



Rubber Interlaboratory Testing Program

Summary Report #211- 1st Qtr 2022

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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
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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 #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2T2TBQ		3,313.3	14.2	0.09	3,262.0	-42.0	-0.23
2VTRPP		3,491.0	192.0	1.19	3,519.5	215.5	1.19
33PUHT		3,253.9	-45.2	-0.28	3,183.3	-120.8	-0.67
3G68KL		3,474.5	175.5	1.09	3,383.0	79.0	0.44
3JFP4R		3,481.6	182.6	1.14	3,504.1	200.1	1.10
3VNR6F		3,179.5	-119.5	-0.74	3,044.0	-260.0	-1.43
46DNUM		3,086.5	-212.5	-1.32	3,094.0	-210.0	-1.16
4A6VCW		3,326.5	27.5	0.17	3,478.3	174.2	0.96
6337BH		3,342.7	43.7	0.27	3,473.9	169.9	0.94
68QYVW		3,433.1	134.1	0.83	3,397.5	93.5	0.52
6MQP4F		3,280.0	-19.0	-0.12	3,150.0	-154.0	-0.85
6YGBJJ		3,247.1	-51.9	-0.32	3,208.4	-95.6	-0.53
89FXCR		3,404.5	105.5	0.66	3,378.0	74.0	0.41
8EYB3E		3,214.9	-84.1	-0.52	3,280.8	-23.3	-0.13
8L8EDL		3,140.8	-158.2	-0.98	3,133.6	-170.5	-0.94
8MKUXF		3,216.5	-82.5	-0.51	3,161.5	-142.5	-0.79
8NN2MK		3,516.0	217.0	1.35	3,370.5	66.5	0.37
8TNXLT		3,305.0	6.0	0.04	3,353.5	49.5	0.27
99Q7QK		3,331.2	32.2	0.20	3,151.2	-152.8	-0.84
9PHXZL		3,124.1	-174.9	-1.09	3,203.9	-100.1	-0.55
9WLQ7B		3,316.3	17.3	0.11	3,430.9	126.9	0.70
9Y3DEN		3,284.0	-15.0	-0.09	3,357.0	53.0	0.29
AEFWZM		3,315.5	16.5	0.10	3,408.0	104.0	0.57
AF88KN		3,125.5	-173.5	-1.08	3,141.5	-162.5	-0.90
AG8VEK	*	3,106.5	-192.5	-1.20	3,430.5	126.5	0.70
BC4TDN		3,256.5	-42.5	-0.26	3,420.0	116.0	0.64
BF7H7H		3,074.1	-224.9	-1.40	3,272.1	-31.9	-0.18
BK2C4K		3,464.4	165.4	1.03	3,431.0	127.0	0.70
CDTEK7		3,467.2	168.1	1.05	3,636.0	332.0	1.83
D4R669		3,181.0	-118.0	-0.73	3,121.5	-182.5	-1.01
DDWCJ9		3,236.2	-62.8	-0.39	3,434.9	130.9	0.72
DFJQ9H		3,505.6	206.6	1.28	3,584.6	280.6	1.55
DVQ2PA		3,282.3	-16.8	-0.10	3,293.8	-10.3	-0.06
DX2R3K		3,300.0	1.0	0.01	3,325.0	21.0	0.12
E2D7X4		3,393.7	94.7	0.59	3,411.6	107.6	0.59
E8ZY8H		3,249.0	-50.0	-0.31	3,405.5	101.5	0.56
EV7HHH		3,487.0	188.0	1.17	3,413.5	109.5	0.60
FBYKND		2,923.9	-375.2	-2.33	2,910.7	-393.3	-2.17



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FG4G9D		3,087.6	-211.4	-1.31	2,970.0	-334.0	-1.84
FRJK6B		3,464.3	165.2	1.03	3,447.6	143.6	0.79
FTBGRJ		3,187.6	-111.4	-0.69	3,006.9	-297.1	-1.64
FTXXXE		3,313.0	14.0	0.09	3,233.0	-71.0	-0.39
FZF4W7		3,510.0	211.0	1.31	3,645.0	341.0	1.88
GAHWDC		3,335.0	36.0	0.22	3,450.0	146.0	0.80
HE9FHF		3,437.5	138.5	0.86	3,489.0	185.0	1.02
HQZDWY		3,474.0	175.0	1.09	3,370.0	66.0	0.36
JFF7XA		3,327.2	28.2	0.18	3,243.8	-60.2	-0.33
JKA4L2		3,189.0	-110.0	-0.68	3,003.0	-301.0	-1.66
JVFW49		3,238.0	-61.0	-0.38	3,144.5	-159.5	-0.88
K9ARQY		3,433.8	134.8	0.84	3,577.6	273.5	1.51
KA83M2	*	2,880.0	-419.0	-2.60	2,907.0	-397.0	-2.19
KZGRZD		3,099.0	-200.0	-1.24	3,145.0	-159.0	-0.88
M3YK27		3,547.7	248.7	1.55	3,433.0	129.0	0.71
M48XJ8		3,480.0	181.0	1.13	3,509.5	205.5	1.13
MBF823		3,397.5	98.5	0.61	3,451.0	147.0	0.81
MTNFAQ2		3,387.4	88.4	0.55	3,325.7	21.7	0.12
P2YBAZ		3,459.5	160.5	1.00	3,207.4	-96.6	-0.53
P4MPXB		3,030.5	-268.5	-1.67	2,996.5	-307.5	-1.69
PKUUX9		3,233.6	-65.4	-0.41	3,119.1	-185.0	-1.02
PPK697		3,194.5	-104.5	-0.65	3,287.5	-16.5	-0.09
Q7RTN4		3,071.0	-228.0	-1.42	3,158.0	-146.0	-0.80
QARWPY		3,309.8	10.7	0.07	3,262.6	-41.4	-0.23
QBH4X3		3,548.4	249.4	1.55	3,480.2	176.2	0.97
QBLT3Y		3,053.8	-245.2	-1.52	3,003.8	-300.3	-1.65
QGAD9Z		3,335.9	36.9	0.23	3,343.1	39.1	0.22
QWML94		3,299.0	0.0	0.00	3,532.5	228.5	1.26
RAXVYX		3,404.6	105.5	0.66	3,433.0	128.9	0.71
RETRL4		3,159.7	-139.4	-0.87	3,150.2	-153.8	-0.85
RPB8RR		3,298.5	-0.5	0.00	3,086.5	-217.5	-1.20
RVPVFU		3,442.5	143.5	0.89	3,565.5	261.5	1.44
TH9GL8		3,176.4	-122.7	-0.76	3,328.6	24.6	0.14
UB7RJT		3,392.5	93.5	0.58	3,520.0	216.0	1.19
UBPBPZ	X	2,705.0	-594.0	-3.69	3,095.0	-209.0	-1.15
UZQRCZ		3,140.0	-159.0	-0.99	3,197.0	-107.0	-0.59
V3AEWY		3,282.0	-17.0	-0.11	3,476.5	172.5	0.95



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
V47GC3		3,165.0	-134.0	-0.83	3,200.0	-104.0	-0.57
VFXGD6		3,280.1	-19.0	-0.12	3,314.1	10.1	0.06
VVUMWZ		3,125.6	-173.4	-1.08	3,140.1	-163.9	-0.90
W39PHT	*	3,522.5	223.5	1.39	3,249.5	-54.5	-0.30
X96TXQ	*	3,778.3	479.3	2.98	3,734.8	430.7	2.37
XN8DMU		3,491.5	192.5	1.20	3,254.5	-49.5	-0.27
XR7PJU	X	2,085.7	-1,213.3	-7.54	2,110.3	-1,193.7	-6.58
XWWBYV		3,059.6	-239.4	-1.49	3,079.2	-224.8	-1.24
ZX2HET		3,344.5	45.5	0.28	3,299.0	-5.0	-0.03

		Summary Statistics	
Grand Means		3,299.01 psi	3,304.02 psi
Stnd Dev Btw Labs		160.86 psi	181.51 psi
Statistics based on 82 of 84 reporting participants			

		Summary Statistics in SI Units	
Grand Means		22.746 MPa	22.78 MPa
Stnd Dev Btw Labs		1.109 MPa	1.25 MPa
Statistics based on 82 of 84 reporting participants			

Samples A21-A22: Polyisoprene compound, batch #1 & A23-A24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #605

UBPBPZ (X) - Data for sample group A21-A22 are low. Inconsistent in testing between sample groups.

XR7PJU (X) - Data for all samples are low. Possible Systematic Error.

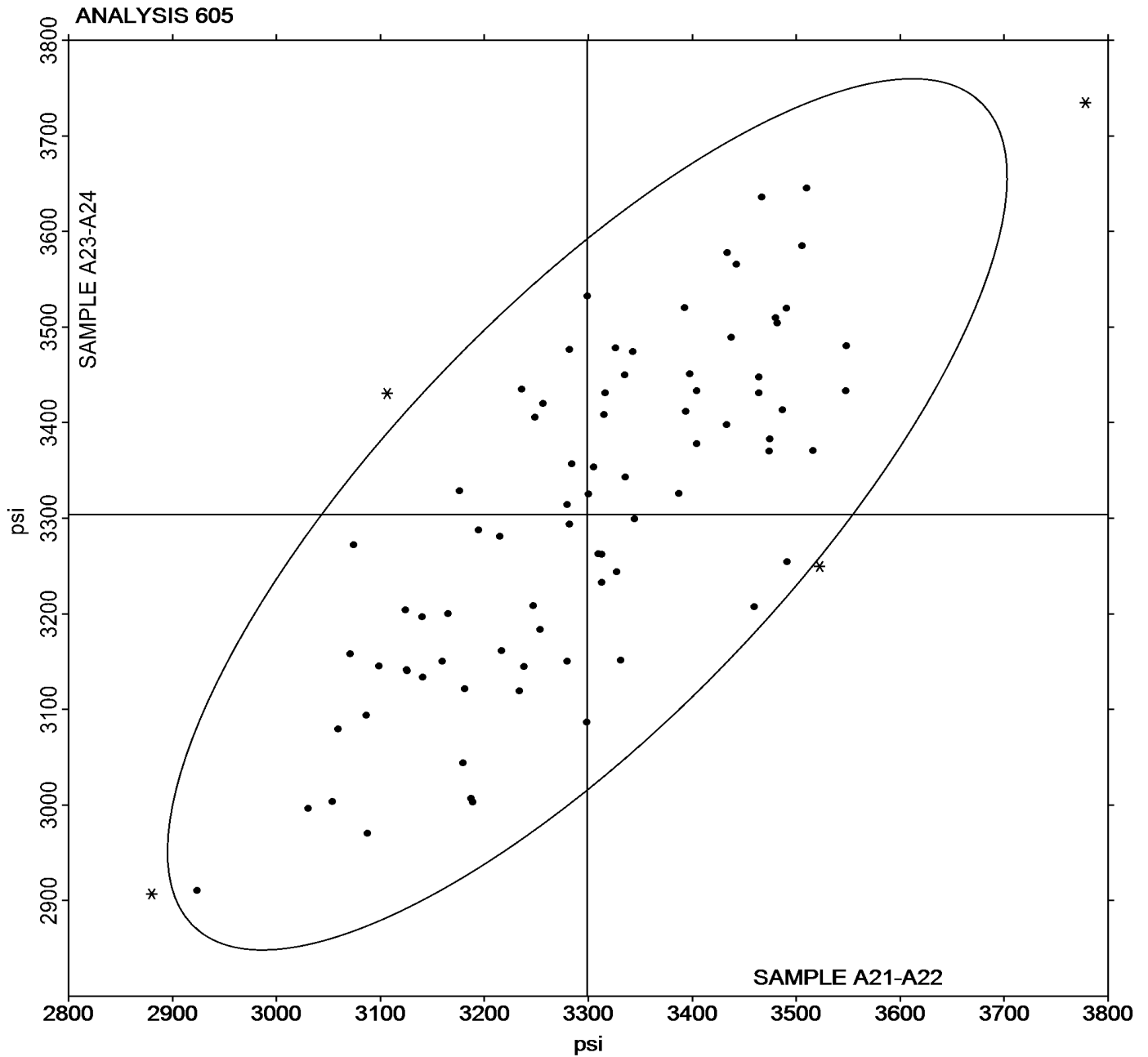


Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #211
1st Qtr 2022

Grand Mean Sample **A21-A22** = 3,299.01 psi

Grand Mean Sample **A23-A24** = 3,304.02 psi





Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2T2TBQ		672.5	7.0	0.16	676.0	7.0	0.16
2VTRPP		664.5	-1.0	-0.02	670.5	1.5	0.04
33PUHT		675.5	10.0	0.23	664.0	-5.0	-0.12
3G68KL		681.5	16.0	0.37	657.5	-11.5	-0.27
3JFP4R		660.6	-4.9	-0.12	640.9	-28.1	-0.66
3VNR6F		617.0	-48.5	-1.13	595.0	-74.0	-1.73
46DNUM		605.5	-60.0	-1.40	636.5	-32.5	-0.76
4A6VCW		674.0	8.5	0.20	680.8	11.8	0.28
6337BH		686.0	20.4	0.48	700.6	31.6	0.74
68QYVW		638.5	-27.0	-0.63	633.5	-35.5	-0.83
6MQP4F		640.0	-25.5	-0.60	625.0	-44.0	-1.03
6YGBJJ		614.5	-51.1	-1.19	598.2	-70.8	-1.66
89FXCR		695.0	29.5	0.69	705.0	36.0	0.84
8EYB3E		682.0	16.5	0.39	678.0	9.0	0.21
8MKUXF		669.5	4.0	0.09	678.5	9.5	0.22
8NN2MK		626.0	-39.5	-0.92	626.5	-42.5	-1.00
8TNXLT		699.0	33.5	0.78	716.5	47.5	1.11
99Q7QK		704.0	38.5	0.90	690.0	21.0	0.49
9PHXZL		724.0	58.5	1.37	738.5	69.5	1.63
9WLQ7B	X	712.5	46.9	1.10	359.3	-309.7	-7.26
9Y3DEN	X	824.5	159.0	3.72	651.5	-17.5	-0.41
AEFWZM		672.5	7.0	0.16	672.5	3.5	0.08
AF88KN	*	536.0	-129.5	-3.03	537.5	-131.5	-3.08
AG8VEK		648.0	-17.5	-0.41	668.5	-0.5	-0.01
BC4TDN		622.0	-43.5	-1.02	630.0	-39.0	-0.91
BF7H7H		649.0	-16.5	-0.39	663.5	-5.5	-0.13
BK2C4K		608.9	-56.6	-1.32	609.8	-59.2	-1.39
CDTEK7		696.3	30.8	0.72	697.1	28.1	0.66
D4R669		614.5	-51.0	-1.19	626.5	-42.5	-1.00
DDWCJ9		639.9	-25.6	-0.60	642.2	-26.7	-0.63
DFJQ9H		637.3	-28.2	-0.66	648.6	-20.4	-0.48
DVQ2PA		653.0	-12.5	-0.29	660.5	-8.5	-0.20
DX2R3K		673.5	8.0	0.19	686.5	17.5	0.41
E2D7X4	X	2,940.7	2,275.1	53.20	2,995.6	2,326.7	54.54
E8ZY8H	X	680.0	14.5	0.34	761.0	92.0	2.16
EV7HHH		679.0	13.5	0.32	674.5	5.5	0.13
FBYKND		585.0	-80.5	-1.88	582.1	-86.9	-2.04
FG4G9D		623.2	-42.3	-0.99	644.9	-24.0	-0.56



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FRJK6B		692.0	26.5	0.62	670.5	1.5	0.04
FTBGRJ		666.9	1.4	0.03	668.3	-0.7	-0.02
FTXXXE		706.5	41.0	0.96	699.5	30.5	0.72
FZF4W7		740.5	75.0	1.75	741.5	72.5	1.70
GAHWDC		657.0	-8.5	-0.20	644.5	-24.5	-0.57
HE9FHF		725.5	60.0	1.40	729.5	60.5	1.42
HQZDWY		697.5	32.0	0.75	697.0	28.0	0.66
JFF7XA		631.2	-34.3	-0.80	616.3	-52.7	-1.24
JKA4L2	X	686.0	20.5	0.48	398.0	-271.0	-6.35
JVFW49		606.5	-59.0	-1.38	592.5	-76.5	-1.79
K9ARQY		681.5	16.0	0.37	695.0	26.0	0.61
KA83M2		713.5	48.0	1.12	719.5	50.5	1.18
KZGRZD		636.0	-29.5	-0.69	646.5	-22.5	-0.53
M3YK27		659.4	-6.1	-0.14	667.5	-1.4	-0.03
M48XJ8		720.0	54.5	1.27	720.0	51.0	1.20
MBF823	*	557.0	-108.5	-2.54	570.5	-98.5	-2.31
MTNFAQ2		735.5	70.0	1.64	737.0	68.0	1.59
P2YBAZ		678.0	12.5	0.29	711.9	43.0	1.01
P4MPXB		714.0	48.5	1.13	708.5	39.5	0.93
PKUUX9		664.5	-1.0	-0.02	657.5	-11.5	-0.27
PPK697		724.0	58.5	1.37	737.0	68.0	1.59
Q7RTN4	*	592.0	-73.5	-1.72	634.0	-35.0	-0.82
QARWPY	X	668.7	3.1	0.07	769.2	100.2	2.35
QBH4X3		705.2	39.6	0.93	694.5	25.5	0.60
QBLT3Y		623.5	-42.0	-0.98	623.5	-45.5	-1.07
QGAD9Z		707.0	41.5	0.97	725.0	56.0	1.31
QWML94		638.0	-27.5	-0.64	665.0	-4.0	-0.09
RAXVYX		686.9	21.4	0.50	705.4	36.4	0.85
RETRL4		669.5	3.9	0.09	686.0	17.0	0.40
RPB8RR		663.5	-2.0	-0.05	661.0	-8.0	-0.19
RVPVFU		696.0	30.5	0.71	691.0	22.0	0.52
TH9GL8		615.0	-50.5	-1.18	629.5	-39.5	-0.93
UB7RJT		693.5	28.0	0.65	694.0	25.0	0.59
UBPBPZ		682.0	16.5	0.39	697.0	28.0	0.66
UZQRCZ		648.5	-17.0	-0.40	685.5	16.5	0.39
V3AEWY		727.5	62.0	1.45	729.5	60.5	1.42
V47GC3		629.3	-36.3	-0.85	663.5	-5.5	-0.13



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
VFXGD6		703.1	37.5	0.88	690.4	21.5	0.50
VVUMWZ		691.1	25.5	0.60	684.6	15.6	0.37
W39PHT		693.0	27.5	0.64	687.0	18.0	0.42
X96TXQ	*	682.0	16.5	0.39	646.0	-23.0	-0.54
XN8DMU		640.5	-25.0	-0.59	643.0	-26.0	-0.61
XR7PJU		771.4	105.9	2.48	762.5	93.5	2.19
XWWBYV		651.5	-14.0	-0.33	656.5	-12.5	-0.29
ZX2HET		660.5	-5.0	-0.12	669.5	0.5	0.01

Grand Means		Summary Statistics	
	665.52 percent		668.97 percent
Std Dev Btwn Labs	42.77 percent		42.66 percent
Statistics based on 77 of 83 reporting participants			

Samples A21-A22: Polyisoprene compound, batch #1 & A23-A24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #606

- 9WLQ7B (X) - Data for sample group A23-A24 are low. Inconsistency in testing between sample groups.
- 9Y3DEN (X) - Data for sample group A21-A22 are high. Inconsistent in testing between sample groups.
- E2D7X4 (X) - Extreme Data.
- E8ZY8H (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group A23-A24.
- JKA4L2 (X) - Data for sample group A23-A24 are low. Inconsistent within the determinations of sample group A23-A24. Inconsistency in testing between sample groups.
- QARWPY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group A23-A24.



Rubber Interlaboratory Testing Program

Report #211

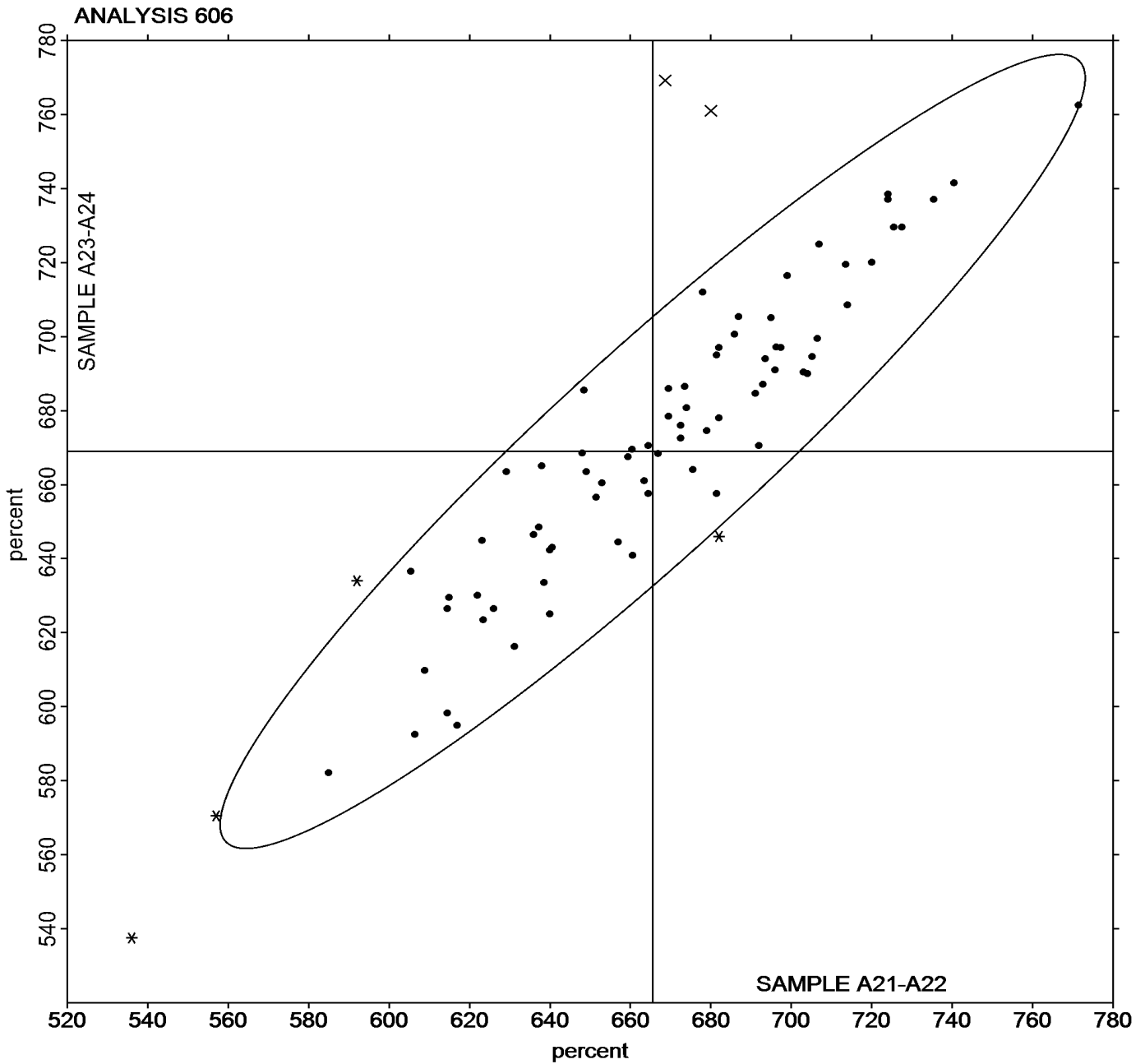
Analysis 606

1st Qtr 2022

Ultimate Elongation (percent)

Grand Mean Sample **A21-A22** = 665.52 percent

Grand Mean Sample **A23-A24** = 668.97 percent





Rubber Interlaboratory Testing Program

Report #211

Analysis 607

1st Qtr 2022

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2T2TBQ		811.5	75.6	1.06	768.0	38.9	0.58
2VTRPP		762.0	26.1	0.37	744.5	15.4	0.23
33PUHT		696.3	-39.6	-0.56	670.6	-58.5	-0.87
3G68KL		715.0	-20.9	-0.29	745.5	16.4	0.25
3JFP4R		814.7	78.7	1.11	818.5	89.5	1.34
3VNR6F		767.5	31.6	0.44	861.5	132.4	1.98
4A6VCW		719.5	-16.4	-0.23	760.8	31.7	0.47
6337BH		753.9	17.9	0.25	721.7	-7.4	-0.11
6MQP4F		841.0	105.1	1.48	799.0	69.9	1.04
6YGBJJ		788.9	52.9	0.74	857.4	128.3	1.92
89FXCR		729.0	-6.9	-0.10	674.5	-54.6	-0.82
8EYB3E		674.7	-61.2	-0.86	715.4	-13.7	-0.20
8MKUXF		734.0	-1.9	-0.03	660.0	-69.1	-1.03
8NN2MK		878.5	142.6	2.01	827.5	98.4	1.47
8TNXLT		675.5	-60.4	-0.85	699.5	-29.6	-0.44
99Q7QK		682.5	-53.4	-0.75	691.7	-37.4	-0.56
9PHXZL		599.0	-136.9	-1.93	571.5	-157.6	-2.36
9WLQ7B		645.4	-90.5	-1.27	688.9	-40.1	-0.60
9Y3DEN		703.9	-32.0	-0.45	826.2	97.1	1.45
AF88KN	X	1,007.2	271.3	3.82	989.1	260.0	3.88
AG8VEK		740.5	4.6	0.06	822.0	92.9	1.39
BC4TDN		795.5	59.6	0.84	841.5	112.4	1.68
BF7H7H		666.5	-69.5	-0.98	774.5	45.4	0.68
BK2C4K	*	956.6	220.6	3.10	848.9	119.9	1.79
CDTEK7		725.0	-10.9	-0.15	766.4	37.3	0.56
D4R669		753.5	17.6	0.25	729.5	0.4	0.01
DDWCJ9		764.6	28.7	0.40	814.4	85.3	1.27
DFJQ9H	*	881.1	145.2	2.04	907.9	178.9	2.67
DVQ2PA		761.8	25.8	0.36	754.4	25.3	0.38
DX2R3K		725.5	-10.4	-0.15	685.5	-43.6	-0.65
E2D7X4		769.8	33.8	0.48	755.6	26.5	0.40
E8ZY8H		678.6	-57.3	-0.81	662.5	-66.6	-0.99
EV7HHH		781.0	45.1	0.63	730.5	1.4	0.02
FBYKND		805.5	69.6	0.98	807.5	78.4	1.17
FG4G9D		764.4	28.4	0.40	653.8	-75.2	-1.12
FRJK6B		710.7	-25.3	-0.36	786.8	57.8	0.86
FTBGRJ		693.1	-42.9	-0.60	664.5	-64.6	-0.96
FTXXXE		655.5	-80.4	-1.13	640.0	-89.1	-1.33



Rubber Interlaboratory Testing Program

Report #211

Analysis 607

1st Qtr 2022

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FZF4W7		627.0	-108.9	-1.53	700.5	-28.6	-0.43
GAHWDC		703.2	-32.8	-0.46	792.3	63.2	0.94
HE9FHF		652.0	-83.9	-1.18	689.0	-40.1	-0.60
HQZDWY		736.0	0.1	0.00	694.0	-35.1	-0.52
JFF7XA		810.0	74.1	1.04	817.3	88.2	1.32
JKA4L2	X	616.0	-119.9	-1.69	2,329.5	1,600.4	23.92
JVFW49		675.0	-60.9	-0.86	633.0	-96.1	-1.44
K9ARQY		784.5	48.6	0.68	748.0	18.9	0.28
KA83M2	*	550.5	-185.4	-2.61	586.5	-142.6	-2.13
KZGRZD		730.0	-5.9	-0.08	702.5	-26.6	-0.40
M3YK27		837.9	101.9	1.43	737.4	8.3	0.12
M48XJ8		731.5	-4.4	-0.06	709.0	-20.1	-0.30
MBF823	X	1,115.0	379.1	5.33	1,054.5	325.4	4.86
MTNFAQ2		820.9	85.0	1.20	741.1	12.1	0.18
P2YBAZ		762.5	26.6	0.37	657.1	-72.0	-1.08
P4MPXB		659.0	-76.9	-1.08	629.0	-100.1	-1.50
PKUUX9		741.9	5.9	0.08	732.4	3.4	0.05
PPK697		595.0	-140.9	-1.98	633.0	-96.1	-1.44
Q7RTN4		868.5	132.6	1.86	779.0	49.9	0.75
QARWPY		749.4	13.5	0.19	775.6	46.5	0.70
QBH4X3		755.7	19.7	0.28	697.6	-31.4	-0.47
QBLT3Y		752.0	16.1	0.23	764.4	35.3	0.53
QGAD9Z		731.7	-4.2	-0.06	684.6	-44.5	-0.66
QWML94		785.0	49.1	0.69	736.0	6.9	0.10
RAXVYX		743.9	7.9	0.11	712.2	-16.9	-0.25
RETRL4		691.7	-44.3	-0.62	692.7	-36.3	-0.54
RPB8RR		752.0	16.1	0.23	673.0	-56.1	-0.84
RVPVFU		693.0	-42.9	-0.60	739.0	9.9	0.15
TH9GL8		755.7	19.7	0.28	744.8	15.7	0.23
UB7RJT		749.5	13.6	0.19	732.0	2.9	0.04
UBPBPZ		643.5	-92.4	-1.30	726.0	-3.1	-0.05
UZQRCZ		728.0	-7.9	-0.11	650.5	-78.6	-1.17
V3AEWY		629.0	-106.9	-1.50	645.0	-84.1	-1.26
VFXGD6		665.7	-70.2	-0.99	727.4	-1.7	-0.03
VVUMWZ		657.8	-78.2	-1.10	690.4	-38.7	-0.58
W39PHT		736.0	0.1	0.00	672.5	-56.6	-0.85
X96TXQ	X	1,032.0	296.0	4.16	1,133.5	404.4	6.04



Rubber Interlaboratory Testing Program

Report #211

Analysis 607

1st Qtr 2022

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
XN8DMU		843.0	107.1	1.51	710.0	-19.1	-0.28
XR7PJU	X	353.9	-382.0	-5.38	385.8	-343.3	-5.13
XWWBYV		728.1	-7.8	-0.11	745.5	16.4	0.25
ZX2HET		762.0	26.1	0.37	702.0	-27.1	-0.40

Summary Statistics	
Grand Means	
	735.94 psi
Stnd Dev Btwn Labs	
	71.08 psi
	729.07 psi
	66.92 psi
Statistics based on 74 of 79 reporting participants	

Summary Statistics in SI Units	
Grand Means	
	5.0741 MPa
Stnd Dev Btwn Labs	
	0.4901 MPa
	5.03 MPa
	0.46 MPa
Statistics based on 74 of 79 reporting participants	

Samples A21-A22: Polyisoprene compound, batch #1 & A23-A24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #607

- AF88KN (X) - Data for all samples are high.
- JKA4L2 (X) - Extreme Data for sample group A23-A24.
- MBF823 (X) - Data for all samples are high.
- X96TXQ (X) - Data for all samples are high. Inconsistent within the determinations of sample group A21-A22.
- XR7PJU (X) - Data for all samples are low.

