

## Rubber Interlaboratory Testing Program

### Summary Report #204- 2nd Qtr 2020

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[About the Rubber Program, About CTS](#)

[Key for Web Summary Report](#)

<b>Analysis</b>	<b>Analysis Name</b>	<b>Analysis</b>	<b>Analysis Name</b>
<a href="#">605</a>	<a href="#">Tensile Strength: Precured Rubber Samples</a>	<a href="#">690</a>	<a href="#">RPA Rheological Properties: Part A - G' at 20Hz</a>
<a href="#">606</a>	<a href="#">Ultimate Elongation: Precured Rubber Samples</a>	<a href="#">691</a>	<a href="#">RPA Rheological Properties: Part A - G'' at 20Hz</a>
<a href="#">607</a>	<a href="#">Stress at 300% Elongation: Precured Samples</a>	<a href="#">695</a>	<a href="#">RPA Rheological Properties: Part B - G' at 1.0Hz</a>
<a href="#">608</a>	<a href="#">Stress at 100% Elongation: Precured Samples</a>	<a href="#">696</a>	<a href="#">RPA Rheological Properties: Part B - G'' at 1.0Hz</a>
<a href="#">620</a>	<a href="#">Hardness (Type A): Precured Rubber Samples</a>		
<a href="#">621</a>	<a href="#">Density: Precured Rubber Samples @ 25C</a>		
<a href="#">625</a>	<a href="#">Hardness (Shore D/Type D)</a>		
<a href="#">630</a>	<a href="#">Tensile Strength: Participant-Cured Rubber</a>		
<a href="#">631</a>	<a href="#">Ultimate Elongation: Participant-Cured Samples</a>		
<a href="#">632</a>	<a href="#">Tensile Stress at 300% Elongation: Lab-Cured</a>		
<a href="#">633</a>	<a href="#">Tensile Stress at 100% Elongation: Lab-Cured</a>		
<a href="#">635</a>	<a href="#">Compression Set</a>		
<a href="#">660</a>	<a href="#">Mooney Viscosity (4-minute readings)</a>		
<a href="#">661</a>	<a href="#">Mooney Viscosity (8-minute butyl readings)</a>		
<a href="#">662</a>	<a href="#">Mooney Stress Relaxation: t80</a>		
<a href="#">663</a>	<a href="#">Mooney Stress Relaxation: X30</a>		
<a href="#">664</a>	<a href="#">Mooney Stress Relaxation: Area under curve</a>		
<a href="#">669</a>	<a href="#">ODR Vulcanization Charac.: Cure Time 10%</a>		
<a href="#">670</a>	<a href="#">ODR Vulcanization Charac.: Scorch Time, Ts1</a>		
<a href="#">671</a>	<a href="#">ODR Vulcanization Charac.: Cure Time 50%</a>		
<a href="#">672</a>	<a href="#">ODR Vulcanization Charac.: Cure Time 90%</a>		
<a href="#">673</a>	<a href="#">ODR Vulcanization Charac.: Minimum Torque</a>		
<a href="#">674</a>	<a href="#">ODR Vulcanization Charac.: Maximum Torque</a>		
<a href="#">684</a>	<a href="#">MDR Vulcanization Charac.: Cure Time 10%</a>		
<a href="#">685</a>	<a href="#">MDR Vulcanization Charac.: Scorch Time, Ts1</a>		
<a href="#">686</a>	<a href="#">MDR Vulcanization Charac.: Cure Time 50%</a>		
<a href="#">687</a>	<a href="#">MDR Vulcanization Charac.: Cure Time 90%</a>		
<a href="#">688</a>	<a href="#">MDR Vulcanization Charac.: Minimum Torque</a>		
<a href="#">689</a>	<a href="#">MDR Vulcanization Charac.: Maximum Torque</a>		

## **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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**Office Hours: 8:00 a.m. - 4:30 p.m. ET**

<b>WebCode</b>	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.
<b>Lab Mean</b>	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.
<b>Grand Mean</b>	The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.
<b>Difference from Grand Mean</b>	The difference of the LAB MEAN from the GRAND MEAN.
<b>Between-Lab Standard Deviation</b>	An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).
<b>Comparative Performance Value</b>	An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa). The critical value for each CPV will vary depending on the number of labs participating in a test.
<b>Inst Code</b>	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).
<b>Data Flag</b>	DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

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



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		3,099.5	-140.3	-0.89	3,045.5	-196.9	-1.24
2HML22		3,074.5	-165.3	-1.04	3,000.0	-242.4	-1.53
2P8QQV		2,980.5	-259.3	-1.64	3,012.4	-230.0	-1.45
34HQZQ		3,360.0	120.2	0.76	3,345.0	102.6	0.65
3B4JDC		3,518.0	278.2	1.76	3,562.5	320.1	2.01
3UTZDY		3,439.1	199.3	1.26	3,371.1	128.7	0.81
4MWHK9		3,093.5	-146.3	-0.92	3,103.5	-138.9	-0.87
4WK97Z		3,288.0	48.2	0.30	3,392.5	150.1	0.94
6D4LXX		3,365.0	125.2	0.79	3,225.0	-17.4	-0.11
6HEPZT		3,340.5	100.7	0.64	3,229.5	-12.9	-0.08
7YW6GU		3,193.5	-46.3	-0.29	3,200.5	-41.9	-0.26
86K3Q4		3,258.5	18.7	0.12	3,189.0	-53.4	-0.34
8GX3MW		3,293.0	53.2	0.34	3,276.0	33.6	0.21
8QZMN4		3,507.0	267.2	1.69	3,453.0	210.6	1.32
8VE3CA		3,278.6	38.8	0.25	3,247.4	5.0	0.03
8XLDAY		3,009.6	-230.2	-1.46	3,140.1	-102.3	-0.64
92APEU		3,411.0	171.2	1.08	3,401.5	159.1	1.00
99X3NU		3,404.5	164.7	1.04	3,415.5	173.1	1.09
9EXQWL		3,172.6	-67.2	-0.42	3,265.5	23.1	0.15
9G8R2T	X	2,813.5	-426.3	-2.69	3,039.5	-202.9	-1.28
9JDYKL		3,326.6	86.8	0.55	3,382.2	139.8	0.88
9LGU4N		3,214.5	-25.3	-0.16	3,114.0	-128.4	-0.81
9MUGL3		3,106.5	-133.3	-0.84	3,105.5	-136.9	-0.86
9PLDBW		3,357.5	117.7	0.74	3,336.0	93.6	0.59
AZWE2M		3,146.0	-93.8	-0.59	3,105.5	-136.9	-0.86
BGYBXR		3,459.4	219.7	1.39	3,412.3	169.9	1.07
BNHGWJ		3,268.6	28.9	0.18	3,272.1	29.7	0.19
BZCXLK		3,250.5	10.7	0.07	3,220.5	-21.9	-0.14
CBUPTU		3,137.0	-102.8	-0.65	3,150.0	-92.4	-0.58
CHTJK2		3,437.4	197.7	1.25	3,480.9	238.5	1.50
D3UPUT		3,426.5	186.7	1.18	3,448.5	206.1	1.30
D636ZY		3,166.0	-73.8	-0.47	3,124.5	-117.9	-0.74
DLLVZX	*	2,781.1	-458.6	-2.90	2,781.1	-461.3	-2.90
DQ2BM4		2,993.5	-246.3	-1.56	3,105.0	-137.4	-0.86
DXWDPF		3,303.5	63.7	0.40	3,319.0	76.6	0.48
EELVZV		3,159.0	-80.8	-0.51	3,238.6	-3.8	-0.02
EGPUBN		2,889.5	-350.3	-2.21	2,881.0	-361.4	-2.27
EK64HZ		3,155.0	-84.8	-0.54	3,118.7	-123.7	-0.78



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
EPLB4E		3,326.2	86.4	0.55	3,460.4	218.0	1.37
EV7LYV		3,211.0	-28.8	-0.18	3,161.0	-81.4	-0.51
F84P4P		3,343.0	103.2	0.65	3,346.0	103.6	0.65
FCXJ2Q		3,150.5	-89.2	-0.56	3,287.0	44.6	0.28
FF9WHP		3,294.3	54.5	0.34	3,306.2	63.8	0.40
G7JB6D		3,589.7	349.9	2.21	3,597.0	354.6	2.23
G8XUXN		3,267.0	27.2	0.17	3,270.0	27.6	0.17
GWCQPN		3,010.0	-229.8	-1.45	3,070.0	-172.4	-1.08
HC4PBW		3,329.0	89.2	0.56	3,354.0	111.6	0.70
HFM3VJ		3,077.5	-162.3	-1.03	3,109.5	-132.9	-0.84
JABEUM		3,146.2	-93.6	-0.59	3,158.2	-84.2	-0.53
JF3QNY		3,194.5	-45.3	-0.29	3,106.7	-135.7	-0.85
K448TP		3,525.0	285.2	1.80	3,540.0	297.6	1.87
KMDAHH	X	4,966.1	1,726.4	10.91	3,473.0	230.5	1.45
KNNB6G		3,252.5	12.7	0.08	3,326.5	84.1	0.53
MC9ZRB	X	3,126.3	-113.5	-0.72	2,863.1	-379.4	-2.39
MD3PCR		3,409.9	170.1	1.08	3,378.0	135.5	0.85
MECVBD	*	3,262.7	23.0	0.15	3,436.8	194.4	1.22
MN2MX7		3,380.8	141.0	0.89	3,383.7	141.3	0.89
MPCKBM		3,145.5	-94.3	-0.60	3,149.0	-93.4	-0.59
MWUTYJ		3,125.6	-114.2	-0.72	3,045.8	-196.6	-1.24
N7YXPF		3,239.0	-0.8	0.00	3,164.5	-77.9	-0.49
NDVYHD		3,180.4	-59.4	-0.38	3,143.1	-99.3	-0.62
NLP846		3,310.0	70.2	0.44	3,212.5	-29.9	-0.19
NMM9CH		3,097.5	-142.3	-0.90	3,054.5	-187.9	-1.18
NQMLWL		3,468.0	228.2	1.44	3,380.0	137.6	0.87
NXNV4E		3,175.0	-64.8	-0.41	3,202.5	-39.9	-0.25
P6VYJC		3,099.4	-140.4	-0.89	3,113.5	-128.9	-0.81
PMFPHB		3,063.3	-176.4	-1.12	3,159.9	-82.5	-0.52
PQE7V6		3,356.0	116.2	0.73	3,429.0	186.6	1.17
Q2FQVC		3,393.9	154.1	0.97	3,401.2	158.8	1.00
RCU4QL		3,165.5	-74.3	-0.47	3,064.7	-177.7	-1.12
RK4MTH		3,408.5	168.7	1.07	3,435.5	193.1	1.21
RN7L4B		3,376.0	136.2	0.86	3,315.0	72.6	0.46
RXANMM		3,495.4	255.7	1.62	3,393.2	150.8	0.95
RYKH9E		3,242.0	2.2	0.01	3,236.0	-6.4	-0.04
T9PPNE		3,136.5	-103.3	-0.65	3,227.0	-15.4	-0.10



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
U7GZYB		3,169.8	-69.9	-0.44	3,261.9	19.5	0.12
UM6BLD		3,043.2	-196.6	-1.24	3,105.5	-136.9	-0.86
V623XX		3,333.0	93.2	0.59	3,462.0	219.6	1.38
VEARKA		3,231.5	-8.3	-0.05	3,197.4	-45.0	-0.28
W2DAYZ		2,920.0	-319.8	-2.02	2,965.0	-277.4	-1.75
WMEYYA		3,255.3	15.6	0.10	3,198.5	-43.9	-0.28
WW6K68		3,394.7	154.9	0.98	3,440.8	198.3	1.25
X69EC6		3,404.7	164.9	1.04	3,317.7	75.3	0.47
XNNMD7		3,130.7	-109.1	-0.69	3,182.2	-60.3	-0.38
XV48W6	X	2,781.0	-458.8	-2.90	2,982.5	-259.9	-1.64
ZBTTF3		3,202.0	-37.8	-0.24	3,145.0	-97.4	-0.61
ZKKCUB		3,038.1	-201.7	-1.28	3,139.8	-102.7	-0.65
ZQML24		3,314.5	74.7	0.47	3,346.0	103.6	0.65
ZWNYFD		3,030.5	-209.3	-1.32	2,954.5	-287.9	-1.81

Summary Statistics	
Grand Means	
3,239.77 psi	3,242.41 psi
Stnd Dev Btwn Labs	
158.17 psi	158.94 psi
Statistics based on 85 of 89 reporting participants	

Summary Statistics in SI Units	
Grand Means	
22.337 MPa	22.36 MPa
Stnd Dev Btwn Labs	
1.091 MPa	1.10 MPa
Statistics based on 85 of 89 reporting participants	

Samples B01-B02: Polyisoprene compound, batch #1 & B03-B04: Polyisoprene compound, batch #2

**Comments on Assigned Data Flags for Test #605**

- 9G8R2T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group B01-B02.
- KMDAHH (X) - Extreme Data for sample group B01-B02.
- MC9ZRB (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group B03-B04.
- XV48W6 (X) - Data for sample group B01-B02 are low. Inconsistent within the determinations of sample group B01-B02.

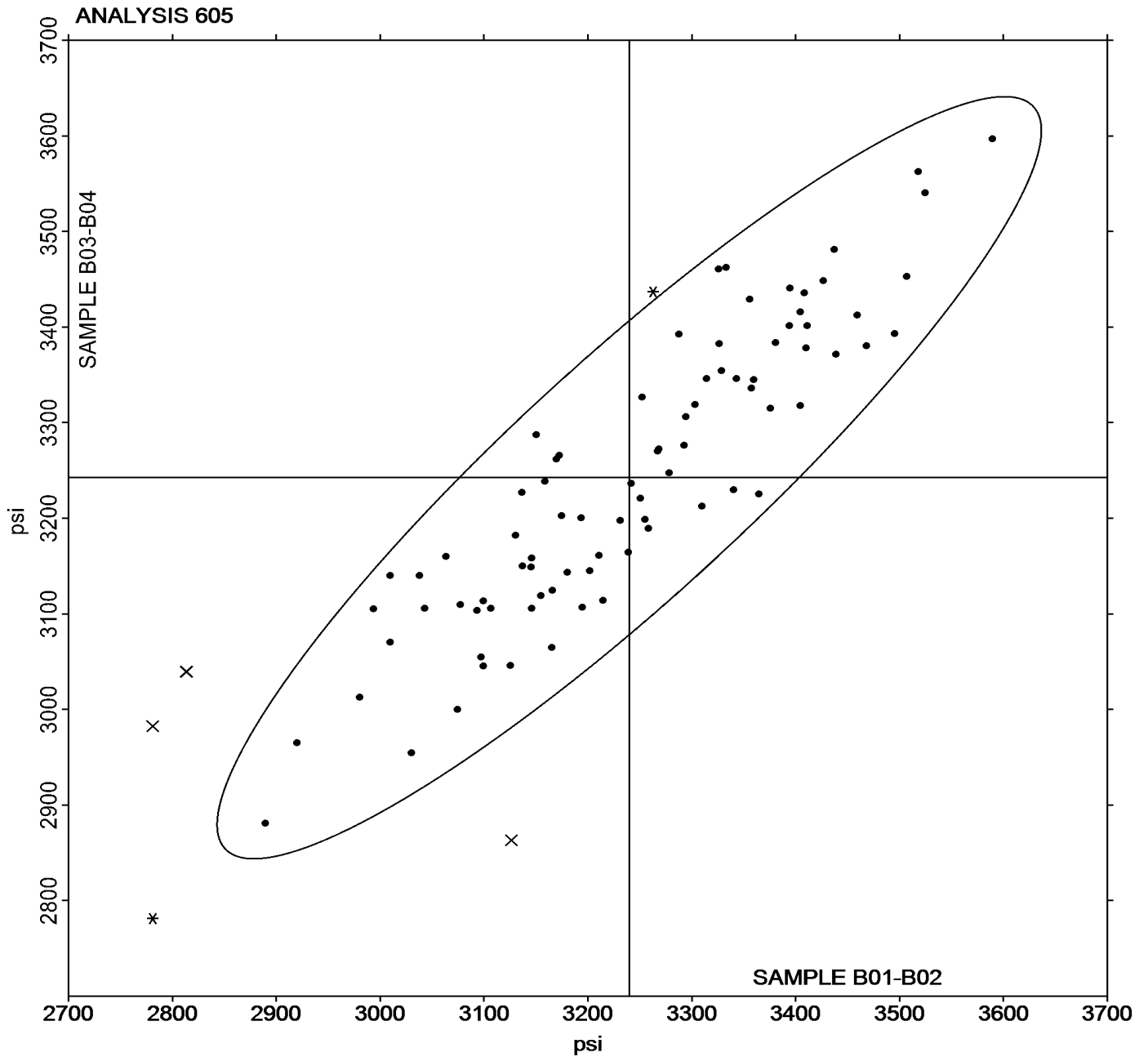


Rubber Interlaboratory Testing Program  
Analysis 605  
Tensile Strength (psi)

Report #204  
2nd Qtr 2020

Grand Mean Sample B01-B02 = 3,239.77 psi

Grand Mean Sample B03-B04 = 3,242.41 psi







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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		571.7	-45.9	-1.53	570.3	-47.3	-1.66
2HML22		624.0	6.4	0.21	612.5	-5.0	-0.18
2P8QQV		600.0	-17.6	-0.58	613.0	-4.5	-0.16
34HQZQ		577.5	-40.1	-1.33	588.5	-29.0	-1.02
3B4JDC		617.5	-0.1	0.00	614.0	-3.5	-0.12
3UTZDY		572.5	-45.1	-1.50	577.0	-40.5	-1.42
4MWHK9		580.0	-37.6	-1.25	590.0	-27.5	-0.96
4WK97Z		607.0	-10.6	-0.35	585.0	-32.5	-1.14
6D4LXX	*	646.0	28.4	0.95	615.5	-2.0	-0.07
6HEPZT		646.5	28.9	0.96	633.0	15.5	0.54
7YW6GU		560.5	-57.1	-1.90	574.0	-43.5	-1.53
86K3Q4		619.5	1.9	0.06	622.5	5.0	0.17
8GX3MW		610.5	-7.1	-0.24	609.0	-8.5	-0.30
8QZMN4		647.6	30.1	1.00	639.6	22.1	0.77
8VE3CA		601.5	-16.1	-0.53	592.0	-25.5	-0.89
8XLDAY		590.7	-26.9	-0.89	606.4	-11.1	-0.39
92APEU		655.0	37.4	1.24	645.0	27.5	0.96
99X3NU		548.5	-69.1	-2.30	562.0	-55.5	-1.95
9EXQWL		628.0	10.4	0.35	618.3	0.8	0.03
9G8R2T	X	559.5	-58.1	-1.93	597.5	-20.0	-0.70
9JDYKL		631.8	14.2	0.47	620.3	2.8	0.10
9LGU4N		614.5	-3.1	-0.10	617.0	-0.5	-0.02
9MUGL3	*	565.5	-52.1	-1.73	550.0	-67.5	-2.37
9PLDBW		631.5	13.9	0.46	638.0	20.5	0.72
AZWE2M		670.0	52.4	1.74	666.5	49.0	1.72
BGYBXR		582.2	-35.3	-1.18	583.6	-34.0	-1.19
BNHGWJ		571.5	-46.1	-1.53	574.9	-42.6	-1.49
BZCXLK		623.0	5.4	0.18	624.0	6.5	0.23
CBUPTU		635.5	17.9	0.60	646.5	29.0	1.02
CHTJK2		588.5	-29.1	-0.97	584.5	-33.0	-1.16
D3UPUT		643.5	25.9	0.86	648.0	30.5	1.07
D636ZY		603.0	-14.6	-0.48	603.0	-14.5	-0.51
DLLVZX		675.5	57.9	1.93	678.5	61.0	2.14
DQ2BM4		581.0	-36.6	-1.22	579.5	-38.0	-1.33
DXWDPF		668.5	50.9	1.69	661.5	44.0	1.54
EELVZV		618.4	0.8	0.03	632.7	15.2	0.53
EGPUBN		635.5	17.9	0.60	636.5	19.0	0.66



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
EK64HZ		647.0	29.4	0.98	643.5	26.0	0.91
EPLB4E		658.4	40.8	1.36	645.9	28.4	0.99
EV7LYV		646.5	28.9	0.96	637.0	19.5	0.68
F84P4P		628.5	10.9	0.36	638.0	20.5	0.72
FCXJ2Q		631.6	14.0	0.47	645.9	28.4	0.99
FF9WHP		626.0	8.4	0.28	633.1	15.5	0.54
G7JB6D		625.0	7.4	0.25	629.0	11.5	0.40
G8XUXN		632.5	14.9	0.50	632.5	15.0	0.52
HC4PBW		621.0	3.4	0.11	632.5	15.0	0.52
HFM3VJ		550.5	-67.1	-2.23	559.0	-58.5	-2.05
JABEUM		613.5	-4.1	-0.14	609.5	-8.0	-0.28
JF3QNY		636.2	18.6	0.62	620.0	2.4	0.08
K448TP		624.5	6.9	0.23	643.0	25.5	0.89
KMDAHH		605.0	-12.6	-0.42	604.0	-13.5	-0.47
KNNB6G		629.5	11.9	0.40	627.0	9.5	0.33
MC9ZRB	X	575.0	-42.5	-1.41	538.6	-78.9	-2.77
MD3PCR	*	675.2	57.6	1.92	689.2	71.6	2.51
MECVBD		566.5	-51.0	-1.70	575.7	-41.8	-1.47
MN2MX7	X	715.6	98.1	3.26	718.5	101.0	3.54
MPCKBM		612.5	-5.1	-0.17	619.0	1.5	0.05
MWUTYJ		608.0	-9.6	-0.32	605.0	-12.5	-0.44
N7YXPF		605.0	-12.6	-0.42	596.0	-21.5	-0.75
NDVYHD		630.0	12.4	0.41	632.3	14.8	0.52
NLP846		621.5	3.9	0.13	610.5	-7.0	-0.25
NMM9CH		595.5	-22.1	-0.73	605.0	-12.5	-0.44
NQMLWL	*	669.0	51.4	1.71	639.5	22.0	0.77
NXNV4E		614.5	-3.1	-0.10	616.5	-1.0	-0.04
P6VYJC		626.1	8.5	0.28	637.4	19.8	0.70
PMFPBH		575.1	-42.5	-1.41	595.1	-22.5	-0.79
PQE7V6		629.5	11.9	0.40	636.0	18.5	0.65
Q2FQVC		643.0	25.4	0.85	640.5	23.0	0.81
RCU4QL		626.5	8.9	0.30	623.0	5.5	0.19
RK4MTH		641.5	23.9	0.80	641.5	24.0	0.84
RN7L4B		626.0	8.4	0.28	622.0	4.5	0.16
RXANMV	X	737.0	119.4	3.97	724.0	106.5	3.73
RYKH9E		656.5	38.9	1.29	641.5	24.0	0.84
T9PPNE		620.0	2.4	0.08	619.0	1.5	0.05
U7GZYB		606.0	-11.6	-0.38	609.5	-8.0	-0.28



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
UM6BLD		596.5	-21.1	-0.70	608.0	-9.5	-0.33
V623XX		576.0	-41.6	-1.38	592.5	-25.0	-0.88
VEARKA		639.5	21.9	0.73	638.3	20.7	0.73
W2DAYZ		662.0	44.4	1.48	673.0	55.5	1.94
WMEYYA		629.5	11.9	0.40	629.5	12.0	0.42
WW6K68		646.5	29.0	0.96	648.7	31.1	1.09
X69EC6		620.2	2.6	0.09	617.2	-0.4	-0.01
XNNMD7		596.0	-21.6	-0.72	598.0	-19.5	-0.68
XV48W6	X	509.5	-108.1	-3.59	510.0	-107.5	-3.77
ZBTTF3	*	554.0	-63.6	-2.11	547.5	-70.0	-2.45
ZKKCUB		640.0	22.4	0.75	640.0	22.5	0.79
ZQML24		618.0	0.4	0.01	601.0	-16.5	-0.58
ZWNYFD		612.5	-5.1	-0.17	594.5	-23.0	-0.81

Grand Means		Summary Statistics	
	617.57 percent		617.52 percent
Stnd Dev Btwn Labs	30.07 percent		28.54 percent
Statistics based on 83 of 88 reporting participants			

Samples B01-B02: Polyisoprene compound, batch #1 & B03-B04: Polyisoprene compound, batch #2

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

- 9G8R2T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group B01-B02.
- MC9ZRB (X) - Data for sample group B03-B04 are low. Inconsistent within the determinations of sample group B03-B04.
- MN2MX7 (X) - Data for all samples are high. Possible Systematic Error.
- RXANMM (X) - Data for all samples are high. Possible Systematic Error.
- XV48W6 (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group B01-B02.

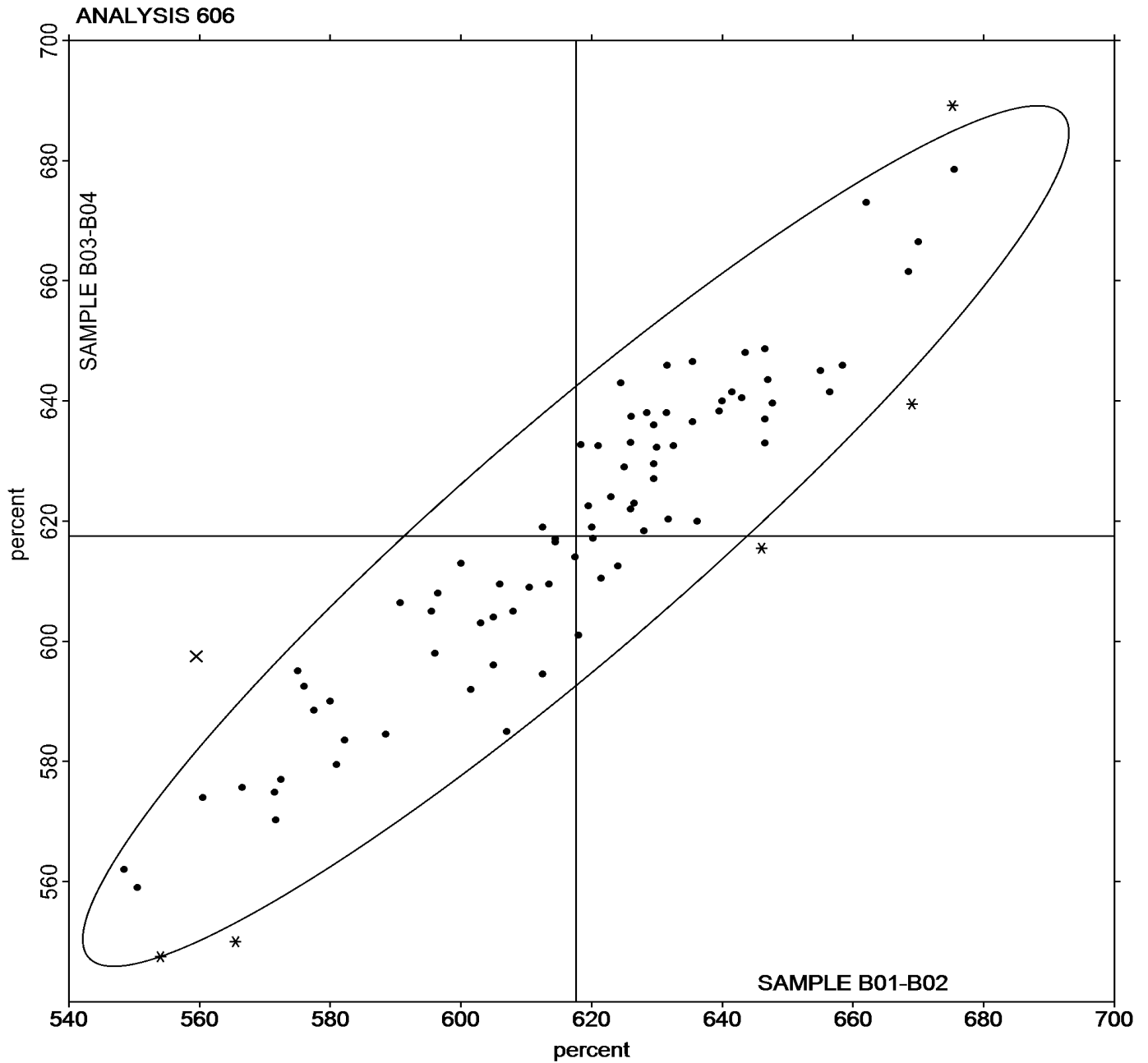


Rubber Interlaboratory Testing Program  
Analysis 606  
Ultimate Elongation (percent)

Report #204  
2nd Qtr 2020

Grand Mean Sample B01-B02 = 617.57 percent

Grand Mean Sample B03-B04 = 617.52 percent





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 607

2nd Qtr 2020

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		1,071.0	106.6	1.14	1,065.1	101.0	1.07
2HML22		915.5	-48.8	-0.52	883.0	-81.1	-0.86
34HQZQ		1,160.0	195.7	2.10	1,110.0	145.9	1.55
3B4JDC		998.0	33.7	0.36	1,069.5	105.4	1.12
3UTZDY		1,106.1	141.8	1.52	1,048.0	83.9	0.89
4MWHK9		1,009.0	44.7	0.48	1,010.0	45.9	0.49
4WK97Z		1,029.0	64.7	0.69	1,089.0	124.9	1.33
6D4LXX		1,006.0	41.7	0.45	974.0	9.9	0.11
6HEPZT		928.5	-35.8	-0.38	929.0	-35.1	-0.37
7YW6GU		1,136.0	171.7	1.84	1,079.0	114.9	1.22
86K3Q4		962.5	-1.8	-0.02	935.5	-28.6	-0.30
8GX3MW		1,017.5	53.2	0.57	1,008.0	43.9	0.47
8QZMN4		974.6	10.2	0.11	1,034.9	70.8	0.75
8VE3CA		855.7	-108.6	-1.16	909.4	-54.7	-0.58
8XLDAY		929.0	-35.3	-0.38	952.9	-11.2	-0.12
92APEU		886.0	-78.3	-0.84	928.5	-35.6	-0.38
99X3NU	*	1,219.0	254.7	2.73	1,188.5	224.4	2.39
9EXQWL		911.0	-53.3	-0.57	904.5	-59.6	-0.63
9JDYKL		999.3	35.0	0.38	1,071.7	107.6	1.14
9LGU4N		945.5	-18.8	-0.20	964.0	-0.1	0.00
9MUGL3	*	1,062.5	98.2	1.05	1,159.5	195.4	2.08
9PLDBW		970.0	5.7	0.06	909.0	-55.1	-0.59
AZWE2M		813.5	-150.8	-1.62	832.0	-132.1	-1.40
BGYBXR		1,134.5	170.2	1.82	1,110.6	146.6	1.56
BNHGWJ		1,077.8	113.5	1.22	1,042.6	78.6	0.84
BZCXLK		969.5	5.2	0.06	935.5	-28.6	-0.30
CBUPTU		889.5	-74.8	-0.80	891.5	-72.6	-0.77
CHTJK2		1,074.7	110.4	1.18	1,135.7	171.6	1.82
D3UPUT		958.0	-6.3	-0.07	963.5	-0.6	-0.01
D636ZY		978.5	14.2	0.15	963.5	-0.6	-0.01
DLLVZX	*	686.0	-278.3	-2.98	696.2	-267.9	-2.85
DQ2BM4		913.5	-50.8	-0.54	950.0	-14.1	-0.15
DXWDPF		893.5	-70.8	-0.76	887.0	-77.1	-0.82
EELVZV		941.1	-23.2	-0.25	932.0	-32.1	-0.34
EGPUBN		816.5	-147.8	-1.58	801.0	-163.1	-1.73
EK64HZ		887.0	-77.3	-0.83	881.3	-82.7	-0.88
EPLB4E	*	940.3	-24.0	-0.26	1,051.0	87.0	0.92
EV7LYV		901.5	-62.8	-0.67	938.0	-26.1	-0.28



