



Rubber Interlaboratory Testing Program

Summary Report #199- 1st Qtr 2019

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

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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		
621	Density: Precured Rubber Samples @ 25C		
625	Hardness (Shore D/Type D)		
630	Tensile Strength: Participant-Cured Rubber		
631	Ultimate Elongation: Participant-Cured Samples		
632	Tensile Stress at 300% Elongation: Lab-Cured		
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635	Compression Set		
660	Mooney Viscosity (4-minute readings)		
661	Mooney Viscosity (8-minute butyl readings)		
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671	ODR Vulcanization Charac.: Cure Time 50%		
672	ODR Vulcanization Charac.: Cure Time 90%		
673	ODR Vulcanization Charac.: Minimum Torque		
674	ODR Vulcanization Charac.: Maximum Torque		
684	MDR Vulcanization Charac.: Cure Time 10%		
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 #199
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WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CNUY9		3,264.8	-36.1	-0.25	3,285.1	-23.9	-0.16
2CRHFL		3,359.9	58.9	0.41	3,416.4	107.4	0.70
2HDE2N		3,373.5	72.5	0.51	3,425.5	116.5	0.76
392HTB	*	3,095.0	-206.0	-1.44	2,957.0	-352.0	-2.29
3YG99N		3,207.5	-93.5	-0.65	3,106.0	-203.0	-1.32
3YJWQ2	X	2,672.5	-628.5	-4.39	2,739.3	-569.7	-3.70
62Y6RY		3,278.0	-23.0	-0.16	3,261.5	-47.5	-0.31
6ARKEG		3,458.3	157.3	1.10	3,526.9	217.9	1.42
6JG7KF		3,335.0	34.0	0.24	3,386.5	77.5	0.50
6K88Q4	X	2,580.0	-721.0	-5.04	2,769.0	-540.0	-3.51
6P4YWE		2,997.0	-304.0	-2.12	3,048.5	-260.5	-1.69
776G4P		3,494.5	193.5	1.35	3,573.0	264.0	1.72
7G9FVC		3,218.6	-82.3	-0.58	3,294.5	-14.5	-0.09
8TTFYJ		3,342.5	41.5	0.29	3,358.0	49.0	0.32
8VJG68		3,208.3	-92.7	-0.65	3,297.5	-11.6	-0.08
8YHRZ8		3,169.1	-131.9	-0.92	3,275.7	-33.3	-0.22
9BAZXZ	*	3,581.5	280.5	1.96	3,742.5	433.5	2.82
A8MNT3		3,040.0	-261.0	-1.82	3,091.0	-218.0	-1.42
ABPGTT		3,419.2	118.2	0.83	3,323.1	14.0	0.09
AFJEFY		3,189.0	-112.0	-0.78	3,188.5	-120.5	-0.78
BRRGGM	X	2,838.0	-463.0	-3.24	3,053.0	-256.0	-1.66
BV7ACL		3,365.5	64.5	0.45	3,449.4	140.4	0.91
BWKPH9		3,466.4	165.5	1.16	3,473.7	164.7	1.07
CN64A4		3,183.6	-117.4	-0.82	3,177.8	-131.2	-0.85
CV8949		3,091.0	-210.0	-1.47	3,145.5	-163.5	-1.06
D4A8UL		3,120.8	-180.1	-1.26	3,070.0	-239.0	-1.55
DCRETE		3,343.1	42.2	0.29	3,415.8	106.8	0.69
DDJD7C		3,346.0	45.0	0.31	3,417.0	108.0	0.70
DR7K8J		3,305.5	4.5	0.03	3,267.0	-42.0	-0.27
DYG7R8		3,100.0	-201.0	-1.40	3,135.0	-174.0	-1.13
E7YWR8		3,389.5	88.5	0.62	3,287.5	-21.5	-0.14
EDZTXY		3,183.6	-117.4	-0.82	3,256.1	-52.9	-0.34
EGENDW		3,369.4	68.4	0.48	3,227.9	-81.2	-0.53
EL66M2		3,335.0	34.0	0.24	3,270.0	-39.0	-0.25
EWNG2Y	*	3,686.2	385.2	2.69	3,699.2	390.2	2.54
EX34GT		3,312.0	11.0	0.08	3,258.5	-50.5	-0.33
FKVBPF		3,335.9	34.9	0.24	3,306.9	-2.1	-0.01
FL93JH		3,507.0	206.0	1.44	3,579.5	270.5	1.76



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FUFNJ7		3,246.7	-54.3	-0.38	3,299.6	-9.4	-0.06
G3RZJN	X	2,726.7	-574.3	-4.01	2,797.3	-511.7	-3.33
G82DZM		3,358.5	57.5	0.40	3,388.0	79.0	0.51
GB2PWM		3,431.0	130.0	0.91	3,435.5	126.5	0.82
GJHZCA		3,349.0	48.0	0.34	3,262.7	-46.4	-0.30
GK943V		3,317.0	16.0	0.11	3,276.5	-32.5	-0.21
GLK6H3		3,422.2	121.2	0.85	3,417.1	108.1	0.70
GP6V98		3,348.8	47.8	0.33	3,322.1	13.1	0.09
H7M7E7		3,490.7	189.7	1.33	3,470.1	161.0	1.05
HG7KH9		3,251.0	-50.0	-0.35	3,230.5	-78.5	-0.51
HPHYZ4		3,417.5	116.5	0.81	3,373.0	64.0	0.42
J99CAM		3,471.0	170.0	1.19	3,430.5	121.5	0.79
JBWRYW		3,342.4	41.4	0.29	3,386.7	77.6	0.50
JMRXUF		3,359.1	58.1	0.41	3,446.9	137.8	0.90
JUMZWR		3,300.0	-1.0	-0.01	3,315.0	6.0	0.04
JVKDGY		3,326.4	25.4	0.18	3,269.4	-39.6	-0.26
K329XT		3,550.5	249.5	1.74	3,596.5	287.5	1.87
L7UUXV		3,511.6	210.6	1.47	3,431.4	122.3	0.80
L8MKA2		3,370.5	69.5	0.49	3,347.5	38.5	0.25
LAT39W		3,394.5	93.5	0.65	3,357.5	48.5	0.32
LE6VJV		3,361.0	60.0	0.42	3,295.5	-13.5	-0.09
LHN92X		3,282.0	-19.0	-0.13	3,305.0	-4.0	-0.03
M3R736		3,363.5	62.5	0.44	3,343.5	34.5	0.22
MR72U7		3,194.0	-107.0	-0.75	3,237.5	-71.5	-0.46
MRTDUE		3,329.5	28.5	0.20	3,269.0	-40.0	-0.26
NMV9J8		3,217.5	-83.5	-0.58	3,209.0	-100.0	-0.65
NTEGYQ		3,388.0	87.0	0.61	3,361.8	52.7	0.34
PAKZD9		3,394.5	93.5	0.65	3,303.5	-5.5	-0.04
PBUA2Z		3,267.3	-33.7	-0.24	3,349.9	40.9	0.27
PDKAJ6	*	2,930.0	-371.0	-2.59	3,065.0	-244.0	-1.59
PHDHKP		3,217.0	-84.0	-0.59	3,269.9	-39.1	-0.25
QD2PAQ		3,507.5	206.5	1.44	3,479.5	170.5	1.11
QMNQQ2		3,340.0	39.0	0.27	3,223.6	-85.5	-0.56
QPV2M6		3,147.0	-154.0	-1.08	3,180.0	-129.0	-0.84
QWR2YB		3,170.8	-130.2	-0.91	3,015.1	-294.0	-1.91
TJGA8M		3,317.0	16.0	0.11	3,211.5	-97.5	-0.63
UG4UF8	*	3,066.2	-234.8	-1.64	3,272.4	-36.6	-0.24



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
UNJVDW	X	3,952.3	651.3	4.55	3,872.5	563.5	3.66
UPX3YD		3,490.2	189.2	1.32	3,571.8	262.7	1.71
VA7MCT		3,392.2	91.3	0.64	3,500.9	191.8	1.25
VNZDNG		3,294.5	-6.5	-0.05	3,344.5	35.5	0.23
VTU736		2,986.1	-314.8	-2.20	3,000.1	-309.0	-2.01
VUQLDG		3,235.5	-65.5	-0.46	3,107.5	-201.5	-1.31
WQKMFT		3,169.1	-131.9	-0.92	3,237.3	-71.7	-0.47
WQLDLC		3,188.2	-112.8	-0.79	3,266.8	-42.2	-0.27
WWUJHH		3,331.5	30.6	0.21	3,221.3	-87.7	-0.57
X6VQBM		3,386.7	85.7	0.60	3,335.9	26.9	0.17
X9G78A		3,165.5	-135.5	-0.95	3,320.5	11.5	0.07
X9KPWX		3,261.0	-40.0	-0.28	3,349.0	40.0	0.26
XAEFZR		3,190.9	-110.1	-0.77	3,183.6	-125.4	-0.82
XBNKF2		3,277.9	-23.1	-0.16	3,219.9	-89.1	-0.58
XE7RVM		3,028.0	-273.0	-1.91	3,048.5	-260.5	-1.69
XMZXPN		3,062.5	-238.5	-1.67	3,083.5	-225.5	-1.47
Y2T3EX		3,288.1	-12.9	-0.09	3,436.7	127.6	0.83
Y6GG48		3,246.9	-54.1	-0.38	3,370.9	61.9	0.40
YP2KGJ		3,487.0	186.0	1.30	3,373.5	64.5	0.42
ZBVNYG	*	3,163.3	-137.7	-0.96	2,997.2	-311.8	-2.03
ZNNB6C		3,582.9	281.9	1.97	3,640.1	331.0	2.15
ZVJ9VL		3,321.3	20.3	0.14	3,412.8	103.7	0.67
ZVLVBE		3,218.5	-82.5	-0.58	3,274.5	-34.5	-0.22

Grand Means		Summary Statistics	
	3,300.97 psi		3,309.01 psi
Std Dev Btwn Labs			
	143.08 psi		153.81 psi
Statistics based on 93 of 98 reporting participants			

Grand Means		Summary Statistics in SI Units	
	22.759 MPa		22.81 MPa
Std Dev Btwn Labs			
	0.986 MPa		1.06 MPa
Statistics based on 93 of 98 reporting participants			



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #199
1st Qtr 2019

Samples A91-A92: Polyisoprene compound, batch #1 & A93-A94: Polyisoprene compound, batch#2

Comments on Assigned Data Flags for Test #605

3YJWQ2 (X) - Data for all samples are low. Possible Systematic Error.

6K88Q4 (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group A91-A92.

BRRGGM (X) - Data for sample group A91-A92 are low.

G3RZJN (X) - Data for all samples are low. Possible Systematic Error.

UNJVDW (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group A91-A92.

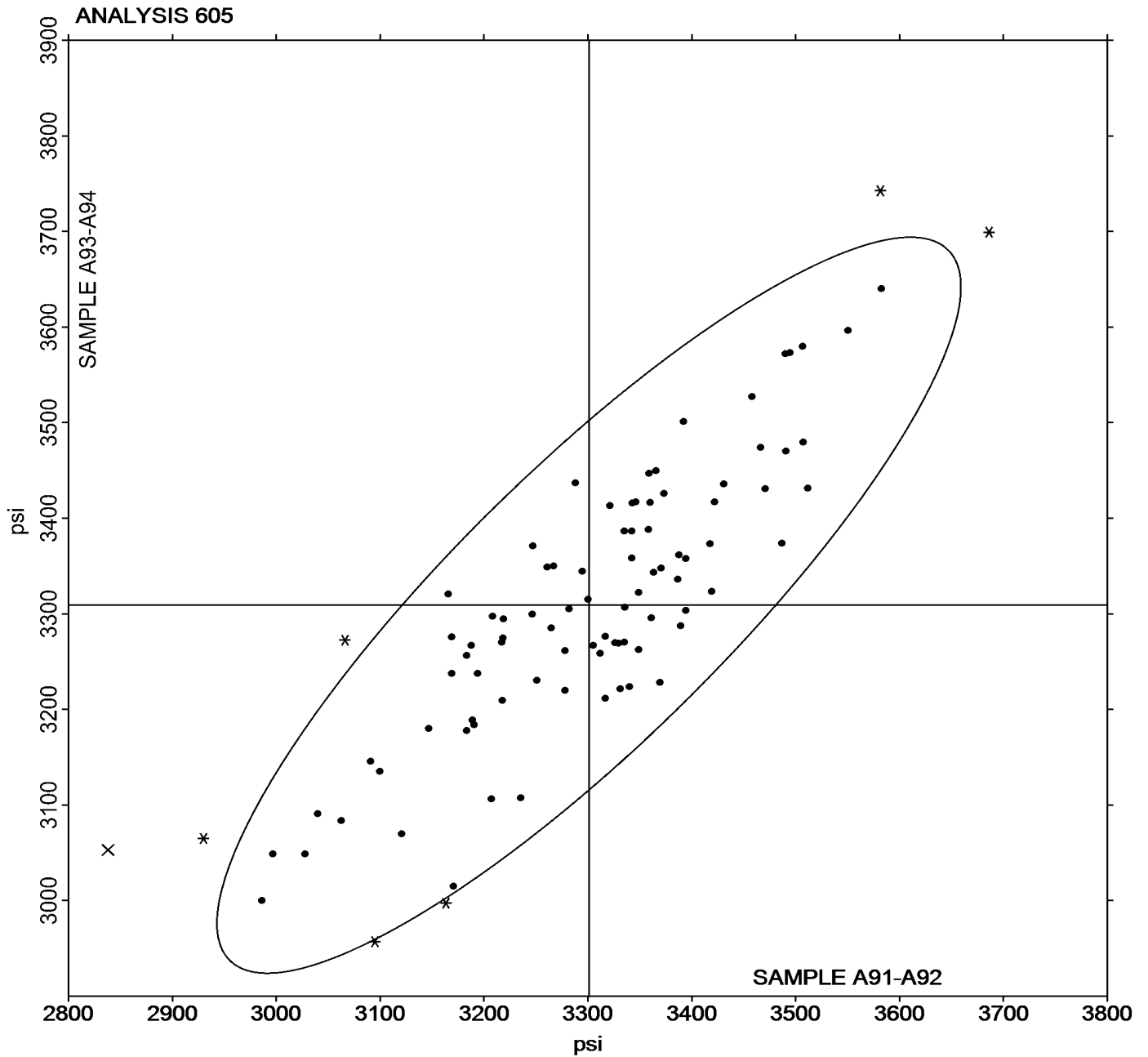


Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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Grand Mean Sample A91-A92 = 3,300.97 psi

Grand Mean Sample A93-A94 = 3,309.01 psi





Rubber Interlaboratory Testing Program

Report #199

Analysis 606

1st Qtr 2019

Ultimate Elongation (percent)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CNUY9		620.5	21.3	0.62	626.5	26.9	0.76
2CRHFL		613.0	13.8	0.40	613.5	13.9	0.39
2HDE2N		607.0	7.8	0.23	609.0	9.4	0.27
392HTB		572.0	-27.2	-0.79	560.5	-39.1	-1.11
3YG99N		581.0	-18.2	-0.53	575.3	-24.4	-0.69
3YJWQ2		532.0	-67.2	-1.95	528.1	-71.5	-2.03
62Y6RY		596.0	-3.2	-0.09	597.5	-2.1	-0.06
6ARKEG		617.0	17.8	0.52	622.4	22.7	0.65
6JG7KF		593.5	-5.7	-0.17	592.5	-7.1	-0.20
6K88Q4		600.5	1.3	0.04	604.0	4.4	0.12
6P4YWE		579.0	-20.2	-0.58	583.0	-16.6	-0.47
776G4P		606.5	7.3	0.21	626.0	26.4	0.75
7G9FVC		631.3	32.1	0.93	647.2	47.6	1.35
8TTFYJ		552.0	-47.2	-1.37	538.0	-61.6	-1.75
8VJG68		567.5	-31.7	-0.92	590.5	-9.1	-0.26
8YHRZ8		587.5	-11.7	-0.34	587.5	-12.1	-0.34
9BAZZZ		632.5	33.3	0.96	634.5	34.9	0.99
A8MNT3		519.0	-80.2	-2.32	528.5	-71.1	-2.02
ABPGTT	X	719.4	120.2	3.48	709.9	110.3	3.13
AFJEFY		581.0	-18.2	-0.53	578.5	-21.1	-0.60
BRRGGM		588.0	-11.2	-0.32	604.5	4.9	0.14
BV7ACL		606.4	7.2	0.21	591.0	-8.6	-0.24
BWKPH9		604.9	5.6	0.16	603.2	3.6	0.10
CV8949	*	512.5	-86.7	-2.51	517.5	-82.1	-2.33
D4A8UL	*	539.3	-59.9	-1.73	566.3	-33.3	-0.95
DCRETE		627.3	28.1	0.81	628.2	28.6	0.81
DR7K8J		599.5	0.3	0.01	619.0	19.4	0.55
E7YWR8		619.0	19.8	0.57	601.5	1.9	0.05
EDZTXY		543.0	-56.2	-1.63	532.9	-66.8	-1.89
EGENDW		630.2	30.9	0.90	617.4	17.7	0.50
EL66M2		554.8	-44.5	-1.29	559.0	-40.6	-1.15
EWNG2Y		591.0	-8.2	-0.24	598.5	-1.1	-0.03
EX34GT		609.9	10.7	0.31	602.3	2.7	0.08
FKVBPB		595.5	-3.7	-0.11	597.5	-2.1	-0.06
FL93JH		612.0	12.8	0.37	614.0	14.4	0.41
FUFNJ7		593.0	-6.2	-0.18	577.9	-21.7	-0.61
G3RZJN	X	538.3	-60.9	-1.76	475.5	-124.1	-3.52



Rubber Interlaboratory Testing Program

Report #199

Analysis 606

1st Qtr 2019

Ultimate Elongation (percent)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
G82DZM		615.0	15.8	0.46	619.5	19.9	0.56
GB2PWM		631.5	32.3	0.93	638.5	38.9	1.10
GJHZCA		559.2	-40.0	-1.16	551.2	-48.4	-1.37
GK943V	X	481.0	-118.2	-3.42	486.5	-113.1	-3.21
GLK6H3		610.5	11.3	0.33	603.0	3.4	0.10
GP6V98		603.0	3.8	0.11	606.0	6.4	0.18
H7M7E7		628.5	29.3	0.85	637.0	37.3	1.06
HG7KH9		563.0	-36.2	-1.05	576.5	-23.1	-0.66
HPHYZ4		625.0	25.8	0.75	624.0	24.4	0.69
J99CAM		631.0	31.8	0.92	621.5	21.9	0.62
JBWRYW		638.5	39.3	1.14	645.0	45.4	1.29
JMRXUF		635.0	35.8	1.04	628.0	28.4	0.81
JUMZWR		642.5	43.3	1.25	623.5	23.9	0.68
JVKDGY		673.8	74.6	2.16	678.7	79.1	2.24
K329XT		575.0	-24.2	-0.70	580.0	-19.6	-0.56
L7UUXV		581.7	-17.5	-0.51	592.7	-6.9	-0.20
L8MKA2		654.5	55.3	1.60	641.5	41.9	1.19
LAT39W		593.0	-6.2	-0.18	603.5	3.9	0.11
LE6VJV	*	508.0	-91.2	-2.64	523.5	-76.1	-2.16
LHN92X		619.5	20.3	0.59	607.0	7.4	0.21
M3R736		629.0	29.8	0.86	627.0	27.4	0.78
MRTDUE		641.0	41.8	1.21	642.0	42.4	1.20
NMV9J8		520.5	-78.7	-2.28	516.5	-83.1	-2.36
NTEGYQ		611.5	12.3	0.36	613.5	13.9	0.39
PAKZD9		594.0	-5.2	-0.15	570.0	-29.6	-0.84
PBUA2Z		595.5	-3.7	-0.11	601.5	1.9	0.05
PDKAJ6		577.0	-22.2	-0.64	586.5	-13.1	-0.37
QD2PAQ		610.5	11.3	0.33	597.0	-2.6	-0.07
QMNQQ2		599.4	0.2	0.00	590.9	-8.7	-0.25
QPV2M6		596.0	-3.2	-0.09	595.0	-4.6	-0.13
QWR2YB		639.0	39.8	1.15	626.1	26.5	0.75
TJGA8M		560.0	-39.2	-1.13	557.5	-42.1	-1.19
UG4UF8		625.6	26.3	0.76	645.7	46.0	1.31
UNJVDW		638.0	38.8	1.12	661.0	61.4	1.74
UPX3YD		624.5	25.3	0.73	633.8	34.1	0.97
VA7MCT		600.4	1.2	0.04	603.8	4.2	0.12
VNZDNG		674.0	74.8	2.16	667.0	67.4	1.91
VTU736		615.3	16.1	0.47	596.7	-2.9	-0.08



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
VUQLDG		555.5	-43.7	-1.26	544.0	-55.6	-1.58
WQKMFT		591.3	-8.0	-0.23	616.9	17.3	0.49
WQLDLC		620.0	20.8	0.60	620.0	20.4	0.58
WWUJHH	*	618.7	19.5	0.56	584.5	-15.1	-0.43
X6VQBM		553.5	-45.7	-1.32	533.0	-66.6	-1.89
X9G78A	M	549.0	-50.2	-1.45	543.0	-56.6	-1.61
X9KPWX		602.5	3.3	0.10	601.5	1.9	0.05
XAEFZR		605.5	6.3	0.18	601.8	2.2	0.06
XBNKF2		582.5	-16.8	-0.48	593.5	-6.2	-0.17
XE7RVM		541.0	-58.2	-1.68	536.3	-63.4	-1.80
XMZXPN		659.5	60.3	1.74	670.5	70.9	2.01
Y2T3EX		578.0	-21.3	-0.62	587.6	-12.0	-0.34
Y6GG48		616.8	17.6	0.51	623.9	24.3	0.69
YP2KGJ		608.0	8.8	0.25	601.5	1.9	0.05
ZBVNYG		591.5	-7.7	-0.22	583.5	-16.1	-0.46
ZNNB6C		646.8	47.6	1.38	637.3	37.7	1.07
ZVJ9VL		602.8	3.6	0.10	618.8	19.2	0.54
ZVLVBE		601.5	2.3	0.07	605.5	5.9	0.17

		Summary Statistics	
Grand Means	599.21 percent	599.61 percent	
Std Dev Btwn Labs	34.56 percent	35.26 percent	
Statistics based on 89 of 93 reporting participants			

Samples A91-A92: Polyisoprene compound, batch #1 & A93-A94: Polyisoprene compound, batch#2

Comments on Assigned Data Flags for Test #606

- ABPGTT (X) - Data for all samples are high. Possible Systematic Error.
- G3RZJN (X) - Data for sample group A93-A94 are low. Inconsistent within the determinations of sample group A93-A94.
- GK943V (X) - Data for all samples are low. Possible Systematic Error.
- X9G78A (M) - Data not reported for Sample A91.

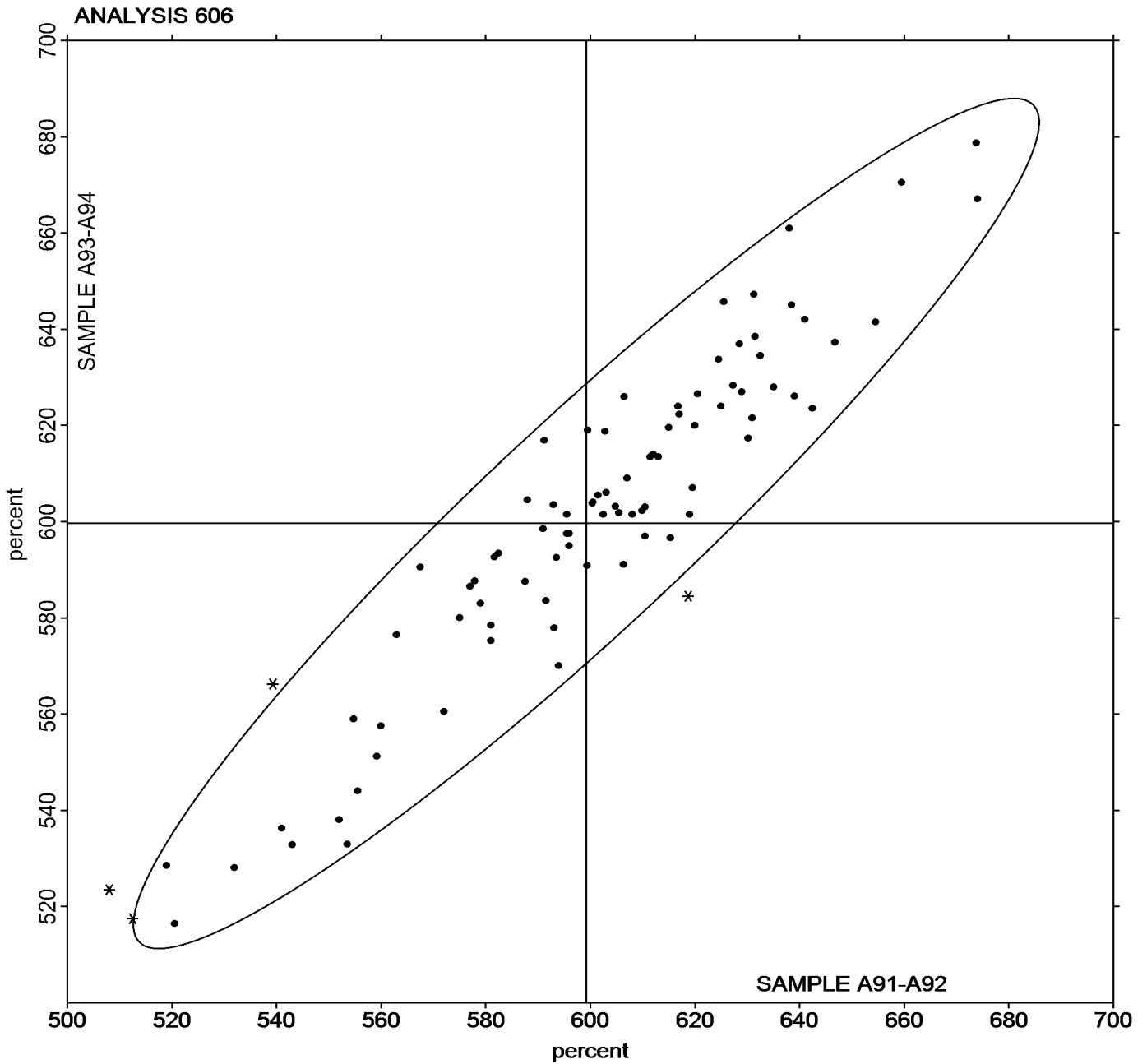


Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #199
1st Qtr 2019

Grand Mean Sample A91-A92 = 599.21 percent

Grand Mean Sample A93-A94 = 599.61 percent





Rubber Interlaboratory Testing Program

Report #199

Analysis 607

1st Qtr 2019

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CNUY9		1,021.1	-44.6	-0.45	1,018.9	-46.8	-0.48
2CRHFL		1,057.5	-8.1	-0.08	1,079.0	13.3	0.14
392HTB		1,076.5	10.9	0.11	1,035.5	-30.2	-0.31
3YG99N		1,043.0	-22.6	-0.23	992.5	-73.2	-0.74
3YJWQ2		991.3	-74.3	-0.74	1,031.9	-33.8	-0.34
62Y6RY		1,099.0	33.4	0.33	1,050.0	-15.7	-0.16
6ARKEG		1,064.1	-1.5	-0.02	1,068.9	3.2	0.03
6JG7KF		1,142.0	76.4	0.77	1,150.5	84.8	0.86
6K88Q4	*	812.0	-253.6	-2.54	897.0	-168.7	-1.71
6P4YWE		1,001.5	-64.1	-0.64	1,049.5	-16.2	-0.16
776G4P		1,160.0	94.4	0.95	1,085.0	19.3	0.20
7G9FVC		938.3	-127.4	-1.28	982.6	-83.1	-0.84
8TTFYJ	*	1,288.5	222.9	2.23	1,335.0	269.3	2.74
8VJG68		1,138.6	72.9	0.73	1,071.1	5.4	0.06
8YHRZ8		1,092.9	27.2	0.27	1,124.8	59.1	0.60
9BAZXZ		1,095.0	29.4	0.29	1,102.0	36.3	0.37
A8MNT3		1,255.0	189.4	1.90	1,237.5	171.8	1.75
ABPGTT		871.8	-193.8	-1.94	892.4	-173.3	-1.76
AFJEFY		1,055.5	-10.1	-0.10	1,091.0	25.3	0.26
BRRGGM		913.5	-152.1	-1.52	953.0	-112.7	-1.14
BV7ACL		1,021.9	-43.7	-0.44	1,112.6	46.9	0.48
BWKPH9		1,116.8	51.2	0.51	1,109.5	43.9	0.45
D4A8UL	X	1,255.8	190.1	1.91	1,091.6	25.9	0.26
DCRETE		1,029.6	-36.1	-0.36	1,024.7	-41.0	-0.42
DR7K8J		1,111.5	45.9	0.46	995.0	-70.7	-0.72
E7YWR8		1,012.5	-53.1	-0.53	1,039.5	-26.2	-0.27
EDZTXY		1,254.6	188.9	1.89	1,290.8	225.2	2.29
EGENDW		1,009.1	-56.5	-0.57	964.8	-100.9	-1.02
EL66M2		1,245.0	179.4	1.80	1,180.0	114.3	1.16
EWNG2Y		1,206.7	141.1	1.41	1,188.6	122.9	1.25
EX34GT		1,028.8	-36.9	-0.37	998.0	-67.6	-0.69
FKVBPF		1,100.1	34.5	0.35	1,108.8	43.1	0.44
FL93JH		1,178.0	112.4	1.13	1,132.0	66.3	0.67
FUFNJ7		1,064.5	-1.1	-0.01	1,154.1	88.4	0.90
G3RZJN	X	963.1	-102.6	-1.03	1,371.4	305.7	3.11
G82DZM		1,057.0	-8.6	-0.09	1,108.5	42.8	0.44
GB2PWM		998.5	-67.1	-0.67	953.5	-112.2	-1.14
GJHZCA		1,145.1	79.4	0.80	1,145.1	79.4	0.81



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
GK943V	X	1,500.0	434.4	4.35	1,495.5	429.8	4.37
GLK6H3		1,051.5	-14.1	-0.14	1,106.6	41.0	0.42
GP6V98		1,073.5	7.8	0.08	1,038.0	-27.7	-0.28
H7M7E7		1,033.2	-32.4	-0.33	992.6	-73.0	-0.74
HG7KH9		1,192.0	126.4	1.27	1,127.5	61.8	0.63
HPHYZ4		999.5	-66.1	-0.66	1,002.5	-63.2	-0.64
J99CAM		1,096.5	30.9	0.31	1,045.5	-20.2	-0.20
JBWRYW		963.8	-101.9	-1.02	954.4	-111.3	-1.13
JMRXUF		983.4	-82.3	-0.82	1,047.9	-17.8	-0.18
JUMZWR		892.5	-173.1	-1.74	969.0	-96.7	-0.98
JVKDGY		871.9	-193.8	-1.94	884.7	-181.0	-1.84
K329XT		1,156.0	90.4	0.91	1,176.0	110.3	1.12
L7UUXV		1,199.3	133.7	1.34	1,109.1	43.4	0.44
L8MKA2		994.5	-71.1	-0.71	1,001.5	-64.2	-0.65
LAT39W		1,155.0	89.4	0.90	1,107.0	41.3	0.42
LE6VJV	X	1,389.5	323.9	3.25	1,211.0	145.3	1.48
M3R736		984.0	-81.6	-0.82	1,006.5	-59.2	-0.60
MRTDUE		998.0	-67.6	-0.68	927.5	-138.2	-1.40
NMV9J8	*	1,259.0	193.4	1.94	1,327.5	261.8	2.66
NTEGYQ		1,063.5	-2.1	-0.02	1,028.5	-37.2	-0.38
PAKZD9		1,034.5	-31.1	-0.31	1,022.5	-43.2	-0.44
PBUA2Z		1,040.5	-25.2	-0.25	1,068.0	2.3	0.02
PDKAJ6		1,031.5	-34.1	-0.34	1,032.0	-33.7	-0.34
QD2PAQ		1,071.5	5.9	0.06	1,103.5	37.8	0.38
QMNQQ2		1,101.7	36.1	0.36	1,068.8	3.1	0.03
QPV2M6		1,041.0	-24.6	-0.25	1,042.0	-23.7	-0.24
QWR2YB		965.3	-100.3	-1.01	1,020.5	-45.2	-0.46
TJGA8M		1,245.0	179.4	1.80	1,201.5	135.8	1.38
UG4UF8		985.8	-79.8	-0.80	1,030.0	-35.7	-0.36
UNJVDW	X	1,418.5	352.8	3.54	1,312.6	246.9	2.51
UPX3YD		1,090.2	24.6	0.25	1,084.8	19.1	0.19
VA7MCT		1,151.4	85.7	0.86	1,168.1	102.4	1.04
VNZDNG		859.0	-206.6	-2.07	907.0	-158.7	-1.61
VTU736		997.0	-68.7	-0.69	1,078.1	12.4	0.13
VUQLDG		1,224.7	159.1	1.59	1,190.7	125.0	1.27
WQKMFT	*	1,071.4	5.8	0.06	953.8	-111.9	-1.14
WQLDLC		1,023.5	-42.1	-0.42	995.0	-70.7	-0.72



Rubber Interlaboratory Testing Program

Report #199

Analysis 607

1st Qtr 2019

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
X6VQBM	*	1,211.1	145.4	1.46	1,312.6	246.9	2.51
X9G78A	M	1,117.0	51.4	0.51	1,295.0	229.3	2.33
X9KPWX		1,062.0	-3.6	-0.04	1,084.5	18.8	0.19
XAEFZR		1,017.4	-48.2	-0.48	1,002.2	-63.5	-0.64
XBNKF2		1,091.4	25.8	0.26	1,058.1	-7.6	-0.08
XE7RVM		1,125.5	59.9	0.60	1,150.3	84.6	0.86
XMZXPN	*	842.0	-223.7	-2.24	814.4	-251.3	-2.55
Y2T3EX		1,175.4	109.8	1.10	1,215.4	149.7	1.52
Y6GG48		1,025.0	-40.6	-0.41	1,053.7	-12.0	-0.12
YP2KGJ		1,110.0	44.4	0.44	1,078.5	12.8	0.13
ZBVNYG		1,038.5	-27.2	-0.27	955.1	-110.6	-1.12
ZNNB6C		1,030.9	-34.7	-0.35	1,061.5	-4.1	-0.04
ZVJ9VL		1,050.4	-15.3	-0.15	1,038.8	-26.9	-0.27
ZVLVBE		1,071.0	5.4	0.05	1,054.0	-11.7	-0.12

Summary Statistics

Grand Means

1,065.64 psi

1,065.67 psi

Stnd Dev Btwn Labs

99.77 psi

98.42 psi

Statistics based on 83 of 89 reporting participants

Summary Statistics in SI Units

Grand Means

7.3473 MPa

7.35 MPa

Stnd Dev Btwn Labs

0.6879 MPa

0.68 MPa

Statistics based on 83 of 89 reporting participants

Samples A91-A92: Polyisoprene compound, batch #1 & A93-A94: Polyisoprene compound, batch#2



Comments on Assigned Data Flags for Test #607

- D4A8UL (X) - Inconsistent in testing between samples.
- G3RZJN (X) - Data for sample group A93-A94 are high. Inconsistent within the determinations of sample group A93-A94.
- GK943V (X) - Data for all samples are high. Possible Systematic Error.
- LE6VJV (X) - Data for sample group A91-A92 are high.
- UNJVDW (X) - Data for sample group A91-A92 are high. Inconsistent within the determinations of sample group A93-A94.
- X9G78A (M) - Data not reported for Sample A91.

