**Collaborative Testing Services, Inc.**

# Rubber Interlaboratory Testing Program

## Summary Report #187- 1st Qtr 2016

About the Rubber Program, About CTS

Key for Web Summary Report

## ABOUT THE PROGRAM

The Collaborative Reference Program for RUBBER, which was initiated in 1969, is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance provided by the Rubber Division of the American Chemical Society. 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 rubber testing proficiency.

For each test there are summary statistics 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. Please refer to the section KEY TO TABLES AND GRAPHS for an explanation of terms and guidelines to interpreting the results.

## ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industrial sectors, including rubber, plastics, fasteners and metals, containerboard, paper and color, 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.

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

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

**Lab Mean**      Tensile & Hardness: the average of the median values obtained for each sample.
All other tests: the average of the test results obtained by the participant.

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

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

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

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

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

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

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

**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 data usually vary by more than three standard deviations from the grand mean.) 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.

5.   *Data appeared to be off by a factor of # and was corrected by CTS* - In tests that involve computations, the results reported to CTS may be off by a factor. If this factor can easily be determined, CTS may correct the data and flag the participant. Occasionally CTS will correct a laboratory's results even though the data are still high or low when compared to the other participants. This is done so that the laboratory may be alerted to other possible errors in its testing procedure.

6.   *Data for two samples (or two tests) appeared to be switched by the lab, and the error was corrected by CTS.*

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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.

# Analysis 605
## Tensile Strength (psi)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2AFDL6 | | 3,149.4 | -26.6 | -0.21 | 3,102.4 | -86.6 | -0.76 | ZZ |
| 2BCNG8 | | 3,398.0 | 222.1 | 1.74 | 3,298.8 | 109.7 | 0.97 | ZZ |
| 3BUW73 | X | 2,869.5 | -306.4 | -2.40 | 2,654.5 | -534.5 | -4.72 | ZZ |
| 3JLFKB | | 3,088.3 | -87.6 | -0.69 | 3,215.0 | 25.9 | 0.23 | ZZ |
| 3XJRTE | | 3,292.4 | 116.5 | 0.91 | 3,379.4 | 190.4 | 1.68 | ZZ |
| 4H9684 | | 3,335.9 | 160.0 | 1.25 | 3,227.1 | 38.1 | 0.34 | ZZ |
| 4P9P8D | | 2,920.0 | -255.9 | -2.00 | 3,140.0 | -49.0 | -0.43 | ZZ |
| 6PMBGF | | 3,082.0 | -93.9 | -0.73 | 3,091.0 | -98.0 | -0.86 | ZZ |
| 6VNMEX | | 3,254.0 | 78.1 | 0.61 | 3,230.0 | 41.0 | 0.36 | ZZ |
| 6ZJEKA | | 3,106.0 | -69.9 | -0.55 | 3,251.0 | 62.0 | 0.55 | ZZ |
| 6ZL4P7 | | 3,111.1 | -64.8 | -0.51 | 3,176.4 | -12.6 | -0.11 | ZZ |
| 7V8TC3 | | 3,166.0 | -9.9 | -0.08 | 3,228.0 | 39.0 | 0.34 | ZZ |
| 832H7C | | 3,200.5 | 24.5 | 0.19 | 3,336.5 | 147.4 | 1.30 | ZZ |
| 87KD94 | | 3,200.1 | 24.2 | 0.19 | 3,148.8 | -40.3 | -0.36 | ZZ |
| 8FQE8A | | 3,413.0 | 237.1 | 1.85 | 3,272.0 | 83.0 | 0.73 | ZZ |
| 94CH37 | | 3,110.0 | -65.9 | -0.52 | 3,052.0 | -137.0 | -1.21 | ZZ |
| 9LUG84 | | 3,298.4 | 122.4 | 0.96 | 3,297.6 | 108.5 | 0.96 | ZZ |
| 9YX2BT | | 3,011.5 | -164.4 | -1.29 | 3,057.0 | -132.0 | -1.17 | ZZ |
| A6YFUA | M | 3,166.0 | -9.9 | -0.08 | 3,074.0 | -115.0 | -1.02 | ZZ |
| A92GU7 | | 3,145.5 | -30.4 | -0.24 | 3,217.0 | 28.0 | 0.25 | ZZ |
| AHP8GY | | 3,127.5 | -48.4 | -0.38 | 3,229.5 | 40.5 | 0.36 | ZZ |
| B2WW72 | | 3,121.0 | -54.9 | -0.43 | 3,163.5 | -25.5 | -0.23 | ZZ |
| B8JMTW | | 3,218.1 | 42.2 | 0.33 | 3,279.3 | 90.3 | 0.80 | ZZ |
| BLKJP4 | | 2,934.5 | -241.4 | -1.89 | 2,928.5 | -260.5 | -2.30 | ZZ |
| C8J7U6 | | 3,037.5 | -138.4 | -1.08 | 2,990.0 | -199.0 | -1.76 | ZZ |
| CCAG43 | | 3,015.5 | -160.4 | -1.25 | 3,017.5 | -171.5 | -1.51 | ZZ |
| CGKUL2 | | 3,000.9 | -175.0 | -1.37 | 3,040.7 | -148.3 | -1.31 | ZZ |
| CGMJPY | | 3,247.5 | 71.6 | 0.56 | 3,318.5 | 129.5 | 1.14 | ZZ |
| CLZ6Y7 | | 3,079.3 | -96.6 | -0.76 | 3,074.7 | -114.4 | -1.01 | ZZ |
| DBUKB4 | | 3,388.4 | 212.5 | 1.66 | 3,238.4 | 49.3 | 0.44 | ZZ |
| DKJ6G2 | | 3,064.0 | -111.9 | -0.88 | 3,314.3 | 125.2 | 1.11 | ZZ |
| E489DT | | 3,188.0 | 12.1 | 0.09 | 3,221.5 | 32.5 | 0.29 | ZZ |
| EDZH4B | | 3,162.0 | -13.9 | -0.11 | 3,057.0 | -132.0 | -1.17 | ZZ |
| EERKN7 | | 3,276.2 | 100.3 | 0.78 | 3,280.1 | 91.0 | 0.80 | ZZ |
| EHTNFR | | 3,167.4 | -8.5 | -0.07 | 3,215.2 | 26.2 | 0.23 | ZZ |
| ELBNW9 | | 3,250.5 | 74.6 | 0.58 | 3,252.5 | 63.5 | 0.56 | ZZ |
| ENFBBX | | 3,275.3 | 99.4 | 0.78 | 3,289.2 | 100.1 | 0.88 | ZZ |
| ETA9ZN | | 3,296.0 | 120.1 | 0.94 | 3,359.0 | 170.0 | 1.50 | ZZ |

# Rubber Interlaboratory Testing Program

## Analysis 605
### Tensile Strength (psi)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| EU4Y74 | | 3,234.4 | 58.5 | 0.46 | 3,096.6 | -92.4 | -0.82 | ZZ |
| FENFPM | | 3,300.0 | 124.1 | 0.97 | 3,266.0 | 77.0 | 0.68 | ZZ |
| FH7E63 | | 3,230.5 | 54.6 | 0.43 | 3,170.0 | -19.0 | -0.17 | ZZ |
| FKEPYL | | 2,888.5 | -287.4 | -2.25 | 3,007.5 | -181.5 | -1.60 | ZZ |
| GMX4ZZ | | 3,287.5 | 111.6 | 0.87 | 3,276.5 | 87.5 | 0.77 | ZZ |
| GP2WUY | | 3,022.0 | -153.9 | -1.20 | 3,033.0 | -156.0 | -1.38 | ZZ |
| GT28QY | | 3,407.7 | 231.8 | 1.81 | 3,325.0 | 136.0 | 1.20 | ZZ |
| H4GE3T | * | 3,556.5 | 380.6 | 2.98 | 3,473.0 | 284.0 | 2.51 | ZZ |
| H8WPFW | | 3,364.5 | 188.6 | 1.48 | 3,164.5 | -24.5 | -0.22 | ZZ |
| J68Z9P | | 3,058.0 | -117.9 | -0.92 | 2,981.0 | -208.0 | -1.84 | ZZ |
| J9MALT | | 3,245.0 | 69.1 | 0.54 | 3,352.5 | 163.5 | 1.44 | ZZ |
| K4NF2W | | 3,144.5 | -31.4 | -0.25 | 3,285.5 | 96.5 | 0.85 | ZZ |
| KH9V6W | | 3,025.0 | -150.9 | -1.18 | 3,170.0 | -19.0 | -0.17 | ZZ |
| KVWXMN | | 3,160.5 | -15.4 | -0.12 | 3,156.0 | -33.0 | -0.29 | ZZ |
| L46RFV | | 3,077.7 | -98.2 | -0.77 | 3,048.0 | -141.0 | -1.24 | ZZ |
| L9E6YF | | 3,336.0 | 160.1 | 1.25 | 3,353.5 | 164.5 | 1.45 | ZZ |
| LADFTX | | 3,213.0 | 37.1 | 0.29 | 3,183.0 | -6.0 | -0.05 | ZZ |
| LKUYCU | X | 2,900.1 | -275.8 | -2.16 | 2,746.3 | -442.7 | -3.91 | ZZ |
| LM2GBP | X | 2,805.0 | -370.9 | -2.90 | 2,792.5 | -396.5 | -3.50 | ZZ |
| LVRZPX | | 3,056.7 | -119.2 | -0.93 | 3,172.7 | -16.3 | -0.14 | ZZ |
| M2XWBJ | | 3,333.7 | 157.8 | 1.23 | 3,305.4 | 116.4 | 1.03 | ZZ |
| M6YWBF | | 3,221.5 | 45.6 | 0.36 | 3,216.5 | 27.5 | 0.24 | ZZ |
| M7972R | | 3,233.5 | 57.6 | 0.45 | 3,308.5 | 119.5 | 1.05 | ZZ |
| M9HWQW | | 3,252.7 | 76.8 | 0.60 | 3,197.6 | 8.6 | 0.08 | ZZ |
| MYUXZQ | | 3,255.0 | 79.1 | 0.62 | 3,288.5 | 99.5 | 0.88 | ZZ |
| ND9LNE | | 3,118.5 | -57.4 | -0.45 | 3,256.5 | 67.5 | 0.60 | ZZ |
| P69LPC | | 3,197.4 | 21.5 | 0.17 | 3,230.0 | 41.0 | 0.36 | ZZ |
| QC2FZF | | 3,098.8 | -77.1 | -0.60 | 3,079.9 | -109.1 | -0.96 | ZZ |
| QFJFFV | | 2,999.5 | -176.4 | -1.38 | 3,159.0 | -30.0 | -0.26 | ZZ |
| QNFBFF | X | 2,833.5 | -342.4 | -2.68 | 2,779.0 | -410.0 | -3.62 | ZZ |
| QQJ7YH | | 3,181.5 | 5.6 | 0.04 | 3,186.5 | -2.5 | -0.02 | ZZ |
| QVFUFP | | 3,042.0 | -133.9 | -1.05 | 3,185.0 | -4.0 | -0.04 | ZZ |
| R7RJTL | | 3,076.5 | -99.4 | -0.78 | 3,245.5 | 56.5 | 0.50 | ZZ |
| RFH6YJ | | 3,094.5 | -81.4 | -0.64 | 3,204.0 | 15.0 | 0.13 | ZZ |
| RGDKAV | | 3,035.0 | -140.9 | -1.10 | 2,968.0 | -221.0 | -1.95 | ZZ |
| RHNMXE | | 3,159.5 | -16.4 | -0.13 | 3,227.0 | 38.0 | 0.34 | ZZ |
| RZ4YNK | | 3,182.5 | 6.6 | 0.05 | 3,094.5 | -94.5 | -0.83 | ZZ |

# Rubber Interlaboratory Testing Program
## Analysis 605
## Tensile Strength (psi)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| T7BM2L | | 3,027.0 | -148.9 | -1.17 | 3,009.6 | -179.4 | -1.58 | ZZ |
| TCYAWQ | | 3,111.0 | -64.9 | -0.51 | 3,079.0 | -110.0 | -0.97 | ZZ |
| U99MEN | | 3,314.5 | 138.6 | 1.08 | 3,168.0 | -21.0 | -0.19 | ZZ |
| ULXM8B | | 3,284.5 | 108.6 | 0.85 | 3,292.5 | 103.5 | 0.91 | ZZ |
| UVJNML | | 3,156.8 | -19.2 | -0.15 | 3,256.2 | 67.2 | 0.59 | ZZ |
| V7KE6M | | 3,162.5 | -13.4 | -0.10 | 2,988.5 | -200.5 | -1.77 | ZZ |
| VTBXXG | | 3,064.5 | -111.4 | -0.87 | 3,025.5 | -163.5 | -1.44 | ZZ |
| WCHMNK | | 2,985.0 | -190.9 | -1.49 | 3,015.0 | -174.0 | -1.54 | ZZ |
| WGYM97 | | 3,129.9 | -46.0 | -0.36 | 3,292.4 | 103.4 | 0.91 | ZZ |
| WRWNKI | | 3,267.7 | 91.8 | 0.72 | 3,065.4 | -123.6 | -1.09 | ZZ |
| WX3K4B | | 2,868.2 | -307.7 | -2.41 | 3,048.0 | -141.0 | -1.24 | ZZ |
| XNRHJA | | 3,386.7 | 210.8 | 1.65 | 3,350.4 | 161.4 | 1.42 | ZZ |
| XVQ6BA | | 3,127.3 | -48.7 | -0.38 | 3,079.1 | -110.0 | -0.97 | ZZ |
| XW823A | | 3,370.0 | 194.1 | 1.52 | 3,246.7 | 57.7 | 0.51 | ZZ |
| Y7TMLC | | 3,205.4 | 29.5 | 0.23 | 3,118.3 | -70.7 | -0.62 | ZZ |
| Z6UYH8 | | 3,232.5 | 56.6 | 0.44 | 3,195.0 | 6.0 | 0.05 | ZZ |
| ZEGZZ3 | | 3,142.5 | -33.4 | -0.26 | 3,248.0 | 59.0 | 0.52 | ZZ |
| ZMA8H9 | | 3,249.7 | 73.8 | 0.58 | 3,349.1 | 160.1 | 1.41 | ZZ |
| ZMRYUD | | 3,233.5 | 57.6 | 0.45 | 3,295.0 | 106.0 | 0.94 | ZZ |
| ZQAGP4 | | 3,155.0 | -20.9 | -0.16 | 3,252.5 | 63.5 | 0.56 | ZZ |
| ZRPHWC | | 3,236.5 | 60.6 | 0.47 | 3,279.0 | 90.0 | 0.79 | ZZ |
| ZVPQ38 | * | 3,346.6 | 170.7 | 1.34 | 3,108.4 | -80.6 | -0.71 | ZZ |
| ZYZ2TG | | 3,080.0 | -95.9 | -0.75 | 3,160.0 | -29.0 | -0.26 | ZZ |

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### Summary Statistics

Grand Means

    3,175.90 psi                      3,189.00 psi

Stnd Dev Btwn Labs

    127.84 psi                       113.30 psi

Statistics based on 93 of 98 reporting participants

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### Summary Statistics in SI Units

Grand Means

    21.897 MPa                       21.99 MPa

Stnd Dev Btwn Labs

    0.881 MPa                        0.78 MPa

Statistics based on 93 of 98 reporting participants

Samples A61-A62: Polyisoprene compound, batch #1 &  A63-A64: Polyisoprene compound, batch #2

## Comments on assigned Data Flags for Test #605

3BUW73 (X) - Data for Sample group A63-A64 are low.

A6YFUA (M) - Data not reported for Sample A61.

LKUYCU (X) - Data for Sample group A63-A64 are low.

LM2GBP (X) - Data for all Samples are low. Possible systematic error.

QNFBFF (X) - Data for Sample group A63-A64 are low.

## Instrument Code Listing

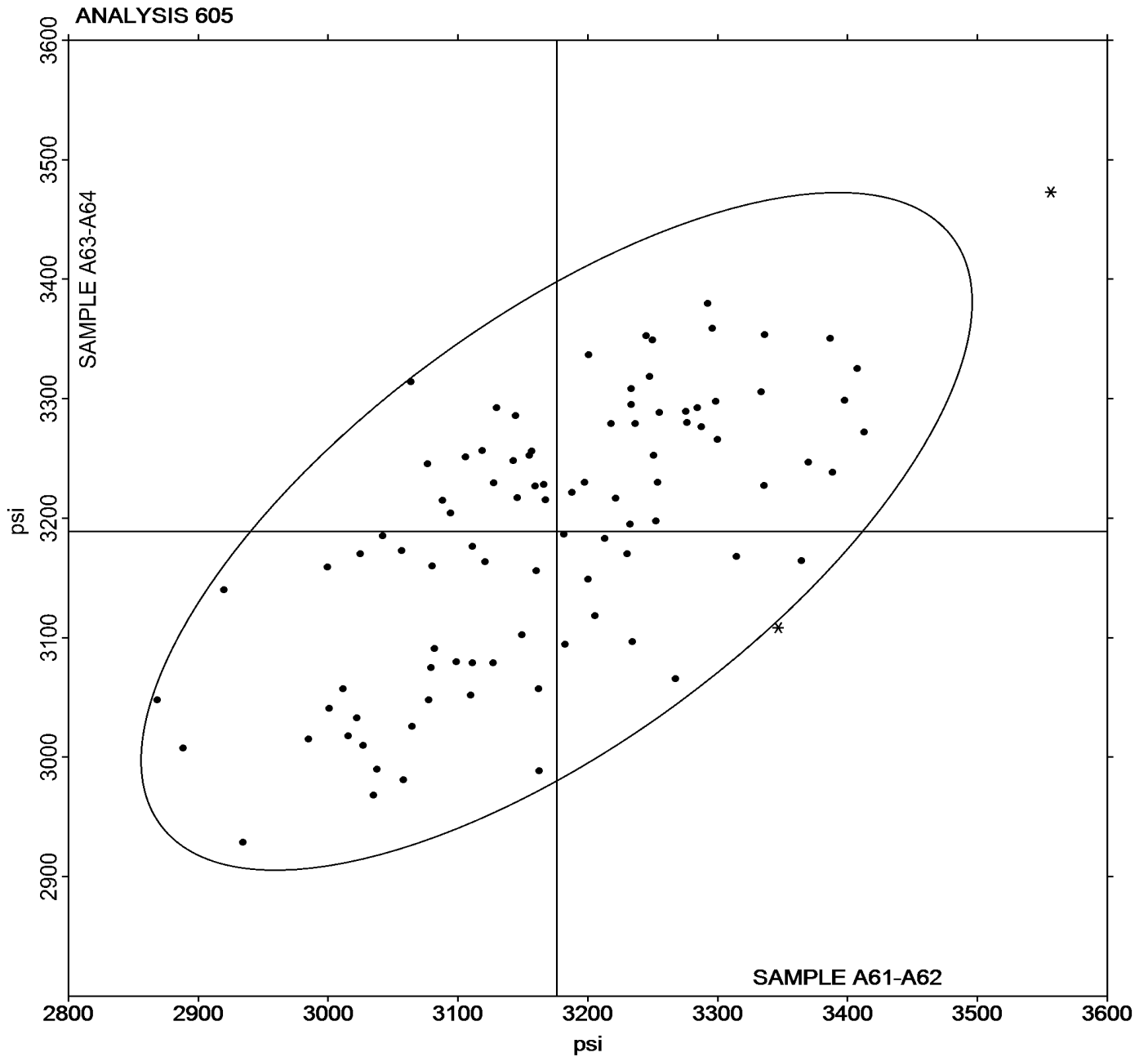| **605** | Tensile Strength (psi) |
|---|---|

**Instruments:**

(ZZ)  Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 605
## Tensile Strength (psi)

Grand Mean Sample **A61** = 3,175.90 psi                    Grand Mean Sample **A62** = 3,189.00 psi

## Analysis 606
## Ultimate Elongation (percent)

| | | Sample A61 | | | Sample A62 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 | X | 527.3 | -101.9 | -3.43 | 528.4 | -98.9 | -3.00 | ZZ |
| 2BCNG8 | | 613.0 | -16.2 | -0.54 | 602.3 | -25.1 | -0.76 | ZZ |
| 3BUW73 | * | 571.0 | -58.2 | -1.96 | 545.5 | -81.8 | -2.49 | ZZ |
| 3JLFKB | | 631.5 | 2.4 | 0.08 | 626.7 | -0.6 | -0.02 | ZZ |
| 3XJRTE | | 642.0 | 12.8 | 0.43 | 629.0 | 1.7 | 0.05 | ZZ |
| 4H9684 | * | 607.5 | -21.7 | -0.73 | 635.0 | 7.7 | 0.23 | ZZ |
| 4P9P8D | | 688.5 | 59.3 | 2.00 | 691.0 | 63.7 | 1.94 | ZZ |
| 6PMBGF | | 639.0 | 9.8 | 0.33 | 617.0 | -10.3 | -0.31 | ZZ |
| 6VNMEX | | 668.0 | 38.8 | 1.31 | 676.0 | 48.7 | 1.48 | ZZ |
| 6ZJEKA | | 644.0 | 14.8 | 0.50 | 654.0 | 26.7 | 0.81 | ZZ |
| 6ZL4P7 | | 590.0 | -39.2 | -1.32 | 584.5 | -42.8 | -1.30 | ZZ |
| 7V8TC3 | | 620.0 | -9.2 | -0.31 | 609.0 | -18.3 | -0.56 | ZZ |
| 832H7C | | 638.0 | 8.8 | 0.30 | 642.1 | 14.8 | 0.45 | ZZ |
| 87KD94 | | 682.4 | 53.2 | 1.79 | 678.3 | 50.9 | 1.55 | ZZ |
| 8FQE8A | | 691.0 | 61.8 | 2.08 | 695.0 | 67.7 | 2.06 | ZZ |
| 94CH37 | | 650.0 | 20.8 | 0.70 | 642.0 | 14.7 | 0.45 | ZZ |
| 9LUG84 | | 605.3 | -23.9 | -0.81 | 614.0 | -13.4 | -0.41 | ZZ |
| 9YX2BT | | 668.0 | 38.8 | 1.31 | 678.0 | 50.7 | 1.54 | ZZ |
| A6YFUA | M | 645.0 | 15.8 | 0.53 | 639.0 | 11.7 | 0.36 | ZZ |
| A92GU7 | | 658.5 | 29.3 | 0.99 | 637.0 | 9.7 | 0.29 | ZZ |
| AHP8GY | | 592.0 | -37.2 | -1.25 | 583.0 | -44.3 | -1.35 | ZZ |
| B2WW72 | | 654.5 | 25.3 | 0.85 | 660.0 | 32.7 | 0.99 | ZZ |
| B8JMTW | | 573.9 | -55.3 | -1.86 | 578.3 | -49.0 | -1.49 | ZZ |
| BLKJP4 | | 623.5 | -5.7 | -0.19 | 616.0 | -11.3 | -0.34 | ZZ |
| C8J7U6 | | 600.5 | -28.7 | -0.97 | 602.5 | -24.8 | -0.75 | ZZ |
| CCAG43 | | 616.5 | -12.7 | -0.43 | 607.5 | -19.8 | -0.60 | ZZ |
| CGKUL2 | | 652.9 | 23.7 | 0.80 | 644.5 | 17.1 | 0.52 | ZZ |
| CGMJPY | | 628.5 | -0.7 | -0.02 | 635.5 | 8.2 | 0.25 | ZZ |
| CLZ6Y7 | | 659.6 | 30.4 | 1.02 | 666.3 | 38.9 | 1.18 | ZZ |
| DBUKB4 | | 650.8 | 21.6 | 0.73 | 635.3 | 8.0 | 0.24 | ZZ |
| DKJ6G2 | | 613.0 | -16.2 | -0.54 | 607.5 | -19.8 | -0.60 | ZZ |
| E489DT | | 615.0 | -14.2 | -0.48 | 617.5 | -9.8 | -0.30 | ZZ |
| EDZH4B | | 648.5 | 19.3 | 0.65 | 645.0 | 17.7 | 0.54 | ZZ |
| EERKN7 | | 620.5 | -8.7 | -0.29 | 631.5 | 4.2 | 0.13 | ZZ |
| EHTNFR | | 624.0 | -5.2 | -0.17 | 629.0 | 1.7 | 0.05 | ZZ |
| ELBNW9 | | 604.0 | -25.2 | -0.85 | 594.0 | -33.3 | -1.01 | ZZ |
| ENFBBX | * | 682.5 | 53.3 | 1.80 | 658.8 | 31.5 | 0.96 | ZZ |

# Analysis 606

## Ultimate Elongation (percent)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| ETA9ZN | * | 651.5 | 22.3 | 0.75 | 679.5 | 52.2 | 1.59 | ZZ |
| EU4Y74 | * | 715.5 | 86.3 | 2.91 | 724.5 | 97.2 | 2.95 | ZZ |
| FENFPM | | 631.5 | 2.3 | 0.08 | 628.5 | 1.2 | 0.04 | ZZ |
| FH7E63 | | 627.0 | -2.2 | -0.07 | 637.5 | 10.2 | 0.31 | ZZ |
| FKEPYL | X | 547.5 | -81.7 | -2.75 | 605.0 | -22.3 | -0.68 | ZZ |
| GMX4ZZ | | 583.0 | -46.2 | -1.56 | 573.5 | -53.8 | -1.63 | ZZ |
| GP2WUY | | 611.5 | -17.7 | -0.60 | 614.0 | -13.3 | -0.40 | ZZ |
| GT28QY | | 603.0 | -26.2 | -0.88 | 609.0 | -18.3 | -0.56 | ZZ |
| H4GE3T | | 620.0 | -9.2 | -0.31 | 615.5 | -11.8 | -0.36 | ZZ |
| H8WPFW | | 610.5 | -18.7 | -0.63 | 601.5 | -25.8 | -0.78 | ZZ |
| J9MALT | | 635.0 | 5.8 | 0.20 | 643.0 | 15.7 | 0.48 | ZZ |
| K4NF2W | | 602.0 | -27.2 | -0.92 | 615.0 | -12.3 | -0.37 | ZZ |
| KH9V6W | | 573.0 | -56.2 | -1.89 | 571.5 | -55.8 | -1.70 | ZZ |
| KVWXMN | | 605.0 | -24.2 | -0.81 | 619.5 | -7.8 | -0.24 | ZZ |
| L46RFV | X | 665.0 | 35.8 | 1.21 | 625.0 | -2.3 | -0.07 | ZZ |
| L9E6YF | | 577.0 | -52.2 | -1.76 | 589.0 | -38.3 | -1.16 | ZZ |
| LADFTX | | 643.0 | 13.8 | 0.47 | 642.0 | 14.7 | 0.45 | ZZ |
| LKUYCU | | 618.0 | -11.2 | -0.38 | 602.5 | -24.8 | -0.75 | ZZ |
| LM2GBP | | 642.5 | 13.3 | 0.45 | 647.5 | 20.2 | 0.61 | ZZ |
| LVRZPX | | 644.5 | 15.3 | 0.52 | 645.0 | 17.7 | 0.54 | ZZ |
| M2XWBJ | | 608.4 | -20.8 | -0.70 | 611.7 | -15.6 | -0.48 | ZZ |
| M6YWBF | | 632.0 | 2.8 | 0.10 | 641.0 | 13.7 | 0.42 | ZZ |
| M7972R | | 641.0 | 11.8 | 0.40 | 632.0 | 4.7 | 0.14 | ZZ |
| M9HWQW | | 639.5 | 10.3 | 0.35 | 643.9 | 16.6 | 0.50 | ZZ |
| MYUXZQ | | 650.0 | 20.8 | 0.70 | 643.0 | 15.7 | 0.48 | ZZ |
| ND9LNE | | 646.5 | 17.3 | 0.58 | 669.5 | 42.2 | 1.28 | ZZ |
| P69LPC | | 630.5 | 1.3 | 0.04 | 623.5 | -3.8 | -0.12 | ZZ |
| QC2FZF | | 608.5 | -20.7 | -0.70 | 605.0 | -22.3 | -0.68 | ZZ |
| QFJFFV | X | 572.0 | -57.2 | -1.93 | 604.0 | -23.3 | -0.71 | ZZ |
| QNFBFF | | 571.5 | -57.7 | -1.94 | 574.0 | -53.3 | -1.62 | ZZ |
| QQJ7YH | | 623.0 | -6.2 | -0.21 | 602.5 | -24.8 | -0.75 | ZZ |
| QVFUFP | | 635.0 | 5.8 | 0.20 | 656.0 | 28.7 | 0.87 | ZZ |
| R7RJTL | | 597.5 | -31.7 | -1.07 | 575.0 | -52.3 | -1.59 | ZZ |
| RFH6YJ | | 628.5 | -0.7 | -0.02 | 637.5 | 10.2 | 0.31 | ZZ |
| RGDKAV | | 633.5 | 4.3 | 0.15 | 615.0 | -12.3 | -0.37 | ZZ |
| RHNMXE | | 586.0 | -43.2 | -1.45 | 574.0 | -53.3 | -1.62 | ZZ |
| RZ4YNK | | 642.0 | 12.8 | 0.43 | 637.0 | 9.7 | 0.29 | ZZ |
| T7BM2L | | 633.0 | 3.8 | 0.13 | 637.0 | 9.7 | 0.29 | ZZ |

**Analysis 606**
**Ultimate Elongation (percent)**

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| TCYAWQ | | 621.5 | -7.7 | -0.26 | 618.0 | -9.3 | -0.28 | ZZ |
| U99MEN | | 659.0 | 29.8 | 1.00 | 650.5 | 23.2 | 0.70 | ZZ |
| ULXM8B | | 637.5 | 8.3 | 0.28 | 643.5 | 16.2 | 0.49 | ZZ |
| UVJNML | | 622.5 | -6.7 | -0.22 | 623.0 | -4.3 | -0.13 | ZZ |
| V7KE6M | | 597.5 | -31.7 | -1.07 | 569.0 | -58.3 | -1.77 | ZZ |
| VTBXXG | | 627.0 | -2.2 | -0.07 | 653.5 | 26.2 | 0.80 | ZZ |
| WCHMNK | | 603.0 | -26.2 | -0.88 | 597.5 | -29.8 | -0.91 | ZZ |
| WRWNKI | | 644.0 | 14.8 | 0.50 | 650.5 | 23.2 | 0.70 | ZZ |
| WX3K4B | | 583.6 | -45.6 | -1.54 | 586.8 | -40.5 | -1.23 | ZZ |
| XNRHJA | | 651.8 | 22.6 | 0.76 | 648.9 | 21.6 | 0.66 | ZZ |
| XVQ6BA | | 646.3 | 17.1 | 0.58 | 643.4 | 16.1 | 0.49 | ZZ |
| XW823A | | 639.5 | 10.3 | 0.35 | 645.5 | 18.2 | 0.55 | ZZ |
| Y7TMLC | | 696.5 | 67.3 | 2.27 | 697.0 | 69.7 | 2.12 | ZZ |
| Z6UYH8 | | 651.0 | 21.8 | 0.74 | 636.5 | 9.2 | 0.28 | ZZ |
| ZEGZZ3 | | 601.0 | -28.2 | -0.95 | 596.0 | -31.3 | -0.95 | ZZ |
| ZMA8H9 | | 619.5 | -9.7 | -0.33 | 618.5 | -8.8 | -0.27 | ZZ |
| ZMRYUD | | 681.5 | 52.3 | 1.76 | 676.5 | 49.2 | 1.49 | ZZ |
| ZQAGP4 | | 661.0 | 31.8 | 1.07 | 638.8 | 11.5 | 0.35 | ZZ |
| ZRPHWC | | 623.0 | -6.2 | -0.21 | 604.0 | -23.3 | -0.71 | ZZ |
| ZVPQ38 | | 636.3 | 7.1 | 0.24 | 617.1 | -10.2 | -0.31 | ZZ |
| ZYZ2TG | | 584.5 | -44.7 | -1.51 | 565.5 | -61.8 | -1.88 | ZZ |

| | Summary Statistics | |
|---|---|---|
| Grand Means | | |
| | 629.18 percent | 627.30 percent |
| Stnd Dev Btwn Labs | | |
| | 29.68 percent | 32.91 percent |
| | | Statistics based on 91 of 96 reporting participants |

Samples A61-A62: Polyisoprene compound, batch #1 & A63-A64: Polyisoprene compound, batch #2

**Comments on assigned Data Flags for Test #606**

2AFDL6 (X) - Data for all Samples are low. Possible systematic error.

A6YFUA (M) - Data not reported for Sample A61.

FKEPYL (X) - Inconsistency in testing between Sample groups.

L46RFV (X) - Inconsistency in testing between Sample groups. Inconsistent in testing within Sample group A61-A62.

QFJFFV (X) - Inconsistency in testing between Sample groups.