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 607

2nd Qtr 2020

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
F84P4P		932.0	-32.3	-0.35	950.5	-13.6	-0.14
FCXJ2Q		882.5	-81.8	-0.88	905.5	-58.5	-0.62
FF9WHP		958.1	-6.2	-0.07	957.7	-6.3	-0.07
G7JB6D		1,042.8	78.5	0.84	1,019.6	55.5	0.59
G8XUXN		960.5	-3.8	-0.04	949.5	-14.6	-0.16
HC4PBW		1,008.5	44.2	0.47	971.5	7.4	0.08
HFM3VJ		1,074.5	110.2	1.18	1,084.5	120.4	1.28
JABEUM		958.7	-5.6	-0.06	961.4	-2.7	-0.03
JF3QNY		938.4	-25.9	-0.28	924.6	-39.5	-0.42
K448TP		1,028.5	64.2	0.69	978.5	14.4	0.15
KMDAHH	X	1,578.0	613.7	6.58	1,079.8	115.7	1.23
KNNB6G		954.0	-10.3	-0.11	947.5	-16.6	-0.18
MC9ZRB		1,034.9	70.6	0.76	1,085.8	121.7	1.29
MD3PCR		885.5	-78.8	-0.84	811.5	-152.6	-1.62
MECVBD		1,138.0	173.7	1.86	1,134.5	170.4	1.81
MN2MX7	*	808.2	-156.1	-1.67	732.6	-231.5	-2.46
MPCKBM		925.5	-38.8	-0.42	942.5	-21.6	-0.23
MWUTYJ		872.5	-91.8	-0.98	858.5	-105.6	-1.12
N7YXPF		1,008.0	43.7	0.47	1,000.0	35.9	0.38
NDVYHD		920.9	-43.4	-0.47	933.6	-30.4	-0.32
NLP846		987.5	23.2	0.25	974.5	10.4	0.11
NMM9CH		1,001.5	37.2	0.40	950.5	-13.6	-0.14
NQMLWL		946.5	-17.8	-0.19	918.5	-45.6	-0.48
NXNV4E		952.5	-11.8	-0.13	920.0	-44.1	-0.47
P6VYJC		809.2	-155.2	-1.66	813.1	-151.0	-1.61
PMFPHB		1,061.0	96.6	1.04	990.5	26.4	0.28
PQE7V6		988.5	24.2	0.26	959.0	-5.1	-0.05
Q2FQVC		1,125.5	161.2	1.73	1,127.7	163.6	1.74
RCU4QL		976.1	11.8	0.13	907.9	-56.1	-0.60
RK4MTH		926.0	-38.3	-0.41	979.5	15.4	0.16
RN7L4B		984.5	20.2	0.22	961.5	-2.6	-0.03
RXANMM		813.7	-150.6	-1.61	823.1	-141.0	-1.50
RYKH9E		879.0	-85.3	-0.91	914.0	-50.1	-0.53
U7GZYB		951.5	-12.9	-0.14	960.9	-3.2	-0.03
UM6BLD		925.2	-39.1	-0.42	926.9	-37.2	-0.40
V623XX		1,009.5	45.2	0.48	999.0	34.9	0.37
VEARKA		936.4	-27.9	-0.30	902.2	-61.9	-0.66



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 607

2nd Qtr 2020

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
W2DAYZ		884.6	-79.7	-0.85	891.8	-72.3	-0.77
WMEYYA		881.5	-82.8	-0.89	881.0	-83.1	-0.88
WW6K68		927.2	-37.1	-0.40	948.6	-15.5	-0.16
X69EC6		1,030.3	66.0	0.71	999.5	35.4	0.38
XNNMD7		966.0	1.7	0.02	1,004.4	40.3	0.43
ZBTTF3		1,159.5	195.2	2.09	1,148.0	183.9	1.96
ZKKCUB		810.5	-153.8	-1.65	816.0	-148.1	-1.57
ZQML24		924.5	-39.8	-0.43	973.0	8.9	0.09
ZWNYFD		880.5	-83.8	-0.90	944.0	-20.1	-0.21

Grand Means		Summary Statistics	
	964.31 psi		964.09 psi
Stnd Dev Btwn Labs	93.33 psi		94.03 psi
Statistics based on 83 of 84 reporting participants			

Grand Means		Summary Statistics in SI Units	
	6.6486 MPa		6.65 MPa
Stnd Dev Btwn Labs	0.6435 MPa		0.65 MPa
Statistics based on 83 of 84 reporting participants			

Samples B01-B02: Polyisoprene compound, batch #1 & B03-B04: Polyisoprene compound, batch #2

#### **Comments on Assigned Data Flags for Test #607**

KMDAHH (X) - Data for sample group B01-B02 are high. Inconsistent within the determinations of sample group B01-B02.







# Rubber Interlaboratory Testing Program

Report #204

## Analysis 608

2nd Qtr 2020

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		235.2	18.3	1.16	238.5	21.7	1.39
2HML22		213.0	-3.9	-0.25	204.5	-12.3	-0.79
34HQZQ	X	270.5	53.6	3.39	265.5	48.7	3.12
3B4JDC		223.5	6.6	0.42	237.5	20.7	1.33
3UTZDY		232.5	15.6	0.99	222.2	5.3	0.34
4MWHK9		220.0	3.1	0.19	220.5	3.7	0.24
4WK97Z		222.5	5.6	0.35	229.5	12.7	0.81
6D4LXX		227.5	10.6	0.67	218.0	1.2	0.08
6HEPZT		223.5	6.6	0.42	226.0	9.2	0.59
7YW6GU		191.5	-25.4	-1.61	194.5	-22.3	-1.43
86K3Q4		210.0	-6.9	-0.44	209.0	-7.8	-0.50
8GX3MW		232.5	15.6	0.99	233.0	16.2	1.04
8QZMN4		203.0	-14.0	-0.88	215.2	-1.6	-0.10
8VE3CA	X	192.2	-24.7	-1.56	223.4	6.6	0.42
8XLDAY		203.1	-13.9	-0.88	211.8	-5.1	-0.32
92APEU		202.0	-14.9	-0.94	212.5	-4.3	-0.28
99X3NU	*	259.0	42.1	2.66	248.5	31.7	2.03
9EXQWL		206.9	-10.0	-0.63	208.4	-8.4	-0.54
9JDYKL	X	231.4	14.5	0.91	253.0	36.2	2.32
9LGU4N		215.0	-1.9	-0.12	221.0	4.2	0.27
9MUGL3		232.5	15.6	0.99	240.0	23.2	1.49
9PLDBW		220.0	3.1	0.19	205.0	-11.8	-0.76
AZWE2M		196.0	-20.9	-1.32	198.0	-18.8	-1.21
BGYBXR		244.7	27.8	1.76	246.3	29.5	1.90
BNHGWJ		229.9	13.0	0.82	223.7	6.9	0.44
BZCXLK		214.5	-2.4	-0.15	204.5	-12.3	-0.79
CBUPTU		209.5	-7.4	-0.47	205.0	-11.8	-0.76
CHTJK2	*	257.4	40.5	2.56	244.4	27.6	1.77
D3UPUT		213.0	-3.9	-0.25	214.5	-2.3	-0.15
D636ZY		215.5	-1.4	-0.09	208.0	-8.8	-0.57
DLLVZX	X	153.7	-63.2	-3.99	163.2	-53.6	-3.44
DQ2BM4		208.0	-8.9	-0.56	213.0	-3.8	-0.24
DXWDPF		203.0	-13.9	-0.88	202.0	-14.8	-0.95
EELVZV		212.9	-4.0	-0.25	209.6	-7.2	-0.46
EGPUBN		195.5	-21.4	-1.35	196.5	-20.3	-1.30
EK64HZ		225.8	8.9	0.56	218.8	2.0	0.13
EPLB4E	X	246.0	29.1	1.84	280.7	63.9	4.10
EV7LYV		211.0	-5.9	-0.37	215.0	-1.8	-0.12



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 608

2nd Qtr 2020

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
F84P4P		208.0	-8.9	-0.56	209.5	-7.3	-0.47
FCXJ2Q		215.0	-1.9	-0.12	222.7	5.8	0.38
FF9WHP		217.2	0.2	0.01	219.1	2.3	0.15
G7JB6D	*	265.4	48.5	3.07	260.3	43.5	2.79
G8XUXN		211.0	-5.9	-0.37	206.5	-10.3	-0.66
HC4PBW		225.0	8.1	0.51	212.5	-4.3	-0.28
HFM3VJ		228.5	11.6	0.73	232.0	15.2	0.97
JABEUM		212.5	-4.4	-0.28	215.9	-1.0	-0.06
JF3QNY		206.0	-11.0	-0.69	204.5	-12.3	-0.79
K448TP		223.5	6.6	0.42	215.0	-1.8	-0.12
KMDAHH	X	354.6	137.7	8.70	255.3	38.5	2.47
KNNB6G		217.5	0.6	0.04	217.0	0.2	0.01
MC9ZRB		233.2	16.3	1.03	245.2	28.4	1.82
MD3PCR		190.7	-26.2	-1.66	181.3	-35.5	-2.28
MECVBD		236.3	19.4	1.22	242.4	25.6	1.64
MN2MX7		194.7	-22.2	-1.40	185.1	-31.7	-2.03
MPCKBM		215.5	-1.4	-0.09	215.5	-1.3	-0.08
MWUTYJ		197.5	-19.4	-1.23	195.0	-21.8	-1.40
N7YXPF		239.5	22.6	1.43	239.5	22.7	1.46
NDVYHD		224.8	7.8	0.50	231.1	14.3	0.92
NLP846		213.5	-3.4	-0.22	216.0	-0.8	-0.05
NMM9CH		227.0	10.1	0.64	218.5	1.7	0.11
NQMLWL		220.5	3.6	0.23	222.5	5.7	0.37
NXNV4E		221.0	4.1	0.26	210.0	-6.8	-0.44
P6VYJC		182.2	-34.8	-2.20	181.5	-35.3	-2.26
PMFPHB		221.0	4.1	0.26	217.9	1.1	0.07
PQE7V6		221.0	4.1	0.26	213.5	-3.3	-0.21
Q2FQVC	X	258.2	41.3	2.61	272.7	55.9	3.58
RCU4QL		230.6	13.7	0.87	214.7	-2.2	-0.14
RK4MTH		210.0	-6.9	-0.44	218.5	1.7	0.11
RN7L4B		231.0	14.1	0.89	226.5	9.7	0.62
RXANMM		203.1	-13.9	-0.88	211.8	-5.1	-0.32
RYKH9E		207.5	-9.4	-0.60	212.0	-4.8	-0.31
T9PPNE		211.5	-5.4	-0.34	221.5	4.7	0.30
U7GZYB		210.3	-6.6	-0.42	213.2	-3.6	-0.23
UM6BLD		203.2	-13.8	-0.87	206.0	-10.8	-0.69
V623XX		209.0	-7.9	-0.50	199.5	-17.3	-1.11



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
VEARKA		225.3	8.4	0.53	220.0	3.2	0.21
W2DAYZ		237.5	20.6	1.30	246.6	29.8	1.91
WMEYYA		193.5	-23.4	-1.48	196.5	-20.3	-1.30
WW6K68		207.8	-9.1	-0.58	213.4	-3.4	-0.22
X69EC6		219.5	2.5	0.16	220.1	3.2	0.21
XNNMD7		213.9	-3.0	-0.19	225.5	8.7	0.56
ZBTTF3		234.0	17.1	1.08	227.5	10.7	0.69
ZKKCUB		192.0	-24.9	-1.57	192.0	-24.8	-1.59
ZQML24		211.0	-5.9	-0.37	215.0	-1.8	-0.12
ZWNYFD		191.0	-25.9	-1.64	206.0	-10.8	-0.69

Summary Statistics	
Grand Means	216.92 psi                      216.81 psi
Stnd Dev Btw Labs	15.82 psi                              15.59 psi
Statistics based on 78 of 85 reporting participants	

Summary Statistics in SI Units	
Grand Means	1.4956 MPa                      1.49 MPa
Stnd Dev Btw Labs	0.1091 MPa                              0.11 MPa
Statistics based on 78 of 85 reporting participants	

Samples B01-B02: Polyisoprene compound, batch #1 & B03-B04: Polyisoprene compound, batch #2

**Comments on Assigned Data Flags for Test #608**

- 34HQZQ (X) - Data for all samples are high. Possible Systematic Error.
- 8VE3CA (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group B01-B02.
- 9JDYKL (X) - Inconsistent in testing between samples.
- DLLVZX (X) - Data for all samples are low. Possible Systematic Error.
- EPLB4E (X) - Data for sample group B03-B04 are high.
- KMDAHH (X) - Data for sample group B01-B02 are high. Inconsistent within the determinations of sample group B01-B02.
- Q2FQVC (X) - Data for sample group B03-B04 are high.



# Rubber Interlaboratory Testing Program

Report #204

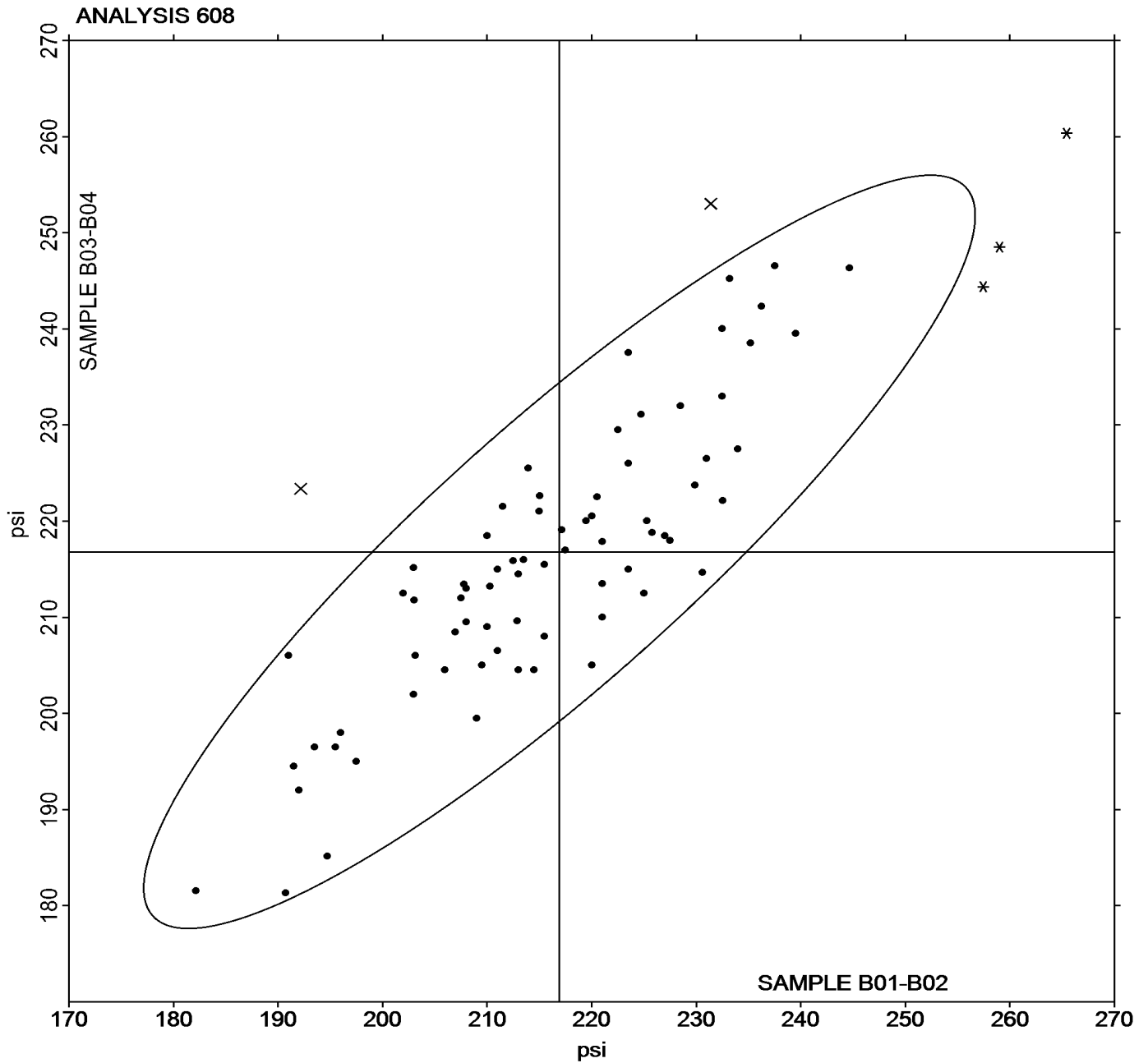
## Analysis 608

2nd Qtr 2020

### Stress at 100% Elongation (psi)

Grand Mean Sample **B01-B02** = 216.92 psi

Grand Mean Sample **B03-B04** = 216.81 psi





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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2HML22		47.00	-2.59	-1.79	46.50	-3.06	-2.03	BT
34HQZQ		49.50	-0.09	-0.06	50.00	0.44	0.29	BT
3B4JDC		49.00	-0.59	-0.41	49.00	-0.56	-0.37	BT
3BKXEU		49.50	-0.09	-0.06	49.50	-0.06	-0.04	HH
3UTZDY		51.40	1.81	1.25	50.55	0.99	0.66	BT
4MWHK9		51.85	2.26	1.56	52.60	3.04	2.02	BT
4WK97Z		47.30	-2.29	-1.58	46.70	-2.86	-1.90	BT
6D4LXX		51.00	1.41	0.97	51.00	1.44	0.96	BT
6HEPZT		51.45	1.86	1.29	51.60	2.04	1.35	XX
7L89EW		47.50	-2.09	-1.45	47.00	-2.56	-1.70	BT
7YW6GU		53.00	3.41	2.36	53.00	3.44	2.28	HH
86K3Q4		49.00	-0.59	-0.41	48.00	-1.56	-1.03	HH
8GX3MW		50.50	0.91	0.63	50.00	0.44	0.29	HH
8QZMN4	*	51.50	1.91	1.32	53.00	3.44	2.28	HH
8VE3CA		50.00	0.41	0.28	49.50	-0.06	-0.04	BT
8XLDAY		50.50	0.91	0.63	50.15	0.59	0.39	BT
92APEU		51.00	1.41	0.97	51.00	1.44	0.96	HH
99X3NU		48.65	-0.94	-0.65	48.80	-0.76	-0.50	BT
9EXQWL		50.00	0.41	0.28	50.50	0.94	0.62	BT
9G8R2T		50.00	0.41	0.28	49.50	-0.06	-0.04	HH
9JDYKL		50.00	0.41	0.28	50.00	0.44	0.29	HH
9LGU4N		50.35	0.76	0.52	50.15	0.59	0.39	BT
9MUGL3	*	48.50	-1.09	-0.75	50.00	0.44	0.29	HH
9PLDBW		49.00	-0.59	-0.41	48.50	-1.06	-0.70	BT
AZWE2M		50.35	0.76	0.52	49.80	0.24	0.16	BT
BGYBXR		51.00	1.41	0.97	50.50	0.94	0.62	BT
BNHGWJ		49.45	-0.14	-0.10	48.05	-1.51	-1.00	BT
BZCXLK		50.10	0.51	0.35	50.10	0.54	0.36	BT
CBUPTU		48.50	-1.09	-0.75	48.50	-1.06	-0.70	BT
CHTJK2		48.05	-1.54	-1.07	47.80	-1.76	-1.17	BT
CNT4HQ		51.00	1.41	0.97	51.00	1.44	0.96	XX
D3UPUT		49.45	-0.14	-0.10	49.50	-0.06	-0.04	BT
D636ZY		50.00	0.41	0.28	49.50	-0.06	-0.04	BT
DLLVZX		50.00	0.41	0.28	50.00	0.44	0.29	BT
DQ2BM4	X	55.00	5.41	3.74	55.50	5.94	3.94	BT
DXWDPF		49.50	-0.09	-0.06	49.50	-0.06	-0.04	BT
EELVZV		50.80	1.21	0.84	51.10	1.54	1.02	BT
EGPUBN		48.50	-1.09	-0.75	47.50	-2.06	-1.37	BT



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
EK64HZ		47.00	-2.59	-1.79	48.00	-1.56	-1.03	BT
EPLB4E		50.00	0.41	0.28	50.00	0.44	0.29	HH
EV7LYV		48.90	-0.69	-0.48	49.65	0.09	0.06	BT
F84P4P		48.50	-1.09	-0.75	47.50	-2.06	-1.37	BT
FCXJ2Q		49.50	-0.09	-0.06	49.50	-0.06	-0.04	HH
FF9WHP		46.95	-2.64	-1.83	47.60	-1.96	-1.30	BT
G7JB6D		48.50	-1.09	-0.75	48.50	-1.06	-0.70	BT
G8XUXN		49.50	-0.09	-0.06	49.20	-0.36	-0.24	BT
GWCQPN	*	46.50	-3.09	-2.14	45.50	-4.06	-2.69	BT
HC4PBW		52.55	2.96	2.05	52.50	2.94	1.95	BT
HFM3VJ		50.60	1.01	0.70	51.00	1.44	0.96	BT
JF3QNY		48.00	-1.59	-1.10	47.90	-1.66	-1.10	XX
JNVUXM		50.00	0.41	0.28	50.00	0.44	0.29	BT
K448TP		48.00	-1.59	-1.10	48.50	-1.06	-0.70	HH
KMDAHH		50.25	0.66	0.46	49.90	0.34	0.23	BT
KNNB6G		49.50	-0.09	-0.06	50.50	0.94	0.62	BT
MC9ZRB	*	53.25	3.66	2.53	54.00	4.44	2.95	HH
MD3PCR		49.50	-0.09	-0.06	50.00	0.44	0.29	HH
MECVBD		48.00	-1.59	-1.10	48.25	-1.31	-0.87	BT
MN2MX7	X	46.50	-3.09	-2.14	44.50	-5.06	-3.36	BT
MPCKBM		47.50	-2.09	-1.45	48.50	-1.06	-0.70	BT
MWUTYJ		48.25	-1.34	-0.93	48.65	-0.91	-0.60	BT
N7YXPF		50.00	0.41	0.28	50.00	0.44	0.29	BT
NDVYHD		50.65	1.06	0.73	50.85	1.29	0.86	HH
NLP846		50.85	1.26	0.87	50.90	1.34	0.89	BT
NMM9CH		50.00	0.41	0.28	50.00	0.44	0.29	HH
NQMLWL		50.00	0.41	0.28	50.30	0.74	0.49	BT
NVB9JE		49.00	-0.59	-0.41	49.00	-0.56	-0.37	BT
P6VYJC		47.95	-1.64	-1.14	47.85	-1.71	-1.13	BT
PMFPHB		49.75	0.16	0.11	49.50	-0.06	-0.04	HH
PQE7V6		50.00	0.41	0.28	50.00	0.44	0.29	HH
Q2FQVC		47.75	-1.84	-1.27	47.70	-1.86	-1.23	BT
RCU4QL		51.00	1.41	0.97	50.00	0.44	0.29	HH
RK4MTH		49.55	-0.04	-0.03	49.70	0.14	0.09	BT
RN7L4B		46.10	-3.49	-2.41	46.45	-3.11	-2.06	BT
RXANMM		52.25	2.66	1.84	51.95	2.39	1.59	BT
RYKH9E		50.00	0.41	0.28	50.00	0.44	0.29	HH





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

**Report #204**  
**2nd Qtr 2020**

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

Reading Time	Sample B01-B02 <i>Polyisoprene compound, batch #1</i>			Sample B03-B04 <i>Polyisoprene compound, batch #2</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Select from list below	51.45	0.00	1.86	51.60	0.00	2.04	1	1
Readings taken within 0 - 5 seconds	49.77	1.20	0.17	49.67	1.24	0.12	56	63
Readings taken at 5 seconds	48.46	1.53	-1.13	48.40	1.37	-1.16	10	11
Readings taken after 5+ seconds	48.38	0.85	-1.22	48.44	1.23	-1.12	4	5
Maximum hardness indicator used	49.99	1.11	0.39	49.97	1.22	0.41	10	10



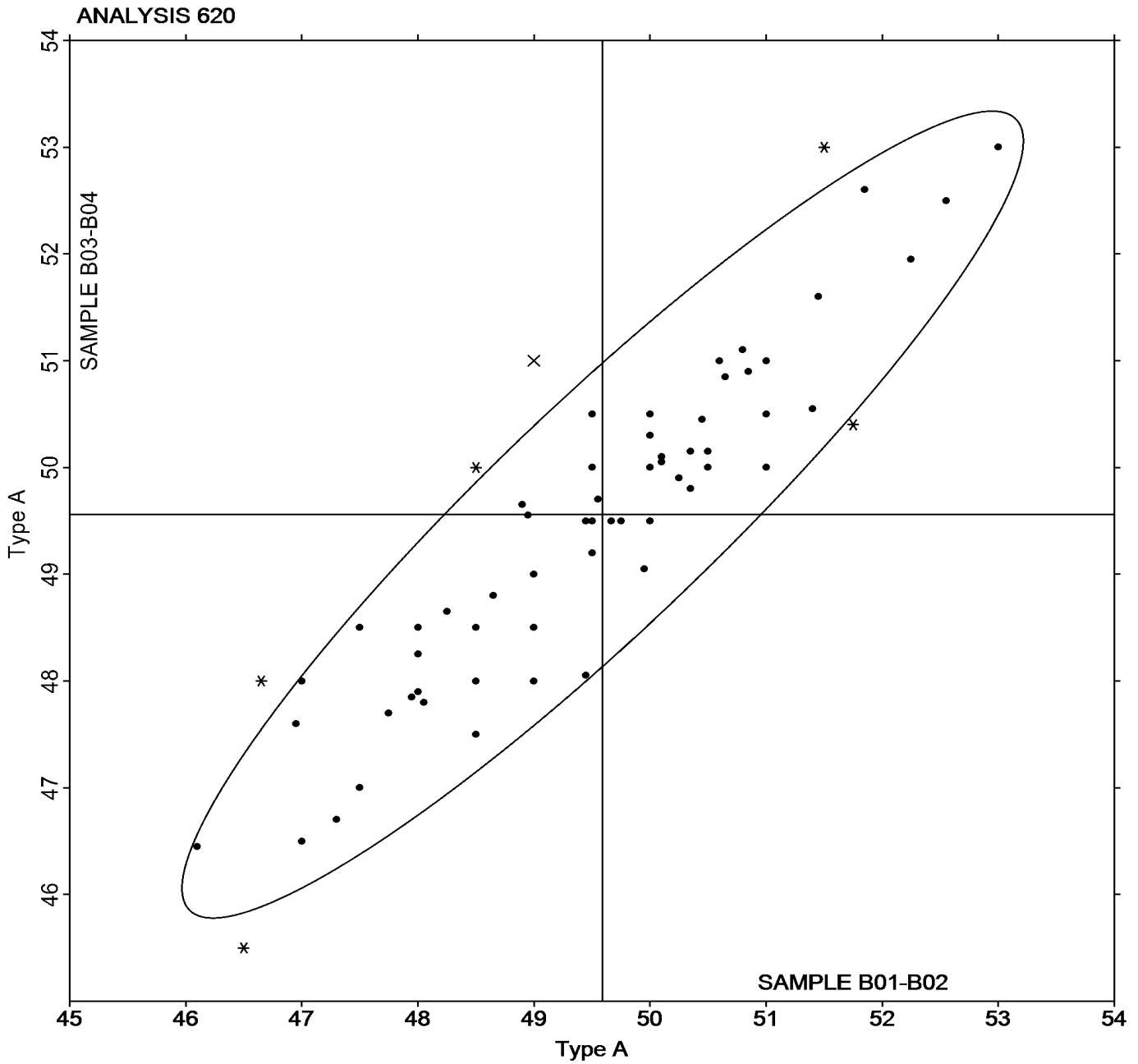


Rubber Interlaboratory Testing Program  
Analysis 620  
Hardness (Shore A/Type A)