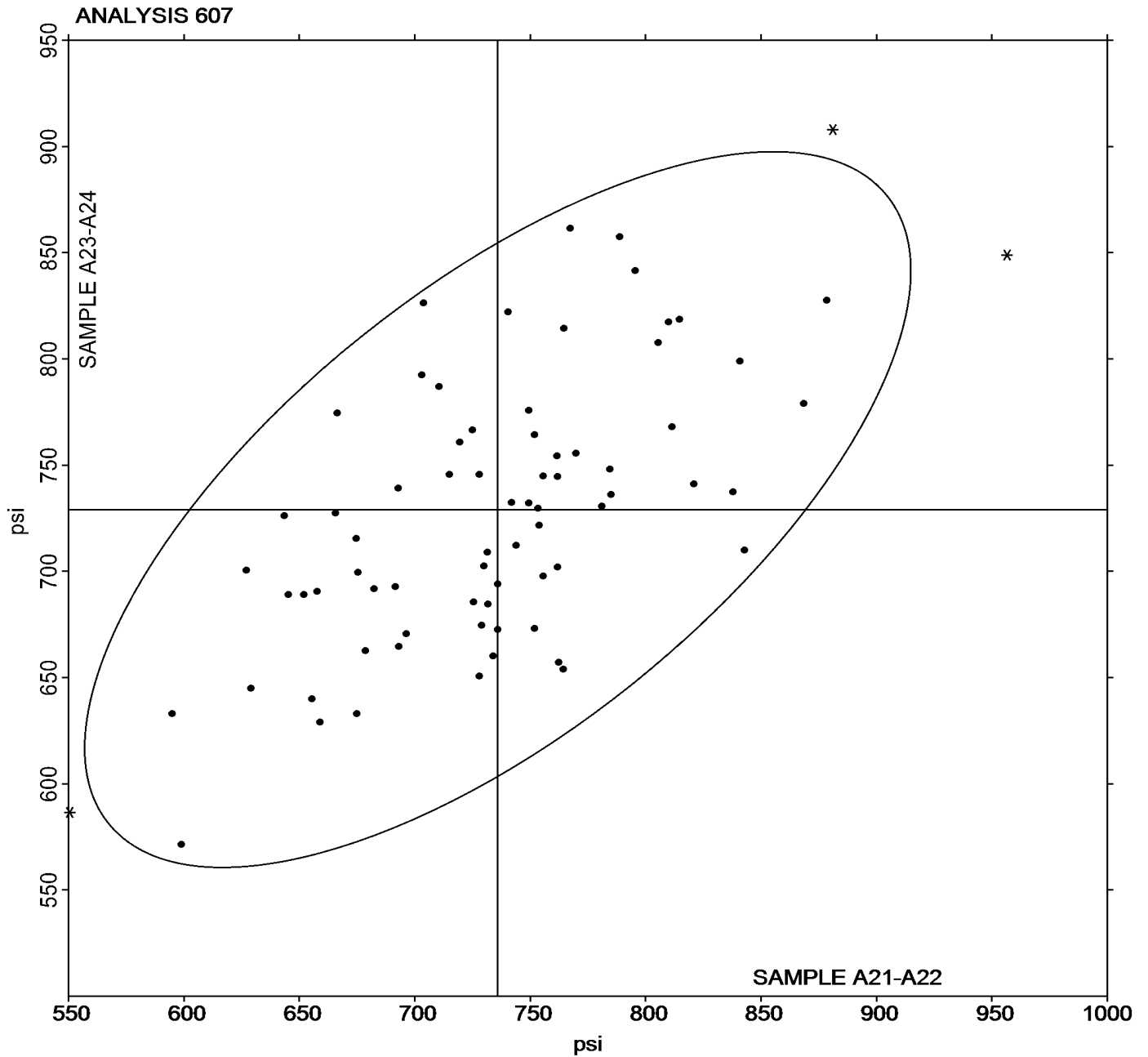


Rubber Interlaboratory Testing Program
Analysis 607
Stress at 300% Elongation (psi)

Report #211
1st Qtr 2022

Grand Mean Sample **A21-A22** = 735.94 psi

Grand Mean Sample **A23-A24** = 729.07 psi





Rubber Interlaboratory Testing Program

Report #211

Analysis 608

1st Qtr 2022

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2T2TBQ		190.5	21.5	1.58	192.5	24.5	1.73
2VTRPP		166.5	-2.5	-0.18	163.5	-4.5	-0.31
33PUHT		156.7	-12.3	-0.91	154.3	-13.7	-0.97
3G68KL		166.5	-2.5	-0.18	176.0	8.0	0.56
3JFP4R		196.0	27.0	1.99	200.5	32.5	2.29
3VNR6F		168.5	-0.5	-0.04	186.5	18.5	1.30
4A6VCW		166.5	-2.5	-0.18	174.0	6.0	0.42
6337BH		180.6	11.6	0.85	172.5	4.5	0.32
6MQP4F		188.5	19.5	1.43	177.5	9.5	0.67
6YGBJJ		162.4	-6.6	-0.48	172.0	4.0	0.28
89FXCR		171.0	2.0	0.15	156.0	-12.0	-0.84
8EYB3E		160.5	-8.5	-0.63	165.0	-3.0	-0.21
8MKUXF		167.0	-2.0	-0.15	154.0	-14.0	-0.98
8NN2MK		184.0	15.0	1.10	172.0	4.0	0.28
8TNXLT		168.5	-0.5	-0.04	172.5	4.5	0.32
99Q7QK		167.1	-1.9	-0.14	167.6	-0.4	-0.02
9PHXZL		145.8	-23.2	-1.71	145.0	-22.9	-1.61
9WLQ7B		153.0	-16.0	-1.18	159.5	-8.4	-0.59
9Y3DEN		187.0	18.0	1.32	184.0	16.0	1.13
AEFWZM		161.5	-7.5	-0.55	162.0	-6.0	-0.42
AF88KN		193.0	24.0	1.77	188.0	20.0	1.41
AG8VEK		167.5	-1.5	-0.11	188.0	20.0	1.41
BC4TDN		156.0	-13.0	-0.96	162.0	-6.0	-0.42
BF7H7H		146.5	-22.5	-1.66	166.1	-1.9	-0.13
BK2C4K		189.7	20.7	1.52	164.7	-3.3	-0.23
CDTEK7		169.0	0.0	0.00	177.0	9.0	0.63
D4R669		166.0	-3.0	-0.22	161.5	-6.5	-0.46
DDWCJ9		166.2	-2.8	-0.21	177.1	9.1	0.64
DFJQ9H		184.9	15.9	1.17	192.2	24.2	1.70
DVQ2PA		161.5	-7.5	-0.55	159.5	-8.5	-0.60
DX2R3K		166.0	-3.0	-0.22	166.0	-2.0	-0.14
E2D7X4		177.6	8.6	0.63	189.0	21.0	1.48
E8ZY8H		169.0	0.0	0.00	172.0	4.0	0.28
EV7HHH		176.5	7.5	0.55	169.5	1.5	0.11
FBYKND		165.5	-3.5	-0.26	170.0	2.0	0.14
FG4G9D		170.8	1.8	0.13	146.6	-21.4	-1.50
FRJK6B		163.2	-5.8	-0.43	181.3	13.3	0.94
FTBGRJ		165.3	-3.7	-0.27	149.8	-18.2	-1.28



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

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FTXXXE		156.0	-13.0	-0.96	154.5	-13.5	-0.95
FZF4W7	*	136.0	-33.0	-2.43	157.0	-11.0	-0.77
GAHWDC		160.0	-9.0	-0.66	175.5	7.5	0.53
HE9FHF		163.0	-6.0	-0.44	167.0	-1.0	-0.07
HQZDWY		167.0	-2.0	-0.15	161.5	-6.5	-0.46
JFF7XA		166.8	-2.2	-0.16	163.9	-4.1	-0.29
JKA4L2	X	146.5	-22.5	-1.65	1,040.0	872.0	61.34
JVFW49		151.5	-17.5	-1.29	147.5	-20.5	-1.44
K9ARQY		177.5	8.5	0.63	171.5	3.5	0.25
KA83M2		142.0	-27.0	-1.99	147.0	-21.0	-1.48
KZGRZD		165.0	-4.0	-0.29	156.0	-12.0	-0.84
M3YK27		189.0	20.0	1.47	169.4	1.5	0.10
M48XJ8	*	208.5	39.5	2.91	199.0	31.0	2.18
MBF823	X	224.0	55.0	4.04	218.0	50.0	3.52
MTNFAQ2		195.8	26.8	1.97	200.2	32.2	2.26
P2YBAZ		164.2	-4.8	-0.35	143.0	-25.0	-1.76
P4MPXB		163.5	-5.5	-0.40	161.0	-7.0	-0.49
PKUUX9		161.7	-7.3	-0.54	164.6	-3.4	-0.24
PPK697	*	194.5	25.5	1.88	207.0	39.0	2.74
Q7RTN4		186.0	17.0	1.25	166.5	-1.5	-0.10
QARWPY		170.6	1.6	0.12	177.7	9.7	0.68
QBH4X3		171.1	2.1	0.16	160.7	-7.3	-0.51
QBLT3Y		162.4	-6.6	-0.48	163.2	-4.8	-0.34
QGAD9Z		161.7	-7.3	-0.54	155.2	-12.8	-0.90
QWML94		171.5	2.5	0.18	166.5	-1.5	-0.10
RAXVYX		191.7	22.7	1.67	185.5	17.5	1.23
RETRL4		165.5	-3.5	-0.26	165.9	-2.1	-0.15
RPB8RR		171.5	2.5	0.18	157.0	-11.0	-0.77
RVPVFU		160.0	-9.0	-0.66	163.0	-5.0	-0.35
TH9GL8		159.5	-9.5	-0.70	139.2	-28.7	-2.02
UB7RJT		172.0	3.0	0.22	165.5	-2.5	-0.17
UBPBPZ		161.5	-7.5	-0.55	178.5	10.5	0.74
UZQRCZ		165.5	-3.5	-0.26	150.5	-17.5	-1.23
V3AEWY		155.0	-14.0	-1.03	161.0	-7.0	-0.49
VFXGD6		152.3	-16.7	-1.23	163.9	-4.1	-0.29
VVUMWZ		148.7	-20.3	-1.50	155.9	-12.1	-0.85
W39PHT		163.0	-6.0	-0.44	154.0	-14.0	-0.98



Rubber Interlaboratory Testing Program

Report #211

Analysis 608

1st Qtr 2022

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
X96TXQ	X	253.8	84.8	6.24	257.4	89.5	6.29
XN8DMU		181.0	12.0	0.88	158.0	-10.0	-0.70
XR7PJU	X	92.8	-76.2	-5.60	97.9	-70.1	-4.93
XWWBYV		174.0	5.1	0.37	178.4	10.4	0.73
ZX2HET		175.0	6.0	0.44	167.5	-0.5	-0.03

Summary Statistics	
Grand Means	
	169.00 psi
Std Dev Btwn Labs	
	13.60 psi
	167.98 psi
	14.22 psi
Statistics based on 76 of 80 reporting participants	

Summary Statistics in SI Units	
Grand Means	
	1.1652 MPa
Std Dev Btwn Labs	
	0.0938 MPa
	1.16 MPa
	0.10 MPa
Statistics based on 76 of 80 reporting participants	

Samples A21-A22: Polyisoprene compound, batch #1 & A23-A24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #608

JKA4L2 (X) - Extreme Data for sample group A23-A24.

MBF823 (X) - Data for all samples are high.

X96TXQ (X) - Data for all samples are high.

XR7PJU (X) - Data for all samples are low.



Rubber Interlaboratory Testing Program

Report #211

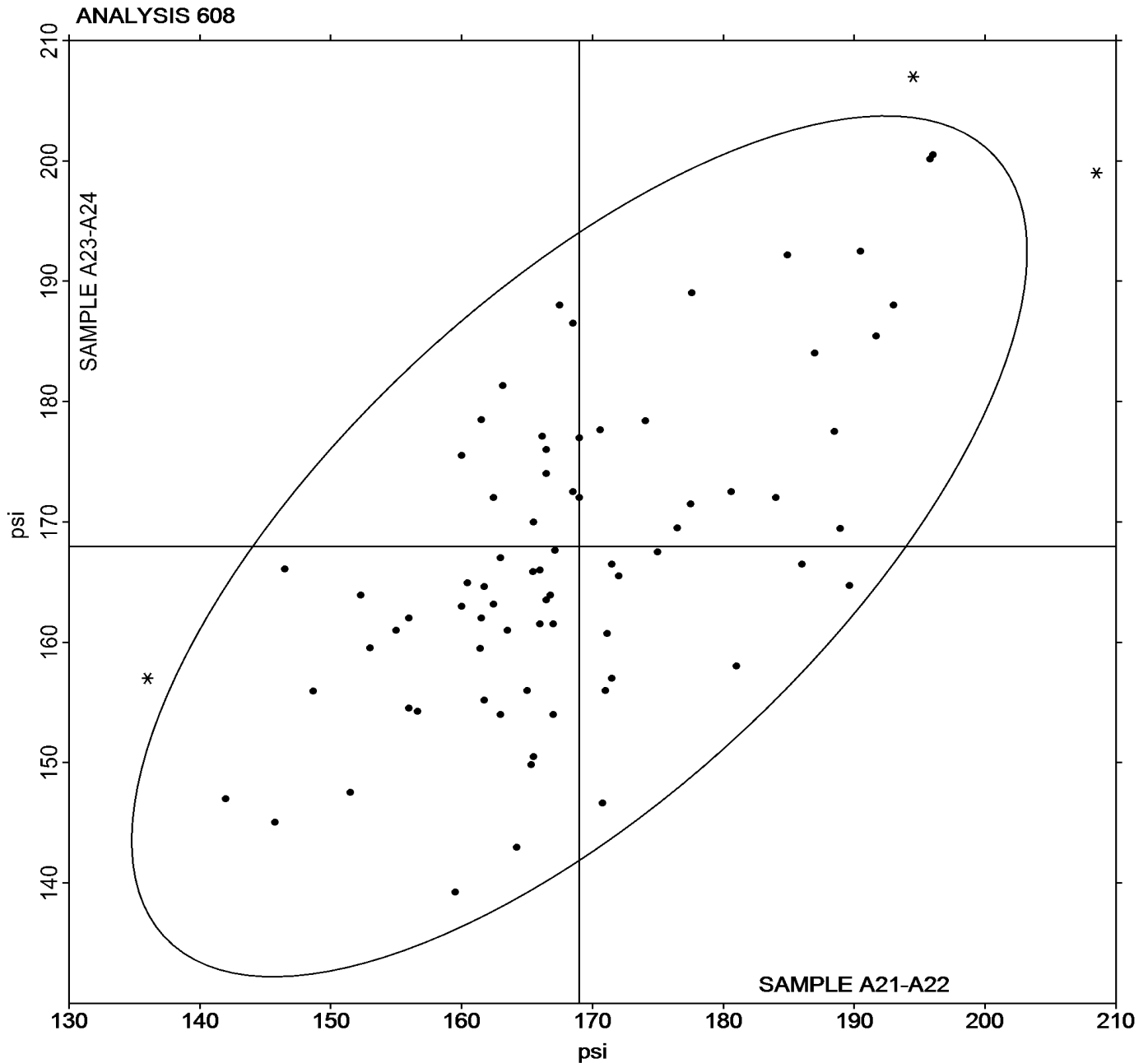
Analysis 608

1st Qtr 2022

Stress at 100% Elongation (psi)

Grand Mean Sample **A21-A22** = 169.00 psi

Grand Mean Sample **A23-A24** = 167.98 psi





Rubber Interlaboratory Testing Program

Report #211

Analysis 620

1st Qtr 2022

Hardness (Shore A/Type A)

WebCode	Data Flag	Sample A21-A22			Sample A23-A24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2T2TBQ		47.50	2.02	0.95	47.00	1.52	0.78	BT
2VTRPP		48.00	2.52	1.19	47.00	1.52	0.78	BT
33PUHT		43.60	-1.88	-0.88	43.10	-2.38	-1.22	BT
3G68KL		44.00	-1.48	-0.70	45.50	0.02	0.01	BT
3JFP4R		49.25	3.77	1.78	49.25	3.77	1.94	HH
3VNR6F		41.40	-4.08	-1.92	42.65	-2.83	-1.45	BT
46DNUM	*	51.00	5.52	2.60	50.00	4.52	2.33	HH
6337BH		44.35	-1.13	-0.53	44.90	-0.58	-0.30	BT
68QYVW		43.25	-2.23	-1.05	43.75	-1.73	-0.89	BT
6MQP4F		48.50	3.02	1.42	48.00	2.52	1.30	BT
6YGBJJ		44.00	-1.48	-0.70	44.00	-1.48	-0.76	BT
89FXCR		47.00	1.52	0.72	47.00	1.52	0.78	HH
8L8EDL		41.00	-4.48	-2.11	42.50	-2.98	-1.53	BT
8MKUXF		48.50	3.02	1.42	49.00	3.52	1.81	XX
8NN2MK		44.00	-1.48	-0.70	43.50	-1.98	-1.02	BT
8TNXLT		46.50	1.02	0.48	46.50	1.02	0.53	BT
99Q7QK		44.70	-0.78	-0.37	43.90	-1.58	-0.81	BT
9PHXZL		43.50	-1.98	-0.93	43.50	-1.98	-1.02	BT
9WLQ7B		44.50	-0.98	-0.46	44.50	-0.98	-0.50	HH
9Y3DEN		44.00	-1.48	-0.70	44.50	-0.98	-0.50	HH
AEFWZM		45.10	-0.38	-0.18	44.95	-0.53	-0.27	BT
AF88KN		45.50	0.02	0.01	45.50	0.02	0.01	BT
AG8VEK		44.00	-1.48	-0.70	44.50	-0.98	-0.50	BT
BC4TDN		47.50	2.02	0.95	47.10	1.62	0.84	BT
BF7H7H		43.75	-1.73	-0.81	44.30	-1.18	-0.60	BT
BK2C4K		50.50	5.02	2.37	50.00	4.52	2.33	HH
CDTEK7		45.55	0.07	0.03	45.65	0.17	0.09	BT
D4R669		46.00	0.52	0.25	46.00	0.52	0.27	BT
DDWCJ9		46.00	0.52	0.25	47.50	2.02	1.04	BT
DFJQ9H		42.75	-2.73	-1.28	43.20	-2.28	-1.17	BT
DVQ2PA		45.95	0.47	0.22	45.15	-0.33	-0.17	BT
DWZ72D		43.10	-2.38	-1.12	42.85	-2.63	-1.35	BT
DX2R3K	X	49.50	4.02	1.89	51.00	5.52	2.84	BT
E2D7X4		47.00	1.52	0.72	45.50	0.02	0.01	HH
E8ZY8H		44.50	-0.98	-0.46	45.00	-0.48	-0.24	HH
EV7HHH		45.00	-0.48	-0.22	45.00	-0.48	-0.24	HH
FBYKND		43.60	-1.88	-0.88	45.00	-0.48	-0.24	BT
FG4G9D	X	47.15	1.67	0.79	44.55	-0.93	-0.48	BT



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

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
FNJA9B		50.00	4.52	2.13	50.00	4.52	2.33	BT
FRJK6B		44.85	-0.63	-0.30	45.45	-0.03	-0.01	BT
FTBGRJ		46.00	0.52	0.25	45.00	-0.48	-0.24	BT
FTXXXE	X	43.00	-2.48	-1.17	41.00	-4.48	-2.30	BT
FU7YTL	*	42.50	-2.98	-1.40	44.50	-0.98	-0.50	BT
FZF4W7		47.50	2.02	0.95	48.00	2.52	1.30	HH
GAHWDC		46.75	1.27	0.60	47.50	2.02	1.04	BT
HE9FHF		48.45	2.97	1.40	48.25	2.77	1.43	BT
HQZDWY		45.20	-0.28	-0.13	44.80	-0.68	-0.35	BT
JFF7XA		47.00	1.52	0.72	46.00	0.52	0.27	BT
JKA4L2		44.50	-0.98	-0.46	43.50	-1.98	-1.02	BT
JVFW49		42.50	-2.98	-1.40	42.50	-2.98	-1.53	BT
K9ARQY		45.00	-0.48	-0.22	44.50	-0.98	-0.50	HH
KA83M2		44.10	-1.38	-0.65	43.75	-1.73	-0.89	BT
KJCCR7		43.25	-2.23	-1.05	42.55	-2.93	-1.51	XX
KZGRZD		44.50	-0.98	-0.46	44.50	-0.98	-0.50	BT
LNL96		43.00	-2.48	-1.17	44.00	-1.48	-0.76	BT
M3YK27		46.80	1.32	0.62	46.65	1.17	0.60	BT
M48XJ8		47.00	1.52	0.72	48.00	2.52	1.30	BT
MBF823		43.50	-1.98	-0.93	43.50	-1.98	-1.02	BT
MTNFQ2		45.00	-0.48	-0.22	45.00	-0.48	-0.24	BT
P2YBAZ	X	49.50	4.02	1.89	46.75	1.27	0.66	HH
P4MPXB		43.50	-1.98	-0.93	44.00	-1.48	-0.76	BT
PKUUX9		43.60	-1.88	-0.88	43.75	-1.73	-0.89	BT
PPK697		45.50	0.02	0.01	45.00	-0.48	-0.24	BT
Q7RTN4		49.00	3.52	1.66	49.50	4.02	2.07	HH
QARWPY		45.35	-0.13	-0.06	45.40	-0.08	-0.04	BT
QBH4X3		44.10	-1.38	-0.65	43.80	-1.68	-0.86	BT
QBLT3Y		47.30	1.82	0.86	46.40	0.92	0.48	BT
QGAD9Z		48.65	3.17	1.49	47.80	2.32	1.20	BT
QWML94		45.00	-0.48	-0.22	44.50	-0.98	-0.50	HH
R3LQC8		48.00	2.52	1.19	47.50	2.02	1.04	BT
RAXVYX		47.25	1.77	0.83	47.05	1.57	0.81	HH
RETRL4		50.00	4.52	2.13	50.00	4.52	2.33	BT
RPB8RR		45.00	-0.48	-0.22	44.50	-0.98	-0.50	HH
RVPVFU		45.15	-0.33	-0.15	46.25	0.77	0.40	BT
TH9GL8		42.50	-2.98	-1.40	42.70	-2.78	-1.43	BT



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

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
UB7RJT		45.80	0.32	0.15	44.55	-0.93	-0.48	HH
UBPBPZ		46.00	0.52	0.25	45.00	-0.48	-0.24	HH
UZQRCZ		46.50	1.02	0.48	46.00	0.52	0.27	BT
V3AEWY		46.30	0.82	0.39	46.80	1.32	0.68	BT
V47GC3		45.50	0.02	0.01	44.50	-0.98	-0.50	BT
V79QTX		44.50	-0.98	-0.46	44.00	-1.48	-0.76	HH
VVUMWZ		44.95	-0.53	-0.25	45.50	0.02	0.01	BT
X96TXQ		42.90	-2.58	-1.21	43.95	-1.53	-0.79	BT
XN8DMU		47.00	1.52	0.72	46.50	1.02	0.53	BT
XR7PJU		45.00	-0.48	-0.22	45.00	-0.48	-0.24	HH
XWWBYV		43.05	-2.43	-1.14	43.85	-1.63	-0.84	HH
ZX2HET	X	51.85	6.37	3.00	49.90	4.42	2.28	XX

Grand Means		Summary Statistics	
	45.477 Type A		45.476 Type A
Std Dev Btwn Labs	2.123 Type A		1.943 Type A
Statistics based on 82 of 87 reporting participants			

Samples A21-A22: Polyisoprene compound, batch #1 & A23-A24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #620

- DX2R3K (X) - Data for sample group A23-A24 are high.
- FG4G9D (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group A23-A24.
- FTXXE (X) - Inconsistent in testing between samples.
- P2YBAZ (X) - Inconsistent in testing between samples.
- ZX2HET (X) - Data for sample group A21-A22 are high.

