconsistent within the determinations of sample K39.

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





# Plastics Interlaboratory Testing Program

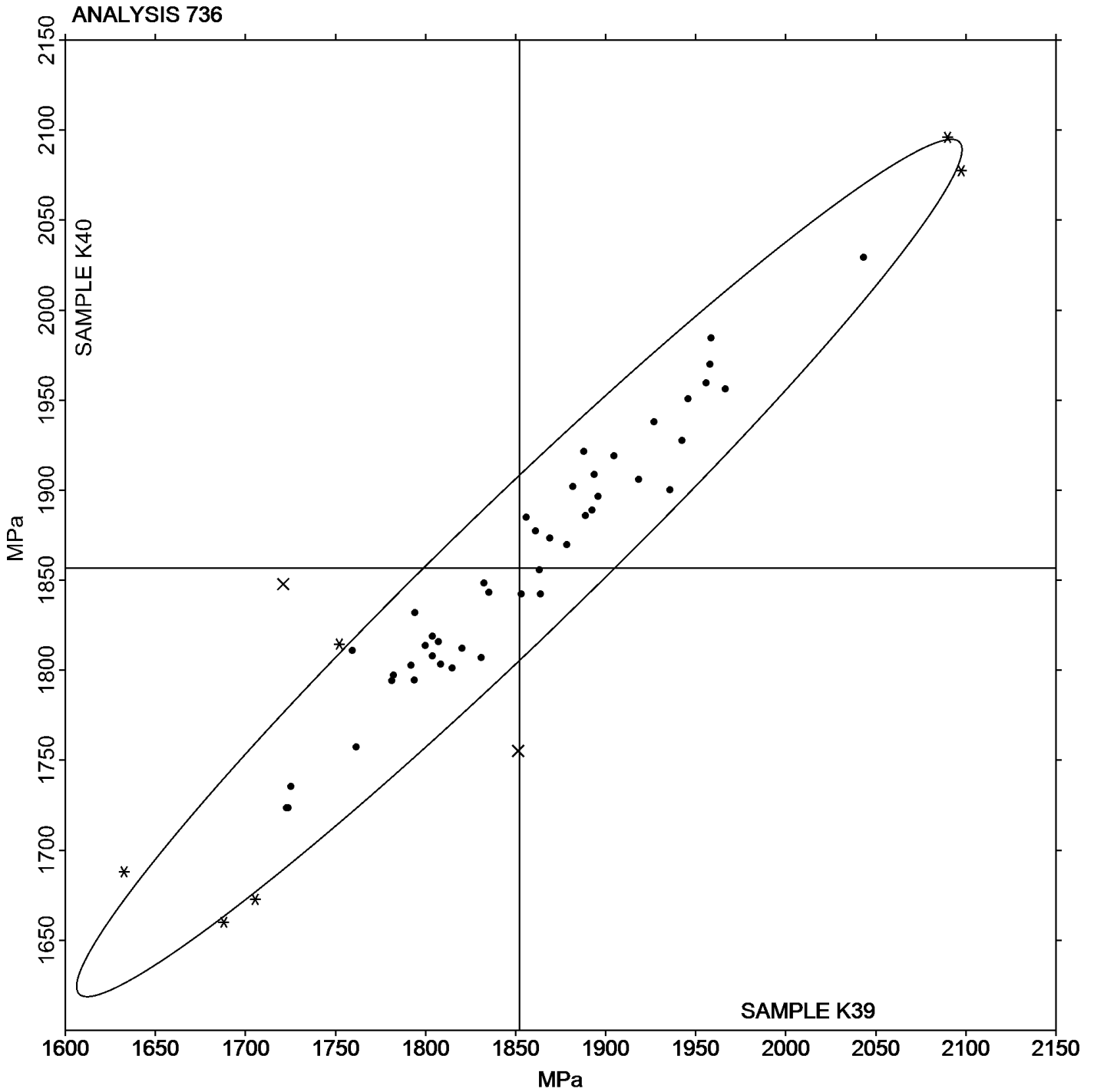
## Analysis 736

### Flexural Modulus - MPa

Report #100

4th Qtr 2016

Grand Mean Sample K39: 1,852.04 MPa    Grand Mean Sample K40: 1,856.79 MPa





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 737

4th Qtr 2016

### Flexural Stress at 3.5% Strain - MPa

| WebCode | Data Flag | Sample K39 |                      |       | Sample K40                       |                      |       |
|---------|-----------|------------|----------------------|-------|----------------------------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean                         | Diff from Grand Mean | CPV   |
| 27RQMX  |           | 30.60      | -3.32                | -2.50 | 30.67                            | -3.30                | -2.50 |
| 33PVBV  |           | 33.43      | -0.48                | -0.36 | 33.23                            | -0.73                | -0.55 |
| 4XPJWM  |           | 33.77      | -0.14                | -0.11 | 33.83                            | -0.13                | -0.10 |
| 67GNJF  |           | 33.01      | -0.90                | -0.68 | 33.14                            | -0.82                | -0.62 |
| 7GFAAR  |           | 33.96      | 0.05                 | 0.04  | 34.00                            | 0.03                 | 0.03  |
| 7NGL8A  |           | 37.11      | 3.19                 | 2.41  | 37.17                            | 3.20                 | 2.42  |
| 7RFYQT  |           | 32.97      | -0.95                | -0.71 | 33.28                            | -0.69                | -0.52 |
| 8CWVLA  |           | 34.08      | 0.16                 | 0.12  | 34.27                            | 0.30                 | 0.23  |
| 8Z93LW  |           | 33.26      | -0.65                | -0.49 | 33.80                            | -0.16                | -0.12 |
| 9A7RT3  |           | 34.79      | 0.88                 | 0.66  | 34.74                            | 0.78                 | 0.59  |
| 9E2DAR  |           | 33.20      | -0.72                | -0.54 | 33.04                            | -0.92                | -0.70 |
| 9KQYQ8  |           | 34.43      | 0.52                 | 0.39  | 34.66                            | 0.70                 | 0.53  |
| 9R4AHX  | X         | 31.23      | -2.69                | -2.03 | 34.13                            | 0.16                 | 0.12  |
| A7PR8V  | *         | 36.93      | 3.01                 | 2.27  | 36.59                            | 2.63                 | 1.99  |
| ATF8N3  |           | 34.38      | 0.46                 | 0.35  | 34.45                            | 0.48                 | 0.37  |
| B937R8  |           | 32.70      | -1.22                | -0.92 | 32.62                            | -1.35                | -1.02 |
| BUPLNG  |           | 36.45      | 2.54                 | 1.92  | 36.41                            | 2.45                 | 1.85  |
| BYHMTG  |           | 33.52      | -0.40                | -0.30 | 33.64                            | -0.32                | -0.25 |
| DDQ679  |           | 33.88      | -0.03                | -0.03 | 34.04                            | 0.08                 | 0.06  |
| DLN8GD  |           | 35.28      | 1.37                 | 1.03  | 35.28                            | 1.32                 | 1.00  |
| E6D94M  |           | 33.62      | -0.29                | -0.22 | 33.39                            | -0.58                | -0.44 |
| ECC7ZH  | X         | 33.45      | -0.47                | -0.35 | 34.57                            | 0.60                 | 0.46  |
| EFWPU9  |           | 34.49      | 0.58                 | 0.44  | 33.98                            | 0.02                 | 0.02  |
| FXTZ7V  | X         | 31.76      | -2.15                | -1.62 | 28.78                            | -5.18                | -3.92 |
| GN2EKC  |           | 33.33      | -0.58                | -0.44 | 33.50                            | -0.46                | -0.35 |
| GPUVPY  |           | 33.75      | -0.16                | -0.12 | 33.93                            | -0.03                | -0.02 |
| JDDPTM  |           | 31.18      | -2.73                | -2.06 | 31.14                            | -2.82                | -2.14 |
| KCT3G6  |           | 33.60      | -0.32                | -0.24 | 33.76                            | -0.20                | -0.15 |
| KFV7LR  |           | 33.48      | -0.43                | -0.33 | 33.06                            | -0.90                | -0.68 |
| KLYFND  |           | 33.88      | -0.03                | -0.02 | 34.36                            | 0.39                 | 0.30  |
| KNR4BF  |           | 35.51      | 1.60                 | 1.21  | 35.43                            | 1.47                 | 1.11  |
| KXBAVJ  | M         | 32.33      | -1.58                | -1.19 | No data reported for this sample |                      |       |
| L8ZKNK  |           | 32.89      | -1.02                | -0.77 | 32.79                            | -1.18                | -0.89 |
| LRG8AC  |           | 35.18      | 1.26                 | 0.95  | 35.26                            | 1.30                 | 0.98  |
| M7HYUG  |           | 33.92      | 0.01                 | 0.01  | 33.72                            | -0.25                | -0.19 |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 737**

**4th Qtr 2016**

**Flexural Stress at 3.5% Strain - MPa**

| WebCode | Data Flag | <u>Sample K39</u> |                      |       | <u>Sample K40</u> |                      |       |
|---------|-----------|-------------------|----------------------|-------|-------------------|----------------------|-------|
|         |           | Lab Mean          | Diff from Grand Mean | CPV   | Lab Mean          | Diff from Grand Mean | CPV   |
| MAXNXQ  |           | 34.33             | 0.42                 | 0.32  | 34.61             | 0.64                 | 0.49  |
| MPC28B  |           | 34.49             | 0.57                 | 0.43  | 34.61             | 0.65                 | 0.49  |
| MU8LGM  |           | 36.29             | 2.38                 | 1.79  | 36.35             | 2.39                 | 1.81  |
| NFMXWA  |           | 31.33             | -2.59                | -1.95 | 31.23             | -2.73                | -2.07 |
| NQ4AYR  |           | 33.29             | -0.63                | -0.47 | 33.51             | -0.45                | -0.34 |
| NU32GJ  |           | 33.85             | -0.06                | -0.05 | 33.76             | -0.20                | -0.15 |
| P63E3H  |           | 32.23             | -1.68                | -1.27 | 32.59             | -1.37                | -1.04 |
| PE7UNG  |           | 34.16             | 0.25                 | 0.19  | 34.16             | 0.20                 | 0.15  |
| QG9YVA  |           | 34.69             | 0.77                 | 0.58  | 35.01             | 1.05                 | 0.79  |
| RD2NAD  |           | 33.18             | -0.73                | -0.55 | 33.54             | -0.42                | -0.32 |
| VYWTH9  |           | 33.58             | -0.33                | -0.25 | 33.65             | -0.32                | -0.24 |
| WB3BKV  |           | 35.41             | 1.49                 | 1.13  | 35.25             | 1.29                 | 0.98  |
| WJVGKN  |           | 34.41             | 0.50                 | 0.37  | 34.55             | 0.58                 | 0.44  |
| WYNLYR  |           | 32.26             | -1.66                | -1.25 | 31.97             | -2.00                | -1.51 |
| XA2Z2X  |           | 33.74             | -0.17                | -0.13 | 33.86             | -0.10                | -0.08 |
| YBEMJC  |           | 34.09             | 0.17                 | 0.13  | 34.47             | 0.51                 | 0.38  |

| <b>Summary Statistics</b>                           |                   |                   |
|---|-------------------|-------------------|
|   | <u>Sample K39</u> | <u>Sample K40</u> |
| <b>Grand Means</b>                                  | 33.913 MPa        | 33.964 MPa        |
| <b>Stnd Dev Btwn Labs</b>                           | 1.326 MPa         | 1.321 MPa         |
| Statistics based on 47 of 51 reporting participants |                   |                   |

Sample K39: HIPS & Sample K40: HIPS

**Comments on Assigned Data Flags for Test #737**

- ECC7ZH (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample K39.
- 9R4AHX (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- FXTZ7V (X) - Data for sample K40 are low.
- KXBAVJ (M) - Participant did not submit data for sample K40.



# Plastics Interlaboratory Testing Program

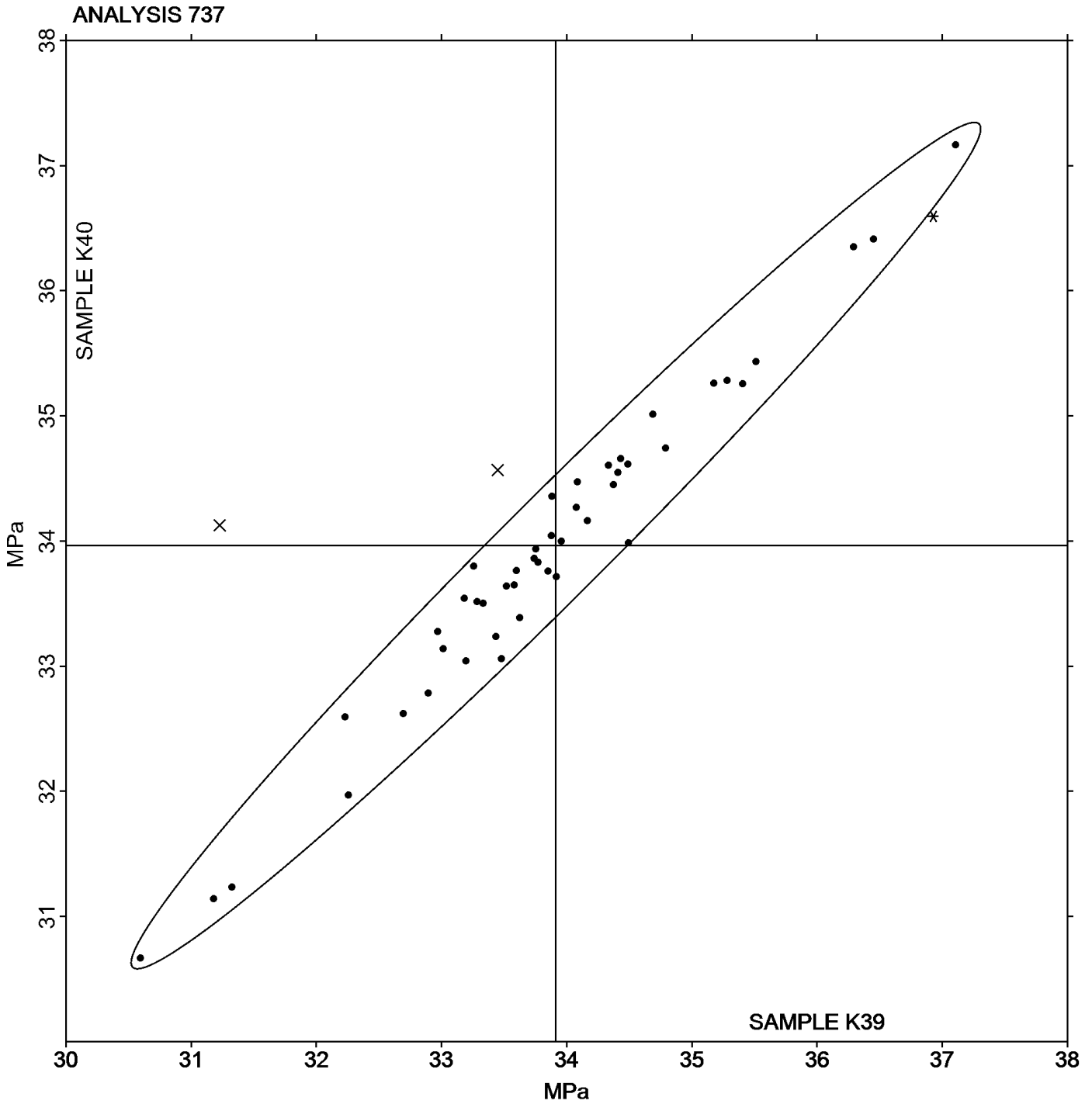
Report #100

## Analysis 737

4th Qtr 2016

### Flexural Stress at 3.5% Strain - MPa

Grand Mean Sample K39: 33.913 MPa    Grand Mean Sample K40: 33.964 MPa





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 738

4th Qtr 2016

### Flexural Stress at Yield - MPa

| WebCode | Data Flag | Sample K39 |                      |          | Sample K40 |                      |          |
|---------|-----------|------------|----------------------|----------|------------|----------------------|----------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV      | Lab Mean   | Diff from Grand Mean | CPV      |
| 33PVBV  |           | 33.54      | -0.33                | -0.30    | 33.34      | -0.61                | -0.55    |
| 3UG48R  |           | 33.68      | -0.19                | -0.17    | 33.46      | -0.49                | -0.44    |
| 67GNJF  |           | 32.61      | -1.26                | -1.15    | 32.94      | -1.01                | -0.91    |
| 7RFYQT  |           | 33.05      | -0.82                | -0.74    | 33.39      | -0.56                | -0.50    |
| 8Z93LW  | X         | 55.22      | 21.35                | 19.49    | 56.08      | 22.13                | 19.88    |
| 9E2DAR  |           | 32.62      | -1.25                | -1.14    | 32.33      | -1.62                | -1.46    |
| 9KQYQ8  |           | 34.70      | 0.83                 | 0.76     | 34.97      | 1.02                 | 0.91     |
| 9R4AHX  | X         | 31.39      | -2.48                | -2.26    | 34.43      | 0.48                 | 0.43     |
| ATF8N3  |           | 34.45      | 0.58                 | 0.53     | 34.53      | 0.58                 | 0.52     |
| AXPMV7  |           | 33.08      | -0.79                | -0.72    | 33.29      | -0.66                | -0.59    |
| B937R8  |           | 32.76      | -1.11                | -1.02    | 32.68      | -1.28                | -1.15    |
| BUPLNG  |           | 36.58      | 2.71                 | 2.48     | 36.54      | 2.59                 | 2.33     |
| BYHMTG  |           | 33.72      | -0.15                | -0.14    | 34.12      | 0.17                 | 0.15     |
| DDQ679  |           | 33.93      | 0.06                 | 0.05     | 34.07      | 0.12                 | 0.11     |
| DLN8GD  |           | 35.31      | 1.44                 | 1.31     | 35.38      | 1.42                 | 1.28     |
| E6D94M  |           | 33.80      | -0.07                | -0.06    | 33.44      | -0.51                | -0.46    |
| ECC7ZH  | *         | 33.52      | -0.35                | -0.32    | 34.42      | 0.47                 | 0.42     |
| EFWPU9  |           | 34.67      | 0.80                 | 0.73     | 34.15      | 0.20                 | 0.18     |
| FXTZ7V  | X         | 32.00      | -1.87                | -1.71    | 29.00      | -4.95                | -4.45    |
| GN2EKC  |           | 33.36      | -0.51                | -0.46    | 33.60      | -0.35                | -0.32    |
| GPUVPY  |           | 33.92      | 0.05                 | 0.05     | 34.19      | 0.24                 | 0.21     |
| KCT3G6  |           | 33.94      | 0.07                 | 0.06     | 34.13      | 0.18                 | 0.16     |
| KFV7LR  |           | 33.50      | -0.37                | -0.34    | 33.16      | -0.79                | -0.71    |
| KNR4BF  |           | 35.69      | 1.82                 | 1.66     | 35.58      | 1.63                 | 1.46     |
| KXBAVJ  |           | 32.38      | -1.49                | -1.36    | 32.58      | -1.37                | -1.23    |
| L8ZKNK  |           | 32.91      | -0.96                | -0.87    | 32.81      | -1.14                | -1.03    |
| LRG8AC  | X         | 39.79      | 5.92                 | 5.41     | 39.83      | 5.87                 | 5.28     |
| M7HYUG  |           | 34.23      | 0.36                 | 0.33     | 33.96      | 0.00                 | 0.00     |
| MAXNXQ  | X         | 1,859.40   | 1,825.53             | 1,666.86 | 1,864.00   | 1,830.05             | 1,644.35 |
| MPC28B  |           | 34.50      | 0.63                 | 0.58     | 34.65      | 0.70                 | 0.63     |
| MU8LGM  |           | 36.53      | 2.66                 | 2.43     | 36.73      | 2.78                 | 2.50     |
| NFMXWA  |           | 31.38      | -2.49                | -2.27    | 31.29      | -2.67                | -2.40    |
| NQ4AYR  |           | 33.81      | -0.06                | -0.05    | 33.91      | -0.04                | -0.04    |
| NU32GJ  |           | 33.94      | 0.07                 | 0.06     | 34.00      | 0.05                 | 0.04     |
| P63E3H  |           | 32.37      | -1.50                | -1.37    | 32.76      | -1.19                | -1.07    |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 738**

**4th Qtr 2016**

**Flexural Stress at Yield - MPa**

| WebCode | Data Flag | Sample K39 |                      |       | Sample K40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| PE7UNG  |           | 34.26      | 0.39                 | 0.35  | 34.32      | 0.37                 | 0.33  |
| QG9YVA  |           | 34.71      | 0.84                 | 0.77  | 35.00      | 1.04                 | 0.94  |
| RD2NAD  |           | 33.23      | -0.64                | -0.58 | 33.57      | -0.39                | -0.35 |
| VYWTH9  |           | 33.63      | -0.24                | -0.22 | 33.69      | -0.26                | -0.23 |
| WJVGKN  |           | 34.71      | 0.84                 | 0.77  | 34.84      | 0.89                 | 0.80  |
| WYNLYR  |           | 32.58      | -1.29                | -1.18 | 32.58      | -1.37                | -1.23 |
| XA2Z2X  |           | 33.86      | -0.01                | -0.01 | 34.00      | 0.05                 | 0.04  |
| YBEMJC  |           | 34.22      | 0.35                 | 0.32  | 34.39      | 0.43                 | 0.39  |
| ZU2T68  |           | 35.23      | 1.36                 | 1.24  | 35.38      | 1.43                 | 1.28  |

| Summary Statistics                                  |            |            |
|---|------------|------------|
|   | Sample K39 | Sample K40 |
| <b>Grand Means</b>                                  | 33.869 MPa | 33.954 MPa |
| <b>Stnd Dev Btwn Labs</b>                           | 1.095 MPa  | 1.113 MPa  |
| Statistics based on 39 of 44 reporting participants |            |            |

Sample K39: HIPS & Sample K40: HIPS

**Comments on Assigned Data Flags for Test #738**

- 9R4AHX (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- FXTZ7V (X) - Data for sample K40 are low.
- MAXNXQ (X) - Extreme data.
- LRG8AC (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- 8Z93LW (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample K39.