Report #204  
2nd Qtr 2020

Grand Mean Sample B01-B02 = 49.592 Type A

Grand Mean Sample B03-B04 = 49.559 Type A





**Rubber Interlaboratory Testing Program**  
**Analysis 621**  
**Density**

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
34HQZQ	X	1.132	-0.005	-1.65	1.127	-0.010	-2.88
3B4JDC		1.134	-0.003	-0.94	1.131	-0.006	-1.73
3BKXEU		1.131	-0.007	-2.00	1.133	-0.005	-1.37
3UTZDY		1.138	0.001	0.34	1.139	0.001	0.44
4MWHK9		1.137	0.000	-0.05	1.137	0.000	0.06
6D4LXX		1.137	0.000	0.12	1.137	0.000	0.05
6HEPZT		1.135	-0.003	-0.78	1.136	-0.002	-0.46
7YW6GU		1.132	-0.005	-1.68	1.132	-0.005	-1.46
86K3Q4		1.136	-0.002	-0.47	1.138	0.001	0.29
8GX3MW	X	1.125	-0.013	-3.83	1.126	-0.012	-3.47
8VE3CA		1.136	-0.001	-0.32	1.133	-0.005	-1.37
92APEU		1.136	-0.002	-0.47	1.136	-0.002	-0.46
99X3NU		1.138	0.001	0.29	1.137	0.000	-0.01
9JDYKL		1.135	-0.002	-0.56	1.134	-0.003	-0.82
9LGU4N		1.141	0.004	1.33	1.142	0.005	1.46
9MUGL3		1.135	-0.002	-0.50	1.134	-0.003	-0.96
9PLDBW		1.137	-0.001	-0.17	1.136	-0.002	-0.46
AZWE2M		1.143	0.006	1.82	1.143	0.005	1.64
BGYBXR		1.131	-0.006	-1.72	1.131	-0.006	-1.82
BNHGWJ		1.135	-0.002	-0.62	1.138	0.000	0.14
BZCXLK		1.137	0.000	-0.01	1.138	0.001	0.30
CBUPTU		1.136	-0.002	-0.47	1.137	-0.001	-0.16
D3UPUT		1.137	0.000	-0.09	1.137	0.000	-0.07
D636ZY		1.138	0.001	0.29	1.137	-0.001	-0.16
DLLVZX		1.135	-0.002	-0.62	1.135	-0.002	-0.61
DXWDPF		1.143	0.005	1.67	1.142	0.005	1.49
EELVZV		1.138	0.001	0.29	1.138	0.000	0.14
EGPUBN		1.137	0.000	-0.01	1.136	-0.002	-0.46
EK64HZ		1.135	-0.002	-0.59	1.136	-0.001	-0.28
EPLB4E		1.137	0.000	-0.12	1.136	-0.001	-0.34
EV7LYV		1.142	0.005	1.41	1.142	0.005	1.49
FCXJ2Q		1.131	-0.007	-2.00	1.130	-0.007	-2.12
FF9WHP	*	1.137	0.000	-0.06	1.132	-0.005	-1.41
G7JB6D		1.136	-0.001	-0.32	1.136	-0.001	-0.31
G8XUXN		1.139	0.002	0.55	1.139	0.002	0.48
HC4PBW		1.135	-0.002	-0.61	1.136	-0.001	-0.31
HFM3VJ		1.137	0.000	-0.01	1.137	0.000	0.02
JABEUM		1.142	0.005	1.56	1.142	0.005	1.49



**Rubber Interlaboratory Testing Program**  
**Analysis 621**  
**Density**

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample B01-B02			Sample B03-B04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
JF3QNY		1.134	-0.004	-1.08	1.133	-0.005	-1.37
JNVUXM		1.137	-0.001	-0.17	1.140	0.002	0.74
K448TP		1.140	0.002	0.75	1.138	0.000	0.14
KMDAHH		1.137	0.000	0.03	1.136	-0.001	-0.18
MC9ZRB		1.135	-0.003	-0.78	1.136	-0.001	-0.31
MD3PCR		1.140	0.002	0.75	1.138	0.000	0.14
MECVBD		1.137	0.000	0.11	1.137	0.000	0.12
MN2MX7		1.136	-0.001	-0.32	1.136	-0.001	-0.31
MPCKBM		1.139	0.002	0.60	1.141	0.003	1.04
MWUTYJ		1.141	0.004	1.28	1.141	0.004	1.30
N7YXPF		1.139	0.002	0.60	1.140	0.003	0.89
NDVYHD		1.136	-0.001	-0.20	1.137	0.000	-0.13
NLP846		1.137	0.000	-0.12	1.137	0.000	-0.03
NMM9CH		1.134	-0.004	-1.08	1.132	-0.005	-1.52
NXNV4E		1.137	-0.001	-0.17	1.137	-0.001	-0.16
P6VYJC		1.142	0.005	1.51	1.141	0.004	1.19
PQE7V6		1.132	-0.005	-1.46	1.131	-0.006	-1.94
Q2FQVC	X	1.137	-0.001	-0.17	1.128	-0.010	-2.87
RK4MTH	*	1.141	0.004	1.10	1.137	0.000	-0.07
RN7L4B		1.140	0.002	0.75	1.140	0.002	0.74
RTGN77	X	1.118	-0.019	-5.81	1.125	-0.013	-3.77
RXANMM		1.141	0.004	1.21	1.141	0.004	1.19
RYKH9E		1.140	0.003	0.90	1.140	0.003	0.89
T9PPNE		1.141	0.004	1.21	1.140	0.003	0.89
U7GZYB		1.137	-0.001	-0.17	1.137	0.000	-0.01
UM6BLD		1.142	0.005	1.59	1.142	0.005	1.57
V623XX		1.142	0.005	1.51	1.142	0.005	1.49
VEARKA		1.133	-0.004	-1.17	1.135	-0.002	-0.51
W2DAYZ		1.140	0.003	0.89	1.141	0.004	1.28
WMEYYA		1.133	-0.004	-1.29	1.135	-0.002	-0.54
WW6K68		1.131	-0.007	-2.00	1.131	-0.006	-1.82
XNNMD7	*	1.133	-0.004	-1.23	1.137	0.000	-0.01
XV48W6		1.136	-0.001	-0.32	1.137	0.000	-0.01
ZBTTF3		1.138	0.000	0.14	1.139	0.001	0.44
ZKKCUB		1.136	-0.002	-0.47	1.137	0.000	-0.12
ZQML24	*	1.146	0.008	2.58	1.146	0.009	2.69



**Rubber Interlaboratory Testing Program**  
**Analysis 621**  
**Density**

**Report #204**  
**2nd Qtr 2020**

		Summary Statistics	
Grand Means	1.1370 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	1.1370 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	
Stnd Dev Btwn Labs	0.0033 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	0.0033 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	
Statistics based on 70 of 74 reporting participants			

Samples B01-B02: Polyisoprene compound, batch #1 & B03-B04: Polyisoprene compound, batch #2

**Comments on Assigned Data Flags for Test #621**

- 34HQZQ (X) - Data for sample group B03-B04 are low. Inconsistent within the determinations of sample group B01-B02.
- 8GX3MW (X) - Data for all samples are low. Possible Systematic Error.
- Q2FQVC (X) - Data for sample group B03-B04 are low. Inconsistent within the determinations of sample group B03-B04.
- RTGN77 (X) - Data for all samples are low. Possible Systematic Error.

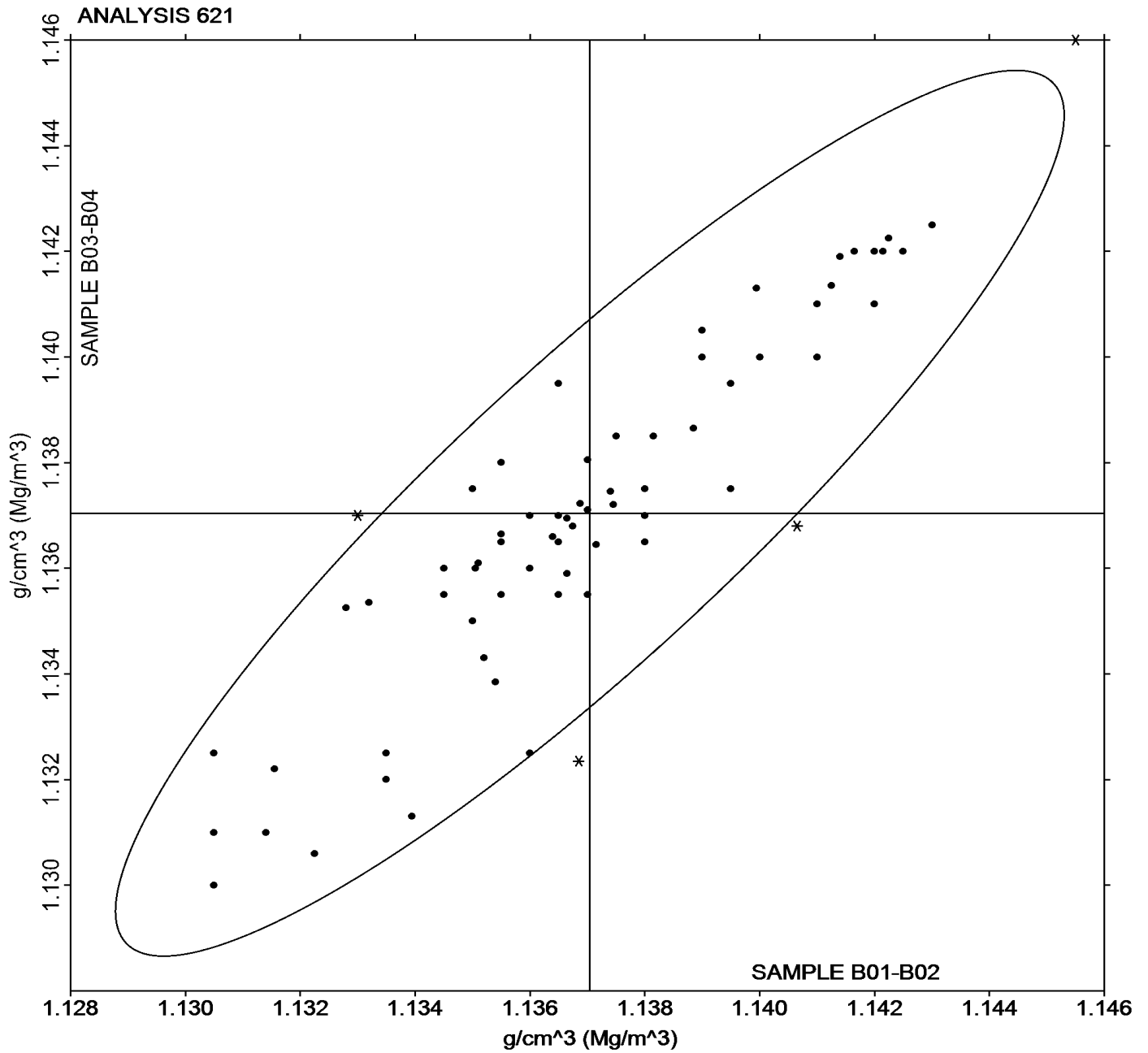


Rubber Interlaboratory Testing Program  
Analysis 621  
Density

Report #204  
2nd Qtr 2020

Grand Mean Sample **B01-B02** = 1.1370 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)

Grand Mean Sample **B03-B04** = 1.1370 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)





**Rubber Interlaboratory Testing Program**  
**Analysis 625**  
**Hardness (Shore D/Type D)**

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample HB01-HB02			Sample HB03-HB04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3TLK7T		78.50	3.25	1.43	87.50	3.07	1.65	XX
8GCNWX		77.90	2.65	1.17	84.90	0.47	0.25	HH
8XLDAY		73.95	-1.30	-0.57	83.80	-0.63	-0.34	BT
9EXQWL		75.00	-0.25	-0.11	85.00	0.57	0.31	XX
9MUGL3		78.00	2.75	1.21	87.25	2.82	1.51	HH
BDLN8T		70.95	-4.30	-1.89	81.15	-3.28	-1.76	XX
CHTJK2		71.75	-3.50	-1.54	81.40	-3.03	-1.63	BT
CWABPV		76.70	1.45	0.64	85.10	0.67	0.36	HH
HF424B		75.00	-0.25	-0.11	84.00	-0.43	-0.23	HH
JBMBZR		71.50	-3.75	-1.65	80.50	-3.93	-2.11	BT
JF3QNY		73.35	-1.90	-0.84	83.50	-0.93	-0.50	XX
JWNB4H		77.00	1.75	0.77	85.50	1.07	0.57	HH
PHNLRR		74.50	-0.75	-0.33	85.00	0.57	0.31	HH
RTGN77	X	57.50	-17.75	-7.82	60.00	-24.43	-13.12	XX
RYKH9E		76.50	1.25	0.55	85.00	0.57	0.31	HH
UM6BLD		75.80	0.55	0.24	84.35	-0.08	-0.04	BT
URXEEG		77.80	2.55	1.13	85.00	0.57	0.31	BT
VKR3RH		76.50	1.25	0.55	86.00	1.57	0.84	BT
VXLGX8		74.00	-1.25	-0.55	85.75	1.32	0.71	BT
ZTEGNC		75.00	-0.25	-0.11	83.50	-0.93	-0.50	BT

Grand Means		Summary Statistics	
	75.247 Type D		84.432 Type D
Std Dev Btwn Labs	2.269 Type D		1.862 Type D
Statistics based on 19 of 20 reporting participants			

Samples HB01-HB02: Hardness Disc, batch #1 & HB03-HB04: Hardness Disc, batch #2

**Comments on Assigned Data Flags for Test #625**

RTGN77 (X) - Extreme Data.

**Key to Instrument Codes Reported by Participants**

- BT Benchtop
- HH Handheld
- XX Specify Benchtop or Handheld Instrument

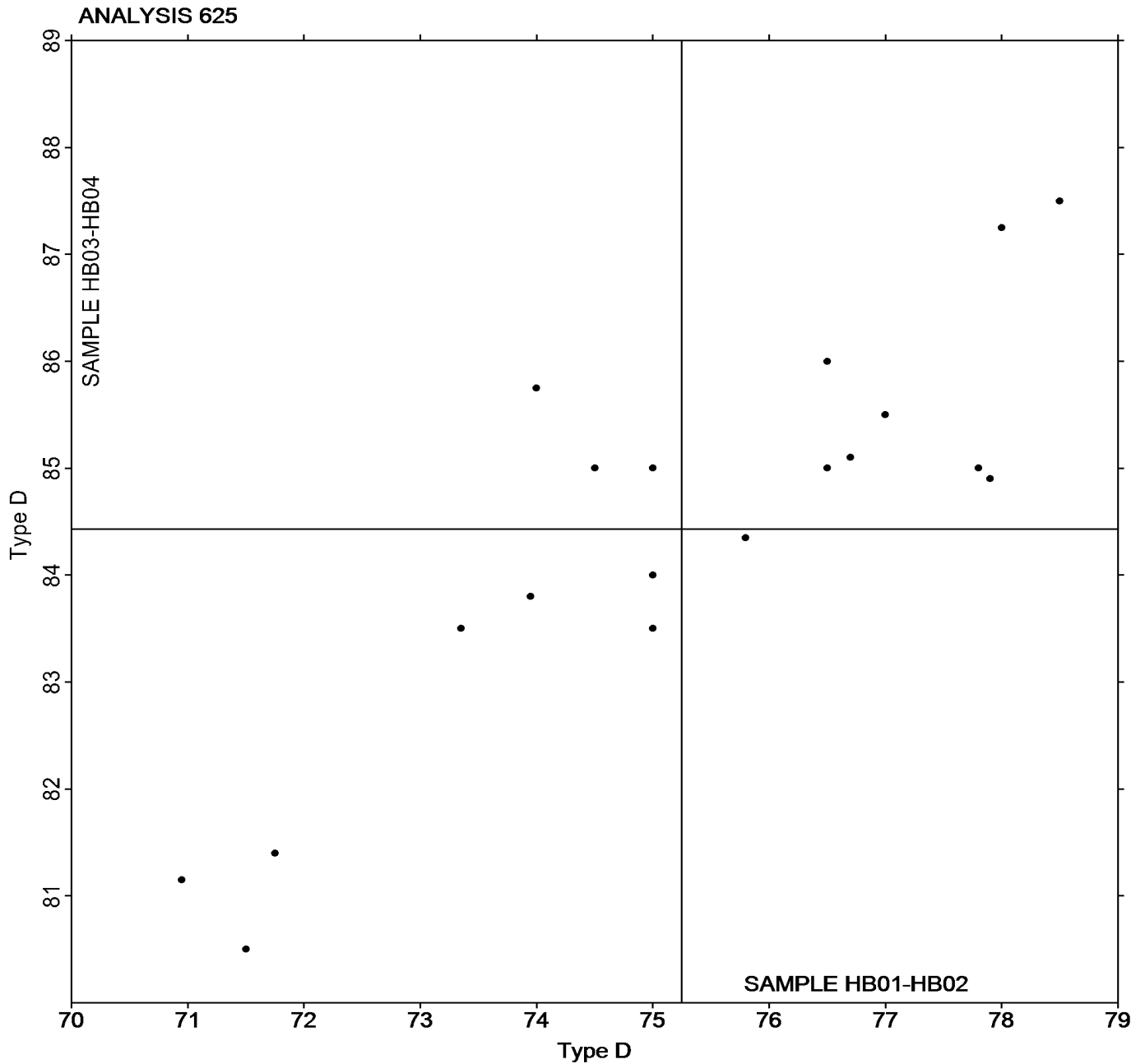


Rubber Interlaboratory Testing Program  
Analysis 625  
Hardness (Shore D/Type D)

Report #204  
2nd Qtr 2020

Grand Mean Sample **HB01-HB02** = 75.247 Type D

Grand Mean Sample **HB03-HB04** = 84.432 Type D



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



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 630

2nd Qtr 2020

### Tensile Strength: Precured vs. Lab-Cured Samples (psi)

WebCode	Data Flag	Sample B01-B02			Sample K01-K02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		3,099.5	-134.3	-0.92	2,986.0	39.7	0.22
3UTZDY		3,439.1	205.3	1.41	3,225.1	278.8	1.57
6HEPZT		3,340.5	106.7	0.73	3,053.0	106.7	0.60
8XLDAY		3,009.6	-224.3	-1.54	2,922.5	-23.8	-0.13
9PLDBW		3,357.5	123.7	0.85	2,970.5	24.2	0.14
AZWE2M		3,146.0	-87.8	-0.60	2,755.0	-191.3	-1.08
EK64HZ		3,155.0	-78.8	-0.54	2,953.6	7.3	0.04
EV7LYV		3,211.0	-22.8	-0.16	3,047.0	100.7	0.57
FCXJ2Q		3,150.5	-83.3	-0.57	2,906.0	-40.4	-0.23
G8XUXN	*	3,267.0	33.2	0.23	2,398.0	-548.3	-3.09
HC4PBW		3,329.0	95.2	0.65	2,974.5	28.2	0.16
JABEUM		3,146.2	-87.7	-0.60	3,019.7	73.3	0.41
K448TP		3,525.0	291.2	2.00	3,085.0	138.7	0.78
KNNB6G		3,252.5	18.7	0.13	3,113.5	167.2	0.94
MC9ZRB		3,126.3	-107.5	-0.74	2,813.0	-133.3	-0.75
MD3PCR		3,409.9	176.0	1.21	2,704.3	-242.0	-1.36
MN2MX7		3,380.8	146.9	1.01	2,955.7	9.4	0.05
MPCKBM		3,145.5	-88.3	-0.61	3,076.0	129.7	0.73
NDVYHD		3,180.4	-53.5	-0.37	2,769.7	-176.6	-0.99
RCU4QL		3,165.5	-68.4	-0.47	2,783.3	-163.0	-0.92
RK4MTH		3,408.5	174.7	1.20	3,235.0	288.7	1.63
UM6BLD		3,043.2	-190.6	-1.31	2,921.0	-25.4	-0.14
W2DAYZ		2,920.0	-313.8	-2.15	2,860.0	-86.3	-0.49
WMEYYA		3,255.3	21.5	0.15	3,202.7	256.4	1.44
X69EC6		3,404.7	170.8	1.17	2,884.6	-61.7	-0.35
XNNMD7		3,130.7	-103.2	-0.71	3,046.5	100.2	0.56
ZQML24		3,314.5	80.7	0.55	2,889.0	-57.3	-0.32

Grand Means		Summary Statistics	
	3,233.83 psi		2,946.30 psi
Stnd Dev Btwn Labs	145.86 psi		177.55 psi
Statistics based on 27 of 27 reporting participants			





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

**Report #204**  
**2nd Qtr 2020**

		Summary Statistics in SI Units	
Grand Means	22.296 MPa	20.31	MPa
Std Dev Btwn Labs	1.006 MPa	1.22	MPa
Statistics based on 27 of 27 reporting participants			

Samples B01-B02: Polyisoprene compound, batch #1 & K01-K02: Polyisoprene compound, batch #1

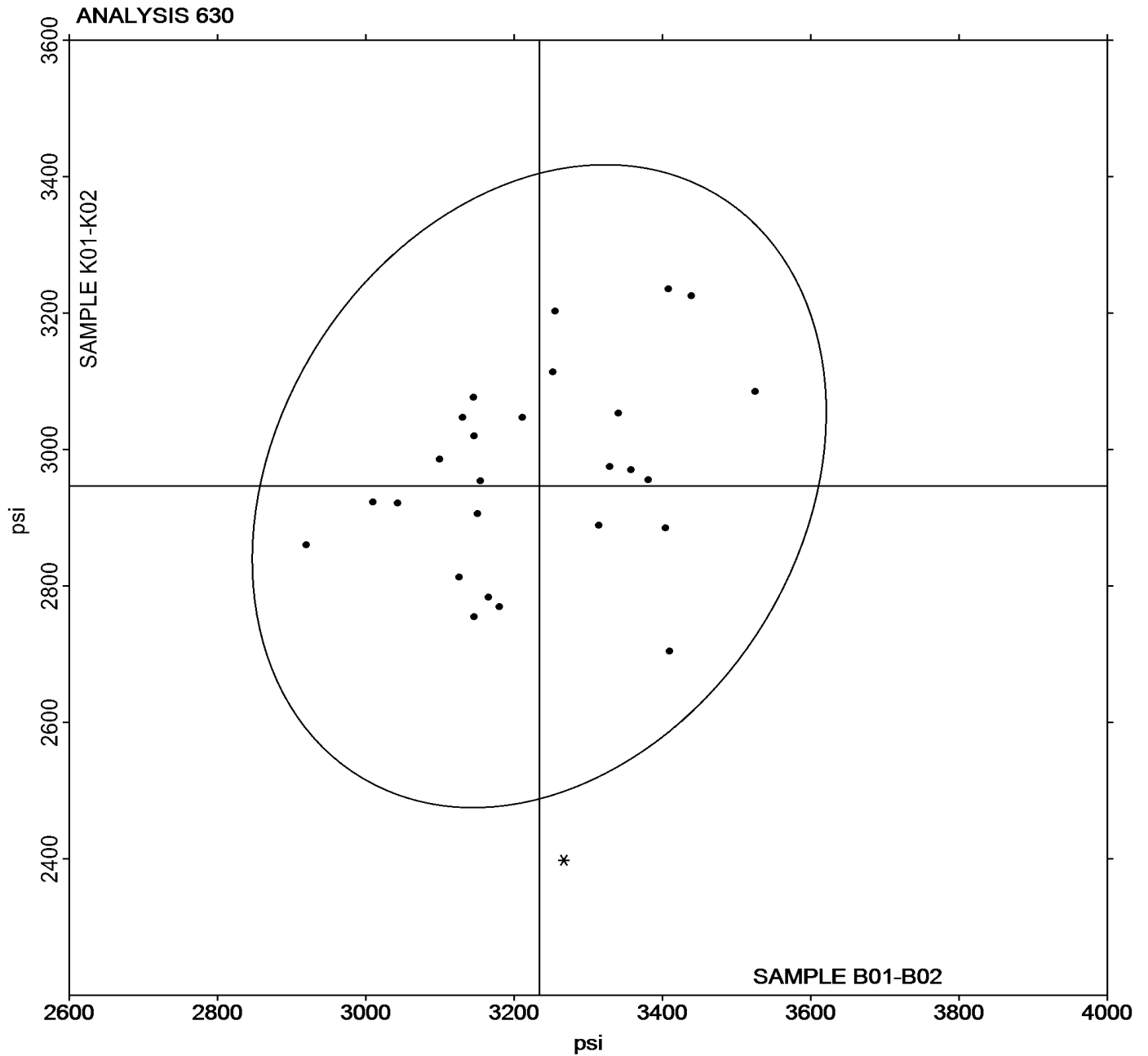


**Rubber Interlaboratory Testing Program**  
**Analysis 630**  
**Tensile Strength: Precured vs. Lab-Cured Samples (psi)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **B01-B02** = 3,233.83 psi

Grand Mean Sample **K01-K02** = 2,946.30 psi





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 631

2nd Qtr 2020

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

WebCode	Data Flag	Sample B01-B02			Sample K01-K02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		571.7	-55.3	-1.71	529.3	-64.8	-1.83
3UTZDY		572.5	-54.4	-1.68	537.5	-56.6	-1.59
6HEPZT		646.5	19.6	0.60	606.0	11.9	0.34
8XLDAY		590.7	-36.2	-1.12	576.6	-17.5	-0.49
9PLDBW		631.5	4.6	0.14	586.0	-8.1	-0.23
AZWE2M		670.0	43.1	1.33	638.5	44.4	1.25
EK64HZ		647.0	20.1	0.62	617.5	23.4	0.66
EV7LYV		646.5	19.6	0.60	596.5	2.4	0.07
FCXJ2Q		631.6	4.6	0.14	616.5	22.4	0.63
G8XUXN		632.5	5.6	0.17	609.0	14.9	0.42
HC4PBW		621.0	-5.9	-0.18	575.0	-19.1	-0.54
JABEUM		613.5	-13.4	-0.42	576.0	-18.1	-0.51
K448TP		624.5	-2.4	-0.08	576.5	-17.6	-0.49
KNNB6G		629.5	2.6	0.08	588.5	-5.6	-0.16
MC9ZRB		575.0	-51.9	-1.60	553.9	-40.2	-1.13
MD3PCR		675.2	48.3	1.49	650.6	56.5	1.59
MN2MX7	*	715.6	88.7	2.74	686.5	92.4	2.60
MPCKBM		612.5	-14.4	-0.45	582.0	-12.1	-0.34
NDVYHD		630.0	3.0	0.09	601.2	7.1	0.20
RCU4QL		626.5	-0.4	-0.01	585.5	-8.6	-0.24
RK4MTH		641.5	14.6	0.45	611.5	17.4	0.49
UM6BLD		596.5	-30.4	-0.94	574.5	-19.6	-0.55
W2DAYZ		662.0	35.1	1.08	657.0	62.9	1.77
WMEYYA		629.5	2.6	0.08	600.5	6.4	0.18
X69EC6		620.2	-6.8	-0.21	579.6	-14.5	-0.41
XNNMD7		596.0	-30.9	-0.96	575.5	-18.6	-0.52
ZQML24		618.0	-8.9	-0.28	552.5	-41.6	-1.17

		Summary Statistics	
Grand Means	626.94 percent	594.08 percent	
Std Dev Btwn Labs	32.36 percent	35.51 percent	
Statistics based on 27 of 27 reporting participants			

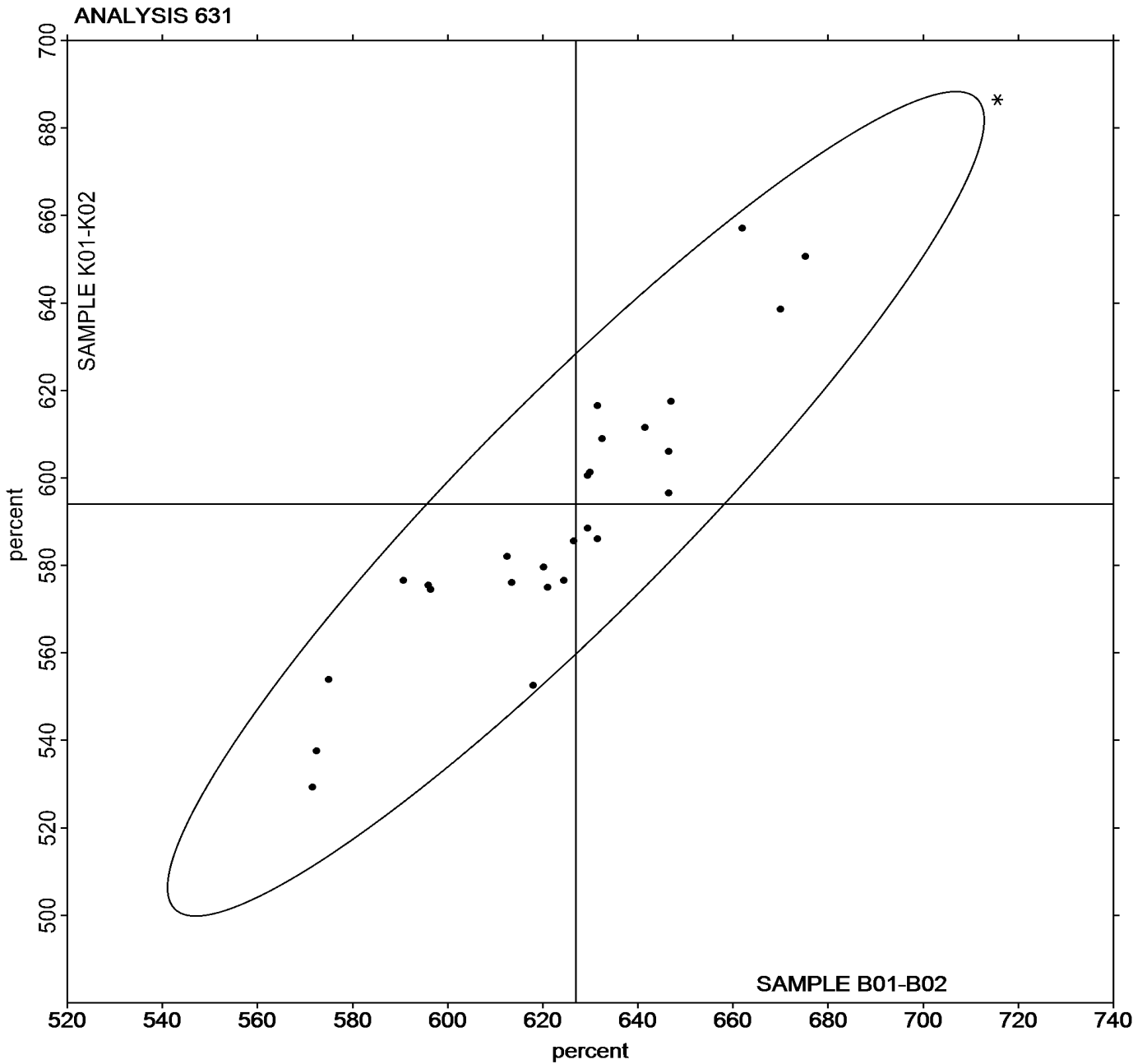
Samples B01-B02: Polyisoprene compound, batch #1 & K01-K02: Polyisoprene compound, batch #1