Key to Instrument Codes Reported by Participants

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



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

Report #211
1st Qtr 2022

Results by Reading Time (as reported by laboratory)

Reading Time	Sample A21-A22 <i>Polyisoprene compound, batch #1</i>			Sample A23-A24 <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		
Reading time not reported	45.75	2.63	0.27	45.68	3.23	0.21	3	4
Readings taken within 0 - 5 seconds	45.62	1.94	0.14	45.51	1.81	0.04	56	61
Readings taken at 5 seconds	43.65	1.80	-1.83	44.28	1.41	-1.20	6	6
Readings taken after 5+ seconds	44.78	1.52	-0.70	44.56	1.31	-0.92	7	7
Maximum hardness indicator used	46.05	2.62	0.57	46.39	2.44	0.92	8	9

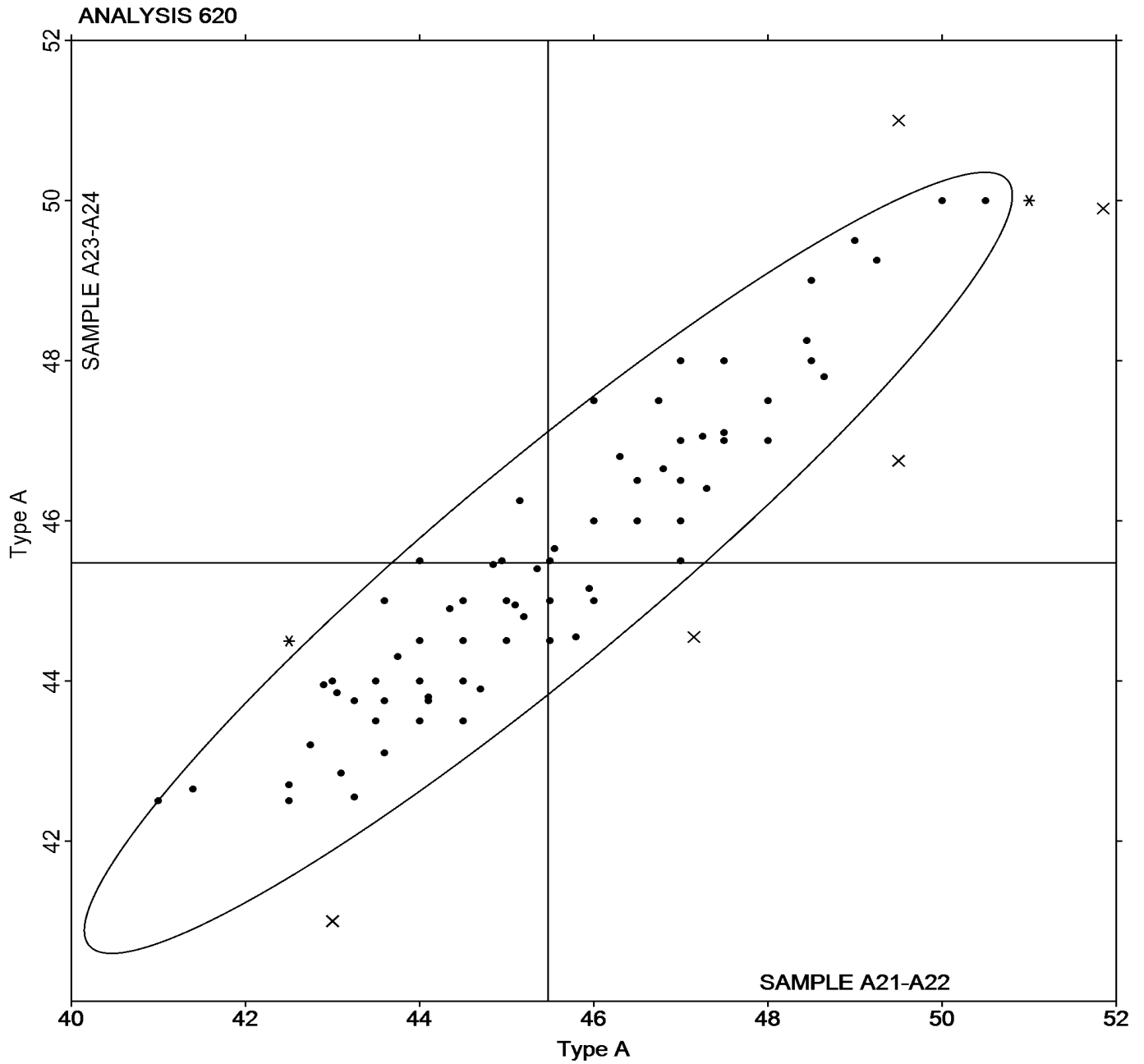


Rubber Interlaboratory Testing Program
Analysis 620
Hardness (Shore A/Type A)

Report #211
1st Qtr 2022

Grand Mean Sample **A21-A22** = 45.477 Type A

Grand Mean Sample **A23-A24** = 45.476 Type A





Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2T2TBQ		1.133	0.002	0.57	1.134	0.002	0.52
2VTRPP		1.132	0.001	0.28	1.133	0.001	0.28
33PUHT		1.132	0.001	0.25	1.133	0.001	0.29
3JFP4R		1.139	0.008	1.89	1.141	0.010	2.02
4A6VCW		1.132	0.001	0.28	1.133	0.002	0.38
68QYVW		1.134	0.003	0.71	1.134	0.003	0.68
6MQP4F		1.132	0.001	0.16	1.132	0.001	0.17
6YGBJJ		1.135	0.005	1.10	1.139	0.007	1.54
89FXCR		1.135	0.004	0.99	1.135	0.004	0.80
8MKUXF	*	1.134	0.003	0.75	1.131	0.000	-0.04
8NN2MK		1.123	-0.008	-1.88	1.122	-0.009	-1.93
8TNXLT		1.130	-0.001	-0.28	1.132	0.001	0.16
99Q7QK		1.127	-0.004	-1.01	1.126	-0.005	-0.99
9WLQ7B	X	1.120	-0.011	-2.60	1.138	0.006	1.32
9Y3DEN		1.121	-0.010	-2.47	1.120	-0.012	-2.42
AEFWZM		1.135	0.004	0.87	1.137	0.006	1.22
AF88KN		1.131	0.000	0.04	1.129	-0.003	-0.56
BC4TDN		1.134	0.003	0.74	1.134	0.003	0.58
BK2C4K	*	1.120	-0.011	-2.57	1.121	-0.011	-2.21
CDTEK7	*	1.131	0.000	0.06	1.136	0.004	0.90
D4R669		1.134	0.003	0.75	1.134	0.003	0.59
DDWCJ9		1.130	-0.001	-0.20	1.131	0.000	-0.04
DVQ2PA		1.135	0.004	1.01	1.136	0.005	1.03
DX2R3K		1.135	0.004	1.08	1.136	0.005	1.04
E2D7X4		1.126	-0.005	-1.28	1.126	-0.006	-1.19
E8ZY8H	*	1.119	-0.011	-2.74	1.120	-0.011	-2.41
EV7HHH		1.129	-0.002	-0.41	1.128	-0.003	-0.69
FBYKND		1.128	-0.003	-0.61	1.129	-0.002	-0.49
FG4G9D		1.129	-0.002	-0.44	1.128	-0.003	-0.67
FRJK6B		1.134	0.003	0.66	1.133	0.002	0.32
FTBGRJ		1.130	-0.001	-0.20	1.130	-0.001	-0.25
FTXXXE		1.134	0.003	0.75	1.132	0.001	0.17
FZF4W7		1.136	0.005	1.23	1.137	0.005	1.11
GAHWDC		1.130	-0.001	-0.20	1.133	0.001	0.28
HE9FHF		1.133	0.002	0.51	1.133	0.001	0.28
HQZDWY		1.133	0.002	0.42	1.133	0.002	0.40
JFF7XA		1.128	-0.003	-0.80	1.128	-0.004	-0.77
JKA4L2		1.133	0.002	0.39	1.134	0.002	0.49



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample A21-A22			Sample A23-A24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
JVFW49		1.132	0.001	0.16	1.132	0.001	0.17
K9ARQY		1.133	0.002	0.51	1.134	0.003	0.60
KA83M2		1.122	-0.009	-2.12	1.123	-0.009	-1.82
KJCCR7		1.133	0.002	0.39	1.135	0.003	0.69
M3YK27		1.131	0.000	0.04	1.133	0.002	0.38
M48XJ8		1.132	0.001	0.29	1.134	0.002	0.51
MBF823		1.135	0.004	0.87	1.134	0.003	0.59
MTNFAQ2		1.127	-0.004	-0.92	1.129	-0.003	-0.56
P4MPXB		1.133	0.002	0.39	1.133	0.002	0.38
PKUUX9		1.135	0.004	0.87	1.136	0.005	1.01
PPK697		1.133	0.002	0.51	1.134	0.002	0.52
Q7RTN4		1.134	0.003	0.65	1.134	0.003	0.64
QBH4X3	X	1.131	0.001	0.13	1.126	-0.005	-1.03
QBLT3Y	*	1.125	-0.006	-1.40	1.121	-0.010	-2.14
QGAD9Z		1.135	0.004	0.99	1.137	0.005	1.11
QWML94		1.133	0.002	0.39	1.132	0.000	0.07
R3LQC8		1.131	0.000	-0.05	1.133	0.002	0.44
RAXVYX		1.128	-0.003	-0.73	1.129	-0.003	-0.53
RPB8RR		1.131	0.000	0.04	1.133	0.001	0.28
RVPVFU		1.137	0.006	1.35	1.136	0.005	0.98
UB7RJT		1.125	-0.006	-1.47	1.124	-0.007	-1.50
UBPBPZ		1.126	-0.005	-1.28	1.123	-0.009	-1.82
UZQRCZ	X	1.136	0.005	1.11	1.142	0.011	2.27
V3AEWY		1.135	0.004	0.99	1.135	0.004	0.80
V47GC3		1.132	0.001	0.16	1.131	-0.001	-0.14
V79QTX		1.132	0.001	0.16	1.132	0.000	0.07
X96TXQ	X	1.116	-0.015	-3.63	1.108	-0.023	-4.92
XN8DMU		1.127	-0.004	-0.87	1.126	-0.006	-1.16
ZX2HET		1.130	-0.001	-0.32	1.131	-0.001	-0.14

		Summary Statistics	
Grand Means	1.1309 g/cm ³ (Mg/m ³)	1.1312 g/cm ³ (Mg/m ³)	
Stnd Dev Btw Labs	0.0042 g/cm ³ (Mg/m ³)	0.0048 g/cm ³ (Mg/m ³)	
Statistics based on 63 of 67 reporting participants			



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #211
1st Qtr 2022

Samples A21-A22: Polyisoprene compound, batch #1 & A23-A24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #621

9WLQ7B (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group A21-A22.

QBH4X3 (X) - Inconsistent in testing between samples.

UZQRCZ (X) - Inconsistent in testing between samples.

X96TXQ (X) - Data for all samples are low. Possible Systematic Error.

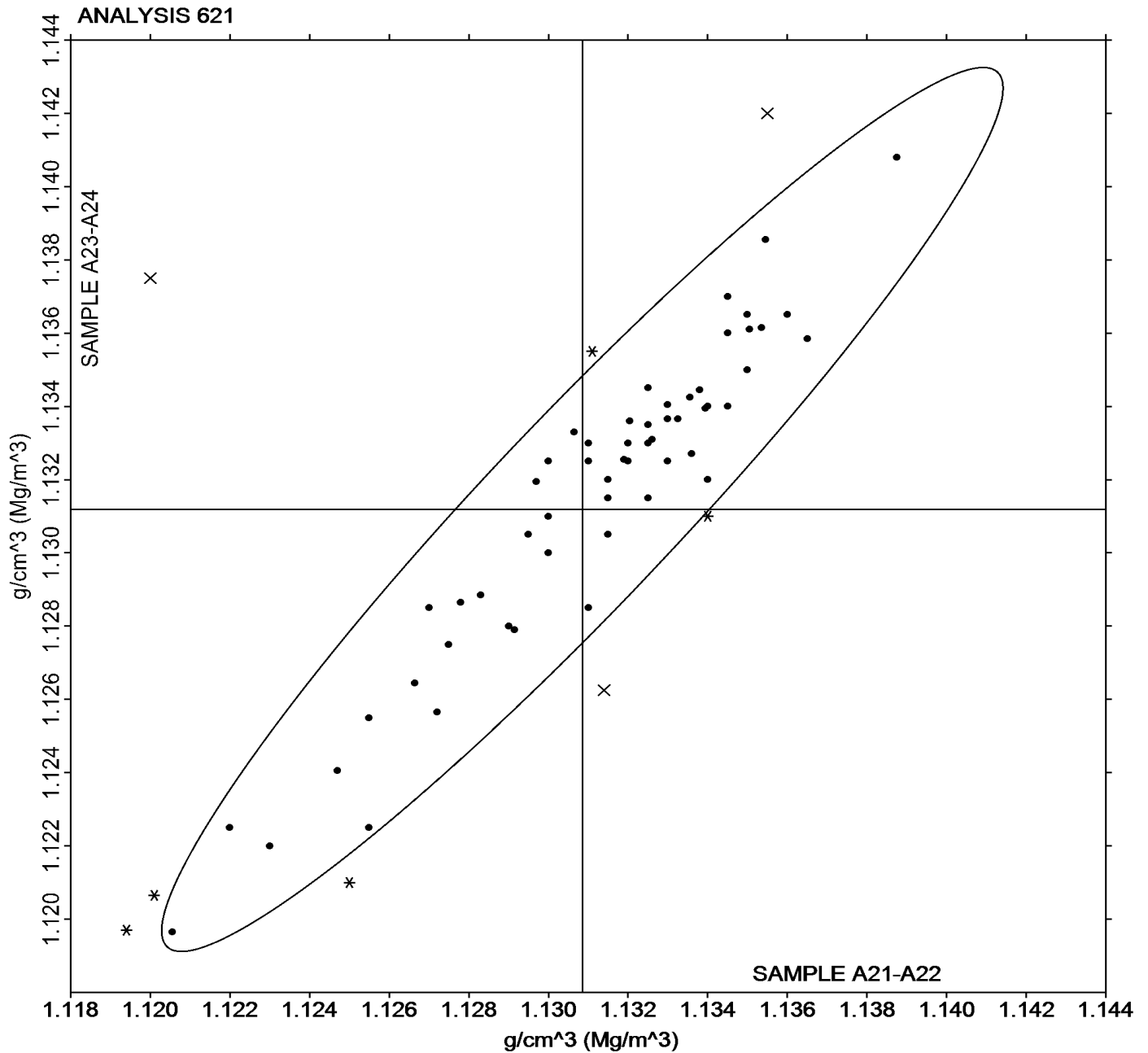


Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #211
1st Qtr 2022

Grand Mean Sample **A21-A22** = 1.1309 g/cm³
(Mg/m³)

Grand Mean Sample **A23-A24** = 1.1312 g/cm³
(Mg/m³)





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

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample HA21-HA22			Sample HA23-HA24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2U2G6N		47.15	-6.26	-2.04	63.20	-4.35	-2.16	BT
33PUHT		52.55	-0.86	-0.28	67.45	-0.10	-0.05	BT
39CUKM		50.00	-3.41	-1.11	67.00	-0.55	-0.28	HH
3H7TMU		54.75	1.34	0.44	68.70	1.15	0.57	HH
3JZG6P		51.00	-2.41	-0.78	67.00	-0.55	-0.28	XX
6MQP4F		52.00	-1.41	-0.46	67.00	-0.55	-0.28	BT
7P99LP		54.70	1.29	0.42	67.75	0.20	0.10	BT
8NN2MK		53.00	-0.41	-0.13	66.00	-1.55	-0.77	HH
98JU9J		50.60	-2.81	-0.91	65.90	-1.65	-0.82	BT
ABXNNF		56.50	3.09	1.01	69.75	2.20	1.09	BT
BC4TDN		50.50	-2.91	-0.95	65.70	-1.85	-0.92	BT
DWZ72D		50.25	-3.16	-1.03	64.65	-2.90	-1.44	BT
FG4G9D	X	93.35	39.94	13.02	93.65	26.10	12.96	BT
K9ZXY6		57.65	4.24	1.38	69.05	1.50	0.74	BT
KJCCR7		47.65	-5.76	-1.88	63.60	-3.95	-1.96	XX
LNLP96		52.00	-1.41	-0.46	67.00	-0.55	-0.28	BT
NLP4JB		57.70	4.29	1.40	69.95	2.40	1.19	HH
Q7RTN4		55.50	2.09	0.68	70.50	2.95	1.46	HH
QVMXF8		52.50	-0.91	-0.30	66.00	-1.55	-0.77	BT
RAL2JX		55.40	1.99	0.65	69.10	1.55	0.77	BT
RETRL4		56.00	2.59	0.85	67.50	-0.05	-0.03	XX
RPB8RR		57.00	3.59	1.17	70.00	2.45	1.21	HH
TAY24Y		58.00	4.59	1.50	70.00	2.45	1.21	BT
TH9GL8		53.25	-0.16	-0.05	67.20	-0.35	-0.18	BT
VQEZX2		54.45	1.04	0.34	69.20	1.65	0.82	BT
VVUMWZ		51.70	-1.71	-0.56	67.20	-0.35	-0.18	BT
XCT8LZ		56.75	3.34	1.09	70.00	2.45	1.21	HH
ZVU372	X	48.50	-4.91	-1.60	68.50	0.95	0.47	BT

Grand Means		Summary Statistics	
	53.406 Type D		67.554 Type D
Std Dev Btw Labs			
	3.069 Type D		2.014 Type D
Statistics based on 26 of 28 reporting participants			

Samples HA21-HA22: Hardness Disc, batch #1 & HA23-HA24: Hardness Disc, batch #2



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

Report #211
1st Qtr 2022

Comments on Assigned Data Flags for Test #625

FG4G9D (X) - Data for all samples are high.

ZVU372 (X) - Inconsistent in testing between samples.

Key to Instrument Codes Reported by Participants

BT	Benchtop	HH	Handheld
XX	Specify Benchtop or Handheld Instrument		

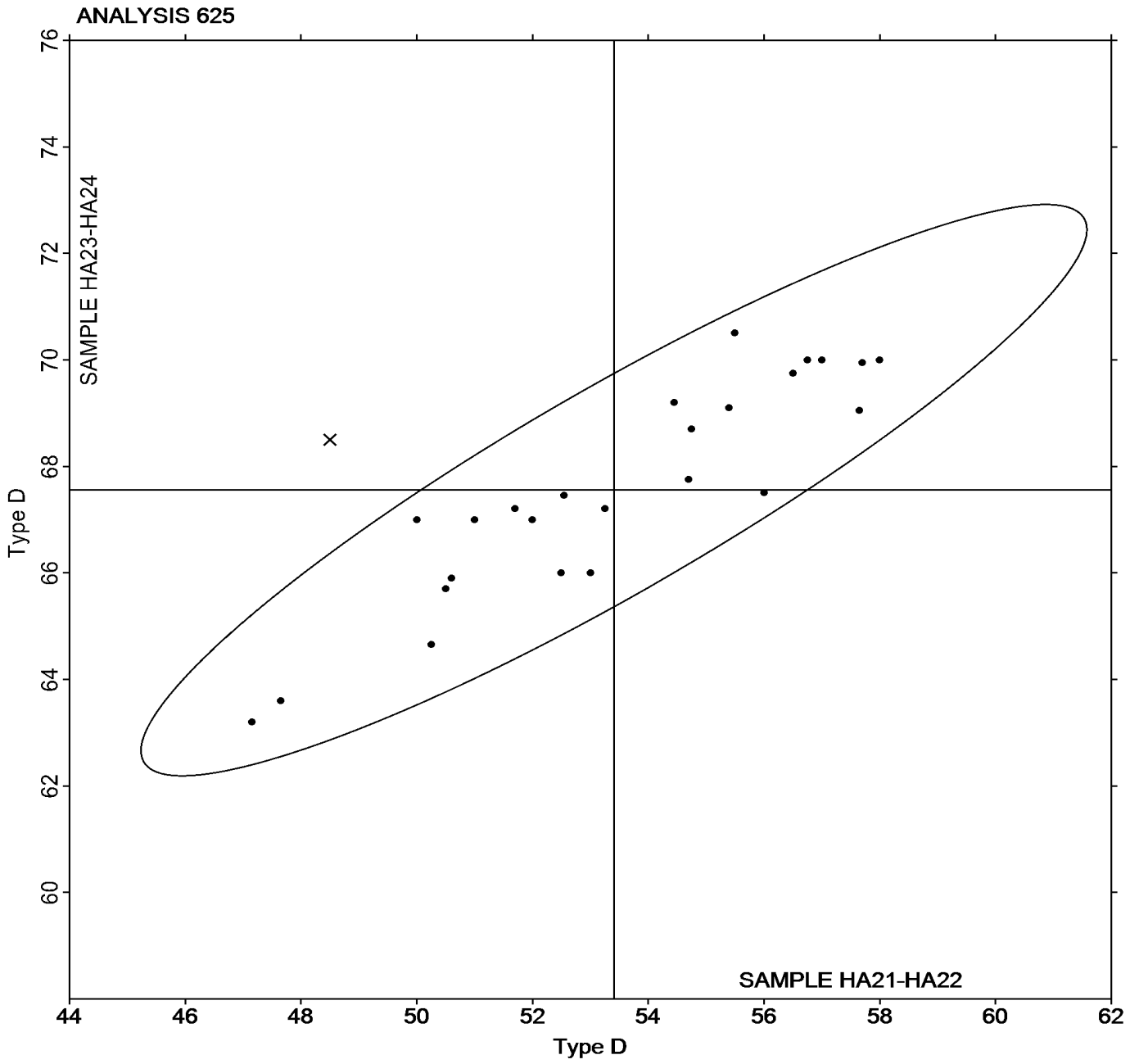


Rubber Interlaboratory Testing Program
Analysis 625
Hardness (Shore D/Type D)

Report #211
1st Qtr 2022

Grand Mean Sample HA21-HA22 = 53.406 Type D

Grand Mean Sample HA23-HA24 = 67.554 Type D





Rubber Interlaboratory Testing Program

Report #211

Analysis 630

1st Qtr 2022

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

WebCode	Data Flag	Sample A21-A22			Sample J21-J22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
33PUHT		3,253.9	-44.2	-0.25	3,238.2	81.4	0.38
3G68KL		3,474.5	176.4	0.98	3,041.0	-115.7	-0.53
3JFP4R		3,481.6	183.5	1.02	2,901.5	-255.3	-1.18
8EYB3E		3,214.9	-83.2	-0.46	3,203.9	47.1	0.22
8NN2MK		3,516.0	217.9	1.21	3,339.5	182.8	0.84
99Q7QK		3,331.2	33.1	0.18	3,141.9	-14.8	-0.07
AF88KN	*	3,125.5	-172.6	-0.96	2,518.5	-638.2	-2.95
BC4TDN		3,256.5	-41.6	-0.23	3,301.0	144.3	0.67
BK2C4K		3,464.4	166.3	0.92	3,220.7	63.9	0.30
DVQ2PA		3,282.3	-15.8	-0.09	3,275.0	118.3	0.55
E2D7X4		3,393.7	95.6	0.53	3,081.4	-75.3	-0.35
FG4G9D		3,087.6	-210.5	-1.17	3,057.6	-99.1	-0.46
FZF4W7		3,510.0	211.9	1.18	3,495.0	338.3	1.56
GAHWDC		3,335.0	36.9	0.21	3,275.0	118.3	0.55
JKA4L2		3,189.0	-109.1	-0.61	3,139.0	-17.7	-0.08
K9ARQY		3,433.8	135.8	0.75	3,220.7	64.0	0.30
QARWPY		3,309.8	11.7	0.06	3,155.2	-1.6	-0.01
QBH4X3		3,548.4	250.3	1.39	3,404.8	248.0	1.15
QGAD9Z		3,335.9	37.8	0.21	3,154.6	-2.1	-0.01
QWML94		3,299.0	0.9	0.01	2,942.0	-214.7	-0.99
RAXVYX		3,404.6	106.5	0.59	3,062.7	-94.1	-0.43
RVPVFU		3,442.5	144.4	0.80	3,447.0	290.3	1.34
UBPBPZ	*	2,705.0	-593.1	-3.30	2,775.0	-381.7	-1.76
UZQRCZ		3,140.0	-158.1	-0.88	3,319.5	162.8	0.75
V3AEWY		3,282.0	-16.1	-0.09	3,345.0	188.3	0.87
VVUMWZ		3,125.6	-172.5	-0.96	3,306.9	150.1	0.69
XWWBYV		3,059.6	-238.5	-1.33	2,817.4	-339.4	-1.57
ZX2HET		3,344.5	46.4	0.26	3,209.0	52.3	0.24

Grand Means		Summary Statistics	
	3,298.09 psi		3,156.74 psi
Std Dev Btwn Labs	179.91 psi		216.40 psi
Statistics based on 28 of 28 reporting participants			



Rubber Interlaboratory Testing Program

Report #211

Analysis 630

1st Qtr 2022

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

Summary Statistics in SI Units

Grand Means

22.739 MPa

21.76 MPa

Std Dev Btwn Labs

1.240 MPa

1.49 MPa

Statistics based on 28 of 28 reporting participants

Samples A21-A22: Polyisoprene compound, batch #1 & J21-J22: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #211

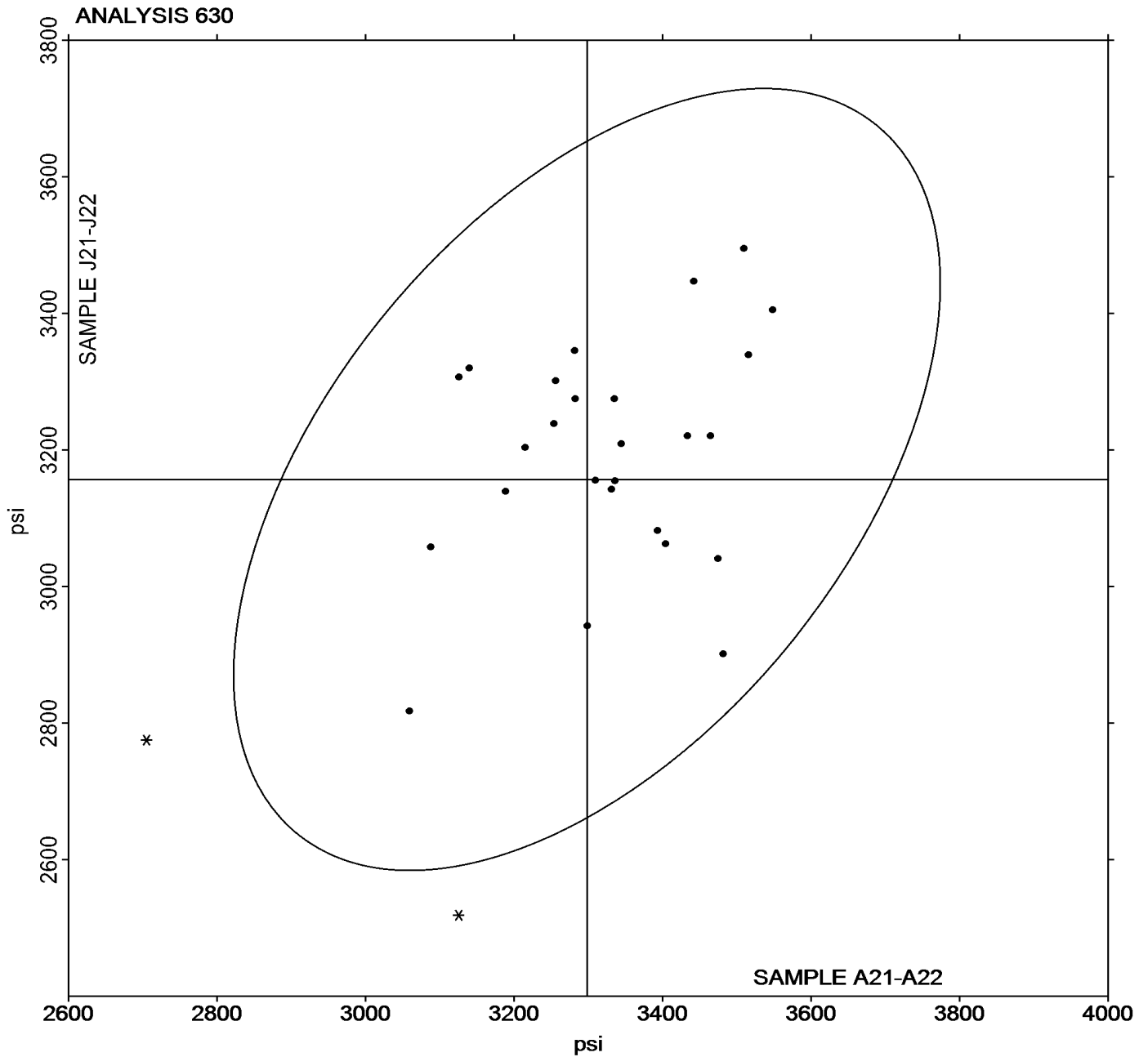
Analysis 630

1st Qtr 2022

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

Grand Mean Sample **A21-A22** = 3,298.09 psi

Grand Mean Sample **J21-J22** = 3,156.74 psi





Rubber Interlaboratory Testing Program

Report #211

Analysis 631

1st Qtr 2022

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

WebCode	Data Flag	Sample A21-A22			Sample J21-J22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
33PUHT		675.5	3.8	0.12	597.0	-24.7	-0.91
3G68KL		681.5	9.8	0.30	596.0	-25.7	-0.95
3JFP4R		660.6	-11.1	-0.34	607.0	-14.8	-0.54
8EYB3E		682.0	10.3	0.31	617.5	-4.2	-0.16
8NN2MK		626.0	-45.7	-1.40	575.0	-46.7	-1.72
99Q7QK		704.0	32.3	0.99	634.5	12.8	0.47
AF88KN	X	536.0	-135.7	-4.14	487.0	-134.7	-4.96
BC4TDN		622.0	-49.7	-1.52	631.5	9.8	0.36
BK2C4K		608.9	-62.8	-1.92	562.8	-58.9	-2.17
DVQ2PA		653.0	-18.7	-0.57	596.5	-25.2	-0.93
E2D7X4	X	2,940.7	2,269.0	69.25	2,554.7	1,932.9	71.14
FG4G9D		623.2	-48.5	-1.48	622.9	1.2	0.04
FZF4W7		740.5	68.8	2.10	679.0	57.3	2.11
GAHWDC		657.0	-14.7	-0.45	598.0	-23.7	-0.87
JKA4L2		686.0	14.3	0.44	635.0	13.3	0.49
K9ARQY		681.5	9.8	0.30	619.0	-2.7	-0.10
QARWPY		668.7	-3.1	-0.09	596.6	-25.1	-0.93
QBH4X3		705.2	33.4	1.02	635.6	13.8	0.51
QGAD9Z		707.0	35.3	1.08	645.5	23.8	0.87
QWML94		638.0	-33.7	-1.03	600.5	-21.2	-0.78
RAXVYX		686.9	15.2	0.46	631.9	10.2	0.37
RVPVFU		696.0	24.3	0.74	630.0	8.3	0.30
UBBPBZ		682.0	10.3	0.31	651.0	29.3	1.08
UZQRCZ		648.5	-23.2	-0.71	640.5	18.8	0.69
V3AEWY		727.5	55.8	1.70	674.0	52.3	1.92
VVUMWZ		691.1	19.3	0.59	638.5	16.7	0.61
XWWBYV		651.5	-20.2	-0.62	632.5	10.8	0.40
ZX2HET		660.5	-11.2	-0.34	617.0	-4.7	-0.17

		Summary Statistics	
Grand Means	671.71 percent	621.74 percent	
Stnd Dev Btwn Labs	32.77 percent	27.17 percent	
Statistics based on 26 of 28 reporting participants			

Samples A21-A22: Polyisoprene compound, batch #1 & J21-J22: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Analysis 631

Report #211

1st Qtr 2022

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

Comments on Assigned Data Flags for Test #631

AF88KN (X) - Data for all samples are low. Inconsistent within the determinations of sample group A21-A22.

E2D7X4 (X) - Extreme Data.



