

Rubber Interlaboratory Testing Program

Summary Report #203- 1st Qtr 2020

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Analysis	Analysis Name	Analysis	Analysis Name
605	Tensile Strength: Precured Rubber Samples	690	RPA Rheological Properties: Part A - G' at 20Hz
606	Ultimate Elongation: Precured Rubber Samples	691	RPA Rheological Properties: Part A - G'' at 20Hz
607	Stress at 300% Elongation: Precured Samples	695	RPA Rheological Properties: Part B - G' at 1.0Hz
608	Stress at 100% Elongation: Precured Samples	696	RPA Rheological Properties: Part B - G'' at 1.0Hz
620	Hardness (Type A): Precured Rubber Samples		
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673	ODR Vulcanization Charac.: Minimum Torque		
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685	MDR Vulcanization Charac.: Scorch Time, Ts1		
686	MDR Vulcanization Charac.: Cure Time 50%		
687	MDR Vulcanization Charac.: Cure Time 90%		
688	MDR Vulcanization Charac.: Minimum Torque		
689	MDR Vulcanization Charac.: Maximum Torque		

ABOUT THE PROGRAM

The Collaborative Reference Program for RUBBER, which was initiated in 1969, is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance provided by the Rubber Division of the American Chemical Society. The program allows laboratories to compare periodically the level and uniformity of their testing with that of other participating laboratories. It also provides a realistic assessment of the state of rubber testing proficiency.

For each test there are summary statistics and a graphical representation of the data. Also shown are notes concerning specific laboratory results, as well as significant findings related to instrument types or other testing variations. Please refer to the section KEY TO TABLES AND GRAPHS for an explanation of terms and guidelines to interpreting the results.

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industrial sectors, including rubber, plastics, fasteners and metals, containerboard, paper and color, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 80 countries, currently participate in CTS programs.

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

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

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

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.**

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 #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		3,191.5	41.0	0.32	3,256.5	117.2	0.88
2X4MNH		3,025.4	-125.1	-0.98	2,991.9	-147.5	-1.11
2ZA44Z		3,082.5	-68.0	-0.54	3,059.5	-79.8	-0.60
3AW4DJ		3,003.8	-146.7	-1.16	2,955.2	-184.2	-1.38
3B87YH		3,061.2	-89.3	-0.70	3,019.3	-120.1	-0.90
3RJF9X	*	2,829.7	-320.8	-2.53	2,940.6	-198.8	-1.49
3TMEZH		3,190.9	40.4	0.32	3,227.1	87.8	0.66
4DT6YX		3,169.5	19.0	0.15	3,209.5	70.2	0.53
4XGVPG		3,257.5	107.0	0.84	3,217.5	78.2	0.59
68HJGE		3,248.5	98.0	0.77	3,278.0	138.7	1.04
6Y8GVD		3,030.0	-120.5	-0.95	2,957.0	-182.3	-1.37
73LATX		3,275.0	124.5	0.98	3,218.0	78.7	0.59
76AMBG		3,164.0	13.5	0.11	3,268.5	129.2	0.97
7CBVYW		3,230.5	80.0	0.63	3,274.0	134.7	1.01
7MUCQ3		3,318.5	168.0	1.32	3,277.0	137.7	1.03
84TQJG		3,004.0	-146.5	-1.15	2,922.0	-217.3	-1.63
888NNH		2,937.0	-213.5	-1.68	2,879.0	-260.3	-1.95
8CNVCH		3,131.2	-19.3	-0.15	3,137.9	-1.5	-0.01
8RHEAT		3,067.5	-83.0	-0.65	3,141.0	1.7	0.01
8VLATV		3,077.0	-73.5	-0.58	3,050.0	-89.3	-0.67
92KZTD		3,029.5	-121.0	-0.95	3,010.0	-129.3	-0.97
99HPAG		3,025.0	-125.5	-0.99	3,060.0	-79.3	-0.60
9RUCXB		3,282.0	131.5	1.04	3,308.7	169.4	1.27
9Z9KYC		3,368.5	218.0	1.72	3,251.0	111.7	0.84
A9DTEC	*	2,829.0	-321.5	-2.53	2,827.0	-312.3	-2.34
AQZ4AR		3,130.5	-20.0	-0.16	3,161.0	21.7	0.16
AZ6BPQ		3,095.5	-55.0	-0.43	3,074.0	-65.3	-0.49
B2Y779		3,173.7	23.2	0.18	3,207.8	68.4	0.51
B79JM8		3,248.9	98.4	0.77	3,234.4	95.0	0.71
BP3BPR		3,363.0	212.5	1.67	3,235.0	95.7	0.72
C3ZQ7D		3,336.6	186.1	1.47	3,317.8	178.4	1.34
CAP2NN		3,072.5	-78.0	-0.61	3,098.5	-40.8	-0.31
CCQCCB		3,190.9	40.4	0.32	3,118.3	-21.0	-0.16
CX9JN6	X	3,908.8	758.3	5.97	3,705.7	566.4	4.25
D32XUQ		3,172.0	21.5	0.17	3,240.0	100.7	0.76
DDJHEM		3,176.0	25.5	0.20	3,118.0	-21.3	-0.16
DNXG34		3,079.5	-71.0	-0.56	3,006.4	-133.0	-1.00
DTCAYN		3,134.5	-16.0	-0.13	3,149.0	9.7	0.07



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DTTBZ6		3,190.5	40.0	0.31	3,097.0	-42.3	-0.32
EBTHRC		3,207.0	56.5	0.44	3,201.5	62.2	0.47
EDVJRA		2,951.5	-198.9	-1.57	3,009.6	-129.8	-0.97
EVFAQ9		3,144.0	-6.5	-0.05	3,166.0	26.7	0.20
F6ZZQ7		3,390.9	240.4	1.89	3,345.5	206.2	1.55
FYAQG8		3,050.0	-100.5	-0.79	3,160.0	20.7	0.15
FYU8WA		3,118.0	-32.5	-0.26	3,081.5	-57.8	-0.43
GXFF3K		3,127.0	-23.5	-0.18	3,053.0	-86.3	-0.65
GY4VB8		3,154.6	4.1	0.03	3,002.3	-137.0	-1.03
HBZYEZ		3,317.0	166.5	1.31	3,281.0	141.7	1.06
HFA9NH		3,201.1	50.6	0.40	3,174.4	35.1	0.26
HRKPDZ		3,086.0	-64.5	-0.51	3,057.6	-81.7	-0.61
J26GDX	X	3,688.1	537.6	4.23	3,625.4	486.0	3.65
JKKPEX		3,151.7	1.2	0.01	3,131.4	-8.0	-0.06
JMNKX2		3,153.8	3.4	0.03	3,133.5	-5.8	-0.04
JPF4H		3,380.9	230.4	1.81	3,362.4	223.0	1.67
K4UZZG		3,350.4	199.9	1.57	3,351.1	211.8	1.59
K6JDHY		3,307.0	156.5	1.23	3,363.0	223.7	1.68
LB6M73		3,050.0	-100.5	-0.79	3,068.0	-71.3	-0.54
LJ3DVJ		2,905.5	-245.0	-1.93	3,014.0	-125.3	-0.94
LM2PQJ		3,350.4	199.9	1.57	3,335.9	196.5	1.47
LTZFQZ		3,151.2	0.7	0.01	3,172.7	33.3	0.25
MWLFQG		3,272.5	122.0	0.96	3,239.5	100.2	0.75
NA237R	X	3,764.1	613.6	4.83	3,816.2	676.8	5.08
NWFKKF		3,085.0	-65.5	-0.52	2,998.7	-140.7	-1.06
PNFKKD		3,139.5	-11.0	-0.09	3,189.5	50.2	0.38
PPUWGX		3,212.1	61.6	0.48	3,185.9	46.5	0.35
QDEL4R		3,105.0	-45.5	-0.36	3,114.0	-25.3	-0.19
QF6HYD		3,155.0	4.5	0.04	3,225.0	85.7	0.64
QNTJ9V		3,034.5	-116.0	-0.91	3,151.5	12.2	0.09
QRWERX		3,172.5	22.0	0.17	3,204.0	64.7	0.48
QXH84X		3,219.5	69.0	0.54	3,242.0	102.6	0.77
RWKGBN		3,300.0	149.5	1.18	3,189.5	50.2	0.38
TDN9YB		3,026.0	-124.5	-0.98	2,923.5	-215.8	-1.62
TL4WRR		3,152.0	1.5	0.01	3,218.5	79.2	0.59
U2BALU		2,966.0	-184.5	-1.45	2,880.5	-258.8	-1.94
U7N9Y9		3,327.0	176.5	1.39	3,300.0	160.7	1.21



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
UD4WRP		3,422.2	271.7	2.14	3,377.2	237.9	1.78
VJRQB9		3,079.2	-71.3	-0.56	3,133.6	-5.8	-0.04
VNVY9N		3,168.5	18.0	0.14	3,121.0	-18.3	-0.14
W9L7M7		3,042.5	-108.0	-0.85	2,923.5	-215.8	-1.62
W9X82T		3,282.9	132.5	1.04	3,253.9	114.6	0.86
WDWJ66		3,098.0	-52.5	-0.41	3,096.5	-42.8	-0.32
WM8LQ7		3,077.5	-73.0	-0.57	2,921.0	-218.3	-1.64
WYTZLT		3,154.3	3.8	0.03	3,145.3	5.9	0.04
XEJM6P	*	3,265.5	115.0	0.91	3,073.5	-65.8	-0.49
YD3PCQ		3,104.8	-45.7	-0.36	3,216.8	77.4	0.58
YK9GN9		3,031.3	-119.2	-0.94	3,015.4	-124.0	-0.93
YMWXXC		3,150.0	-0.5	0.00	3,233.0	93.7	0.70
Z34CRK		3,257.9	107.4	0.85	3,333.9	194.5	1.46
Z74MNJ		2,900.0	-250.5	-1.97	2,820.0	-319.3	-2.40

Summary Statistics	
Grand Means	
3,150.49 psi	3,139.35 psi
Std Dev Btwn Labs	
127.02 psi	133.31 psi
Statistics based on 86 of 89 reporting participants	

Summary Statistics in SI Units	
Grand Means	
21.722 MPa	21.64 MPa
Std Dev Btwn Labs	
0.876 MPa	0.92 MPa
Statistics based on 86 of 89 reporting participants	

Samples A01-A02: Polyisoprene compound, batch #1 & A03-A04: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #605

- CX9JN6 (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group A01-A02.
- J26GDX (X) - Data for all samples are high. Possible Systematic Error.
- NA237R (X) - Data for all samples are high. Possible Systematic Error.

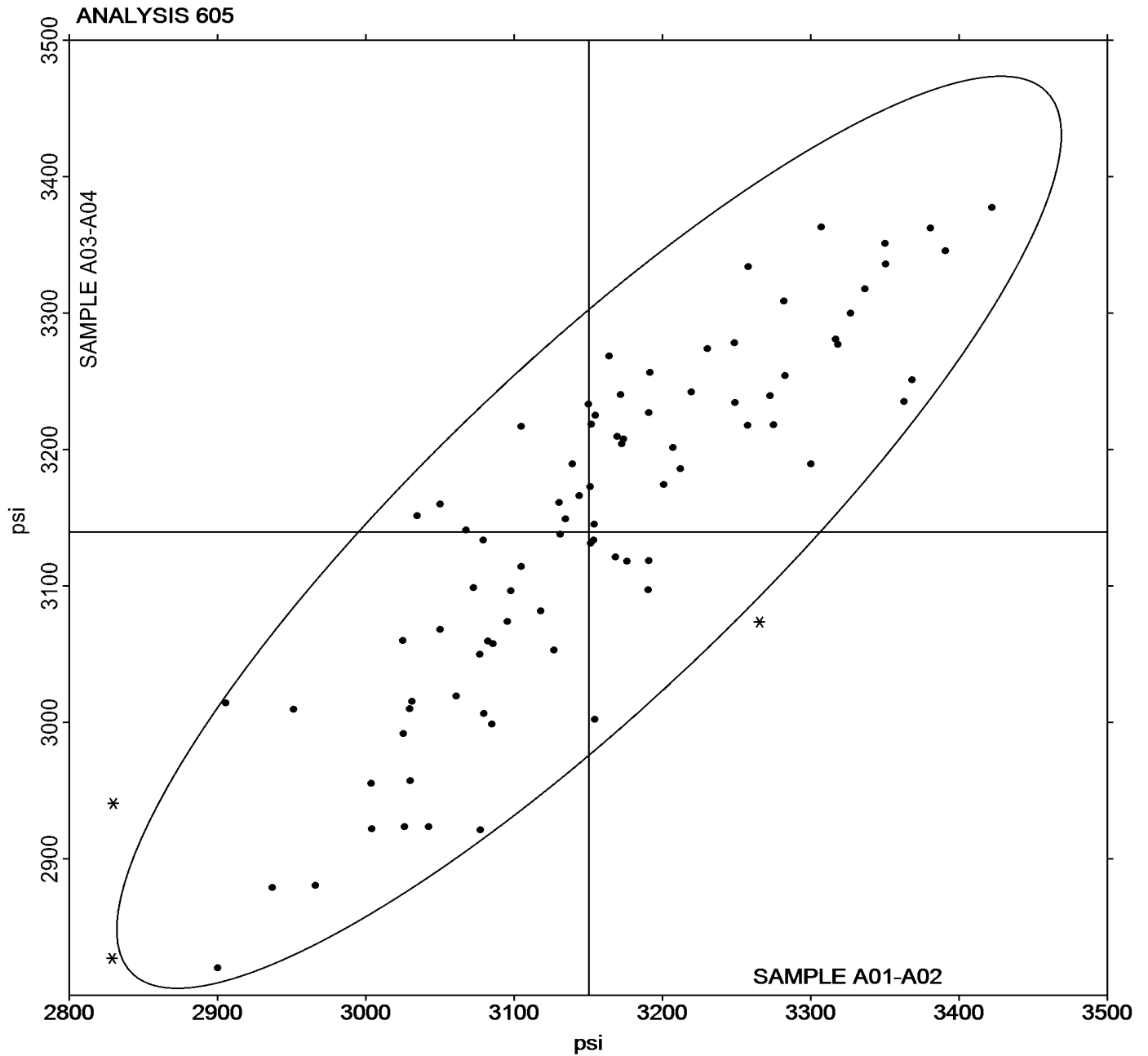


Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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Grand Mean Sample **A01-A02** = 3,150.49 psi

Grand Mean Sample **A03-A04** = 3,139.35 psi





Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		599.0	-20.7	-0.82	628.5	6.7	0.25
2X4MNH		582.5	-37.2	-1.47	599.5	-22.3	-0.85
2ZA44Z		609.0	-10.7	-0.42	606.0	-15.8	-0.60
3AW4DJ		607.5	-12.2	-0.48	603.0	-18.8	-0.72
3B87YH		629.0	9.3	0.37	644.0	22.2	0.84
3RJF9X		630.0	10.3	0.41	640.0	18.2	0.69
3TMEZH	X	541.0	-78.7	-3.12	574.5	-47.3	-1.80
4DT6YX		623.5	3.8	0.15	624.5	2.7	0.10
4XGVPG		596.0	-23.7	-0.94	599.5	-22.3	-0.85
68HJGE		604.5	-15.2	-0.60	624.0	2.2	0.08
6Y8GVD		603.0	-16.7	-0.66	605.0	-16.8	-0.64
73LATX		632.5	12.8	0.51	616.0	-5.8	-0.22
76AMBG		627.0	7.3	0.29	646.5	24.7	0.94
7CBVYW		643.0	23.3	0.92	648.0	26.2	0.99
7MUCQ3		633.5	13.8	0.55	631.0	9.2	0.35
84TQJG		603.5	-16.2	-0.64	588.5	-33.3	-1.27
888NNH	*	685.0	65.3	2.58	686.5	64.7	2.46
8CNVCH		615.5	-4.3	-0.17	610.7	-11.1	-0.42
8RHEAT		591.5	-28.2	-1.12	610.5	-11.3	-0.43
8VLATV		598.5	-21.2	-0.84	588.5	-33.3	-1.27
92KZTD		623.0	3.3	0.13	608.5	-13.3	-0.51
9RUCXB		623.5	3.8	0.15	620.1	-1.7	-0.07
9Z9KYC	X	673.6	53.8	2.13	620.8	-1.0	-0.04
A9DTEC		648.0	28.3	1.12	653.5	31.7	1.20
AQZ4AR		595.5	-24.2	-0.96	601.0	-20.8	-0.79
AZ6BPQ		577.5	-42.2	-1.67	570.0	-51.8	-1.97
B2Y779	X	706.3	86.6	3.43	726.0	104.1	3.96
B79JM8		629.5	9.8	0.39	628.0	6.2	0.23
BP3BPR		645.0	25.3	1.00	644.5	22.7	0.86
C3ZQ7D		617.5	-2.2	-0.09	621.0	-0.8	-0.03
CAP2NN		638.5	18.8	0.74	643.0	21.2	0.80
CCQCCB		598.5	-21.2	-0.84	618.0	-3.8	-0.15
CX9JN6		599.5	-20.2	-0.80	598.5	-23.3	-0.89
D32XUQ		632.5	12.8	0.51	642.0	20.2	0.77
DDJHEM		638.5	18.8	0.74	627.5	5.7	0.21
DNXG34		607.2	-12.5	-0.49	597.3	-24.6	-0.93
DTCAYN		613.0	-6.7	-0.27	619.5	-2.3	-0.09



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DTTBZ6		632.5	12.8	0.51	609.5	-12.3	-0.47
EBTHRC		637.0	17.3	0.68	656.5	34.7	1.32
EDVJRA		586.1	-33.6	-1.33	591.4	-30.5	-1.16
EVFAQ9		675.0	55.3	2.19	665.0	43.2	1.64
F6ZZQ7		632.8	13.1	0.52	636.5	14.7	0.56
FYAQG8		609.5	-10.2	-0.40	624.5	2.7	0.10
FYU8WA		645.5	25.8	1.02	630.5	8.7	0.33
GXFF3K		610.0	-9.7	-0.39	607.5	-14.3	-0.54
GY4VB8		608.7	-11.0	-0.44	622.2	0.3	0.01
HBZYEZ		634.5	14.8	0.58	625.0	3.2	0.12
HFA9NH		626.7	6.9	0.28	623.2	1.4	0.05
HRKPDZ		579.7	-40.0	-1.58	585.4	-36.4	-1.38
J26GDX		577.3	-42.4	-1.68	581.4	-40.5	-1.54
JMNKX2		593.0	-26.8	-1.06	586.9	-35.0	-1.33
JPFF4H		649.1	29.4	1.16	638.3	16.5	0.63
K4UZZG		637.7	18.0	0.71	645.9	24.1	0.91
K6JDHY		634.5	14.8	0.58	647.0	25.2	0.96
LB6M73		626.0	6.3	0.25	640.5	18.7	0.71
LJ3DVJ	X	534.0	-85.7	-3.39	549.0	-72.8	-2.77
LM2PQJ	*	586.9	-32.8	-1.30	559.3	-62.5	-2.38
LTZSQZ		632.8	13.1	0.52	623.6	1.7	0.07
MWLFQG		619.0	-0.7	-0.03	623.5	1.7	0.06
NA237R		568.4	-51.3	-2.03	588.1	-33.8	-1.28
NWFKKF		602.5	-17.2	-0.68	598.5	-23.3	-0.89
PNFKKD		619.5	-0.2	-0.01	622.0	0.2	0.01
PPUWGX		626.0	6.3	0.25	621.0	-0.8	-0.03
QDEL4R		623.0	3.3	0.13	604.5	-17.3	-0.66
QF6HYD		614.0	-5.7	-0.23	631.0	9.2	0.35
QNTJ9V		596.0	-23.7	-0.94	604.0	-17.8	-0.68
QRWERX		612.0	-7.7	-0.31	616.5	-5.3	-0.20
QXH84X		621.0	1.2	0.05	631.8	9.9	0.38
RWKGBN		586.0	-33.7	-1.34	598.0	-23.8	-0.91
TDN9YB	*	635.5	15.8	0.62	672.5	50.7	1.92
TL4WRR	*	691.5	71.8	2.84	689.5	67.7	2.57
U2BALU		584.0	-35.7	-1.41	576.5	-45.3	-1.72
U7N9Y9		627.5	7.8	0.31	622.0	0.2	0.01
UD4WRP		589.0	-30.7	-1.22	590.0	-31.8	-1.21
VJRQB9		598.0	-21.7	-0.86	611.0	-10.8	-0.41



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
VNVY9N		622.0	2.3	0.09	623.5	1.7	0.06
W9L7M7		569.0	-50.7	-2.01	561.0	-60.8	-2.31
W9X82T		634.4	14.7	0.58	622.2	0.4	0.02
WDWJ66		636.5	16.8	0.66	643.5	21.7	0.82
WM8LQ7		629.0	9.3	0.37	626.0	4.2	0.16
WYTZLT		644.5	24.8	0.98	646.5	24.7	0.94
XEJM6P		623.5	3.8	0.15	629.0	7.2	0.27
YD3PCQ		637.5	17.8	0.70	644.3	22.4	0.85
YK9GN9	*	622.5	2.8	0.11	656.0	34.2	1.30
YMWXXC		655.0	35.3	1.40	666.5	44.7	1.70
Z34CRK		647.9	28.1	1.11	629.7	7.9	0.30
Z74MNJ	*	686.0	66.3	2.62	672.0	50.2	1.90

Grand Means		Summary Statistics	
	619.73 percent		621.85 percent
Std Dev Btwn Labs	25.26 percent		26.33 percent
Statistics based on 83 of 87 reporting participants			

Samples A01-A02: Polyisoprene compound, batch #1 & A03-A04: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #606

- 3TMEZH (X) - Data for sample group A01-A02 are low. Inconsistent within the determinations of sample group A03-A04.
- 9Z9KYC (X) - Inconsistent in testing between samples.
- B2Y779 (X) - Data for all samples are high. Possible Systematic Error.
- LJ3DVJ (X) - Data for all samples are low. Possible Systematic Error.

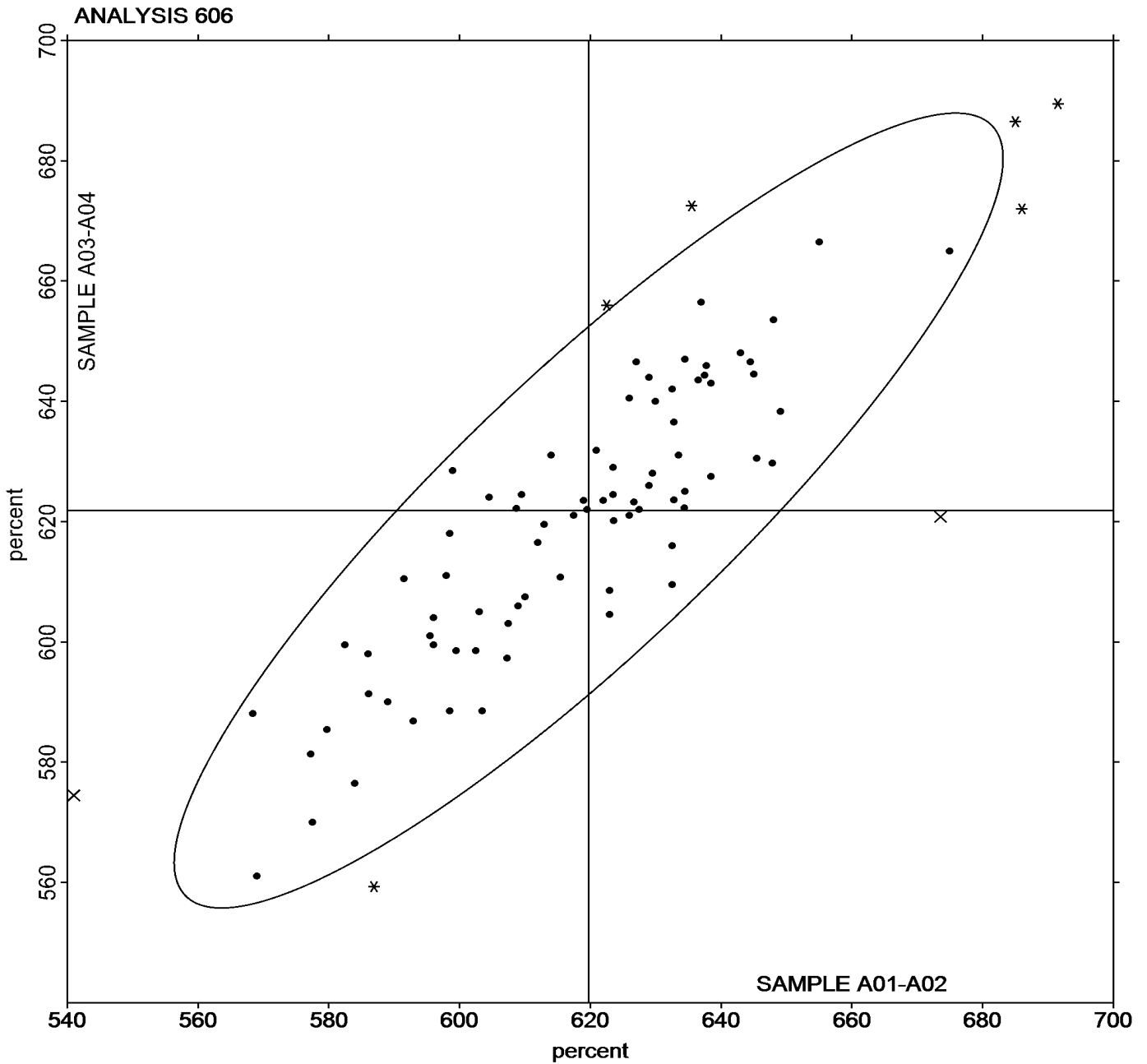


Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #203
1st Qtr 2020

Grand Mean Sample A01-A02 = 619.73 percent

Grand Mean Sample A03-A04 = 621.85 percent





Rubber Interlaboratory Testing Program

Report #203

Analysis 607

1st Qtr 2020

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		929.5	35.1	0.52	882.0	-2.6	-0.04
2X4MNH		851.6	-42.8	-0.64	842.0	-42.6	-0.74
2ZA44Z		887.0	-7.4	-0.11	878.0	-6.6	-0.11
3AW4DJ		921.0	26.6	0.40	874.6	-10.0	-0.17
3B87YH		864.9	-29.5	-0.44	802.5	-82.0	-1.43
3RJF9X		775.5	-118.9	-1.77	784.0	-100.6	-1.75
3TMEZH	*	1,095.0	200.6	2.99	1,029.8	145.2	2.52
4DT6YX		889.0	-5.4	-0.08	898.0	13.4	0.23
4XGVPG		987.0	92.6	1.38	959.5	74.9	1.30
68HJGE		965.5	71.1	1.06	890.0	5.4	0.09
6Y8GVD		892.0	-2.4	-0.04	876.5	-8.1	-0.14
73LATX		921.0	26.6	0.40	957.0	72.4	1.26
76AMBG		903.5	9.1	0.14	853.0	-31.6	-0.55
7CBVYW		831.0	-63.4	-0.94	853.0	-31.6	-0.55
84TQJG		893.0	-1.4	-0.02	886.5	1.9	0.03
888NNH		979.0	84.6	1.26	958.0	73.4	1.28
8CNVCH		852.1	-42.3	-0.63	853.3	-31.3	-0.54
8RHEAT		950.5	56.1	0.84	898.0	13.4	0.23
92KZTD		875.5	-18.9	-0.28	894.0	9.4	0.16
9RUCXB		917.8	23.4	0.35	959.3	74.7	1.30
9Z9KYC	*	808.6	-85.8	-1.28	896.3	11.8	0.20
AQZ4AR		904.0	9.6	0.14	897.0	12.4	0.22
AZ6BPQ		1,017.0	122.6	1.83	1,013.0	128.4	2.23
B2Y779	X	736.6	-157.8	-2.35	679.4	-205.2	-3.56
B79JM8		955.1	60.7	0.90	934.1	49.5	0.86
BP3BPR		858.0	-36.4	-0.54	817.5	-67.1	-1.17
C3ZQ7D		1,022.5	128.1	1.91	965.2	80.6	1.40
CAP2NN		799.5	-94.9	-1.41	818.5	-66.1	-1.15
CCQCCB		893.0	-1.4	-0.02	851.0	-33.6	-0.58
CX9JN6	X	1,230.0	335.6	5.00	1,185.0	300.4	5.22
D32XUQ		876.0	-18.4	-0.27	833.5	-51.1	-0.89
DDJHEM		835.0	-59.4	-0.88	857.5	-27.1	-0.47
DNXG34		893.6	-0.8	-0.01	900.3	15.7	0.27
DTCAYN		883.5	-10.9	-0.16	878.0	-6.6	-0.11
DTTBZ6		851.5	-42.9	-0.64	898.0	13.4	0.23
EBTHRC		881.5	-12.9	-0.19	825.0	-59.6	-1.04
EDVJRA		865.2	-29.3	-0.44	892.0	7.4	0.13
EVFAQ9		766.0	-128.4	-1.91	801.0	-83.6	-1.45



Rubber Interlaboratory Testing Program

Report #203

Analysis 607

1st Qtr 2020

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
F6ZZQ7		922.8	28.4	0.42	941.7	57.2	0.99
FYU8WA		817.0	-77.4	-1.15	840.5	-44.1	-0.77
GXFF3K		974.8	80.3	1.20	922.0	37.4	0.65
GY4VB8		966.7	72.3	1.08	863.7	-20.9	-0.36
HBZYEZ		914.0	19.6	0.29	905.5	20.9	0.36
HFA9NH		895.4	1.0	0.01	911.9	27.3	0.48
HRKPDZ		1,021.8	127.3	1.90	973.9	89.3	1.55
J26GDX	X	1,327.7	433.2	6.45	1,182.9	298.3	5.18
JMNKX2		969.6	75.2	1.12	1,003.9	119.3	2.07
JPPF4H		905.3	10.9	0.16	893.9	9.4	0.16
K4UZZG		925.6	31.1	0.46	904.3	19.7	0.34
K6JDHY		868.0	-26.4	-0.39	871.5	-13.1	-0.23
LB6M73		880.0	-14.4	-0.21	838.5	-46.1	-0.80
LJ3DVJ		1,017.0	122.6	1.83	1,000.5	115.9	2.01
LM2PQJ	X	1,125.5	231.1	3.44	1,116.1	231.5	4.02
LTZFAQZ		849.9	-44.5	-0.66	859.3	-25.3	-0.44
MWLFQG		884.5	-9.9	-0.15	905.0	20.4	0.35
NA237R	X	1,336.3	441.9	6.58	1,271.4	386.8	6.72
NWFKKF		927.5	33.1	0.49	913.7	29.2	0.51
PNFKKD		871.5	-22.9	-0.34	872.0	-12.6	-0.22
PPUWGX		919.0	24.6	0.37	901.5	16.9	0.29
QDEL4R		831.5	-62.9	-0.94	903.5	18.9	0.33
QF6HYD		909.0	14.6	0.22	912.5	27.9	0.48
QNTJ9V		913.0	18.6	0.28	919.0	34.4	0.60
QRWERX		868.5	-25.9	-0.39	859.5	-25.1	-0.44
QXH84X		879.7	-14.7	-0.22	869.9	-14.6	-0.25
RWKGBN		926.0	31.6	0.47	889.0	4.4	0.08
TDN9YB	*	859.5	-34.9	-0.52	760.0	-124.6	-2.16
TL4WRR		769.0	-125.4	-1.87	756.0	-128.6	-2.23
U2BALU		951.0	56.6	0.84	963.0	78.4	1.36
U7N9Y9		958.0	63.6	0.95	921.5	36.9	0.64
UD4WRP		1,011.6	117.2	1.75	963.1	78.5	1.36
VJRQB9		902.9	8.5	0.13	911.6	27.0	0.47
VNVY9N		915.5	21.1	0.31	891.5	6.9	0.12
W9X82T		896.0	1.6	0.02	895.3	10.7	0.19
WDWJ66		818.0	-76.4	-1.14	833.0	-51.6	-0.90
WM8LQ7		892.5	-1.9	-0.03	814.0	-70.6	-1.23



Rubber Interlaboratory Testing Program

Report #203

Analysis 607

1st Qtr 2020

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WYTZLT		787.6	-106.9	-1.59	816.9	-67.7	-1.18
XEJM6P		922.5	28.1	0.42	857.0	-27.6	-0.48
YD3PCQ		839.1	-55.3	-0.82	846.6	-38.0	-0.66
YK9GN9	*	725.2	-169.2	-2.52	803.5	-81.1	-1.41
YMWXXC		815.5	-78.9	-1.18	807.0	-77.6	-1.35
Z34CRK		874.1	-20.4	-0.30	905.9	21.3	0.37
Z74MNJ		782.1	-112.3	-1.67	783.8	-100.8	-1.75

Grand Means		Summary Statistics	
	894.41 psi		884.59 psi
Std Dev Btwn Labs	67.15 psi		57.56 psi
Statistics based on 77 of 82 reporting participants			

Grand Means		Summary Statistics in SI Units	
	6.1667 MPa		6.10 MPa
Std Dev Btwn Labs	0.4630 MPa		0.40 MPa
Statistics based on 77 of 82 reporting participants			

Samples A01-A02: Polyisoprene compound, batch #1 & A03-A04: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #607

- B2Y779 (X) - Data for sample group A03-A04 are low.
- CX9JN6 (X) - Data for all samples are high. Possible Systematic Error.
- J26GDX (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group A01-A02.
- LM2PQJ (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group A01-A02.
- NA237R (X) - Data for all samples are high. Possible Systematic Error.