Instrument Code Listing

| **606** | Ultimate Elongation (percent) |
|---|---|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 606
## Ultimate Elongation (percent)

Grand Mean Sample **A61** = 629.18 percent          Grand Mean Sample **A62** = 627.30 percent
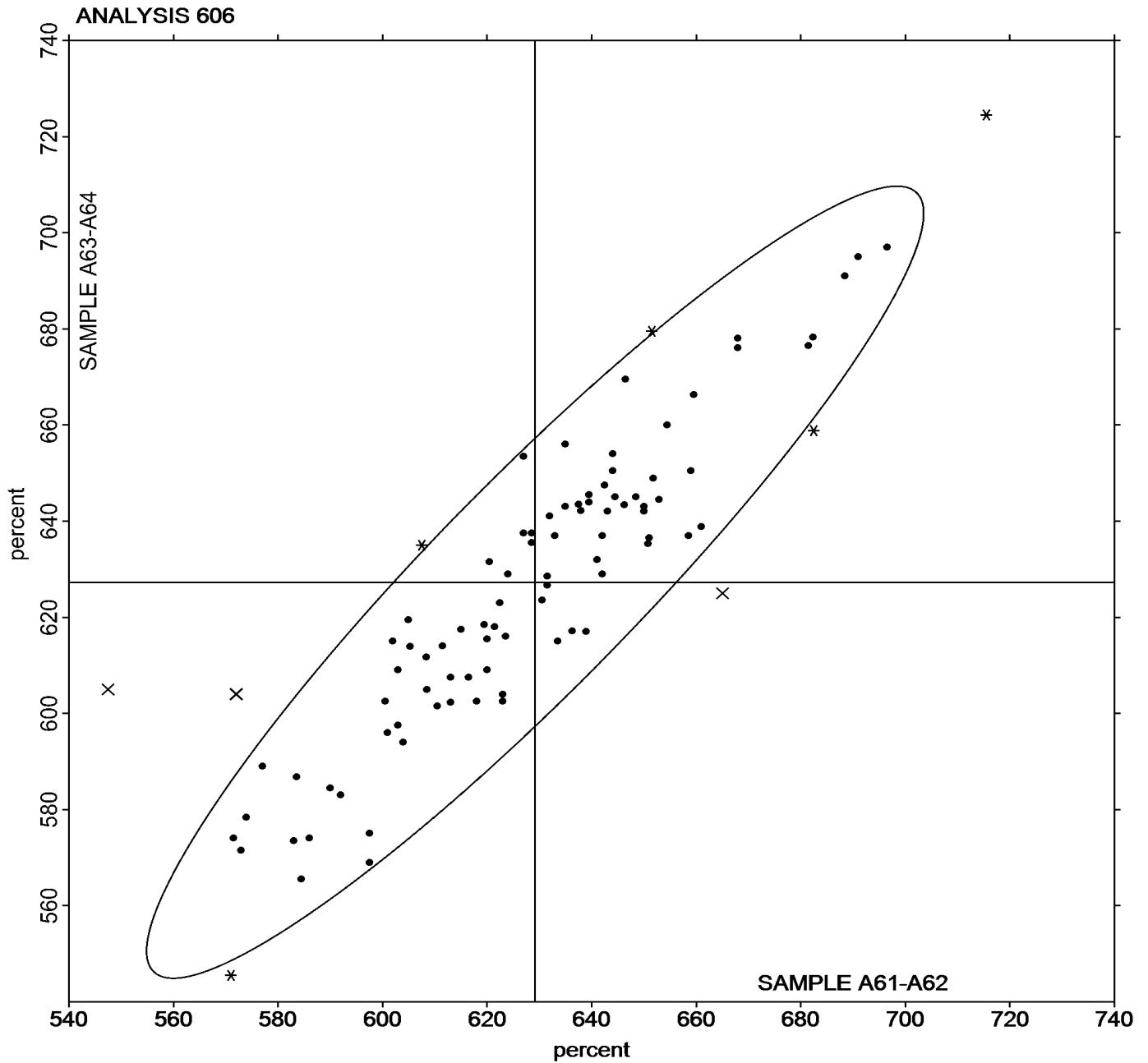
# Rubber Interlaboratory Testing Program
## Analysis 607
### Stress at 300% Elongation (psi)

| | | Sample A61 | | | Sample A62 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 | | 873.4 | 20.2 | 0.32 | 888.5 | 26.8 | 0.33 | ZZ |
| 2BCNG8 | | 931.5 | 78.4 | 1.23 | 911.0 | 49.2 | 0.62 | ZZ |
| 3BUW73 | | 936.5 | 83.4 | 1.31 | 949.0 | 87.2 | 1.09 | ZZ |
| 3JLFKB | | 780.7 | -72.4 | -1.14 | 871.0 | 9.3 | 0.12 | ZZ |
| 3XJRTE | | 884.7 | 31.6 | 0.50 | 979.0 | 117.3 | 1.46 | ZZ |
| 4H9684 | X | 960.9 | 107.7 | 1.69 | 810.0 | -51.7 | -0.65 | ZZ |
| 4P9P8D | X | 651.0 | -202.1 | -3.17 | 709.0 | -152.8 | -1.91 | ZZ |
| 6PMBGF | | 789.5 | -63.6 | -1.00 | 854.0 | -7.8 | -0.10 | ZZ |
| 6VNMEX | | 879.5 | 26.4 | 0.41 | 799.0 | -62.8 | -0.78 | ZZ |
| 6ZJEKA | | 794.8 | -58.3 | -0.91 | 810.0 | -51.7 | -0.65 | ZZ |
| 6ZL4P7 | | 846.5 | -6.6 | -0.10 | 952.5 | 90.7 | 1.13 | ZZ |
| 7V8TC3 | | 857.5 | 4.4 | 0.07 | 906.5 | 44.7 | 0.56 | ZZ |
| 832H7C | | 845.7 | -7.5 | -0.12 | 864.5 | 2.7 | 0.03 | ZZ |
| 87KD94 | | 760.4 | -92.8 | -1.45 | 726.0 | -135.7 | -1.70 | ZZ |
| 8FQE8A | | 786.5 | -66.6 | -1.04 | 716.0 | -145.8 | -1.82 | ZZ |
| 94CH37 | | 764.0 | -89.1 | -1.40 | 782.5 | -79.3 | -0.99 | ZZ |
| 9LUG84 | | 934.8 | 81.6 | 1.28 | 905.4 | 43.6 | 0.54 | ZZ |
| 9YX2BT | | 739.0 | -114.1 | -1.79 | 703.0 | -158.8 | -1.98 | ZZ |
| A6YFUA | M | 839.0 | -14.1 | -0.22 | 854.0 | -7.8 | -0.10 | ZZ |
| A92GU7 | | 741.3 | -111.8 | -1.75 | 825.3 | -36.5 | -0.46 | ZZ |
| AHP8GY | | 924.0 | 70.9 | 1.11 | 977.5 | 115.7 | 1.45 | ZZ |
| B2WW72 | | 787.5 | -65.6 | -1.03 | 763.0 | -98.8 | -1.23 | ZZ |
| B8JMTW | | 951.2 | 98.0 | 1.54 | 997.4 | 135.7 | 1.69 | ZZ |
| BLKJP4 | | 792.0 | -61.1 | -0.96 | 810.0 | -51.8 | -0.65 | ZZ |
| C8J7U6 | | 889.0 | 35.9 | 0.56 | 871.5 | 9.7 | 0.12 | ZZ |
| CCAG43 | | 831.0 | -22.1 | -0.35 | 856.0 | -5.8 | -0.07 | ZZ |
| CGKUL2 | | 769.6 | -83.6 | -1.31 | 794.2 | -67.5 | -0.84 | ZZ |
| CGMJPY | | 824.9 | -28.2 | -0.44 | 843.9 | -17.9 | -0.22 | ZZ |
| CLZ6Y7 | | 747.0 | -106.1 | -1.66 | 739.3 | -122.5 | -1.53 | ZZ |
| DBUKB4 | | 869.4 | 16.3 | 0.25 | 856.1 | -5.6 | -0.07 | ZZ |
| DKJ6G2 | | 829.5 | -23.6 | -0.37 | 948.5 | 86.7 | 1.08 | ZZ |
| E489DT | | 912.5 | 59.4 | 0.93 | 869.0 | 7.2 | 0.09 | ZZ |
| EDZH4B | | 825.0 | -28.1 | -0.44 | 782.0 | -79.8 | -1.00 | ZZ |
| EERKN7 | | 945.9 | 92.7 | 1.45 | 901.3 | 39.5 | 0.49 | ZZ |
| EHTNFR | | 838.0 | -15.1 | -0.24 | 849.0 | -12.8 | -0.16 | ZZ |
| ELBNW9 | | 936.5 | 83.4 | 1.31 | 981.0 | 119.2 | 1.49 | ZZ |
| ENFBBX | | 756.0 | -97.1 | -1.52 | 807.6 | -54.2 | -0.68 | ZZ |

# Rubber Interlaboratory Testing Program
## Analysis 607
### Stress at 300% Elongation (psi)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| ETA9ZN | | 821.5 | -31.6 | -0.50 | 811.5 | -50.3 | -0.63 | ZZ |
| FENFPM | | 869.0 | 15.9 | 0.25 | 858.5 | -3.3 | -0.04 | ZZ |
| FH7E63 | | 834.0 | -19.1 | -0.30 | 783.5 | -78.3 | -0.98 | ZZ |
| FKEPYL | | 788.0 | -65.1 | -1.02 | 696.0 | -165.8 | -2.07 | ZZ |
| GMX4ZZ | | 977.5 | 124.4 | 1.95 | 1,046.0 | 184.2 | 2.30 | ZZ |
| GP2WUY | | 810.0 | -43.1 | -0.68 | 834.5 | -27.3 | -0.34 | ZZ |
| GT28QY | | 968.9 | 115.7 | 1.81 | 920.3 | 58.5 | 0.73 | ZZ |
| H4GE3T | | 913.0 | 59.9 | 0.94 | 865.5 | 3.7 | 0.05 | ZZ |
| H8WPFW | | 916.0 | 62.9 | 0.99 | 966.0 | 104.2 | 1.30 | ZZ |
| J9MALT | | 899.5 | 46.4 | 0.73 | 935.5 | 73.7 | 0.92 | ZZ |
| K4NF2W | | 906.5 | 53.4 | 0.84 | 927.0 | 65.2 | 0.82 | ZZ |
| KH9V6W | X | 1,028.5 | 175.4 | 2.75 | 1,140.0 | 278.2 | 3.48 | ZZ |
| KVWXMM | | 911.5 | 58.4 | 0.91 | 888.0 | 26.2 | 0.33 | ZZ |
| L9E6YF | | 917.0 | 63.9 | 1.00 | 842.5 | -19.3 | -0.24 | ZZ |
| LADFTX | | 823.0 | -30.1 | -0.47 | 819.0 | -42.8 | -0.53 | ZZ |
| LKUYCU | | 776.0 | -77.2 | -1.21 | 762.2 | -99.6 | -1.24 | ZZ |
| LVRZPX | | 782.5 | -70.7 | -1.11 | 836.9 | -24.9 | -0.31 | ZZ |
| M2XWBJ | | 927.5 | 74.4 | 1.17 | 937.7 | 75.9 | 0.95 | ZZ |
| M6YWBF | | 869.5 | 16.4 | 0.26 | 846.5 | -15.3 | -0.19 | ZZ |
| M7972R | | 827.0 | -26.1 | -0.41 | 884.5 | 22.7 | 0.28 | ZZ |
| M9HWQW | | 878.2 | 25.1 | 0.39 | 828.9 | -32.9 | -0.41 | ZZ |
| MYUXZQ | | 835.5 | -17.6 | -0.28 | 852.5 | -9.3 | -0.12 | ZZ |
| ND9LNE | | 779.5 | -73.6 | -1.15 | 785.0 | -76.8 | -0.96 | ZZ |
| P69LPC | | 871.0 | 17.8 | 0.28 | 863.7 | 1.9 | 0.02 | ZZ |
| QC2FZF | | 904.3 | 51.2 | 0.80 | 868.8 | 7.0 | 0.09 | ZZ |
| QNFBFF | | 898.5 | 45.4 | 0.71 | 861.5 | -0.3 | 0.00 | ZZ |
| QQJ7YH | | 858.0 | 4.9 | 0.08 | 918.5 | 56.7 | 0.71 | ZZ |
| QVFUFP | | 777.5 | -75.6 | -1.19 | 782.0 | -79.8 | -1.00 | ZZ |
| R7RJTL | | 908.5 | 55.4 | 0.87 | 990.0 | 128.2 | 1.60 | ZZ |
| RGDKAV | | 803.5 | -49.6 | -0.78 | 826.5 | -35.3 | -0.44 | ZZ |
| RHNMXE | | 922.5 | 69.4 | 1.09 | 987.0 | 125.2 | 1.56 | ZZ |
| RZ4YNK | | 906.0 | 52.9 | 0.83 | 875.5 | 13.7 | 0.17 | ZZ |
| T7BM2L | | 744.1 | -109.1 | -1.71 | 754.2 | -107.6 | -1.34 | ZZ |
| TCYAWQ | | 845.0 | -8.1 | -0.13 | 846.0 | -15.8 | -0.20 | ZZ |
| U99MEN | | 854.5 | 1.4 | 0.02 | 853.0 | -8.8 | -0.11 | ZZ |
| ULXM8B | | 832.5 | -20.6 | -0.32 | 842.5 | -19.3 | -0.24 | ZZ |
| UVJNML | | 857.9 | 4.8 | 0.07 | 921.5 | 59.7 | 0.75 | ZZ |
| V7KE6M | | 934.0 | 80.9 | 1.27 | 964.0 | 102.2 | 1.28 | ZZ |

## Analysis 607

### Stress at 300% Elongation (psi)

| | | Sample A61 | | | | Sample A62 | | | |
|---|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| VTBXXG | | 823.0 | -30.1 | -0.47 | | 760.0 | -101.8 | -1.27 | ZZ |
| WCHMNK | | 912.5 | 59.4 | 0.93 | | 943.5 | 81.7 | 1.02 | ZZ |
| WRWNKF | | 850.7 | -2.5 | -0.04 | | 775.2 | -86.5 | -1.08 | ZZ |
| WX3K4B | X | 7,924.4 | 7,071.3 | 110.86 | | 8,578.1 | 7,716.4 | 96.40 | ZZ |
| XNRHJA | | 879.7 | 26.5 | 0.42 | | 863.0 | 1.2 | 0.02 | ZZ |
| XVQ6BA | | 815.8 | -37.4 | -0.59 | | 813.7 | -48.1 | -0.60 | ZZ |
| XW823A | | 873.1 | 20.0 | 0.31 | | 849.2 | -12.6 | -0.16 | ZZ |
| Y7TMLC | | 732.4 | -120.7 | -1.89 | | 688.9 | -172.8 | -2.16 | ZZ |
| Z6UYH8 | | 812.0 | -41.1 | -0.64 | | 842.5 | -19.3 | -0.24 | ZZ |
| ZEGZZ3 | | 850.5 | -2.6 | -0.04 | | 895.5 | 33.7 | 0.42 | ZZ |
| ZMA8H9 | | 901.5 | 48.4 | 0.76 | | 932.5 | 70.7 | 0.88 | ZZ |
| ZMRYUD | | 746.0 | -107.1 | -1.68 | | 780.0 | -81.8 | -1.02 | ZZ |
| ZQAGP4 | | 911.8 | 58.6 | 0.92 | | 938.7 | 76.9 | 0.96 | ZZ |
| ZRPHWC | | 860.2 | 7.1 | 0.11 | | 924.5 | 62.7 | 0.78 | ZZ |
| ZVPQ38 | | 862.4 | 9.2 | 0.14 | | 825.9 | -35.8 | -0.45 | ZZ |
| ZYZ2TG | * | 1,014.5 | 161.4 | 2.53 | | 1,105.0 | 243.2 | 3.04 | ZZ |

---

| Summary Statistics | | |
|---|---|---|
| Grand Means | | |
| 853.14 psi | | 861.76 psi |
| Stnd Dev Btwn Labs | | |
| 63.78 psi | | 80.05 psi |
| | | Statistics based on 86 of 91 reporting participants |

| Summary Statistics in SI Units | | |
|---|---|---|
| Grand Means | | |
| 5.8821 MPa | | 5.94 MPa |
| Stnd Dev Btwn Labs | | |
| 0.4398 MPa | | 0.55 MPa |
| | | Statistics based on 86 of 91 reporting participants |

Samples A61-A62: Polyisoprene compound, batch #1 & A63-A64: Polyisoprene compound, batch #2

## Comments on assigned Data Flags for Test #607

4H9684 (X) - Inconsistency in testing between Sample groups.

4P9P8D (X) - Data for Sample group A61-A62 are low.

A6YFUA (M) - Data not reported for Sample A61.

KH9V6W (X) - Data for Sample group A63-A64 are high.

WX3K4B (X) - Extreme data.

## Instrument Code Listing

| **607** | Stress at 300% Elongation (psi) |
|---------|----------------------------------|

### Instruments:

(ZZ)   Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program

## Analysis 607

### Stress at 300% Elongation (psi)

Grand Mean Sample **A61** = 853.14 psi

Grand Mean Sample **A62** = 861.76 psi
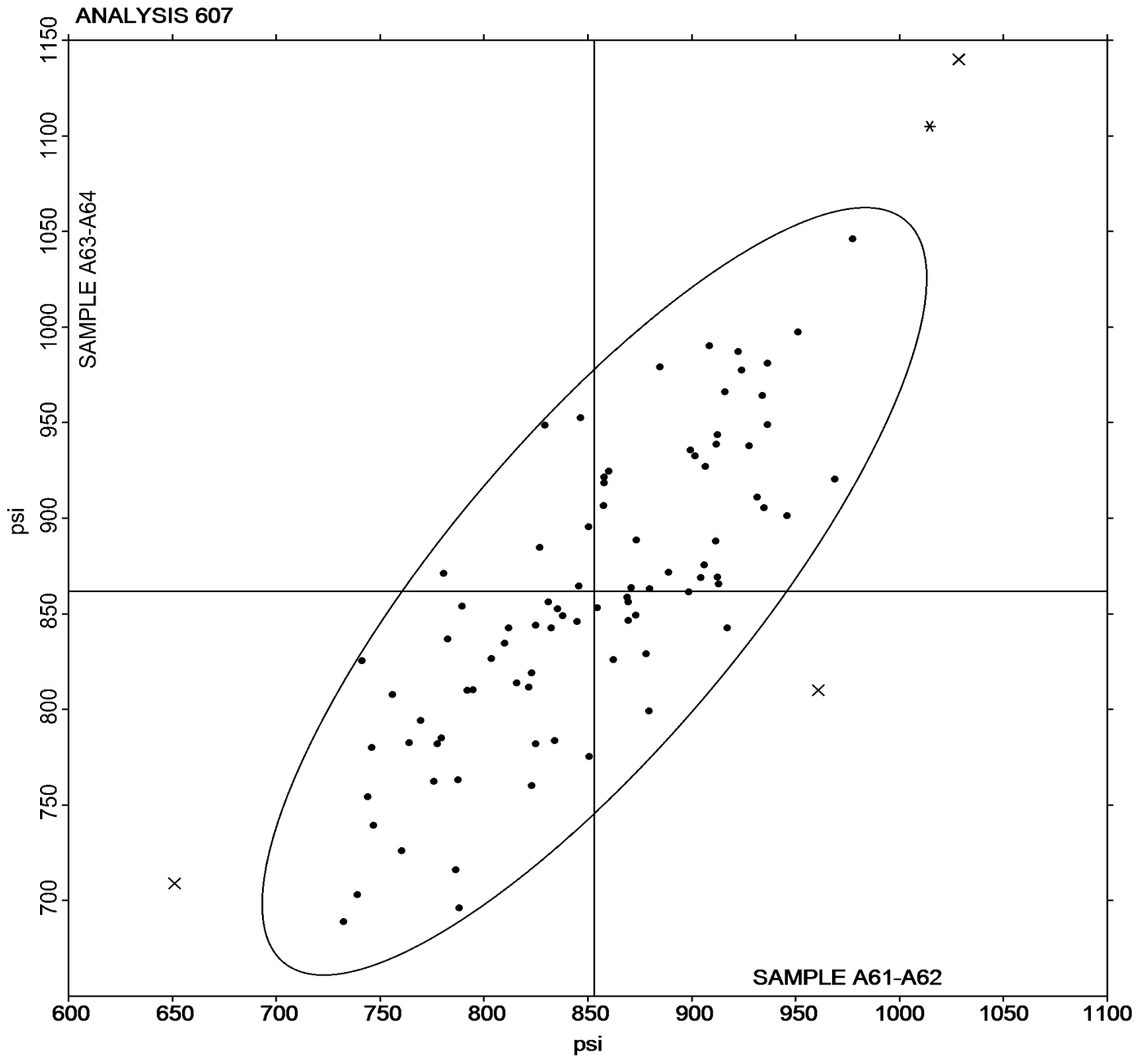
## Analysis 608
### Stress at 100% Elongation (psi)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
|---|---|---|---|---|---|---|---|---|
| 2AFDL6 | | 185.3 | 3.3 | 0.31 | 184.2 | 0.5 | 0.04 | ZZ |
| 2BCNG8 | | 189.0 | 7.0 | 0.66 | 187.5 | 3.9 | 0.29 | ZZ |
| 3BUW73 | | 192.5 | 10.5 | 1.00 | 195.5 | 11.9 | 0.89 | ZZ |
| 3JLFKB | | 167.0 | -15.0 | -1.43 | 183.7 | 0.1 | 0.01 | ZZ |
| 3XJRTE | | 188.6 | 6.5 | 0.62 | 203.1 | 19.4 | 1.46 | ZZ |
| 4H9684 | X | 198.0 | 15.9 | 1.52 | 168.2 | -15.4 | -1.16 | ZZ |
| 4P9P8D | | 172.0 | -10.0 | -0.96 | 182.5 | -1.1 | -0.09 | ZZ |
| 6PMBGF | | 169.5 | -12.5 | -1.19 | 183.0 | -0.6 | -0.05 | ZZ |
| 6VNMEX | * | 207.5 | 25.5 | 2.42 | 193.0 | 9.4 | 0.71 | ZZ |
| 6ZJEKA | | 179.8 | -2.2 | -0.21 | 178.4 | -5.2 | -0.39 | ZZ |
| 6ZL4P7 | * | 174.0 | -8.0 | -0.77 | 200.0 | 16.4 | 1.23 | ZZ |
| 7V8TC3 | | 181.0 | -1.0 | -0.10 | 189.0 | 5.4 | 0.40 | ZZ |
| 832H7C | | 182.9 | 0.9 | 0.08 | 193.9 | 10.2 | 0.77 | ZZ |
| 87KD94 | | 180.6 | -1.5 | -0.14 | 177.3 | -6.3 | -0.48 | ZZ |
| 8FQE8A | | 184.0 | 2.0 | 0.19 | 170.5 | -13.1 | -0.99 | ZZ |
| 94CH37 | | 166.0 | -16.0 | -1.53 | 170.0 | -13.6 | -1.03 | ZZ |
| 9LUG84 | | 193.4 | 11.4 | 1.08 | 187.0 | 3.4 | 0.25 | ZZ |
| 9YX2BT | | 169.5 | -12.5 | -1.19 | 162.5 | -21.1 | -1.59 | ZZ |
| A6YFUA | M | 195.0 | 13.0 | 1.23 | 190.0 | 6.4 | 0.48 | ZZ |
| A92GU7 | | 167.7 | -14.3 | -1.36 | 181.8 | -1.8 | -0.14 | ZZ |
| AHP8GY | | 191.0 | 9.0 | 0.85 | 202.5 | 18.9 | 1.42 | ZZ |
| B2WW72 | | 173.0 | -9.0 | -0.86 | 169.5 | -14.1 | -1.06 | ZZ |
| B8JMTW | | 188.3 | 6.3 | 0.60 | 197.7 | 14.1 | 1.06 | ZZ |
| BLKJP4 | | 175.5 | -6.5 | -0.62 | 181.5 | -2.1 | -0.16 | ZZ |
| C8J7U6 | | 171.8 | -10.3 | -0.98 | 175.0 | -8.6 | -0.65 | ZZ |
| CCAG43 | | 170.5 | -11.5 | -1.10 | 177.5 | -6.1 | -0.46 | ZZ |
| CGKUL2 | | 171.7 | -10.4 | -0.99 | 177.8 | -5.8 | -0.44 | ZZ |
| CGMJPY | | 182.6 | 0.5 | 0.05 | 184.7 | 1.1 | 0.08 | ZZ |
| CLZ6Y7 | | 169.0 | -13.0 | -1.24 | 169.4 | -14.2 | -1.07 | ZZ |
| DBUKB4 | | 181.9 | -0.1 | -0.01 | 178.0 | -5.6 | -0.42 | ZZ |
| DKJ6G2 | | 193.0 | 11.0 | 1.04 | 213.8 | 30.1 | 2.27 | ZZ |
| E489DT | | 196.0 | 14.0 | 1.33 | 186.5 | 2.9 | 0.22 | ZZ |
| EDZH4B | | 167.0 | -15.0 | -1.43 | 159.5 | -24.1 | -1.82 | ZZ |
| EERKN7 | X | 223.7 | 41.7 | 3.96 | 223.6 | 39.9 | 3.01 | ZZ |
| EHTNFR | | 179.0 | -3.0 | -0.29 | 183.5 | -0.1 | -0.01 | ZZ |
| ELBNW9 | | 193.0 | 11.0 | 1.04 | 201.0 | 17.4 | 1.31 | ZZ |
| ENFBBX | | 174.6 | -7.5 | -0.71 | 186.5 | 2.8 | 0.21 | ZZ |
| ETA9ZN | | 185.0 | 3.0 | 0.28 | 183.0 | -0.6 | -0.05 | ZZ |

# Rubber Interlaboratory Testing Program

## Analysis 608

### Stress at 100% Elongation (psi)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---------|-----------|------------|------------------------|------|------------|------------------------|------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| FENFPM | | 186.5 | 4.5 | 0.42 | 185.0 | 1.4 | 0.10 | ZZ |
| FH7E63 | | 178.5 | -3.5 | -0.34 | 171.0 | -12.6 | -0.95 | ZZ |
| FKEPYL | | 163.0 | -19.0 | -1.81 | 151.0 | -32.6 | -2.46 | ZZ |
| GMX4ZZ | | 203.0 | 21.0 | 1.99 | 214.0 | 30.4 | 2.29 | ZZ |
| GP2WUY | | 174.5 | -7.5 | -0.72 | 177.0 | -6.6 | -0.50 | ZZ |
| GT28QY | | 201.6 | 19.6 | 1.86 | 195.8 | 12.2 | 0.92 | ZZ |
| H4GE3T | | 194.5 | 12.5 | 1.19 | 187.5 | 3.9 | 0.29 | ZZ |
| H8WPFW | | 181.5 | -0.5 | -0.05 | 192.0 | 8.4 | 0.63 | ZZ |
| J9MALT | X | 225.5 | 43.5 | 4.14 | 237.0 | 53.4 | 4.02 | ZZ |
| K4NF2W | | 187.5 | 5.5 | 0.52 | 193.0 | 9.4 | 0.71 | ZZ |
| KH9V6W | X | 270.5 | 88.5 | 8.42 | 299.5 | 115.9 | 8.73 | ZZ |
| KVWXMN | | 184.5 | 2.5 | 0.23 | 184.5 | 0.9 | 0.07 | ZZ |
| L9E6YF | | 173.5 | -8.5 | -0.81 | 155.0 | -28.6 | -2.16 | ZZ |
| LADFTX | | 177.5 | -4.5 | -0.43 | 170.0 | -13.6 | -1.03 | ZZ |
| LKUYCU | | 169.0 | -13.1 | -1.24 | 166.8 | -16.8 | -1.27 | ZZ |
| LM2GBP | | 174.5 | -7.5 | -0.72 | 169.0 | -14.6 | -1.10 | ZZ |
| LVRZPX | | 168.2 | -13.8 | -1.31 | 179.8 | -3.8 | -0.28 | ZZ |
| M2XWBJ | | 194.4 | 12.3 | 1.17 | 189.3 | 5.6 | 0.43 | ZZ |
| M6YWBF | | 186.0 | 4.0 | 0.38 | 183.0 | -0.6 | -0.05 | ZZ |
| M7972R | | 194.5 | 12.5 | 1.19 | 209.0 | 25.4 | 1.91 | ZZ |
| M9HWQW | | 185.3 | 3.3 | 0.31 | 176.2 | -7.5 | -0.56 | ZZ |
| MYUXZQ | | 178.5 | -3.5 | -0.34 | 182.0 | -1.6 | -0.12 | ZZ |
| ND9LNE | | 170.5 | -11.5 | -1.10 | 172.5 | -11.1 | -0.84 | ZZ |
| P69LPC | | 190.7 | 8.7 | 0.83 | 187.8 | 4.2 | 0.32 | ZZ |
| QC2FZF | | 185.6 | 3.6 | 0.34 | 187.8 | 4.2 | 0.32 | ZZ |
| QNFBFF | | 184.5 | 2.5 | 0.23 | 176.5 | -7.1 | -0.54 | ZZ |
| QQJ7YH | | 187.5 | 5.5 | 0.52 | 198.5 | 14.9 | 1.12 | ZZ |
| QVFUFP | | 178.0 | -4.0 | -0.38 | 176.0 | -7.6 | -0.57 | ZZ |
| R7RJTL | | 197.0 | 15.0 | 1.42 | 204.0 | 20.4 | 1.53 | ZZ |
| RFH6YJ | | 183.0 | 1.0 | 0.09 | 179.5 | -4.1 | -0.31 | ZZ |
| RGDKAV | | 174.5 | -7.5 | -0.72 | 176.5 | -7.1 | -0.54 | ZZ |
| RHNMXE | | 188.0 | 6.0 | 0.57 | 198.0 | 14.4 | 1.08 | ZZ |
| RZ4YNK | | 188.5 | 6.5 | 0.61 | 183.0 | -0.6 | -0.05 | ZZ |
| T7BM2L | | 157.4 | -24.7 | -2.35 | 159.5 | -24.1 | -1.81 | ZZ |
| TCYAWQ | | 179.0 | -3.0 | -0.29 | 178.5 | -5.1 | -0.39 | ZZ |
| U99MEN | | 189.5 | 7.5 | 0.71 | 187.0 | 3.4 | 0.25 | ZZ |
| ULXM8B | | 204.5 | 22.5 | 2.14 | 207.5 | 23.9 | 1.80 | ZZ |

# Rubber Interlaboratory Testing Program
## Analysis 608
### Stress at 100% Elongation (psi)

| | | Sample A61 | | | Sample A62 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| UVJNML | | 175.4 | -6.6 | -0.63 | 189.3 | 5.7 | 0.43 | ZZ |
| V7KE6M | | 177.5 | -4.5 | -0.43 | 192.5 | 8.9 | 0.67 | ZZ |
| VTBXXG | | 182.0 | 0.0 | 0.00 | 171.0 | -12.6 | -0.95 | ZZ |
| WCHMNK | X | 247.5 | 65.5 | 6.23 | 250.5 | 66.9 | 5.04 | ZZ |
| WRWNKE | | 189.3 | 7.2 | 0.69 | 174.8 | -8.9 | -0.67 | ZZ |
| WX3K4B | X | 619.3 | 437.2 | 41.61 | 640.7 | 457.1 | 34.43 | ZZ |
| XNRHJA | | 187.1 | 5.1 | 0.48 | 182.0 | -1.6 | -0.12 | ZZ |
| XVQ6BA | | 181.4 | -0.6 | -0.06 | 184.7 | 1.0 | 0.08 | ZZ |
| XW823A | | 195.1 | 13.0 | 1.24 | 188.6 | 4.9 | 0.37 | ZZ |
| Y7TMLC | | 166.8 | -15.2 | -1.45 | 152.3 | -31.3 | -2.36 | ZZ |
| Z6UYH8 | | 179.0 | -3.0 | -0.29 | 181.5 | -2.1 | -0.16 | ZZ |
| ZEGZZ3 | | 178.5 | -3.5 | -0.34 | 180.0 | -3.6 | -0.27 | ZZ |
| ZMA8H9 | | 205.5 | 23.5 | 2.23 | 213.0 | 29.4 | 2.21 | ZZ |
| ZMRYUD | | 167.5 | -14.5 | -1.38 | 176.0 | -7.6 | -0.57 | ZZ |
| ZQAGP4 | | 193.1 | 11.1 | 1.05 | 196.9 | 13.3 | 1.00 | ZZ |
| ZRPHWC | | 187.0 | 4.9 | 0.47 | 198.9 | 15.2 | 1.15 | ZZ |
| ZVPQ38 | | 180.7 | -1.3 | -0.13 | 173.4 | -10.2 | -0.77 | ZZ |
| ZYZ2TG | X | 240.0 | 58.0 | 5.52 | 261.0 | 77.4 | 5.83 | ZZ |

| Summary Statistics | |
|---|---|
| **Grand Means** | |
| 182.04 psi | 183.63 psi |
| **Stnd Dev Btwn Labs** | |
| 10.51 psi | 13.27 psi |
| | Statistics based on 85 of 93 reporting participants |

| Summary Statistics in SI Units | |
|---|---|
| **Grand Means** | |
| 1.2551 MPa | 1.27 MPa |
| **Stnd Dev Btwn Labs** | |
| 0.0725 MPa | 0.09 MPa |
| | Statistics based on 85 of 93 reporting participants |

Samples A61-A62: Polyisoprene compound, batch #1 &  A63-A64: Polyisoprene compound, batch #2

## Comments on assigned Data Flags for Test #608

4H9684 (X) - Inconsistency in testing between Sample groups.