Rubber Interlaboratory Testing Program

Report #211

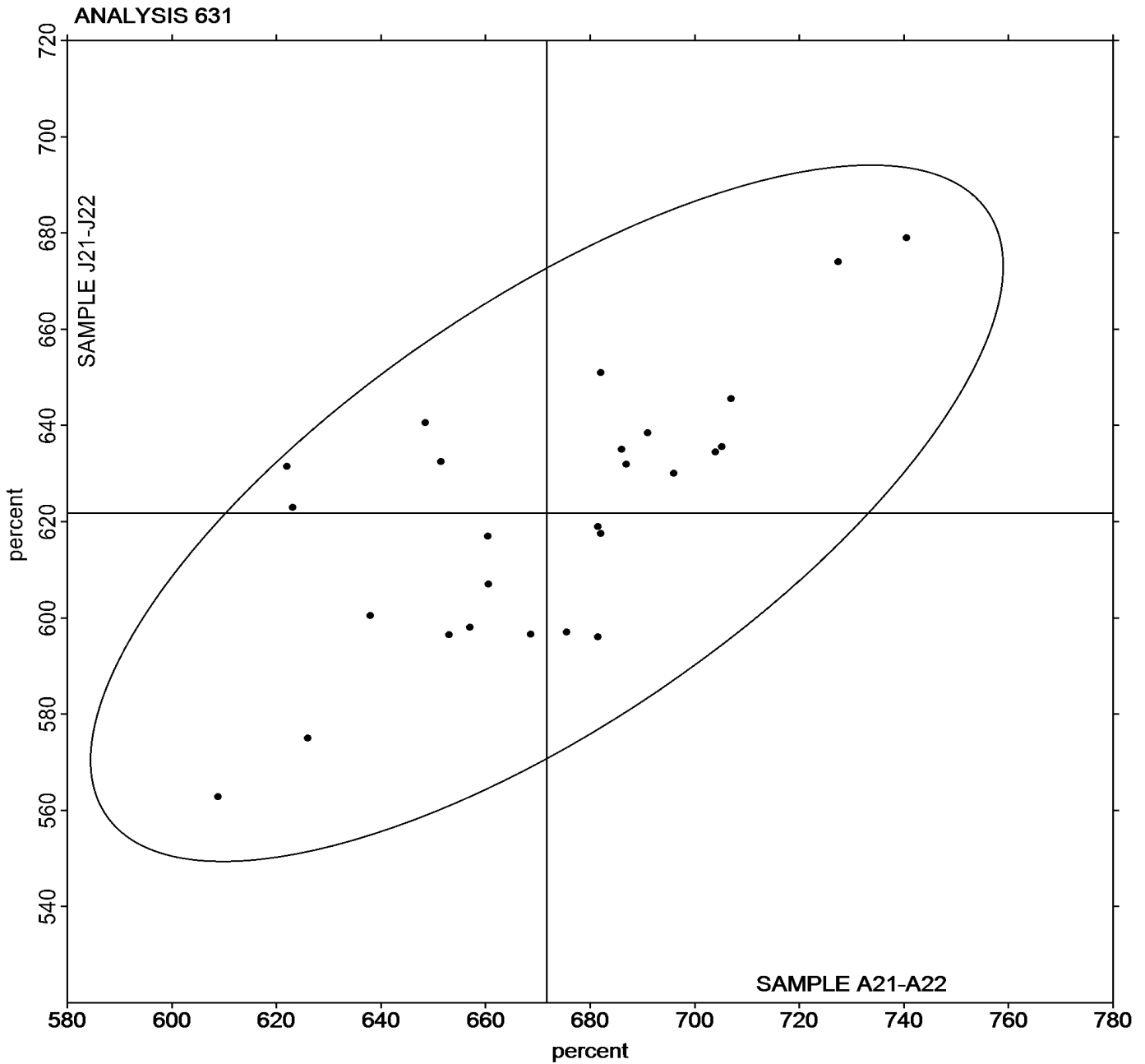
Analysis 631

1st Qtr 2022

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

Grand Mean Sample **A21-A22** = 671.71 percent

Grand Mean Sample **J21-J22** = 621.74 percent





Rubber Interlaboratory Testing Program

Report #211

Analysis 632

1st Qtr 2022

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

WebCode	Data Flag	Sample A21-A22			Sample J21-J22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
33PUHT		696.3	-48.5	-0.53	962.2	63.1	0.81
3G68KL		715.0	-29.8	-0.33	862.5	-36.6	-0.47
3JFP4R		814.7	69.9	0.77	819.8	-79.3	-1.02
8EYB3E		674.7	-70.1	-0.77	931.1	31.9	0.41
8NN2MK		878.5	133.7	1.47	1,006.0	106.9	1.37
99Q7QK		682.5	-62.3	-0.69	850.0	-49.1	-0.63
AF88KN	*	1,007.2	262.4	2.89	1,063.0	163.9	2.10
BC4TDN		795.5	50.7	0.56	908.5	9.4	0.12
BK2C4K		956.6	211.8	2.33	1,039.0	139.9	1.79
DVQ2PA		761.8	16.9	0.19	937.7	38.5	0.49
E2D7X4		769.8	25.0	0.27	871.7	-27.4	-0.35
FG4G9D		764.4	19.6	0.22	824.5	-74.6	-0.96
FZF4W7		627.0	-117.8	-1.30	897.0	-2.1	-0.03
GAHWDC		703.2	-41.7	-0.46	1,008.5	109.4	1.40
JKA4L2		616.0	-128.8	-1.42	809.0	-90.1	-1.15
K9ARQY		784.5	39.7	0.44	871.5	-27.6	-0.35
QARWPY		749.4	4.6	0.05	981.6	82.4	1.06
QBH4X3		755.7	10.9	0.12	960.9	61.8	0.79
QGAD9Z		731.7	-13.1	-0.14	876.8	-22.4	-0.29
QWML94		785.0	40.2	0.44	833.5	-65.6	-0.84
RAXVYX		743.9	-0.9	-0.01	897.5	-1.6	-0.02
RVPVFU		693.0	-51.8	-0.57	895.0	-4.1	-0.05
UBPBPZ		643.5	-101.3	-1.12	817.5	-81.6	-1.05
UZQRCZ		728.0	-16.8	-0.18	885.5	-13.6	-0.17
V3AEWY		629.0	-115.8	-1.27	794.0	-105.1	-1.35
VVUMWZ		657.8	-87.1	-0.96	952.9	53.8	0.69
XWWBYV		728.1	-16.7	-0.18	736.8	-162.3	-2.08
ZX2HET		762.0	17.2	0.19	881.5	-17.6	-0.23

Grand Means		Summary Statistics	
	744.80 psi		899.12 psi
Std Dev Btwn Labs	90.85 psi		78.06 psi
Statistics based on 28 of 28 reporting participants			



Rubber Interlaboratory Testing Program

Report #211

Analysis 632

1st Qtr 2022

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

Summary Statistics in SI Units

Grand Means

5.1352 MPa

6.20 MPa

Std Dev Btwn Labs

0.6264 MPa

0.54 MPa

Statistics based on 28 of 28 reporting participants

Samples A21-A22: Polyisoprene compound, batch #1 & J21-J22: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #211

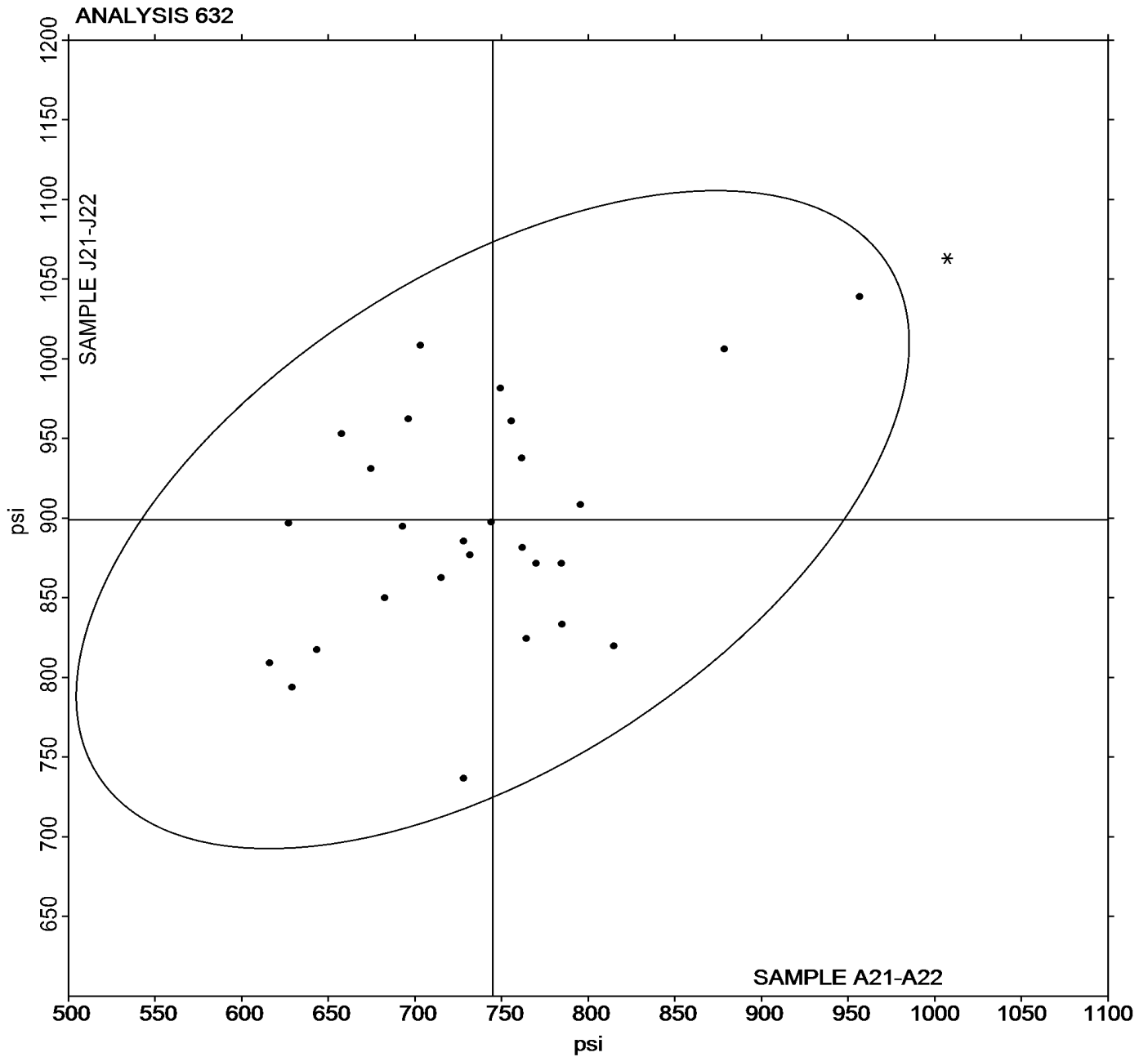
Analysis 632

1st Qtr 2022

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

Grand Mean Sample **A21-A22** = 744.80 psi

Grand Mean Sample **J21-J22** = 899.12 psi





Rubber Interlaboratory Testing Program

Report #211

Analysis 633

1st Qtr 2022

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

WebCode	Data Flag	Sample A21-A22			Sample J21-J22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
33PUHT		156.7	-11.4	-0.79	210.7	8.2	0.62
3G68KL		166.5	-1.6	-0.11	199.5	-3.0	-0.23
3JFP4R		196.0	28.0	1.94	189.3	-13.2	-1.00
8EYB3E		160.5	-7.6	-0.53	206.1	3.6	0.27
8NN2MK		184.0	15.9	1.10	209.5	7.0	0.53
99Q7QK		167.1	-0.9	-0.06	225.7	23.3	1.76
AF88KN		193.0	24.9	1.73	204.0	1.5	0.12
BC4TDN		156.0	-12.1	-0.84	199.0	-3.5	-0.26
BK2C4K		189.7	21.6	1.50	202.9	0.4	0.03
DVQ2PA		161.5	-6.6	-0.46	198.5	-4.0	-0.30
E2D7X4		177.6	9.6	0.66	201.5	-1.0	-0.07
FG4G9D		170.8	2.7	0.19	191.0	-11.5	-0.87
FZF4W7		136.0	-32.1	-2.22	192.0	-10.5	-0.79
GAHWDC		160.0	-8.1	-0.56	224.7	22.2	1.68
JKA4L2		146.5	-21.6	-1.49	190.0	-12.5	-0.95
K9ARQY		177.5	9.4	0.65	202.0	-0.5	-0.04
QARWPY		170.6	2.5	0.18	218.3	15.8	1.20
QBH4X3		171.1	3.1	0.21	223.4	20.9	1.58
QGAD9Z		161.7	-6.3	-0.44	195.8	-6.7	-0.51
QWML94		171.5	3.4	0.24	183.5	-19.0	-1.44
RAXVYX		191.7	23.6	1.64	225.7	23.2	1.76
RVPVFU		160.0	-8.1	-0.56	188.5	-14.0	-1.06
UBBPBZ		161.5	-6.6	-0.45	208.0	5.5	0.42
UZQRCZ		165.5	-2.6	-0.18	204.0	1.5	0.12
V3AEWY		155.0	-13.1	-0.90	190.5	-12.0	-0.91
VVUMWZ		148.7	-19.4	-1.34	211.0	8.6	0.65
XWWBYV		174.0	6.0	0.42	173.3	-29.2	-2.21
ZX2HET		175.0	6.9	0.48	201.0	-1.5	-0.11

		Summary Statistics	
Grand Means	168.06 psi	202.47 psi	
Stnd Dev Btwn Labs	14.43 psi	13.20 psi	
Statistics based on 28 of 28 reporting participants			



Rubber Interlaboratory Testing Program

Report #211

Analysis 633

1st Qtr 2022

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

Summary Statistics in SI Units

Grand Means

1.1587 MPa

1.40 MPa

Std Dev Btwn Labs

0.0995 MPa

0.09 MPa

Statistics based on 28 of 28 reporting participants

Samples A21-A22: Polyisoprene compound, batch #1 & J21-J22: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #211

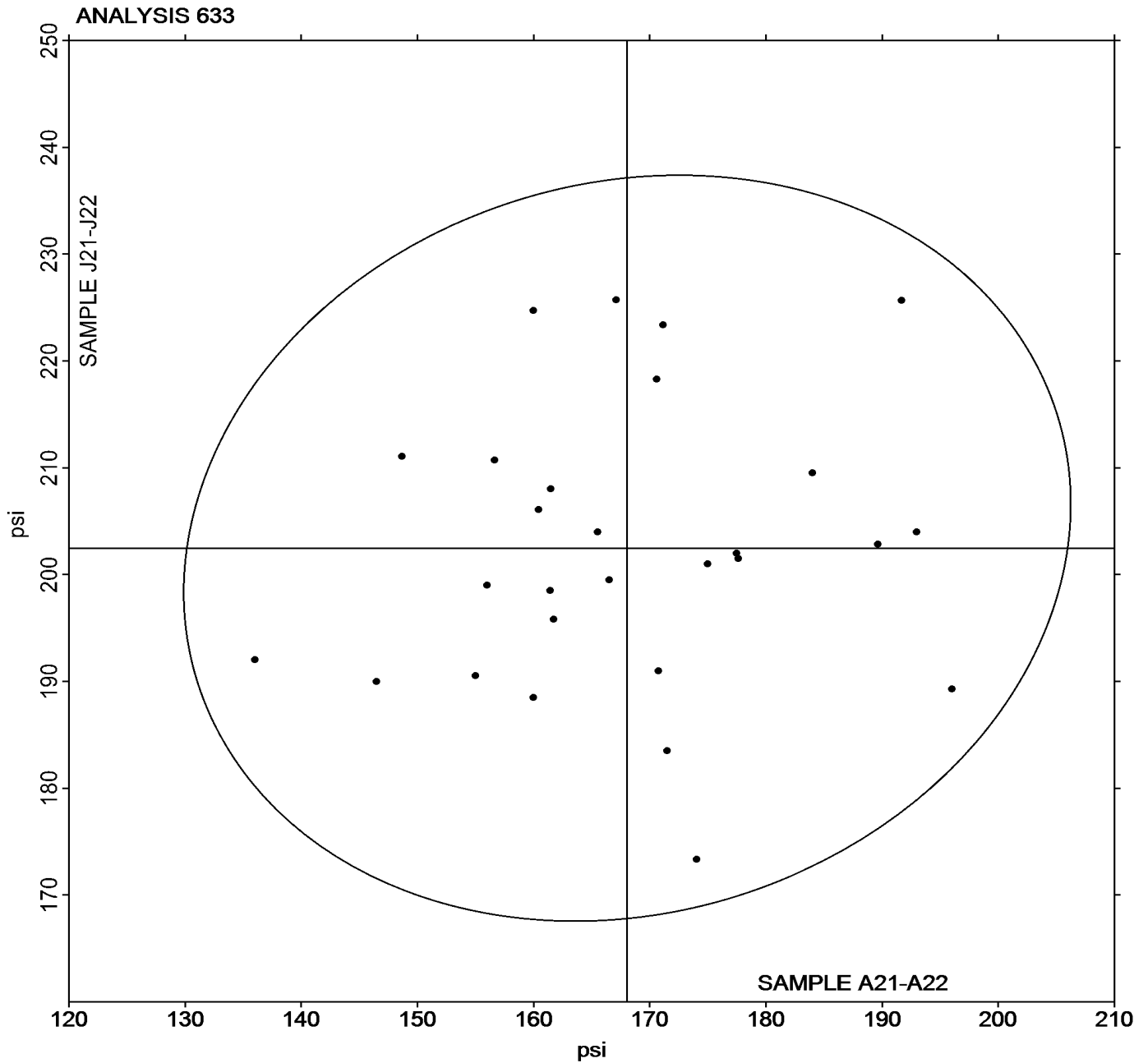
Analysis 633

1st Qtr 2022

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

Grand Mean Sample **A21-A22** = 168.06 psi

Grand Mean Sample **J21-J22** = 202.47 psi





Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample N21			Sample N22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2T2TBQ		26.00	-4.23	-1.09	24.00	-6.30	-1.53
33PUHT		29.06	-1.17	-0.30	31.03	0.73	0.18
6MQP4F		35.00	4.77	1.23	34.00	3.70	0.90
8NN2MK		33.13	2.90	0.75	31.10	0.80	0.20
8TNXLT		26.67	-3.57	-0.92	26.67	-3.63	-0.88
9A79WT		26.33	-3.90	-1.01	29.00	-1.30	-0.31
9PHXZL		28.68	-1.55	-0.40	27.64	-2.66	-0.65
9WLQ7B	*	35.67	5.43	1.40	26.33	-3.96	-0.96
AEFWZM		27.47	-2.77	-0.71	27.70	-2.60	-0.63
B3D88Q		30.08	-0.15	-0.04	31.19	0.89	0.22
BC4TDN		28.33	-1.90	-0.49	28.33	-1.96	-0.48
BK2C4K		26.74	-3.49	-0.90	25.41	-4.88	-1.19
D4R669		31.00	0.77	0.20	27.67	-2.63	-0.64
FBYKND		31.53	1.30	0.34	35.03	4.74	1.15
FG4G9D		25.34	-4.89	-1.26	25.09	-5.21	-1.27
FZF4W7		36.67	6.43	1.66	36.33	6.04	1.47
HQZDWY		26.15	-4.08	-1.05	26.05	-4.25	-1.03
JKA4L2		23.67	-6.57	-1.70	30.00	-0.30	-0.07
JVFW49		31.00	0.77	0.20	36.00	5.70	1.39
K9ARQY		27.87	-2.37	-0.61	29.89	-0.40	-0.10
M3YK27		27.37	-2.87	-0.74	27.67	-2.63	-0.64
M48XJ8		33.67	3.43	0.89	34.00	3.70	0.90
P4MPXB	X	476.00	445.77	115.15	470.33	440.04	106.88
P8LZTB		27.67	-2.57	-0.66	25.37	-4.93	-1.20
PKUUX9		30.33	0.10	0.03	29.00	-1.30	-0.31
PPK697		34.00	3.77	0.97	34.67	4.37	1.06
Q7RTN4		32.60	2.37	0.61	31.87	1.57	0.38
QARWPY		33.63	3.40	0.88	26.73	-3.56	-0.87
QWML94		36.00	5.77	1.49	35.00	4.70	1.14
RAXVYX		36.10	5.87	1.52	36.67	6.37	1.55
TH9GL8	*	38.67	8.43	2.18	42.00	11.70	2.84
UZQRCZ		27.00	-3.23	-0.84	27.67	-2.63	-0.64
V47GC3		26.00	-4.23	-1.09	30.00	-0.30	-0.07
VQEZX2		29.50	-0.73	-0.19	30.00	-0.30	-0.07
XN8DMU		29.00	-1.23	-0.32	31.00	0.70	0.17



Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	30.233 % Compression		30.297 % Compression
Std Dev Btwn Labs	3.871 % Compression		4.117 % Compression
Statistics based on 34 of 35 reporting participants			

Samples N21: EPDM compound, batch #1 & N22: EPDM compound, batch #1

Comments on Assigned Data Flags for Test #635

P4MPXB (X) - Extreme Data.



Rubber Interlaboratory Testing Program

Report #211

Analysis 660

1st Qtr 2022

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

WebCode	Data Flag	Sample S21-S22			Sample S23-S24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23CVWR	*	49.80	2.35	2.48	57.05	3.97	3.27	TA
3G68KL		47.38	-0.07	-0.07	53.08	0.00	0.00	MR
3JFP4R		46.77	-0.68	-0.72	52.77	-0.31	-0.26	ML
6337BH		46.11	-1.34	-1.42	51.58	-1.51	-1.24	MR
8EYB3E		47.83	0.38	0.40	53.70	0.62	0.51	MR
8QFUMB	*	47.28	-0.17	-0.18	55.25	2.17	1.79	MR
8TNXLT		48.12	0.67	0.70	53.40	0.32	0.26	MR
99Q7QK		48.77	1.31	1.39	54.01	0.93	0.77	XX
BC4TDN		47.42	-0.03	-0.04	52.97	-0.12	-0.10	ML
DVQ2PA		47.28	-0.17	-0.18	52.62	-0.47	-0.39	MR
FG4G9D		45.98	-1.47	-1.55	51.43	-1.65	-1.36	MR
FZF4W7	*	48.52	1.07	1.13	52.47	-0.62	-0.51	MR
GAHWDC		47.18	-0.27	-0.29	52.26	-0.83	-0.68	MV
K9ARQY		48.65	1.20	1.27	55.16	2.08	1.71	ML
LEBMM4		47.00	-0.45	-0.48	52.85	-0.23	-0.19	MR
MGELWB		47.21	-0.24	-0.26	53.46	0.37	0.31	MV
N2KNZY		46.73	-0.72	-0.76	52.53	-0.55	-0.45	MR
N3WALU		47.24	-0.21	-0.22	52.43	-0.65	-0.54	MV
NBPMH9		47.40	-0.05	-0.05	52.92	-0.17	-0.14	MR
P4MPXB		47.55	0.10	0.10	53.55	0.47	0.38	MR
PKUUX9		47.85	0.40	0.42	53.77	0.68	0.56	MR
QBH4X3		47.14	-0.31	-0.33	52.75	-0.34	-0.28	MV
QGAD9Z		47.05	-0.40	-0.42	52.87	-0.22	-0.18	MR
QWML94		45.92	-1.53	-1.62	51.38	-1.70	-1.40	MP
RVPVFU		47.53	0.08	0.08	52.65	-0.43	-0.36	MR
UBPBPZ		48.93	1.48	1.56	54.14	1.06	0.87	MZ
UZQRCZ		47.72	0.27	0.29	54.09	1.01	0.83	MV
V3AEWY		47.33	-0.12	-0.13	53.00	-0.08	-0.07	MV
V79QTX		49.30	1.85	1.96	54.15	1.07	0.88	MR
VVUMWZ		45.87	-1.58	-1.68	51.07	-2.02	-1.66	MR
XWWBYV		45.98	-1.47	-1.56	51.87	-1.21	-1.00	MV
Y8FXYN		47.60	0.15	0.16	52.58	-0.50	-0.41	MR
ZFKDVM		47.97	0.52	0.55	53.37	0.28	0.23	MR
ZX2HET		46.95	-0.50	-0.53	51.68	-1.40	-1.16	XX



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

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	47.452 ML 1 + 4	53.084 ML 1 + 4	
Stnd Dev Btwn Labs	0.945 ML 1 + 4	1.212 ML 1 + 4	
Statistics based on 34 of 34 reporting participants			

Samples S21-S22: SBR & S23-S24: 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
MZ	Rebuilt Monsanto Mooney Viscometer	TA	TA Instruments (any model)
XX	Instrument make/model not specified by lab		

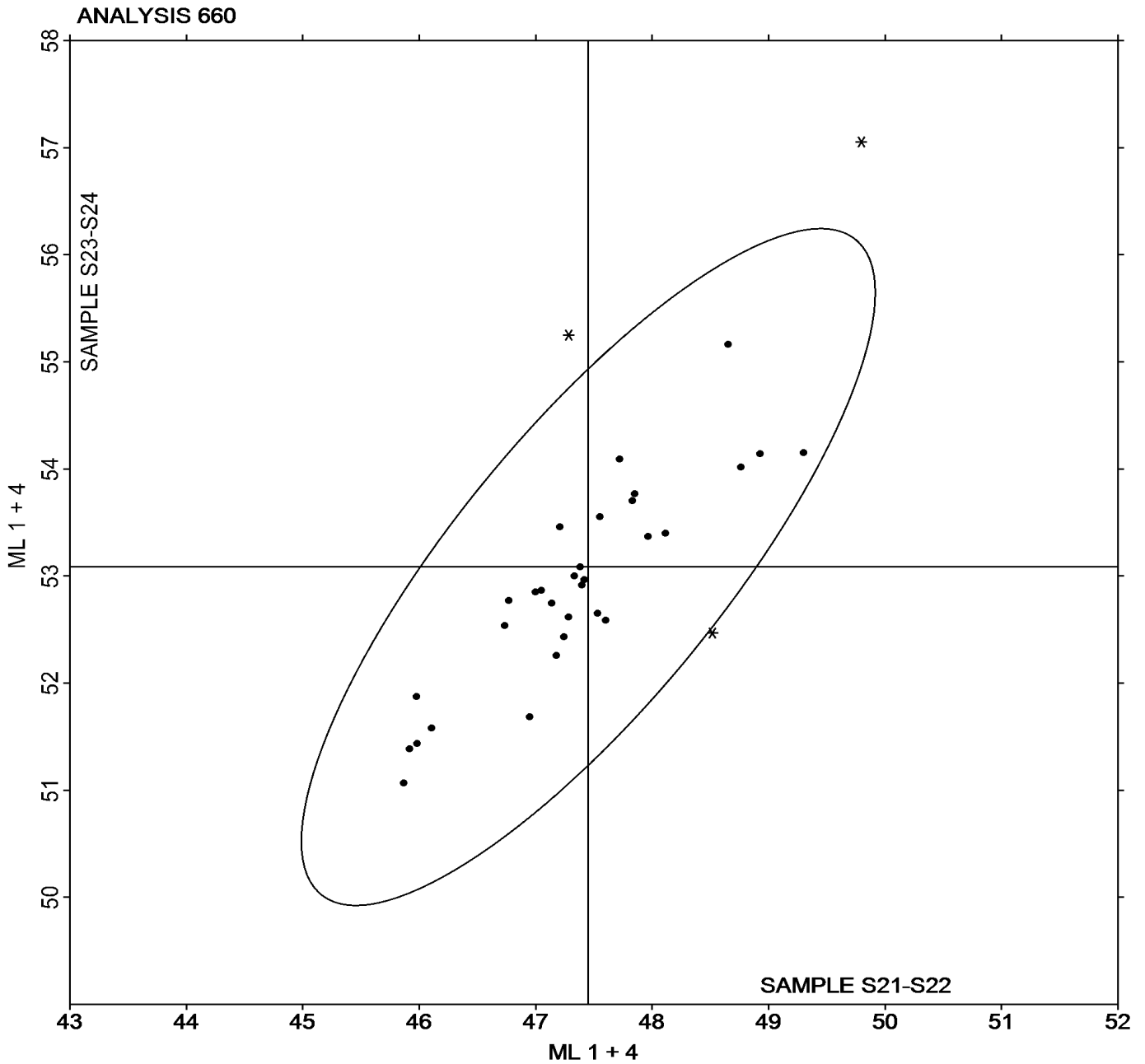


Rubber Interlaboratory Testing Program
Analysis 660
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #211
1st Qtr 2022

Grand Mean Sample **S21-S22** = 47.452 ML 1 + 4

Grand Mean Sample **S23-S24** = 53.084 ML 1 + 4





Rubber Interlaboratory Testing Program

Report #211

Analysis 661

1st Qtr 2022

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

WebCode	Data Flag	Sample S21-S22			Sample S23-S24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23CVWR	*	49.80	2.35	2.43	53.62	2.90	2.49	TA
3G68KL		47.38	-0.07	-0.07	50.90	0.18	0.15	MR
3JFP4R		46.77	-0.68	-0.70	50.16	-0.56	-0.48	ML
6337BH		46.11	-1.34	-1.39	49.37	-1.36	-1.16	MR
8EYB3E		47.83	0.38	0.40	51.45	0.73	0.63	MR
8QFUMB		47.28	-0.17	-0.17	51.63	0.91	0.78	MR
8TNXLT		48.12	0.67	0.69	51.00	0.28	0.24	MR
99Q7QK		48.77	1.32	1.36	50.65	-0.07	-0.06	XX
BC4TDN		47.42	-0.03	-0.03	50.58	-0.14	-0.12	ML
DVQ2PA		47.28	-0.17	-0.17	50.05	-0.67	-0.58	MR
FG4G9D		45.98	-1.47	-1.52	51.68	0.95	0.82	MR
FZF4W7		48.52	1.07	1.10	49.73	-0.99	-0.85	MR
GAHWDC	*	47.18	-0.27	-0.28	53.66	2.94	2.52	MV
K9ARQY		48.65	1.20	1.24	51.85	1.13	0.97	ML
MGELWB		47.21	-0.24	-0.25	51.41	0.69	0.59	MV
N2KNZY		46.73	-0.72	-0.74	49.75	-0.97	-0.83	MR
N3WALU		47.24	-0.21	-0.21	50.71	-0.01	-0.01	MV
NBPMH9		47.40	-0.05	-0.05	50.44	-0.28	-0.24	MR
P4MPXB		47.55	0.10	0.10	50.68	-0.04	-0.03	MR
PKUUX9		47.85	0.40	0.41	51.18	0.46	0.40	MR
QBH4X3		47.14	-0.31	-0.32	49.01	-1.71	-1.47	MV
QGAD9Z		47.05	-0.40	-0.41	50.22	-0.50	-0.43	MR
QWML94		45.92	-1.53	-1.58	48.67	-2.05	-1.76	MP
RVPVFU		47.53	0.08	0.08	50.51	-0.21	-0.18	MR
UBPBPZ		48.93	1.48	1.53	51.40	0.68	0.59	MZ
UZQRCZ		47.72	0.27	0.28	51.55	0.83	0.71	MV
V3AEWY		47.33	-0.12	-0.12	51.38	0.66	0.56	MV
V79QTX		49.30	1.85	1.91	51.60	0.88	0.75	MR
VVUMWZ		45.87	-1.58	-1.64	49.02	-1.70	-1.46	MR
XWWBYV		45.98	-1.47	-1.52	49.86	-0.86	-0.74	MV
Y8FXYN		47.60	0.15	0.16	50.08	-0.64	-0.55	MR
ZX2HET		46.95	-0.50	-0.52	49.27	-1.45	-1.25	XX