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

Grand Mean Sample B01-B02 = 626.94 percent

Grand Mean Sample K01-K02 = 594.08 percent





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 632

2nd Qtr 2020

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

WebCode	Data Flag	Sample B01-B02			Sample K01-K02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		1,071.0	126.9	1.80	1,236.2	290.9	2.31
3UTZDY		1,106.1	162.1	2.29	1,191.2	245.9	1.95
6HEPZT		928.5	-15.5	-0.22	923.5	-21.8	-0.17
8XLDAY		929.0	-15.0	-0.21	964.5	19.2	0.15
9PLDBW		970.0	26.0	0.37	945.0	-0.3	0.00
AZWE2M		813.5	-130.5	-1.85	792.0	-153.3	-1.22
EK64HZ		887.0	-57.0	-0.81	971.1	25.8	0.20
EV7LYV		901.5	-42.5	-0.60	1,017.5	72.2	0.57
FCXJ2Q		882.5	-61.5	-0.87	835.1	-110.2	-0.87
G8XUXN	*	960.5	16.5	0.23	672.0	-273.3	-2.17
HC4PBW		1,008.5	64.5	0.91	1,036.5	91.2	0.72
JABEUM		958.7	14.7	0.21	981.1	35.7	0.28
K448TP		1,028.5	84.5	1.20	1,030.5	85.2	0.68
KNNB6G		954.0	10.0	0.14	987.5	42.2	0.33
MC9ZRB		1,034.9	90.9	1.29	994.2	48.9	0.39
MD3PCR		885.5	-58.5	-0.83	735.3	-210.0	-1.67
MN2MX7		808.2	-135.9	-1.92	692.4	-252.9	-2.01
MPCKBM		925.5	-18.5	-0.26	1,009.0	63.7	0.50
NDVYHD		920.9	-23.1	-0.33	968.0	22.6	0.18
RCU4QL		976.1	32.1	0.45	860.8	-84.5	-0.67
RK4MTH		926.0	-18.0	-0.25	941.0	-4.3	-0.03
UM6BLD		925.2	-18.8	-0.27	930.4	-15.0	-0.12
W2DAYZ		884.6	-59.4	-0.84	912.5	-32.8	-0.26
WMEYYA		881.5	-62.5	-0.88	991.5	46.2	0.37
X69EC6		1,030.3	86.3	1.22	925.3	-20.0	-0.16
XNNMD7		966.0	21.9	0.31	1,026.9	81.5	0.65
ZQML24		924.5	-19.5	-0.28	953.0	7.7	0.06

Grand Means		Summary Statistics	
	944.01 psi		945.33 psi
Std Dev Btwn Labs	70.65 psi		126.11 psi
Statistics based on 27 of 27 reporting participants			



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 632

2nd Qtr 2020

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

#### Summary Statistics in SI Units

Grand Means

6.5087 MPa

6.52 MPa

Std Dev Btwn Labs

0.4871 MPa

0.87 MPa

Statistics based on 27 of 27 reporting participants

Samples B01-B02: Polyisoprene compound, batch #1 & K01-K02: Polyisoprene compound, batch #1



# Rubber Interlaboratory Testing Program

Report #204

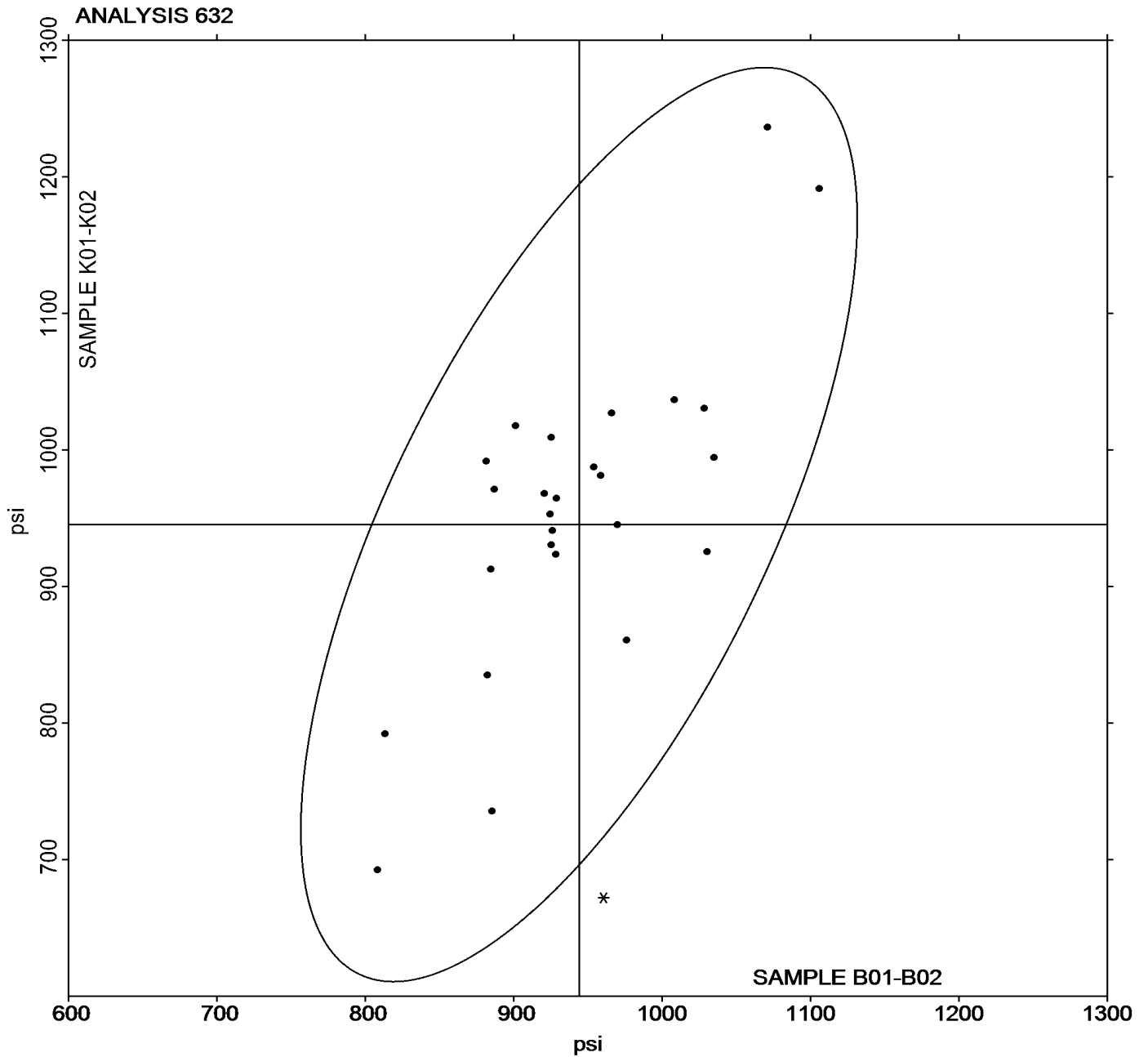
## Analysis 632

2nd Qtr 2020

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

Grand Mean Sample **B01-B02** = 944.01 psi

Grand Mean Sample **K01-K02** = 945.33 psi





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 633

2nd Qtr 2020

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

WebCode	Data Flag	Sample B01-B02			Sample K01-K02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		235.2	19.3	1.47	295.5	71.7	2.50
3UTZDY		232.5	16.6	1.27	257.2	33.4	1.17
6HEPZT		223.5	7.6	0.58	233.0	9.2	0.32
8XLDAY		203.1	-12.9	-0.98	225.5	1.7	0.06
9PLDBW		220.0	4.1	0.31	217.5	-6.3	-0.22
AZWE2M		196.0	-19.9	-1.52	193.5	-30.3	-1.06
EK64HZ		225.8	9.9	0.75	257.6	33.8	1.18
EV7LYV		211.0	-4.9	-0.37	239.0	15.2	0.53
FCXJ2Q		215.0	-0.9	-0.07	210.4	-13.4	-0.47
G8XUXN	*	211.0	-4.9	-0.37	153.5	-70.3	-2.46
HC4PBW		225.0	9.1	0.69	229.5	5.7	0.20
JABEUM		212.5	-3.4	-0.26	223.0	-0.8	-0.03
K448TP		223.5	7.6	0.58	233.0	9.2	0.32
KNNB6G		217.5	1.6	0.12	231.0	7.2	0.25
MC9ZRB		233.2	17.3	1.32	234.0	10.2	0.36
MD3PCR		190.7	-25.2	-1.92	162.4	-61.4	-2.14
MN2MX7		194.7	-21.2	-1.61	184.6	-39.2	-1.37
MPCKBM		215.5	-0.4	-0.03	234.5	10.7	0.37
NDVYHD		224.8	8.8	0.67	225.9	2.1	0.07
RCU4QL		230.6	14.7	1.12	209.6	-14.2	-0.50
RK4MTH		210.0	-5.9	-0.45	217.5	-6.3	-0.22
UM6BLD		203.2	-12.8	-0.97	214.5	-9.3	-0.33
W2DAYZ		237.5	21.6	1.65	259.6	35.8	1.25
WMEYYA		193.5	-22.4	-1.71	228.0	4.2	0.15
X69EC6		219.5	3.5	0.27	215.8	-8.0	-0.28
XNNMD7		213.9	-2.0	-0.15	235.0	11.2	0.39
ZQML24		211.0	-4.9	-0.37	222.0	-1.8	-0.06

Grand Means		Summary Statistics	
	215.92 psi		223.80 psi
Stnd Dev Btwn Labs	13.11 psi		28.63 psi
Statistics based on 27 of 27 reporting participants			





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 633

2nd Qtr 2020

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

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#### Summary Statistics in SI Units

Grand Means

1.4887 MPa

1.54 MPa

Std Dev Btwn Labs

0.0904 MPa

0.20 MPa

Statistics based on 27 of 27 reporting participants

Samples B01-B02: Polyisoprene compound, batch #1 & K01-K02: Polyisoprene compound, batch #1



# Rubber Interlaboratory Testing Program

Report #204

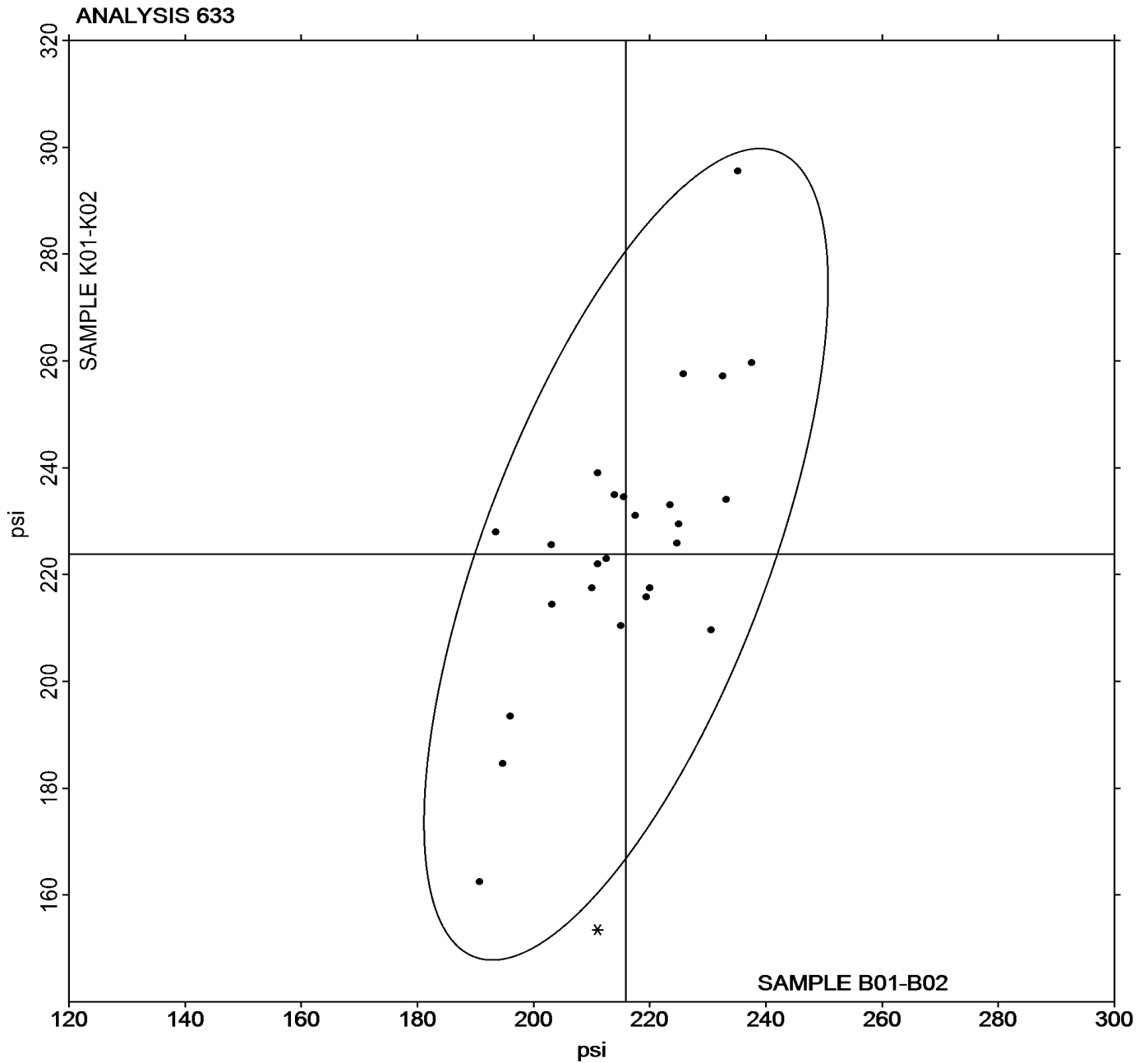
## Analysis 633

2nd Qtr 2020

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

Grand Mean Sample **B01-B02** = 215.92 psi

Grand Mean Sample **K01-K02** = 223.80 psi





**Rubber Interlaboratory Testing Program**  
**Analysis 635**  
**Compression Set Method B**

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample O01			Sample O02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CHQYT		40.43	4.38	1.03	39.83	3.30	0.82
7YW6GU		33.67	-2.39	-0.56	34.67	-1.87	-0.46
92APEU		37.33	1.28	0.30	36.67	0.13	0.03
99X3NU		42.26	6.21	1.46	43.02	6.48	1.60
9PLDBW		35.33	-0.72	-0.17	35.33	-1.20	-0.30
BBW3TJ		34.56	-1.50	-0.35	35.31	-1.23	-0.30
BNHGWJ		45.33	9.28	2.19	44.67	8.13	2.01
BZCXLK		33.33	-2.72	-0.64	34.33	-2.20	-0.55
CBUPTU	*	47.80	11.75	2.77	47.97	11.43	2.83
CEU2PU		31.67	-4.39	-1.03	32.13	-4.40	-1.09
CHTJK2		39.13	3.08	0.73	39.03	2.50	0.62
D3UPUT		32.07	-3.98	-0.94	31.05	-5.49	-1.36
EELVZV		29.33	-6.72	-1.58	30.00	-6.54	-1.62
G8XUXN		39.67	3.61	0.85	39.67	3.13	0.77
HC4PBW		36.14	0.09	0.02	38.19	1.66	0.41
HFM3VJ		35.00	-1.05	-0.25	35.33	-1.20	-0.30
JK9JHU		33.87	-2.18	-0.51	33.43	-3.11	-0.77
N7YXPF		33.67	-2.39	-0.56	35.00	-1.54	-0.38
NDVYHD	*	32.43	-3.62	-0.85	30.23	-6.30	-1.56
NLP846		33.00	-3.05	-0.72	35.00	-1.54	-0.38
T9PPNE		34.97	-1.09	-0.26	35.03	-1.50	-0.37
UM6BLD		36.93	0.87	0.21	36.67	0.13	0.03
VEARKA		33.93	-2.12	-0.50	35.93	-0.60	-0.15
W7V3JF		32.00	-4.05	-0.95	35.00	-1.54	-0.38
WMEYYA		37.05	0.99	0.23	38.32	1.78	0.44
XV48W6		32.00	-4.05	-0.95	35.33	-1.20	-0.30
ZBTTF3		37.92	1.87	0.44	37.87	1.33	0.33
ZET6C3		38.67	2.61	0.62	38.00	1.46	0.36

		Summary Statistics	
Grand Means	36.053 % Compression	36.536 % Compression	
Std Dev Btwn Labs	4.246 % Compression	4.042 % Compression	
Statistics based on 28 of 28 reporting participants			

Samples O01: EPDM compound, batch #1 & O02: EPDM compound, batch #2

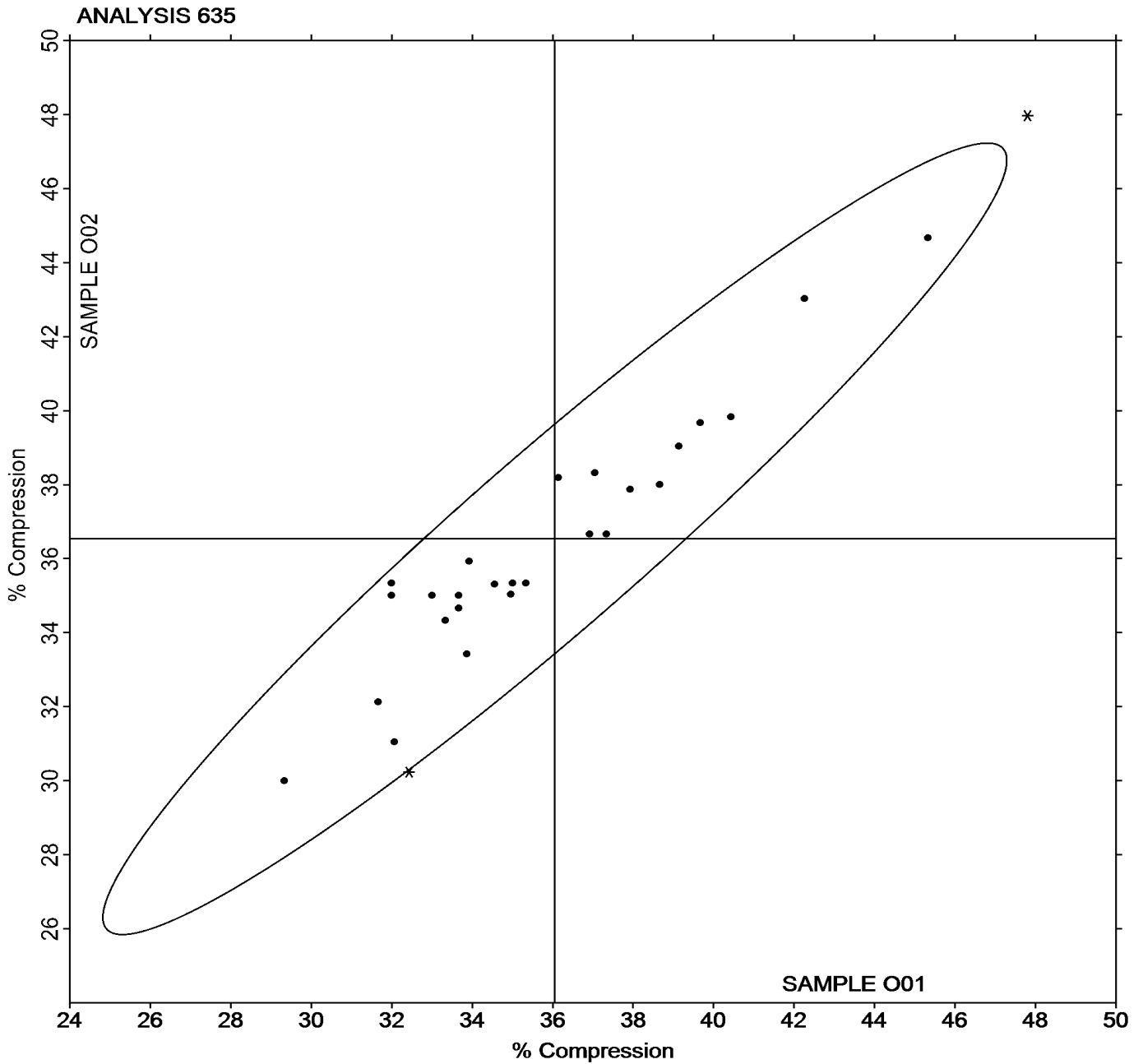


**Rubber Interlaboratory Testing Program**  
**Analysis 635**  
**Compression Set Method B**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **O01** = 36.053 % Compression

Grand Mean Sample **O02** = 36.536 % Compression





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 660

2nd Qtr 2020

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

WebCode	Data Flag	Sample T01-T02			Sample T03-T04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3BKXEU		46.22	1.71	1.65	55.40	1.27	1.12	MR
3UTZDY		43.90	-0.61	-0.58	53.63	-0.49	-0.44	MR
6HEPZT		44.57	0.06	0.06	53.83	-0.29	-0.26	XX
6Q9UTU		44.57	0.06	0.06	54.47	0.34	0.30	MR
86K3Q4		44.92	0.41	0.40	54.80	0.67	0.59	MR
89HJ4X		44.15	-0.36	-0.34	53.30	-0.82	-0.73	MV
8XLDAY		44.10	-0.41	-0.39	53.20	-0.93	-0.82	MR
92APEU		43.43	-1.08	-1.04	53.22	-0.91	-0.80	MP
AZWE2M		44.83	0.33	0.32	53.83	-0.29	-0.26	MV
BGYBXR		44.68	0.17	0.17	54.19	0.06	0.06	MR
CBUPTU		44.24	-0.27	-0.26	54.34	0.21	0.18	MR
D7U2PR		44.38	-0.12	-0.12	54.80	0.67	0.59	MR
DQ34NX		43.82	-0.69	-0.66	54.10	-0.03	-0.02	MR
EELVZV	*	41.87	-2.64	-2.54	51.08	-3.04	-2.69	MR
EK64HZ		45.28	0.77	0.74	56.27	2.15	1.90	XX
HC4PBW		44.77	0.26	0.25	53.58	-0.55	-0.49	MV
JABEUM		45.23	0.73	0.70	54.88	0.76	0.67	MR
K448TP		44.30	-0.21	-0.20	53.40	-0.73	-0.64	MR
KNNB6G		43.92	-0.59	-0.57	54.10	-0.03	-0.02	MR
M8GRPP		43.97	-0.54	-0.52	54.22	0.09	0.08	MR
MC9ZRB	M	44.22	-0.29	-0.28	No data reported for this sample			MR
MN2MX7		44.72	0.21	0.20	54.23	0.11	0.09	MR
MPCKBM		44.64	0.13	0.13	55.02	0.89	0.78	MV
N7YXPF		44.95	0.44	0.43	53.85	-0.28	-0.25	MR
NMM9CH	X	44.27	-0.24	-0.23	56.34	2.22	1.96	MR
NQMLWL		42.60	-1.91	-1.84	51.40	-2.73	-2.41	MR
PMFPHB		44.11	-0.40	-0.38	54.84	0.71	0.63	MR
QAAYF4		47.02	2.52	2.43	56.29	2.17	1.91	TA
RCU4QL		45.38	0.88	0.84	55.06	0.93	0.82	MV
RK4MTH		43.51	-0.99	-0.96	52.85	-1.28	-1.13	MR
RTGN77		42.57	-1.94	-1.86	52.73	-1.39	-1.23	MV
TFBUC9		44.72	0.21	0.20	54.48	0.36	0.31	MR
UGYL2J		44.73	0.23	0.22	53.37	-0.76	-0.67	MR
W2DAYZ		45.69	1.18	1.14	56.01	1.88	1.66	MZ
WCUUJW		45.85	1.34	1.30	55.10	0.97	0.86	MR
WMEYYA		45.62	1.12	1.08	54.39	0.26	0.23	ML
WW6K68		43.29	-1.21	-1.17	53.51	-0.62	-0.55	MV
XNNMD7		45.67	1.16	1.12	54.82	0.69	0.61	MR



**Rubber Interlaboratory Testing Program**  
**Analysis 660**  
**Mooney Viscosity: 4-minute readings (ML 1 + 4)**

**Report #204**  
**2nd Qtr 2020**

		Summary Statistics	
Grand Means	44.505 ML 1 + 4	54.128 ML 1 + 4	
Stnd Dev Btwn Labs	1.038 ML 1 + 4	1.131 ML 1 + 4	
Statistics based on 36 of 38 reporting participants			

Samples T01-T02: NBR & T03-T04: Butyl

**Comments on Assigned Data Flags for Test #660**

- MC9ZRB (M) - Participant did not submit data for sample group .
- NMM9CH (X) - Inconsistent in testing between samples.

**Key to Instrument Codes Reported by Participants**

- |   |  |
|---|--|
| <b>ML</b> Alpha Technologies/Monsanto model not specified | <b>MP</b> Monsanto Compact Mooney Viscometer |
| <b>MR</b> Alpha Technologies Model MV2000/MV2000E         | <b>MV</b> MonTech                            |
| <b>MZ</b> Rebuilt Monsanto Mooney Viscometer              | <b>TA</b> TA Instruments (any model)         |
| <b>XX</b> Instrument make/model not specified by lab      |  |

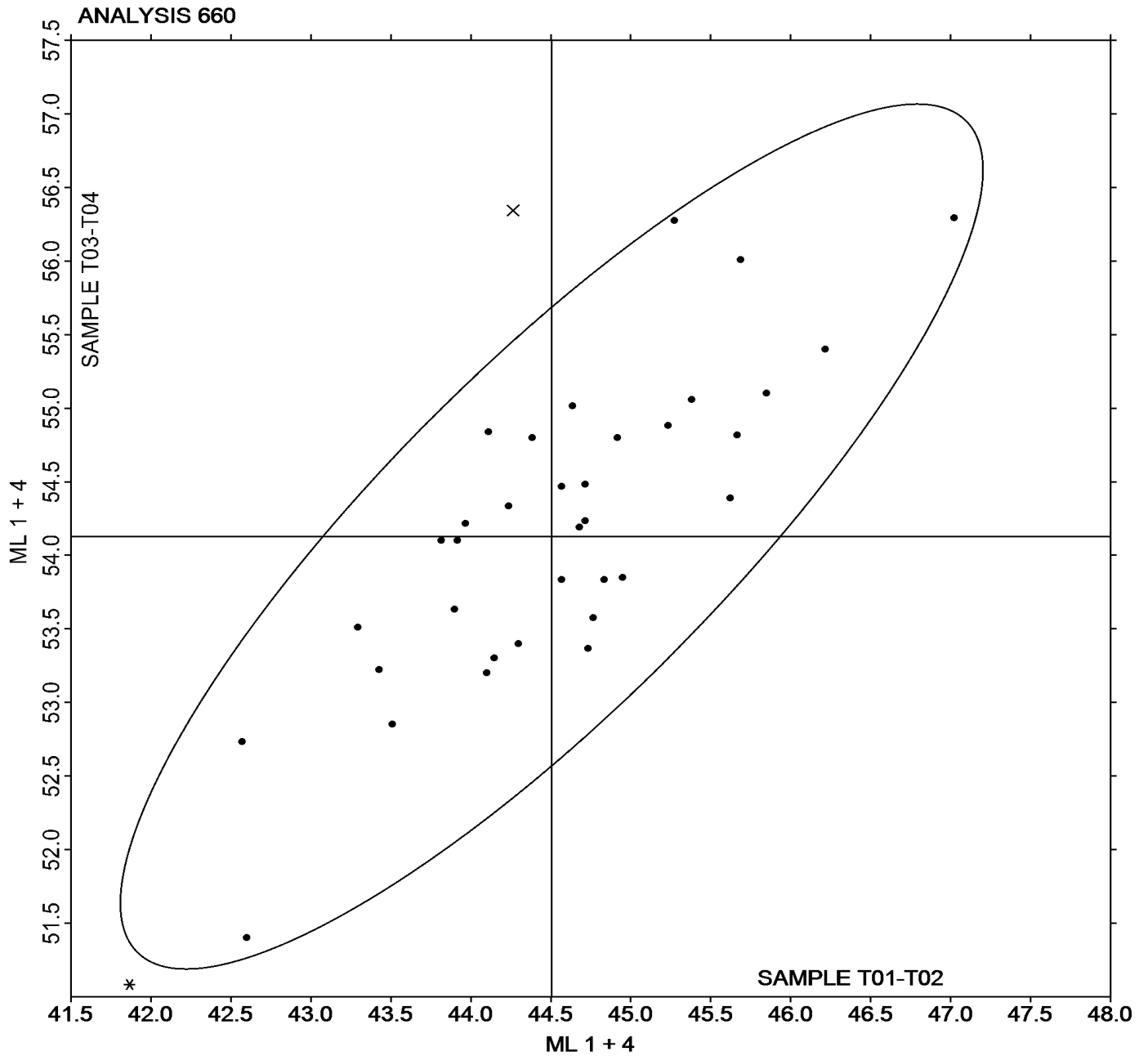


**Rubber Interlaboratory Testing Program**  
**Analysis 660**  
**Mooney Viscosity: 4-minute readings (ML 1 + 4)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **T01-T02** = 44.505 ML 1 + 4

Grand Mean Sample **T03-T04** = 54.128 ML 1 + 4





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 661

2nd Qtr 2020

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

WebCode	Data Flag	Sample T01-T02			Sample T03-T04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3BKXEU		46.22	1.78	2.09	53.00	1.31	1.44	MR
3UTZDY		43.90	-0.53	-0.63	50.70	-0.99	-1.10	MR
6HEPZT		44.57	0.13	0.15	51.25	-0.44	-0.49	XX
86K3Q4		44.92	0.48	0.57	52.20	0.51	0.56	MR
89HJ4X		44.15	-0.29	-0.34	52.00	0.31	0.34	MV
8XLDAY		44.10	-0.33	-0.39	50.83	-0.86	-0.95	MR
92APEU		43.43	-1.01	-1.18	50.24	-1.46	-1.61	MP
AZWE2M		44.83	0.40	0.47	51.60	-0.09	-0.10	MV
BGYBXR		44.68	0.25	0.29	51.98	0.28	0.31	MR
CBUPTU		44.24	-0.20	-0.23	51.97	0.27	0.30	MR
D7U2PR		44.38	-0.05	-0.06	52.35	0.66	0.73	MR
DQ34NX		43.82	-0.62	-0.73	51.28	-0.41	-0.45	MR
EELVZV	X	41.87	-2.57	-3.02	51.58	-0.11	-0.12	MR
EK64HZ		45.28	0.84	0.99	52.32	0.62	0.69	XX
HC4PBW		44.77	0.33	0.39	51.37	-0.32	-0.36	MV
JABEUM		45.23	0.80	0.94	52.45	0.76	0.84	MR
K448TP		44.30	-0.13	-0.16	50.69	-1.00	-1.11	MP
KNNB6G		43.92	-0.52	-0.61	51.75	0.06	0.06	MR
M8GRPP		43.97	-0.47	-0.55	51.47	-0.23	-0.25	MR
MC9ZRB		44.22	-0.22	-0.25	51.78	0.08	0.09	MR
MN2MX7		44.72	0.28	0.33	51.90	0.21	0.23	MR
MPCKBM		44.64	0.20	0.24	52.11	0.42	0.46	MV
N7YXPF		44.95	0.52	0.60	51.47	-0.23	-0.25	MR
NMM9CH		44.27	-0.17	-0.20	53.03	1.33	1.48	MR
NQMLWL	*	42.60	-1.83	-2.15	49.08	-2.61	-2.89	MR
PMFPHB		44.11	-0.32	-0.38	52.47	0.77	0.86	MR
QAAYF4	X	47.02	2.59	3.04	58.15	6.45	7.13	TA
RCU4QL		45.38	0.95	1.11	52.86	1.17	1.29	MV
RK4MTH		43.51	-0.92	-1.08	50.64	-1.06	-1.17	MR
RTGN77		42.57	-1.86	-2.19	50.69	-1.00	-1.11	MV
W2DAYZ		45.69	1.25	1.47	53.49	1.79	1.98	MZ
WCUUJW	X	45.85	1.42	1.66	56.35	4.66	5.15	MR
WMEYYA		45.62	1.19	1.40	51.94	0.24	0.27	ML
WW6K68		43.29	-1.14	-1.34	51.41	-0.29	-0.32	MV
XNNMD7		45.67	1.23	1.45	51.92	0.22	0.25	MR





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 661

2nd Qtr 2020

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

		Summary Statistics	
Grand Means	44.435 ML 1 + 8	51.694 ML 1 + 8	
Stnd Dev Btwn Labs	0.852 ML 1 + 8	0.904 ML 1 + 8	
Statistics based on 32 of 35 reporting participants			

Samples T01-T02: NBR & T03-T04: Butyl

#### Comments on Assigned Data Flags for Test #661

EELVZV (X) - Data for sample group T01-T02 are low. Inconsistent within the determinations of sample group T03-T04.