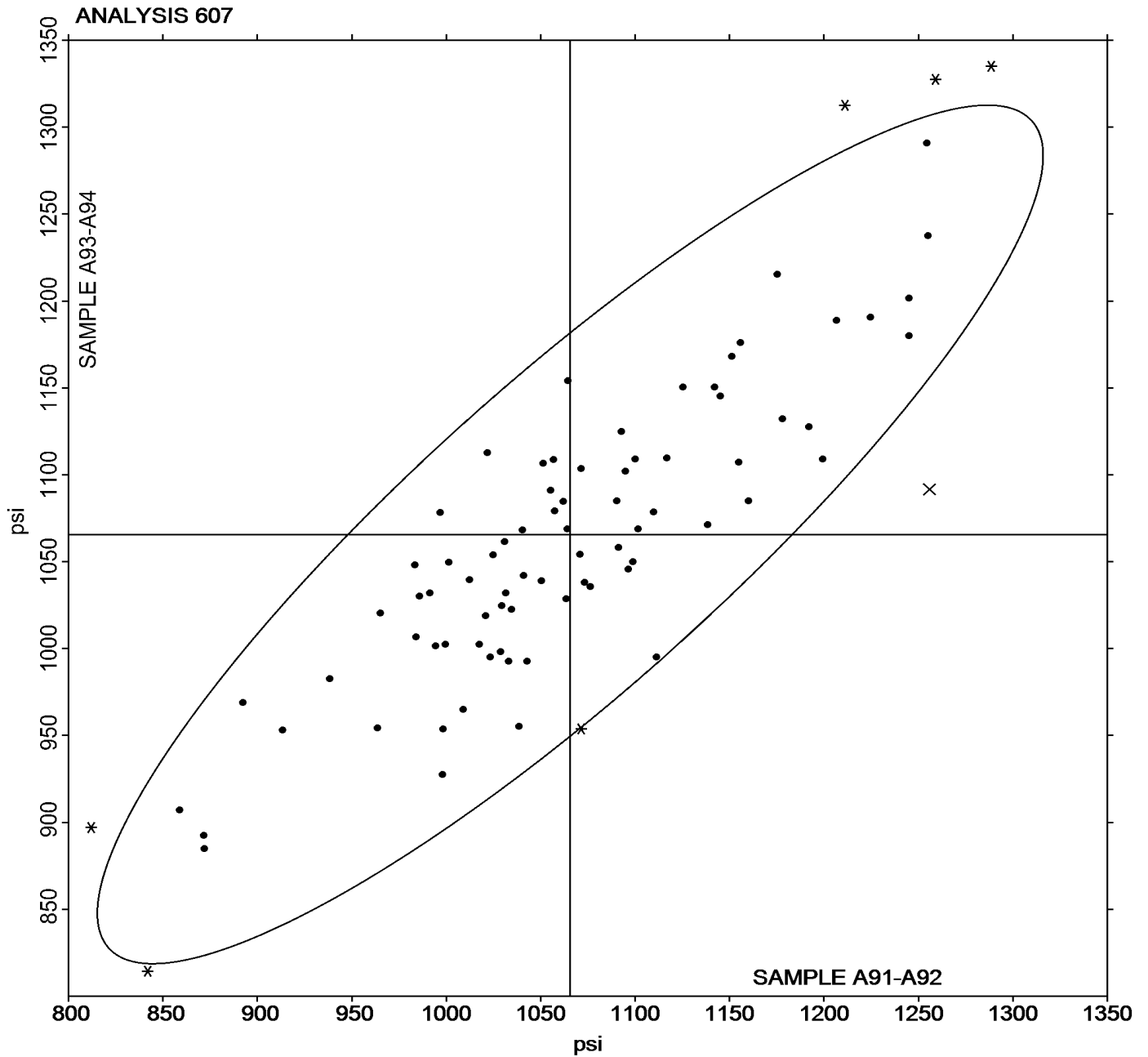


Rubber Interlaboratory Testing Program
Analysis 607
Stress at 300% Elongation (psi)

Report #199
1st Qtr 2019

Grand Mean Sample A91-A92 = 1,065.64 psi

Grand Mean Sample A93-A94 = 1,065.67 psi





Rubber Interlaboratory Testing Program

Report #199

Analysis 608

1st Qtr 2019

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CNUY9		229.2	-8.8	-0.44	229.9	-10.2	-0.55
2CRHFL		233.0	-5.0	-0.25	247.5	7.4	0.40
2HDE2N		227.0	-11.0	-0.54	232.0	-8.1	-0.44
392HTB		246.0	8.0	0.40	232.5	-7.6	-0.41
3YG99N		230.5	-7.5	-0.37	223.5	-16.6	-0.89
3YJWQ2		213.3	-24.6	-1.22	224.0	-16.1	-0.86
62Y6RY		243.0	5.0	0.25	231.5	-8.6	-0.46
6ARKEG		239.4	1.4	0.07	247.1	6.9	0.37
6JG7KF		251.5	13.5	0.67	256.0	15.9	0.85
6K88Q4	*	183.0	-55.0	-2.72	212.0	-28.1	-1.51
6P4YWE		215.0	-23.0	-1.14	232.5	-7.6	-0.41
776G4P		261.5	23.5	1.16	246.5	6.4	0.34
7G9FVC		213.8	-24.1	-1.19	223.4	-16.7	-0.90
8TTFYJ		258.0	20.0	0.99	273.5	33.4	1.79
8VJG68		247.3	9.3	0.46	235.0	-5.2	-0.28
8YHRZ8		245.1	7.2	0.35	256.7	16.6	0.89
9BAZXZ		247.5	9.5	0.47	250.0	9.9	0.53
A8MNT3		279.0	41.0	2.03	276.5	36.4	1.95
ABPGTT		240.3	2.4	0.12	246.6	6.5	0.35
AFJEFY		230.5	-7.5	-0.37	240.0	-0.1	-0.01
BRRGGM		206.5	-31.5	-1.56	216.5	-23.6	-1.27
BV7ACL		222.3	-15.7	-0.78	247.5	7.4	0.40
BWKPH9		245.1	7.2	0.35	244.4	4.3	0.23
D4A8UL	*	264.6	26.6	1.32	228.4	-11.7	-0.63
DCRETE		235.6	-2.3	-0.12	231.7	-8.4	-0.45
DR7K8J		241.5	3.5	0.17	225.0	-15.1	-0.81
E7YWR8		230.0	-8.0	-0.39	237.0	-3.1	-0.17
EDZTXY		270.5	32.5	1.61	281.4	41.3	2.21
EGENDW		225.6	-12.4	-0.61	214.8	-25.4	-1.36
EL66M2		286.5	48.5	2.40	274.0	33.9	1.82
EWNG2Y		253.8	15.9	0.78	256.0	15.9	0.85
EX34GT		226.9	-11.1	-0.55	225.8	-14.3	-0.77
FKVBPF		221.9	-16.1	-0.79	229.2	-11.0	-0.59
FL93JH		232.0	-6.0	-0.29	230.5	-9.6	-0.52
FUFNJ7		243.8	5.8	0.29	264.4	24.3	1.30
G3RZJN	*	185.8	-52.1	-2.58	218.4	-21.7	-1.17
G82DZM		232.5	-5.5	-0.27	247.5	7.4	0.40
GB2PWM		232.0	-6.0	-0.29	221.0	-19.1	-1.03



Rubber Interlaboratory Testing Program

Report #199

Analysis 608

1st Qtr 2019

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
GJHZCA		262.5	24.6	1.21	261.1	20.9	1.12
GK943V	X	301.0	63.0	3.12	310.5	70.4	3.77
GLK6H3		212.5	-25.5	-1.26	231.3	-8.8	-0.47
GP6V98		238.2	0.2	0.01	231.6	-8.5	-0.46
H7M7E7		243.1	5.1	0.25	237.1	-3.0	-0.16
HG7KH9		268.5	30.5	1.51	261.0	20.9	1.12
HPHYZ4		220.5	-17.5	-0.86	225.5	-14.6	-0.78
J99CAM		242.0	4.0	0.20	227.0	-13.1	-0.70
JBWRYW		219.7	-18.2	-0.90	220.5	-19.7	-1.05
JMRXUF		221.2	-16.8	-0.83	248.7	8.6	0.46
JUMZWR		203.0	-35.0	-1.73	226.5	-13.6	-0.73
JVKDGY		207.9	-30.1	-1.49	209.2	-30.9	-1.66
K329XT		239.5	1.5	0.08	246.5	6.4	0.34
L7UUXV		270.6	32.6	1.61	253.3	13.2	0.71
L8MKA2		224.5	-13.5	-0.67	228.0	-12.1	-0.65
LAT39W		271.5	33.5	1.66	262.0	21.9	1.17
LE6VJV	*	283.0	45.0	2.23	250.5	10.4	0.56
M3R736		222.5	-15.5	-0.76	227.5	-12.6	-0.68
MRTDUE	*	211.5	-26.5	-1.31	195.5	-44.6	-2.39
NMV9J8	*	264.5	26.5	1.31	289.5	49.4	2.65
NTEGYQ		237.8	-0.2	-0.01	231.3	-8.9	-0.48
PAKZD9		232.0	-6.0	-0.29	229.0	-11.1	-0.60
PBUA2Z		225.5	-12.5	-0.62	237.7	-2.4	-0.13
PDKAJ6		232.5	-5.5	-0.27	234.5	-5.6	-0.30
QD2PAQ		238.5	0.5	0.03	247.0	6.9	0.37
QMNQQ2		244.7	6.7	0.33	245.7	5.5	0.30
QPV2M6		231.0	-7.0	-0.34	235.5	-4.6	-0.25
QWR2YB		230.7	-7.3	-0.36	254.7	14.6	0.78
TJGA8M		251.0	13.0	0.64	244.0	3.9	0.21
UG4UF8	X	231.1	-6.8	-0.34	277.3	37.2	1.99
UNJVDW	X	373.5	135.5	6.70	343.0	102.9	5.52
UPX3YD		245.9	7.9	0.39	246.9	6.8	0.36
VA7MCT		255.4	17.4	0.86	267.1	27.0	1.45
VNZDNG		202.0	-36.0	-1.78	214.5	-25.6	-1.37
VTU736		254.7	16.7	0.83	273.4	33.3	1.79
VUQLDG		248.7	10.7	0.53	245.4	5.3	0.28
WQKMFT		248.6	10.6	0.53	218.4	-21.7	-1.16



Rubber Interlaboratory Testing Program

Report #199

Analysis 608

1st Qtr 2019

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WQLDLC		256.5	18.5	0.92	254.5	14.4	0.77
X6VQBM		261.1	23.1	1.14	275.6	35.4	1.90
X9G78A	M	218.0	-20.0	-0.99	234.5	-5.6	-0.30
X9KPWX		246.5	8.5	0.42	255.0	14.9	0.80
XAEFZR		218.3	-19.7	-0.97	222.6	-17.5	-0.94
XBNKF2		232.1	-5.9	-0.29	223.4	-16.8	-0.90
XE7RVM		240.0	2.0	0.10	237.0	-3.1	-0.17
XMZXPN		213.2	-24.8	-1.22	208.9	-31.3	-1.68
Y2T3EX		272.9	34.9	1.72	277.3	37.1	1.99
Y6GG48		235.4	-2.6	-0.13	255.8	15.7	0.84
YP2KGJ		240.5	2.5	0.13	233.5	-6.6	-0.36
ZBVNYG		237.1	-0.8	-0.04	220.5	-19.7	-1.05
ZNNB6C		234.9	-3.1	-0.15	239.2	-1.0	-0.05
ZVJ9VL		230.7	-7.3	-0.36	232.6	-7.6	-0.41
ZVLVBE		249.5	11.5	0.57	247.5	7.4	0.40

Summary Statistics	
Grand Means	237.96 psi 240.12 psi
Stnd Dev Btwn Labs	20.23 psi 18.65 psi
Statistics based on 86 of 90 reporting participants	

Summary Statistics in SI Units	
Grand Means	1.6407 MPa 1.66 MPa
Stnd Dev Btwn Labs	0.1395 MPa 0.13 MPa
Statistics based on 86 of 90 reporting participants	

Samples A91-A92: Polyisoprene compound, batch #1 & A93-A94: Polyisoprene compound, batch#2

Comments on Assigned Data Flags for Test #608

GK943V (X) - Data for all samples are high. Possible Systematic Error.

UG4UF8 (X) - Inconsistent in testing between samples.

UNJVDW (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of both sample groups.

X9G78A (M) - Data not reported for Sample A91.



Rubber Interlaboratory Testing Program

Report #199

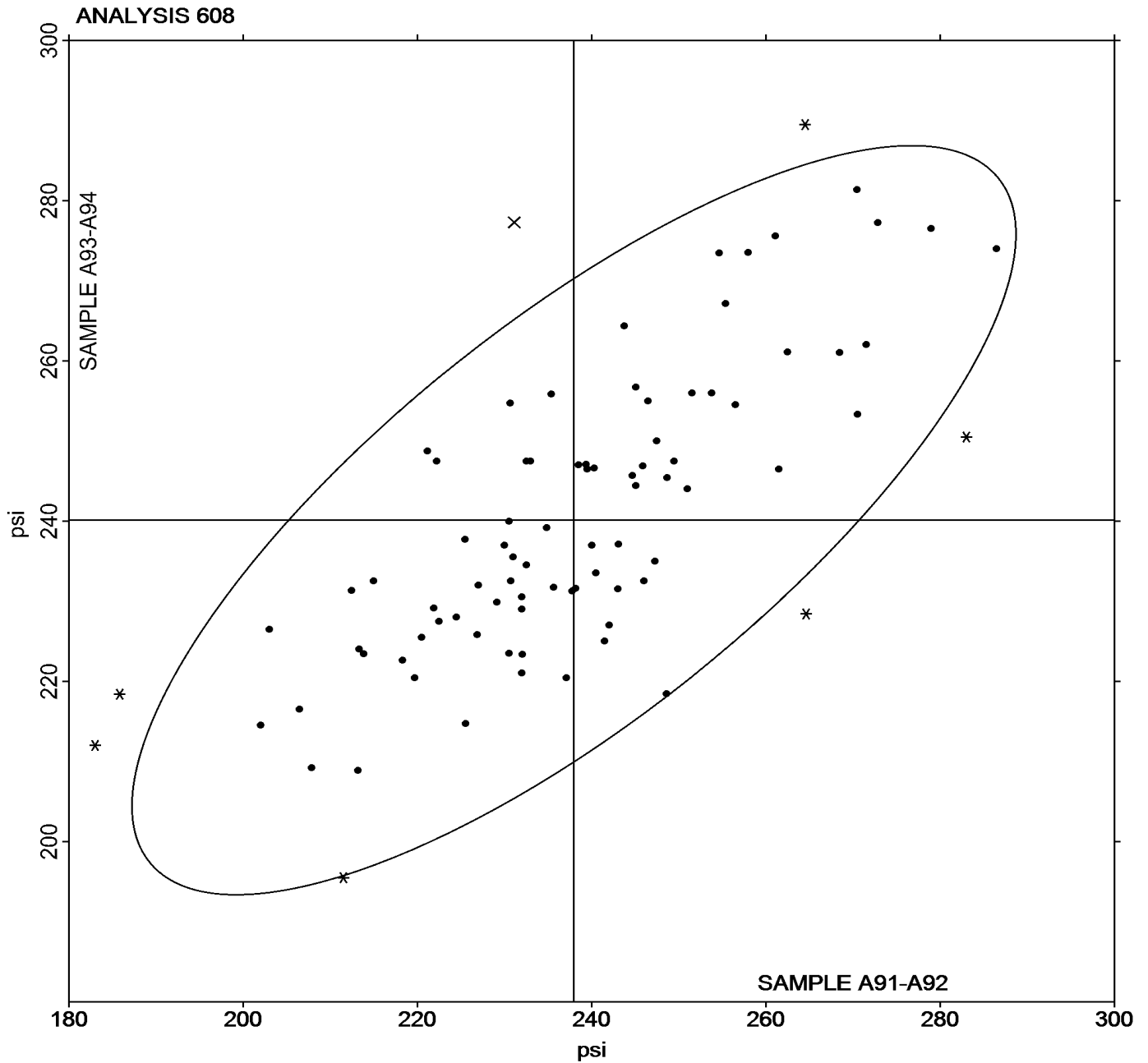
Analysis 608

1st Qtr 2019

Stress at 100% Elongation (psi)

Grand Mean Sample **A91-A92** = 237.96 psi

Grand Mean Sample **A93-A94** = 240.12 psi





Rubber Interlaboratory Testing Program

Report #199

Analysis 620

1st Qtr 2019

Hardness (Shore A/Type A)

WebCode	Data Flag	Sample A91-A92			Sample A93-A94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CNUY9		50.60	-0.68	-0.46	50.55	-1.06	-0.72	BT
2CRHFL		54.00	2.72	1.81	53.50	1.89	1.29	HH
2HDE2N		52.30	1.02	0.68	51.90	0.29	0.20	BT
392HTB	*	54.90	3.62	2.41	55.35	3.74	2.56	XX
3YG99N		51.50	0.22	0.14	51.50	-0.11	-0.07	HH
3YJWQ2		52.50	1.22	0.81	54.00	2.39	1.64	XX
4KCAWB	X	45.00	-6.28	-4.19	47.00	-4.61	-3.15	HH
62Y6RY		50.00	-1.28	-0.86	50.00	-1.61	-1.10	BT
69WUBN	X	45.50	-5.78	-3.86	47.00	-4.61	-3.15	BT
6ARKEG		51.75	0.47	0.31	52.10	0.49	0.34	BT
6JG7KF		51.90	0.62	0.41	51.90	0.29	0.20	BT
6K88Q4		51.50	0.22	0.14	53.00	1.39	0.95	BT
6P4YWE		49.00	-2.28	-1.52	49.50	-2.11	-1.44	BT
6V76BH		50.50	-0.78	-0.52	52.20	0.59	0.41	BT
776G4P		54.15	2.87	1.91	53.25	1.64	1.12	BT
7G9FVC	*	54.40	3.12	2.08	55.35	3.74	2.56	BT
8TTFYJ		52.55	1.27	0.84	53.35	1.74	1.19	BT
8VJG68		54.00	2.72	1.81	53.50	1.89	1.29	BT
8YHRZ8		50.70	-0.58	-0.39	52.10	0.49	0.34	BT
9BAZZZ		52.85	1.57	1.04	53.35	1.74	1.19	BT
A8MNT3		50.50	-0.78	-0.52	52.00	0.39	0.27	HH
ABPGTT		48.00	-3.28	-2.19	49.00	-2.61	-1.78	BT
AFJEFY		50.00	-1.28	-0.86	50.00	-1.61	-1.10	HH
BRRGGM		50.70	-0.58	-0.39	50.75	-0.86	-0.59	BT
BV7ACL		50.00	-1.28	-0.86	50.50	-1.11	-0.76	BT
BWKPH9		50.75	-0.53	-0.36	50.75	-0.86	-0.59	XX
CV8949		50.50	-0.78	-0.52	51.00	-0.61	-0.42	HH
D4A8UL	*	50.75	-0.53	-0.36	49.30	-2.31	-1.58	BT
DCRETE		51.50	0.22	0.14	51.00	-0.61	-0.42	BT
DDJD7C		51.60	0.32	0.21	52.00	0.39	0.27	BT
DR7K8J		53.50	2.22	1.48	53.00	1.39	0.95	BT
DYG7R8		50.00	-1.28	-0.86	50.50	-1.11	-0.76	BT
E7YWR8		50.50	-0.78	-0.52	51.50	-0.11	-0.07	BT
EDZTXY		51.50	0.22	0.14	51.50	-0.11	-0.07	HH
EGENDW		52.50	1.22	0.81	51.95	0.34	0.23	BT
EL66M2		51.50	0.22	0.14	51.50	-0.11	-0.07	BT
EWNG2Y		51.00	-0.28	-0.19	51.00	-0.61	-0.42	HH
EX34GT	X	57.60	6.32	4.21	58.05	6.44	4.41	BT



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample A91-A92			Sample A93-A94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
FKVBPF		50.50	-0.78	-0.52	50.25	-1.36	-0.93	BT
FL93JH		53.25	1.97	1.31	53.25	1.64	1.12	HH
FUFNJ7		52.45	1.17	0.78	53.90	2.29	1.57	BT
G3RZJN		50.15	-1.13	-0.76	50.85	-0.76	-0.52	XX
G82DZM		52.00	0.72	0.48	52.00	0.39	0.27	BT
GB2PWM		50.35	-0.93	-0.62	50.70	-0.91	-0.62	BT
GJHZCA		49.50	-1.78	-1.19	50.50	-1.11	-0.76	HH
GK943V		51.00	-0.28	-0.19	52.00	0.39	0.27	HH
GLK6H3	*	48.00	-3.28	-2.19	50.00	-1.61	-1.10	BT
H7M7E7		54.40	3.12	2.08	54.25	2.64	1.81	BT
HG7KH9		50.55	-0.73	-0.49	50.50	-1.11	-0.76	BT
HPHYZ4		51.55	0.27	0.18	51.80	0.19	0.13	BT
J99CAM		50.00	-1.28	-0.86	50.50	-1.11	-0.76	HH
JBWRYW		52.00	0.72	0.48	52.00	0.39	0.27	BT
JMRXUF		50.00	-1.28	-0.86	50.00	-1.61	-1.10	BT
JUMZWR		49.50	-1.78	-1.19	50.00	-1.61	-1.10	HH
JVKDGY		54.00	2.72	1.81	54.00	2.39	1.64	BT
K329XT		51.50	0.22	0.14	52.50	0.89	0.61	BT
L7UUXV		52.10	0.82	0.54	51.65	0.04	0.03	BT
L8MKA2		50.95	-0.33	-0.22	50.85	-0.76	-0.52	BT
LAT39W		52.50	1.22	0.81	53.50	1.89	1.29	BT
LE6VJV		49.50	-1.78	-1.19	49.00	-2.61	-1.78	BT
LHN92X		50.00	-1.28	-0.86	50.00	-1.61	-1.10	BT
M3R736		50.00	-1.28	-0.86	50.00	-1.61	-1.10	BT
MRTDUE	*	53.00	1.72	1.14	51.50	-0.11	-0.07	BT
NMV9J8		50.00	-1.28	-0.86	50.00	-1.61	-1.10	HH
NTEGYQ		51.00	-0.28	-0.19	51.50	-0.11	-0.07	BT
PAKZD9		50.50	-0.78	-0.52	52.00	0.39	0.27	BT
PBUA2Z		51.60	0.32	0.21	52.55	0.94	0.64	BT
PDKAJ6		51.50	0.22	0.14	51.25	-0.36	-0.24	BT
PHDHKP		48.50	-2.78	-1.86	49.00	-2.61	-1.78	BT
QD2PAQ	*	55.00	3.72	2.48	55.50	3.89	2.66	BT
QMNQQ2		51.50	0.22	0.14	51.50	-0.11	-0.07	BT
QPV2M6		50.00	-1.28	-0.86	50.00	-1.61	-1.10	HH
QWR2YB		51.50	0.22	0.14	52.00	0.39	0.27	HH
THJWP2		52.00	0.72	0.48	53.00	1.39	0.95	BT
TJGA8M		49.60	-1.68	-1.12	49.00	-2.61	-1.78	BT



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample A91-A92			Sample A93-A94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
UG4UF8		51.00	-0.28	-0.19	52.00	0.39	0.27	HH
UNJVDW		50.65	-0.63	-0.42	50.80	-0.81	-0.55	BT
UPX3YD		52.50	1.22	0.81	53.00	1.39	0.95	HH
VA7MCT		50.00	-1.28	-0.86	50.00	-1.61	-1.10	HH
VNZDNG		51.65	0.37	0.24	53.60	1.99	1.36	BT
VTU736		51.00	-0.28	-0.19	52.25	0.64	0.44	HH
VUQLDG		50.50	-0.78	-0.52	50.00	-1.61	-1.10	BT
WQKMFT		50.90	-0.38	-0.26	50.45	-1.16	-0.79	BT
WQLDLC		51.55	0.27	0.18	51.55	-0.06	-0.04	BT
WWUJHH		51.50	0.22	0.14	52.50	0.89	0.61	BT
X6VQBM		49.35	-1.93	-1.29	50.50	-1.11	-0.76	BT
X9G78A		51.00	-0.28	-0.19	51.00	-0.61	-0.42	HH
X9KPWX		51.95	0.67	0.44	51.85	0.24	0.17	HH
XAEFZR		51.80	0.52	0.34	52.50	0.89	0.61	BT
XBNKF2		50.85	-0.43	-0.29	51.45	-0.16	-0.11	BT
XE7RVM		53.50	2.22	1.48	53.00	1.39	0.95	HH
XMZXPN		50.50	-0.78	-0.52	51.00	-0.61	-0.42	HH
Y2T3EX		51.10	-0.18	-0.12	52.30	0.69	0.47	XX
Y6GG48		50.45	-0.83	-0.56	51.10	-0.51	-0.35	BT
YP2KGJ		52.70	1.42	0.94	52.40	0.79	0.54	BT
ZBVNYG	X	52.00	0.72	0.48	49.50	-2.11	-1.44	BT
ZNNB6C		53.50	2.22	1.48	52.50	0.89	0.61	HH
ZVJ9VL	*	47.50	-3.78	-2.52	49.00	-2.61	-1.78	BT
ZVLVBE		51.25	-0.03	-0.02	51.50	-0.11	-0.07	HH

Grand Means		Summary Statistics	
	51.285 Type A		51.607 Type A
Stnd Dev Btwn Labs			
	1.500 Type A		1.463 Type A
Statistics based on 95 of 99 reporting participants			

Samples A91-A92: Polyisoprene compound, batch #1 & A93-A94: Polyisoprene compound, batch#2

Comments on Assigned Data Flags for Test #620

- 4KCAWB (X) - Data for all samples are low. Possible Systematic Error.
- 69WUBN (X) - Data for all samples are low. Possible Systematic Error.
- EX34GT (X) - Data for all samples are high. Possible Systematic Error.
- ZBVNYG (X) - Inconsistent in testing between samples.