A6YFUA (M) - Data not reported for Sample A61.

EERKN7 (X) - Data for all Samples are high.

J9MALT (X) - Data for all Samples are high.

KH9V6W (X) - Data for all Samples are high.

WCHMNK (X) - Data for all Samples are high.

WX3K4B (X) - Extreme data.

ZYZ2TG (X) - Data for all Samples are high.

## Instrument Code Listing
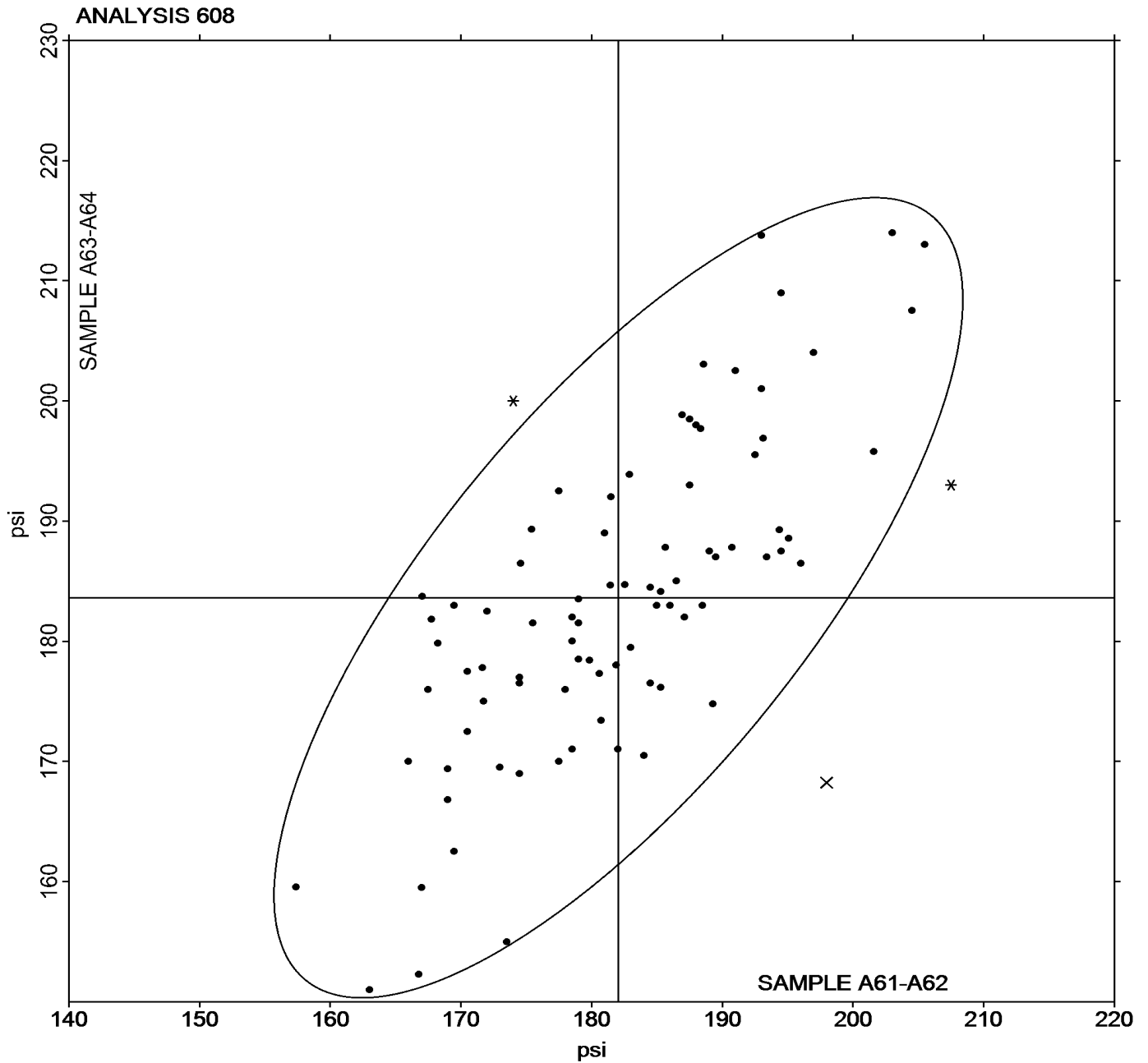
| **608** | Stress at 100% Elongation (psi) |
|---|---|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

Grand Mean Sample **A61** = 182.04 psi          Grand Mean Sample **A62** = 183.63 psi



ANALYSIS 608

## Analysis 620
## Hardness (Shore A/Type A)

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2AFDL6 | | 48.30 | 0.73 | 0.40 | 47.60 | -0.09 | -0.05 | BT |
| 2BCNG8 | * | 48.00 | 0.43 | 0.23 | 46.00 | -1.69 | -0.90 | HH |
| | | | | | | | | |
| 3BUW73 | | 45.00 | -2.57 | -1.39 | 45.50 | -2.19 | -1.17 | XX |
| 3JLFKB | | 46.75 | -0.82 | -0.44 | 47.60 | -0.09 | -0.05 | BT |
| 3XJRTE | | 48.50 | 0.93 | 0.51 | 49.50 | 1.81 | 0.96 | HH |
| 4H9684 | X | 49.45 | 1.88 | 1.02 | 47.10 | -0.59 | -0.32 | BT |
| 4NWPBJ | | 46.20 | -1.37 | -0.74 | 45.35 | -2.34 | -1.25 | BT |
| | | | | | | | | |
| 4P9P8D | | 46.00 | -1.57 | -0.85 | 47.50 | -0.19 | -0.10 | HH |
| 4XZ39Y | | 51.45 | 3.88 | 2.11 | 51.30 | 3.61 | 1.92 | BT |
| 6PMBGF | | 48.00 | 0.43 | 0.23 | 47.50 | -0.19 | -0.10 | XX |
| 6VNMEX | | 46.75 | -0.82 | -0.44 | 46.75 | -0.94 | -0.50 | XX |
| 6ZJEKA | | 45.50 | -2.07 | -1.12 | 45.50 | -2.19 | -1.17 | BT |
| | | | | | | | | |
| 6ZL4P7 | | 45.60 | -1.97 | -1.07 | 46.35 | -1.34 | -0.72 | BT |
| 7V8TC3 | | 47.00 | -0.57 | -0.31 | 47.50 | -0.19 | -0.10 | BT |
| 832H7C | | 49.00 | 1.43 | 0.78 | 49.50 | 1.81 | 0.96 | BT |
| 87KD94 | | 46.00 | -1.57 | -0.85 | 46.00 | -1.69 | -0.90 | BT |
| 8FQE8A | | 48.00 | 0.43 | 0.23 | 47.50 | -0.19 | -0.10 | HH |
| | | | | | | | | |
| 94CH37 | | 47.40 | -0.17 | -0.09 | 47.95 | 0.26 | 0.14 | BT |
| 9LUG84 | | 46.00 | -1.57 | -0.85 | 45.00 | -2.69 | -1.43 | XX |
| 9YX2BT | | 48.40 | 0.83 | 0.45 | 48.20 | 0.51 | 0.27 | BT |
| A6YFUA | | 46.00 | -1.57 | -0.85 | 46.50 | -1.19 | -0.64 | HH |
| A92GU7 | | 47.00 | -0.57 | -0.31 | 47.50 | -0.19 | -0.10 | HH |
| | | | | | | | | |
| AHP8GY | | 49.25 | 1.68 | 0.91 | 49.00 | 1.31 | 0.69 | BT |
| B2WW72 | | 47.35 | -0.22 | -0.12 | 47.70 | 0.01 | 0.00 | XX |
| B8JMTW | | 48.60 | 1.03 | 0.56 | 48.60 | 0.91 | 0.48 | XX |
| BLKJP4 | | 45.35 | -2.22 | -1.20 | 45.95 | -1.74 | -0.93 | BT |
| C8J7U6 | | 45.50 | -2.07 | -1.12 | 46.00 | -1.69 | -0.90 | HH |
| | | | | | | | | |
| CCAG43 | | 47.00 | -0.57 | -0.31 | 47.00 | -0.69 | -0.37 | BT |
| CGKUL2 | | 47.20 | -0.37 | -0.20 | 46.90 | -0.79 | -0.42 | XX |
| CLZ6Y7 | * | 42.50 | -5.07 | -2.75 | 42.00 | -5.69 | -3.03 | BT |
| DBUKB4 | | 52.00 | 4.43 | 2.40 | 51.50 | 3.81 | 2.03 | XX |
| DF6PPP | | 47.00 | -0.57 | -0.31 | 46.30 | -1.39 | -0.74 | XX |
| | | | | | | | | |
| DKJ6G2 | | 48.00 | 0.43 | 0.23 | 48.00 | 0.31 | 0.16 | HH |
| E489DT | | 47.25 | -0.32 | -0.17 | 46.75 | -0.94 | -0.50 | HH |
| EDZH4B | | 49.00 | 1.43 | 0.78 | 47.50 | -0.19 | -0.10 | XX |
| EERKN7 | | 46.70 | -0.87 | -0.47 | 46.15 | -1.54 | -0.82 | BT |
| EHTNFR | | 49.50 | 1.93 | 1.05 | 49.70 | 2.01 | 1.07 | XX |

**Analysis 620**

**Hardness (Shore A/Type A)**

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
|---|---|---|---|---|---|---|---|---|
| ELBNW9 | | 48.80 | 1.23 | 0.67 | 48.95 | 1.26 | 0.67 | BT |
| ENFBBX | | 48.50 | 0.93 | 0.51 | 49.85 | 2.16 | 1.15 | BT |
| ETA9ZN | | 49.50 | 1.93 | 1.05 | 49.50 | 1.81 | 0.96 | XX |
| EU4Y74 | | 47.00 | -0.57 | -0.31 | 46.50 | -1.19 | -0.64 | HH |
| FENFPM | | 48.50 | 0.93 | 0.51 | 49.00 | 1.31 | 0.69 | XX |
| FH7E63 | | 47.50 | -0.07 | -0.04 | 48.00 | 0.31 | 0.16 | HH |
| FKEPYL | | 50.65 | 3.08 | 1.67 | 50.05 | 2.36 | 1.25 | HH |
| GMX4ZZ | | 50.00 | 2.43 | 1.32 | 51.00 | 3.31 | 1.76 | XX |
| GP2WUY | | 44.00 | -3.57 | -1.94 | 45.00 | -2.69 | -1.43 | HH |
| GT28QY | | 48.65 | 1.08 | 0.59 | 49.25 | 1.56 | 0.83 | BT |
| H4GE3T | | 49.50 | 1.93 | 1.05 | 49.50 | 1.81 | 0.96 | HH |
| J68Z9P | | 45.50 | -2.07 | -1.12 | 45.50 | -2.19 | -1.17 | BT |
| J9MALT | | 47.50 | -0.07 | -0.04 | 48.50 | 0.81 | 0.43 | HH |
| K4NF2W | | 48.00 | 0.43 | 0.23 | 48.00 | 0.31 | 0.16 | XX |
| KH9V6W | | 46.50 | -1.07 | -0.58 | 47.50 | -0.19 | -0.10 | HH |
| KVWXMN | | 47.00 | -0.57 | -0.31 | 47.00 | -0.69 | -0.37 | HH |
| KVYMRL | X | 45.50 | -2.07 | -1.12 | 48.00 | 0.31 | 0.16 | BT |
| L46RFV | | 50.50 | 2.93 | 1.59 | 50.50 | 2.81 | 1.49 | XX |
| L9E6YF | | 46.50 | -1.07 | -0.58 | 47.50 | -0.19 | -0.10 | BT |
| LADFTX | | 49.00 | 1.43 | 0.78 | 48.50 | 0.81 | 0.43 | BT |
| LKUYCU | | 47.00 | -0.57 | -0.31 | 46.00 | -1.69 | -0.90 | BT |
| LM2GBP | | 45.00 | -2.57 | -1.39 | 44.50 | -3.19 | -1.70 | BT |
| LVRZPX | | 47.05 | -0.52 | -0.28 | 47.90 | 0.21 | 0.11 | BT |
| M2XWBJ | | 48.35 | 0.78 | 0.42 | 48.30 | 0.61 | 0.32 | BT |
| M6YWBF | | 50.00 | 2.43 | 1.32 | 50.00 | 2.31 | 1.23 | XX |
| M7972R | | 48.50 | 0.93 | 0.51 | 50.00 | 2.31 | 1.23 | HH |
| M9HWQW | | 48.70 | 1.13 | 0.61 | 47.70 | 0.01 | 0.00 | BT |
| MYUXZQ | | 47.05 | -0.52 | -0.28 | 47.25 | -0.44 | -0.24 | BT |
| ND9LNE | | 47.00 | -0.57 | -0.31 | 47.50 | -0.19 | -0.10 | XX |
| P69LPC | * | 53.00 | 5.43 | 2.95 | 53.00 | 5.31 | 2.82 | BT |
| PEXAKF | | 46.85 | -0.72 | -0.39 | 45.60 | -2.09 | -1.11 | BT |
| QC2FZF | | 47.50 | -0.07 | -0.04 | 47.50 | -0.19 | -0.10 | BT |
| QFJFFV | | 48.65 | 1.08 | 0.59 | 49.90 | 2.21 | 1.17 | HH |
| QNFBFF | | 49.00 | 1.43 | 0.78 | 49.00 | 1.31 | 0.69 | HH |
| QQJ7YH | | 49.00 | 1.43 | 0.78 | 49.50 | 1.81 | 0.96 | HH |
| QVFUFP | | 46.40 | -1.17 | -0.63 | 46.95 | -0.74 | -0.40 | BT |
| R7RJTL | | 46.50 | -1.07 | -0.58 | 48.00 | 0.31 | 0.16 | BT |
| RFH6YJ | | 45.50 | -2.07 | -1.12 | 45.50 | -2.19 | -1.17 | XX |

## Analysis 620
## Hardness (Shore A/Type A)

| | | Sample A61 | | | Sample A62 | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| RGDKAV | | 51.00 | 3.43 | 1.86 | 50.50 | 2.81 | 1.49 | BT |
| RHNMXE | | 50.00 | 2.43 | 1.32 | 50.50 | 2.81 | 1.49 | HH |
| RZ4YNK | | 46.05 | -1.52 | -0.82 | 46.05 | -1.64 | -0.88 | BT |
| TCYAWQ | | 45.00 | -2.57 | -1.39 | 45.00 | -2.69 | -1.43 | BT |
| U99MEN | | 49.70 | 2.13 | 1.16 | 49.25 | 1.56 | 0.83 | BT |
| ULXM8B | | 49.75 | 2.18 | 1.18 | 50.25 | 2.56 | 1.36 | HH |
| UVJNML | | 46.65 | -0.92 | -0.50 | 47.70 | 0.01 | 0.00 | BT |
| V7KE6M | | 48.00 | 0.43 | 0.23 | 48.00 | 0.31 | 0.16 | XX |
| VTBXXG | | 46.45 | -1.12 | -0.61 | 46.20 | -1.49 | -0.80 | BT |
| WCHMNK | | 45.50 | -2.07 | -1.12 | 46.50 | -1.19 | -0.64 | HH |
| WGYM97 | | 45.00 | -2.57 | -1.39 | 45.50 | -2.19 | -1.17 | BT |
| WL89UH | | 48.00 | 0.43 | 0.23 | 48.00 | 0.31 | 0.16 | BT |
| WRWNKF | | 48.50 | 0.93 | 0.51 | 47.50 | -0.19 | -0.10 | BT |
| WX3K4B | | 47.25 | -0.32 | -0.17 | 48.25 | 0.56 | 0.30 | HH |
| XNRHJA | * | 45.65 | -1.92 | -1.04 | 44.15 | -3.54 | -1.89 | XX |
| XVQ6BA | | 48.80 | 1.23 | 0.67 | 50.15 | 2.46 | 1.31 | BT |
| XW823A | | 47.60 | 0.03 | 0.02 | 46.85 | -0.84 | -0.45 | BT |
| Y7TMLC | | 50.00 | 2.43 | 1.32 | 50.50 | 2.81 | 1.49 | XX |
| Z6UYH8 | | 43.50 | -4.07 | -2.21 | 44.25 | -3.44 | -1.83 | BT |
| ZEGZZ3 | | 45.00 | -2.57 | -1.39 | 45.00 | -2.69 | -1.43 | HH |
| ZMA8H9 | | 49.50 | 1.93 | 1.05 | 49.50 | 1.81 | 0.96 | HH |
| ZMRYUD | | 49.40 | 1.83 | 0.99 | 49.05 | 1.36 | 0.72 | BT |
| ZQAGP4 | | 46.50 | -1.07 | -0.58 | 46.50 | -1.19 | -0.64 | BT |
| ZRPHWC | | 48.25 | 0.68 | 0.37 | 48.25 | 0.56 | 0.30 | BT |
| ZVPQ38 | | 46.00 | -1.57 | -0.85 | 46.50 | -1.19 | -0.64 | BT |
| ZYZ2TG | * | 45.00 | -2.57 | -1.39 | 47.00 | -0.69 | -0.37 | HH |

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**Summary Statistics**

Grand Means

　　47.568　Type A　　　　　　　　　47.694　Type A

Stnd Dev Btwn Labs

　　1.844　Type A　　　　　　　　　1.879　Type A

Statistics based on 99 of 101 reporting participants

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Samples A61-A62: Polyisoprene compound, batch #1 & A63-A64: Polyisoprene compound, batch #2

## Analysis 620

### Hardness (Shore A/Type A)

### Comments on assigned Data Flags for Test #620

4H9684 (X) - Inconsistency in testing between Sample groups.

KVYMRL (X) - Inconsistency in testing between Sample groups.

### Instrument Code Listing

| 620 | Hardness (Shore A/Type A) |
| --- | --- |

#### Instruments:

(BT)   Benchtop                                    (HH)   Handheld

(XX)   Specify Benchtop or Handheld Instrument

### Results by Reading Time (as reported by laboratory)

| Reading Time | Sample A61 *Polyisoprene compound, batch #1* | | | Sample A62 *Polyisoprene compound, batch #1* | | | Labs Incl / Rpt | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Group Mean | Btwn Lab STD | Diff from GM | Group Mean | Btwn Lab STD | Diff from GM | | |
| Readings taken within 0 - 5 seconds | 47.86 | 1.46 | 0.30 | 48.01 | 1.48 | 0.31 | 68 | 73 |
| Readings taken at 5 seconds | 46.47 | 1.40 | -1.10 | 46.70 | 1.62 | -1.00 | 11 | 12 |
| Readings taken after 5+ seconds | 47.11 | 2.16 | -0.46 | 47.18 | 2.33 | -0.51 | 5 | 5 |
| Maximum hardness indicator used | 47.37 | 2.69 | -0.20 | 47.56 | 2.49 | -0.13 | 10 | 11 |

# Rubber Interlaboratory Testing Program
## Analysis 620
## Hardness (Shore A/Type A)

Grand Mean Sample **A61** = 47.568 Type A

Grand Mean Sample **A62** = 47.694 Type A
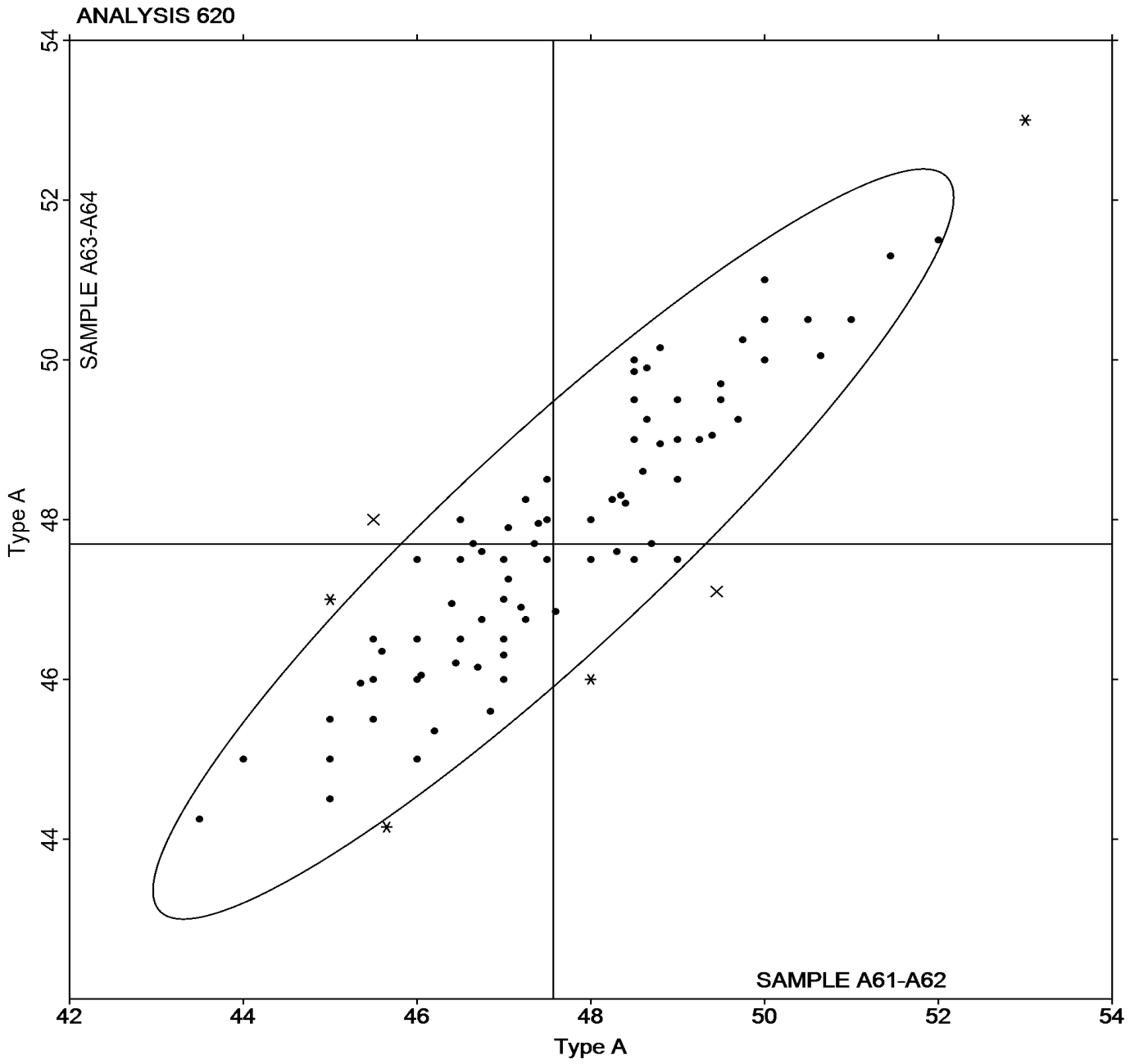
## Analysis 621
### Density

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---------|-----------|----------|----------------------|------|----------|----------------------|------|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2AFDL6 | * | 1.136 | 0.000 | 0.00 | 1.133 | -0.003 | -1.15 | ZZ |
| 3BUW73 | | 1.139 | 0.003 | 1.29 | 1.138 | 0.002 | 0.62 | ZZ |
| 3JLFKB | * | 1.129 | -0.007 | -2.66 | 1.131 | -0.005 | -2.16 | ZZ |
| 6ZJEKA | | 1.138 | 0.002 | 0.73 | 1.137 | 0.001 | 0.22 | ZZ |
| 6ZL4P7 | | 1.137 | 0.001 | 0.54 | 1.136 | 0.000 | 0.16 | ZZ |
| 7V8TC3 | | 1.134 | -0.002 | -0.59 | 1.135 | -0.001 | -0.37 | ZZ |
| 832H7C | | 1.139 | 0.004 | 1.43 | 1.140 | 0.004 | 1.74 | ZZ |
| 87KD94 | | 1.138 | 0.003 | 1.03 | 1.139 | 0.003 | 1.13 | ZZ |
| 9LUG84 | | 1.130 | -0.006 | -2.28 | 1.132 | -0.004 | -1.76 | ZZ |
| 9YX2BT | | 1.133 | -0.003 | -1.15 | 1.133 | -0.003 | -1.17 | ZZ |
| A92GU7 | | 1.138 | 0.002 | 0.92 | 1.138 | 0.002 | 0.62 | ZZ |
| AHP8GY | | 1.136 | 0.000 | 0.05 | 1.136 | 0.000 | -0.18 | ZZ |
| B2WW72 | | 1.134 | -0.001 | -0.49 | 1.135 | -0.001 | -0.28 | ZZ |
| B8JMTW | | 1.135 | -0.001 | -0.32 | 1.135 | -0.001 | -0.35 | ZZ |
| BLKJP4 | | 1.135 | -0.001 | -0.21 | 1.136 | 0.000 | -0.18 | ZZ |
| CCAG43 | | 1.140 | 0.004 | 1.48 | 1.141 | 0.005 | 2.10 | ZZ |
| CLZ6Y7 | | 1.133 | -0.002 | -0.79 | 1.134 | -0.002 | -0.83 | ZZ |
| DKJ6G2 | | 1.136 | 0.000 | 0.15 | 1.136 | 0.000 | 0.00 | ZZ |
| E489DT | | 1.130 | -0.006 | -2.22 | 1.130 | -0.006 | -2.41 | ZZ |
| EERKN7 | | 1.140 | 0.004 | 1.67 | 1.140 | 0.004 | 1.60 | ZZ |
| EHTNFR | | 1.138 | 0.003 | 1.01 | 1.138 | 0.002 | 0.93 | ZZ |
| ELBNW9 | | 1.136 | 0.000 | 0.17 | 1.138 | 0.002 | 0.62 | ZZ |
| ETA9ZN | | 1.134 | -0.002 | -0.61 | 1.134 | -0.002 | -0.73 | ZZ |
| FENFPM | | 1.135 | -0.001 | -0.32 | 1.135 | -0.001 | -0.45 | ZZ |
| FH7E63 | | 1.138 | 0.002 | 0.92 | 1.138 | 0.002 | 0.81 | ZZ |
| FKEPYL | | 1.137 | 0.001 | 0.35 | 1.139 | 0.003 | 1.21 | ZZ |
| GMX4ZZ | X | 1.127 | -0.009 | -3.41 | 1.136 | 0.000 | 0.02 | ZZ |
| GP2WUY | | 1.138 | 0.002 | 0.75 | 1.138 | 0.002 | 0.89 | ZZ |
| GT28QY | | 1.136 | 0.000 | 0.09 | 1.136 | 0.000 | 0.02 | ZZ |
| H8WPFW | | 1.134 | -0.001 | -0.51 | 1.137 | 0.001 | 0.28 | ZZ |
| J9MALT | | 1.138 | 0.002 | 0.79 | 1.138 | 0.002 | 0.81 | ZZ |
| L9E6YF | | 1.137 | 0.001 | 0.54 | 1.138 | 0.002 | 0.62 | ZZ |
| M2XWBJ | X | 1.129 | -0.007 | -2.51 | 1.125 | -0.010 | -4.16 | ZZ |
| M6YWBF | | 1.137 | 0.001 | 0.35 | 1.138 | 0.002 | 0.65 | ZZ |
| M7972R | | 1.134 | -0.002 | -0.59 | 1.135 | -0.001 | -0.57 | ZZ |
| M9HWQW | | 1.139 | 0.004 | 1.45 | 1.139 | 0.003 | 1.29 | ZZ |
| MYUXZQ | | 1.138 | 0.002 | 0.73 | 1.138 | 0.002 | 0.62 | ZZ |

## Analysis 621
### Density

| WebCode | Data Flag | Sample A61 | | | Sample A62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| ND9LNE | | 1.136 | 0.000 | 0.15 | 1.135 | 0.000 | -0.20 | ZZ |
| PEXAKF | * | 1.132 | -0.004 | -1.34 | 1.135 | -0.001 | -0.37 | ZZ |
| QC2FZF | | 1.136 | 0.000 | -0.02 | 1.136 | 0.000 | 0.02 | ZZ |
| QFJFFV | * | 1.129 | -0.007 | -2.47 | 1.130 | -0.006 | -2.55 | ZZ |
| | | | | | | | | |
| QQJ7YH | | 1.136 | 0.000 | 0.17 | 1.137 | 0.001 | 0.22 | ZZ |
| QVFUFP | X | 1.140 | 0.004 | 1.48 | 1.130 | -0.006 | -2.35 | ZZ |
| RFH6YJ | | 1.136 | 0.000 | -0.02 | 1.136 | 0.000 | -0.18 | ZZ |
| RGDKAV | | 1.138 | 0.002 | 0.92 | 1.138 | 0.002 | 0.81 | ZZ |
| RHNMXE | | 1.135 | -0.001 | -0.34 | 1.134 | -0.002 | -0.69 | ZZ |
| | | | | | | | | |
| TCYAWQ | | 1.140 | 0.004 | 1.67 | 1.141 | 0.005 | 1.80 | ZZ |
| ULXM8B | | 1.137 | 0.002 | 0.60 | 1.137 | 0.001 | 0.42 | ZZ |
| V7KE6M | | 1.134 | -0.002 | -0.66 | 1.136 | 0.000 | 0.02 | ZZ |
| VTBXXG | | 1.136 | 0.000 | 0.17 | 1.135 | -0.001 | -0.37 | ZZ |
| WL89UH | | 1.137 | 0.001 | 0.43 | 1.138 | 0.002 | 0.75 | ZZ |
| | | | | | | | | |
| WRWNKH | | 1.137 | 0.001 | 0.49 | 1.137 | 0.001 | 0.48 | ZZ |
| XNRHJA | | 1.134 | -0.001 | -0.46 | 1.134 | -0.002 | -0.89 | ZZ |
| XVQ6BA | | 1.133 | -0.003 | -1.15 | 1.132 | -0.004 | -1.56 | ZZ |
| XW823A | | 1.136 | 0.000 | 0.18 | 1.136 | 0.000 | 0.00 | ZZ |
| Z6UYH8 | | 1.136 | 0.001 | 0.20 | 1.137 | 0.001 | 0.26 | ZZ |
| | | | | | | | | |
| ZEGZZ3 | | 1.137 | 0.002 | 0.71 | 1.137 | 0.001 | 0.34 | ZZ |
| ZMA8H9 | | 1.133 | -0.003 | -1.15 | 1.134 | -0.002 | -0.79 | ZZ |
| ZQAGP4 | | 1.135 | -0.001 | -0.40 | 1.135 | -0.001 | -0.37 | ZZ |
| ZRPHWC | | 1.136 | 0.000 | -0.02 | 1.136 | 0.000 | 0.02 | ZZ |
| ZVPQ38 | | 1.132 | -0.004 | -1.34 | 1.132 | -0.004 | -1.50 | ZZ |

| Summary Statistics | | |
|---|---|---|
| Grand Means | | |
| | 1.1356  Mg/M^3 | 1.1359  Mg/M^3 |
| Stnd Dev Btwn Labs | | |
| | 0.0027  Mg/M^3 | 0.0025  Mg/M^3 |
| | | Statistics based on 58 of  61 reporting participants |

Samples A61-A62: Polyisoprene compound, batch #1 &  A63-A64: Polyisoprene compound, batch #2

## Comments on assigned Data Flags for Test #621

GMX4ZZ (X) - Inconsistency in testing between Sample groups. Data for Sample group A61-A62 are low.

M2XWBJ (X) - Inconsistency in testing between Sample groups. Data for Sample group A63-A64 are low.

QVFUFP (X) - Inconsistency in testing between Sample groups. Inconsistent in testing within Sample group A61-A62.