Rubber Interlaboratory Testing Program

Report #203

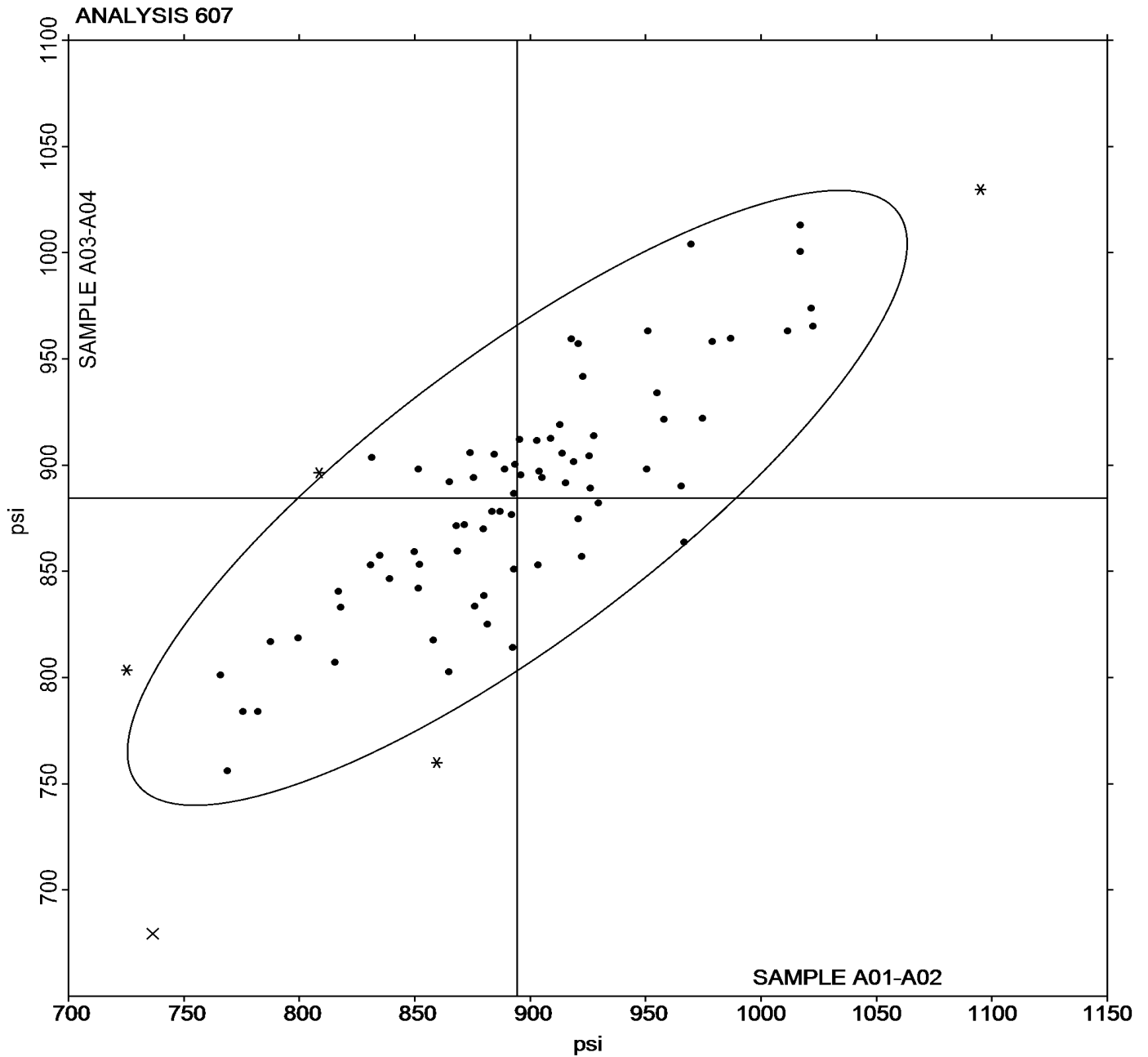
Analysis 607

1st Qtr 2020

Stress at 300% Elongation (psi)

Grand Mean Sample **A01-A02** = 894.41 psi

Grand Mean Sample **A03-A04** = 884.59 psi





Rubber Interlaboratory Testing Program

Report #203

Analysis 608

1st Qtr 2020

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		219.5	9.2	0.78	210.0	1.0	0.10
2X4MNH		189.7	-20.6	-1.74	192.4	-16.6	-1.63
2ZA44Z		207.5	-2.8	-0.23	205.0	-4.0	-0.39
3AW4DJ		226.3	16.0	1.35	216.8	7.9	0.77
3B87YH	*	227.5	17.2	1.45	206.8	-2.2	-0.21
3RJF9X		191.0	-19.3	-1.62	198.5	-10.5	-1.03
3TMEZH		239.3	29.1	2.45	224.8	15.8	1.56
4DT6YX		205.0	-5.3	-0.44	208.0	-1.0	-0.10
4XGVPG		224.5	14.2	1.20	219.5	10.5	1.03
68HJGE		207.0	-3.3	-0.27	204.0	-5.0	-0.49
6Y8GVD		199.5	-10.8	-0.91	198.5	-10.5	-1.03
73LATX		213.0	2.7	0.23	222.5	13.5	1.33
76AMBG		217.0	6.7	0.57	202.5	-6.5	-0.64
7CBVYW		207.0	-3.3	-0.27	215.0	6.0	0.59
7MUCQ3		200.0	-10.3	-0.86	197.0	-12.0	-1.18
84TQJG		204.0	-6.3	-0.53	204.5	-4.5	-0.44
888NNH	X	261.1	50.8	4.28	245.1	36.1	3.55
8CNVCH		202.1	-8.1	-0.69	198.6	-10.3	-1.02
8RHEAT		218.0	7.7	0.65	207.0	-2.0	-0.19
92KZTD		206.0	-4.3	-0.36	214.0	5.0	0.49
9RUCXB		214.9	4.6	0.39	218.3	9.3	0.92
9Z9KYC		190.7	-19.5	-1.65	206.0	-3.0	-0.30
AQZ4AR		208.0	-2.3	-0.19	207.0	-2.0	-0.19
AZ6BPQ		225.0	14.7	1.24	225.5	16.5	1.62
B2Y779	X	178.7	-31.6	-2.66	167.7	-41.3	-4.06
B79JM8		227.0	16.7	1.41	222.6	13.7	1.34
BP3BPR		206.5	-3.8	-0.32	197.5	-11.5	-1.13
C3ZQ7D	*	242.9	32.7	2.75	228.4	19.5	1.91
CAP2NN		192.0	-18.3	-1.54	195.5	-13.5	-1.32
CCQCCB		207.0	-3.3	-0.27	203.5	-5.5	-0.54
CX9JN6	X	310.5	100.2	8.44	298.5	89.5	8.80
D32XUQ		207.5	-2.8	-0.23	194.0	-15.0	-1.47
DDJHEM		204.0	-6.3	-0.53	209.5	0.5	0.05
DNXG34		216.3	6.1	0.51	210.6	1.7	0.16
DTCAYN		202.0	-8.3	-0.70	202.5	-6.5	-0.64
DTTBZ6		198.0	-12.3	-1.03	208.5	-0.5	-0.05
EBTHRC		212.5	2.2	0.19	198.5	-10.5	-1.03



Rubber Interlaboratory Testing Program

Report #203

Analysis 608

1st Qtr 2020

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
EDVJRA		195.1	-15.2	-1.28	205.2	-3.7	-0.37
EVFAQ9		191.5	-18.8	-1.58	196.5	-12.5	-1.23
F6ZZQ7		221.6	11.3	0.95	222.3	13.4	1.31
FYAQG8		212.5	2.2	0.19	210.0	1.0	0.10
FYU8WA		197.5	-12.8	-1.07	201.5	-7.5	-0.74
GXFF3K		227.3	17.0	1.43	214.3	5.3	0.52
GY4VB8		200.9	-9.4	-0.79	194.4	-14.6	-1.44
HBZYEZ		211.0	0.7	0.06	211.0	2.0	0.20
HFA9NH		209.5	-0.8	-0.07	215.9	6.9	0.68
HRKPDZ		237.2	26.9	2.27	226.8	17.8	1.75
J26GDX	X	321.3	111.0	9.35	306.2	97.2	9.56
JMNKX2	X	237.5	27.2	2.29	245.8	36.8	3.62
JPF4H		211.5	1.2	0.10	211.7	2.7	0.27
K4UZZG		212.7	2.4	0.21	208.8	-0.2	-0.02
K6JDHY		211.0	0.7	0.06	210.0	1.0	0.10
LB6M73		215.0	4.7	0.40	209.0	0.0	0.00
LJ3DVJ		216.0	5.7	0.48	217.0	8.0	0.79
LM2PQJ	X	253.1	42.8	3.61	254.5	45.6	4.48
LTZFQZ		210.3	0.0	0.00	209.4	0.4	0.04
MWLFQG		215.5	5.2	0.44	223.5	14.5	1.43
NA237R	X	350.9	140.6	11.84	343.0	134.0	13.17
NWFKKF		219.0	8.8	0.74	213.9	5.0	0.49
PNFKKD		206.5	-3.8	-0.32	208.0	-1.0	-0.10
PPUWGX		214.0	3.7	0.32	212.0	3.0	0.30
QDEL4R	*	197.5	-12.8	-1.07	215.5	6.5	0.64
QF6HYD		215.5	5.2	0.44	213.0	4.0	0.40
QNTJ9V		208.5	-1.8	-0.15	212.5	3.5	0.35
QRWERX		208.0	-2.3	-0.19	204.5	-4.5	-0.44
QXH84X		206.6	-3.6	-0.31	203.5	-5.5	-0.54
RWKGBN		195.0	-15.3	-1.29	185.0	-24.0	-2.36
TDN9YB	X	251.5	41.2	3.47	230.5	21.5	2.12
TL4WRR		195.5	-14.8	-1.24	194.5	-14.5	-1.42
U2BALU		219.0	8.7	0.74	228.0	19.0	1.87
U7N9Y9		221.5	11.2	0.95	217.5	8.5	0.84
UD4WRP		222.6	12.4	1.04	215.4	6.4	0.63
VJRQB9		206.7	-3.6	-0.30	208.9	-0.1	-0.01
VNVY9N		217.0	6.7	0.57	213.0	4.0	0.40
W9X82T		219.0	8.8	0.74	228.2	19.2	1.89



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

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WDWJ66		195.5	-14.8	-1.24	202.5	-6.5	-0.64
WM8LQ7		208.0	-2.3	-0.19	197.0	-12.0	-1.18
WYTZLT		188.7	-21.6	-1.82	197.9	-11.1	-1.09
XEJM6P		213.0	2.7	0.23	202.5	-6.5	-0.64
YD3PCQ		219.3	9.0	0.76	220.0	11.0	1.08
YK9GN9		197.3	-12.9	-1.09	192.7	-16.3	-1.60
YMWXXC		191.5	-18.8	-1.58	191.0	-18.0	-1.77
Z34CRK		212.5	2.2	0.18	217.4	8.4	0.83
Z74MNJ		227.7	17.4	1.47	227.5	18.5	1.82

		Summary Statistics	
Grand Means		210.26 psi	208.98 psi
Std Dev Btwn Labs		11.87 psi	10.17 psi
Statistics based on 76 of 84 reporting participants			

		Summary Statistics in SI Units	
Grand Means		1.4497 MPa	1.44 MPa
Std Dev Btwn Labs		0.0819 MPa	0.07 MPa
Statistics based on 76 of 84 reporting participants			

Samples A01-A02: Polyisoprene compound, batch #1 & A03-A04: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #608

- 888NNH (X) - Data for all samples are high. Possible Systematic Error.
- B2Y779 (X) - Data for sample group A03-A04 are low.
- CX9JN6 (X) - Data for all samples are high. Possible Systematic Error.
- J26GDX (X) - Extreme Data.
- JMNKX2 (X) - Data for sample group A03-A04 are high.
- LM2PQJ (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group A01-A02.
- NA237R (X) - Extreme Data.
- TDN9YB (X) - Data for sample group A01-A02 are high. Inconsistent within the determinations of sample group A01-A02.



Rubber Interlaboratory Testing Program

Report #203

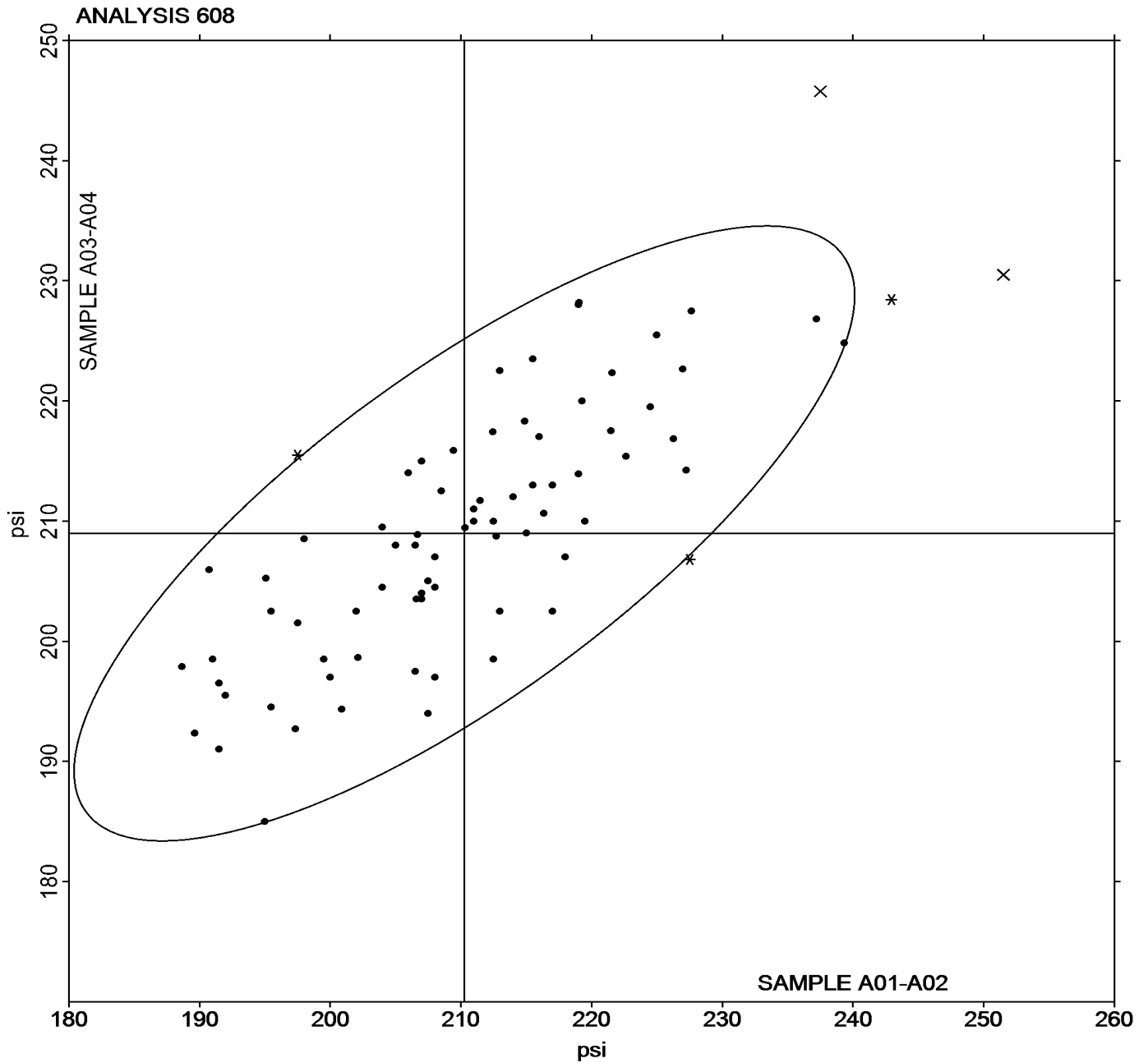
Analysis 608

1st Qtr 2020

Stress at 100% Elongation (psi)

Grand Mean Sample **A01-A02** = 210.26 psi

Grand Mean Sample **A03-A04** = 208.98 psi





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

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Q2BRK		49.00	-0.67	-0.47	48.50	-1.06	-0.73	BT
2ZA44Z		48.00	-1.67	-1.19	48.00	-1.56	-1.08	BT
3AW4DJ		50.00	0.33	0.24	50.00	0.44	0.30	HH
3B87YH		49.00	-0.67	-0.47	48.00	-1.56	-1.08	BT
3RJF9X		50.85	1.18	0.84	50.85	1.29	0.89	BT
3TMEZH		47.30	-2.37	-1.68	47.05	-2.51	-1.74	BT
4DT6YX		49.50	-0.17	-0.12	50.50	0.94	0.65	BT
4XGVPG		49.00	-0.67	-0.47	48.25	-1.31	-0.91	BT
68HJGE		50.25	0.58	0.41	50.05	0.49	0.34	BT
6Y8GVD		50.55	0.88	0.63	50.35	0.79	0.54	BT
73LATX		48.85	-0.82	-0.58	49.97	0.41	0.28	BT
76AMBG		51.60	1.93	1.38	50.65	1.09	0.75	BT
7CBVYW		51.40	1.73	1.23	51.10	1.54	1.06	BT
7MUCQ3		52.00	2.33	1.66	52.25	2.69	1.86	HH
84TQJG		50.20	0.53	0.38	49.65	0.09	0.06	BT
888NNH		49.90	0.23	0.17	48.70	-0.86	-0.60	BT
8CNVCH		52.25	2.58	1.84	51.25	1.69	1.17	BT
8RHEAT		49.00	-0.67	-0.47	48.00	-1.56	-1.08	HH
8VLATV		48.50	-1.17	-0.83	48.00	-1.56	-1.08	BT
99HPAG	*	46.00	-3.67	-2.61	47.00	-2.56	-1.77	BT
9RUCXB		50.50	0.83	0.59	51.00	1.44	0.99	BT
9Z9KYC	X	43.10	-6.57	-4.67	42.55	-7.01	-4.84	BT
AQZ4AR		47.50	-2.17	-1.54	47.50	-2.06	-1.43	HH
AZ6BPQ	X	54.00	4.33	3.08	54.50	4.94	3.41	HH
B2Y779		49.00	-0.67	-0.47	48.00	-1.56	-1.08	BT
B79JM8		49.50	-0.17	-0.12	49.00	-0.56	-0.39	BT
C3ZQ7D		50.45	0.78	0.56	51.20	1.64	1.13	BT
CAP2NN		49.00	-0.67	-0.47	50.00	0.44	0.30	BT
CCQCCB		48.55	-1.12	-0.80	49.65	0.09	0.06	BT
CX9JN6		50.00	0.33	0.24	50.00	0.44	0.30	BT
D32XUQ		48.50	-1.17	-0.83	49.00	-0.56	-0.39	BT
DDJHEM		48.50	-1.17	-0.83	49.00	-0.56	-0.39	BT
DNXG34		49.75	0.08	0.06	49.50	-0.06	-0.04	BT
DTCAYN		48.50	-1.17	-0.83	47.50	-2.06	-1.43	HH
DTTBZ6		49.85	0.18	0.13	49.90	0.34	0.23	BT
EBTHRC	X	47.50	-2.17	-1.54	44.50	-5.06	-3.50	BT
EDVJRA		51.10	1.43	1.02	51.45	1.89	1.30	BT
EVFAQ9		49.00	-0.67	-0.47	49.50	-0.06	-0.04	HH



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

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
F6ZZQ7		49.30	-0.37	-0.26	49.45	-0.11	-0.08	BT
FYAQG8		50.50	0.83	0.59	50.40	0.84	0.58	BT
FYU8WA		49.00	-0.67	-0.47	50.00	0.44	0.30	HH
GXFF3K		51.90	2.23	1.59	51.55	1.99	1.37	BT
GY4VB8		51.50	1.83	1.30	51.15	1.59	1.10	BT
HBZYEZ		50.00	0.33	0.24	50.00	0.44	0.30	HH
HFA9NH		50.05	0.38	0.27	49.55	-0.01	-0.01	BT
HRKPDZ		49.05	-0.62	-0.44	49.35	-0.21	-0.15	XX
J26GDX		50.00	0.33	0.24	50.00	0.44	0.30	HH
JKKPEX		47.50	-2.17	-1.54	47.50	-2.06	-1.43	BT
JMNKX2	X	55.75	6.08	4.33	56.50	6.94	4.79	HH
JPPF4H		47.85	-1.82	-1.29	47.80	-1.76	-1.22	BT
K4UZZG		50.00	0.33	0.24	49.50	-0.06	-0.04	HH
K6JDHY		48.50	-1.17	-0.83	49.00	-0.56	-0.39	BT
LB6M73		50.00	0.33	0.24	49.50	-0.06	-0.04	BT
LJ3DVJ		49.00	-0.67	-0.47	49.50	-0.06	-0.04	BT
LM2PQJ		51.50	1.83	1.30	51.00	1.44	0.99	HH
LTZFAQZ		50.60	0.93	0.66	50.50	0.94	0.65	BT
MWLFQG		50.00	0.33	0.24	50.00	0.44	0.30	BT
NA237R		50.00	0.33	0.24	50.00	0.44	0.30	HH
NWFKKF	*	46.25	-3.42	-2.43	45.70	-3.86	-2.67	BT
PHCNT2	*	48.50	-1.17	-0.83	47.00	-2.56	-1.77	BT
PNFKKD	*	46.20	-3.47	-2.47	46.00	-3.56	-2.46	BT
PPUWGX		49.50	-0.17	-0.12	49.00	-0.56	-0.39	HH
QDEL4R		50.00	0.33	0.24	50.25	0.69	0.47	BT
QF6HYD	X	49.50	-0.17	-0.12	51.50	1.94	1.34	BT
QNTJ9V		50.75	1.08	0.77	50.65	1.09	0.75	BT
QRWERX		50.00	0.33	0.24	50.50	0.94	0.65	BT
QXH84X		48.25	-1.42	-1.01	48.00	-1.56	-1.08	BT
RVAEPP		48.50	-1.17	-0.83	48.50	-1.06	-0.73	HH
RWKGBN		48.50	-1.17	-0.83	48.50	-1.06	-0.73	BT
T2VQ2W		47.50	-2.17	-1.54	47.50	-2.06	-1.43	XX
TA7TMX		50.00	0.33	0.24	50.00	0.44	0.30	BT
TDN9YB		51.00	1.33	0.95	51.00	1.44	0.99	HH
TL4WRR		51.25	1.58	1.13	50.80	1.24	0.85	BT
U2BALU		49.75	0.08	0.06	50.00	0.44	0.30	HH
U7N9Y9		52.15	2.48	1.77	52.05	2.49	1.72	BT



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

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
UD4WRP		50.00	0.33	0.24	50.00	0.44	0.30	BT
UF7RBT		50.00	0.33	0.24	49.00	-0.56	-0.39	BT
VJRQB9		48.00	-1.67	-1.19	48.00	-1.56	-1.08	BT
VNVY9N		52.30	2.63	1.87	52.00	2.44	1.68	XX
W9L7M7		51.50	1.83	1.30	51.00	1.44	0.99	HH
W9X82T	X	49.50	-0.17	-0.12	51.50	1.94	1.34	HH
WDWJ66		50.50	0.83	0.59	50.95	1.39	0.96	BT
WM8LQ7		49.45	-0.22	-0.15	49.10	-0.46	-0.32	BT
WYTZLT		50.85	1.18	0.84	51.40	1.84	1.27	BT
XEJM6P		50.00	0.33	0.24	50.90	1.34	0.92	HH
YD3PCQ		51.35	1.68	1.20	51.10	1.54	1.06	HH
YK9GN9		48.90	-0.77	-0.55	48.80	-0.76	-0.53	BT
YMWXXC	*	48.50	-1.17	-0.83	47.00	-2.56	-1.77	BT
Z34CRK		52.50	2.83	2.02	52.00	2.44	1.68	HH
Z74MNJ		51.00	1.33	0.95	50.50	0.94	0.65	HH

Summary Statistics	
Grand Means	49.667 Type A 49.563 Type A
Std Dev Btwn Labs	1.405 Type A 1.447 Type A
Statistics based on 84 of 90 reporting participants	

Samples A01-A02: Polyisoprene compound, batch #1 & A03-A04: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #620

- 9Z9KYC (X) - Data for all samples are low. Possible Systematic Error.
- AZ6BPQ (X) - Data for all samples are high. Possible Systematic Error.
- EBTHRC (X) - Data for sample group A03-A04 are low.
- JMNKX2 (X) - Data for all samples are high. Possible Systematic Error.
- QF6HYD (X) - Inconsistent in testing between samples.
- W9X82T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group A03-A04.