QAAYF4 (X) - Data for all samples are high. Possible Systematic Error.

WCUUJW (X) - Data for sample group T03-T04 are high.

#### Key to Instrument Codes Reported by Participants

<b>ML</b>	Alpha Technologies/Monsanto model not specified	<b>MP</b>	Monsanto Compact Mooney Viscometer
<b>MR</b>	Alpha Technologies Model MV2000/MV2000E	<b>MV</b>	Montech
<b>MZ</b>	Rebuilt Monsanto Mooney Viscometer	<b>TA</b>	TA Instruments (any model)
<b>XX</b>	Instrument make/model not specified by lab		



# Rubber Interlaboratory Testing Program

Report #204

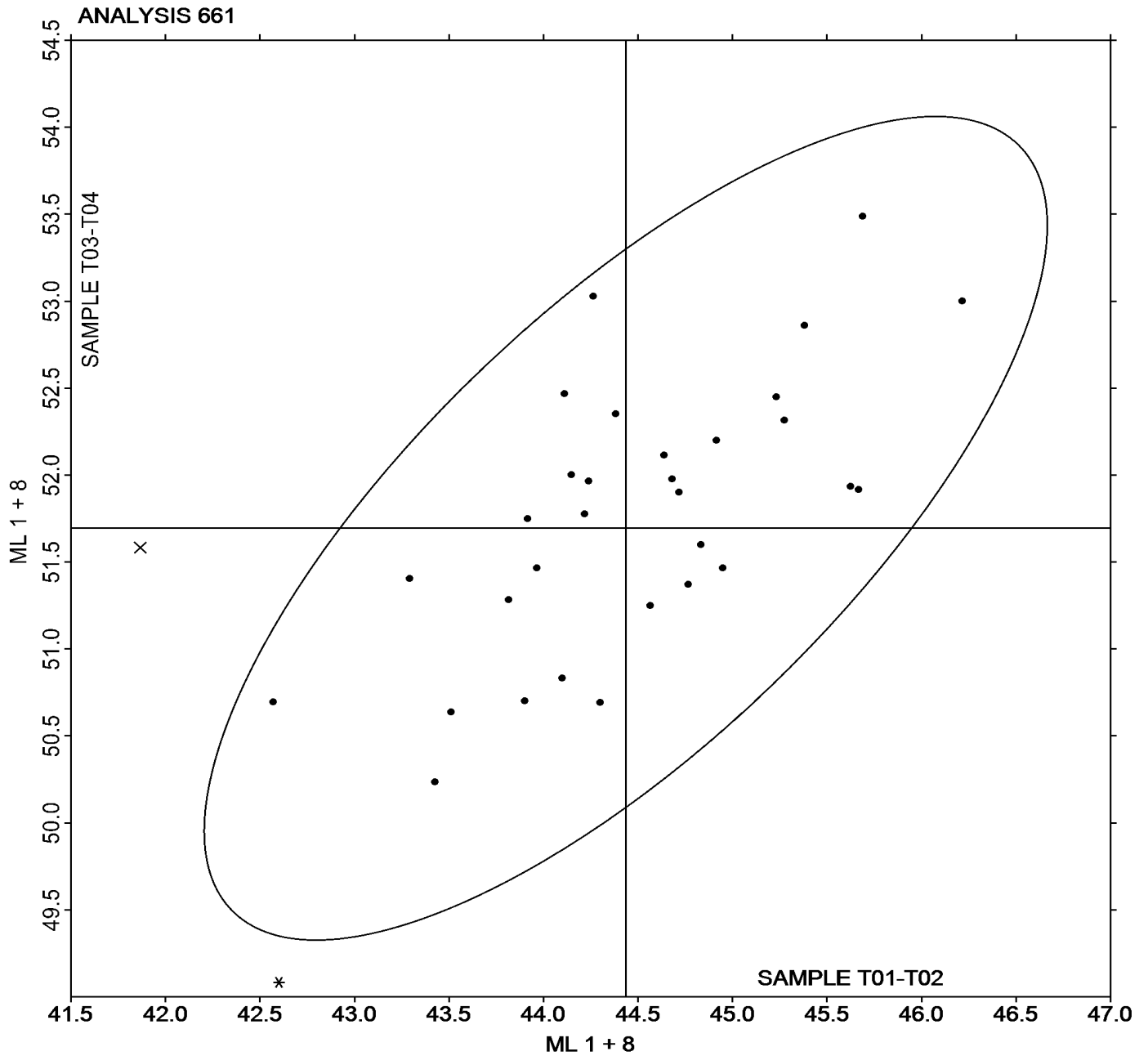
## Analysis 661

2nd Qtr 2020

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

Grand Mean Sample **T01-T02** = 44.435 ML 1 + 8

Grand Mean Sample **T03-T04** = 51.694 ML 1 + 8





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 662

2nd Qtr 2020

### Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample T01-T02			Sample T03-T04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3BKXEU		5.060	0.406	0.50	8.133	0.179	0.20	MR
3UTZDY		4.893	0.239	0.29	7.787	-0.167	-0.18	MR
6HEPZT		5.200	0.546	0.67	8.317	0.363	0.40	XX
6Q9UTU		4.800	0.146	0.18	9.000	1.046	1.15	MR
8XLDAY		4.680	0.026	0.03	7.710	-0.244	-0.27	MR
AZWE2M		5.200	0.546	0.67	8.467	0.513	0.56	MV
EK64HZ		4.333	-0.321	-0.39	9.500	1.546	1.70	XX
HC4PBW		5.633	0.979	1.20	8.033	0.079	0.09	MV
KNNB6G		4.637	-0.018	-0.02	7.750	-0.204	-0.22	MR
M8GRPP		5.033	0.379	0.47	8.067	0.113	0.12	MR
MC9ZRB	X	347.300	342.646	420.78	424.100	416.146	458.65	MR
MPCKBM		3.633	-1.021	-1.25	6.533	-1.421	-1.57	MV
RCU4QL		4.200	-0.454	-0.56	7.400	-0.554	-0.61	MV
RTGN77	X	543.000	538.346	661.10	547.000	539.046	594.10	MV
W2DAYZ		2.467	-2.188	-2.69	6.000	-1.954	-2.15	MZ
WMEYYA		5.390	0.736	0.90	8.661	0.707	0.78	ML
WW6K68	X	303.000	298.346	366.38	306.700	298.746	329.26	MV
XNNMD7	X	21.128	16.474	20.23	22.692	14.738	16.24	MR

Grand Means		Summary Statistics	
	4.6543 seconds		7.9541 seconds
Std Dev Btwn Labs	0.8143 seconds		0.9073 seconds
Statistics based on 14 of 18 reporting participants			

Samples T01-T02: NBR & T03-T04: Butyl

### Comments on Assigned Data Flags for Test #662

MC9ZRB (X) - Extreme data.

RTGN77 (X) - Extreme data.

WW6K68 (X) - Extreme data.

XNNMD7 (X) - Extreme data.

### Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MR	Alpha Technologies Model MV2000/MV2000E
MV	MonTech	MZ	Rebuilt Monsanto Mooney Viscometer
XX	Instrument make/model not specified by lab		

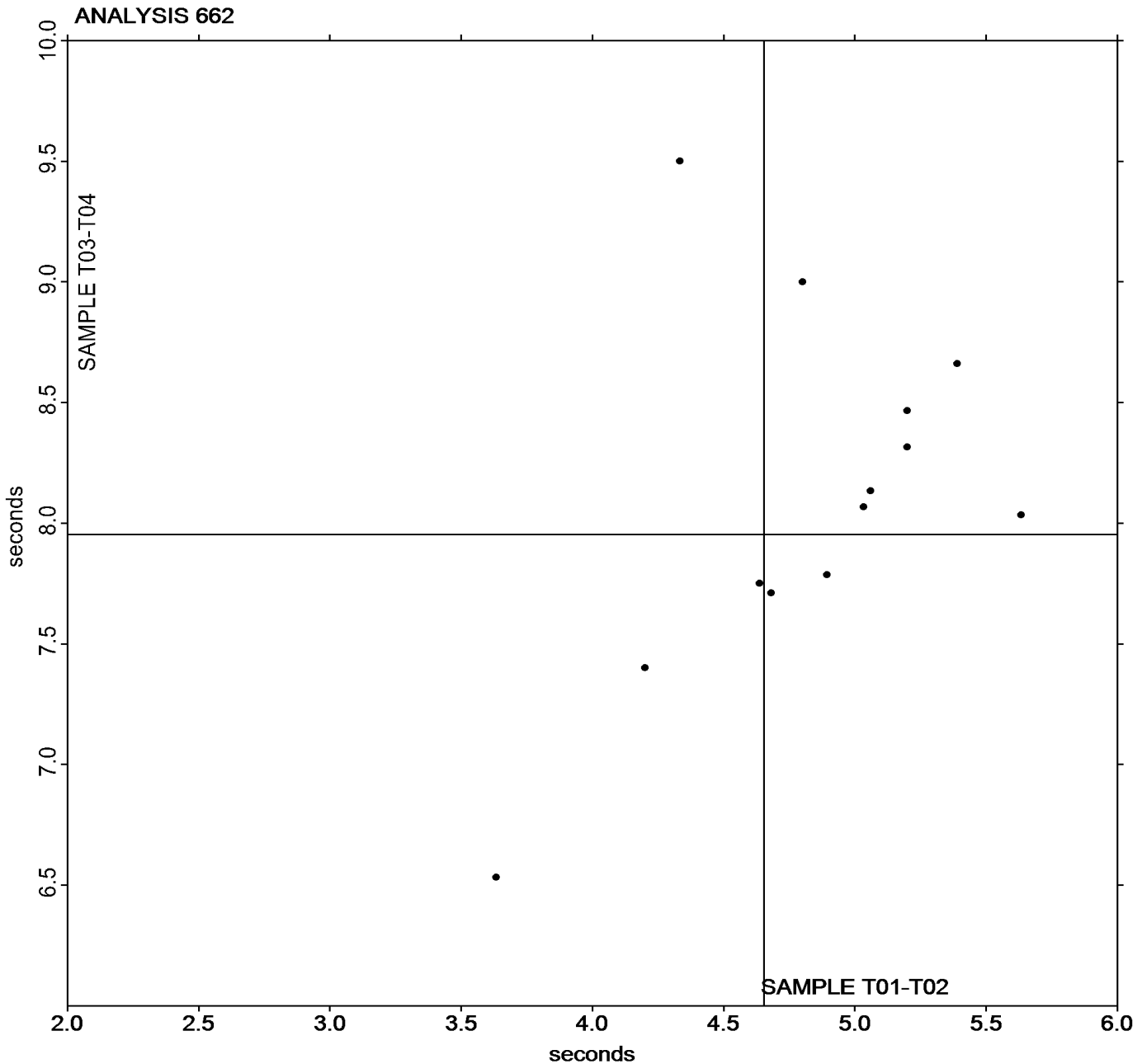


**Rubber Interlaboratory Testing Program**  
**Analysis 662**  
**Mooney Stress Relaxation: t80 (seconds)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **T01-T02** = 4.6543 seconds

Grand Mean Sample **T03-T04** = 7.9541 seconds



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



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 663

2nd Qtr 2020

### Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample T01-T02			Sample T03-T04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3BKXEU		90.18	-1.28	-0.43	90.53	-1.23	-0.96	MR
3UTZDY		91.76	0.29	0.10	92.00	0.24	0.19	MR
6HEPZT		90.72	-0.75	-0.25	91.03	-0.73	-0.57	XX
8XLDAY		91.95	0.49	0.16	92.23	0.47	0.37	MR
AZWE2M		90.50	-0.96	-0.32	90.49	-1.28	-1.00	MV
EK64HZ		92.43	0.97	0.33	90.48	-1.28	-1.00	XX
HC4PBW		89.41	-2.05	-0.69	91.48	-0.28	-0.22	MV
KNNB6G		91.35	-0.12	-0.04	91.60	-0.16	-0.13	MR
M8GRPP		91.65	0.19	0.06	91.58	-0.18	-0.14	MR
MC9ZRB	*	82.80	-8.67	-2.91	90.22	-1.54	-1.20	MR
MPCKBM		93.53	2.06	0.69	93.36	1.59	1.24	MV
RCU4QL		93.15	1.69	0.57	92.53	0.77	0.60	MV
W2DAYZ		96.54	5.07	1.71	94.44	2.67	2.08	MZ
WMEYYA		90.61	-0.85	-0.28	90.61	-1.16	-0.90	ML
WW6K68		95.39	3.92	1.32	93.98	2.22	1.73	MV
XNNMD7		91.44	-0.02	-0.01	91.65	-0.11	-0.09	MR

Grand Means		Summary Statistics	
	91.462 percent		91.763 percent
Std Dev Btwn Labs	2.974 percent		1.283 percent
Statistics based on 16 of 16 reporting participants			

Samples T01-T02: NBR & T03-T04: Butyl

### Key to Instrument Codes Reported by Participants

<b>ML</b>	Alpha Technologies/Monsanto model not specified	<b>MR</b>	Alpha Technologies Model MV2000/MV2000E
<b>MV</b>	Montech	<b>MZ</b>	Rebuilt Monsanto Mooney Viscometer
<b>XX</b>	Instrument make/model not specified by lab		





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 664

2nd Qtr 2020

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

WebCode	Data Flag	Sample T01-T02			Sample T03-T04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3UTZDY		390.3	10.6	0.10	457.2	-11.0	-0.14	MR
6HEPZT		447.3	67.5	0.65	516.7	48.5	0.60	XX
8XLDAY		380.2	0.4	0.00	450.3	-17.9	-0.22	XX
AZWE2M		459.8	80.1	0.78	539.1	70.9	0.87	MV
EK64HZ	*	366.9	-12.8	-0.12	597.6	129.4	1.59	XX
HC4PBW		523.5	143.7	1.39	496.9	28.7	0.35	MV
KNNB6G		407.3	27.6	0.27	487.5	19.3	0.24	MR
M8GRPP		403.8	24.1	0.23	491.3	23.1	0.28	MR
MC9ZRB		417.1	37.3	0.36	440.7	-27.5	-0.34	MR
MPCKBM		300.9	-78.8	-0.76	373.7	-94.5	-1.16	MV
RCU4QL		326.0	-53.8	-0.52	432.4	-35.7	-0.44	MV
W2DAYZ		147.2	-232.5	-2.25	319.8	-148.4	-1.83	MZ
WMEYYA		506.4	126.7	1.23	593.4	125.3	1.54	ML
WW6K68		197.1	-182.7	-1.77	337.3	-130.8	-1.61	MV
XNNMD7		422.2	42.5	0.41	488.7	20.5	0.25	MR

Grand Means		Summary Statistics	
	379.74 M-s		468.18 M-s
Stnd Dev Btwn Labs			
	103.18 M-s		81.29 M-s
Statistics based on 15 of 15 reporting participants			

Samples T01-T02: NBR & T03-T04: Butyl

### Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MR	Alpha Technologies Model MV2000/MV2000E
MV	MonTech	MZ	Rebuilt Mooney Viscometer
XX	Instrument make/model not specified by lab		

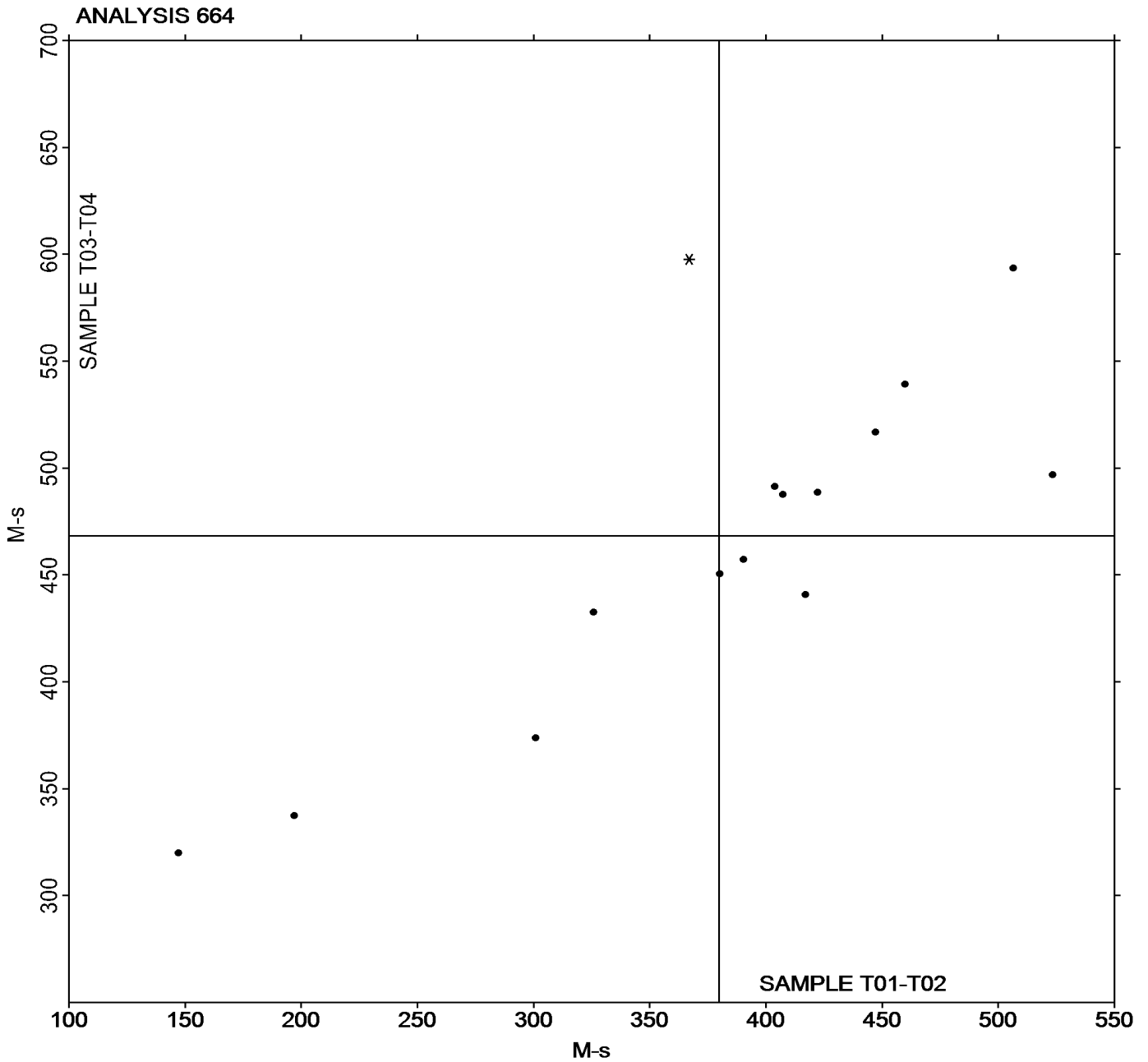


Rubber Interlaboratory Testing Program  
Analysis 664  
Mooney Stress Relaxation: Area under curve (M-s)

Report #204  
2nd Qtr 2020

Grand Mean Sample T01-T02 = 379.74 M-s

Grand Mean Sample T03-T04 = 468.18 M-s



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





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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X01-X02			Sample X03-X04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BGYBXR		1.800	-0.142	-0.85	3.072	-0.483	-0.72
HC4PBW		2.148	0.207	1.23	4.557	1.002	1.50
MPCKBM		1.755	-0.187	-1.11	2.952	-0.603	-0.90
NQMLWL		2.117	0.175	1.04	3.513	-0.041	-0.06
RTGN77		1.842	-0.100	-0.60	3.063	-0.491	-0.74
X69EC6		1.988	0.047	0.28	4.170	0.616	0.92

Summary Statistics	
Grand Means	
	1.9417 minutes                      3.5544 minutes
Std Dev Btwn Labs	
	0.1676 minutes                      0.6667 minutes
	Statistics based on 6 of 6 reporting participants

Samples X01-X02: EPDM compound, batch #1 & X03-X04: EPDM compound, batch #2

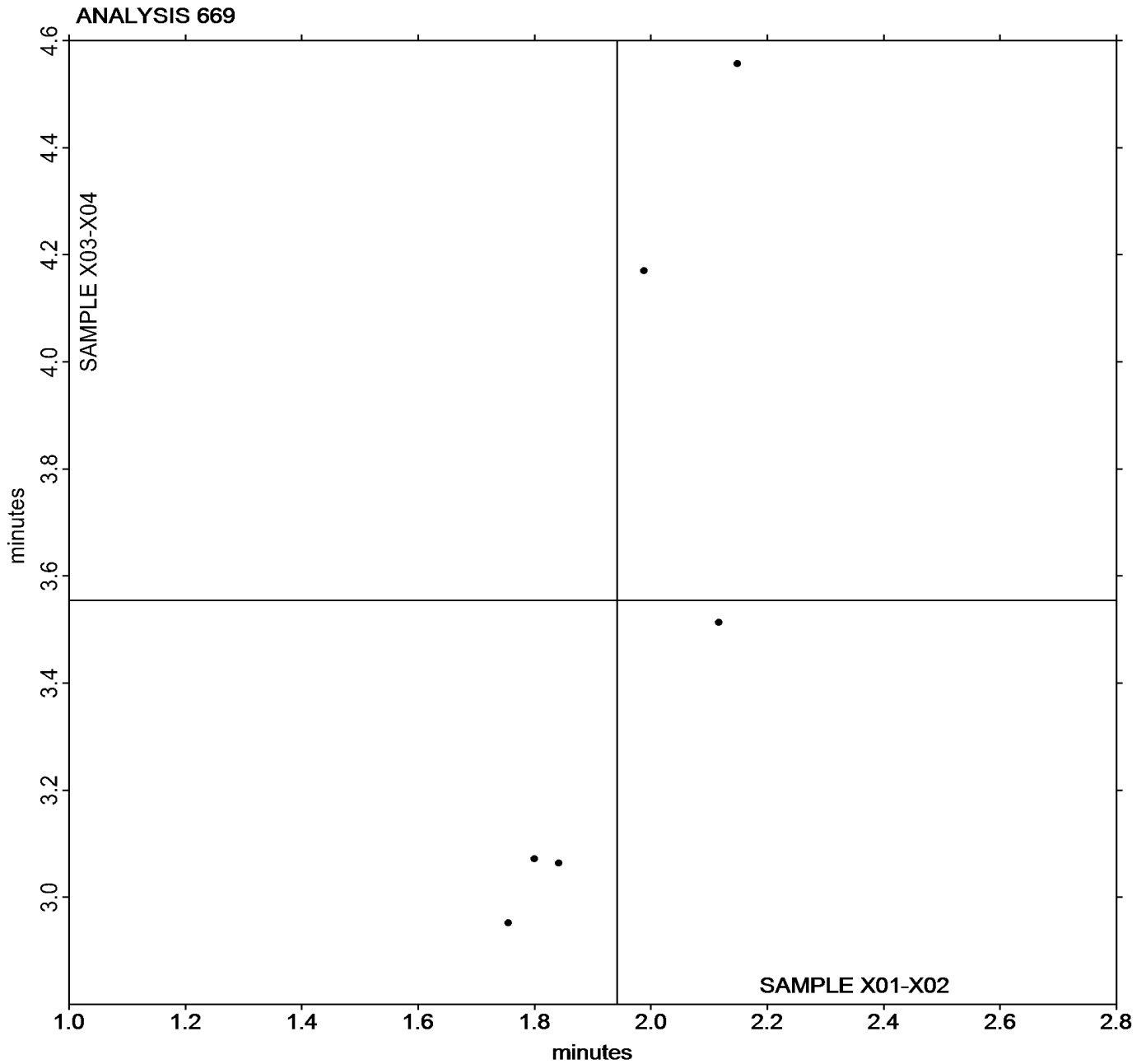


Rubber Interlaboratory Testing Program  
Analysis 669  
ODR Vulcanization-Cure Time 10% (minutes)

Report #204  
2nd Qtr 2020

Grand Mean Sample X01-X02 = 1.9417 minutes

Grand Mean Sample X03-X04 = 3.5544 minutes



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



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X01-X02			Sample X03-X04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BGYBXR		1.242	-0.176	-1.06	2.298	-0.352	-0.68
HC4PBW		1.557	0.139	0.84	3.498	0.848	1.63
MPCKBM		1.197	-0.221	-1.34	2.100	-0.551	-1.06
NQMLWL		1.590	0.173	1.04	2.685	0.034	0.07
RTGN77		1.413	-0.004	-0.03	2.342	-0.309	-0.59
X69EC6		1.507	0.089	0.54	2.980	0.329	0.63

Summary Statistics	
Grand Means	
	1.4175 minutes                      2.6506 minutes
Stnd Dev Btwn Labs	
	0.1654 minutes                      0.5198 minutes
	Statistics based on 6 of 6 reporting participants

Samples X01-X02: EPDM compound, batch #1 & X03-X04: EPDM compound, batch #2

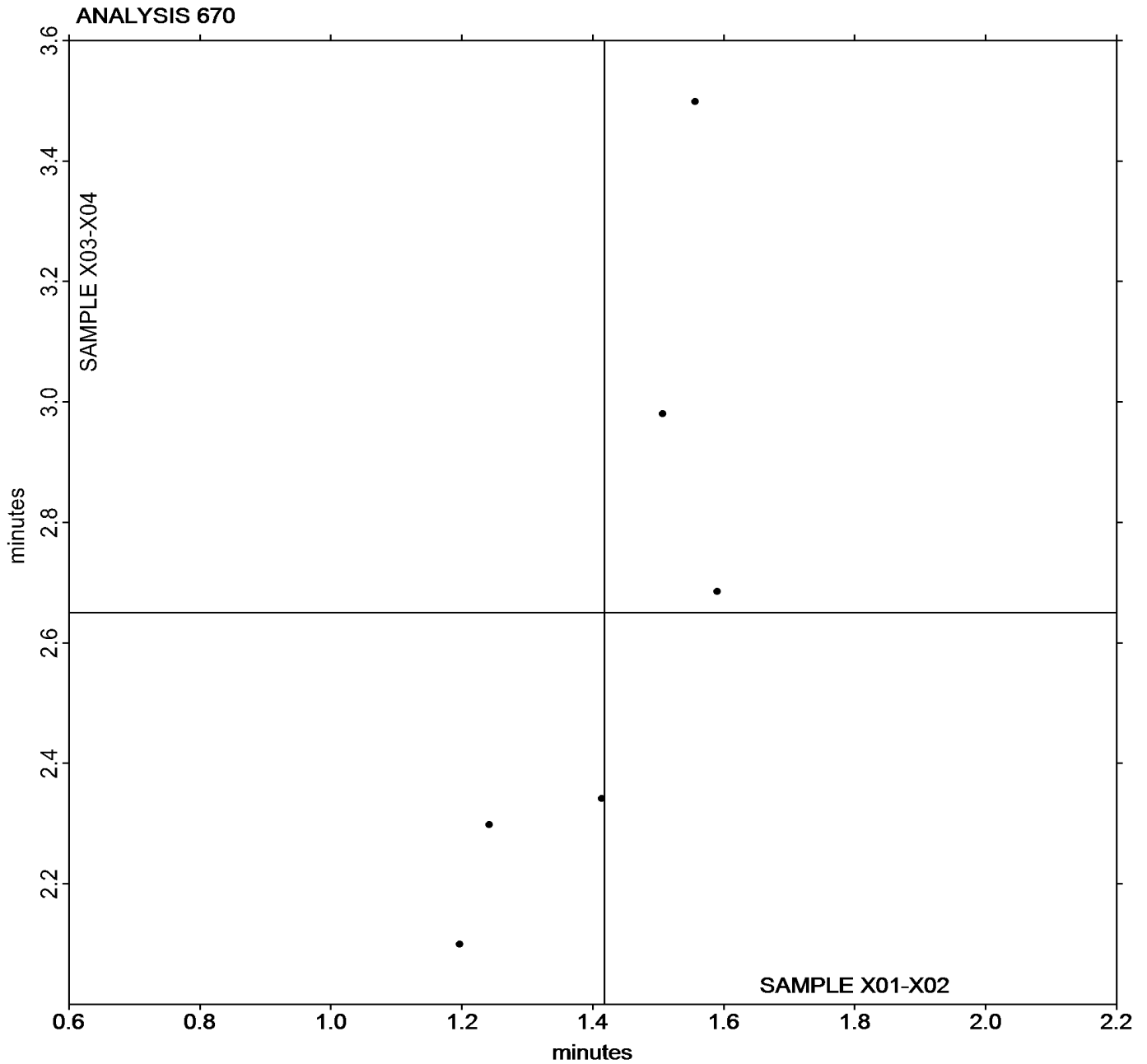


Rubber Interlaboratory Testing Program  
Analysis 670  
ODR Vulcanization-Scorch Time, Ts1 (minutes)