Rubber Interlaboratory Testing Program

Analysis 620

Hardness (Shore A/Type A)

Key to Instrument Codes Reported by Participants

BT Benchtop
XX Specify Benchtop or Handheld Instrument
HH Handheld

Results by Reading Time (as reported by laboratory)

Reading Time	Sample A91-A92 <i>Polyisoprene compound, batch #1</i>			Sample A93-A94 <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	52.50	0.00	1.22	54.00	0.00	2.39	1 2
Readings taken within 0 - 5 seconds	51.34	1.29	0.05	51.63	1.22	0.02	64 68
Readings taken at 5 seconds	50.53	1.33	-0.75	51.02	1.71	-0.59	11 13
Readings taken after 5+ seconds	50.58	0.84	-0.71	50.76	0.50	-0.85	6 7
Maximum hardness indicator used	51.87	1.18	0.58	52.13	0.86	0.53	6 9

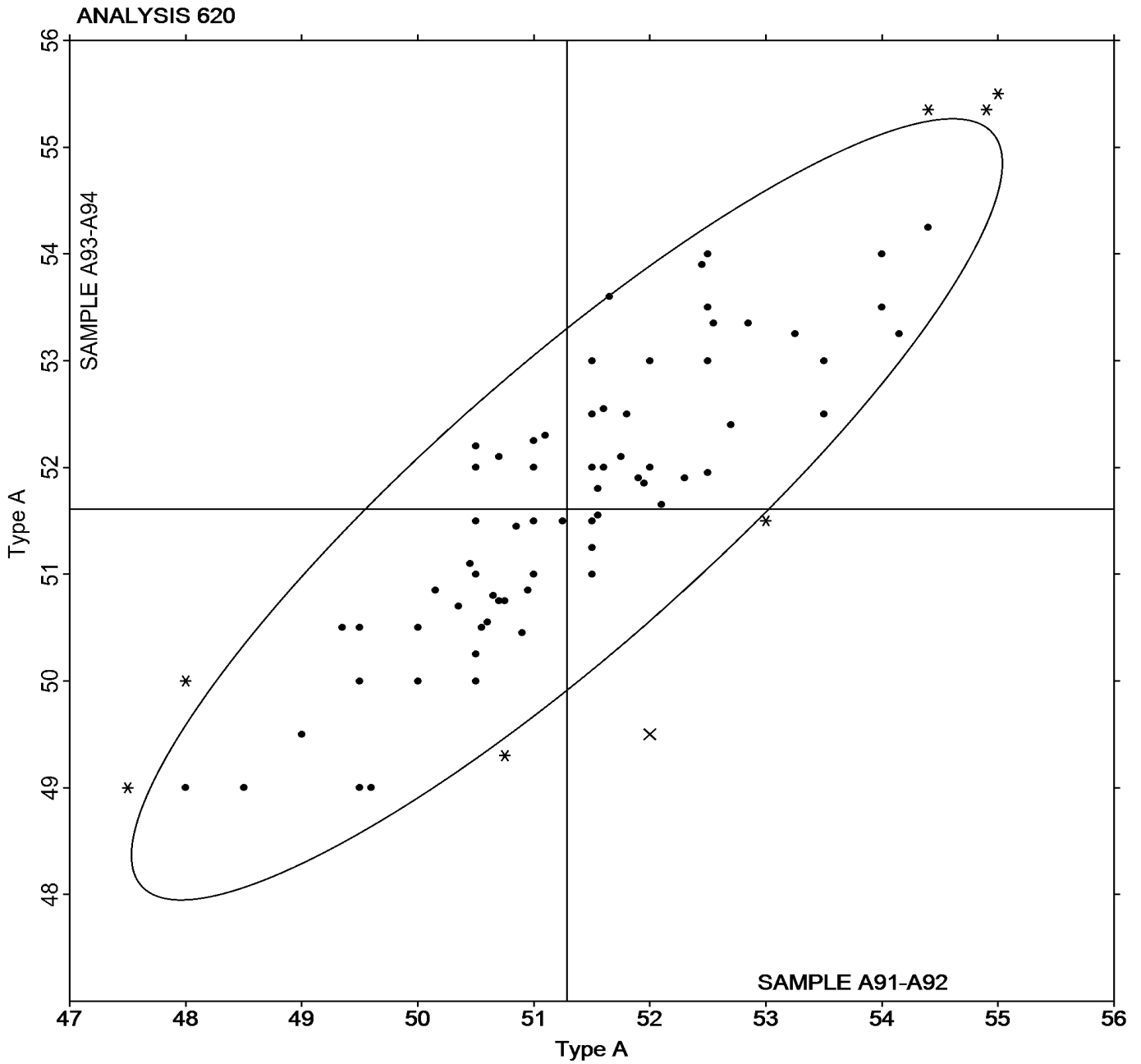


Rubber Interlaboratory Testing Program
Analysis 620
Hardness (Shore A/Type A)

Report #199
1st Qtr 2019

Grand Mean Sample **A91-A92** = 51.285 Type A

Grand Mean Sample **A93-A94** = 51.607 Type A





Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CRHFL		1.134	-0.003	-1.00	1.136	-0.001	-0.27
2HDE2N		1.141	0.004	1.25	1.142	0.004	1.50
392HTB		1.134	-0.003	-0.91	1.136	-0.002	-0.58
3YG99N		1.138	0.001	0.43	1.138	0.001	0.41
4KCAWB		1.131	-0.006	-2.00	1.130	-0.007	-2.48
62Y6RY		1.141	0.004	1.25	1.140	0.003	0.98
6ARKEG		1.134	-0.003	-0.79	1.137	0.000	-0.04
6JG7KF		1.138	0.001	0.17	1.138	0.001	0.29
6K88Q4		1.140	0.003	0.98	1.142	0.004	1.54
6V76BH		1.134	-0.003	-0.80	1.137	0.000	-0.13
7G9FVC		1.139	0.002	0.64	1.140	0.003	0.98
8VJG68		1.132	-0.005	-1.69	1.133	-0.004	-1.44
8YHRZ8		1.133	-0.004	-1.22	1.133	-0.005	-1.62
9BAZZXZ		1.135	-0.002	-0.71	1.136	-0.001	-0.34
A8MNT3		1.140	0.003	0.95	1.141	0.003	1.16
ABPGTT		1.138	0.001	0.17	1.137	-0.001	-0.23
AFJEFY		1.135	-0.002	-0.60	1.135	-0.002	-0.75
BRRGGM		1.138	0.001	0.40	1.138	0.000	0.17
BV7ACL		1.135	-0.002	-0.53	1.135	-0.002	-0.84
BWKPH9		1.137	0.000	-0.09	1.137	-0.001	-0.18
D4A8UL		1.136	-0.001	-0.29	1.136	-0.001	-0.27
DCRETE		1.138	0.001	0.19	1.136	-0.001	-0.25
DDJD7C		1.133	-0.004	-1.16	1.133	-0.004	-1.31
DR7K8J		1.140	0.003	0.79	1.141	0.003	1.16
E7YWR8		1.137	0.000	-0.14	1.137	-0.001	-0.23
EGENDW		1.140	0.003	0.93	1.140	0.003	0.95
EL66M2		1.140	0.003	0.81	1.138	0.001	0.31
EX34GT		1.135	-0.002	-0.60	1.136	-0.001	-0.40
FKVBPF		1.136	-0.001	-0.29	1.136	-0.001	-0.40
FUFNJ7		1.132	-0.005	-1.53	1.131	-0.006	-2.14
G3RZJN		1.139	0.002	0.73	1.137	0.000	-0.16
G82DZM		1.138	0.001	0.25	1.138	0.001	0.39
GB2PWM		1.137	0.000	0.03	1.138	0.001	0.34
GJHZCA		1.130	-0.007	-2.15	1.130	-0.007	-2.48
GK943V		1.141	0.004	1.10	1.137	0.000	-0.06
GLK6H3		1.144	0.007	2.18	1.144	0.007	2.37
GP6V98		1.143	0.006	1.83	1.143	0.006	1.99



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample A91-A92			Sample A93-A94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
H7M7E7		1.134	-0.003	-0.79	1.135	-0.002	-0.77
HPHYZ4		1.133	-0.004	-1.28	1.137	-0.001	-0.21
J99CAM	X	1.137	0.001	0.16	1.132	-0.005	-1.72
JMRXUF		1.136	-0.001	-0.42	1.137	0.000	0.03
JUMZWR		1.140	0.003	0.95	1.140	0.002	0.81
JVKDGY		1.141	0.004	1.18	1.137	0.000	0.05
K329XT		1.131	-0.006	-1.75	1.131	-0.006	-2.24
L7UUXV		1.137	0.000	-0.14	1.138	0.001	0.29
L8MKA2		1.133	-0.004	-1.27	1.134	-0.003	-0.99
LAT39W		1.135	-0.002	-0.73	1.136	-0.001	-0.35
LE6VJV		1.140	0.003	0.95	1.137	0.000	-0.06
LHN92X		1.136	-0.001	-0.29	1.136	-0.001	-0.40
M3R736		1.136	0.000	-0.15	1.139	0.002	0.79
NMV9J8		1.135	-0.002	-0.60	1.136	-0.001	-0.37
PBUA2Z		1.143	0.006	1.73	1.143	0.005	1.85
QD2PAQ		1.136	-0.001	-0.37	1.137	-0.001	-0.18
QMNQQ2		1.137	0.000	0.06	1.136	-0.001	-0.46
QPV2M6		1.141	0.004	1.25	1.141	0.004	1.33
QWR2YB		1.140	0.003	0.85	1.139	0.001	0.46
UG4UF8		1.137	0.000	0.14	1.140	0.003	1.07
UNJVDW		1.133	-0.004	-1.19	1.136	-0.001	-0.32
VA7MCT		1.133	-0.004	-1.22	1.135	-0.003	-0.92
VNZDNG		1.144	0.007	2.18	1.141	0.004	1.33
VUQLDG		1.132	-0.005	-1.41	1.136	-0.001	-0.46
WQLDLC		1.137	0.000	-0.11	1.137	0.000	-0.13
WWUJHH		1.140	0.003	0.95	1.142	0.004	1.50
X9G78A		1.141	0.004	1.16	1.140	0.003	1.10
X9KPWX		1.139	0.002	0.56	1.139	0.002	0.72
XBNKF2		1.137	0.000	-0.03	1.137	0.000	-0.01
XE7RVM		1.139	0.002	0.64	1.138	0.000	0.12
Y6GG48	X	1.127	-0.010	-3.13	1.127	-0.010	-3.63
YP2KGJ		1.138	0.001	0.37	1.135	-0.002	-0.70
ZBVNYG		1.138	0.001	0.33	1.137	0.000	-0.06
ZNNB6C	X	1.120	-0.017	-5.40	1.120	-0.017	-5.95
ZTFDCJ		1.137	0.000	0.02	1.136	-0.001	-0.34
ZVJ9VL		1.137	0.000	-0.14	1.136	-0.001	-0.40



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #199
1st Qtr 2019

		Summary Statistics	
Grand Means	1.1369 g/cm ³ (Mg/m ³)	1.1372 g/cm ³ (Mg/m ³)	
Stnd Dev Btwn Labs	0.0032 g/cm ³ (Mg/m ³)	0.0029 g/cm ³ (Mg/m ³)	

Statistics based on 70 of 73 reporting participants

Samples A91-A92: Polyisoprene compound, batch #1 & A93-A94: Polyisoprene compound, batch#2

Comments on Assigned Data Flags for Test #621

- J99CAM (X) - Inconsistent in testing between samples.
- Y6GG48 (X) - Data for all samples are low. Possible Systematic Error.
- ZNNB6C (X) - Data for all samples are low. Possible Systematic Error.



Rubber Interlaboratory Testing Program

Report #199

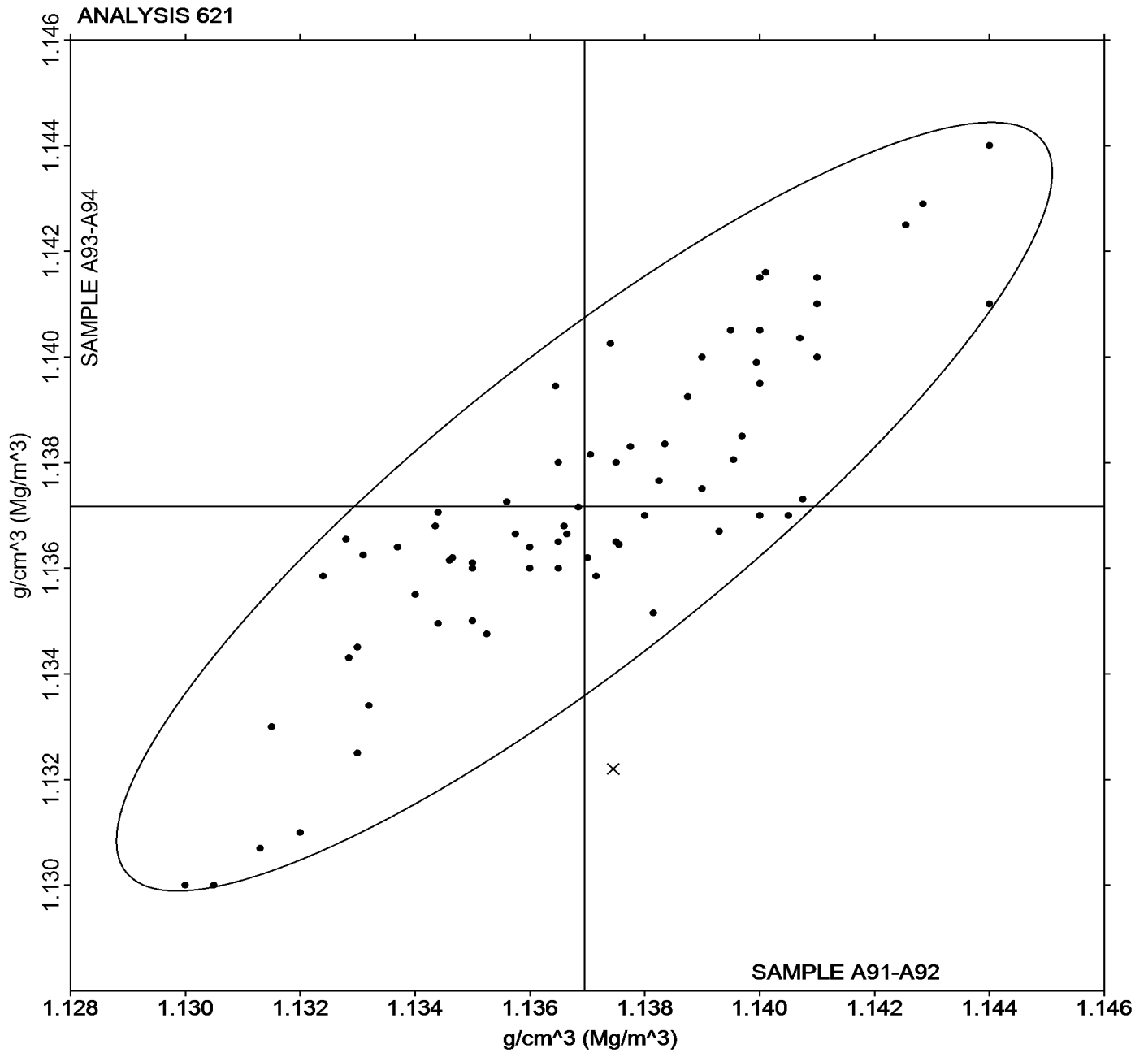
Analysis 621

1st Qtr 2019

Density

Grand Mean Sample **A91-A92** = 1.1369 g/cm³
(Mg/m³)

Grand Mean Sample **A93-A94** = 1.1372 g/cm³
(Mg/m³)





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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample HA91-HA92			Sample HA93-HA94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2DL8JF		69.20	1.64	0.43	55.95	2.53	0.69	HH
3YJWQ2		69.00	1.44	0.37	57.50	4.08	1.11	XX
6LJ97B		67.10	-0.46	-0.12	51.95	-1.47	-0.40	BT
9QMAY4		68.00	0.44	0.11	54.50	1.08	0.29	BT
B4HBPA		66.50	-1.06	-0.27	50.50	-2.92	-0.79	BT
BDBGQN		67.00	-0.56	-0.15	54.50	1.08	0.29	BT
BRPUZ9		68.50	0.94	0.24	55.50	2.08	0.57	HH
EWQ6LJ		69.45	1.89	0.49	56.20	2.78	0.76	BT
G8ZQF3		63.00	-4.56	-1.18	49.25	-4.17	-1.13	BT
NMV9J8	X	13.50	-54.06	-14.01	14.00	-39.42	-10.71	HH
PBUA2Z		68.15	0.59	0.15	54.05	0.63	0.17	BT
U7N3RX	*	79.00	11.44	2.97	61.50	8.08	2.20	XX
UXBAG3		62.50	-5.06	-1.31	48.00	-5.42	-1.47	BT
X6VQBM		64.65	-2.91	-0.75	49.55	-3.87	-1.05	BT
XAEFZR		67.10	-0.46	-0.12	52.60	-0.82	-0.22	BT
XHN6EP		64.25	-3.31	-0.86	49.75	-3.67	-1.00	BT

Grand Means		Summary Statistics	
	67.560 Type D		53.420 Type D
Std Dev Btwn Labs	3.857 Type D		3.681 Type D
Statistics based on 15 of 16 reporting participants			

Samples HA91-HA92: Hardness Disc, batch #1 & HA93-HA94: Hardness Disc, batch #2

Comments on Assigned Data Flags for Test #625

NMV9J8 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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

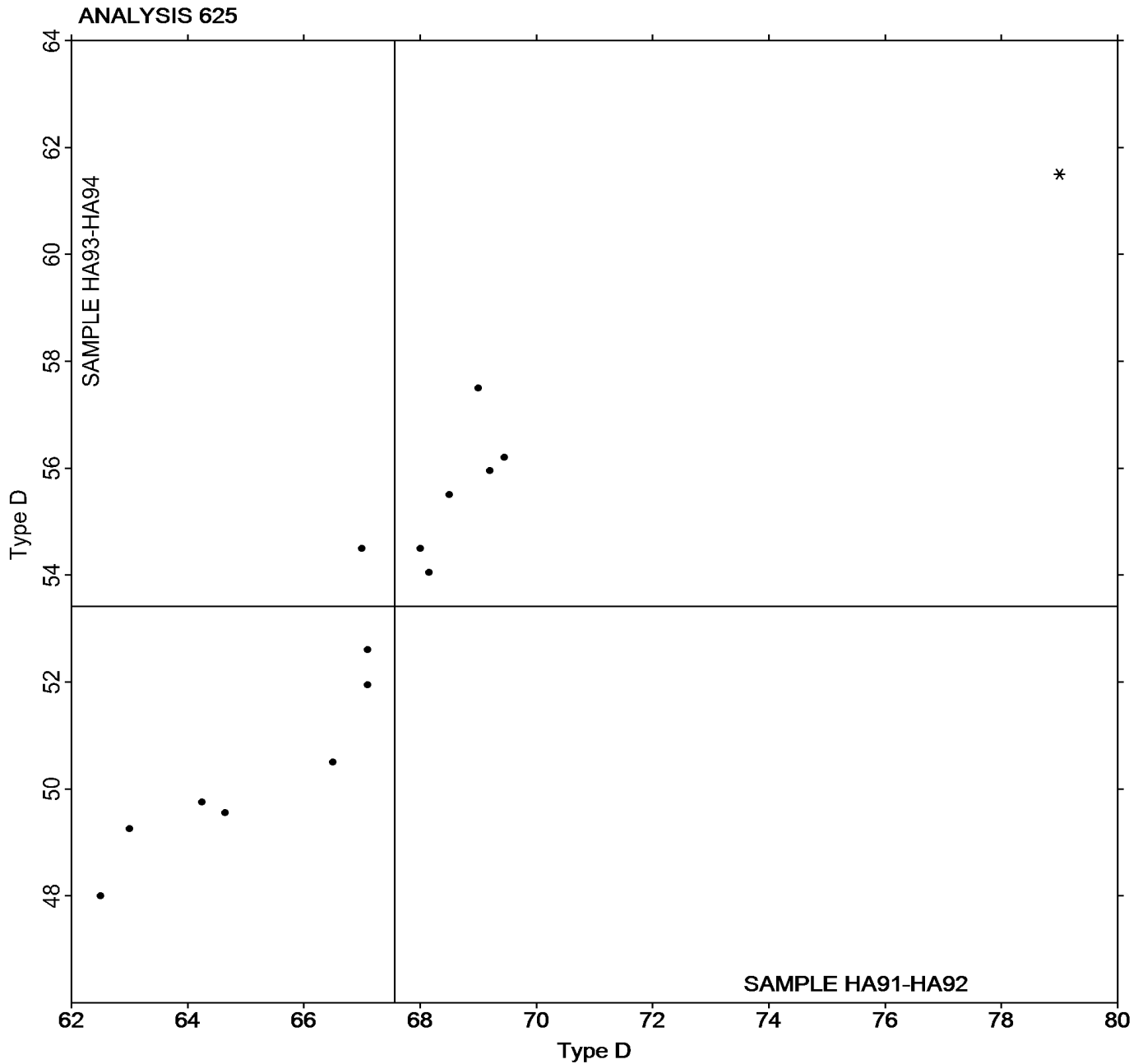


Rubber Interlaboratory Testing Program
Analysis 625
Hardness (Shore D/Type D)

Report #199
1st Qtr 2019

Grand Mean Sample HA91-HA92 = 67.560 Type D

Grand Mean Sample HA93-HA94 = 53.420 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 #199

Analysis 630

1st Qtr 2019

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

WebCode	Data Flag	Sample A91-A92			Sample J91-J92		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CRHFL		3,359.9	40.3	0.29	3,161.6	29.6	0.14
392HTB		3,095.0	-224.6	-1.64	2,872.5	-259.5	-1.27
62Y6RY		3,278.0	-41.6	-0.30	2,836.0	-296.0	-1.44
6K88Q4	X	2,580.0	-739.6	-5.40	3,166.0	34.0	0.17
8TTFYJ		3,342.5	22.9	0.17	3,279.0	147.0	0.72
8YHRZ8		3,169.1	-150.5	-1.10	3,050.2	-81.8	-0.40
9BAZXZ		3,581.5	261.9	1.91	3,527.5	395.5	1.93
A8MNT3		3,040.0	-279.6	-2.04	2,838.5	-293.5	-1.43
ABPGTT		3,419.2	99.6	0.73	3,423.3	291.3	1.42
BRRGGM	X	2,838.0	-481.6	-3.52	3,274.5	142.5	0.70
DCRETE	X	3,343.1	23.6	0.17	2,584.1	-547.9	-2.67
E7YWR8		3,389.5	69.9	0.51	3,203.0	71.0	0.35
EGENDW		3,369.4	49.8	0.36	3,190.5	58.5	0.29
FUFNJ7		3,246.7	-72.9	-0.53	2,866.7	-265.3	-1.30
GP6V98		3,348.8	29.2	0.21	3,160.6	28.5	0.14
H7M7E7		3,490.7	171.1	1.25	3,384.3	252.3	1.23
JUMZWR		3,300.0	-19.6	-0.14	3,220.0	88.0	0.43
L8MKA2		3,370.5	50.9	0.37	3,087.5	-44.5	-0.22
LE6VJV		3,361.0	41.4	0.30	3,051.5	-80.5	-0.39
PAKZD9		3,394.5	74.9	0.55	3,083.0	-49.0	-0.24
PBUA2Z		3,267.3	-52.3	-0.38	3,184.9	52.8	0.26
QPV2M6		3,147.0	-172.6	-1.26	2,833.0	-299.0	-1.46
UPX3YD		3,490.2	170.6	1.25	3,336.4	204.4	1.00
VA7MCT		3,392.2	72.6	0.53	3,253.8	121.8	0.59
VNZDNG		3,294.5	-25.1	-0.18	3,124.0	-8.0	-0.04
X9KPWX		3,261.0	-58.6	-0.43	2,784.0	-348.0	-1.70
XAEFZR		3,190.9	-128.7	-0.94	3,089.3	-42.7	-0.21
XMZXPN		3,062.5	-257.1	-1.88	2,772.4	-359.6	-1.76
Y2T3EX		3,288.1	-31.5	-0.23	3,170.5	38.5	0.19
Y6GG48		3,246.9	-72.7	-0.53	3,160.6	28.6	0.14
YP2KGJ		3,487.0	167.4	1.22	3,284.5	152.5	0.74
ZNNB6C		3,582.9	263.3	1.92	3,429.5	297.4	1.45
ZVJ9VL		3,321.3	1.7	0.01	3,301.7	169.6	0.83



Rubber Interlaboratory Testing Program

Report #199

Analysis 630

1st Qtr 2019

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

		Summary Statistics	
Grand Means	3,319.59 psi		3,132.00 psi
Stnd Dev Btwn Labs	136.96 psi		204.89 psi
Statistics based on 30 of 33 reporting participants			

		Summary Statistics in SI Units	
Grand Means	22.888 MPa		21.59 MPa
Stnd Dev Btwn Labs	0.944 MPa		1.41 MPa
Statistics based on 30 of 33 reporting participants			

Samples A91-A92: Polyisoprene compound, batch #1 & J91-J92: Polyisoprene compound, batch #1

Comments on Assigned Data Flags for Test #630

6K88Q4 (X) - Data for sample group A91-A92 are low. Inconsistent within the determinations of sample group A91-A92.

BRRGGM (X) - Data for sample group A91-A92 are low.

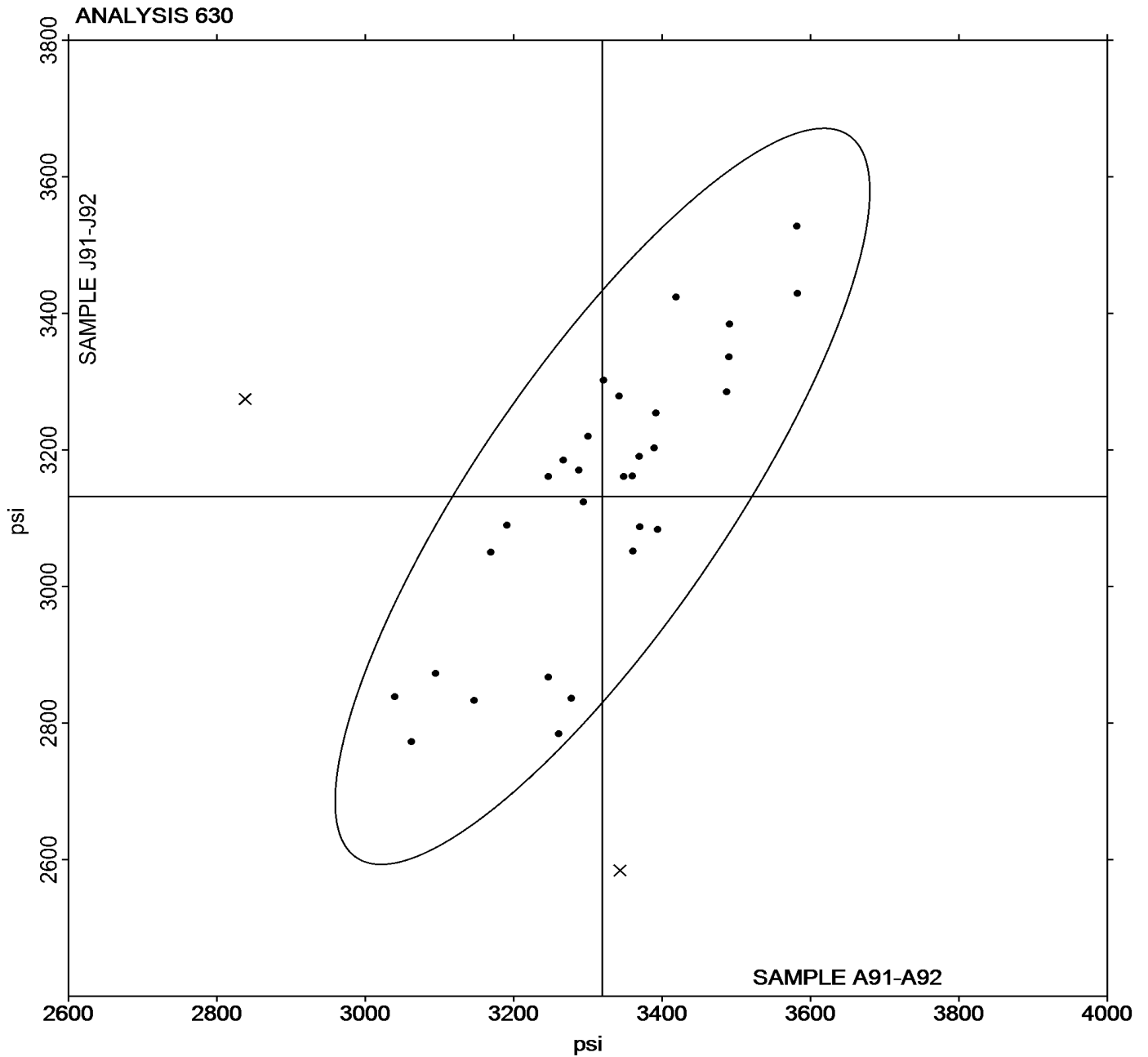
DCRETE (X) - Data for sample group J91-J92 are low.



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

Grand Mean Sample A91-A92 = 3,319.59 psi

Grand Mean Sample J91-J92 = 3,132.00 psi





Rubber Interlaboratory Testing Program

Report #199

Analysis 631

1st Qtr 2019

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

WebCode	Data Flag	Sample A91-A92			Sample J91-J92		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CRHFL		613.0	7.7	0.22	578.0	5.9	0.20
392HTB		572.0	-33.3	-0.94	548.5	-23.6	-0.80
62Y6RY		596.0	-9.3	-0.26	563.5	-8.6	-0.29
6K88Q4		600.5	-4.8	-0.14	585.0	12.9	0.44
8TTFYJ		552.0	-53.3	-1.50	518.0	-54.1	-1.84
8YHRZ8		587.5	-17.8	-0.50	548.5	-23.6	-0.80
9BAZXZ		632.5	27.2	0.76	609.5	37.4	1.27
A8MNT3		519.0	-86.3	-2.43	523.5	-48.6	-1.65
ABPGTT	X	719.4	114.0	3.21	710.7	138.6	4.71
BRRGGM		588.0	-17.3	-0.49	602.0	29.9	1.02
DCRETE		627.3	22.0	0.62	580.0	7.9	0.27
E7YWR8		619.0	13.7	0.38	555.0	-17.1	-0.58
EGENDW		630.2	24.8	0.70	583.2	11.0	0.38
FUFNJ7		593.0	-12.3	-0.35	536.0	-36.1	-1.23
GP6V98		603.0	-2.3	-0.07	568.5	-3.6	-0.12
H7M7E7		628.5	23.2	0.65	624.7	52.6	1.78
JUMZWR		642.5	37.2	1.05	589.0	16.9	0.57
L8MKA2		654.5	49.2	1.38	629.0	56.9	1.93
LE6VJV	*	508.0	-97.3	-2.74	525.5	-46.6	-1.58
PAKZD9		594.0	-11.3	-0.32	542.0	-30.1	-1.02
PBUA2Z		595.5	-9.8	-0.28	572.0	-0.1	0.00
QPV2M6		596.0	-9.3	-0.26	551.5	-20.6	-0.70
UPX3YD		624.5	19.1	0.54	571.3	-0.8	-0.03
VA7MCT		600.4	-4.9	-0.14	567.8	-4.3	-0.15
VNZNNG		674.0	68.7	1.93	586.5	14.4	0.49
X9KPWX		602.5	-2.8	-0.08	575.5	3.4	0.12
XAEFZR		605.5	0.2	0.00	559.1	-13.1	-0.44
XMZXPN		659.5	54.2	1.52	631.5	59.4	2.02
Y2T3EX		578.0	-27.4	-0.77	545.3	-26.8	-0.91
Y6GG48		616.8	11.4	0.32	591.0	18.9	0.64
YP2KGJ		608.0	2.7	0.07	568.5	-3.6	-0.12
ZNNB6C		646.8	41.5	1.17	608.2	36.1	1.23
ZVJ9VL		602.8	-2.5	-0.07	569.9	-2.3	-0.08



Rubber Interlaboratory Testing Program

Report #199

Analysis 631

1st Qtr 2019

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

		Summary Statistics	
Grand Means	605.34 percent	572.10 percent	
Stnd Dev Btwn Labs	35.54 percent	29.45 percent	
Statistics based on 32 of 33 reporting participants			

Samples A91-A92: Polyisoprene compound, batch #1 & J91-J92: Polyisoprene compound, batch #1

Comments on Assigned Data Flags for Test #631

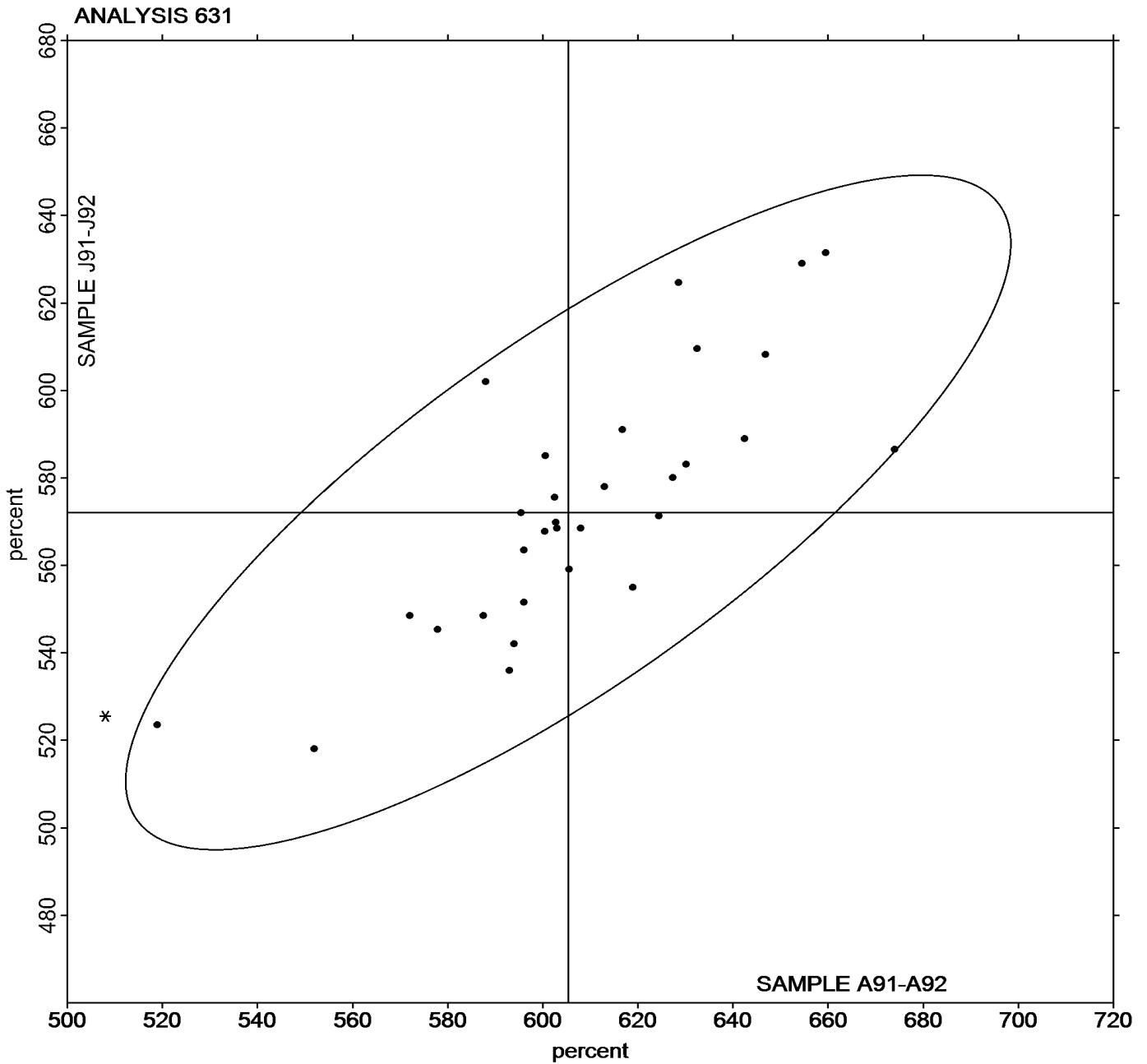
ABPGTT (X) - Data for all samples are high.