Key to Instrument Codes Reported by Participants

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



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

Report #203
1st Qtr 2020

Results by Reading Time (as reported by laboratory)

Reading Time	Sample A01-A02 <i>Polyisoprene compound, batch #1</i>			Sample A03-A04 <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	52.30	0.00	2.63	52.00	0.00	2.44	1	1
Readings taken within 0 - 5 seconds	49.89	1.17	0.22	49.87	1.20	0.31	55	62
Readings taken at 5 seconds	49.56	1.58	-0.10	49.20	1.50	-0.36	11	13
Readings taken after 5+ seconds	49.25	0.90	-0.42	49.00	1.00	-0.56	3	5
Maximum hardness indicator used	49.70	1.27	0.03	49.70	1.16	0.14	9	9



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		1.135	-0.001	-0.25	1.135	-0.001	-0.48
3B87YH		1.139	0.003	0.93	1.137	0.001	0.25
3RJF9X		1.135	-0.001	-0.42	1.134	-0.002	-0.57
4DT6YX		1.132	-0.004	-1.44	1.132	-0.004	-1.44
68HJGE		1.134	-0.002	-0.56	1.137	0.001	0.45
76AMBG		1.137	0.001	0.29	1.136	0.000	0.15
84TQJG		1.141	0.006	1.89	1.141	0.005	1.51
888NNH	X	1.134	-0.002	-0.66	1.124	-0.012	-3.70
8CNVCH		1.141	0.005	1.78	1.142	0.006	1.77
8RHEAT		1.135	-0.001	-0.42	1.134	-0.002	-0.80
8VLATV		1.135	-0.001	-0.25	1.133	-0.003	-0.96
9Z9KYC		1.138	0.002	0.81	1.139	0.003	0.92
AQZ4AR		1.137	0.001	0.25	1.137	0.001	0.17
AZ6BPQ		1.136	0.001	0.20	1.137	0.001	0.39
B2Y779		1.133	-0.003	-1.10	1.136	0.000	-0.16
B79JM8		1.135	-0.001	-0.25	1.135	-0.001	-0.32
BP3BPR		1.142	0.006	2.11	1.143	0.007	2.09
C3ZQ7D		1.133	-0.002	-0.78	1.133	-0.003	-0.86
CAP2NN		1.135	-0.001	-0.19	1.136	0.000	-0.12
CCQCCB		1.139	0.003	0.98	1.137	0.001	0.45
CX9JN6		1.134	-0.002	-0.57	1.133	-0.003	-0.86
DDJHEM		1.137	0.001	0.25	1.136	0.000	0.01
DNXG34		1.134	-0.002	-0.76	1.135	-0.001	-0.48
DTCAYN		1.137	0.001	0.42	1.137	0.001	0.17
DTTBZ6		1.136	0.000	0.12	1.137	0.001	0.33
EBTHRC		1.135	-0.001	-0.32	1.136	0.000	-0.04
EVFAQ9		1.137	0.001	0.42	1.137	0.001	0.33
F6ZZQ7		1.138	0.002	0.69	1.138	0.002	0.79
FYAQG8		1.139	0.003	1.10	1.141	0.005	1.45
FYU8WA		1.132	-0.004	-1.44	1.131	-0.005	-1.60
GXFF3K		1.136	0.000	-0.02	1.137	0.001	0.33
GY4VB8		1.135	0.000	-0.13	1.135	-0.001	-0.28
HBZYEZ		1.133	-0.003	-1.10	1.130	-0.006	-1.78
HFA9NH		1.136	0.001	0.20	1.135	-0.001	-0.25
J26GDX		1.137	0.001	0.34	1.137	0.001	0.25
JMNKX2	X	1.123	-0.013	-4.31	1.123	-0.013	-4.17
JPPF4H	X	1.131	-0.004	-1.52	1.127	-0.009	-2.88
K4UZZG		1.132	-0.004	-1.44	1.132	-0.004	-1.28



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample A01-A02			Sample A03-A04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
K6JDHY	X	1.121	-0.014	-4.89	1.119	-0.017	-5.31
LB6M73		1.135	-0.001	-0.25	1.134	-0.002	-0.65
LJ3DVJ		1.131	-0.005	-1.64	1.131	-0.005	-1.73
LTZFQZ		1.133	-0.003	-1.10	1.132	-0.004	-1.23
MWLFQG		1.139	0.003	1.10	1.142	0.006	1.77
NA237R		1.133	-0.003	-0.98	1.134	-0.002	-0.67
NWFKKF		1.135	-0.001	-0.25	1.137	0.001	0.33
PNFKKD		1.135	-0.001	-0.25	1.133	-0.003	-0.96
PPUWGX		1.135	0.000	-0.15	1.135	-0.001	-0.20
QDEL4R		1.137	0.002	0.52	1.138	0.002	0.58
QF6HYD		1.139	0.003	0.93	1.139	0.003	0.86
QXH84X		1.137	0.001	0.41	1.138	0.002	0.55
RVAEPP	*	1.128	-0.008	-2.62	1.129	-0.007	-2.24
RWKGBN		1.140	0.004	1.44	1.141	0.005	1.45
TDN9YB	X	1.125	-0.011	-3.80	1.123	-0.013	-4.17
TL4WRR		1.137	0.001	0.42	1.140	0.004	1.13
U7N9Y9		1.134	-0.002	-0.59	1.136	0.000	-0.16
UD4WRP	*	1.128	-0.008	-2.62	1.130	-0.006	-1.92
UF7RBT		1.139	0.003	0.93	1.141	0.005	1.61
VJRQB9		1.136	0.000	-0.08	1.135	-0.001	-0.32
VNVY9N		1.136	0.000	0.09	1.136	0.000	0.01
W9X82T		1.131	-0.005	-1.77	1.131	-0.005	-1.60
WDWJ66	*	1.138	0.003	0.85	1.135	-0.001	-0.43
WM8LQ7		1.140	0.004	1.51	1.141	0.005	1.53
WYTZLT		1.139	0.003	1.02	1.138	0.002	0.79
XEJM6P		1.133	-0.002	-0.84	1.135	-0.001	-0.36
YD3PCQ		1.137	0.002	0.56	1.137	0.001	0.39
YK9GN9		1.136	0.000	-0.08	1.135	-0.001	-0.48
YMWXXC		1.137	0.001	0.25	1.138	0.002	0.65
Z34CRK		1.137	0.001	0.25	1.137	0.001	0.17
Z74MNJ		1.141	0.005	1.61	1.141	0.005	1.61



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	1.1357 g/cm ³ (Mg/m ³)	1.1360 g/cm ³ (Mg/m ³)	
Stnd Dev Btwn Labs	0.0030 g/cm ³ (Mg/m ³)	0.0031 g/cm ³ (Mg/m ³)	
Statistics based on 64 of 69 reporting participants			

Samples A01-A02: Polyisoprene compound, batch #1 & A03-A04: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #621

- 888NNH (X) - Data for sample group A03-A04 are low.
- JMNKX2 (X) - Data for all samples are low. Possible Systematic Error.
- JPF4H (X) - Data for sample group A03-A04 are low.
- K6JDHY (X) - Data for all samples are low. Possible Systematic Error.
- TDN9YB (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group A01-A02.

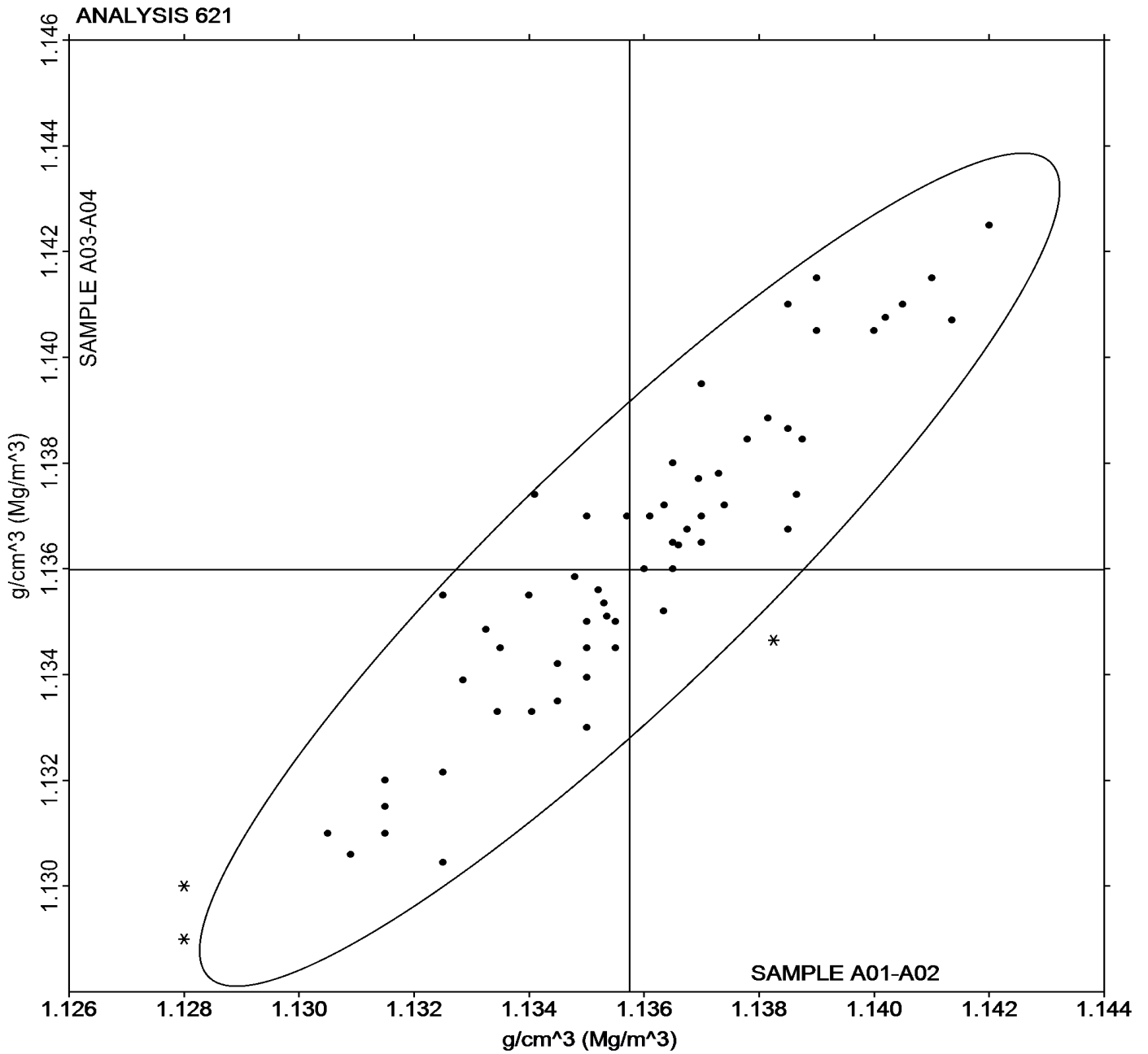


Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #203
1st Qtr 2020

Grand Mean Sample **A01-A02** = 1.1357 g/cm³
(Mg/m³)

Grand Mean Sample **A03-A04** = 1.1360 g/cm³
(Mg/m³)





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

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample HA01-HA02			Sample HA03-HA04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28T7B4		75.95	0.36	0.12	83.35	-1.18	-0.58	BT
3TMEZH		71.45	-4.14	-1.37	82.50	-2.03	-0.99	BT
84TQJG		74.75	-0.84	-0.28	83.80	-0.73	-0.36	BT
8BE2EW		78.00	2.41	0.80	86.00	1.47	0.72	HH
9RUCXB		75.00	-0.59	-0.20	82.50	-2.03	-0.99	XX
AZ6BPQ		80.00	4.41	1.46	87.50	2.97	1.45	HH
CEG98W		75.00	-0.59	-0.20	83.50	-1.03	-0.50	BT
CWXH27		71.00	-4.59	-1.52	81.50	-3.03	-1.48	BT
EDVJRA		74.70	-0.89	-0.30	84.85	0.32	0.16	BT
EVFAQ9		76.50	0.91	0.30	85.50	0.97	0.47	HH
JYGZ4P		70.00	-5.59	-1.85	79.50	-5.03	-2.46	BT
MPK932		76.10	0.51	0.17	84.85	0.32	0.16	HH
PM6JYE		71.90	-3.69	-1.22	83.85	-0.68	-0.33	BT
Q969LT		78.00	2.41	0.80	86.00	1.47	0.72	BT
UAJZ87		78.70	3.11	1.03	85.80	1.27	0.62	BT
UM9YY9		73.00	-2.59	-0.86	85.75	1.22	0.60	BT
WVA9AQ		78.50	2.91	0.97	86.40	1.87	0.91	HH
Z34CRK	X	99.75	24.16	8.02	99.50	14.97	7.32	XX
ZBUWXH		78.50	2.91	0.97	87.00	2.47	1.21	HH
ZLCEQP		79.15	3.56	1.18	85.95	1.42	0.69	HH

Grand Means		Summary Statistics	
	75.589 Type D		84.532 Type D
Std Dev Btwn Labs	3.014 Type D		2.044 Type D
Statistics based on 19 of 20 reporting participants			

Samples HA01-HA02: Hardness Disc, batch #1 & HA03-HA04: Hardness Disc, batch #2

Comments on Assigned Data Flags for Test #625

Z34CRK (X) - Data for all samples are high.

Key to Instrument Codes Reported by Participants

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

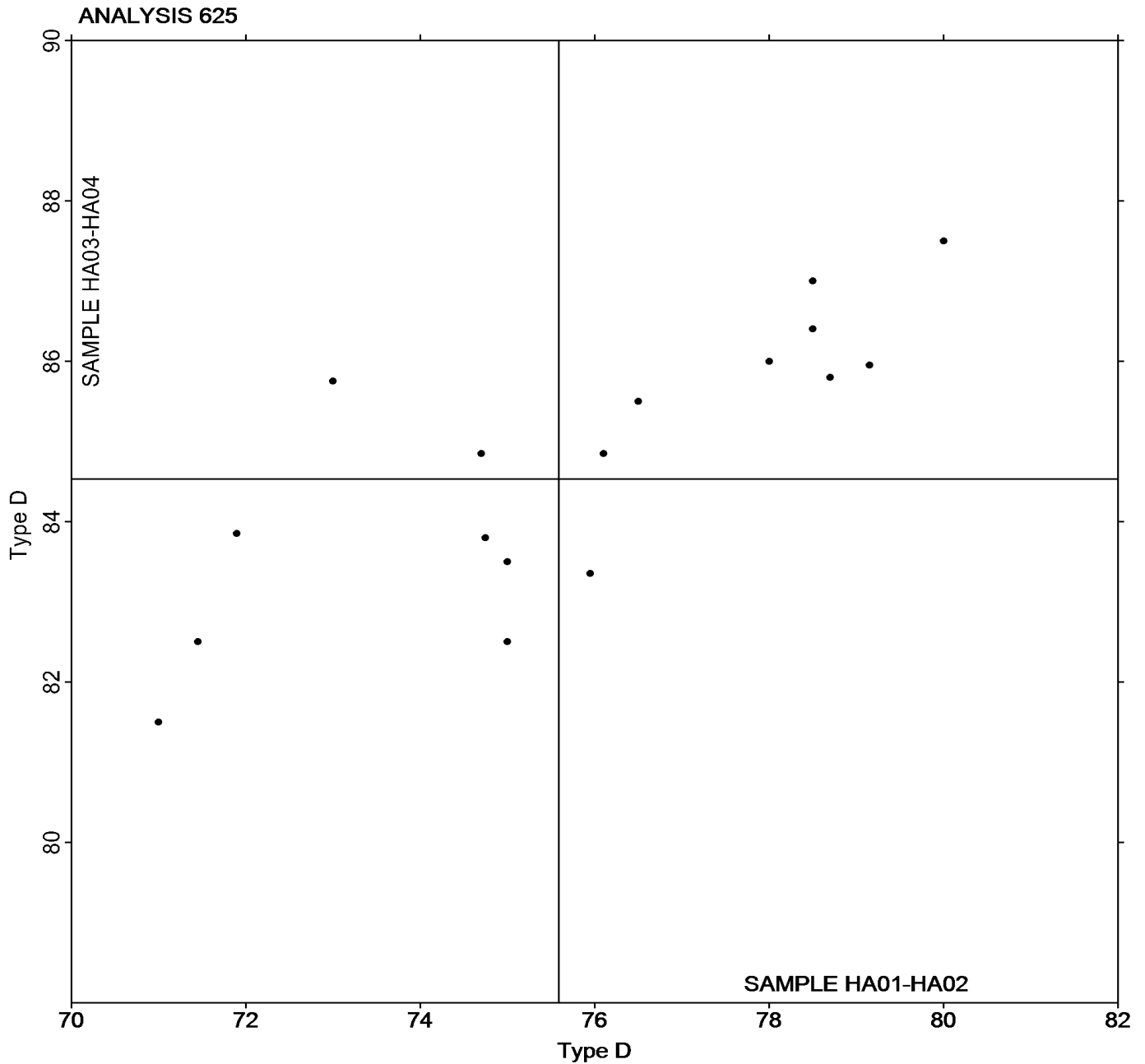


Rubber Interlaboratory Testing Program
Analysis 625
Hardness (Shore D/Type D)

Report #203
1st Qtr 2020

Grand Mean Sample HA01-HA02 = 75.589 Type D

Grand Mean Sample HA03-HA04 = 84.532 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 #203

Analysis 630

1st Qtr 2020

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

WebCode	Data Flag	Sample A01-A02			Sample J01-J02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		3,191.5	48.2	0.41	3,196.0	153.8	0.78
3AW4DJ		3,003.8	-139.5	-1.18	2,649.1	-393.1	-2.00
3B87YH		3,061.2	-82.1	-0.69	2,899.7	-142.5	-0.73
68HJGE		3,248.5	105.2	0.89	3,203.5	161.3	0.82
84TQJG		3,004.0	-139.3	-1.18	2,995.5	-46.7	-0.24
9Z9KYC		3,368.5	225.3	1.91	3,309.8	267.6	1.36
AQZ4AR		3,130.5	-12.8	-0.11	2,862.5	-179.7	-0.92
B2Y779		3,173.7	30.4	0.26	3,231.7	189.4	0.97
CAP2NN		3,072.5	-70.8	-0.60	2,900.0	-142.2	-0.73
DTCAYN		3,134.5	-8.8	-0.07	3,126.0	83.8	0.43
EDVJRA		2,951.5	-191.7	-1.62	3,158.2	116.0	0.59
HRKPDZ		3,086.0	-57.2	-0.48	3,096.4	54.2	0.28
JMNKX2		3,153.8	10.6	0.09	2,809.4	-232.8	-1.19
JPF4H		3,380.9	237.7	2.01	3,385.3	343.1	1.75
K4UZZG		3,350.4	207.1	1.75	3,196.5	154.3	0.79
NWFKKF		3,085.0	-58.3	-0.49	2,981.3	-60.9	-0.31
PPUWGX		3,212.1	68.8	0.58	3,207.0	164.8	0.84
QNTJ9V		3,034.5	-108.8	-0.92	2,882.5	-159.7	-0.81
QRWERX		3,172.5	29.2	0.25	3,089.5	47.3	0.24
TL4WRR		3,152.0	8.7	0.07	3,250.5	208.3	1.06
VNVY9N		3,168.5	25.2	0.21	3,161.5	119.3	0.61
W9X82T		3,282.9	139.7	1.18	3,069.2	27.0	0.14
WDWJ66		3,098.0	-45.3	-0.38	3,239.5	197.3	1.01
WM8LQ7		3,077.5	-65.8	-0.56	3,032.0	-10.2	-0.05
WY TZLT		3,154.3	11.0	0.09	3,031.5	-10.7	-0.05
YD3PCQ		3,104.8	-38.5	-0.33	2,742.8	-299.5	-1.53
Z34CRK	*	3,257.9	114.6	0.97	2,715.3	-326.9	-1.67
Z74MNJ		2,900.0	-243.3	-2.06	2,760.0	-282.2	-1.44

Grand Means		Summary Statistics	
	3,143.26 psi		3,042.22 psi
Std Dev Btwn Labs	118.13 psi		196.08 psi
Statistics based on 28 of 28 reporting participants			



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

Report #203
1st Qtr 2020

		Summary Statistics in SI Units	
Grand Means	21.672 MPa		20.98 MPa
Std Dev Btwn Labs	0.814 MPa		1.35 MPa
Statistics based on 28 of 28 reporting participants			

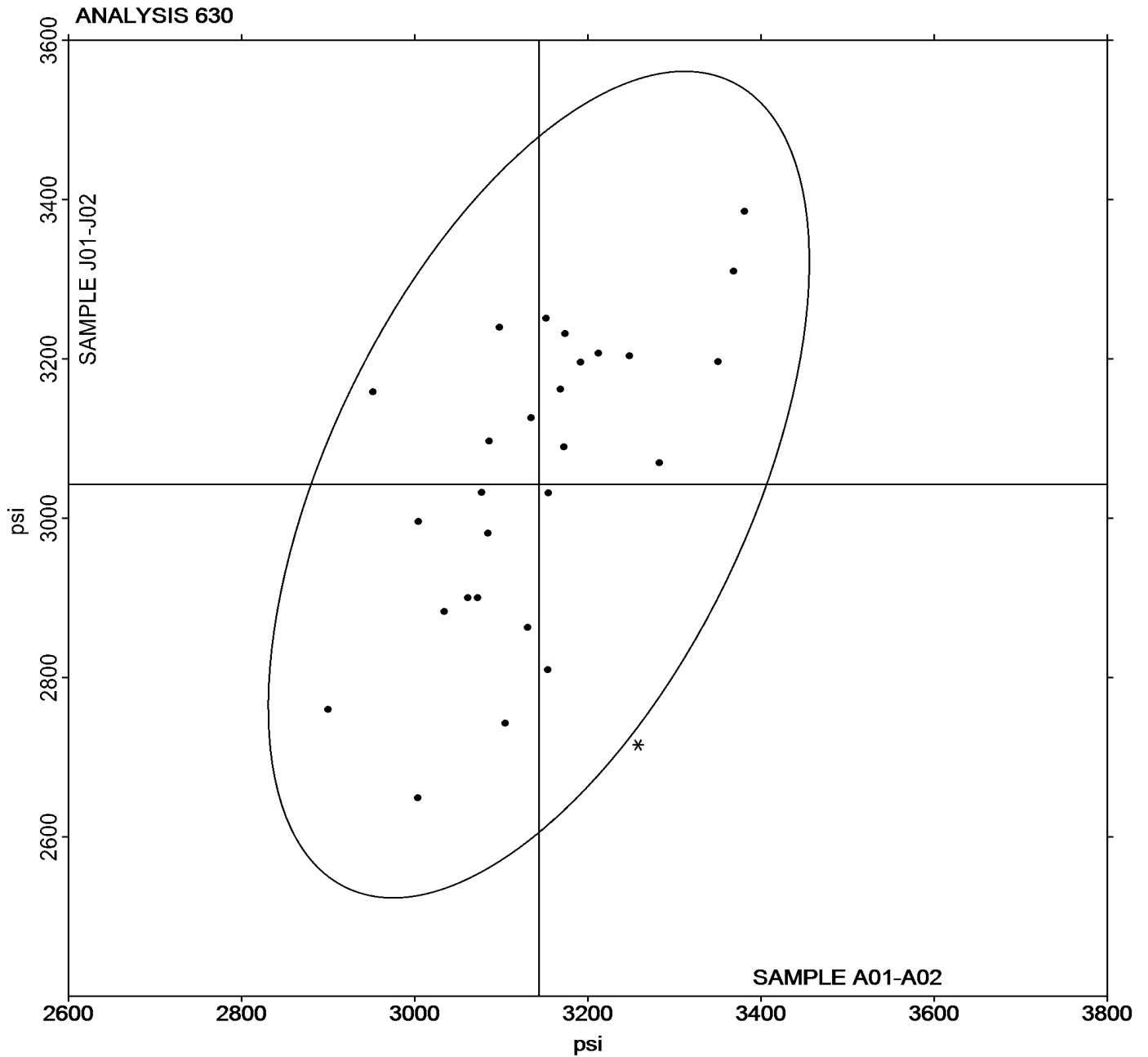
Samples A01-A02: Polyisoprene compound, batch #1 & J01-J02: Polyisoprene compound, batch #1



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

Grand Mean Sample A01-A02 = 3,143.26 psi

Grand Mean Sample J01-J02 = 3,042.22 psi





Rubber Interlaboratory Testing Program

Report #203

Analysis 631

1st Qtr 2020

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

WebCode	Data Flag	Sample A01-A02			Sample J01-J02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		599.0	-28.9	-0.90	593.0	-17.9	-0.45
3AW4DJ		607.5	-20.4	-0.63	626.5	15.6	0.39
3B87YH		629.0	1.1	0.03	603.8	-7.1	-0.18
68HJGE		604.5	-23.4	-0.73	611.0	0.1	0.00
84TQJG		603.5	-24.4	-0.76	555.5	-55.4	-1.39
9Z9KYC	*	673.6	45.6	1.41	595.7	-15.2	-0.38
AQZ4AR		595.5	-32.4	-1.00	572.5	-38.4	-0.96
B2Y779	*	706.3	78.4	2.43	714.1	103.2	2.59
CAP2NN		638.5	10.6	0.33	608.5	-2.4	-0.06
DTCAYN		613.0	-14.9	-0.46	610.5	-0.4	-0.01
EDVJRA		586.1	-41.8	-1.30	606.6	-4.3	-0.11
HRKPDZ		579.7	-48.2	-1.49	576.7	-34.2	-0.86
JMNKX2		593.0	-35.0	-1.08	565.0	-45.9	-1.15
JPF4H		649.1	21.2	0.66	625.4	14.5	0.36
K4UZZG		637.7	9.8	0.30	597.8	-13.1	-0.33
NWFKKF		602.5	-25.4	-0.79	598.0	-12.9	-0.32
PPUWGX		626.0	-1.9	-0.06	601.5	-9.4	-0.24
QNTJ9V		596.0	-31.9	-0.99	540.0	-70.9	-1.78
QRWERX		612.0	-15.9	-0.49	598.0	-12.9	-0.32
TL4WRR		691.5	63.6	1.97	705.0	94.1	2.36
VNVY9N		622.0	-5.9	-0.18	632.5	21.6	0.54
W9X82T		634.4	6.5	0.20	585.1	-25.8	-0.65
WDWJ66		636.5	8.6	0.27	641.5	30.6	0.77
WM8LQ7		629.0	1.1	0.03	606.5	-4.4	-0.11
WYTZLT		644.5	16.6	0.51	623.5	12.6	0.32
YD3PCQ		637.5	9.6	0.30	606.4	-4.5	-0.11
Z34CRK		647.9	19.9	0.62	612.4	1.5	0.04
Z74MNJ		686.0	58.1	1.80	692.0	81.1	2.04

		Summary Statistics	
Grand Means	627.92 percent	610.89 percent	
Std Dev Btwn Labs	32.27 percent	39.85 percent	
Statistics based on 28 of 28 reporting participants			

Samples A01-A02: Polyisoprene compound, batch #1 & J01-J02: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #203

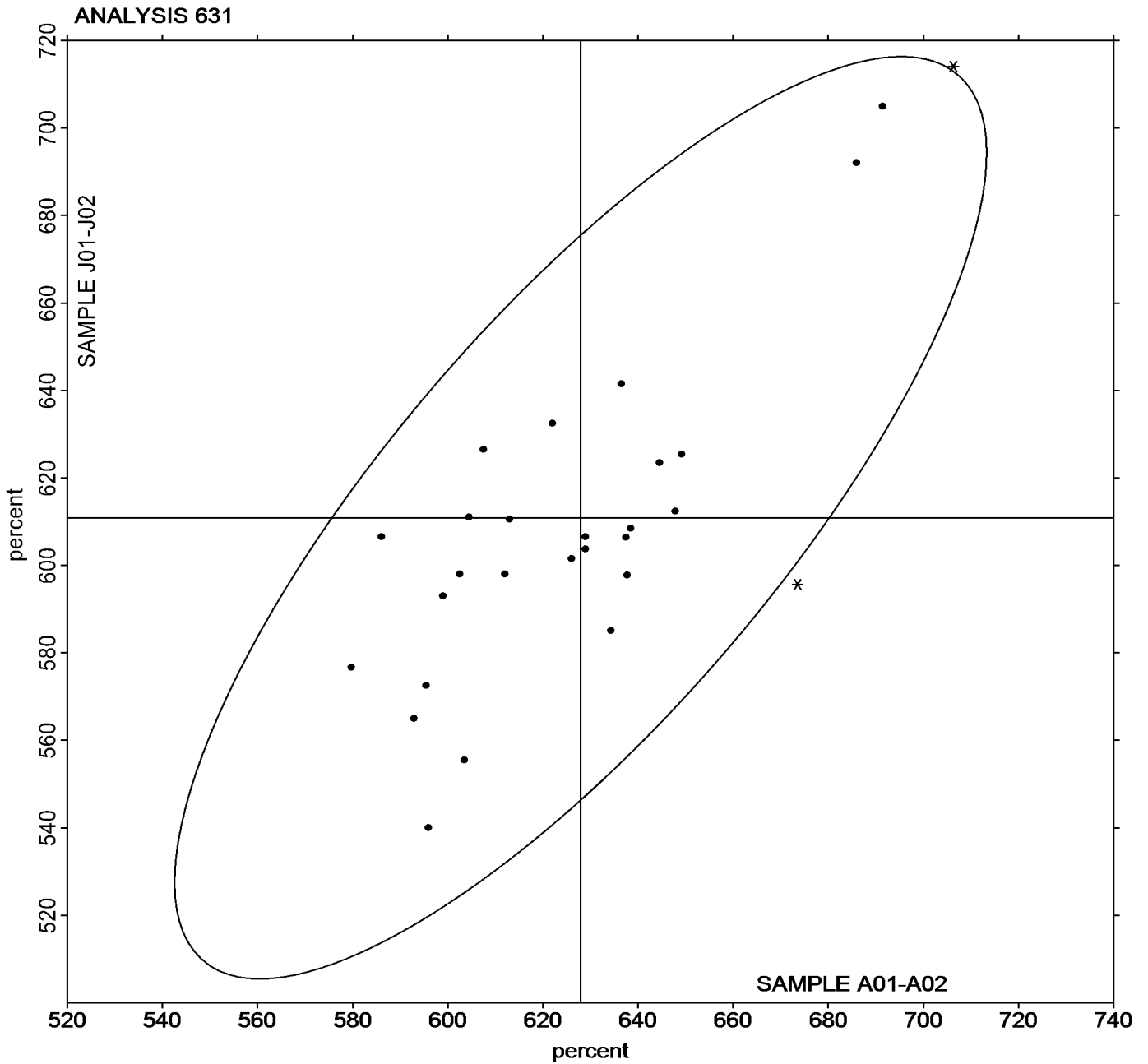
Analysis 631

1st Qtr 2020

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

Grand Mean Sample **A01-A02** = 627.92 percent

Grand Mean Sample **J01-J02** = 610.89 percent





Rubber Interlaboratory Testing Program

Report #203

Analysis 632

1st Qtr 2020

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

WebCode	Data Flag	Sample A01-A02			Sample J01-J02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		929.5	51.1	0.77	1,025.5	114.1	1.00
3AW4DJ		921.0	42.6	0.64	688.9	-222.5	-1.94
3B87YH		864.9	-13.5	-0.20	937.9	26.5	0.23
68HJGE		965.5	87.1	1.32	932.5	21.1	0.18
84TQJG		893.0	14.6	0.22	1,096.5	185.1	1.62
9Z9KYC		808.6	-69.8	-1.05	1,047.9	136.5	1.19
AQZ4AR		904.0	25.6	0.39	895.0	-16.4	-0.14
B2Y779		736.6	-141.8	-2.14	737.4	-174.0	-1.52
CAP2NN		799.5	-78.9	-1.19	881.5	-29.9	-0.26
DTCAYN		883.5	5.1	0.08	882.0	-29.4	-0.26
EDVJRA		865.2	-13.2	-0.20	966.0	54.6	0.48
HRKPDZ		1,021.8	143.3	2.17	1,011.3	99.9	0.87
JMNKX2		969.6	91.2	1.38	948.9	37.5	0.33
JPPF4H		905.3	26.9	0.41	979.5	68.1	0.59
K4UZZG		925.6	47.1	0.71	972.3	60.9	0.53
NWFKKF		927.5	49.1	0.74	863.0	-48.4	-0.42
PPUWGX		919.0	40.6	0.61	997.0	85.6	0.75
QNTJ9V		913.0	34.6	0.52	1,157.0	245.6	2.14
QRWERX		868.5	-9.9	-0.15	899.5	-11.9	-0.10
TL4WRR		769.0	-109.4	-1.65	730.0	-181.4	-1.58
VNVY9N		915.5	37.1	0.56	853.0	-58.4	-0.51
W9X82T		896.0	17.6	0.27	1,007.5	96.1	0.84
WDWJ66		818.0	-60.4	-0.91	891.5	-19.9	-0.17
WM8LQ7		892.5	14.1	0.21	949.0	37.6	0.33
WYTZLT		787.6	-90.9	-1.37	831.4	-80.1	-0.70
YD3PCQ		839.1	-39.3	-0.59	843.3	-68.1	-0.59
Z34CRK		874.1	-4.4	-0.07	755.4	-156.0	-1.36
Z74MNJ		782.1	-96.3	-1.45	738.7	-172.7	-1.51