Report #204  
2nd Qtr 2020

Grand Mean Sample X01-X02 = 1.4175 minutes

Grand Mean Sample X03-X04 = 2.6506 minutes



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



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X01-X02			Sample X03-X04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BGYBXR		3.683	-0.078	-0.28	5.662	-0.910	-0.72
HC4PBW		4.078	0.317	1.13	8.277	1.705	1.35
MPCKBM		3.477	-0.285	-1.02	5.563	-1.008	-0.80
NQMLWL		3.998	0.237	0.85	6.230	-0.341	-0.27
RTGN77		3.412	-0.350	-1.25	5.633	-0.938	-0.74
X69EC6		3.922	0.160	0.57	8.062	1.491	1.18

Summary Statistics	
Grand Means	
	3.7617 minutes                      6.5712 minutes
Std Dev Btwn Labs	
	0.2799 minutes                      1.2625 minutes
	Statistics based on 6 of 6 reporting participants

Samples X01-X02: EPDM compound, batch #1 & X03-X04: EPDM compound, batch #2

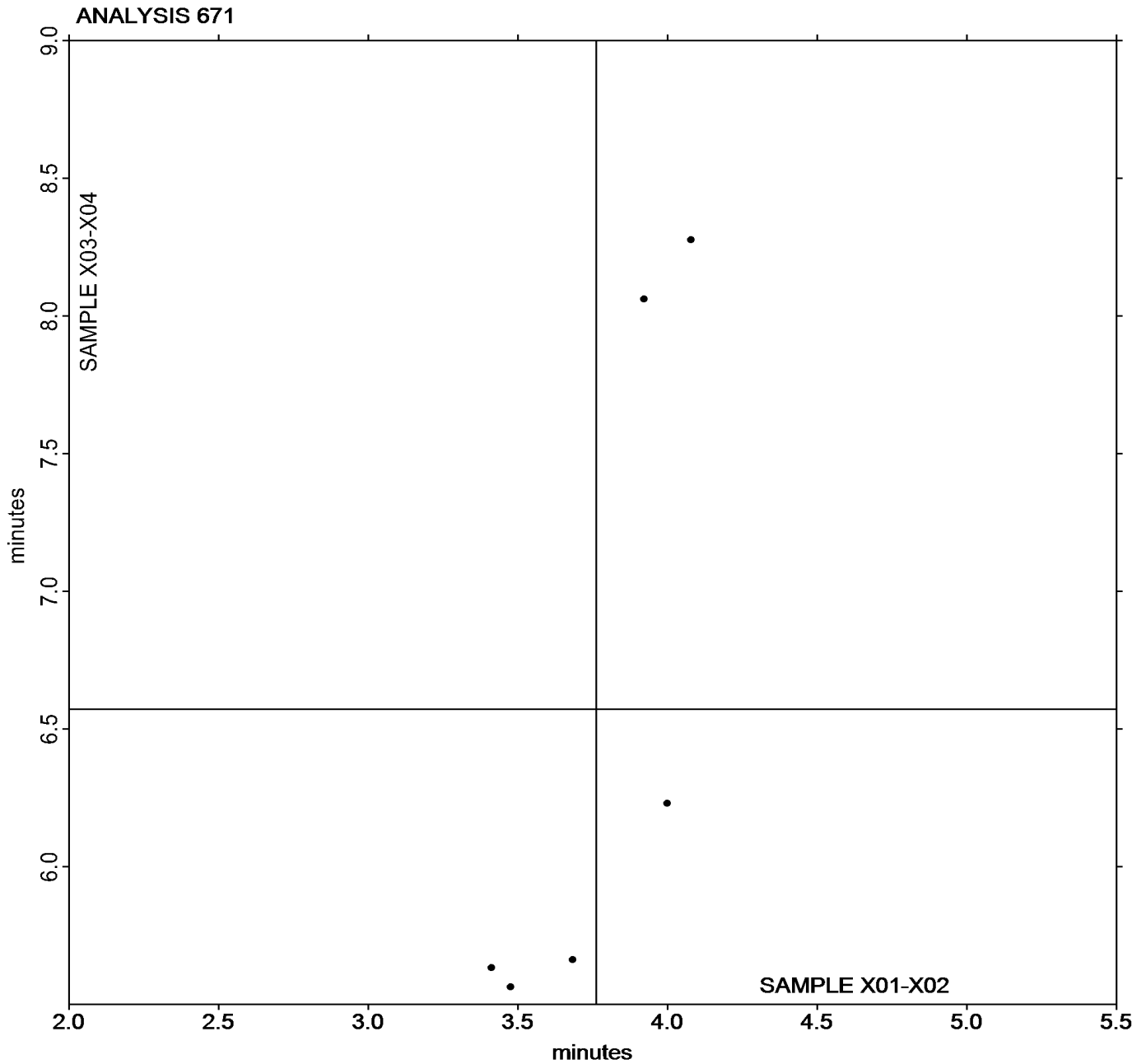


**Rubber Interlaboratory Testing Program**  
**Analysis 671**  
**ODR Vulcanization-Cure Time 50% (minutes)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **X01-X02** = 3.7617 minutes

Grand Mean Sample **X03-X04** = 6.5712 minutes



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



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X01-X02			Sample X03-X04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BGYBXR		19.02	5.77	1.89	11.58	-1.83	-0.63
HC4PBW		12.40	-0.84	-0.27	17.99	4.58	1.58
MPCKBM		10.03	-3.22	-1.05	10.89	-2.52	-0.87
NQMLWL		13.04	-0.20	-0.07	12.54	-0.87	-0.30
RTGN77		11.70	-1.55	-0.51	11.47	-1.94	-0.67
X69EC6		13.28	0.03	0.01	15.99	2.58	0.89

Summary Statistics	
Grand Means	
	13.244 minutes                      13.408 minutes
Std Dev Btwn Labs	
	3.060 minutes                      2.893 minutes
Statistics based on 6 of 6 reporting participants	

Samples X01-X02: EPDM compound, batch #1 & X03-X04: EPDM compound, batch #2

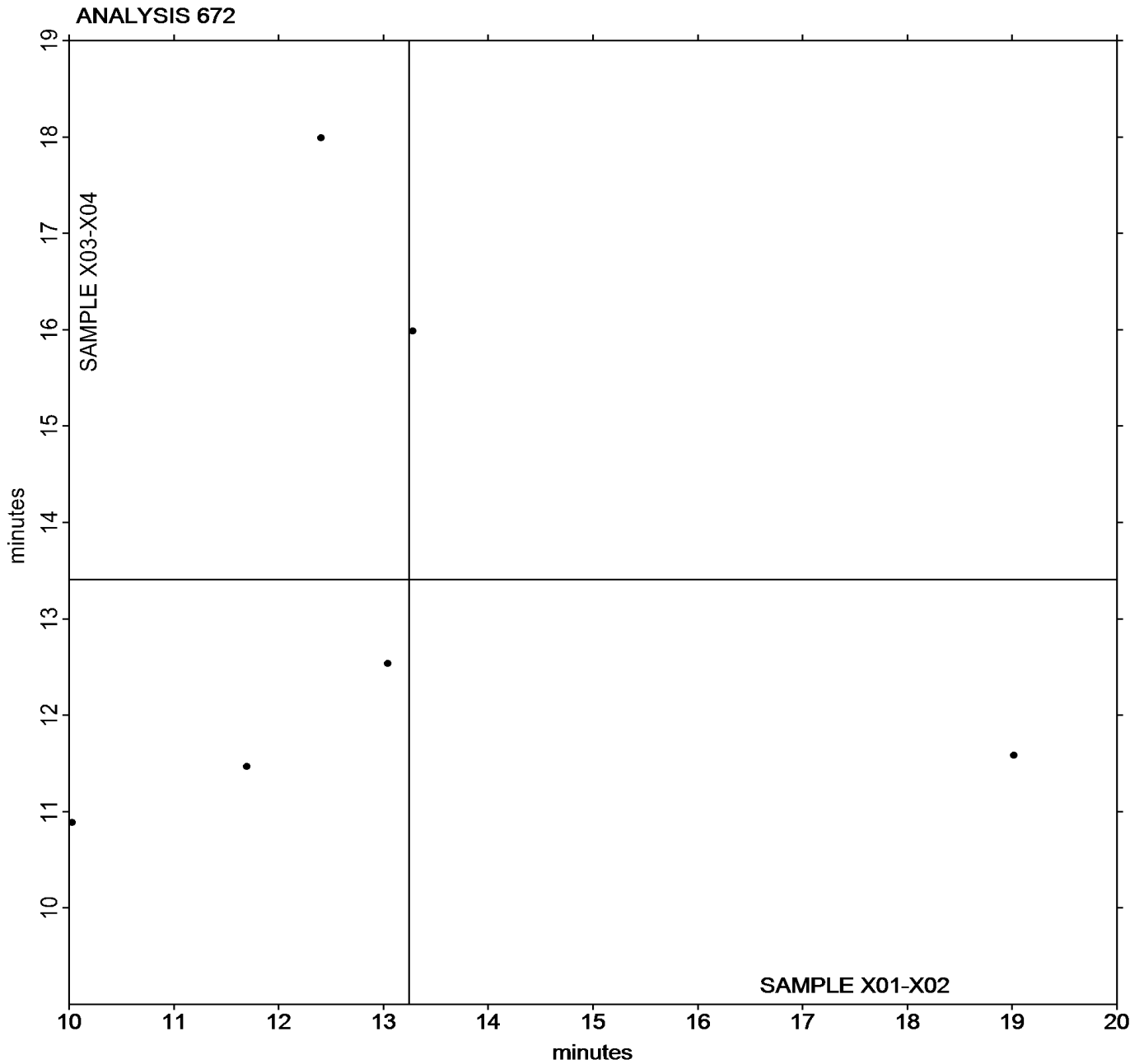


**Rubber Interlaboratory Testing Program**  
**Analysis 672**  
**ODR Vulcanization-Cure Time 90% (minutes)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **X01-X02** = 13.244 minutes

Grand Mean Sample **X03-X04** = 13.408 minutes



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





**Rubber Interlaboratory Testing Program**  
**Analysis 673**  
**ODR Vulcanization: Minimum Torque (lbf.in)**

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X01-X02			Sample X03-X04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BGYBXR		6.030	-1.294	-0.87	12.66	1.10	0.44
HC4PBW		6.890	-0.434	-0.29	10.90	-0.67	-0.27
MPCKBM		9.048	1.725	1.16	12.28	0.72	0.29
NQMLWL		7.288	-0.035	-0.02	9.57	-1.99	-0.79
RTGN77		5.583	-1.740	-1.17	8.45	-3.11	-1.24
X69EC6		9.102	1.778	1.20	15.52	3.96	1.58

		Summary Statistics	
Grand Means		7.3236 lbf.in	11.561 lbf.in
Std Dev Btwn Labs		1.4851 lbf.in	2.508 lbf.in
Statistics based on 6 of 6 reporting participants			

		Summary Statistics in SI Units	
Grand Means		8.2746 dN.m	13.063 dN.m
Std Dev Btwn Labs		1.6779 dN.m	2.834 dN.m
Statistics based on 6 of 6 reporting participants			

Samples X01-X02: EPDM compound, batch #1 & X03-X04: EPDM compound, batch #2

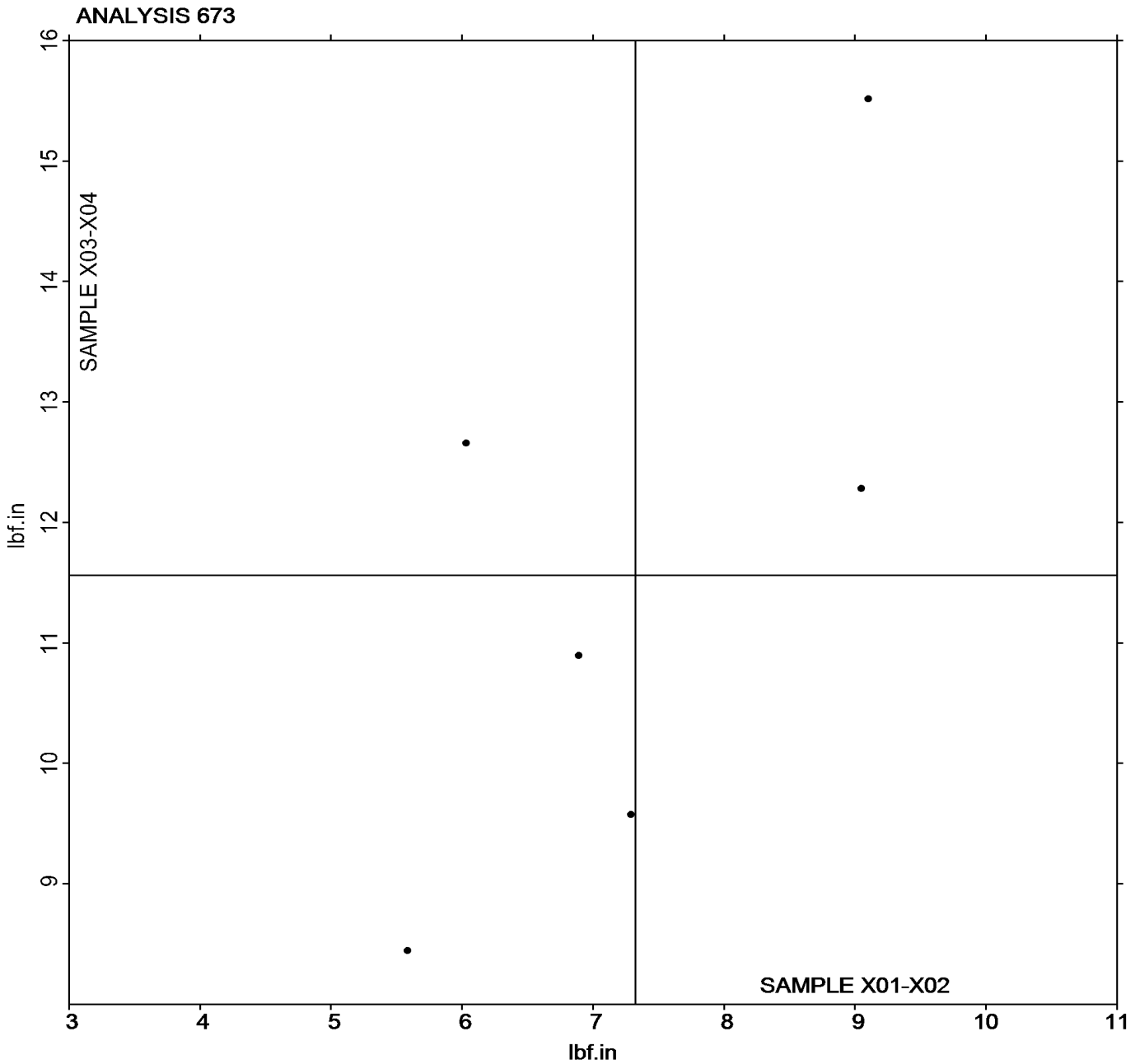


**Rubber Interlaboratory Testing Program**  
**Analysis 673**  
**ODR Vulcanization: Minimum Torque (lbf.in)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **X01-X02** = 7.3236 lbf.in

Grand Mean Sample **X03-X04** = 11.561 lbf.in



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



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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X01-X02			Sample X03-X04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BGYBXR		49.36	4.39	1.04	40.65	1.68	0.41
HC4PBW		46.23	1.26	0.30	36.75	-2.23	-0.54
MPCKBM		50.20	5.23	1.24	43.41	4.44	1.08
NQMLWL		41.23	-3.74	-0.89	36.16	-2.82	-0.68
RTGN77		40.60	-4.37	-1.04	33.48	-5.49	-1.33
X69EC6		42.20	-2.77	-0.66	43.39	4.41	1.07

		Summary Statistics	
Grand Means		44.970 lbf.in	38.974 lbf.in
Std Dev Btwn Labs		4.219 lbf.in	4.124 lbf.in
Statistics based on 6 of 6 reporting participants			

		Summary Statistics in SI Units	
Grand Means		50.809 dN.m	44.034 dN.m
Std Dev Btwn Labs		4.767 dN.m	4.659 dN.m
Statistics based on 6 of 6 reporting participants			

Samples X01-X02: EPDM compound, batch #1 & X03-X04: EPDM compound, batch #2

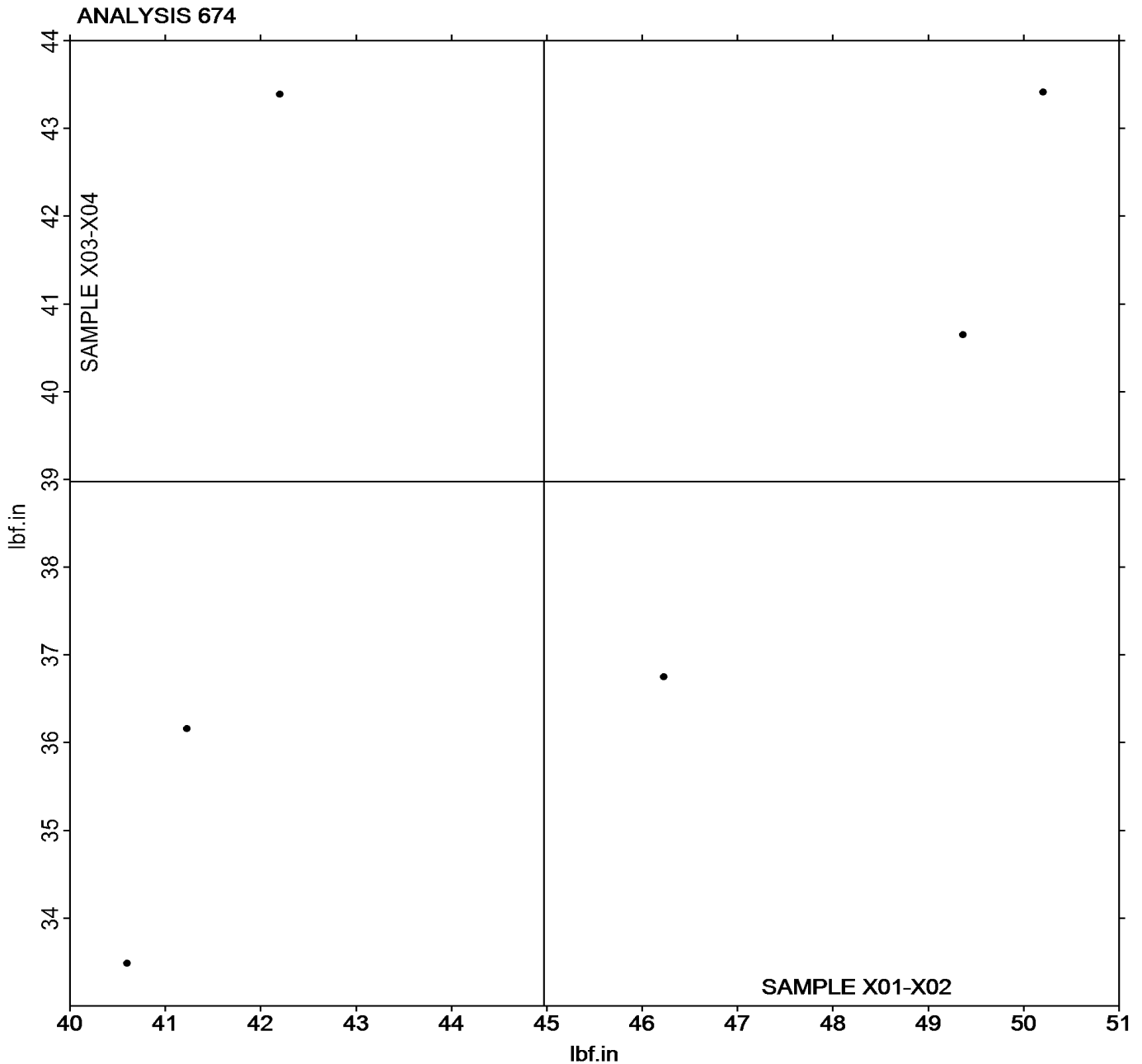


**Rubber Interlaboratory Testing Program**  
**Analysis 674**  
**ODR Vulcanization: Maximum Torque (lbf.in)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **X01-X02** = 44.970 lbf.in

Grand Mean Sample **X03-X04** = 38.974 lbf.in



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



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 684

2nd Qtr 2020

### MDR Vulcanization-Cure Time 10% (minutes)

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		2.125	-0.663	-1.51	2.782	-0.216	-1.72	MC
3B4JDC		2.190	-0.598	-1.36	2.955	-0.043	-0.34	MR
3BKXEU		2.895	0.107	0.24	2.950	-0.048	-0.38	MC
3UTZDY		3.035	0.247	0.56	3.117	0.119	0.94	MC
6HEPZT		2.160	-0.628	-1.43	2.927	-0.071	-0.57	XX
86K3Q4		3.043	0.255	0.58	2.955	-0.043	-0.34	MC
89HJ4X	*	2.792	0.004	0.01	2.700	-0.298	-2.38	MC
9PLDBW		2.933	0.146	0.33	2.861	-0.137	-1.09	MC
9RBPA3		3.077	0.289	0.66	2.920	-0.078	-0.62	ME
AZWE2M		2.363	-0.425	-0.97	2.975	-0.023	-0.18	MM
BGYBXR		2.185	-0.603	-1.37	2.997	-0.001	-0.01	MC
CBUPTU		3.112	0.324	0.74	3.087	0.089	0.71	MC
EK64HZ		1.915	-0.873	-1.99	2.698	-0.300	-2.39	MC
EV7LYV		3.062	0.274	0.62	2.930	-0.068	-0.54	MD
HC4PBW		3.395	0.607	1.38	3.190	0.192	1.53	MD
KMDAHH		2.235	-0.553	-1.26	3.045	0.047	0.37	MC
KNNB6G		2.895	0.107	0.24	3.047	0.049	0.39	MC
MC9ZRB	*	2.232	-0.556	-1.27	3.203	0.205	1.63	MC
MN2MX7		3.018	0.230	0.53	2.907	-0.091	-0.73	MC
MPCKBM		3.290	0.502	1.14	3.048	0.050	0.40	XX
N7YXPF		2.955	0.167	0.38	3.007	0.009	0.07	MC
NMM9CH		3.343	0.555	1.27	3.183	0.185	1.48	TP
NQMLWL		2.935	0.147	0.34	2.978	-0.020	-0.16	MC
RCU4QL	X	3.017	0.229	0.52	6.898	3.900	31.07	MC
RK4MTH		3.175	0.387	0.88	2.970	-0.028	-0.22	MC
TFBUC9		2.173	-0.615	-1.40	3.007	0.009	0.07	MP
UM6BLD		3.123	0.335	0.76	3.082	0.084	0.67	MC
VGX4JE		2.925	0.137	0.31	3.025	0.027	0.21	MM
W2DAYZ		2.215	-0.573	-1.31	2.932	-0.066	-0.53	MX
WMEYYA		3.083	0.295	0.67	3.106	0.108	0.86	MM
WW6K68		3.138	0.350	0.80	3.108	0.110	0.88	MR
XNNMD7		3.118	0.330	0.75	3.153	0.155	1.24	MC
ZQML24		3.075	0.287	0.65	3.097	0.099	0.78	ME



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

**Report #204**  
**2nd Qtr 2020**

		Summary Statistics	
Grand Means	2.7879 minutes	2.9981 minutes	
Stnd Dev Btwn Labs	0.4387 minutes	0.1255 minutes	
Statistics based on 32 of 33 reporting participants			

Samples X05-X06: EPDM compound, batch #1 & X07-X08: EPDM compound, batch #2

**Comments on Assigned Data Flags for Test #684**

RCU4QL (X) - Extreme Data for sample group X07-X08.

**Key to Instrument Codes Reported by Participants**

<b>MC</b>	Alpha Technologies [Monsanto] MDR 2000 or 2000E	<b>MD</b>	Alpha Tech. Rubber Process Analyzer (RPA 2000)
<b>ME</b>	Alpha Tech. MDR Premiere	<b>MM</b>	MonTech MDR 3000
<b>MP</b>	Alpha Technologies [Monsanto] MDR 2000P	<b>MR</b>	MonTech D-RPA 3000
<b>MX</b>	Rebuilt MonTech Alpha	<b>TP</b>	Tech Pro MDR model MDPT
<b>XX</b>	Instrument model not specified by lab		

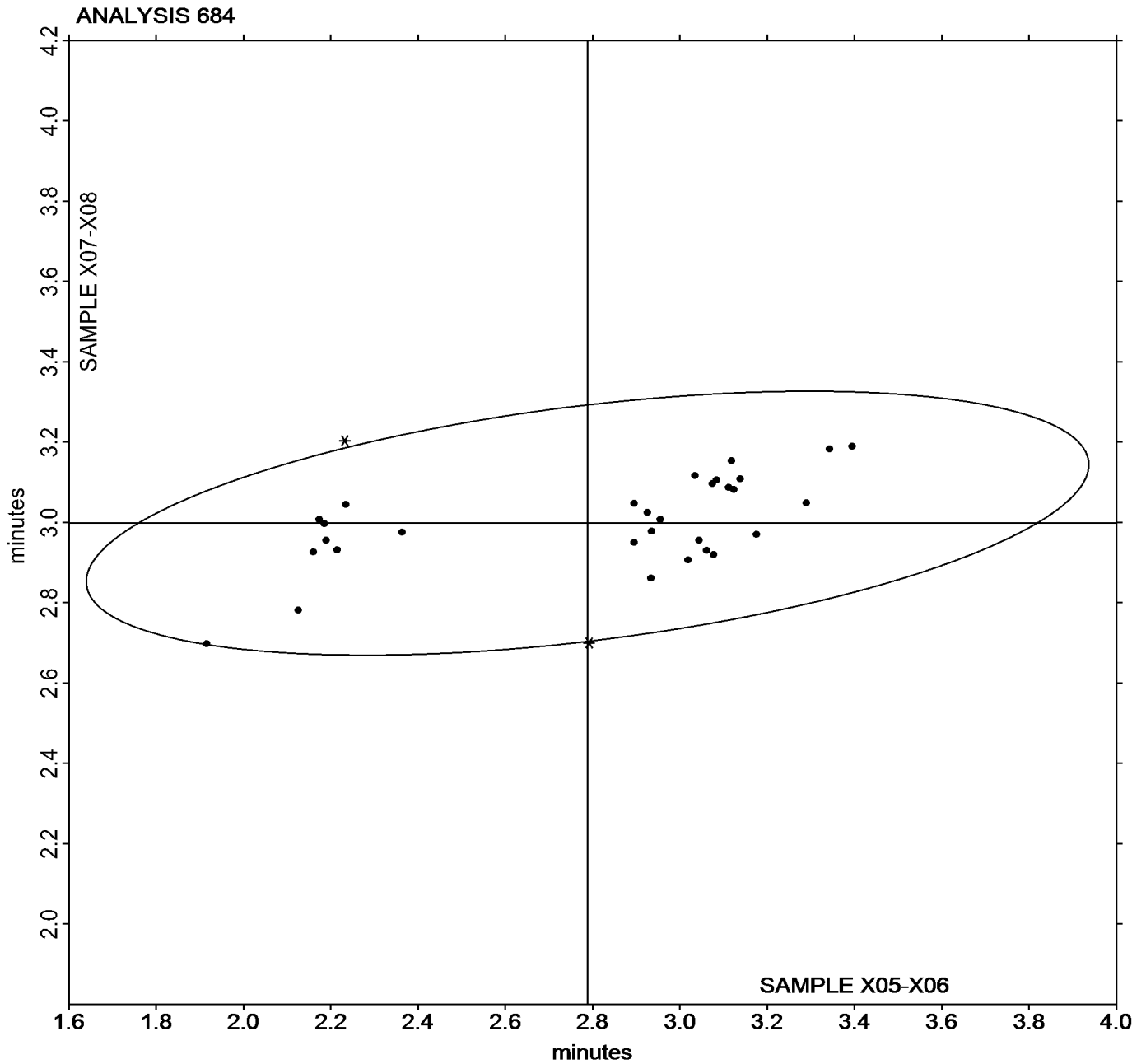


Rubber Interlaboratory Testing Program  
Analysis 684  
MDR Vulcanization-Cure Time 10% (minutes)

Report #204  
2nd Qtr 2020

Grand Mean Sample X05-X06 = 2.7879 minutes

Grand Mean Sample X07-X08 = 2.9981 minutes





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 685

2nd Qtr 2020

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

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		1.943	-0.833	-1.94	2.563	-0.384	-2.02	MC
3B4JDC		2.308	-0.468	-1.09	3.125	0.178	0.93	MR
3BKXEU		2.910	0.133	0.31	2.920	-0.027	-0.14	MC
3UTZDY		3.015	0.238	0.56	3.057	0.109	0.57	MC
6HEPZT		2.208	-0.568	-1.32	3.022	0.074	0.39	XX
6Q9UTU		2.255	-0.522	-1.22	3.013	0.066	0.35	MC
86K3Q4		3.115	0.338	0.79	3.022	0.074	0.39	MC
89HJ4X		2.680	-0.097	-0.23	2.510	-0.437	-2.30	MC
8XLDAY		2.769	-0.007	-0.02	2.658	-0.289	-1.52	MC
9PLDBW		2.947	0.171	0.40	2.836	-0.111	-0.58	MC
9RBPA3		3.017	0.240	0.56	2.887	-0.061	-0.32	ME
AZWE2M		2.218	-0.558	-1.30	2.792	-0.156	-0.82	MM
BGYBXR		2.135	-0.642	-1.50	2.905	-0.042	-0.22	MC
CBUPTU		3.102	0.325	0.76	3.043	0.096	0.50	MC
EK64HZ	X	1.312	-1.465	-3.42	1.872	-1.076	-5.65	MC
EV7LYV		3.038	0.262	0.61	2.998	0.051	0.27	MD
HC4PBW		3.403	0.627	1.46	3.185	0.238	1.25	MD
K448TP		2.815	0.038	0.09	2.695	-0.252	-1.32	MR
KMDAHH		2.150	-0.627	-1.46	2.860	-0.087	-0.46	MC
KNNB6G		2.937	0.160	0.37	3.083	0.136	0.71	MC
MC9ZRB	*	2.277	-0.500	-1.17	3.285	0.338	1.77	MC
MECVBD		2.828	0.052	0.12	2.797	-0.151	-0.79	MC
MN2MX7		3.057	0.280	0.65	2.993	0.046	0.24	MC
MPCKBM		3.482	0.705	1.64	3.088	0.141	0.74	XX
N7YXPF		2.908	0.132	0.31	2.960	0.013	0.07	MC
NMM9CH		3.552	0.775	1.81	3.382	0.434	2.28	TP
NQMLWL		2.983	0.207	0.48	2.987	0.039	0.21	MC
RCU4QL		2.932	0.155	0.36	3.010	0.063	0.33	MC
RK4MTH		3.102	0.325	0.76	2.957	0.009	0.05	MC
RTGN77	X	3.828	1.052	2.45	3.853	0.906	4.76	MM
TFBUC9		2.007	-0.770	-1.79	2.763	-0.184	-0.97	MP
UM6BLD		3.038	0.262	0.61	2.970	0.023	0.12	MC
VGX4JE		2.972	0.195	0.45	3.097	0.149	0.78	MM
W2DAYZ		2.122	-0.655	-1.53	2.848	-0.099	-0.52	MX
WMEYYA		2.975	0.198	0.46	3.089	0.141	0.74	MM
WW6K68		2.692	-0.085	-0.20	2.615	-0.332	-1.74	MR
XNNMD7		2.958	0.182	0.42	2.948	0.001	0.01	MC
ZQML24		3.107	0.330	0.77	3.140	0.193	1.01	ME





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

**Report #204**  
**2nd Qtr 2020**

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	

Grand Means		Summary Statistics	
	2.7766 minutes		2.9473 minutes
Stnd Dev Btwn Labs	0.4289 minutes		0.1905 minutes
Statistics based on 36 of 38 reporting participants			

Samples X05-X06: EPDM compound, batch #1 & X07-X08: EPDM compound, batch #2

**Comments on Assigned Data Flags for Test #685**

EK64HZ (X) - Data for all samples are low. Inconsistent within the determinations of sample group X07-X08.