## Instrument Code Listing
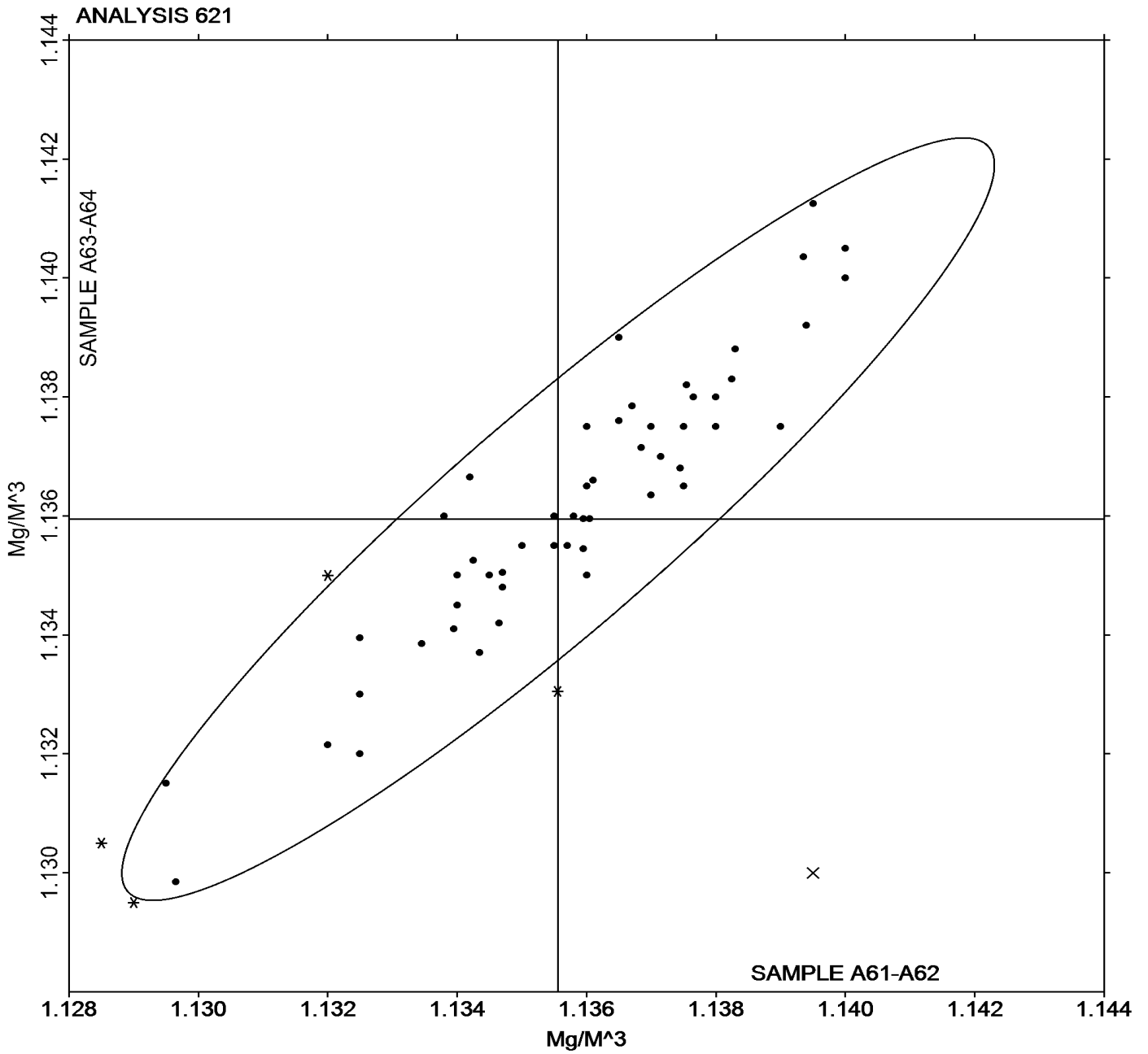
| **621** | Density |
|---|---|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

**Analysis 621**

**Density**

Grand Mean Sample **A61** = 1.1356 Mg/M^3                Grand Mean Sample **A62** = 1.1359 Mg/M^3

ANALYSIS 621



SAMPLE A63-A64

Mg/M^3

SAMPLE A61-A62

Mg/M^3

# Rubber Interlaboratory Testing Program
## Analysis 630
## Tensile Strength: Precured vs. Lab-Cured Samples (psi)

| WebCode | Data Flag | Sample J61 | | | Sample J62 | | | Instr Code |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2BCNG8 | | 3,398.0 | 169.5 | 1.45 | 3,255.0 | 50.4 | 0.30 | ZZ |
| 3BUW73 | * | 2,869.5 | -359.0 | -3.07 | 3,219.0 | 14.4 | 0.08 | ZZ |
| 6VNMEX | | 3,254.0 | 25.5 | 0.22 | 3,242.5 | 37.9 | 0.22 | ZZ |
| 7V8TC3 | | 3,166.0 | -62.5 | -0.53 | 3,189.0 | -15.6 | -0.09 | ZZ |
| 832H7C | | 3,200.5 | -28.0 | -0.24 | 3,350.2 | 145.5 | 0.86 | ZZ |
| 94CH37 | | 3,110.0 | -118.5 | -1.01 | 3,262.5 | 57.9 | 0.34 | ZZ |
| 9LUG84 | | 3,298.4 | 69.9 | 0.60 | 3,453.0 | 248.4 | 1.47 | ZZ |
| A92GU7 | X | 3,145.5 | -83.0 | -0.71 | 2,245.8 | -958.8 | -5.66 | ZZ |
| B2WW72 | X | 3,121.0 | -107.5 | -0.92 | 1,943.5 | -1,261.1 | -7.45 | ZZ |
| CGMJPY | | 3,247.5 | 19.0 | 0.16 | 3,421.5 | 216.9 | 1.28 | ZZ |
| DBUKB4 | | 3,388.4 | 159.9 | 1.37 | 3,123.8 | -80.8 | -0.48 | ZZ |
| EERKN7 | | 3,276.2 | 47.7 | 0.41 | 3,317.0 | 112.3 | 0.66 | ZZ |
| EHTNFR | | 3,167.4 | -61.1 | -0.52 | 3,264.0 | 59.4 | 0.35 | ZZ |
| FH7E63 | | 3,230.5 | 2.0 | 0.02 | 3,070.5 | -134.1 | -0.79 | ZZ |
| GT28QY | | 3,407.7 | 179.2 | 1.53 | 3,378.0 | 173.3 | 1.02 | ZZ |
| J9MALT | | 3,245.0 | 16.5 | 0.14 | 3,391.0 | 186.4 | 1.10 | ZZ |
| KVWXMN | | 3,160.5 | -68.0 | -0.58 | 3,109.0 | -95.6 | -0.56 | ZZ |
| L9E6YF | | 3,336.0 | 107.5 | 0.92 | 3,348.0 | 143.4 | 0.85 | ZZ |
| M2XWBJ | | 3,333.7 | 105.2 | 0.90 | 3,178.5 | -26.1 | -0.15 | ZZ |
| M9HWQW | | 3,252.7 | 24.2 | 0.21 | 3,368.1 | 163.5 | 0.97 | ZZ |
| QQJ7YH | | 3,181.5 | -47.0 | -0.40 | 2,976.5 | -228.1 | -1.35 | ZZ |
| QVFUFP | | 3,042.0 | -186.5 | -1.59 | 3,085.5 | -119.1 | -0.70 | ZZ |
| ULXM8B | | 3,284.5 | 56.0 | 0.48 | 2,820.0 | -384.6 | -2.27 | ZZ |
| VTBXXG | | 3,064.5 | -164.0 | -1.40 | 3,121.5 | -83.1 | -0.49 | ZZ |
| XNRHJA | | 3,386.7 | 158.2 | 1.35 | 3,270.6 | 66.0 | 0.39 | ZZ |
| XVQ6BA | | 3,127.3 | -101.2 | -0.87 | 3,149.2 | -55.4 | -0.33 | ZZ |
| Y7TMLC | | 3,205.4 | -23.1 | -0.20 | 3,263.4 | 58.8 | 0.35 | ZZ |
| ZMA8H9 | | 3,249.7 | 21.2 | 0.18 | 3,142.0 | -62.6 | -0.37 | ZZ |
| ZMRYUD | | 3,233.5 | 5.0 | 0.04 | 2,976.5 | -228.1 | -1.35 | ZZ |
| ZQAGP4 | | 3,155.0 | -73.5 | -0.63 | 3,281.5 | 76.9 | 0.45 | ZZ |
| ZRPHWC | | 3,236.5 | 8.0 | 0.07 | 3,366.5 | 161.9 | 0.96 | ZZ |
| ZVPQ38 | * | 3,346.6 | 118.1 | 1.01 | 2,744.9 | -459.7 | -2.71 | ZZ |

# Rubber Interlaboratory Testing Program
## Analysis 630
## Tensile Strength: Precured vs. Lab-Cured Samples (psi)

### Summary Statistics

Grand Means

   3,228.50 psi                                    3,204.62 psi

Stnd Dev Btwn Labs

   116.97 psi                                       169.34 psi

Statistics based on 30 of 32 reporting participants

### Summary Statistics in SI Units

Grand Means

   22.260  MPa                                     22.09  MPa

Stnd Dev Btwn Labs

   0.806  MPa                                       1.17  MPa

Statistics based on 30 of 32 reporting participants

All samples : Polyisoprene compound, batch #1

## Comments on assigned Data Flags for Test #630

A92GU7 (X) - Data for Sample group J61-J62 are low.

B2WW72 (X) - Data for Sample group J61-J62 are low.

## Instrument Code Listing

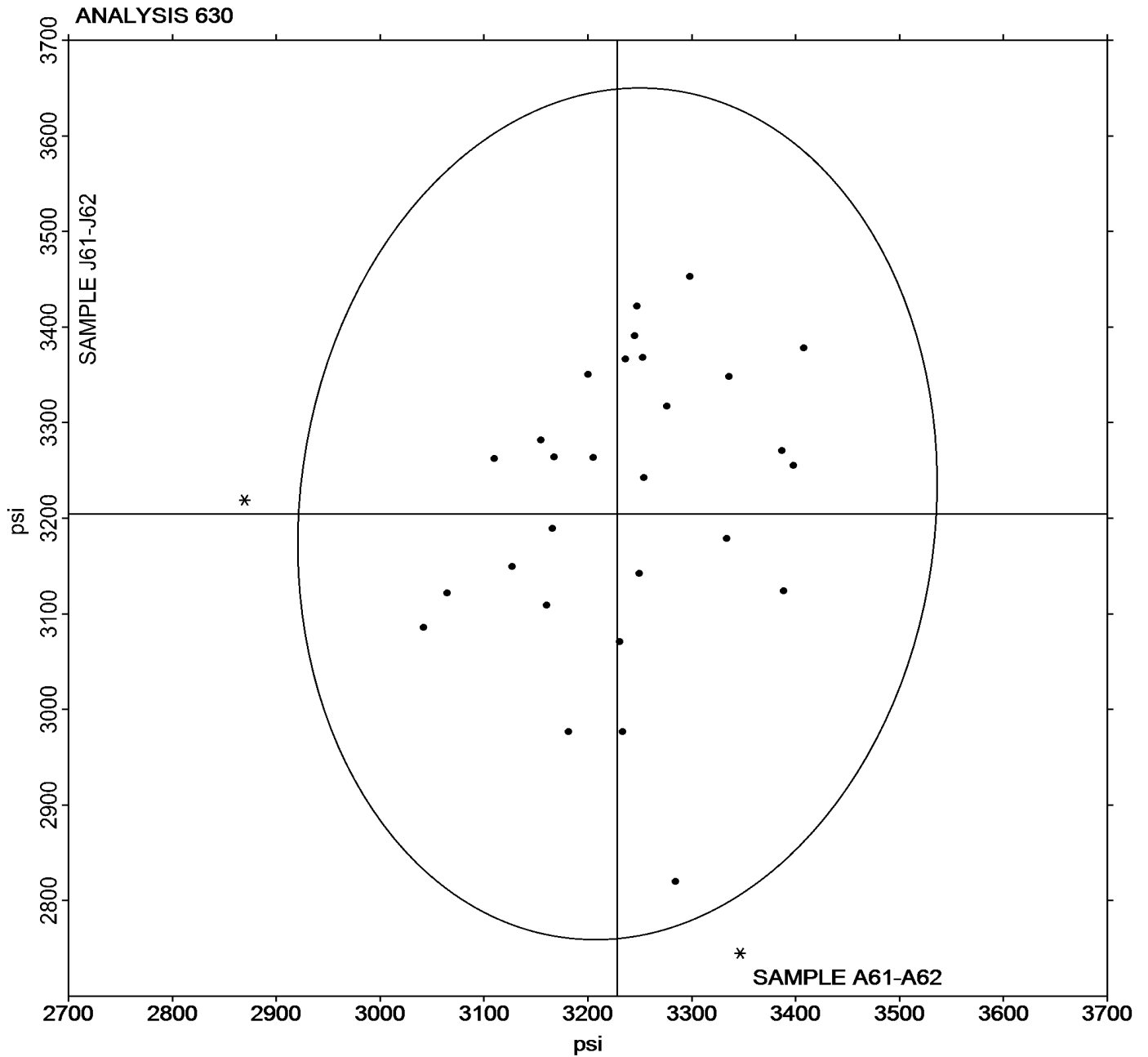| **630** | Tensile Strength: Precured vs. Lab-Cured Samples (psi) |
|---|---|

### Instruments:

(ZZ)  Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 630
## Tensile Strength: Precured vs. Lab-Cured Samples (psi)

Grand Mean Sample **J61** = 3,228.50 psi          Grand Mean Sample **J62** = 3,204.62 psi



ANALYSIS 630

SAMPLE J61-J62

SAMPLE A61-A62

psi

psi

## Analysis 631

## Ultimate Elongation: Precured vs. Lab-Cured Samples (percent)

| WebCode | Data Flag | Sample J61 Lab Mean | Sample J61 Diff from Grand Mean | Sample J61 CPV | Sample J62 Lab Mean | Sample J62 Diff from Grand Mean | Sample J62 CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2BCNG8 |   | 613.0 | -19.4 | -0.73 | 543.0 | -39.3 | -1.49 | ZZ |
| 3BUW73 | * | 571.0 | -61.4 | -2.30 | 568.0 | -14.3 | -0.54 | ZZ |
| 6VNMEX |   | 668.0 | 35.6 | 1.34 | 612.0 | 29.7 | 1.13 | ZZ |
| 7V8TC3 |   | 620.0 | -12.4 | -0.46 | 578.0 | -4.3 | -0.16 | ZZ |
| 832H7C |   | 638.0 | 5.6 | 0.21 | 608.6 | 26.3 | 1.00 | ZZ |
| 94CH37 |   | 650.0 | 17.6 | 0.66 | 585.5 | 3.2 | 0.12 | ZZ |
| 9LUG84 |   | 605.3 | -27.1 | -1.02 | 570.6 | -11.7 | -0.44 | ZZ |
| A92GU7 |   | 658.5 | 26.1 | 0.98 | 607.5 | 25.2 | 0.96 | ZZ |
| B2WW72 | * | 654.5 | 22.1 | 0.83 | 652.0 | 69.7 | 2.65 | ZZ |
| CGMJPY |   | 628.5 | -3.9 | -0.14 | 577.5 | -4.8 | -0.18 | ZZ |
| DBUKB4 |   | 650.8 | 18.4 | 0.69 | 566.9 | -15.4 | -0.59 | ZZ |
| EERKN7 |   | 620.5 | -11.9 | -0.45 | 584.3 | 2.0 | 0.08 | ZZ |
| EHTNFR |   | 624.0 | -8.4 | -0.31 | 569.0 | -13.3 | -0.50 | ZZ |
| FH7E63 |   | 627.0 | -5.4 | -0.20 | 571.5 | -10.8 | -0.41 | ZZ |
| GT28QY |   | 603.0 | -29.4 | -1.10 | 546.0 | -36.3 | -1.38 | ZZ |
| J9MALT |   | 635.0 | 2.6 | 0.10 | 593.0 | 10.7 | 0.41 | ZZ |
| KVWXMN |   | 605.0 | -27.4 | -1.03 | 561.5 | -20.8 | -0.79 | ZZ |
| L9E6YF |   | 577.0 | -55.4 | -2.08 | 555.5 | -26.8 | -1.02 | ZZ |
| M2XWBJ |   | 608.4 | -23.9 | -0.90 | 524.9 | -57.4 | -2.18 | ZZ |
| M9HWQW |   | 639.5 | 7.1 | 0.27 | 593.1 | 10.8 | 0.41 | ZZ |
| QQJ7YH |   | 623.0 | -9.4 | -0.35 | 572.5 | -9.8 | -0.37 | ZZ |
| QVFUFP |   | 635.0 | 2.6 | 0.10 | 597.0 | 14.7 | 0.56 | ZZ |
| ULXM8B |   | 637.5 | 5.1 | 0.19 | 583.0 | 0.7 | 0.03 | ZZ |
| VTBXXG |   | 627.0 | -5.4 | -0.20 | 598.0 | 15.7 | 0.60 | ZZ |
| XNRHJA |   | 651.8 | 19.4 | 0.73 | 597.3 | 15.0 | 0.57 | ZZ |
| XVQ6BA |   | 646.3 | 13.9 | 0.52 | 563.2 | -19.1 | -0.73 | ZZ |
| Y7TMLC |   | 696.5 | 64.1 | 2.41 | 623.0 | 40.7 | 1.55 | ZZ |
| ZMA8H9 |   | 619.5 | -12.9 | -0.48 | 563.5 | -18.8 | -0.71 | ZZ |
| ZMRYUD |   | 681.5 | 49.1 | 1.84 | 630.0 | 47.7 | 1.82 | ZZ |
| ZQAGP4 |   | 661.0 | 28.7 | 1.07 | 590.5 | 8.2 | 0.31 | ZZ |
| ZRPHWC |   | 623.0 | -9.4 | -0.35 | 563.0 | -19.3 | -0.73 | ZZ |
| ZVPQ38 |   | 636.3 | 4.0 | 0.15 | 583.2 | 0.9 | 0.04 | ZZ |

# Rubber Interlaboratory Testing Program
## Analysis 631
### Ultimate Elongation: Precured vs. Lab-Cured Samples (percent)

| Summary Statistics | |
|---|---|
| **Grand Means** | |
| 632.35 percent | 582.27 percent |
| **Stnd Dev Btwn Labs** | |
| 26.67 percent | 26.28 percent |
| | Statistics based on 32 of 32 reporting participants |

All samples : Polyisoprene compound, batch #1

## Instrument Code Listing
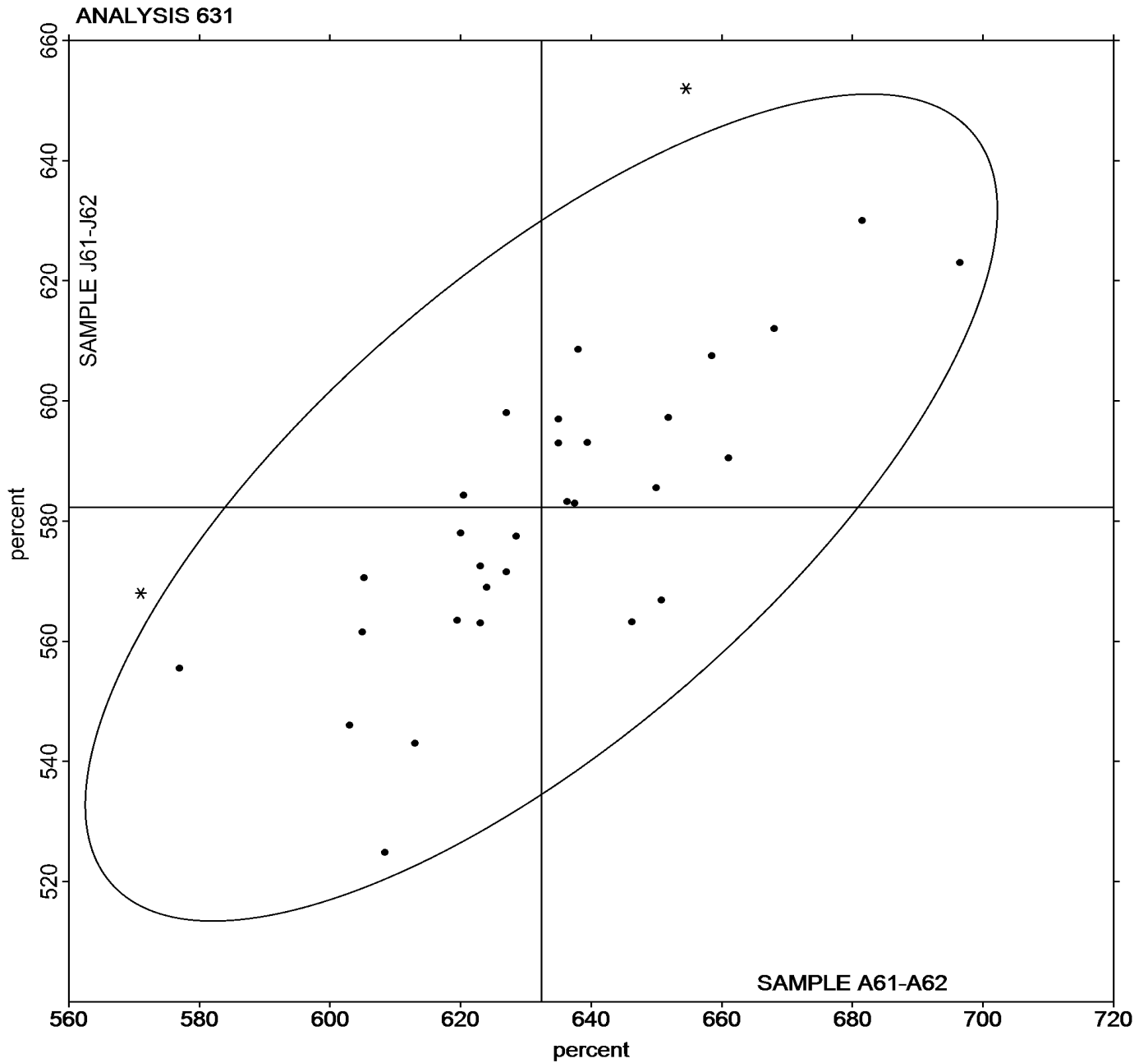
| **631** | Ultimate Elongation: Precured vs. Lab-Cured Samples (percent) |
|---|---|

**Instruments:**

(ZZ)  Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 631
## Ultimate Elongation: Precured vs. Lab-Cured Samples (percent)

Grand Mean Sample **J61** = 632.35 percent          Grand Mean Sample **J62** = 582.27 percent

# Rubber Interlaboratory Testing Program

## Analysis 632

### Stress at 300% Elongation: Precured vs. Lab-Cured Samples (psi)

| WebCode | Data Flag | Sample J61 | | | Sample J62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2BCNG8 | | 931.5 | 65.9 | 1.08 | 1,243.5 | 134.8 | 1.35 | ZZ |
| 3BUW73 | | 936.5 | 70.9 | 1.16 | 1,165.5 | 56.8 | 0.57 | ZZ |
| 6VNMEX | | 879.5 | 13.9 | 0.23 | 1,086.0 | -22.7 | -0.23 | ZZ |
| 7V8TC3 | | 857.5 | -8.1 | -0.13 | 1,074.5 | -34.2 | -0.34 | ZZ |
| 832H7C | | 845.7 | -19.9 | -0.33 | 1,112.3 | 3.6 | 0.04 | ZZ |
| 94CH37 | | 764.0 | -101.6 | -1.66 | 1,162.0 | 53.3 | 0.53 | ZZ |
| 9LUG84 | | 934.8 | 69.1 | 1.13 | 1,201.6 | 92.9 | 0.93 | ZZ |
| A92GU7 | X | 741.3 | -124.3 | -2.04 | 642.0 | -466.7 | -4.67 | ZZ |
| B2WW72 | X | 787.5 | -78.1 | -1.28 | 502.5 | -606.2 | -6.07 | ZZ |
| CGMJPY | | 824.9 | -40.7 | -0.67 | 1,187.5 | 78.8 | 0.79 | ZZ |
| DBUKB4 | | 869.4 | 3.8 | 0.06 | 1,119.3 | 10.6 | 0.11 | ZZ |
| EERKN7 | | 945.9 | 80.3 | 1.31 | 1,099.9 | -8.8 | -0.09 | ZZ |
| EHTNFR | | 838.0 | -27.6 | -0.45 | 1,155.5 | 46.8 | 0.47 | ZZ |
| FH7E63 | | 834.0 | -31.6 | -0.52 | 1,047.0 | -61.7 | -0.62 | ZZ |
| GT28QY | | 968.9 | 103.3 | 1.69 | 1,227.8 | 119.1 | 1.19 | ZZ |
| J9MALT | | 899.5 | 33.9 | 0.55 | 1,127.0 | 18.3 | 0.18 | ZZ |
| KVWXMN | | 911.5 | 45.9 | 0.75 | 1,132.0 | 23.3 | 0.23 | ZZ |
| L9E6YF | | 917.0 | 51.4 | 0.84 | 1,157.0 | 48.3 | 0.48 | ZZ |
| M2XWBJ | | 927.5 | 61.9 | 1.01 | 1,282.9 | 174.2 | 1.74 | ZZ |
| M9HWQW | | 878.2 | 12.6 | 0.21 | 1,191.3 | 82.6 | 0.83 | ZZ |
| QQJ7YH | | 858.0 | -7.6 | -0.12 | 987.0 | -121.7 | -1.22 | ZZ |
| QVFUFP | | 777.5 | -88.1 | -1.44 | 987.5 | -121.2 | -1.21 | ZZ |
| ULXM8B | | 832.5 | -33.1 | -0.54 | 938.0 | -170.7 | -1.71 | ZZ |
| VTBXXG | | 823.0 | -42.6 | -0.70 | 1,068.0 | -40.7 | -0.41 | ZZ |
| XNRHJA | | 879.7 | 14.1 | 0.23 | 1,042.8 | -65.8 | -0.66 | ZZ |
| XVQ6BA | | 815.8 | -49.9 | -0.82 | 1,145.6 | 36.9 | 0.37 | ZZ |
| Y7TMLC | | 732.4 | -133.2 | -2.18 | 950.0 | -158.7 | -1.59 | ZZ |
| ZMA8H9 | | 901.5 | 35.9 | 0.59 | 1,071.0 | -37.7 | -0.38 | ZZ |
| ZMRYUD | * | 746.0 | -119.6 | -1.96 | 838.5 | -270.2 | -2.71 | ZZ |
| ZQAGP4 | | 911.8 | 46.2 | 0.76 | 1,135.5 | 26.9 | 0.27 | ZZ |
| ZRPHWC | | 860.2 | -5.4 | -0.09 | 1,215.3 | 106.6 | 1.07 | ZZ |

**Analysis 632**

**Stress at 300% Elongation: Precured vs. Lab-Cured Samples (psi)**

---

| Summary Statistics | |
|---|---|
| **Grand Means** | |
| 865.60 psi | 1,108.68 psi |
| **Stnd Dev Btwn Labs** | |
| 61.08 psi | 99.85 psi |
| | Statistics based on 29 of 31 reporting participants |

| Summary Statistics in SI Units | |
|---|---|
| **Grand Means** | |
| 5.9681 MPa | 7.64 MPa |
| **Stnd Dev Btwn Labs** | |
| 0.4211 MPa | 0.69 MPa |
| | Statistics based on 29 of 31 reporting participants |

All samples : Polyisoprene compound, batch #1

## Comments on assigned Data Flags for Test #632

A92GU7 (X) - Data for Sample group J61-J62 are low.

B2WW72 (X) - Data for Sample group J61-J62 are low.

## Instrument Code Listing

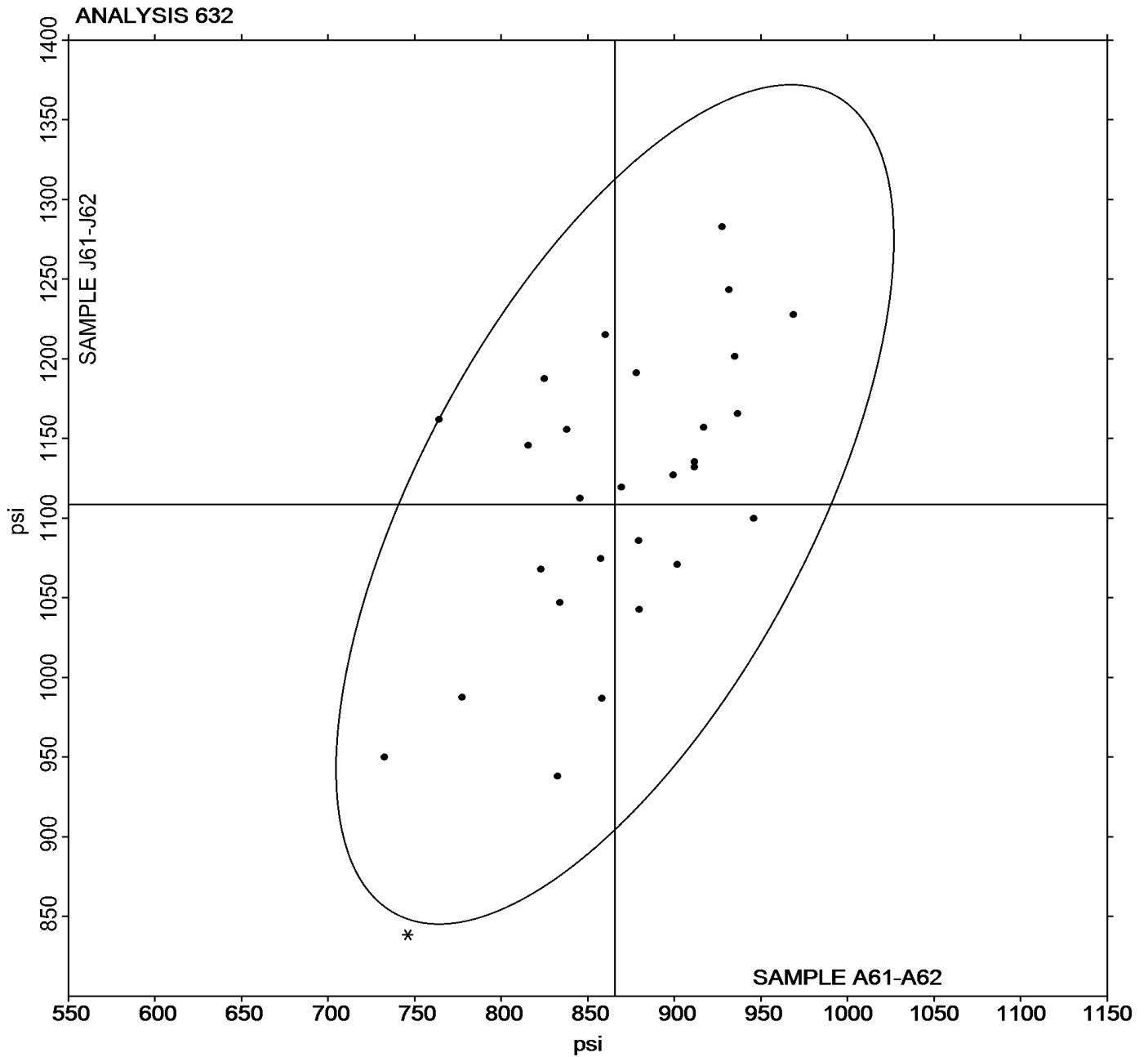| **632** | Stress at 300% Elongation: Precured vs. Lab-Cured Samples (psi) |
|---|---|

**Instruments:**

(ZZ) Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 632
### Stress at 300% Elongation: Precured vs. Lab-Cured Samples (psi)

Grand Mean Sample **J61** = 865.60 psi                Grand Mean Sample **J62** = 1,108.68 psi

## Analysis 633

### Stress at 100% Elongation: Precured vs. Lab-Cured Samples (psi)

| WebCode | Data Flag | Sample J61 | | | Sample J62 | | | Instr Code |
|---------|-----------|----------|--------------------|------|----------|--------------------|------|------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2BCNG8 | | 189.0 | 0.9 | 0.06 | 244.0 | 3.2 | 0.15 | ZZ |
| 3BUW73 | | 192.5 | 4.4 | 0.30 | 253.5 | 12.7 | 0.57 | ZZ |
| 6VNMEX | | 207.5 | 19.4 | 1.34 | 263.0 | 22.2 | 1.00 | ZZ |
| 7V8TC3 | | 181.0 | -7.1 | -0.49 | 232.0 | -8.8 | -0.40 | ZZ |
| 832H7C | | 182.9 | -5.2 | -0.36 | 248.5 | 7.8 | 0.35 | ZZ |
| 94CH37 | | 166.0 | -22.1 | -1.53 | 251.5 | 10.7 | 0.48 | ZZ |
| 9LUG84 | | 193.4 | 5.3 | 0.36 | 258.1 | 17.3 | 0.78 | ZZ |
| A92GU7 | X | 167.7 | -20.4 | -1.41 | 145.9 | -94.9 | -4.29 | ZZ |
| B2WW72 | X | 173.0 | -15.1 | -1.05 | 123.5 | -117.3 | -5.30 | ZZ |
| CGMJPY | | 182.6 | -5.6 | -0.39 | 262.6 | 21.8 | 0.98 | ZZ |
| DBUKB4 | | 181.9 | -6.2 | -0.43 | 219.7 | -21.1 | -0.95 | ZZ |
| EERKN7 | | 223.7 | 35.6 | 2.46 | 267.0 | 26.2 | 1.18 | ZZ |
| EHTNFR | | 179.0 | -9.1 | -0.63 | 248.0 | 7.2 | 0.33 | ZZ |
| FH7E63 | | 178.5 | -9.6 | -0.67 | 224.5 | -16.3 | -0.74 | ZZ |
| GT28QY | | 201.6 | 13.5 | 0.93 | 256.7 | 15.9 | 0.72 | ZZ |
| J9MALT | * | 225.5 | 37.4 | 2.58 | 289.5 | 48.7 | 2.20 | ZZ |
| KVWXMN | | 184.5 | -3.6 | -0.25 | 241.0 | 0.2 | 0.01 | ZZ |
| L9E6YF | | 173.5 | -14.6 | -1.01 | 229.0 | -11.8 | -0.53 | ZZ |
| M2XWBJ | | 194.4 | 6.2 | 0.43 | 253.1 | 12.3 | 0.56 | ZZ |
| M9HWQW | | 185.3 | -2.8 | -0.20 | 249.2 | 8.4 | 0.38 | ZZ |
| QQJ7YH | | 187.5 | -0.6 | -0.04 | 219.5 | -21.3 | -0.96 | ZZ |
| QVFUFP | | 178.0 | -10.1 | -0.70 | 221.0 | -19.8 | -0.89 | ZZ |
| ULXM8B | | 204.5 | 16.4 | 1.13 | 224.5 | -16.3 | -0.74 | ZZ |
| VTBXXG | | 182.0 | -6.1 | -0.42 | 245.0 | 4.2 | 0.19 | ZZ |
| XNRHJA | | 187.1 | -1.0 | -0.07 | 216.1 | -24.7 | -1.11 | ZZ |
| XVQ6BA | | 181.4 | -6.7 | -0.46 | 254.8 | 14.1 | 0.64 | ZZ |
| Y7TMLC | | 166.8 | -21.3 | -1.47 | 210.3 | -30.5 | -1.38 | ZZ |
| ZMA8H9 | | 205.5 | 17.4 | 1.20 | 240.5 | -0.3 | -0.01 | ZZ |
| ZMRYUD | | 167.5 | -20.6 | -1.43 | 190.5 | -50.3 | -2.27 | ZZ |
| ZQAGP4 | | 193.1 | 5.0 | 0.35 | 248.6 | 7.8 | 0.35 | ZZ |
| ZRPHWC | | 187.0 | -1.2 | -0.08 | 265.8 | 25.0 | 1.13 | ZZ |
| ZVPQ38 | | 180.7 | -7.4 | -0.51 | 196.0 | -44.8 | -2.02 | ZZ |

# Rubber Interlaboratory Testing Program
## Analysis 633
### Stress at 100% Elongation: Precured vs. Lab-Cured Samples (psi)

| Summary Statistics | |
|---|---|
| **Grand Means** | |
| 188.13 psi | 240.78 psi |
| **Stnd Dev Btwn Labs** | |
| 14.47 psi | 22.13 psi |
| | Statistics based on 30 of 32 reporting participants |

| Summary Statistics in SI Units | |
|---|---|
| **Grand Means** | |
| 1.2971 MPa | 1.66 MPa |
| **Stnd Dev Btwn Labs** | |
| 0.0998 MPa | 0.15 MPa |
| | Statistics based on 30 of 32 reporting participants |

All samples : Polyisoprene compound, batch #1

## Comments on assigned Data Flags for Test #633

A92GU7 (X) - Data for Sample group J61-J62 are low.

