



Rubber Interlaboratory Testing Program

Summary Report #212- 2nd Qtr 2022

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[Key for Web Summary Report](#)

<u>Analysis</u>	<u>Analysis Name</u>	<u>Analysis</u>	<u>Analysis Name</u>
605	Tensile Strength: Precured Rubber Samples	6871	MDR Vulcanization Charac.: Cure Time 90%
606	Ultimate Elongation: Precured Rubber Samples	6872	MDR Vulcanization Charac.: Cure Time 90%
607	Stress at 300% Elongation: Precured Samples	6881	MDR Vulcanization Charac.: Minimum Torque
608	Stress at 100% Elongation: Precured Samples	6882	MDR Vulcanization Charac.: Minimum Torque
620	Hardness (Type A): Precured Rubber Samples	6891	MDR Vulcanization Charac.: Maximum Torque
621	Density: Precured Rubber Samples @ 25C	6892	MDR Vulcanization Charac.: Maximum Torque
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6852	MDR Vulcanization Charac.: Scorch Time, Ts1		
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6862	MDR Vulcanization Charac.: Cure Time 50%		

Note: Laboratory results for MDR Tests 684 through 689 exhibited a significant bimodal distribution for cure time and scorch time properties. This unusual distribution is attributed to sample performance. In order to ensure that published statistics are valid and meaningful, CTS split Tests 684-689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842) to separate the two groups of data.

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.

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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)

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WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		3,218.1	91.9	0.61	2,961.3	27.8	0.17
2M3F88		3,159.0	32.8	0.22	2,992.0	58.6	0.36
3JYYBN		3,327.5	201.3	1.34	2,889.0	-44.4	-0.28
3ZLLD7		3,176.4	50.2	0.33	2,966.0	32.6	0.20
4FF9GD		2,987.1	-139.1	-0.92	2,785.5	-147.9	-0.92
69VNTR		3,075.6	-50.6	-0.34	2,855.8	-77.6	-0.48
6QPJ7F		3,198.2	72.0	0.48	2,934.9	1.5	0.01
6UB9PR		3,347.0	220.8	1.46	3,023.0	89.6	0.56
7QQKM8		3,242.3	116.2	0.77	2,955.9	22.5	0.14
7X3UUZ		3,200.3	74.1	0.49	2,808.0	-125.4	-0.78
82JG4Y		2,875.5	-250.7	-1.66	2,905.5	-27.9	-0.17
8NX4UA	*	2,689.0	-437.2	-2.90	2,688.5	-244.9	-1.52
9B3AW8		3,055.2	-70.9	-0.47	3,050.9	117.5	0.73
9MEPVY		3,057.4	-68.8	-0.46	3,009.6	76.2	0.47
A4YQ8G		3,073.5	-52.7	-0.35	3,063.0	129.6	0.81
AGCTTE		3,049.3	-76.9	-0.51	2,833.8	-99.6	-0.62
AR929B		3,150.0	23.8	0.16	2,995.0	61.6	0.38
AV7HMP		3,273.7	147.5	0.98	2,800.1	-133.3	-0.83
BCB7FG		3,039.1	-87.0	-0.58	3,173.7	240.3	1.49
BG66P7		3,324.0	197.8	1.31	2,870.0	-63.4	-0.39
BRLUJ6		3,132.7	6.5	0.04	3,012.5	79.1	0.49
C9QJCV		3,284.5	158.3	1.05	3,031.0	97.6	0.61
CUNACT		3,045.5	-80.7	-0.54	2,741.5	-191.9	-1.19
CYFE6W		3,306.7	180.5	1.20	3,025.1	91.7	0.57
CZ9DD4		3,084.3	-41.9	-0.28	2,826.4	-107.0	-0.67
DECU6Q		3,052.0	-74.2	-0.49	2,943.5	10.1	0.06
DX6RA4		3,281.0	154.8	1.03	3,010.5	77.1	0.48
E6GB4M		3,112.5	-13.6	-0.09	2,730.4	-203.0	-1.26
EZN7D4	*	2,899.4	-226.8	-1.50	2,452.7	-480.7	-2.99
FAM7GV		3,317.0	190.8	1.27	2,952.5	19.1	0.12
FAV7L6		3,334.4	208.3	1.38	3,150.2	216.8	1.35
FNRKKD	X	2,153.8	-972.4	-6.45	2,255.4	-678.0	-4.21
G8Y99V		2,905.0	-221.2	-1.47	2,882.0	-51.4	-0.32
HRJFDW		3,263.4	137.2	0.91	3,212.6	279.2	1.74
HVHQAW		2,812.7	-313.5	-2.08	2,630.4	-303.0	-1.88
JNWB36		3,101.6	-24.6	-0.16	2,706.4	-227.0	-1.41
K3BYP9		3,218.5	92.3	0.61	2,978.0	44.6	0.28
KCK3XR		3,060.5	-65.7	-0.44	3,112.5	179.1	1.11



Rubber Interlaboratory Testing Program

Report #212

Analysis 605

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Tensile Strength (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
KL82QH		3,250.0	123.8	0.82	2,980.0	46.6	0.29
KMGAVW		3,143.7	17.5	0.12	3,079.4	145.9	0.91
L9D8TF		3,316.5	190.3	1.26	3,066.5	133.1	0.83
LN68EM		3,422.0	295.8	1.96	3,209.0	275.6	1.71
LR9XMN		2,984.5	-141.7	-0.94	2,676.5	-256.9	-1.60
LUWAQZ		3,035.0	-91.2	-0.60	3,007.5	74.1	0.46
LZZBQU		3,221.4	95.2	0.63	3,113.9	180.4	1.12
M2AM4P	*	3,259.0	132.8	0.88	2,638.5	-294.9	-1.83
MC9DMC		3,305.4	179.3	1.19	3,264.1	330.7	2.06
MN6JGA		3,022.7	-103.5	-0.69	3,021.5	88.1	0.55
MQAWGW		3,229.5	103.3	0.69	3,056.0	122.6	0.76
MTFFJX		2,855.0	-271.2	-1.80	3,024.5	91.1	0.57
NAZR7P		3,153.5	27.3	0.18	2,965.0	31.6	0.20
NDZW3H		3,094.4	-31.8	-0.21	2,962.4	29.0	0.18
NFRRQC		3,118.0	-8.2	-0.05	3,031.0	97.6	0.61
PTN2UN		3,215.5	89.3	0.59	2,763.5	-169.9	-1.06
PVFP7C		3,018.0	-108.2	-0.72	2,882.0	-51.4	-0.32
PX4YHY		3,122.5	-3.7	-0.02	3,007.5	74.1	0.46
QFCPPT		3,140.0	13.8	0.09	2,770.0	-163.4	-1.02
QJ2PC4		3,222.8	96.6	0.64	3,021.2	87.8	0.55
QKCWAQ		3,350.4	224.2	1.49	3,321.4	388.0	2.41
QT4CYU		3,147.5	21.3	0.14	2,972.5	39.1	0.24
QVDYVM	X	2,388.1	-738.1	-4.90	2,372.1	-561.3	-3.49
R863HD	X	3,185.0	58.8	0.39	2,490.0	-443.4	-2.76
RG8KTG		2,967.5	-158.7	-1.05	2,664.5	-268.9	-1.67
RL2HGL		2,856.0	-270.2	-1.79	2,860.0	-73.4	-0.46
TKHZWD		3,180.0	53.8	0.36	3,075.0	141.6	0.88
TUT3HE		2,800.0	-326.2	-2.16	2,770.0	-163.4	-1.02
U3KVA6		3,088.5	-37.7	-0.25	2,896.0	-37.4	-0.23
UAKCMV		3,285.5	159.3	1.06	2,872.5	-60.9	-0.38
UJ7JGE		3,338.5	212.3	1.41	2,991.0	57.6	0.36
V8CJ63		3,128.3	2.1	0.01	2,964.0	30.5	0.19
VNGT8M		2,921.5	-204.7	-1.36	2,933.5	0.1	0.00
VXZ87J		3,179.3	53.1	0.35	2,982.7	49.3	0.31
WFFQ6F		3,194.0	67.8	0.45	2,662.5	-270.9	-1.68
WTNYXD		3,021.5	-104.7	-0.69	2,794.0	-139.4	-0.87
WUFYXA		2,953.0	-173.2	-1.15	2,943.5	10.1	0.06



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
X6XUVN		3,052.5	-73.7	-0.49	2,795.0	-138.4	-0.86
XBG4ZD		3,207.5	81.3	0.54	3,137.0	203.6	1.27
XBJT6A		2,979.5	-146.7	-0.97	2,586.4	-347.0	-2.16
XYQ83K		2,848.5	-277.7	-1.84	2,834.0	-99.4	-0.62
XZKVLG		3,206.5	80.3	0.53	3,160.0	226.6	1.41
YAJBKK		3,254.5	128.3	0.85	2,998.0	64.6	0.40
YPF7GK		3,031.3	-94.9	-0.63	2,929.8	-3.6	-0.02
YPG6DD	X	3,605.0	478.8	3.18	3,418.5	485.1	3.02
Z9RC88		3,205.4	79.2	0.53	3,002.3	68.9	0.43
ZG2W9H		3,164.7	38.5	0.26	2,960.8	27.3	0.17

Summary Statistics	
Grand Means	
3,126.18 psi	2,933.40 psi
Stnd Dev Btwn Labs	
150.76 psi	160.88 psi
Statistics based on 81 of 85 reporting participants	

Summary Statistics in SI Units	
Grand Means	
21.554 MPa	20.22 MPa
Stnd Dev Btwn Labs	
1.039 MPa	1.11 MPa
Statistics based on 81 of 85 reporting participants	

Samples B21-B22: Polyisoprene compound, batch #1 & B23-B24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #605

- FNRKKD (X) - Data for all samples are low. Inconsistent within the determinations of sample group B21-B22.
- QVDYVM (X) - Data for all samples are low.
- R863HD (X) - Data for sample group B23-B24 are low.
- YPG6DD (X) - Data for all samples are high.

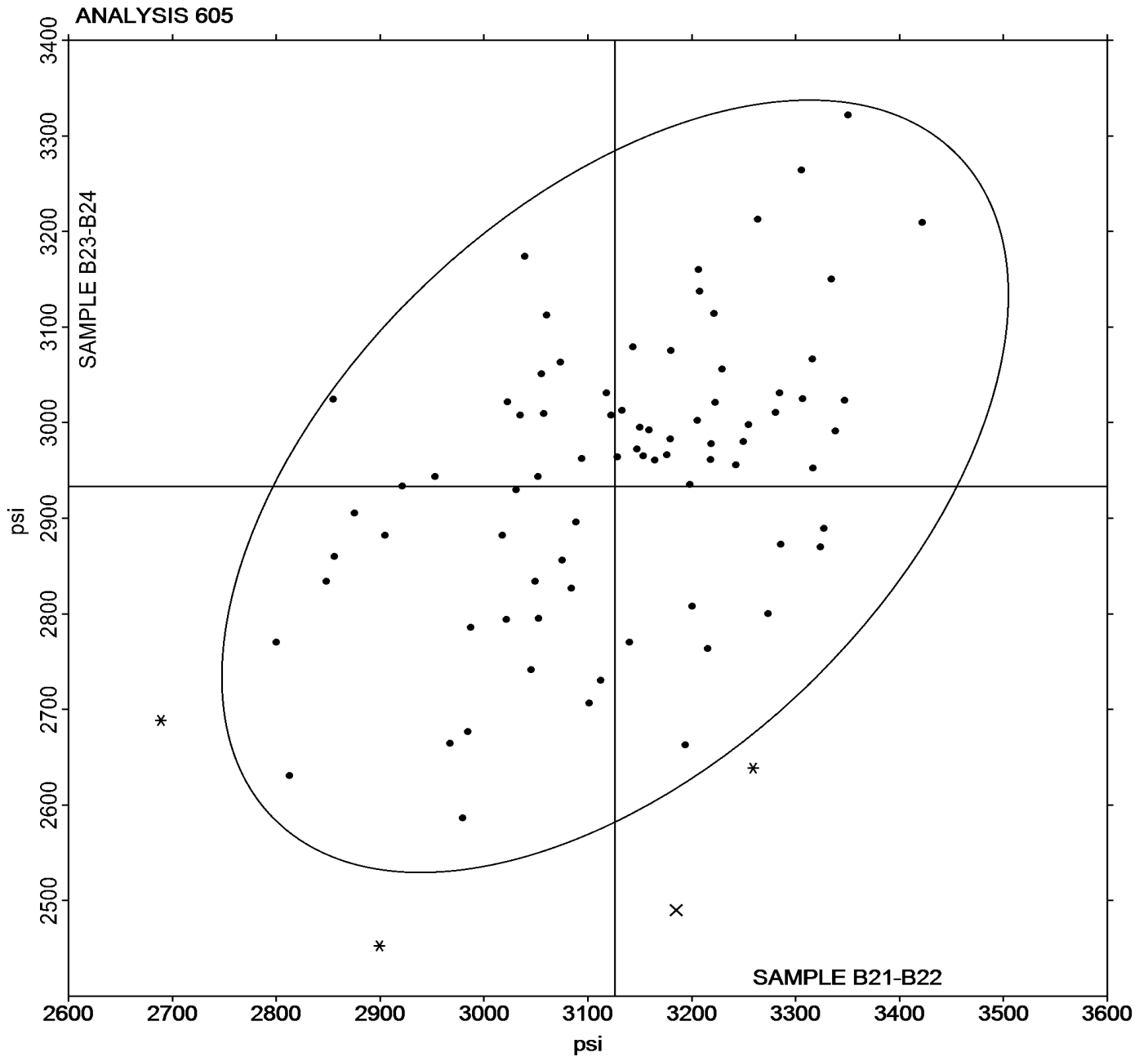


Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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Grand Mean Sample **B21-B22** = 3,126.18 psi

Grand Mean Sample **B23-B24** = 2,933.40 psi





Rubber Interlaboratory Testing Program

Report #212

Analysis 606

2nd Qtr 2022

Ultimate Elongation (percent)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		623.1	-44.5	-1.43	584.0	-52.7	-1.91
2M3F88		695.0	27.4	0.88	661.0	24.3	0.88
3JYYBN		679.5	11.9	0.38	629.0	-7.7	-0.28
3ZLLD7		682.5	14.9	0.48	655.5	18.8	0.68
4FF9GD		683.0	15.4	0.49	636.5	-0.2	-0.01
69VNTR		675.0	7.4	0.24	649.5	12.8	0.46
6QPJ7F		689.0	21.4	0.69	657.0	20.3	0.73
6UB9PR		684.5	16.9	0.54	649.5	12.8	0.46
7QQKM8		719.4	51.8	1.66	674.0	37.2	1.35
7X3UUZ		636.5	-31.1	-1.00	598.5	-38.2	-1.38
82JG4Y		646.0	-21.6	-0.69	637.0	0.3	0.01
8NX4UA		589.5	-78.1	-2.50	579.5	-57.2	-2.07
9B3AW8		625.8	-41.8	-1.34	613.3	-23.4	-0.85
AGCTTE		655.5	-12.1	-0.39	632.0	-4.7	-0.17
AR929B		649.5	-18.1	-0.58	639.5	2.8	0.10
AV7HMP		699.3	31.6	1.01	637.3	0.6	0.02
BCB7FG		620.1	-47.5	-1.52	581.9	-54.9	-1.99
BG66P7		653.5	-14.1	-0.45	602.5	-34.2	-1.24
BRLUJ6		691.0	23.4	0.75	658.5	21.7	0.79
C9QJCV		636.0	-31.6	-1.01	610.5	-26.2	-0.95
CUNACT		652.0	-15.6	-0.50	598.0	-38.7	-1.40
CYFE6W		707.4	39.8	1.27	663.7	26.9	0.97
CZ9DD4		713.0	45.4	1.45	662.5	25.8	0.93
DECU6Q		645.5	-22.1	-0.71	614.0	-22.7	-0.82
DX6RA4		708.5	40.9	1.31	680.5	43.8	1.58
E6GB4M	*	600.0	-67.6	-2.17	613.0	-23.7	-0.86
EZN7D4		719.5	51.9	1.66	690.2	53.5	1.94
FAM7GV		646.5	-21.1	-0.68	622.0	-14.7	-0.53
FAV7L6		645.7	-21.9	-0.70	633.9	-2.8	-0.10
FNRKKD		613.5	-54.1	-1.73	619.5	-17.2	-0.62
G8Y99V		640.5	-27.1	-0.87	636.5	-0.2	-0.01
HRJFDW	*	663.5	-4.1	-0.13	673.5	36.8	1.33
HVHQAW		650.4	-17.2	-0.55	605.3	-31.4	-1.14
JNWB36		672.3	4.7	0.15	644.1	7.3	0.26
K3BYP9		678.5	10.9	0.35	654.5	17.8	0.64
KCK3XR		670.5	2.9	0.09	649.0	12.3	0.44
KL82QH		744.0	76.4	2.45	685.0	48.3	1.75
KMGAVW		649.0	-18.6	-0.60	646.0	9.3	0.34



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

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WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
L9D8TF		706.0	38.4	1.23	671.0	34.3	1.24
LN68EM		661.5	-6.1	-0.20	615.0	-21.7	-0.79
LR9XMN		665.0	-2.6	-0.08	633.0	-3.7	-0.14
LUWAQZ		677.5	9.9	0.32	667.0	30.3	1.10
LZZBQU		653.7	-13.9	-0.45	632.2	-4.6	-0.17
M2AM4P		661.5	-6.1	-0.20	621.5	-15.2	-0.55
MC9DMC	*	685.5	17.9	0.57	689.0	52.3	1.89
MN6JGA		629.5	-38.1	-1.22	612.8	-24.0	-0.87
MQAWGW		622.5	-45.1	-1.45	601.0	-35.7	-1.29
MTFFJX		635.0	-32.6	-1.05	629.5	-7.2	-0.26
NAZR7P		726.0	58.4	1.87	674.0	37.3	1.35
NDZW3H	*	733.0	65.4	2.10	712.5	75.8	2.74
NFRRQC		655.5	-12.1	-0.39	628.5	-8.2	-0.30
PTN2UN		710.7	43.1	1.38	670.6	33.9	1.23
PVFP7C		675.5	7.9	0.25	610.5	-26.2	-0.95
PX4YHY		684.0	16.4	0.53	662.5	25.8	0.93
QFCPPT		656.5	-11.1	-0.36	613.0	-23.7	-0.86
QJ2PC4		664.5	-3.1	-0.10	637.0	0.3	0.01
QKCWAQ		678.5	10.9	0.35	648.5	11.8	0.43
QT4CYU		681.0	13.4	0.43	647.5	10.8	0.39
QVDYVM	X	821.5	153.9	4.93	817.5	180.8	6.54
R863HD		675.0	7.4	0.24	605.0	-31.7	-1.15
RG8KTG		644.0	-23.7	-0.76	613.5	-23.3	-0.84
RL2HGL		621.0	-46.6	-1.49	623.5	-13.2	-0.48
TKHZWD		681.5	13.9	0.45	626.5	-10.2	-0.37
TUT3HE		691.5	23.9	0.77	639.0	2.3	0.08
U3KVA6		672.5	4.9	0.16	642.0	5.3	0.19
UAKCMV		691.0	23.4	0.75	667.0	30.3	1.10
UJ7JGE		646.0	-21.6	-0.69	609.5	-27.2	-0.99
V8CJ63	X	343.8	-323.8	-10.38	335.0	-301.7	-10.92
VNGT8M		665.0	-2.6	-0.08	630.0	-6.7	-0.24
VXZ87J		719.2	51.5	1.65	646.8	10.1	0.36
WFFQ6F		642.0	-25.6	-0.82	595.0	-41.7	-1.51
WTNYXD		665.0	-2.6	-0.08	650.0	13.3	0.48
WUFYXA		635.0	-32.6	-1.05	608.5	-28.2	-1.02
X6XUVN		687.0	19.4	0.62	640.5	3.8	0.14
XBG4ZD		657.5	-10.1	-0.32	633.0	-3.7	-0.14



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #212
2nd Qtr 2022

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
XBJT6A		650.1	-17.5	-0.56	597.9	-38.9	-1.41
XYQ83K	X	774.0	106.4	3.41	707.5	70.8	2.56
XZKVLG		657.5	-10.1	-0.32	621.5	-15.2	-0.55
YAJBKK		665.5	-2.1	-0.07	640.0	3.3	0.12
YPF7GK		661.1	-6.6	-0.21	639.3	2.6	0.09
YPG6DD		655.5	-12.1	-0.39	620.5	-16.2	-0.59
Z9RC88		724.5	56.9	1.82	688.0	51.3	1.86
ZG2W9H		685.0	17.4	0.56	648.5	11.8	0.43

		Summary Statistics	
Grand Means	667.61 percent	636.75 percent	
Std Dev Btwn Labs	31.20 percent	27.62 percent	
Statistics based on 80 of 83 reporting participants			

Samples B21-B22: Polyisoprene compound, batch #1 & B23-B24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #606

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

V8CJ63 (X) - Data for all Samples are low.

XYQ83K (X) - Data for sample group B21-B22 are high.