Grand Means		Summary Statistics	
	878.40 psi		911.41 psi
Std Dev Btwn Labs	66.17 psi		114.54 psi
Statistics based on 28 of 28 reporting participants			



Rubber Interlaboratory Testing Program

Report #203

Analysis 632

1st Qtr 2020

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

Summary Statistics in SI Units

Grand Means

6.0563 MPa

6.28 MPa

Std Dev Btwn Labs

0.4562 MPa

0.79 MPa

Statistics based on 28 of 28 reporting participants

Samples A01-A02: Polyisoprene compound, batch #1 & J01-J02: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #203

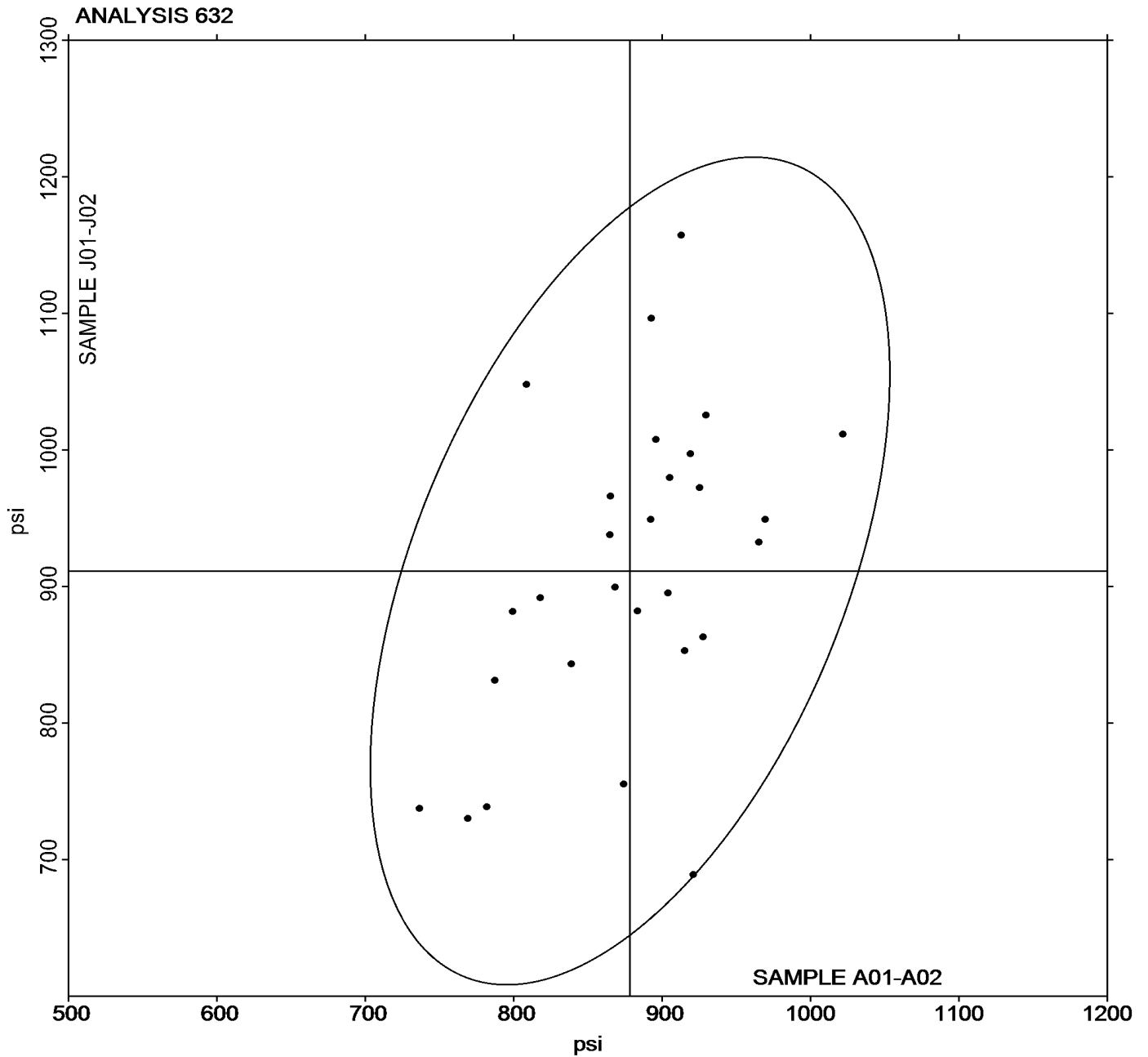
Analysis 632

1st Qtr 2020

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

Grand Mean Sample **A01-A02** = 878.40 psi

Grand Mean Sample **J01-J02** = 911.41 psi





Rubber Interlaboratory Testing Program

Report #203

Analysis 633

1st Qtr 2020

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

WebCode	Data Flag	Sample A01-A02			Sample J01-J02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		219.5	9.4	0.65	243.5	30.1	1.35
3AW4DJ	*	226.3	16.2	1.11	169.7	-43.7	-1.96
3B87YH		227.5	17.4	1.20	242.9	29.5	1.32
68HJGE		207.0	-3.1	-0.21	197.0	-16.4	-0.74
84TQJG		204.0	-6.1	-0.42	246.5	33.1	1.49
9Z9KYC		190.7	-19.4	-1.33	229.9	16.5	0.74
AQZ4AR		208.0	-2.1	-0.14	200.5	-12.9	-0.58
B2Y779		178.7	-31.4	-2.16	186.3	-27.1	-1.22
CAP2NN		192.0	-18.1	-1.24	205.0	-8.4	-0.38
DTCAYN		202.0	-8.1	-0.56	195.0	-18.4	-0.83
EDVJRA		195.1	-15.0	-1.03	215.0	1.6	0.07
HRKPDZ		237.2	27.1	1.87	231.9	18.4	0.83
JMNKX2		237.5	27.4	1.89	231.6	18.2	0.82
JPF4H		211.5	1.4	0.10	223.2	9.8	0.44
K4UZZG		212.7	2.6	0.18	217.8	4.4	0.20
NWFKKF		219.0	8.9	0.61	201.6	-11.8	-0.53
PPUWGX		214.0	3.9	0.27	228.0	14.6	0.66
QNTJ9V		208.5	-1.6	-0.11	264.5	51.1	2.30
QRWERX		208.0	-2.1	-0.14	211.5	-1.9	-0.09
TL4WRR		195.5	-14.6	-1.00	184.0	-29.4	-1.32
VNVY9N		217.0	6.9	0.48	201.0	-12.4	-0.56
W9X82T		219.0	9.0	0.62	237.4	24.0	1.08
WDWJ66		195.5	-14.6	-1.00	204.5	-8.9	-0.40
WM8LQ7		208.0	-2.1	-0.14	211.0	-2.4	-0.11
WYTZLT		188.7	-21.4	-1.48	193.3	-20.1	-0.90
YD3PCQ		219.3	9.2	0.63	210.2	-3.3	-0.15
Z34CRK		212.5	2.4	0.16	183.8	-29.7	-1.33
Z74MNJ		227.7	17.6	1.21	208.9	-4.5	-0.20

		Summary Statistics	
Grand Means	210.08 psi	213.40 psi	
Stnd Dev Btwn Labs	14.52 psi	22.26 psi	
Statistics based on 28 of 28 reporting participants			



Rubber Interlaboratory Testing Program

Report #203

Analysis 633

1st Qtr 2020

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

Summary Statistics in SI Units

Grand Means

1.4484 MPa

1.47 MPa

Std Dev Btwn Labs

0.1001 MPa

0.15 MPa

Statistics based on 28 of 28 reporting participants

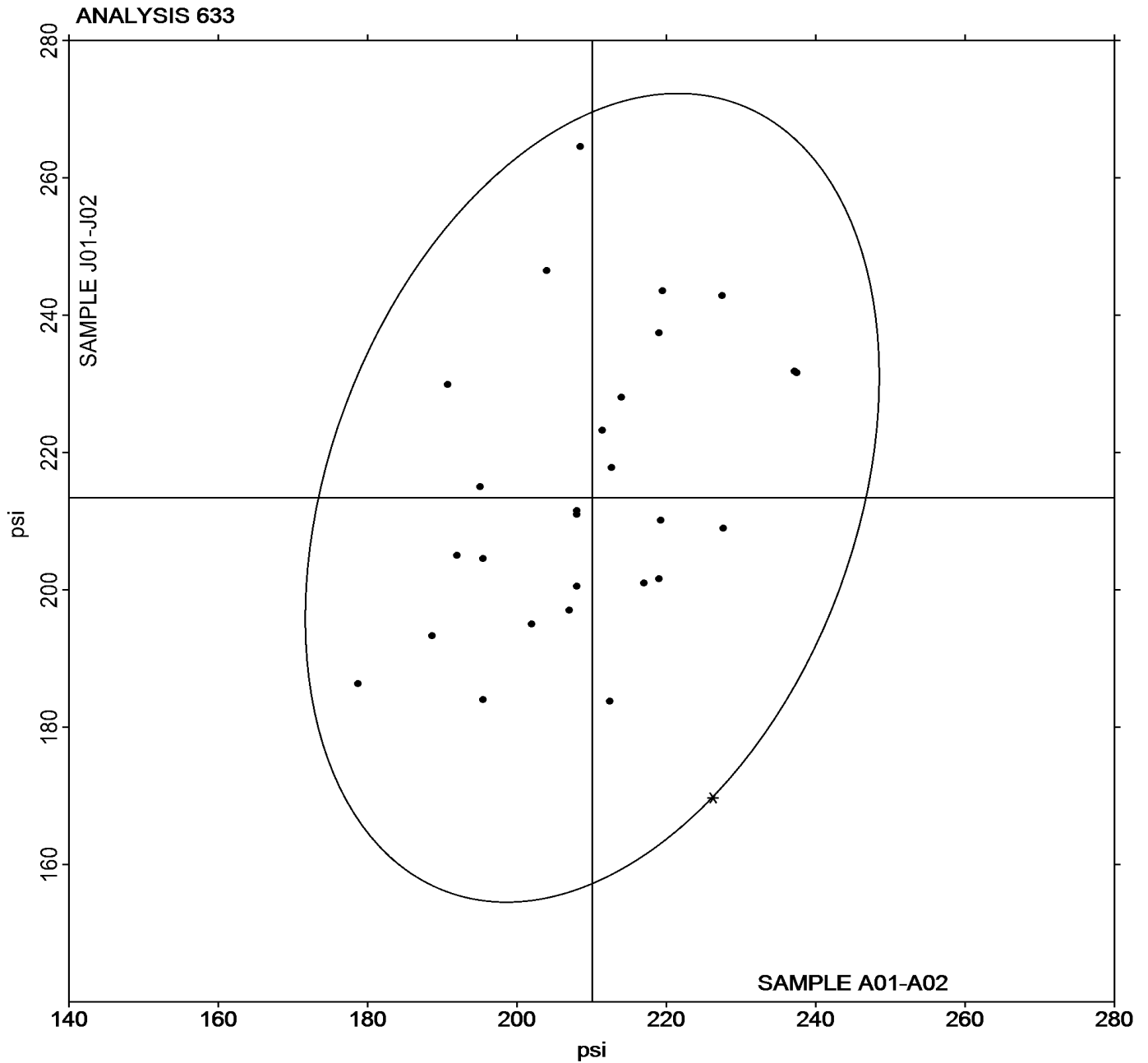
Samples A01-A02: Polyisoprene compound, batch #1 & J01-J02: Polyisoprene compound, batch #1



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

Grand Mean Sample A01-A02 = 210.08 psi

Grand Mean Sample J01-J02 = 213.40 psi





Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #203
1st Qtr 2020

WebCode	Data Flag	Sample N01			Sample N02		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Q2BRK		32.00	3.88	0.66	29.67	1.10	0.18
3FNDMG		29.33	1.21	0.21	29.67	1.10	0.18
3TMEZH		31.00	2.88	0.49	34.00	5.43	0.91
68HJGE		28.82	0.69	0.12	30.74	2.17	0.36
76AMBG		25.29	-2.83	-0.48	26.88	-1.69	-0.28
84TQJG		29.10	0.98	0.17	30.43	1.86	0.31
8R2GHT		26.67	-1.46	-0.25	28.33	-0.24	-0.04
8VLATV		27.67	-0.46	-0.08	27.33	-1.24	-0.21
AD9MCD		28.67	0.54	0.09	27.60	-0.97	-0.16
DNXG34		26.00	-2.12	-0.36	27.33	-1.24	-0.21
DTTBZ6		27.33	-0.79	-0.13	27.00	-1.57	-0.26
DVZQ8B		26.30	-1.82	-0.31	26.14	-2.43	-0.40
FYAQG8		25.47	-2.66	-0.45	27.47	-1.10	-0.18
HFA9NH		31.67	3.54	0.60	33.33	4.76	0.79
HRKPDZ		35.83	7.71	1.31	35.43	6.86	1.14
LB6M73		40.00	11.88	2.02	40.70	12.13	2.02
LJ3DVJ		29.00	0.88	0.15	30.00	1.43	0.24
LTZFQZ		29.33	1.21	0.21	29.30	0.73	0.12
MWLFQG		19.33	-8.79	-1.49	18.67	-9.90	-1.65
N2WT9E		33.67	5.54	0.94	31.33	2.76	0.46
PPUWGX		31.46	3.34	0.57	31.27	2.70	0.45
QDEL4R		27.33	-0.79	-0.13	28.00	-0.57	-0.09
U7N9Y9		33.33	5.21	0.89	34.67	6.10	1.02
XEJM6P	*	10.33	-17.79	-3.02	10.00	-18.57	-3.09
YD3PCQ		18.17	-9.96	-1.69	18.93	-9.64	-1.61

Summary Statistics	
Grand Means	28.124 % Compression
	28.569 % Compression
Std Dev Btwn Labs	5.881 % Compression
	6.001 % Compression
Statistics based on 25 of 25 reporting participants	

Samples N01: EPDM compound, batch #1 & N02: EPDM compound, batch #2

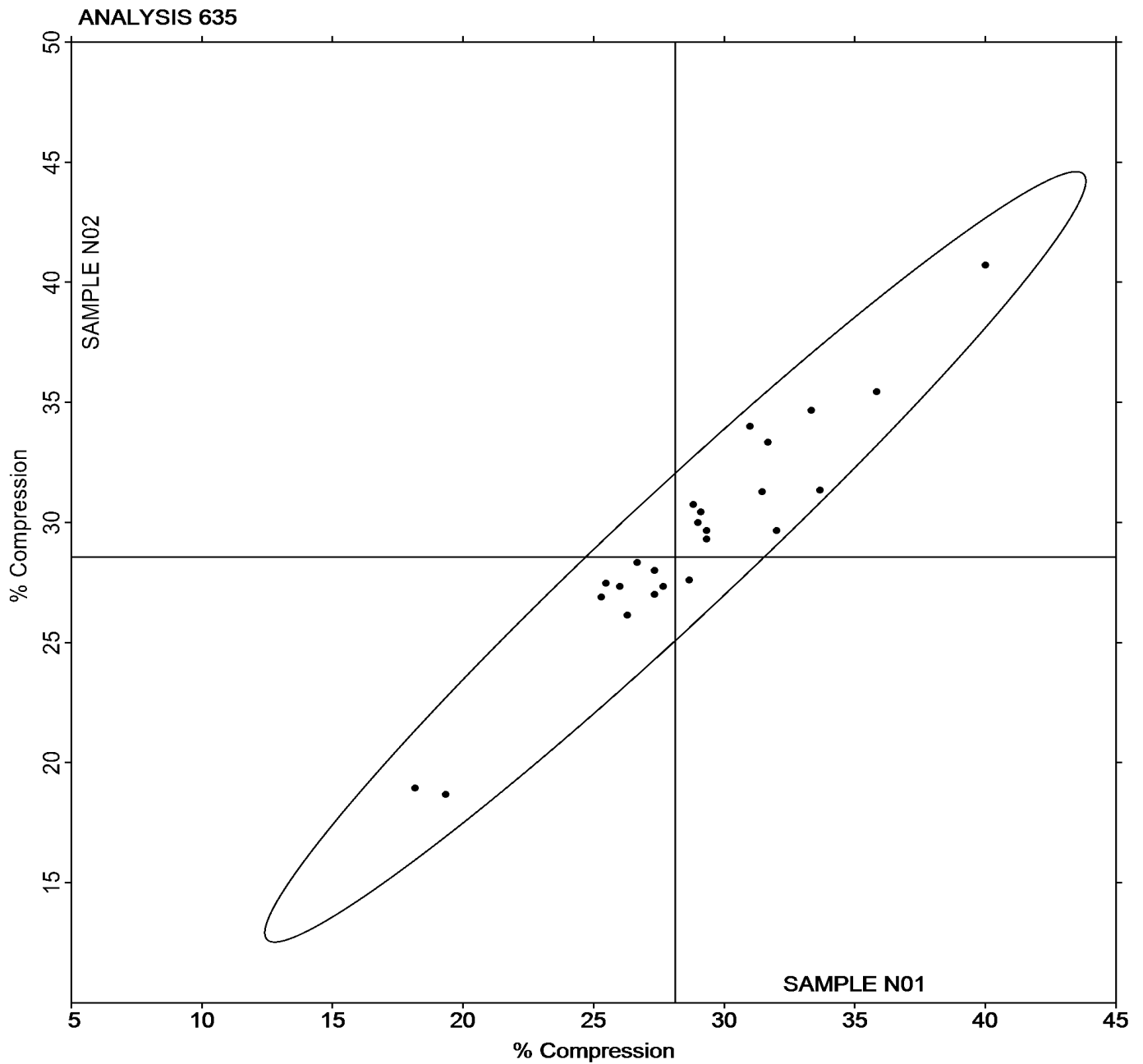


Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #203
1st Qtr 2020

Grand Mean Sample **N01** = 28.124 % Compression

Grand Mean Sample **N02** = 28.569 % Compression





Rubber Interlaboratory Testing Program

Report #203

Analysis 660

1st Qtr 2020

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

WebCode	Data Flag	Sample S01-S02			Sample S03-S04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3AW4DJ		50.96	-1.21	-1.19	53.61	-0.81	-0.67	MV
3B87YH		53.90	1.73	1.70	56.51	2.09	1.72	XX
68HJGE		52.27	0.10	0.10	53.90	-0.52	-0.43	MV
6LZB7K		52.02	-0.16	-0.15	53.98	-0.44	-0.36	MR
79AY8F	X	47.37	-4.81	-4.73	49.92	-4.50	-3.70	MR
7CBVYW		51.50	-0.67	-0.66	53.12	-1.30	-1.07	MR
8RHEAT		51.63	-0.54	-0.53	54.60	0.18	0.15	MR
B2Y779		52.20	0.03	0.03	54.10	-0.32	-0.26	MR
CAP2NN		52.14	-0.04	-0.04	55.23	0.81	0.67	MV
CLJHDP		52.65	0.48	0.47	53.97	-0.45	-0.37	MR
DTCAYN		53.03	0.86	0.85	53.35	-1.07	-0.88	MR
EBTHRC		52.52	0.35	0.35	54.82	0.40	0.33	MP
EDVJRA		52.13	-0.04	-0.04	53.85	-0.57	-0.47	MR
FHKFU6		52.40	0.23	0.22	53.48	-0.94	-0.77	MR
FYU8WA	*	53.73	1.56	1.54	57.95	3.53	2.90	TV
GY4VB8		51.85	-0.32	-0.32	53.50	-0.92	-0.75	TA
HFA9NH	*	49.17	-3.01	-2.96	51.00	-3.42	-2.81	MR
JBUZZH		52.65	0.48	0.47	54.30	-0.12	-0.10	MR
JMNKX2		52.02	-0.15	-0.15	56.43	2.01	1.65	MR
JPPF4H		52.10	-0.07	-0.07	54.44	0.02	0.01	MV
LB6M73		52.00	-0.17	-0.17	55.41	0.99	0.81	MR
MWLFQG		53.33	1.16	1.14	54.47	0.05	0.04	MR
NWFKKF		52.60	0.43	0.42	55.33	0.91	0.75	MR
PPUWGX		53.40	1.22	1.20	55.68	1.26	1.03	ML
QNTJ9V		52.75	0.58	0.57	54.80	0.38	0.31	MR
QRWERX		52.18	0.01	0.01	54.08	-0.34	-0.28	MR
RVAEPP		54.03	1.86	1.83	55.38	0.96	0.79	MR
TL4WRR		51.00	-1.17	-1.15	53.67	-0.75	-0.62	MV
U2BALU	X	36.48	-15.69	-15.44	21.48	-32.94	-27.03	MR
VNVY9N		50.32	-1.86	-1.83	52.47	-1.95	-1.60	XX
WDWJ66		52.42	0.25	0.25	54.43	0.00	0.00	MR
WQ3G8K		52.60	0.43	0.42	54.67	0.25	0.20	MR
WYTZLT		51.80	-0.37	-0.37	53.98	-0.44	-0.36	MR
XNA8BN		50.77	-1.41	-1.39	53.73	-0.70	-0.57	MV
YHHXZP		53.04	0.87	0.86	55.21	0.79	0.65	MR
Z34CRK		50.73	-1.44	-1.42	54.25	-0.17	-0.14	MV
Z74MNJ		52.17	-0.01	-0.01	55.00	0.58	0.48	MV



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	52.172 ML 1 + 4	54.420 ML 1 + 4	
Stnd Dev Btwn Labs	1.016 ML 1 + 4	1.219 ML 1 + 4	
Statistics based on 35 of 37 reporting participants			

Samples S01-S02: SBR & S03-S04: Butyl

Comments on Assigned Data Flags for Test #660

79AY8F (X) - Data for all samples are low.

U2BALU (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MP	Monsanto Compact Mooney Viscometer
MR	Alpha Technologies Model MV2000/MV2000E	MV	MonTech
TA	TA Instruments (any model)	TV	Tech Pro Visc Tech (any model)
XX	Instrument make/model not specified by lab		

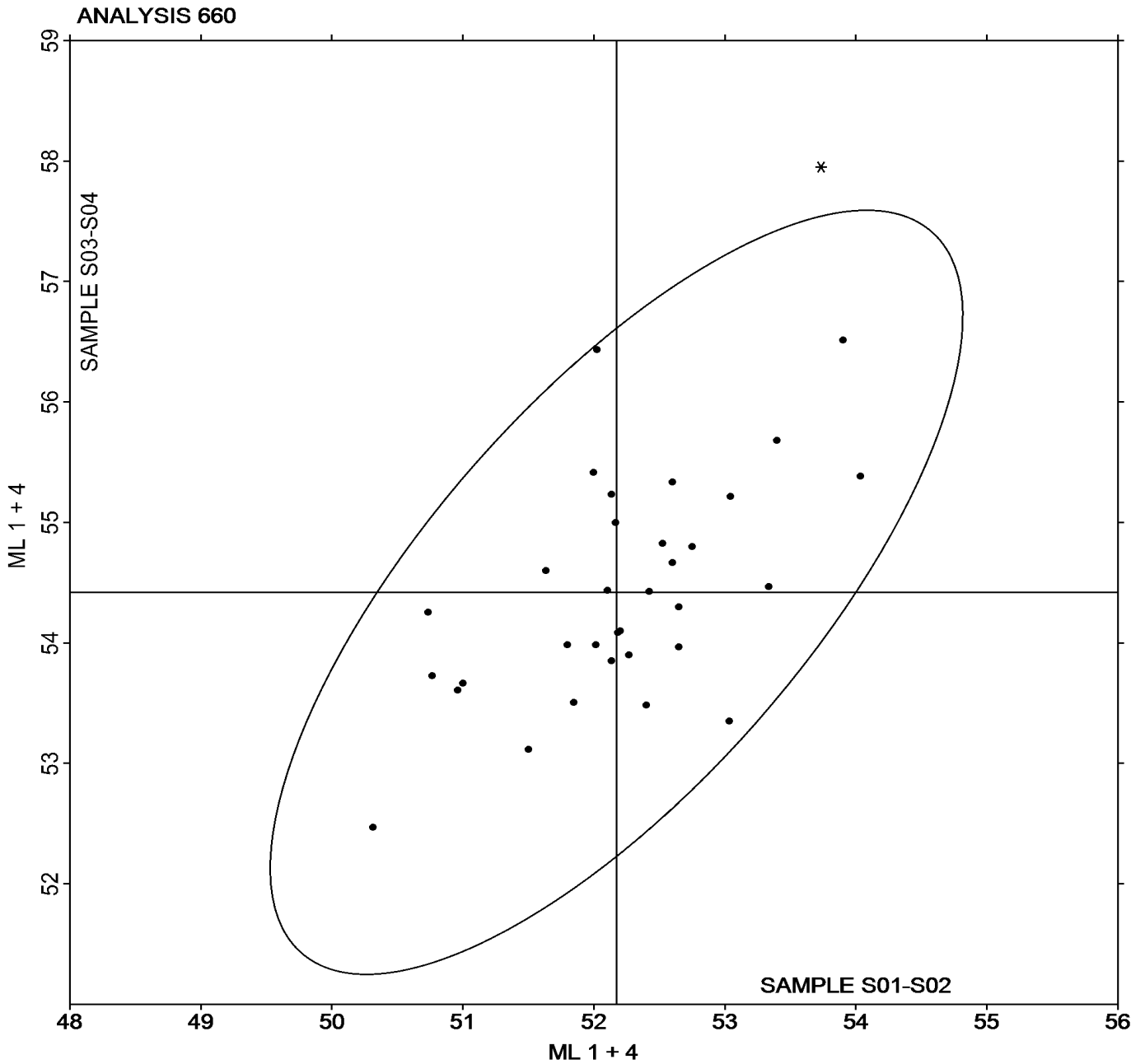


Rubber Interlaboratory Testing Program
Analysis 660
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #203
1st Qtr 2020

Grand Mean Sample **S01-S02** = 52.172 ML 1 + 4

Grand Mean Sample **S03-S04** = 54.420 ML 1 + 4





Rubber Interlaboratory Testing Program

Report #203

Analysis 661

1st Qtr 2020

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

WebCode	Data Flag	Sample S01-S02			Sample S03-S04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3AW4DJ		50.96	-1.16	-1.11	51.72	-0.25	-0.28	MV
3B87YH		53.90	1.78	1.70	52.22	0.25	0.28	XX
68HJGE		52.27	0.15	0.14	51.36	-0.60	-0.68	MV
79AY8F	X	47.37	-4.76	-4.55	47.78	-4.18	-4.73	MR
7CBVYW		51.50	-0.62	-0.60	50.88	-1.08	-1.23	MR
8RHEAT		51.63	-0.49	-0.47	51.65	-0.32	-0.36	MR
B2Y779		52.20	0.08	0.07	52.27	0.30	0.34	MR
CAP2NN		52.14	0.01	0.01	52.59	0.62	0.71	MV
CLJHDP		52.65	0.53	0.51	51.33	-0.63	-0.72	MR
DTCAYN		53.03	0.91	0.87	50.61	-1.36	-1.54	MR
EBTHRC		52.52	0.40	0.38	51.94	-0.03	-0.03	MP
EDVJRA		52.13	0.01	0.01	51.40	-0.57	-0.64	MR
FHKFU6		52.40	0.28	0.27	51.27	-0.70	-0.79	MR
FYU8WA	*	53.73	1.61	1.54	54.62	2.65	3.00	TV
HFA9NH	*	49.17	-2.96	-2.83	51.17	-0.80	-0.91	MR
JBUZZH		52.65	0.53	0.51	51.55	-0.42	-0.47	MR
JMNKX2		52.02	-0.10	-0.09	52.32	0.36	0.40	MR
JPPF4H		52.10	-0.02	-0.02	52.15	0.18	0.20	MV
LB6M73		52.00	-0.12	-0.12	53.11	1.14	1.29	MR
NWFKKF		52.60	0.48	0.46	52.25	0.28	0.32	MR
PPUWGX		53.40	1.27	1.22	52.72	0.75	0.85	ML
QNTJ9V		52.75	0.63	0.60	52.57	0.60	0.68	MR
QRWERX		52.18	0.06	0.06	51.68	-0.28	-0.32	MR
RVAEPP		54.03	1.91	1.83	53.05	1.08	1.22	MR
TL4WRR		51.00	-1.12	-1.07	51.55	-0.42	-0.47	MV
U2BALU	X	36.48	-15.64	-14.96	13.97	-38.00	-43.00	MR
VNVY9N		50.32	-1.81	-1.73	50.05	-1.92	-2.17	XX
WDWJ66		52.42	0.30	0.29	52.15	0.18	0.21	MR
WQ3G8K		52.60	0.48	0.46	52.73	0.77	0.87	MR
WYTZLT		51.80	-0.32	-0.31	50.83	-1.13	-1.28	MR
XNA8BN		50.77	-1.36	-1.30	52.07	0.10	0.11	MV
Z34CRK		50.73	-1.39	-1.33	52.58	0.61	0.69	MV
Z74MNJ		52.17	0.04	0.04	52.63	0.66	0.75	MV



Rubber Interlaboratory Testing Program

Report #203

Analysis 661

1st Qtr 2020

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

		Summary Statistics	
Grand Means	52.122 ML 1 + 8	51.968 ML 1 + 8	
Stnd Dev Btwn Labs	1.045 ML 1 + 8	0.884 ML 1 + 8	
Statistics based on 31 of 33 reporting participants			

Samples S01-S02: SBR & S03-S04: Butyl

Comments on Assigned Data Flags for Test #661

79AY8F (X) - Data for all samples are low.