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

Grand Mean Sample A91-A92 = 605.34 percent

Grand Mean Sample J91-J92 = 572.10 percent





Rubber Interlaboratory Testing Program

Report #199

Analysis 632

1st Qtr 2019

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

WebCode	Data Flag	Sample A91-A92			Sample J91-J92		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CRHFL		1,057.5	9.3	0.08	1,139.5	29.1	0.24
392HTB		1,076.5	28.3	0.23	1,077.0	-33.4	-0.27
62Y6RY		1,099.0	50.8	0.42	983.0	-127.4	-1.04
6K88Q4		812.0	-236.2	-1.94	1,092.5	-17.9	-0.15
8TTFYJ	*	1,288.5	240.3	1.97	1,434.5	324.1	2.63
8YHRZ8		1,092.9	44.7	0.37	1,187.1	76.7	0.62
9BAZXZ		1,095.0	46.8	0.38	1,122.0	11.6	0.09
A8MNT3		1,255.0	206.8	1.70	1,092.5	-17.9	-0.15
ABPGTT		871.8	-176.4	-1.45	941.9	-168.5	-1.37
BRRGGM		913.5	-134.7	-1.11	1,108.0	-2.4	-0.02
DCRETE		1,029.6	-18.6	-0.15	834.4	-276.0	-2.24
E7YWR8		1,012.5	-35.7	-0.29	1,224.0	113.6	0.92
EGENDW		1,009.1	-39.1	-0.32	1,089.9	-20.5	-0.17
FUFNJ7		1,064.5	16.3	0.13	1,153.8	43.4	0.35
GP6V98		1,073.5	25.3	0.21	1,130.5	20.0	0.16
H7M7E7		1,033.2	-15.0	-0.12	1,016.3	-94.1	-0.77
JUMZWR		892.5	-155.7	-1.28	1,130.5	20.1	0.16
L8MKA2		994.5	-53.7	-0.44	964.5	-145.9	-1.19
LE6VJV	*	1,389.5	341.3	2.80	1,171.0	60.6	0.49
PAKZD9		1,034.5	-13.7	-0.11	1,124.5	14.1	0.11
PBUA2Z		1,040.5	-7.7	-0.06	1,148.2	37.8	0.31
QPV2M6		1,041.0	-7.2	-0.06	1,106.0	-4.4	-0.04
UPX3YD		1,090.2	42.0	0.35	1,258.1	147.7	1.20
VA7MCT		1,151.4	103.2	0.85	1,286.1	175.7	1.43
VNZDNG		859.0	-189.2	-1.55	1,068.5	-41.9	-0.34
X9KPWX		1,062.0	13.8	0.11	969.0	-141.4	-1.15
XAEFZR		1,017.4	-30.7	-0.25	1,176.3	65.9	0.54
XMZXPN		842.0	-206.2	-1.69	819.5	-290.9	-2.36
Y2T3EX		1,175.4	127.2	1.05	1,277.8	167.4	1.36
Y6GG48		1,025.0	-23.2	-0.19	1,065.7	-44.7	-0.36
YP2KGJ		1,110.0	61.8	0.51	1,162.0	51.6	0.42
ZNNB6C		1,030.9	-17.2	-0.14	1,138.5	28.0	0.23
ZVJ9VL		1,050.4	2.2	0.02	1,150.6	40.1	0.33



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

		Summary Statistics	
Grand Means			
	1,048.19 psi		1,110.41 psi
Std Dev Btwn Labs			
	121.72 psi		123.04 psi
Statistics based on 33 of 33 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	7.2269 MPa		7.66 MPa
Std Dev Btwn Labs			
	0.8392 MPa		0.85 MPa
Statistics based on 33 of 33 reporting participants			

Samples A91-A92: Polyisoprene compound, batch #1 & J91-J92: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #199

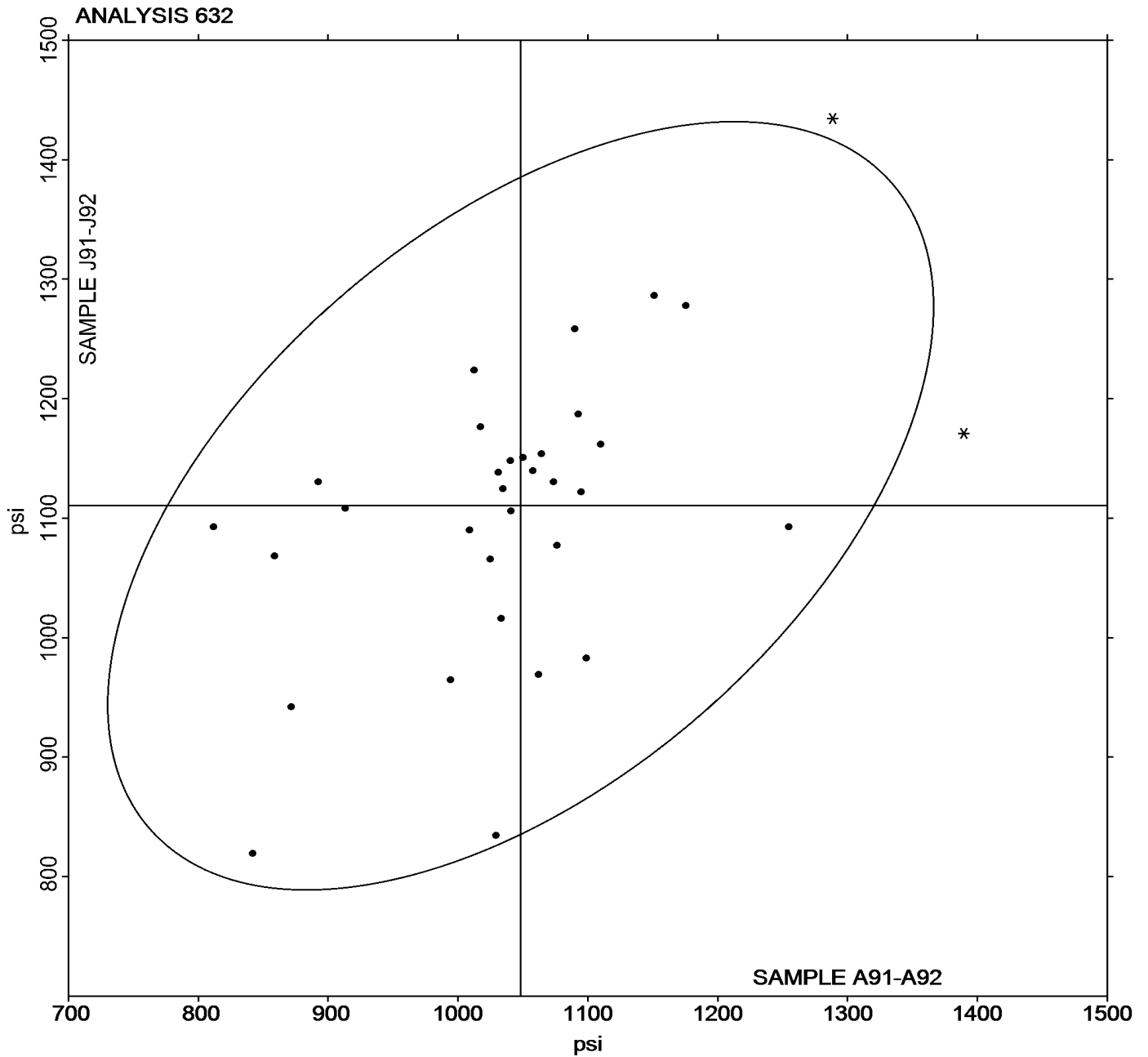
Analysis 632

1st Qtr 2019

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

Grand Mean Sample A91-A92 = 1,048.19 psi

Grand Mean Sample J91-J92 = 1,110.41 psi





Rubber Interlaboratory Testing Program

Report #199

Analysis 633

1st Qtr 2019

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

WebCode	Data Flag	Sample A91-A92			Sample J91-J92		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2CRHFL		233.0	-3.1	-0.15	261.5	9.3	0.41
392HTB		246.0	9.9	0.47	249.0	-3.2	-0.14
62Y6RY		243.0	6.9	0.33	218.0	-34.2	-1.49
6K88Q4	*	183.0	-53.1	-2.52	253.0	0.8	0.04
8TTFYJ		258.0	21.9	1.04	289.5	37.3	1.63
8YHRZ8		245.1	9.0	0.43	272.7	20.5	0.90
9BAZXZ		247.5	11.4	0.54	255.0	2.8	0.12
A8MNT3		279.0	42.9	2.03	260.0	7.8	0.34
ABPGTT		240.3	4.2	0.20	264.4	12.2	0.54
BRRGGM		206.5	-29.6	-1.41	246.0	-6.2	-0.27
DCRETE	*	235.6	-0.5	-0.02	191.5	-60.6	-2.65
E7YWR8		230.0	-6.1	-0.29	281.0	28.8	1.26
EGENDW		225.6	-10.6	-0.50	245.7	-6.5	-0.28
FUFNJ7		243.8	7.6	0.36	268.6	16.4	0.72
GP6V98		238.2	2.1	0.10	256.1	3.9	0.17
H7M7E7		243.1	7.0	0.33	247.0	-5.2	-0.23
JUMZWR		203.0	-33.1	-1.57	259.0	6.8	0.30
L8MKA2		224.5	-11.6	-0.55	215.0	-37.2	-1.63
LE6VJV		283.0	46.9	2.22	256.5	4.3	0.19
PAKZD9		232.0	-4.1	-0.20	251.0	-1.2	-0.05
PBUA2Z		225.5	-10.6	-0.50	260.3	8.1	0.35
QPV2M6		231.0	-5.1	-0.24	249.0	-3.2	-0.14
UPX3YD		245.9	9.8	0.46	262.6	10.4	0.45
VA7MCT		255.4	19.2	0.91	289.2	37.0	1.62
VNZNNG		202.0	-34.1	-1.62	252.0	-0.2	-0.01
X9KPWX		246.5	10.4	0.49	215.0	-37.2	-1.63
XAEFZR		218.3	-17.8	-0.85	254.5	2.4	0.10
XMZXPN		213.2	-22.9	-1.09	201.6	-50.6	-2.21
Y2T3EX		272.9	36.7	1.74	286.7	34.5	1.51
Y6GG48		235.4	-0.7	-0.03	238.9	-13.3	-0.58
YP2KGJ		240.5	4.4	0.21	250.0	-2.2	-0.09
ZNNB6C		234.9	-1.3	-0.06	266.5	14.3	0.62
ZVJ9VL		230.7	-5.4	-0.26	254.8	2.6	0.12



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

		Summary Statistics	
Grand Means	236.13 psi		252.16 psi
Std Dev Btwn Labs	21.09 psi		22.86 psi
Statistics based on 33 of 33 reporting participants			

		Summary Statistics in SI Units	
Grand Means	1.6280 MPa		1.74 MPa
Std Dev Btwn Labs	0.1454 MPa		0.16 MPa
Statistics based on 33 of 33 reporting participants			

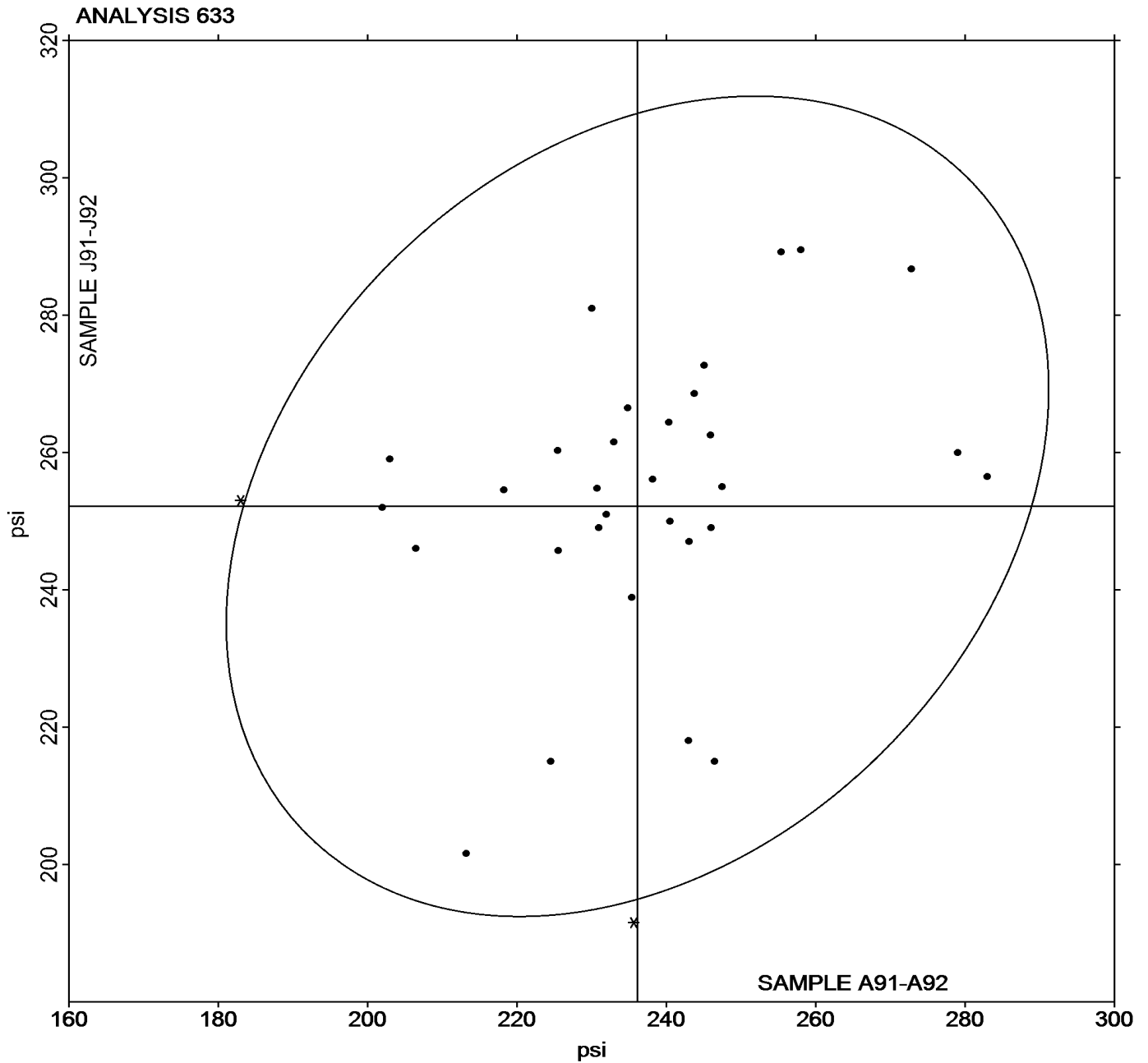
Samples A91-A92: Polyisoprene compound, batch #1 & J91-J92: Polyisoprene compound, batch #1



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

Grand Mean Sample A91-A92 = 236.13 psi

Grand Mean Sample J91-J92 = 252.16 psi





Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample N91			Sample N92		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2HDE2N		18.15	1.52	0.45	15.05	-1.40	-0.39
6V76BH		18.61	1.98	0.58	20.00	3.55	1.00
9VVFVA		14.24	-2.39	-0.70	14.84	-1.61	-0.45
D4A8UL		11.18	-5.45	-1.60	12.23	-4.22	-1.19
E7YWR8		17.50	0.87	0.26	17.00	0.55	0.16
G82DZM		15.50	-1.13	-0.33	18.50	2.05	0.58
GB2PWM		18.50	1.87	0.55	18.50	2.05	0.58
H7M7E7		11.70	-4.93	-1.45	10.25	-6.20	-1.74
HPHYZ4		15.92	-0.71	-0.21	16.18	-0.27	-0.08
JBWRYW		20.50	3.87	1.14	21.50	5.05	1.42
K329XT		20.20	3.57	1.05	14.05	-2.40	-0.67
L8MKA2		19.50	2.87	0.84	22.00	5.55	1.56
PBUA2Z		16.31	-0.32	-0.09	17.86	1.41	0.40
PDHL3Q		20.00	3.37	0.99	20.00	3.55	1.00
VUQLDG		14.15	-2.48	-0.73	14.65	-1.80	-0.51
X6VQBM		18.35	1.72	0.51	20.60	4.15	1.17
X9KPWX		11.75	-4.88	-1.43	11.25	-5.20	-1.46
XE7RVM		18.00	1.37	0.40	19.00	2.55	0.72
Y2T3EX		10.50	-6.13	-1.80	13.00	-3.45	-0.97
YP2KGJ	*	22.00	5.37	1.58	12.50	-3.95	-1.11

Summary Statistics			
Grand Means	16.628 % Compression	16.448 % Compression	
Std Dev Btwn Labs	3.407 % Compression	3.557 % Compression	
Statistics based on 20 of 20 reporting participants			

Samples N91: EPDM compound, batch #1 & N92: EPDM compound, batch #2

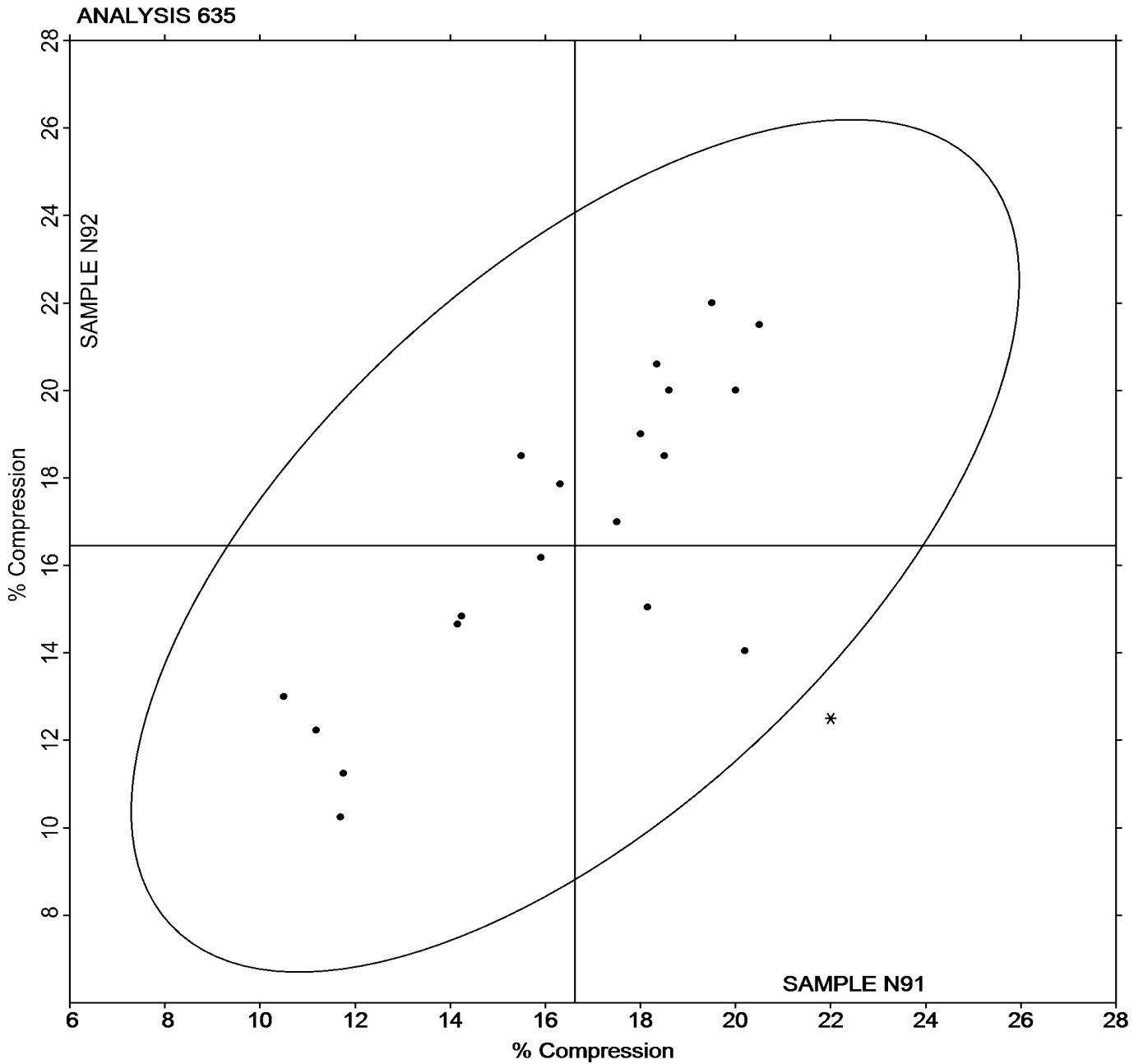


Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #199
1st Qtr 2019

Grand Mean Sample **N91** = 16.628 % Compression

Grand Mean Sample **N92** = 16.448 % Compression





Rubber Interlaboratory Testing Program

Report #199

Analysis 660

1st Qtr 2019

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

WebCode	Data Flag	Sample S91-S92			Sample S93-S94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		52.44	-0.74	-0.59	54.23	-0.15	-0.10	MV
2X84TE		55.15	1.97	1.55	56.53	2.15	1.46	MR
392HTB		54.05	0.87	0.68	55.73	1.35	0.92	XX
4KCAWB		53.15	-0.03	-0.03	52.98	-1.40	-0.95	MR
62Y6RY		51.41	-1.78	-1.40	52.57	-1.81	-1.23	ML
6K88Q4		52.60	-0.58	-0.46	54.02	-0.36	-0.25	MV
776G4P		50.60	-2.58	-2.04	51.15	-3.23	-2.19	MR
8YHRZ8		52.97	-0.22	-0.17	54.40	0.02	0.01	MR
9BAZZZ		53.17	-0.01	-0.01	53.90	-0.48	-0.33	MR
A8MNT3		55.00	1.82	1.43	56.83	2.45	1.66	MV
ABPGTT		53.83	0.65	0.51	54.10	-0.28	-0.19	MR
AFJEFY		53.76	0.57	0.45	55.32	0.94	0.64	MR
B3QAPD		53.73	0.55	0.43	54.78	0.40	0.27	MR
BRRGGM		52.77	-0.42	-0.33	53.98	-0.40	-0.27	MR
BWKPH9		52.91	-0.27	-0.22	53.65	-0.73	-0.50	MR
CFC4HH		52.48	-0.70	-0.55	53.97	-0.41	-0.28	MR
DCPQBZ		51.04	-2.14	-1.69	51.67	-2.71	-1.84	XX
DCRETE	*	57.06	3.88	3.06	57.99	3.61	2.45	TV
FUFNJ7		54.27	1.08	0.85	55.21	0.83	0.56	MR
GP6V98		53.95	0.77	0.60	54.57	0.19	0.13	MR
H7M7E7		53.12	-0.07	-0.05	55.40	1.02	0.69	MR
JUMZWR		53.12	-0.07	-0.05	52.92	-1.46	-0.99	MR
LAT39W		53.35	0.17	0.13	53.50	-0.88	-0.60	MR
LBMN49		53.28	0.10	0.08	54.75	0.37	0.25	MR
PAKZD9		53.18	0.00	0.00	54.10	-0.28	-0.19	MR
PDHL3Q		54.98	1.79	1.42	56.86	2.48	1.68	MP
QMNQQ2		52.55	-0.64	-0.50	55.25	0.87	0.59	MR
QYHZDA		53.13	-0.05	-0.04	55.10	0.72	0.49	MR
UCVNJ2		52.45	-0.73	-0.58	53.67	-0.71	-0.48	MR
VNZDNG		52.82	-0.37	-0.29	53.68	-0.70	-0.47	MV
VVK89T		53.27	0.09	0.07	54.86	0.48	0.33	MV
XAEFZR		52.65	-0.53	-0.42	53.73	-0.65	-0.44	MR
XBNKF2		54.61	1.42	1.12	56.38	2.00	1.36	TA
XMZXPX		53.57	0.39	0.31	55.05	0.67	0.46	MV
Y6GG48		53.13	-0.05	-0.04	54.51	0.13	0.09	MV
YP2KGJ		51.73	-1.46	-1.15	52.92	-1.46	-0.99	MV
ZNNB6C		50.55	-2.63	-2.08	51.78	-2.60	-1.76	MV



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

Report #199
1st Qtr 2019

		Summary Statistics	
Grand Means			
	53.184 ML 1 + 4		54.379 ML 1 + 4
Stnd Dev Btwn Labs			
	1.266 ML 1 + 4		1.474 ML 1 + 4
Statistics based on 37 of 37 reporting participants			

Samples S91-S92: NBR & S93-S94: BUTYL

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 | | |

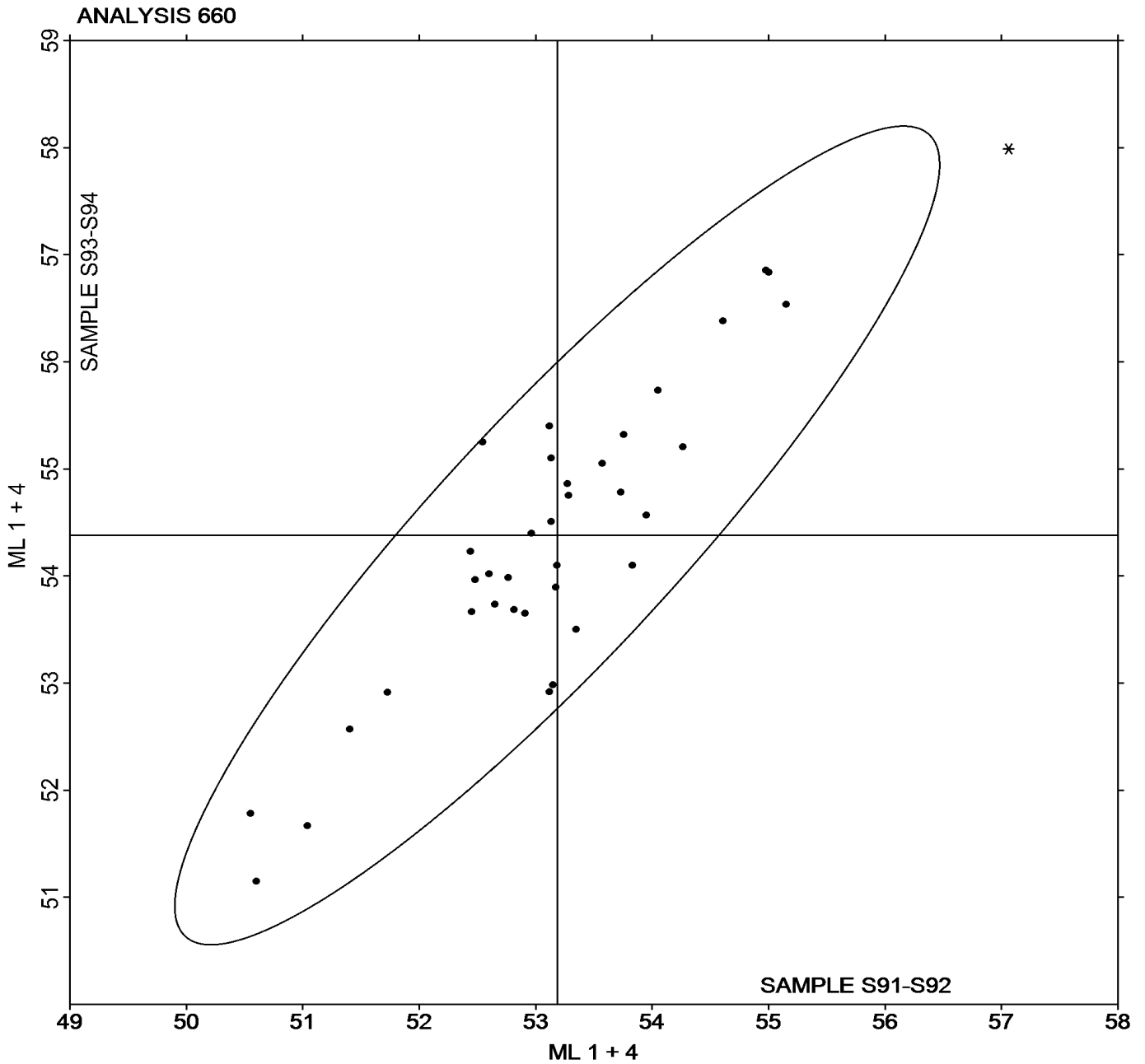


Rubber Interlaboratory Testing Program
Analysis 660
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #199
1st Qtr 2019

Grand Mean Sample **S91-S92** = 53.184 ML 1 + 4

Grand Mean Sample **S93-S94** = 54.379 ML 1 + 4





Rubber Interlaboratory Testing Program

Report #199

Analysis 661

1st Qtr 2019

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

WebCode	Data Flag	Sample S91-S92			Sample S93-S94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		52.44	-0.64	-0.60	51.72	0.01	0.00	MV
2X84TE		55.15	2.07	1.92	53.95	2.24	1.48	MR
392HTB		54.05	0.97	0.90	52.93	1.22	0.81	XX
4KCAWB		53.15	0.07	0.06	50.72	-1.00	-0.66	MR
62Y6RY	*	51.41	-1.68	-1.56	47.65	-4.06	-2.69	ML
6K88Q4		52.60	-0.48	-0.45	51.48	-0.23	-0.15	MV
776G4P		50.60	-2.48	-2.31	49.00	-2.71	-1.80	MR
8YHRZ8		52.97	-0.12	-0.11	51.50	-0.21	-0.14	MR
9BAZXZ		53.17	0.09	0.08	51.49	-0.22	-0.15	MR
A8MNT3		55.00	1.92	1.78	54.11	2.39	1.59	MV
ABPGTT		53.83	0.75	0.70	52.53	0.82	0.54	MR
AFJEFY		53.76	0.67	0.63	52.54	0.83	0.55	MR
B3QAPD		53.73	0.65	0.60	52.12	0.40	0.27	MR
BRRGGM		52.77	-0.32	-0.30	51.13	-0.58	-0.38	MR
BWKPH9		52.91	-0.17	-0.16	51.37	-0.35	-0.23	XX
CFC4HH		52.48	-0.60	-0.56	51.28	-0.43	-0.28	MR
DCRETE	X	57.06	3.98	3.70	54.60	2.89	1.91	TV
FUFNJ7		54.27	1.18	1.10	52.83	1.12	0.74	MR
GP6V98		53.95	0.87	0.81	52.88	1.17	0.78	MR
H7M7E7		53.12	0.03	0.03	53.20	1.49	0.99	MR
JUMZWR		53.12	0.03	0.03	50.17	-1.55	-1.03	MP
LAT39W		53.35	0.27	0.25	50.78	-0.93	-0.62	MR
PAKZD9		53.18	0.10	0.09	51.68	-0.03	-0.02	MR
PDHL3Q		54.98	1.89	1.76	53.75	2.04	1.35	MP
QMNQQ2		52.55	-0.54	-0.50	53.09	1.37	0.91	MR
UCVNJ2		52.45	-0.63	-0.59	51.03	-0.68	-0.45	MR
VNZDNG		52.82	-0.27	-0.25	51.37	-0.34	-0.23	MV
VVK89T		53.27	0.19	0.17	53.02	1.31	0.87	MV
XAEFZR		52.65	-0.43	-0.40	51.42	-0.30	-0.20	MR
XMZXPX		53.57	0.49	0.45	53.11	1.40	0.93	MV
Y6GG48		53.13	0.05	0.04	52.14	0.42	0.28	MV
YP2KGJ		51.73	-1.36	-1.26	50.40	-1.31	-0.87	MV
ZNNB6C		50.55	-2.53	-2.36	48.43	-3.29	-2.18	MV



Rubber Interlaboratory Testing Program

Report #199

Analysis 661

1st Qtr 2019

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

		Summary Statistics	
Grand Means	53.084 ML 1 + 8	51.713 ML 1 + 8	
Stnd Dev Btwn Labs	1.074 ML 1 + 8	1.508 ML 1 + 8	
Statistics based on 32 of 33 reporting participants			

Samples S91-S92: NBR & S93-S94: BUTYL

Comments on Assigned Data Flags for Test #661

DCRETE (X) - Data for sample group S91-S92 are high.