Rubber Interlaboratory Testing Program

Report #212

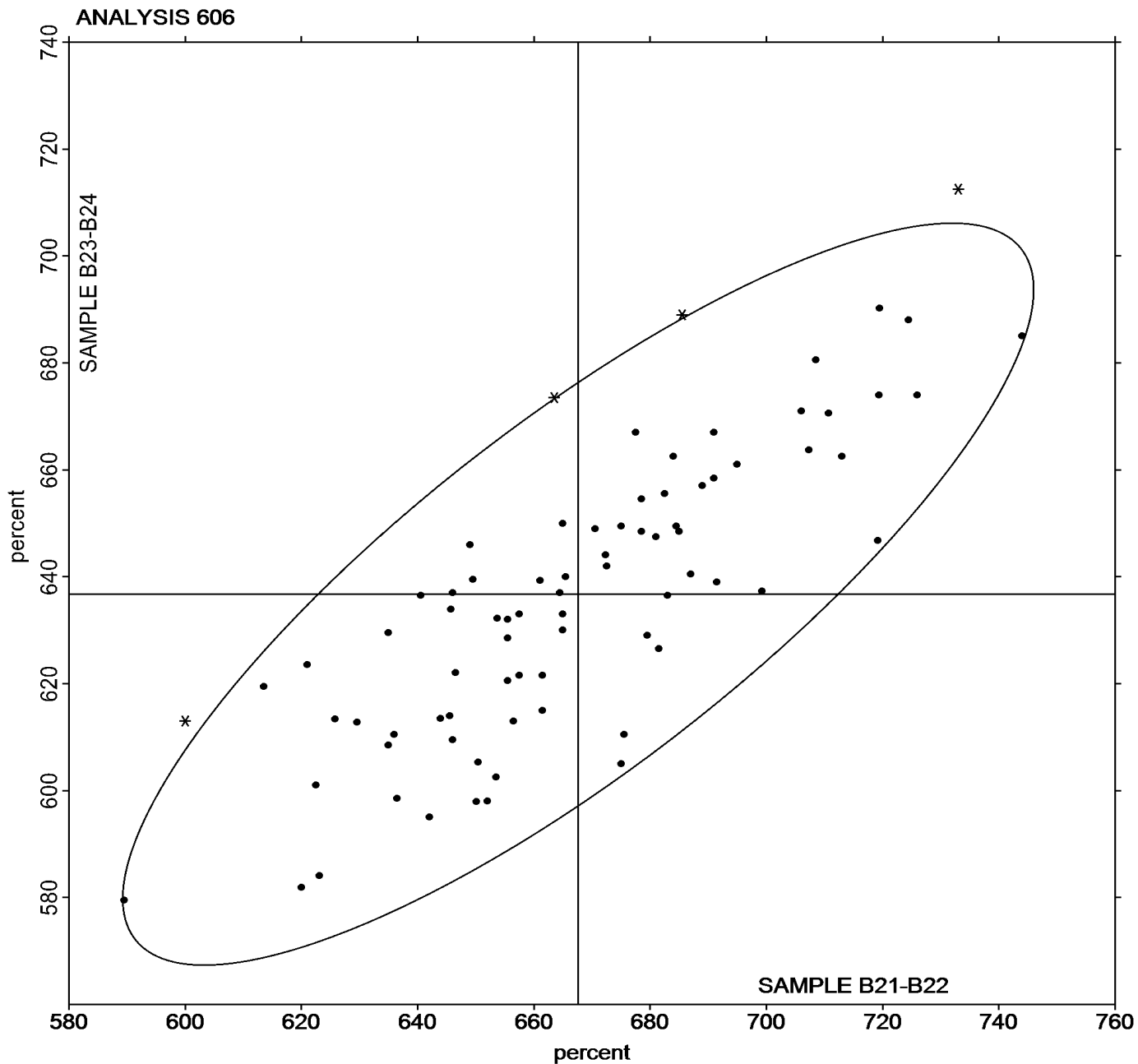
Analysis 606

2nd Qtr 2022

Ultimate Elongation (percent)

Grand Mean Sample **B21-B22** = 667.61 percent

Grand Mean Sample **B23-B24** = 636.75 percent





Rubber Interlaboratory Testing Program

Report #212

Analysis 607

2nd Qtr 2022

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		805.5	124.0	1.81	881.6	149.9	2.03
2M3F88		612.5	-69.0	-1.01	673.5	-58.2	-0.79
3JYYBN		713.0	31.5	0.46	702.5	-29.2	-0.40
3ZLLD7		754.5	73.0	1.07	802.0	70.3	0.95
4FF9GD		668.6	-12.9	-0.19	710.7	-21.0	-0.28
69VNTR		673.7	-7.8	-0.11	696.9	-34.7	-0.47
6QPJ7F		642.6	-38.9	-0.57	699.4	-32.3	-0.44
6UB9PR		671.0	-10.5	-0.15	733.0	1.3	0.02
7QQKM8		579.4	-102.1	-1.49	653.4	-78.3	-1.06
7X3UUZ		747.0	65.5	0.96	770.2	38.5	0.52
82JG4Y		643.5	-38.0	-0.56	736.0	4.3	0.06
8NX4UA		686.0	4.5	0.07	768.5	36.8	0.50
9B3AW8		771.6	90.1	1.32	856.5	124.8	1.69
AGCTTE		648.0	-33.5	-0.49	687.5	-44.2	-0.60
AR929B		693.0	11.5	0.17	750.5	18.8	0.26
AV7HMP		629.8	-51.7	-0.76	669.6	-62.0	-0.84
BCB7FG	*	800.5	119.0	1.74	928.8	197.2	2.68
BRLUJ6		661.4	-20.1	-0.29	750.3	18.6	0.25
C9QJCV		744.5	63.0	0.92	814.5	82.8	1.12
CUNACT		681.0	-0.5	-0.01	762.0	30.3	0.41
CYFE6W		679.8	-1.7	-0.02	753.8	22.2	0.30
CZ9DD4		602.1	-79.4	-1.16	665.9	-65.7	-0.89
DECU6Q		634.0	-47.5	-0.70	729.0	-2.7	-0.04
DX6RA4		657.0	-24.5	-0.36	715.0	-16.7	-0.23
E6GB4M		638.9	-42.6	-0.62	692.6	-39.1	-0.53
EZN7D4	*	538.5	-143.0	-2.09	515.8	-215.8	-2.93
FAM7GV		800.0	118.5	1.73	794.5	62.8	0.85
FAV7L6		837.6	156.1	2.28	829.6	98.0	1.33
FNRKKD		661.4	-20.1	-0.29	701.3	-30.4	-0.41
HRJFDW		703.4	21.9	0.32	728.8	-2.8	-0.04
HVHQAW		633.1	-48.4	-0.71	719.3	-12.4	-0.17
JNWB36		693.0	11.5	0.17	660.3	-71.3	-0.97
K3BYP9		689.0	7.5	0.11	700.5	-31.2	-0.42
KCK3XR		647.0	-34.5	-0.50	781.0	49.3	0.67
KL82QH		580.0	-101.5	-1.49	620.0	-111.7	-1.52
KMGAVW		755.3	73.8	1.08	740.9	9.2	0.12
L9D8TF		630.0	-51.5	-0.75	703.5	-28.2	-0.38
LN68EM	*	829.5	148.0	2.17	927.5	195.8	2.66



Rubber Interlaboratory Testing Program

Report #212

Analysis 607

2nd Qtr 2022

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
LR9XMN		619.5	-62.0	-0.91	635.0	-96.7	-1.31
LUWAQZ	*	871.0	189.5	2.77	876.0	144.3	1.96
LZZBQU		738.6	57.1	0.84	781.7	50.0	0.68
M2AM4P	*	710.5	29.0	0.42	641.0	-90.7	-1.23
MC9DMC		718.7	37.2	0.54	717.2	-14.4	-0.20
MN6JGA		749.5	68.0	1.00	753.4	21.8	0.30
MQAWGW		763.5	82.0	1.20	803.5	71.8	0.98
NAZR7P		593.5	-88.0	-1.29	669.0	-62.7	-0.85
NDZW3H		575.1	-106.4	-1.56	609.2	-122.5	-1.66
NFRROC		726.0	44.5	0.65	822.5	90.8	1.23
PTN2UN		657.1	-24.3	-0.36	643.5	-88.1	-1.20
PVFP7C		625.5	-56.0	-0.82	708.0	-23.7	-0.32
PX4YHY		644.5	-37.0	-0.54	689.0	-42.7	-0.58
QFCPPT		683.5	2.0	0.03	765.0	33.3	0.45
QJ2PC4		715.0	33.5	0.49	762.9	31.3	0.42
QKCWAQ		678.5	-3.0	-0.04	802.0	70.3	0.95
QT4CYU		662.5	-19.0	-0.28	750.5	18.8	0.26
R863HD		713.5	32.0	0.47	671.0	-60.7	-0.82
RG8KTG		717.5	36.0	0.53	762.3	30.6	0.42
RL2HGL		705.5	24.0	0.35	701.0	-30.7	-0.42
TKHZWD	*	661.4	-20.1	-0.29	824.3	92.6	1.26
TUT3HE		632.5	-49.0	-0.72	755.0	23.3	0.32
U3KVA6		685.9	4.4	0.06	724.3	-7.4	-0.10
UAKCMV		644.0	-37.5	-0.55	629.0	-102.7	-1.39
UJ7JGE		706.5	25.0	0.37	745.5	13.8	0.19
V8CJ63	X	2,477.0	1,795.5	26.28	2,490.7	1,759.0	23.88
VNGT8M		634.5	-47.0	-0.69	727.0	-4.7	-0.06
VXZ87J		604.1	-77.4	-1.13	688.9	-42.7	-0.58
WFFQ6F		748.0	66.5	0.97	724.0	-7.7	-0.10
WTNYXD		628.5	-53.0	-0.78	663.5	-68.2	-0.93
WUFYXA		694.5	13.0	0.19	784.5	52.8	0.72
X6XUVN		609.5	-72.0	-1.05	658.8	-72.9	-0.99
XBG4ZD		745.0	63.5	0.93	837.0	105.3	1.43
XBJT6A		650.5	-31.0	-0.45	679.9	-51.8	-0.70
XYQ83K	*	471.0	-210.5	-3.08	571.5	-160.2	-2.17
XZKVLG		686.0	4.5	0.07	758.0	26.3	0.36
YAJBKK		711.0	29.5	0.43	736.0	4.3	0.06



Rubber Interlaboratory Testing Program

Report #212

Analysis 607

2nd Qtr 2022

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
YPF7GK		678.8	-2.7	-0.04	732.4	0.8	0.01
YPG6DD		752.5	71.0	1.04	806.0	74.3	1.01
Z9RC88		661.4	-20.1	-0.29	722.3	-9.4	-0.13
ZG2W9H		645.2	-36.3	-0.53	710.8	-20.9	-0.28

		Summary Statistics	
Grand Means		681.49 psi	731.65 psi
Stnd Dev Btwn Labs		68.33 psi	73.67 psi
Statistics based on 78 of 79 reporting participants			

		Summary Statistics in SI Units	
Grand Means		4.6987 MPa	5.04 MPa
Stnd Dev Btwn Labs		0.4711 MPa	0.51 MPa
Statistics based on 78 of 79 reporting participants			

Samples B21-B22: Polyisoprene compound, batch #1 & B23-B24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #607

V8CJ63 (X) - Extreme Data.



Rubber Interlaboratory Testing Program

Report #212

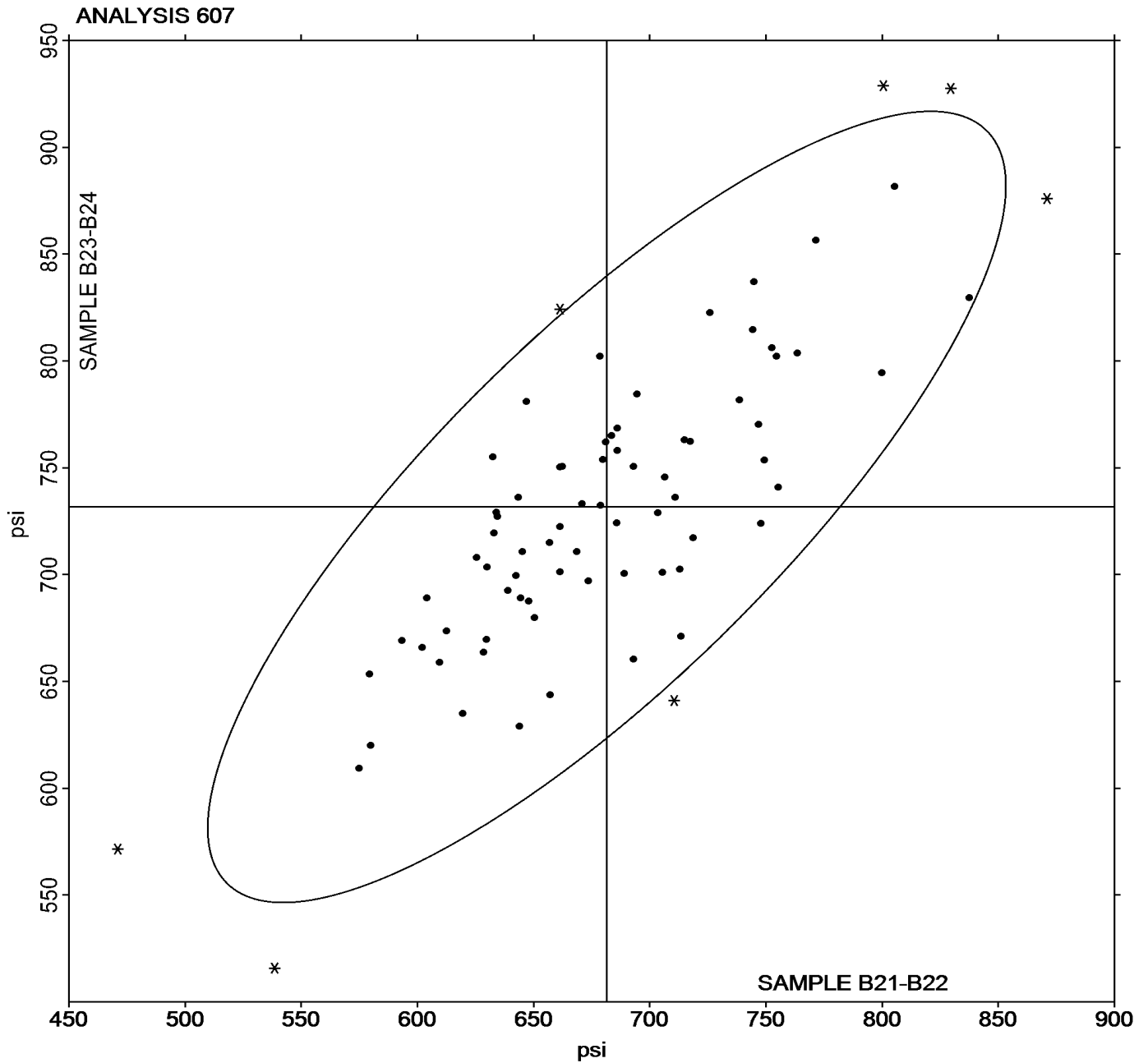
Analysis 607

2nd Qtr 2022

Stress at 300% Elongation (psi)

Grand Mean Sample **B21-B22** = 681.49 psi

Grand Mean Sample **B23-B24** = 731.65 psi





Rubber Interlaboratory Testing Program

Report #212

Analysis 608

2nd Qtr 2022

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		162.1	4.5	0.35	173.8	10.3	0.71
2M3F88		149.0	-8.6	-0.65	160.5	-3.0	-0.21
3JYYBN		169.0	11.4	0.87	162.0	-1.5	-0.10
3ZLLD7		182.5	24.9	1.90	188.5	25.0	1.71
4FF9GD		166.8	9.2	0.70	173.3	9.8	0.67
69VNTR		153.0	-4.5	-0.35	157.4	-6.1	-0.42
6QPJ7F		155.4	-2.2	-0.16	162.7	-0.8	-0.05
6UB9PR		158.0	0.4	0.03	164.0	0.5	0.03
7QQKM8		138.5	-19.0	-1.45	155.9	-7.6	-0.52
7X3UUZ		158.8	1.3	0.10	161.0	-2.5	-0.17
82JG4Y		151.0	-6.6	-0.50	162.0	-1.5	-0.10
8NX4UA		155.0	-2.6	-0.20	170.5	7.0	0.48
9B3AW8	*	194.4	36.8	2.81	195.8	32.3	2.21
AGCTTE		154.5	-3.1	-0.23	160.5	-3.0	-0.21
AR929B		167.5	9.9	0.76	178.0	14.5	0.99
AV7HMP		148.8	-8.8	-0.67	151.1	-12.4	-0.85
BCB7FG		162.7	5.1	0.39	172.9	9.4	0.64
BG66P7		162.5	4.9	0.38	162.0	-1.5	-0.10
BRLUJ6		159.3	1.7	0.13	174.9	11.5	0.79
C9QJCV		181.5	23.9	1.83	192.5	29.0	1.99
CUNACT		155.0	-2.6	-0.20	166.5	3.0	0.21
CYFE6W		163.7	6.1	0.47	165.8	2.3	0.16
CZ9DD4		156.1	-1.5	-0.11	165.2	1.7	0.12
DECU6Q		150.0	-7.6	-0.58	160.5	-3.0	-0.21
DX6RA4		159.5	1.9	0.15	169.5	6.0	0.41
E6GB4M		134.2	-23.4	-1.78	143.6	-19.9	-1.36
EZN7D4	*	128.5	-29.0	-2.21	126.7	-36.8	-2.52
FAM7GV	X	195.0	37.4	2.85	174.5	11.0	0.75
FAV7L6		176.9	19.4	1.48	171.9	8.4	0.57
FNRKKD		150.5	-7.1	-0.54	158.8	-4.7	-0.32
HRJFDW		161.0	3.4	0.26	159.5	-4.0	-0.27
HVHQAW		136.7	-20.9	-1.59	149.3	-14.2	-0.97
JNWB36		158.9	1.3	0.10	149.0	-14.5	-0.99
K3BYP9		159.0	1.4	0.11	157.0	-6.5	-0.45
KCK3XR		155.0	-2.6	-0.20	175.5	12.0	0.82
KL82QH		152.0	-5.6	-0.42	155.5	-8.0	-0.55
KMGAVW		168.2	10.6	0.81	162.1	-1.4	-0.10
L9D8TF		151.0	-6.6	-0.50	160.0	-3.5	-0.24



Rubber Interlaboratory Testing Program

Report #212

Analysis 608

2nd Qtr 2022

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
LN68EM	X	276.5	118.9	9.07	286.5	123.0	8.43
LR9XMN		147.5	-10.1	-0.77	145.5	-18.0	-1.23
LUWAQZ	X	203.5	45.9	3.50	207.5	44.0	3.02
LZZBQU		171.3	13.8	1.05	173.9	10.4	0.71
M2AM4P	*	161.0	3.4	0.26	144.5	-19.0	-1.30
MC9DMC		142.1	-15.4	-1.18	139.2	-24.3	-1.66
MN6JGA		168.2	10.6	0.81	168.4	4.9	0.34
MQAWGW	*	194.0	36.4	2.78	195.0	31.5	2.16
NAZR7P		139.5	-18.1	-1.38	150.0	-13.5	-0.93
NDZW3H		147.9	-9.6	-0.73	153.0	-10.5	-0.72
NFRRQC		168.0	10.4	0.80	181.5	18.0	1.23
PTN2UN		149.9	-7.6	-0.58	142.8	-20.7	-1.42
PVFP7C		151.0	-6.6	-0.50	163.0	-0.5	-0.03
PX4YHY		152.5	-5.1	-0.39	156.5	-7.0	-0.48
QFCPPT		150.0	-7.6	-0.58	162.5	-1.0	-0.07
QJ2PC4		174.0	16.5	1.26	179.1	15.6	1.07
QKCWAQ		160.0	2.4	0.19	178.5	15.0	1.03
QT4CYU		161.0	3.4	0.26	173.0	9.5	0.65
R863HD		161.5	3.9	0.30	156.5	-7.0	-0.48
RG8KTG		160.5	2.9	0.22	165.0	1.5	0.10
RL2HGL		154.0	-3.6	-0.27	146.0	-17.5	-1.20
TKHZWD	*	156.7	-0.9	-0.07	186.5	23.0	1.58
TUT3HE		166.0	8.4	0.64	189.5	26.0	1.78
U3KVA6		165.0	7.4	0.56	167.4	3.9	0.27
UAKCMV		156.0	-1.6	-0.12	151.5	-12.0	-0.82
UJ7JGE		163.5	5.9	0.45	160.5	-3.0	-0.21
V8CJ63	X	354.5	197.0	15.02	361.6	198.1	13.58
VNGT8M		153.0	-4.6	-0.35	165.0	1.5	0.10
VXZ87J		136.3	-21.2	-1.62	140.7	-22.8	-1.56
WFFQ6F		164.0	6.4	0.49	154.5	-9.0	-0.62
WTNYXD		144.0	-13.6	-1.03	147.0	-16.5	-1.13
WUFYXA		157.5	-0.1	0.00	171.0	7.5	0.51
X6XUVN		148.0	-9.6	-0.73	152.5	-11.0	-0.75
XBG4ZD	*	187.5	29.9	2.28	204.5	41.0	2.81
XBJT6A		136.7	-20.9	-1.59	142.9	-20.6	-1.41
XYQ83K		130.5	-27.1	-2.06	148.5	-15.0	-1.03
XZKVLG		152.0	-5.6	-0.42	159.0	-4.5	-0.31



Rubber Interlaboratory Testing Program

Report #212

Analysis 608

2nd Qtr 2022

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
YAJBKK		167.0	9.4	0.72	168.5	5.0	0.34
YPF7GK		152.3	-5.3	-0.40	160.3	-3.2	-0.22
YPG6DD		179.5	21.9	1.67	188.5	25.0	1.71
Z9RC88		149.4	-8.2	-0.62	159.5	-4.0	-0.27
ZG2W9H		149.4	-8.2	-0.62	158.2	-5.3	-0.37

Summary Statistics	
Grand Means	
	157.56 psi
	163.50 psi
Std Dev Btwn Labs	
	13.12 psi
	14.59 psi
Statistics based on 76 of 80 reporting participants	

Summary Statistics in SI Units	
Grand Means	
	1.0863 MPa
	1.13 MPa
Std Dev Btwn Labs	
	0.0904 MPa
	0.10 MPa
Statistics based on 76 of 80 reporting participants	

Samples B21-B22: Polyisoprene compound, batch #1 & B23-B24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #608

FAM7GV (X) - Data for sample group B21-B22 are high. Inconsistent in testing between sample groups.

LN68EM (X) - Data for all samples are high.

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

V8CJ63 (X) - Data for all samples are high. Inconsistent within the determinations of sample group B23-B24.