RTGN77 (X) - Data for sample group X07-X08 are high.

**Key to Instrument Codes Reported by Participants**

<b>MC</b>	Alpha Technologies [Monsanto] MDR 2000 or 2000E	<b>MD</b>	Alpha Tech. Rubber Process Analyzer (RPA 2000)
<b>ME</b>	Alpha Tech. MDR Premiere	<b>MM</b>	MonTech MDR 3000
<b>MP</b>	Alpha Technologies [Monsanto] MDR 2000P	<b>MR</b>	MonTech D-RPA 3000
<b>MX</b>	Rebuilt MonTech Alpha	<b>TP</b>	Tech Pro MDR model MDPT
<b>XX</b>	Instrument model not specified by lab		

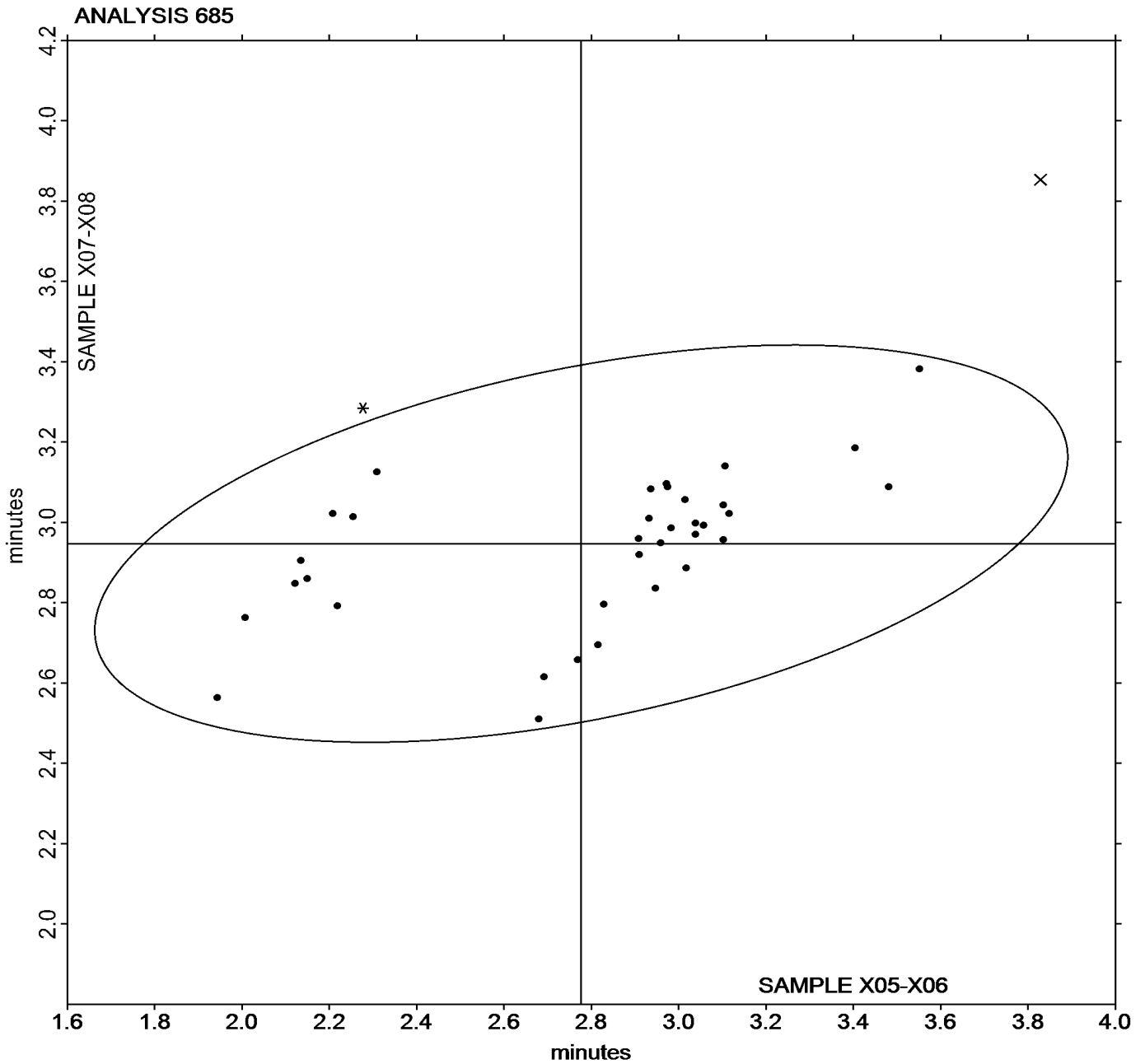


Rubber Interlaboratory Testing Program  
Analysis 685  
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #204  
2nd Qtr 2020

Grand Mean Sample X05-X06 = 2.7766 minutes

Grand Mean Sample X07-X08 = 2.9473 minutes





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 686

2nd Qtr 2020

### MDR Vulcanization-Cure Time 50% (minutes)

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		4.868	-1.252	-1.59	6.358	-0.262	-1.08	MC
3B4JDC		5.005	-1.115	-1.42	6.458	-0.162	-0.67	MR
3BKXEU		6.382	0.262	0.33	6.688	0.068	0.28	MC
3UTZDY		6.462	0.342	0.43	6.870	0.250	1.03	MC
6HEPZT		4.810	-1.310	-1.67	6.458	-0.162	-0.67	XX
6Q9UTU		4.860	-1.260	-1.60	6.348	-0.272	-1.12	MC
86K3Q4		6.735	0.615	0.78	6.693	0.073	0.30	MC
89HJ4X		6.308	0.188	0.24	6.423	-0.197	-0.81	MC
8XLDAY		6.765	0.645	0.82	6.623	0.003	0.01	MC
9PLDBW		6.470	0.349	0.44	6.558	-0.062	-0.26	MC
9RBPA3		6.502	0.382	0.49	6.238	-0.382	-1.57	ME
AZWE2M		5.393	-0.727	-0.92	6.697	0.076	0.31	MM
BGYBXR		4.782	-1.338	-1.70	6.503	-0.117	-0.48	MC
CBUPTU		6.582	0.462	0.59	6.723	0.103	0.42	MC
EK64HZ	X	4.150	-1.970	-2.51	5.600	-1.020	-4.20	MC
EV7LYV		6.463	0.343	0.44	6.270	-0.350	-1.44	MD
HC4PBW		7.272	1.152	1.47	7.042	0.421	1.73	MX
K448TP		6.853	0.733	0.93	6.667	0.046	0.19	MR
KMDAHH		5.075	-1.045	-1.33	6.925	0.305	1.25	MC
KNNB6G		6.147	0.027	0.03	6.478	-0.142	-0.58	MC
MC9ZRB		4.647	-1.473	-1.88	6.428	-0.192	-0.79	MC
MECVBD		5.982	-0.138	-0.18	6.090	-0.530	-2.18	MC
MN2MX7		6.417	0.297	0.38	6.215	-0.405	-1.67	MC
MPCKBM		7.030	0.910	1.16	6.650	0.030	0.12	XX
N7YXPF		6.343	0.223	0.28	6.843	0.223	0.92	MC
NMM9CH		6.715	0.595	0.76	6.725	0.105	0.43	TP
NQMLWL		6.408	0.288	0.37	6.777	0.156	0.64	MC
RCU4QL		6.450	0.330	0.42	6.898	0.278	1.14	MC
RK4MTH		6.685	0.565	0.72	6.463	-0.157	-0.65	MC
RTGN77		6.777	0.657	0.84	7.183	0.563	2.32	MM
TFBUC9		4.853	-1.267	-1.61	6.790	0.170	0.70	MC
UM6BLD		6.705	0.585	0.74	6.773	0.153	0.63	MC
VGX4JE		6.498	0.378	0.48	6.568	-0.052	-0.21	MM
W2DAYZ		4.813	-1.307	-1.66	6.610	-0.010	-0.04	MX
WMEYYA		6.577	0.457	0.58	6.673	0.053	0.22	MM
WW6K68		6.540	0.420	0.53	6.563	-0.057	-0.24	MR
XNNMD7		6.807	0.687	0.87	7.038	0.418	1.72	MC
ZQML24		6.465	0.345	0.44	6.643	0.023	0.09	ME



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

**Report #204**  
**2nd Qtr 2020**

		Summary Statistics	
Grand Means	6.1201 minutes	6.6204 minutes	
Stnd Dev Btwn Labs	0.7858 minutes	0.2430 minutes	
Statistics based on 37 of 38 reporting participants			

Samples X05-X06: EPDM compound, batch #1 & X07-X08: EPDM compound, batch #2

**Comments on Assigned Data Flags for Test #686**

EK64HZ (X) - Data for sample group X07-X08 are low.

**Key to Instrument Codes Reported by Participants**

<b>MC</b>	Alpha Technologies [Monsanto] MDR 2000 or 2000E	<b>MD</b>	Alpha Tech. Rubber Process Analyzer (RPA 2000)
<b>ME</b>	Alpha Tech. MDR Premiere	<b>MM</b>	MonTech MDR 3000
<b>MR</b>	MonTech D-RPA 3000	<b>MX</b>	Rebuilt MonTech Alpha
<b>TP</b>	Tech Pro MDR model MDPT	<b>XX</b>	Instrument model not specified by lab

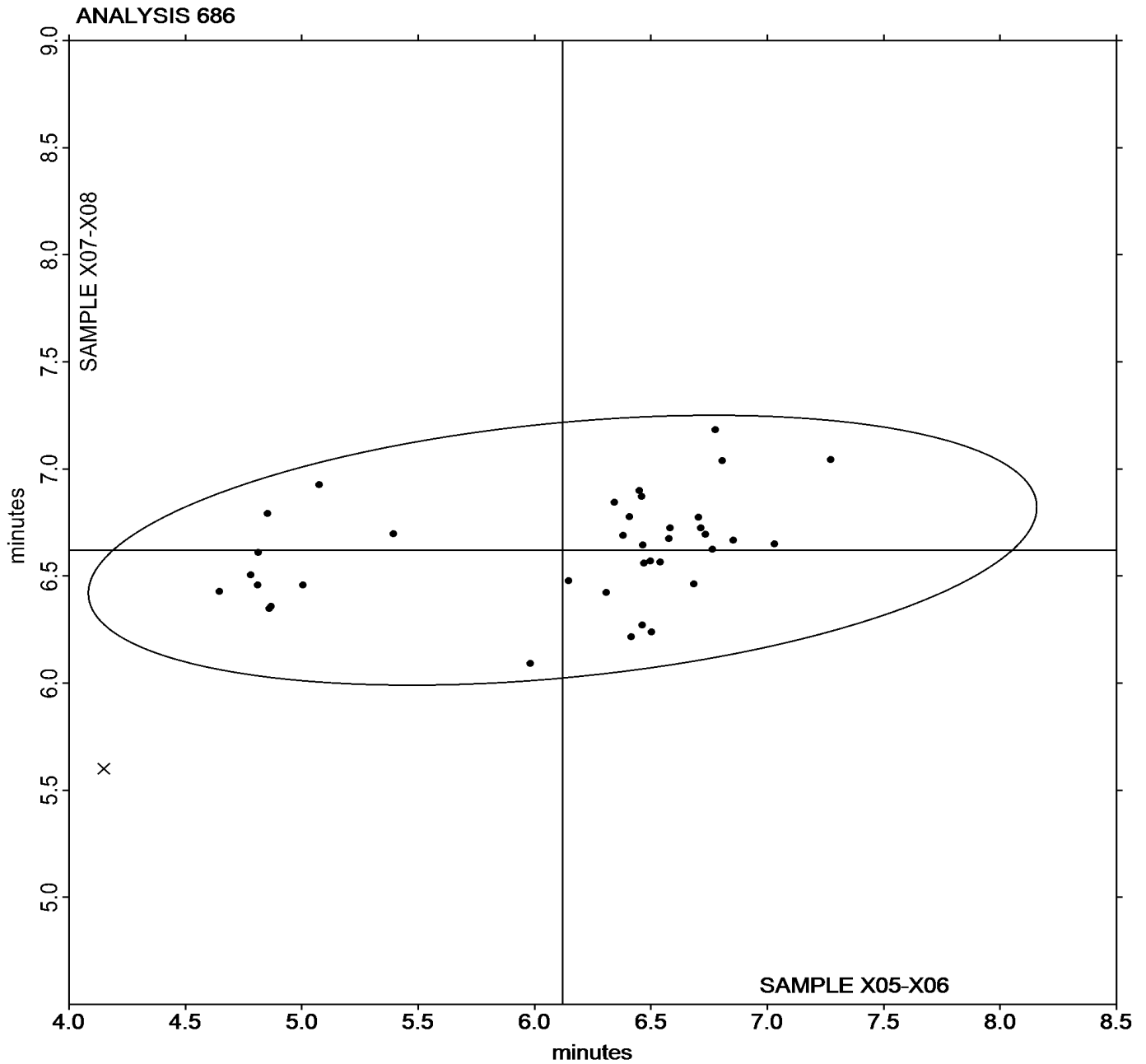


**Rubber Interlaboratory Testing Program**  
**Analysis 686**  
**MDR Vulcanization-Cure Time 50% (minutes)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **X05-X06** = 6.1201 minutes

Grand Mean Sample **X07-X08** = 6.6204 minutes





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 687

2nd Qtr 2020

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

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		8.01	-2.09	-1.85	10.14	-0.56	-1.58	MC
3B4JDC		8.38	-1.72	-1.53	10.56	-0.14	-0.40	MR
3BKXEU		10.82	0.72	0.64	11.04	0.33	0.93	MC
3UTZDY		10.63	0.53	0.47	11.14	0.43	1.21	MC
6HEPZT		7.99	-2.11	-1.87	10.28	-0.42	-1.17	XX
6Q9UTU		8.70	-1.40	-1.24	10.87	0.17	0.47	MC
86K3Q4		10.64	0.54	0.48	10.66	-0.04	-0.11	MC
89HJ4X		10.59	0.49	0.44	10.65	-0.05	-0.15	MC
8XLDAY		10.95	0.85	0.76	10.64	-0.06	-0.17	MC
9PLDBW		10.61	0.51	0.45	10.74	0.04	0.10	MC
9RBPA3		10.61	0.51	0.46	10.09	-0.61	-1.71	ME
AZWE2M		8.83	-1.27	-1.13	10.80	0.09	0.26	MM
BGYBXR	X	9.06	-1.04	-0.92	13.18	2.48	6.93	MC
CBUPTU		10.66	0.56	0.50	10.79	0.09	0.24	MC
EK64HZ	X	7.17	-2.93	-2.60	9.26	-1.45	-4.05	MC
EV7LYV		10.52	0.42	0.37	10.25	-0.46	-1.27	MD
HC4PBW		11.75	1.65	1.46	11.49	0.79	2.21	MX
K448TP		11.08	0.98	0.87	10.88	0.18	0.50	MR
KMDAHH		8.31	-1.79	-1.59	11.16	0.45	1.27	MC
KNNB6G		10.04	-0.06	-0.05	10.43	-0.27	-0.76	MC
MC9ZRB		7.67	-2.43	-2.15	10.09	-0.61	-1.70	MC
MECVBD		10.05	-0.05	-0.04	10.18	-0.53	-1.47	MC
MN2MX7		10.50	0.40	0.35	10.05	-0.66	-1.84	MC
MPCKBM		11.40	1.30	1.15	11.08	0.38	1.07	XX
N7YXPF		10.34	0.24	0.22	10.79	0.08	0.24	MC
NMM9CH		10.51	0.41	0.37	10.44	-0.26	-0.73	TP
NQMLWL		10.42	0.32	0.29	10.75	0.05	0.14	MC
RCU4QL		10.65	0.55	0.49	11.02	0.32	0.90	MC
RK4MTH		10.80	0.70	0.62	10.45	-0.25	-0.71	MC
RTGN77		10.88	0.78	0.69	11.25	0.55	1.54	MM
TFBUC9		8.11	-1.99	-1.76	10.88	0.18	0.50	MP
UM6BLD		10.66	0.56	0.50	10.59	-0.11	-0.31	MC
VGX4JE		10.78	0.68	0.60	10.90	0.20	0.56	MM
W2DAYZ		8.44	-1.66	-1.47	10.81	0.10	0.29	MX
WMEYYA		10.93	0.83	0.74	10.87	0.16	0.46	MM
WW6K68		11.03	0.93	0.83	11.04	0.33	0.94	MR
XNNMD7		10.77	0.67	0.60	10.96	0.25	0.71	MC



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 687

2nd Qtr 2020

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

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
ZQML24		10.50	0.40	0.35	10.55	-0.15	-0.43	ME

Summary Statistics			
Grand Means		10.099 minutes	10.702 minutes
Stnd Dev Btwn Labs		1.126 minutes	0.358 minutes
Statistics based on 36 of 38 reporting participants			

Samples X05-X06: EPDM compound, batch #1 & X07-X08: EPDM compound, batch #2

#### Comments on Assigned Data Flags for Test #687

BGYBXR (X) - Data for sample group X07-X08 are high. Inconsistent within the determinations of both sample groups.

EK64HZ (X) - Data for sample group X07-X08 are low.

#### Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	MD	Alpha Tech. Rubber Process Analyzer (RPA 2000)
ME	Alpha Tech. MDR Premiere	MM	MonTech MDR 3000
MP	Alpha Technologies [Monsanto] MDR 2000P	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha	TP	Tech Pro MDR model MDPT
XX	Instrument model not specified by lab		

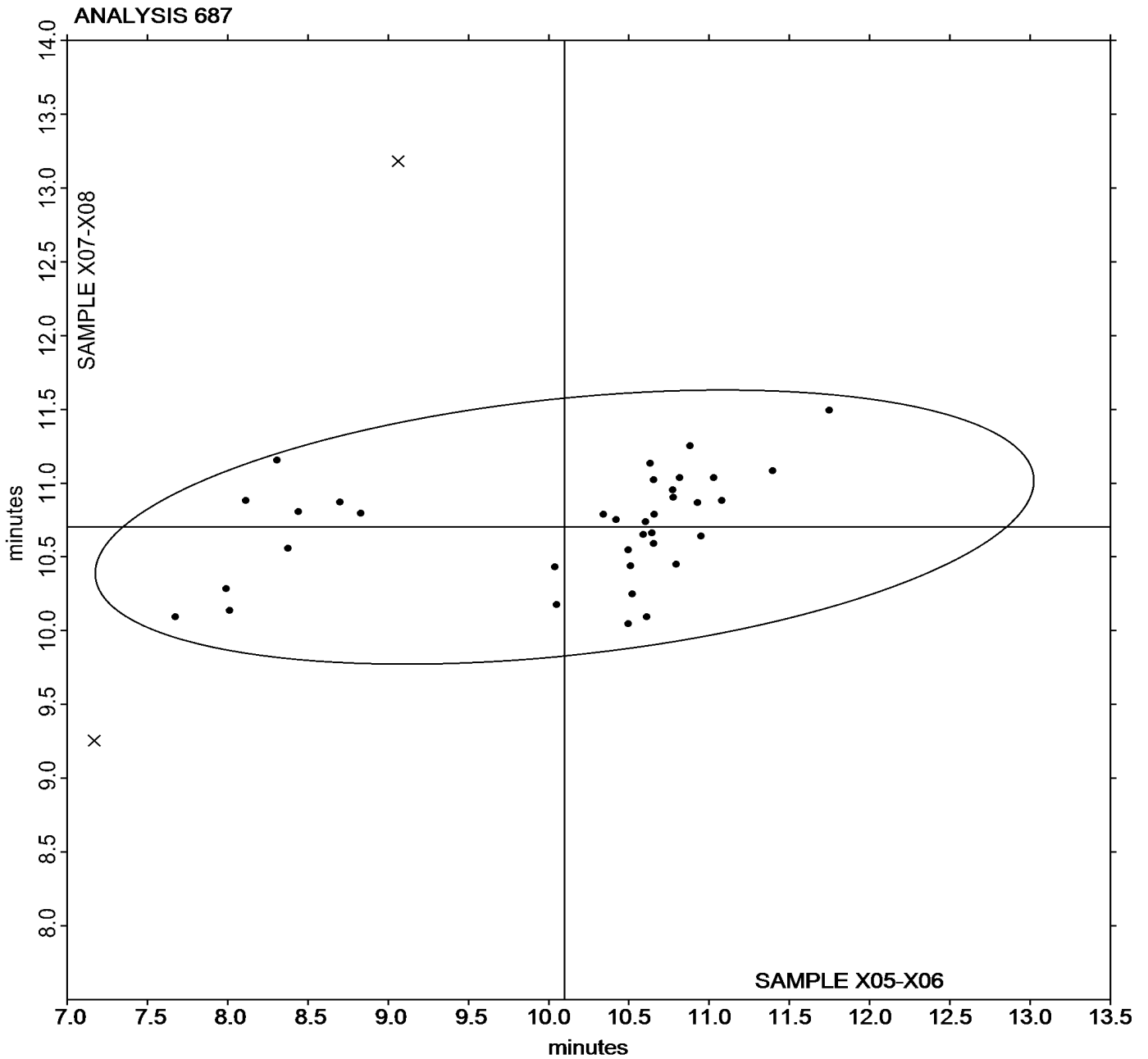


**Rubber Interlaboratory Testing Program**  
**Analysis 687**  
**MDR Vulcanization-Cure Time 90% (minutes)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample **X05-X06** = 10.099 minutes

Grand Mean Sample **X07-X08** = 10.702 minutes







# Rubber Interlaboratory Testing Program

Report #204

## Analysis 688

2nd Qtr 2020

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

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		2.059	-0.643	-1.56	1.896	-0.285	-0.74	MC
3B4JDC		2.348	-0.354	-0.86	2.038	-0.142	-0.37	MR
3BKXEU		2.598	-0.104	-0.25	1.912	-0.269	-0.70	MC
3UTZDY		2.645	-0.057	-0.14	2.232	0.051	0.13	MC
6HEPZT		2.373	-0.329	-0.80	2.060	-0.121	-0.31	XX
6Q9UTU		3.020	0.318	0.77	2.540	0.359	0.93	MC
86K3Q4		2.595	-0.107	-0.26	1.818	-0.362	-0.94	MC
89HJ4X		3.012	0.309	0.75	2.218	0.038	0.10	MC
8XLDAY		2.629	-0.074	-0.18	2.034	-0.146	-0.38	MC
9PLDBW		2.452	-0.251	-0.61	1.888	-0.292	-0.76	MC
9RBPA3		3.397	0.694	1.68	2.497	0.316	0.82	ME
AZWE2M		2.515	-0.187	-0.45	2.028	-0.152	-0.39	MM
BGYBXR		2.862	0.159	0.39	2.617	0.436	1.13	MC
CBUPTU		2.467	-0.236	-0.57	1.892	-0.289	-0.75	MC
EK64HZ		2.897	0.194	0.47	2.732	0.551	1.42	MC
EV7LYV		3.185	0.483	1.17	2.510	0.329	0.85	MD
HC4PBW		2.384	-0.319	-0.77	1.624	-0.557	-1.44	MX
K448TP		2.872	0.169	0.41	2.088	-0.092	-0.24	MR
KMDAHH		2.288	-0.415	-1.01	1.957	-0.223	-0.58	MC
KNNB6G		2.960	0.258	0.62	2.735	0.554	1.43	MC
MC9ZRB	*	3.708	1.006	2.44	3.428	1.248	3.22	MC
MECVBD		3.235	0.533	1.29	2.752	0.571	1.48	MC
MN2MX7		3.065	0.363	0.88	2.545	0.364	0.94	MC
MPCKBM		2.132	-0.571	-1.38	1.495	-0.686	-1.77	MM
N7YXPF		2.517	-0.186	-0.45	1.955	-0.226	-0.58	MC
NMM9CH		3.230	0.528	1.28	2.363	0.183	0.47	TP
NQMLWL		2.385	-0.317	-0.77	1.822	-0.359	-0.93	MC
RCU4QL		2.537	-0.166	-0.40	2.068	-0.112	-0.29	MC
RK4MTH		3.485	0.783	1.90	2.487	0.306	0.79	MC
RTGN77		2.243	-0.459	-1.11	1.793	-0.387	-1.00	MM
TFBUC9		2.126	-0.577	-1.40	1.941	-0.239	-0.62	MP
UM6BLD		2.952	0.249	0.60	2.058	-0.122	-0.32	MC
VGX4JE		2.967	0.264	0.64	2.543	0.363	0.94	MM
W2DAYZ		2.052	-0.651	-1.58	1.747	-0.434	-1.12	MX
WMEYYA		2.961	0.258	0.63	2.428	0.247	0.64	MM
WW6K68		2.663	-0.039	-0.09	2.015	-0.166	-0.43	MR
XNNMD7		2.384	-0.319	-0.77	1.937	-0.244	-0.63	MC
ZQML24		2.498	-0.204	-0.50	2.172	-0.009	-0.02	ME



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

**Report #204**  
**2nd Qtr 2020**

		Summary Statistics	
Grand Means			
	2.7025 lbf.in		2.1807 lbf.in
Stnd Dev Btwn Labs			
	0.4123 lbf.in		0.3869 lbf.in
Statistics based on 38 of 38 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	3.0534 dN.m		2.4638 dN.m
Stnd Dev Btwn Labs			
	0.4659 dN.m		0.4372 dN.m
Statistics based on 38 of 38 reporting participants			

Samples X05-X06: EPDM compound, batch #1 & X07-X08: EPDM compound, batch #2

**Key to Instrument Codes Reported by Participants**

<b>MC</b>	Alpha Technologies [Monsanto] MDR 2000 or 2000E	<b>MD</b>	Alpha Tech. Rubber Process Analyzer (RPA 2000)
<b>ME</b>	Alpha Tech. MDR Premiere	<b>MM</b>	MonTech MDR 3000
<b>MP</b>	Alpha Technologies [Monsanto] MDR 2000P	<b>MR</b>	MonTech D-RPA 3000
<b>MX</b>	Rebuilt MonTech Alpha	<b>TP</b>	Tech Pro MDR model MDPT
<b>XX</b>	Instrument model not specified by lab		