# Plastics Interlaboratory Testing Program

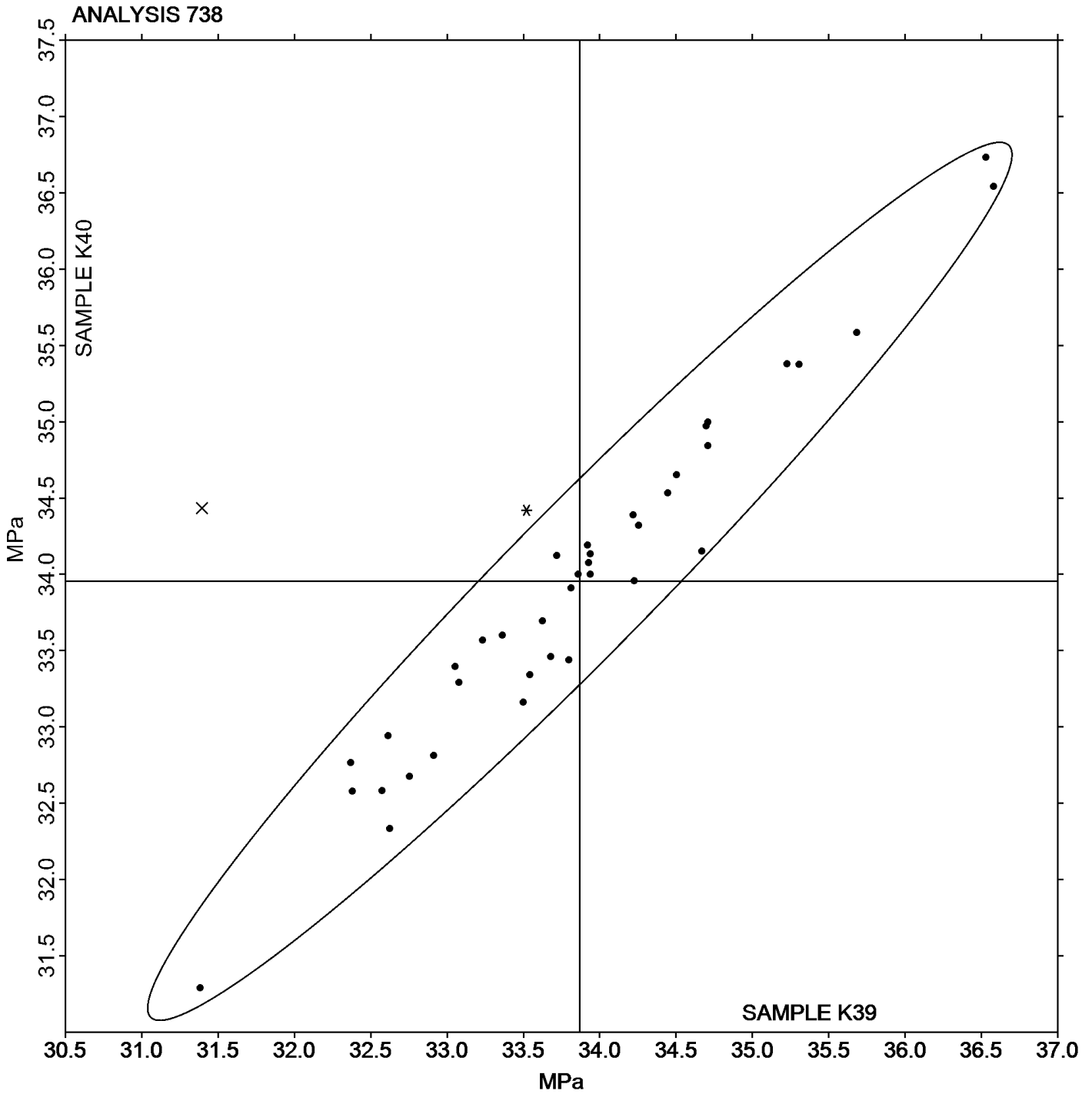
## Analysis 738

### Flexural Stress at Yield - MPa

Report #100

4th Qtr 2016

Grand Mean Sample K39: 33.869 MPa    Grand Mean Sample K40: 33.954 MPa





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 750

4th Qtr 2016

### Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

| WebCode | Data Flag | Sample X39 |                      |       | Sample X40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 2H67AW  | X         | 16.52      | 10.11                | 34.82 | 16.61      | 10.20                | 37.80 | CE         |
| 33PVBV  |           | 6.25       | -0.16                | -0.56 | 6.30       | -0.11                | -0.42 | TO         |
| 3GKU6W  |           | 6.51       | 0.10                 | 0.35  | 6.45       | 0.04                 | 0.13  | TO         |
| 3UG48R  |           | 6.74       | 0.33                 | 1.13  | 6.74       | 0.32                 | 1.19  | TO         |
| 4MU9Q2  | X         | 5.63       | -0.78                | -2.68 | 6.45       | 0.04                 | 0.14  | DY         |
| 4XPJWM  |           | 6.18       | -0.23                | -0.79 | 6.20       | -0.22                | -0.81 | DY         |
| 67GNJF  |           | 6.35       | -0.06                | -0.20 | 6.30       | -0.11                | -0.42 | TO         |
| 6X3ZHM  |           | 6.50       | 0.09                 | 0.32  | 6.50       | 0.09                 | 0.32  | TO         |
| 7TANDV  |           | 6.44       | 0.03                 | 0.09  | 6.33       | -0.08                | -0.31 | DY         |
| 8JHUBX  |           | 5.76       | -0.65                | -2.25 | 5.81       | -0.60                | -2.24 | XX         |
| 8Z93LW  |           | 6.65       | 0.24                 | 0.82  | 6.78       | 0.36                 | 1.34  | TO         |
| 9EH9CM  | X         | 6.35       | -0.06                | -0.21 | 5.90       | -0.52                | -1.92 | TM         |
| 9KQYQ8  |           | 6.33       | -0.08                | -0.26 | 6.31       | -0.11                | -0.40 | KA         |
| 9MC7PU  |           | 6.30       | -0.11                | -0.37 | 6.30       | -0.11                | -0.42 | KA         |
| A696LF  |           | 5.96       | -0.45                | -1.54 | 6.03       | -0.39                | -1.44 | WZ         |
| A7PR8V  |           | 6.60       | 0.19                 | 0.66  | 6.60       | 0.19                 | 0.69  | DY         |
| B7YDX9  |           | 6.56       | 0.15                 | 0.52  | 6.45       | 0.04                 | 0.14  | DY         |
| BUPLNG  |           | 6.55       | 0.14                 | 0.49  | 6.53       | 0.11                 | 0.42  | XX         |
| CLT3RK  |           | 6.60       | 0.19                 | 0.66  | 6.45       | 0.04                 | 0.14  | DY         |
| E4GVE9  |           | 5.97       | -0.44                | -1.53 | 6.11       | -0.31                | -1.14 | CE         |
| E7P7BC  |           | 6.71       | 0.30                 | 1.02  | 6.56       | 0.14                 | 0.54  | TO         |
| ECC7ZH  | X         | 12.83      | 6.42                 | 22.14 | 11.11      | 4.70                 | 17.42 | TO         |
| EQTVM7  |           | 6.03       | -0.38                | -1.32 | 6.02       | -0.39                | -1.46 | TO         |
| EXYTMR  |           | 6.46       | 0.05                 | 0.18  | 6.42       | 0.00                 | 0.01  | TO         |
| F9AC9E  |           | 6.42       | 0.01                 | 0.04  | 6.32       | -0.09                | -0.34 | TO         |
| FLVRBD  |           | 6.30       | -0.11                | -0.39 | 6.51       | 0.09                 | 0.34  | TO         |
| FXTZ7V  |           | 6.30       | -0.11                | -0.37 | 6.20       | -0.21                | -0.79 | TO         |
| GBUW23  | *         | 6.75       | 0.34                 | 1.18  | 6.95       | 0.54                 | 1.99  | TO         |
| H3FYLG  |           | 6.35       | -0.06                | -0.22 | 6.35       | -0.07                | -0.25 | XX         |
| H872FL  |           | 5.71       | -0.70                | -2.42 | 5.78       | -0.64                | -2.36 | TO         |
| HADQRP  | X         | 6.84       | 0.43                 | 1.49  | 6.36       | -0.05                | -0.20 | XX         |
| JAR7NJ  |           | 6.58       | 0.17                 | 0.60  | 6.59       | 0.18                 | 0.66  | TO         |
| JV8PFD  |           | 6.70       | 0.29                 | 1.01  | 6.60       | 0.19                 | 0.69  | TO         |
| KA8TEC  |           | 6.57       | 0.16                 | 0.54  | 6.39       | -0.02                | -0.09 | TO         |
| KFV7LR  |           | 6.45       | 0.04                 | 0.14  | 6.41       | -0.01                | -0.02 | GO         |





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 750

4th Qtr 2016

### Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

| WebCode | Data Flag | Sample X39 |                      |        | Sample X40 |                      |        | Instr Code |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |            |
| KLYFND  |           | 6.43       | 0.02                 | 0.07   | 6.43       | 0.02                 | 0.06   | KA         |
| KNR4BF  |           | 6.46       | 0.05                 | 0.16   | 6.44       | 0.03                 | 0.10   | TO         |
| KQGF7E  |           | 5.90       | -0.51                | -1.75  | 5.95       | -0.46                | -1.72  | TO         |
| L6CCLH  | X         | 6.90       | 0.49                 | 1.69   | 6.30       | -0.11                | -0.42  | TY         |
| M7HYUG  |           | 6.52       | 0.11                 | 0.37   | 6.48       | 0.07                 | 0.25   | DY         |
| MAXNXQ  |           | 6.80       | 0.39                 | 1.35   | 6.70       | 0.29                 | 1.06   | AT         |
| MPC28B  |           | 6.41       | 0.00                 | -0.01  | 6.38       | -0.03                | -0.12  | GO         |
| N3V2GB  |           | 6.60       | 0.19                 | 0.66   | 6.55       | 0.14                 | 0.51   | CE         |
| NC3977  |           | 5.86       | -0.55                | -1.89  | 5.85       | -0.56                | -2.09  | DA         |
| NFMXWA  |           | 6.40       | -0.01                | -0.03  | 6.47       | 0.06                 | 0.21   | TO         |
| NU32GJ  |           | 6.87       | 0.46                 | 1.59   | 6.86       | 0.44                 | 1.64   | TO         |
| NX48T6  | X         | 6.15       | -0.26                | -0.89  | 5.80       | -0.61                | -2.27  | TO         |
| P63E3H  |           | 6.50       | 0.09                 | 0.32   | 6.35       | -0.06                | -0.23  | TO         |
| PE7UNG  |           | 6.20       | -0.21                | -0.72  | 6.20       | -0.21                | -0.79  | TO         |
| PFJTV7  | X         | 0.31       | -6.10                | -21.00 | 0.32       | -6.10                | -22.61 | XX         |
| QG9YVA  | X         | 0.30       | -6.11                | -21.05 | 0.29       | -6.12                | -22.70 | GO         |
| QHJTJM  |           | 6.68       | 0.28                 | 0.95   | 6.82       | 0.40                 | 1.49   | XX         |
| QHZ8PB  |           | 6.53       | 0.12                 | 0.41   | 6.52       | 0.11                 | 0.40   | CE         |
| QZZ64Z  |           | 5.85       | -0.56                | -1.94  | 5.79       | -0.62                | -2.31  | DY         |
| T2R6D4  |           | 6.54       | 0.13                 | 0.46   | 6.55       | 0.14                 | 0.52   | TO         |
| UDUNB3  |           | 6.40       | -0.01                | -0.03  | 6.50       | 0.09                 | 0.32   | DY         |
| UFKR4A  |           | 6.66       | 0.25                 | 0.87   | 6.58       | 0.17                 | 0.62   | TO         |
| UJ2J94  |           | 6.17       | -0.23                | -0.81  | 6.24       | -0.17                | -0.63  | TO         |
| URVUET  |           | 7.01       | 0.60                 | 2.06   | 6.79       | 0.37                 | 1.38   | DY         |
| UX2T3H  | X         | 6.60       | 0.19                 | 0.66   | 6.15       | -0.26                | -0.97  | TO         |
| V2W9J4  |           | 6.20       | -0.21                | -0.72  | 6.35       | -0.06                | -0.23  | DY         |
| VX2D6B  |           | 6.54       | 0.13                 | 0.45   | 6.50       | 0.09                 | 0.32   | TO         |
| VYTE68  |           | 6.65       | 0.24                 | 0.83   | 6.70       | 0.29                 | 1.06   | TO         |
| VYWTH9  |           | 6.72       | 0.31                 | 1.06   | 6.58       | 0.16                 | 0.60   | TO         |
| WAP846  |           | 6.18       | -0.23                | -0.78  | 6.27       | -0.14                | -0.52  | TO         |
| WB3BKV  |           | 6.72       | 0.31                 | 1.08   | 6.44       | 0.03                 | 0.10   | DY         |
| WVTKNH  |           | 6.35       | -0.06                | -0.20  | 6.25       | -0.16                | -0.60  | GO         |
| WY7R23  | *         | 6.57       | 0.16                 | 0.56   | 6.84       | 0.42                 | 1.57   | XX         |
| WYNLYR  |           | 6.47       | 0.06                 | 0.20   | 6.68       | 0.26                 | 0.97   | TO         |
| XA2Z2X  |           | 6.12       | -0.29                | -0.99  | 6.11       | -0.31                | -1.14  | TY         |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 750**

**4th Qtr 2016**

**Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins**

| WebCode | Data Flag | Sample X39 |                      |        | Sample X40 |                      |        | Instr Code |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |            |
| XA86M2  |           | 6.29       | -0.12                | -0.42  | 6.24       | -0.17                | -0.64  | TO         |
| XD4U49  |           | 6.05       | -0.36                | -1.23  | 6.30       | -0.11                | -0.42  | TO         |
| XJQJQ4  |           | 6.91       | 0.50                 | 1.71   | 6.95       | 0.53                 | 1.97   | TO         |
| XKJE6Z  |           | 6.60       | 0.19                 | 0.66   | 6.75       | 0.34                 | 1.25   | TO         |
| XLFNJB  | *         | 5.72       | -0.69                | -2.37  | 6.01       | -0.40                | -1.49  | TO         |
| XRKPHJ  |           | 6.52       | 0.11                 | 0.38   | 6.58       | 0.16                 | 0.60   | TO         |
| XVZRDB  | X         | 0.58       | -5.82                | -20.07 | 0.53       | -5.88                | -21.82 | TO         |
| Y8EGZZ  |           | 6.94       | 0.53                 | 1.84   | 6.76       | 0.34                 | 1.27   | TO         |
| YBEMJC  |           | 6.35       | -0.06                | -0.22  | 6.45       | 0.03                 | 0.12   | GO         |
| YQ7JGZ  |           | 6.39       | -0.02                | -0.06  | 6.50       | 0.08                 | 0.30   | DY         |
| YVWY32  |           | 6.00       | -0.41                | -1.41  | 6.00       | -0.41                | -1.53  | TO         |
| Z68H6X  |           | 6.55       | 0.14                 | 0.49   | 6.70       | 0.29                 | 1.06   | TO         |
| Z9KDP2  |           | 6.44       | 0.03                 | 0.11   | 6.27       | -0.15                | -0.55  | CE         |
| ZPALKD  | X         | 6.50       | 0.09                 | 0.32   | 5.90       | -0.51                | -1.90  | XX         |
| ZU2T68  |           | 6.25       | -0.16                | -0.55  | 6.28       | -0.13                | -0.49  | TO         |

| Summary Statistics                                  |                     |                     |
|---|---------------------|---------------------|
|   | Sample X39          | Sample X40          |
| <b>Grand Means</b>                                  | 6.408 grams/10 mins | 6.413 grams/10 mins |
| <b>Stnd Dev Btwn Labs</b>                           | 0.290 grams/10 mins | 0.270 grams/10 mins |
| Statistics based on 73 of 85 reporting participants |                     |                     |

Sample X39: LDPE & Sample X40: LDPE



**Comments on Assigned Data Flags for Test #750**

- 4MU9Q2 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample X40.
- ECC7ZH (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- 2H67AW (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample X40.
- L6CCLH (X) - Inconsistent in testing between samples.
- UX2T3H (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- ZPALKD (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample X39.
- QG9YVA (X) - Extreme data.
- NX48T6 (X) - Inconsistent in testing between samples.
- PFJTV7 (X) - Extreme data.
- 9EH9CM (X) - Inconsistent in testing between samples.
- XVZRDB (X) - Extreme data.
- HADQRP (X) - Inconsistent in testing between samples.

**Key to Instrument Codes Reported by Participants**

|    |  |    |              |
|----|--|----|--------------|
| AT | Atlas  | CE | Ceast        |
| DA | Davenport                                    | DY | Dynisco      |
| GO | Gottfert                                     | KA | Kayeness     |
| TM | TMI  | TO | Tinius Olsen |
| TY | Toyoseiki Seisakusho                         | WZ | Zwick        |
| XX | Instrument manufacturer not specified by lab |    |              |



# Plastics Interlaboratory Testing Program

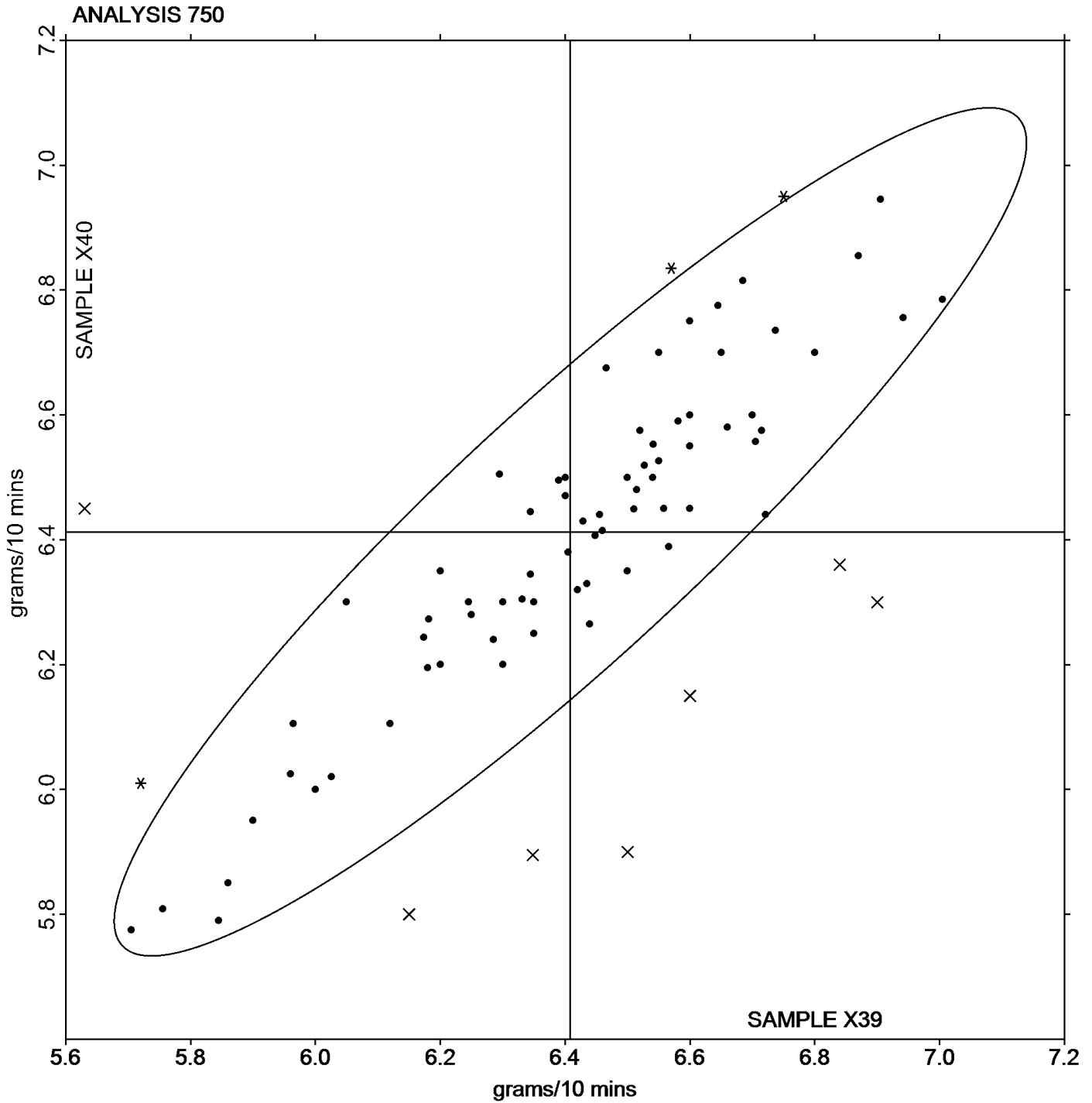
Report #100

## Analysis 750

4th Qtr 2016

Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

Grand Mean Sample X39: 6.4083 grams/10 mins    Grand Mean Sample X40: 6.4128 grams/10 mins





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 755

4th Qtr 2016

### Moisture Content of Plastics

| WebCode | Data Flag | Sample Y39 |                      |       | Sample Y40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 2H67AW  | *         | 0.04333    | 0.01771              | 1.87  | 0.03183    | 0.00298              | 0.34  | MK         |
| 2HLVNP  |           | 0.04400    | 0.01837              | 1.95  | 0.04800    | 0.01914              | 2.17  | SB         |
| 3UG48R  |           | 0.01150    | -0.01413             | -1.50 | 0.01800    | -0.01086             | -1.23 | CT         |
| 3V4EPP  |           | 0.01867    | -0.00696             | -0.74 | 0.01933    | -0.00952             | -1.08 | MU         |
| 4XPJWM  |           | 0.02323    | -0.00239             | -0.25 | 0.03517    | 0.00631              | 0.71  | MU         |
| 7GFAAR  |           | 0.02417    | -0.00146             | -0.15 | 0.02913    | 0.00028              | 0.03  | XX         |
| 7TANDV  |           | 0.02193    | -0.00369             | -0.39 | 0.02847    | -0.00039             | -0.04 | AZ         |
| 7VEDCX  |           | 0.02600    | 0.00037              | 0.04  | 0.03333    | 0.00448              | 0.51  | MI         |
| 9R4AHX  |           | 0.02900    | 0.00337              | 0.36  | 0.03500    | 0.00614              | 0.70  | MK         |
| A7PR8V  |           | 0.02487    | -0.00076             | -0.08 | 0.02887    | 0.00001              | 0.00  | MR         |
| BPX9TK  |           | 0.02267    | -0.00296             | -0.31 | 0.02900    | 0.00014              | 0.02  | PA         |
| BTXH22  |           | 0.02033    | -0.00529             | -0.56 | 0.03167    | 0.00281              | 0.32  | MJ         |
| BUPLNG  |           | 0.02050    | -0.00513             | -0.54 | 0.02050    | -0.00836             | -0.95 | CT         |
| C94X9A  |           | 0.03400    | 0.00837              | 0.89  | 0.03700    | 0.00814              | 0.92  | SA         |
| CUHH6A  |           | 0.03100    | 0.00537              | 0.57  | 0.02900    | 0.00014              | 0.02  | SB         |
| DDQ679  |           | 0.02433    | -0.00129             | -0.14 | 0.02933    | 0.00048              | 0.05  | MK         |
| E4GVE9  |           | 0.03057    | 0.00494              | 0.52  | 0.03433    | 0.00548              | 0.62  | MU         |
| EN4P3A  |           | 0.02800    | 0.00237              | 0.25  | 0.03500    | 0.00614              | 0.70  | ML         |
| F9AC9E  | X         | 0.04100    | 0.01537              | 1.63  | 0.06600    | 0.03714              | 4.20  | MB         |
| JAR7NJ  |           | 0.02630    | 0.00067              | 0.07  | 0.02657    | -0.00229             | -0.26 | AQ         |
| K4GEUB  |           | 0.01936    | -0.00627             | -0.66 | 0.02035    | -0.00851             | -0.96 | CS         |
| KA8TEC  |           | 0.02741    | 0.00178              | 0.19  | 0.03649    | 0.00763              | 0.86  | CT         |
| L8ZKNK  |           | 0.02133    | -0.00429             | -0.45 | 0.02633    | -0.00252             | -0.29 | MK         |
| NAD8HN  |           | 0.02500    | -0.00063             | -0.07 | 0.02107    | -0.00779             | -0.88 | MR         |
| NU32GJ  |           | 0.02500    | -0.00063             | -0.07 | 0.02300    | -0.00586             | -0.66 | CT         |
| NX48T6  | X         | 0.10833    | 0.08271              | 8.76  | 0.09533    | 0.06648              | 7.52  | MU         |
| PE7UNG  | X         | 0.10433    | 0.07871              | 8.33  | 0.08033    | 0.05148              | 5.82  | MU         |
| PM22J3  |           | 0.02467    | -0.00096             | -0.10 | 0.02733    | -0.00152             | -0.17 | ML         |
| UFKR4A  | *         | 0.00577    | -0.01986             | -2.10 | 0.00490    | -0.02396             | -2.71 | AZ         |
| V2W9J4  |           | 0.02967    | 0.00404              | 0.43  | 0.03467    | 0.00581              | 0.66  | AZ         |
| VYTE68  | X         | 0.11033    | 0.08471              | 8.97  | 0.11033    | 0.08148              | 9.22  | SA         |
| WAP846  |           | 0.00647    | -0.01916             | -2.03 | 0.01570    | -0.01316             | -1.49 | CT         |
| WB44MA  |           | 0.02796    | 0.00233              | 0.25  | 0.03220    | 0.00334              | 0.38  | MJ         |
| WJVGKN  |           | 0.02238    | -0.00325             | -0.34 | 0.02469    | -0.00417             | -0.47 | MK         |
| XHYVG4  |           | 0.02363    | -0.00199             | -0.21 | 0.02430    | -0.00456             | -0.52 | ML         |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 755

4th Qtr 2016

### Moisture Content of Plastics

| WebCode | Data Flag | Sample Y39 |                      |      | Sample Y40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV  | Lab Mean   | Diff from Grand Mean | CPV   |            |
| XVZRDB  | X         | 0.05667    | 0.03104              | 3.29 | 0.02000    | -0.00886             | -1.00 | MU         |
| XWENWF  |           | 0.02767    | 0.00204              | 0.22 | 0.02967    | 0.00081              | 0.09  | MT         |
| YQ7JGZ  | *         | 0.05500    | 0.02937              | 3.11 | 0.05200    | 0.02314              | 2.62  | MB         |
| Z68H6X  | X         | 0.06867    | 0.04304              | 4.56 | 0.07500    | 0.04614              | 5.22  | MU         |

#### Summary Statistics

|   | Sample Y39       | Sample Y40       |
|---|------------------|------------------|
| <b>Grand Means</b>                                  | 0.025628 Percent | 0.028855 Percent |
| <b>Stnd Dev Btwn Labs</b>                           | 0.009444 Percent | 0.008838 Percent |
| Statistics based on 33 of 39 reporting participants |                  |                  |

Sample Y39: HIPS & Sample Y40: HIPS

#### Comments on Assigned Data Flags for Test #755

- VYTE68 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- Z68H6X (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample Y40.
- PE7UNG (X) - Data for both samples are high. Possible Systematic Error.
- NX48T6 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample Y40.
- F9AC9E (X) - Data for sample Y40 are high.
- XVZRDB (X) - Data for sample Y39 are high. Inconsistent within the determinations of sample Y40.