B2WW72 (X) - Data for Sample group J61-J62 are low.

## Instrument Code Listing

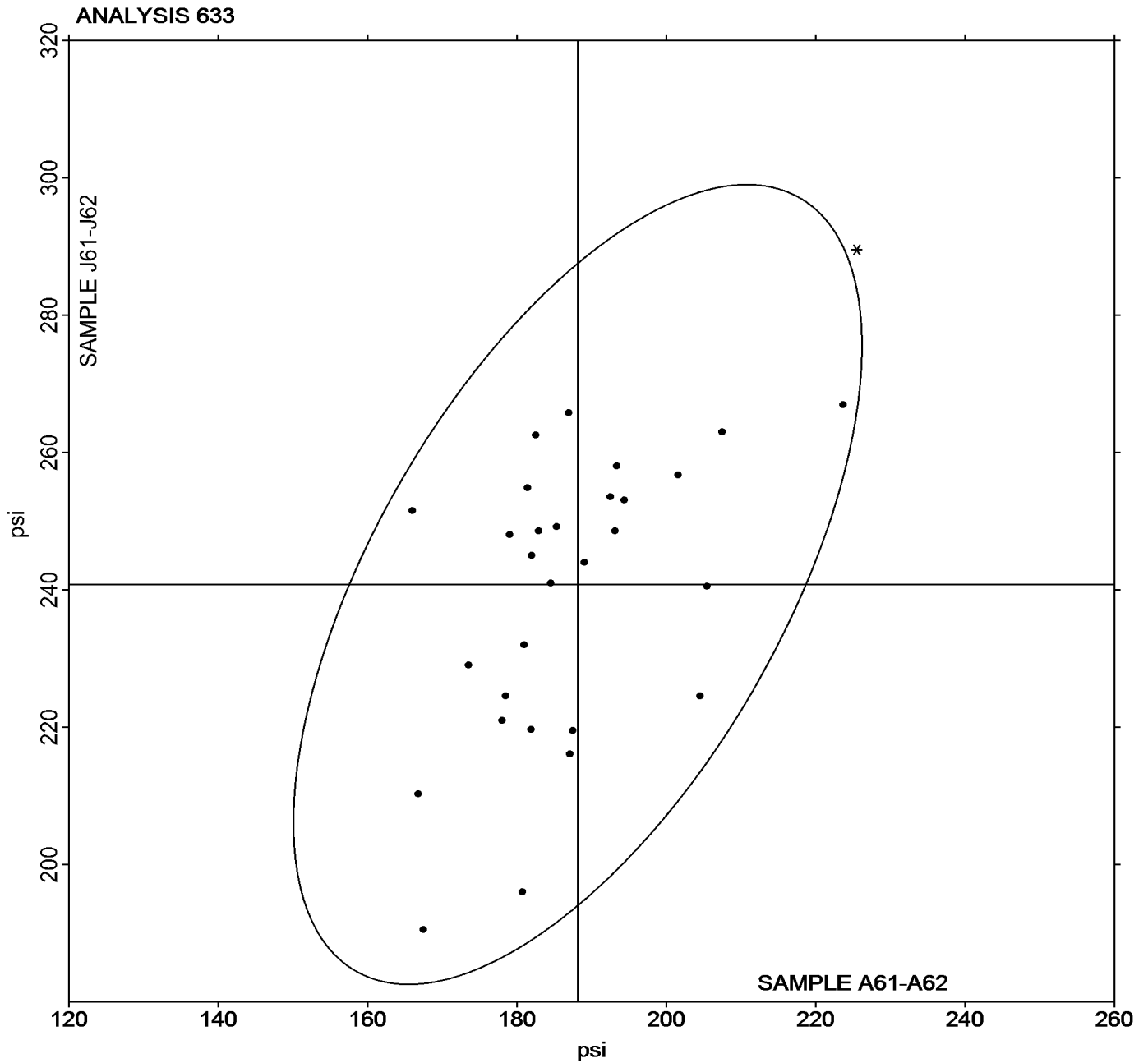| **633** Stress at 100% Elongation: Precured vs. Lab-Cured Samples (psi) |
|---|

### Instruments:

(ZZ) Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 633
### Stress at 100% Elongation: Precured vs. Lab-Cured Samples (psi)

Grand Mean Sample **J61** = 188.13 psi

Grand Mean Sample **J62** = 240.78 psi

# Rubber Interlaboratory Testing Program

## Analysis 660

## Mooney Viscosity: 4-minute readings (ML 1 + 4)

| WebCode | Data Flag | Sample S61 | | | Sample S62 | | | Instr Code |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
|---|---|---|---|---|---|---|---|---|
| 2AFDL6 | | 48.04 | 0.72 | 0.70 | 55.24 | -0.11 | -0.10 | MR |
| 2EA8J7 | | 47.25 | -0.07 | -0.07 | 57.23 | 1.88 | 1.65 | MR |
| 3BUW73 | | 46.67 | -0.65 | -0.63 | 55.85 | 0.50 | 0.44 | XX |
| 4P9P8D | | 47.50 | 0.18 | 0.18 | 56.67 | 1.31 | 1.15 | MR |
| 6NRTEE | | 45.72 | -1.60 | -1.56 | 55.07 | -0.28 | -0.25 | MR |
| 8263VZ | | 48.73 | 1.42 | 1.38 | 57.23 | 1.88 | 1.65 | MR |
| 832H7C | | 47.44 | 0.12 | 0.12 | 54.44 | -0.91 | -0.80 | MR |
| 87KD94 | | 46.97 | -0.35 | -0.34 | 55.97 | 0.62 | 0.54 | MR |
| A2Z6XA | | 47.93 | 0.62 | 0.60 | 56.20 | 0.85 | 0.74 | MR |
| A92GU7 | | 46.50 | -0.82 | -0.80 | 54.82 | -0.53 | -0.47 | MR |
| B8N4RV | | 46.38 | -0.93 | -0.91 | 54.58 | -0.77 | -0.67 | MR |
| CCAG43 | | 48.08 | 0.77 | 0.75 | 54.90 | -0.45 | -0.39 | MR |
| CGMJPY | | 46.72 | -0.60 | -0.59 | 55.02 | -0.33 | -0.29 | MR |
| EERKN7 | X | 31.14 | -16.18 | -15.79 | 39.93 | -15.42 | -13.49 | MR |
| EHTNFR | | 48.48 | 1.17 | 1.14 | 54.88 | -0.47 | -0.41 | MR |
| FH7E63 | | 47.48 | 0.17 | 0.16 | 54.82 | -0.53 | -0.47 | MR |
| GT28QY | | 48.42 | 1.11 | 1.08 | 55.70 | 0.34 | 0.30 | XX |
| J9MALT | | 44.68 | -2.64 | -2.57 | 53.53 | -1.82 | -1.59 | TA |
| L46RFV | | 46.60 | -0.71 | -0.70 | 52.51 | -2.84 | -2.49 | XX |
| PEXAKF | | 48.32 | 1.01 | 0.98 | 55.84 | 0.49 | 0.43 | MR |
| RHNMXE | | 47.20 | -0.12 | -0.11 | 55.68 | 0.33 | 0.29 | MP |
| TCYAWQ | | 48.28 | 0.97 | 0.94 | 58.03 | 2.68 | 2.35 | MR |
| TCZZ3A | | 46.52 | -0.80 | -0.78 | 55.60 | 0.25 | 0.22 | MR |
| U99MEN | | 47.27 | -0.05 | -0.05 | 54.27 | -1.08 | -0.95 | MR |
| UHHRRE | | 47.93 | 0.61 | 0.60 | 55.88 | 0.53 | 0.47 | MR |
| VTBXXG | | 46.50 | -0.82 | -0.80 | 54.50 | -0.85 | -0.74 | MR |
| XVQ6BA | | 49.17 | 1.85 | 1.80 | 56.75 | 1.40 | 1.22 | MR |
| Y7TMLC | | 45.32 | -2.00 | -1.95 | 54.37 | -0.98 | -0.86 | MR |
| ZMA8H9 | | 47.93 | 0.62 | 0.60 | 54.48 | -0.87 | -0.76 | MR |
| ZQAGP4 | | 47.63 | 0.32 | 0.31 | 55.07 | -0.28 | -0.25 | XX |
| ZVPQ38 | | 47.85 | 0.53 | 0.52 | 55.42 | 0.07 | 0.06 | MZ |

### Summary Statistics

Grand Means

47.317 ML 1 + 4          55.351 ML 1 + 4

Stnd Dev Btwn Labs

1.025 ML 1 + 4          1.143 ML 1 + 4

Statistics based on 30 of 31 reporting participants

Samples S61-S62: NBR &  S63-S64: Butyl

### Comments on assigned Data Flags for Test #660

EERKN7 (X) - Extreme data.

## Instrument Code Listing

| 660 | Mooney Viscosity: 4-minute readings (ML 1 + 4) |
|---|---|

### Instruments:

(ML)  Alpha Technologies/Monsanto model not specified          (MM)   Alpha Technologies Model 1xxx or OSM

(MP)   Monsanto Compact Mooney Viscometer          (MR)   Alpha Technologies Model MV2000/MV2000E

(MZ)   Rebuilt Monsanto Mooney Viscometer          (SF)   Scott STI  (any model)

(TA)   TA Instruments (any model)          (TV)   Tech Pro Visc Tech     (any model)

(XA)   Special In-House Instrument          (XX)   Instrument make/model not specified by lab

**Mooney Viscosity: 4-minute readings (ML 1 + 4)**

Grand Mean Sample **S61** = 47.317 ML 1 + 4                  Grand Mean Sample **S62** = 55.351 ML 1 + 4
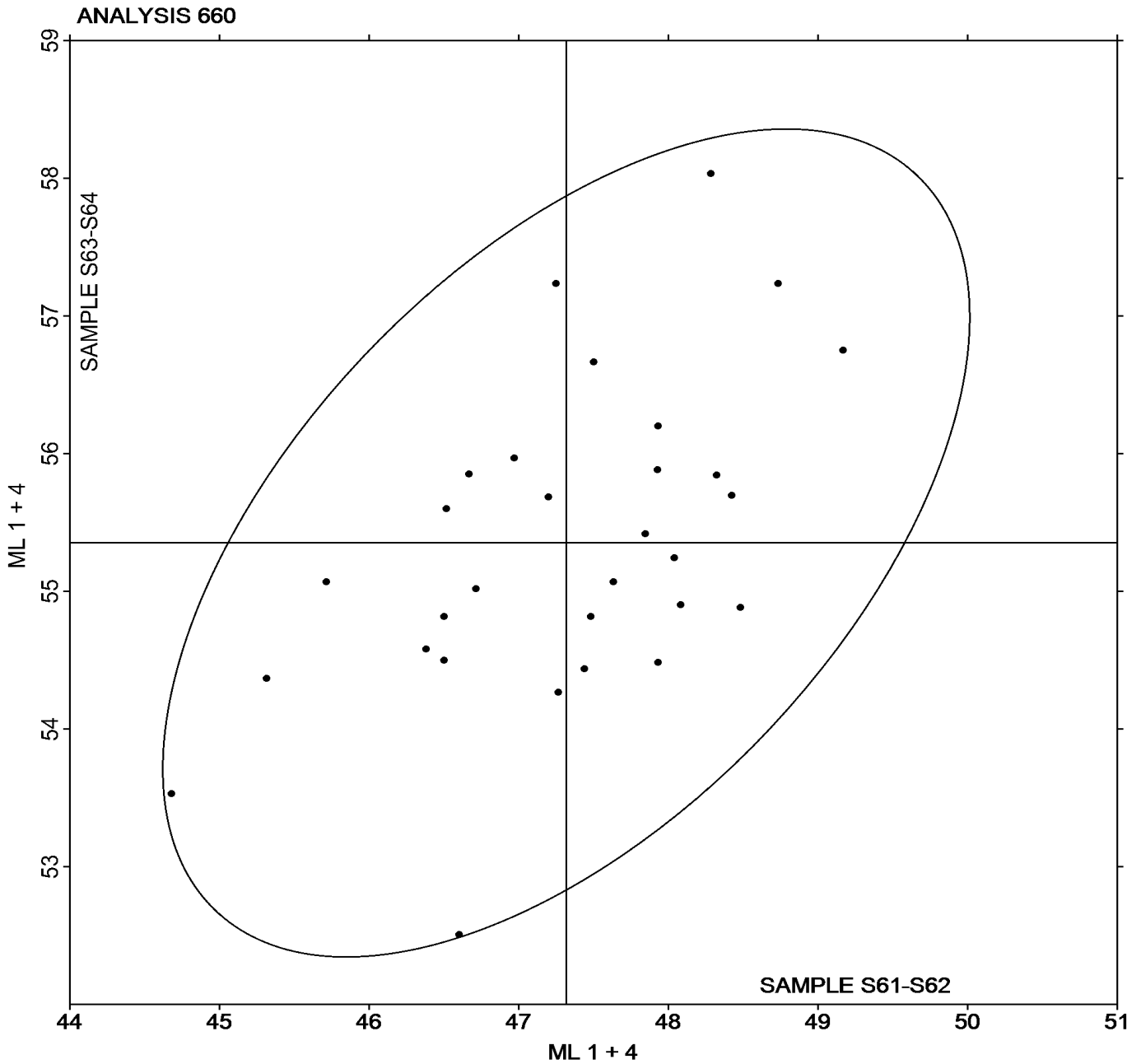
# Rubber Interlaboratory Testing Program
## Analysis 661
## Mooney Viscosity: 4-min NBR/SBR & 8-min butyl readings (ML)

| WebCode | Data Flag | Sample Lab Mean | Sample Diff from Grand Mean | Sample CPV | Sample Lab Mean | Sample Diff from Grand Mean | Sample CPV | Instr Code |
|---------|-----------|-----------------|-----------------------------|------------|-----------------|-----------------------------|------------|------------|
| 2AFDL6 |   | 48.04 | 0.66 | 0.62 | 52.79 | 0.03 | 0.02 | MR |
| 3BUW73 |   | 46.67 | -0.71 | -0.68 | 52.58 | -0.18 | -0.16 | XX |
| 4P9P8D |   | 47.50 | 0.12 | 0.11 | 53.60 | 0.84 | 0.76 | MR |
| 6NRTEE |   | 45.72 | -1.66 | -1.58 | 51.73 | -1.03 | -0.94 | MR |
| 8263VZ |   | 48.73 | 1.35 | 1.28 | 54.53 | 1.77 | 1.61 | MR |
| 832H7C |   | 47.44 | 0.06 | 0.06 | 51.81 | -0.96 | -0.87 | MR |
| 87KD94 |   | 46.97 | -0.41 | -0.39 | 53.68 | 0.92 | 0.84 | MR |
| A2Z6XA |   | 47.93 | 0.55 | 0.52 | 53.55 | 0.79 | 0.72 | MR |
| A92GU7 |   | 46.50 | -0.88 | -0.83 | 51.78 | -0.98 | -0.89 | MR |
| CCAG43 |   | 48.08 | 0.70 | 0.67 | 52.38 | -0.38 | -0.34 | MR |
| CGMJPY |   | 46.72 | -0.66 | -0.63 | 52.73 | -0.03 | -0.03 | MR |
| EERKN7 | X | 31.14 | -16.25 | -15.39 | 36.36 | -16.40 | -14.91 | MR |
| EHTNFR |   | 48.48 | 1.10 | 1.04 | 51.93 | -0.83 | -0.75 | XX |
| FH7E63 |   | 47.48 | 0.10 | 0.10 | 51.88 | -0.89 | -0.81 | MP |
| GT28QY |   | 48.42 | 1.04 | 0.99 | 53.16 | 0.40 | 0.36 | XX |
| J9MALT |   | 44.68 | -2.70 | -2.56 | 51.02 | -1.74 | -1.58 | TA |
| PEXAKF |   | 48.32 | 0.94 | 0.89 | 53.11 | 0.34 | 0.31 | XX |
| RHNMXE |   | 47.20 | -0.18 | -0.17 | 52.43 | -0.33 | -0.30 | MP |
| TCYAWQ | * | 48.28 | 0.90 | 0.85 | 55.65 | 2.89 | 2.63 | MR |
| TCZZ3A |   | 46.52 | -0.86 | -0.82 | 53.32 | 0.55 | 0.50 | MR |
| U99MEN |   | 47.27 | -0.11 | -0.11 | 51.88 | -0.88 | -0.80 | MR |
| UHHRRE |   | 47.93 | 0.55 | 0.52 | 54.51 | 1.75 | 1.59 | MR |
| VTBXXG |   | 46.50 | -0.88 | -0.83 | 52.53 | -0.23 | -0.21 | MR |
| XVQ6BA |   | 49.17 | 1.79 | 1.69 | 54.30 | 1.54 | 1.40 | MR |
| Y7TMLC |   | 45.32 | -2.06 | -1.96 | 51.50 | -1.26 | -1.15 | MR |
| ZMA8H9 |   | 47.93 | 0.55 | 0.52 | 51.75 | -1.01 | -0.92 | MR |
| ZQAGP4 |   | 47.63 | 0.25 | 0.24 | 52.37 | -0.40 | -0.36 | XX |
| ZVPQ38 |   | 47.85 | 0.47 | 0.44 | 52.07 | -0.69 | -0.63 | MZ |

## Summary Statistics

Grand Means

47.381 ML 1 + 8          52.763 ML 1 + 8

Stnd Dev Btwn Labs

1.056 ML 1 + 8           1.100 ML 1 + 8

Statistics based on 27 of 28 reporting participants

Please refer to the sample information provided for Analysis 660.

## Comments on assigned Data Flags for Test #661

EERKN7 (X) - Extreme data.

## Instrument Code Listing

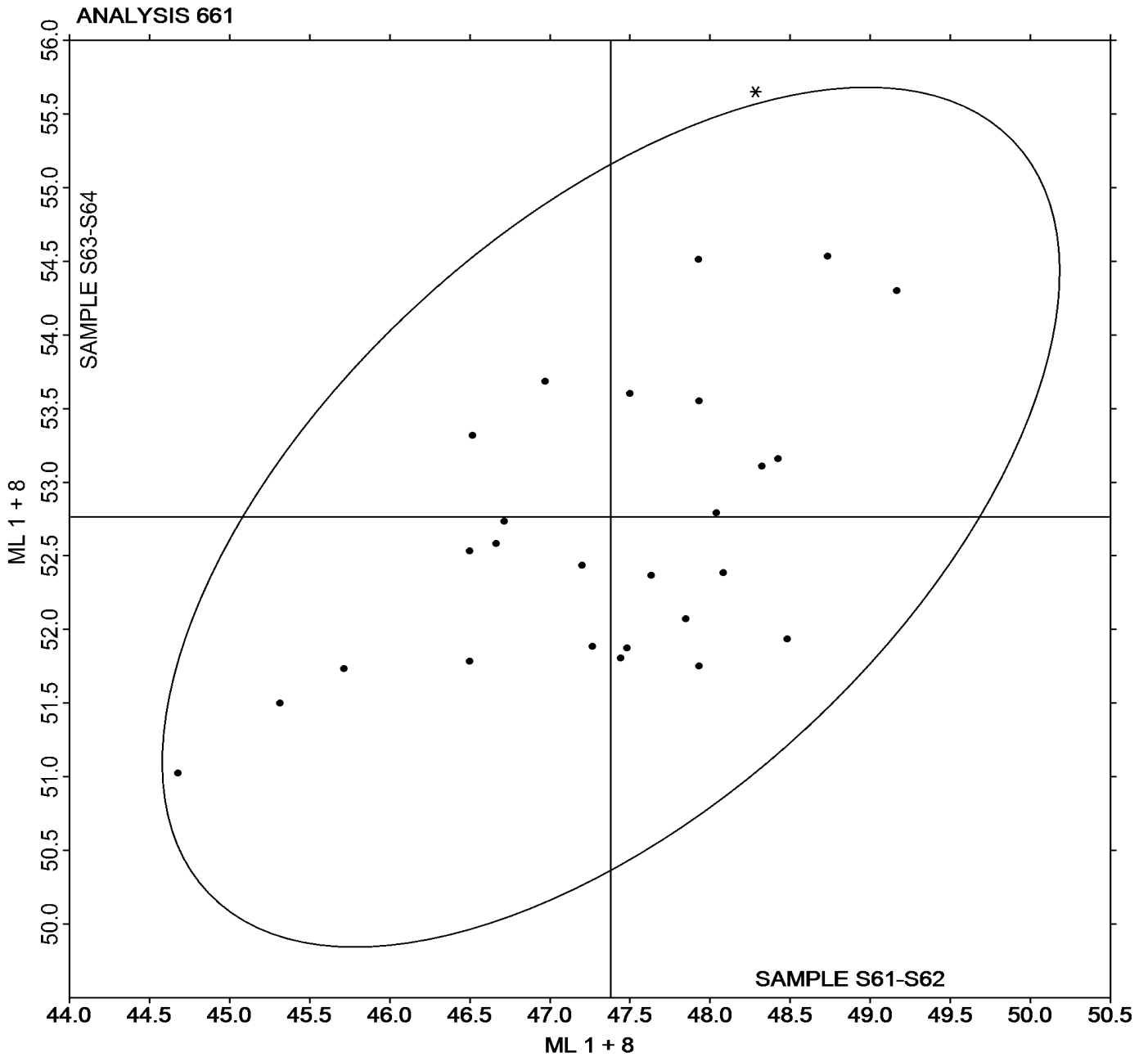| **661** | Mooney Viscosity: 4-min NBR/SBR & 8-min butyl readings (ML) |
|---------|-------------------------------------------------------------|

**Instruments:**

(ML)   Alpha Technologies/Monsanto model not specified

(MM)   Alpha Technologies Model 1xxx or OSM

(MP)   Monsanto Compact Mooney Viscometer

(MR)   Alpha Technologies Model MV2000/MV2000E

(MZ)   Rebuilt Monsanto Mooney Viscometer

(SF)   Scott STI  (any model)

(TA)   TA Instruments (any model)

(TV)   Tech Pro Visc Tech    (any model)

(XA)   Special In-House Instrument

(XX)   Instrument make/model not specified by lab

# Rubber Interlaboratory Testing Program
## Analysis 661
## Mooney Viscosity: 4-min NBR/SBR & 8-min butyl readings (ML)

Grand Mean Sample = 47.381 ML 1 + 8                    Grand Mean Sample = 52.763 ML 1 + 8



ANALYSIS 661

# Analysis 662

## Mooney Stress Relaxation: t80 (seconds)

|  |  | Sample S61 |  |  |  | Sample S62 |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV |  | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 832H7C |  | 4.493 | -0.263 | -0.83 |  | 7.015 | -0.691 | -0.43 | MR |
| A2Z6XA |  | 4.750 | -0.007 | -0.02 |  | 8.833 | 1.127 | 0.69 | MR |
| B8N4RV |  | 4.700 | -0.057 | -0.18 |  | 8.900 | 1.194 | 0.73 | MR |
| EHTNFR |  | 4.500 | -0.257 | -0.81 |  | 8.163 | 0.457 | 0.28 | MR |
| GT28QY |  | 5.070 | 0.313 | 0.99 |  | 5.150 | -2.556 | -1.57 | XX |
| J9MALT |  | 5.048 | 0.292 | 0.92 |  | 5.102 | -2.605 | -1.60 | TA |
| XVQ6BA |  | 4.327 | -0.430 | -1.35 |  | 8.483 | 0.777 | 0.48 | MR |
| Y7TMLC |  | 5.292 | 0.535 | 1.68 |  | 9.617 | 1.910 | 1.18 | XX |
| ZMA8H9 |  | 4.630 | -0.127 | -0.40 |  | 8.093 | 0.387 | 0.24 | MR |
| ZVPQ38 | X | 11.050 | 6.293 | 19.79 |  | 11.112 | 3.405 | 2.10 | TV |

| Summary Statistics | | |
| --- | --- | --- |
| **Grand Means** | | |
| 4.7567  seconds | | 7.7063  seconds |
| **Stnd Dev Btwn Labs** | | |
| 0.3180  seconds | | 1.6242  seconds |
| | | Statistics based on 9 of  10 reporting participants |

Samples S61-S62: NBR &  S63-S64: Butyl

## Comments on assigned Data Flags for Test #662

ZVPQ38 (X) - Extreme data for Sample group S61-S62.

## Instrument Code Listing

| 662 | Mooney Stress Relaxation: t80 (seconds) |
| --- | --- |

### Instruments:

(ML)   Alpha Technologies/Monsanto model not specified          (MM)   Alpha Technologies Model 1xxx or OSM

(MP)   Monsanto Compact Mooney Viscometer          (MR)   Alpha Technologies Model MV2000/MV2000E

(MZ)   Rebuilt Monsanto Mooney Viscometer          (SF)   Scott STI  (any model)

(TA)   TA Instruments (any model)          (TV)   Tech Pro Visc Tech  (any model)

(XA)   Special In-House Instrument          (XX)   Instrument make/model not specified by lab

# Rubber Interlaboratory Testing Program
## Analysis 662
### Mooney Stress Relaxation: t80 (seconds)

Grand Mean Sample **S61** = 4.7567 seconds          Grand Mean Sample **S62** = 7.7063 seconds



ANALYSIS 662

SAMPLE S63-S64

seconds

SAMPLE S61-S62

seconds
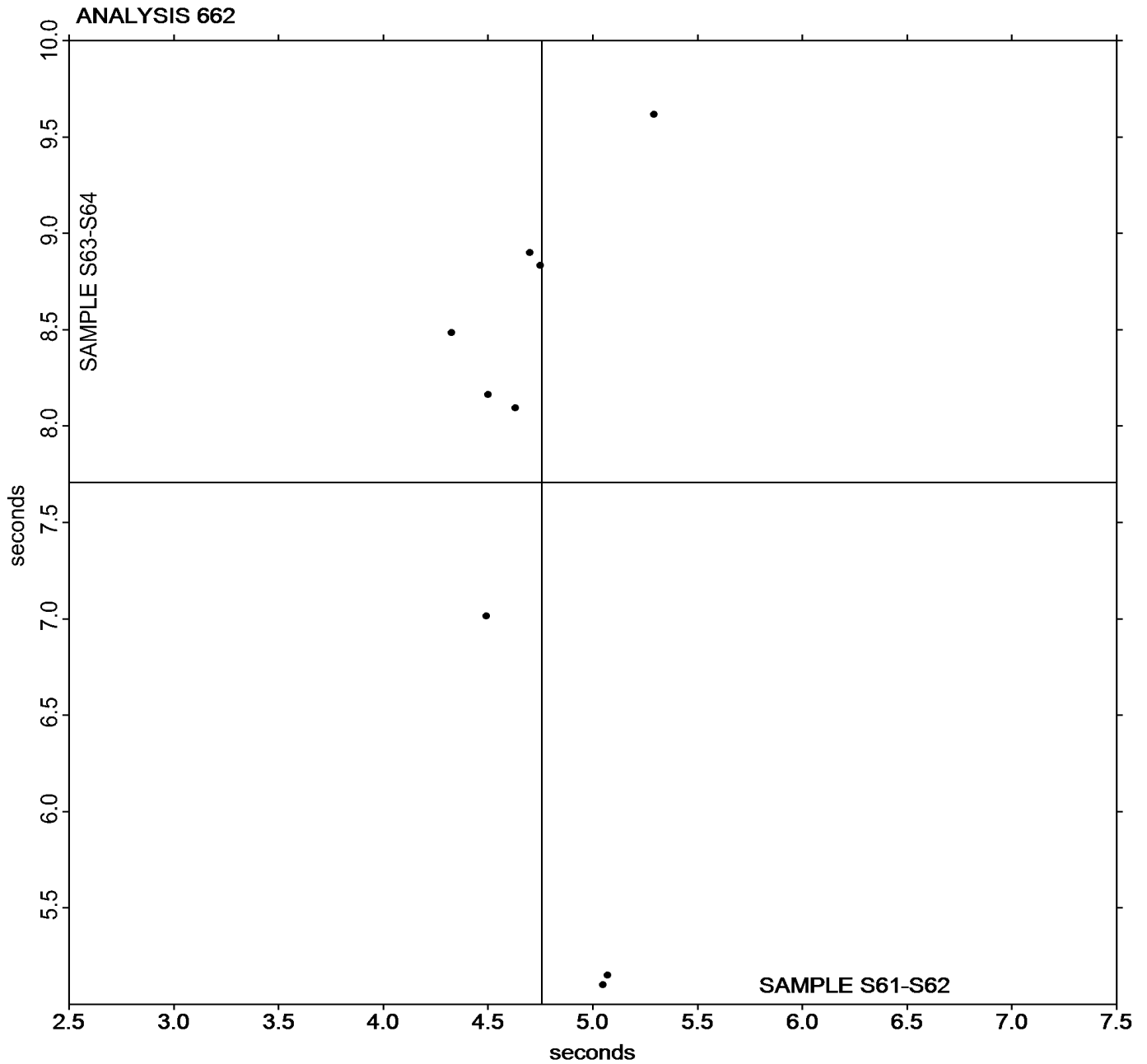
# Rubber Interlaboratory Testing Program
## Analysis 663
## Mooney Stress Relaxation: X30 (percent)

| WebCode | Data Flag | Sample S61 | | | Sample S62 | | | Instr Code |
|---------|-----------|------------|--|--|------------|--|--|------------|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 832H7C | | 92.93 | 0.58 | 0.34 | 92.67 | 1.33 | 1.01 | MR |
| A2Z6XA | | 91.47 | -0.88 | -0.51 | 90.43 | -0.91 | -0.69 | MR |
| EHTNFR | | 92.10 | -0.25 | -0.14 | 91.43 | 0.09 | 0.07 | MR |
| GT28QY | | 92.59 | 0.25 | 0.14 | 90.87 | -0.47 | -0.36 | XX |
| J9MALT | X | 0.39 | -91.95 | -52.91 | 2.54 | -88.80 | -67.38 | TA |
| XVQ6BA | | 91.90 | -0.45 | -0.26 | 90.76 | -0.58 | -0.44 | MR |
| Y7TMLC | | 90.15 | -2.19 | -1.26 | 89.60 | -1.74 | -1.32 | XX |
| ZMA8H9 | | 91.51 | -0.83 | -0.48 | 91.18 | -0.16 | -0.12 | MR |
| ZVPQ38 | | 96.11 | 3.77 | 2.17 | 93.78 | 2.44 | 1.85 | TV |

### Summary Statistics

Grand Means

   92.344  percent                                      91.340  percent

Stnd Dev Btwn Labs

   1.738  percent                                       1.318  percent

Statistics based on 8 of 9 reporting participants

Samples S61-S62: NBR &  S63-S64: Butyl

## Comments on assigned Data Flags for Test #663

J9MALT (X) - Extreme data.