Rubber Interlaboratory Testing Program

Report #211

Analysis 661

1st Qtr 2022

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

		Summary Statistics	
Grand Means	47.450 ML 1 + 8	50.721 ML 1 + 8	
Stnd Dev Btwn Labs	0.967 ML 1 + 8	1.164 ML 1 + 8	
Statistics based on 32 of 32 reporting participants			

Samples S21-S22: SBR & S23-S24: 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
MZ	Rebuilt Monsanto Mooney Viscometer	TA	TA Instruments (any model)
XX	Instrument make/model not specified by lab		



Rubber Interlaboratory Testing Program

Report #211

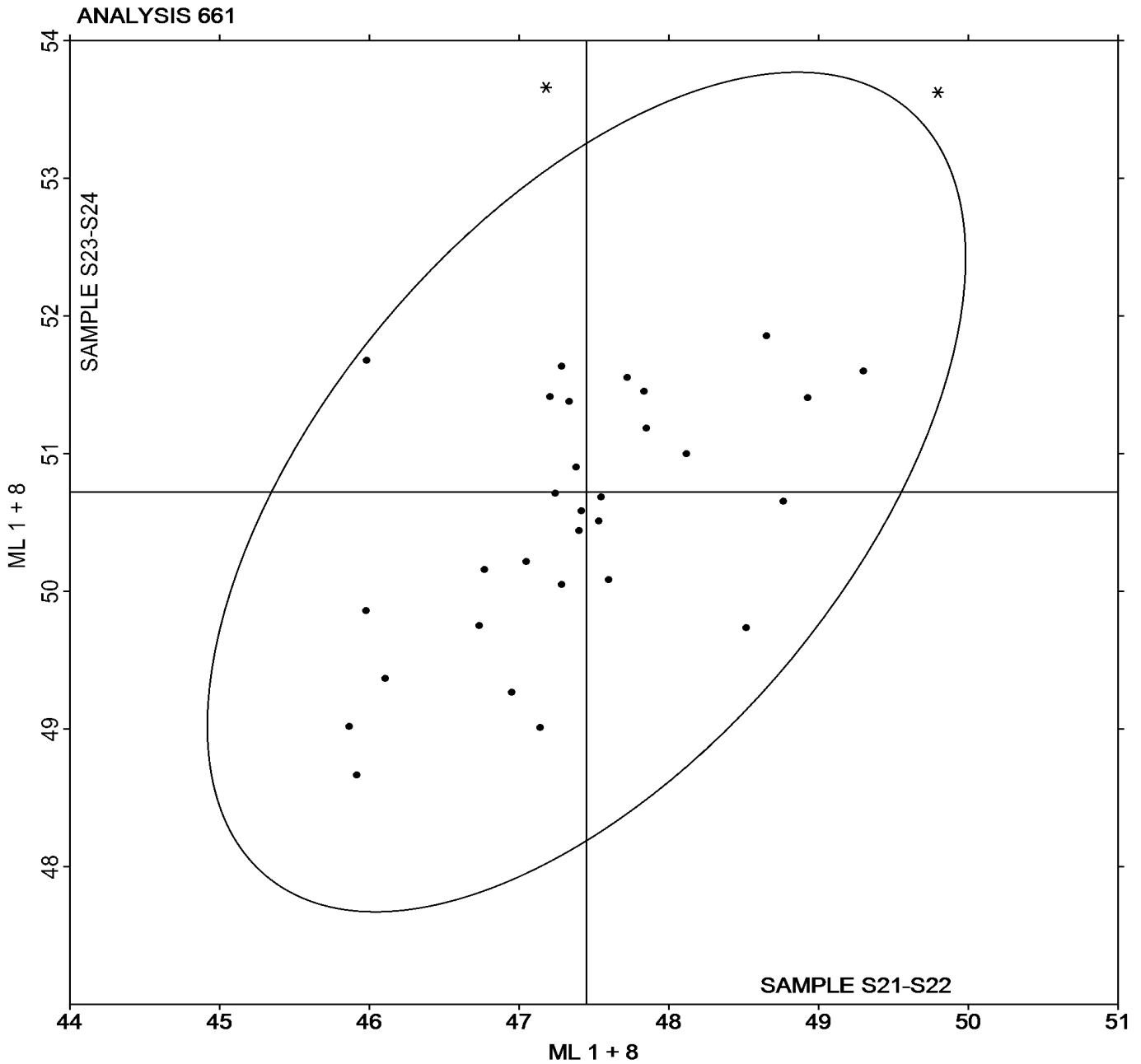
Analysis 661

1st Qtr 2022

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

Grand Mean Sample **S21-S22** = 47.450 ML 1 + 8

Grand Mean Sample **S23-S24** = 50.721 ML 1 + 8





Rubber Interlaboratory Testing Program

Report #211

Analysis 662

1st Qtr 2022

Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample S21-S22			Sample S23-S24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G68KL		12.10	0.79	0.29	5.883	-0.063	-0.09	MR
3JFP4R		12.68	1.37	0.50	5.895	-0.051	-0.07	ML
99Q7QK		11.83	0.53	0.19	7.000	1.054	1.49	XX
BC4TDN		13.37	2.06	0.75	6.267	0.320	0.45	ML
DVQ2PA		12.56	1.26	0.45	5.957	0.010	0.01	MR
GAHWDC	X	544.90	533.60	193.02	545.933	539.987	765.77	MV
K9ARQY		12.71	1.41	0.51	6.324	0.378	0.54	ML
LEBMM4		12.10	0.80	0.29	6.600	0.654	0.93	MR
MGELWB		4.09	-7.21	-2.61	4.317	-1.630	-2.31	MV
N2KNZY		13.80	2.50	0.90	7.183	1.237	1.75	MR
PKUUX9	X	37.73	26.43	9.56	10.157	4.210	5.97	MR
QBH4X3	X	307.60	296.30	107.18	305.400	299.454	424.67	MV
QGAD9Z		12.69	1.38	0.50	5.875	-0.071	-0.10	MR
UBPBPZ		6.00	-5.30	-1.92	5.000	-0.946	-1.34	MZ
UZQRCZ		8.93	-2.37	-0.86	5.167	-0.780	-1.11	MV
V3AEWY		10.77	-0.54	-0.19	5.867	-0.080	-0.11	MV
V79QTX		13.90	2.60	0.94	6.292	0.345	0.49	MR
VVUMWZ		13.10	1.80	0.65	6.160	0.214	0.30	MR
XWWBYV		9.00	-2.30	-0.83	5.400	-0.546	-0.77	MV
ZX2HET		12.53	1.23	0.45	5.900	-0.046	-0.07	XX

Grand Means		Summary Statistics	
	11.303 seconds		5.9462 seconds
Std Dev Btwn Labs	2.764 seconds		0.7052 seconds
Statistics based on 17 of 20 reporting participants			

Samples S21-S22: SBR & S23-S24: Butyl

Comments on Assigned Data Flags for Test #662

GAHWDC (X) - Extreme Data.

PKUUX9 (X) - Data for all samples are high.

QBH4X3 (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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

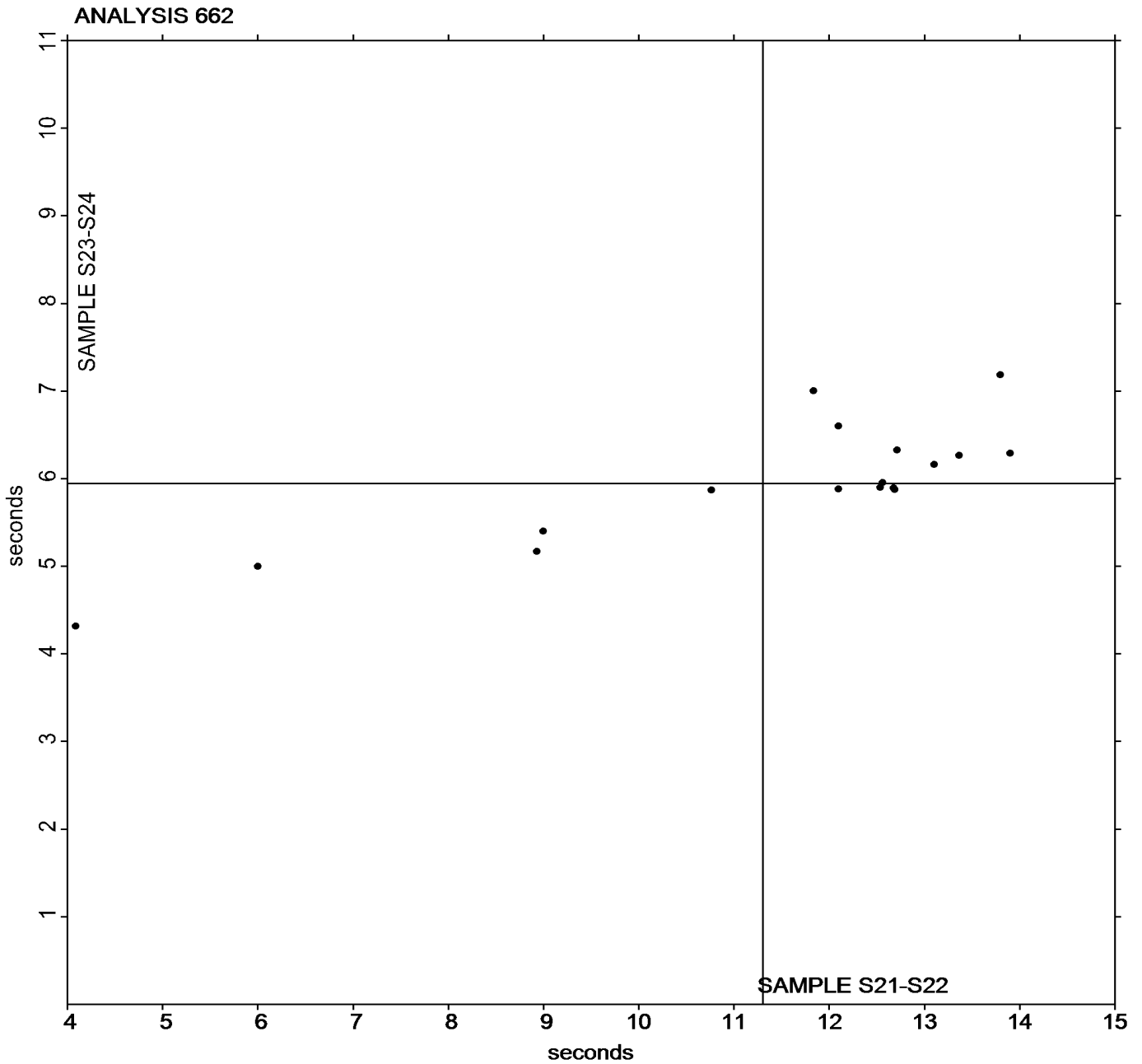


Rubber Interlaboratory Testing Program
Analysis 662
Mooney Stress Relaxation: t80 (seconds)

Report #211
1st Qtr 2022

Grand Mean Sample **S21-S22** = 11.303 seconds

Grand Mean Sample **S23-S24** = 5.9462 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 #211

Analysis 663

1st Qtr 2022

Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample S21-S22			Sample S23-S24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G68KL		85.90	-0.46	-0.16	94.05	-0.23	-0.20	MR
3JFP4R		85.75	-0.60	-0.22	94.70	0.43	0.37	ML
99Q7QK		86.10	-0.25	-0.09	93.70	-0.57	-0.50	XX
BC4TDN		85.32	-1.04	-0.37	93.68	-0.59	-0.52	ML
DVQ2PA		85.76	-0.60	-0.21	94.41	0.13	0.12	MR
GAHWDC		91.69	5.33	1.91	94.58	0.30	0.27	MV
K9ARQY		85.66	-0.69	-0.25	93.51	-0.76	-0.67	ML
MGELWB	X	5.97	-80.38	-28.78	1.62	-92.65	-81.21	MV
N2KNZY		85.02	-1.34	-0.48	92.78	-1.49	-1.30	MR
PKUUX9	*	78.33	-8.02	-2.87	91.83	-2.44	-2.14	MR
QBH4X3		89.24	2.88	1.03	96.27	2.00	1.75	MV
QGAD9Z		85.61	-0.74	-0.27	94.36	0.08	0.07	MR
UBPBPZ		90.38	4.02	1.44	95.41	1.14	1.00	MZ
UZQRCZ		88.33	1.98	0.71	95.92	1.65	1.44	MV
V3AEWY		86.88	0.52	0.19	93.70	-0.57	-0.50	MV
V79QTX		84.94	-1.41	-0.51	93.27	-1.01	-0.88	MR
VVUMWZ		85.50	-0.85	-0.30	94.30	0.03	0.02	MR
XWWBYV		88.17	1.81	0.65	96.00	1.73	1.51	MV
ZX2HET		85.82	-0.54	-0.19	94.45	0.18	0.16	XX

Grand Means		Summary Statistics	
	86.355 percent		94.272 percent
Stnd Dev Btwn Labs	2.793 percent		1.141 percent
Statistics based on 18 of 19 reporting participants			

Samples S21-S22: SBR & S23-S24: Butyl

Comments on Assigned Data Flags for Test #663

MGELWB (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

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

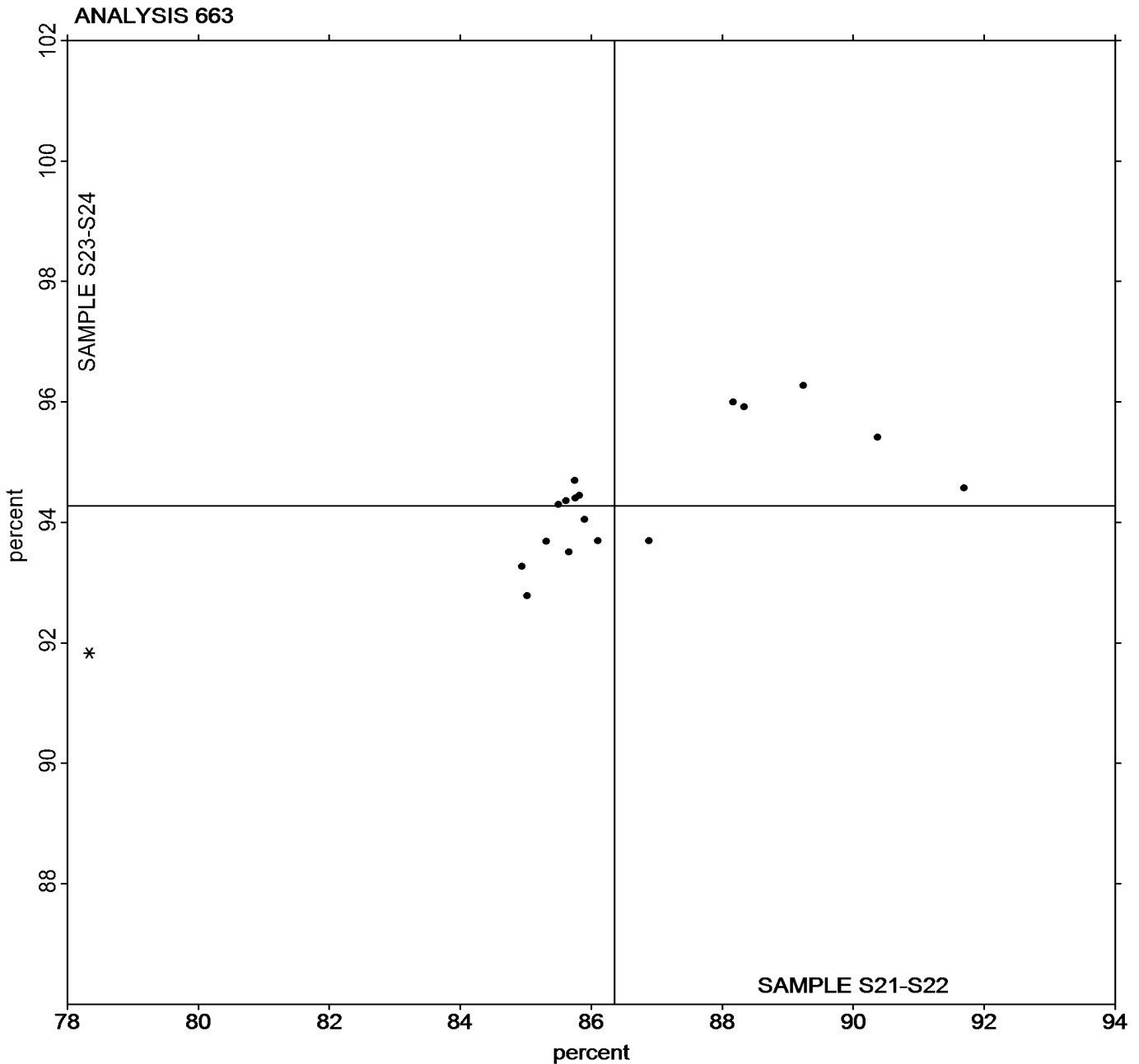


Rubber Interlaboratory Testing Program
Analysis 663
Mooney Stress Relaxation: X30 (percent)

Report #211
1st Qtr 2022

Grand Mean Sample S21-S22 = 86.355 percent

Grand Mean Sample S23-S24 = 94.272 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 #211

Analysis 664

1st Qtr 2022

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

WebCode	Data Flag	Sample S21-S22			Sample S23-S24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3G68KL		725.0	86.0	0.57	352.5	30.5	0.38	MR
3JFP4R		717.4	78.3	0.52	323.8	1.8	0.02	ML
99Q7QK		743.5	104.5	0.69	421.8	99.9	1.26	XX
BC4TDN		757.0	117.9	0.78	380.6	58.6	0.74	ML
DVQ2PA		724.5	85.4	0.56	331.8	9.8	0.12	MR
GAHWDC		405.8	-233.2	-1.54	327.2	5.3	0.07	MV
K9ARQY		793.8	154.8	1.02	441.1	119.1	1.50	ML
MGELWB		224.7	-414.3	-2.73	143.2	-178.7	-2.25	MV
N2KNZY		759.5	120.5	0.79	439.3	117.4	1.48	MR
PKUUX9		698.5	59.5	0.39	345.9	24.0	0.30	MR
QBH4X3		530.8	-108.2	-0.71	217.9	-104.1	-1.31	MV
QGAD9Z		729.5	90.4	0.60	333.5	11.6	0.15	MR
UBPBPZ		454.2	-184.8	-1.22	268.3	-53.7	-0.68	MZ
UZQRCZ		582.7	-56.4	-0.37	234.7	-87.3	-1.10	MV
V3AEWY		661.6	22.6	0.15	352.2	30.2	0.38	MV
VVUMWZ		719.7	80.6	0.53	335.7	13.7	0.17	XX
XWWBYV		557.7	-81.4	-0.54	223.3	-98.7	-1.24	MV
ZX2HET		716.8	77.8	0.51	322.5	0.6	0.01	XX

Grand Means		Summary Statistics	
	639.04 M-s		321.96 M-s
Stnd Dev Btwn Labs	151.58 M-s		79.43 M-s
Statistics based on 18 of 18 reporting participants			

Samples S21-S22: SBR & S23-S24: Butyl

Key to Instrument Codes Reported by Participants

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

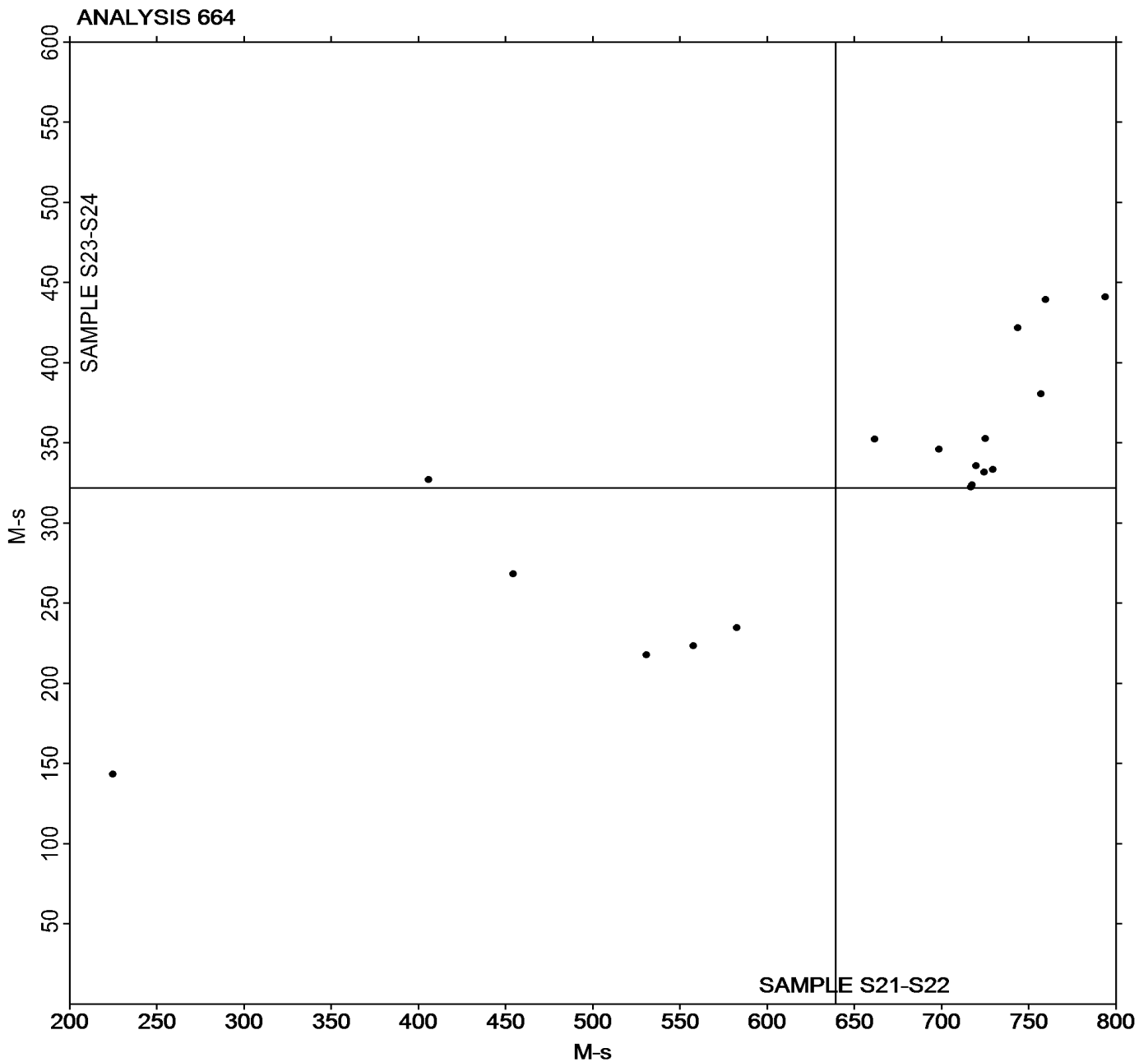


Rubber Interlaboratory Testing Program
Analysis 664
Mooney Stress Relaxation: Area under curve (M-s)

Report #211
1st Qtr 2022

Grand Mean Sample S21-S22 = 639.04 M-s

Grand Mean Sample S23-S24 = 321.96 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 #211
1st Qtr 2022

WebCode	Data Flag	Sample W21-W22			Sample W23-W24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BK2C4K		1.990	0.100	1.12	2.945	-0.137	-0.66
GAHWDC		1.862	-0.028	-0.32	2.978	-0.103	-0.50
UZQRCZ		1.818	-0.072	-0.80	3.322	0.240	1.15

		Summary Statistics	
Grand Means		1.8900 minutes	3.0817 minutes
Std Dev Btwn Labs		0.0893 minutes	0.2085 minutes
Statistics based on 3 of 3 reporting participants			

Samples W21-W22: EPDM compound, batch #1 & W23-W24: EPDM compound, batch #2

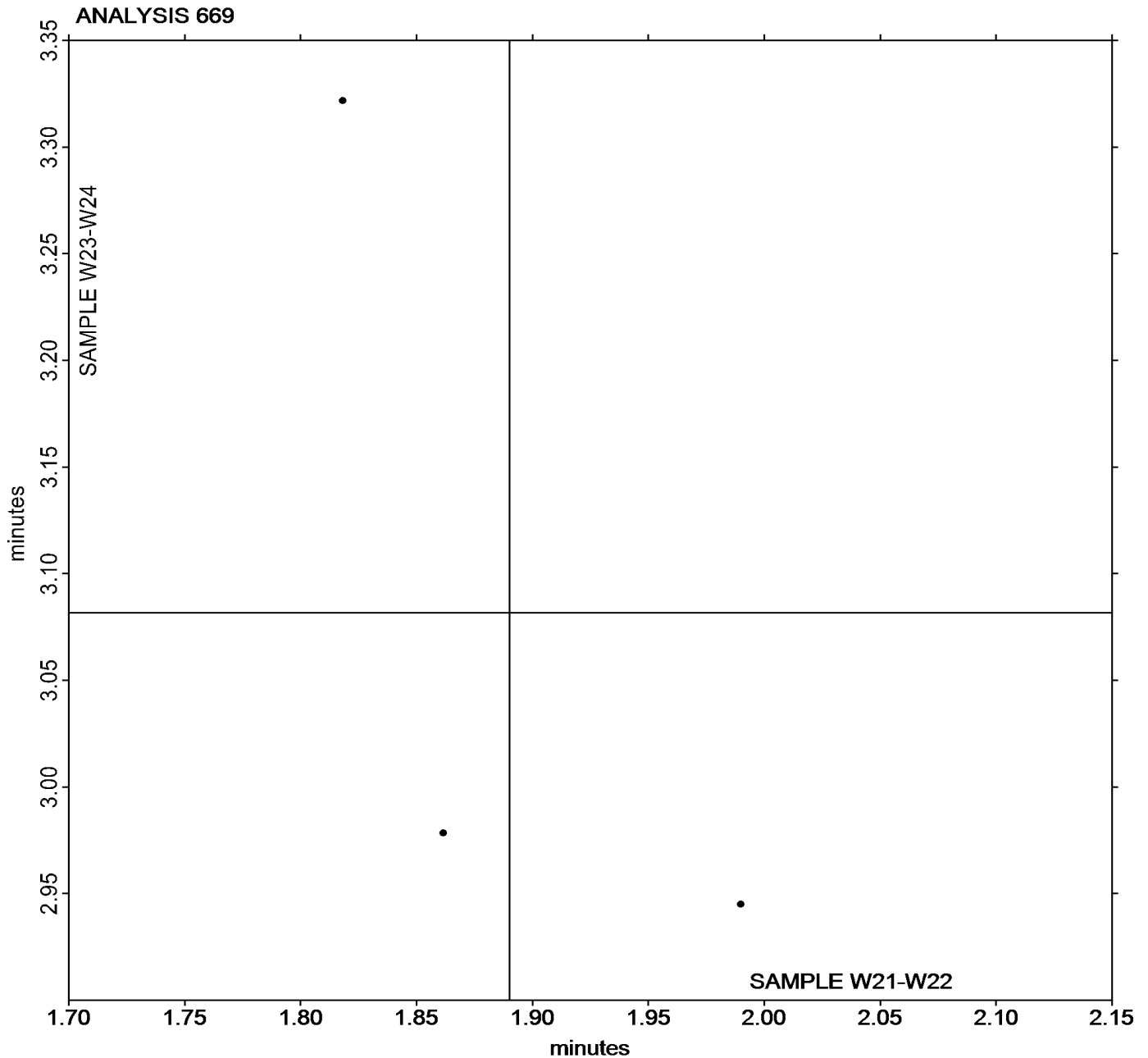


Rubber Interlaboratory Testing Program
Analysis 669
ODR Vulcanization-Cure Time 10% (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W21-W22** = 1.8900 minutes

Grand Mean Sample **W23-W24** = 3.0817 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 #211
1st Qtr 2022

WebCode	Data Flag	Sample W21-W22			Sample W23-W24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BK2C4K		1.475	0.054	0.73	2.070	-0.287	-0.91
GAHWDC		1.452	0.031	0.41	2.308	-0.049	-0.16
UZQRCZ		1.335	-0.086	-1.14	2.693	0.336	1.07

		Summary Statistics	
Grand Means		1.4206 minutes	2.3572 minutes
Std Dev Btwn Labs		0.0750 minutes	0.3145 minutes
Statistics based on 3 of 3 reporting participants			