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 #199

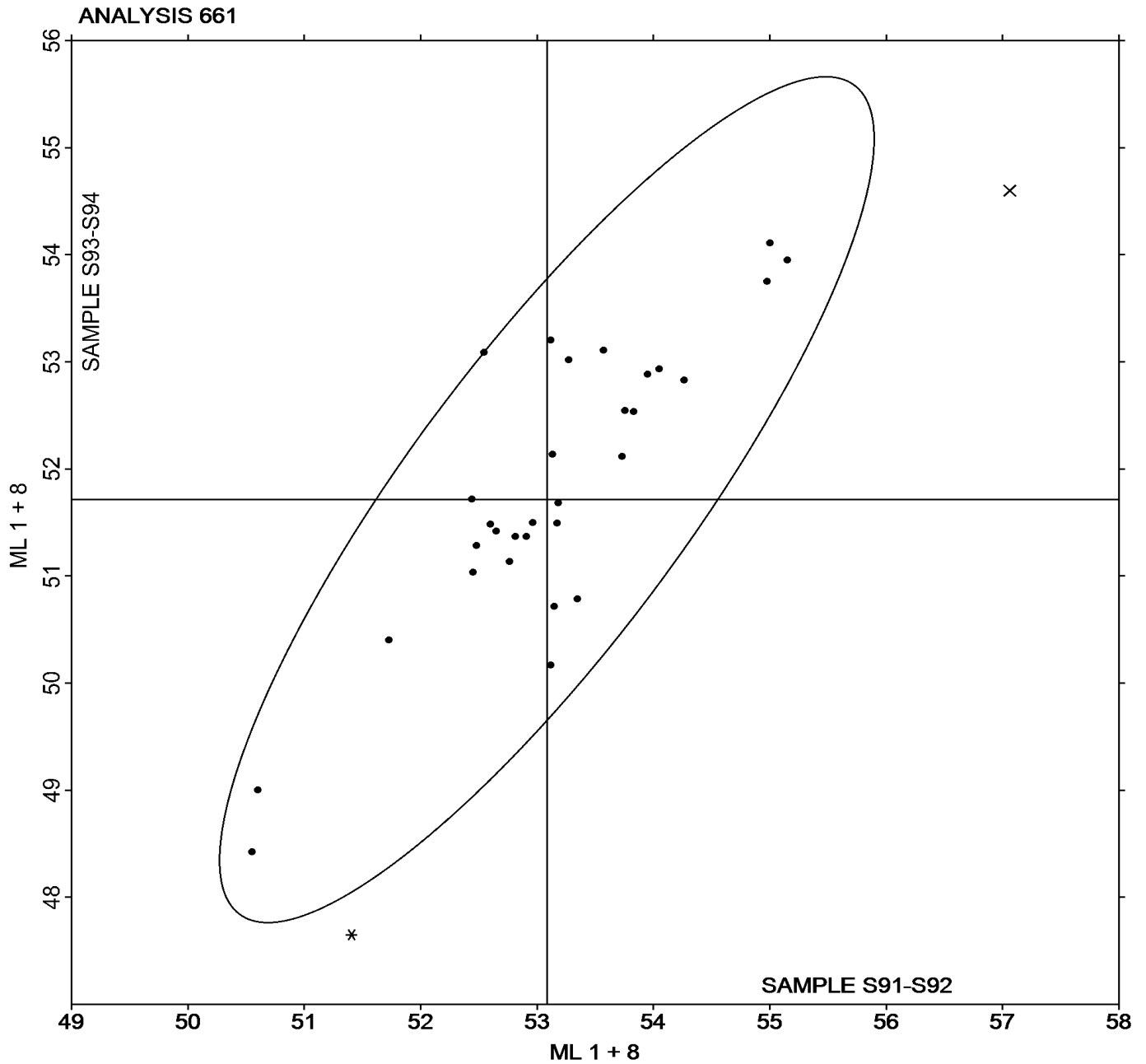
Analysis 661

1st Qtr 2019

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

Grand Mean Sample **S91-S92** = 53.084 ML 1 + 8

Grand Mean Sample **S93-S94** = 51.713 ML 1 + 8





Rubber Interlaboratory Testing Program

Report #199

Analysis 662

1st Qtr 2019

Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample S91-S92			Sample S93-S94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		14.50	-2.13	-0.43	6.767	-1.224	-1.12	MV
392HTB		12.00	-4.63	-0.94	7.850	-0.141	-0.13	XX
4KCAWB		21.52	4.89	0.99	8.043	0.052	0.05	MR
6K88Q4		5.21	-11.42	-2.32	9.100	1.109	1.02	MV
8YHRZ8		20.63	4.00	0.81	7.988	-0.003	0.00	MR
A8MNT3		9.16	-7.46	-1.51	9.113	1.122	1.03	MV
BRRGGM		20.01	3.39	0.69	7.720	-0.271	-0.25	MR
CFC4HH		21.60	4.97	1.01	8.200	0.209	0.19	MR
DCRETE	X	670.20	653.57	132.58	667.200	659.209	605.66	TV
FUFNJ7	X	1,277.20	1,260.57	255.71	449.900	441.909	406.01	MR
H7M7E7		17.99	1.36	0.28	8.083	0.092	0.08	MR
LBMN49		22.30	5.67	1.15	9.400	1.409	1.29	MR
PAKZD9		20.02	3.39	0.69	7.753	-0.238	-0.22	MR
VNZDNG		16.00	-0.63	-0.13	6.733	-1.258	-1.16	MV
XAEFZR		19.53	2.90	0.59	8.270	0.279	0.26	MR
XBNKF2		18.00	1.37	0.28	9.967	1.976	1.82	TA
XMZXPX		15.20	-1.43	-0.29	7.200	-0.791	-0.73	MV
Y6GG48	X	313.40	296.77	60.20	307.200	299.209	274.90	MV
YP2KGJ		12.37	-4.26	-0.86	5.667	-2.324	-2.14	MV
ZNNB6C	X	556.07	539.44	109.43	548.167	540.176	496.30	MV

Summary Statistics	
Grand Means	16.627 seconds
Std Dev Btwn Labs	4.930 seconds
	7.9909 seconds
	1.0884 seconds
Statistics based on 16 of 20 reporting participants	

Samples S91-S92: NBR & S93-S94: BUTYL

Comments on Assigned Data Flags for Test #662

DCRETE (X) - Extreme Data.

FUFNJ7 (X) - Extreme Data.

Y6GG48 (X) - Extreme Data.

ZNNB6C (X) - Extreme Data.



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

Report #199
1st Qtr 2019

Key to Instrument Codes Reported by Participants

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		

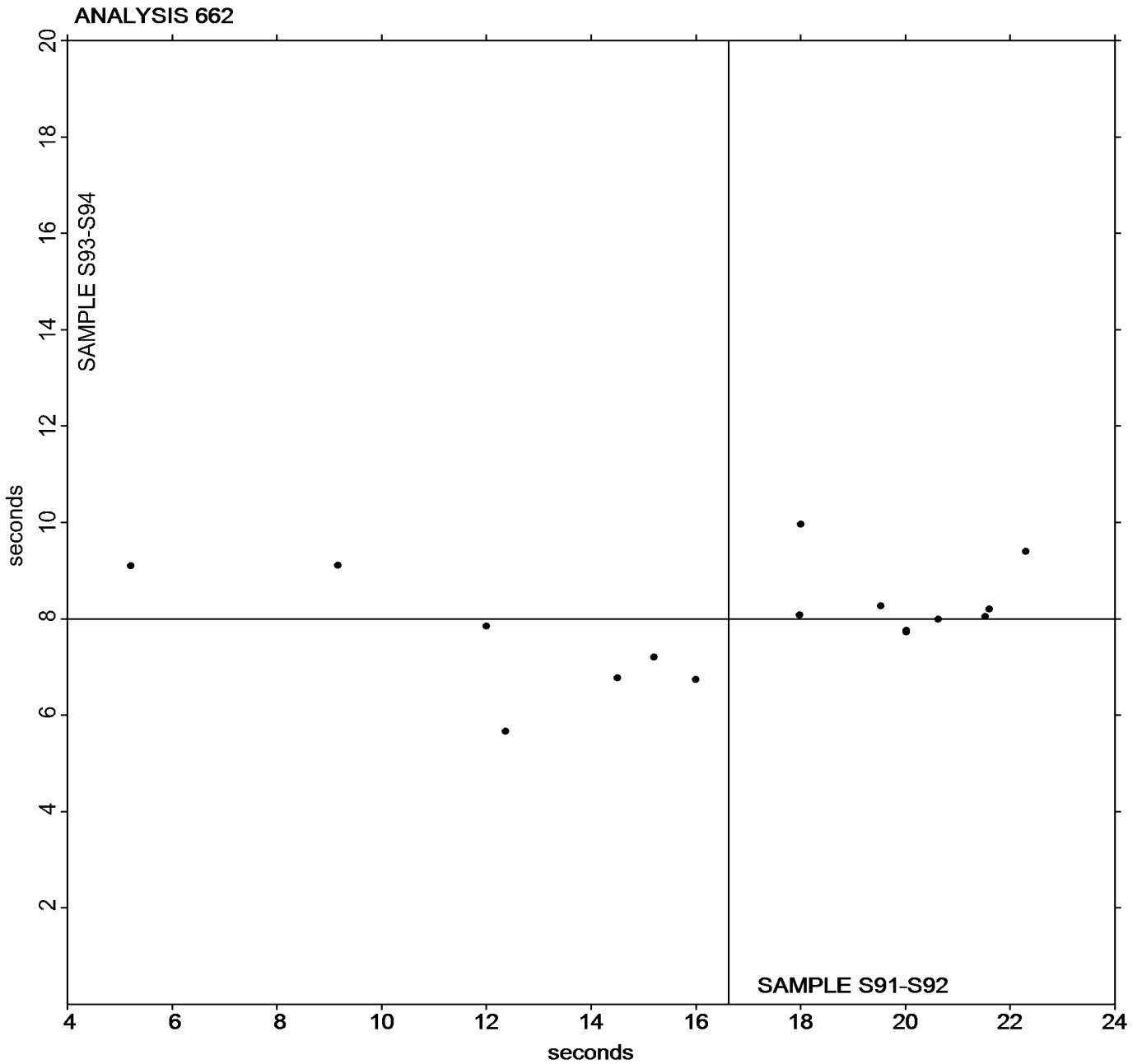


Rubber Interlaboratory Testing Program
Analysis 662
Mooney Stress Relaxation: t80 (seconds)

Report #199
1st Qtr 2019

Grand Mean Sample **S91-S92** = 16.627 seconds

Grand Mean Sample **S93-S94** = 7.9909 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 #199

Analysis 663

1st Qtr 2019

Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample S91-S92			Sample S93-S94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		85.21	0.81	0.47	93.48	1.18	0.86	MV
392HTB		85.97	1.57	0.90	91.30	-1.01	-0.73	XX
4KCAWB		81.60	-2.80	-1.61	91.40	-0.91	-0.66	MR
6K88Q4		86.30	1.91	1.10	94.80	2.49	1.81	MV
8YHRZ8		82.54	-1.86	-1.07	91.43	-0.88	-0.64	MR
A8MNT3		87.07	2.68	1.54	92.18	-0.13	-0.09	MZ
BRRGGM		82.83	-1.56	-0.90	91.78	-0.53	-0.39	MR
CFC4HH		82.28	-2.11	-1.21	91.38	-0.92	-0.67	MR
DCRETE		86.98	2.58	1.48	92.65	0.35	0.25	TV
FUFNJ7	X	69.07	-15.32	-8.80	87.52	-4.79	-3.49	MR
H7M7E7		83.46	-0.94	-0.54	91.29	-1.02	-0.74	MR
PAKZD9		82.76	-1.63	-0.94	91.47	-0.83	-0.61	MR
VNZDNG		84.35	-0.04	-0.02	93.12	0.81	0.59	MV
XAEFZR		82.88	-1.52	-0.87	91.61	-0.70	-0.51	MR
XBNKF2		83.62	-0.77	-0.44	90.44	-1.87	-1.36	TA
XMZXPX		85.00	0.61	0.35	93.00	0.69	0.51	MV
Y6GG48		85.67	1.27	0.73	93.45	1.15	0.83	MV
YP2KGJ		86.46	2.06	1.18	95.63	3.32	2.42	MV
ZNNB6C		84.14	-0.25	-0.15	91.12	-1.19	-0.87	MV

Grand Means		Summary Statistics	
	84.395 percent		92.307 percent
Stnd Dev Btwn Labs	1.741 percent		1.372 percent
Statistics based on 18 of 19 reporting participants			

Samples S91-S92: NBR & S93-S94: BUTYL

Comments on Assigned Data Flags for Test #663

FUFNJ7 (X) - Data for all samples are low. Inconsistent within the determinations of both sample groups.

Key to Instrument Codes Reported by Participants

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

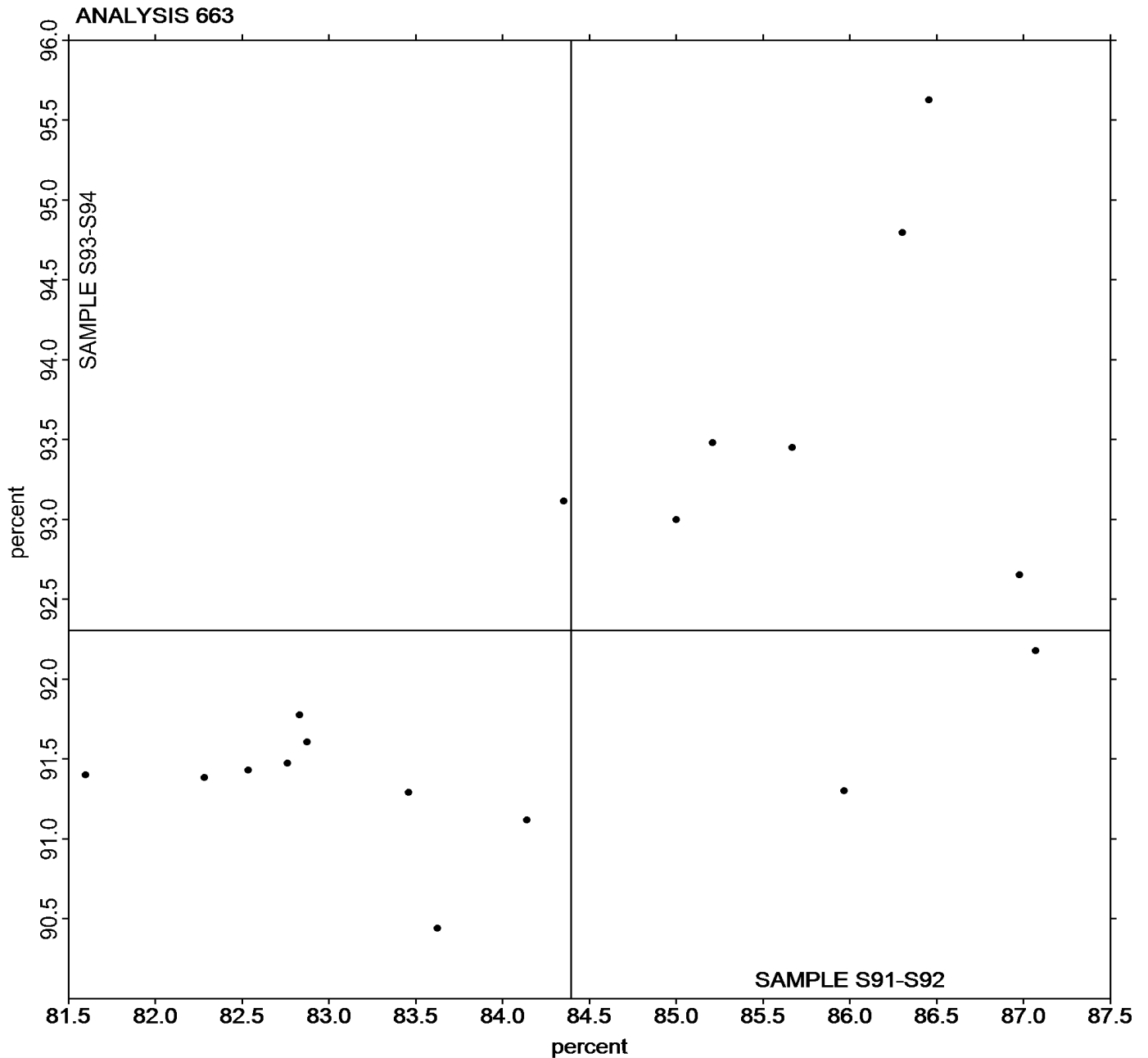


Rubber Interlaboratory Testing Program
Analysis 663
Mooney Stress Relaxation: X30 (percent)

Report #199
1st Qtr 2019

Grand Mean Sample **S91-S92** = 84.395 percent

Grand Mean Sample **S93-S94** = 92.307 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 #199

Analysis 664

1st Qtr 2019

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

WebCode	Data Flag	Sample S91-S92			Sample S93-S94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		813.8	-32.3	-0.25	358.9	-78.6	-0.96	MV
392HTB		713.0	-133.2	-1.02	512.7	75.2	0.92	XX
6K88Q4		763.1	-83.1	-0.63	282.8	-154.7	-1.89	MV
8YHRZ8		997.7	151.5	1.16	495.7	58.2	0.71	MR
A8MNT3		667.3	-178.9	-1.36	469.7	32.2	0.39	MZ
BRRGGM		976.8	130.7	1.00	478.3	40.8	0.50	MR
CFC4HH		1,006.7	160.5	1.22	490.5	53.0	0.65	MR
DCRETE		667.6	-178.5	-1.36	443.5	6.1	0.07	TV
FUFNJ7		1,041.0	194.9	1.49	501.9	64.4	0.78	MR
H7M7E7		943.3	97.2	0.74	517.3	79.8	0.97	MR
PAKZD9		990.2	144.0	1.10	491.8	54.3	0.66	MR
VNZDNG		874.8	28.7	0.22	384.2	-53.3	-0.65	MV
XAEFZR		968.0	121.9	0.93	487.2	49.7	0.61	XX
XBNKF2		682.3	-163.9	-1.25	466.4	28.9	0.35	TA
XMZXPX		850.2	4.0	0.03	395.2	-42.3	-0.52	MV
Y6GG48		801.1	-45.0	-0.34	379.0	-58.5	-0.71	MV
YP2KGJ		728.8	-117.3	-0.89	231.7	-205.8	-2.51	MV
ZNNB6C		745.0	-101.2	-0.77	487.9	50.4	0.61	MV

Grand Means		Summary Statistics	
	846.15 M-s		437.49 M-s
Stnd Dev Btwn Labs	131.08 M-s		82.04 M-s
Statistics based on 18 of 18 reporting participants			

Samples S91-S92: NBR & S93-S94: BUTYL

Key to Instrument Codes Reported by Participants

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

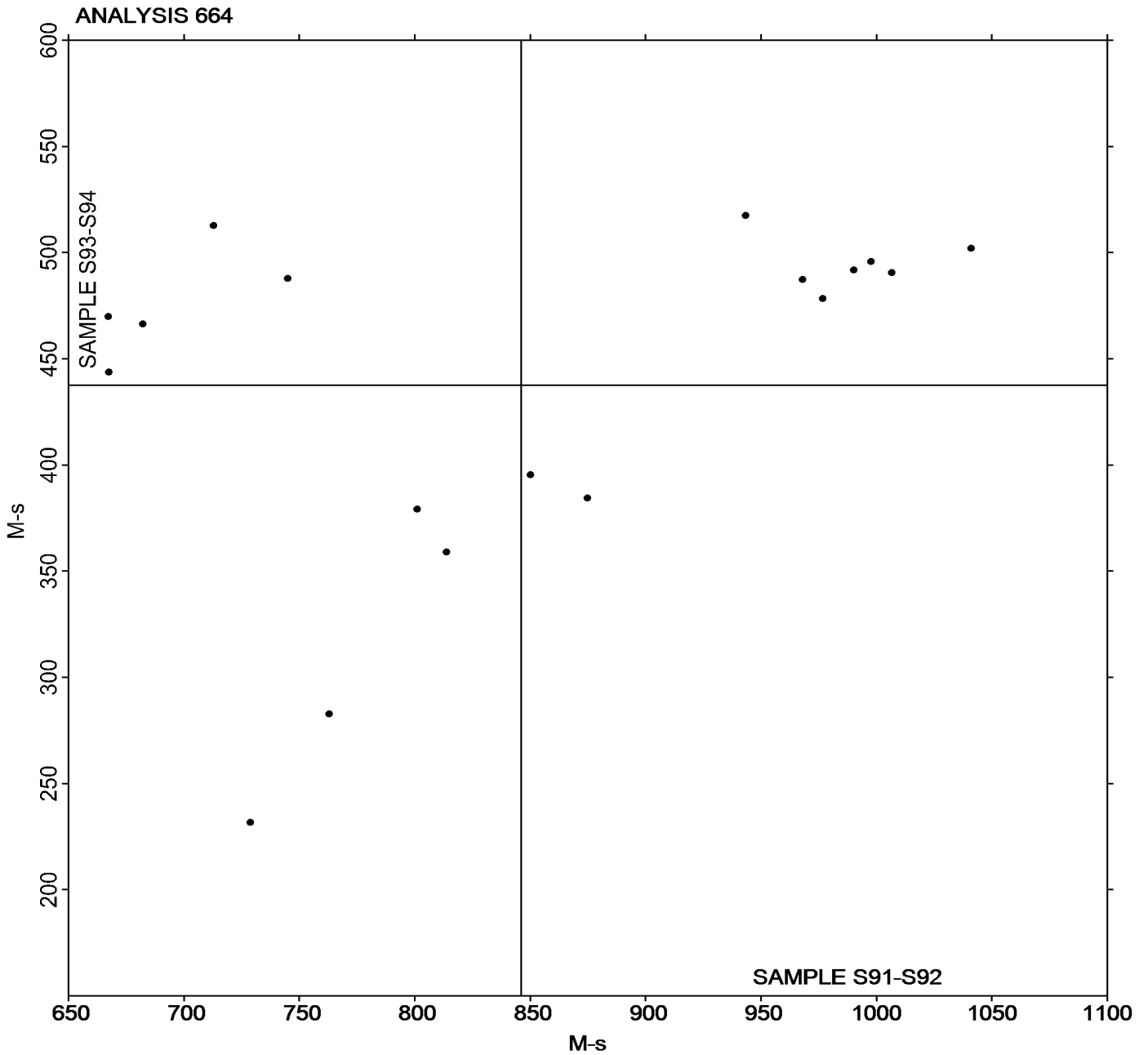


Rubber Interlaboratory Testing Program
Analysis 664
Mooney Stress Relaxation: Area under curve (M-s)

Report #199
1st Qtr 2019

Grand Mean Sample S91-S92 = 846.15 M-s

Grand Mean Sample S93-S94 = 437.49 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 #199
1st Qtr 2019

WebCode	Data Flag	Sample W91-W92			Sample W93-W94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6K88Q4		1.518	-0.176	-0.92	2.412	-0.207	-0.78
776G4P		1.885	0.191	1.00	2.848	0.230	0.87
DCRETE		1.575	-0.119	-0.62	2.482	-0.137	-0.52
JUMZWR		1.705	0.011	0.06	2.747	0.128	0.49
PDHL3Q		2.037	0.343	1.79	3.098	0.480	1.82
QMNQQ2		1.490	-0.204	-1.07	2.327	-0.292	-1.10
UPX3YD		1.588	-0.106	-0.55	2.412	-0.207	-0.78
YP2KGJ		1.755	0.061	0.32	2.622	0.003	0.01

		Summary Statistics	
Grand Means	1.6942 minutes	2.6183 minutes	
Stnd Dev Btwn Labs	0.1911 minutes	0.2643 minutes	
Statistics based on 8 of 8 reporting participants			

Samples W91-W92: EPDM compound #1 & W93-W94: EPDM compound #2

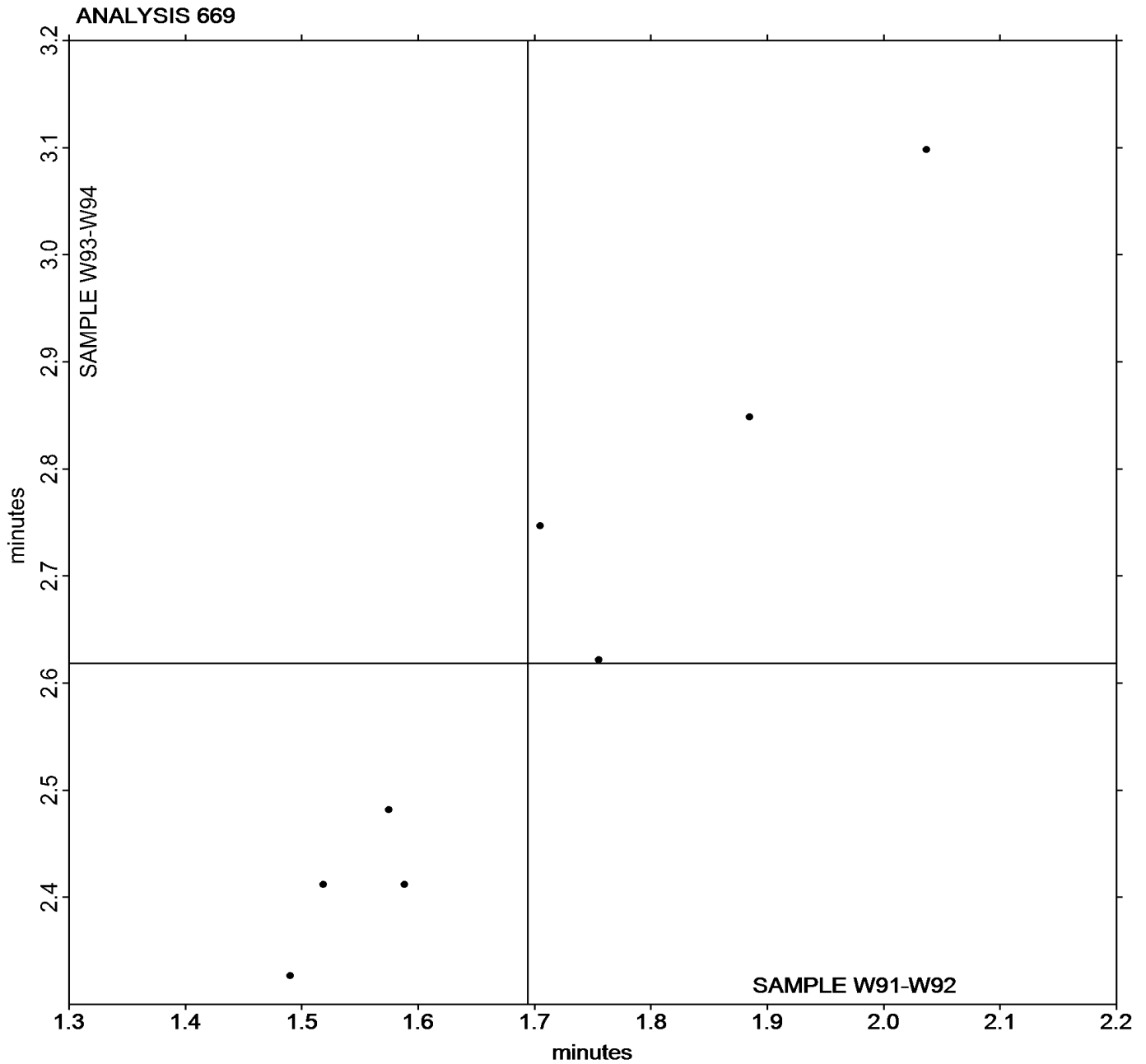


Rubber Interlaboratory Testing Program
Analysis 669
ODR Vulcanization-Cure Time 10% (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W91-W92** = 1.6942 minutes