#### Key to Instrument Codes Reported by Participants

|    |                               |    |  |
|----|-------------------------------|----|--|
| AQ | Aquastar                      | AZ | Arizona Instruments Moisture Analyzer        |
| CS | Cosa Instruments              | CT | Computrac Moisture Analyzer                  |
| MB | Omnimark Mark 3               | MI | Mitsubishi MCI Series                        |
| MJ | Mitsubishi KF Analyzer Series | MK | Mitsubishi KF Analyzer CA                    |
| ML | Metrohm Coulometer            | MR | Metrohm Coulineter 756 KF                    |
| MT | Mettler Toledo DL39           | MU | Mettler Toledo                               |
| PA | Photovolt Aquatest            | SA | Sartorius MA30                               |
| SB | Sartorius Mark 3              | XX | Instrument manufacturer not specified by lab |





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 757

4th Qtr 2016

### Ash Content in Thermoplastics - Percent

| WebCode | Data Flag | Sample L39 |                      |       | Sample L40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 2H67AW  |           | 14.923     | -0.032               | -0.23 | 14.992     | 0.048                | 0.40  |
| 2ZZAZT  | X         | 15.800     | 0.846                | 6.23  | 15.250     | 0.306                | 2.57  |
| 33PVBV  |           | 15.145     | 0.191                | 1.40  | 15.025     | 0.081                | 0.68  |
| 3CUH6T  |           | 15.060     | 0.106                | 0.78  | 15.075     | 0.131                | 1.10  |
| 3GCF4H  |           | 15.100     | 0.146                | 1.07  | 14.950     | 0.006                | 0.05  |
| 3GKU6W  |           | 15.020     | 0.066                | 0.48  | 14.920     | -0.024               | -0.20 |
| 4MU9Q2  | *         | 14.805     | -0.149               | -1.10 | 15.165     | 0.221                | 1.86  |
| 4XPJWM  |           | 15.090     | 0.136                | 1.00  | 15.005     | 0.061                | 0.51  |
| 67GNJF  |           | 15.040     | 0.086                | 0.63  | 15.015     | 0.071                | 0.60  |
| 6X3ZHM  | X         | 14.390     | -0.564               | -4.16 | 14.685     | -0.259               | -2.18 |
| 7GFAAR  |           | 15.010     | 0.056                | 0.41  | 14.865     | -0.079               | -0.66 |
| 8CWWLA  |           | 15.060     | 0.106                | 0.78  | 14.960     | 0.016                | 0.13  |
| 8JHUBX  |           | 14.620     | -0.334               | -2.46 | 14.745     | -0.199               | -1.67 |
| 9KQYQ8  |           | 14.939     | -0.016               | -0.12 | 14.952     | 0.008                | 0.07  |
| 9MC7PU  |           | 15.120     | 0.166                | 1.22  | 15.110     | 0.166                | 1.40  |
| 9R4AHX  |           | 15.005     | 0.051                | 0.37  | 15.020     | 0.076                | 0.64  |
| 9XDX8F  |           | 15.067     | 0.112                | 0.83  | 15.134     | 0.190                | 1.60  |
| A696LF  |           | 14.881     | -0.074               | -0.54 | 14.885     | -0.059               | -0.50 |
| A7PR8V  |           | 15.110     | 0.156                | 1.15  | 14.965     | 0.021                | 0.18  |
| AXPMV7  |           | 14.885     | -0.069               | -0.51 | 14.800     | -0.144               | -1.21 |
| BUPLNG  |           | 14.970     | 0.016                | 0.11  | 14.945     | 0.001                | 0.01  |
| C94X9A  |           | 14.962     | 0.008                | 0.06  | 14.859     | -0.085               | -0.71 |
| CUHH6A  | *         | 14.630     | -0.324               | -2.39 | 14.610     | -0.334               | -2.81 |
| E4GVE9  |           | 15.030     | 0.075                | 0.55  | 15.097     | 0.153                | 1.29  |
| F9AC9E  |           | 14.790     | -0.164               | -1.21 | 14.905     | -0.039               | -0.33 |
| FXTZ7V  |           | 15.018     | 0.064                | 0.47  | 15.223     | 0.279                | 2.35  |
| GBUW23  |           | 14.790     | -0.164               | -1.21 | 14.825     | -0.119               | -1.00 |
| GCMERP  |           | 14.910     | -0.044               | -0.33 | 14.930     | -0.014               | -0.12 |
| GN2EKC  |           | 15.065     | 0.111                | 0.81  | 14.800     | -0.144               | -1.21 |
| K3BRJR  |           | 14.960     | 0.006                | 0.04  | 14.945     | 0.001                | 0.01  |
| KFV7LR  |           | 15.204     | 0.250                | 1.84  | 14.973     | 0.028                | 0.24  |
| KNR4BF  |           | 14.830     | -0.124               | -0.92 | 14.929     | -0.016               | -0.13 |
| KUELEC  |           | 14.858     | -0.097               | -0.71 | 14.949     | 0.004                | 0.04  |
| L8ZNKN  |           | 15.035     | 0.081                | 0.59  | 14.945     | 0.001                | 0.01  |
| M7HYUG  |           | 14.990     | 0.036                | 0.26  | 14.980     | 0.036                | 0.30  |





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 757**

**4th Qtr 2016**

**Ash Content in Thermoplastics - Percent**

| WebCode | Data Flag | Sample L39 |                      |       | Sample L40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| NAD8HN  |           | 14.995     | 0.041                | 0.30  | 15.000     | 0.056                | 0.47  |
| NFMXWA  |           | 15.170     | 0.216                | 1.59  | 15.110     | 0.166                | 1.40  |
| NU32GJ  |           | 14.935     | -0.019               | -0.14 | 14.895     | -0.049               | -0.41 |
| PE7UNG  |           | 14.820     | -0.134               | -0.99 | 14.980     | 0.036                | 0.30  |
| QG9YVA  | X         | 15.620     | 0.666                | 4.90  | 14.930     | -0.014               | -0.12 |
| UFKR4A  |           | 14.895     | -0.059               | -0.44 | 14.715     | -0.229               | -1.93 |
| UMJAK7  |           | 15.051     | 0.097                | 0.71  | 14.886     | -0.058               | -0.48 |
| URVUET  |           | 14.835     | -0.119               | -0.88 | 14.835     | -0.109               | -0.92 |
| V2W9J4  |           | 14.700     | -0.254               | -1.87 | 14.810     | -0.134               | -1.13 |
| VYTE68  |           | 14.905     | -0.049               | -0.36 | 15.045     | 0.101                | 0.85  |
| VYWTH9  |           | 14.901     | -0.053               | -0.39 | 14.859     | -0.085               | -0.71 |
| WAP846  |           | 15.068     | 0.113                | 0.83  | 14.948     | 0.003                | 0.03  |
| WB3BKV  | X         | 15.515     | 0.561                | 4.13  | 14.950     | 0.006                | 0.05  |
| XVZRDB  | X         | 15.351     | 0.396                | 2.92  | 14.869     | -0.075               | -0.63 |
| Y8EGZZ  |           | 14.848     | -0.106               | -0.78 | 15.006     | 0.061                | 0.52  |
| YQ7JGZ  |           | 14.795     | -0.159               | -1.17 | 14.775     | -0.169               | -1.42 |
| Z3J4H9  |           | 14.762     | -0.192               | -1.41 | 15.017     | 0.073                | 0.61  |
| Z68H6X  |           | 15.150     | 0.196                | 1.44  | 15.065     | 0.121                | 1.02  |
| ZPALKD  |           | 14.915     | -0.039               | -0.29 | 14.805     | -0.139               | -1.17 |
| ZU2T68  |           | 15.055     | 0.101                | 0.74  | 14.955     | 0.011                | 0.09  |

| Summary Statistics                                  |                 |                 |
|---|-----------------|-----------------|
|   | Sample L39      | Sample L40      |
| <b>Grand Means</b>                                  | 14.9544 Percent | 14.9440 Percent |
| <b>Std Dev Btwn Labs</b>                            | 0.1358 Percent  | 0.1189 Percent  |
| Statistics based on 50 of 55 reporting participants |                 |                 |

Sample L39: PBT & Sample L40: PBT

**Comments on Assigned Data Flags for Test #757**

- QG9YVA (X) - Data for sample L39 are high.
- WB3BKV (X) - Data for sample L39 are high. Inconsistent within the determinations of sample L39.
- 2ZZAZT (X) - Data for sample L39 are high.
- 6X3ZHM (X) - Data for sample L39 are low. Inconsistent within the determinations of sample L40.
- XVZRDB (X) - Data for sample L39 are high.



# Plastics Interlaboratory Testing Program

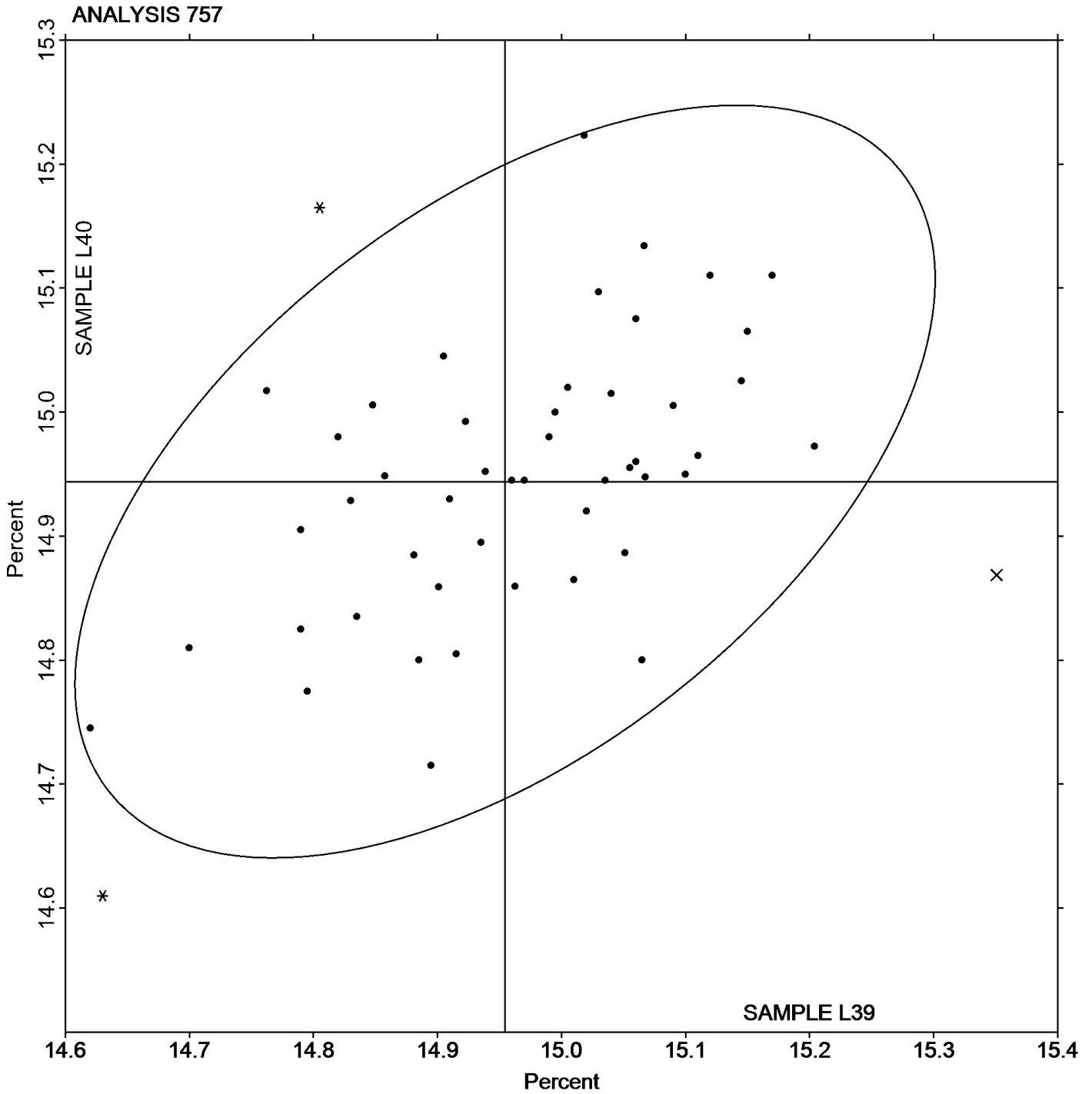
## Analysis 757

### Ash Content in Thermoplastics - Percent

Report #100

4th Qtr 2016

Grand Mean Sample L39: 14.954 Percent    Grand Mean Sample L40: 14.944 Percent





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 760**

**4th Qtr 2016**

**DSC Crystallization Temperature**

| WebCode | Data Flag | <u>Sample W39</u> |                      |       | <u>Sample W40</u> |                      |       | Instr Code |
|---------|-----------|-------------------|----------------------|-------|-------------------|----------------------|-------|------------|
|         |           | Lab Mean          | Diff from Grand Mean | CPV   | Lab Mean          | Diff from Grand Mean | CPV   |            |
| 3V4EPP  |           | 176.60            | 0.30                 | 0.08  | 197.03            | 1.06                 | 0.37  | TA         |
| 8JHUBX  |           | 174.88            | -1.42                | -0.39 | 192.60            | -3.38                | -1.17 | TA         |
| 9R4AHX  |           | 173.63            | -2.67                | -0.73 | 196.70            | 0.72                 | 0.25  | TA         |
| DVW6JH  |           | 178.73            | 2.43                 | 0.67  | 197.30            | 1.32                 | 0.46  | XX         |
| JYCKDH  |           | 179.77            | 3.47                 | 0.95  | 191.92            | -4.06                | -1.41 | TA         |
| KA8TEC  |           | 182.84            | 6.54                 | 1.80  | 195.30            | -0.68                | -0.24 | TA         |
| KFV7LR  |           | 174.30            | -2.00                | -0.55 | 198.90            | 2.92                 | 1.01  | TA         |
| KNR4BF  |           | 175.12            | -1.18                | -0.32 | 195.48            | -0.50                | -0.17 | TA         |
| KXBAVJ  |           | 174.15            | -2.15                | -0.59 | 190.73            | -5.25                | -1.82 | TA         |
| L6CCLH  |           | 181.70            | 5.40                 | 1.48  | 202.33            | 6.35                 | 2.20  | XX         |
| MAXNXQ  |           | 173.23            | -3.07                | -0.84 | 196.47            | 0.49                 | 0.17  | MT         |
| N3V2GB  |           | 172.33            | -3.97                | -1.09 | 195.93            | -0.04                | -0.02 | PE         |
| NVF2M8  |           | 179.44            | 3.14                 | 0.86  | 196.04            | 0.06                 | 0.02  | TA         |
| NX48T6  |           | 172.44            | -3.86                | -1.06 | 192.67            | -3.31                | -1.15 | MT         |
| PFJTV7  |           | 181.68            | 5.38                 | 1.48  | 195.81            | -0.16                | -0.06 | TA         |
| YBEMJC  |           | 174.47            | -1.83                | -0.50 | 199.53            | 3.56                 | 1.23  | TA         |
| ZPALKD  |           | 171.77            | -4.53                | -1.25 | 196.90            | 0.92                 | 0.32  | TA         |

**Summary Statistics**

|                          | <u>Sample W39</u>       | <u>Sample W40</u>       |
|--------------------------|-------------------------|-------------------------|
| <b>Grand Means</b>       | 176.300 Degrees Celsius | 195.978 Degrees Celsius |
| <b>Std Dev Btwn Labs</b> | 3.639 Degrees Celsius   | 2.885 Degrees Celsius   |

Statistics based on 17 of 17 reporting participants

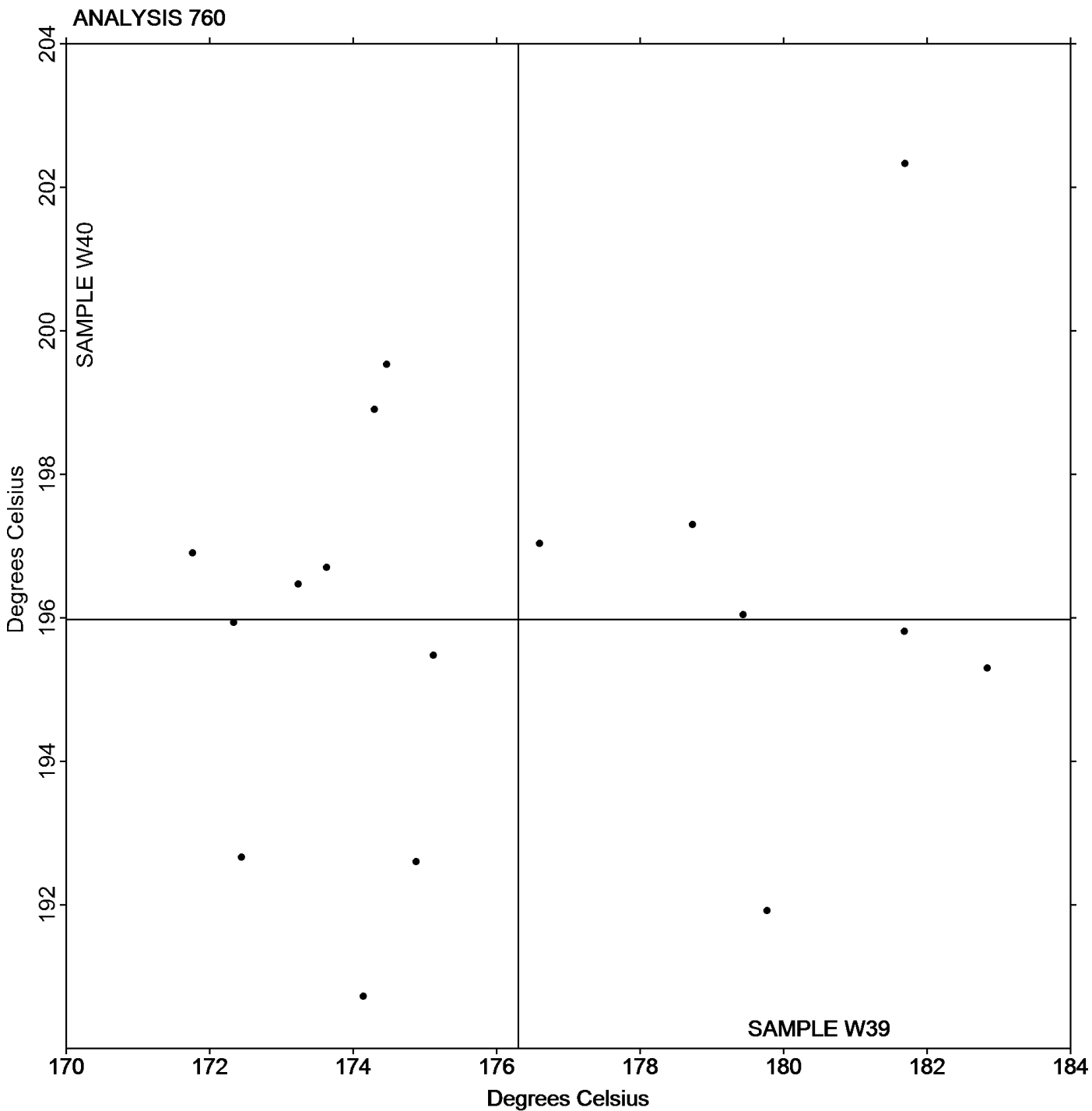
Sample W39: PBT & Sample W40: PBT

**Key to Instrument Codes Reported by Participants**

- MT Mettler Toledo Instruments
- PE Perkins Elmer Instruments
- TA TA Instruments
- XX Instrument manufacturer not specified by lab



Grand Mean Sample W39: 176.30 Degrees Celsius    Grand Mean Sample W40: 195.98 Degrees Celsius





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 761**

**4th Qtr 2016**

**DSC Melt Temperature**

| WebCode | Data Flag | Sample W39 |                      |       | Sample W40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3V4EPP  |           | 225.63     | 1.31                 | 0.84  | 223.93     | 2.41                 | 1.38  | TA         |
| 4MU9Q2  |           | 224.70     | 0.38                 | 0.24  | 222.80     | 1.27                 | 0.73  | TA         |
| 8JHUBX  |           | 224.28     | -0.04                | -0.03 | 218.85     | -2.67                | -1.54 | XX         |
| 9R4AHX  |           | 226.67     | 2.35                 | 1.50  | 222.97     | 1.44                 | 0.83  | TA         |
| DVW6JH  |           | 224.27     | -0.05                | -0.03 | 222.83     | 1.31                 | 0.75  | XX         |
| JYCKDH  |           | 225.01     | 0.69                 | 0.44  | 223.71     | 2.18                 | 1.25  | TA         |
| KA8TEC  |           | 224.49     | 0.17                 | 0.11  | 218.65     | -2.88                | -1.65 | TA         |
| KFV7LR  |           | 223.03     | -1.29                | -0.82 | 221.07     | -0.46                | -0.27 | TA         |
| KNR4BF  |           | 226.17     | 1.85                 | 1.18  | 221.03     | -0.50                | -0.29 | TA         |
| KXBAVJ  |           | 223.76     | -0.56                | -0.36 | 218.30     | -3.22                | -1.85 | TA         |
| L6CCLH  |           | 222.08     | -2.24                | -1.43 | 220.22     | -1.31                | -0.75 | SH         |
| MAXNXQ  |           | 222.97     | -1.35                | -0.86 | 222.00     | 0.47                 | 0.27  | MT         |
| N3V2GB  |           | 222.87     | -1.45                | -0.93 | 220.80     | -0.73                | -0.42 | PE         |
| NVF2M8  |           | 228.57     | 4.25                 | 2.71  | 221.90     | 0.37                 | 0.21  | TA         |
| NX48T6  |           | 223.22     | -1.10                | -0.70 | 224.00     | 2.47                 | 1.42  | MT         |
| PFJTV7  |           | 225.21     | 0.89                 | 0.57  | 220.30     | -1.23                | -0.71 | TA         |
| WJVGKN  |           | 223.13     | -1.19                | -0.76 | 223.69     | 2.17                 | 1.24  | MT         |
| Y8EGZZ  |           | 223.29     | -1.03                | -0.66 | 221.16     | -0.37                | -0.21 | TA         |
| YBEMJC  |           | 222.97     | -1.35                | -0.86 | 221.23     | -0.29                | -0.17 | TA         |
| ZPALKD  |           | 224.07     | -0.25                | -0.16 | 221.13     | -0.40                | -0.23 | XX         |

**Summary Statistics**

|                           | Sample W39              | Sample W40              |
|---------------------------|-------------------------|-------------------------|
| <b>Grand Means</b>        | 224.319 Degrees Celsius | 221.528 Degrees Celsius |
| <b>Stnd Dev Btwn Labs</b> | 1.568 Degrees Celsius   | 1.740 Degrees Celsius   |

Statistics based on 20 of 20 reporting participants

Sample W39: PBT & Sample W40: PBT

**Key to Instrument Codes Reported by Participants**

- MT Mettler Toledo Instruments
- SH Shimadzu
- XX Instrument manufacturer not specified by lab
- PE Perkins Elmer Instruments
- TA TA Instruments



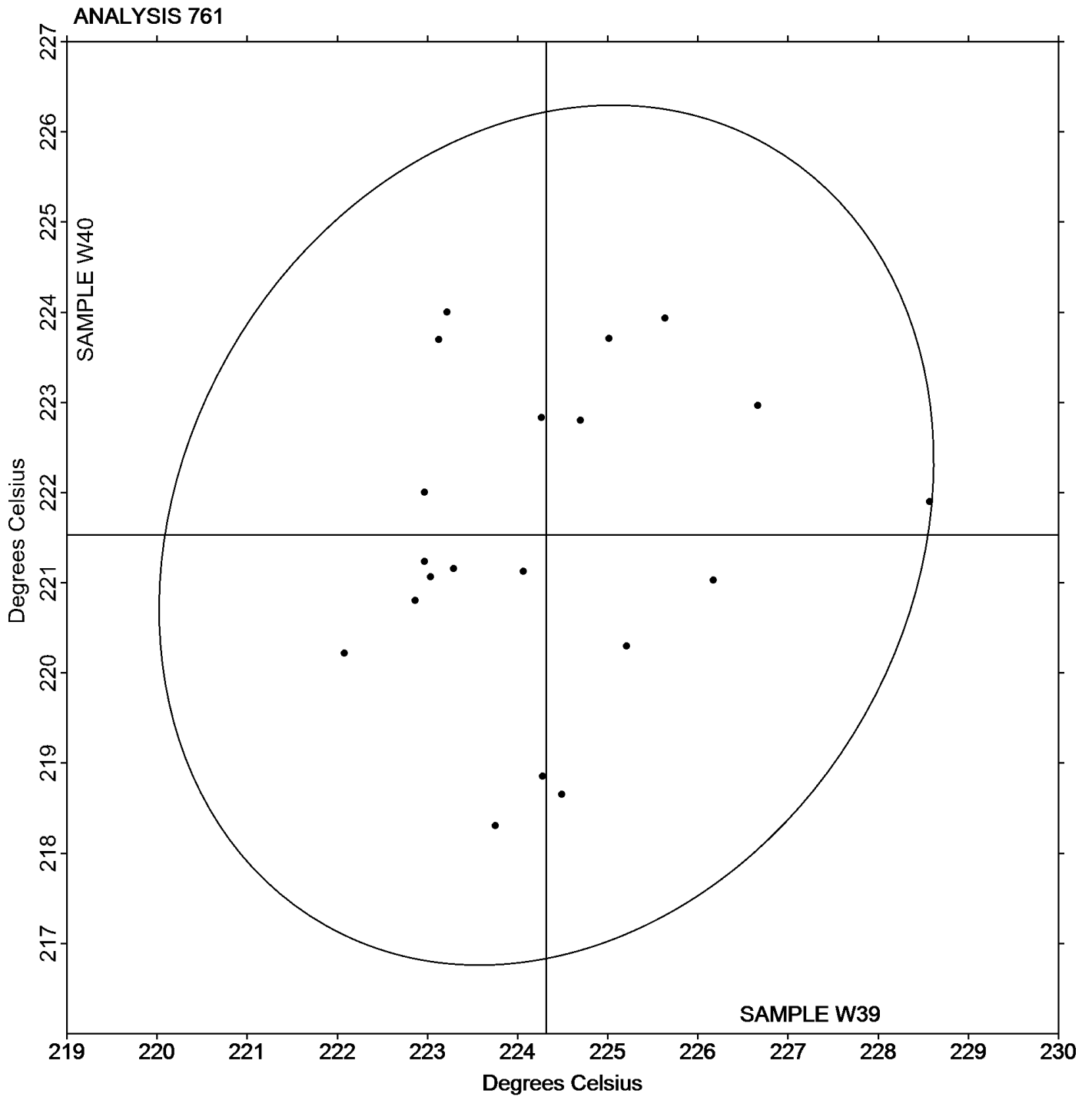
# Plastics Interlaboratory Testing Program