## Instrument Code Listing

| **663** | Mooney Stress Relaxation: X30 (percent) |
|---------|------------------------------------------|

### Instruments:

(ML)  Alpha Technologies/Monsanto model not specified         (MM)  Alpha Technologies Model 1xxx or OSM

(MP)  Monsanto Compact Mooney Viscometer                       (MR)  Alpha Technologies Model MV2000/MV2000E

(MZ)  Rebuilt Monsanto Mooney Viscometer                       (SF)  Scott STI  (any model)

(TA)  TA Instruments (any model)                               (TV)  Tech Pro Visc Tech  (any model)

(XA)  Special In-House Instrument                              (XX)  Instrument make/model not specified by lab

**Mooney Stress Relaxation: X30 (percent)**

Grand Mean Sample **S61** = 92.344 percent

Grand Mean Sample **S62** = 91.340 percent

# Rubber Interlaboratory Testing Program
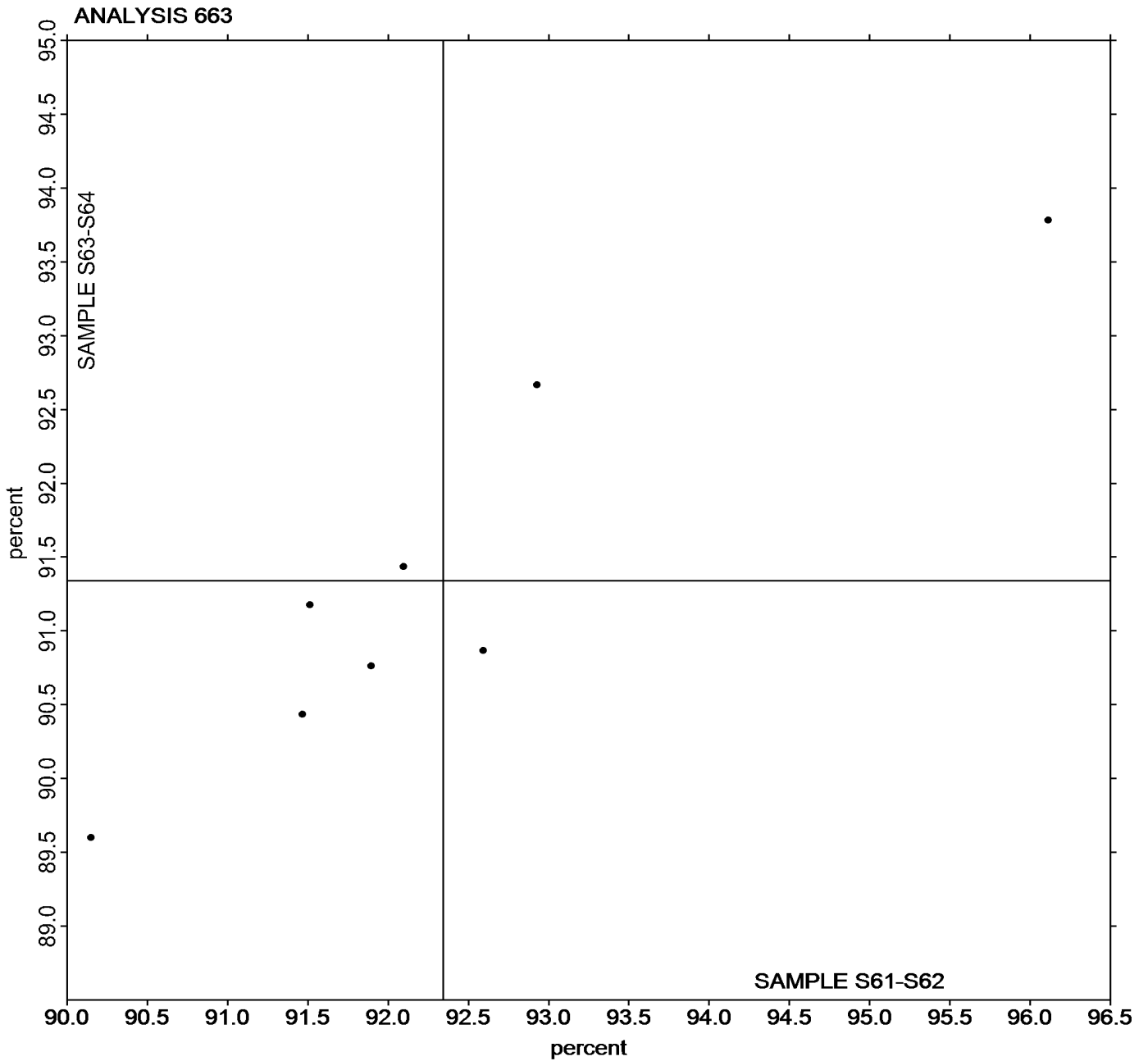
## Analysis 664

## Mooney Stress Relaxation: Area under curve (M-s)

|  |  | Sample S61 | | | | Sample S62 | | | |
|---|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 832H7C | | 364.1 | -7.9 | -0.07 | | 436.4 | -49.2 | -0.44 | MR |
| A2Z6XA | | 447.3 | 75.2 | 0.70 | | 569.5 | 83.9 | 0.75 | MR |
| EHTNFR | | 414.9 | 42.9 | 0.40 | | 501.6 | 16.0 | 0.14 | MR |
| GT28QY | | 381.4 | 9.3 | 0.09 | | 547.0 | 61.4 | 0.55 | XX |
| J9MALT | | 212.3 | -159.8 | -1.48 | | 280.4 | -205.2 | -1.83 | TA |
| XVQ6BA | | 430.0 | 57.9 | 0.54 | | 561.3 | 75.7 | 0.68 | MR |
| Y7TMLC | | 483.5 | 111.4 | 1.03 | | 620.9 | 135.3 | 1.21 | XX |
| ZMA8H9 | | 441.3 | 69.2 | 0.64 | | 509.3 | 23.7 | 0.21 | MR |
| ZVPQ38 | | 173.9 | -198.2 | -1.84 | | 344.0 | -141.6 | -1.26 | TV |

| Summary Statistics | |
|---|---|
| **Grand Means** | |
| 372.09 M-s | 485.60 M-s |
| **Stnd Dev Btwn Labs** | |
| 107.84 M-s | 111.94 M-s |
| | Statistics based on 9 of 9 reporting participants |

Samples S61-S62: NBR & S63-S64: Butyl

## Instrument Code Listing

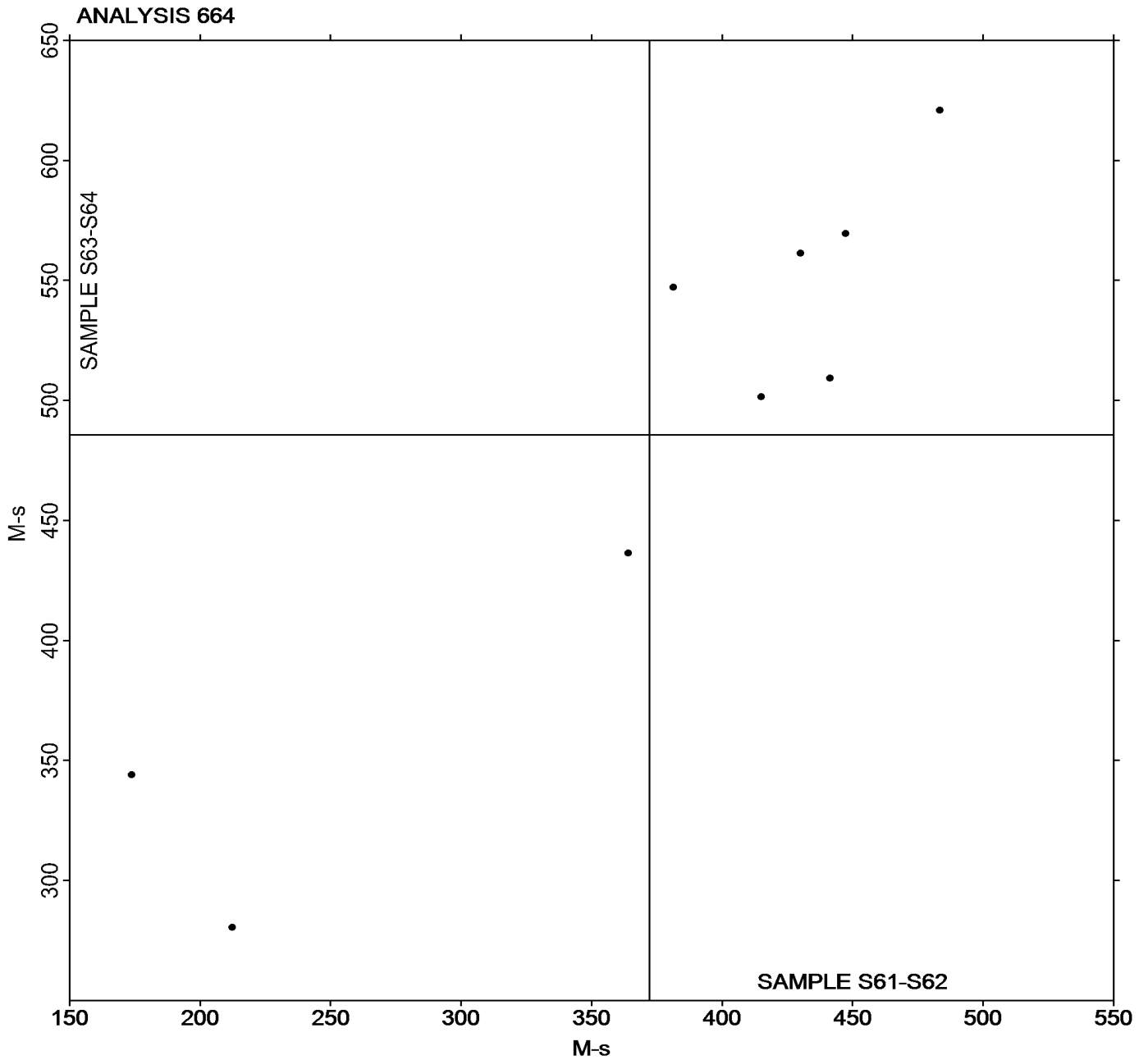| **664** | Mooney Stress Relaxation: Area under curve (M-s) |
|---|---|

### Instruments:

(ML)   Alpha Technologies/Monsanto model not specified          (MM)   Alpha Technologies Model 1xxx or OSM

(MP)   Monsanto Compact Mooney Viscometer          (MR)   Alpha Technologies Model MV2000/MV2000E

(MZ)   Rebuilt Mooney Viscometer          (SF)   Scott STI  (any model)

(TA)   TA Instruments (any model)          (TV)   Tech Pro Visc Tech   (any model)

(XA)   Special In-House Instrument          (XX)   Instrument make/model not specified by lab

**Mooney Stress Relaxation: Area under curve (M-s)**

Grand Mean Sample **S61** = 372.09 M-s          Grand Mean Sample **S62** = 485.60 M-s

# Rubber Interlaboratory Testing Program
## Analysis 669
## ODR Vulcanization-Cure Time 10% (minutes)

| | | Sample W61 | | | | Sample W62 | | | |
|---|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 | | 0.9283 | -0.0379 | -0.77 | | 1.412 | -0.209 | -0.77 | ZZ |
| 832H7C | | 0.9850 | 0.0188 | 0.38 | | 1.585 | -0.036 | -0.13 | ZZ |
| 87KD94 | | 0.9833 | 0.0171 | 0.35 | | 1.408 | -0.213 | -0.78 | ZZ |
| A92GU7 | | 1.0100 | 0.0438 | 0.89 | | 1.877 | 0.256 | 0.94 | ZZ |
| DBUKB4 | | 0.8983 | -0.0679 | -1.38 | | 1.350 | -0.271 | -1.00 | ZZ |
| FH7E63 | | 0.9567 | -0.0095 | -0.19 | | 1.838 | 0.217 | 0.80 | ZZ |
| PEXAKF | | 0.9367 | -0.0295 | -0.60 | | 1.403 | -0.218 | -0.80 | ZZ |
| U99MEN | | 0.9833 | 0.0171 | 0.35 | | 1.528 | -0.093 | -0.34 | ZZ |
| VTBXXG | | 0.9033 | -0.0629 | -1.27 | | 1.493 | -0.128 | -0.47 | ZZ |
| Y7TMLC | | 0.9750 | 0.0088 | 0.18 | | 1.693 | 0.072 | 0.27 | ZZ |
| ZVPQ38 | | 1.0683 | 0.1021 | 2.07 | | 2.242 | 0.621 | 2.28 | ZZ |

### Summary Statistics

| | |
|---|---|
| Grand Means | |
| 0.96621 minutes | 1.6209 minutes |
| Stnd Dev Btwn Labs | |
| 0.04932 minutes | 0.2719 minutes |
| | Statistics based on 11 of 11 reporting participants |

Samples W61-W62: EPDM compound #1 &  W63-W64: EPDM compound #2

## Instrument Code Listing

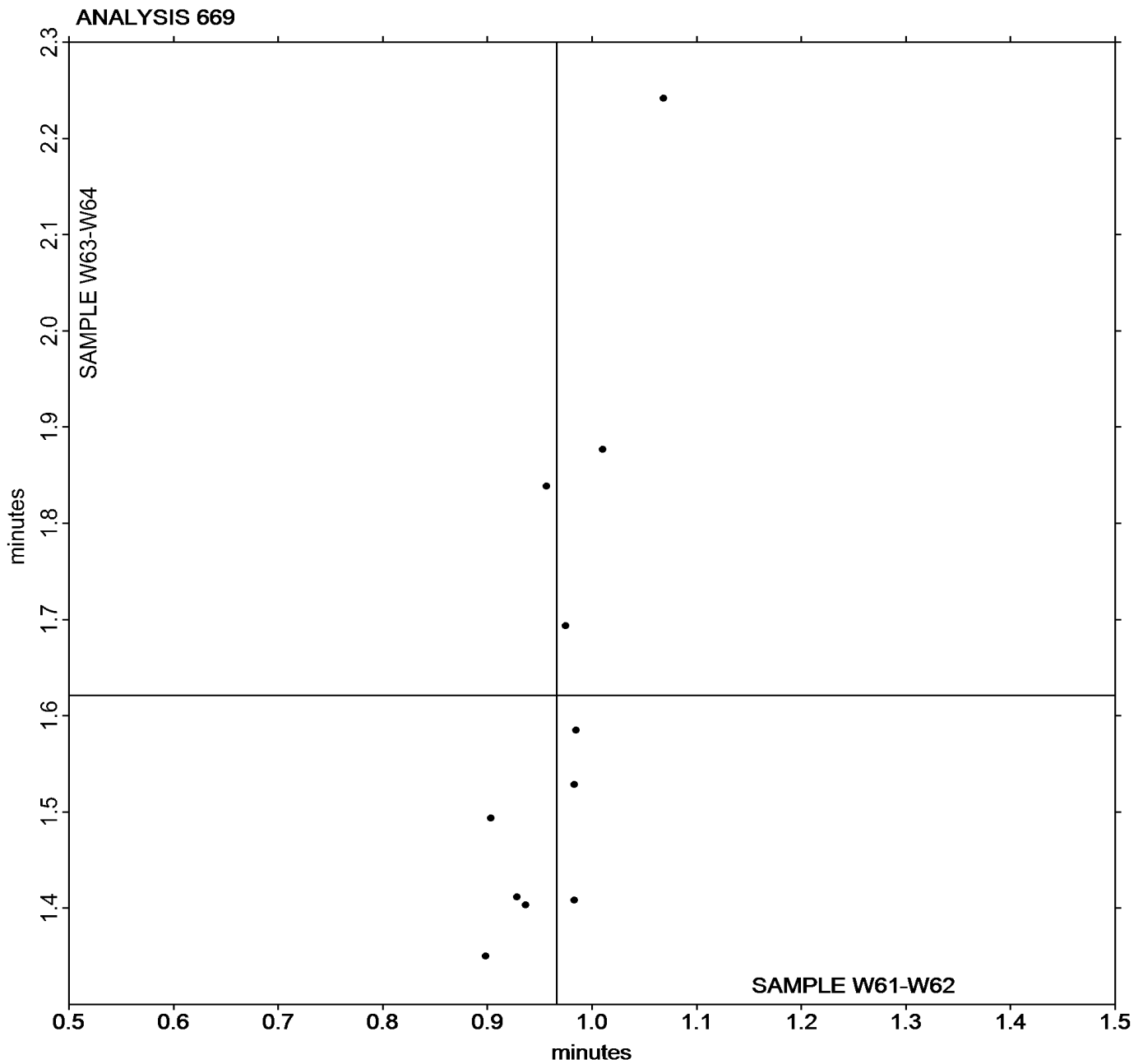| **669** | ODR Vulcanization-Cure Time 10% (minutes) |
|---|---|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

Grand Mean Sample **W61** = 0.96621 minutes          Grand Mean Sample **W62** = 1.6209 minutes



ANALYSIS 669

SAMPLE W63-W64

SAMPLE W61-W62

minutes

minutes

## Analysis 670

### ODR Vulcanization-Scorch Time, Ts1 (minutes)

| WebCode | Data Flag | Sample W61 Lab Mean | Diff from Grand Mean | CPV | Sample W62 Lab Mean | Diff from Grand Mean | CPV | Instr Code |
|---------|-----------|---------|----------------------|------|---------|----------------------|------|------------|
| 2AFDL6  |           | 0.6317  | -0.0383              | -0.81 | 1.018   | -0.222               | -0.77 | ZZ |
| 832H7C  |           | 0.6900  | 0.0200               | 0.42  | 1.213   | -0.027               | -0.09 | ZZ |
| 87KD94  |           | 0.6750  | 0.0050               | 0.11  | 1.005   | -0.235               | -0.82 | ZZ |
| A92GU7  |           | 0.6983  | 0.0283               | 0.60  | 1.507   | 0.266                | 0.92  | ZZ |
| DBUKB4  |           | 0.6133  | -0.0567              | -1.20 | 0.977   | -0.264               | -0.91 | ZZ |
| FH7E63  |           | 0.6750  | 0.0050               | 0.11  | 1.463   | 0.223                | 0.77  | ZZ |
| PEXAKF  |           | 0.6350  | -0.0350              | -0.74 | 1.003   | -0.237               | -0.82 | ZZ |
| U99MEN  |           | 0.7283  | 0.0583               | 1.24  | 1.207   | -0.034               | -0.12 | ZZ |
| VTBXXG  |           | 0.6100  | -0.0600              | -1.27 | 1.060   | -0.180               | -0.63 | ZZ |
| Y7TMLC  |           | 0.6550  | -0.0150              | -0.32 | 1.283   | 0.043                | 0.15  | ZZ |
| ZVPQ38  |           | 0.7583  | 0.0883               | 1.88  | 1.908   | 0.668                | 2.31  | ZZ |

| Summary Statistics | | |
|---|---|---|
| **Grand Means** | | |
| | 0.67000 minutes | 1.2405 minutes |
| **Stnd Dev Btwn Labs** | | |
| | 0.04711 minutes | 0.2887 minutes |
| | | Statistics based on 11 of 11 reporting participants |

Samples W61-W62: EPDM compound #1 &  W63-W64: EPDM compound #2

### Instrument Code Listing
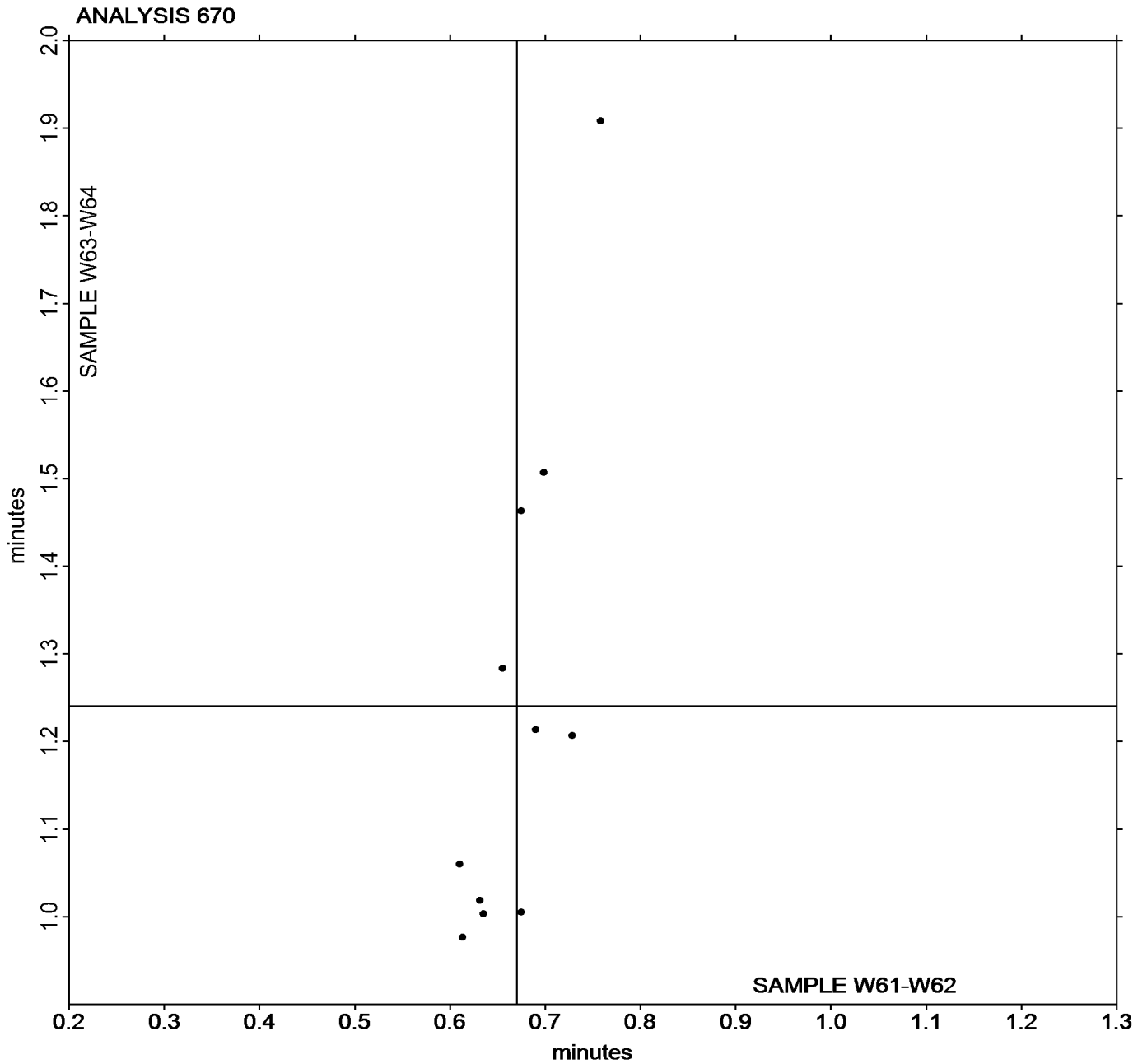
| **670** | ODR Vulcanization-Scorch Time, Ts1 (minutes) |
|---------|-----------------------------------------------|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 670
## ODR Vulcanization-Scorch Time, Ts1 (minutes)

Grand Mean Sample **W61** = 0.67000 minutes

Grand Mean Sample **W62** = 1.2405 minutes

**Analysis 671**

**ODR Vulcanization-Cure Time 50% (minutes)**

| WebCode | Data Flag | Sample W61 | | | Sample W62 | | | Instr Code |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
|---------|-----------|----------|---------------------|-----|----------|---------------------|-----|------|
| 2AFDL6  | | 2.363 | -0.158 | -0.79 | 3.308 | -0.147 | -0.44 | ZZ |
| 832H7C  | | 2.528 | 0.007  | 0.04  | 3.388 | -0.067 | -0.20 | ZZ |
| 87KD94  | | 2.457 | -0.064 | -0.32 | 3.167 | -0.289 | -0.87 | ZZ |
| A92GU7  | | 2.603 | 0.082  | 0.41  | 3.628 | 0.173  | 0.52  | ZZ |
| DBUKB4  | | 2.243 | -0.278 | -1.39 | 3.260 | -0.196 | -0.59 | ZZ |
| FH7E63  | | 2.450 | -0.071 | -0.36 | 3.770 | 0.314  | 0.94  | ZZ |
| PEXAKF  | | 2.507 | -0.014 | -0.07 | 3.247 | -0.209 | -0.63 | ZZ |
| U99MEN  | | 2.375 | -0.146 | -0.73 | 2.945 | -0.511 | -1.53 | ZZ |
| VTBXXG  | | 2.627 | 0.106  | 0.53  | 3.495 | 0.039  | 0.12  | ZZ |
| Y7TMLC  | | 2.562 | 0.041  | 0.20  | 3.645 | 0.189  | 0.57  | ZZ |
| ZVPQ38  | | 3.017 | 0.496  | 2.48  | 4.160 | 0.704  | 2.11  | ZZ |

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**Summary Statistics**

Grand Means

    2.5211  minutes                    3.4558  minutes

Stnd Dev Btwn Labs

    0.1995  minutes                    0.3339  minutes

Statistics based on 11 of 11 reporting participants

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Samples W61-W62: EPDM compound #1 &  W63-W64: EPDM compound #2

Instrument Code Listing

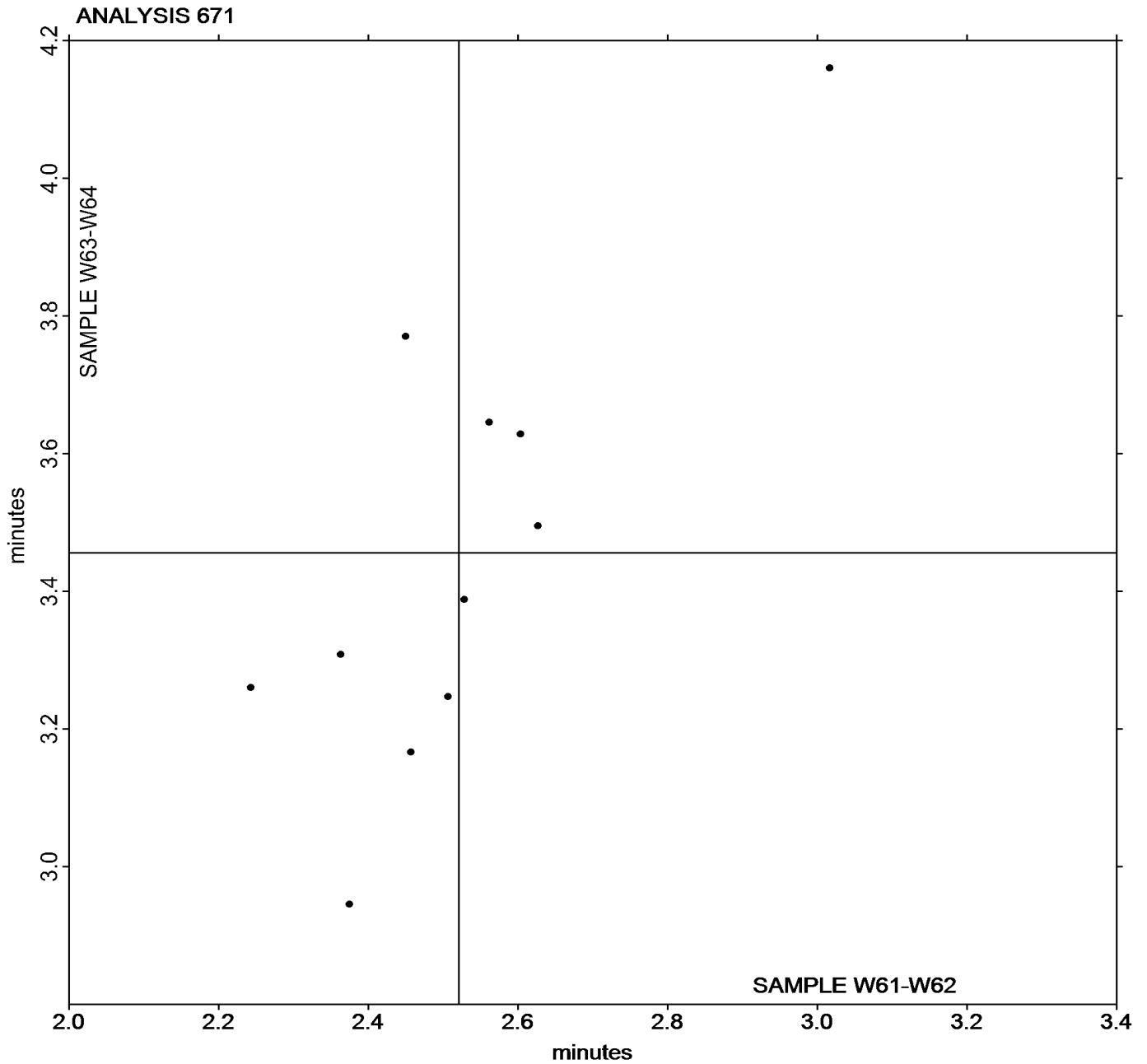| **671** | ODR Vulcanization-Cure Time 50% (minutes) |

**Instruments:**

(ZZ)   Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 671
### ODR Vulcanization-Cure Time 50% (minutes)

Grand Mean Sample **W61** = 2.5211 minutes          Grand Mean Sample **W62** = 3.4558 minutes



ANALYSIS 671

## Analysis 672
## ODR Vulcanization-Cure Time 90% (minutes)

| WebCode | Data Flag | Sample W61 | | | Sample W62 | | | Instr Code |
|---|---|---|---|---|---|---|---|---|
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2AFDL6 | | 12.59 | -0.26 | -0.17 | 9.42 | -0.93 | -0.47 | ZZ |
| 832H7C | | 12.31 | -0.54 | -0.35 | 9.37 | -0.99 | -0.50 | ZZ |
| 87KD94 | | 11.59 | -1.26 | -0.81 | 8.02 | -2.33 | -1.17 | ZZ |
| A92GU7 | | 13.95 | 1.09 | 0.71 | 9.86 | -0.49 | -0.25 | ZZ |
| DBUKB4 | | 11.60 | -1.25 | -0.81 | 9.62 | -0.73 | -0.37 | ZZ |
| FH7E63 | | 11.42 | -1.43 | -0.92 | 13.16 | 2.80 | 1.41 | ZZ |
| PEXAKF | | 12.07 | -0.79 | -0.51 | 10.96 | 0.61 | 0.31 | ZZ |
| U99MEN | | 11.25 | -1.60 | -1.03 | 6.84 | -3.51 | -1.77 | ZZ |
| VTBXXG | | 14.80 | 1.95 | 1.26 | 12.18 | 1.82 | 0.92 | ZZ |
| Y7TMLC | | 13.92 | 1.07 | 0.69 | 11.73 | 1.38 | 0.70 | ZZ |
| ZVPQ38 | | 15.87 | 3.02 | 1.95 | 12.72 | 2.37 | 1.19 | ZZ |