U2BALU (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MP	Monsanto Compact Mooney Viscometer
MR	Alpha Technologies Model MV2000/MV2000E	MV	Montech
TV	Tech Pro Visc Tech (any model)	XX	Instrument make/model not specified by lab



Rubber Interlaboratory Testing Program

Report #203

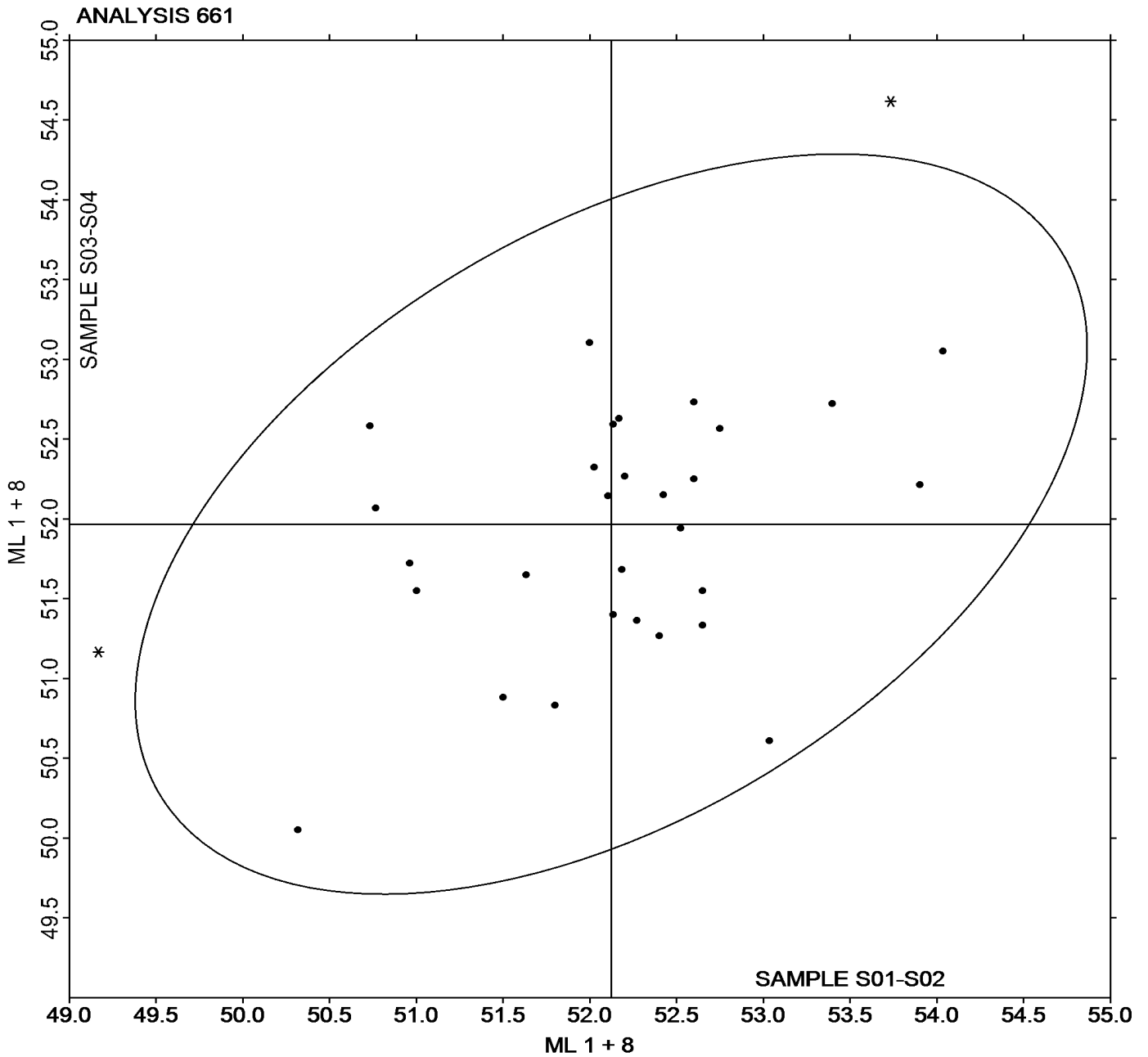
Analysis 661

1st Qtr 2020

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

Grand Mean Sample **S01-S02** = 52.122 ML 1 + 8

Grand Mean Sample **S03-S04** = 51.968 ML 1 + 8





Rubber Interlaboratory Testing Program

Report #203

Analysis 662

1st Qtr 2020

Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample S01-S02			Sample S03-S04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3AW4DJ		11.40	-7.10	-2.14	6.000	-2.084	-1.96	MV
3B87YH		17.00	-1.50	-0.45	9.167	1.083	1.02	XX
68HJGE		17.83	-0.67	-0.20	7.200	-0.884	-0.83	MV
6LZB7K		19.60	1.10	0.33	8.600	0.516	0.49	MR
CAP2NN		15.67	-2.84	-0.86	7.033	-1.051	-0.99	MV
CLJHDP		22.00	3.50	1.05	9.250	1.166	1.10	MR
EDVJRA		19.27	0.77	0.23	8.020	-0.064	-0.06	MR
FYU8WA		22.50	4.00	1.20	8.235	0.151	0.14	TV
GY4VB8	*	21.20	2.70	0.81	10.867	2.783	2.62	TA
JMNKX2		15.78	-2.72	-0.82	8.740	0.656	0.62	MR
JPPF4H	X	323.17	304.66	91.84	312.000	303.916	285.77	MV
NWFKKF		20.28	1.78	0.54	7.885	-0.199	-0.19	MR
PPUWGX		21.67	3.16	0.95	8.514	0.430	0.40	ML
QRWERX		19.49	0.98	0.30	7.780	-0.304	-0.29	MR
RVAEPP		20.51	2.01	0.61	7.958	-0.126	-0.12	MR
TL4WRR		19.23	0.73	0.22	7.800	-0.284	-0.27	MV
U2BALU	X	105.32	86.81	26.17	26.532	18.448	17.35	MR
VNVY9N		19.10	0.60	0.18	7.767	-0.317	-0.30	XX
WYTZLT		19.82	1.32	0.40	7.793	-0.291	-0.27	MR
Z34CRK	X	546.20	527.70	159.07	545.633	537.549	505.46	MV
Z74MNJ		10.73	-7.77	-2.34	6.900	-1.184	-1.11	MV

Grand Means		Summary Statistics	
	18.505 seconds		8.0838 seconds
Std Dev Btwn Labs	3.317 seconds		1.0635 seconds
Statistics based on 18 of 21 reporting participants			

Samples S01-S02: SBR & S03-S04: Butyl

Comments on Assigned Data Flags for Test #662

JPPF4H (X) - Extreme Data.

U2BALU (X) - Extreme Data.

Z34CRK (X) - Extreme Data.



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

Report #203
1st Qtr 2020

Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MR	Alpha Technologies Model MV2000/MV2000E
MV	MonTech	TA	TA Instruments (any model)
TV	Tech Pro Visc Tech (any model)	XX	Instrument make/model not specified by lab

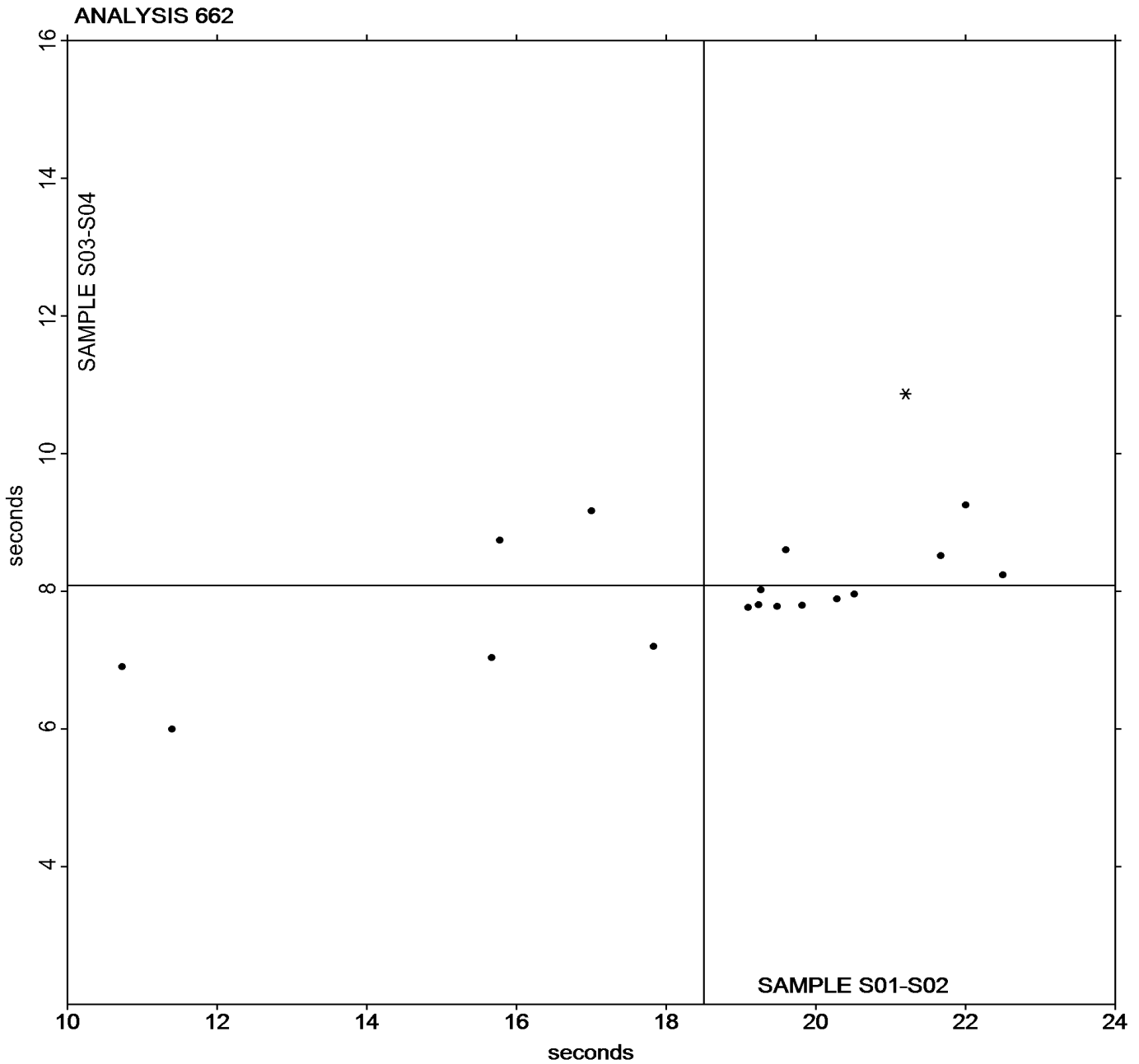


Rubber Interlaboratory Testing Program
Analysis 662
Mooney Stress Relaxation: t80 (seconds)

Report #203
1st Qtr 2020

Grand Mean Sample **S01-S02** = 18.505 seconds

Grand Mean Sample **S03-S04** = 8.0838 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 #203

Analysis 663

1st Qtr 2020

Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample S01-S02			Sample S03-S04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3AW4DJ		87.17	3.75	1.06	95.00	3.33	1.56	MV
3B87YH		83.99	0.57	0.16	90.70	-0.97	-0.45	XX
68HJGE		83.56	0.15	0.04	92.14	0.47	0.22	MV
CAP2NN		84.46	1.04	0.29	92.63	0.96	0.45	MV
CLJHDP		82.07	-1.35	-0.38	90.52	-1.15	-0.54	MR
EDVJRA		83.06	-0.36	-0.10	91.83	0.16	0.08	MR
FYU8WA		81.78	-1.63	-0.46	89.97	-1.70	-0.80	TV
GY4VB8		82.41	-1.00	-0.28	89.15	-2.52	-1.18	TA
JMNKX2	*	72.95	-10.46	-2.95	86.72	-4.95	-2.33	MR
JPF4H		85.44	2.03	0.57	93.19	1.52	0.71	MV
NWFKKF		82.63	-0.78	-0.22	91.46	-0.21	-0.10	MR
PPUWGX		82.18	-1.23	-0.35	90.71	-0.96	-0.45	ML
QRWERX		82.95	-0.46	-0.13	91.52	-0.15	-0.07	MR
RVAEPP		82.52	-0.90	-0.25	91.16	-0.51	-0.24	MR
TL4WRR		83.02	-0.39	-0.11	91.50	-0.17	-0.08	MV
VNVY9N		83.10	-0.31	-0.09	92.20	0.53	0.25	XX
WYTZLT		82.85	-0.57	-0.16	92.00	0.33	0.16	MR
Z34CRK		92.26	8.84	2.50	97.06	5.39	2.53	MV
Z74MNJ		86.46	3.05	0.86	92.28	0.61	0.29	MZ

Grand Means		Summary Statistics	
	83.412 percent		91.669 percent
Std Dev Btwn Labs	3.543 percent		2.130 percent
Statistics based on 19 of 19 reporting participants			

Samples S01-S02: SBR & S03-S04: 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 Monsanto Mooney Viscometer
TA	TA Instruments (any model)	TV	Tech Pro Visc Tech (any model)
XX	Instrument make/model not specified by lab		

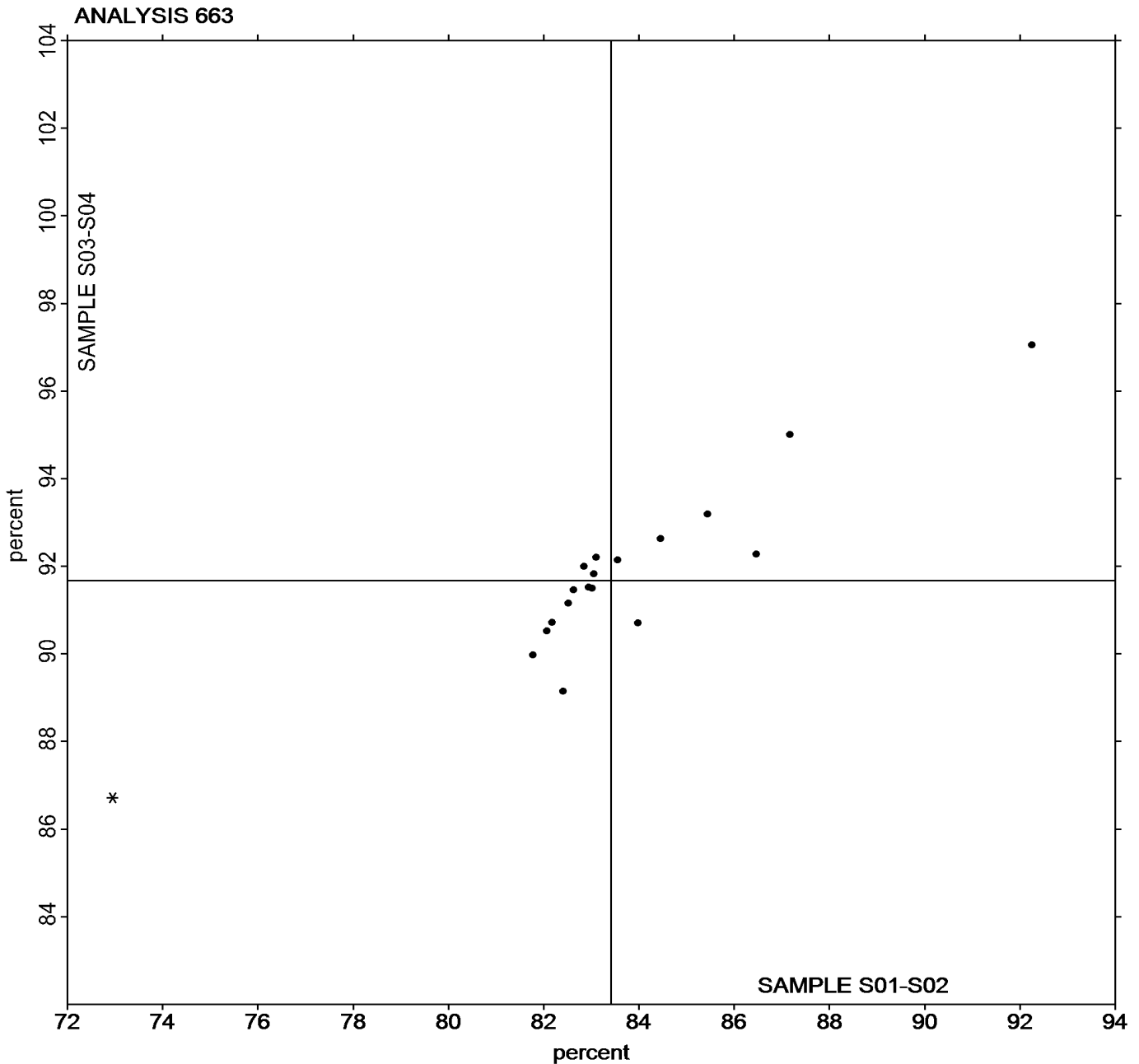


Rubber Interlaboratory Testing Program
Analysis 663
Mooney Stress Relaxation: X30 (percent)

Report #203
1st Qtr 2020

Grand Mean Sample S01-S02 = 83.412 percent

Grand Mean Sample S03-S04 = 91.669 percent



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 #203

Analysis 664

1st Qtr 2020

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

WebCode	Data Flag	Sample S01-S02			Sample S03-S04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3AW4DJ		662.3	-176.3	-0.95	257.0	-212.7	-1.94	MV
3B87YH		939.0	100.4	0.54	583.4	113.8	1.04	XX
68HJGE		918.3	79.6	0.43	449.0	-20.7	-0.19	MV
CAP2NN		858.2	19.6	0.11	422.1	-47.5	-0.43	MV
CLJHDP		1,014.2	175.5	0.94	558.2	88.5	0.81	MR
EDVJRA		949.5	110.9	0.60	479.8	10.2	0.09	XX
FYU8WA	*	557.1	-281.6	-1.51	593.6	124.0	1.13	TV
GY4VB8		718.9	-119.8	-0.64	509.4	39.8	0.36	TA
JMNKX2		875.7	37.1	0.20	602.6	132.9	1.21	MR
JPF4H		798.2	-40.4	-0.22	394.9	-74.8	-0.68	MV
NWFKKF		985.5	146.8	0.79	501.8	32.2	0.29	MR
PPUWGX		1,073.2	234.6	1.26	596.9	127.3	1.16	ML
QRWERX		962.0	123.4	0.66	489.3	19.7	0.18	MR
TL4WRR		923.2	84.6	0.45	476.5	6.8	0.06	MV
U2BALU	M	No data reported for this sample			167.5	-302.2	-2.75	MR
VNVY9N		912.4	73.8	0.40	442.7	-26.9	-0.25	XX
WYTZLT		951.9	113.2	0.61	458.4	-11.2	-0.10	MR
Z34CRK	*	336.1	-502.5	-2.70	192.2	-277.4	-2.53	MV
Z74MNJ		659.9	-178.7	-0.96	445.7	-23.9	-0.22	MZ

Grand Means		Summary Statistics	
	838.65 M-s		469.64 M-s
Stnd Dev Btw Labs	186.19 M-s		109.83 M-s
Statistics based on 18 of 19 reporting participants			

Samples S01-S02: SBR & S03-S04: Butyl

Comments on Assigned Data Flags for Test #664

U2BALU (M) - Participant did not submit data for sample group .

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
TA	TA Instruments (any model)	TV	Tech Pro Visc Tech (any model)
XX	Instrument make/model not specified by lab		

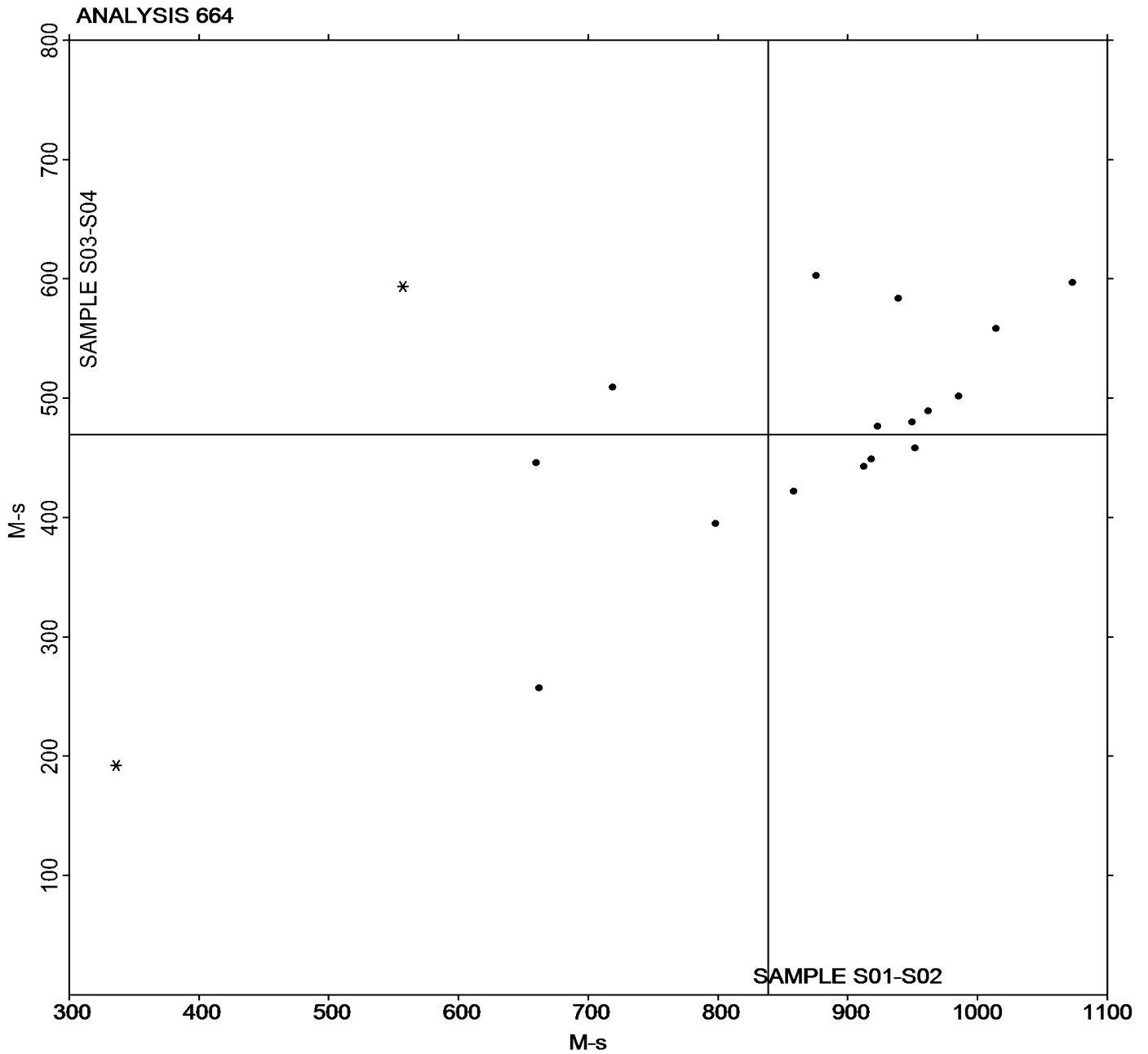


Rubber Interlaboratory Testing Program
Analysis 664
Mooney Stress Relaxation: Area under curve (M-s)

Report #203
1st Qtr 2020

Grand Mean Sample **S01-S02** = 838.65 M-s

Grand Mean Sample **S03-S04** = 469.64 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 #203
1st Qtr 2020

WebCode	Data Flag	Sample W01-W02			Sample W03-W04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
68HJGE		2.215	0.201	1.18	4.602	0.421	1.22
7CBVYW		2.158	0.144	0.85	4.507	0.326	0.95
CAP2NN		1.823	-0.191	-1.12	3.937	-0.244	-0.71
K4UZZG		1.995	-0.019	-0.11	3.985	-0.195	-0.57
Z34CRK		1.878	-0.136	-0.80	3.872	-0.309	-0.89

Summary Statistics	
Grand Means	
	2.0140 minutes 4.1803 minutes
Stnd Dev Btwn Labs	
	0.1706 minutes 0.3453 minutes
	Statistics based on 5 of 5 reporting participants

Samples W01-W02: EPDM compound, batch #1 & W03-W04: EPDM compound, batch #2

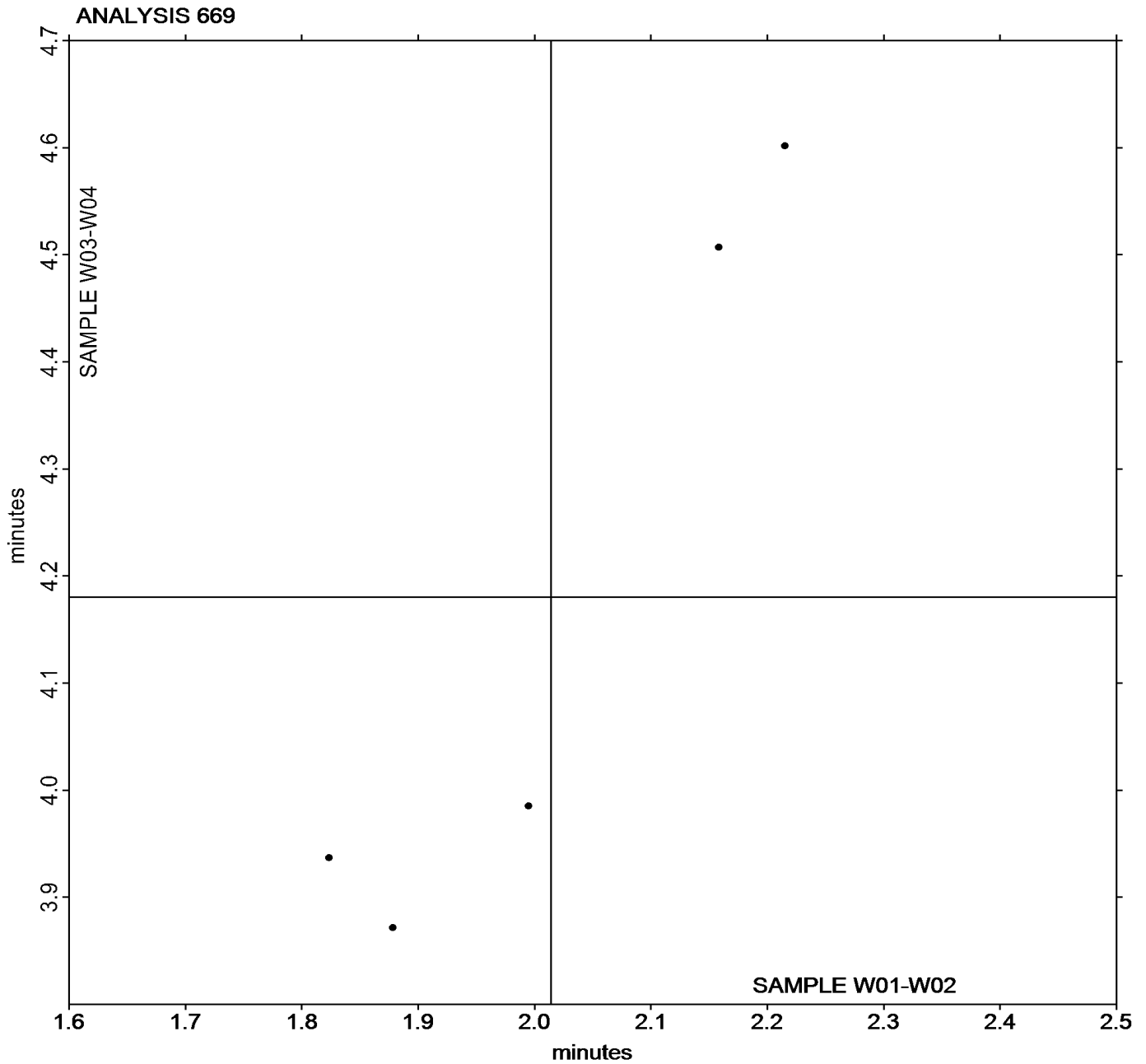


Rubber Interlaboratory Testing Program
Analysis 669
ODR Vulcanization-Cure Time 10% (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W01-W02** = 2.0140 minutes

Grand Mean Sample **W03-W04** = 4.1803 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 #203
1st Qtr 2020

WebCode	Data Flag	Sample W01-W02			Sample W03-W04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
68HJGE		1.612	0.128	0.90	3.293	0.256	1.01
7CBVYW		1.627	0.143	1.01	3.322	0.284	1.13
CAP2NN		1.293	-0.191	-1.35	2.787	-0.251	-0.99
K4UZZG		1.487	0.003	0.02	2.848	-0.189	-0.75
Z34CRK		1.402	-0.082	-0.58	2.938	-0.099	-0.39

Summary Statistics	
Grand Means	
	1.4840 minutes 3.0377 minutes
Stnd Dev Btwn Labs	
	0.1412 minutes 0.2524 minutes
	Statistics based on 5 of 5 reporting participants