Analysis 761  
DSC Melt Temperature

Report #100

4th Qtr 2016

Grand Mean Sample W39: 224.32 Degrees Celsius    Grand Mean Sample W40: 221.53 Degrees Celsius





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 762**

**4th Qtr 2016**

**DSC Enthalpy of Crystallization**

| WebCode | Data Flag | <u>Sample W39</u> |                      |       | <u>Sample W40</u> |                      |       | Instr Code |
|---------|-----------|-------------------|----------------------|-------|-------------------|----------------------|-------|------------|
|         |           | Lab Mean          | Diff from Grand Mean | CPV   | Lab Mean          | Diff from Grand Mean | CPV   |            |
| 9R4AHX  |           | 46.86             | -0.44                | -0.10 | 22.89             | 0.14                 | 0.05  | TA         |
| DVW6JH  |           | 46.18             | -1.12                | -0.25 | 27.97             | 5.22                 | 1.76  | XX         |
| JYCKDH  |           | 39.92             | -7.38                | -1.66 | 17.94             | -4.81                | -1.62 | TA         |
| KA8TEC  |           | 51.88             | 4.58                 | 1.03  | 21.23             | -1.52                | -0.51 | TA         |
| KFV7LR  |           | 50.22             | 2.92                 | 0.66  | 24.76             | 2.00                 | 0.67  | TA         |
| KNR4BF  |           | 49.60             | 2.30                 | 0.52  | 23.70             | 0.94                 | 0.32  | TA         |
| KXBAVJ  |           | 53.55             | 6.25                 | 1.41  | 24.79             | 2.03                 | 0.68  | TA         |
| L6CCLH  |           | 42.58             | -4.72                | -1.06 | 22.53             | -0.23                | -0.08 | XX         |
| MAXNXQ  |           | 45.70             | -1.60                | -0.36 | 21.70             | -1.06                | -0.36 | MT         |
| N3V2GB  |           | 46.97             | -0.33                | -0.07 | 23.84             | 1.08                 | 0.36  | PE         |
| NVF2M8  |           | 45.13             | -2.17                | -0.49 | 17.14             | -5.62                | -1.89 | TA         |
| PFJTV7  |           | 54.29             | 6.99                 | 1.57  | 25.75             | 2.99                 | 1.01  | TA         |
| YBEMJC  |           | 42.00             | -5.30                | -1.19 | 21.57             | -1.19                | -0.40 | TA         |

**Summary Statistics**

|                          | <u>Sample W39</u>      | <u>Sample W40</u>      |
|--------------------------|------------------------|------------------------|
| <b>Grand Means</b>       | 47.299 Joules Per Gram | 22.753 Joules Per Gram |
| <b>Std Dev Btwn Labs</b> | 4.439 Joules Per Gram  | 2.972 Joules Per Gram  |

Statistics based on 13 of 13 reporting participants

Sample W39: PBT & Sample W40: PBT

**Key to Instrument Codes Reported by Participants**

- MT Mettler Toledo Instruments
- PE Perkins Elmer Instruments
- TA TA Instruments
- XX Instrument manufacturer not specified by lab







**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 763**

**4th Qtr 2016**

**DSC Enthalpy of Fusion**

| WebCode | Data Flag | <u>Sample W39</u> |                      |       | <u>Sample W40</u> |                      |       | Instr Code |
|---------|-----------|-------------------|----------------------|-------|-------------------|----------------------|-------|------------|
|         |           | Lab Mean          | Diff from Grand Mean | CPV   | Lab Mean          | Diff from Grand Mean | CPV   |            |
| 9R4AHX  |           | 39.70             | -0.33                | -0.07 | 22.86             | -0.18                | -0.08 | TA         |
| DVW6JH  |           | 46.03             | 6.00                 | 1.25  | 25.01             | 1.96                 | 0.90  | XX         |
| JYCKDH  |           | 38.65             | -1.38                | -0.29 | 22.60             | -0.44                | -0.20 | TA         |
| KA8TEC  |           | 43.32             | 3.30                 | 0.69  | 22.75             | -0.29                | -0.13 | TA         |
| KFV7LR  |           | 39.60             | -0.43                | -0.09 | 24.47             | 1.42                 | 0.65  | TA         |
| KNR4BF  |           | 36.76             | -3.27                | -0.68 | 24.09             | 1.05                 | 0.48  | TA         |
| KXBAVJ  |           | 43.21             | 3.18                 | 0.66  | 23.83             | 0.78                 | 0.36  | TA         |
| L6CCLH  |           | 36.98             | -3.04                | -0.63 | 24.50             | 1.45                 | 0.67  | XX         |
| MAXNXQ  |           | 34.81             | -5.21                | -1.09 | 21.53             | -1.51                | -0.70 | MT         |
| N3V2GB  |           | 41.75             | 1.72                 | 0.36  | 23.19             | 0.15                 | 0.07  | PE         |
| NVF2M8  | *         | 33.31             | -6.72                | -1.40 | 16.57             | -6.47                | -2.98 | TA         |
| PFJTV7  |           | 50.30             | 10.27                | 2.14  | 24.45             | 1.40                 | 0.65  | TA         |
| YBEMJC  |           | 35.93             | -4.09                | -0.85 | 23.73             | 0.69                 | 0.32  | TA         |

**Summary Statistics**

|                          | <u>Sample W39</u>      | <u>Sample W40</u>      |
|--------------------------|------------------------|------------------------|
| <b>Grand Means</b>       | 40.026 Joules Per Gram | 23.046 Joules Per Gram |
| <b>Std Dev Btwn Labs</b> | 4.802 Joules Per Gram  | 2.173 Joules Per Gram  |

Statistics based on 13 of 13 reporting participants

Sample W39: PBT & Sample W40: PBT

**Key to Instrument Codes Reported by Participants**

- MT Mettler Toledo Instruments
- PE Perkins Elmer Instruments
- TA TA Instruments
- XX Instrument manufacturer not specified by lab





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 764**

**4th Qtr 2016**

**DSC Glass Transition Temperature**

| WebCode | Data Flag | Sample V39 |                      |       | Sample V40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 9R4AHX  |           | 88.57      | 2.55                 | 1.02  | 88.40      | 2.25                 | 0.97  | TA         |
| DVW6JH  |           | 82.63      | -3.38                | -1.36 | 82.57      | -3.59                | -1.55 | XX         |
| JYCKDH  |           | 90.51      | 4.50                 | 1.81  | 90.32      | 4.17                 | 1.80  | TA         |
| KA8TEC  |           | 84.01      | -2.00                | -0.80 | 84.00      | -2.15                | -0.93 | TA         |
| KFV7LR  |           | 85.57      | -0.45                | -0.18 | 86.03      | -0.12                | -0.05 | TA         |
| KNR4BF  |           | 87.52      | 1.50                 | 0.60  | 87.67      | 1.51                 | 0.65  | TA         |
| KXBAVJ  |           | 86.71      | 0.70                 | 0.28  | 86.97      | 0.82                 | 0.35  | TA         |
| L6CCLH  |           | 81.41      | -4.60                | -1.85 | 82.37      | -3.78                | -1.63 | XX         |
| MAXNXQ  |           | 86.10      | 0.09                 | 0.03  | 85.97      | -0.19                | -0.08 | MT         |
| N3V2GB  |           | 88.20      | 2.19                 | 0.88  | 88.10      | 1.95                 | 0.84  | PE         |
| NVF2M8  |           | 83.47      | -2.54                | -1.02 | 83.54      | -2.62                | -1.13 | TA         |
| NX48T6  |           | 86.63      | 0.62                 | 0.25  | 86.40      | 0.25                 | 0.11  | MT         |
| PFJTV7  |           | 85.34      | -0.68                | -0.27 | 86.25      | 0.09                 | 0.04  | TA         |
| YBEMJC  |           | 87.53      | 1.52                 | 0.61  | 87.57      | 1.41                 | 0.61  | TA         |

| Summary Statistics                                  |                        |                        |
|---|------------------------|------------------------|
|   | Sample V39             | Sample V40             |
| <b>Grand Means</b>                                  | 86.015 Degrees Celsius | 86.154 Degrees Celsius |
| <b>Stnd Dev Btwn Labs</b>                           | 2.491 Degrees Celsius  | 2.320 Degrees Celsius  |
| Statistics based on 14 of 14 reporting participants |                        |                        |

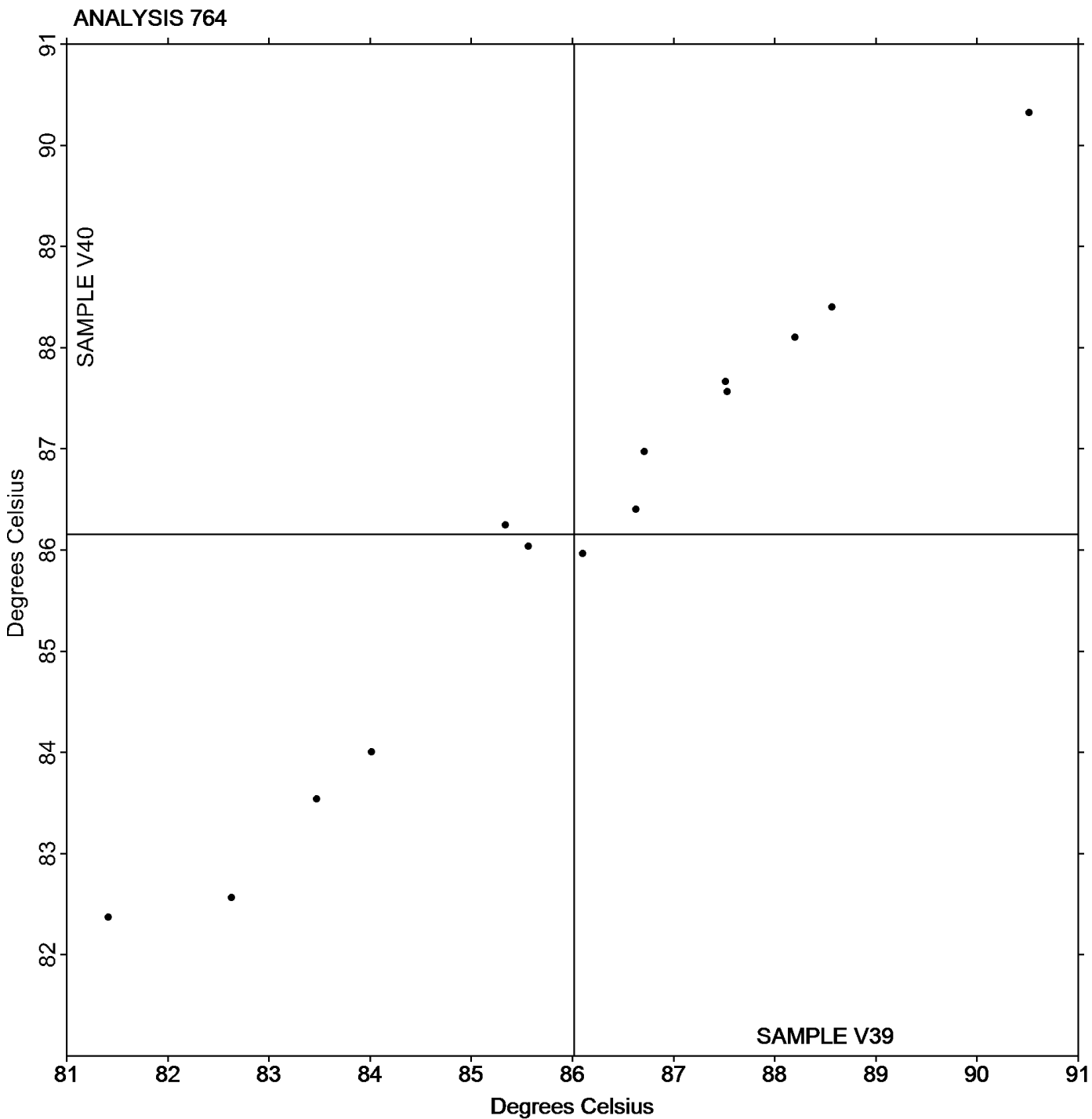
Sample V39: PET & Sample V40: PET

**Key to Instrument Codes Reported by Participants**

- MT Mettler Toledo Instruments
- PE Perkins Elmer Instruments
- TA TA Instruments
- XX Instrument manufacturer not specified by lab



Grand Mean Sample V39: 86.015 Degrees Celsius    Grand Mean Sample V40: 86.154 Degrees Celsius



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 770**

**4th Qtr 2016**

**Tensile Stress at Yield, Film Samples - psi**

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3AMP9T  |           | 1,743      | 108                  | 1.05  | 1,667      | 42                   | 0.39  | IN         |
| 66MQX8  |           | 1,503      | -131                 | -1.27 | 1,504      | -120                 | -1.12 | IN         |
| 6X3ZHM  |           | 1,690      | 55                   | 0.54  | 1,711      | 87                   | 0.81  | IN         |
| 9GRH3Y  |           | 1,606      | -29                  | -0.28 | 1,636      | 12                   | 0.11  | MT         |
| A696LF  |           | 1,691      | 57                   | 0.55  | 1,639      | 15                   | 0.14  | WZ         |
| BGKTR   |           | 1,429      | -206                 | -2.00 | 1,510      | -114                 | -1.06 | IN         |
| CDTB8C  |           | 1,666      | 32                   | 0.31  | 1,606      | -19                  | -0.17 | MT         |
| DVW6JH  |           | 1,726      | 91                   | 0.89  | 1,713      | 89                   | 0.83  | IN         |
| GHAWYQ  |           | 1,515      | -120                 | -1.16 | 1,479      | -145                 | -1.35 | IN         |
| JKR9X2  |           | 1,669      | 35                   | 0.34  | 1,664      | 39                   | 0.37  | XX         |
| JZPMBV  |           | 1,660      | 26                   | 0.25  | 1,720      | 96                   | 0.90  | TH         |
| QHZ8PB  |           | 1,623      | -11                  | -0.11 | 1,605      | -19                  | -0.18 | IN         |
| QZZ64Z  |           | 1,431      | -203                 | -1.97 | 1,347      | -277                 | -2.58 | IN         |
| VX2D6B  |           | 1,671      | 37                   | 0.36  | 1,650      | 26                   | 0.24  | IN         |
| WPGGVU  |           | 1,699      | 65                   | 0.63  | 1,703      | 78                   | 0.73  | MT         |
| YYKZ33  |           | 1,730      | 96                   | 0.93  | 1,754      | 130                  | 1.21  | SH         |
| ZW7QPV  |           | 1,731      | 96                   | 0.94  | 1,705      | 81                   | 0.75  | IN         |

| Summary Statistics                                  |             |             |
|---|-------------|-------------|
|   | Sample B39  | Sample B40  |
| <b>Grand Means</b>                                  | 1,634.4 psi | 1,624.3 psi |
| <b>Std Dev Btwn Labs</b>                            | 102.9 psi   | 107.4 psi   |
| Statistics based on 17 of 17 reporting participants |             |             |

Sample B39: LDPE & Sample B40: LDPE

**Key to Instrument Codes Reported by Participants**

- |    |          |    |  |
|----|----------|----|--|
| IN | Instron  | MT | MTS/Sintech                                  |
| SH | Shimadzu | TH | Thwing Albert                                |
| WZ | Zwick    | XX | Instrument manufacturer not specified by lab |



# Plastics Interlaboratory Testing Program

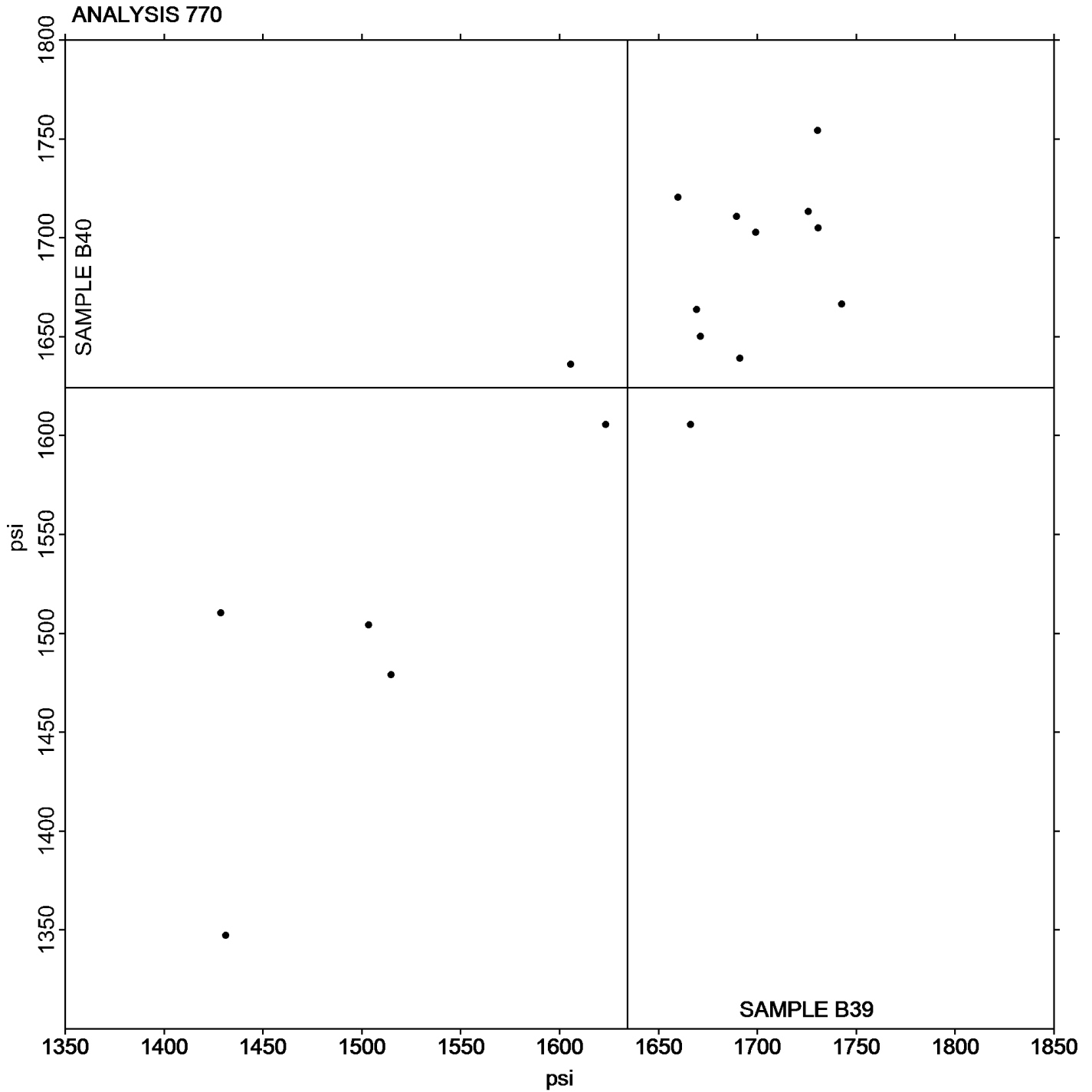
Report #100

## Analysis 770

4th Qtr 2016

### Tensile Stress at Yield, Film Samples - psi

Grand Mean Sample B39: 1,634.36 psi    Grand Mean Sample B40: 1,624.28 psi



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 771**

**4th Qtr 2016**

**Tensile Stress at Break, Film Samples - psi**

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3AMP9T  |           | 3,830      | 480                  | 1.14  | 3,594      | 233                  | 0.59  | IN         |
| 66MQX8  |           | 3,010      | -340                 | -0.81 | 3,056      | -306                 | -0.77 | IN         |
| 6X3ZHM  |           | 3,412      | 62                   | 0.15  | 3,315      | -47                  | -0.12 | IN         |
| A696LF  |           | 3,613      | 263                  | 0.63  | 3,597      | 235                  | 0.60  | WZ         |
| BGKKTR  |           | 2,377      | -973                 | -2.32 | 2,417      | -944                 | -2.39 | IN         |
| CDTB8C  |           | 3,367      | 17                   | 0.04  | 3,423      | 61                   | 0.16  | MT         |
| DVW6JH  |           | 3,545      | 195                  | 0.47  | 3,620      | 258                  | 0.66  | IN         |
| GHAWYQ  |           | 3,140      | -210                 | -0.50 | 3,119      | -243                 | -0.62 | IN         |
| HADQRP  |           | 3,289      | -61                  | -0.15 | 3,287      | -74                  | -0.19 | XX         |
| HWBVHG  |           | 3,088      | -262                 | -0.62 | 3,434      | 73                   | 0.18  | UC         |
| JKR9X2  |           | 2,465      | -885                 | -2.11 | 2,583      | -779                 | -1.97 | XX         |
| JZPMBV  |           | 3,620      | 270                  | 0.64  | 3,619      | 257                  | 0.65  | TH         |
| L6CCLH  |           | 3,201      | -149                 | -0.35 | 3,262      | -100                 | -0.25 | SH         |
| QHZ8PB  |           | 3,833      | 483                  | 1.15  | 3,847      | 486                  | 1.23  | IN         |
| QZZ64Z  |           | 3,148      | -202                 | -0.48 | 3,005      | -356                 | -0.90 | IN         |
| VX2D6B  |           | 3,754      | 404                  | 0.96  | 3,813      | 452                  | 1.15  | IN         |
| WPGGVU  |           | 3,852      | 502                  | 1.20  | 3,748      | 386                  | 0.98  | MT         |
| YYKZ33  |           | 3,514      | 164                  | 0.39  | 3,363      | 1                    | 0.00  | SH         |
| ZW7QPV  |           | 3,591      | 241                  | 0.57  | 3,767      | 405                  | 1.03  | IN         |

| Summary Statistics                                  |  | Sample B39  | Sample B40  |
|---|--|-------------|-------------|
| <b>Grand Means</b>                                  |  | 3,350.0 psi | 3,361.5 psi |
| <b>Stnd Dev Btwn Labs</b>                           |  | 419.9 psi   | 394.4 psi   |
| Statistics based on 19 of 19 reporting participants |  |             |             |

Sample B39: LDPE & Sample B40: LDPE

**Key to Instrument Codes Reported by Participants**

- |   |                  |
|---|------------------|
| IN Instron                                      | MT MTS/Sintech   |
| SH Shimadzu                                     | TH Thwing Albert |
| UC United                                       | WZ Zwick         |
| XX Instrument manufacturer not specified by lab |                  |