Grand Mean Sample **W93-W94** = 2.6183 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 #199
1st Qtr 2019

WebCode	Data Flag	Sample W91-W92			Sample W93-W94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6K88Q4		1.043	-0.222	-1.07	1.648	-0.285	-0.91
776G4P		1.410	0.145	0.70	2.085	0.152	0.48
DCRETE		1.153	-0.112	-0.54	1.827	-0.107	-0.34
JUMZWR		1.360	0.095	0.46	2.167	0.233	0.74
PDHL3Q		1.667	0.402	1.94	2.528	0.595	1.89
QMNQQ2		1.067	-0.198	-0.96	1.567	-0.367	-1.17
UPX3YD		1.173	-0.092	-0.44	1.753	-0.180	-0.57
YP2KGJ		1.247	-0.018	-0.09	1.892	-0.042	-0.13

		Summary Statistics	
Grand Means		1.2650 minutes	1.9333 minutes
Std Dev Btwn Labs		0.2074 minutes	0.3146 minutes
Statistics based on 8 of 8 reporting participants			

Samples W91-W92: EPDM compound #1 & W93-W94: EPDM compound #2

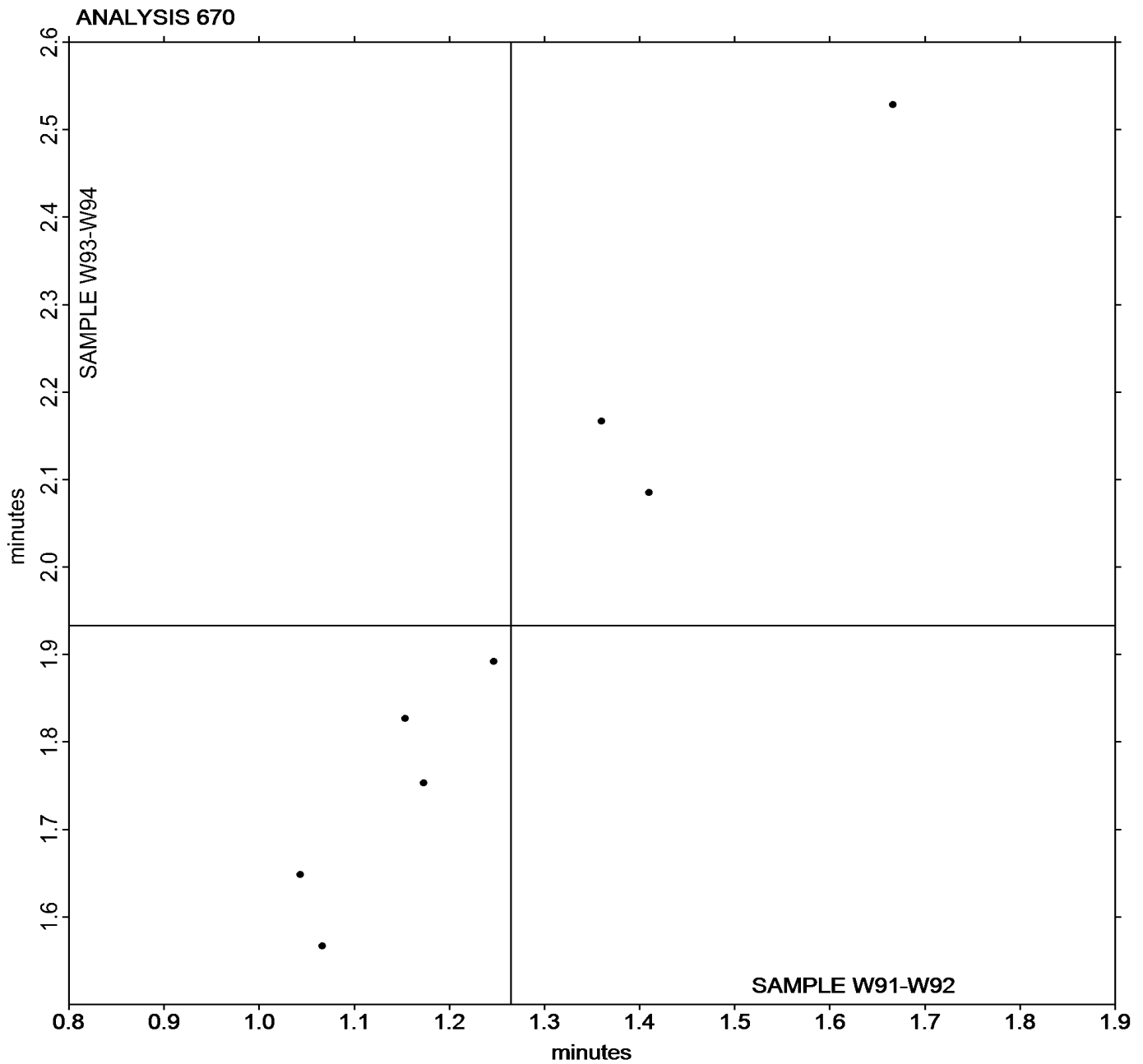


Rubber Interlaboratory Testing Program
Analysis 670
ODR Vulcanization-Scorch Time, Ts1 (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W91-W92** = 1.2650 minutes

Grand Mean Sample **W93-W94** = 1.9333 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 #199
1st Qtr 2019

WebCode	Data Flag	Sample W91-W92			Sample W93-W94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6K88Q4		3.033	-0.248	-0.80	4.483	-0.248	-1.00
776G4P		3.483	0.202	0.65	4.972	0.241	0.97
DCRETE		3.157	-0.124	-0.40	4.520	-0.211	-0.85
JUMZWR		3.687	0.406	1.31	4.893	0.162	0.66
PDHL3Q		3.638	0.357	1.15	5.082	0.351	1.42
QMNQQ2		2.853	-0.428	-1.38	4.432	-0.299	-1.21
UPX3YD		3.015	-0.266	-0.86	4.622	-0.109	-0.44
YP2KGJ		3.382	0.101	0.32	4.845	0.114	0.46

		Summary Statistics	
Grand Means	3.2810 minutes	4.7310 minutes	
Stnd Dev Btwn Labs	0.3102 minutes	0.2472 minutes	
Statistics based on 8 of 8 reporting participants			

Samples W91-W92: EPDM compound #1 & W93-W94: EPDM compound #2

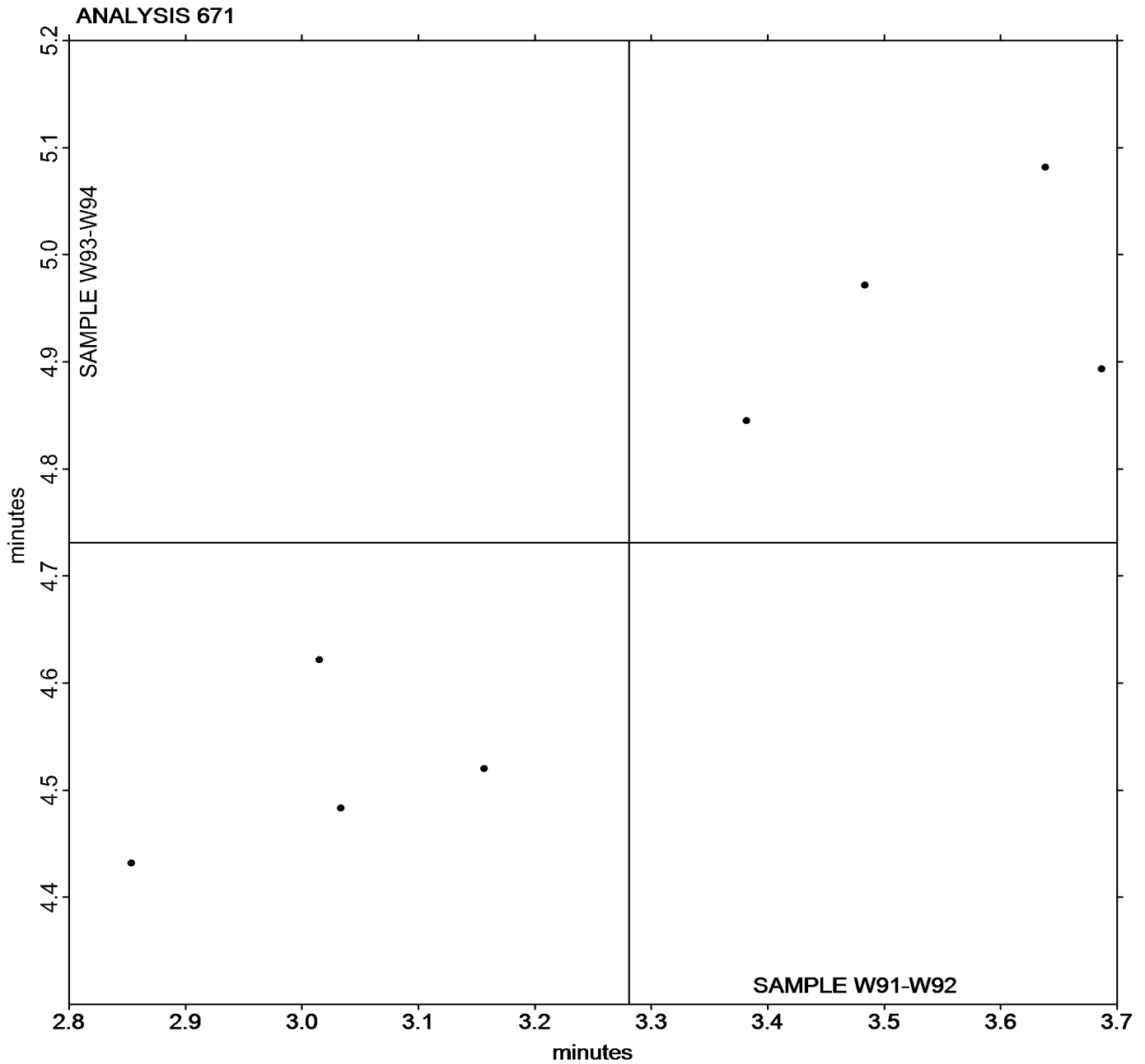


Rubber Interlaboratory Testing Program
Analysis 671
ODR Vulcanization-Cure Time 50% (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W91-W92** = 3.2810 minutes

Grand Mean Sample **W93-W94** = 4.7310 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 #199
1st Qtr 2019

WebCode	Data Flag	Sample W91-W92			Sample W93-W94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6K88Q4		13.28	-1.15	-0.53	8.87	-1.24	-0.90
776G4P		14.21	-0.22	-0.10	10.14	0.03	0.02
DCRETE		16.50	2.07	0.96	11.79	1.68	1.22
JUMZWR		18.77	4.34	2.01	12.58	2.48	1.80
PDHL3Q		14.07	-0.36	-0.17	9.54	-0.57	-0.41
QMNQQ2		13.30	-1.13	-0.52	9.53	-0.58	-0.42
UPX3YD		12.15	-2.28	-1.05	9.70	-0.41	-0.30
YP2KGJ		13.15	-1.28	-0.59	8.72	-1.39	-1.01

		Summary Statistics	
Grand Means	14.430 minutes	10.106 minutes	
Std Dev Btwn Labs	2.164 minutes	1.376 minutes	
Statistics based on 8 of 8 reporting participants			

Samples W91-W92: EPDM compound #1 & W93-W94: EPDM compound #2

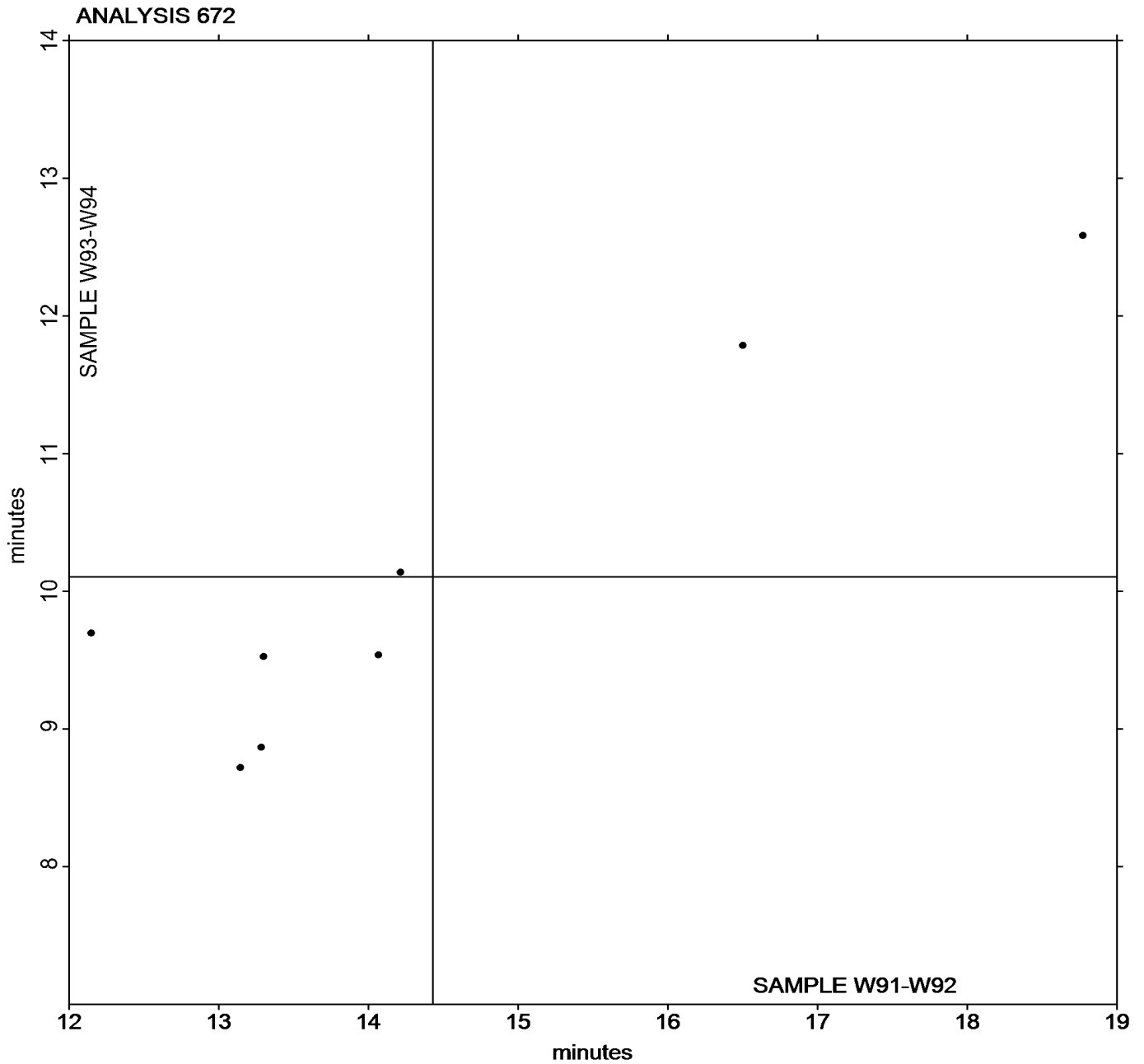


Rubber Interlaboratory Testing Program
Analysis 672
ODR Vulcanization-Cure Time 90% (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W91-W92** = 14.430 minutes

Grand Mean Sample **W93-W94** = 10.106 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 #199
1st Qtr 2019

WebCode	Data Flag	Sample W91-W92			Sample W93-W94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6K88Q4		9.233	1.001	0.69	6.967	0.990	0.89
776G4P		9.640	1.407	0.97	6.935	0.959	0.87
DCRETE		8.272	0.039	0.03	6.128	0.152	0.14
JUMZWR		4.933	-3.299	-2.28	3.508	-2.468	-2.23
PDHL3Q		8.200	-0.033	-0.02	5.813	-0.163	-0.15
QMNQQ2		8.022	-0.211	-0.15	5.643	-0.333	-0.30
UPX3YD		8.552	0.319	0.22	6.582	0.605	0.55
YP2KGJ		9.010	0.777	0.54	6.235	0.259	0.23

		Summary Statistics	
Grand Means		8.2327 lbf.in	5.9765 lbf.in
Std Dev Btwn Labs		1.4452 lbf.in	1.1074 lbf.in
Statistics based on 8 of 8 reporting participants			

		Summary Statistics in SI Units	
Grand Means		9.3017 dN.m	6.7525 dN.m
Std Dev Btwn Labs		1.6329 dN.m	1.2512 dN.m
Statistics based on 8 of 8 reporting participants			

Samples W91-W92: EPDM compound #1 & W93-W94: EPDM compound #2

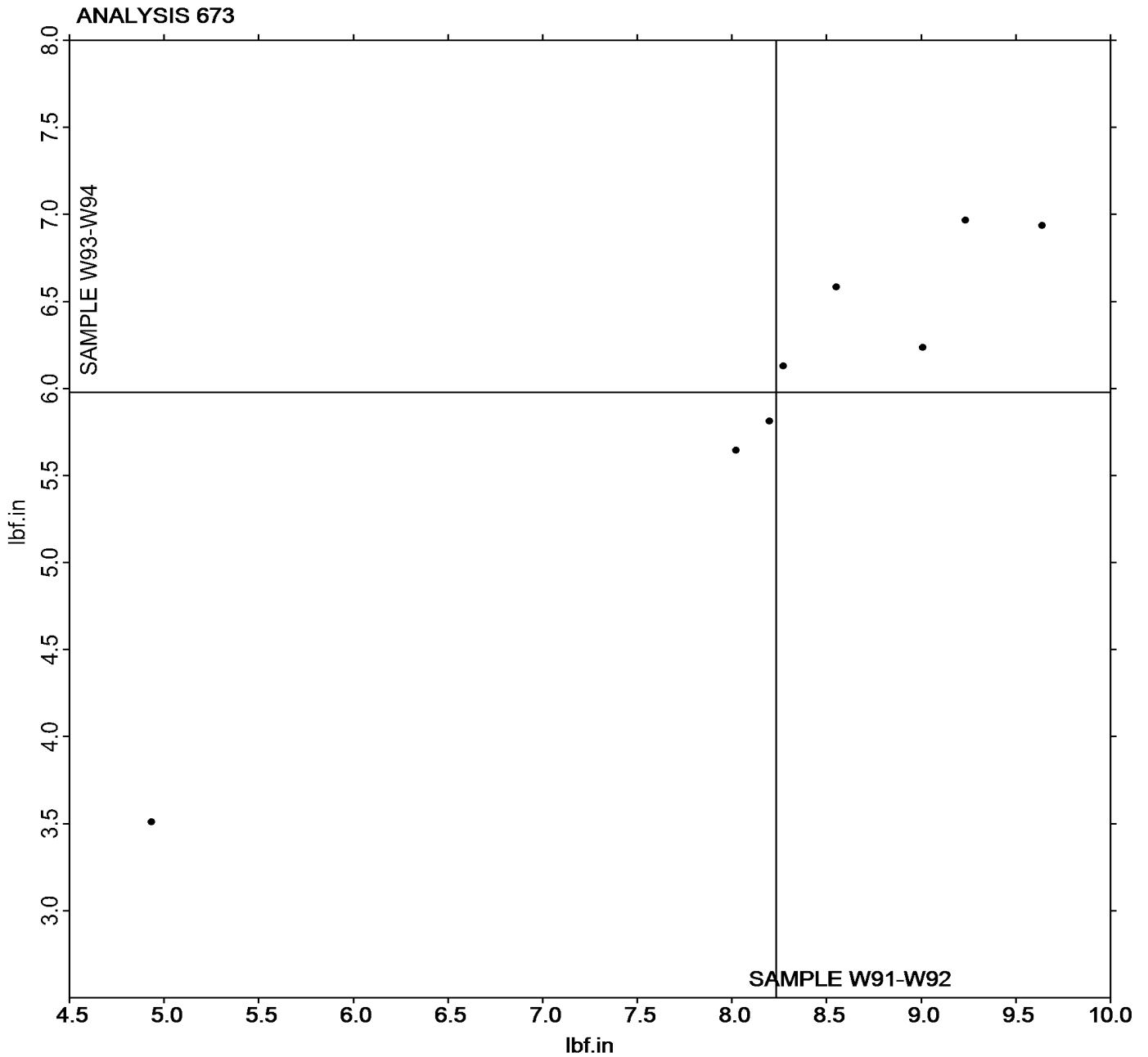


Rubber Interlaboratory Testing Program
Analysis 673
ODR Vulcanization: Minimum Torque (lbf.in)

Report #199
1st Qtr 2019

Grand Mean Sample **W91-W92** = 8.2327 lbf.in

Grand Mean Sample **W93-W94** = 5.9765 lbf.in



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



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample W91-W92			Sample W93-W94		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
6K88Q4		48.28	4.90	0.64	38.15	3.46	0.66
776G4P		44.16	0.78	0.10	36.41	1.72	0.33
DCRETE	X	42.98	-0.40	-0.05	5,874.16	5,839.47	1,114.03
JUMZWR		27.11	-16.27	-2.12	23.68	-11.01	-2.10
PDHL3Q		45.45	2.07	0.27	35.94	1.24	0.24
QMNQQ2		48.37	4.99	0.65	39.80	5.10	0.97
UPX3YD		41.45	-1.93	-0.25	33.77	-0.93	-0.18
YP2KGJ		48.82	5.44	0.71	35.11	0.41	0.08

		Summary Statistics	
Grand Means		43.379 lbf.in	34.692 lbf.in
Std Dev Btwn Labs		7.657 lbf.in	5.242 lbf.in
Statistics based on 7 of 8 reporting participants			

		Summary Statistics in SI Units	
Grand Means		49.011 dN.m	39.197 dN.m
Std Dev Btwn Labs		8.651 dN.m	5.922 dN.m
Statistics based on 7 of 8 reporting participants			

Samples W91-W92: EPDM compound #1 & W93-W94: EPDM compound #2

Comments on Assigned Data Flags for Test #674

DCRETE (X) - Extreme Data for sample group W93-W94. Lab appears to have a typo in data entry.

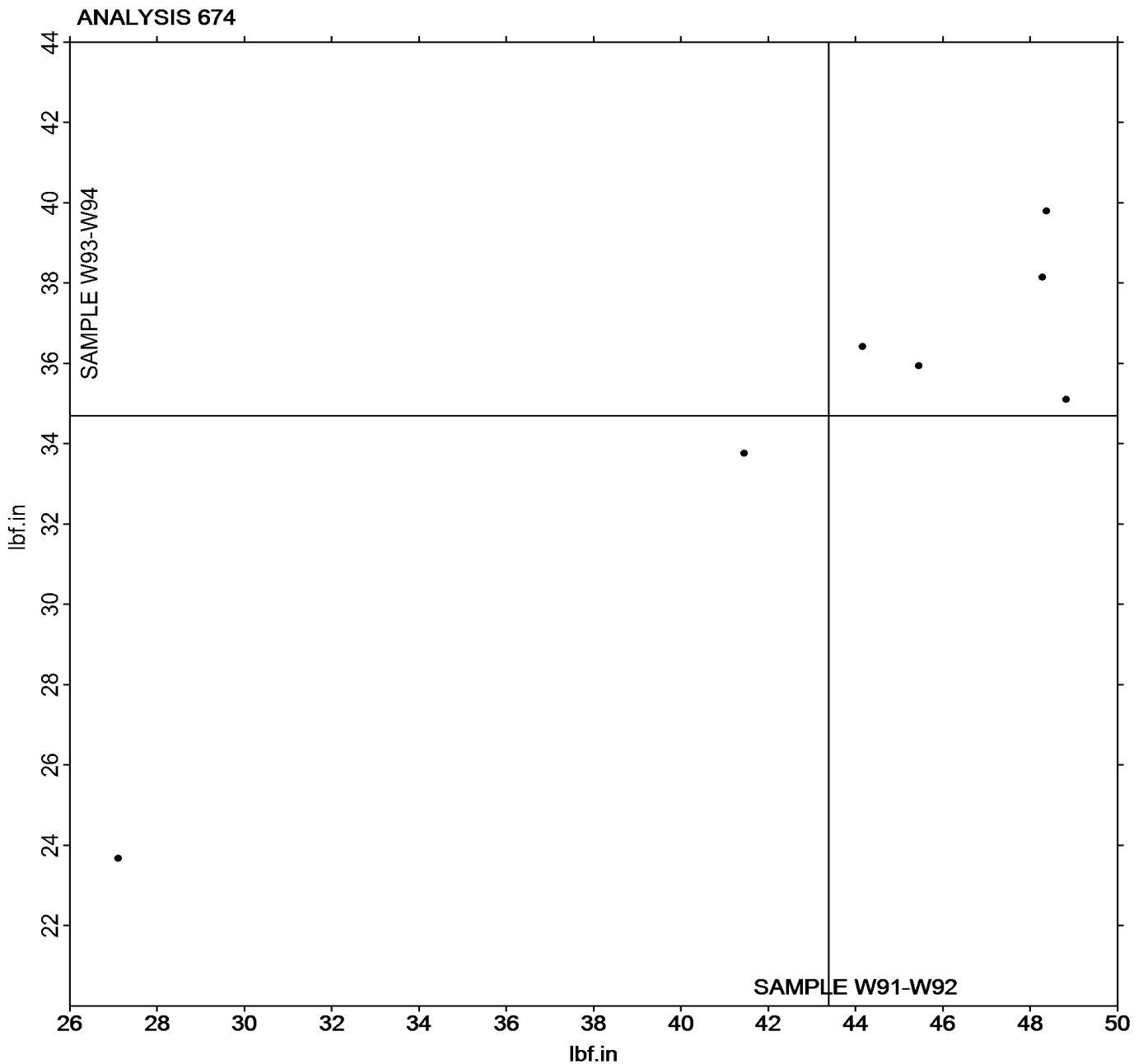


Rubber Interlaboratory Testing Program
Analysis 674
ODR Vulcanization: Maximum Torque (lbf.in)

Report #199
1st Qtr 2019

Grand Mean Sample **W91-W92** = 43.379 lbf.in

Grand Mean Sample **W93-W94** = 34.692 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 #199

Analysis 684

1st Qtr 2019

MDR Vulcanization-Cure Time 10% (minutes)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		1.472	-0.125	-1.10	1.475	-0.117	-1.04	MM
392HTB		1.683	0.087	0.76	1.667	0.075	0.66	XX
4KCAWB		1.685	0.089	0.78	1.703	0.111	0.99	MC
62Y6RY	X	1.637	0.040	0.35	1.430	-0.162	-1.44	MC
6K88Q4		1.633	0.037	0.32	1.667	0.075	0.66	XX
6V76BH		1.527	-0.070	-0.61	1.537	-0.055	-0.49	ME
776G4P		1.637	0.040	0.35	1.613	0.021	0.19	MC
8YHRZ8	*	1.698	0.102	0.90	1.643	0.051	0.45	MC
9BAZZZ		1.577	-0.020	-0.17	1.597	0.005	0.04	MC
A8MNT3		1.680	0.084	0.73	1.678	0.086	0.77	MX
ABPGTT		1.370	-0.226	-1.99	1.380	-0.212	-1.88	MC
AFJEFY		1.703	0.107	0.94	1.720	0.128	1.14	MC
BRRGGM		1.537	-0.060	-0.52	1.485	-0.107	-0.95	MC
BV7ACL		1.727	0.130	1.14	1.725	0.133	1.18	MC
BWKPH9		1.658	0.062	0.54	1.636	0.043	0.39	MC
DDJD7C		1.540	-0.056	-0.50	1.507	-0.085	-0.76	MC
E7YWR8		1.636	0.040	0.35	1.633	0.041	0.37	MC
EGENDW		1.628	0.032	0.28	1.622	0.030	0.26	MC
FUFNJ7	*	1.298	-0.298	-2.62	1.303	-0.289	-2.56	MC
H7M7E7		1.628	0.032	0.28	1.638	0.046	0.41	MD
L8MKA2		1.552	-0.045	-0.39	1.548	-0.044	-0.39	ME
LAT39W	X	1.347	-0.250	-2.19	1.253	-0.339	-3.01	MC
LE6VJV		1.583	-0.013	-0.11	1.565	-0.027	-0.24	MC
LKBK3N		1.652	0.055	0.49	1.652	0.060	0.53	MC
PAKZD9		1.538	-0.058	-0.51	1.543	-0.049	-0.43	MC
PBUA2Z		1.607	0.010	0.09	1.605	0.013	0.11	MC
QMNQQ2		1.700	0.104	0.91	1.703	0.111	0.99	MC
QPV2M6		1.688	0.092	0.81	1.653	0.061	0.54	TP
QYHZDA		1.580	-0.016	-0.14	1.557	-0.035	-0.31	MP
TYTLZG		1.557	-0.040	-0.35	1.558	-0.034	-0.30	ME
VNZDNG		1.673	0.077	0.68	1.682	0.090	0.79	MM
VVK89T	X	1.555	-0.041	-0.36	1.345	-0.247	-2.19	MC
XBNKF2		1.435	-0.161	-1.42	1.437	-0.155	-1.38	MD
XMZXPX		1.620	0.024	0.21	1.603	0.011	0.10	MC
Y2T3EX		1.493	-0.103	-0.91	1.492	-0.100	-0.89	MC
Y6GG48		1.337	-0.260	-2.28	1.350	-0.242	-2.15	MR
YP2KGJ		1.775	0.179	1.57	1.770	0.178	1.58	MD
ZNNB6C		1.767	0.170	1.50	1.775	0.183	1.62	MM



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

Report #199
1st Qtr 2019

		Summary Statistics	
Grand Means	1.5964 minutes	1.5921 minutes	
Stnd Dev Btwn Labs	0.1138 minutes	0.1127 minutes	
Statistics based on 35 of 38 reporting participants			

Samples W95-W96: PDM compound, batch #1 & W97-W98: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #684

62Y6RY (X) - Inconsistent in testing between samples.

LAT39W (X) - Data for sample group W97-W98 are low.

VVK89T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W95-W96.