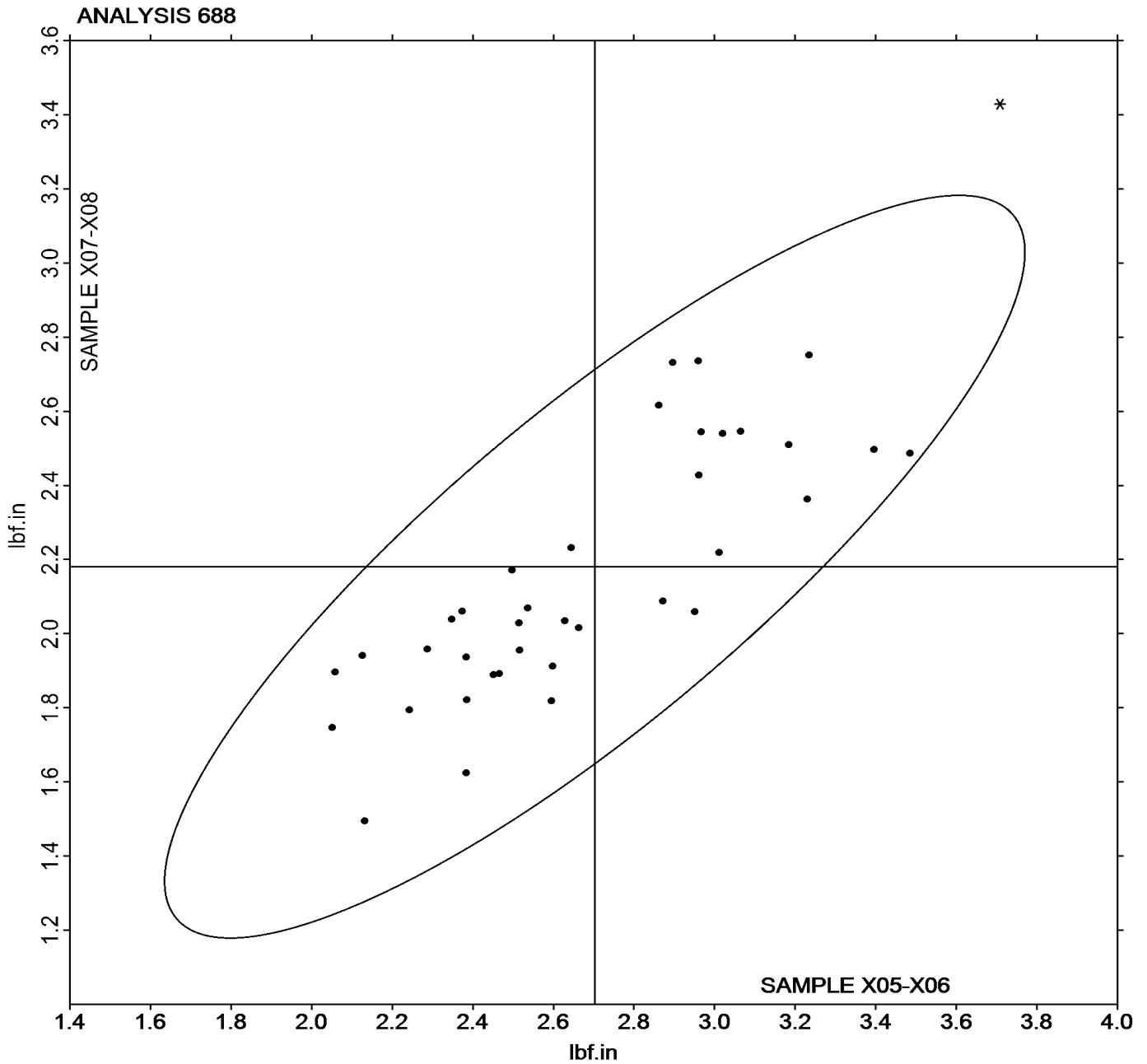


Rubber Interlaboratory Testing Program  
Analysis 688  
MDR Vulcanization: Minimum Torque (lbf.in)

Report #204  
2nd Qtr 2020

Grand Mean Sample X05-X06 = 2.7025 lbf.in

Grand Mean Sample X07-X08 = 2.1807 lbf.in





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 689

2nd Qtr 2020

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

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		12.63	-0.12	-0.12	12.12	-0.07	-0.08	MC
3B4JDC		11.45	-1.31	-1.31	11.01	-1.18	-1.35	MR
3BKXEU		12.46	-0.30	-0.30	12.05	-0.14	-0.16	MC
3UTZDY		12.76	0.01	0.01	12.64	0.45	0.51	MC
6HEPZT		12.00	-0.76	-0.76	11.43	-0.76	-0.87	XX
6Q9UTU		13.67	0.91	0.91	12.69	0.50	0.57	MC
86K3Q4		12.17	-0.59	-0.59	11.43	-0.76	-0.87	MC
89HJ4X		13.87	1.11	1.11	13.45	1.27	1.44	MC
8XLDAY		13.45	0.69	0.69	12.59	0.40	0.46	MC
9PLDBW		12.39	-0.36	-0.36	12.04	-0.14	-0.16	MC
9RBPA3		13.84	1.08	1.08	12.78	0.59	0.67	ME
AZWE2M		14.06	1.30	1.30	13.21	1.02	1.16	MM
BGYBXR		13.34	0.58	0.58	13.30	1.11	1.26	MC
CBUPTU		12.54	-0.21	-0.21	12.18	-0.01	-0.01	MC
EK64HZ		13.41	0.66	0.66	13.18	0.99	1.12	MC
EV7LYV		13.37	0.61	0.61	12.04	-0.15	-0.17	MD
HC4PBW		11.14	-1.62	-1.62	10.50	-1.68	-1.92	MX
K448TP		13.22	0.46	0.46	12.16	-0.03	-0.03	MR
KMDAHH		12.64	-0.11	-0.11	12.39	0.20	0.23	MC
KNNB6G		12.68	-0.08	-0.08	12.51	0.33	0.37	MC
MC9ZRB		13.34	0.58	0.58	12.89	0.70	0.80	MC
MECVBD		13.13	0.37	0.37	12.55	0.36	0.41	MC
MN2MX7		12.86	0.10	0.10	11.97	-0.21	-0.24	MC
MPCKBM		11.04	-1.71	-1.71	11.24	-0.94	-1.08	MM
N7YXPF	X	12.85	0.09	0.09	1.96	-10.23	-11.66	MC
NMM9CH		11.85	-0.91	-0.91	11.13	-1.05	-1.20	TP
NQMLWL		12.06	-0.70	-0.70	11.75	-0.44	-0.50	MC
RCU4QL		13.19	0.43	0.43	12.42	0.23	0.27	MC
RK4MTH		13.81	1.06	1.05	12.57	0.38	0.44	MC
RTGN77	*	9.69	-3.07	-3.07	9.85	-2.34	-2.66	MM
TFBUC9	X	2.19	-10.57	-10.56	1.44	-10.74	-12.24	MC
UM6BLD		13.59	0.83	0.83	12.71	0.52	0.59	MC
VGX4JE		12.61	-0.15	-0.15	12.03	-0.15	-0.18	MM
W2DAYZ		11.95	-0.81	-0.81	11.07	-1.11	-1.27	MX
WMEYYA		13.71	0.95	0.95	12.58	0.39	0.45	MM
WW6K68	*	14.88	2.12	2.12	14.46	2.27	2.59	MR
XNNMD7		12.24	-0.52	-0.52	11.97	-0.22	-0.25	MC



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 689

2nd Qtr 2020

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

WebCode	Data Flag	Sample X05-X06			Sample X07-X08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
ZQML24		12.26	-0.50	-0.50	11.88	-0.31	-0.35	ME

Summary Statistics			
Grand Means	12.758 lbf.in	12.188 lbf.in	
Stnd Dev Btwn Labs	1.001 lbf.in	0.877 lbf.in	
Statistics based on 36 of 38 reporting participants			

Summary Statistics in SI Units			
Grand Means	14.414 dN.m	13.771 dN.m	
Stnd Dev Btwn Labs	1.131 dN.m	0.991 dN.m	
Statistics based on 36 of 38 reporting participants			

Samples X05-X06: EPDM compound, batch #1 & X07-X08: EPDM compound, batch #2

#### Comments on Assigned Data Flags for Test #689

N7YXPF (X) - Extreme Data for sample group X07-X08.

TFBUC9 (X) - Extreme Data.

#### Key to Instrument Codes Reported by Participants

<b>MC</b>	Alpha Technologies [Monsanto] MDR 2000 or 2000E	<b>MD</b>	Alpha Tech. Rubber Process Analyzer (RPA 2000)
<b>ME</b>	Alpha Tech. MDR Premiere	<b>MM</b>	MonTech MDR 3000
<b>MR</b>	MonTech D-RPA 3000	<b>MX</b>	Rebuilt MonTech Alpha
<b>TP</b>	Tech Pro MDR model MDPT	<b>XX</b>	Instrument model not specified by lab

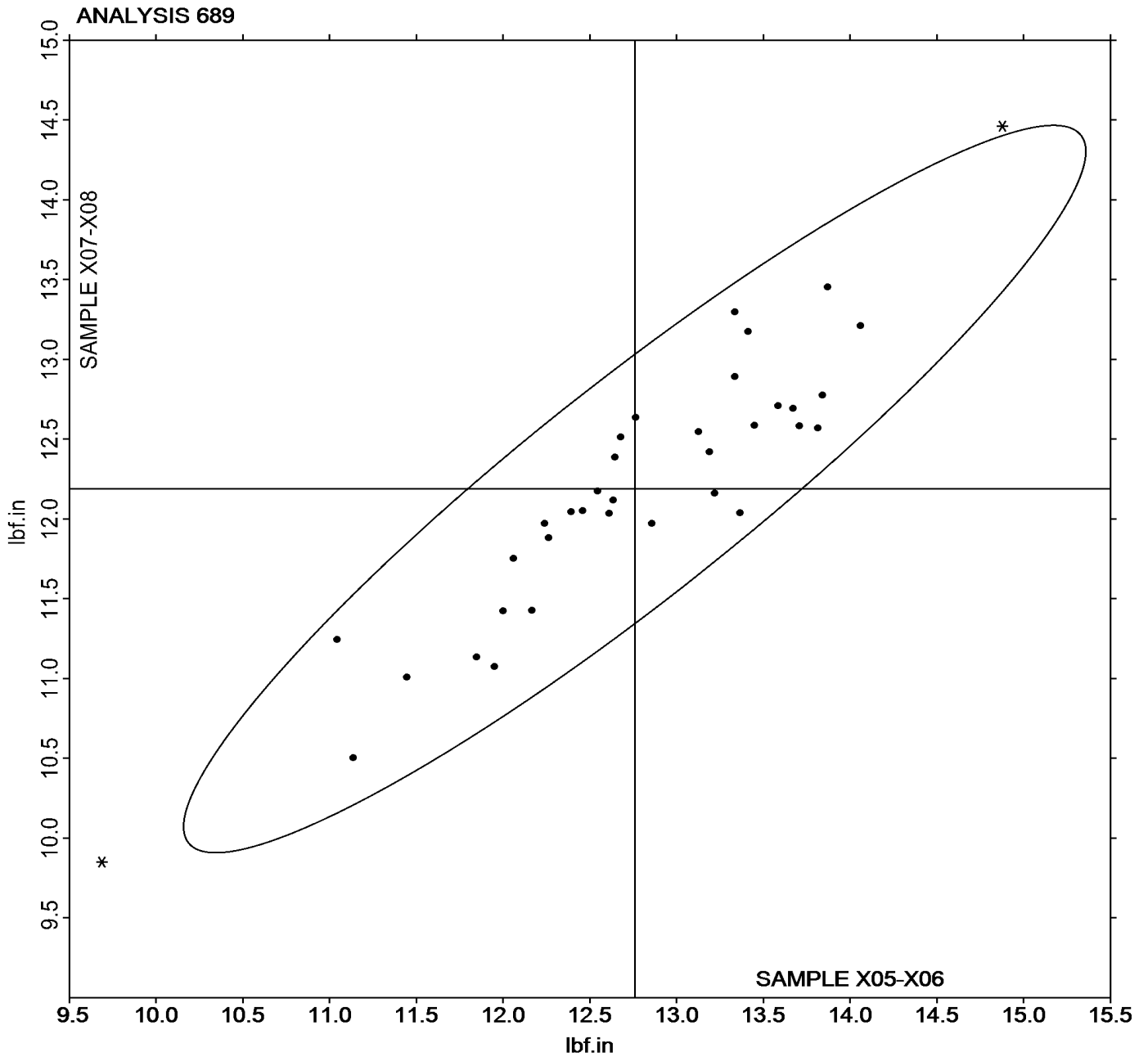


**Rubber Interlaboratory Testing Program**  
**Analysis 689**  
**MDR Vulcanization: Maximum Torque (lbf.in)**

**Report #204**  
**2nd Qtr 2020**

Grand Mean Sample X05-X06 = 12.758 lbf.in

Grand Mean Sample X07-X08 = 12.188 lbf.in





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 690

2nd Qtr 2020

### RPA Rheological Properties: Part A - G' at 20Hz (kPa)

WebCode	Data Flag	Sample F01-F02			Sample F03-F04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		493.1	-17.3	-0.39	446.8	-5.4	-0.17	RP
8XLDAY		494.4	-16.0	-0.36	448.8	-3.4	-0.11	RP
HC4PBW		436.3	-74.1	-1.66	391.7	-60.6	-1.85	RP
JABEUM		553.1	42.7	0.96	479.3	27.1	0.83	RP
UM6BLD		544.5	34.1	0.76	470.5	18.3	0.56	PR
VEARKA		541.0	30.6	0.68	476.2	24.0	0.73	XX

Summary Statistics	
Grand Means	
	510.43 kPa
	452.21 kPa
Std Dev Btwn Labs	
	44.64 kPa
	32.72 kPa
Statistics based on 6 of 6 reporting participants	

Samples F01-F02: EPDM compound, batch #1 & F03-F04: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab

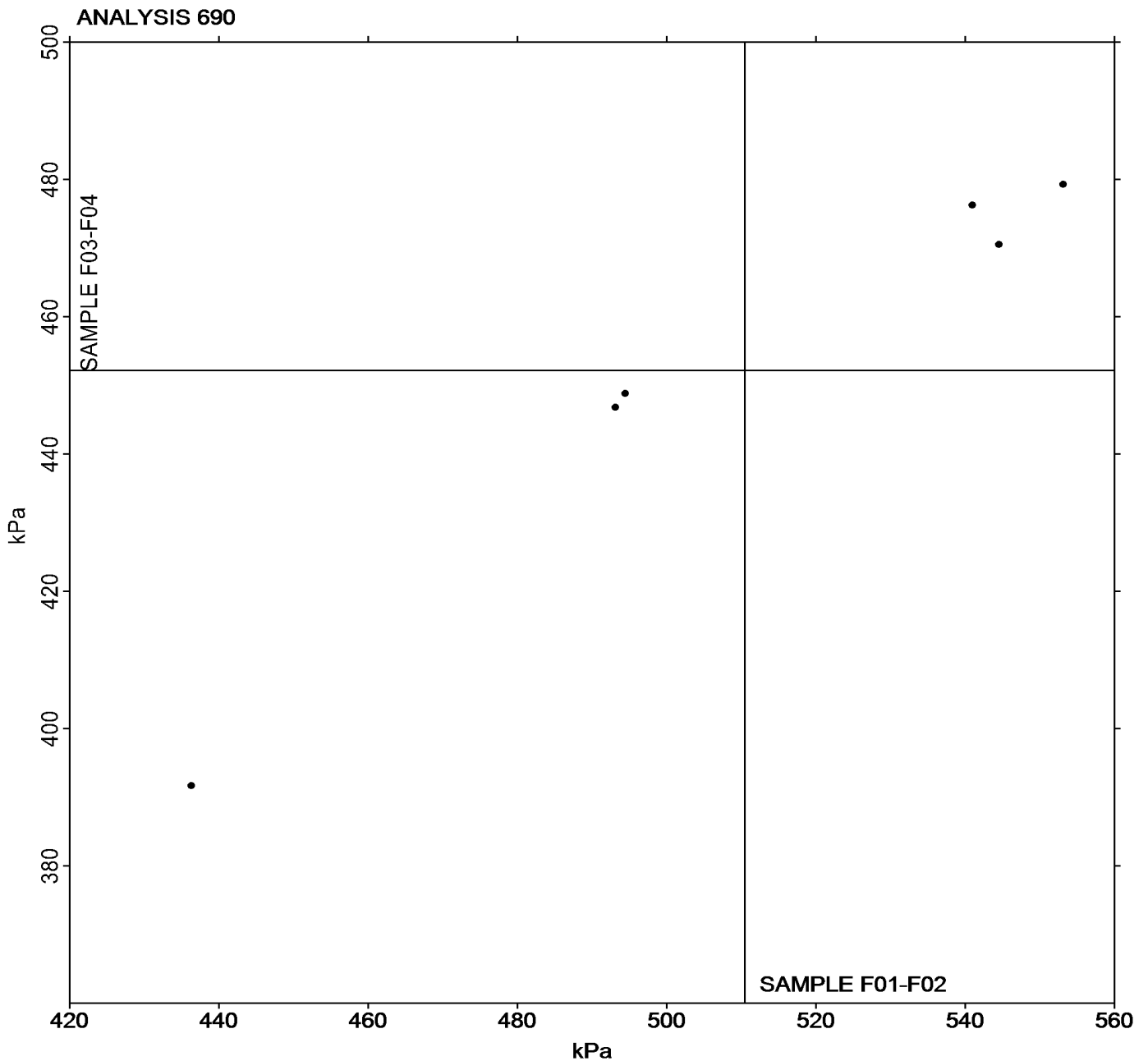


Rubber Interlaboratory Testing Program  
Analysis 690  
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #204  
2nd Qtr 2020

Grand Mean Sample **F01-F02** = 510.43 kPa

Grand Mean Sample **F03-F04** = 452.21 kPa



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





# Rubber Interlaboratory Testing Program

Report #204

## Analysis 691

2nd Qtr 2020

### RPA Rheological Properties: Part A - G'' at 20Hz (kPa)

WebCode	Data Flag	Sample F01-F02			Sample F03-F04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		197.8	-4.7	-0.26	191.9	0.3	0.02	RP
8XLDAY		196.3	-6.2	-0.34	189.8	-1.8	-0.12	RP
HC4PBW		172.2	-30.3	-1.65	165.4	-26.2	-1.81	RP
JABEUM		223.2	20.6	1.13	207.3	15.7	1.09	RP
UM6BLD		218.2	15.7	0.86	202.1	10.5	0.73	PR
VEARKA		207.4	4.9	0.27	193.0	1.4	0.10	XX

Summary Statistics	
Grand Means	202.51 kPa
Std Dev Btwn Labs	18.30 kPa
	191.57 kPa
	14.48 kPa
Statistics based on 6 of 6 reporting participants	

Samples F01-F02: EPDM compound, batch #1 & F03-F04: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab

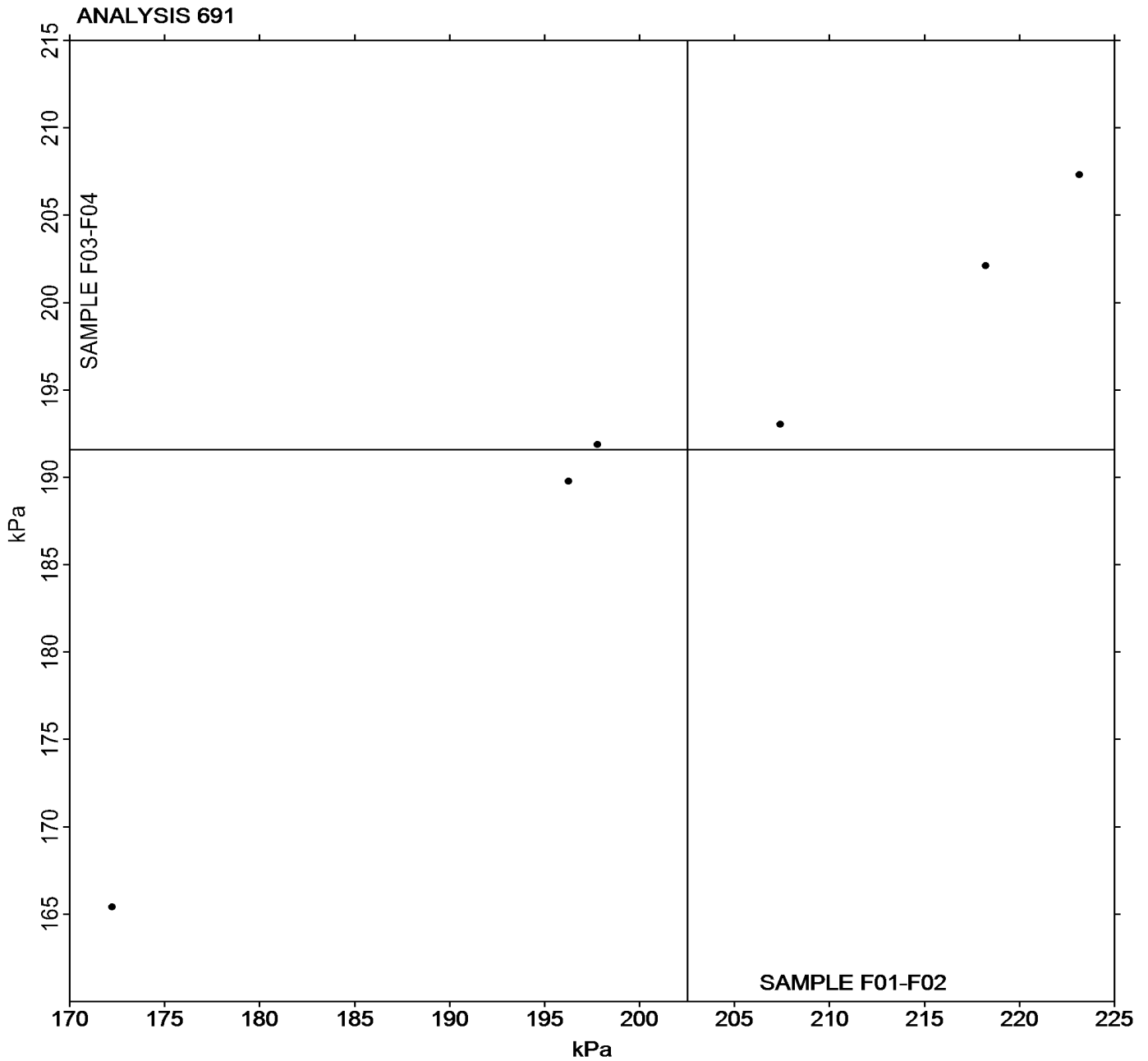


Rubber Interlaboratory Testing Program  
Analysis 691  
RPA Rheological Properties: Part A -  $G''$  at 20Hz (kPa)

Report #204  
2nd Qtr 2020

Grand Mean Sample **F01-F02** = 202.51 kPa

Grand Mean Sample **F03-F04** = 191.57 kPa



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



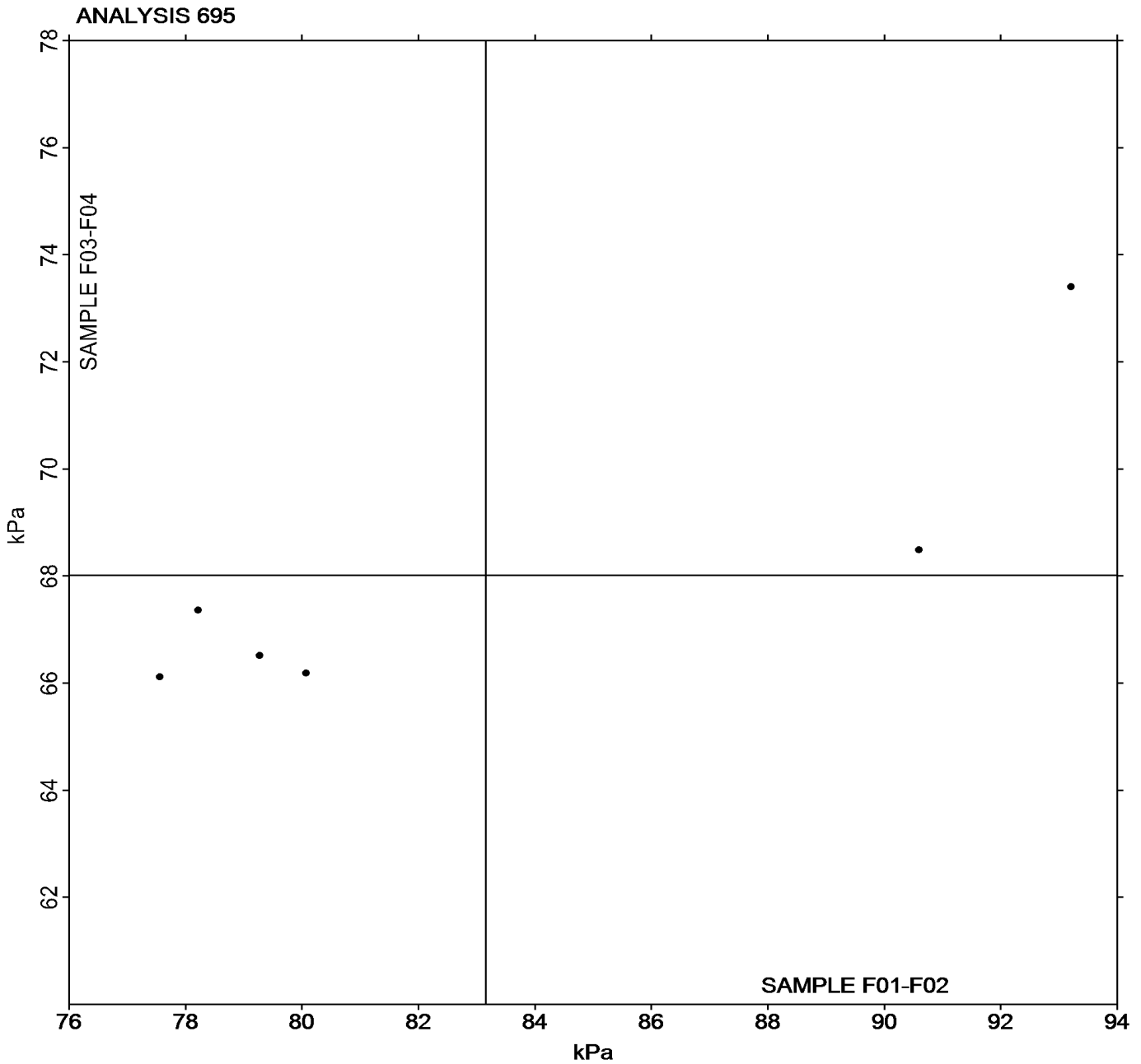


Rubber Interlaboratory Testing Program  
Analysis 695  
RPA Rheological Properties: Part B -  $G'$  at 1.0Hz (kPa)

Report #204  
2nd Qtr 2020

Grand Mean Sample **F01-F02** = 83.153 kPa

Grand Mean Sample **F03-F04** = 68.010 kPa



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



# Rubber Interlaboratory Testing Program

Report #204

## Analysis 696

2nd Qtr 2020

### RPA Rheological Properties: Part B - G'' at 1.0Hz (kPa)

WebCode	Data Flag	Sample F01-F02			Sample F03-F04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CHQYT		67.78	-0.94	-0.15	63.78	0.51	0.10	RP
8XLDAY		67.63	-1.09	-0.18	63.71	0.44	0.09	RP
HC4PBW		57.38	-11.34	-1.83	53.51	-9.76	-1.93	RP
JABEUM		72.09	3.37	0.54	65.28	2.01	0.40	XX
UM6BLD		73.25	4.54	0.73	65.03	1.75	0.35	PR
VEARKA		74.17	5.45	0.88	68.33	5.06	1.00	XX

Summary Statistics	
Grand Means	68.714 kPa
Std Dev Btwn Labs	6.202 kPa
	63.273 kPa
	5.069 kPa
Statistics based on 6 of 6 reporting participants	

Samples F01-F02: EPDM compound, batch #1 & F03-F04: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab



# Rubber Interlaboratory Testing Program

Report #204

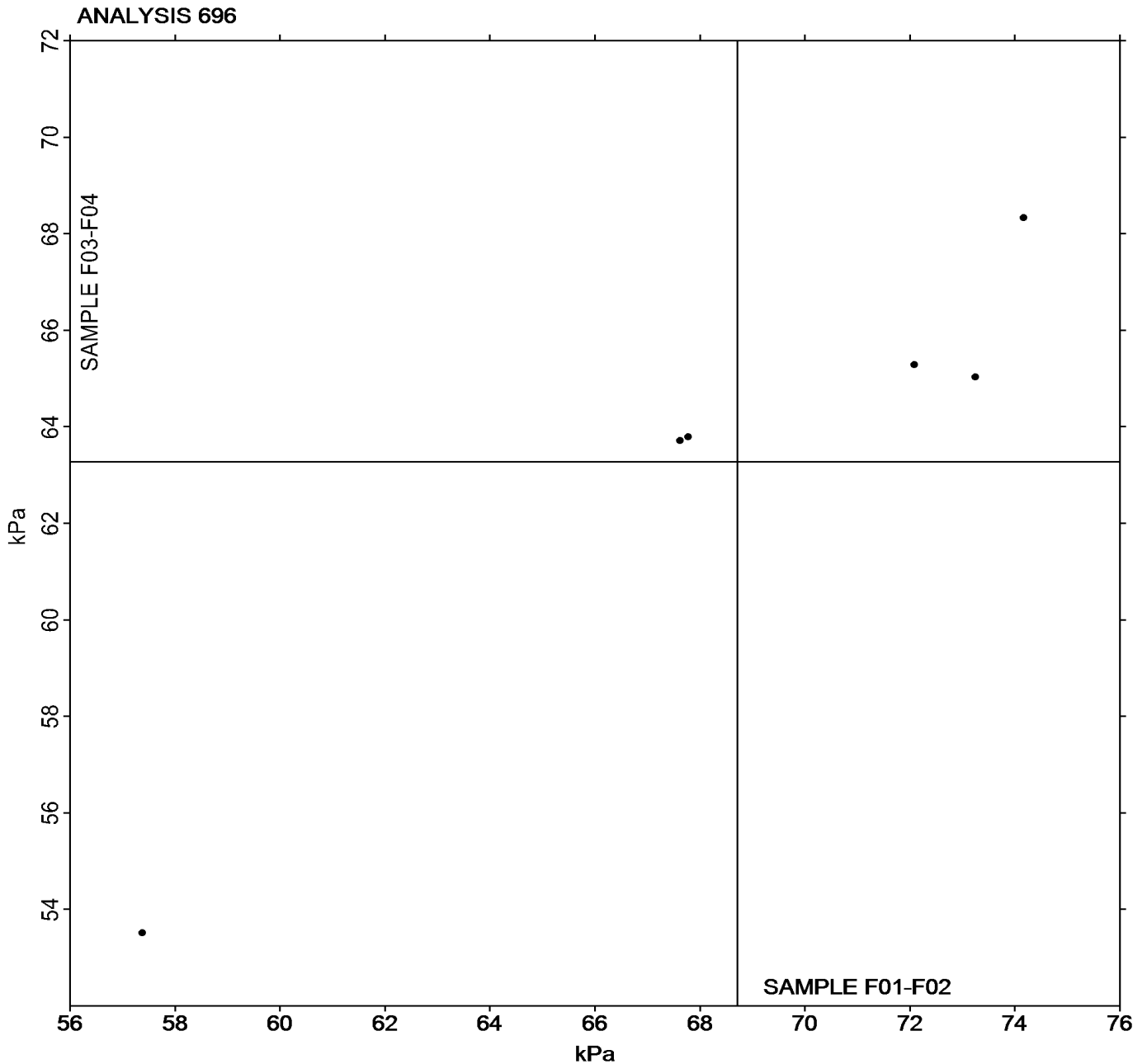
## Analysis 696

2nd Qtr 2020

### RPA Rheological Properties: Part B - G'' at 1.0Hz (kPa)

Grand Mean Sample **F01-F02** = 68.714 kPa

Grand Mean Sample **F03-F04** = 63.273 kPa



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

-End of Report-