Rubber Interlaboratory Testing Program

Report #212

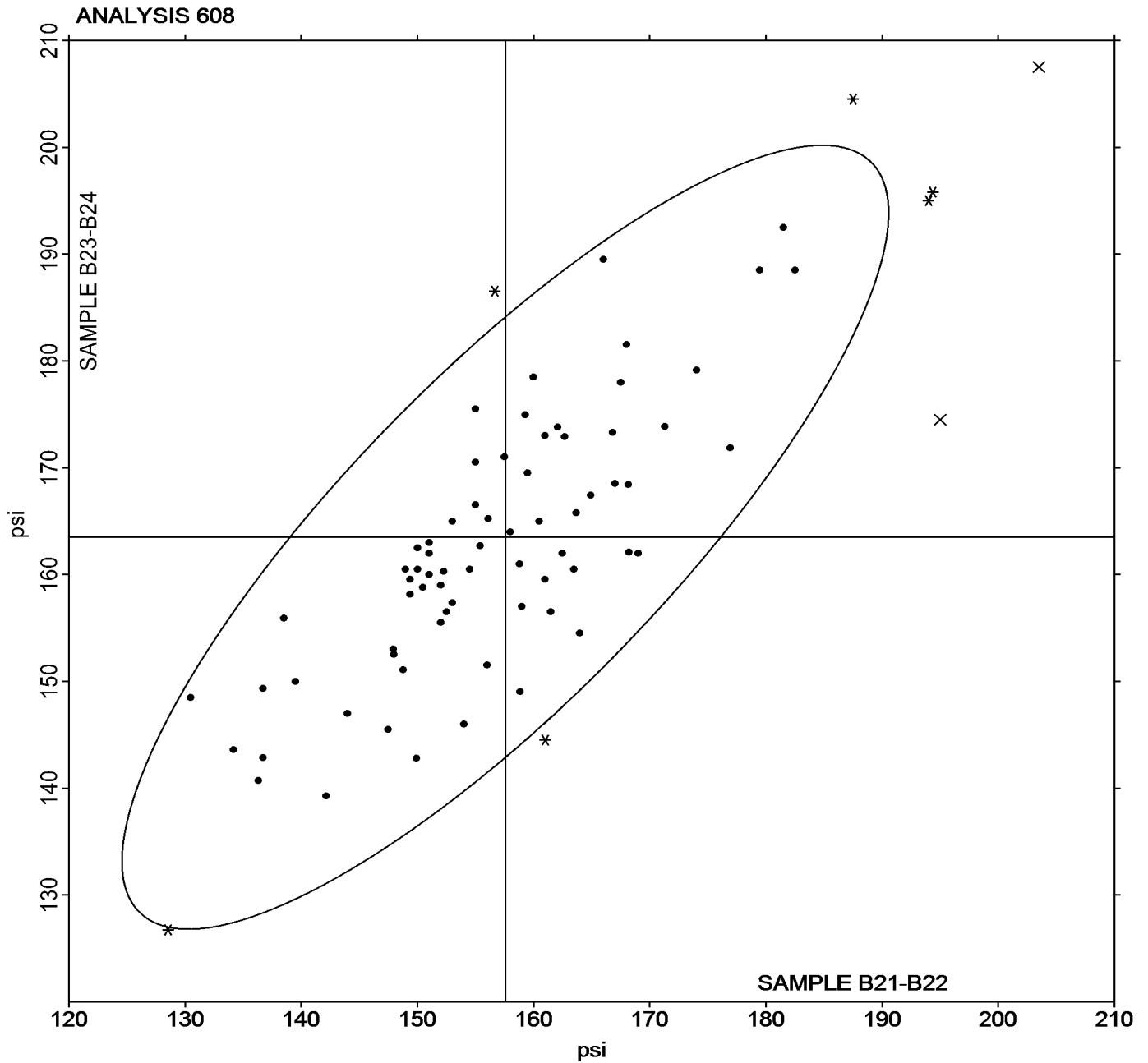
Analysis 608

2nd Qtr 2022

Stress at 100% Elongation (psi)

Grand Mean Sample **B21-B22** = 157.56 psi

Grand Mean Sample **B23-B24** = 163.50 psi





Rubber Interlaboratory Testing Program

Report #212

Analysis 620

2nd Qtr 2022

Hardness (Shore A/Type A)

WebCode	Data Flag	Sample B21-B22			Sample B23-B24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2J36B8	X	50.00	5.43	2.78	48.00	2.94	1.57	HH
2M3F88		41.00	-3.57	-1.83	41.00	-4.06	-2.17	BT
3JYYBN		46.70	2.13	1.09	45.80	0.74	0.40	HH
3ZLLD7		45.00	0.43	0.22	45.00	-0.06	-0.03	BT
46VZU6		45.20	0.63	0.32	45.70	0.64	0.34	BT
4FF9GD		45.00	0.43	0.22	45.00	-0.06	-0.03	HH
69VNTR		40.10	-4.47	-2.29	41.70	-3.36	-1.79	BT
6QPJ7F		43.95	-0.62	-0.32	45.40	0.34	0.18	BT
6UB9PR		45.00	0.43	0.22	45.50	0.44	0.24	HH
7X3UUZ		45.70	1.13	0.58	45.05	-0.01	0.00	BT
7ZUT7D		45.00	0.43	0.22	45.50	0.44	0.24	BT
82JG4Y	*	42.81	-1.76	-0.90	45.67	0.61	0.33	BT
8NX4UA		40.75	-3.82	-1.96	41.70	-3.36	-1.79	BT
9B3AW8		44.00	-0.57	-0.29	44.00	-1.06	-0.56	HH
9MEPVY		43.00	-1.57	-0.81	43.00	-2.06	-1.10	BT
9X2JDM		44.85	0.28	0.14	46.40	1.34	0.72	BT
A4YQ8G		47.00	2.43	1.24	47.00	1.94	1.04	HH
AGCTTE		42.00	-2.57	-1.32	44.00	-1.06	-0.56	HH
AR929B		48.50	3.93	2.01	49.00	3.94	2.11	BT
AV7HMP		45.45	0.88	0.45	45.65	0.59	0.32	BT
BCB7FG		43.50	-1.07	-0.55	44.50	-0.56	-0.30	BT
BG66P7		45.10	0.53	0.27	45.30	0.24	0.13	BT
BRLUJ6		46.00	1.43	0.73	46.00	0.94	0.50	BT
C9QJCV	X	50.65	6.08	3.12	52.00	6.94	3.71	HH
CUNACT		44.00	-0.57	-0.29	44.50	-0.56	-0.30	BT
CYFE6W		43.00	-1.57	-0.81	43.45	-1.61	-0.86	BT
CZ9DD4		43.60	-0.97	-0.50	44.30	-0.76	-0.40	BT
DECU6Q		44.00	-0.57	-0.29	45.00	-0.06	-0.03	BT
DX6RA4		44.30	-0.27	-0.14	44.75	-0.31	-0.16	BT
E6GB4M		41.75	-2.82	-1.45	41.90	-3.16	-1.69	BT
EZN7D4		43.35	-1.22	-0.63	43.30	-1.76	-0.94	BT
FAM7GV		45.50	0.93	0.48	45.00	-0.06	-0.03	HH
FAV7L6		43.30	-1.27	-0.65	43.50	-1.56	-0.83	BT
FNRKKD		41.80	-2.77	-1.42	42.05	-3.01	-1.61	BT
G8Y99V		47.50	2.93	1.50	48.00	2.94	1.57	HH
HRJFDW		43.70	-0.87	-0.45	44.00	-1.06	-0.56	BT
HVHQAW		44.00	-0.57	-0.29	44.00	-1.06	-0.56	BT
JNWB36		43.00	-1.57	-0.81	45.00	-0.06	-0.03	HH



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

Report #212
2nd Qtr 2022

WebCode	Data Flag	Sample B21-B22			Sample B23-B24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
K3BYP9		45.00	0.43	0.22	44.85	-0.21	-0.11	BT
KB64HA		48.50	3.93	2.01	49.50	4.44	2.38	BT
KCK3XR		45.50	0.93	0.48	45.85	0.79	0.42	BT
KL82QH		46.00	1.43	0.73	45.50	0.44	0.24	HH
KMGAVW		47.20	2.63	1.35	46.35	1.29	0.69	BT
L9D8TF		45.10	0.53	0.27	45.90	0.84	0.45	BT
LN68EM		43.50	-1.07	-0.55	44.50	-0.56	-0.30	BT
LR9XMN		42.75	-1.82	-0.93	42.35	-2.71	-1.45	BT
LUWAQZ		46.50	1.93	0.99	47.85	2.79	1.49	HH
LUZW48		42.05	-2.52	-1.29	43.50	-1.56	-0.83	XX
LZZBQU		45.90	1.33	0.68	45.80	0.74	0.40	BT
M2AM4P		43.00	-1.57	-0.81	42.00	-3.06	-1.63	BT
M8ZXEM	X	50.00	5.43	2.78	51.50	6.44	3.44	HH
MC9DMC		45.50	0.93	0.48	46.00	0.94	0.50	BT
MN6JGA		45.50	0.93	0.48	46.50	1.44	0.77	BT
MQAWGW		43.00	-1.57	-0.81	43.00	-2.06	-1.10	BT
MTFFJX		43.50	-1.07	-0.55	45.50	0.44	0.24	BT
NAZR7P		44.75	0.18	0.09	45.60	0.54	0.29	BT
NDZW3H		44.50	-0.07	-0.04	45.50	0.44	0.24	BT
PTN2UN		47.50	2.93	1.50	46.50	1.44	0.77	HH
PVFP7C		44.15	-0.42	-0.22	45.05	-0.01	0.00	BT
PX4YHY		45.00	0.43	0.22	46.00	0.94	0.50	BT
QFCPPT		45.50	0.93	0.48	47.00	1.94	1.04	BT
QFXYZH		44.00	-0.57	-0.29	44.00	-1.06	-0.56	HH
QJ2PC4		44.35	-0.22	-0.11	44.65	-0.41	-0.22	BT
QKCWAQ		43.50	-1.07	-0.55	43.50	-1.56	-0.83	XX
QT4CYU		45.00	0.43	0.22	46.00	0.94	0.50	BT
QVDYVM		48.50	3.93	2.01	48.00	2.94	1.57	BT
R863HD		47.00	2.43	1.24	46.00	0.94	0.50	BT
RG8KTG		42.85	-1.72	-0.88	43.10	-1.96	-1.05	BT
RL2HGL		42.75	-1.82	-0.93	42.00	-3.06	-1.63	BT
TKHZWD		45.50	0.93	0.48	47.50	2.44	1.31	BT
TUT3HE	*	42.25	-2.32	-1.19	45.00	-0.06	-0.03	HH
U3KVA6		45.60	1.03	0.53	44.80	-0.26	-0.14	BT
UAKCMV		43.80	-0.77	-0.40	43.90	-1.16	-0.62	BT
UJ7JGE		45.50	0.93	0.48	46.00	0.94	0.50	HH
V2JH4N		46.15	1.58	0.81	45.45	0.39	0.21	BT



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

Report #212
2nd Qtr 2022

WebCode	Data Flag	Sample B21-B22			Sample B23-B24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
V8CJ63		41.00	-3.57	-1.83	42.50	-2.56	-1.37	BT
VDDV2Y	*	39.60	-4.97	-2.55	40.20	-4.86	-2.60	BT
VNGT8M		48.50	3.93	2.01	49.50	4.44	2.38	HH
VXZ87J		46.00	1.43	0.73	45.50	0.44	0.24	BT
WFFQ6F		46.00	1.43	0.73	45.50	0.44	0.24	BT
WQHECY		45.00	0.43	0.22	46.50	1.44	0.77	BT
WTNYXD		49.00	4.43	2.27	49.00	3.94	2.11	BT
WUFYXA		47.75	3.18	1.63	48.50	3.44	1.84	XX
X2YHYN		42.90	-1.67	-0.86	43.90	-1.16	-0.62	BT
X6XUVN		43.50	-1.07	-0.55	44.50	-0.56	-0.30	HH
XBG4ZD		45.50	0.93	0.48	46.00	0.94	0.50	HH
XBJT6A		44.50	-0.07	-0.04	45.00	-0.06	-0.03	BT
XYQ83K		42.00	-2.57	-1.32	43.00	-2.06	-1.10	BT
XZKVLG		44.50	-0.07	-0.04	45.50	0.44	0.24	BT
YPF7GK		46.65	2.08	1.07	47.45	2.39	1.28	BT
YPG6DD		43.50	-1.07	-0.55	43.50	-1.56	-0.83	BT
Z9RC88		46.00	1.43	0.73	46.80	1.74	0.93	BT

Grand Means		Summary Statistics	
	44.573 Type A		45.056 Type A
Std Dev Btwn Labs	1.950 Type A		1.871 Type A
Statistics based on 89 of 92 reporting participants			

Samples B21-B22: Polyisoprene compound, batch #1 & B23-B24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #620

- 2J36B8 (X) - Data for sample group B21-B22 are high.
- C9QJCV (X) - Data for all samples are high. Possible Systematic Error.
- M8ZXEM (X) - Data for all samples are high. Possible Systematic Error.

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 #212
2nd Qtr 2022

Results by Reading Time (as reported by laboratory)

Reading Time	Sample B21-B22 <i>Polyisoprene compound, batch #1</i>			Sample B23-B24 <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	44.90	4.03	0.33	46.00	3.54	0.94	2	2
Readings taken within 0 - 5 seconds	44.77	1.83	0.20	45.21	1.72	0.15	62	65
Readings taken at 5 seconds	44.43	2.30	-0.14	44.71	2.01	-0.35	7	8
Readings taken after 5+ seconds	44.09	1.37	-0.49	44.53	1.69	-0.53	7	8
Maximum hardness indicator used	44.63	2.21	0.05	44.94	2.47	-0.12	8	9

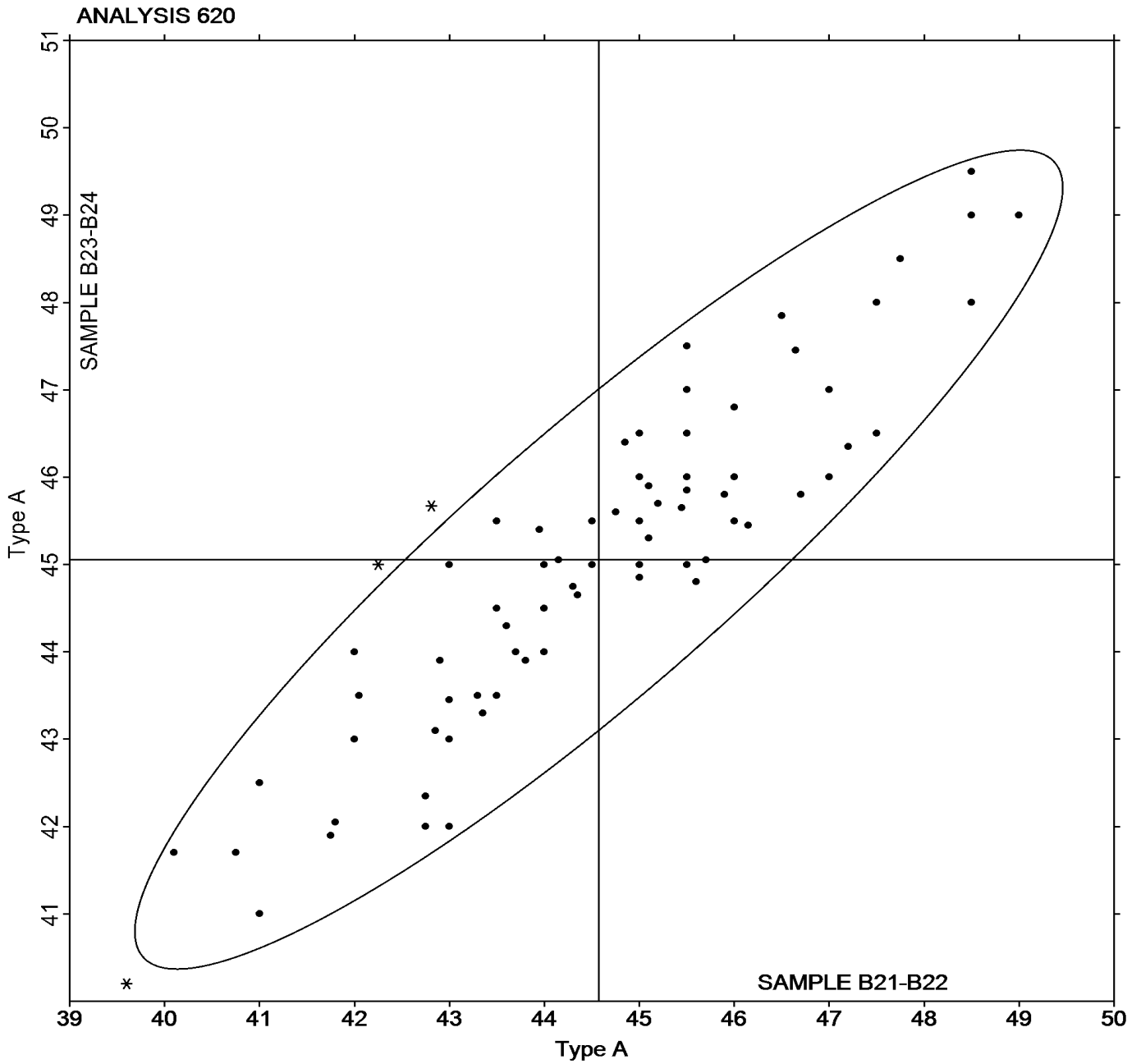


Rubber Interlaboratory Testing Program
Analysis 620
Hardness (Shore A/Type A)

Report #212
2nd Qtr 2022

Grand Mean Sample **B21-B22** = 44.573 Type A

Grand Mean Sample **B23-B24** = 45.056 Type A





Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #212
2nd Qtr 2022

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8	*	1.127	-0.006	-1.83	1.124	-0.009	-2.46
2M3F88	X	1.137	0.005	1.40	1.143	0.010	2.91
3ZLLD7		1.131	-0.001	-0.37	1.130	-0.002	-0.67
46VZU6		1.139	0.007	2.01	1.140	0.007	2.06
69VNTR		1.135	0.002	0.63	1.137	0.004	1.07
6QPJ7F		1.134	0.001	0.46	1.136	0.003	0.89
6UB9PR		1.130	-0.002	-0.75	1.130	-0.003	-0.77
7X3UUZ		1.134	0.002	0.47	1.134	0.001	0.22
7ZUT7D		1.132	-0.001	-0.29	1.134	0.001	0.22
9B3AW8	X	1.096	-0.036	-11.20	1.098	-0.035	-9.96
9X2JDM		1.133	0.001	0.27	1.136	0.003	0.83
AGCTTE		1.133	0.001	0.18	1.133	0.000	0.12
AR929B		1.135	0.002	0.74	1.136	0.004	1.01
AV7HMP		1.136	0.003	1.06	1.138	0.005	1.42
BCB7FG		1.135	0.003	0.83	1.136	0.003	0.83
BG66P7		1.136	0.003	0.94	1.135	0.002	0.51
BRLUJ6		1.134	0.001	0.34	1.134	0.001	0.24
C9QJCV		1.134	0.002	0.60	1.134	0.001	0.31
CUNACT	*	1.135	0.003	0.78	1.130	-0.003	-0.77
CYFE6W		1.134	0.001	0.46	1.136	0.004	1.04
CZ9DD4		1.129	-0.003	-0.99	1.129	-0.004	-1.06
DECU6Q		1.134	0.002	0.47	1.135	0.002	0.51
DX6RA4		1.133	0.001	0.21	1.132	-0.001	-0.16
EZN7D4		1.132	-0.001	-0.29	1.132	-0.001	-0.20
FAM7GV		1.131	-0.001	-0.43	1.134	0.001	0.25
FNRKKD	X	1.228	0.095	29.21	1.132	-0.001	-0.34
HVHQAW		1.125	-0.007	-2.29	1.126	-0.007	-2.04
JNWB36		1.126	-0.006	-1.98	1.125	-0.008	-2.18
K3BYP9		1.134	0.001	0.35	1.136	0.003	0.83
KCK3XR	*	1.127	-0.006	-1.83	1.123	-0.010	-2.75
KL82QH		1.138	0.005	1.55	1.137	0.004	1.21
KMGAVW		1.133	0.001	0.18	1.133	0.000	0.11
L9D8TF		1.134	0.002	0.51	1.133	0.001	0.18
LN68EM		1.129	-0.004	-1.22	1.129	-0.004	-1.05
LR9XMN		1.131	-0.001	-0.45	1.130	-0.003	-0.77
LUWAQZ		1.129	-0.003	-1.06	1.129	-0.003	-0.94
LUZW48		1.133	0.000	0.01	1.134	0.001	0.36
LZZBQU		1.128	-0.005	-1.51	1.130	-0.003	-0.87



Rubber Interlaboratory Testing Program

Report #212

Analysis 621

2nd Qtr 2022

Density

WebCode	Data Flag	Sample B21-B22			Sample B23-B24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
M8ZXEM		1.135	0.002	0.75	1.135	0.002	0.63
MC9DMC		1.131	-0.002	-0.60	1.131	-0.002	-0.48
MQAWGW		1.131	-0.001	-0.36	1.131	-0.002	-0.53
MTFFJX		1.129	-0.003	-1.06	1.132	-0.001	-0.34
NAZR7P		1.136	0.004	1.18	1.133	0.000	0.14
PX4YHY		1.134	0.002	0.47	1.135	0.002	0.51
QFCPPT		1.130	-0.002	-0.75	1.130	-0.003	-0.77
QFXYZH		1.134	0.002	0.60	1.134	0.001	0.24
QJ2PC4		1.129	-0.003	-0.97	1.126	-0.007	-1.97
QKCWAQ		1.132	-0.001	-0.29	1.133	0.000	0.08
QT4CYU		1.132	0.000	-0.14	1.132	-0.001	-0.20
QVDYVM		1.134	0.001	0.34	1.135	0.002	0.53
R863HD		1.140	0.008	2.32	1.140	0.007	2.06
RG8KTG		1.133	0.001	0.21	1.135	0.002	0.55
RL2HGL		1.129	-0.003	-1.06	1.130	-0.003	-0.91
TKHZWD		1.133	0.001	0.17	1.136	0.003	0.79
TUT3HE		1.135	0.002	0.63	1.136	0.003	0.93
UAKCMV		1.131	-0.001	-0.43	1.130	-0.003	-0.74
UJ7JGE		1.129	-0.004	-1.22	1.131	-0.002	-0.63
V2JH4N		1.130	-0.003	-0.91	1.133	0.000	-0.06
V8CJ63		1.139	0.006	1.90	1.141	0.008	2.33
VNGT8M		1.136	0.003	0.94	1.136	0.003	0.79
VXZ87J		1.138	0.005	1.55	1.134	0.001	0.36
WFFQ6F		1.136	0.003	0.94	1.134	0.001	0.22
WQHECY		1.133	0.001	0.17	1.135	0.002	0.51
WTNYXD		1.134	0.001	0.32	1.134	0.001	0.22
WUFYXA		1.138	0.005	1.55	1.135	0.002	0.51
X6XUVN	X	1.130	-0.002	-0.75	1.124	-0.009	-2.46
XBG4ZD		1.131	-0.002	-0.52	1.130	-0.002	-0.70
XBJT6A		1.127	-0.005	-1.68	1.130	-0.003	-0.77
XYQ83K		1.133	0.000	0.01	1.135	0.002	0.65
XZKVLG		1.129	-0.003	-1.06	1.129	-0.004	-1.05
YAJBKK		1.131	-0.001	-0.45	1.130	-0.003	-0.77
YPF7GK		1.136	0.003	0.94	1.135	0.002	0.65
Z9RC88		1.129	-0.004	-1.22	1.132	-0.001	-0.34



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #212
2nd Qtr 2022

		Summary Statistics	
Grand Means	1.1325 g/cm ³ (Mg/m ³)	1.1327 g/cm ³ (Mg/m ³)	
Stnd Dev Btwn Labs	0.0033 g/cm ³ (Mg/m ³)	0.0035 g/cm ³ (Mg/m ³)	
Statistics based on 69 of 73 reporting participants			

Samples B21-B22: Polyisoprene compound, batch #1 & B23-B24: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #621

- 2M3F88 (X) - Data for sample group B23-B24 are high. Inconsistent in testing between sample groups.
- 9B3AW8 (X) - Data for all Samples are low.
- FNRKKD (X) - Extreme Data for sample group B21-B22.
- X6XUVN (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group B23-B24.