# Plastics Interlaboratory Testing Program

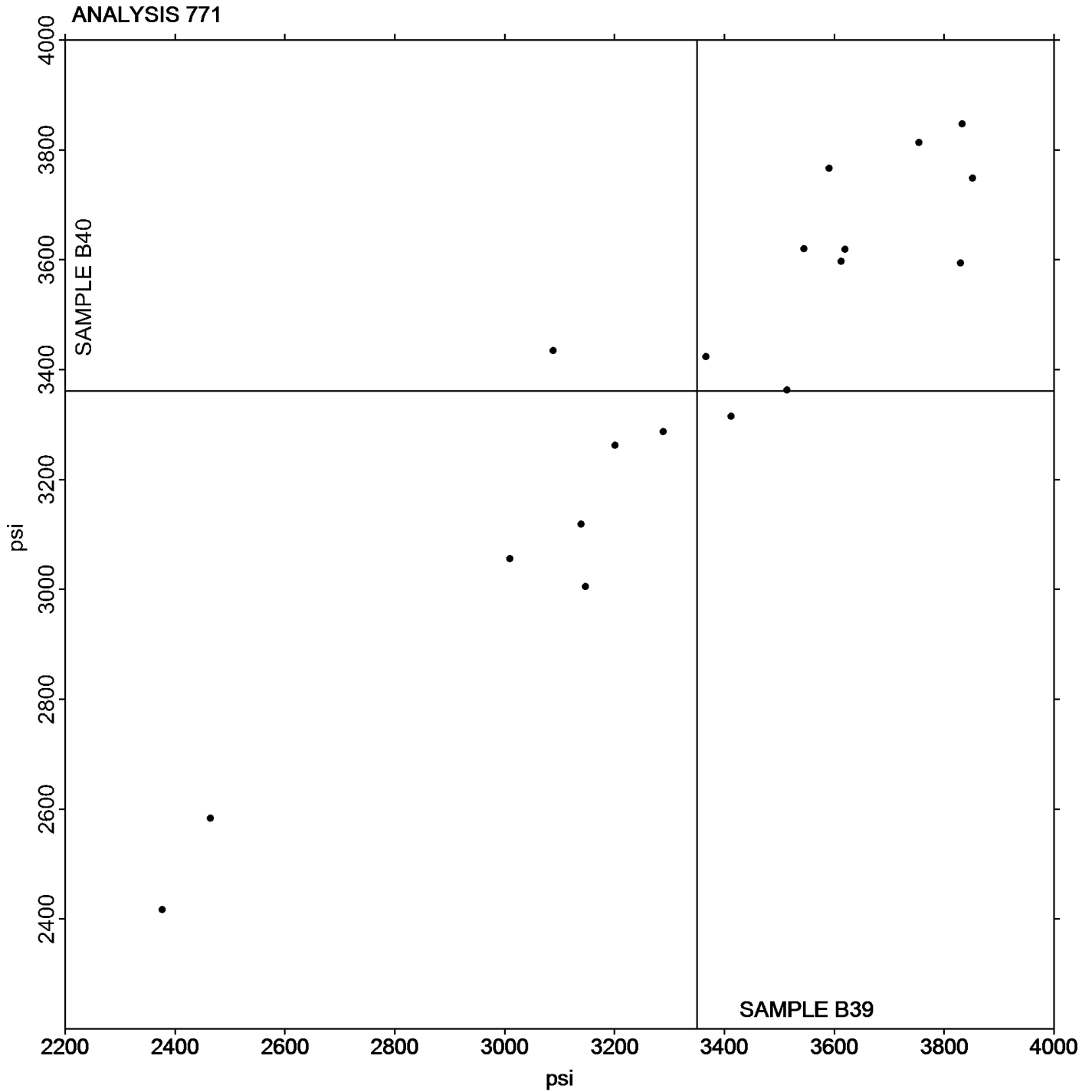
Report #100

## Analysis 771

4th Qtr 2016

### Tensile Stress at Break, Film Samples - psi

Grand Mean Sample B39: 3,350.01 psi    Grand Mean Sample B40: 3,361.51 psi



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





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 772**

**4th Qtr 2016**

**Percent Elongation at Yield, Films**

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3AMP9T  |           | 62.36      | 17.19                | 0.71  | 58.25      | 13.17                | 0.54  | IN         |
| 66MQX8  |           | 40.34      | -4.83                | -0.20 | 40.15      | -4.93                | -0.20 | IN         |
| 6X3ZHM  | *         | 67.58      | 22.41                | 0.92  | 75.33      | 30.25                | 1.24  | IN         |
| A696LF  |           | 55.49      | 10.32                | 0.42  | 55.69      | 10.61                | 0.43  | WZ         |
| BGKKTR  |           | 14.88      | -30.29               | -1.25 | 14.61      | -30.47               | -1.24 | IN         |
| CDTB8C  |           | 72.90      | 27.73                | 1.14  | 72.00      | 26.92                | 1.10  | MT         |
| DVW6JH  |           | 63.93      | 18.76                | 0.77  | 60.52      | 15.44                | 0.63  | IN         |
| GHAWYQ  |           | 10.50      | -34.67               | -1.43 | 10.92      | -34.16               | -1.40 | IN         |
| JKR9X2  |           | 61.68      | 16.51                | 0.68  | 61.44      | 16.36                | 0.67  | XX         |
| QHZ8PB  |           | 10.41      | -34.75               | -1.43 | 10.56      | -34.52               | -1.41 | IN         |
| QZZ64Z  |           | 61.80      | 16.63                | 0.68  | 59.13      | 14.05                | 0.57  | IN         |
| VX2D6B  |           | 16.78      | -28.39               | -1.17 | 17.05      | -28.03               | -1.14 | IN         |
| WPGGVU  |           | 14.28      | -30.89               | -1.27 | 13.67      | -31.41               | -1.28 | MT         |
| YYKZ33  |           | 64.44      | 19.28                | 0.79  | 65.08      | 20.00                | 0.82  | SH         |
| ZW7QPV  |           | 60.10      | 14.93                | 0.61  | 61.78      | 16.70                | 0.68  | IN         |

| Summary Statistics                                  |                |                |
|---|----------------|----------------|
|   | Sample B39     | Sample B40     |
| <b>Grand Means</b>                                  | 45.165 Percent | 45.079 Percent |
| <b>Stnd Dev Btwn Labs</b>                           | 24.319 Percent | 24.483 Percent |
| Statistics based on 15 of 15 reporting participants |                |                |

Sample B39: LDPE & Sample B40: LDPE

**Key to Instrument Codes Reported by Participants**

- IN Instron
- SH Shimadzu
- XX Instrument manufacturer not specified by lab
- MT MTS/Sintech
- WZ Zwick



# Plastics Interlaboratory Testing Program

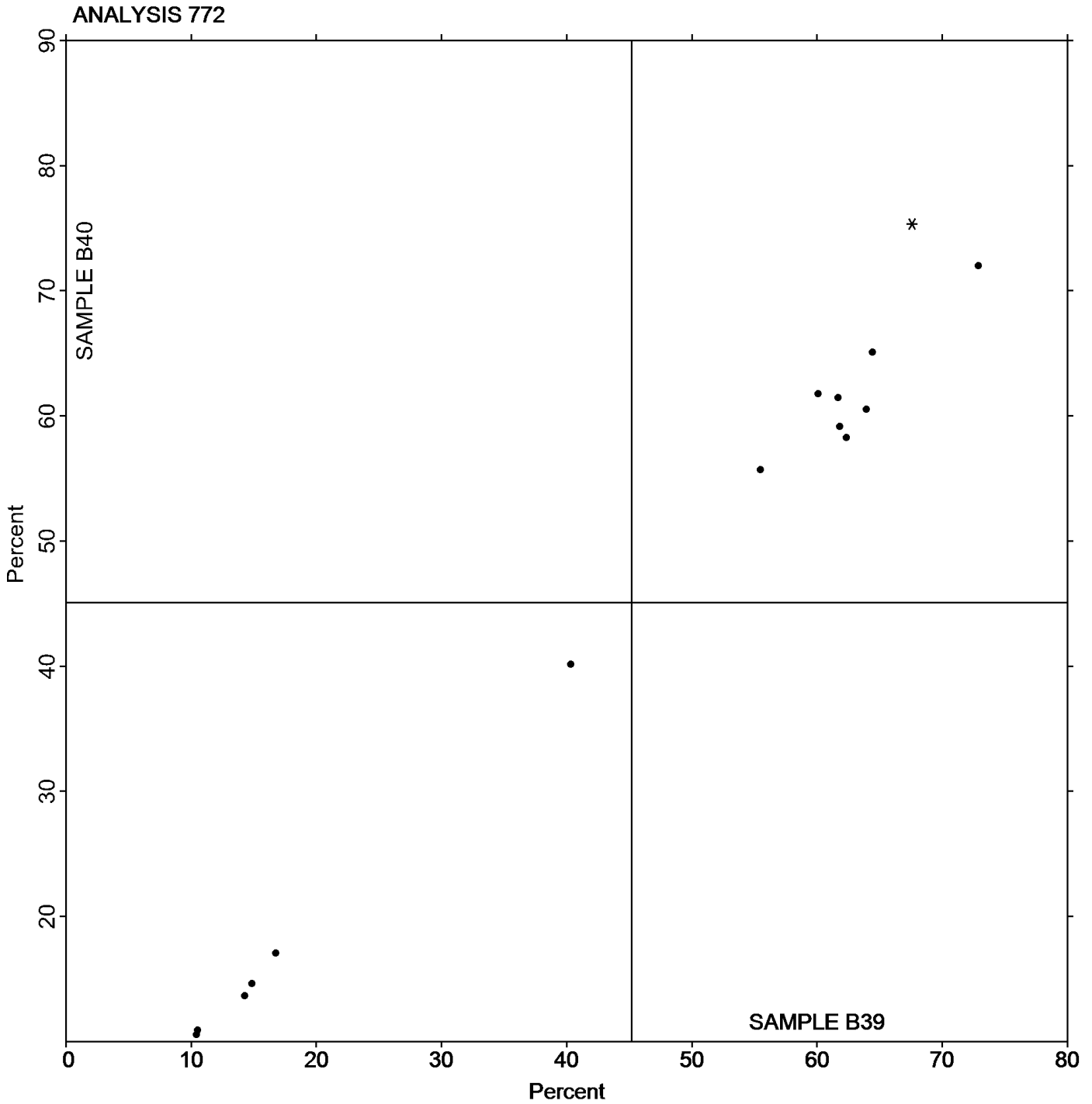
## Analysis 772

### Percent Elongation at Yield, Films

Report #100

4th Qtr 2016

Grand Mean Sample B39: 45.165 Percent    Grand Mean Sample B40: 45.079 Percent



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 773**

**4th Qtr 2016**

**Percent Elongation at Break, Film Samples**

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3AMP9T  |           | 637.8      | -119.6               | -0.78 | 654.2      | -124.2               | -0.69 | IN         |
| 66MQX8  |           | 942.3      | 184.9                | 1.20  | 961.6      | 183.3                | 1.01  | IN         |
| 6X3ZHM  |           | 1,023.1    | 265.7                | 1.73  | 1,020.2    | 241.9                | 1.34  | IN         |
| A696LF  |           | 645.0      | -112.4               | -0.73 | 662.0      | -116.3               | -0.64 | WZ         |
| BGKKTR  |           | 664.1      | -93.3                | -0.61 | 640.9      | -137.4               | -0.76 | XX         |
| CDTB8C  |           | 1,013.9    | 256.5                | 1.67  | 1,109.6    | 331.3                | 1.83  | MT         |
| DVW6JH  |           | 673.1      | -84.3                | -0.55 | 674.8      | -103.6               | -0.57 | IN         |
| GHAWYQ  |           | 719.0      | -38.4                | -0.25 | 729.2      | -49.1                | -0.27 | IN         |
| HADQRP  |           | 842.1      | 84.7                 | 0.55  | 845.2      | 66.9                 | 0.37  | XX         |
| HWBVHG  |           | 948.3      | 190.9                | 1.24  | 1,085.5    | 307.1                | 1.70  | UC         |
| JKR9X2  |           | 542.2      | -215.2               | -1.40 | 553.8      | -224.6               | -1.24 | XX         |
| JZPMBV  |           | 651.2      | -106.2               | -0.69 | 638.4      | -139.9               | -0.77 | TH         |
| L6CCLH  |           | 992.7      | 235.3                | 1.53  | 1,087.8    | 309.5                | 1.71  | SH         |
| QHZ8PB  |           | 654.0      | -103.4               | -0.67 | 667.0      | -111.4               | -0.62 | IN         |
| QZZ64Z  |           | 721.0      | -36.4                | -0.24 | 723.7      | -54.6                | -0.30 | IN         |
| VX2D6B  |           | 652.0      | -105.4               | -0.69 | 657.4      | -120.9               | -0.67 | IN         |
| WPGGVU  |           | 650.9      | -106.5               | -0.69 | 643.2      | -135.1               | -0.75 | MT         |
| YYKZ33  |           | 796.3      | 38.9                 | 0.25  | 774.0      | -4.4                 | -0.02 | SH         |
| ZW7QPV  |           | 621.5      | -135.9               | -0.88 | 660.2      | -118.2               | -0.65 | IN         |

| Summary Statistics                                  |                |                |
|---|----------------|----------------|
|   | Sample B39     | Sample B40     |
| <b>Grand Means</b>                                  | 757.40 Percent | 778.34 Percent |
| <b>Std Dev Btwn Labs</b>                            | 153.81 Percent | 180.99 Percent |
| Statistics based on 19 of 19 reporting participants |                |                |

Sample B39: LDPE & Sample B40: LDPE

**Key to Instrument Codes Reported by Participants**

- |   |                  |
|---|------------------|
| IN Instron                                      | MT MTS/Sintech   |
| SH Shimadzu                                     | TH Thwing Albert |
| UC United                                       | WZ Zwick         |
| XX Instrument manufacturer not specified by lab |                  |



# Plastics Interlaboratory Testing Program

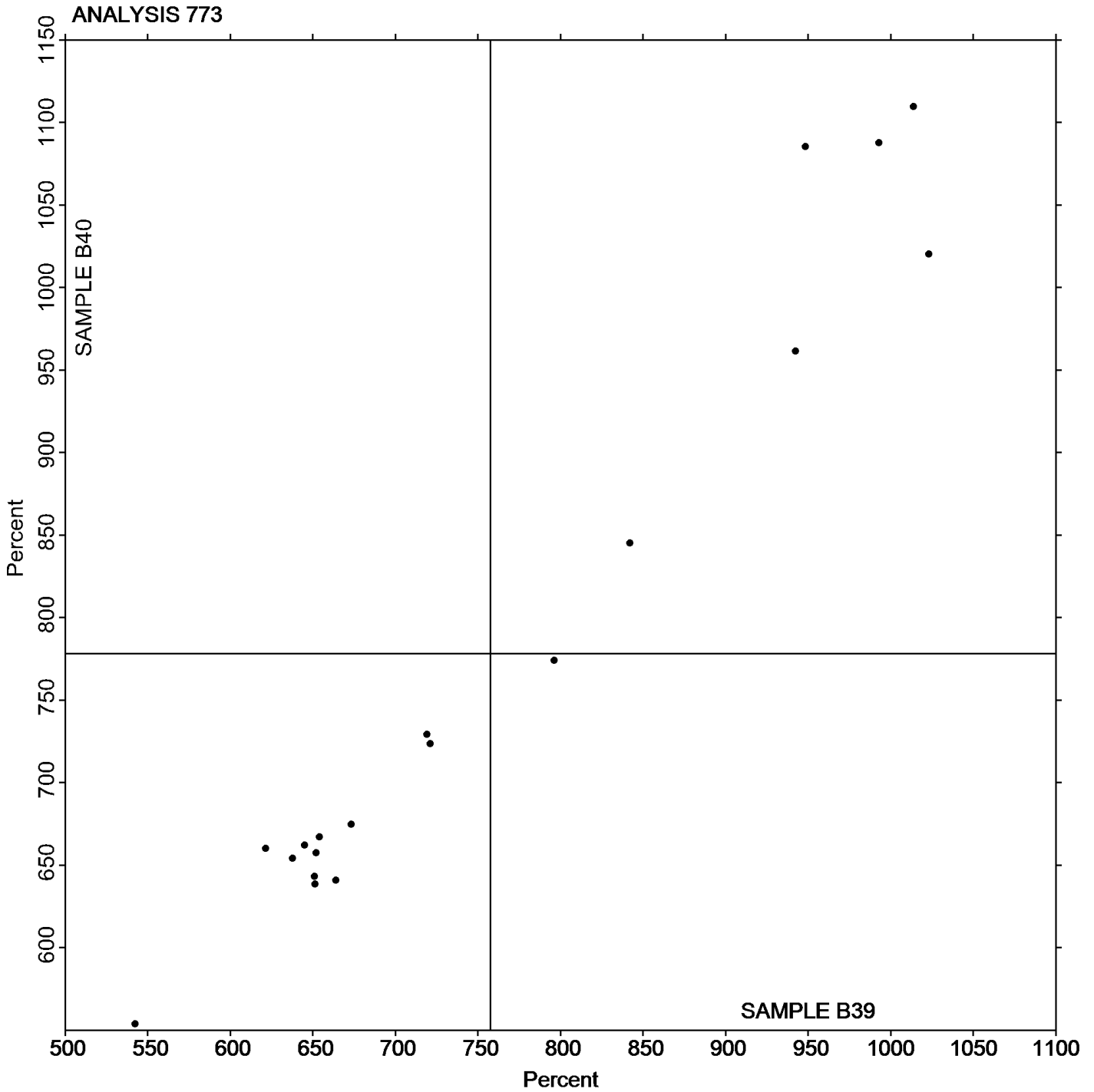
Report #100

## Analysis 773

4th Qtr 2016

### Percent Elongation at Break, Film Samples

Grand Mean Sample B39: 757.40 Percent    Grand Mean Sample B40: 778.34 Percent



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 774**

**4th Qtr 2016**

**Thickness of Film Tensile Samples - mils**

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |
| 3AMP9T  |           | 3.8490     | -0.0296              | -0.28 | 3.9990     | 0.0842               | 0.60  |
| 66MQX8  |           | 3.9135     | 0.0348               | 0.33  | 3.9450     | 0.0302               | 0.21  |
| 6X3ZHM  |           | 4.0030     | 0.1244               | 1.17  | 3.9740     | 0.0592               | 0.42  |
| A696LF  |           | 3.9134     | 0.0348               | 0.33  | 3.8465     | -0.0683              | -0.48 |
| BGKKTR  |           | 3.9252     | 0.0466               | 0.44  | 3.7402     | -0.1746              | -1.24 |
| CDTB8C  |           | 3.9850     | 0.1064               | 1.00  | 4.1410     | 0.2262               | 1.60  |
| DVW6JH  |           | 3.8430     | -0.0356              | -0.33 | 3.8360     | -0.0788              | -0.56 |
| GHAWYQ  |           | 3.9100     | 0.0314               | 0.29  | 4.0250     | 0.1102               | 0.78  |
| HADQRP  |           | 3.9409     | 0.0623               | 0.59  | 3.8189     | -0.0959              | -0.68 |
| HWBVHG  | *         | 3.6200     | -0.2586              | -2.43 | 3.5600     | -0.3548              | -2.51 |
| JKR9X2  |           | 3.9371     | 0.0585               | 0.55  | 3.9371     | 0.0223               | 0.16  |
| JZPMBV  |           | 3.7740     | -0.1046              | -0.98 | 4.0830     | 0.1682               | 1.19  |
| L6CCLH  |           | 3.8425     | -0.0361              | -0.34 | 4.0118     | 0.0971               | 0.69  |
| LHHAQH  |           | 4.0750     | 0.1964               | 1.85  | 4.0820     | 0.1672               | 1.19  |
| QHZ8PB  |           | 3.9331     | 0.0545               | 0.51  | 3.9489     | 0.0341               | 0.24  |
| QUAMRA  |           | 3.9130     | 0.0344               | 0.32  | 3.9870     | 0.0722               | 0.51  |
| QZZ64Z  |           | 3.9430     | 0.0644               | 0.60  | 3.9230     | 0.0082               | 0.06  |
| VX2D6B  |           | 3.7950     | -0.0836              | -0.79 | 3.8570     | -0.0578              | -0.41 |
| WPGGVU  |           | 3.8500     | -0.0286              | -0.27 | 3.8700     | -0.0448              | -0.32 |
| YYKZ33  |           | 3.6591     | -0.2195              | -2.06 | 3.6575     | -0.2572              | -1.82 |
| ZW7QPV  |           | 3.8260     | -0.0526              | -0.49 | 3.9670     | 0.0522               | 0.37  |

| Summary Statistics                                  |              |              |
|---|--------------|--------------|
|   | Sample B39   | Sample B40   |
| <b>Grand Means</b>                                  | 3.87861 mils | 3.91475 mils |
| <b>Stnd Dev Btwn Labs</b>                           | 0.10644 mils | 0.14109 mils |
| Statistics based on 21 of 21 reporting participants |              |              |

Sample B39: LDPE & Sample B40: LDPE



# Plastics Interlaboratory Testing Program

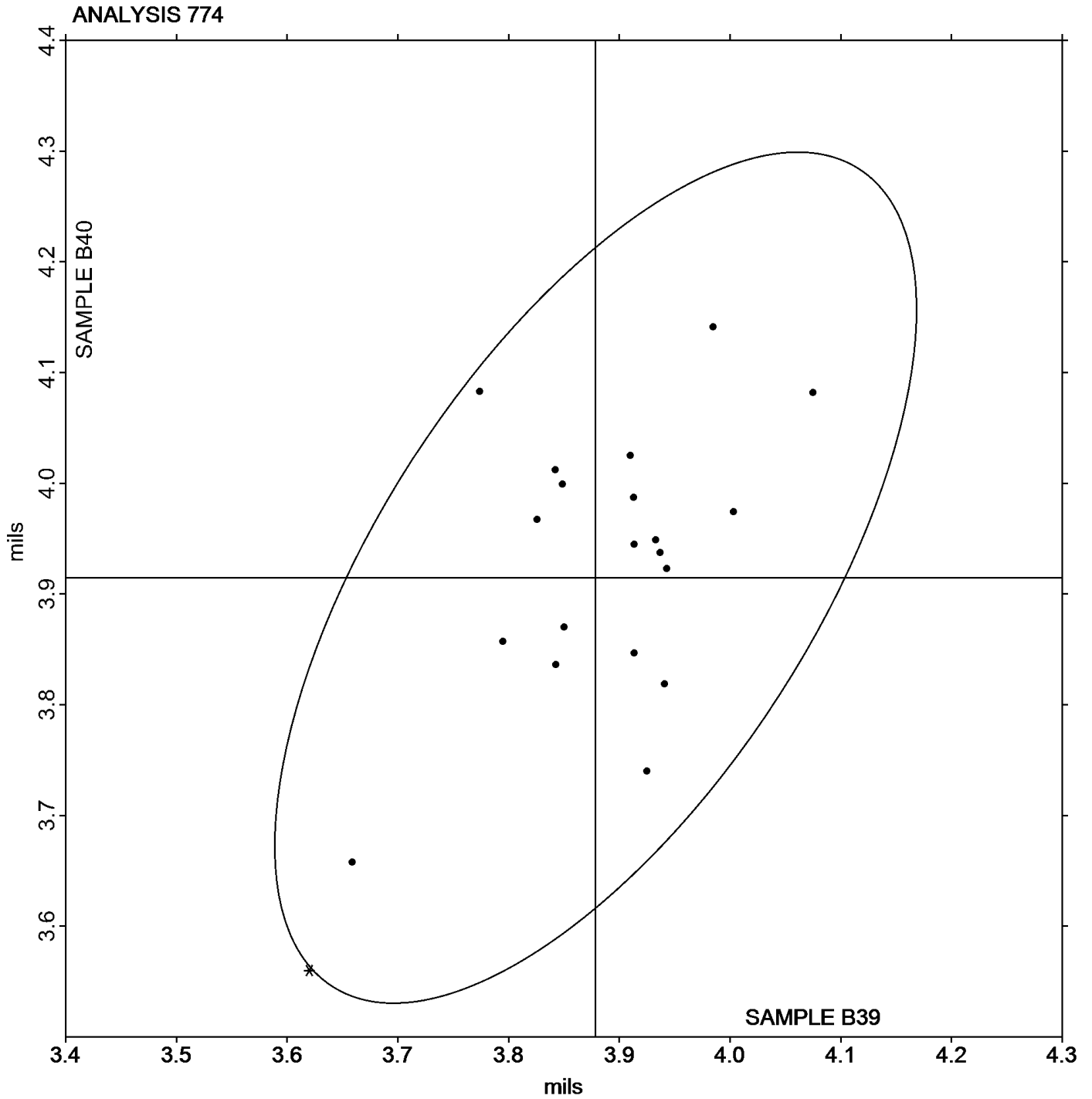
## Analysis 774

### Thickness of Film Tensile Samples - mils

Report #100

4th Qtr 2016

Grand Mean Sample B39: 3.8786 mils    Grand Mean Sample B40: 3.9148 mils





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 775**

**4th Qtr 2016**

**Secant Modulus at 1% Strain - psi**

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3AMP9T  |           | 29,473     | -946                 | -0.19 | 29,672     | -89                  | -0.02 | IN         |
| 66MQX8  |           | 28,384     | -2,035               | -0.40 | 27,427     | -2,334               | -0.43 | IN         |
| 6X3ZHM  |           | 37,911     | 7,492                | 1.47  | 37,453     | 7,692                | 1.42  | IN         |
| A696LF  |           | 30,009     | -411                 | -0.08 | 31,372     | 1,611                | 0.30  | WZ         |
| BGKKTR  | X         | 7,303      | -23,116              | -4.54 | 8,894      | -20,867              | -3.86 | IN         |
| CDTB8C  |           | 31,390     | 971                  | 0.19  | 30,710     | 949                  | 0.18  | MT         |
| DVW6JH  |           | 32,302     | 1,883                | 0.37  | 26,741     | -3,019               | -0.56 | IN         |
| GHAWYQ  |           | 20,393     | -10,027              | -1.97 | 20,234     | -9,527               | -1.76 | IN         |
| JKR9X2  |           | 22,548     | -7,871               | -1.54 | 23,933     | -5,827               | -1.08 | XX         |
| JZPMBV  |           | 35,432     | 5,013                | 0.98  | 33,091     | 3,331                | 0.62  | TH         |
| QZZ64Z  |           | 27,011     | -3,408               | -0.67 | 24,338     | -5,422               | -1.00 | IN         |
| VX2D6B  |           | 30,678     | 259                  | 0.05  | 30,899     | 1,138                | 0.21  | IN         |
| WPGGVU  |           | 30,784     | 365                  | 0.07  | 29,907     | 146                  | 0.03  | MT         |
| YYKZ33  |           | 38,916     | 8,497                | 1.67  | 41,426     | 11,665               | 2.16  | SH         |
| ZW7QPV  |           | 30,636     | 217                  | 0.04  | 29,446     | -315                 | -0.06 | IN         |

| Summary Statistics                                  |              |              |
|---|--------------|--------------|
|   | Sample B39   | Sample B40   |
| <b>Grand Means</b>                                  | 30,419.1 psi | 29,760.6 psi |
| <b>Stnd Dev Btwn Labs</b>                           | 5,095.2 psi  | 5,406.1 psi  |
| Statistics based on 14 of 15 reporting participants |              |              |

Sample B39: LDPE & Sample B40: LDPE

**Comments on Assigned Data Flags for Test #775**

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

**Key to Instrument Codes Reported by Participants**

|    |          |    |  |
|----|----------|----|--|
| IN | Instron  | MT | MTS/Sintech                                  |
| SH | Shimadzu | TH | Thwing Albert                                |
| WZ | Zwick    | XX | Instrument manufacturer not specified by lab |