Samples W21-W22: EPDM compound, batch #1 & W23-W24: EPDM compound, batch #2

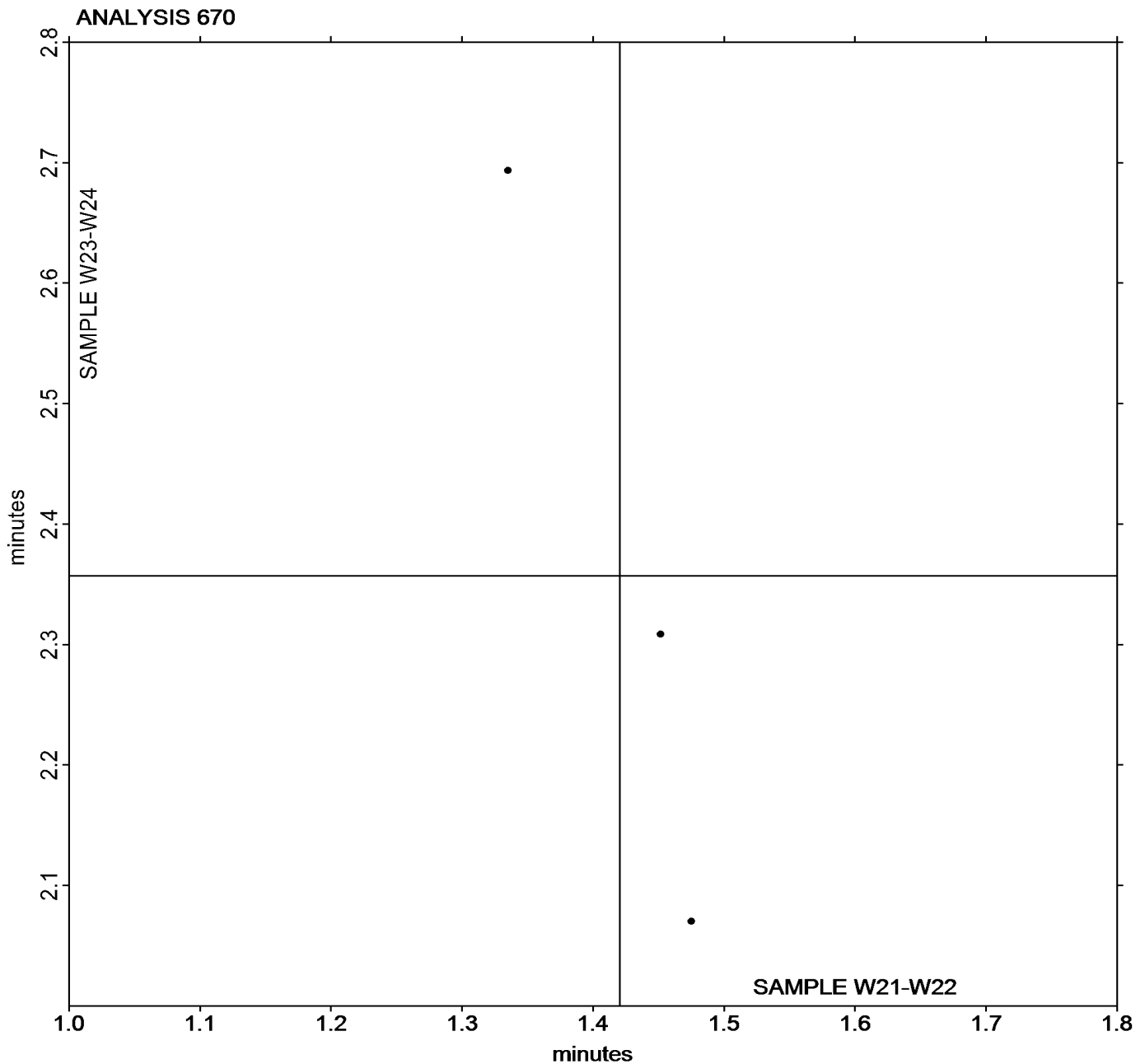


Rubber Interlaboratory Testing Program
Analysis 670
ODR Vulcanization-Scorch Time, Ts1 (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W21-W22** = 1.4206 minutes

Grand Mean Sample **W23-W24** = 2.3572 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 #211
1st Qtr 2022

WebCode	Data Flag	Sample W21-W22			Sample W23-W24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BK2C4K		3.692	0.267	1.09	5.862	0.119	0.39
GAHWDC		3.210	-0.214	-0.87	5.395	-0.348	-1.14
UZQRCZ		3.372	-0.053	-0.22	5.972	0.229	0.75

		Summary Statistics	
Grand Means		3.4244 minutes	5.7428 minutes
Std Dev Btwn Labs		0.2451 minutes	0.3062 minutes
Statistics based on 3 of 3 reporting participants			

Samples W21-W22: EPDM compound, batch #1 & W23-W24: EPDM compound, batch #2

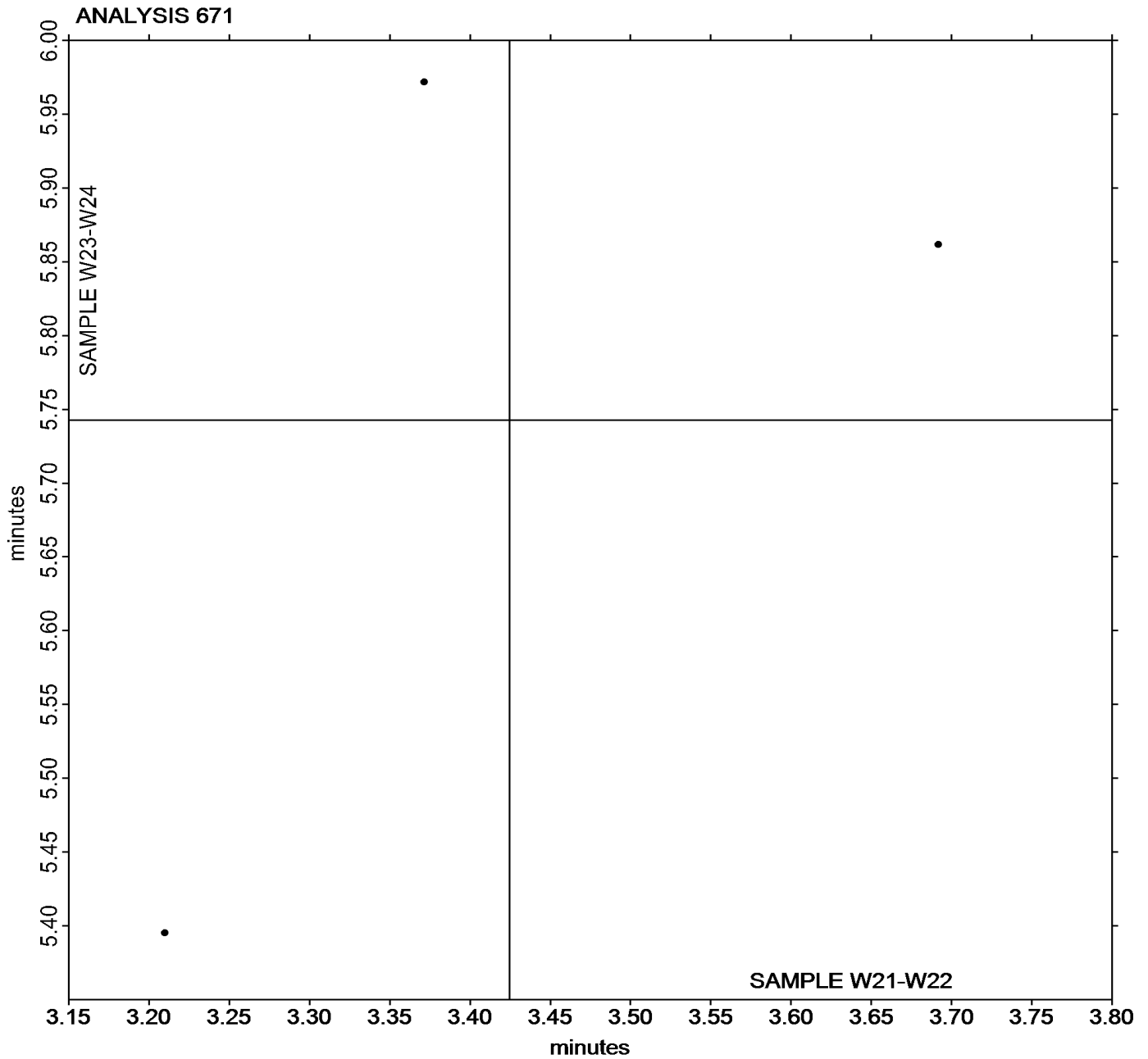


Rubber Interlaboratory Testing Program
Analysis 671
ODR Vulcanization-Cure Time 50% (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W21-W22** = 3.4244 minutes

Grand Mean Sample **W23-W24** = 5.7428 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

Report #211

Analysis 672

1st Qtr 2022

ODR Vulcanization-Cure Time 90% (minutes)

WebCode	Data Flag	Sample W21-W22			Sample W23-W24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BK2C4K		13.18	1.51	1.13	12.54	1.13	1.13
GAHWDC		10.64	-1.03	-0.77	10.64	-0.76	-0.76
UZQRCZ		11.20	-0.48	-0.36	11.03	-0.37	-0.37

		Summary Statistics	
Grand Means		11.674 minutes	11.401 minutes
Std Dev Btwn Labs		1.336 minutes	1.002 minutes
Statistics based on 3 of 3 reporting participants			

Samples W21-W22: EPDM compound, batch #1 & W23-W24: EPDM compound, batch #2

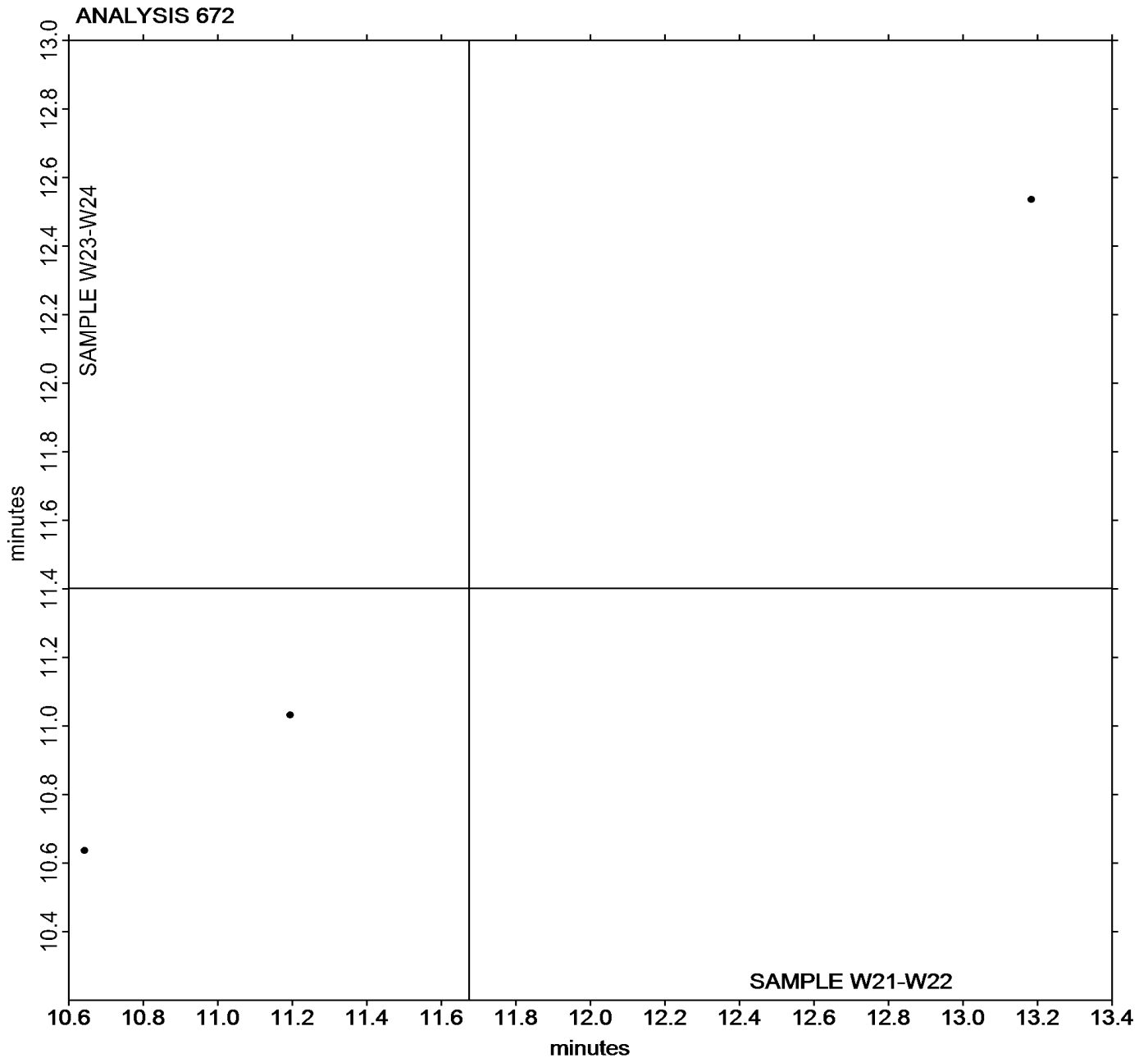


Rubber Interlaboratory Testing Program
Analysis 672
ODR Vulcanization-Cure Time 90% (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W21-W22** = 11.674 minutes

Grand Mean Sample **W23-W24** = 11.401 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 #211
1st Qtr 2022

WebCode	Data Flag	Sample W21-W22			Sample W23-W24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BK2C4K		12.725	3.270	1.04	21.74	6.70	1.07
GAHWDC		6.478	-2.977	-0.95	9.28	-5.77	-0.92
UZQRCZ		9.162	-0.293	-0.09	14.12	-0.93	-0.15

		Summary Statistics	
Grand Means		9.4550 lbf.in	15.046 lbf.in
Stnd Dev Btwn Labs		3.1336 lbf.in	6.285 lbf.in
Statistics based on 3 of 3 reporting participants			

		Summary Statistics in SI Units	
Grand Means		10.683 dN.m	16.999 dN.m
Stnd Dev Btwn Labs		3.541 dN.m	7.101 dN.m
Statistics based on 3 of 3 reporting participants			

Samples W21-W22: EPDM compound, batch #1 & W23-W24: EPDM compound, batch #2

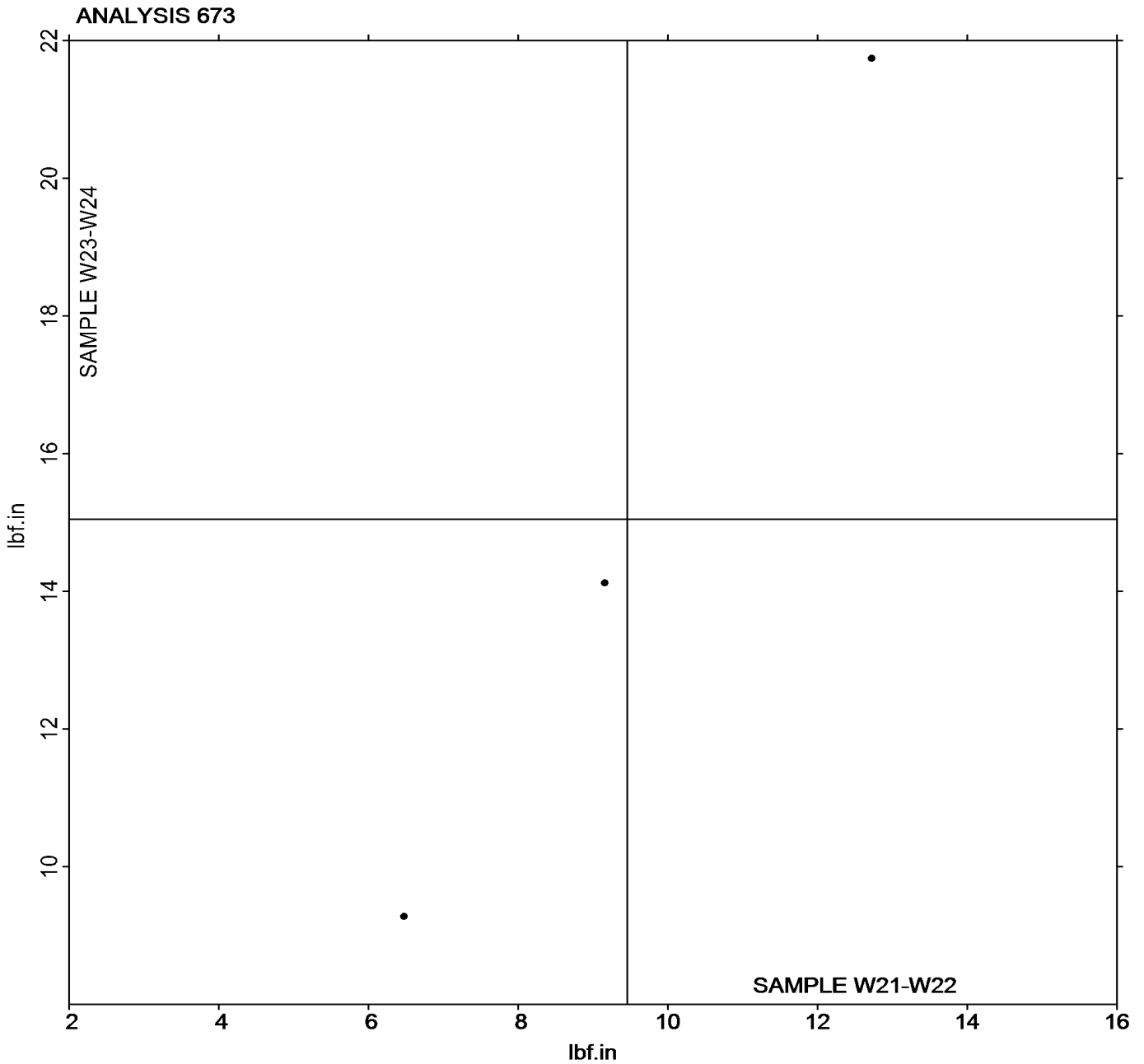


Rubber Interlaboratory Testing Program
Analysis 673
ODR Vulcanization: Minimum Torque (lbf.in)

Report #211
1st Qtr 2022

Grand Mean Sample **W21-W22** = 9.4550 lbf.in

Grand Mean Sample **W23-W24** = 15.046 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 #211

Analysis 674

1st Qtr 2022

ODR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample W21-W22			Sample W23-W24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
BK2C4K		52.19	4.69	1.13	54.27	10.09	1.08
GAHWDC		44.34	-3.16	-0.76	35.76	-8.43	-0.90
UZQRCZ		45.97	-1.53	-0.37	42.54	-1.65	-0.18

		Summary Statistics	
Grand Means		47.502 lbf.in	44.188 lbf.in
Stnd Dev Btwn Labs		4.144 lbf.in	9.369 lbf.in
Statistics based on 3 of 3 reporting participants			

		Summary Statistics in SI Units	
Grand Means		53.670 dN.m	49.925 dN.m
Stnd Dev Btwn Labs		4.682 dN.m	10.586 dN.m
Statistics based on 3 of 3 reporting participants			

Samples W21-W22: EPDM compound, batch #1 & W23-W24: EPDM compound, batch #2

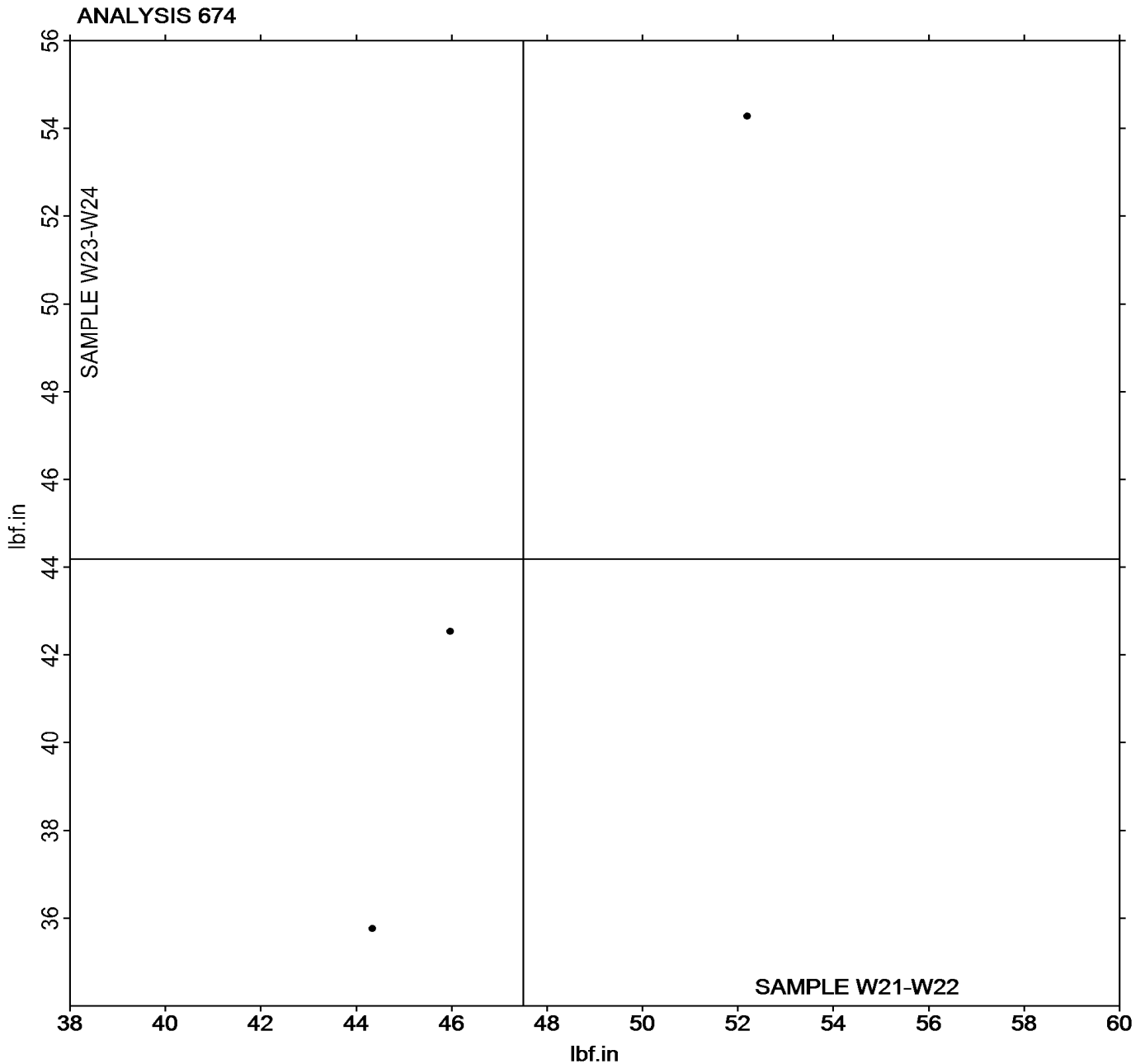


Rubber Interlaboratory Testing Program
Analysis 674
ODR Vulcanization: Maximum Torque (lbf.in)

Report #211
1st Qtr 2022

Grand Mean Sample **W21-W22** = 47.502 lbf.in

Grand Mean Sample **W23-W24** = 44.188 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 #211

Analysis 684

1st Qtr 2022

MDR Vulcanization-Cure Time 10% (minutes)

WebCode	Data Flag	Sample W25-W26			Sample W27-W28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		2.098	0.021	0.20	2.215	0.060	0.72	MC
3G68KL		1.938	-0.139	-1.29	1.983	-0.172	-2.07	MC
3JFP4R		2.092	0.015	0.14	2.135	-0.020	-0.25	ME
6337BH		2.080	0.003	0.03	2.210	0.055	0.66	MC
8NN2MK		2.053	-0.024	-0.22	2.178	0.023	0.28	MC
8TNXLT		2.027	-0.050	-0.47	2.110	-0.045	-0.55	MC
99Q7QK		2.182	0.105	0.97	2.183	0.028	0.34	ME
AUVXWD		2.018	-0.059	-0.54	2.098	-0.057	-0.69	ME
BC4TDN		2.245	0.168	1.56	2.305	0.150	1.80	ME
DVQ2PA		2.157	0.080	0.74	2.157	0.001	0.02	MC
FRJK6B		2.037	-0.040	-0.37	2.055	-0.100	-1.21	MC
GAHWDC		2.168	0.091	0.85	2.232	0.076	0.92	MM
JKA4L2		2.033	-0.043	-0.40	2.158	0.003	0.04	MC
K9ARQY		2.131	0.054	0.50	2.208	0.052	0.63	MM
LEBMM4		1.847	-0.230	-2.14	2.018	-0.137	-1.65	MC
N3WALU		1.865	-0.212	-1.97	1.953	-0.202	-2.43	MC
P4MPXB		2.188	0.111	1.04	2.245	0.090	1.08	MC
PKUUX9		2.108	0.031	0.29	2.150	-0.005	-0.07	ME
QARWPY		1.962	-0.115	-1.07	2.200	0.045	0.54	MC
QBH4X3		2.117	0.040	0.37	2.113	-0.042	-0.51	MR
QGAD9Z		2.013	-0.064	-0.59	2.123	-0.032	-0.39	MC
QWML94	*	2.393	0.316	2.94	2.255	0.100	1.20	ME
RPB8RR		2.168	0.091	0.85	2.268	0.113	1.36	XX
RVPVFU		2.023	-0.054	-0.50	2.147	-0.009	-0.11	MC
TVJ2AU		2.172	0.095	0.88	2.210	0.055	0.66	MM
UBPBPZ		2.005	-0.072	-0.67	2.245	0.090	1.08	MX
V3AEWY		2.052	-0.025	-0.23	2.210	0.055	0.66	MM
V79QTX		2.023	-0.054	-0.50	2.050	-0.105	-1.27	MC
XWWBYV		2.082	0.005	0.04	2.118	-0.037	-0.45	MC
ZFKDVM		2.053	-0.024	-0.22	2.158	0.003	0.04	MP
ZX2HET		2.052	-0.025	-0.23	2.125	-0.030	-0.37	XX

Grand Means		Summary Statistics	
	2.0769 minutes		2.1554 minutes
Std Dev Btwn Labs	0.1076 minutes		0.0830 minutes
Statistics based on 31 of 31 reporting participants			



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

Report #211
1st Qtr 2022

Samples W25-W26: EPDM compound, batch #1 & W27-W28: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	ME	Alpha Tech. MDR Premiere
MM	MonTech MDR 3000	MP	Alpha Technologies [Monsanto] MDR 2000P
MR	MonTech D-RPA 3000	MX	Rebuilt MonTech Alpha
XX	Instrument model not specified by lab		

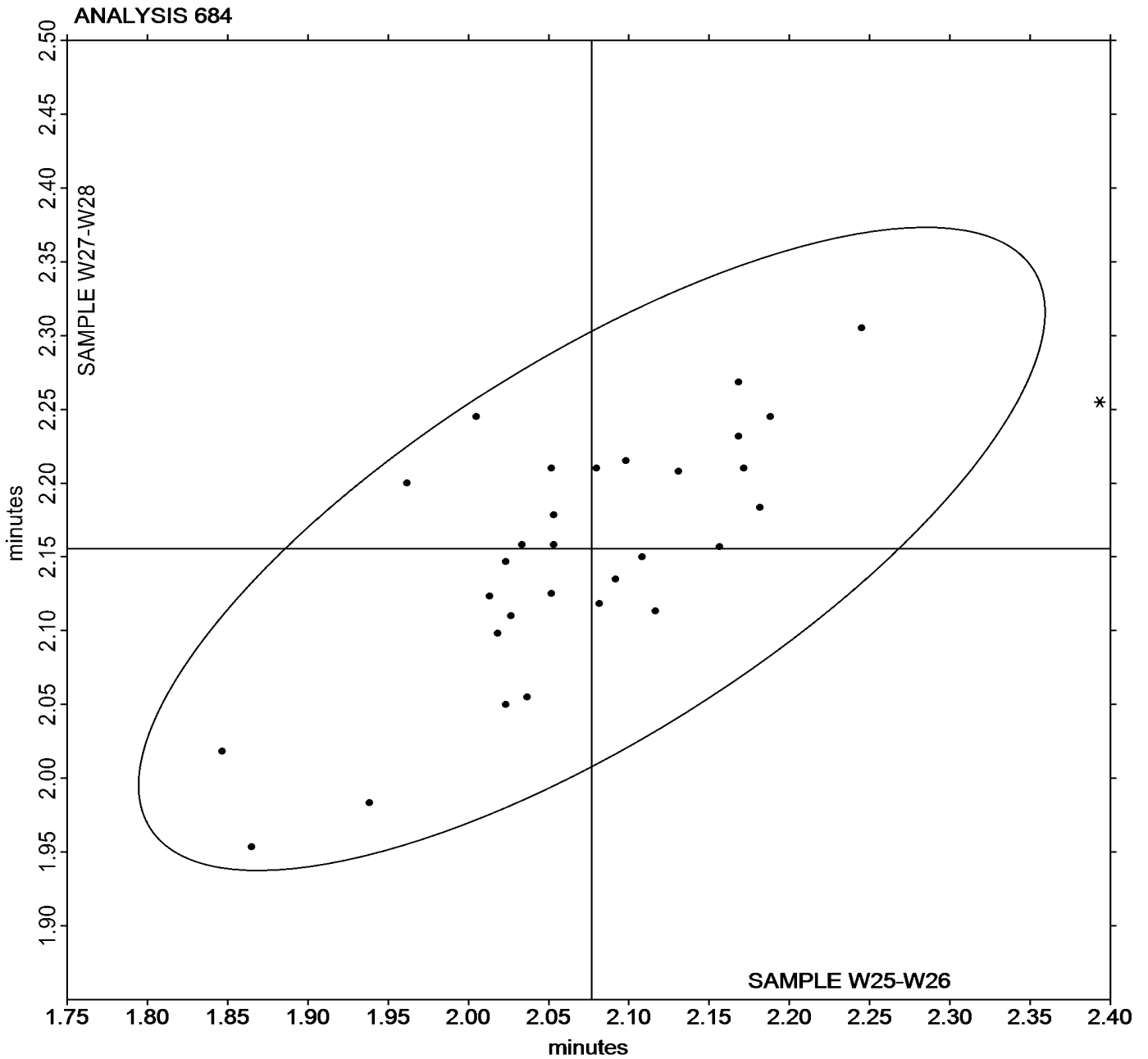


Rubber Interlaboratory Testing Program
Analysis 684
MDR Vulcanization-Cure Time 10% (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W25-W26** = 2.0769 minutes