Rubber Interlaboratory Testing Program

Report #212

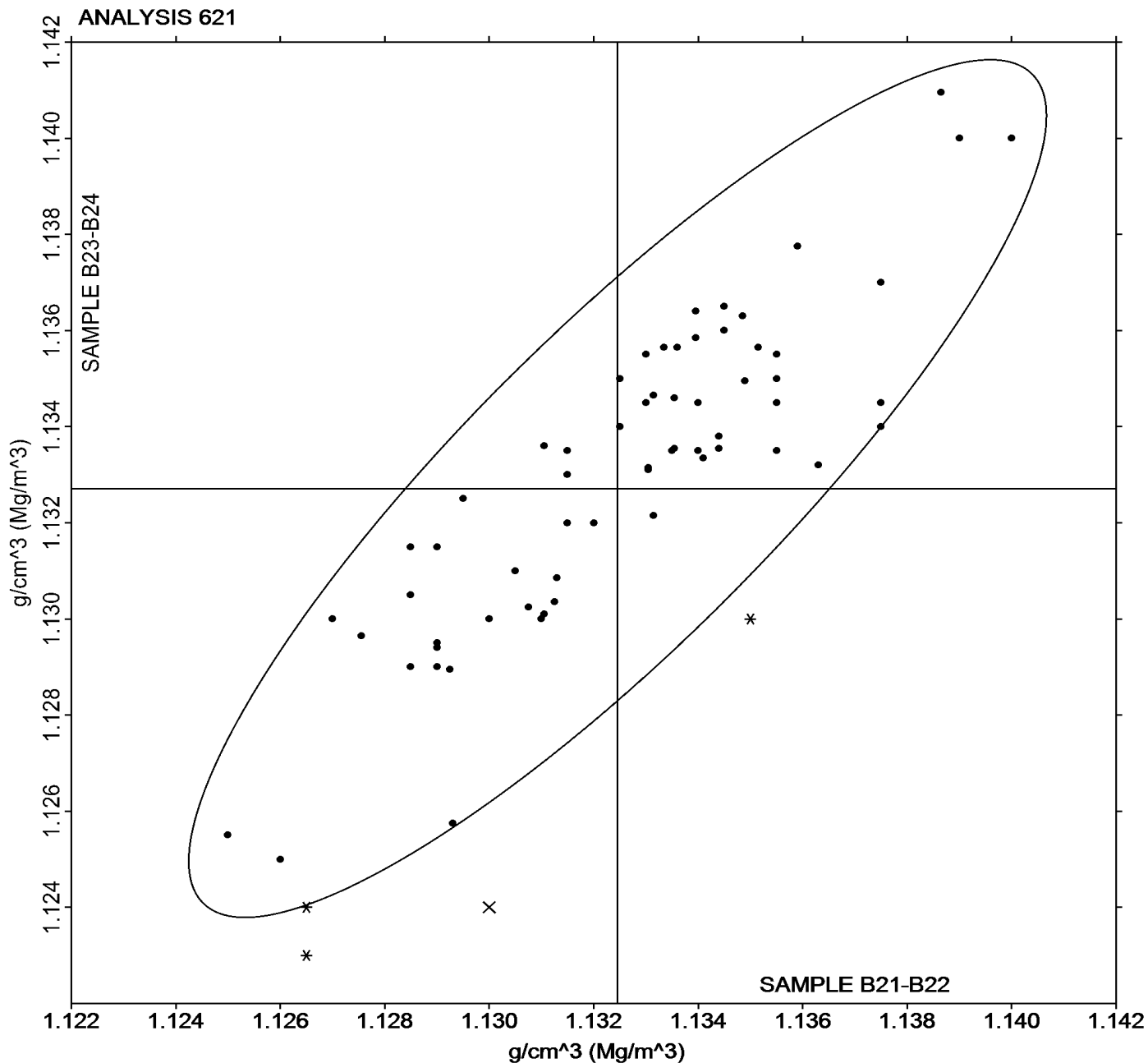
Analysis 621

2nd Qtr 2022

Density

Grand Mean Sample **B21-B22** = 1.1325 g/cm³
(Mg/m³)

Grand Mean Sample **B23-B24** = 1.1327 g/cm³
(Mg/m³)





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

Report #212
2nd Qtr 2022

WebCode	Data Flag	Sample HB21-HB22			Sample HB23-HB24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3GCM9C		73.25	-1.24	-0.53	81.35	-1.51	-0.82	BT
4G6T7H	X	98.15	23.66	10.01	98.30	15.44	8.39	HH
6HFURG		76.00	1.51	0.64	83.00	0.14	0.08	BT
6QPJ7F		73.45	-1.04	-0.44	82.70	-0.16	-0.09	BT
7PU8ZE		76.25	1.76	0.74	83.00	0.14	0.08	HH
EGAW8W		76.50	2.01	0.85	84.00	1.14	0.62	HH
EVTE3L		76.60	2.11	0.89	84.05	1.19	0.65	BT
EZN7D4		72.05	-2.44	-1.03	82.80	-0.06	-0.03	BT
HRJFDW		74.60	0.11	0.04	82.00	-0.86	-0.47	BT
HVHQAW		72.00	-2.49	-1.06	80.50	-2.36	-1.28	BT
KLMLD2		73.55	-0.94	-0.40	83.70	0.84	0.46	BT
LN68EM		71.50	-2.99	-1.27	80.00	-2.86	-1.55	HH
LR9XMN	X	93.55	19.06	8.07	93.55	10.69	5.81	BT
LUZW48		71.30	-3.19	-1.35	81.60	-1.26	-0.69	XX
M8ZXEM		77.00	2.51	1.06	84.50	1.64	0.89	HH
MAK4CP		73.25	-1.24	-0.53	82.85	-0.01	-0.01	XX
MN6JGA		74.50	0.01	0.00	82.50	-0.36	-0.20	XX
NAZR7P		72.70	-1.79	-0.76	81.75	-1.11	-0.60	BT
R863HD		75.00	0.51	0.21	83.50	0.64	0.35	BT
TWWMWJ		71.95	-2.54	-1.08	80.50	-2.36	-1.28	BT
TZCM6Q		77.90	3.41	1.44	83.95	1.09	0.59	HH
V6LKPH		75.50	1.01	0.43	84.50	1.64	0.89	BT
VDDV2Y		70.30	-4.19	-1.78	80.10	-2.76	-1.50	BT
VMHT4G		75.50	1.01	0.43	84.50	1.64	0.89	BT
X2YHYN		73.50	-0.99	-0.42	82.60	-0.26	-0.14	BT
X6XUVN	*	81.00	6.51	2.75	88.50	5.64	3.06	HH
MXRDK		76.30	1.81	0.76	83.95	1.09	0.59	HH
YPF7GK		74.50	0.01	0.00	84.50	1.64	0.89	BT
ZWDDFK	*	75.40	0.91	0.38	80.35	-2.51	-1.36	BT

Summary Statistics			
Grand Means	74.494	Type D	82.861
Std Dev Btwn Labs	2.362	Type D	1.841
Statistics based on 27 of 29 reporting participants			

Samples HB21-HB22: Hardness Disc, batch #1 & HB23-HB24: Hardness Disc, batch #2



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

Report #212
2nd Qtr 2022

Comments on Assigned Data Flags for Test #625

4G6T7H (X) - Data for all Samples are high.

LR9XMN (X) - Data for all samples are high.

Key to Instrument Codes Reported by Participants

BT Benchtop

HH Handheld

XX Specify Benchtop or Handheld Instrument

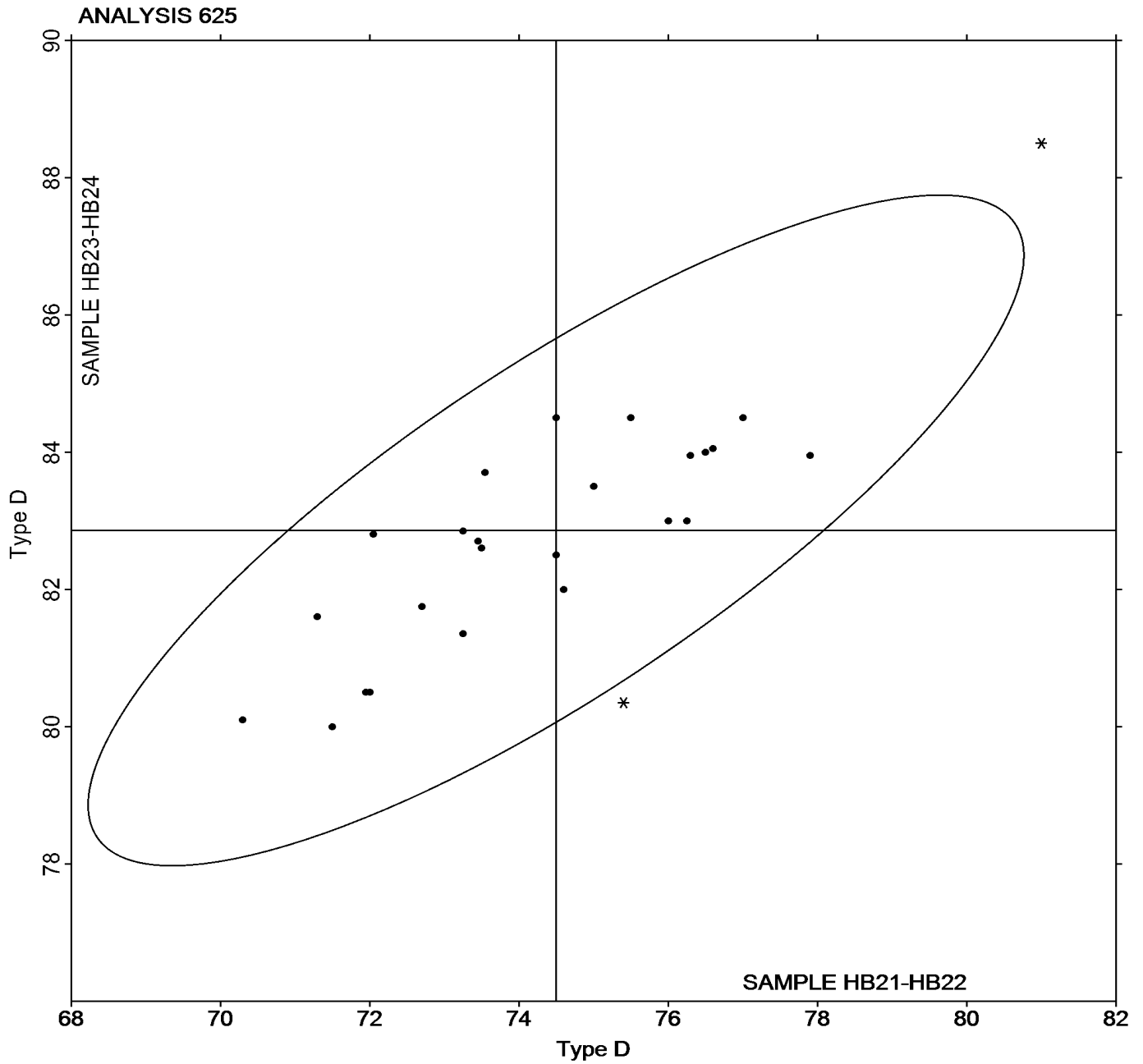


Rubber Interlaboratory Testing Program
Analysis 625
Hardness (Shore D/Type D)

Report #212
2nd Qtr 2022

Grand Mean Sample **HB21-HB22** = 74.494 Type D

Grand Mean Sample **HB23-HB24** = 82.861 Type D





Rubber Interlaboratory Testing Program

Report #212

Analysis 630

2nd Qtr 2022

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

WebCode	Data Flag	Sample B21-B22			Sample K21-K22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		3,218.1	72.3	0.54	3,156.9	52.8	0.26
4FF9GD		2,987.1	-158.7	-1.18	2,822.5	-281.6	-1.40
6QPJ7F		3,198.2	52.4	0.39	3,157.0	52.9	0.26
AGCTTE		3,049.3	-96.5	-0.72	3,114.4	10.3	0.05
AV7HMP		3,273.7	127.8	0.95	3,197.0	92.9	0.46
C9QJCV		3,284.5	138.7	1.03	3,010.0	-94.1	-0.47
CYFE6W		3,306.7	160.9	1.20	3,580.7	476.6	2.38
CZ9DD4		3,084.3	-61.6	-0.46	3,141.0	36.9	0.18
JNWB36		3,101.6	-44.3	-0.33	2,916.6	-187.5	-0.93
KL82QH		3,250.0	104.2	0.78	3,270.0	165.9	0.83
L9D8TF		3,316.5	170.7	1.27	3,214.5	110.4	0.55
LN68EM		3,422.0	276.2	2.06	3,302.5	198.4	0.99
LR9XMN		2,984.5	-161.3	-1.20	3,073.0	-31.1	-0.16
LUWAQZ		3,035.0	-110.8	-0.83	3,153.0	48.9	0.24
LZZBQU		3,221.4	75.5	0.56	3,300.0	195.9	0.98
NAZR7P		3,153.5	7.7	0.06	3,035.0	-69.1	-0.34
NFRRQC		3,118.0	-27.8	-0.21	2,951.0	-153.1	-0.76
PX4YHY		3,122.5	-23.3	-0.17	3,107.5	3.4	0.02
QFCPPT		3,140.0	-5.8	-0.04	3,125.0	20.9	0.10
TKHZWD	*	3,180.0	34.2	0.25	2,535.0	-569.1	-2.84
TUT3HE	*	2,800.0	-345.8	-2.58	3,060.0	-44.1	-0.22
U3KVA6		3,088.5	-57.3	-0.43	2,924.5	-179.6	-0.90
UJ7JGE		3,338.5	192.7	1.44	3,120.5	16.4	0.08
VXZ87J		3,179.3	33.4	0.25	2,707.9	-396.2	-1.98
WTNYXD		3,021.5	-124.3	-0.93	3,228.0	123.9	0.62
WUFYXA		2,953.0	-192.8	-1.44	3,108.5	4.4	0.02
YPF7GK		3,031.3	-114.5	-0.85	3,118.3	14.2	0.07
Z9RC88		3,205.4	59.5	0.44	3,234.4	130.3	0.65
ZG2W9H		3,164.7	18.9	0.14	3,354.1	250.0	1.25

Summary Statistics	
Grand Means	3,145.82 psi
Std Dev Btwn Labs	134.07 psi
	3,104.09 psi
	200.54 psi
Statistics based on 29 of 29 reporting participants	



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

Report #212
2nd Qtr 2022

		Summary Statistics in SI Units	
Grand Means	21.689 MPa	21.40	MPa
Std Dev Btwn Labs	0.924 MPa	1.38	MPa
Statistics based on 29 of 29 reporting participants			

Samples B21-B22: Polyisoprene compound, batch #1 & K21-K22: Polyisoprene compound, batch #1

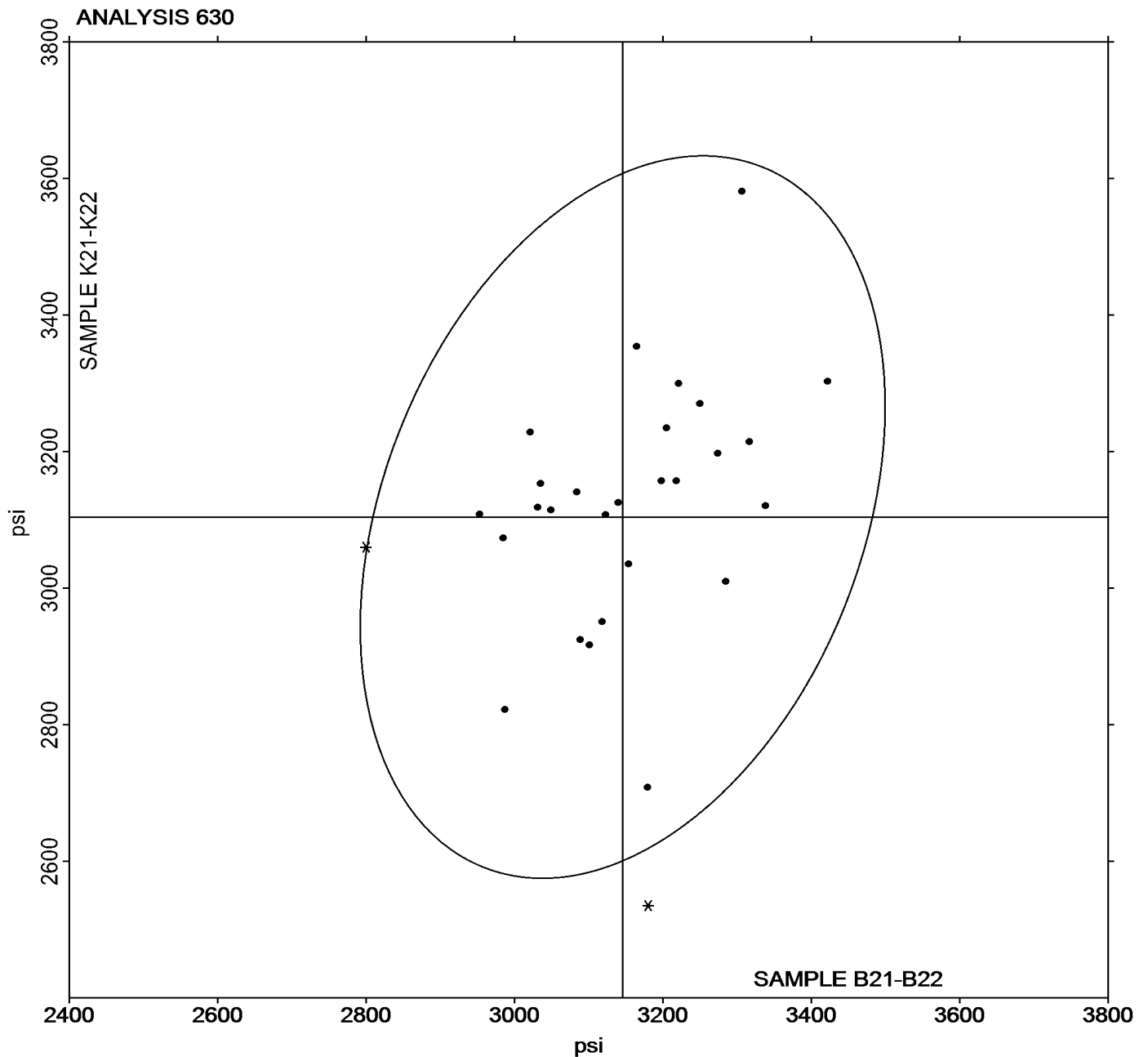


Rubber Interlaboratory Testing Program
Analysis 630
Tensile Strength: Precured vs. Lab-Cured Samples (psi)

Report #212
2nd Qtr 2022

Grand Mean Sample **B21-B22** = 3,145.82 psi

Grand Mean Sample **K21-K22** = 3,104.09 psi





Rubber Interlaboratory Testing Program

Report #212

Analysis 631

2nd Qtr 2022

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

WebCode	Data Flag	Sample B21-B22			Sample K21-K22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		623.1	-55.8	-1.87	563.1	-53.0	-1.79
4FF9GD		683.0	4.1	0.14	645.0	28.9	0.97
6QPJ7F		689.0	10.1	0.34	617.0	0.9	0.03
AGCTTE		655.5	-23.4	-0.79	602.0	-14.1	-0.48
AV7HMP		699.3	20.3	0.68	625.6	9.5	0.32
C9QJCV		636.0	-42.9	-1.44	579.5	-36.6	-1.24
CYFE6W		707.4	28.4	0.95	667.9	51.7	1.75
CZ9DD4		713.0	34.1	1.14	631.0	14.9	0.50
JNWB36		672.3	-6.6	-0.22	583.4	-32.7	-1.10
KL82QH	*	744.0	65.1	2.18	700.5	84.4	2.85
L9D8TF		706.0	27.1	0.91	625.5	9.4	0.32
LN68EM		661.5	-17.4	-0.58	585.0	-31.1	-1.05
LR9XMN		665.0	-13.9	-0.47	619.5	3.4	0.11
LUWAQZ		677.5	-1.4	-0.05	619.5	3.4	0.11
LZZBQU		653.7	-25.2	-0.85	610.6	-5.5	-0.19
NAZR7P		726.0	47.1	1.58	629.0	12.9	0.43
NFRRQC		655.5	-23.4	-0.79	588.0	-28.1	-0.95
PX4YHY		684.0	5.1	0.17	633.0	16.9	0.57
QFCPPT		656.5	-22.4	-0.75	597.0	-19.1	-0.65
TKHZWD		681.5	2.6	0.09	587.0	-29.1	-0.98
TUT3HE		691.5	12.6	0.42	656.0	39.9	1.35
U3KVA6		672.5	-6.4	-0.22	590.5	-25.6	-0.87
UJ7JGE		646.0	-32.9	-1.10	616.0	-0.1	0.00
VXZ87J		719.2	40.2	1.35	629.2	13.0	0.44
WTNYXD		665.0	-13.9	-0.47	603.0	-13.1	-0.44
WUFYXA		635.0	-43.9	-1.47	584.5	-31.6	-1.07
YPF7GK		661.1	-17.9	-0.60	614.4	-1.7	-0.06
Z9RC88		724.5	45.6	1.53	648.5	32.4	1.09
ZG2W9H		685.0	6.1	0.20	617.0	0.9	0.03

Summary Statistics	
Grand Means	678.95 percent
Std Dev Btwn Labs	29.83 percent
	616.14 percent
	29.62 percent
Statistics based on 29 of 29 reporting participants	

Samples B21-B22: Polyisoprene compound, batch #1 & K21-K22: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Report #212

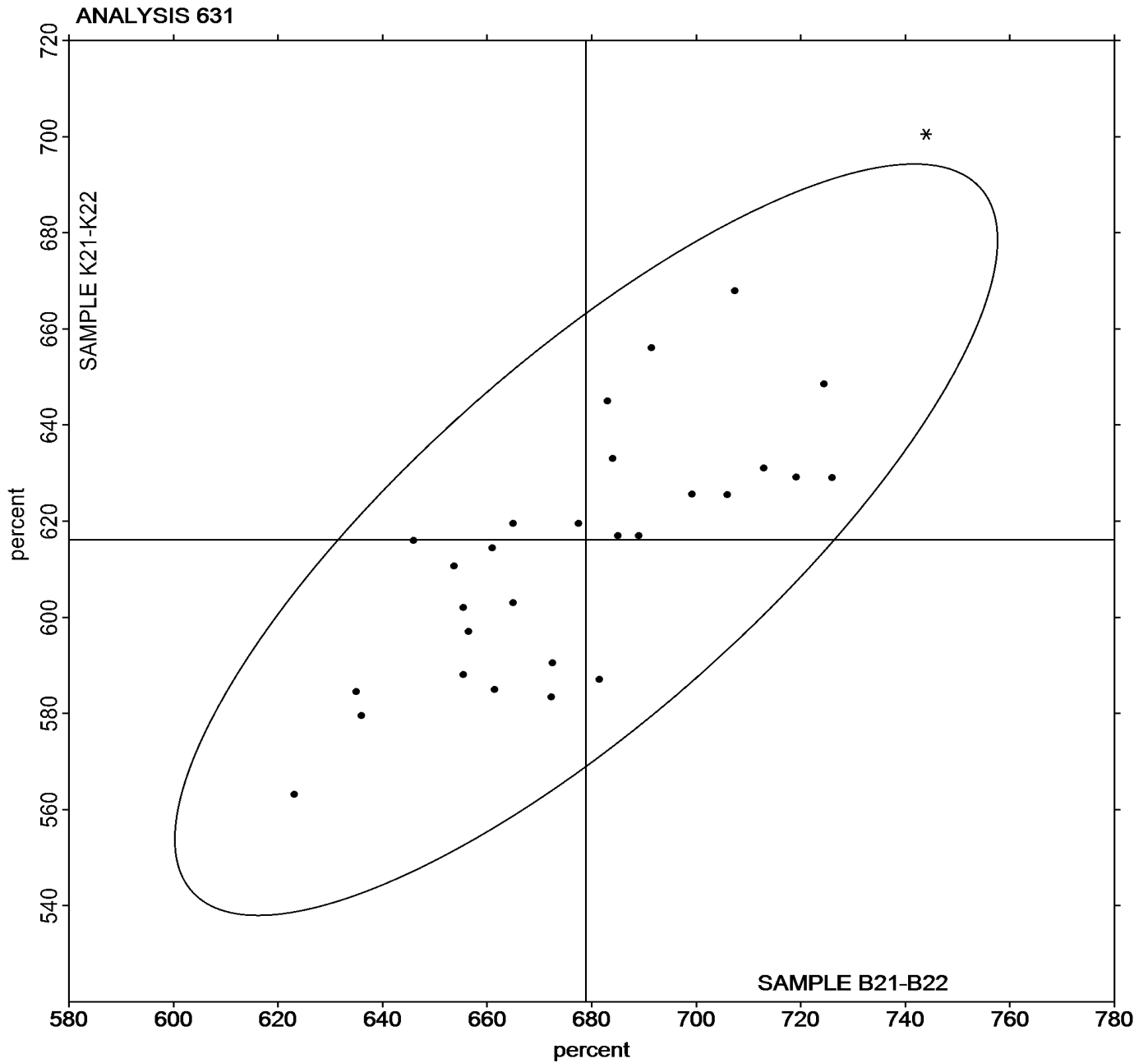
Analysis 631

2nd Qtr 2022

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

Grand Mean Sample B21-B22 = 678.95 percent

Grand Mean Sample K21-K22 = 616.14 percent





Rubber Interlaboratory Testing Program

Report #212

Analysis 632

2nd Qtr 2022

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

WebCode	Data Flag	Sample B21-B22			Sample K21-K22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		805.5	128.6	1.86	1,072.9	173.4	1.88
4FF9GD		668.6	-8.2	-0.12	783.9	-115.5	-1.25
6QPJ7F		642.6	-34.3	-0.50	912.1	12.6	0.14
AGCTTE		648.0	-28.9	-0.42	906.5	7.0	0.08
AV7HMP		629.8	-47.0	-0.68	885.9	-13.6	-0.15
C9QJCV		744.5	67.6	0.98	866.0	-33.5	-0.36
CYFE6W		679.8	2.9	0.04	993.3	93.8	1.02
CZ9DD4		602.1	-74.7	-1.08	883.6	-15.9	-0.17
JNWB36		693.0	16.2	0.23	892.1	-7.4	-0.08
KL82QH		580.0	-96.9	-1.40	761.0	-138.5	-1.50
L9D8TF		630.0	-46.9	-0.68	909.0	9.5	0.10
LN68EM	*	829.5	152.6	2.21	1,138.0	238.5	2.58
LR9XMN		619.5	-57.4	-0.83	841.0	-58.5	-0.63
LUWAQZ	*	871.0	194.1	2.81	983.0	83.5	0.90
LZZBQU		738.6	61.7	0.89	965.7	66.2	0.72
NAZR7P		593.5	-83.4	-1.21	805.5	-94.0	-1.02
NFRRQC		726.0	49.1	0.71	879.5	-20.0	-0.22
PX4YHY		644.5	-32.4	-0.47	769.0	-130.5	-1.41
QFCPPT		683.5	6.6	0.10	972.0	72.5	0.79
TKHZWD		661.4	-15.5	-0.22	737.0	-162.5	-1.76
TUT3HE		632.5	-44.4	-0.64	905.0	5.5	0.06
U3KVA6		685.9	9.0	0.13	923.0	23.5	0.25
UJ7JGE		706.5	29.6	0.43	839.0	-60.5	-0.65
VXZ87J		604.1	-72.8	-1.05	763.6	-135.8	-1.47
WTNYXD		628.5	-48.4	-0.70	969.5	70.0	0.76
WUFYXA		694.5	17.6	0.26	983.0	83.5	0.90
YPF7GK		678.8	1.9	0.03	900.0	0.5	0.01
Z9RC88		661.4	-15.5	-0.22	907.2	7.8	0.08
ZG2W9H		645.2	-31.7	-0.46	937.4	37.9	0.41