# Plastics Interlaboratory Testing Program

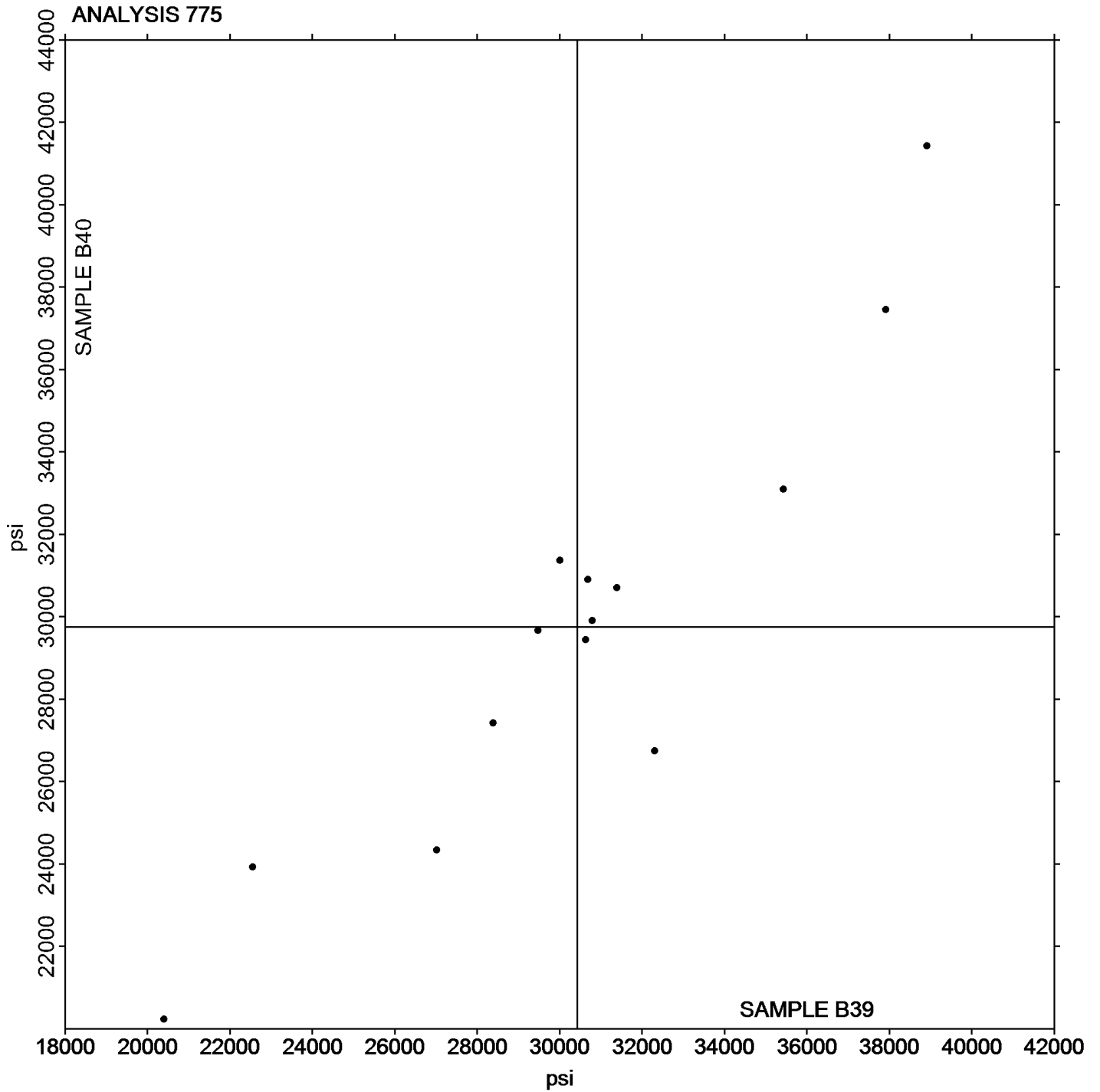
Report #100

## Analysis 775

4th Qtr 2016

Secant Modulus at 1% Strain - psi

Grand Mean Sample B39: 30,419.08 psi    Grand Mean Sample B40: 29,760.62 psi



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





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 776

4th Qtr 2016

### Secant Modulus at 2% Strain - psi

| WebCode | Data Flag | Sample B39 |                      |       | Sample B40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3AMP9T  |           | 26,142     | -373                 | -0.13 | 26,209     | 545                  | 0.20  | IN         |
| 66MQX8  |           | 25,976     | -539                 | -0.18 | 25,251     | -413                 | -0.15 | IN         |
| 6X3ZHM  |           | 28,451     | 1,936                | 0.66  | 29,108     | 3,444                | 1.25  | IN         |
| A696LF  |           | 24,193     | -2,323               | -0.79 | 25,324     | -340                 | -0.12 | WZ         |
| BGKKTR  | X         | 6,727      | -19,788              | -6.71 | 7,157      | -18,507              | -6.72 | IN         |
| CDTB8C  |           | 26,500     | -15                  | -0.01 | 25,820     | 156                  | 0.06  | MT         |
| DVW6JH  | *         | 33,116     | 6,601                | 2.24  | 27,332     | 1,668                | 0.61  | IN         |
| GHAWYQ  |           | 21,826     | -4,689               | -1.59 | 21,648     | -4,017               | -1.46 | IN         |
| JKR9X2  |           | 25,708     | -807                 | -0.27 | 24,201     | -1,463               | -0.53 | XX         |
| JZPMBV  |           | 28,175     | 1,660                | 0.56  | 26,638     | 974                  | 0.35  | TH         |
| QZZ64Z  |           | 22,109     | -4,406               | -1.49 | 19,829     | -5,835               | -2.12 | IN         |
| WPGGVU  |           | 26,687     | 172                  | 0.06  | 25,737     | 73                   | 0.03  | MT         |
| YYKZ33  |           | 29,010     | 2,495                | 0.85  | 30,369     | 4,705                | 1.71  | SH         |
| ZW7QPV  |           | 26,803     | 288                  | 0.10  | 26,168     | 503                  | 0.18  | IN         |

#### Summary Statistics

|                          | Sample B39   | Sample B40   |
|--------------------------|--------------|--------------|
| <b>Grand Means</b>       | 26,515.1 psi | 25,664.2 psi |
| <b>Std Dev Btwn Labs</b> | 2,948.1 psi  | 2,752.4 psi  |

Statistics based on 13 of 14 reporting participants

Sample B39: LDPE & Sample B40: LDPE

#### Comments on Assigned Data Flags for Test #776

BGKKTR (X) - data for both samples are low.

#### Key to Instrument Codes Reported by Participants

|    |          |    |  |
|----|----------|----|--|
| IN | Instron  | MT | MTS/Sintech                                  |
| SH | Shimadzu | TH | Thwing Albert                                |
| WZ | Zwick    | XX | Instrument manufacturer not specified by lab |



# Plastics Interlaboratory Testing Program

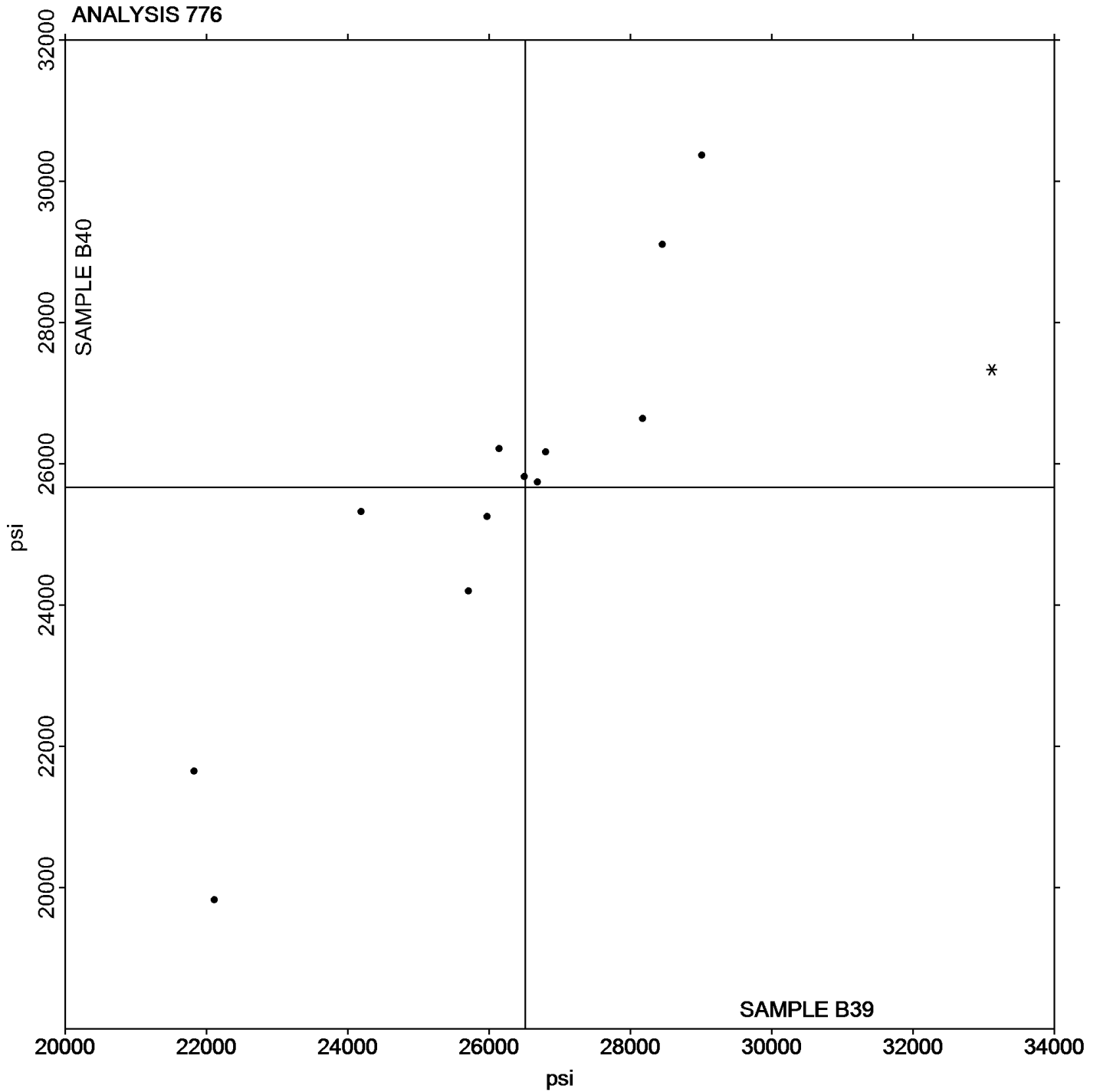
Report #100

## Analysis 776

4th Qtr 2016

Secant Modulus at 2% Strain - psi

Grand Mean Sample B39: 26,515.06 psi    Grand Mean Sample B40: 25,664.15 psi



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 780**

**4th Qtr 2016**

**Coefficient of Static Friction**

| WebCode | Data Flag | Sample P39 |                      |       | Sample P40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3GCF4H  |           | 0.0960     | -0.0361              | -0.68 | 0.0800     | -0.0463              | -0.95 | KA         |
| 3NNYEN  |           | 0.0876     | -0.0445              | -0.84 | 0.0848     | -0.0415              | -0.85 | TN         |
| 6X3ZHM  |           | 0.1466     | 0.0145               | 0.27  | 0.1256     | -0.0007              | -0.01 | TH         |
| 82ZQTC  |           | 0.1319     | -0.0002              | 0.00  | 0.1342     | 0.0079               | 0.16  | IG         |
| A696LF  |           | 0.0460     | -0.0861              | -1.63 | 0.0440     | -0.0823              | -1.69 | TY         |
| B8QGKN  |           | 0.1200     | -0.0121              | -0.23 | 0.1260     | -0.0003              | -0.01 | CH         |
| DVW6JH  |           | 0.1040     | -0.0281              | -0.53 | 0.0980     | -0.0283              | -0.58 | TM         |
| GCMERP  |           | 0.1224     | -0.0097              | -0.18 | 0.1274     | 0.0011               | 0.02  | IP         |
| GHAWYQ  | *         | 0.2684     | 0.1363               | 2.57  | 0.2222     | 0.0959               | 1.97  | TN         |
| JKR9X2  |           | 0.1346     | 0.0025               | 0.05  | 0.1350     | 0.0087               | 0.18  | RD         |
| JZPMBV  |           | 0.1156     | -0.0165              | -0.31 | 0.1136     | -0.0127              | -0.26 | TH         |
| K9UPXL  |           | 0.2159     | 0.0838               | 1.58  | 0.2261     | 0.0997               | 2.05  | XX         |
| L6CCLH  |           | 0.1344     | 0.0023               | 0.04  | 0.1154     | -0.0109              | -0.22 | SA         |
| VX2D6B  |           | 0.1014     | -0.0307              | -0.58 | 0.0972     | -0.0291              | -0.60 | TH         |
| WPGGVU  |           | 0.1056     | -0.0265              | -0.50 | 0.1068     | -0.0195              | -0.40 | MI         |
| YYKZ33  |           | 0.1838     | 0.0517               | 0.97  | 0.1847     | 0.0584               | 1.20  | SA         |

| Summary Statistics                                  |  | Sample P39  | Sample P40  |
|---|--|-------------|-------------|
| <b>Grand Means</b>                                  |  | 0.13214 COF | 0.12631 COF |
| <b>Stnd Dev Btwn Labs</b>                           |  | 0.05301 COF | 0.04875 COF |
| Statistics based on 16 of 16 reporting participants |  |             |             |

Sample P39: LDPE & Sample P40: LDPE

**Key to Instrument Codes Reported by Participants**

|    |                              |    |  |
|----|------------------------------|----|--|
| CH | ChemInstruments AR-1000      | IG | Instron  |
| IP | Instron 4000 Series          | KA | Kayeness Inc.                                  |
| MI | MTS Insight                  | RD | RDM CF   |
| SA | Shimadzu Autograph           | TH | Thwing Albert Friction/Peel Tester Model 225-1 |
| TM | TMI Slip and Friction Tester | TN | TMI #32-06                                     |
| TY | Toyoseiki                    | XX | Instrument make/model not specified by lab     |



# Plastics Interlaboratory Testing Program

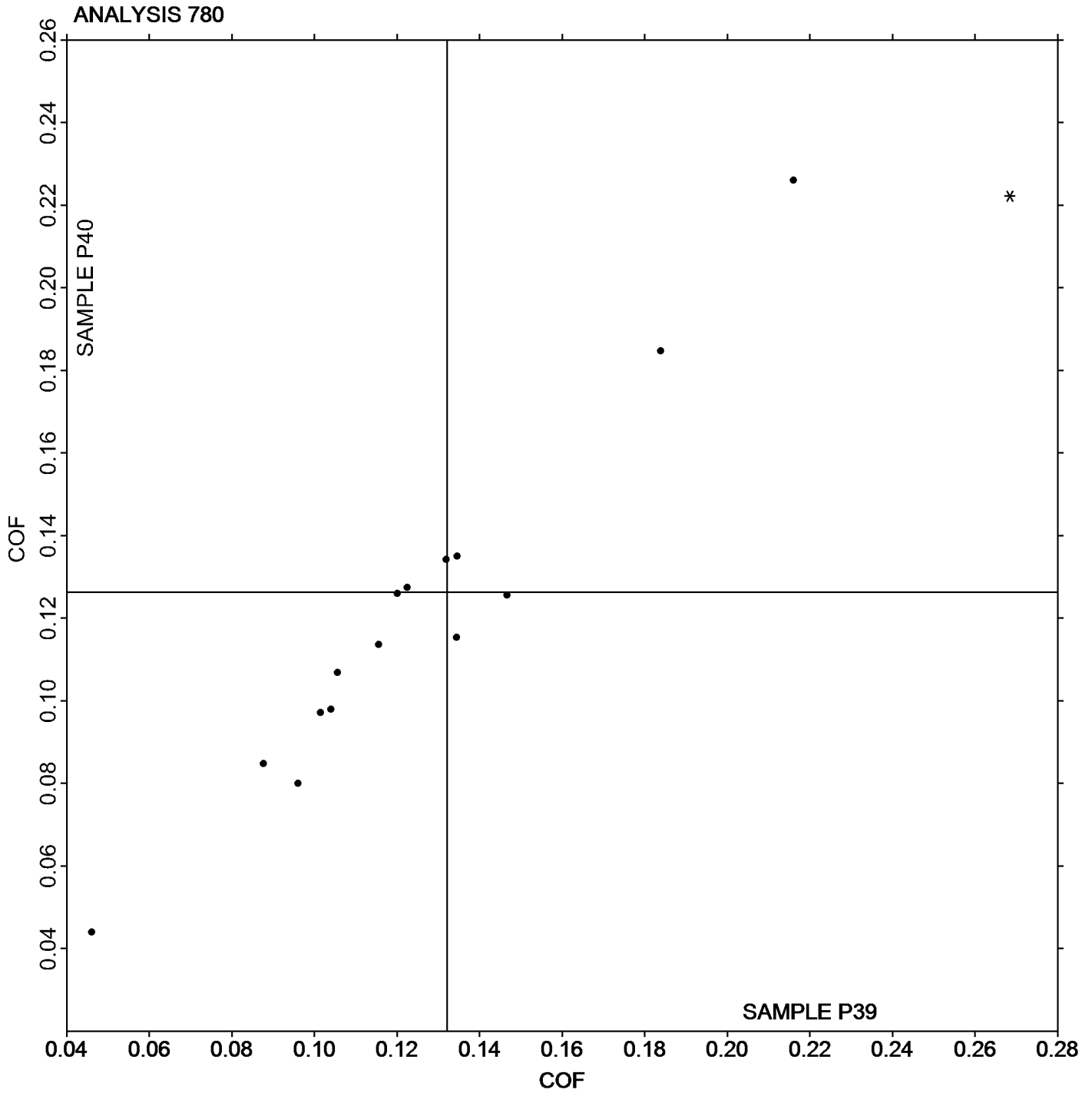
## Analysis 780

### Coefficient of Static Friction

Report #100

4th Qtr 2016

Grand Mean Sample P39: 0.13214 COF    Grand Mean Sample P40: 0.12631 COF



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



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 781**

**4th Qtr 2016**

**Coefficient of Kinetic Friction**

| WebCode | Data Flag | Sample P39 |                      |       | Sample P40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3GCF4H  |           | 0.1180     | 0.0131               | 0.32  | 0.1060     | 0.0083               | 0.24  | KA         |
| 3NNYEN  |           | 0.0740     | -0.0309              | -0.76 | 0.0722     | -0.0255              | -0.74 | TN         |
| 6X3ZHM  |           | 0.0888     | -0.0161              | -0.40 | 0.0720     | -0.0257              | -0.75 | TH         |
| 8ZZQTC  |           | 0.1062     | 0.0013               | 0.03  | 0.1051     | 0.0074               | 0.22  | IG         |
| A696LF  |           | 0.0280     | -0.0769              | -1.90 | 0.0320     | -0.0657              | -1.91 | TY         |
| B8QGKN  |           | 0.0880     | -0.0169              | -0.42 | 0.0860     | -0.0117              | -0.34 | CH         |
| DVW6JH  |           | 0.0800     | -0.0249              | -0.62 | 0.0740     | -0.0237              | -0.69 | TM         |
| GCMERP  |           | 0.1028     | -0.0021              | -0.05 | 0.1038     | 0.0061               | 0.18  | IP         |
| GHAWYQ  |           | 0.1946     | 0.0897               | 2.22  | 0.1664     | 0.0687               | 1.99  | TN         |
| JKR9X2  |           | 0.1270     | 0.0221               | 0.55  | 0.1198     | 0.0221               | 0.64  | RD         |
| JZPMBV  |           | 0.0732     | -0.0317              | -0.78 | 0.0752     | -0.0225              | -0.65 | TH         |
| K9UPXL  |           | 0.1748     | 0.0699               | 1.73  | 0.1514     | 0.0537               | 1.56  | XX         |
| L6CCLH  |           | 0.0872     | -0.0177              | -0.44 | 0.0696     | -0.0281              | -0.82 | SA         |
| VX2D6B  |           | 0.0974     | -0.0075              | -0.19 | 0.0908     | -0.0069              | -0.20 | TH         |
| WPGGVU  |           | 0.0956     | -0.0093              | -0.23 | 0.0982     | 0.0005               | 0.01  | MI         |
| YYKZ33  |           | 0.1430     | 0.0381               | 0.94  | 0.1409     | 0.0432               | 1.25  | SA         |

| Summary Statistics                                  |             |             |
|---|-------------|-------------|
|   | Sample P39  | Sample P40  |
| <b>Grand Means</b>                                  | 0.10492 COF | 0.09772 COF |
| <b>Stnd Dev Btwn Labs</b>                           | 0.04045 COF | 0.03444 COF |
| Statistics based on 16 of 16 reporting participants |             |             |

Sample P39: LDPE & Sample P40: LDPE

**Key to Instrument Codes Reported by Participants**

|    |                              |    |  |
|----|------------------------------|----|--|
| CH | ChemInstruments AR-1000      | IG | Instron  |
| IP | Instron 4000 Series          | KA | Kayeness Inc.                                  |
| MI | MTS Insight                  | RD | RDM CF   |
| SA | Shimadzu Autograph           | TH | Thwing Albert Friction/Peel Tester Model 225-1 |
| TM | TMI Slip and Friction Tester | TN | TMI #32-06                                     |
| TY | Toyoseiki                    | XX | Instrument make/model not specified by lab     |



# Plastics Interlaboratory Testing Program

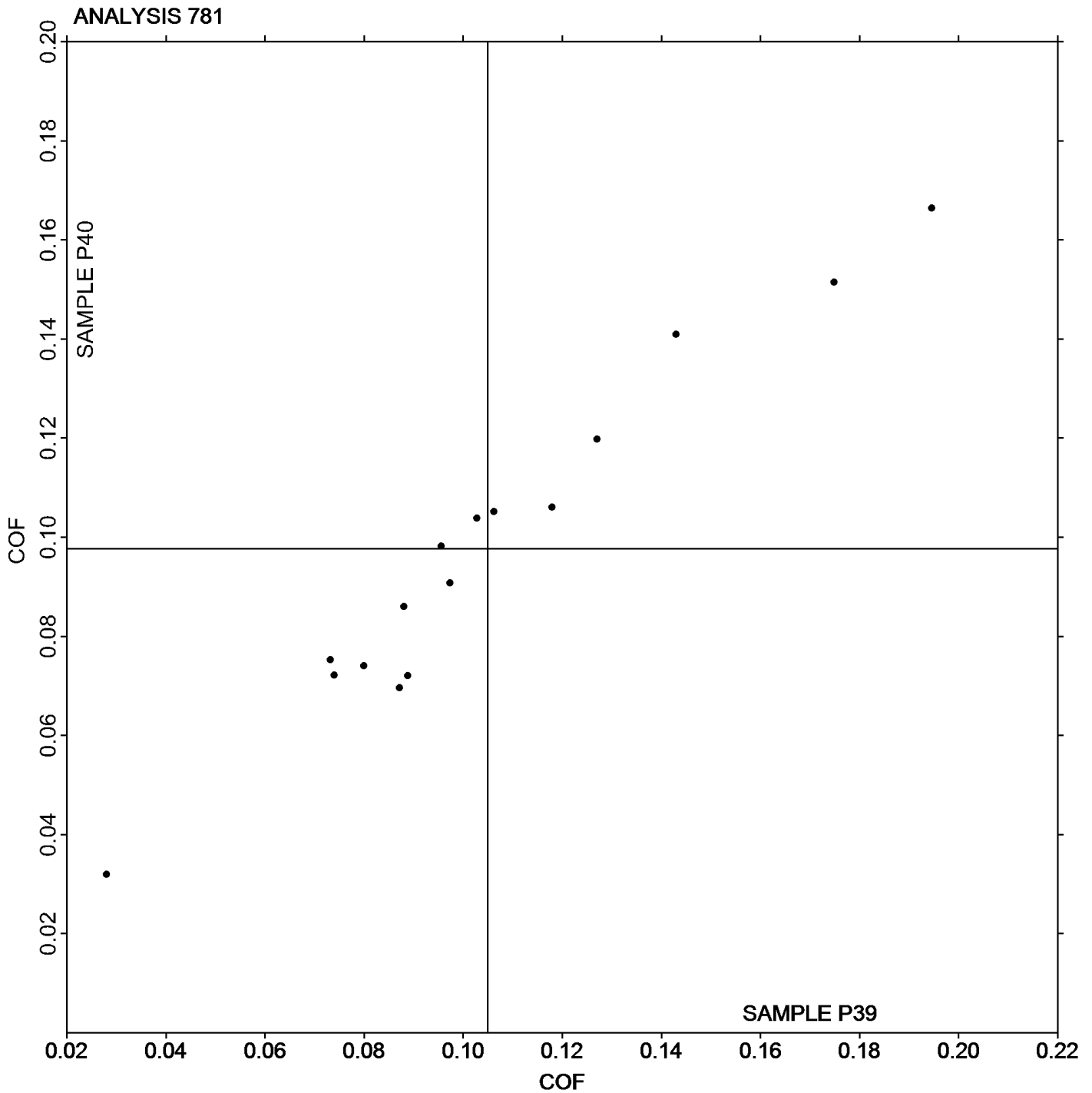
## Analysis 781

### Coefficient of Kinetic Friction

Report #100

4th Qtr 2016

Grand Mean Sample P39: 0.10492 COF    Grand Mean Sample P40: 0.09772 COF



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



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 782

4th Qtr 2016

### Tear Resistance of Films

| WebCode | Data Flag | Sample Q39 |                      |       | Sample Q40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| A696LF  |           | 528.2      | 47.5                 | 1.02  | 468.0      | -13.8                | -0.44 | TA         |
| DVW6JH  |           | 526.4      | 45.7                 | 0.98  | 520.0      | 38.3                 | 1.23  | TE         |
| GHAWYQ  |           | 475.6      | -5.1                 | -0.11 | 446.1      | -35.6                | -1.15 | TM         |
| L6CCLH  |           | 429.9      | -50.8                | -1.09 | 487.0      | 5.3                  | 0.17  | LO         |
| QHZ8PB  |           | 408.0      | -72.7                | -1.55 | 439.8      | -41.9                | -1.35 | SZ         |
| VX2D6B  |           | 550.0      | 69.3                 | 1.48  | 536.1      | 54.4                 | 1.75  | TE         |
| WPGGVU  |           | 467.7      | -13.0                | -0.28 | 480.8      | -0.9                 | -0.03 | TE         |
| YYKZ33  |           | 464.8      | -15.9                | -0.34 | 480.3      | -1.4                 | -0.05 | TE         |
| ZW7QPV  |           | 475.7      | -5.0                 | -0.11 | 477.6      | -4.1                 | -0.13 | TM         |