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		

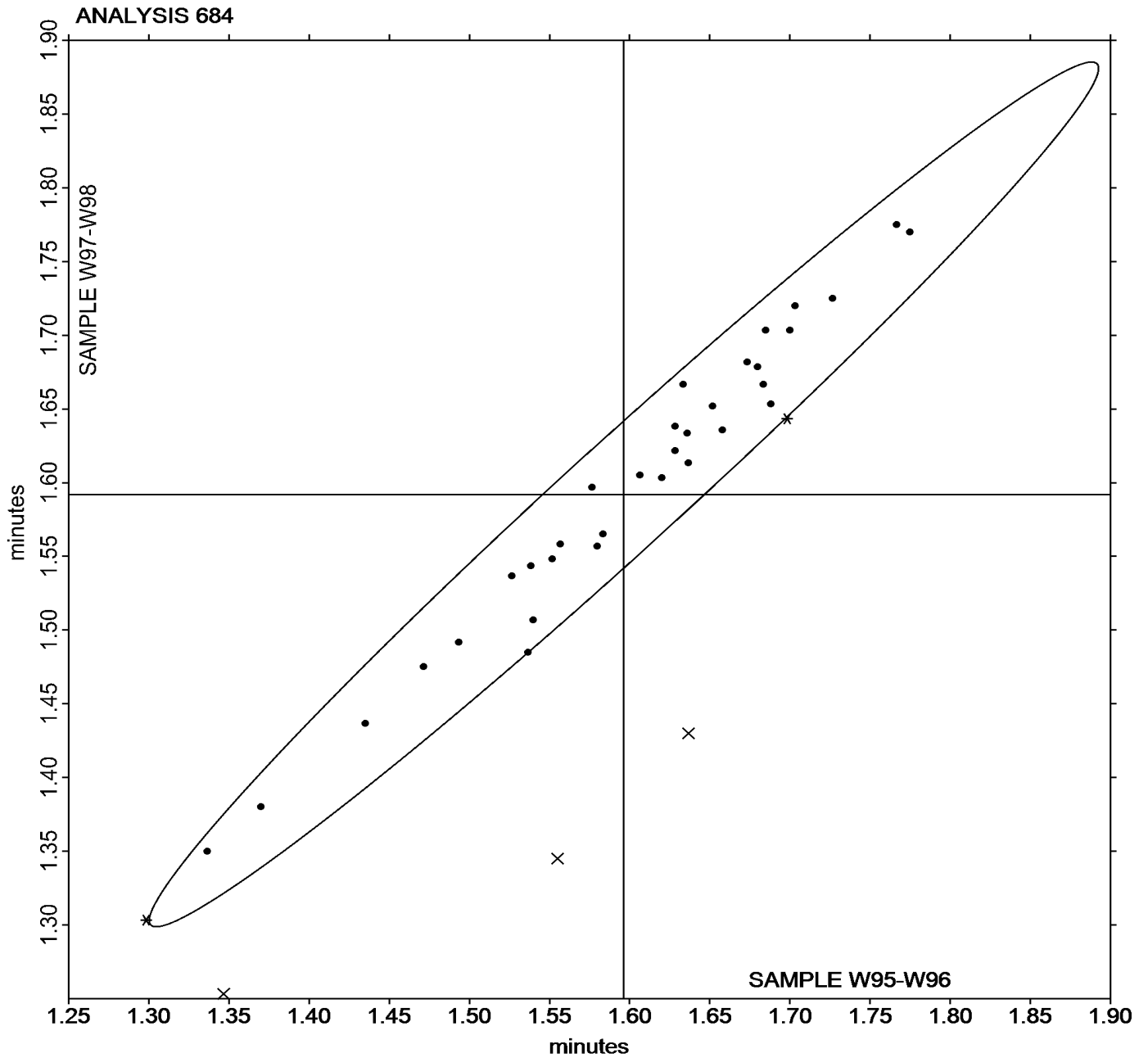


Rubber Interlaboratory Testing Program
Analysis 684
MDR Vulcanization-Cure Time 10% (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W95-W96** = 1.5964 minutes

Grand Mean Sample **W97-W98** = 1.5921 minutes





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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		1.427	-0.051	-0.46	1.435	-0.042	-0.36	MM
392HTB		1.507	0.029	0.26	1.512	0.035	0.30	XX
4KCAWB		1.585	0.107	0.96	1.602	0.125	1.06	MC
62Y6RY	X	1.627	0.149	1.34	1.415	-0.062	-0.53	MC
6K88Q4		1.567	0.089	0.80	1.600	0.123	1.05	XX
6V76BH		1.398	-0.080	-0.72	1.405	-0.072	-0.61	MC
776G4P		1.502	0.024	0.21	1.510	0.033	0.28	MC
9BAZXZ		1.543	0.065	0.59	1.557	0.080	0.68	MC
A8MNT3		1.635	0.157	1.41	1.623	0.146	1.25	MX
ABPGTT		1.335	-0.143	-1.29	1.352	-0.125	-1.07	MC
AFJEFY		1.643	0.165	1.49	1.633	0.156	1.33	MC
BRRGGM		1.478	0.000	0.00	1.468	-0.009	-0.07	MC
BV7ACL		1.593	0.115	1.04	1.605	0.128	1.09	MC
BWKPH9		1.485	0.007	0.06	1.492	0.015	0.13	XX
DDJD7C		1.417	-0.061	-0.55	1.385	-0.092	-0.78	MC
E7YWR8		1.542	0.064	0.57	1.544	0.068	0.58	MC
EGENDW		1.507	0.029	0.26	1.490	0.013	0.11	MC
FUFNJ7		1.245	-0.233	-2.09	1.250	-0.227	-1.93	MC
H7M7E7		1.545	0.067	0.60	1.552	0.075	0.64	MD
L8MKA2		1.472	-0.006	-0.06	1.475	-0.002	-0.02	ME
LAT39W	*	1.303	-0.175	-1.57	1.260	-0.217	-1.85	MC
LBMN49		1.508	0.030	0.27	1.480	0.003	0.03	MC
LE6VJV		1.437	-0.041	-0.37	1.442	-0.035	-0.30	MC
LKBK3N		1.555	0.077	0.69	1.553	0.076	0.65	MC
PAKZD9		1.467	-0.011	-0.10	1.468	-0.009	-0.07	MC
PBUA2Z		1.553	0.075	0.68	1.552	0.075	0.64	MC
QMNQQ2		1.578	0.100	0.90	1.578	0.101	0.86	MC
QPV2M6	X	1.690	0.212	1.91	1.605	0.128	1.09	TP
QYHZDA		1.398	-0.080	-0.72	1.397	-0.080	-0.68	MP
TYTLZG		1.495	0.017	0.15	1.502	0.025	0.21	ME
VNZDNG		1.527	0.049	0.44	1.533	0.056	0.48	MM
VVK89T	*	1.313	-0.165	-1.48	1.258	-0.219	-1.86	MC
XAEFZR		1.335	-0.143	-1.29	1.347	-0.130	-1.11	MC
XBNKF2		1.337	-0.141	-1.27	1.328	-0.149	-1.27	MD
XMZXPN		1.517	0.039	0.35	1.530	0.053	0.45	MC
Y2T3EX		1.326	-0.152	-1.36	1.315	-0.162	-1.38	MC
Y6GG48		1.292	-0.186	-1.67	1.292	-0.185	-1.58	MR



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
YP2KGJ		1.625	0.147	1.32	1.622	0.145	1.23	MD
ZNNB6C		1.692	0.214	1.92	1.698	0.221	1.89	MM

Grand Means		Summary Statistics	
	1.4779 minutes		1.4769 minutes
Std Dev Btwn Labs	0.1112 minutes		0.1173 minutes
Statistics based on 37 of 39 reporting participants			

Samples W95-W96: EPDM compound, batch #1 & W97-W98: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #685

62Y6RY (X) - Inconsistent in testing between samples.

QPV2M6 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W97-W98.

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		

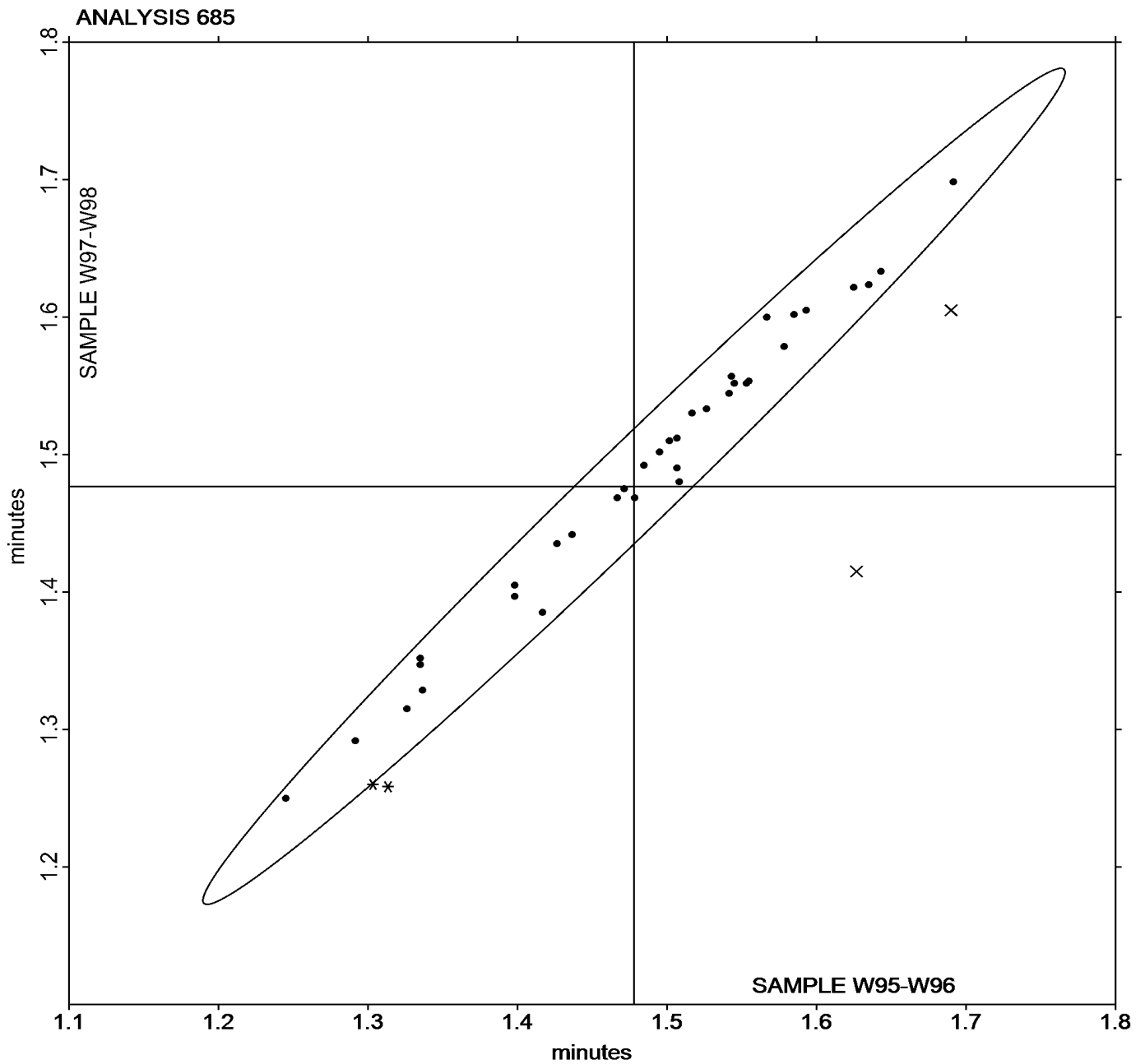


Rubber Interlaboratory Testing Program
Analysis 685
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W95-W96** = 1.4779 minutes

Grand Mean Sample **W97-W98** = 1.4769 minutes





Rubber Interlaboratory Testing Program

Report #199

Analysis 686

1st Qtr 2019

MDR Vulcanization-Cure Time 50% (minutes)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		3.483	-0.254	-1.30	3.445	-0.234	-1.34	MM
392HTB		3.743	0.006	0.03	3.697	0.017	0.10	XX
4KCAWB		3.778	0.041	0.21	3.770	0.091	0.52	MC
62Y6RY	X	3.773	0.036	0.18	3.375	-0.304	-1.75	MC
6K88Q4		3.617	-0.121	-0.62	3.617	-0.063	-0.36	XX
6V76BH		3.618	-0.119	-0.61	3.610	-0.069	-0.40	MC
776G4P		3.850	0.113	0.57	3.785	0.106	0.61	MC
8YHRZ8	*	3.917	0.179	0.92	3.710	0.031	0.18	MC
9BAZXZ		3.817	0.079	0.40	3.813	0.134	0.77	MC
A8MNT3		3.725	-0.012	-0.06	3.670	-0.009	-0.05	MX
ABPGTT	*	3.195	-0.542	-2.77	3.160	-0.519	-2.98	MC
AFJEFY	*	4.210	0.473	2.41	3.997	0.317	1.82	MC
BRRGGM		3.555	-0.182	-0.93	3.457	-0.223	-1.28	MC
BV7ACL		3.977	0.239	1.22	3.953	0.274	1.57	MC
BWKPH9		3.843	0.106	0.54	3.794	0.115	0.66	MC
DDJD7C		3.625	-0.112	-0.57	3.552	-0.128	-0.73	MC
E7YWR8		3.892	0.154	0.79	3.811	0.132	0.76	MC
EGENDW		3.872	0.134	0.69	3.835	0.156	0.89	MC
FUFNJ7	X	2.963	-0.774	-3.95	2.968	-0.711	-4.08	MC
H7M7E7		3.707	-0.031	-0.16	3.663	-0.016	-0.09	MD
L8MKA2		3.592	-0.146	-0.74	3.563	-0.116	-0.67	ME
LAT39W	X	3.177	-0.561	-2.86	2.978	-0.701	-4.02	MC
LBMN49		3.713	-0.024	-0.12	3.617	-0.063	-0.36	MC
LE6VJV		3.667	-0.071	-0.36	3.657	-0.023	-0.13	MC
LKBK3N		3.872	0.134	0.69	3.755	0.076	0.43	MC
PAKZD9		3.693	-0.044	-0.23	3.672	-0.008	-0.04	MC
PBUA2Z		3.880	0.143	0.73	3.815	0.136	0.78	MC
QMNQQ2		3.960	0.223	1.14	3.802	0.122	0.70	MC
QPV2M6		3.907	0.169	0.86	3.755	0.076	0.43	TP
QYHZDA		3.575	-0.162	-0.83	3.518	-0.161	-0.92	MC
TYTLZG		3.675	-0.062	-0.32	3.625	-0.054	-0.31	ME
VNZDNG		3.890	0.153	0.78	3.838	0.159	0.91	MM
VVK89T	X	3.542	-0.196	-1.00	3.317	-0.363	-2.08	MC
XAEFZR		3.602	-0.136	-0.69	3.583	-0.097	-0.56	MC
XBKFK2		3.480	-0.257	-1.32	3.438	-0.241	-1.38	MD
XMZXPX		3.805	0.068	0.34	3.702	0.022	0.13	MC
Y2T3EX		3.612	-0.126	-0.64	3.585	-0.094	-0.54	MC
Y6GG48		3.395	-0.342	-1.75	3.402	-0.278	-1.59	MR



Rubber Interlaboratory Testing Program

Report #199

Analysis 686

1st Qtr 2019

MDR Vulcanization-Cure Time 50% (minutes)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
YP2KGJ		4.052	0.314	1.60	4.018	0.339	1.94	XX
ZNNB6C		3.758	0.021	0.11	3.773	0.094	0.54	MM

Summary Statistics	
Grand Means	
	3.7375 minutes
Std Dev Btwn Labs	
	0.1958 minutes
	3.6793 minutes
	0.1743 minutes
Statistics based on 36 of 40 reporting participants	

Samples W95-W96: EPDM compound, batch #1 & W97-W98: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #686

62Y6RY (X) - Inconsistent in testing between samples.

FUFNJ7 (X) - Data for all samples are low. Possible Systematic Error.

LAT39W (X) - Data for all samples are low. Possible Systematic Error.

VVK89T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W95-W96.

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

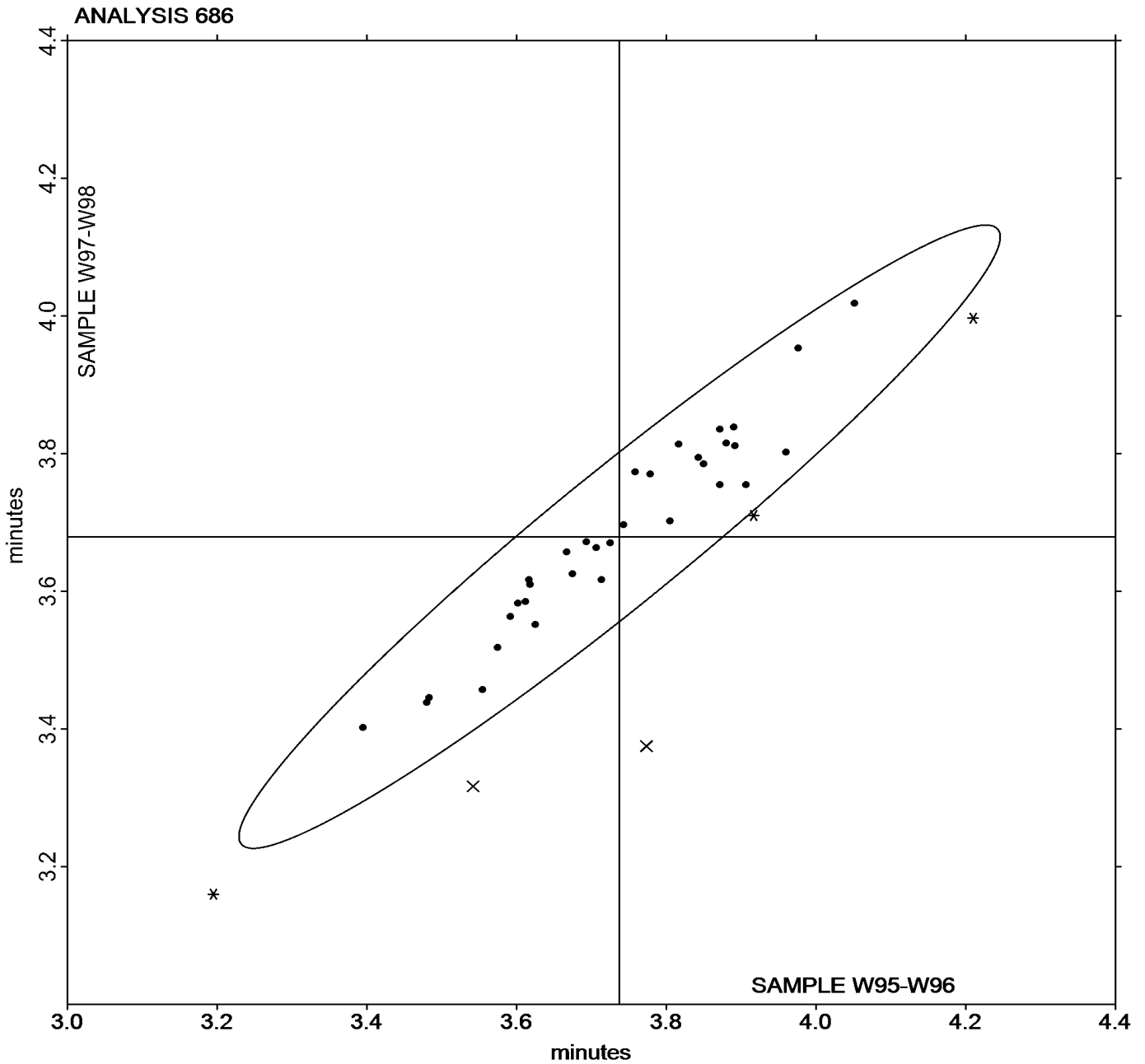


Rubber Interlaboratory Testing Program
Analysis 686
MDR Vulcanization-Cure Time 50% (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W95-W96** = 3.7375 minutes

Grand Mean Sample **W97-W98** = 3.6793 minutes





Rubber Interlaboratory Testing Program

Report #199

Analysis 687

1st Qtr 2019

MDR Vulcanization-Cure Time 90% (minutes)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		5.648	-0.717	-1.75	5.672	-0.589	-1.63	MM
392HTB		6.773	0.408	1.00	6.512	0.251	0.69	XX
4KCAWB		6.778	0.413	1.01	6.677	0.416	1.15	MC
62Y6RY	X	6.345	-0.020	-0.05	5.673	-0.588	-1.62	MC
6K88Q4		6.317	-0.049	-0.12	6.383	0.122	0.34	XX
6V76BH		6.357	-0.009	-0.02	6.348	0.087	0.24	MC
776G4P		6.677	0.311	0.76	6.562	0.301	0.83	MC
8YHRZ8		6.727	0.361	0.88	6.392	0.131	0.36	MC
9BAZXZ		6.603	0.238	0.58	6.550	0.289	0.80	MC
A8MNT3		6.615	0.250	0.61	6.492	0.231	0.64	MX
ABPGTT		5.713	-0.652	-1.59	5.762	-0.499	-1.38	MC
AFJEFY		6.725	0.360	0.88	6.550	0.289	0.80	MC
BRRGGM		6.325	-0.040	-0.10	6.037	-0.224	-0.62	MC
BV7ACL		7.027	0.661	1.62	6.828	0.567	1.57	MC
BWKPH9		6.719	0.353	0.86	6.400	0.139	0.38	MC
DDJD7C		6.173	-0.192	-0.47	6.088	-0.173	-0.48	MC
E7YWR8		6.883	0.518	1.27	6.636	0.375	1.04	MC
EGENDW		6.422	0.056	0.14	6.262	0.001	0.00	MC
FUFNJ7	*	5.107	-1.259	-3.08	5.108	-1.153	-3.19	MC
H7M7E7		6.453	0.088	0.22	6.380	0.119	0.33	MD
L8MKA2		6.248	-0.117	-0.29	6.153	-0.108	-0.30	ME
LAT39W		5.558	-0.807	-1.97	5.475	-0.786	-2.17	MC
LBMN49		6.398	0.033	0.08	6.253	-0.008	-0.02	MC
LE6VJV		6.478	0.113	0.28	6.357	0.096	0.26	MC
LKBK3N		6.475	0.110	0.27	6.445	0.184	0.51	MC
PAKZD9		6.222	-0.144	-0.35	6.097	-0.164	-0.45	MC
PBUA2Z		6.025	-0.340	-0.83	5.980	-0.281	-0.78	MC
QMNQQ2		6.735	0.370	0.90	6.552	0.291	0.80	MC
QPV2M6		6.397	0.031	0.08	6.443	0.182	0.50	TP
QYHZDA		6.268	-0.097	-0.24	6.052	-0.209	-0.58	MP
TYTLZG		6.348	-0.017	-0.04	6.298	0.037	0.10	ME
VNZDNG		6.627	0.261	0.64	6.495	0.234	0.65	MM
VVK89T	X	6.647	0.281	0.69	5.778	-0.483	-1.33	MC
XAEFZR		6.261	-0.104	-0.25	6.263	0.002	0.01	MC
XBKFK2		6.058	-0.307	-0.75	6.098	-0.163	-0.45	MD
XMZXPX		6.670	0.305	0.75	6.413	0.152	0.42	MC
Y2T3EX		6.081	-0.284	-0.69	6.032	-0.229	-0.63	MC
Y6GG48		5.708	-0.657	-1.61	5.648	-0.613	-1.69	MR



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
YP2KGJ		6.823	0.458	1.12	6.747	0.486	1.34	XX
ZNNB6C		6.452	0.086	0.21	6.477	0.216	0.60	MM

Summary Statistics	
Grand Means	
	6.3652 minutes
Std Dev Btwn Labs	
	0.4090 minutes
	6.2610 minutes
	0.3618 minutes
	Statistics based on 38 of 40 reporting participants

Samples W95-W96: EPDM compound, batch #1 & W97-W98: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #687

62Y6RY (X) - Inconsistent in testing between samples.

VVK89T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W95-W96.

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	

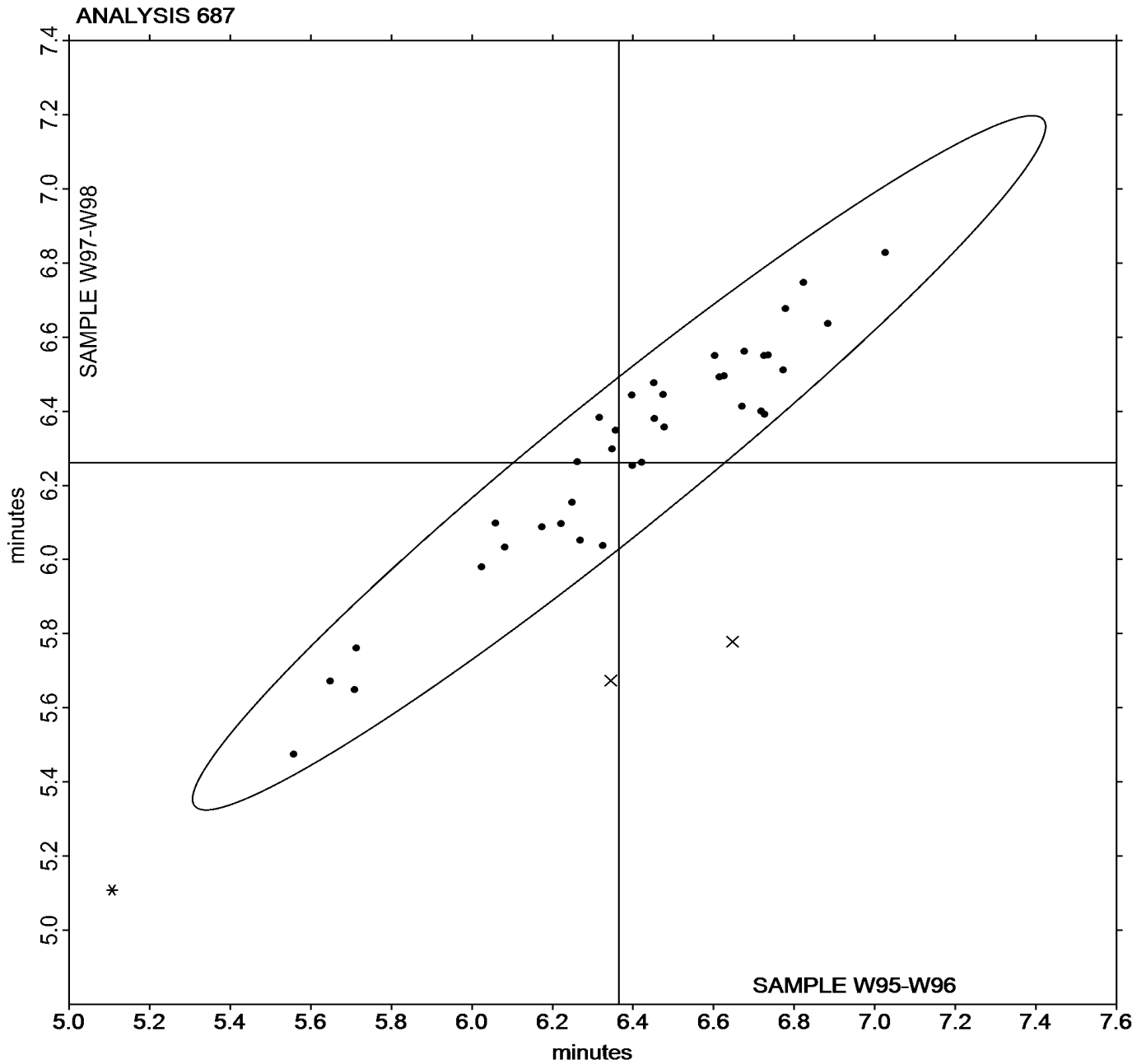


Rubber Interlaboratory Testing Program
Analysis 687
MDR Vulcanization-Cure Time 90% (minutes)

Report #199
1st Qtr 2019

Grand Mean Sample **W95-W96** = 6.3652 minutes

Grand Mean Sample **W97-W98** = 6.2610 minutes





Rubber Interlaboratory Testing Program

Report #199

Analysis 688

1st Qtr 2019

MDR Vulcanization: Minimum Torque (lbf.in)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		1.958	0.249	0.92	1.978	0.289	1.04	MM
392HTB		1.660	-0.050	-0.18	1.673	-0.016	-0.06	XX
4KCAWB		1.508	-0.201	-0.75	1.488	-0.201	-0.73	MC
62Y6RY		2.195	0.485	1.80	2.229	0.539	1.94	MC
6K88Q4		1.400	-0.310	-1.15	1.400	-0.290	-1.04	MM
6V76BH	*	1.835	0.125	0.46	1.698	0.008	0.03	MC
776G4P		1.620	-0.090	-0.33	1.605	-0.085	-0.31	MC
8YHRZ8		1.511	-0.199	-0.74	1.459	-0.231	-0.83	MC
9BAZXZ		1.620	-0.090	-0.33	1.608	-0.081	-0.29	MC
A8MNT3		1.457	-0.253	-0.94	1.462	-0.228	-0.82	MX
ABPGTT		2.298	0.589	2.18	2.308	0.619	2.23	MC
AFJEFY		1.437	-0.273	-1.01	1.422	-0.268	-0.97	MC
BRRGGM		1.782	0.072	0.27	1.757	0.067	0.24	MC
BV7ACL		1.517	-0.193	-0.72	1.478	-0.211	-0.76	MC
BWKPH9	*	2.498	0.788	2.92	2.480	0.790	2.85	XX
DDJD7C		1.999	0.289	1.07	1.900	0.210	0.76	MC
E7YWR8		1.550	-0.160	-0.59	1.497	-0.193	-0.70	MC
EGENDW		1.553	-0.156	-0.58	1.528	-0.161	-0.58	MC
FUFNJ7		2.007	0.297	1.10	2.012	0.322	1.16	MC
H7M7E7		1.516	-0.193	-0.72	1.515	-0.175	-0.63	MD
L8MKA2		1.635	-0.075	-0.28	1.612	-0.078	-0.28	ME
LAT39W	*	2.392	0.682	2.53	2.417	0.727	2.62	MC
LBMN49		1.638	-0.071	-0.26	1.675	-0.015	-0.05	MC
LE6VJV		1.720	0.010	0.04	1.692	0.002	0.01	MC
LKBK3N		1.535	-0.175	-0.65	1.535	-0.155	-0.56	MC
PAKZD9		1.868	0.159	0.59	1.843	0.154	0.55	MC
PBUA2Z		1.740	0.030	0.11	1.750	0.060	0.22	MC
QMNQQ2		1.522	-0.188	-0.70	1.473	-0.216	-0.78	MC
QPV2M6	*	1.575	-0.135	-0.50	1.432	-0.258	-0.93	TP
QYHZDA		1.533	-0.177	-0.66	1.516	-0.173	-0.62	MP
TYTLZG		1.580	-0.130	-0.48	1.600	-0.090	-0.32	ME
VNZDNG		1.680	-0.030	-0.11	1.663	-0.026	-0.10	MM
VVK89T		1.715	0.005	0.02	1.648	-0.041	-0.15	MC
XAEFZR		1.744	0.034	0.13	1.721	0.032	0.11	MC
XMZXPN		1.598	-0.111	-0.41	1.572	-0.118	-0.43	MC
Y2T3EX		1.673	-0.037	-0.14	1.668	-0.021	-0.08	MC
Y6GG48		1.798	0.089	0.33	1.790	0.100	0.36	MR
YP2KGJ		1.466	-0.243	-0.90	1.453	-0.237	-0.85	XX



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

Report #199
1st Qtr 2019

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
ZNNB6C		1.343	-0.366	-1.36	1.345	-0.345	-1.24	MM

		Summary Statistics	
Grand Means		1.7096 lbf.in	1.6898 lbf.in
Stnd Dev Btwn Labs		0.2698 lbf.in	0.2776 lbf.in
Statistics based on 39 of 39 reporting participants			

		Summary Statistics in SI Units	
Grand Means		1.9316 dN.m	1.9092 dN.m
Stnd Dev Btwn Labs		0.3048 dN.m	0.3136 dN.m
Statistics based on 39 of 39 reporting participants			