Summary Statistics	
Grand Means	676.85 psi 899.46 psi
Std Dev Btwn Labs	69.11 psi 92.38 psi
Statistics based on 29 of 29 reporting participants	



Rubber Interlaboratory Testing Program

Report #212

Analysis 632

2nd Qtr 2022

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

Summary Statistics in SI Units

Grand Means

4.6667 MPa

6.20 MPa

Std Dev Btwn Labs

0.4765 MPa

0.64 MPa

Statistics based on 29 of 29 reporting participants

Samples B21-B22: Polyisoprene compound, batch #1 & K21-K22: Polyisoprene compound, batch #1



Rubber Interlaboratory Testing Program

Analysis 632

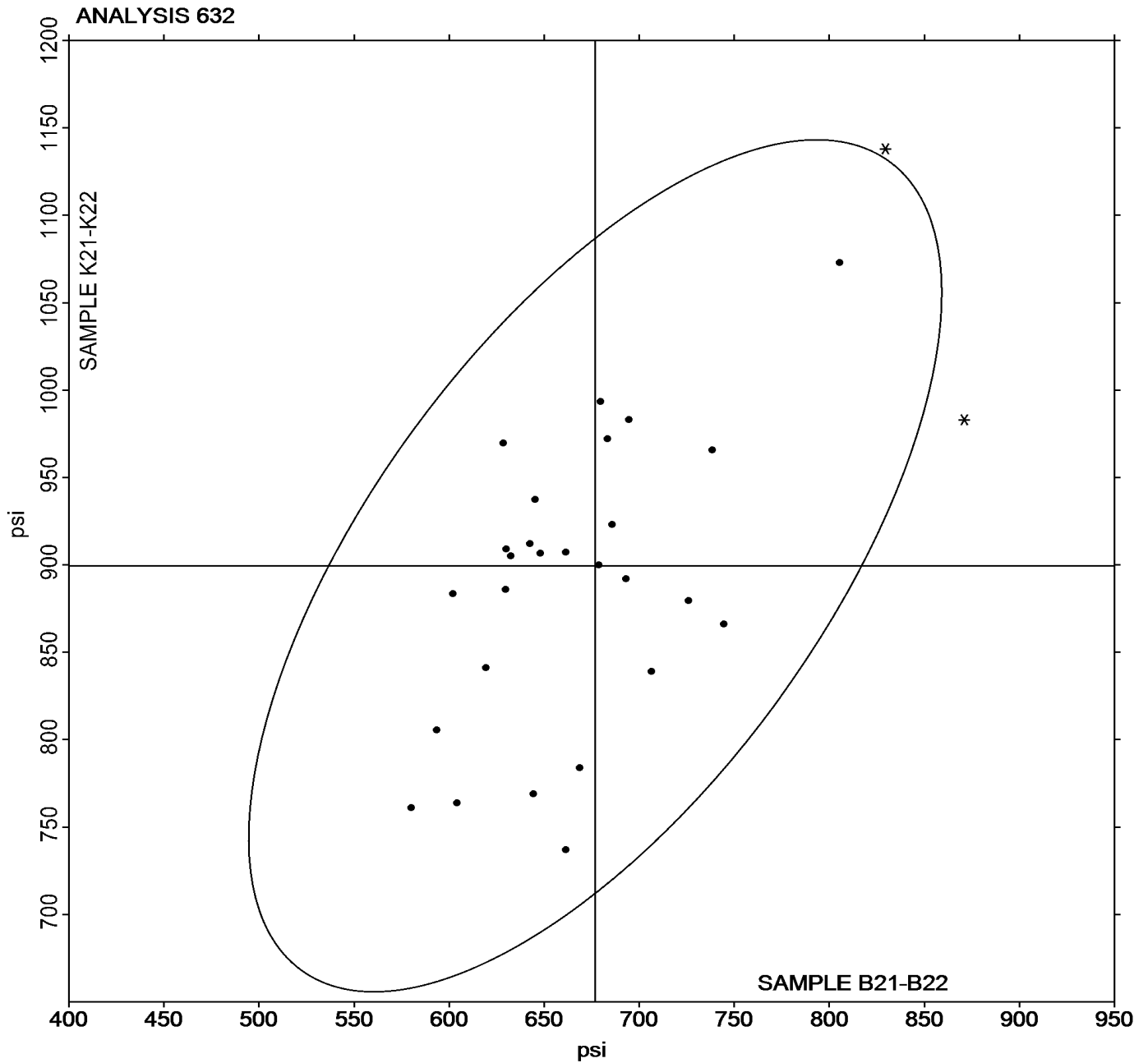
Report #212

2nd Qtr 2022

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

Grand Mean Sample B21-B22 = 676.85 psi

Grand Mean Sample K21-K22 = 899.46 psi





Rubber Interlaboratory Testing Program

Report #212

Analysis 633

2nd Qtr 2022

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

WebCode	Data Flag	Sample B21-B22			Sample K21-K22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		162.1	5.8	0.58	213.8	11.3	0.66
4FF9GD		166.8	10.5	1.05	188.6	-13.9	-0.82
6QPJ7F		155.4	-0.9	-0.09	208.6	6.2	0.36
AGCTTE		154.5	-1.8	-0.18	209.5	7.1	0.41
AV7HMP		148.8	-7.5	-0.75	202.3	-0.2	-0.01
C9QJCV	*	181.5	25.2	2.52	198.5	-3.9	-0.23
CYFE6W		163.7	7.4	0.74	220.2	17.8	1.04
CZ9DD4		156.1	-0.2	-0.02	216.5	14.1	0.83
JNWB36		158.9	2.6	0.26	196.4	-6.1	-0.36
KL82QH		152.0	-4.3	-0.43	194.5	-7.9	-0.47
L9D8TF		151.0	-5.3	-0.53	198.5	-3.9	-0.23
LN68EM	X	276.5	120.2	12.01	336.0	133.6	7.83
LR9XMN		147.5	-8.8	-0.88	195.0	-7.4	-0.44
LUWAQZ	X	203.5	47.2	4.72	251.0	48.6	2.85
LZZBQU		171.3	15.0	1.50	224.0	21.6	1.26
NAZR7P		139.5	-16.8	-1.68	185.5	-16.9	-0.99
NFRRQC		168.0	11.7	1.17	202.0	-0.4	-0.03
PX4YHY		152.5	-3.8	-0.38	182.0	-20.4	-1.20
QFCPPT		150.0	-6.3	-0.63	216.0	13.6	0.79
TKHZWD		156.7	0.4	0.04	170.9	-31.6	-1.85
TUT3HE		166.0	9.7	0.97	240.0	37.6	2.20
U3KVA6		165.0	8.7	0.87	209.5	7.1	0.41
UJ7JGE		163.5	7.2	0.72	190.5	-11.9	-0.70
VXZ87J	*	136.3	-19.9	-1.99	158.1	-44.4	-2.60
WTNYXD		144.0	-12.3	-1.23	217.0	14.6	0.85
WUFYXA		157.5	1.2	0.12	218.5	16.1	0.94
YPF7GK		152.3	-4.0	-0.40	198.0	-4.5	-0.26
Z9RC88		149.4	-6.9	-0.69	203.8	1.3	0.08
ZG2W9H		149.4	-6.9	-0.69	208.1	5.7	0.33

Summary Statistics	
Grand Means	156.28 psi 202.45 psi
Std Dev Btwn Labs	10.01 psi 17.05 psi
Statistics based on 27 of 29 reporting participants	



Rubber Interlaboratory Testing Program

Report #212

Analysis 633

2nd Qtr 2022

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

		Summary Statistics in SI Units	
Grand Means	1.0775 MPa	1.40	MPa
Stnd Dev Btwn Labs	0.0690 MPa	0.12	MPa
Statistics based on 27 of 29 reporting participants			

Samples B21-B22: Polyisoprene compound, batch #1 & K21-K22: Polyisoprene compound, batch #1

Comments on Assigned Data Flags for Test #633

LN68EM (X) - Data for all Samples are high.

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



Rubber Interlaboratory Testing Program

Report #212

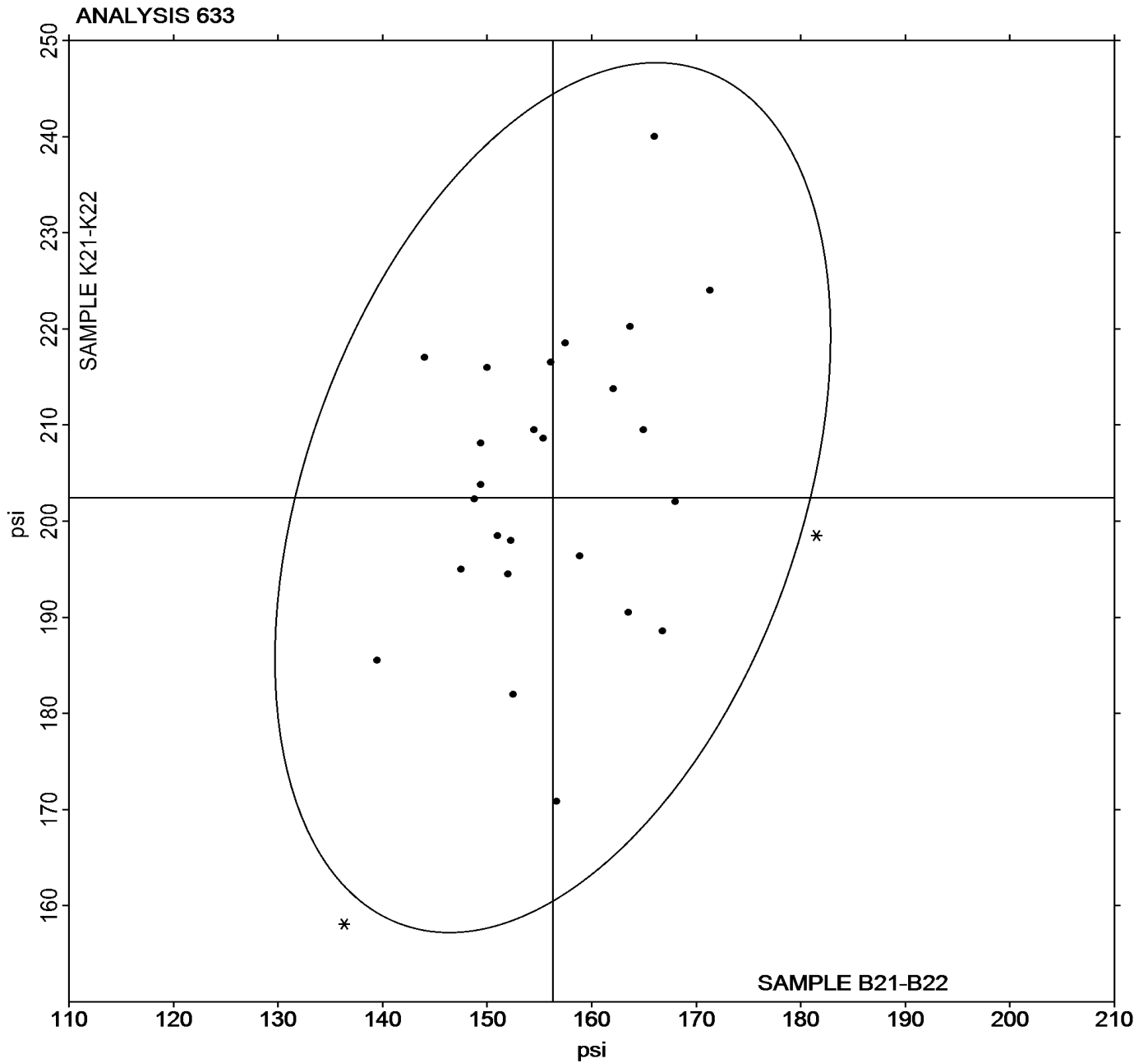
Analysis 633

2nd Qtr 2022

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

Grand Mean Sample **B21-B22** = 156.28 psi

Grand Mean Sample **K21-K22** = 202.45 psi





Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #212
2nd Qtr 2022

WebCode	Data Flag	Sample O21			Sample O22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		28.58	-1.98	-0.47	27.94	-2.55	-0.53
3JYYBN		30.00	-0.56	-0.13	30.67	0.17	0.04
3ZLLD7		24.67	-5.89	-1.40	21.33	-9.16	-1.91
69VNTR		28.67	-1.89	-0.45	29.67	-0.83	-0.17
6QPJ7F		32.10	1.54	0.37	32.99	2.50	0.52
9B3AW8	X	47.00	16.44	3.90	45.00	14.51	3.03
9X2JDM		31.33	0.78	0.18	29.67	-0.83	-0.17
AGCTTE		29.78	-0.78	-0.18	31.26	0.77	0.16
BG66P7		27.47	-3.09	-0.73	29.93	-0.56	-0.12
DECU6Q		29.67	-0.89	-0.21	29.63	-0.86	-0.18
DX6RA4		32.33	1.78	0.42	36.33	5.84	1.22
HRJFDW	*	42.33	11.78	2.79	42.33	11.84	2.47
KL82QH		25.00	-5.56	-1.32	27.00	-3.49	-0.73
LN68EM		33.00	2.44	0.58	34.50	4.01	0.84
LR9XMN		26.00	-4.56	-1.08	21.67	-8.83	-1.84
LUWAQZ		35.87	5.31	1.26	36.60	6.11	1.27
LUZW48		31.60	1.04	0.25	30.65	0.16	0.03
LZZBQU		29.23	-1.32	-0.31	31.30	0.81	0.17
MTFFJX		25.33	-5.22	-1.24	23.67	-6.83	-1.43
NAZR7P		28.67	-1.89	-0.45	26.67	-3.83	-0.80
NDZW3H		30.94	0.38	0.09	28.79	-1.70	-0.36
PX4YHY		28.67	-1.89	-0.45	28.33	-2.16	-0.45
Q7QG8Q		28.10	-2.46	-0.58	26.33	-4.16	-0.87
QT4CYU		27.00	-3.56	-0.84	26.67	-3.83	-0.80
R863HD		33.00	2.44	0.58	33.00	2.51	0.52
RG8KTG	*	43.43	12.88	3.05	41.30	10.81	2.26
RL2HGL		27.33	-3.22	-0.76	28.00	-2.49	-0.52
U3KVA6		33.00	2.44	0.58	36.23	5.74	1.20
UAKCMV		26.32	-4.24	-1.00	28.33	-2.17	-0.45
UJ7JGE		36.97	6.41	1.52	38.87	8.38	1.75
UZCMZK		30.00	-0.56	-0.13	29.93	-0.56	-0.12
WQHECY		31.33	0.78	0.18	33.00	2.51	0.52
WTNYXD		28.37	-2.19	-0.52	27.63	-2.86	-0.60
XXR8YE		29.00	-1.56	-0.37	29.33	-1.16	-0.24
XYQ83K		30.73	0.18	0.04	27.73	-2.76	-0.58
XZKVLG		33.67	3.11	0.74	30.00	-0.49	-0.10



Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #212
2nd Qtr 2022

		Summary Statistics	
Grand Means	30.556 % Compression		30.495 % Compression
Std Dev Btwn Labs	4.219 % Compression		4.790 % Compression
Statistics based on 35 of 36 reporting participants			

Samples O21: EPDM compound, batch #1 & O22: EPDM compound, batch #1

Comments on Assigned Data Flags for Test #635

9B3AW8 (X) - Data for all samples are high. Possible Systematic Error.

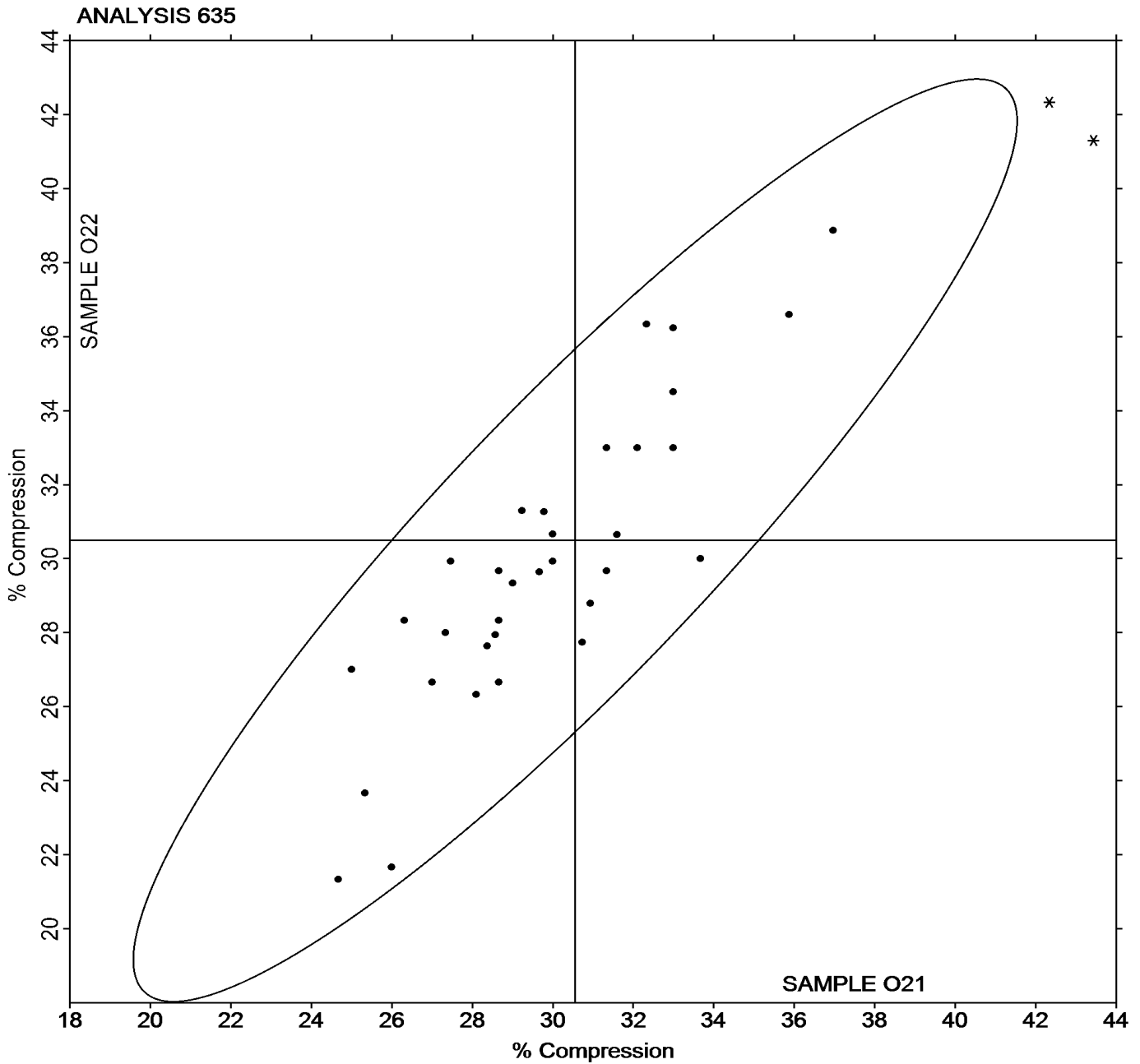


Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #212
2nd Qtr 2022

Grand Mean Sample O21 = 30.556 % Compression

Grand Mean Sample O22 = 30.495 % Compression





Rubber Interlaboratory Testing Program

Report #212

Analysis 660

2nd Qtr 2022

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

WebCode	Data Flag	Sample T21-T22			Sample T23-T24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		44.84	-0.13	-0.12	52.85	-0.13	-0.15	MV
46VZU6		45.50	0.53	0.48	52.83	-0.15	-0.17	MV
4FF9GD		44.57	-0.40	-0.36	52.85	-0.13	-0.15	MV
69VNTR		45.79	0.82	0.75	53.45	0.47	0.52	MR
6APCCM		45.07	0.10	0.09	53.63	0.65	0.73	MR
7MMP44	X	45.42	0.45	0.41	55.66	2.67	2.99	TA
AGCTTE		45.10	0.13	0.12	54.07	1.09	1.21	ML
AUYZQF		45.65	0.68	0.62	53.78	0.80	0.89	MR
AV7HMP		44.85	-0.12	-0.11	52.65	-0.33	-0.37	MR
C9QJCV		45.91	0.94	0.86	53.22	0.23	0.26	MR
CYFE6W		44.75	-0.22	-0.20	52.89	-0.10	-0.11	MV
CZ9DD4		45.78	0.81	0.73	53.41	0.42	0.47	XX
GEYQKM		43.45	-1.52	-1.38	52.45	-0.53	-0.60	MR
H68HU4		45.77	0.80	0.73	53.37	0.38	0.43	MV
HLVLK7		44.00	-0.97	-0.88	53.33	0.35	0.39	MR
KL82QH		44.40	-0.57	-0.51	51.37	-1.62	-1.81	MR
L9D8TF		46.67	1.70	1.54	53.64	0.65	0.73	MR
LR9XMN		43.13	-1.83	-1.66	51.75	-1.23	-1.38	MM
LZZBQU		43.40	-1.56	-1.42	51.65	-1.33	-1.49	MR
NAZR7P		43.55	-1.42	-1.29	52.70	-0.28	-0.32	ML
NBAUYF		44.35	-0.62	-0.56	52.68	-0.30	-0.34	MR
NFRRQC		44.42	-0.55	-0.50	53.38	0.40	0.45	MR
PVFP7C		43.63	-1.34	-1.22	51.74	-1.25	-1.39	MR
QFXYZH		46.38	1.42	1.28	53.02	0.03	0.04	MR
QT4CYU		44.82	-0.15	-0.14	52.40	-0.58	-0.65	MR
TKHZWD		43.00	-1.97	-1.79	51.62	-1.37	-1.53	MV
TUT3HE	*	47.40	2.44	2.21	55.35	2.36	2.64	MZ
UJ7JGE		44.45	-0.52	-0.47	52.12	-0.87	-0.97	MP
UQMY6H		46.87	1.90	1.72	54.43	1.45	1.62	MR
WTNYXD		45.98	1.01	0.92	53.95	0.96	1.08	MV
WUFYXA		44.05	-0.92	-0.83	52.12	-0.87	-0.97	XX
XYQ83K		46.49	1.52	1.38	54.27	1.29	1.44	MR
YPEF9G		45.13	0.17	0.15	52.38	-0.60	-0.67	MR
YPF7GK		44.62	-0.35	-0.32	52.20	-0.78	-0.87	MR
Z9RC88		44.48	-0.48	-0.44	53.10	0.12	0.13	MR
ZG2W9H		45.63	0.67	0.60	53.78	0.80	0.89	MR



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

Report #212
2nd Qtr 2022

		Summary Statistics	
Grand Means	44.967 ML 1 + 4	52.984 ML 1 + 4	
Stnd Dev Btwn Labs	1.103 ML 1 + 4	0.896 ML 1 + 4	
Statistics based on 35 of 36 reporting participants			

Samples T21-T22: NBR & T23-T24: Butyl

Comments on Assigned Data Flags for Test #660

7MMP44 (X) - Data for sample group T23-T24 are high. Inconsistent within the determinations of both sample groups.

Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MM	Alpha Technologies Model 1xxx or OSM
MP	Monsanto Compact Mooney Viscometer	MR	Alpha Technologies Model MV2000/MV2000E
MV	MonTech	MZ	Rebuilt Monsanto Mooney Viscometer
TA	TA Instruments (any model)	XX	Instrument make/model not specified by lab

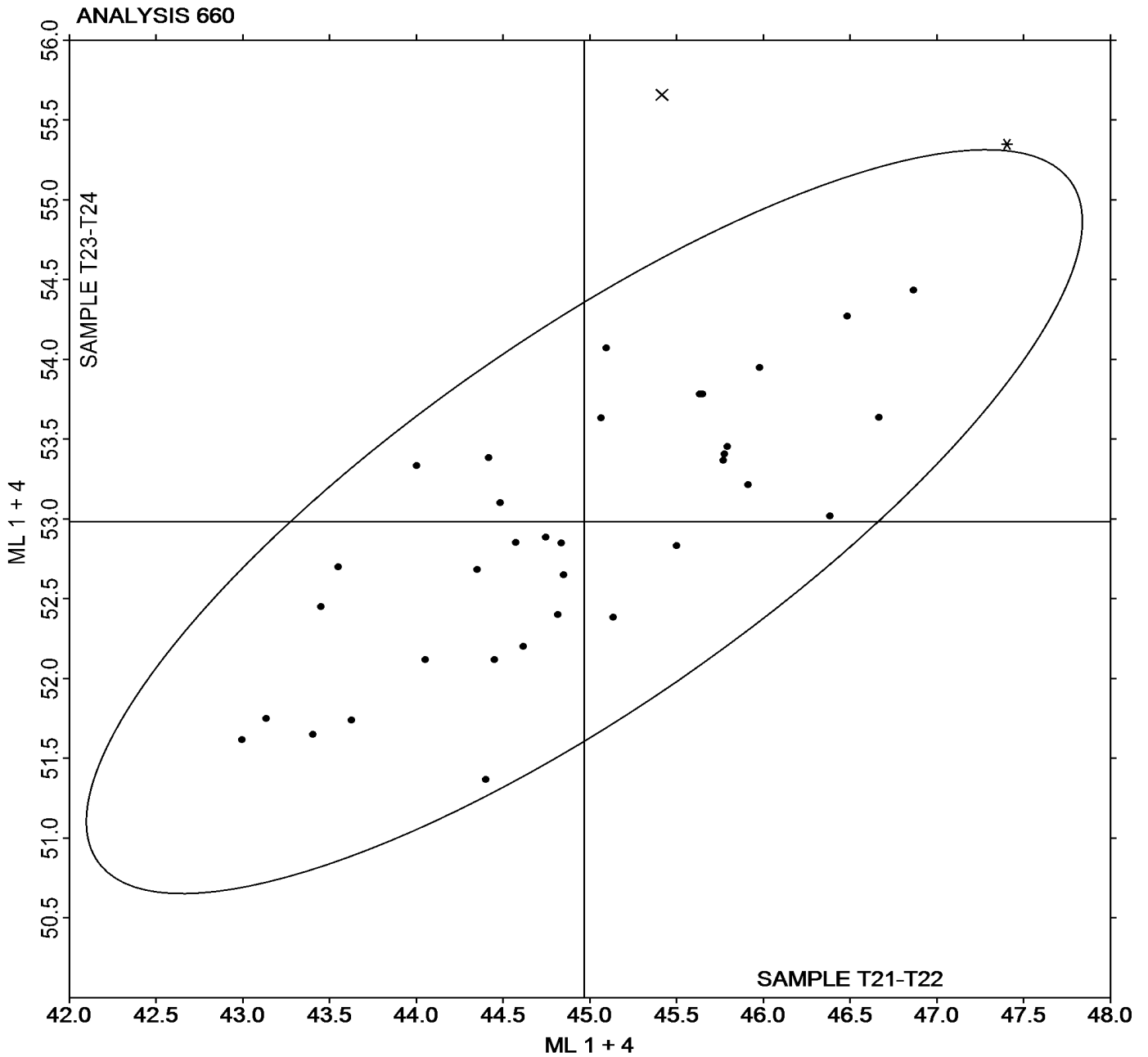


Rubber Interlaboratory Testing Program
Analysis 660
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #212
2nd Qtr 2022

Grand Mean Sample **T21-T22** = 44.967 ML 1 + 4

Grand Mean Sample **T23-T24** = 52.984 ML 1 + 4





Rubber Interlaboratory Testing Program

Report #212

Analysis 661

2nd Qtr 2022

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

WebCode	Data Flag	Sample T21-T22			Sample T23-T24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		44.84	-0.17	-0.15	51.41	0.71	0.69	MV
46VZU6		45.50	0.50	0.44	51.06	0.36	0.35	MV
4FF9GD		44.57	-0.43	-0.38	50.94	0.24	0.23	MV
69VNTR		45.79	0.79	0.70	50.98	0.28	0.27	MR
7MMP44		45.42	0.41	0.37	52.24	1.54	1.50	TA
AGCTTE		45.10	0.09	0.08	51.63	0.93	0.91	ML
AUYZQF		45.65	0.65	0.58	51.18	0.48	0.47	MR
AV7HMP		44.85	-0.15	-0.14	49.58	-1.12	-1.09	MR
C9QJCV		45.91	0.91	0.81	50.93	0.23	0.23	MR
CYFE6W		44.75	-0.26	-0.23	50.37	-0.33	-0.32	MV
CZ9DD4		45.78	0.77	0.69	50.20	-0.50	-0.49	XX
GEYQKM		43.45	-1.55	-1.38	49.87	-0.83	-0.80	MR
H68HU4		45.77	0.77	0.68	51.61	0.91	0.89	MV
KL82QH		44.40	-0.60	-0.54	49.02	-1.68	-1.64	MR
L9D8TF		46.67	1.66	1.48	50.90	0.20	0.19	MR
LR9XMN	*	43.13	-1.87	-1.66	51.78	1.08	1.06	MR
LZZBQU		43.40	-1.60	-1.42	49.62	-1.08	-1.05	MR
NAZR7P		43.55	-1.45	-1.29	50.23	-0.47	-0.45	ML
NBAUYF		44.35	-0.65	-0.58	49.88	-0.82	-0.80	MR
NFRRQC		44.42	-0.59	-0.52	51.15	0.45	0.44	MR
PVFP7C		43.63	-1.38	-1.22	49.59	-1.11	-1.08	MR
QFXYZH		46.38	1.38	1.23	50.58	-0.12	-0.11	MR
QT4CYU		44.82	-0.19	-0.16	49.95	-0.75	-0.73	MR
TKHZWD		43.00	-2.01	-1.78	49.94	-0.76	-0.74	MV
TUT3HE		47.40	2.40	2.13	52.73	2.03	1.98	MZ
UJ7JGE		44.45	-0.55	-0.49	48.62	-2.08	-2.03	MP
UQMY6H		46.87	1.86	1.66	52.70	2.00	1.95	MR
WTNYXD		45.98	0.98	0.87	51.58	0.88	0.86	MV
WUFYXA		44.05	-0.95	-0.85	49.27	-1.43	-1.40	XX
XYQ83K		46.49	1.48	1.32	51.66	0.96	0.94	MR
YPF7GK		44.62	-0.39	-0.34	49.92	-0.78	-0.76	MR
Z9RC88		44.48	-0.52	-0.46	50.43	-0.27	-0.26	MR
ZG2W9H		45.63	0.63	0.56	51.53	0.83	0.81	MR



Rubber Interlaboratory Testing Program

Report #212

Analysis 661

2nd Qtr 2022

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

		Summary Statistics	
Grand Means	45.002 ML 1 + 8	50.700 ML 1 + 8	
Stnd Dev Btwn Labs	1.126 ML 1 + 8	1.027 ML 1 + 8	
Statistics based on 33 of 33 reporting participants			

Samples T21-T22: NBR & T23-T24: 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 #212

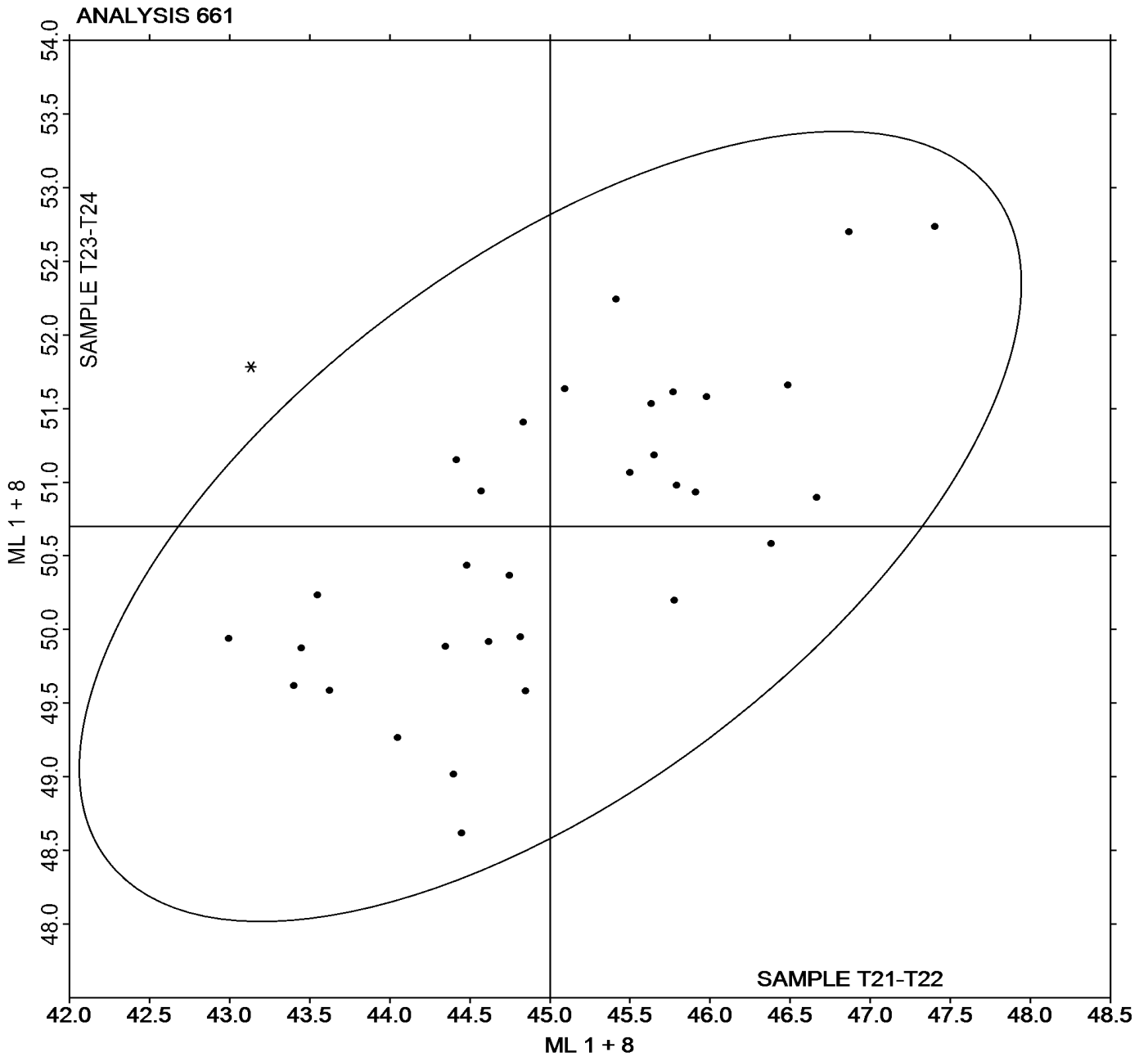
Analysis 661

2nd Qtr 2022

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

Grand Mean Sample T21-T22 = 45.002 ML 1 + 8

Grand Mean Sample T23-T24 = 50.700 ML 1 + 8





Rubber Interlaboratory Testing Program

Report #212

Analysis 662

2nd Qtr 2022

Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample T21-T22			Sample T23-T24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
46VZU6		4.000	-0.909	-0.79	5.400	-0.481	-0.62	MV
4FF9GD		4.800	-0.109	-0.09	6.000	0.119	0.15	MV
69VNTR	X	18.443	13.535	11.70	10.210	4.329	5.59	MR
AGCTTE		5.448	0.539	0.47	6.416	0.534	0.69	ML
AV7HMP		5.630	0.721	0.62	6.005	0.124	0.16	MR
C9QJCV		5.382	0.473	0.41	6.068	0.187	0.24	MR
CYFE6W		5.098	0.190	0.16	5.112	-0.770	-0.99	MV
CZ9DD4		5.167	0.258	0.22	7.000	1.119	1.44	XX
H68HU4		1.830	-3.079	-2.66	3.917	-1.965	-2.54	MV
HLVLK7		5.400	0.491	0.42	6.800	0.919	1.19	MR
LZZBQU		5.248	0.340	0.29	6.117	0.235	0.30	MR
NAZR7P		4.290	-0.619	-0.53	5.327	-0.555	-0.72	ML
NBAUYF		5.867	0.958	0.83	6.767	0.885	1.14	MR
NFRRQC		5.177	0.268	0.23	5.888	0.007	0.01	MR
QFXYZH		6.673	1.765	1.53	6.693	0.812	1.05	MR
TKHZWD	X	542.767	537.858	464.95	545.200	539.319	696.41	MV
TUT3HE		2.433	-2.475	-2.14	4.700	-1.181	-1.53	MZ
WTNYXD		4.267	-0.642	-0.56	5.300	-0.581	-0.75	MV
WUFYXA		5.817	0.908	0.78	6.117	0.235	0.30	XX
YPF7GK		5.340	0.431	0.37	6.120	0.239	0.31	MR
Z9RC88		5.400	0.491	0.42	6.000	0.119	0.15	MR

Grand Means		Summary Statistics	
	4.9088 seconds		5.8814 seconds
Std Dev Btwn Labs	1.1568 seconds		0.7744 seconds
Statistics based on 19 of 21 reporting participants			

Samples T21-T22: NBR & T23-T24: Butyl

Comments on Assigned Data Flags for Test #662

69VNTR (X) - Extreme Data for sample group T21-T22. Data for sample group T23-T24 are high.

TKHZWD (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		

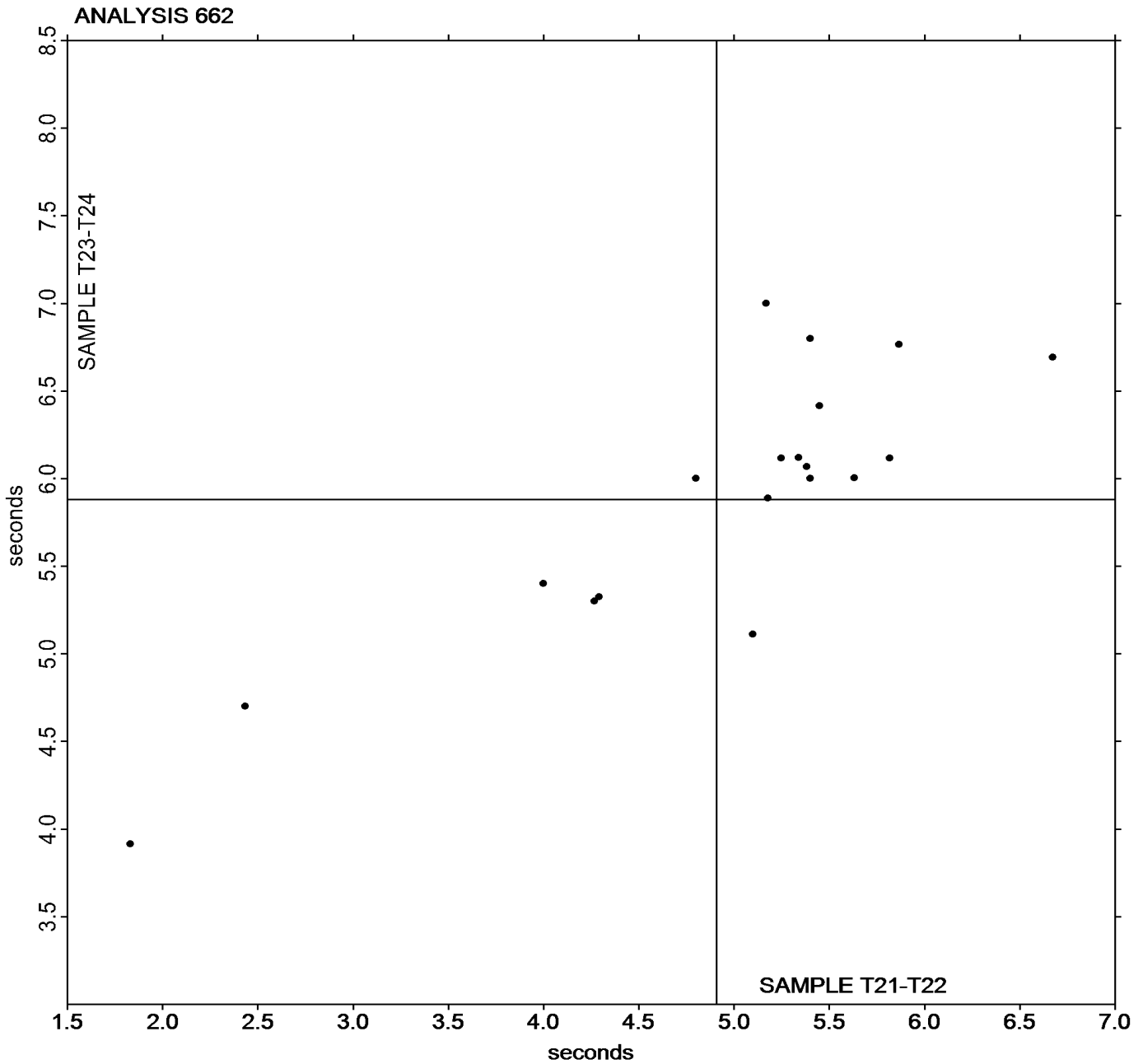


Rubber Interlaboratory Testing Program
Analysis 662
Mooney Stress Relaxation: t80 (seconds)

Report #212
2nd Qtr 2022

Grand Mean Sample **T21-T22** = 4.9088 seconds

Grand Mean Sample **T23-T24** = 5.8814 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 #212

Analysis 663

2nd Qtr 2022

Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample T21-T22			Sample T23-T24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
46VZU6		93.17	1.54	0.48	95.52	1.06	0.57	MV
4FF9GD		92.00	0.37	0.11	94.67	0.21	0.12	MV
69VNTR	*	84.24	-7.39	-2.29	91.74	-2.71	-1.46	MR
AGCTTE		90.44	-1.19	-0.37	93.18	-1.27	-0.69	ML
AV7HMP		90.67	-0.96	-0.30	94.46	0.01	0.00	MR
C9QJCV		90.71	-0.92	-0.28	94.07	-0.39	-0.21	MR
CYFE6W		89.25	-2.38	-0.74	92.23	-2.23	-1.20	MV
CZ9DD4		90.94	-0.70	-0.22	93.74	-0.71	-0.38	XX
H68HU4	*	99.98	8.35	2.58	99.81	5.36	2.89	MV
LZZBQU		90.92	-0.72	-0.22	93.95	-0.50	-0.27	MR
NAZR7P		92.89	1.25	0.39	96.11	1.66	0.90	ML
NBAUYF		90.32	-1.32	-0.41	93.03	-1.42	-0.77	MR
NFRRQC		90.50	-1.13	-0.35	93.91	-0.54	-0.29	MR
QFXYZH		88.57	-3.07	-0.95	92.32	-2.13	-1.15	MR
TKHZWD		96.60	4.97	1.54	96.65	2.20	1.19	MV
TUT3HE		95.11	3.47	1.07	95.78	1.33	0.72	MZ
WTNYXD		92.24	0.61	0.19	95.19	0.74	0.40	MV
WUFYXA		91.38	-0.25	-0.08	93.95	-0.50	-0.27	XX
YPF7GK		91.11	-0.52	-0.16	94.29	-0.16	-0.09	MR
Z9RC88	X	965.18	873.55	270.18	638.76	544.31	293.88	MR

Grand Means		Summary Statistics	
	91.634 percent		94.453 percent
Std Dev Btwn Labs	3.233 percent		1.852 percent
Statistics based on 19 of 20 reporting participants			