#### Summary Statistics

|                           | Sample Q39         | Sample Q40         |
|---------------------------|--------------------|--------------------|
| <b>Grand Means</b>        | 480.70 grams-force | 481.75 grams-force |
| <b>Stnd Dev Btwn Labs</b> | 46.75 grams-force  | 30.99 grams-force  |

Statistics based on 9 of 9 reporting participants

Sample Q39: LDPE & Sample Q40: LDPE

#### Key to Instrument Codes Reported by Participants

|    |                             |    |                        |
|----|-----------------------------|----|------------------------|
| LO | Lorentzen & Wettre Model II | SZ | Textest FX 3700        |
| TA | Thwing-Albert               | TE | Thwing-Albert Pro Tear |
| TM | TMI No. 83-1100             |    |                        |



# Plastics Interlaboratory Testing Program

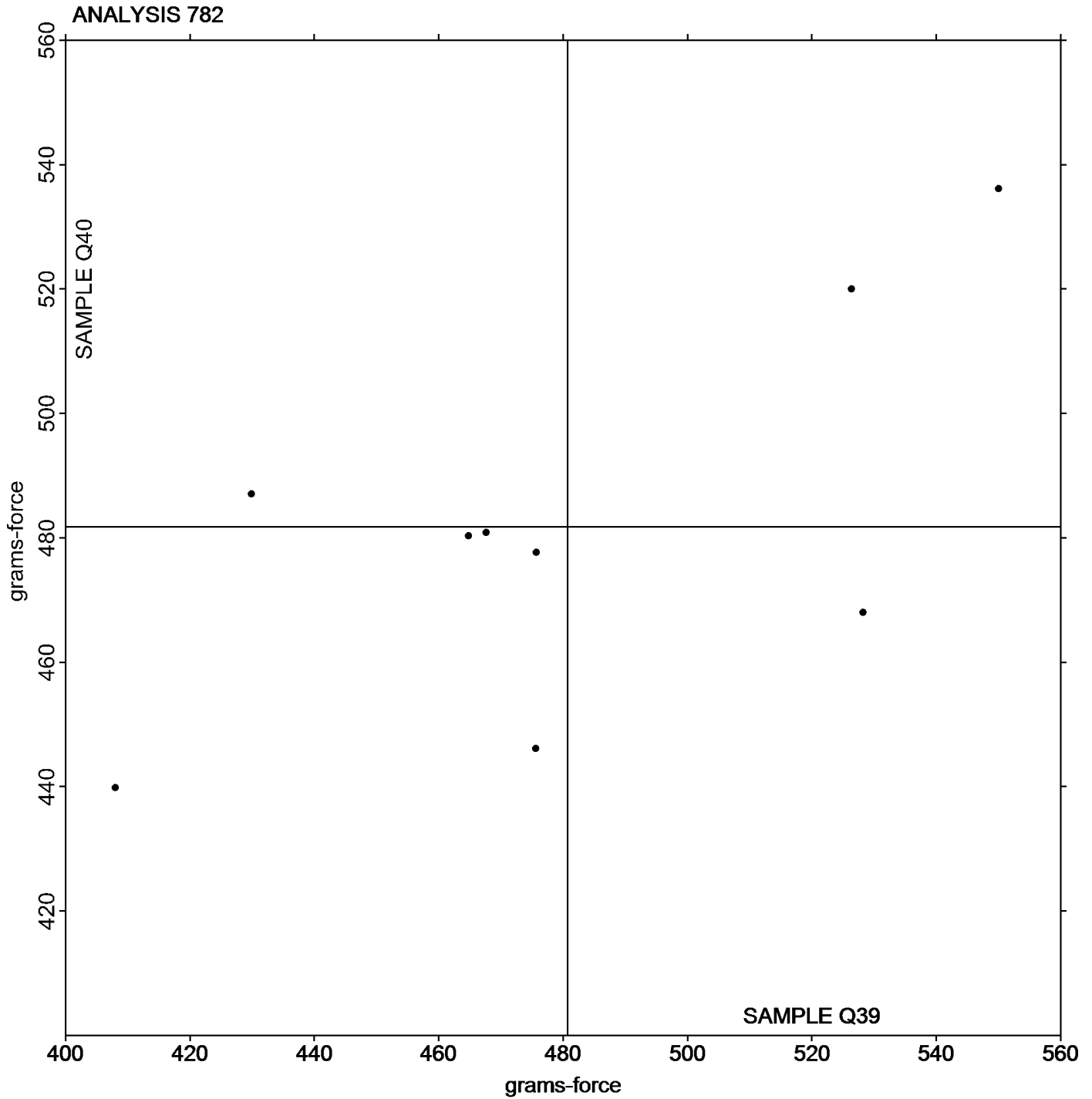
Report #100

## Analysis 782

4th Qtr 2016

### Tear Resistance of Films

Grand Mean Sample Q39: 480.70 grams-force    Grand Mean Sample Q40: 481.75 grams-force



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





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 785**

**4th Qtr 2016**

**Percent Haze of Film**

| WebCode | Data Flag | Sample D39 |                      |       | Sample D40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 4A82TZ  | *         | 14.920     | 2.384                | 2.72  | 13.649     | 1.154                | 1.72  | XR         |
| 4C9UFQ  | *         | 13.989     | 1.452                | 1.66  | 14.483     | 1.988                | 2.95  | XR         |
| 6X3ZHM  |           | 11.463     | -1.074               | -1.23 | 11.925     | -0.569               | -0.85 | BJ         |
| 7VEDCX  |           | 12.850     | 0.314                | 0.36  | 12.463     | -0.032               | -0.05 | BJ         |
| A696LF  |           | 12.000     | -0.536               | -0.61 | 12.363     | -0.132               | -0.20 | BJ         |
| AA6GB6  |           | 11.550     | -0.986               | -1.13 | 11.550     | -0.944               | -1.40 | BJ         |
| AKMWD8  |           | 11.244     | -1.293               | -1.48 | 11.301     | -1.193               | -1.77 | HL         |
| AN6Z4P  |           | 12.175     | -0.361               | -0.41 | 12.225     | -0.269               | -0.40 | DA         |
| BGKKTR  |           | 12.513     | -0.024               | -0.03 | 12.338     | -0.157               | -0.23 | XR         |
| BPX9TK  |           | 12.925     | 0.389                | 0.44  | 12.800     | 0.306                | 0.45  | BT         |
| DVW6JH  |           | 11.813     | -0.724               | -0.83 | 12.813     | 0.318                | 0.47  | BJ         |
| ECC7ZH  |           | 14.038     | 1.501                | 1.72  | 13.329     | 0.834                | 1.24  | MA         |
| ELZUJ8  |           | 11.463     | -1.074               | -1.23 | 11.800     | -0.694               | -1.03 | BJ         |
| GHAWYQ  |           | 13.013     | 0.476                | 0.54  | 12.150     | -0.344               | -0.51 | BJ         |
| L8ZKNK  |           | 13.363     | 0.826                | 0.94  | 12.575     | 0.081                | 0.12  | BJ         |
| LBZYGN  |           | 12.138     | -0.399               | -0.46 | 12.100     | -0.394               | -0.59 | BJ         |
| MRZ9VE  |           | 13.355     | 0.819                | 0.94  | 13.063     | 0.568                | 0.84  | XR         |
| QHZ8PB  |           | 12.338     | -0.199               | -0.23 | 13.025     | 0.531                | 0.79  | BJ         |
| QQWCR8  |           | 12.475     | -0.061               | -0.07 | 12.660     | 0.166                | 0.25  | BJ         |
| QUAMRA  |           | 12.213     | -0.324               | -0.37 | 12.213     | -0.282               | -0.42 | BJ         |
| QZZ64Z  |           | 13.130     | 0.594                | 0.68  | 12.754     | 0.259                | 0.39  | HC         |
| VX2D6B  |           | 12.488     | -0.049               | -0.06 | 12.175     | -0.319               | -0.47 | BJ         |
| WPGGVU  |           | 11.738     | -0.799               | -0.91 | 12.488     | -0.007               | -0.01 | BJ         |
| XA2Z2X  |           | 12.013     | -0.524               | -0.60 | 12.213     | -0.282               | -0.42 | BJ         |
| YNFJFJ  |           | 12.269     | -0.268               | -0.31 | 12.670     | 0.176                | 0.26  | BH         |
| YV44N6  |           | 12.013     | -0.524               | -0.60 | 11.481     | -1.013               | -1.51 | BJ         |
| YYKZ33  |           | 13.000     | 0.464                | 0.53  | 12.750     | 0.256                | 0.38  | BJ         |

| Summary Statistics                                  |                 |                 |
|---|-----------------|-----------------|
|   | Sample D39      | Sample D40      |
| <b>Grand Means</b>                                  | 12.5363 Percent | 12.4945 Percent |
| <b>Std Dev Btwn Labs</b>                            | 0.8749 Percent  | 0.6730 Percent  |
| Statistics based on 27 of 27 reporting participants |                 |                 |

Sample D39: LDPE & Sample D40: LDPE



# Plastics Interlaboratory Testing Program

## Analysis 785

### Percent Haze of Film

Report #100

4th Qtr 2016

#### Key to Instrument Codes Reported by Participants

|           |   |           |                                       |
|-----------|---|-----------|---------------------------------------|
| <b>BH</b> | BYK-Gardner/Pacific Scientific Model XL-211 | <b>BJ</b> | BYK-Gardner Haze-Gard Plus            |
| <b>BT</b> | BYK Gardner TCS Series                      | <b>DA</b> | Datacolor SF 600 Series               |
| <b>HC</b> | Hunterlab ColorQuest                        | <b>HL</b> | Hunterlab Ultrascan                   |
| <b>MA</b> | Macbeth 7000A                               | <b>XR</b> | X-Rite Spectrocolorimeter (any model) |





**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 786**

**4th Qtr 2016**

**Total Luminous transmittance of film**

| WebCode | Data Flag | Sample D39 |                      |       | Sample D40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 4A82TZ  |           | 91.17      | -0.63                | -0.58 | 91.22      | -0.58                | -0.54 | XR         |
| 4C9UFQ  |           | 90.77      | -1.03                | -0.96 | 90.89      | -0.91                | -0.85 | XR         |
| 6X3ZHM  |           | 92.40      | 0.60                 | 0.56  | 92.39      | 0.59                 | 0.54  | BJ         |
| 7VEDCX  |           | 93.10      | 1.30                 | 1.21  | 93.15      | 1.35                 | 1.25  | BJ         |
| A696LF  |           | 91.78      | -0.03                | -0.02 | 91.71      | -0.09                | -0.08 | BJ         |
| AA6GB6  |           | 93.00      | 1.20                 | 1.12  | 93.01      | 1.21                 | 1.12  | BJ         |
| AKMWD8  |           | 90.24      | -1.56                | -1.46 | 90.31      | -1.50                | -1.39 | HL         |
| AN6Z4P  |           | 90.06      | -1.74                | -1.62 | 90.03      | -1.78                | -1.65 | DA         |
| BGKKTR  |           | 91.10      | -0.70                | -0.65 | 91.28      | -0.53                | -0.49 | XR         |
| BPX9TK  |           | 91.81      | 0.01                 | 0.01  | 91.81      | 0.01                 | 0.01  | BT         |
| DVW6JH  |           | 89.54      | -2.26                | -2.11 | 89.48      | -2.33                | -2.16 | BJ         |
| ECC7ZH  |           | 91.36      | -0.44                | -0.41 | 91.20      | -0.60                | -0.56 | MA         |
| ELZUJ8  |           | 92.44      | 0.64                 | 0.59  | 92.43      | 0.62                 | 0.58  | BJ         |
| GHAWYQ  |           | 92.65      | 0.85                 | 0.79  | 92.69      | 0.89                 | 0.82  | BJ         |
| LBZYGN  |           | 91.78      | -0.03                | -0.02 | 91.66      | -0.14                | -0.13 | BJ         |
| MRZ9VE  |           | 91.22      | -0.58                | -0.54 | 91.21      | -0.60                | -0.55 | XR         |
| QHZ8PB  |           | 91.11      | -0.69                | -0.64 | 91.00      | -0.80                | -0.74 | BJ         |
| QQWCR8  |           | 92.55      | 0.75                 | 0.70  | 92.54      | 0.74                 | 0.68  | BJ         |
| QUAMRA  |           | 93.85      | 2.05                 | 1.91  | 93.79      | 1.99                 | 1.84  | BJ         |
| QZZ64Z  |           | 91.55      | -0.25                | -0.24 | 91.59      | -0.21                | -0.20 | HC         |
| VX2D6B  |           | 93.94      | 2.14                 | 1.99  | 94.00      | 2.20                 | 2.04  | BJ         |
| WPGGVU  |           | 92.00      | 0.20                 | 0.19  | 92.05      | 0.25                 | 0.23  | BJ         |
| XA2Z2X  |           | 92.45      | 0.65                 | 0.61  | 92.39      | 0.59                 | 0.54  | BJ         |
| YNFJFJ  |           | 91.06      | -0.74                | -0.69 | 91.06      | -0.74                | -0.69 | BH         |
| YV44N6  |           | 91.64      | -0.16                | -0.15 | 91.69      | -0.11                | -0.11 | BJ         |
| YYKZ33  |           | 92.26      | 0.46                 | 0.43  | 92.30      | 0.50                 | 0.46  | BJ         |

| Summary Statistics                                  |                |                |
|---|----------------|----------------|
|   | Sample D39     | Sample D40     |
| <b>Grand Means</b>                                  | 91.800 Percent | 91.802 Percent |
| <b>Stnd Dev Btwn Labs</b>                           | 1.074 Percent  | 1.077 Percent  |
| Statistics based on 26 of 26 reporting participants |                |                |

Sample D39: LDPE & Sample D40: LDPE



# Plastics Interlaboratory Testing Program

## Analysis 786

### Total Luminous transmittance of film

Report #100

4th Qtr 2016

#### Key to Instrument Codes Reported by Participants

|           |   |           |                                       |
|-----------|---|-----------|---------------------------------------|
| <b>BH</b> | BYK-Gardner/Pacific Scientific Model XL-211 | <b>BJ</b> | BYK-Gardner Haze-Gard Plus            |
| <b>BT</b> | BYK Gardner TCS Plus Spectrophotometer      | <b>DA</b> | Datacolor SF 600 Series               |
| <b>HC</b> | Hunterlab ColorQuest                        | <b>HL</b> | Hunterlab Ultrascan XE                |
| <b>MA</b> | Macbeth 7000A                               | <b>XR</b> | X-Rite Spectrocolorimeter (any model) |



# Plastics Interlaboratory Testing Program

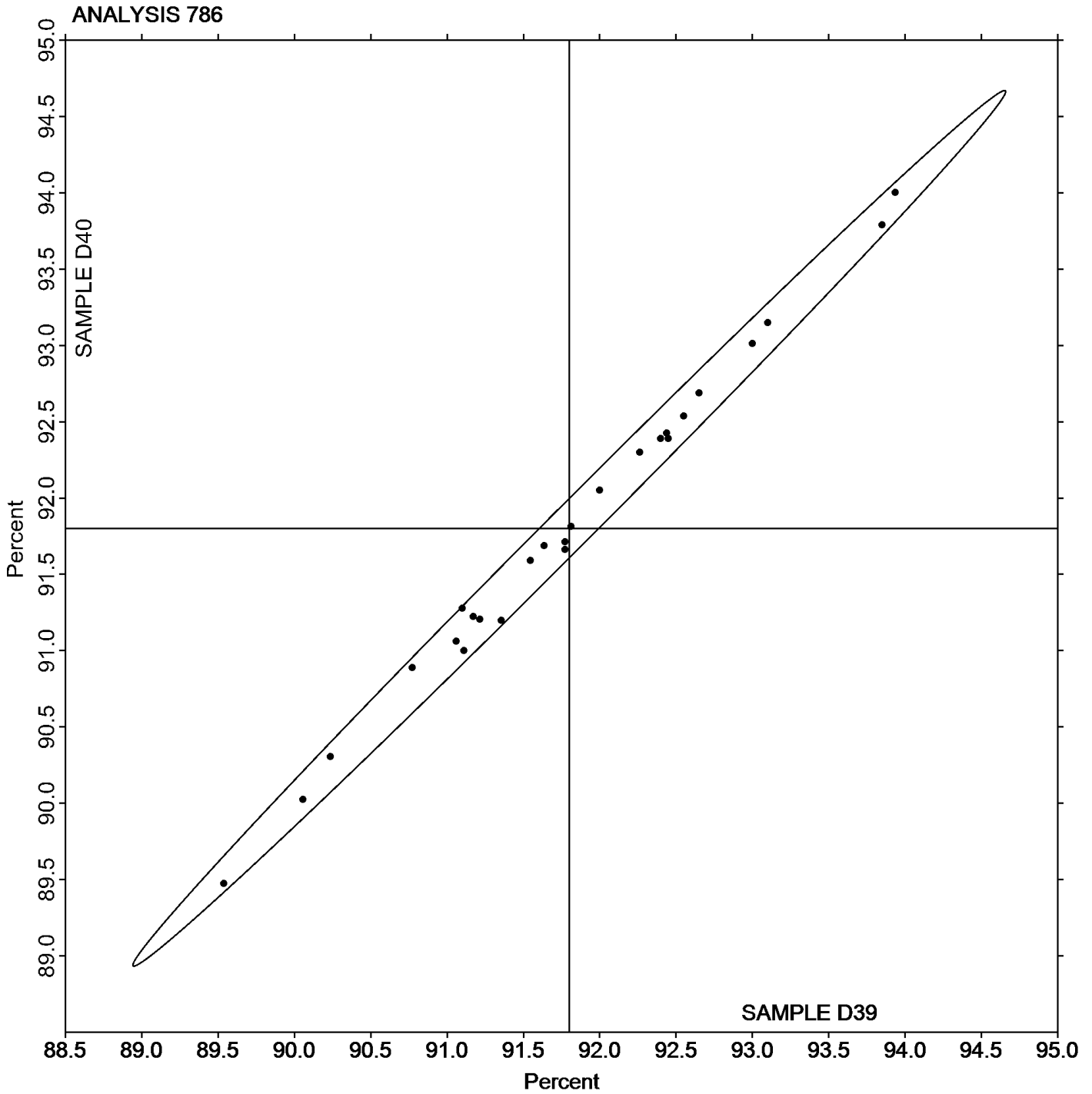
Analysis 786

Total Luminous transmittance of film

Report #100

4th Qtr 2016

Grand Mean Sample D39: 91.800 Percent    Grand Mean Sample D40: 91.802 Percent





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 790

4th Qtr 2016

### Notched Izod Impact - ft.lbf/in

| WebCode | Data Flag | Sample S39 |                      |       | Sample S40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 3CUH6T  |           | 2.54       | -0.35                | -1.22 | 2.49       | -0.39                | -1.35 | DS         |
| 3GKU6W  |           | 2.50       | -0.39                | -1.35 | 2.50       | -0.38                | -1.33 | TO         |
| 4XPJWM  |           | 2.77       | -0.12                | -0.42 | 2.91       | 0.02                 | 0.09  | CE         |
| 67GNJF  |           | 2.59       | -0.30                | -1.04 | 2.63       | -0.25                | -0.88 | TO         |
| 7FNBZZ  |           | 2.54       | -0.36                | -1.22 | 2.71       | -0.18                | -0.61 | TO         |
| 7RFYQT  |           | 2.74       | -0.15                | -0.52 | 2.77       | -0.11                | -0.37 | TO         |
| 8JHUBX  |           | 3.08       | 0.19                 | 0.64  | 2.99       | 0.11                 | 0.39  | XX         |
| 8Z93LW  |           | 2.93       | 0.04                 | 0.13  | 2.86       | -0.03                | -0.09 | TO         |
| 9GRH3Y  |           | 2.88       | -0.01                | -0.04 | 2.79       | -0.10                | -0.33 | XX         |
| 9KQYQ8  |           | 2.87       | -0.03                | -0.09 | 2.88       | 0.00                 | 0.00  | TO         |
| 9MC7PU  |           | 2.81       | -0.09                | -0.29 | 2.84       | -0.04                | -0.15 | XX         |
| A696LF  |           | 2.91       | 0.02                 | 0.07  | 2.79       | -0.09                | -0.33 | WZ         |
| A7PR8V  |           | 2.92       | 0.03                 | 0.10  | 2.97       | 0.08                 | 0.29  | CE         |
| AXPMV7  |           | 2.82       | -0.07                | -0.25 | 2.97       | 0.09                 | 0.32  | CE         |
| B937R8  | *         | 3.09       | 0.20                 | 0.69  | 2.80       | -0.08                | -0.28 | TO         |
| BTXH22  |           | 2.35       | -0.54                | -1.86 | 2.46       | -0.42                | -1.46 | TO         |
| CVWBBQ  |           | 2.86       | -0.03                | -0.12 | 2.79       | -0.09                | -0.30 | TO         |
| CYUYNR  |           | 2.81       | -0.08                | -0.29 | 2.85       | -0.03                | -0.10 | TO         |
| ECC7ZH  |           | 2.31       | -0.59                | -2.02 | 2.37       | -0.51                | -1.78 | TO         |
| EQTVM7  |           | 2.31       | -0.58                | -2.00 | 2.30       | -0.58                | -2.03 | TO         |
| GN2EKC  |           | 2.75       | -0.14                | -0.49 | 2.68       | -0.20                | -0.69 | TM         |
| HWBVHG  |           | 3.06       | 0.17                 | 0.59  | 3.07       | 0.19                 | 0.65  | TO         |
| JV8PFD  |           | 3.07       | 0.17                 | 0.59  | 3.14       | 0.26                 | 0.90  | TO         |
| K2TZ8M  |           | 2.87       | -0.02                | -0.08 | 2.87       | -0.01                | -0.03 | TM         |
| K4GEUB  |           | 3.23       | 0.34                 | 1.17  | 3.23       | 0.35                 | 1.22  | CE         |
| K9UPXL  | X         | 5.12       | 2.23                 | 7.68  | 5.16       | 2.28                 | 7.91  | XX         |
| KLYFND  |           | 2.99       | 0.09                 | 0.33  | 2.94       | 0.06                 | 0.20  | BA         |
| KNR4BF  |           | 2.94       | 0.05                 | 0.16  | 3.11       | 0.22                 | 0.78  | WZ         |
| L8ZKNK  |           | 2.95       | 0.06                 | 0.21  | 3.10       | 0.22                 | 0.77  | TM         |
| LJ89VN  |           | 2.40       | -0.49                | -1.69 | 2.38       | -0.50                | -1.73 | WZ         |
| M7HYUG  |           | 3.23       | 0.33                 | 1.14  | 3.09       | 0.21                 | 0.74  | CE         |
| MAXNXQ  |           | 2.96       | 0.07                 | 0.23  | 2.78       | -0.10                | -0.36 | CS         |
| MU8LGM  |           | 2.81       | -0.08                | -0.29 | 2.85       | -0.04                | -0.13 | CE         |
| NX48T6  |           | 3.13       | 0.24                 | 0.82  | 3.07       | 0.19                 | 0.66  | TM         |
| QHJTJM  |           | 2.30       | -0.59                | -2.03 | 2.29       | -0.59                | -2.06 | XX         |



**Plastics Interlaboratory Testing Program**

**Report #100**

**Analysis 790**

**4th Qtr 2016**

**Notched Izod Impact - ft.lbf/in**

| WebCode | Data Flag | Sample S39 |                      |       | Sample S40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| QZZ64Z  |           | 3.40       | 0.51                 | 1.76  | 3.50       | 0.62                 | 2.16  | CE         |
| RD2NAD  |           | 3.04       | 0.14                 | 0.50  | 3.00       | 0.12                 | 0.41  | TO         |
| UFKR4A  | X         | 0.82       | -2.08                | -7.15 | 0.86       | -2.03                | -7.03 | TM         |
| UMJAK7  |           | 3.17       | 0.28                 | 0.95  | 3.00       | 0.12                 | 0.40  | TO         |
| UX2T3H  |           | 3.25       | 0.36                 | 1.24  | 3.02       | 0.14                 | 0.47  | TM         |
| VX2D6B  |           | 3.02       | 0.13                 | 0.43  | 3.13       | 0.25                 | 0.86  | CE         |
| VYTE68  |           | 3.14       | 0.25                 | 0.86  | 3.18       | 0.30                 | 1.03  | TO         |
| WB44MA  |           | 3.02       | 0.13                 | 0.44  | 3.13       | 0.25                 | 0.88  | TO         |
| WJVGN   |           | 3.38       | 0.49                 | 1.67  | 3.40       | 0.52                 | 1.80  | TM         |
| WPGGVU  | X         | 2.61       | -0.28                | -0.98 | 3.16       | 0.28                 | 0.96  | TO         |
| WVTKNH  | X         | 3.73       | 0.84                 | 2.88  | 3.90       | 1.02                 | 3.55  | TM         |
| X6CNFW  |           | 2.82       | -0.07                | -0.25 | 2.73       | -0.15                | -0.53 | TM         |
| XA2Z2X  |           | 2.92       | 0.02                 | 0.08  | 2.88       | 0.00                 | -0.01 | TY         |
| XA86M2  |           | 3.09       | 0.20                 | 0.69  | 3.01       | 0.13                 | 0.46  | BA         |
| XEYAG7  |           | 2.96       | 0.06                 | 0.22  | 3.01       | 0.13                 | 0.45  | TM         |
| XLFNJB  |           | 2.59       | -0.30                | -1.04 | 2.57       | -0.31                | -1.07 | TM         |
| XRKPHJ  |           | 2.84       | -0.05                | -0.18 | 2.82       | -0.06                | -0.22 | TM         |
| XVZRDB  |           | 3.04       | 0.15                 | 0.52  | 3.05       | 0.17                 | 0.60  | TO         |
| YBEMJC  |           | 2.51       | -0.38                | -1.32 | 2.48       | -0.40                | -1.40 | CE         |
| YVWY32  | X         | 0.58       | -2.31                | -7.95 | 0.48       | -2.40                | -8.33 | TO         |
| YXL6MX  |           | 2.73       | -0.17                | -0.57 | 2.69       | -0.19                | -0.66 | TO         |
| Z9KDP2  |           | 2.87       | -0.03                | -0.09 | 2.72       | -0.16                | -0.56 | TO         |
| ZAXHAY  |           | 3.47       | 0.57                 | 1.98  | 3.41       | 0.53                 | 1.83  | TO         |
| ZKVVDX  | *         | 3.62       | 0.72                 | 2.49  | 3.68       | 0.80                 | 2.78  | TM         |
| ZPALKD  |           | 3.04       | 0.15                 | 0.52  | 2.90       | 0.02                 | 0.07  | XX         |
| ZU2T68  |           | 2.76       | -0.14                | -0.47 | 2.79       | -0.10                | -0.33 | CE         |

| Summary Statistics                                  | Sample S39      | Sample S40      |
|---|-----------------|-----------------|
| <b>Grand Means</b>                                  | 2.893 ft.lbf/in | 2.882 ft.lbf/in |
| <b>Std Dev Btwn Labs</b>                            | 0.290 ft.lbf/in | 0.288 ft.lbf/in |
| Statistics based on 56 of 61 reporting participants |                 |                 |

Sample S39: HIPS & Sample S40: HIPS





**Comments on Assigned Data Flags for Test #790**

UFKR4A (X) - Data for both samples are low. Possible Systematic Error.