Samples W01-W02: EPDM compound, batch #1 & W03-W04: EPDM compound, batch #2

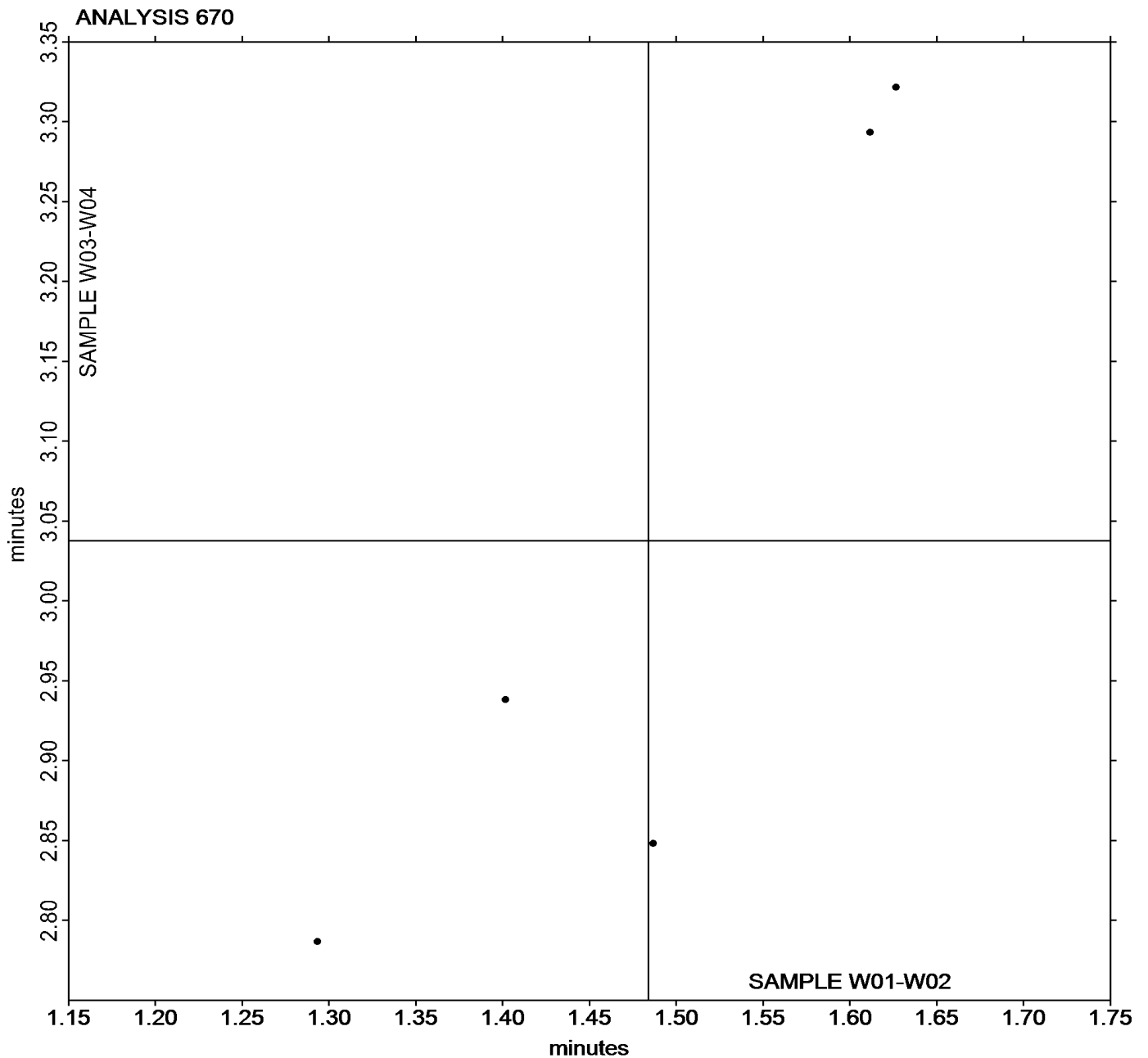


Rubber Interlaboratory Testing Program
Analysis 670
ODR Vulcanization-Scorch Time, Ts1 (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W01-W02** = 1.4840 minutes

Grand Mean Sample **W03-W04** = 3.0377 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 #203
1st Qtr 2020

WebCode	Data Flag	Sample W01-W02			Sample W03-W04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
68HJGE		4.175	0.330	1.19	8.565	0.607	1.11
7CBVYW		4.017	0.172	0.62	8.210	0.252	0.46
CAP2NN		3.542	-0.303	-1.09	7.480	-0.478	-0.88
K4UZZG		3.918	0.073	0.26	8.248	0.290	0.53
Z34CRK		3.573	-0.272	-0.98	7.288	-0.670	-1.23

Summary Statistics	
Grand Means	
	3.8450 minutes 7.9583 minutes
Stnd Dev Btwn Labs	
	0.2782 minutes 0.5462 minutes
	Statistics based on 5 of 5 reporting participants

Samples W01-W02: EPDM compound, batch #1 & W03-W04: EPDM compound, batch #2

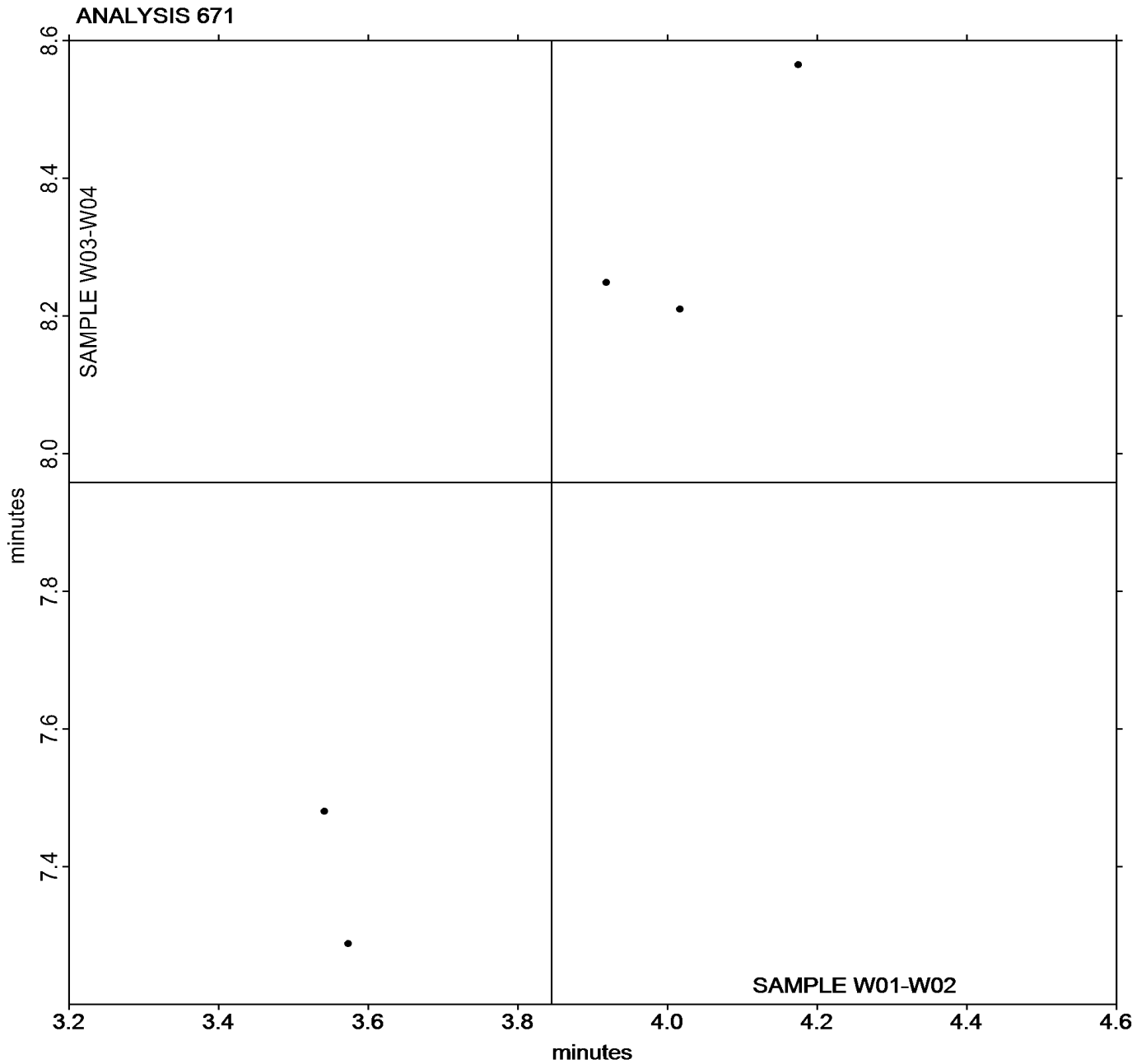


Rubber Interlaboratory Testing Program
Analysis 671
ODR Vulcanization-Cure Time 50% (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W01-W02** = 3.8450 minutes

Grand Mean Sample **W03-W04** = 7.9583 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 #203
1st Qtr 2020

WebCode	Data Flag	Sample W01-W02			Sample W03-W04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
68HJGE		11.51	-0.45	-0.49	14.81	0.40	0.37
7CBVYW		12.78	0.82	0.91	15.05	0.64	0.60
CAP2NN		10.65	-1.30	-1.44	12.98	-1.44	-1.36
K4UZZG		12.06	0.11	0.12	15.56	1.15	1.08
Z34CRK		12.77	0.82	0.91	13.68	-0.74	-0.70

		Summary Statistics	
Grand Means		11.952 minutes	14.418 minutes
Stnd Dev Btwn Labs		0.903 minutes	1.059 minutes
Statistics based on 5 of 5 reporting participants			

Samples W01-W02: EPDM compound, batch #1 & W03-W04: EPDM compound, batch #2

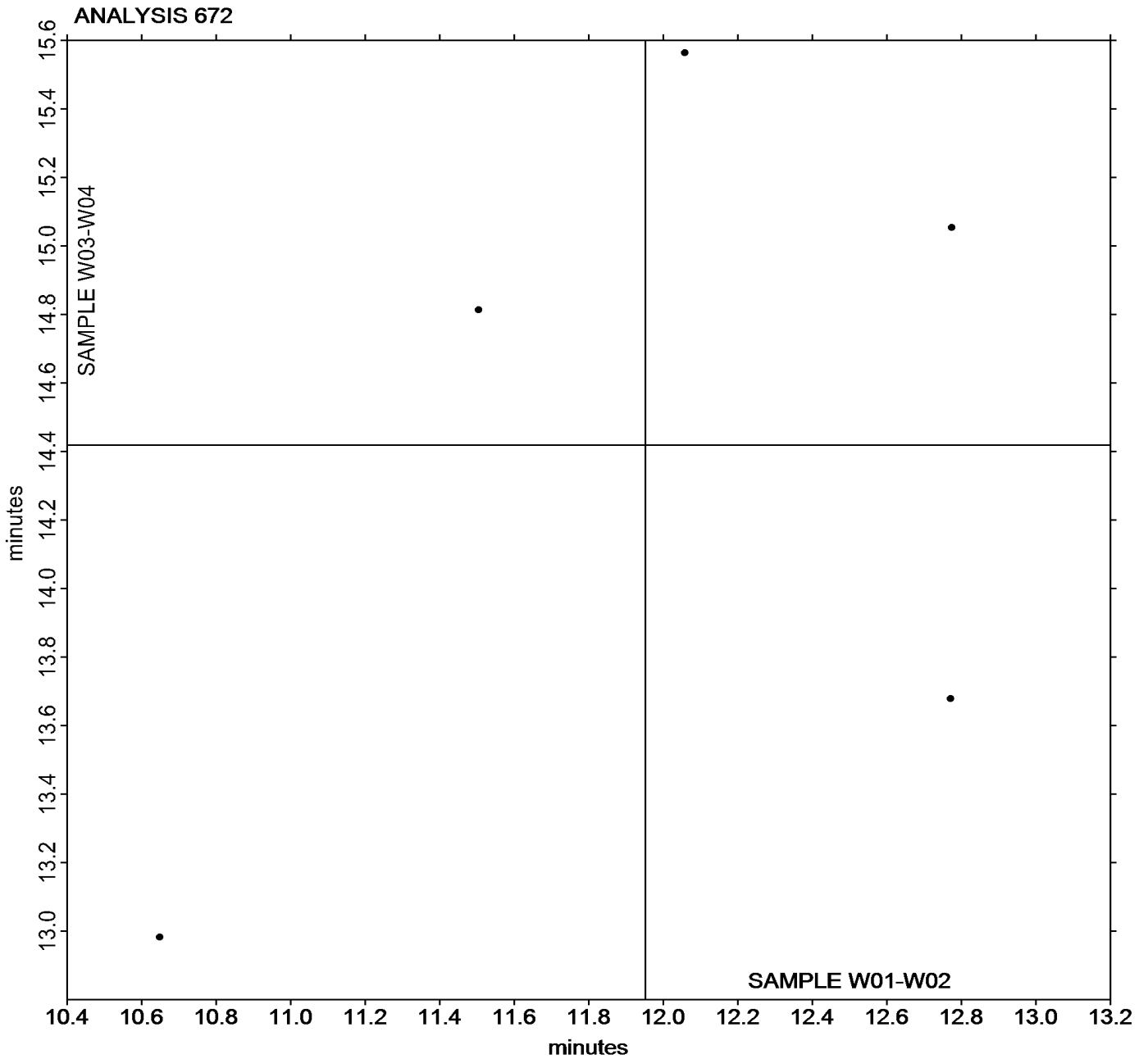


Rubber Interlaboratory Testing Program
Analysis 672
ODR Vulcanization-Cure Time 90% (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W01-W02** = 11.952 minutes

Grand Mean Sample **W03-W04** = 14.418 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 #203
1st Qtr 2020

WebCode	Data Flag	Sample W01-W02			Sample W03-W04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
68HJGE		6.552	-0.340	-0.33	7.657	-0.991	-0.64
7CBVYW		7.267	0.375	0.37	7.608	-1.039	-0.67
CAP2NN		7.107	0.215	0.21	9.418	0.771	0.49
K4UZZG		8.153	1.262	1.23	11.047	2.399	1.54
Z34CRK		5.380	-1.512	-1.48	7.507	-1.141	-0.73

		Summary Statistics	
Grand Means		6.8917 lbf.in	8.6473 lbf.in
Std Dev Btwn Labs		1.0222 lbf.in	1.5583 lbf.in
Statistics based on 5 of 5 reporting participants			

		Summary Statistics in SI Units	
Grand Means		7.7865 dN.m	9.7702 dN.m
Std Dev Btwn Labs		1.1549 dN.m	1.7607 dN.m
Statistics based on 5 of 5 reporting participants			

Samples W01-W02: EPDM compound, batch #1 & W03-W04: EPDM compound, batch #2

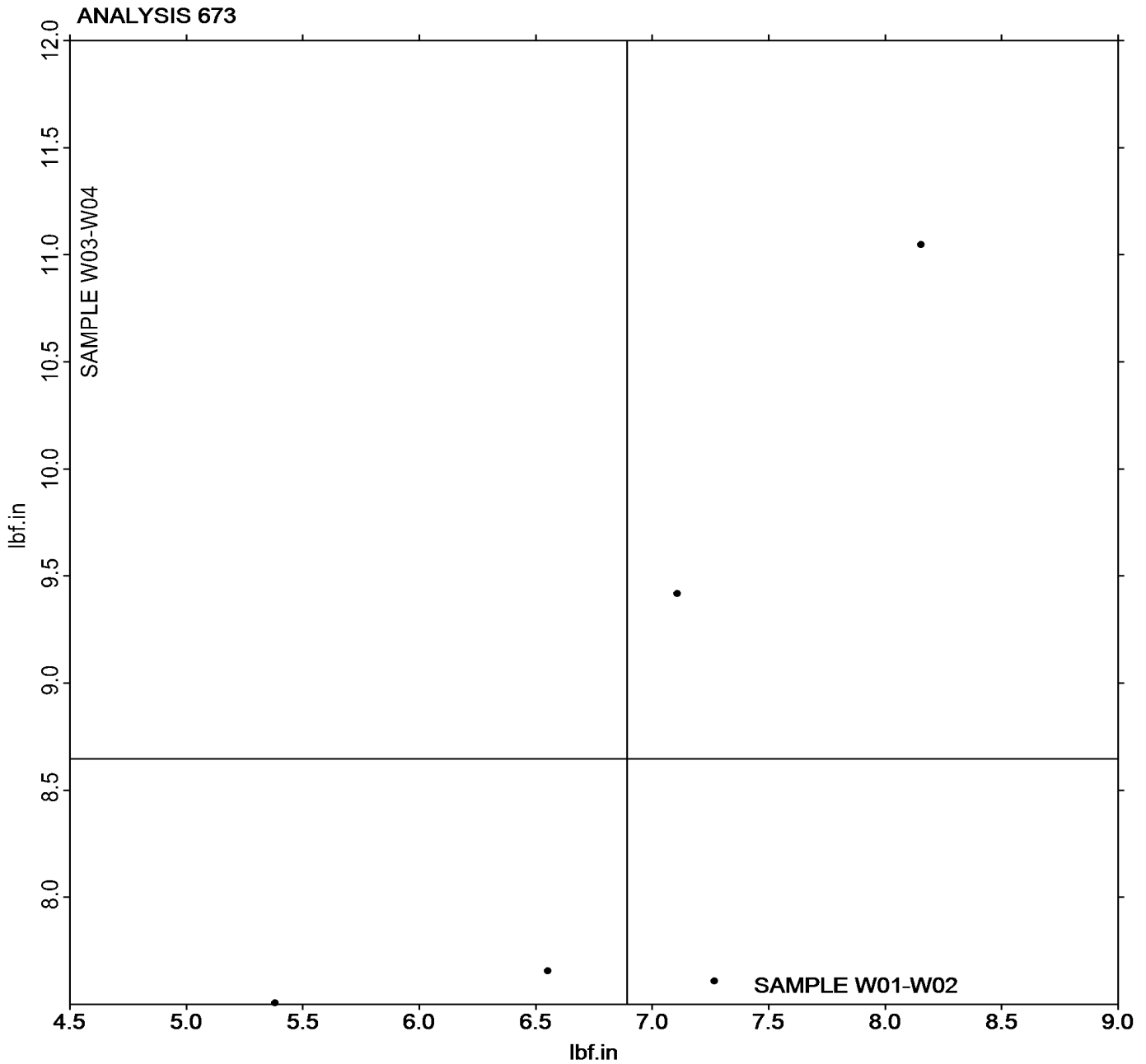


Rubber Interlaboratory Testing Program
Analysis 673
ODR Vulcanization: Minimum Torque (lbf.in)

Report #203
1st Qtr 2020

Grand Mean Sample **W01-W02** = 6.8917 lbf.in

Grand Mean Sample **W03-W04** = 8.6473 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 #203

Analysis 674

1st Qtr 2020

ODR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample W01-W02			Sample W03-W04		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
68HJGE		45.27	2.03	0.66	35.79	0.17	0.05
7CBVYW		40.55	-2.70	-0.89	32.98	-2.65	-0.80
CAP2NN		47.57	4.32	1.42	38.19	2.56	0.77
K4UZZG		41.91	-1.34	-0.44	39.48	3.85	1.16
Z34CRK		40.94	-2.31	-0.76	31.70	-3.93	-1.19

		Summary Statistics	
Grand Means		43.246 lbf.in	35.626 lbf.in
Std Dev Btwn Labs		3.050 lbf.in	3.310 lbf.in
Statistics based on 5 of 5 reporting participants			

		Summary Statistics in SI Units	
Grand Means		48.861 dN.m	40.252 dN.m
Std Dev Btwn Labs		3.446 dN.m	3.740 dN.m
Statistics based on 5 of 5 reporting participants			

Samples W01-W02: EPDM compound, batch #1 & W03-W04: EPDM compound, batch #2

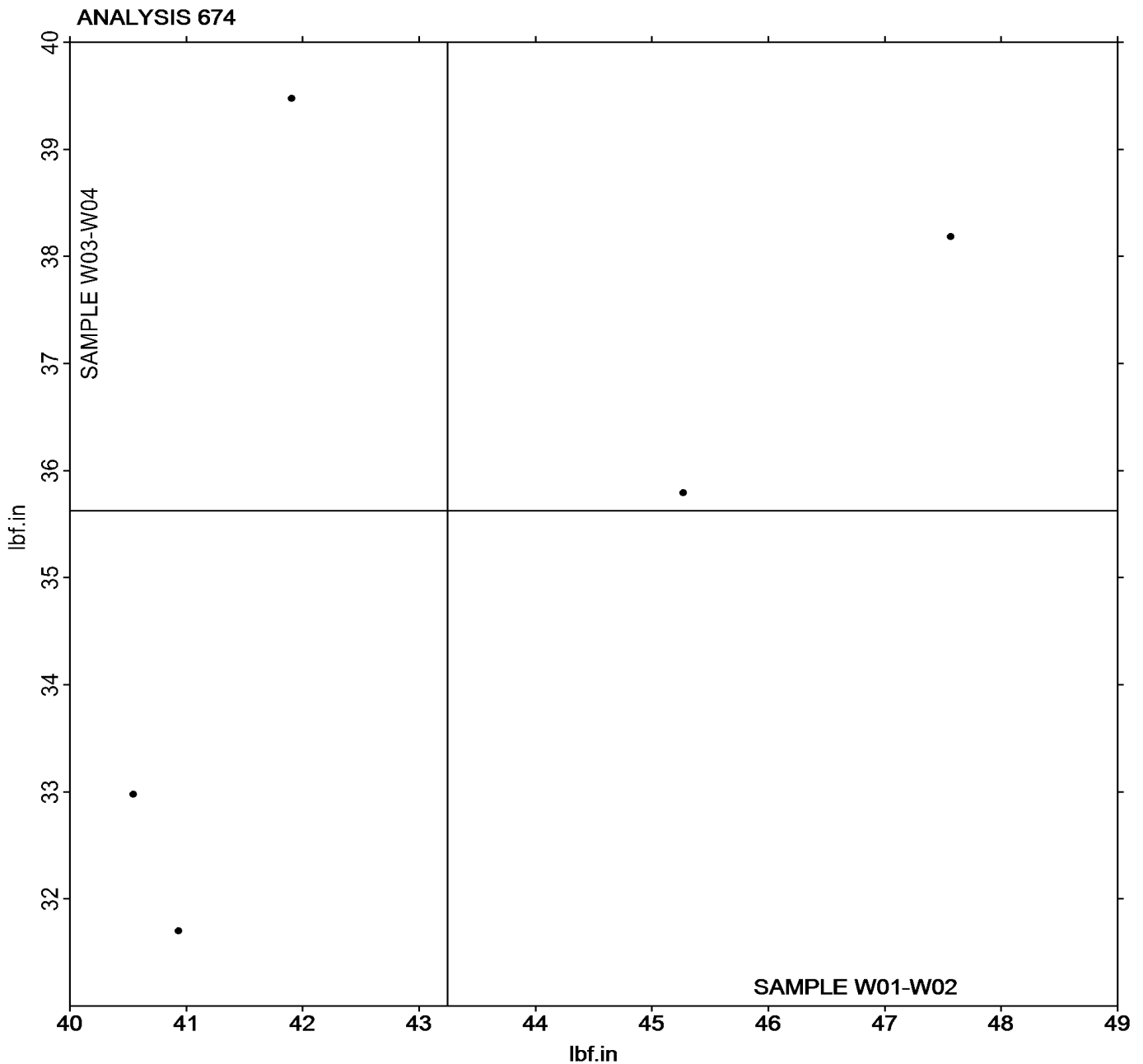


Rubber Interlaboratory Testing Program
Analysis 674
ODR Vulcanization: Maximum Torque (lbf.in)

Report #203
1st Qtr 2020

Grand Mean Sample **W01-W02** = 43.246 lbf.in

Grand Mean Sample **W03-W04** = 35.626 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 #203

Analysis 684

1st Qtr 2020

MDR Vulcanization-Cure Time 10% (minutes)

WebCode	Data Flag	Sample W05-W06			Sample W07-W08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
39JRGY		2.992	-0.056	-0.46	2.920	-0.079	-0.63	ME
3AW4DJ		3.132	0.084	0.69	3.048	0.049	0.40	MC
3B87YH		2.797	-0.251	-2.06	2.692	-0.307	-2.47	MC
4DT6YX		3.013	-0.034	-0.28	2.995	-0.004	-0.03	MC
68HJGE		3.268	0.221	1.81	3.250	0.251	2.01	MX
7CBVYW		3.065	0.018	0.15	2.980	-0.019	-0.15	MC
84TQJG		2.950	-0.097	-0.80	2.995	-0.004	-0.03	MC
8RHEAT		2.937	-0.111	-0.91	2.937	-0.062	-0.50	MC
AQZ4AR		3.145	0.098	0.80	3.072	0.073	0.58	ME
B2Y779		3.167	0.119	0.98	3.010	0.011	0.09	MC
C3ZQ7D		2.955	-0.092	-0.76	2.860	-0.139	-1.12	MC
CAP2NN		3.090	0.043	0.35	3.000	0.001	0.01	XX
FYU8WA		3.100	0.053	0.43	3.015	0.016	0.13	TP
HRKPDZ		2.820	-0.227	-1.87	2.895	-0.104	-0.84	MC
JMNKX2		2.978	-0.069	-0.57	2.998	-0.001	-0.01	MC
JPF4H		3.108	0.061	0.50	3.047	0.048	0.38	MR
K6JDHY	*	3.208	0.161	1.32	3.328	0.329	2.64	MR
LB6M73		3.120	0.073	0.60	3.090	0.091	0.73	MC
MWLFQG		2.950	-0.097	-0.80	2.910	-0.089	-0.71	MC
NWFKKF		3.155	0.108	0.88	3.098	0.099	0.80	MC
PPUWGX		3.120	0.073	0.60	3.005	0.006	0.05	MM
QRWERX		3.075	0.028	0.23	3.082	0.083	0.66	MC
RVAEPP		2.837	-0.211	-1.73	2.872	-0.127	-1.02	MC
TL4WRR		3.143	0.096	0.79	3.037	0.038	0.30	MM
VNVY9N		3.010	-0.037	-0.31	2.993	-0.006	-0.05	XX
WDWJ66		3.022	-0.026	-0.21	2.943	-0.056	-0.45	MC
WM8LQ7		2.925	-0.122	-1.00	2.885	-0.114	-0.92	MD
WYTZLT		2.998	-0.049	-0.40	2.892	-0.107	-0.86	MC
XNA8BN	X	2.548	-0.499	-4.10	2.717	-0.282	-2.27	MC
YHHXZP	X	1.453	-1.594	-13.09	1.380	-1.619	-12.99	MP
Z34CRK		3.313	0.266	2.18	3.250	0.251	2.01	MM
Z4EA62		3.053	0.006	0.05	2.928	-0.071	-0.57	MM
Z74MNJ		3.020	-0.027	-0.22	2.945	-0.054	-0.43	MM



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	3.0473 minutes	2.9991 minutes	
Stnd Dev Btwn Labs	0.1218 minutes	0.1246 minutes	
Statistics based on 31 of 33 reporting participants			

Samples W05-W06: EPDM compound, batch #1 & W07-W08: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #684

- XNA8BN (X) - Data for sample group W05-W06 are low.
- YHHXZP (X) - Extreme Data.

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		

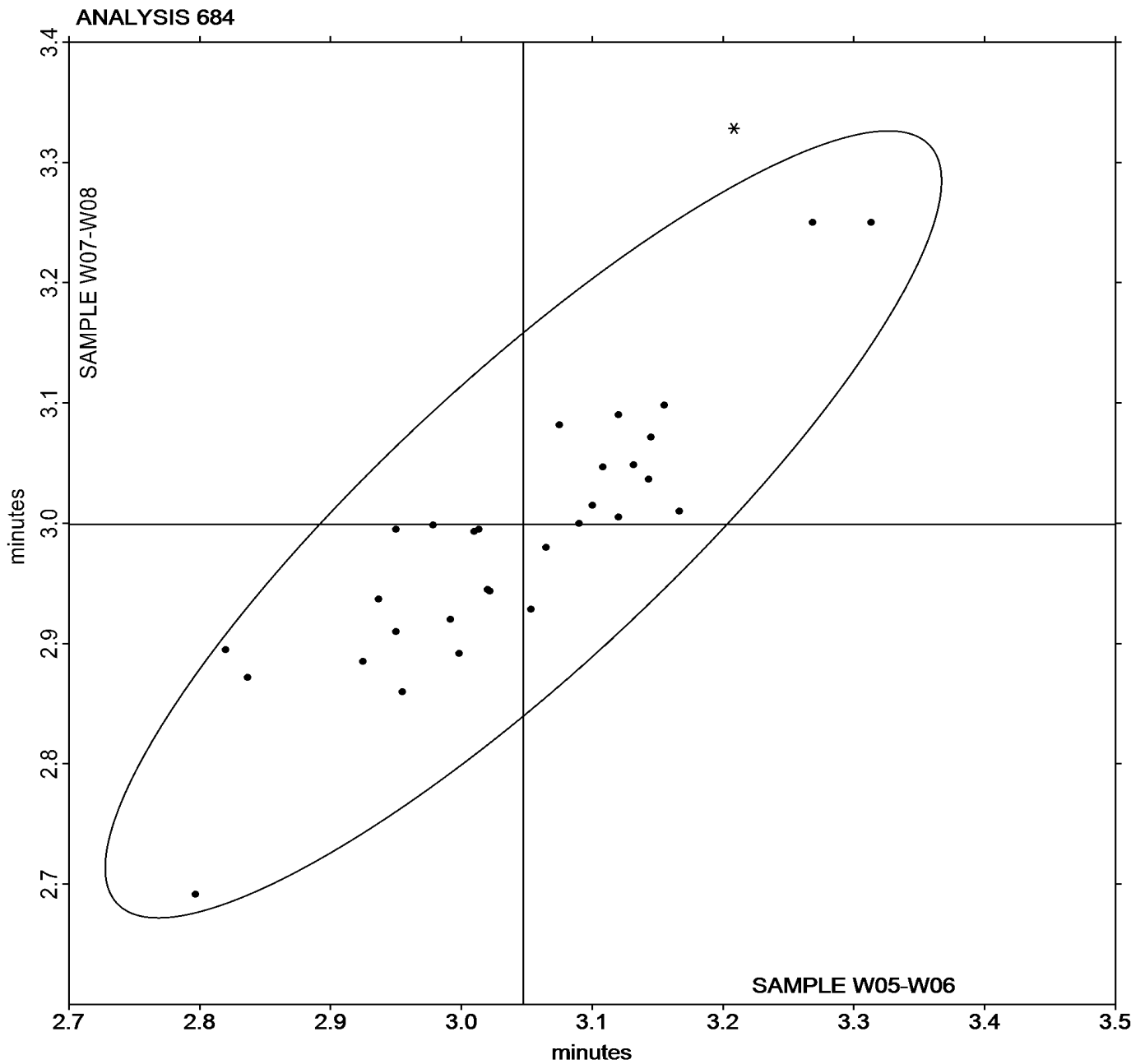


Rubber Interlaboratory Testing Program
Analysis 684
MDR Vulcanization-Cure Time 10% (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W05-W06** = 3.0473 minutes

Grand Mean Sample **W07-W08** = 2.9991 minutes





Rubber Interlaboratory Testing Program

Report #203

Analysis 685

1st Qtr 2020

MDR Vulcanization-Scorch Time, Ts1 (minutes)

WebCode	Data Flag	Sample W05-W06			Sample W07-W08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
39JRGY		3.000	0.011	0.04	2.912	-0.002	-0.01	ME
3AW4DJ		3.055	0.066	0.26	2.930	0.017	0.08	MC
3B87YH	X	1.630	-1.359	-5.45	1.705	-1.208	-5.63	MC
4DT6YX		2.988	-0.001	0.00	2.940	0.027	0.12	MC
68HJGE		3.207	0.218	0.87	3.208	0.295	1.37	MX
6LZB7K		3.005	0.016	0.06	2.877	-0.037	-0.17	MC
7CBVYW		3.048	0.059	0.24	2.960	0.047	0.22	MC
84TQJG		2.880	-0.109	-0.44	2.895	-0.018	-0.09	MC
8RHEAT		2.945	-0.044	-0.18	2.913	0.000	0.00	MC
AQZ4AR		3.177	0.188	0.75	3.037	0.123	0.57	ME
B2Y779		3.170	0.181	0.73	2.987	0.073	0.34	MC
C3ZQ7D		2.930	-0.059	-0.24	2.760	-0.153	-0.71	MC
CAP2NN		3.463	0.474	1.90	3.350	0.437	2.03	XX
DTCAYN		2.673	-0.316	-1.27	2.640	-0.273	-1.27	MR
EDVJRA		2.748	-0.242	-0.97	2.634	-0.279	-1.30	MC
FYU8WA		3.305	0.316	1.27	3.190	0.277	1.29	TP
HRKPDZ		2.554	-0.435	-1.74	2.571	-0.342	-1.59	MC
JMNKX2		3.078	0.089	0.36	3.018	0.105	0.49	MC
JPF4H		2.587	-0.402	-1.61	2.602	-0.312	-1.45	MR
K6JDHY	X	3.340	0.351	1.41	3.500	0.587	2.73	MR
LB6M73		3.025	0.036	0.14	3.005	0.092	0.43	MC
MWLFQG		2.925	-0.064	-0.26	2.857	-0.057	-0.26	MC
NWFKKF		2.920	-0.069	-0.28	2.890	-0.023	-0.11	MC
PPUWGX		3.077	0.088	0.35	2.917	0.003	0.01	MM
QRWERX		3.113	0.124	0.50	3.067	0.153	0.71	MC
QXH84X		2.753	-0.236	-0.95	2.688	-0.225	-1.05	MC
RVAEPP		2.757	-0.232	-0.93	2.780	-0.133	-0.62	MC
TL4WRR		2.962	-0.027	-0.11	2.820	-0.093	-0.44	MM
VNVY9N		3.195	0.206	0.83	2.973	0.060	0.28	XX
WDWJ66		3.035	0.046	0.18	2.932	0.018	0.08	MC
WM8LQ7		2.975	-0.014	-0.06	2.913	0.000	0.00	MD
WYTZLT		2.875	-0.114	-0.46	2.777	-0.137	-0.64	MC
XNA8BN	*	2.385	-0.604	-2.42	2.545	-0.368	-1.72	MC
YHHXZP	X	1.227	-1.762	-7.07	1.203	-1.710	-7.96	MP
Z34CRK	*	3.647	0.658	2.64	3.568	0.655	3.05	MM
Z4EA62		3.245	0.256	1.03	3.092	0.178	0.83	MM
Z74MNJ		2.925	-0.064	-0.26	2.812	-0.102	-0.47	MM



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	2.9890 minutes	2.9135 minutes	
Stnd Dev Btwn Labs	0.2493 minutes	0.2148 minutes	
Statistics based on 34 of 37 reporting participants			

Samples W05-W06: EPDM compound, batch #1 & W07-W08: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #685

3B87YH (X) - Data for all samples are low. Possible Systematic Error.