Grand Mean Sample **W27-W28** = 2.1554 minutes





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

Report #211
1st Qtr 2022

WebCode	Data Flag	Sample W25-W26			Sample W27-W28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		2.087	0.099	0.80	2.200	0.126	1.01	MC
3G68KL		1.907	-0.081	-0.65	1.985	-0.089	-0.72	MC
3JFP4R		2.107	0.119	0.97	2.137	0.062	0.50	ME
6337BH		2.042	0.054	0.44	2.167	0.092	0.74	MC
6YGBJJ		1.770	-0.217	-1.76	1.795	-0.279	-2.24	MC
8NN2MK		2.008	0.021	0.17	2.133	0.059	0.47	MC
8TNXLT		2.027	0.039	0.32	2.098	0.024	0.19	MC
99Q7QK		2.133	0.146	1.18	2.138	0.064	0.51	ME
AUVXWD		2.020	0.033	0.26	2.103	0.029	0.23	ME
BC4TDN		2.070	0.083	0.67	2.158	0.084	0.68	ME
DVQ2PA		2.083	0.096	0.78	2.118	0.044	0.35	MC
FRJK6B		1.963	-0.024	-0.19	2.065	-0.009	-0.07	MC
FZF4W7		1.738	-0.249	-2.01	1.792	-0.283	-2.27	MR
GAHWDC		2.178	0.191	1.54	2.293	0.219	1.76	MM
JKA4L2		1.989	0.002	0.01	2.122	0.048	0.39	MC
K9ARQY		2.097	0.110	0.89	2.202	0.128	1.03	MM
LEBMM4		1.847	-0.141	-1.14	2.018	-0.056	-0.45	MC
N3WALU		1.763	-0.224	-1.81	1.852	-0.223	-1.79	MC
P4MPXB		2.120	0.133	1.07	2.203	0.129	1.04	MC
PKUUX9		1.895	-0.092	-0.75	1.963	-0.111	-0.89	ME
QARWPY	X	1.731	-0.257	-2.08	2.120	0.046	0.37	MC
QBH4X3	X	2.967	0.979	7.92	2.955	0.881	7.07	MR
QGAD9Z		1.848	-0.139	-1.12	1.988	-0.086	-0.69	MC
QWML94	X	2.407	0.419	3.39	2.288	0.214	1.72	ME
RPB8RR		2.013	0.026	0.21	2.113	0.039	0.31	XX
RVPVFU		2.088	0.101	0.82	2.235	0.161	1.29	MC
TVJ2AU		2.188	0.201	1.63	2.232	0.157	1.26	MM
UBPBPZ	X	1.917	-0.071	-0.57	2.195	0.121	0.97	MX
UZQRCZ		1.805	-0.182	-1.47	1.945	-0.129	-1.04	XX
V3AEWY		1.983	-0.004	-0.03	2.072	-0.003	-0.02	MM
V79QTX		1.987	-0.001	-0.01	2.017	-0.058	-0.46	MC
VVUMWZ		1.883	-0.104	-0.84	1.955	-0.119	-0.96	MC
XWWBYV		2.037	0.049	0.40	2.098	0.024	0.19	MC
ZFKDVM		1.887	-0.101	-0.81	1.982	-0.093	-0.74	MP
ZX2HET		2.042	0.054	0.44	2.120	0.046	0.37	XX



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

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	1.9873 minutes	2.0742 minutes	
Stnd Dev Btwn Labs	0.1237 minutes	0.1246 minutes	
Statistics based on 31 of 35 reporting participants			

Samples W25-W26: EPDM compound, batch #1 & W27-W28: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #685

- QARWPY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W27-W28.
- QBH4X3 (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group W25-W26.
- QWML94 (X) - Data for sample group W25-W26 are high.
- UBPBPZ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both sample groups.

Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	ME	Alpha Tech. MDR Premiere
MM	MonTech MDR 3000	MP	Alpha Technologies [Monsanto] MDR 2000P
MR	MonTech D-RPA 3000	MX	Rebuilt MonTech Alpha
XX	Instrument model not specified by lab		

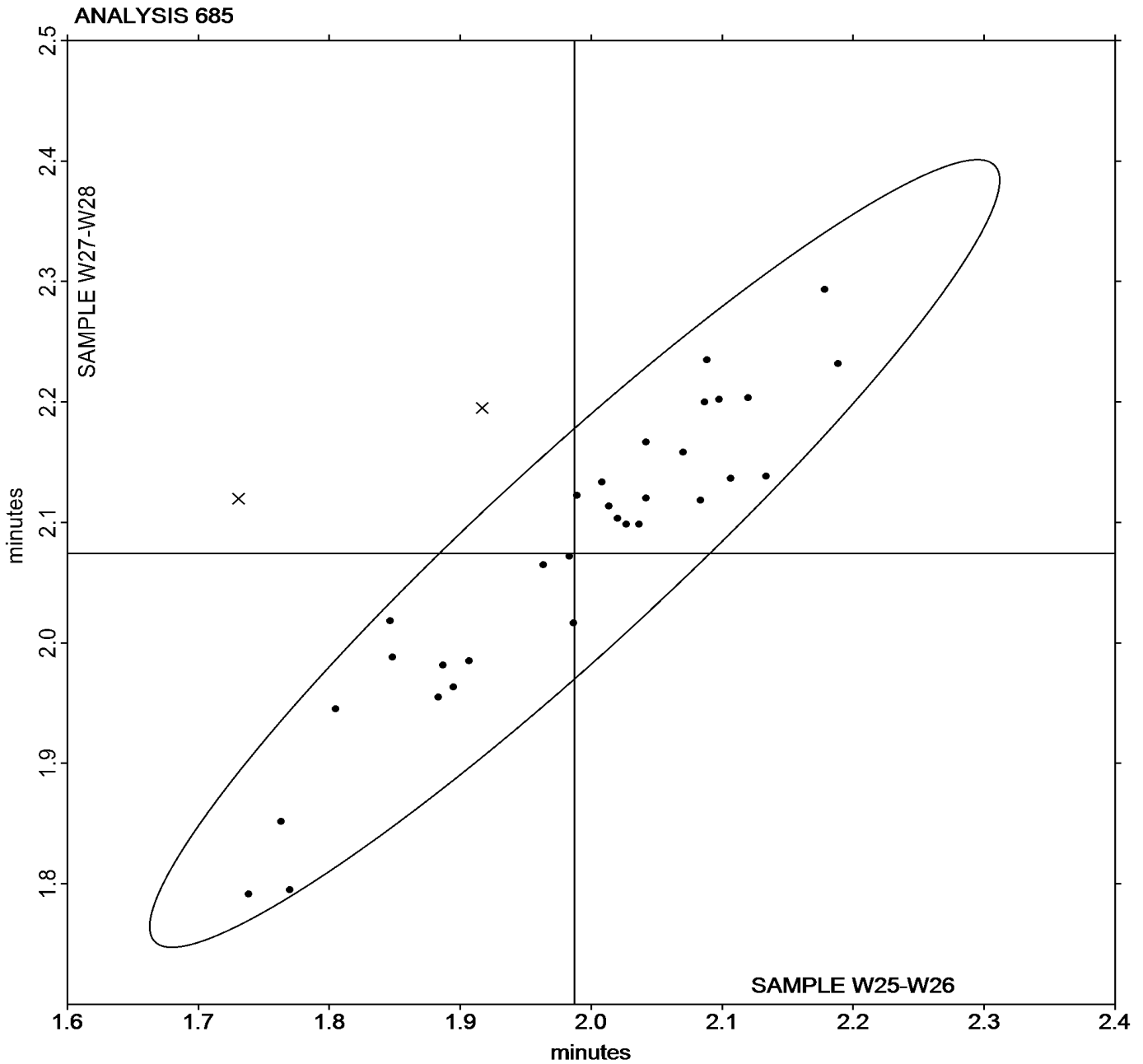


Rubber Interlaboratory Testing Program
Analysis 685
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W25-W26** = 1.9873 minutes

Grand Mean Sample **W27-W28** = 2.0742 minutes





Rubber Interlaboratory Testing Program

Report #211

Analysis 686

1st Qtr 2022

MDR Vulcanization-Cure Time 50% (minutes)

WebCode	Data Flag	Sample W25-W26			Sample W27-W28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		4.715	0.114	0.50	4.940	0.179	0.88	MC
3G68KL		4.325	-0.276	-1.22	4.408	-0.353	-1.74	MC
3JFP4R		4.633	0.032	0.14	4.677	-0.084	-0.42	ME
6337BH		4.687	0.085	0.38	4.898	0.137	0.68	MC
6YGBJJ		4.398	-0.203	-0.90	4.468	-0.293	-1.44	MC
8NN2MK		4.633	0.032	0.14	4.848	0.087	0.43	MC
8TNXLT		4.538	-0.063	-0.28	4.702	-0.059	-0.29	MC
99Q7QK		4.942	0.340	1.51	4.930	0.169	0.83	ME
AUVXWD		4.483	-0.118	-0.52	4.652	-0.109	-0.54	ME
BC4TDN		4.897	0.295	1.31	5.027	0.266	1.31	ME
DVQ2PA		4.828	0.227	1.01	4.898	0.137	0.68	MC
FRJK6B		4.605	0.004	0.02	4.710	-0.051	-0.25	MC
FZF4W7		4.528	-0.073	-0.32	4.695	-0.066	-0.33	MR
GAHWDC		4.633	0.032	0.14	4.780	0.019	0.09	MM
JKA4L2		4.525	-0.076	-0.34	4.731	-0.030	-0.15	MC
K9ARQY		4.837	0.235	1.04	5.032	0.271	1.34	MM
LEBMM4		4.118	-0.483	-2.14	4.400	-0.361	-1.78	MC
N3WALU		4.348	-0.253	-1.12	4.523	-0.238	-1.17	MC
P4MPXB		4.817	0.215	0.96	4.947	0.186	0.92	MC
PKUUX9		4.585	-0.016	-0.07	4.707	-0.054	-0.27	ME
QARWPY	X	4.505	-0.096	-0.43	5.467	0.706	3.48	MC
QBH4X3		4.822	0.220	0.98	4.800	0.039	0.19	MR
QGAD9Z		4.490	-0.111	-0.49	4.752	-0.009	-0.05	MC
QWML94	X	4.942	0.340	1.51	4.653	-0.108	-0.53	ME
RPB8RR		5.063	0.462	2.05	5.253	0.492	2.43	XX
RVPVFU		4.520	-0.081	-0.36	4.728	-0.033	-0.16	MC
TVJ2AU		4.857	0.255	1.13	5.002	0.241	1.19	MM
UBPBPZ	X	4.483	-0.118	-0.52	5.092	0.331	1.63	MX
UZQRCZ	*	4.030	-0.571	-2.53	4.380	-0.381	-1.88	XX
V3AEWY		4.558	-0.043	-0.19	4.890	0.129	0.64	MM
V79QTX		4.367	-0.235	-1.04	4.485	-0.276	-1.36	MC
VVUMWZ		4.744	0.143	0.63	4.850	0.089	0.44	MC
XWWBYV		4.573	-0.028	-0.12	4.707	-0.054	-0.27	MC
ZFKDVM		4.582	-0.020	-0.09	4.818	0.057	0.28	MC
ZX2HET		4.555	-0.046	-0.20	4.715	-0.046	-0.23	XX



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

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	4.6012 minutes	4.7610 minutes	
Stnd Dev Btwn Labs	0.2255 minutes	0.2026 minutes	
Statistics based on 32 of 35 reporting participants			

Samples W25-W26: EPDM compound, batch #1 & W27-W28: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #686

- QARWPY (X) - Data for sample group W27-W28 are high. Inconsistent within the determinations of sample group W27-W28.
- QWML94 (X) - Inconsistent in testing between samples.
- UBPBPZ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W27-W28.

Key to Instrument Codes Reported by Participants

MC Alpha Technologies [Monsanto] MDR 2000 or 2000E	ME Alpha Tech. MDR Premiere
MM MonTech MDR 3000	MR MonTech D-RPA 3000
MX Rebuilt MonTech Alpha	XX Instrument model not specified by lab

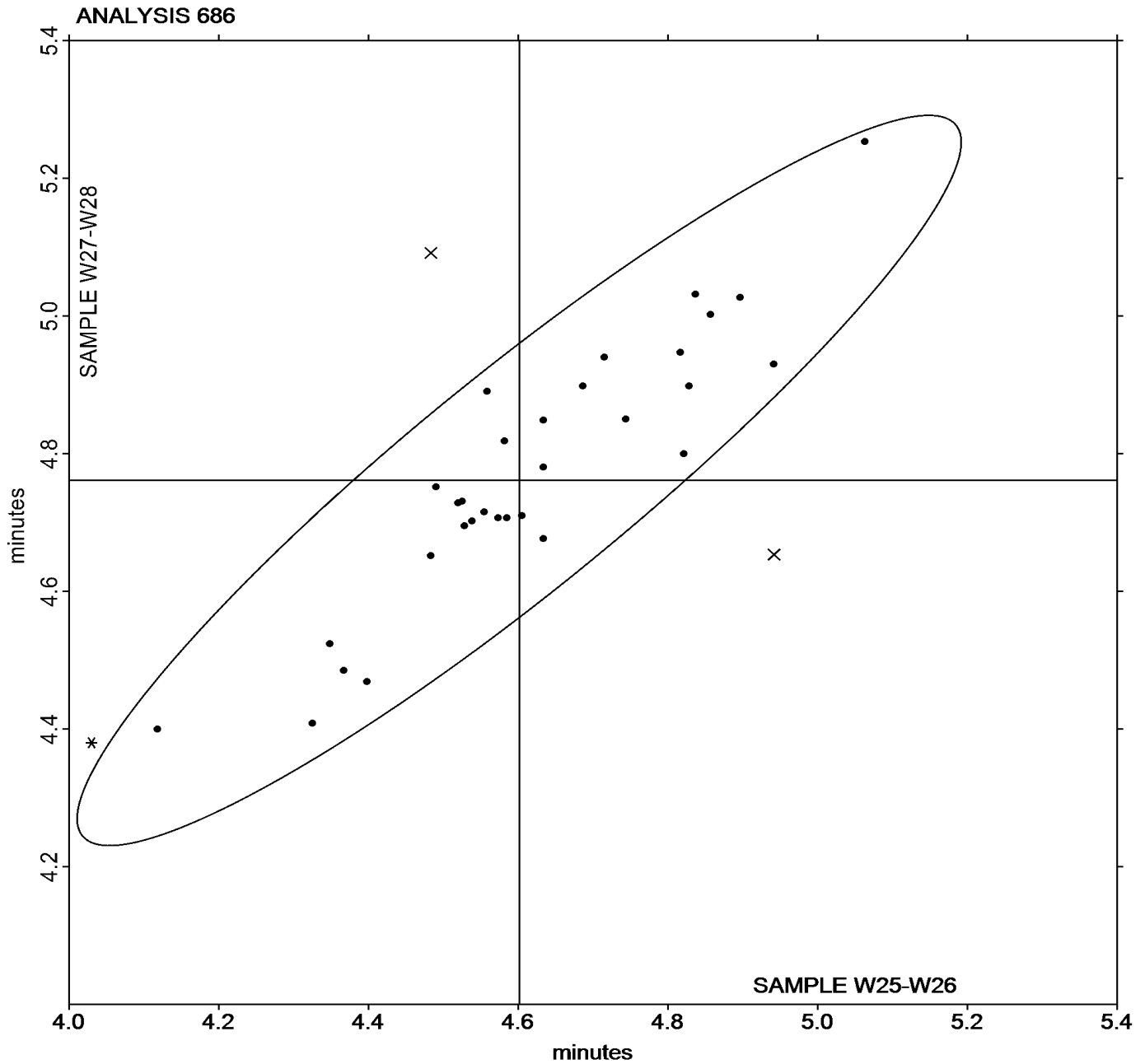


Rubber Interlaboratory Testing Program
Analysis 686
MDR Vulcanization-Cure Time 50% (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W25-W26** = 4.6012 minutes

Grand Mean Sample **W27-W28** = 4.7610 minutes





Rubber Interlaboratory Testing Program

Report #211

Analysis 687

1st Qtr 2022

MDR Vulcanization-Cure Time 90% (minutes)

WebCode	Data Flag	Sample W25-W26			Sample W27-W28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		7.777	-0.053	-0.13	8.125	0.112	0.33	MC
3G68KL		7.308	-0.521	-1.28	7.397	-0.616	-1.79	MC
3JFP4R		7.610	-0.220	-0.54	7.735	-0.278	-0.81	ME
6337BH		7.745	-0.085	-0.21	8.083	0.070	0.20	MC
6YGBJJ		7.988	0.159	0.39	8.135	0.122	0.35	MC
8NN2MK		7.680	-0.150	-0.37	8.027	0.014	0.04	MC
8TNXLT		7.348	-0.481	-1.18	7.550	-0.463	-1.34	MC
99Q7QK		8.392	0.562	1.38	8.328	0.315	0.91	ME
AUVXWD		7.355	-0.475	-1.16	7.663	-0.350	-1.01	ME
BC4TDN		8.162	0.332	0.81	8.327	0.314	0.91	ME
DVQ2PA		8.388	0.559	1.37	8.285	0.272	0.79	MC
FRJK6B		7.790	-0.040	-0.10	7.757	-0.256	-0.74	MC
FZF4W7		7.602	-0.228	-0.56	7.957	-0.056	-0.16	MR
GAHWDC		7.590	-0.240	-0.59	7.913	-0.100	-0.29	MM
JKA4L2		7.783	-0.046	-0.11	7.956	-0.057	-0.17	MC
K9ARQY		8.062	0.232	0.57	8.366	0.353	1.02	MM
LEBMM4		7.243	-0.586	-1.44	7.500	-0.513	-1.49	MC
N3WALU		7.270	-0.560	-1.37	7.500	-0.513	-1.49	MC
P4MPXB		8.288	0.459	1.12	8.372	0.359	1.04	MC
PKUUX9		8.357	0.527	1.29	8.255	0.242	0.70	ME
QARWPY	X	7.510	-0.320	-0.78	8.800	0.787	2.28	MC
QBH4X3		7.623	-0.206	-0.51	7.648	-0.365	-1.06	MR
QGAD9Z		7.633	-0.196	-0.48	7.807	-0.206	-0.60	MC
QWML94	*	8.330	0.500	1.23	7.852	-0.161	-0.47	ME
RPB8RR		8.672	0.842	2.06	8.888	0.875	2.54	XX
RVPVFU		7.620	-0.210	-0.51	7.847	-0.166	-0.48	MC
TVJ2AU		8.642	0.812	1.99	8.652	0.639	1.85	MM
UBPBPZ	*	7.538	-0.291	-0.71	8.430	0.417	1.21	MX
UZQRCZ		7.183	-0.646	-1.58	7.638	-0.375	-1.09	XX
V3AEWY		7.585	-0.245	-0.60	8.173	0.160	0.47	MM
V79QTX		7.807	-0.023	-0.06	7.935	-0.078	-0.23	MC
VVUMWZ		8.108	0.278	0.68	8.136	0.123	0.36	MC
XWWBYV		8.278	0.449	1.10	8.338	0.325	0.94	MC
ZFKDVM		7.722	-0.108	-0.26	8.045	0.032	0.09	MP
ZX2HET		7.730	-0.100	-0.24	7.818	-0.195	-0.56	XX



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

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	7.8297 minutes	8.0129 minutes	
Stnd Dev Btwn Labs	0.4079 minutes	0.3450 minutes	
Statistics based on 34 of 35 reporting participants			

Samples W25-W26: EPDM compound, batch #1 & W27-W28: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #687

QARWPY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W27-W28.

Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	ME	Alpha Tech. MDR Premiere
MM	MonTech MDR 3000	MP	Alpha Technologies [Monsanto] MDR 2000P
MR	MonTech D-RPA 3000	MX	Rebuilt MonTech Alpha
XX	Instrument model not specified by lab		

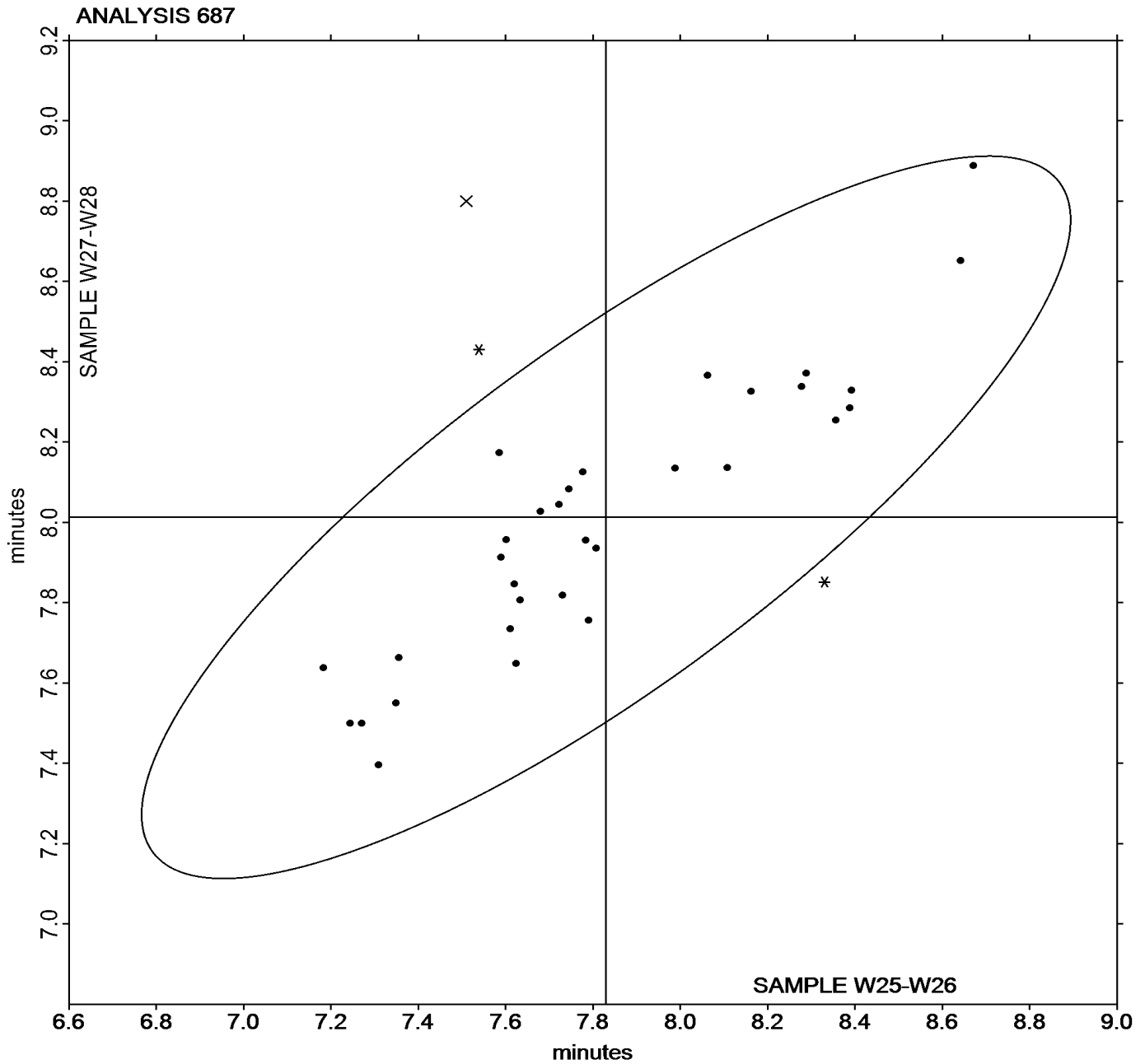


Rubber Interlaboratory Testing Program
Analysis 687
MDR Vulcanization-Cure Time 90% (minutes)

Report #211
1st Qtr 2022

Grand Mean Sample **W25-W26** = 7.8297 minutes

Grand Mean Sample **W27-W28** = 8.0129 minutes





Rubber Interlaboratory Testing Program

Report #211

Analysis 688

1st Qtr 2022

MDR Vulcanization: Minimum Torque (lbf.in)

WebCode	Data Flag	Sample W25-W26			Sample W27-W28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		2.282	-0.144	-0.67	2.347	-0.121	-0.55	MC
3G68KL		2.762	0.336	1.56	2.845	0.378	1.72	MC
3JFP4R		2.270	-0.156	-0.72	2.317	-0.151	-0.69	ME
6337BH		2.202	-0.224	-1.04	2.293	-0.174	-0.79	MC
6YGBJJ	*	2.645	0.219	1.02	2.558	0.091	0.42	MC
8NN2MK		2.485	0.059	0.28	2.605	0.138	0.63	MC
8TNXLT		2.205	-0.221	-1.02	2.235	-0.232	-1.06	MC
99Q7QK		2.192	-0.234	-1.08	2.188	-0.279	-1.27	ME
AUVXWD		2.517	0.091	0.42	2.535	0.068	0.31	ME
BC4TDN		2.326	-0.099	-0.46	2.440	-0.027	-0.12	ME
DVQ2PA		2.370	-0.056	-0.26	2.432	-0.036	-0.16	MC
FRJK6B		2.306	-0.120	-0.56	2.341	-0.126	-0.57	MC
FZF4W7		2.293	-0.132	-0.61	2.348	-0.119	-0.54	MR
GAHWDC		2.547	0.121	0.56	2.582	0.114	0.52	MM
JKA4L2		2.523	0.098	0.45	2.615	0.148	0.67	MC
K9ARQY		2.118	-0.307	-1.43	2.164	-0.303	-1.38	MM
N3WALU		2.637	0.211	0.98	2.695	0.228	1.04	MC
P4MPXB		2.353	-0.072	-0.34	2.387	-0.081	-0.37	MC
PKUUX9		2.508	0.082	0.38	2.552	0.085	0.39	ME
QARWPY		2.173	-0.253	-1.17	2.146	-0.321	-1.46	MC
QBH4X3		2.288	-0.137	-0.64	2.335	-0.132	-0.60	MR
QGAD9Z		2.093	-0.332	-1.54	2.135	-0.333	-1.52	MC
QWML94		2.940	0.514	2.38	2.972	0.504	2.30	ME
RPB8RR		2.865	0.439	2.04	2.913	0.446	2.03	XX
RVPVFU		2.387	-0.039	-0.18	2.452	-0.016	-0.07	MC
TVJ2AU		2.440	0.014	0.07	2.552	0.084	0.38	MM
UBPBPZ	*	2.292	-0.134	-0.62	2.202	-0.266	-1.21	MX
UZQRCZ		2.350	-0.076	-0.35	2.343	-0.124	-0.56	MM
V3AEWY		2.503	0.078	0.36	2.577	0.109	0.50	MM
V79QTX		2.813	0.388	1.80	2.787	0.319	1.46	MC
VVUMWZ		2.264	-0.161	-0.75	2.353	-0.114	-0.52	MC
XWWBYV		2.532	0.106	0.49	2.562	0.094	0.43	MC
ZFKDVM		2.317	-0.108	-0.50	2.357	-0.110	-0.50	MP
ZX2HET		2.675	0.249	1.16	2.722	0.254	1.16	XX



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

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	2.4256 lbf.in	2.4672 lbf.in	
Stnd Dev Btwn Labs	0.2157 lbf.in	0.2194 lbf.in	
Statistics based on 34 of 34 reporting participants			

		Summary Statistics in SI Units	
Grand Means	2.7406 dN.m	2.7875 dN.m	
Stnd Dev Btwn Labs	0.2437 dN.m	0.2479 dN.m	
Statistics based on 34 of 34 reporting participants			

Samples W25-W26: EPDM compound, batch #1 & W27-W28: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

- | | |
|---|---|
| MC Alpha Technologies [Monsanto] MDR 2000 or 2000E | ME Alpha Tech. MDR Premiere |
| MM MonTech MDR 3000 | MP Alpha Technologies [Monsanto] MDR 2000P |
| MR MonTech D-RPA 3000 | MX Rebuilt MonTech Alpha |
| XX Instrument model not specified by lab | |