Samples W95-W96: EPDM compound, batch #1 & W97-W98: EPDM compound, batch #2

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 | |

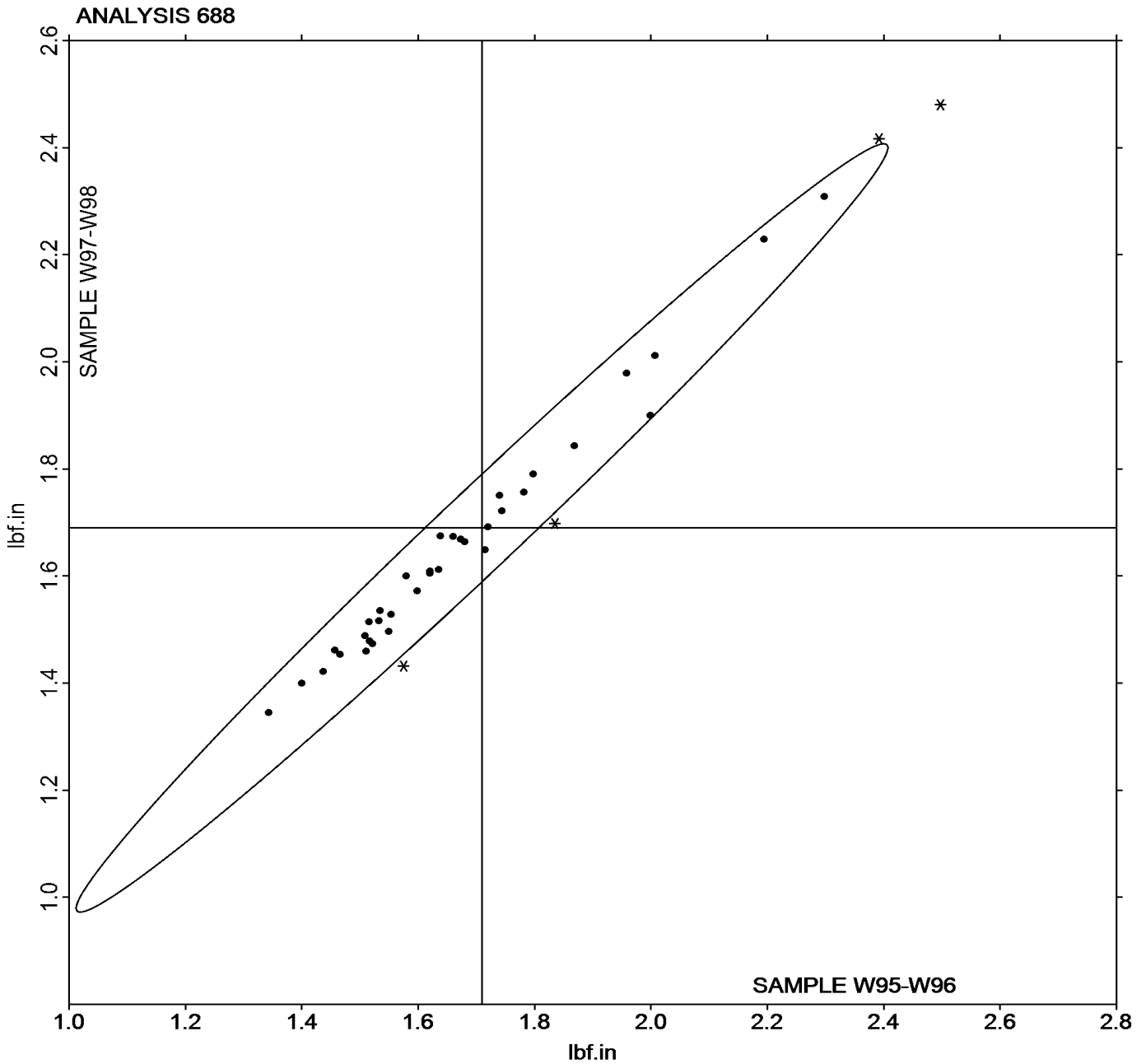


Rubber Interlaboratory Testing Program
Analysis 688
MDR Vulcanization: Minimum Torque (lbf.in)

Report #199
1st Qtr 2019

Grand Mean Sample **W95-W96** = 1.7096 lbf.in

Grand Mean Sample **W97-W98** = 1.6898 lbf.in





Rubber Interlaboratory Testing Program

Report #199

Analysis 689

1st Qtr 2019

MDR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		12.74	-0.01	-0.02	12.65	-0.01	-0.01	MM
392HTB		14.12	1.36	1.97	13.89	1.23	1.98	XX
4KCAWB		12.71	-0.05	-0.07	12.73	0.06	0.10	MC
62Y6RY		11.16	-1.59	-2.30	11.25	-1.41	-2.27	MC
6K88Q4		12.80	0.05	0.07	12.63	-0.03	-0.05	MM
6V76BH		12.35	-0.41	-0.59	12.21	-0.45	-0.72	MC
776G4P		13.34	0.58	0.84	12.94	0.28	0.44	MC
8YHRZ8		13.00	0.24	0.35	12.46	-0.21	-0.33	MC
9BAZXZ		12.03	-0.73	-1.05	12.15	-0.51	-0.83	MC
A8MNT3		12.20	-0.56	-0.81	12.32	-0.34	-0.54	MX
ABPGTT		12.90	0.15	0.21	12.82	0.16	0.26	MC
AFJEFY		12.14	-0.62	-0.89	12.55	-0.11	-0.18	MC
BRRGGM		12.38	-0.37	-0.54	11.95	-0.72	-1.15	MC
BV7ACL		13.17	0.42	0.60	13.01	0.35	0.56	MC
BWKPH9	*	14.76	2.00	2.89	14.51	1.85	2.97	MC
DDJD7C		12.53	-0.22	-0.32	12.35	-0.31	-0.50	MC
E7YWR8		12.95	0.19	0.27	12.67	0.00	0.01	MC
EGENDW		13.15	0.40	0.57	13.30	0.63	1.02	MC
FUFNJ7		12.98	0.23	0.33	12.94	0.28	0.44	MC
H7M7E7		12.69	-0.07	-0.10	12.70	0.04	0.07	MD
L8MKA2		12.69	-0.07	-0.10	12.59	-0.08	-0.12	ME
LAT39W	*	13.13	0.37	0.54	12.37	-0.29	-0.47	MC
LBMN49		12.68	-0.08	-0.12	12.49	-0.18	-0.28	MC
LE6VJV		13.76	1.00	1.45	13.34	0.68	1.09	MC
LKBK3N		12.77	0.02	0.02	12.76	0.10	0.16	MC
PAKZD9		12.91	0.16	0.23	12.94	0.28	0.45	MC
PBUA2Z		12.63	-0.12	-0.18	12.49	-0.17	-0.28	MC
QMNQQ2		13.10	0.34	0.49	13.18	0.52	0.83	MC
QPV2M6		11.57	-1.19	-1.71	12.01	-0.65	-1.04	TP
QYHZDA		12.79	0.03	0.05	12.48	-0.18	-0.29	MC
TYTLZG		12.50	-0.25	-0.37	12.32	-0.34	-0.55	ME
VNZDNG		13.73	0.98	1.41	13.78	1.11	1.79	MM
VVK89T	X	15.68	2.92	4.22	12.90	0.23	0.38	MC
XAEFZR		13.09	0.34	0.49	13.16	0.49	0.79	MC
XMZXPN		12.90	0.14	0.20	12.49	-0.17	-0.27	MC
Y2T3EX		12.63	-0.12	-0.17	12.79	0.13	0.20	MC
Y6GG48		12.47	-0.28	-0.41	12.66	-0.01	-0.01	MR
YP2KGJ		12.10	-0.66	-0.95	12.08	-0.58	-0.93	XX



Rubber Interlaboratory Testing Program

Report #199

Analysis 689

1st Qtr 2019

MDR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample W95-W96			Sample W97-W98			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
ZNNB6C		11.17	-1.58	-2.29	11.23	-1.43	-2.30	MM

		Summary Statistics	
Grand Means		12.755 lbf.in	12.662 lbf.in
Std Dev Btwn Labs		0.692 lbf.in	0.622 lbf.in
Statistics based on 38 of 39 reporting participants			

		Summary Statistics in SI Units	
Grand Means		14.411 dN.m	14.307 dN.m
Std Dev Btwn Labs		0.782 dN.m	0.703 dN.m
Statistics based on 38 of 39 reporting participants			

Samples W95-W96: EPDM compound, batch #1 & W97-W98: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #689

VVK89T (X) - Data for sample group W95-W96 are high. Inconsistent within the determinations of sample group W95-W96.

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

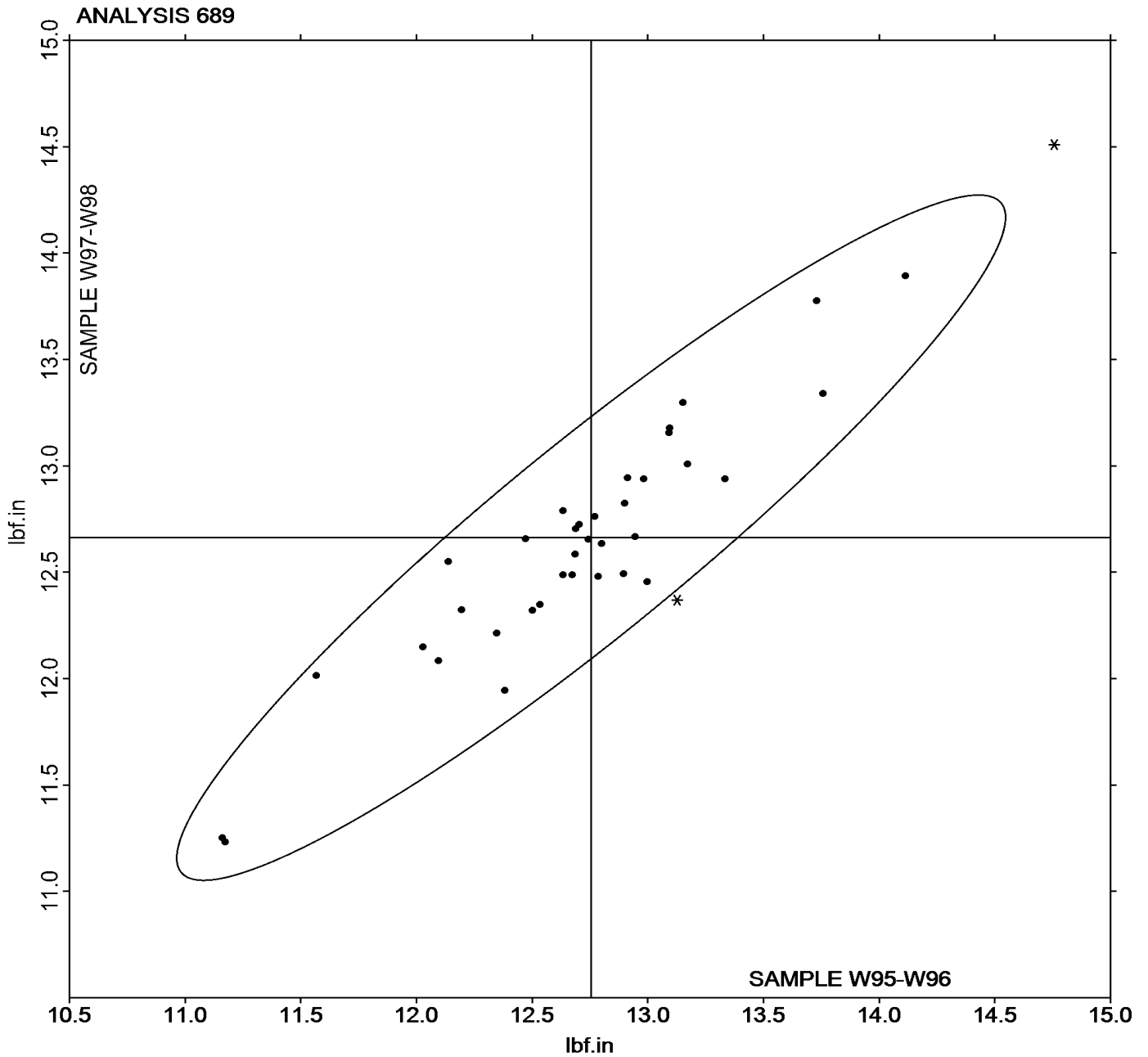


Rubber Interlaboratory Testing Program
Analysis 689
MDR Vulcanization: Maximum Torque (lbf.in)

Report #199
1st Qtr 2019

Grand Mean Sample **W95-W96** = 12.755 lbf.in

Grand Mean Sample **W97-W98** = 12.662 lbf.in





Rubber Interlaboratory Testing Program

Report #199

Analysis 690

1st Qtr 2019

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

WebCode	Data Flag	Sample E91-E92			Sample E93-E94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		596.7	103.1	1.58	596.1	103.8	1.62	RP
A8MNT3		579.2	85.5	1.31	572.5	80.2	1.26	XX
GP6V98		442.3	-51.4	-0.79	443.7	-48.7	-0.76	RP
PBUA2Z		463.2	-30.4	-0.47	465.2	-27.2	-0.43	PR
QPV2M6	X	254.1	-239.6	-3.67	245.0	-247.4	-3.87	XX
XAEFZR		450.7	-42.9	-0.66	447.2	-45.1	-0.71	RP
Y2T3EX		469.6	-24.0	-0.37	469.8	-22.5	-0.35	RP
YP2KGJ		453.7	-40.0	-0.61	451.8	-40.5	-0.63	RP

Grand Means		Summary Statistics	
	493.62 kPa		492.31 kPa
Std Dev Btwn Labs	65.21 kPa		63.88 kPa
Statistics based on 7 of 8 reporting participants			

Samples E91-E92: EPDM compound, batch #1 & E93-E94: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #690

QPV2M6 (X) - Extreme data.

Key to Instrument Codes Reported by Participants

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

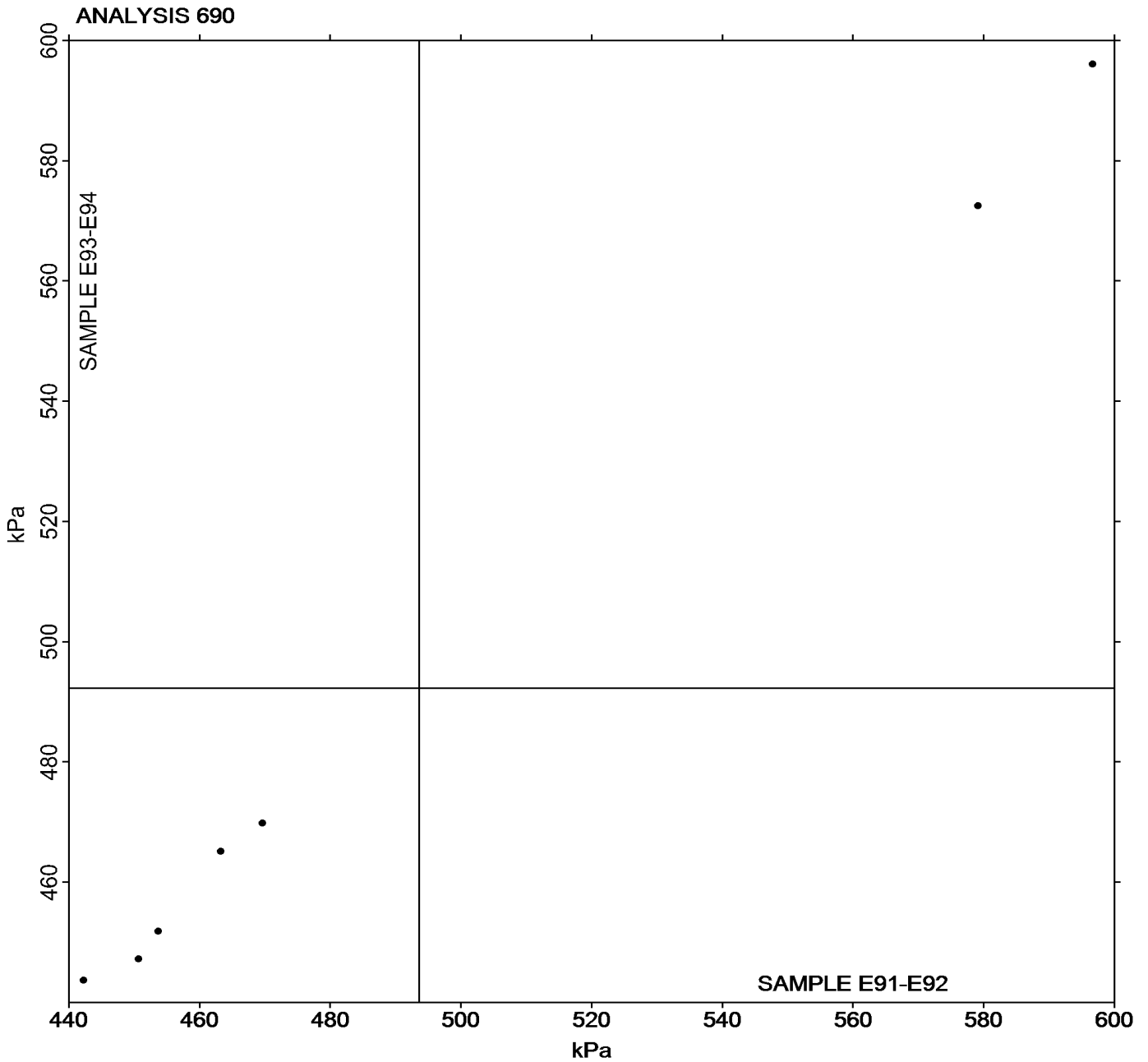


Rubber Interlaboratory Testing Program
Analysis 690
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #199
1st Qtr 2019

Grand Mean Sample E91-E92 = 493.62 kPa

Grand Mean Sample E93-E94 = 492.31 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 #199

Analysis 691

1st Qtr 2019

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

WebCode	Data Flag	Sample E91-E92			Sample E93-E94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		170.7	-23.3	-0.80	171.5	-22.0	-0.71	XX
A8MNT3		210.9	16.9	0.58	209.6	16.1	0.52	XX
GP6V98		211.8	17.7	0.61	213.7	20.2	0.65	RP
PBUA2Z		220.6	26.6	0.91	220.6	27.1	0.87	PR
QPV2M6		133.6	-60.4	-2.08	127.1	-66.4	-2.14	XX
XAEFZR		201.2	7.1	0.25	200.6	7.1	0.23	RP
Y2T3EX		212.5	18.5	0.64	213.3	19.8	0.64	RP
YP2KGJ		190.9	-3.1	-0.11	191.4	-2.1	-0.07	RP

Grand Means		Summary Statistics	
	194.03 kPa		193.46 kPa
Stnd Dev Btwn Labs	29.05 kPa		31.04 kPa
Statistics based on 8 of 8 reporting participants			

Samples E91-E92: EPDM compound, batch #1 & E93-E94: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

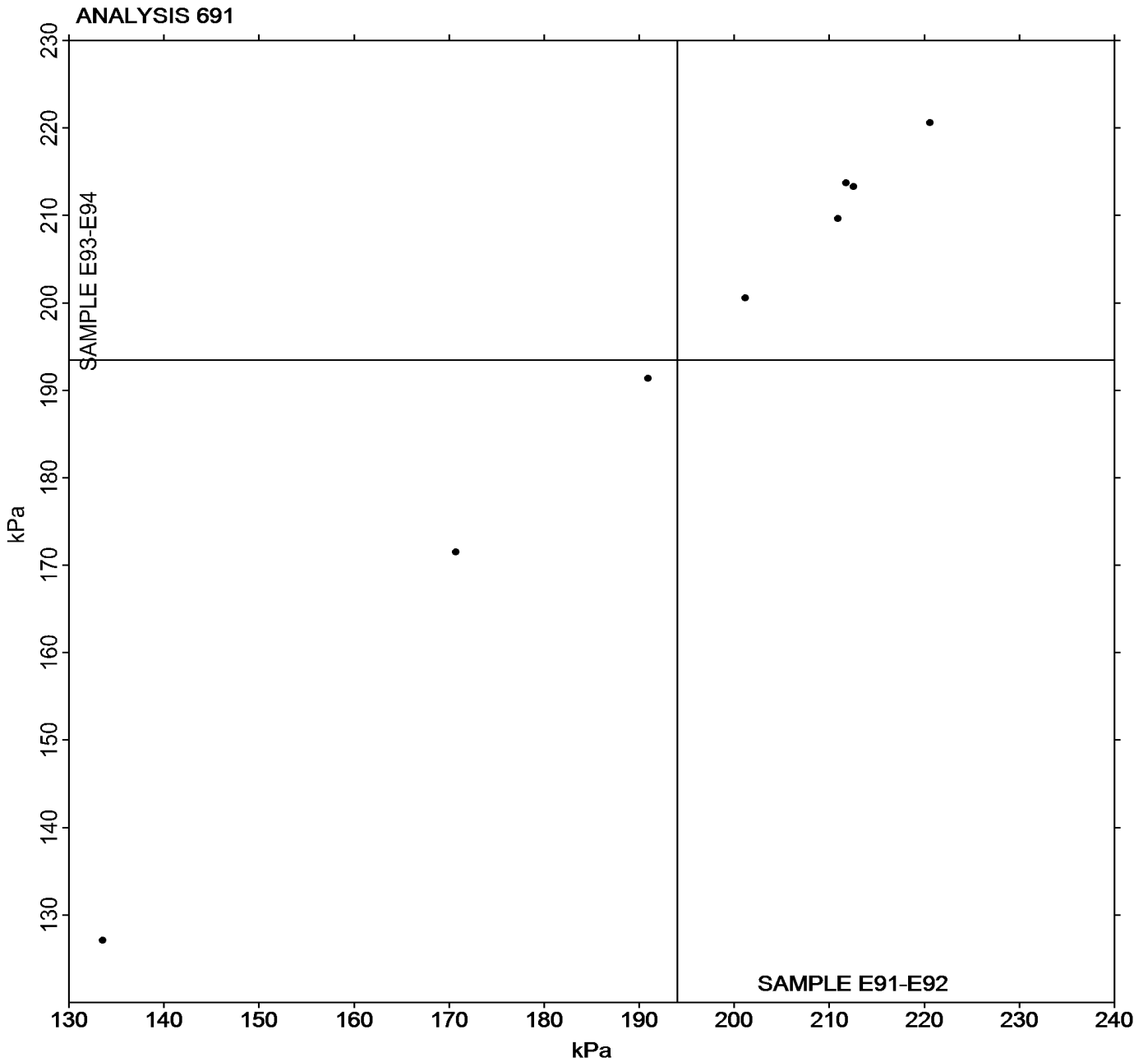
- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab



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

Grand Mean Sample E91-E92 = 194.03 kPa

Grand Mean Sample E93-E94 = 193.46 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 #199

Analysis 695

1st Qtr 2019

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

WebCode	Data Flag	Sample E91-E92			Sample E93-E94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		130.34	47.57	1.93	131.59	48.68	1.94	XX
A8MNT3		98.07	15.30	0.62	98.42	15.50	0.62	XX
GP6V98		63.75	-19.01	-0.77	63.79	-19.12	-0.76	RP
PBUA2Z		65.31	-17.46	-0.71	66.20	-16.72	-0.67	PR
XAEFZR		63.55	-19.22	-0.78	62.86	-20.06	-0.80	RP
Y2T3EX		72.66	-10.11	-0.41	72.53	-10.38	-0.41	RP
YP2KGJ		85.71	2.94	0.12	85.01	2.10	0.08	RP

Grand Means		Summary Statistics	
	82.767 kPa		82.914 kPa
Std Dev Btwn Labs	24.643 kPa		25.064 kPa
Statistics based on 7 of 7 reporting participants			

Samples E91-E92: EPDM compound, batch #1 & E93-E94: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

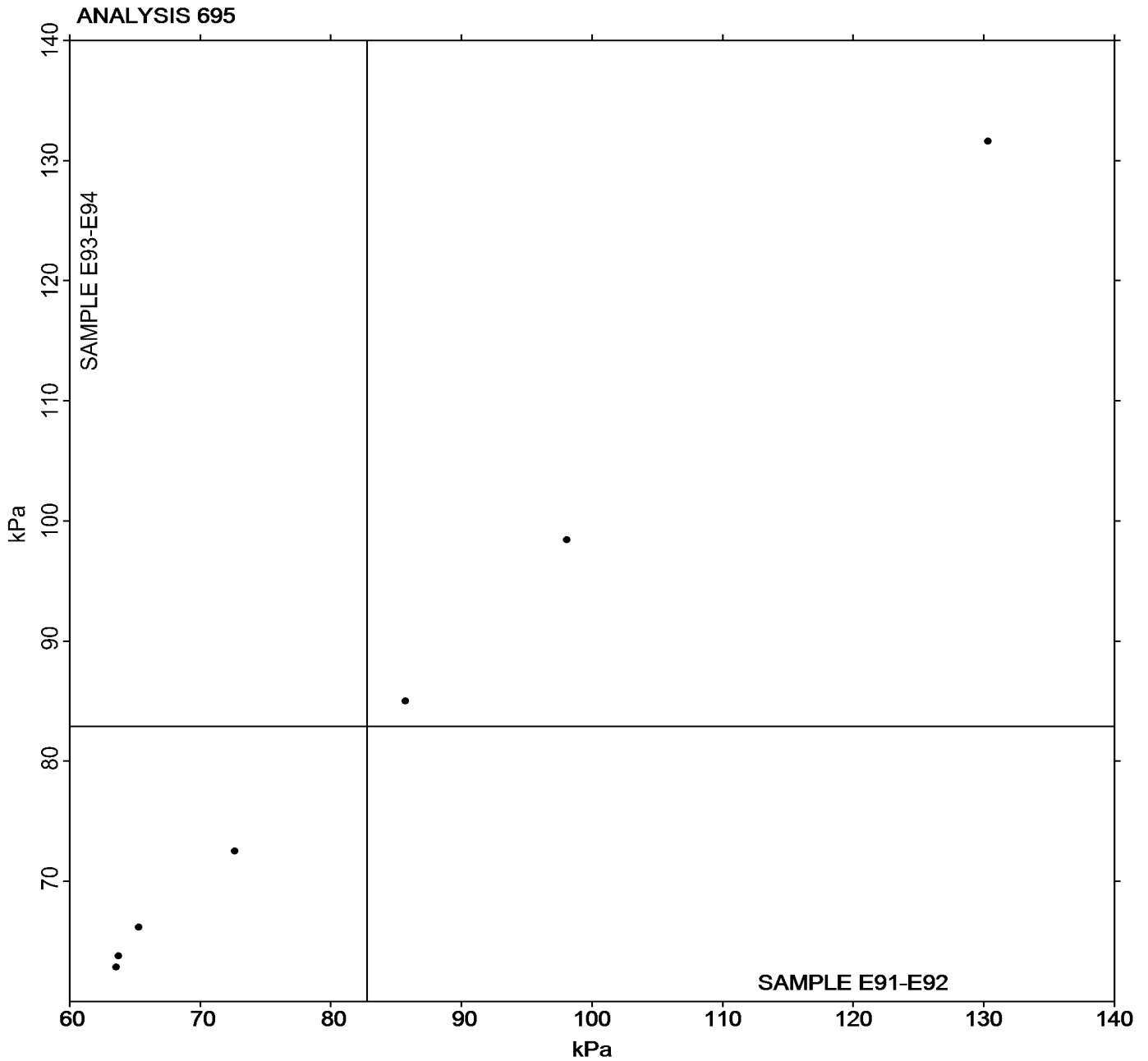
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample E91-E92 = 82.767 kPa

Grand Mean Sample E93-E94 = 82.914 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 #199

Analysis 696

1st Qtr 2019

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

WebCode	Data Flag	Sample E91-E92			Sample E93-E94			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2CRHFL		84.64	14.20	1.81	85.76	15.31	1.90	XX
A8MNT3		76.22	5.78	0.74	74.87	4.42	0.55	XX
GP6V98		62.52	-7.92	-1.01	62.79	-7.66	-0.95	XX
PBUA2Z		66.75	-3.69	-0.47	66.93	-3.52	-0.44	PR
XAEFZR		64.12	-6.32	-0.80	63.98	-6.47	-0.81	RP
Y2T3EX		72.33	1.89	0.24	72.45	2.01	0.25	RP
YP2KGJ		66.49	-3.95	-0.50	66.36	-4.09	-0.51	RP

Summary Statistics	
Grand Means	70.439 kPa
Std Dev Btwn Labs	7.860 kPa
	70.446 kPa
	8.038 kPa
Statistics based on 7 of 7 reporting participants	

Samples E91-E92: EPDM compound, batch #1 & E93-E94: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

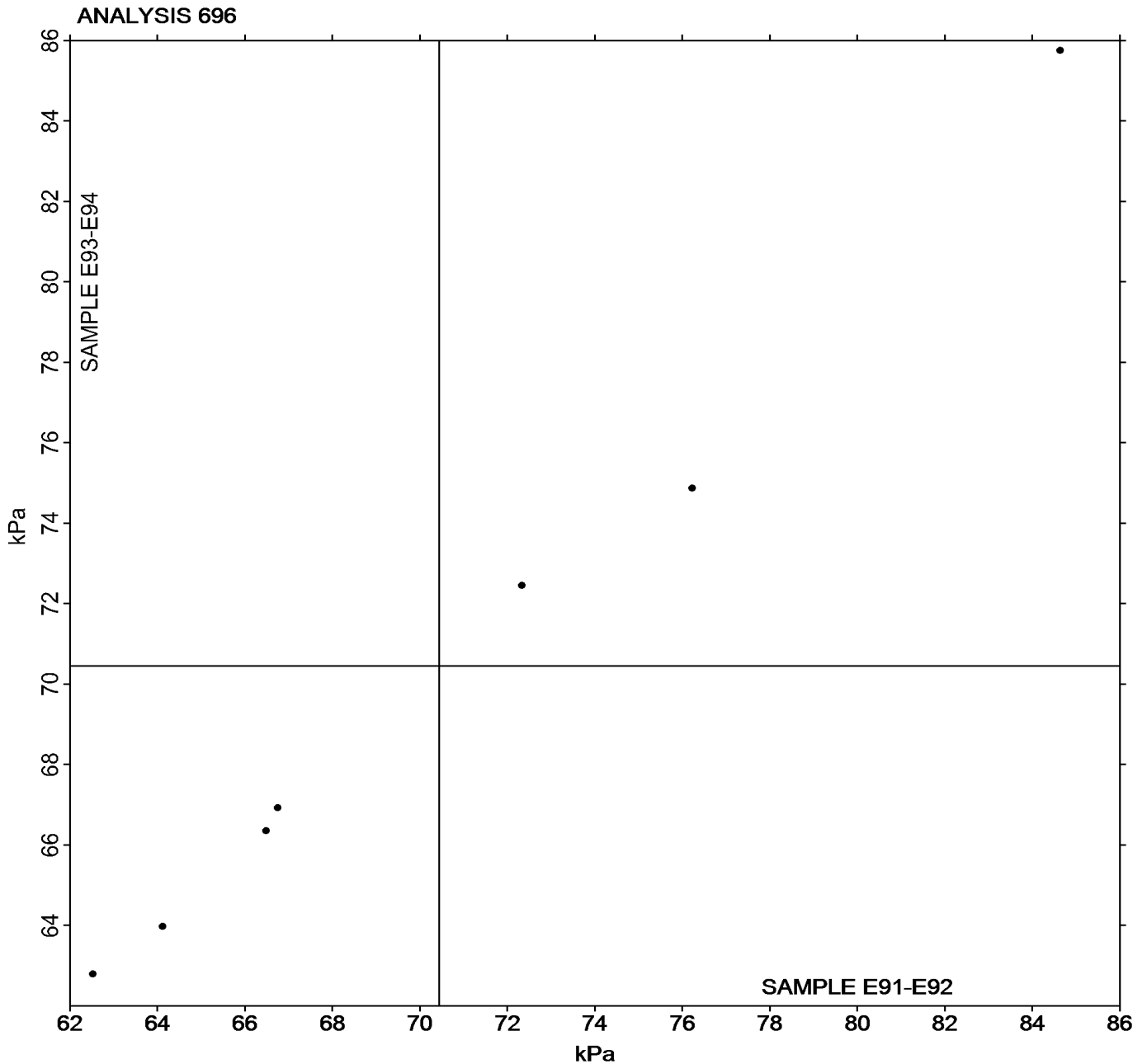
- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab



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

Grand Mean Sample E91-E92 = 70.439 kPa

Grand Mean Sample E93-E94 = 70.446 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-