Samples T21-T22: NBR & T23-T24: Butyl

Comments on Assigned Data Flags for Test #663

Z9RC88 (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

Report #212

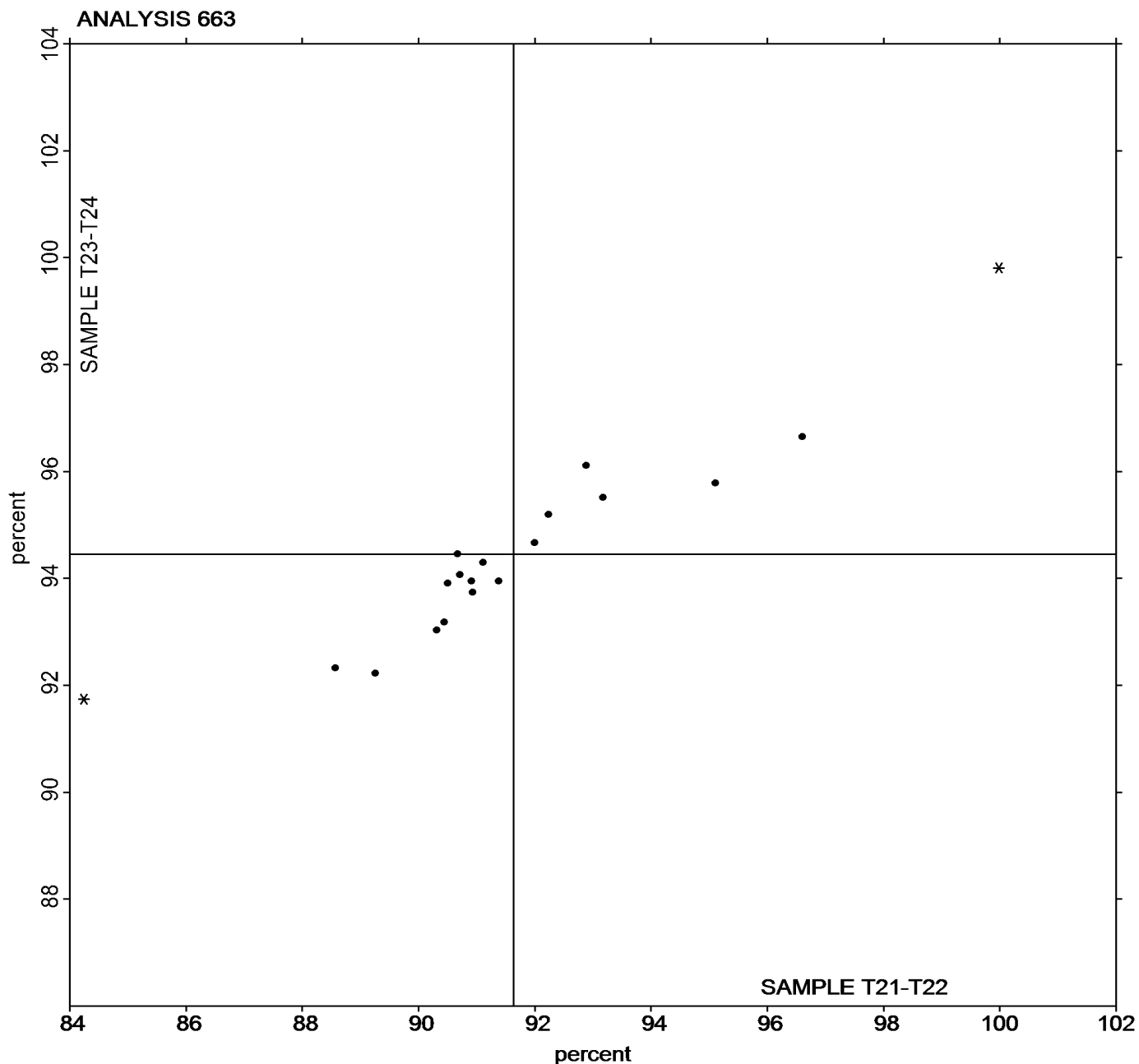
Analysis 663

2nd Qtr 2022

Mooney Stress Relaxation: X30 (percent)

Grand Mean Sample T21-T22 = 91.634 percent

Grand Mean Sample T23-T24 = 94.453 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 #212

Analysis 664

2nd Qtr 2022

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

WebCode	Data Flag	Sample T21-T22			Sample T23-T24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
46VZU6		319.9	-86.0	-0.87	251.6	-83.3	-1.09	MV
4FF9GD		386.5	-19.4	-0.20	312.0	-22.9	-0.30	MV
69VNTR		435.2	29.3	0.30	345.6	10.8	0.14	MR
AGCTTE		506.2	100.3	1.02	458.3	123.4	1.61	ML
AV7HMP		450.5	44.6	0.45	326.1	-8.7	-0.11	MR
C9QJCV		460.3	54.4	0.55	361.0	26.1	0.34	MR
CYFE6W		527.4	121.5	1.23	469.3	134.5	1.75	MV
CZ9DD4		449.0	43.1	0.44	391.4	56.5	0.74	XX
LZZBQU		424.5	18.6	0.19	352.2	17.3	0.23	MR
NAZR7P		327.7	-78.2	-0.79	210.2	-124.7	-1.63	ML
NBAUYF		456.5	50.6	0.51	401.8	67.0	0.87	MR
NFRRQC		456.3	50.4	0.51	359.3	24.5	0.32	MR
TKHZWD	*	138.4	-267.5	-2.71	190.2	-144.7	-1.89	MV
TUT3HE		224.7	-181.2	-1.84	245.7	-89.2	-1.16	MZ
WTNYXD		375.6	-30.3	-0.31	279.1	-55.7	-0.73	MV
WUFYXA		472.6	66.7	0.68	352.3	17.4	0.23	XX
YPF7GK		430.2	24.3	0.25	344.5	9.6	0.13	XX
Z9RC88		464.8	58.9	0.60	376.9	42.0	0.55	MR

Grand Means		Summary Statistics	
	405.89 M-s		334.86 M-s
Stnd Dev Btwn Labs	98.72 M-s		76.66 M-s
Statistics based on 18 of 18 reporting participants			

Samples T21-T22: NBR & T23-T24: 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		

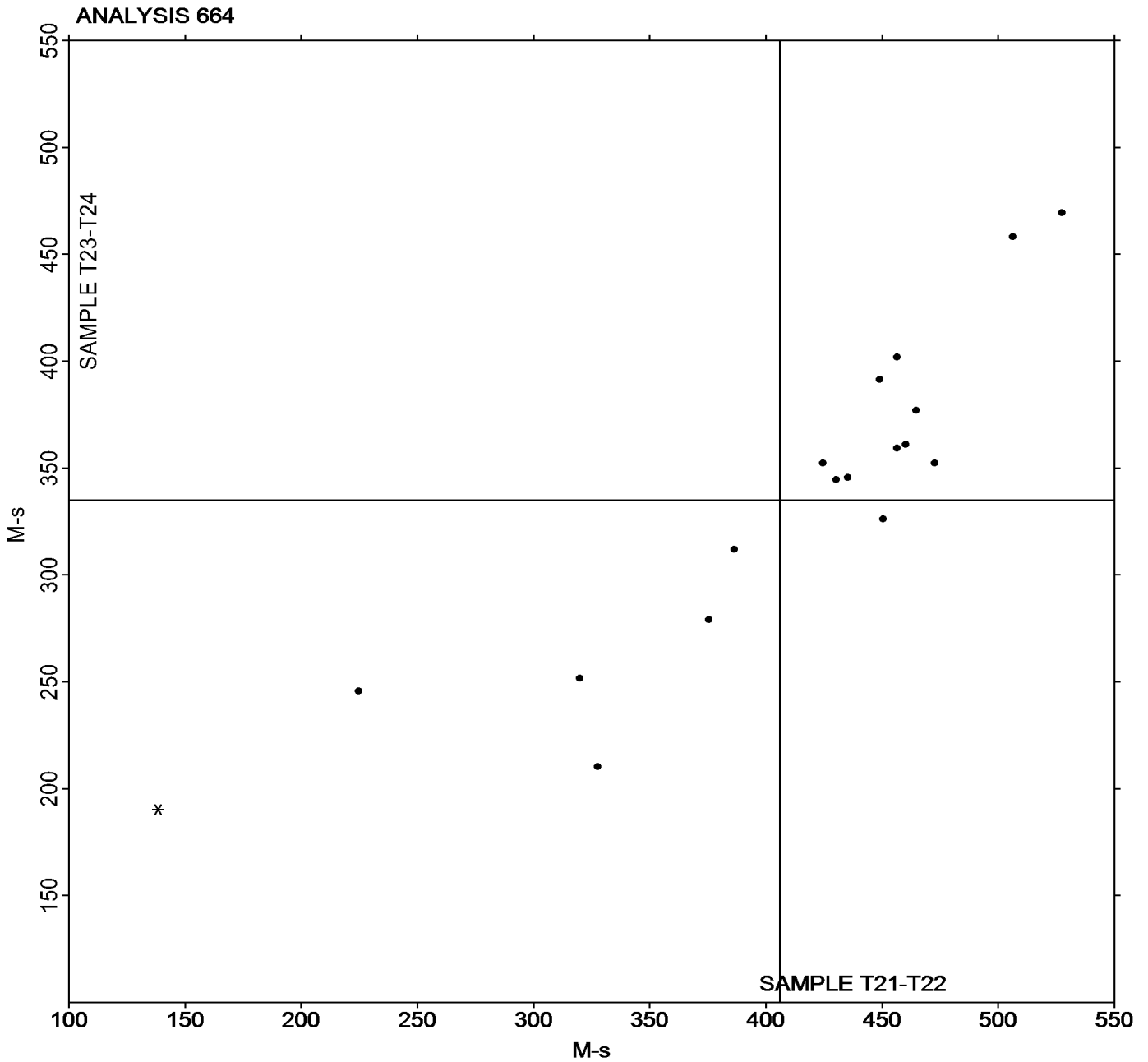


Rubber Interlaboratory Testing Program
Analysis 664
Mooney Stress Relaxation: Area under curve (M-s)

Report #212
2nd Qtr 2022

Grand Mean Sample **T21-T22** = 405.89 M-s

Grand Mean Sample **T23-T24** = 334.86 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 #212
2nd Qtr 2022

WebCode	Data Flag	Sample X21-X22			Sample X23-X24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		1.903	-0.009	-0.23	3.630	-0.006	-0.03
TKHZWD		1.878	-0.034	-0.87	3.460	-0.176	-0.98
WTNYXD		1.955	0.043	1.09	3.817	0.181	1.02

		Summary Statistics	
Grand Means		1.9122 minutes	3.6356 minutes
Stnd Dev Btwn Labs		0.0391 minutes	0.1784 minutes
		Statistics based on 3 of 3 reporting participants	

Samples X21-X22: EPDM compound, batch #1 & X23-X24: EPDM compound, batch #2

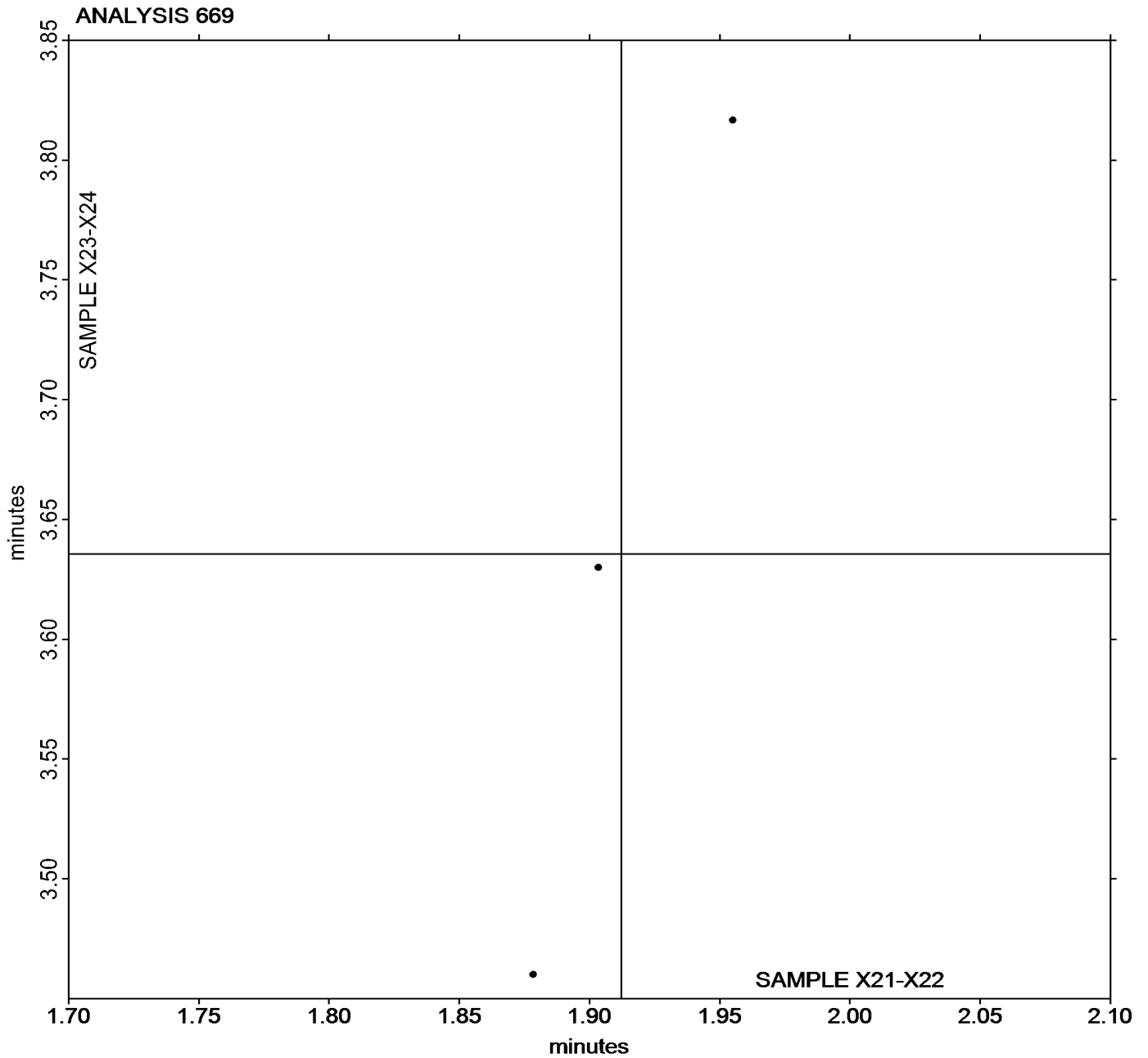


Rubber Interlaboratory Testing Program
Analysis 669
ODR Vulcanization-Cure Time 10% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X21-X22** = 1.9122 minutes

Grand Mean Sample **X23-X24** = 3.6356 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 #212
2nd Qtr 2022

WebCode	Data Flag	Sample X21-X22			Sample X23-X24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		1.432	-0.001	-0.22	2.665	0.007	0.05
TKHZWD		1.438	0.006	1.09	2.500	-0.158	-1.02
WTNYXD		1.428	-0.004	-0.87	2.808	0.151	0.98

		Summary Statistics	
Grand Means		1.4328 minutes	2.6578 minutes
Stnd Dev Btwn Labs		0.0051 minutes	0.1543 minutes
		Statistics based on 3 of 3 reporting participants	

Samples X21-X22: EPDM compound, batch #1 & X23-X24: EPDM compound, batch #2



Rubber Interlaboratory Testing Program

Report #212

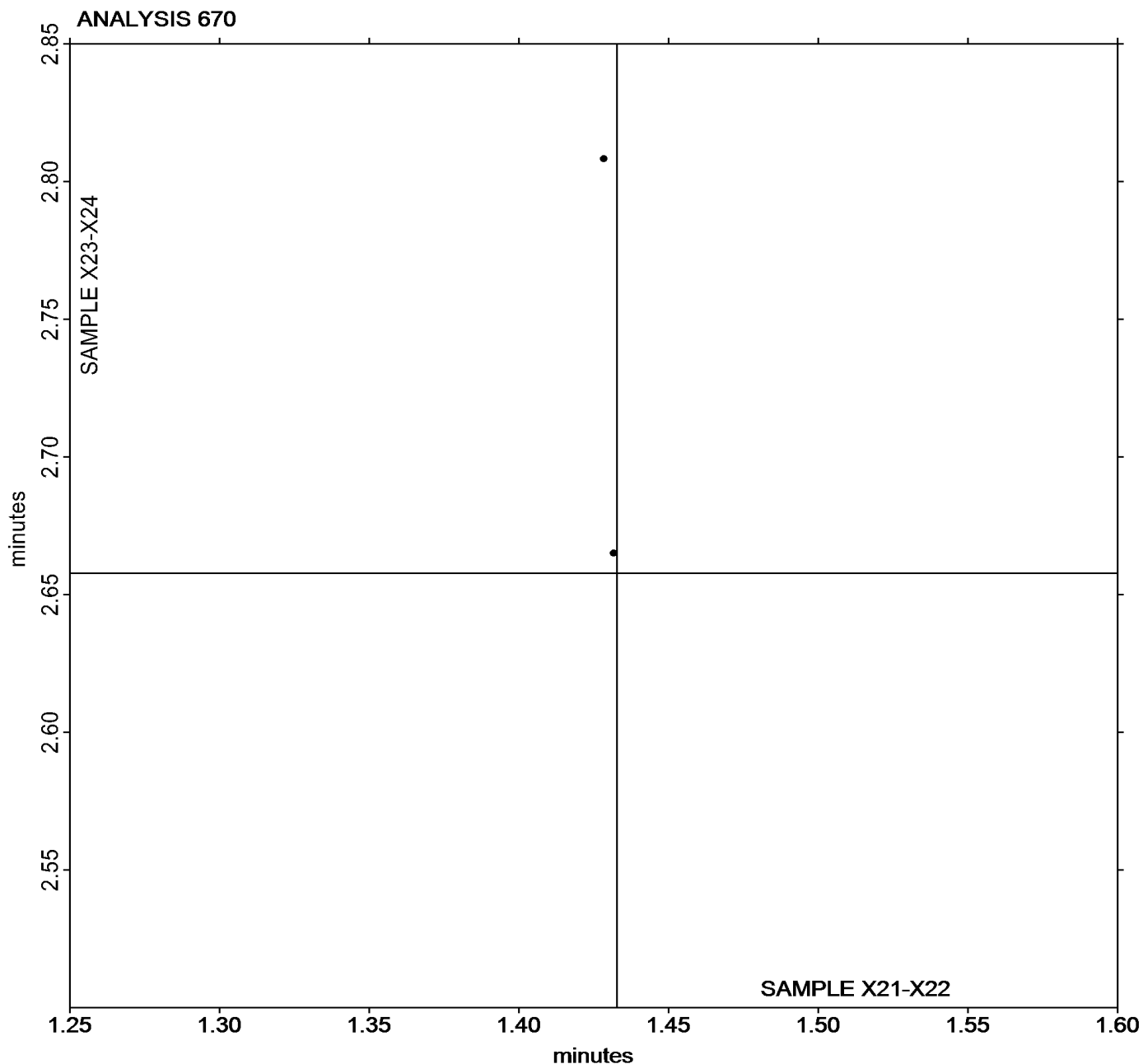
Analysis 670

2nd Qtr 2022

ODR Vulcanization-Scorch Time, Ts1 (minutes)

Grand Mean Sample X21-X22 = 1.4328 minutes

Grand Mean Sample X23-X24 = 2.6578 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 #212
2nd Qtr 2022

WebCode	Data Flag	Sample X21-X22			Sample X23-X24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		3.492	0.032	0.21	7.420	0.389	0.94
TKHZWD		3.290	-0.169	-1.09	6.595	-0.436	-1.05
WTNYXD		3.597	0.137	0.88	7.078	0.047	0.11

		Summary Statistics	
Grand Means		3.4594 minutes	7.0311 minutes
Std Dev Btwn Labs		0.1559 minutes	0.4145 minutes
Statistics based on 3 of 3 reporting participants			

Samples X21-X22: EPDM compound, batch #1 & X23-X24: EPDM compound, batch #2

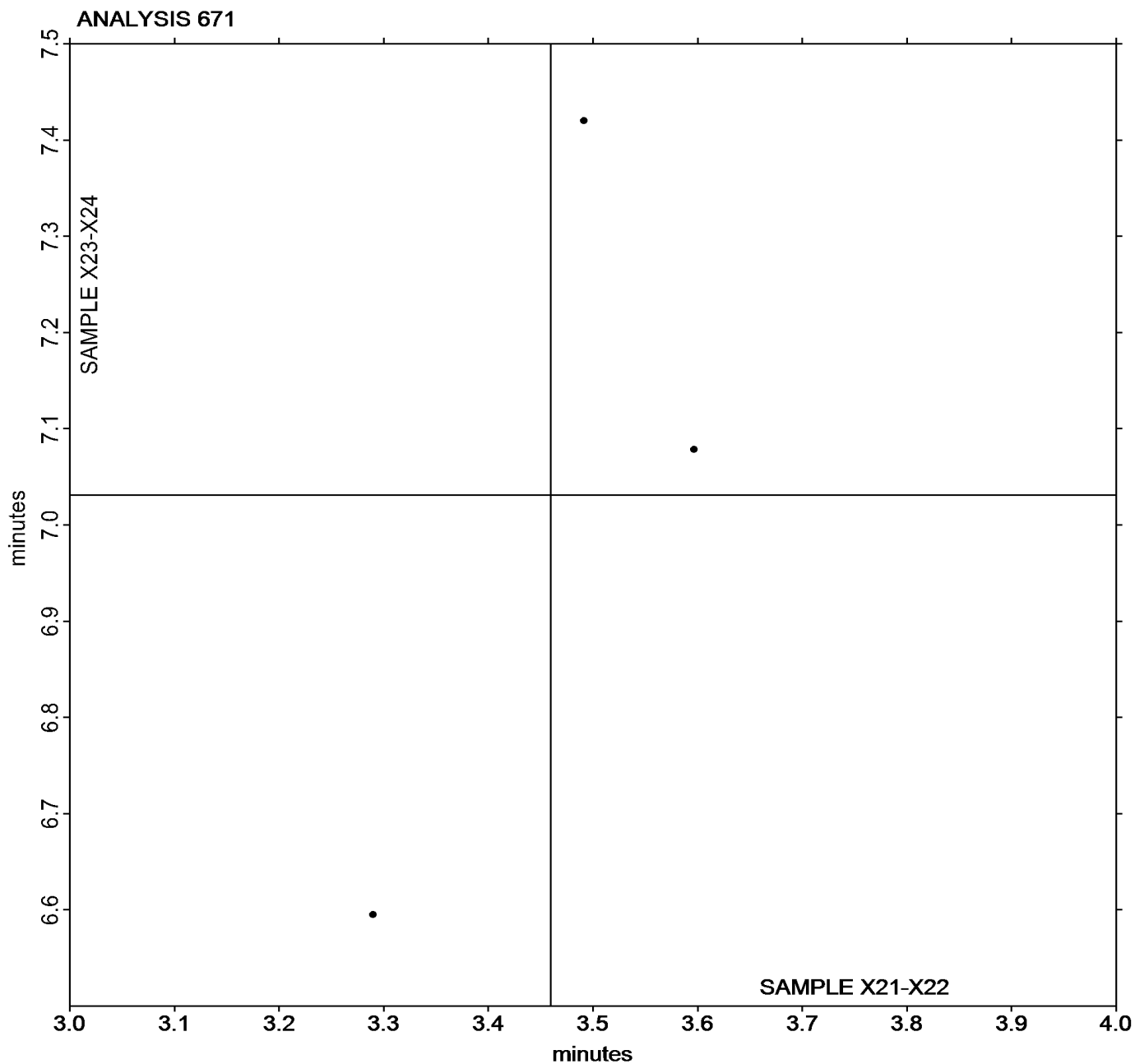


Rubber Interlaboratory Testing Program
Analysis 671
ODR Vulcanization-Cure Time 50% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X21-X22** = 3.4594 minutes