WVTKNH (X) - Data for both samples are high. Possible Systematic Error.

YVWY32 (X) - Data for both samples are low. Possible Systematic Error.

WPGGVU (X) - Inconsistent in testing between samples.

K9UPXL (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

**Key to Instrument Codes Reported by Participants**

BA Baldwin

CE Ceast

CS CSI

DS Dynisco

TM TMI

TO Tinius Olsen

TY Toyoseiki

WZ Zwick

XX Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

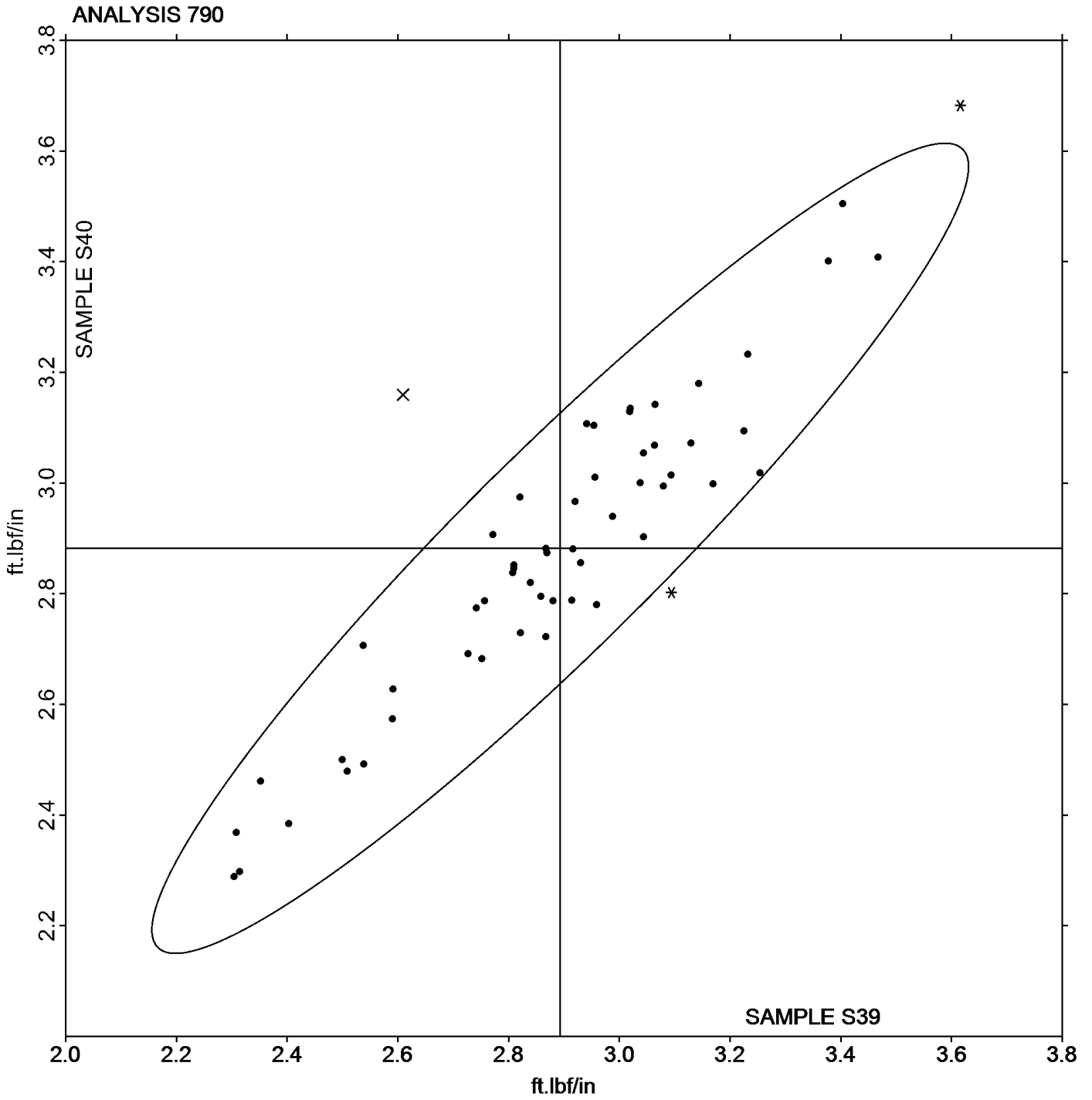
Analysis 790

Notched Izod Impact - ft.lbf/in

Report #100

4th Qtr 2016

Grand Mean Sample S39: 2.8932 ft.lbf/in Grand Mean Sample S40: 2.8820 ft.lbf/in





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 791

4th Qtr 2016

### Notched Izod Impact - kJ/m<sup>2</sup>

| WebCode | Data Flag | Sample Z39 |                      |        | Sample Z40 |                      |        | Instr Code |
|---------|-----------|------------|----------------------|--------|------------|----------------------|--------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV    | Lab Mean   | Diff from Grand Mean | CPV    |            |
| 33PVBV  |           | 21.79400   | -0.06120             | -0.05  | 22.13000   | 0.21910              | 0.24   | TO         |
| 3UG48R  |           | 19.48960   | -2.36560             | -2.07  | 20.46880   | -1.44210             | -1.56  | TO         |
| 7GDEDM  |           | 22.58400   | 0.72880              | 0.64   | 22.92000   | 1.00910              | 1.09   | TM         |
| 7GFAAR  |           | 22.73000   | 0.87480              | 0.77   | 22.02800   | 0.11710              | 0.13   | XX         |
| 7VEDCX  |           | 20.83400   | -1.02120             | -0.89  | 21.24600   | -0.66490             | -0.72  | TO         |
| 8Z93LW  |           | 21.92000   | 0.06480              | 0.06   | 21.14000   | -0.77090             | -0.83  | TO         |
| 9KQYQ8  |           | 21.26000   | -0.59520             | -0.52  | 21.10000   | -0.81090             | -0.88  | TO         |
| A7PR8V  | X         | 21.59720   | -0.25800             | -0.23  | 10.49360   | -11.41730            | -12.34 | CE         |
| FXTZ7V  |           | 23.43400   | 1.57880              | 1.38   | 23.16600   | 1.25510              | 1.36   | IN         |
| GHAWYQ  |           | 21.00000   | -0.85520             | -0.75  | 21.60000   | -0.31090             | -0.34  | CE         |
| JAR7NJ  | X         | 26.62640   | 4.77120              | 4.17   | 26.76740   | 4.85650              | 5.25   | TO         |
| JDDPTM  |           | 20.05200   | -1.80320             | -1.58  | 20.58200   | -1.32890             | -1.44  | CE         |
| KA8TEC  |           | 20.63960   | -1.21560             | -1.06  | 20.61880   | -1.29210             | -1.40  | CE         |
| KFV7LR  |           | 20.70000   | -1.15520             | -1.01  | 20.66000   | -1.25090             | -1.35  | WZ         |
| KLYFND  |           | 22.93540   | 1.08020              | 0.94   | 22.98900   | 1.07810              | 1.17   | CE         |
| KNR4BF  |           | 23.53200   | 1.67680              | 1.47   | 23.68200   | 1.77110              | 1.91   | WZ         |
| NFMXWA  |           | 22.42200   | 0.56680              | 0.50   | 22.14400   | 0.23310              | 0.25   | TO         |
| NU32GJ  | X         | 9.75640    | 12.09880             | -10.58 | 10.00340   | -11.90750            | -12.87 | TM         |
| P4PEVA  |           | 21.75200   | -0.10320             | -0.09  | 21.55200   | -0.35890             | -0.39  | TM         |
| P63E3H  |           | 21.80600   | -0.04920             | -0.04  | 22.23400   | 0.32310              | 0.35   | CE         |
| QG9YVA  |           | 21.63800   | -0.21720             | -0.19  | 21.70600   | -0.20490             | -0.22  | XX         |
| QPJDLH  |           | 22.64800   | 0.79280              | 0.69   | 22.65600   | 0.74510              | 0.81   | CE         |
| RD2NAD  |           | 21.24000   | -0.61520             | -0.54  | 21.26000   | -0.65090             | -0.70  | TO         |
| VYWTH9  | *         | 24.25000   | 2.39480              | 2.10   | 22.17020   | 0.25930              | 0.28   | TM         |
| WJVGKN  |           | 21.84820   | -0.00700             | -0.01  | 23.09280   | 1.18190              | 1.28   | TM         |
| WYNLYR  |           | 22.82000   | 0.96480              | 0.84   | 22.94000   | 1.02910              | 1.11   | TO         |
| XA2Z2X  |           | 21.19600   | -0.65920             | -0.58  | 21.77600   | -0.13490             | -0.15  | XX         |

#### Summary Statistics

#### Grand Means

Sample Z39  
21.855200 kJ/m<sup>2</sup>

Sample Z40  
21.910900 kJ/m<sup>2</sup>

#### Std Dev Btwn Labs

1.143084 kJ/m<sup>2</sup>

0.924888 kJ/m<sup>2</sup>

Statistics based on 24 of 27 reporting participants

Sample Z39: HIPS & Sample Z40: HIPS



# Plastics Interlaboratory Testing Program

## Analysis 791

### Notched Izod Impact - $\text{kJ/m}^2$

Report #100

4th Qtr 2016

#### **Comments on Assigned Data Flags for Test #791**

A7PR8V (X) - Data for sample Z40 are low.

JAR7NJ (X) - Data for both samples are high.

NU32GJ (X) - Data for both samples are low.

#### **Key to Instrument Codes Reported by Participants**

CE Ceast

TM TMI

WZ Zwick

IN Instron

TO Tinius Olsen

XX Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

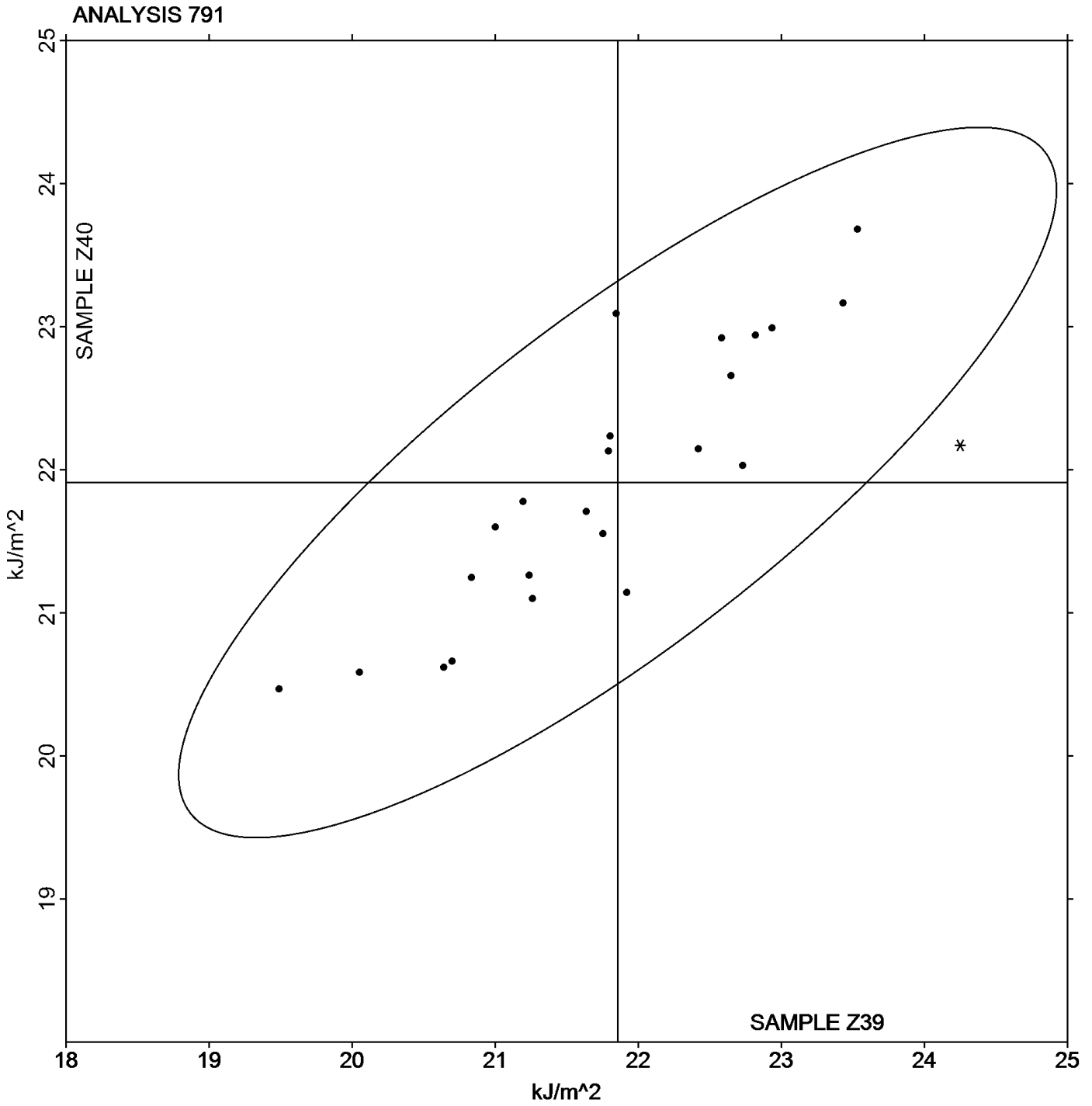
Report #100

Analysis 791

4th Qtr 2016

Notched Izod Impact -  $\text{kJ/m}^2$

Grand Mean Sample Z39:  $21.855 \text{ kJ/m}^2$  Grand Mean Sample Z40:  $21.911 \text{ kJ/m}^2$





# Plastics Interlaboratory Testing Program

Report #100

## Analysis 792

4th Qtr 2016

### Notched Charpy Impact - kJ/m<sup>2</sup>

| WebCode | Data Flag | Sample M39 |                      |       | Sample M40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| 33PVBV  |           | 11.18      | -0.16                | -0.34 | 11.48      | 0.11                 | 0.22  | TO         |
| 3UG48R  |           | 11.30      | -0.04                | -0.08 | 11.10      | -0.27                | -0.56 | TO         |
| 4MU9Q2  |           | 11.68      | 0.34                 | 0.72  | 11.82      | 0.45                 | 0.94  | CE         |
| 6X3ZHM  |           | 11.37      | 0.03                 | 0.07  | 11.75      | 0.38                 | 0.79  | TO         |
| 7GFAAR  |           | 11.19      | -0.15                | -0.31 | 11.18      | -0.19                | -0.39 | XX         |
| 8CWVLA  |           | 11.06      | -0.28                | -0.58 | 10.87      | -0.50                | -1.05 | CE         |
| 8JHUBX  |           | 10.66      | -0.67                | -1.41 | 10.58      | -0.79                | -1.65 | XX         |
| 8Z93LW  |           | 11.94      | 0.60                 | 1.25  | 11.60      | 0.23                 | 0.49  | TO         |
| 938AAK  |           | 11.18      | -0.16                | -0.33 | 11.08      | -0.29                | -0.60 | TM         |
| 9A7RT3  |           | 11.64      | 0.30                 | 0.63  | 11.52      | 0.15                 | 0.31  | CE         |
| 9KQYQ8  |           | 11.54      | 0.20                 | 0.42  | 11.58      | 0.21                 | 0.44  | TO         |
| 9R4AHX  | *         | 10.82      | -0.52                | -1.09 | 11.47      | 0.10                 | 0.20  | TM         |
| A7PR8V  |           | 12.09      | 0.75                 | 1.57  | 12.21      | 0.84                 | 1.75  | CE         |
| AXPMV7  |           | 11.13      | -0.21                | -0.43 | 11.27      | -0.10                | -0.21 | CE         |
| BUPLNG  |           | 11.82      | 0.48                 | 1.01  | 11.88      | 0.51                 | 1.05  | XX         |
| E6D94M  |           | 10.84      | -0.50                | -1.04 | 10.75      | -0.62                | -1.30 | CE         |
| GPUVPY  |           | 11.01      | -0.33                | -0.69 | 11.04      | -0.33                | -0.69 | CE         |
| H3FYLG  |           | 11.87      | 0.53                 | 1.11  | 11.86      | 0.49                 | 1.01  | CE         |
| JAR7NJ  | X         | 9.55       | -1.78                | -3.73 | 9.52       | -1.85                | -3.85 | TO         |
| JDDPTM  |           | 10.49      | -0.85                | -1.77 | 10.33      | -1.04                | -2.17 | CE         |
| JMZVHE  |           | 12.28      | 0.94                 | 1.97  | 12.28      | 0.91                 | 1.89  | WZ         |
| JV8PFD  |           | 11.09      | -0.25                | -0.51 | 11.44      | 0.07                 | 0.14  | TO         |
| KA8TEC  |           | 10.80      | -0.54                | -1.13 | 10.74      | -0.63                | -1.31 | XX         |
| KCT3G6  |           | 11.64      | 0.30                 | 0.63  | 11.22      | -0.15                | -0.31 | XX         |
| KFV7LR  |           | 11.06      | -0.28                | -0.58 | 11.10      | -0.27                | -0.56 | WZ         |
| KLYFND  |           | 12.14      | 0.80                 | 1.68  | 12.14      | 0.77                 | 1.60  | CE         |
| L8ZKNK  |           | 11.80      | 0.46                 | 0.97  | 11.54      | 0.17                 | 0.36  | TM         |
| LRMCVF  | X         | 50.39      | 39.05                | 81.68 | 49.71      | 38.34                | 79.68 | PO         |
| M7HYUG  |           | 11.12      | -0.22                | -0.46 | 11.06      | -0.31                | -0.64 | CE         |
| MPC28B  |           | 11.31      | -0.03                | -0.05 | 11.30      | -0.07                | -0.15 | WZ         |
| N3V2GB  |           | 10.92      | -0.42                | -0.88 | 10.87      | -0.50                | -1.04 | TM         |
| NFMXWA  |           | 11.40      | 0.07                 | 0.14  | 11.36      | -0.01                | -0.02 | TO         |
| NQ4AYR  |           | 10.42      | -0.92                | -1.93 | 10.71      | -0.66                | -1.37 | XX         |
| NU32GJ  | X         | 9.63       | -1.71                | -3.58 | 9.33       | -2.04                | -4.24 | TM         |
| P63E3H  |           | 11.75      | 0.41                 | 0.86  | 11.77      | 0.40                 | 0.84  | CE         |



# Plastics Interlaboratory Testing Program

Report #100

## Analysis 792

4th Qtr 2016

### Notched Charpy Impact - kJ/m<sup>2</sup>

| WebCode | Data Flag | Sample M39 |                      |       | Sample M40 |                      |       | Instr Code |
|---------|-----------|------------|----------------------|-------|------------|----------------------|-------|------------|
|         |           | Lab Mean   | Diff from Grand Mean | CPV   | Lab Mean   | Diff from Grand Mean | CPV   |            |
| PE7UNG  |           | 12.29      | 0.95                 | 1.98  | 12.10      | 0.73                 | 1.52  | TO         |
| PVAXZE  |           | 12.04      | 0.70                 | 1.47  | 12.30      | 0.93                 | 1.94  | TO         |
| QG9YVA  |           | 11.41      | 0.07                 | 0.15  | 11.26      | -0.11                | -0.22 | WZ         |
| QPJDLH  |           | 11.06      | -0.28                | -0.58 | 11.28      | -0.09                | -0.18 | CE         |
| RD2NAD  |           | 10.86      | -0.48                | -1.00 | 10.98      | -0.39                | -0.81 | TO         |
| VX2D6B  |           | 11.08      | -0.25                | -0.53 | 11.55      | 0.18                 | 0.37  | CE         |
| VYWTH9  |           | 11.58      | 0.24                 | 0.51  | 11.54      | 0.17                 | 0.35  | TM         |
| WB3BKV  |           | 11.48      | 0.14                 | 0.30  | 11.74      | 0.37                 | 0.77  | WZ         |
| WJVGKN  |           | 11.86      | 0.52                 | 1.09  | 12.08      | 0.71                 | 1.48  | TM         |
| WVTKNH  |           | 10.84      | -0.50                | -1.04 | 11.05      | -0.32                | -0.67 | TM         |
| XA2Z2X  |           | 10.94      | -0.40                | -0.84 | 11.01      | -0.36                | -0.74 | TY         |
| XD4U49  |           | 11.74      | 0.40                 | 0.84  | 11.76      | 0.39                 | 0.81  | TO         |
| YBEMJC  |           | 10.86      | -0.48                | -1.01 | 10.99      | -0.38                | -0.78 | CE         |
| ZKVVDX  |           | 11.56      | 0.22                 | 0.46  | 11.23      | -0.14                | -0.29 | TM         |
| ZPALKD  |           | 10.75      | -0.59                | -1.24 | 10.62      | -0.75                | -1.55 | XX         |

| Summary Statistics                                  |                          |                          |
|---|--------------------------|--------------------------|
|   | Sample M39               | Sample M40               |
| <b>Grand Means</b>                                  | 11.338 kJ/m <sup>2</sup> | 11.370 kJ/m <sup>2</sup> |
| <b>Stnd Dev Btwn Labs</b>                           | 0.478 kJ/m <sup>2</sup>  | 0.481 kJ/m <sup>2</sup>  |
| Statistics based on 47 of 50 reporting participants |                          |                          |

Sample M39: HIPS & Sample M40: HIPS

#### Comments on Assigned Data Flags for Test #792

JAR7NJ (X) - Data for both samples are low. Possible Systematic Error.

LRMCVF (X) - Extreme data.

NU32GJ (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.

#### Key to Instrument Codes Reported by Participants

|    |  |    |              |
|----|--|----|--------------|
| CE | Ceast  | PO | POE          |
| TM | TMI  | TO | Tinius Olsen |
| TY | Toyoseiki                                    | WZ | Zwick        |
| XX | Instrument manufacturer not specified by lab |    |              |



# Plastics Interlaboratory Testing Program

Report #100

Analysis 792

4th Qtr 2016

Notched Charpy Impact -  $\text{kJ/m}^2$

Grand Mean Sample M39:  $11.338 \text{ kJ/m}^2$  Grand Mean Sample M40:  $11.370 \text{ kJ/m}^2$