K6JDHY (X) - Data for sample group W07-W08 are high. Inconsistent within the determinations of sample group W05-W06.

YHHXZP (X) - Data for all samples are low. Possible Systematic Error.

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		

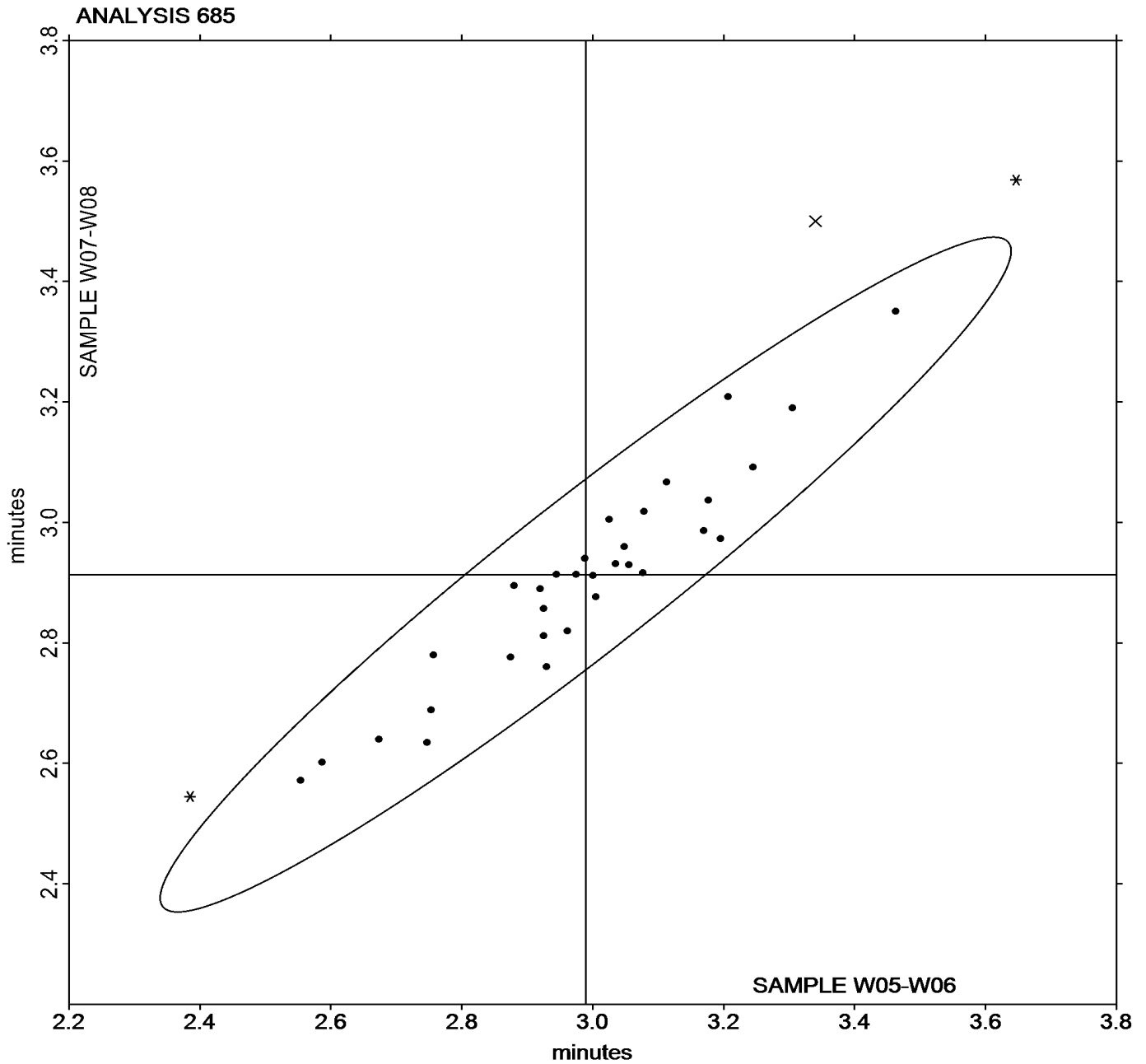


Rubber Interlaboratory Testing Program
Analysis 685
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W05-W06** = 2.9890 minutes

Grand Mean Sample **W07-W08** = 2.9135 minutes





Rubber Interlaboratory Testing Program

Report #203

Analysis 686

1st Qtr 2020

MDR Vulcanization-Cure Time 50% (minutes)

WebCode	Data Flag	Sample W05-W06			Sample W07-W08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
39JRGY		6.875	0.082	0.30	6.413	-0.069	-0.29	ME
3AW4DJ		7.120	0.327	1.19	6.632	0.149	0.62	MC
3B87YH	*	6.257	-0.536	-1.94	5.862	-0.621	-2.57	MC
4DT6YX		6.902	0.109	0.39	6.658	0.176	0.73	MC
68HJGE		7.315	0.522	1.89	7.038	0.556	2.30	MX
6LZB7K		6.948	0.156	0.56	6.500	0.017	0.07	MC
7CBVYW		7.127	0.334	1.21	6.632	0.149	0.62	MC
84TQJG		6.497	-0.296	-1.07	6.425	-0.058	-0.24	MC
8RHEAT		6.713	-0.079	-0.29	6.525	0.042	0.17	MC
AQZ4AR		7.053	0.261	0.95	6.630	0.147	0.61	ME
B2Y779		6.717	-0.076	-0.28	6.293	-0.189	-0.78	MC
C3ZQ7D		6.560	-0.233	-0.84	6.185	-0.298	-1.23	MC
CAP2NN		6.717	-0.076	-0.28	6.493	0.011	0.04	XX
DTCAYN		6.815	0.022	0.08	6.582	0.099	0.41	MR
EDVJRA		6.893	0.101	0.36	6.455	-0.028	-0.12	MC
FYU8WA		7.168	0.376	1.36	6.705	0.222	0.92	TP
HRKPDZ		6.545	-0.248	-0.90	6.393	-0.089	-0.37	MC
JMNKX2		6.367	-0.426	-1.55	5.988	-0.494	-2.05	MC
JPPF4H		6.663	-0.129	-0.47	6.405	-0.078	-0.32	MR
K6JDHY		6.910	0.117	0.43	6.840	0.357	1.48	MR
LB6M73		6.983	0.191	0.69	6.753	0.271	1.12	MC
MWLFQG		6.557	-0.236	-0.86	6.282	-0.201	-0.83	MC
NWFKKF		7.178	0.386	1.40	6.818	0.336	1.39	MC
PPUWGX		6.912	0.119	0.43	6.508	0.026	0.11	MM
QRWERX		6.803	0.011	0.04	6.590	0.107	0.44	MC
QXH84X		6.427	-0.366	-1.33	6.140	-0.343	-1.42	MC
RVAEPP		6.562	-0.231	-0.84	6.432	-0.051	-0.21	MC
TL4WRR		7.242	0.449	1.63	6.752	0.269	1.11	MM
VNVY9N		6.530	-0.263	-0.95	6.372	-0.111	-0.46	XX
WDWJ66		7.102	0.309	1.12	6.570	0.087	0.36	MC
WM8LQ7		6.620	-0.173	-0.63	6.408	-0.074	-0.31	MD
WYTZLT		6.747	-0.046	-0.17	6.340	-0.143	-0.59	MC
XNA8BN		6.270	-0.523	-1.90	6.267	-0.216	-0.89	MC
YHHXZP	X	2.828	-3.964	-14.38	2.620	-3.863	-15.98	MC
Z34CRK		7.028	0.236	0.85	6.773	0.291	1.20	MM
Z4EA62		6.673	-0.119	-0.43	6.227	-0.256	-1.06	MM
Z74MNJ		6.745	-0.048	-0.17	6.495	0.012	0.05	MM



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	6.7928 minutes	6.4828 minutes	
Stnd Dev Btwn Labs	0.2757 minutes	0.2418 minutes	
Statistics based on 36 of 37 reporting participants			

Samples W05-W06: EPDM compound, batch #1 & W07-W08: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #686

YHHXZP (X) - Extreme Data.

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
MR	MonTech D-RPA 3000	MX	Rebuilt MonTech Alpha
TP	Tech Pro MDR model MDPT	XX	Instrument model not specified by lab

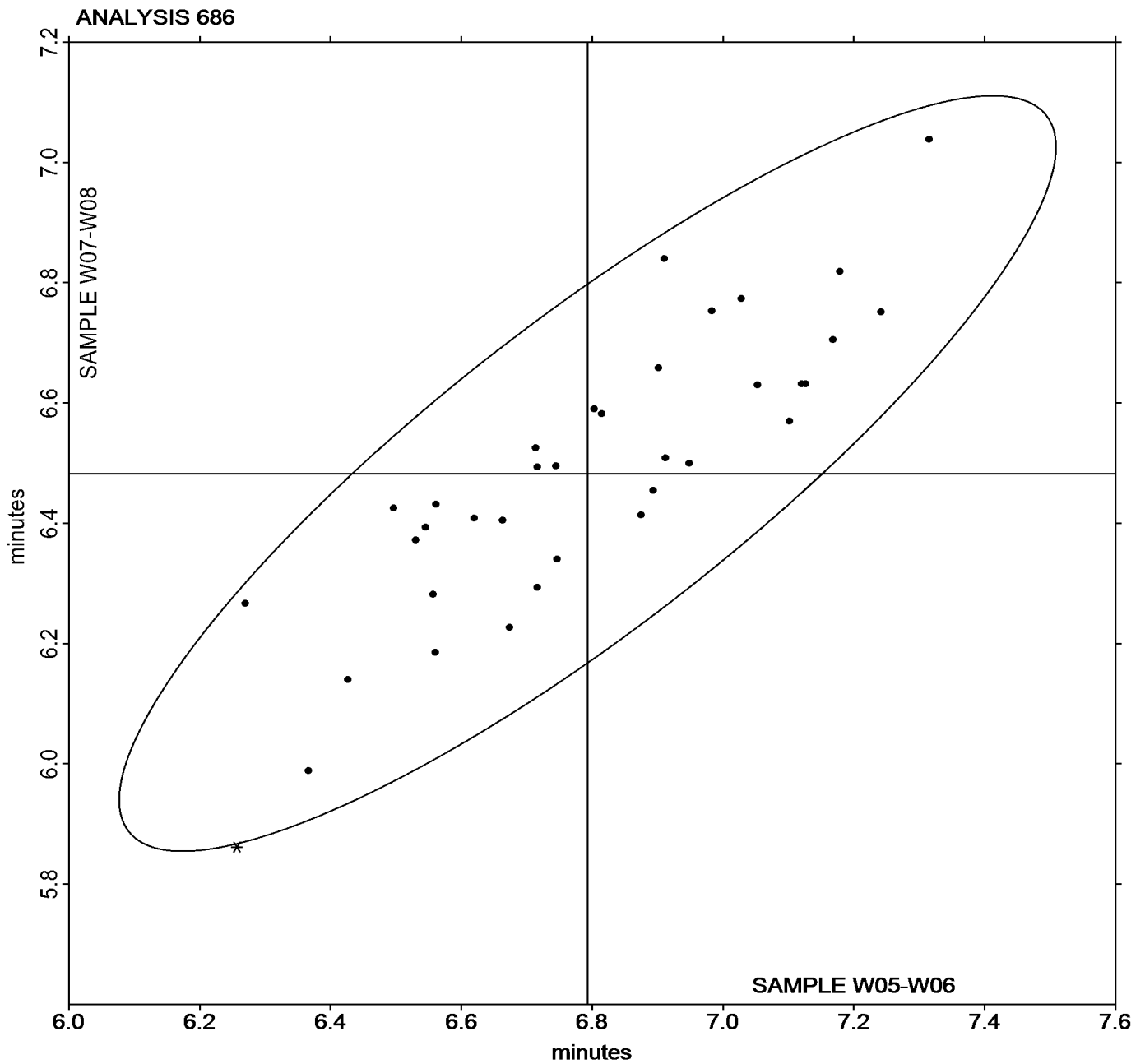


Rubber Interlaboratory Testing Program
Analysis 686
MDR Vulcanization-Cure Time 50% (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W05-W06** = 6.7928 minutes

Grand Mean Sample **W07-W08** = 6.4828 minutes





Rubber Interlaboratory Testing Program

Report #203

Analysis 687

1st Qtr 2020

MDR Vulcanization-Cure Time 90% (minutes)

WebCode	Data Flag	Sample W05-W06			Sample W07-W08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
39JRGY		10.86	-0.05	-0.12	10.38	-0.30	-0.72	ME
3AW4DJ		11.42	0.51	1.24	11.01	0.33	0.81	MC
3B87YH	*	10.04	-0.87	-2.13	9.62	-1.06	-2.60	MC
4DT6YX		11.02	0.11	0.28	10.85	0.17	0.42	MC
68HJGE		11.70	0.79	1.92	11.43	0.75	1.85	MX
6LZB7K		11.33	0.42	1.02	10.92	0.24	0.60	MC
7CBVYW		11.26	0.35	0.86	10.75	0.07	0.18	MC
84TQJG		10.45	-0.46	-1.13	10.54	-0.13	-0.33	MC
8RHEAT		10.79	-0.12	-0.28	10.64	-0.03	-0.08	MC
AQZ4AR		11.08	0.17	0.42	10.80	0.13	0.31	ME
B2Y779		10.80	-0.11	-0.26	10.47	-0.20	-0.50	MC
C3ZQ7D		10.84	-0.07	-0.17	10.43	-0.24	-0.59	MC
CAP2NN		11.03	0.12	0.28	11.01	0.34	0.82	XX
DTCAYN		11.16	0.25	0.60	11.04	0.36	0.89	MR
EDVJRA		10.89	-0.02	-0.05	10.67	0.00	0.00	MC
FYU8WA		11.11	0.20	0.49	10.62	-0.06	-0.14	TP
HRKPDZ		10.42	-0.49	-1.19	10.50	-0.17	-0.42	MC
JMNKX2	*	9.81	-1.10	-2.69	9.39	-1.29	-3.15	MC
JPF4H		11.05	0.14	0.35	10.87	0.19	0.47	MR
K6JDHY		11.29	0.38	0.93	11.27	0.60	1.47	MR
LB6M73		11.04	0.13	0.31	10.95	0.27	0.66	MC
MWLFQG		10.36	-0.55	-1.35	10.16	-0.51	-1.26	MC
NWFKKF		11.28	0.37	0.91	10.78	0.11	0.26	MC
PPUWGX		11.05	0.14	0.35	10.88	0.20	0.49	MM
QRWERX		10.94	0.03	0.06	10.72	0.05	0.11	MC
QXH84X		10.35	-0.56	-1.37	10.13	-0.54	-1.33	MC
RVAEPP		11.01	0.10	0.24	10.93	0.26	0.63	MC
TL4WRR		11.50	0.59	1.44	11.20	0.52	1.28	MM
VNVY9N		10.67	-0.24	-0.58	10.67	-0.01	-0.02	XX
WDWJ66		11.25	0.34	0.83	10.70	0.03	0.07	MC
WM8LQ7		10.66	-0.25	-0.62	10.52	-0.16	-0.39	MD
WYTZLT		10.88	-0.03	-0.08	10.59	-0.08	-0.21	MC
XNA8BN		10.31	-0.60	-1.46	10.39	-0.29	-0.71	MC
YHHXZP	X	4.73	-6.18	-15.11	4.36	-6.32	-15.50	MP
Z34CRK		11.24	0.33	0.80	11.04	0.37	0.90	MM
Z4EA62		10.80	-0.11	-0.27	10.51	-0.17	-0.42	MM
Z74MNJ		11.09	0.18	0.45	10.94	0.27	0.66	MM



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	10.909 minutes	10.676 minutes	
Stnd Dev Btwn Labs	0.409 minutes	0.408 minutes	
Statistics based on 36 of 37 reporting participants			

Samples W05-W06: EPDM compound, batch #1 & W07-W08: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #687

YHHXZP (X) - Extreme Data.

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		

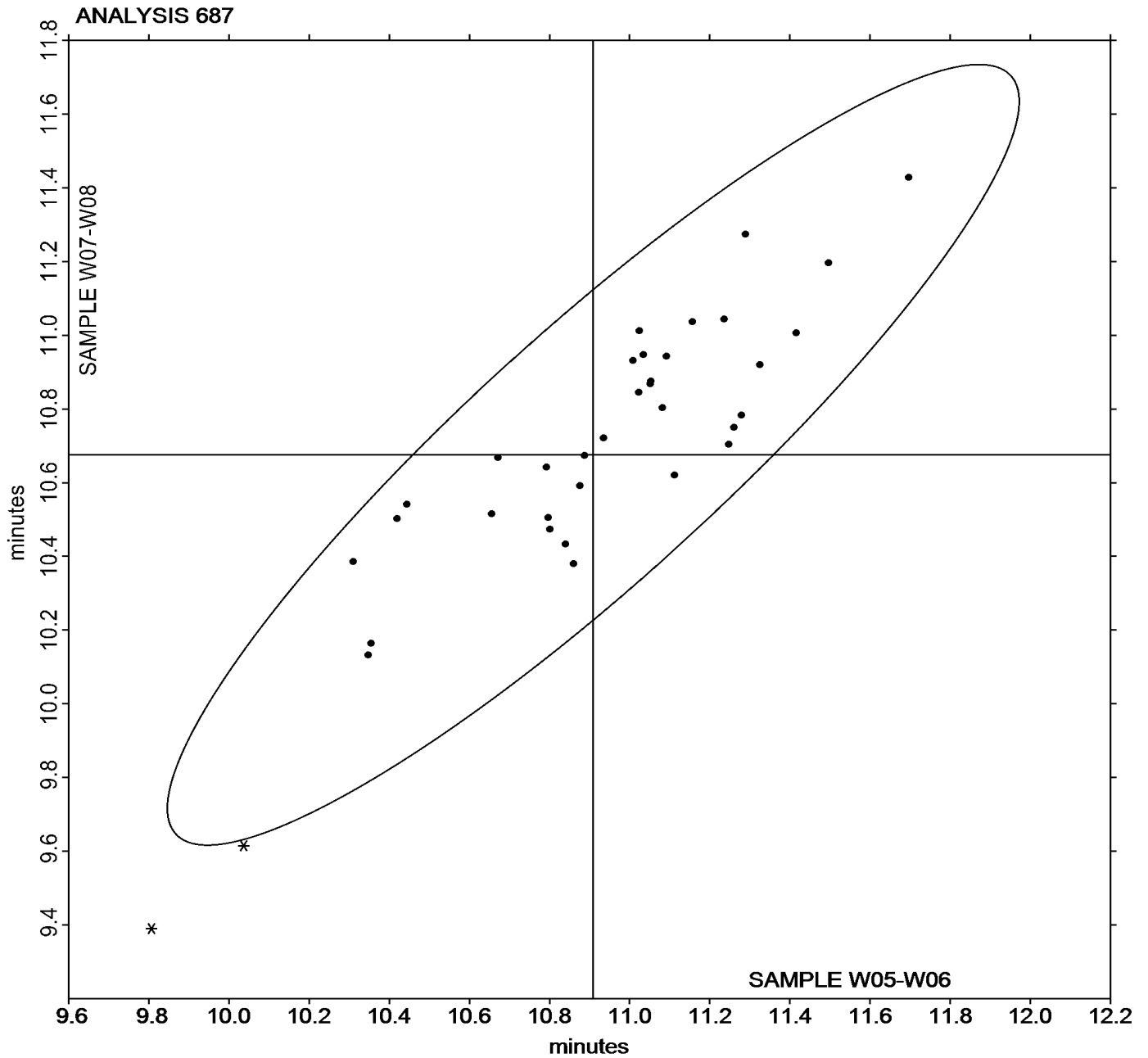


Rubber Interlaboratory Testing Program
Analysis 687
MDR Vulcanization-Cure Time 90% (minutes)

Report #203
1st Qtr 2020

Grand Mean Sample **W05-W06** = 10.909 minutes

Grand Mean Sample **W07-W08** = 10.676 minutes





Rubber Interlaboratory Testing Program

Report #203

Analysis 688

1st Qtr 2020

MDR Vulcanization: Minimum Torque (lbf.in)

WebCode	Data Flag	Sample W05-W06			Sample W07-W08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
39JRGY		1.837	-0.149	-0.55	2.163	-0.110	-0.40	ME
3AW4DJ		1.940	-0.046	-0.17	2.232	-0.042	-0.15	MC
3B87YH		1.895	-0.091	-0.33	2.262	-0.012	-0.04	MC
4DT6YX		1.763	-0.222	-0.82	2.027	-0.247	-0.90	MC
68HJGE		1.558	-0.428	-1.57	1.890	-0.384	-1.40	MX
6LZB7K		2.077	0.091	0.33	2.355	0.082	0.30	MC
7CBVYW		1.842	-0.144	-0.53	2.103	-0.170	-0.62	MC
84TQJG		2.137	0.151	0.55	2.478	0.205	0.75	MC
8RHEAT		2.055	0.069	0.25	2.355	0.082	0.30	MC
AQZ4AR		1.863	-0.122	-0.45	2.088	-0.185	-0.68	ME
B2Y779	*	2.650	0.664	2.44	2.812	0.538	1.97	MC
C3ZQ7D		2.322	0.336	1.23	2.556	0.283	1.03	MC
CAP2NN		1.727	-0.259	-0.95	1.920	-0.353	-1.29	MM
DTCAYN		2.002	0.016	0.06	2.378	0.105	0.38	MR
EDVJRA		2.078	0.093	0.34	2.326	0.053	0.19	MC
FYU8WA		1.732	-0.254	-0.93	1.963	-0.310	-1.13	TP
HRKPDZ		1.804	-0.182	-0.67	2.163	-0.111	-0.41	MC
JMNKX2	*	2.595	0.609	2.24	2.973	0.700	2.56	MC
JPF4H		1.807	-0.179	-0.66	2.137	-0.137	-0.50	MR
K6JDHY	X	2.188	0.203	0.74	2.738	0.465	1.70	MR
LB6M73		1.780	-0.206	-0.76	2.083	-0.190	-0.69	MC
MWLFQG		1.987	0.001	0.00	2.263	-0.010	-0.04	MC
NWFKKF		1.875	-0.111	-0.41	2.205	-0.068	-0.25	MC
PPUWGX		2.165	0.179	0.66	2.383	0.110	0.40	MM
QRWERX		2.300	0.314	1.15	2.582	0.308	1.13	MC
QXH84X		2.018	0.033	0.12	2.293	0.020	0.07	MC
RVAEPP		1.692	-0.294	-1.08	2.033	-0.240	-0.88	MC
TL4WRR		2.167	0.181	0.66	2.420	0.147	0.54	MM
VNVY9N		2.575	0.589	2.16	2.848	0.575	2.10	XX
WDWJ66		1.843	-0.142	-0.52	2.172	-0.102	-0.37	MC
WM8LQ7		1.950	-0.036	-0.13	2.247	-0.027	-0.10	MD
WYTZLT		1.947	-0.039	-0.14	2.208	-0.065	-0.24	MC
XNA8BN	*	2.027	0.041	0.15	2.518	0.245	0.89	MC
YHHXZP		1.711	-0.275	-1.01	1.960	-0.313	-1.14	MP
Z34CRK	X	9.805	7.819	28.73	9.847	7.573	27.67	MM
Z4EA62		2.265	0.279	1.03	2.460	0.187	0.68	MM
Z74MNJ		1.517	-0.469	-1.72	1.712	-0.562	-2.05	MM



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	1.9857 lbf.in	2.2734 lbf.in	
Stnd Dev Btwn Labs	0.2722 lbf.in	0.2737 lbf.in	
Statistics based on 35 of 37 reporting participants			

		Summary Statistics in SI Units	
Grand Means	2.2435 dN.m	2.5686 dN.m	
Stnd Dev Btwn Labs	0.3075 dN.m	0.3093 dN.m	
Statistics based on 35 of 37 reporting participants			

Samples W05-W06: EPDM compound, batch #1 & W07-W08: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #688

- K6JDHY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W05-W06.
- Z34CRK (X) - Extreme Data.