### Summary Statistics

**Grand Means**

12.852 minutes                    10.352 minutes

**Stnd Dev Btwn Labs**

1.549 minutes                    1.986 minutes

Statistics based on 11 of 11 reporting participants

Samples W61-W62: EPDM compound #1 &  W63-W64: EPDM compound #2

## Instrument Code Listing

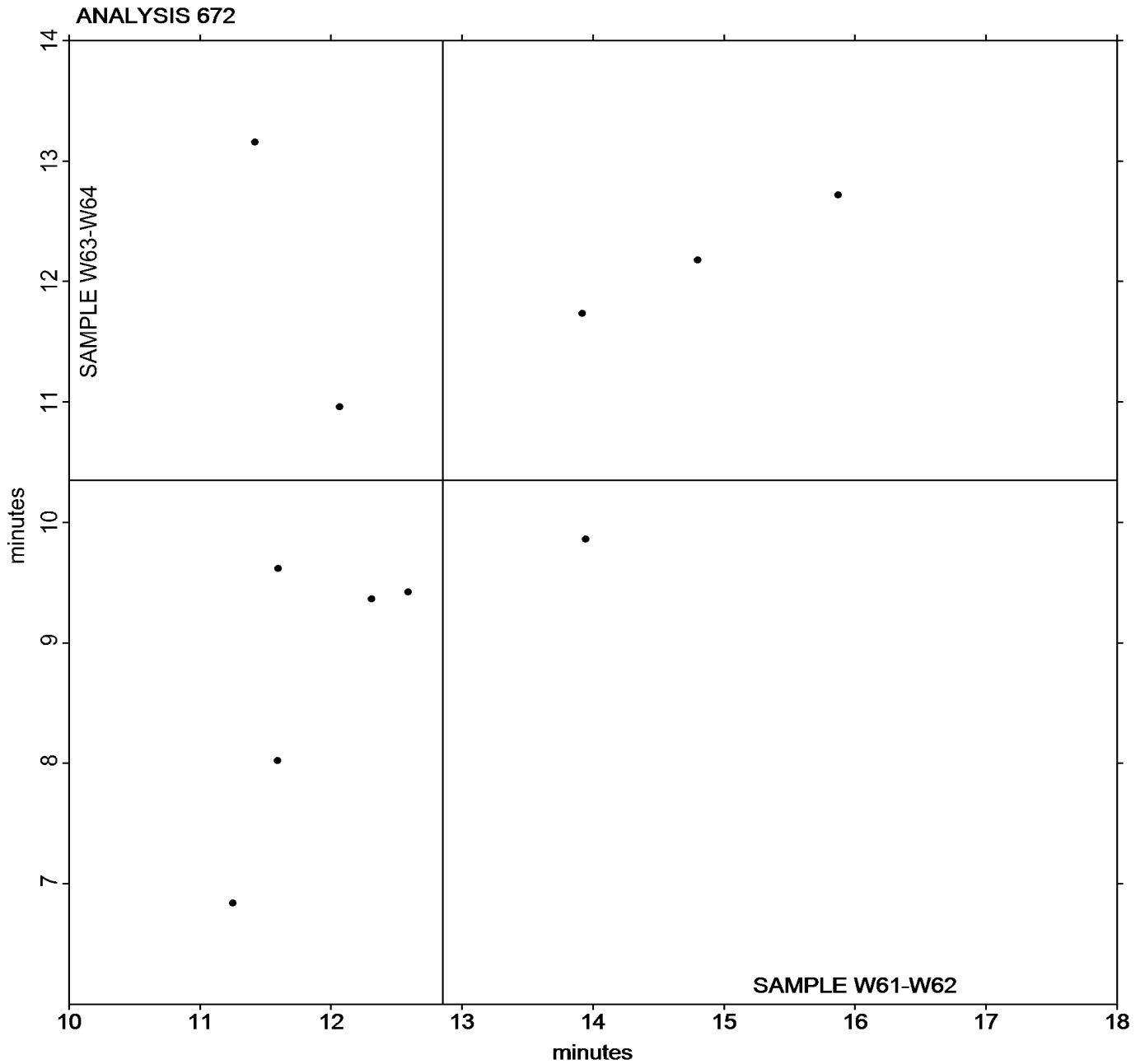| **672** | ODR Vulcanization-Cure Time 90% (minutes) |
|---|---|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 672
### ODR Vulcanization-Cure Time 90% (minutes)

Grand Mean Sample **W61** = 12.852 minutes          Grand Mean Sample **W62** = 10.352 minutes



ANALYSIS 672

## Analysis 673
## ODR Vulcanization: Minimum Torque (lbf.in)

| | | Sample W61 | | | Sample W62 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 | | 10.21 | -1.45 | -1.41 | 16.73 | -3.29 | -0.80 | ZZ |
| 832H7C | | 11.89 | 0.23 | 0.22 | 17.67 | -2.34 | -0.57 | ZZ |
| 87KD94 | | 11.04 | -0.62 | -0.60 | 16.74 | -3.28 | -0.79 | ZZ |
| A92GU7 | | 12.35 | 0.70 | 0.67 | 25.87 | 5.85 | 1.41 | ZZ |
| DBUKB4 | | 10.80 | -0.86 | -0.83 | 16.61 | -3.40 | -0.82 | ZZ |
| FH7E63 | | 14.01 | 2.35 | 2.28 | 25.62 | 5.60 | 1.36 | ZZ |
| PEXAKF | | 11.37 | -0.29 | -0.28 | 17.86 | -2.16 | -0.52 | ZZ |
| U99MEN | | 12.05 | 0.39 | 0.38 | 18.56 | -1.46 | -0.35 | ZZ |
| VTBXXG | | 10.89 | -0.77 | -0.75 | 16.99 | -3.03 | -0.73 | ZZ |
| Y7TMLC | | 11.35 | -0.31 | -0.30 | 20.42 | 0.40 | 0.10 | ZZ |
| ZVPQ38 | | 12.31 | 0.65 | 0.63 | 27.13 | 7.11 | 1.72 | ZZ |

### Summary Statistics

Grand Means

    11.658  lbf.in            20.017  lbf.in

Stnd Dev Btwn Labs

    1.031  lbf.in            4.136  lbf.in

Statistics based on 11 of 11 reporting participants

### Summary Statistics in SI Units

Grand Means

    13.172  dN.m            22.616  dN.m

Stnd Dev Btwn Labs

    1.165  dN.m            4.673  dN.m

Statistics based on 11 of 11 reporting participants

Samples W61-W62: EPDM compound #1 &  W63-W64: EPDM compound #2

### Instrument Code Listing

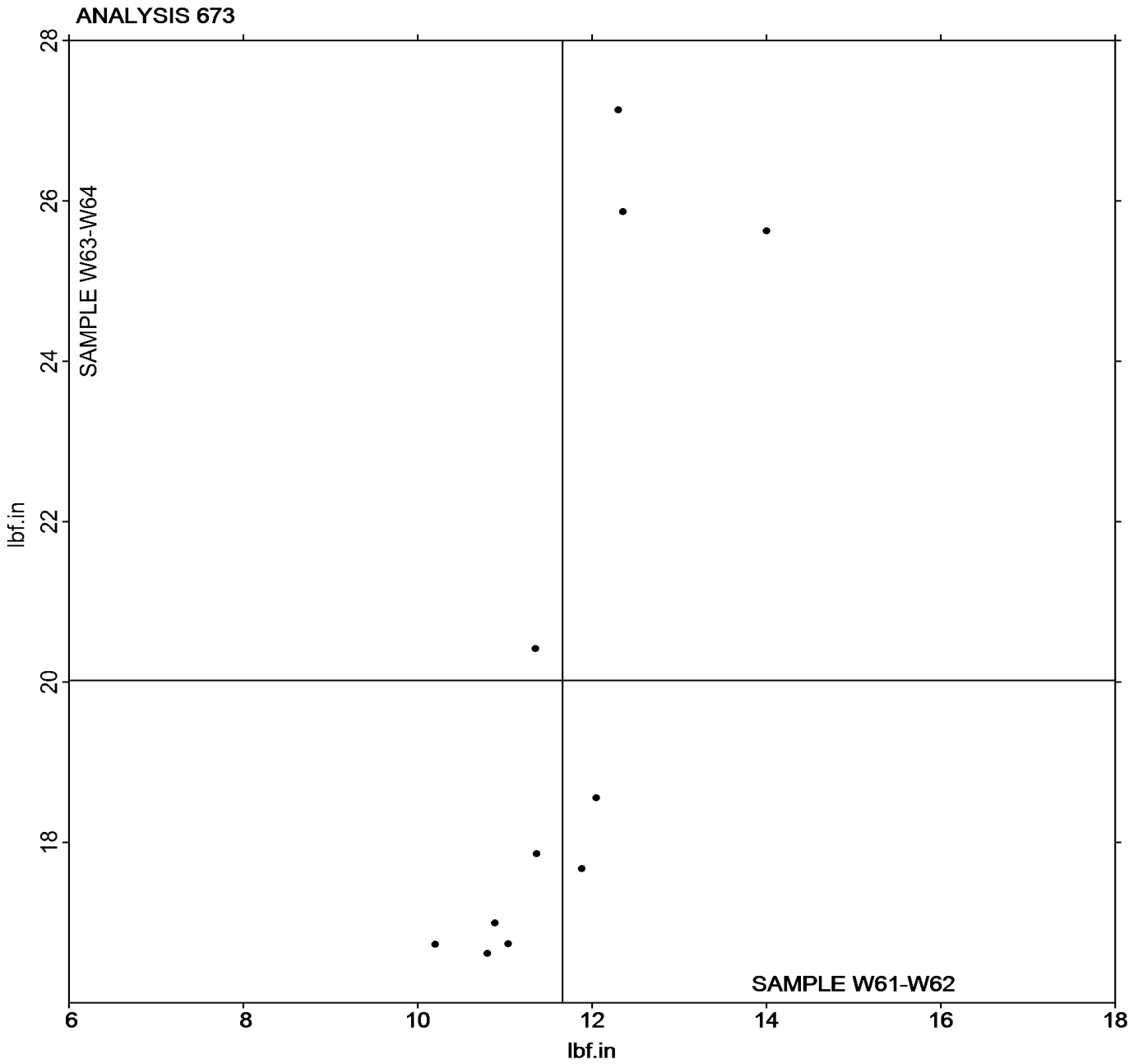| **673** | ODR Vulcanization: Minimum Torque (lbf.in) |
|---|---|

**Instruments:**

(ZZ)   Instruments No Longer Tracked

Grand Mean Sample **W61** = 11.658 lbf.in

Grand Mean Sample **W62** = 20.017 lbf.in



ANALYSIS 673

# Rubber Interlaboratory Testing Program
## Analysis 674
## ODR Vulcanization: Maximum Torque (lbf.in)

| WebCode | Data Flag | Sample W61 | | | Sample W62 | | | Instr Code |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | |
| 2AFDL6 | | 45.20 | -0.74 | -0.29 | 42.99 | -0.67 | -0.19 | ZZ |
| 832H7C | | 43.71 | -2.24 | -0.87 | 39.59 | -4.06 | -1.17 | ZZ |
| 87KD94 | | 48.84 | 2.90 | 1.13 | 43.74 | 0.09 | 0.03 | ZZ |
| A92GU7 | | 50.95 | 5.01 | 1.95 | 50.06 | 6.41 | 1.85 | ZZ |
| DBUKB4 | | 42.16 | -3.79 | -1.47 | 38.93 | -4.72 | -1.36 | ZZ |
| FH7E63 | | 45.83 | -0.12 | -0.05 | 47.14 | 3.49 | 1.01 | ZZ |
| PEXAKF | | 46.04 | 0.09 | 0.04 | 41.84 | -1.81 | -0.52 | ZZ |
| U99MEN | | 45.14 | -0.81 | -0.31 | 40.42 | -3.24 | -0.94 | ZZ |
| VTBXXG | | 47.48 | 1.54 | 0.60 | 43.57 | -0.09 | -0.02 | ZZ |
| Y7TMLC | | 47.03 | 1.09 | 0.42 | 44.72 | 1.07 | 0.31 | ZZ |
| ZVPQ38 | | 43.02 | -2.93 | -1.14 | 47.17 | 3.52 | 1.02 | ZZ |

### Summary Statistics

| | | |
| --- | --- | --- |
| Grand Means | | |
| | 45.945 lbf.in | 43.650 lbf.in |
| Stnd Dev Btwn Labs | | |
| | 2.572 lbf.in | 3.460 lbf.in |

Statistics based on 11 of 11 reporting participants

### Summary Statistics in SI Units

| | | |
| --- | --- | --- |
| Grand Means | | |
| | 51.910 dN.m | 49.318 dN.m |
| Stnd Dev Btwn Labs | | |
| | 2.906 dN.m | 3.910 dN.m |

Statistics based on 11 of 11 reporting participants

Samples W61-W62: EPDM compound #1 & W63-W64: EPDM compound #2

## Instrument Code Listing

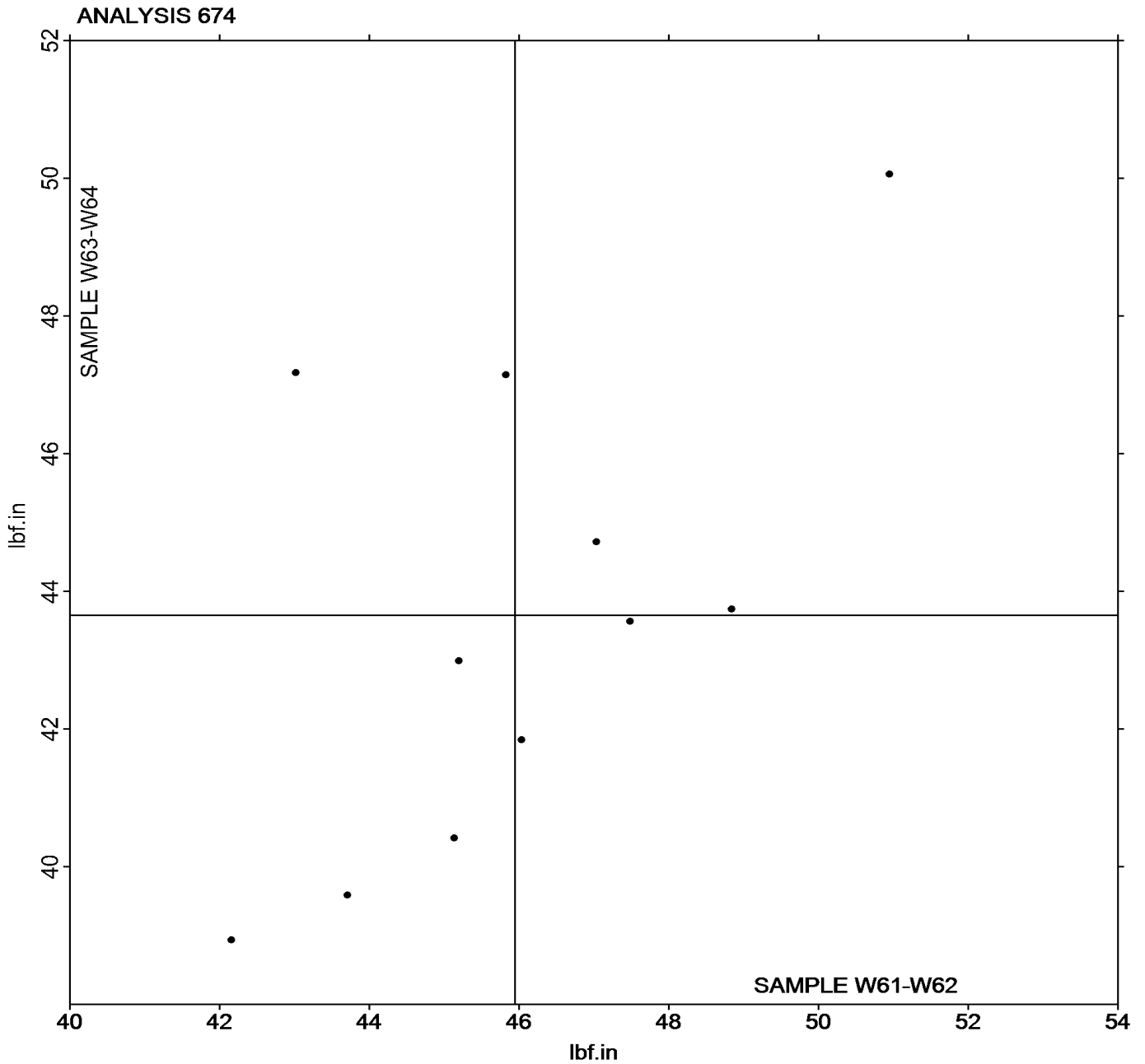| **674** | ODR Vulcanization: Maximum Torque (lbf.in) |
| --- | --- |

**Instruments:**

(ZZ) Instruments No Longer Tracked

# Rubber Interlaboratory Testing Program
## Analysis 674
## ODR Vulcanization: Maximum Torque (lbf.in)

Grand Mean Sample **W61** = 45.945 lbf.in

Grand Mean Sample **W62** = 43.650 lbf.in

ANALYSIS 674

# Rubber Interlaboratory Testing Program
## Analysis 684
## MDR Vulcanization-Cure Time 10% (minutes)

| WebCode | Data Flag | Sample W65 Lab Mean | Diff from Grand Mean | CPV | Sample W66 Lab Mean | Diff from Grand Mean | CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2AFDL6 |   | 0.8717 | -0.0343 | -0.52 | 0.8650 | -0.0027 | -0.04 | MC |
| 2EA8J7 |   | 0.9267 | 0.0207 | 0.31 | 0.9250 | 0.0573 | 0.80 | MP |
| 3BUW73 |   | 0.9517 | 0.0457 | 0.69 | 0.8950 | 0.0273 | 0.38 | MC |
| 3JLFKB |   | 0.8367 | -0.0693 | -1.06 | 0.9033 | 0.0356 | 0.50 | MC |
| 6VNMEX |   | 0.9517 | 0.0457 | 0.69 | 0.6950 | -0.1727 | -2.40 | MC |
| 7V8TC3 |   | 0.8861 | -0.0199 | -0.30 | 0.8972 | 0.0295 | 0.41 | MC |
| 832H7C |   | 0.9017 | -0.0043 | -0.07 | 0.8500 | -0.0177 | -0.25 | XX |
| 87KD94 |   | 0.9133 | 0.0073 | 0.11 | 0.9667 | 0.0990 | 1.38 | MC |
| A7UYVB |   | 0.8917 | -0.0143 | -0.22 | 0.9133 | 0.0456 | 0.63 | MC |
| B2WW72 |   | 0.8833 | -0.0227 | -0.34 | 0.7733 | -0.0944 | -1.31 | TP |
| CCAG43 | * | 0.9683 | 0.0623 | 0.95 | 0.6800 | -0.1877 | -2.61 | MC |
| DWR8F6 | X | 0.9467 | 0.0407 | 0.62 | 0.8633 | -0.0044 | -0.06 | MC |
| EERKN7 |   | 0.8733 | -0.0327 | -0.50 | 0.9133 | 0.0456 | 0.63 | MD |
| EHTNFR |   | 0.8517 | -0.0543 | -0.83 | 0.8350 | -0.0327 | -0.46 | MC |
| GT28QY |   | 0.9333 | 0.0273 | 0.42 | 0.9767 | 0.1090 | 1.52 | XX |
| L9E6YF |   | 1.0483 | 0.1423 | 2.17 | 0.9083 | 0.0406 | 0.56 | MC |
| M9HWQW |   | 0.9417 | 0.0357 | 0.54 | 0.8617 | -0.0060 | -0.08 | MC |
| PEXAKF |   | 0.9450 | 0.0390 | 0.59 | 0.8467 | -0.0210 | -0.29 | MC |
| QQJ7YH |   | 1.0667 | 0.1607 | 2.44 | 0.8433 | -0.0244 | -0.34 | TP |
| TCYAWQ |   | 0.8817 | -0.0243 | -0.37 | 0.9417 | 0.0740 | 1.03 | MC |
| U99MEN |   | 0.8933 | -0.0127 | -0.19 | 0.8950 | 0.0273 | 0.38 | MC |
| UHHRRE |   | 0.8217 | -0.0843 | -1.28 | 0.9083 | 0.0406 | 0.56 | MC |
| XVQ6BA |   | 0.9233 | 0.0173 | 0.26 | 0.8817 | 0.0140 | 0.19 | MD |
| XW823A |   | 0.8600 | -0.0460 | -0.70 | 0.9100 | 0.0423 | 0.59 | MC |
| ZMA8H9 |   | 0.9150 | 0.0090 | 0.14 | 0.8317 | -0.0360 | -0.50 | XX |
| ZQAGP4 | * | 0.7400 | -0.1660 | -2.53 | 0.7783 | -0.0894 | -1.24 | XX |
| ZRPHWC |   | 0.8783 | -0.0277 | -0.42 | 0.8650 | -0.0027 | -0.04 | MC |

| Summary Statistics | | |
|---|---|---|
| **Grand Means** | | |
| 0.90600 minutes | 0.86771 minutes | |
| **Stnd Dev Btwn Labs** | | |
| 0.06572 minutes | 0.07190 minutes | |
| | Statistics based on 26 of 27 reporting participants | |

Samples W65-W66: EPDM compound, batch #1 &  W67-W68: EPDM compound, batch #2

## Comments on assigned Data Flags for Test #684

DWR8F6 (X) - Data for Sample A68 appear to be off by a factor of .1. Data corrected by CTS (x10).

## Instrument Code Listing

| **684** | MDR Vulcanization-Cure Time 10% (minutes) |
|---|---|

### Instruments:

(MC)   Alpha Technologies [Monsanto] MDR 2000 or 2000E

(MD)   Alpha Tech. Rubber Process Analyzer (RPA 2000)

(MP)   Alpha Technologies [Monsanto] MDR 2000P

(TP)   Tech Pro MDR model MDPT

(XX)   Instrument model not specified by lab

# Rubber Interlaboratory Testing Program
## Analysis 684
### MDR Vulcanization-Cure Time 10% (minutes)

Grand Mean Sample **W65** = 0.90600 minutes                 Grand Mean Sample **W66** = 0.86771 minutes
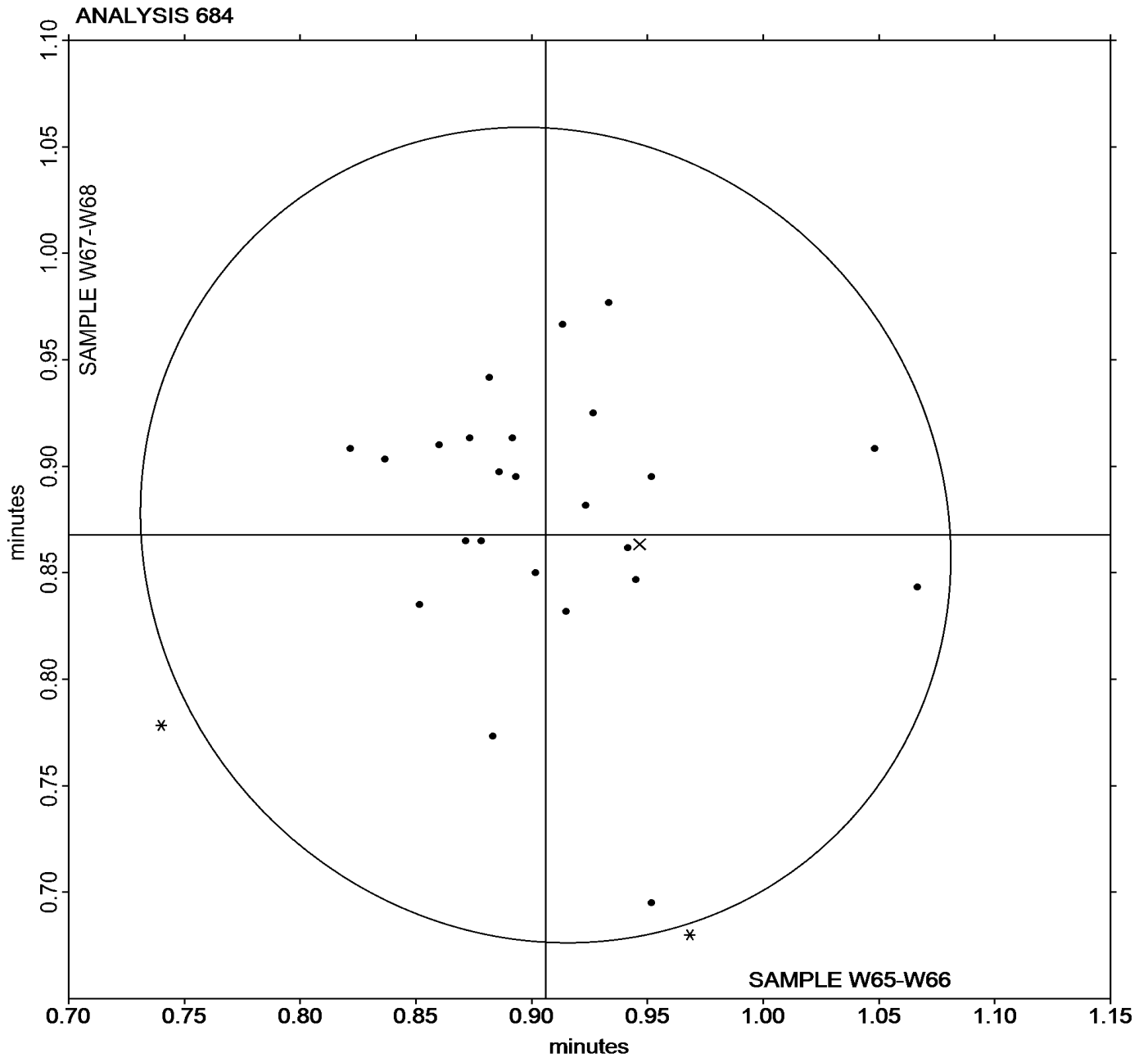
ANALYSIS 684

SAMPLE W67-W68

minutes

SAMPLE W65-W66

minutes

## Analysis 685

## MDR Vulcanization-Scorch Time, Ts1 (minutes)

| | | Sample W65 | | | Sample W66 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 | | 0.8150 | -0.0452 | -0.43 | 0.7783 | 0.0277 | 0.51 | MC |
| 2EA8J7 | | 0.8167 | -0.0435 | -0.42 | 0.7667 | 0.0160 | 0.30 | MP |
| 3BUW73 | | 0.9217 | 0.0615 | 0.59 | 0.8083 | 0.0577 | 1.06 | MC |
| 3JLFKB | | 0.7300 | -0.1302 | -1.25 | 0.7667 | 0.0160 | 0.30 | MC |
| 6VNMEX | * | 0.9425 | 0.0823 | 0.79 | 0.5956 | -0.1551 | -2.86 | MC |
| 7V8TC3 | | 0.8083 | -0.0519 | -0.50 | 0.7695 | 0.0188 | 0.35 | MC |
| 832H7C | | 1.0200 | 0.1598 | 1.53 | 0.8100 | 0.0594 | 1.09 | XX |
| 87KD94 | | 0.8183 | -0.0419 | -0.40 | 0.8267 | 0.0760 | 1.40 | MC |
| A7UYVB | | 0.8000 | -0.0602 | -0.58 | 0.7867 | 0.0360 | 0.66 | MC |
| B2WW72 | | 0.9200 | 0.0598 | 0.57 | 0.7233 | -0.0273 | -0.50 | TP |
| B8JMTW | | 0.9633 | 0.1031 | 0.99 | 0.7100 | -0.0406 | -0.75 | MC |
| B8N4RV | | 1.0900 | 0.2298 | 2.21 | 0.6733 | -0.0773 | -1.42 | MC |
| CCAG43 | | 0.9867 | 0.1265 | 1.21 | 0.6317 | -0.1190 | -2.19 | MC |
| DWR8F6 | | 0.9167 | 0.0565 | 0.54 | 0.7433 | -0.0073 | -0.13 | MC |
| EERKN7 | | 0.8150 | -0.0452 | -0.43 | 0.8050 | 0.0544 | 1.00 | MD |
| EHTNFR | | 0.8250 | -0.0352 | -0.34 | 0.7033 | -0.0473 | -0.87 | MC |
| GT28QY | | 0.8017 | -0.0585 | -0.56 | 0.8067 | 0.0560 | 1.03 | XX |
| L9E6YF | | 0.9450 | 0.0848 | 0.81 | 0.7867 | 0.0360 | 0.66 | MC |
| M9HWQW | | 0.8750 | 0.0148 | 0.14 | 0.7500 | -0.0006 | -0.01 | MC |
| PEXAKF | | 0.8433 | -0.0169 | -0.16 | 0.7233 | -0.0273 | -0.50 | MC |
| QQJ7YH | | 1.0767 | 0.2165 | 2.08 | 0.7700 | 0.0194 | 0.36 | TP |
| TCYAWQ | | 0.7883 | -0.0719 | -0.69 | 0.7900 | 0.0394 | 0.72 | MC |
| U99MEN | | 0.8050 | -0.0552 | -0.53 | 0.7617 | 0.0110 | 0.20 | MC |
| UHHRRE | | 0.6700 | -0.1902 | -1.83 | 0.7300 | -0.0206 | -0.38 | MC |
| XVQ6BA | | 0.8533 | -0.0069 | -0.07 | 0.7883 | 0.0377 | 0.69 | MD |
| XW823A | | 0.7750 | -0.0852 | -0.82 | 0.7950 | 0.0444 | 0.82 | MC |
| ZMA8H9 | | 0.8567 | -0.0035 | -0.03 | 0.7250 | -0.0256 | -0.47 | XX |
| ZQAGP4 | | 0.6733 | -0.1869 | -1.79 | 0.6917 | -0.0590 | -1.09 | XX |
| ZRPHWC | | 0.7933 | -0.0669 | -0.64 | 0.7517 | 0.0010 | 0.02 | MC |

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**Summary Statistics**

Grand Means

　　0.86020 minutes　　　　　　　　0.75063 minutes

Stnd Dev Btwn Labs

　　0.10413 minutes　　　　　　　　0.05430 minutes

Statistics based on 29 of 29 reporting participants

Samples W65-W66: EPDM compound, batch #1 &  W67-W68: EPDM compound, batch #2

## Instrument Code Listing

| **685** | MDR Vulcanization-Scorch Time, Ts1 (minutes) |
|---|---|

**Instruments:**

(MC)   Alpha Technologies [Monsanto] MDR 2000 or 2000E

(MD)   Alpha Tech. Rubber Process Analyzer (RPA 2000)