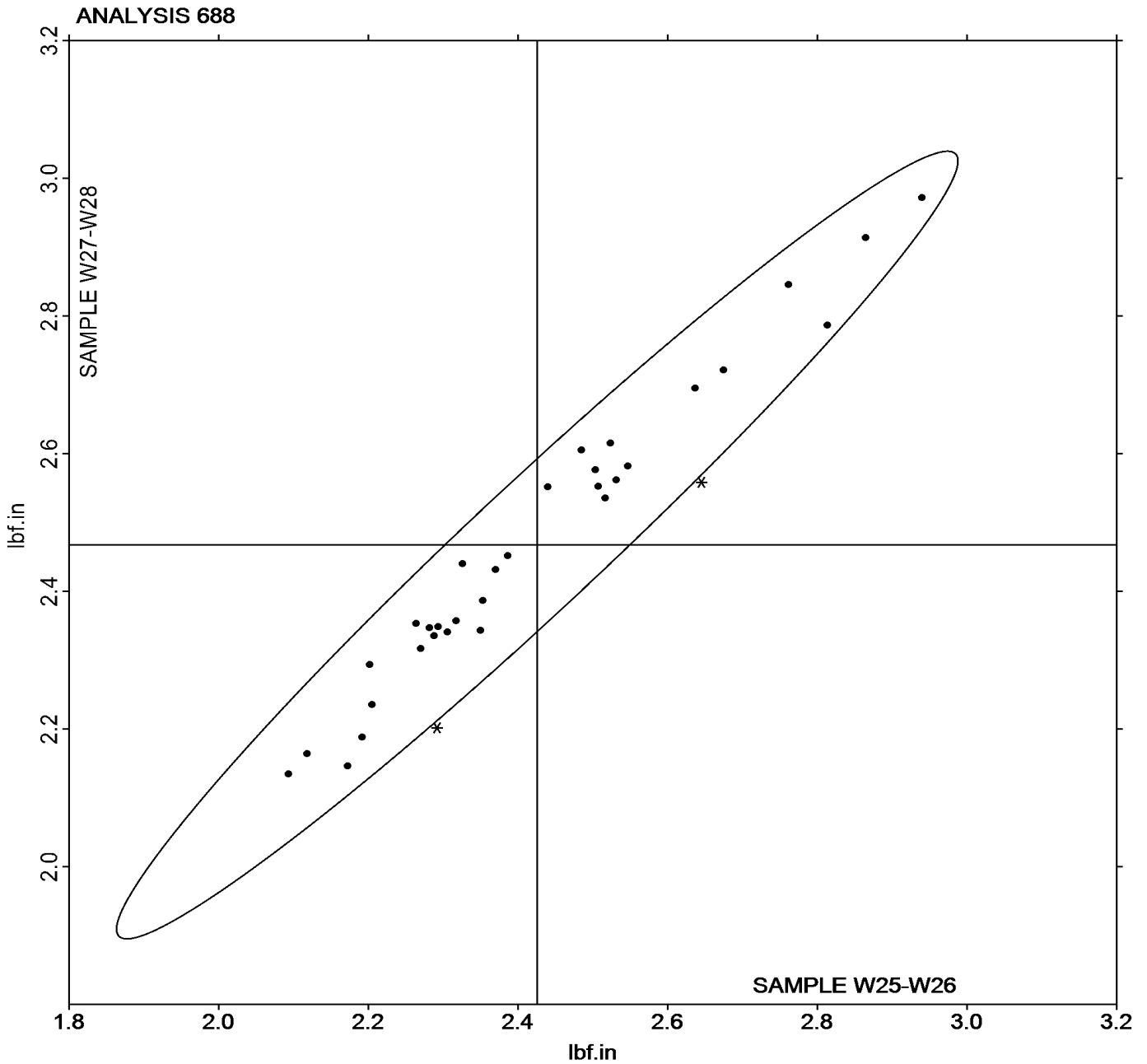


Rubber Interlaboratory Testing Program
Analysis 688
MDR Vulcanization: Minimum Torque (lbf.in)

Report #211
1st Qtr 2022

Grand Mean Sample **W25-W26** = 2.4256 lbf.in

Grand Mean Sample **W27-W28** = 2.4672 lbf.in





Rubber Interlaboratory Testing Program

Report #211

Analysis 689

1st Qtr 2022

MDR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample W25-W26			Sample W27-W28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		12.36	-0.35	-0.66	12.48	-0.12	-0.22	MC
3G68KL		13.00	0.30	0.56	12.88	0.28	0.51	MC
3JFP4R		12.12	-0.58	-1.10	12.36	-0.24	-0.44	ME
6337BH		12.56	-0.14	-0.27	12.70	0.11	0.19	MC
6YGBJJ	X	15.52	2.82	5.34	15.23	2.63	4.80	MC
8NN2MK		12.92	0.22	0.42	13.03	0.43	0.78	MC
8TNXLT		12.23	-0.48	-0.90	12.34	-0.26	-0.47	MC
99Q7QK		12.63	-0.07	-0.13	12.59	-0.01	-0.02	ME
AUVXWD		12.51	-0.19	-0.36	12.48	-0.12	-0.22	ME
BC4TDN		12.83	0.13	0.24	12.69	0.09	0.16	ME
DVQ2PA		13.09	0.39	0.74	12.77	0.18	0.32	MC
FRJK6B	*	12.40	-0.31	-0.58	11.74	-0.86	-1.57	MC
FZF4W7		13.08	0.37	0.71	13.26	0.66	1.20	MR
GAHWDC		12.49	-0.21	-0.40	12.04	-0.56	-1.03	MM
JKA4L2		13.05	0.35	0.66	13.03	0.43	0.78	MC
K9ARQY		12.43	-0.27	-0.51	12.21	-0.38	-0.70	MM
N3WALU		13.79	1.09	2.06	13.83	1.23	2.24	MC
P4MPXB		13.00	0.29	0.55	12.81	0.21	0.38	MC
PKUUX9		13.54	0.84	1.59	13.25	0.65	1.19	ME
QARWPY		13.30	0.60	1.14	12.92	0.32	0.59	MC
QBH4X3		12.43	-0.27	-0.52	12.50	-0.10	-0.17	MR
QGAD9Z		12.55	-0.15	-0.29	12.24	-0.36	-0.65	MC
QWML94		12.86	0.15	0.29	12.63	0.03	0.06	ME
RPB8RR		13.28	0.57	1.09	13.28	0.69	1.25	XX
RVPVFU		11.81	-0.89	-1.69	11.69	-0.91	-1.66	MC
TVJ2AU		12.33	-0.37	-0.70	12.37	-0.23	-0.41	MM
UBPBPZ		12.03	-0.67	-1.27	11.49	-1.11	-2.02	MX
UZQRCZ		11.61	-1.09	-2.07	11.77	-0.82	-1.50	MM
V3AEWY	X	13.27	0.57	1.07	14.02	1.43	2.60	MM
V79QTX		13.21	0.51	0.96	13.12	0.52	0.96	MC
VVUMWZ		13.45	0.74	1.41	13.33	0.73	1.34	MC
XWWBYV		13.00	0.29	0.55	12.78	0.18	0.33	MC
ZFKDVM		11.79	-0.91	-1.73	11.77	-0.83	-1.51	MC
ZX2HET		12.80	0.10	0.19	12.77	0.17	0.31	XX



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

Report #211
1st Qtr 2022

		Summary Statistics	
Grand Means	12.703 lbf.in	12.598 lbf.in	
Stnd Dev Btwn Labs	0.528 lbf.in	0.548 lbf.in	
Statistics based on 32 of 34 reporting participants			

		Summary Statistics in SI Units	
Grand Means	14.352 dN.m	14.233 dN.m	
Stnd Dev Btwn Labs	0.596 dN.m	0.620 dN.m	
Statistics based on 32 of 34 reporting participants			

Samples W25-W26: EPDM compound, batch #1 & W27-W28: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #689

6YGBJJ (X) - Data for all samples are high. Possible Systematic Error.

V3AEWY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group W27-W28.

Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	ME	Alpha Tech. MDR Premiere
MM	MonTech MDR 3000	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha	XX	Instrument model not specified by lab

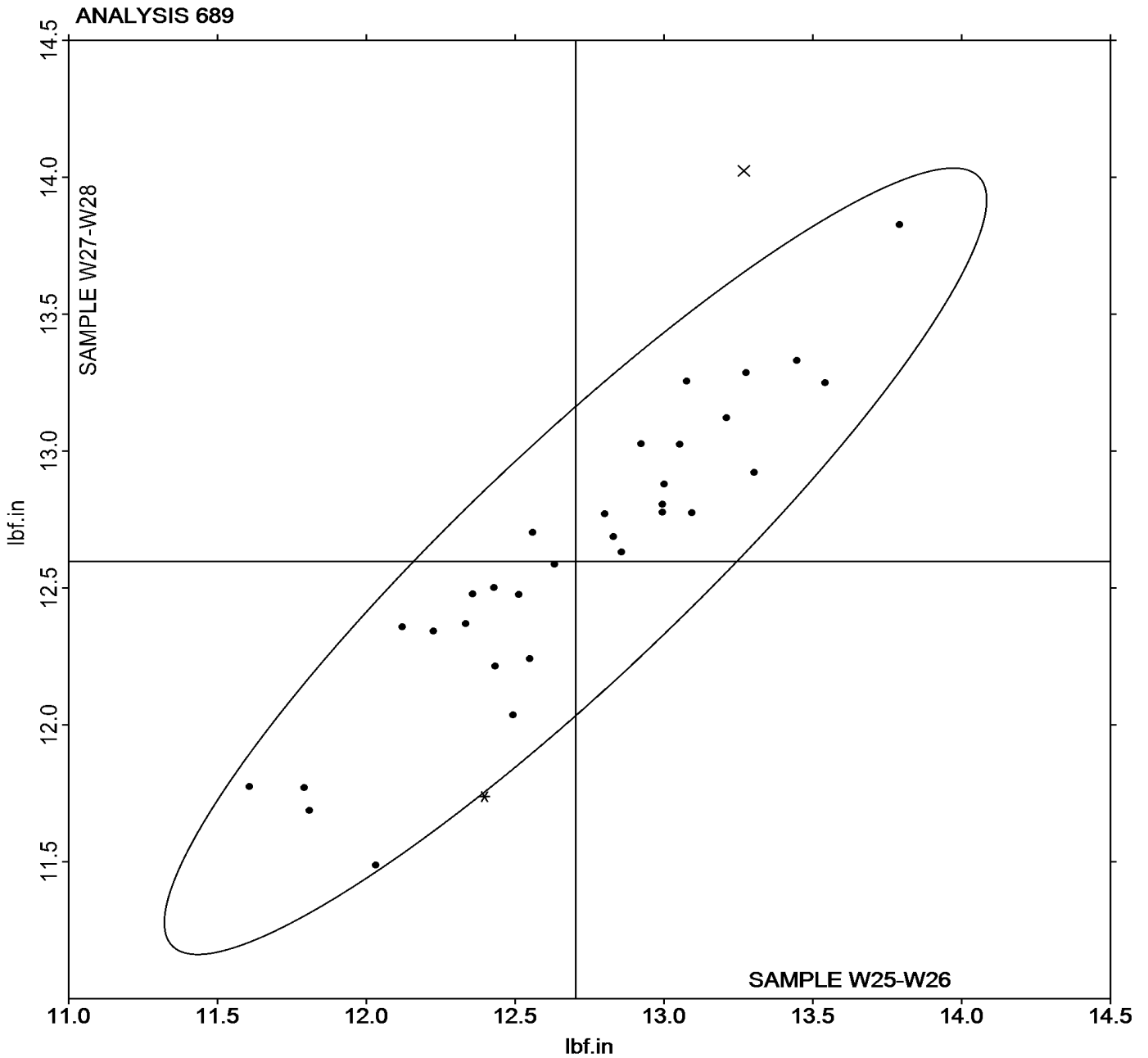


Rubber Interlaboratory Testing Program
Analysis 689
MDR Vulcanization: Maximum Torque (lbf.in)

Report #211
1st Qtr 2022

Grand Mean Sample **W25-W26** = 12.703 lbf.in

Grand Mean Sample **W27-W28** = 12.598 lbf.in



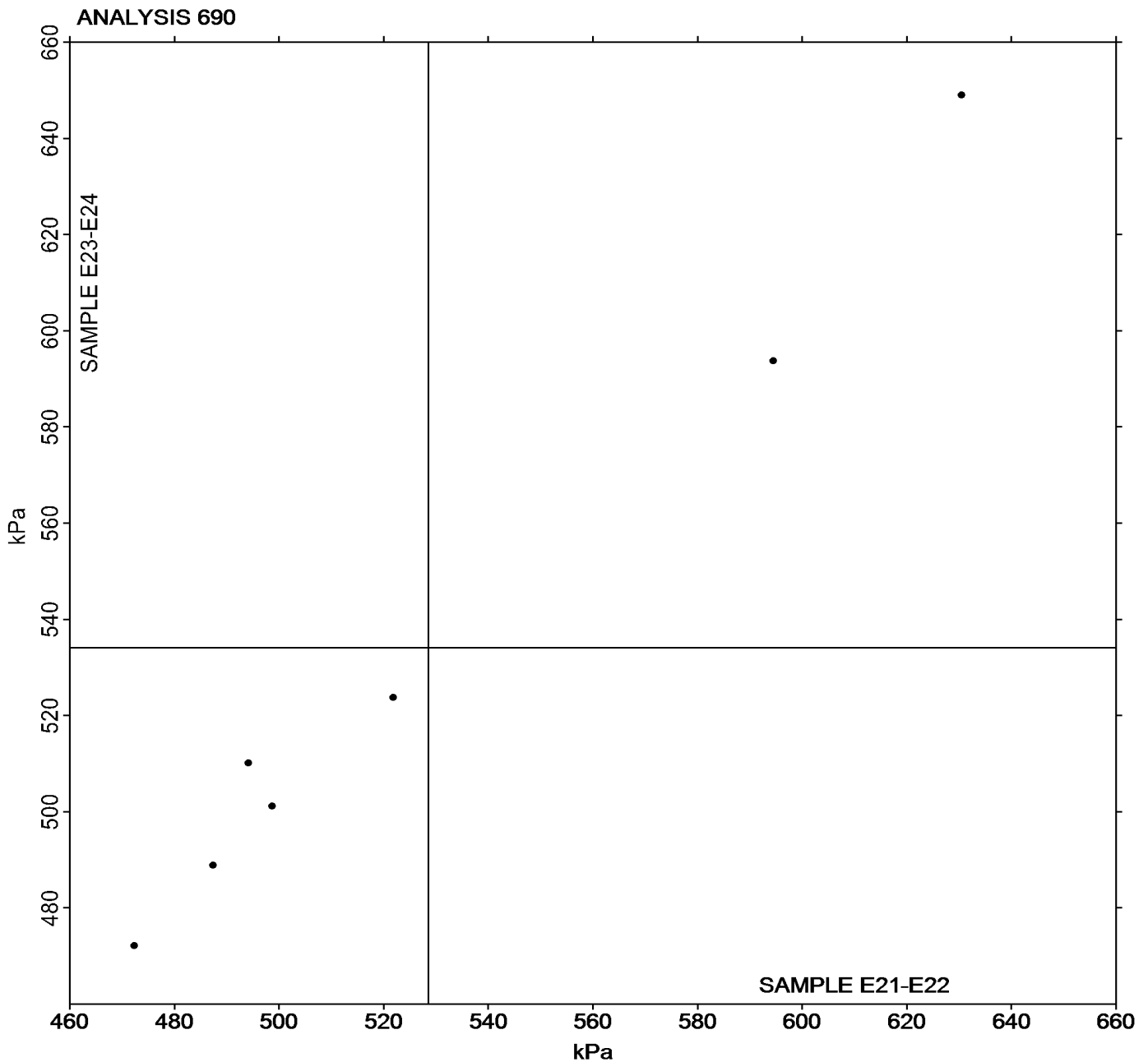


Rubber Interlaboratory Testing Program
Analysis 690
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #211
1st Qtr 2022

Grand Mean Sample E21-E22 = 528.50 kPa

Grand Mean Sample E23-E24 = 534.10 kPa



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

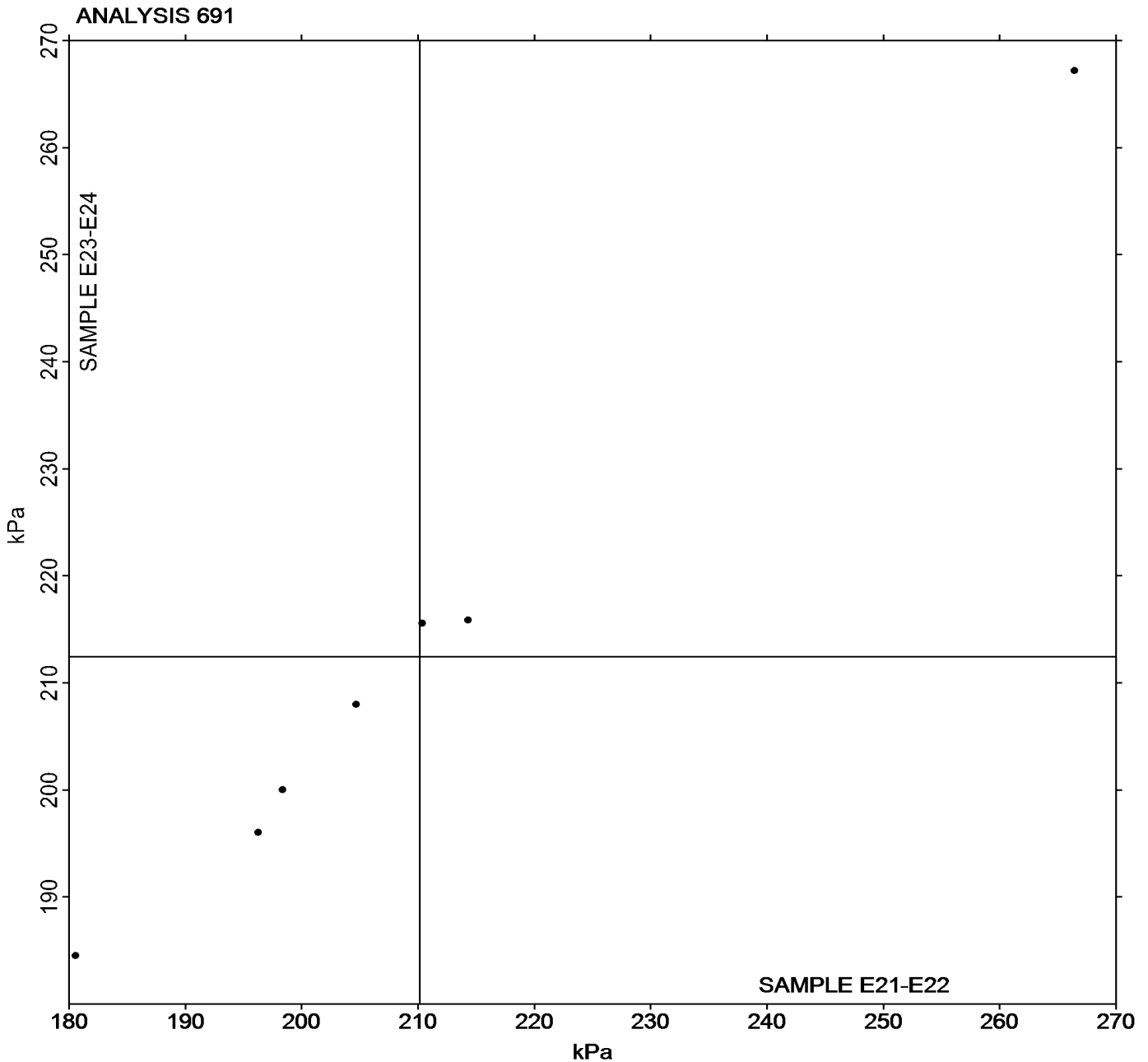


Rubber Interlaboratory Testing Program
Analysis 691
RPA Rheological Properties: Part A - G'' at 20Hz (kPa)

Report #211
1st Qtr 2022

Grand Mean Sample E21-E22 = 210.14 kPa

Grand Mean Sample E23-E24 = 212.44 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 #211

Analysis 695

1st Qtr 2022

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

WebCode	Data Flag	Sample E21-E22			Sample E23-E24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		76.62	-12.83	-0.68	76.71	-11.81	-0.72	PR
8EYB3E		78.84	-10.61	-0.56	78.50	-10.02	-0.61	RP
BC4TDN		91.00	1.55	0.08	92.78	4.25	0.26	XX
GAHWDC		132.88	43.43	2.30	124.96	36.43	2.23	RP
K9ARQY		89.97	0.52	0.03	88.65	0.13	0.01	XX
QARWPY		77.64	-11.81	-0.63	77.59	-10.93	-0.67	RP
RPB8RR		92.49	3.04	0.16	92.58	4.05	0.25	XX
VVUMWZ		76.15	-13.30	-0.70	76.42	-12.11	-0.74	RP

Grand Means		Summary Statistics	
	89.449 kPa		88.522 kPa
Std Dev Btwn Labs	18.865 kPa		16.335 kPa
Statistics based on 8 of 8 reporting participants			

Samples E21-E22: EPDM compound, batch #1 & E23-E24: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

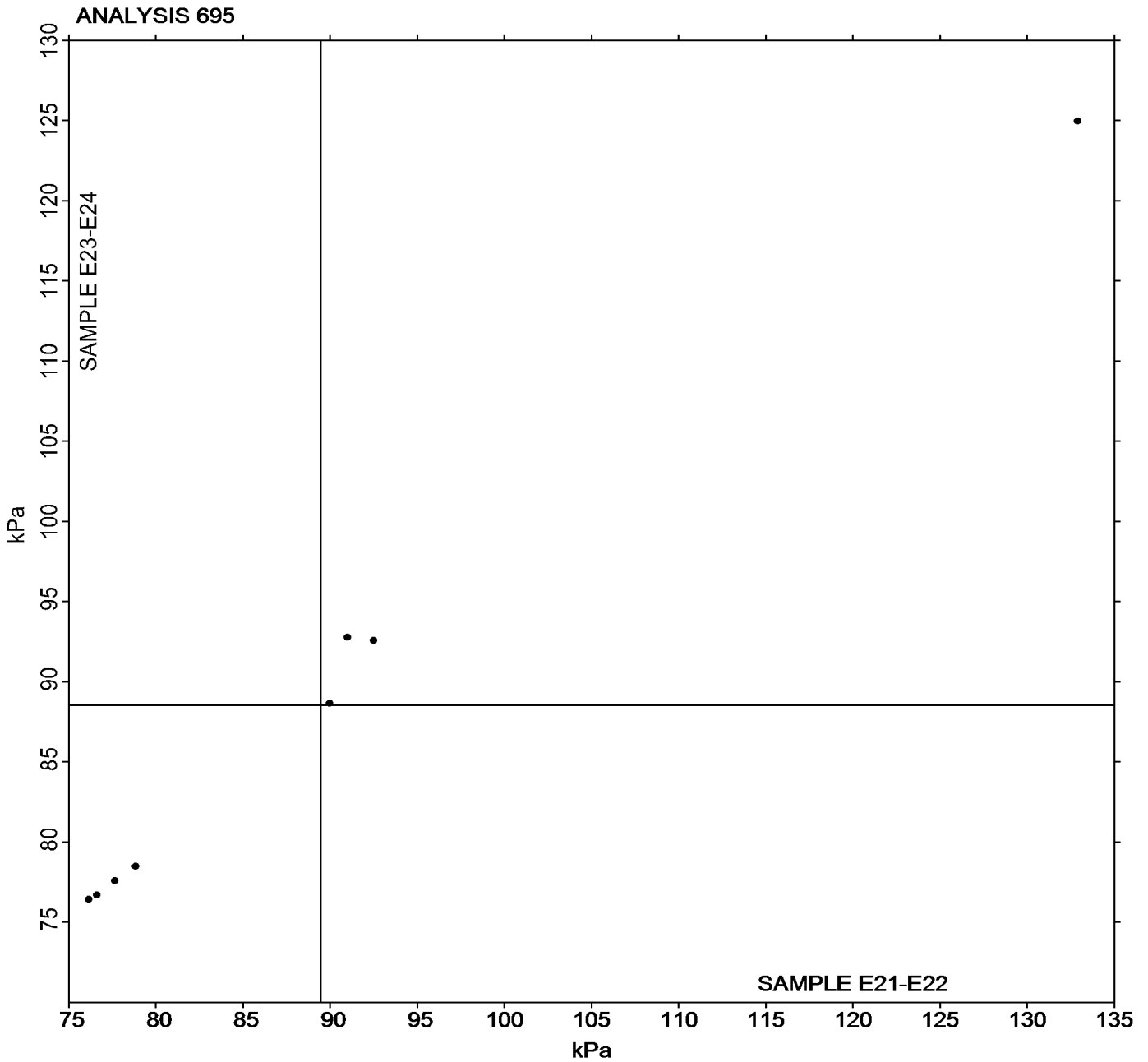
- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab



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

Grand Mean Sample E21-E22 = 89.449 kPa

Grand Mean Sample E23-E24 = 88.522 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 #211

Analysis 696

1st Qtr 2022

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

WebCode	Data Flag	Sample E21-E22			Sample E23-E24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
33PUHT		69.15	-5.03	-0.59	69.03	-5.26	-0.60	PR
8EYB3E		67.25	-6.93	-0.82	67.36	-6.93	-0.79	XX
BC4TDN		88.17	13.99	1.65	89.01	14.72	1.68	XX
GAHWDC		77.09	2.91	0.34	76.71	2.42	0.28	XX
K9ARQY		74.15	-0.03	0.00	73.95	-0.34	-0.04	XX
QARWPY		66.07	-8.11	-0.95	65.65	-8.64	-0.99	RP
RPB8RR		84.64	10.46	1.23	85.06	10.77	1.23	XX
VVUMWZ		66.93	-7.25	-0.85	67.54	-6.75	-0.77	RP

Grand Means		Summary Statistics	
	74.179 kPa		74.287 kPa
Std Dev Btwn Labs	8.495 kPa		8.737 kPa
Statistics based on 8 of 8 reporting participants			

Samples E21-E22: EPDM compound, batch #1 & E23-E24: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

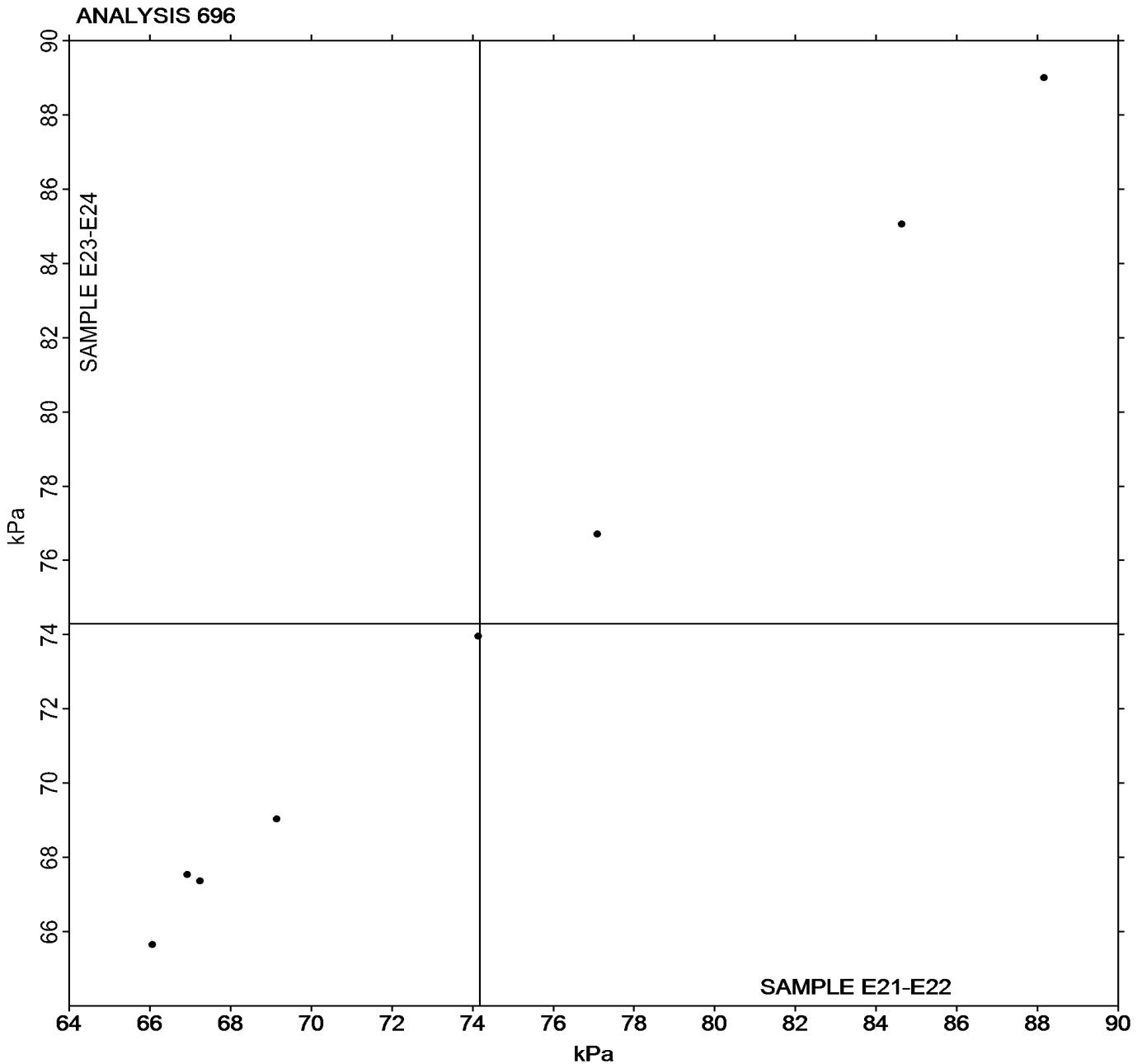
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample E21-E22 = 74.179 kPa

Grand Mean Sample E23-E24 = 74.287 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-