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		

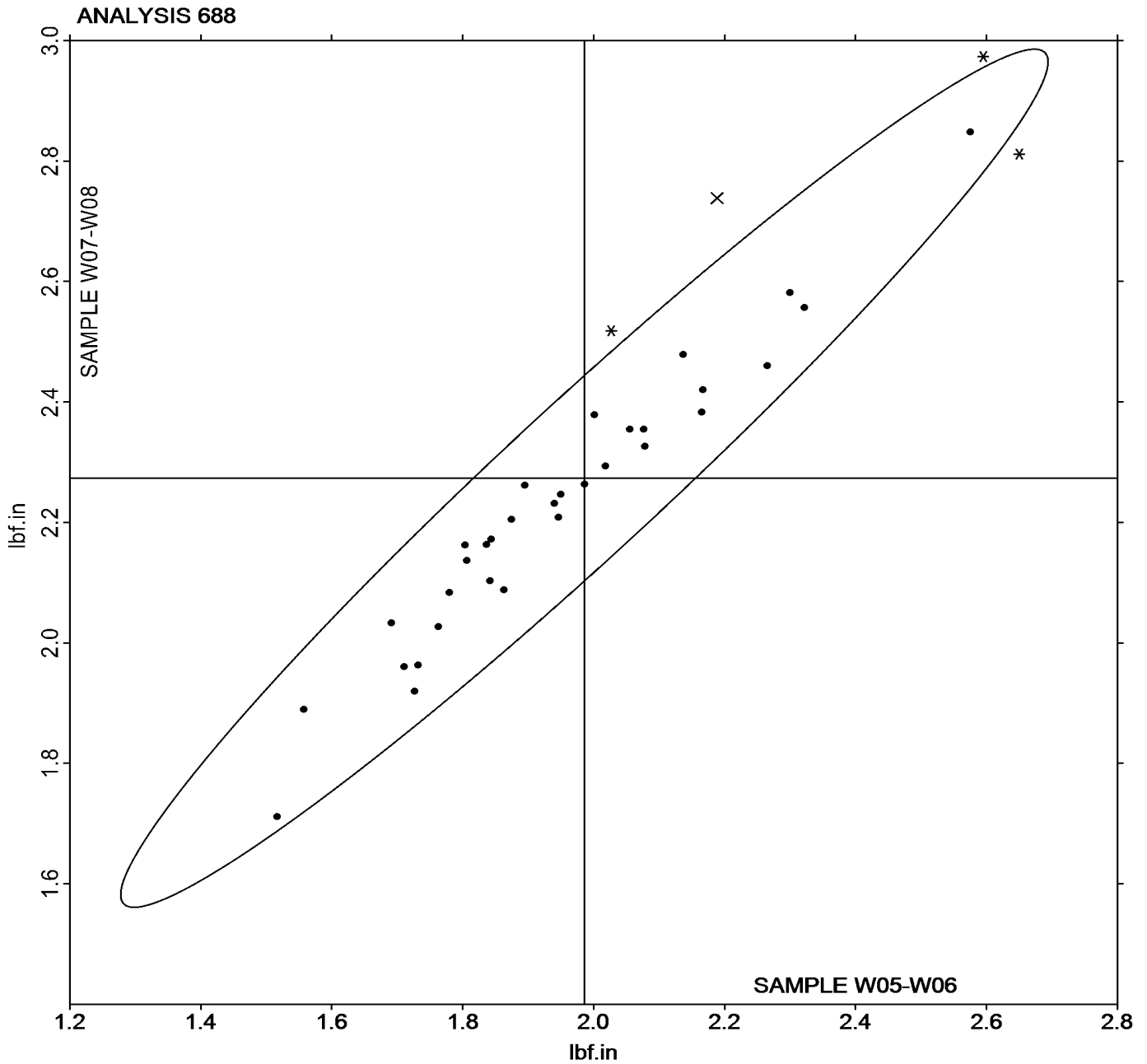


Rubber Interlaboratory Testing Program
Analysis 688
MDR Vulcanization: Minimum Torque (lbf.in)

Report #203
1st Qtr 2020

Grand Mean Sample **W05-W06** = 1.9857 lbf.in

Grand Mean Sample **W07-W08** = 2.2734 lbf.in





Rubber Interlaboratory Testing Program

Report #203

Analysis 689

1st Qtr 2020

MDR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample W05-W06			Sample W07-W08			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
39JRGY		11.79	-0.19	-0.25	12.24	-0.22	-0.24	ME
3AW4DJ		12.35	0.37	0.47	13.02	0.55	0.60	MC
3B87YH	*	13.55	1.57	1.99	13.75	1.29	1.39	MC
4DT6YX		11.91	-0.07	-0.09	12.42	-0.04	-0.04	MC
68HJGE		10.69	-1.29	-1.64	10.97	-1.49	-1.61	MX
6LZB7K		12.79	0.81	1.03	13.20	0.74	0.80	MC
7CBVYW		11.93	-0.06	-0.07	12.24	-0.22	-0.24	MC
84TQJG		12.62	0.64	0.81	13.20	0.74	0.80	MC
8RHEAT		12.09	0.10	0.13	12.52	0.06	0.07	MC
AQZ4AR		11.66	-0.33	-0.41	12.32	-0.14	-0.15	ME
B2Y779		12.65	0.66	0.84	13.00	0.54	0.58	MC
C3ZQ7D		11.90	-0.08	-0.10	12.58	0.12	0.13	MC
CAP2NN		10.80	-1.19	-1.51	11.00	-1.47	-1.58	MM
DTCAYN	*	12.22	0.23	0.29	13.41	0.95	1.02	MR
EDVJRA		12.59	0.61	0.78	13.32	0.86	0.93	MC
FYU8WA		10.64	-1.34	-1.70	10.83	-1.63	-1.76	TP
HRKPDZ		12.23	0.25	0.31	13.21	0.75	0.81	MC
JMNKX2		11.90	-0.08	-0.10	12.82	0.35	0.38	MC
JPF4H	X	14.31	2.33	2.96	14.31	1.85	2.00	MR
K6JDHY		11.36	-0.63	-0.80	11.79	-0.67	-0.73	MR
LB6M73		12.34	0.36	0.46	12.68	0.22	0.24	MC
MWLFQG		12.21	0.23	0.29	12.65	0.18	0.20	MC
NWFKKF		12.08	0.09	0.12	12.42	-0.04	-0.04	MC
PPUWGX		12.42	0.43	0.55	12.96	0.50	0.53	MM
QRWERX		12.08	0.10	0.12	12.74	0.28	0.30	MC
QXH84X		12.12	0.13	0.17	12.59	0.13	0.14	MC
RVAEPP		12.15	0.17	0.22	12.58	0.12	0.13	MC
TL4WRR		13.21	1.23	1.56	13.88	1.42	1.53	MM
VNVY9N		12.30	0.32	0.40	12.99	0.53	0.57	XX
WDWJ66		11.61	-0.37	-0.47	12.13	-0.33	-0.36	MC
WM8LQ7		11.67	-0.32	-0.40	12.04	-0.43	-0.46	MD
WYTZLT		12.74	0.76	0.97	13.02	0.56	0.60	MC
XNA8BN		13.11	1.13	1.44	13.70	1.24	1.34	MC
YHHXZP	X	14.65	2.67	3.39	14.36	1.90	2.04	MC
Z34CRK	*	9.81	-2.18	-2.77	9.85	-2.61	-2.82	MM
Z4EA62		11.08	-0.91	-1.15	11.33	-1.14	-1.22	MM
Z74MNJ		10.83	-1.16	-1.47	10.74	-1.72	-1.86	MM



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

Report #203
1st Qtr 2020

		Summary Statistics	
Grand Means	11.983 lbf.in	12.460 lbf.in	
Std Dev Btwn Labs	0.787 lbf.in	0.928 lbf.in	
Statistics based on 35 of 37 reporting participants			

		Summary Statistics in SI Units	
Grand Means	13.539 dN.m	14.078 dN.m	
Std Dev Btwn Labs	0.889 dN.m	1.049 dN.m	
Statistics based on 35 of 37 reporting participants			

Samples W05-W06: EPDM compound, batch #1 & W07-W08: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #689

JPF4H (X) - Data for sample group W05-W06 are high.

YHHXZP (X) - Data for sample group W05-W06 are high.

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
MR	MonTech D-RPA 3000	MX	Rebuilt MonTech Alpha
TP	Tech Pro MDR model MDPT	XX	Instrument model not specified by lab

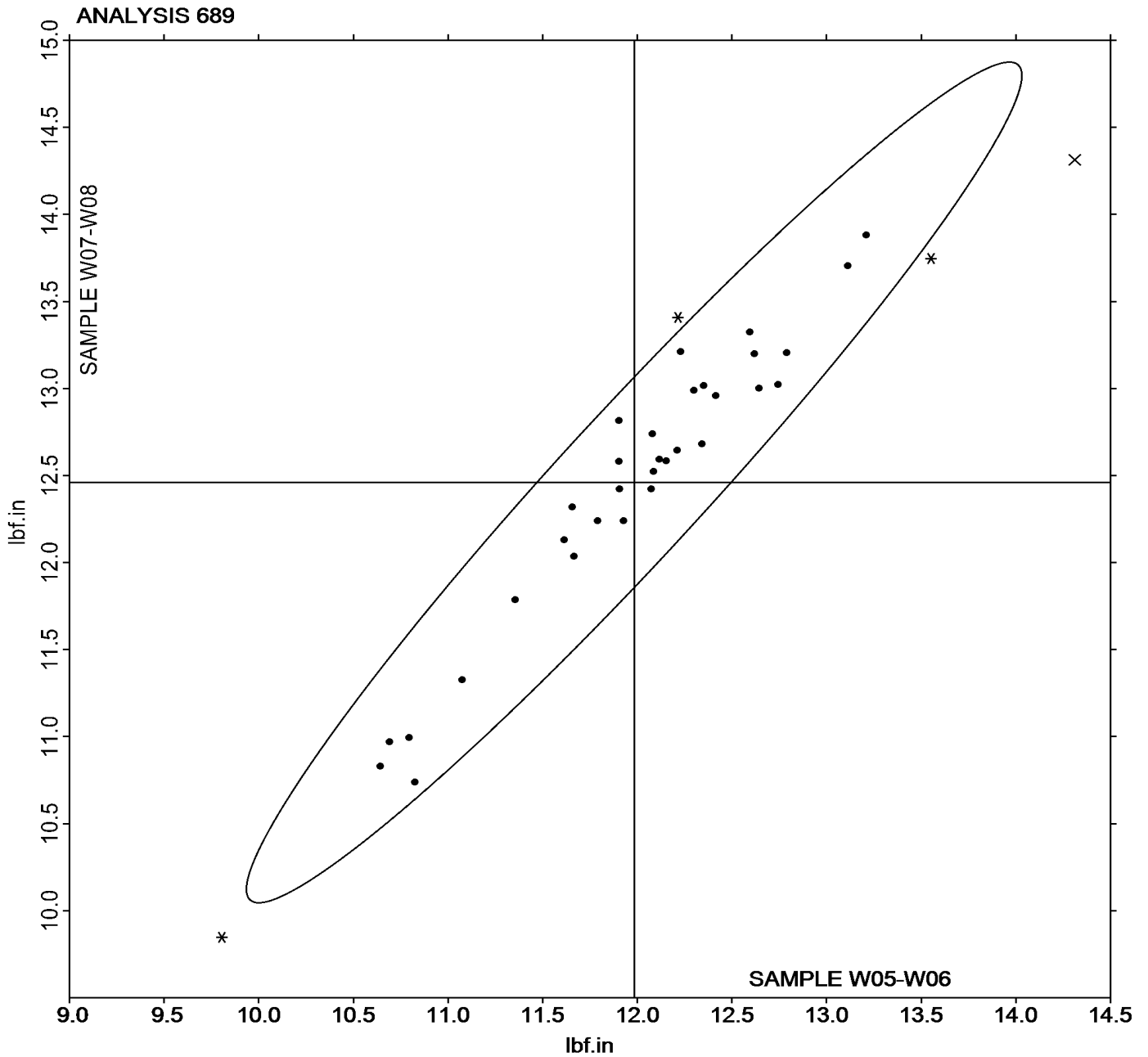


Rubber Interlaboratory Testing Program
Analysis 689
MDR Vulcanization: Maximum Torque (lbf.in)

Report #203
1st Qtr 2020

Grand Mean Sample **W05-W06** = 11.983 lbf.in

Grand Mean Sample **W07-W08** = 12.460 lbf.in





Rubber Interlaboratory Testing Program

Report #203

Analysis 690

1st Qtr 2020

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

WebCode	Data Flag	Sample E01-E02			Sample E03-E04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
68HJGE		398.1	-83.2	-1.60	419.2	-87.8	-1.63	RP
84TQJG		491.0	9.8	0.19	521.3	14.4	0.27	PR
EDVJRA		446.3	-34.9	-0.67	470.4	-36.6	-0.68	RP
HRKPDZ		447.5	-33.7	-0.65	475.9	-31.1	-0.58	RP
LTZFQZ		564.5	83.2	1.60	602.8	95.8	1.78	RP
PPUWGX		494.2	12.9	0.25	520.8	13.8	0.26	XX
QNTJ9V		478.3	-2.9	-0.06	511.6	4.6	0.09	RP
Z34CRK		529.9	48.7	0.94	533.8	26.9	0.50	RP

Grand Means		Summary Statistics	
	481.21 kPa		506.97 kPa
Std Dev Btwn Labs	51.88 kPa		53.89 kPa
Statistics based on 8 of 8 reporting participants			

Samples E01-E02: EPDM compound, batch #1 & E03-E04: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

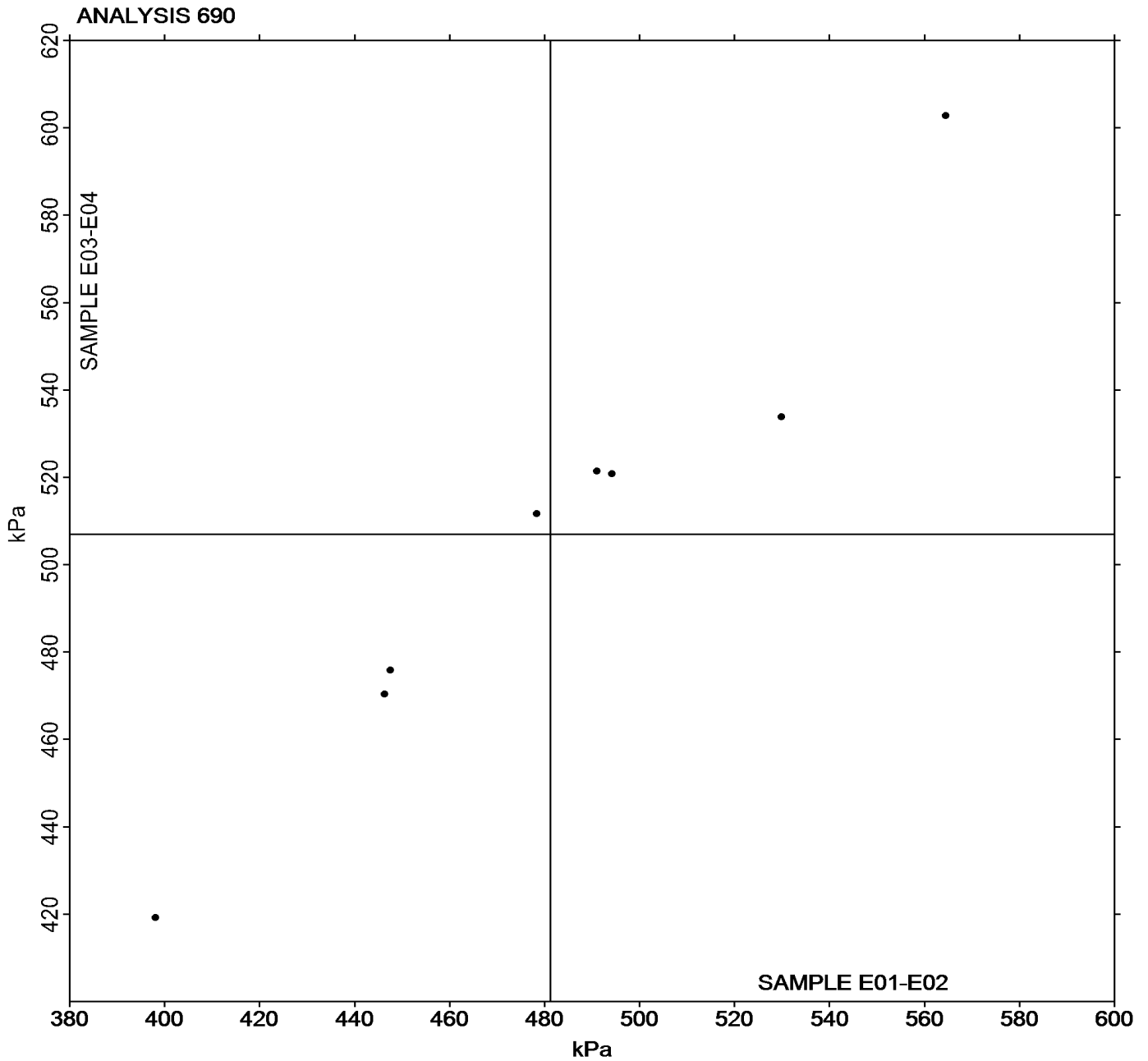


Rubber Interlaboratory Testing Program
Analysis 690
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #203
1st Qtr 2020

Grand Mean Sample E01-E02 = 481.21 kPa

Grand Mean Sample E03-E04 = 506.97 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 #203

Analysis 691

1st Qtr 2020

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

WebCode	Data Flag	Sample E01-E02			Sample E03-E04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
68HJGE		167.9	-23.4	-1.03	168.1	-25.2	-1.04	RP
84TQJG		203.4	12.1	0.53	207.8	14.5	0.60	PR
EDVJRA		188.3	-3.1	-0.14	188.1	-5.2	-0.21	RP
HRKPDZ		195.7	4.4	0.19	197.2	4.0	0.16	RP
LTZFQZ		224.0	32.6	1.44	230.0	36.7	1.52	RP
PPUWGX		150.8	-40.5	-1.79	152.1	-41.1	-1.70	XX
QNTJ9V		199.4	8.1	0.36	204.2	11.0	0.45	RP
Z34CRK		201.2	9.9	0.44	198.7	5.4	0.22	RP

Grand Means		Summary Statistics	
	191.35 kPa		193.29 kPa
Std Dev Btwn Labs	22.66 kPa		24.13 kPa
Statistics based on 8 of 8 reporting participants			

Samples E01-E02: EPDM compound, batch #1 & E03-E04: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

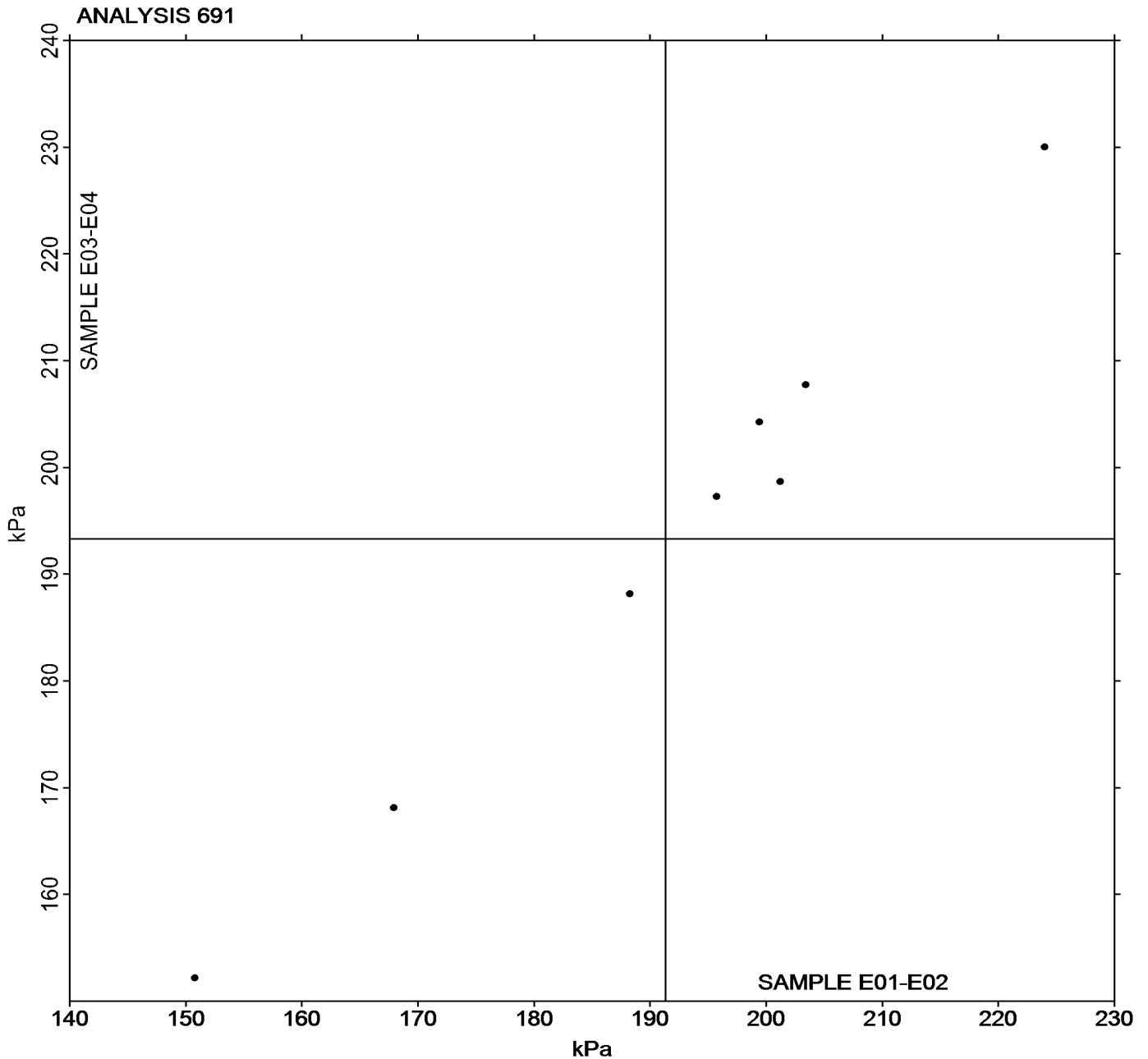


Rubber Interlaboratory Testing Program
Analysis 691
RPA Rheological Properties: Part A - G'' at 20Hz (kPa)

Report #203
1st Qtr 2020

Grand Mean Sample E01-E02 = 191.35 kPa

Grand Mean Sample E03-E04 = 193.29 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 #203

Analysis 695

1st Qtr 2020

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

WebCode	Data Flag	Sample E01-E02			Sample E03-E04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
68HJGE		64.18	-11.71	-1.17	71.76	-10.31	-1.26	RP
84TQJG		75.18	-0.71	-0.07	81.32	-0.75	-0.09	PR
EDVJRA		66.69	-9.20	-0.92	74.64	-7.43	-0.91	RP
HRKPDZ		66.34	-9.56	-0.95	73.53	-8.54	-1.05	RP
LTZFQZ		87.39	11.49	1.14	91.40	9.33	1.14	RP
PPUWGX		81.34	5.45	0.54	89.07	7.01	0.86	XX
QNTJ9V		74.97	-0.93	-0.09	83.01	0.94	0.12	RP
Z34CRK		91.05	15.16	1.51	91.82	9.75	1.19	XX

Grand Means		Summary Statistics	
	75.892 kPa		82.069 kPa
Std Dev Btwn Labs	10.042 kPa		8.170 kPa
Statistics based on 8 of 8 reporting participants			

Samples E01-E02: EPDM compound, batch #1 & E03-E04: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

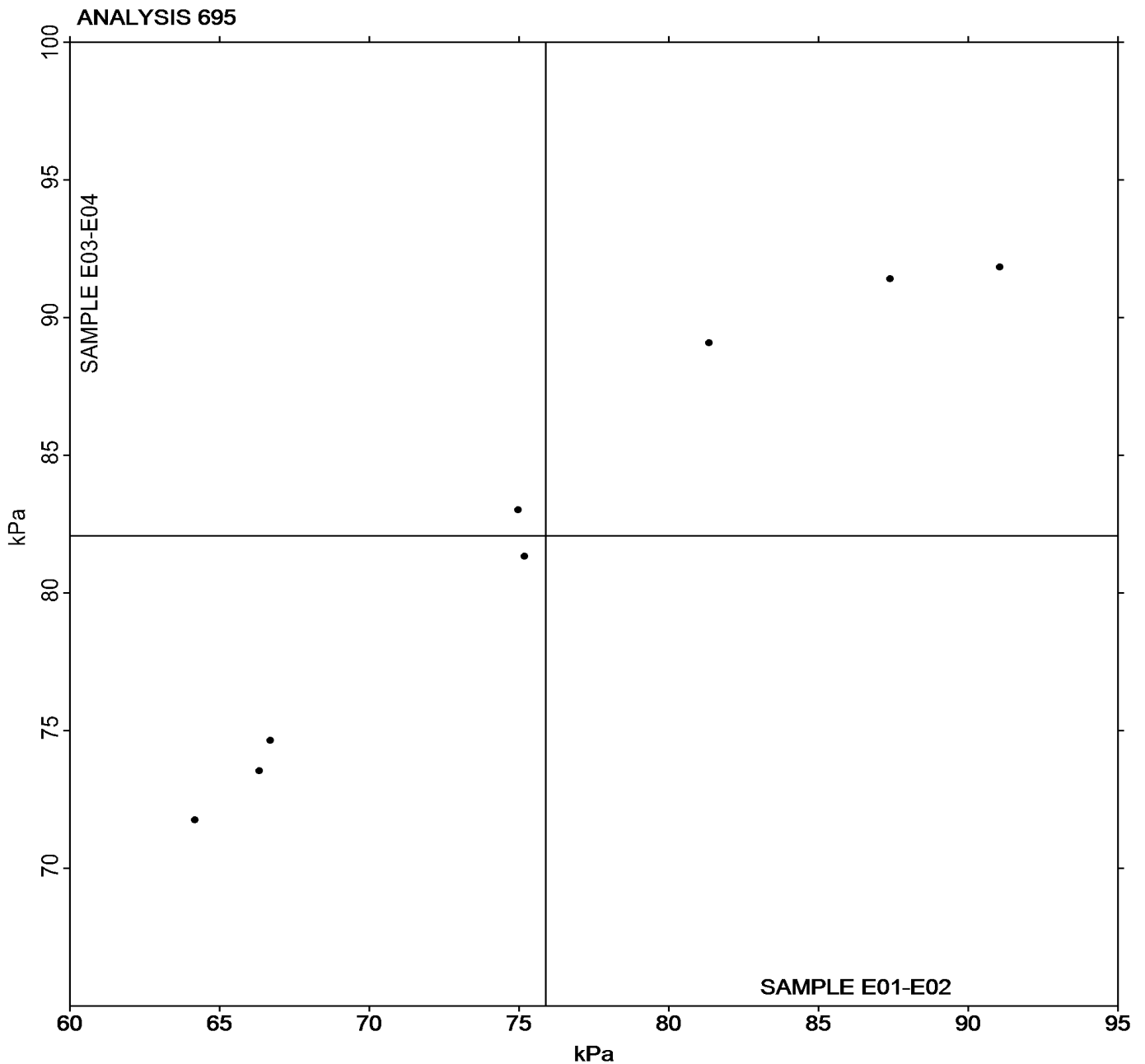


Rubber Interlaboratory Testing Program
Analysis 695
RPA Rheological Properties: Part B - G' at 1.0Hz (kPa)

Report #203
1st Qtr 2020

Grand Mean Sample E01-E02 = 75.892 kPa

Grand Mean Sample E03-E04 = 82.069 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 #203

Analysis 696

1st Qtr 2020

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

WebCode	Data Flag	Sample E01-E02			Sample E03-E04			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
68HJGE		55.83	-10.44	-1.55	57.79	-10.64	-1.64	RP
84TQJG		66.78	0.52	0.08	69.76	1.33	0.21	PR
EDVJRA		64.37	-1.89	-0.28	66.65	-1.78	-0.28	RP
HRKPDZ		64.61	-1.66	-0.25	67.16	-1.27	-0.20	RP
LTZFQZ		79.94	13.68	2.03	81.49	13.07	2.02	RP
PPUWGX		65.24	-1.02	-0.15	67.69	-0.74	-0.11	XX
QNTJ9V		64.01	-2.26	-0.33	67.28	-1.15	-0.18	XX
Z34CRK		69.32	3.06	0.45	69.61	1.18	0.18	XX

Grand Means		Summary Statistics	
	66.262 kPa		68.427 kPa
Std Dev Btwn Labs	6.741 kPa		6.477 kPa
Statistics based on 8 of 8 reporting participants			

Samples E01-E02: EPDM compound, batch #1 & E03-E04: 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 #203

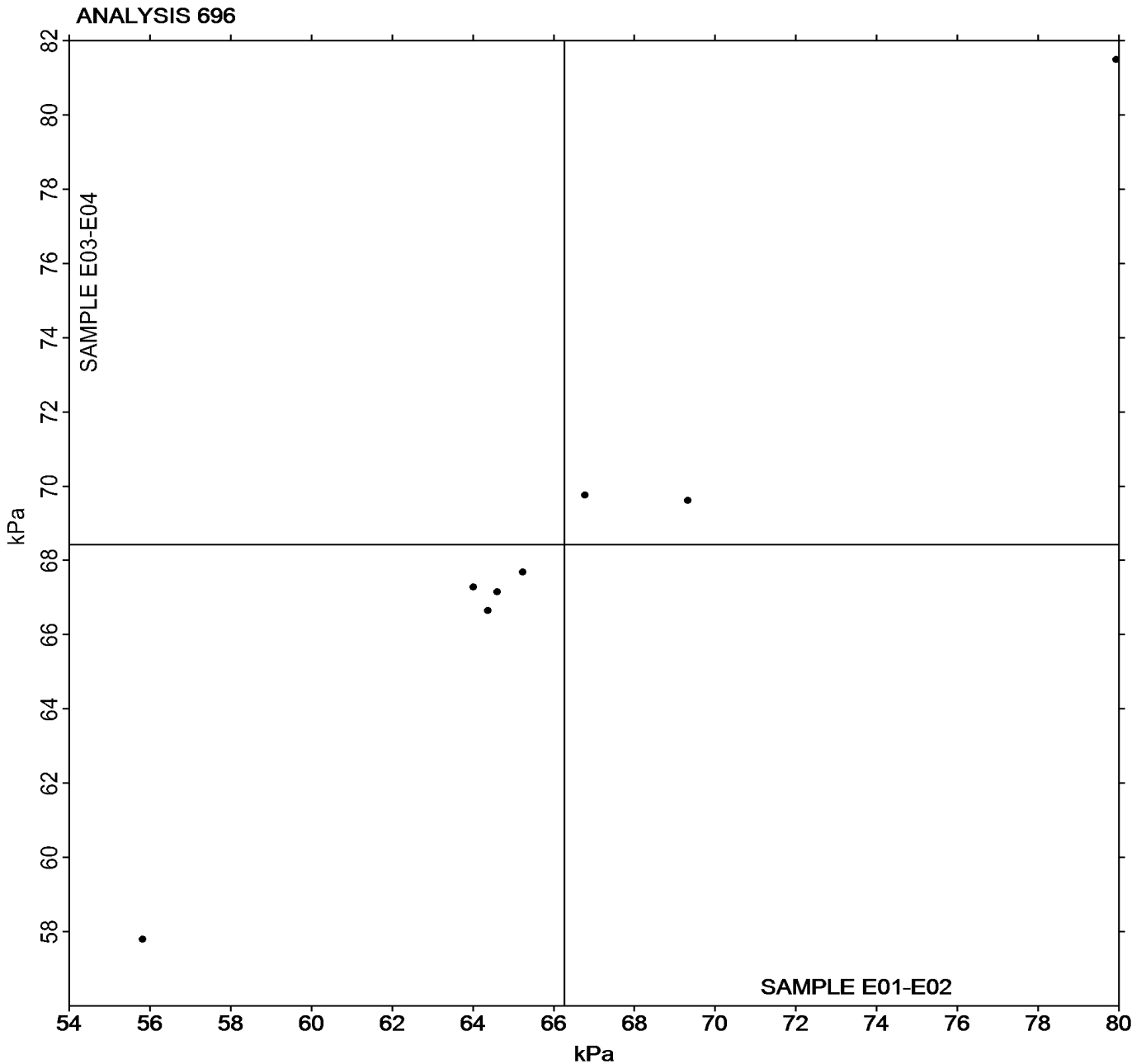
Analysis 696

1st Qtr 2020

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

Grand Mean Sample **E01-E02** = 66.262 kPa

Grand Mean Sample **E03-E04** = 68.427 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-