(MP)   Alpha Technologies [Monsanto] MDR 2000P

(TP)   Tech Pro MDR model MDPT

(XX)   Instrument model not specified by lab

# Rubber Interlaboratory Testing Program
## Analysis 685
## MDR Vulcanization-Scorch Time, Ts1 (minutes)

Grand Mean Sample **W65** = 0.86020 minutes

Grand Mean Sample **W66** = 0.75063 minutes
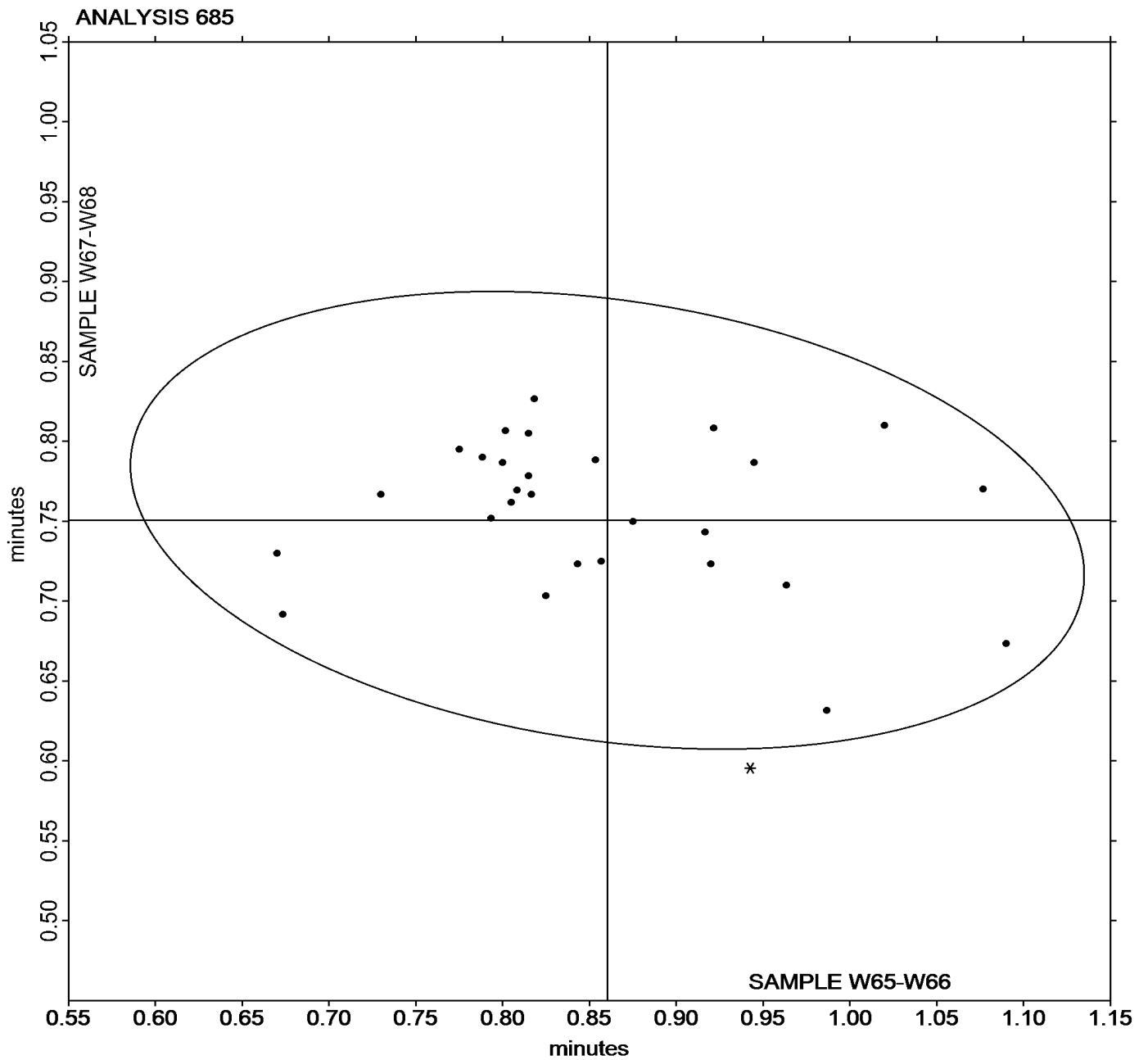
# Rubber Interlaboratory Testing Program
## Analysis 686
## MDR Vulcanization-Cure Time 50% (minutes)

|  |  | Sample W65 | | | Sample W66 | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 |  | 2.543 | -0.039 | -0.45 | 3.125 | 0.068 | 0.42 | MC |
| 2EA8J7 |  | 2.612 | 0.029 | 0.34 | 3.083 | 0.026 | 0.16 | MC |
| 3BUW73 |  | 2.520 | -0.062 | -0.73 | 3.095 | 0.038 | 0.23 | MC |
| 3JLFKB |  | 2.635 | 0.053 | 0.61 | 3.325 | 0.268 | 1.67 | MC |
| 6VNMEX |  | 2.445 | -0.137 | -1.60 | 2.725 | -0.332 | -2.08 | MC |
| 7V8TC3 |  | 2.600 | 0.018 | 0.21 | 3.133 | 0.076 | 0.47 | MC |
| 832H7C |  | 2.495 | -0.087 | -1.02 | 2.960 | -0.097 | -0.61 | XX |
| 87KD94 |  | 2.678 | 0.096 | 1.12 | 3.288 | 0.231 | 1.44 | MC |
| A7UYVB |  | 2.573 | -0.009 | -0.10 | 3.053 | -0.004 | -0.03 | MC |
| B2WW72 |  | 2.420 | -0.162 | -1.89 | 2.840 | -0.217 | -1.36 | TP |
| B8JMTW |  | 2.577 | -0.006 | -0.07 | 2.947 | -0.111 | -0.69 | MC |
| B8N4RV |  | 2.520 | -0.062 | -0.73 | 2.878 | -0.179 | -1.12 | MC |
| CCAG43 |  | 2.498 | -0.084 | -0.98 | 2.747 | -0.311 | -1.94 | MC |
| DWR8F6 |  | 2.577 | -0.006 | -0.07 | 3.072 | 0.014 | 0.09 | MC |
| EERKN7 |  | 2.685 | 0.103 | 1.20 | 3.143 | 0.086 | 0.54 | MD |
| EHTNFR |  | 2.567 | -0.016 | -0.18 | 3.038 | -0.019 | -0.12 | MC |
| GT28QY |  | 2.643 | 0.061 | 0.71 | 2.938 | -0.119 | -0.74 | XX |
| L9E6YF | * | 2.785 | 0.203 | 2.36 | 3.202 | 0.144 | 0.90 | MC |
| M9HWQW |  | 2.570 | -0.012 | -0.14 | 3.098 | 0.041 | 0.26 | MC |
| PEXAKF |  | 2.642 | 0.059 | 0.69 | 3.053 | -0.004 | -0.03 | MC |
| QQJ7YH |  | 2.642 | 0.059 | 0.69 | 3.158 | 0.101 | 0.63 | TP |
| TCYAWQ |  | 2.673 | 0.091 | 1.06 | 3.345 | 0.288 | 1.80 | MC |
| U99MEN |  | 2.633 | 0.051 | 0.60 | 3.135 | 0.078 | 0.48 | MC |
| UHHRRE |  | 2.645 | 0.063 | 0.73 | 3.167 | 0.109 | 0.68 | MC |
| XVQ6BA |  | 2.672 | 0.089 | 1.04 | 3.260 | 0.203 | 1.27 | MD |
| XW823A |  | 2.580 | -0.002 | -0.03 | 3.060 | 0.003 | 0.02 | MC |
| ZMA8H9 |  | 2.438 | -0.144 | -1.68 | 2.862 | -0.196 | -1.22 | XX |
| ZQAGP4 |  | 2.453 | -0.129 | -1.50 | 2.867 | -0.191 | -1.19 | XX |
| ZRPHWC |  | 2.565 | -0.017 | -0.20 | 3.067 | 0.009 | 0.06 | MC |

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### Summary Statistics

Grand Means

    2.5823 minutes              3.0574 minutes

Stnd Dev Btwn Labs

    0.0857 minutes              0.1600 minutes

Statistics based on 29 of 29 reporting participants

Samples W65-W66: EPDM compound, batch #1 &  W67-W68: EPDM compound, batch #2

## Instrument Code Listing

| **686** | MDR Vulcanization-Cure Time 50% (minutes) |
|---|---|

### Instruments:

(MC)   Alpha Technologies [Monsanto] MDR 2000 or 2000E

(MP)   Alpha Technologies [Monsanto] MDR 2000P

(XX)   Instrument model not specified by lab

(MD)   Alpha Tech. Rubber Process Analyzer (RPA 2000)

(TP)   Tech Pro MDR model MDPT

# Rubber Interlaboratory Testing Program
## Analysis 686
### MDR Vulcanization-Cure Time 50% (minutes)

Grand Mean Sample **W65** = 2.5823 minutes          Grand Mean Sample **W66** = 3.0574 minutes
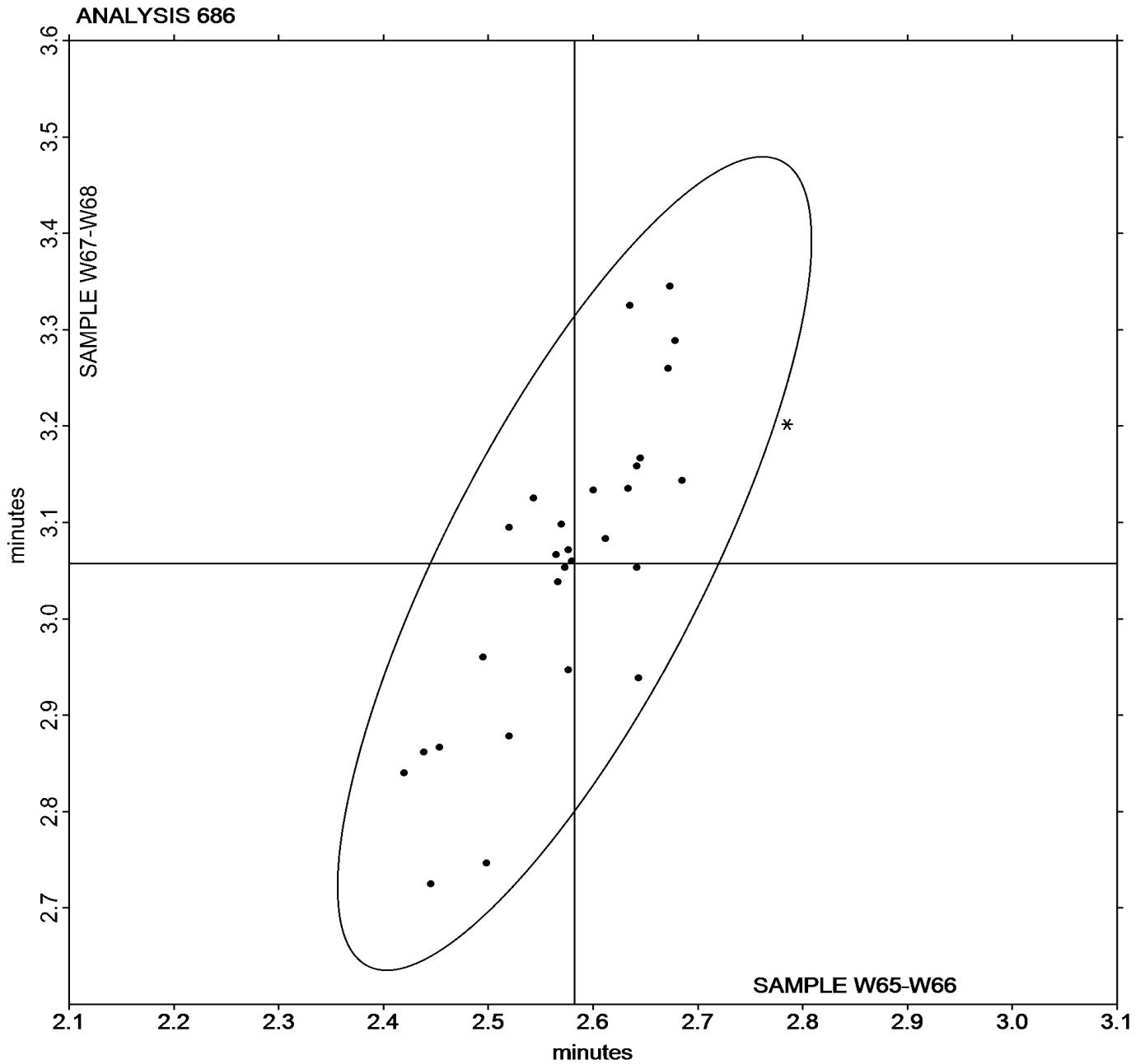


ANALYSIS 686

SAMPLE W67-W68

minutes

SAMPLE W65-W66

minutes

# Analysis 687
## MDR Vulcanization-Cure Time 90% (minutes)

|  |  | Sample W65 | | | Sample W66 | | |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 |  | 6.127 | 0.026 | 0.19 | 6.440 | 0.075 | 0.36 | MC |
| 2EA8J7 |  | 5.920 | -0.180 | -1.32 | 6.300 | -0.065 | -0.31 | MP |
| 3BUW73 |  | 5.922 | -0.179 | -1.31 | 6.163 | -0.202 | -0.97 | MC |
| 3JLFKB |  | 6.247 | 0.146 | 1.07 | 6.622 | 0.256 | 1.23 | MC |
| 6VNMEX |  | 5.879 | -0.221 | -1.61 | 6.004 | -0.362 | -1.74 | MC |
| 7V8TC3 |  | 6.083 | -0.017 | -0.12 | 6.345 | -0.021 | -0.10 | MC |
| 832H7C | * | 5.838 | -0.262 | -1.91 | 6.387 | 0.021 | 0.10 | XX |
| 87KD94 |  | 6.207 | 0.106 | 0.78 | 6.677 | 0.311 | 1.49 | MC |
| A7UYVB |  | 6.043 | -0.057 | -0.42 | 6.353 | -0.012 | -0.06 | MC |
| B2WW72 | X | 5.213 | -0.887 | -6.48 | 5.875 | -0.490 | -2.35 | TP |
| B8JMTW |  | 5.947 | -0.154 | -1.12 | 6.072 | -0.294 | -1.41 | MC |
| B8N4RV |  | 6.098 | -0.002 | -0.01 | 6.160 | -0.205 | -0.98 | MC |
| CCAG43 |  | 6.000 | -0.100 | -0.73 | 6.165 | -0.200 | -0.96 | MC |
| DWR8F6 |  | 6.095 | -0.005 | -0.04 | 6.417 | 0.051 | 0.25 | MC |
| EERKN7 |  | 6.323 | 0.223 | 1.63 | 6.823 | 0.458 | 2.20 | MD |
| EHTNFR |  | 6.292 | 0.191 | 1.40 | 6.477 | 0.111 | 0.53 | MC |
| GT28QY | X | 6.312 | 0.211 | 1.54 | 4.923 | -1.442 | -6.92 | XX |
| L9E6YF |  | 6.253 | 0.153 | 1.12 | 6.287 | -0.079 | -0.38 | MC |
| M9HWQW |  | 6.035 | -0.065 | -0.48 | 6.373 | 0.008 | 0.04 | MC |
| PEXAKF |  | 6.088 | -0.012 | -0.09 | 6.400 | 0.035 | 0.17 | MC |
| QQJ7YH |  | 6.172 | 0.071 | 0.52 | 6.407 | 0.041 | 0.20 | TP |
| TCYAWQ |  | 6.278 | 0.178 | 1.30 | 6.733 | 0.368 | 1.77 | MC |
| U99MEN |  | 6.065 | -0.035 | -0.26 | 6.398 | 0.033 | 0.16 | MC |
| UHHRRE |  | 6.135 | 0.035 | 0.25 | 6.448 | 0.083 | 0.40 | MC |
| XVQ6BA |  | 6.345 | 0.245 | 1.79 | 6.557 | 0.191 | 0.92 | MD |
| XW823A |  | 6.155 | 0.055 | 0.40 | 6.360 | -0.005 | -0.02 | MC |
| ZMA8H9 |  | 6.008 | -0.092 | -0.67 | 5.972 | -0.394 | -1.89 | XX |
| ZQAGP4 |  | 6.012 | -0.089 | -0.65 | 6.372 | 0.006 | 0.03 | XX |
| ZRPHWC |  | 6.142 | 0.041 | 0.30 | 6.150 | -0.215 | -1.03 | MC |

### Summary Statistics

| Grand Means | |
| --- | --- |
| 6.1004 minutes | 6.3652 minutes |

| Stnd Dev Btwn Labs | |
| --- | --- |
| 0.1368 minutes | 0.2084 minutes |

Statistics based on 27 of 29 reporting participants

Samples W65-W66: EPDM compound, batch #1 &  W67-W68: EPDM compound, batch #2

## Comments on assigned Data Flags for Test #687

B2WW72 (X) - Data for Sample group W65-W66 are low. Inconsistency in testing within Sample group W65-W66.

GT28QY (X) - Data for Sample group W67-W68 are low.

## Instrument Code Listing

| **687** | MDR Vulcanization-Cure Time 90% (minutes) |
|---|---|

### Instruments:

(MC)   Alpha Technologies [Monsanto] MDR 2000 or 2000E

(MD)   Alpha Tech. Rubber Process Analyzer (RPA 2000)

(MP)   Alpha Technologies [Monsanto] MDR 2000P
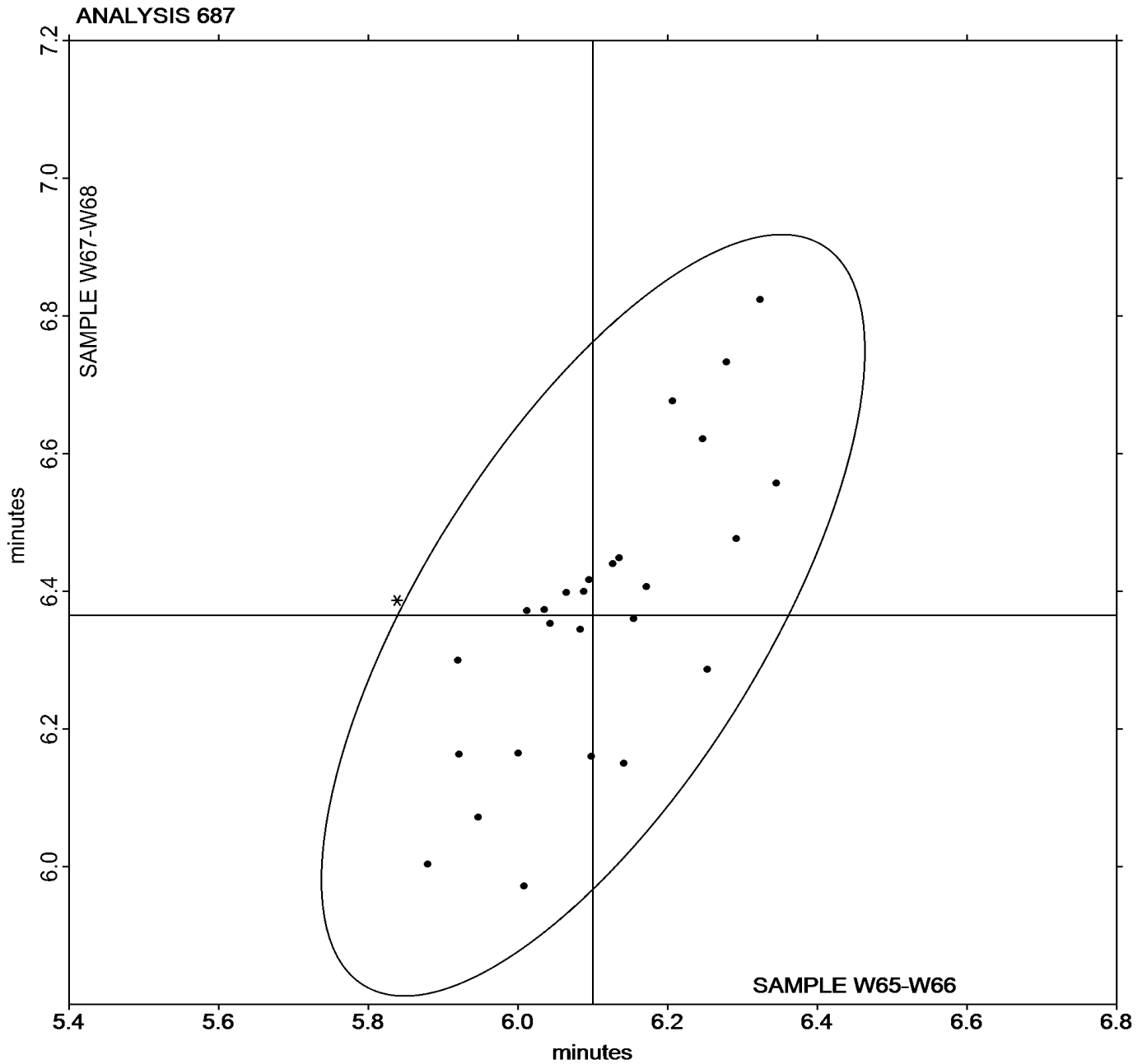
(TP)   Tech Pro MDR model MDPT

(XX)   Instrument model not specified by lab

**Analysis 687**

**MDR Vulcanization-Cure Time 90% (minutes)**

Grand Mean Sample **W65** = 6.1004 minutes

Grand Mean Sample **W66** = 6.3652 minutes

# Analysis 688

## MDR Vulcanization: Minimum Torque (lbf.in)

| WebCode | Data Flag | Sample W65 Lab Mean | Diff from Grand Mean | CPV | Sample W66 Lab Mean | Diff from Grand Mean | CPV | Instr Code |
|---|---|---|---|---|---|---|---|---|
| 2AFDL6 | | 4.378 | -0.119 | -0.24 | 2.062 | -0.157 | -0.67 | MC |
| 2EA8J7 | | 4.144 | -0.353 | -0.72 | 2.015 | -0.204 | -0.87 | MP |
| 3BUW73 | | 4.313 | -0.184 | -0.37 | 2.098 | -0.121 | -0.52 | MC |
| 3JLFKB | | 4.012 | -0.485 | -0.98 | 2.165 | -0.054 | -0.23 | MC |
| 6VNMEX | | 4.625 | 0.128 | 0.26 | 2.543 | 0.324 | 1.38 | MC |
| 7V8TC3 | | 4.450 | -0.047 | -0.09 | 2.153 | -0.066 | -0.28 | MC |
| 832H7C | * | 3.042 | -1.455 | -2.95 | 1.678 | -0.541 | -2.31 | XX |
| 87KD94 | | 4.107 | -0.390 | -0.79 | 2.098 | -0.121 | -0.52 | MC |
| A7UYVB | | 4.408 | -0.089 | -0.18 | 2.163 | -0.056 | -0.24 | MC |
| B2WW72 | | 4.408 | -0.089 | -0.18 | 2.028 | -0.191 | -0.81 | TP |
| B8JMTW | | 5.330 | 0.833 | 1.69 | 2.302 | 0.083 | 0.35 | MC |
| B8N4RV | | 5.607 | 1.110 | 2.25 | 2.588 | 0.369 | 1.57 | MC |
| CCAG43 | * | 5.333 | 0.836 | 1.70 | 2.840 | 0.621 | 2.65 | MC |
| DWR8F6 | | 4.527 | 0.030 | 0.06 | 2.387 | 0.168 | 0.71 | MC |
| EERKN7 | | 3.964 | -0.533 | -1.08 | 2.031 | -0.188 | -0.80 | MD |
| EHTNFR | | 4.412 | -0.085 | -0.17 | 2.378 | 0.159 | 0.68 | MC |
| GT28QY | | 4.657 | 0.160 | 0.32 | 2.308 | 0.089 | 0.38 | XX |
| L9E6YF | | 5.195 | 0.698 | 1.42 | 2.180 | -0.039 | -0.17 | MC |
| M9HWQW | | 4.705 | 0.208 | 0.42 | 2.257 | 0.038 | 0.16 | MC |
| PEXAKF | | 4.715 | 0.218 | 0.44 | 2.003 | -0.216 | -0.92 | MC |
| QQJ7YH | | 4.682 | 0.185 | 0.37 | 2.052 | -0.167 | -0.71 | TP |
| TCYAWQ | | 4.127 | -0.370 | -0.75 | 2.208 | -0.011 | -0.05 | MC |
| U99MEN | | 4.342 | -0.155 | -0.31 | 2.137 | -0.082 | -0.35 | MC |
| UHHRRE | | 4.782 | 0.285 | 0.58 | 2.318 | 0.099 | 0.42 | MC |
| XVQ6BA | | 4.489 | -0.008 | -0.02 | 2.032 | -0.188 | -0.80 | MD |
| XW823A | | 3.970 | -0.527 | -1.07 | 2.089 | -0.130 | -0.56 | MC |
| ZMA8H9 | | 4.622 | 0.125 | 0.25 | 2.337 | 0.118 | 0.50 | XX |
| ZQAGP4 | | 4.583 | 0.086 | 0.18 | 2.682 | 0.463 | 1.97 | XX |
| ZRPHWC | | 4.483 | -0.014 | -0.03 | 2.223 | 0.004 | 0.02 | MC |

### Summary Statistics

**Grand Means**

4.4968 lbf.in                          2.2192 lbf.in

**Stnd Dev Btwn Labs**

0.4932 lbf.in                          0.2345 lbf.in

Statistics based on 29 of 29 reporting participants

# Rubber Interlaboratory Testing Program
## Analysis 688
## MDR Vulcanization: Minimum Torque (lbf.in)

<table>
<tr><td colspan="2" style="background-color:green;color:white">Summary Statistics in SI Units</td></tr>
<tr><td>Grand Means</td><td></td></tr>
<tr><td>5.0808  dN.m</td><td>2.5073  dN.m</td></tr>
<tr><td>Stnd Dev Btwn Labs</td><td></td></tr>
<tr><td>0.5572  dN.m</td><td>0.2649  dN.m</td></tr>
<tr><td></td><td>Statistics based on 29 of  29 reporting participants</td></tr>
</table>

Samples W65-W66: EPDM compound, batch #1 &  W67-W68: EPDM compound, batch #2

## Instrument Code Listing

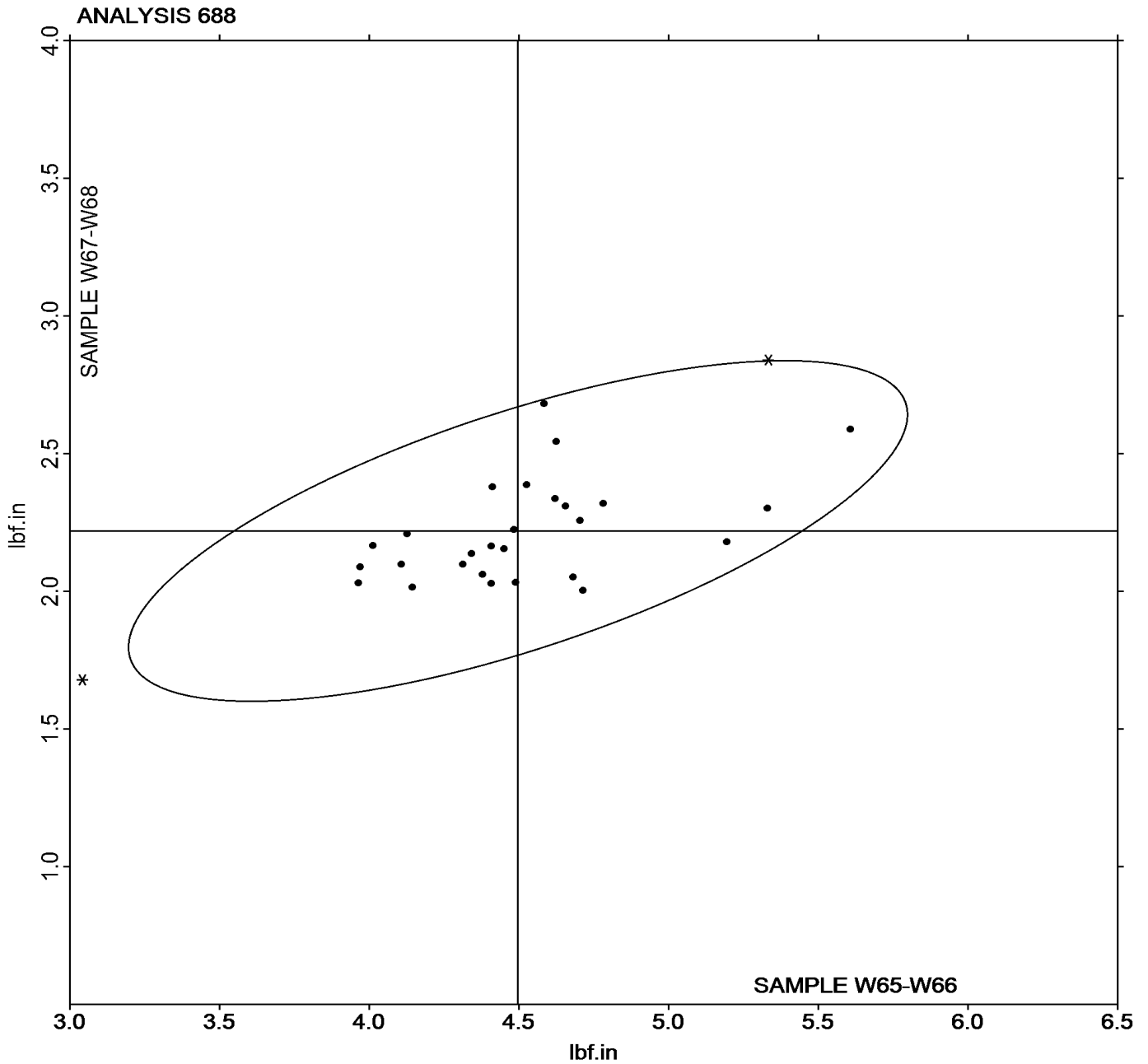| **688** | MDR Vulcanization: Minimum Torque (lbf.in) |
|---|---|

### Instruments:

(MC)   Alpha Technologies [Monsanto] MDR 2000 or 2000E

(MP)   Alpha Technologies [Monsanto] MDR 2000P

(XX)   Instrument model not specified by lab

(MD)   Alpha Tech. Rubber Process Analyzer (RPA 2000)

(TP)   Tech Pro MDR model MDPT

**Analysis 688**

**MDR Vulcanization: Minimum Torque (lbf.in)**

Grand Mean Sample **W65** = 4.4968 lbf.in　　　　　　　　Grand Mean Sample **W66** = 2.2192 lbf.in



ANALYSIS 688

SAMPLE W67-W68

lbf.in

SAMPLE W65-W66

lbf.in

# Analysis 689
## MDR Vulcanization: Maximum Torque (lbf.in)

| | | Sample W65 | | | Sample W66 | | | |
|---|---|---|---|---|---|---|---|---|
| WebCode | Data Flag | Lab Mean | Diff from Grand Mean | CPV | Lab Mean | Diff from Grand Mean | CPV | Instr Code |
| 2AFDL6 | | 15.46 | -0.34 | -0.34 | 13.99 | -0.90 | -1.12 | MC |
| 2EA8J7 | | 15.22 | -0.58 | -0.58 | 14.37 | -0.51 | -0.64 | MC |
| 3BUW73 | | 14.87 | -0.93 | -0.92 | 14.04 | -0.85 | -1.06 | MC |
| 3JLFKB | | 16.24 | 0.43 | 0.43 | 15.36 | 0.47 | 0.59 | MC |
| 6VNMEX | | 13.67 | -2.14 | -2.12 | 13.87 | -1.02 | -1.27 | MC |
| 7V8TC3 | | 16.24 | 0.44 | 0.43 | 15.18 | 0.30 | 0.37 | MC |
| 832H7C | X | 11.21 | -4.59 | -4.56 | 12.53 | -2.36 | -2.95 | XX |
| 87KD94 | | 16.01 | 0.21 | 0.21 | 15.23 | 0.34 | 0.43 | MC |
| A7UYVB | | 16.36 | 0.56 | 0.56 | 15.12 | 0.24 | 0.30 | MC |
| B2WW72 | | 14.05 | -1.75 | -1.74 | 13.41 | -1.48 | -1.85 | TP |
| B8JMTW | X | 16.20 | 0.40 | 0.40 | 17.85 | 2.96 | 3.70 | MC |
| B8N4RV | | 15.69 | -0.11 | -0.11 | 14.46 | -0.43 | -0.54 | MC |
| CCAG43 | | 15.09 | -0.71 | -0.71 | 14.36 | -0.53 | -0.66 | MC |
| DWR8F6 | | 14.96 | -0.85 | -0.84 | 15.28 | 0.39 | 0.49 | MC |
| EERKN7 | | 15.10 | -0.70 | -0.69 | 14.48 | -0.41 | -0.51 | MD |
| EHTNFR | | 15.45 | -0.35 | -0.35 | 15.44 | 0.56 | 0.70 | MC |
| GT28QY | | 18.01 | 2.21 | 2.19 | 16.75 | 1.87 | 2.34 | XX |
| L9E6YF | | 16.57 | 0.77 | 0.76 | 14.83 | -0.05 | -0.07 | MC |
| M9HWQW | | 16.06 | 0.26 | 0.26 | 14.98 | 0.10 | 0.12 | MC |
| PEXAKF | | 16.81 | 1.01 | 1.00 | 14.84 | -0.05 | -0.06 | MC |
| QQJ7YH | | 14.46 | -1.34 | -1.33 | 13.64 | -1.25 | -1.56 | TP |
| TCYAWQ | | 16.01 | 0.21 | 0.21 | 15.66 | 0.78 | 0.97 | MC |
| U99MEN | | 16.22 | 0.41 | 0.41 | 15.18 | 0.29 | 0.36 | MC |
| UHHRRE | | 18.23 | 2.43 | 2.41 | 16.75 | 1.87 | 2.34 | MC |
| XVQ6BA | | 15.99 | 0.19 | 0.19 | 14.35 | -0.54 | -0.67 | MD |
| XW823A | | 15.76 | -0.04 | -0.04 | 14.77 | -0.11 | -0.14 | MC |
| ZMA8H9 | | 16.17 | 0.37 | 0.37 | 15.56 | 0.68 | 0.84 | XX |
| ZQAGP4 | | 15.75 | -0.05 | -0.05 | 15.12 | 0.23 | 0.29 | XX |
| ZRPHWC | | 16.19 | 0.38 | 0.38 | 14.89 | 0.00 | 0.00 | MC |

### Summary Statistics

| Grand Means | | |
|---|---|---|
| 15.801 lbf.in | | 14.885 lbf.in |
| **Stnd Dev Btwn Labs** | | |
| 1.006 lbf.in | | 0.800 lbf.in |

Statistics based on 27 of 29 reporting participants

# MDR Vulcanization: Maximum Torque (lbf.in)

| Summary Statistics in SI Units | |
| --- | --- |
| **Grand Means** | |
| 17.852　dN.m | 16.817　dN.m |
| **Stnd Dev Btwn Labs** | |
| 1.137　dN.m | 0.904　dN.m |
| | Statistics based on 27 of 29 reporting participants |

Samples W65-W66: EPDM compound, batch #1 &  W67-W68: EPDM compound, batch #2

## Comments on assigned Data Flags for Test #689

832H7C (X) - Data for all Samples are low. Inconsistency in testing within Sample group W67-W68.

B8JMTW (X) - Data for Sample group W67-W68 are high.

## Instrument Code Listing

| **689** MDR Vulcanization: Maximum Torque (lbf.in) |
| --- |

**Instruments:**

(MC)　Alpha Technologies [Monsanto] MDR 2000 or 2000E

(MP)　Alpha Technologies [Monsanto] MDR 2000P

(XX)　Instrument model not specified by lab

(MD)　Alpha Tech. Rubber Process Analyzer (RPA 2000)

(TP)　Tech Pro MDR model MDPT

# Rubber Interlaboratory Testing Program
## Analysis 689
## MDR Vulcanization: Maximum Torque (lbf.in)

Grand Mean Sample **W65** = 15.801 lbf.in

Grand Mean Sample **W66** = 14.885 lbf.in



ANALYSIS 689

SAMPLE W67-W68

SAMPLE W65-W66

lbf.in