Grand Mean Sample **X23-X24** = 7.0311 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 #212

Analysis 672

2nd Qtr 2022

ODR Vulcanization-Cure Time 90% (minutes)

WebCode	Data Flag	Sample X21-X22			Sample X23-X24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		10.54	-0.36	-1.15	14.47	1.22	1.13
TKHZWD		11.12	0.21	0.67	12.88	-0.37	-0.34
WTNYXD		11.06	0.15	0.48	12.41	-0.85	-0.78

		Summary Statistics	
Grand Means		10.904 minutes	13.254 minutes
Stnd Dev Btwn Labs		0.316 minutes	1.081 minutes
Statistics based on 3 of 3 reporting participants			

Samples X21-X22: EPDM compound, batch #1 & X23-X24: EPDM compound, batch #2

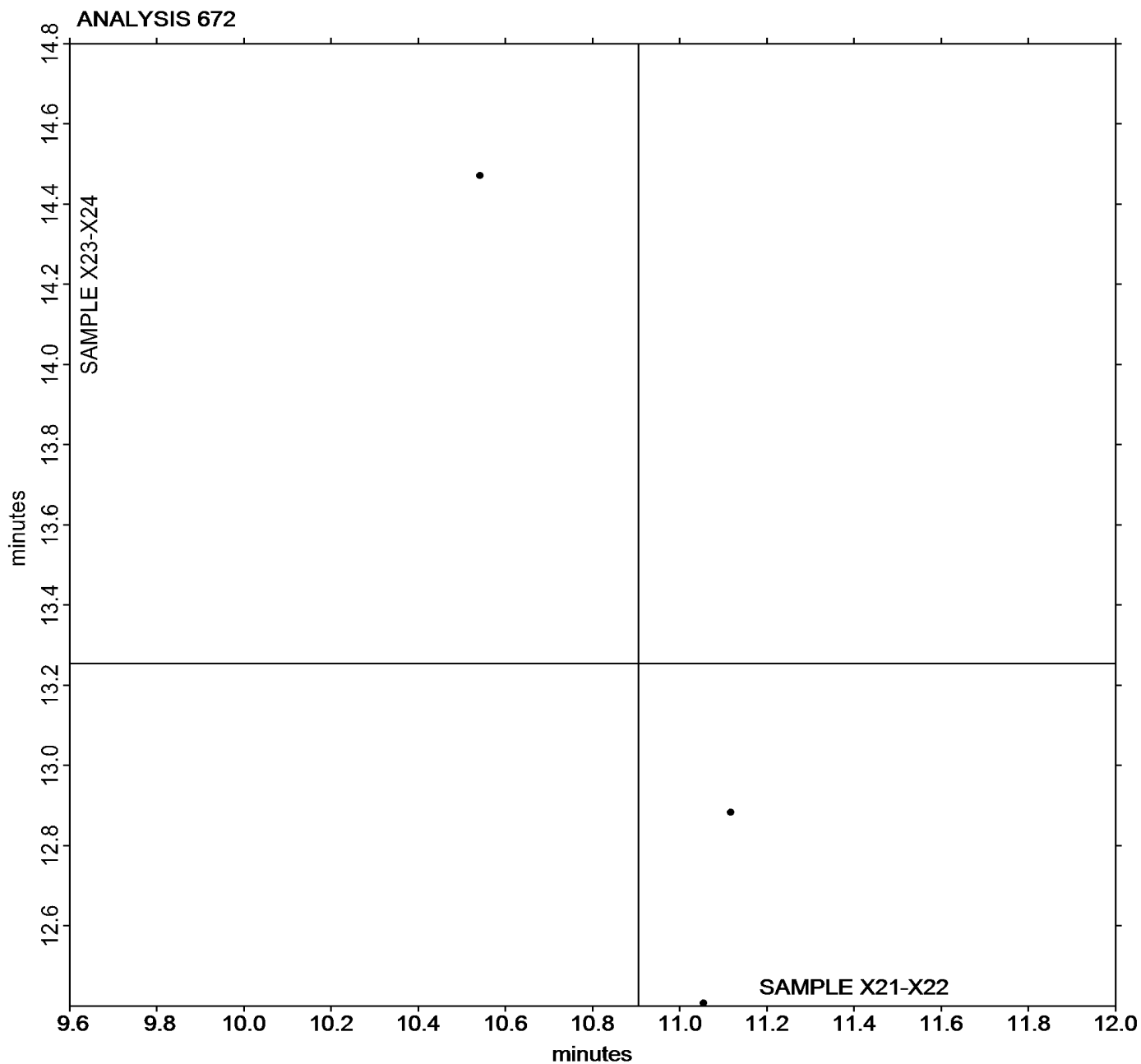


Rubber Interlaboratory Testing Program
Analysis 672
ODR Vulcanization-Cure Time 90% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X21-X22** = 10.904 minutes

Grand Mean Sample **X23-X24** = 13.254 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 #212

Analysis 673

2nd Qtr 2022

ODR Vulcanization: Minimum Torque (lbf.in)

WebCode	Data Flag	Sample X21-X22			Sample X23-X24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		7.920	-0.002	0.00	9.85	-0.25	-0.13
TKHZWD		6.628	-1.294	-1.00	8.33	-1.77	-0.93
WTNYXD		9.218	1.296	1.00	12.11	2.01	1.06

		Summary Statistics	
Grand Means		7.9222 lbf.in	10.098 lbf.in
Std Dev Btwn Labs		1.2950 lbf.in	1.899 lbf.in
Statistics based on 3 of 3 reporting participants			

		Summary Statistics in SI Units	
Grand Means		8.9509 dN.m	11.410 dN.m
Std Dev Btwn Labs		1.4632 dN.m	2.146 dN.m
Statistics based on 3 of 3 reporting participants			

Samples X21-X22: EPDM compound, batch #1 & X23-X24: EPDM compound, batch #2

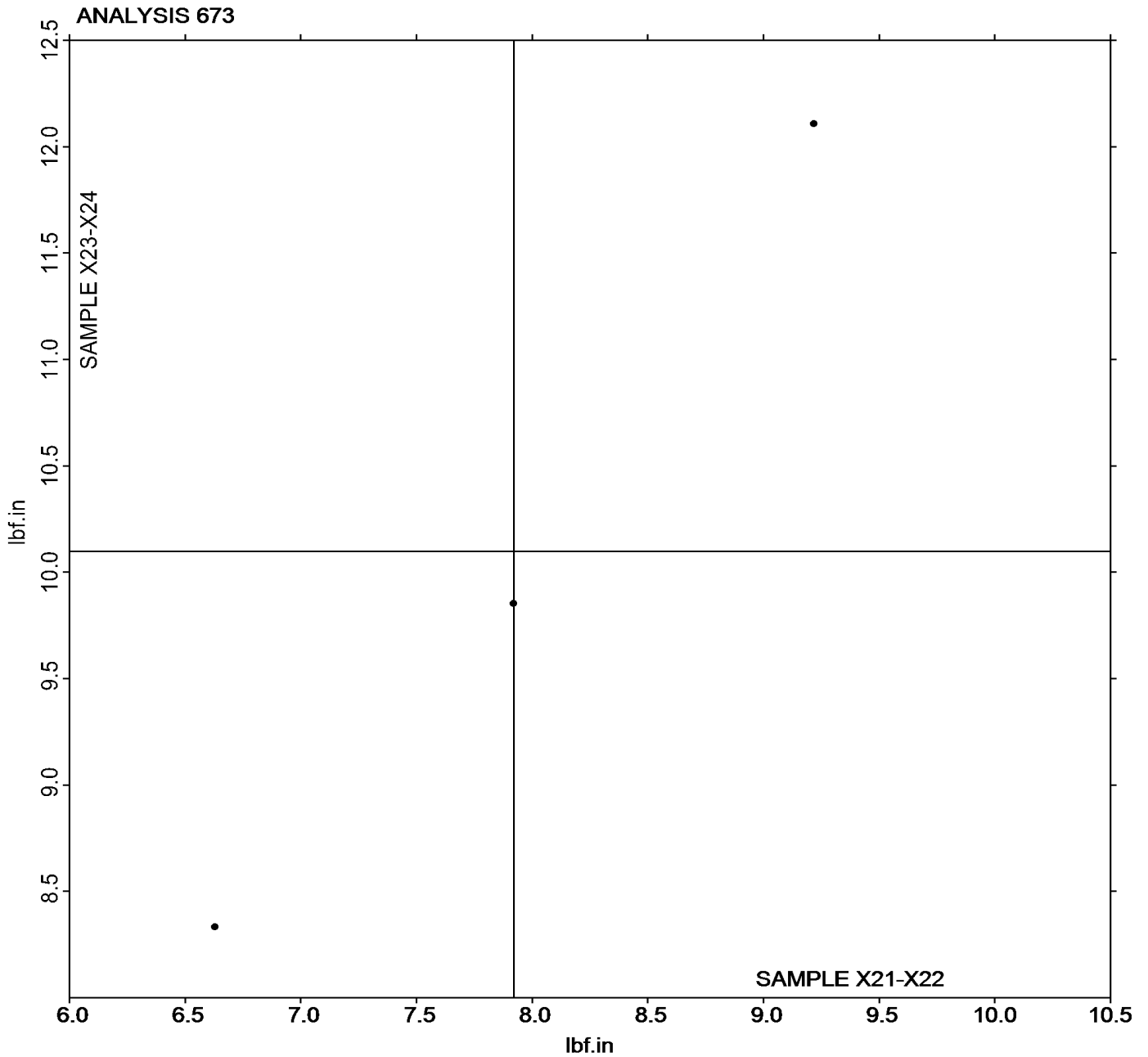


Rubber Interlaboratory Testing Program
Analysis 673
ODR Vulcanization: Minimum Torque (lbf.in)

Report #212
2nd Qtr 2022

Grand Mean Sample **X21-X22** = 7.9222 lbf.in

Grand Mean Sample **X23-X24** = 10.098 lbf.in



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



**Rubber Interlaboratory Testing Program
Analysis 674**

**Report #212
2nd Qtr 2022**

ODR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample X21-X22			Sample X23-X24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2J36B8		43.87	-3.12	-1.10	41.92	2.05	0.95
TKHZWD		47.67	0.67	0.24	37.63	-2.24	-1.04
WTNYXD		49.45	2.45	0.86	40.06	0.19	0.09

		Summary Statistics	
Grand Means		46.994 lbf.in	39.870 lbf.in
Stnd Dev Btwn Labs		2.849 lbf.in	2.151 lbf.in
Statistics based on 3 of 3 reporting participants			

		Summary Statistics in SI Units	
Grand Means		53.097 dN.m	45.047 dN.m
Stnd Dev Btwn Labs		3.219 dN.m	2.430 dN.m
Statistics based on 3 of 3 reporting participants			

Samples X21-X22: EPDM compound, batch #1 & X23-X24: EPDM compound, batch #2

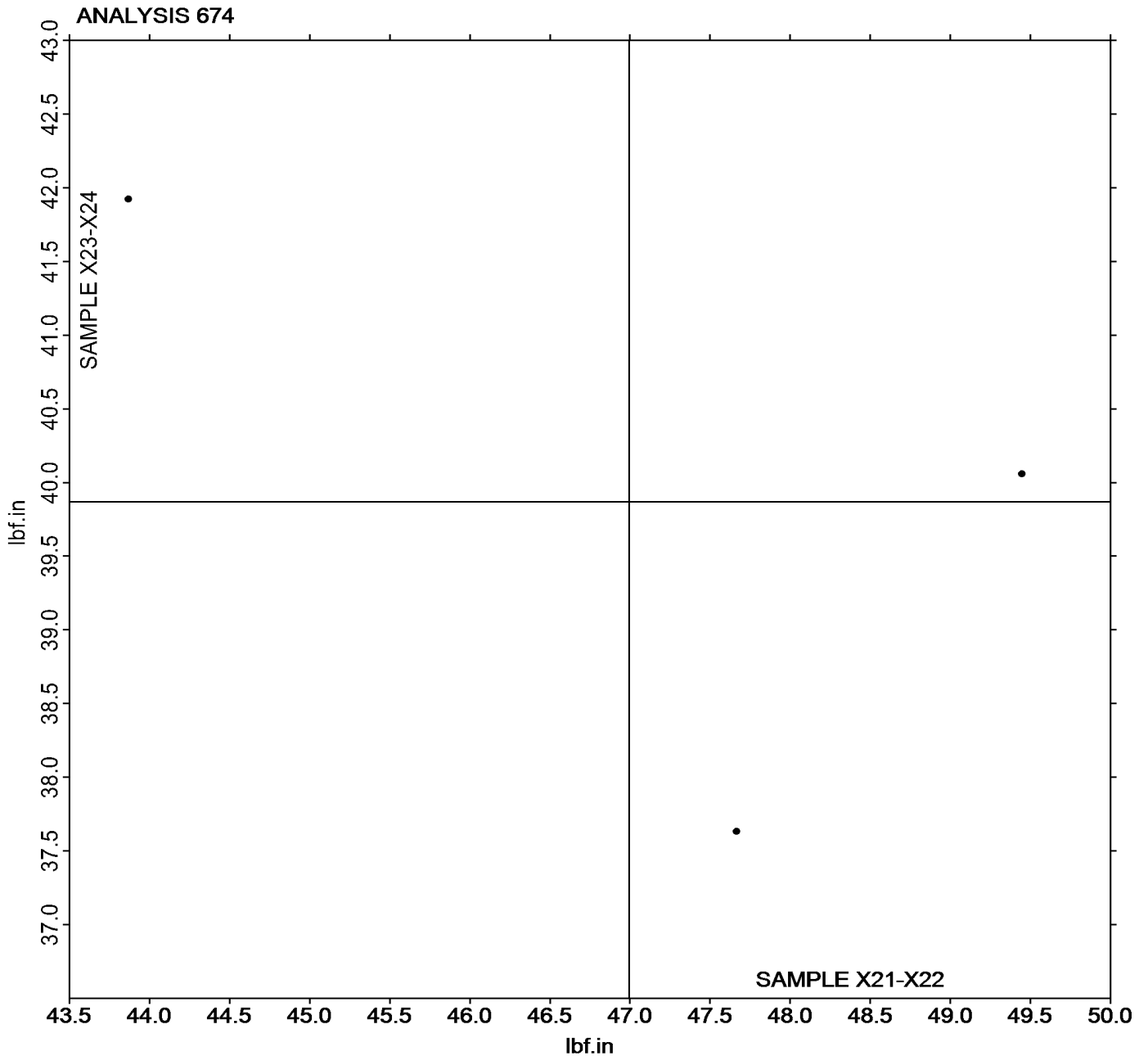


Rubber Interlaboratory Testing Program
Analysis 674
ODR Vulcanization: Maximum Torque (lbf.in)

Report #212
2nd Qtr 2022

Grand Mean Sample X21-X22 = 46.994 lbf.in

Grand Mean Sample X23-X24 = 39.870 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 #212

Analysis 6841

2nd Qtr 2022

MDR Vulcanization-Cure Time 10% (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
 If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BLVGJ		2.610	-0.041	-0.47	2.753	0.016	0.20	ME
4FF9GD		2.748	0.097	1.10	2.752	0.014	0.18	MC
6QPJ7F		2.713	0.062	0.70	2.810	0.072	0.92	MC
AGCTTE		2.599	-0.053	-0.59	2.668	-0.070	-0.89	MM
AV7HMP		2.605	-0.046	-0.53	2.752	0.014	0.18	MC
C9QJCV		2.652	0.000	0.00	2.697	-0.041	-0.52	ME
CUNACT		2.595	-0.056	-0.64	2.647	-0.091	-1.15	MC
CYFE6W		2.445	-0.206	-2.34	2.578	-0.159	-2.02	MR
CZ9DD4		2.732	0.080	0.91	2.812	0.074	0.94	ME
DX6RA4		2.577	-0.075	-0.85	2.660	-0.078	-0.98	ME
KMGAVW		2.698	0.047	0.53	2.847	0.109	1.38	MC
LZZBQU		2.602	-0.050	-0.56	2.713	-0.024	-0.31	MD
MQAWGW		2.568	-0.083	-0.94	2.632	-0.106	-1.34	ME
NFRRQC		2.680	0.029	0.32	2.845	0.107	1.36	MC
PX4YHY		2.642	-0.010	-0.11	2.719	-0.018	-0.23	MC
QJ2PC4		2.560	-0.091	-1.04	2.670	-0.068	-0.86	MC
QT4CYU		2.632	-0.020	-0.22	2.713	-0.024	-0.31	MC
UJ7JGE		2.798	0.147	1.66	2.860	0.122	1.55	ME
UY3XG9		2.692	0.040	0.45	2.725	-0.013	-0.16	MM
WTNYXD		2.770	0.119	1.34	2.820	0.082	1.05	XX
WUFYXA		2.645	-0.006	-0.07	2.722	-0.016	-0.20	XX
X6XUVN		2.830	0.179	2.02	2.862	0.124	1.57	XX
Z9RC88		2.592	-0.060	-0.68	2.708	-0.029	-0.37	MC

Grand Means		Summary Statistics	
	2.6515 minutes		2.7376 minutes
Std Dev Btwn Labs	0.0883 minutes		0.0788 minutes
Statistics based on 23 of 23 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: EPDM compound, batch #2



Rubber Interlaboratory Testing Program

Report #212

Analysis 6841

2nd Qtr 2022

MDR Vulcanization-Cure Time 10% (minutes)

Key to Instrument Codes Reported by Participants

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

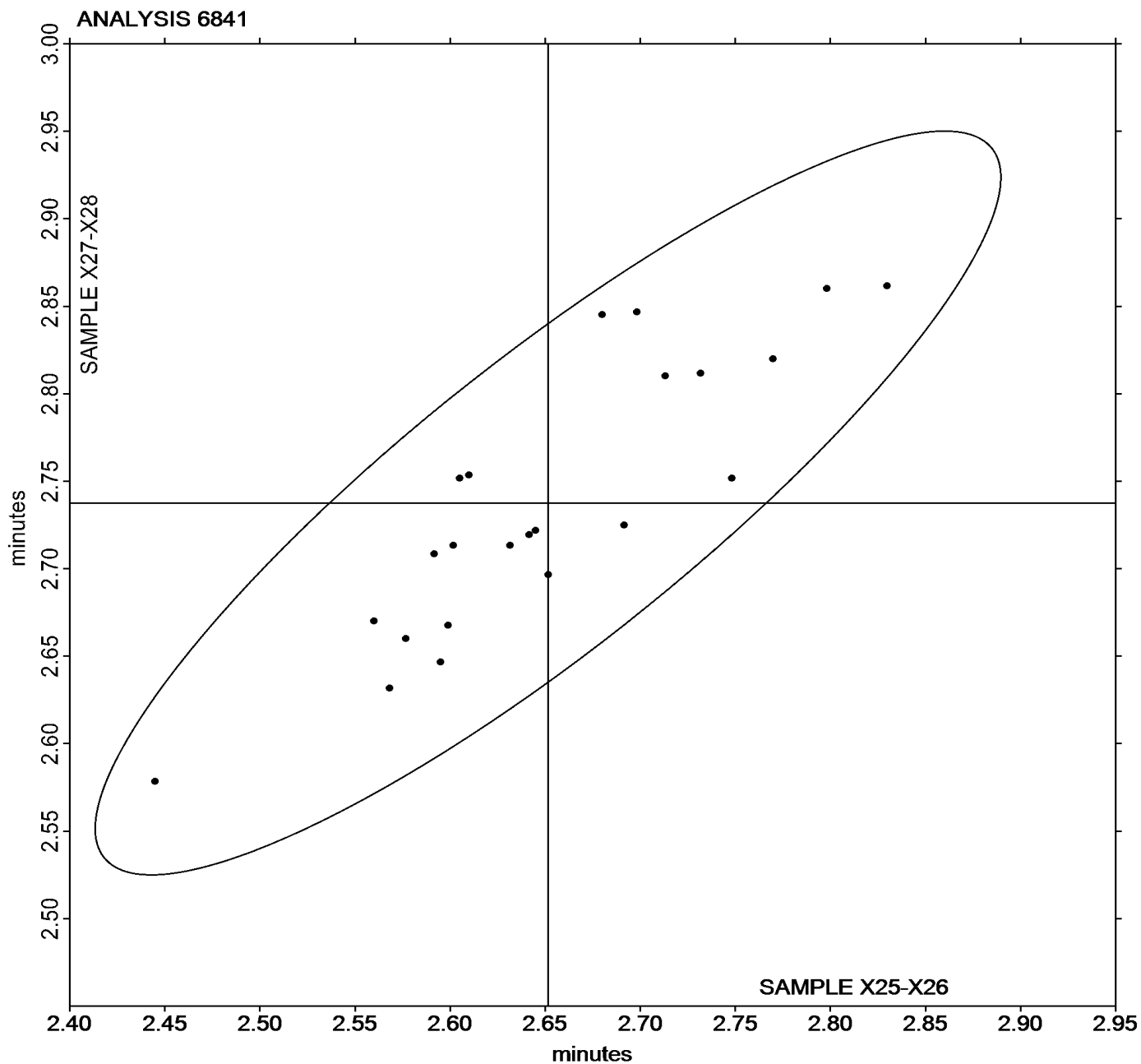


Rubber Interlaboratory Testing Program
Analysis 6841
MDR Vulcanization-Cure Time 10% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 2.6515 minutes

Grand Mean Sample **X27-X28** = 2.7376 minutes





Rubber Interlaboratory Testing Program

Report #212

Analysis 6842

2nd Qtr 2022

MDR Vulcanization-Cure Time 10% (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		2.353	-0.309	-2.57	2.388	0.206	1.83	MC
46VZU6		2.795	0.133	1.11	2.303	0.121	1.07	MM
69VNTR		2.672	0.009	0.08	2.217	0.034	0.30	ME
6APCCM		2.695	0.033	0.27	2.200	0.017	0.15	MC
KMGAVW		2.698	0.036	0.30	2.070	-0.113	-1.00	MC
L9D8TF		2.645	-0.017	-0.14	2.067	-0.116	-1.03	MC
LN68EM		2.623	-0.039	-0.32	2.153	-0.029	-0.26	MC
NAZR7P		2.740	0.078	0.65	2.263	0.081	0.72	ME
PVFP7C		2.648	-0.014	-0.12	2.182	-0.001	-0.01	MC
QFXYZH		2.795	0.133	1.11	2.252	0.069	0.61	MC
TKHZWD		2.825	0.163	1.36	2.347	0.164	1.46	MM
TUT3HE		2.620	-0.042	-0.35	2.027	-0.156	-1.39	MX
U3KVA6		2.492	-0.171	-1.42	2.065	-0.118	-1.05	MC
WCLYC6		2.625	-0.037	-0.31	2.065	-0.118	-1.05	ME
XYQ83K		2.707	0.044	0.37	2.142	-0.041	-0.36	MC

Grand Means		Summary Statistics	
	2.6622 minutes		2.1827 minutes
Stnd Dev Btwn Labs	0.1201 minutes		0.1125 minutes
Statistics based on 15 of 15 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: 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	MX	Rebuilt MonTech Alpha

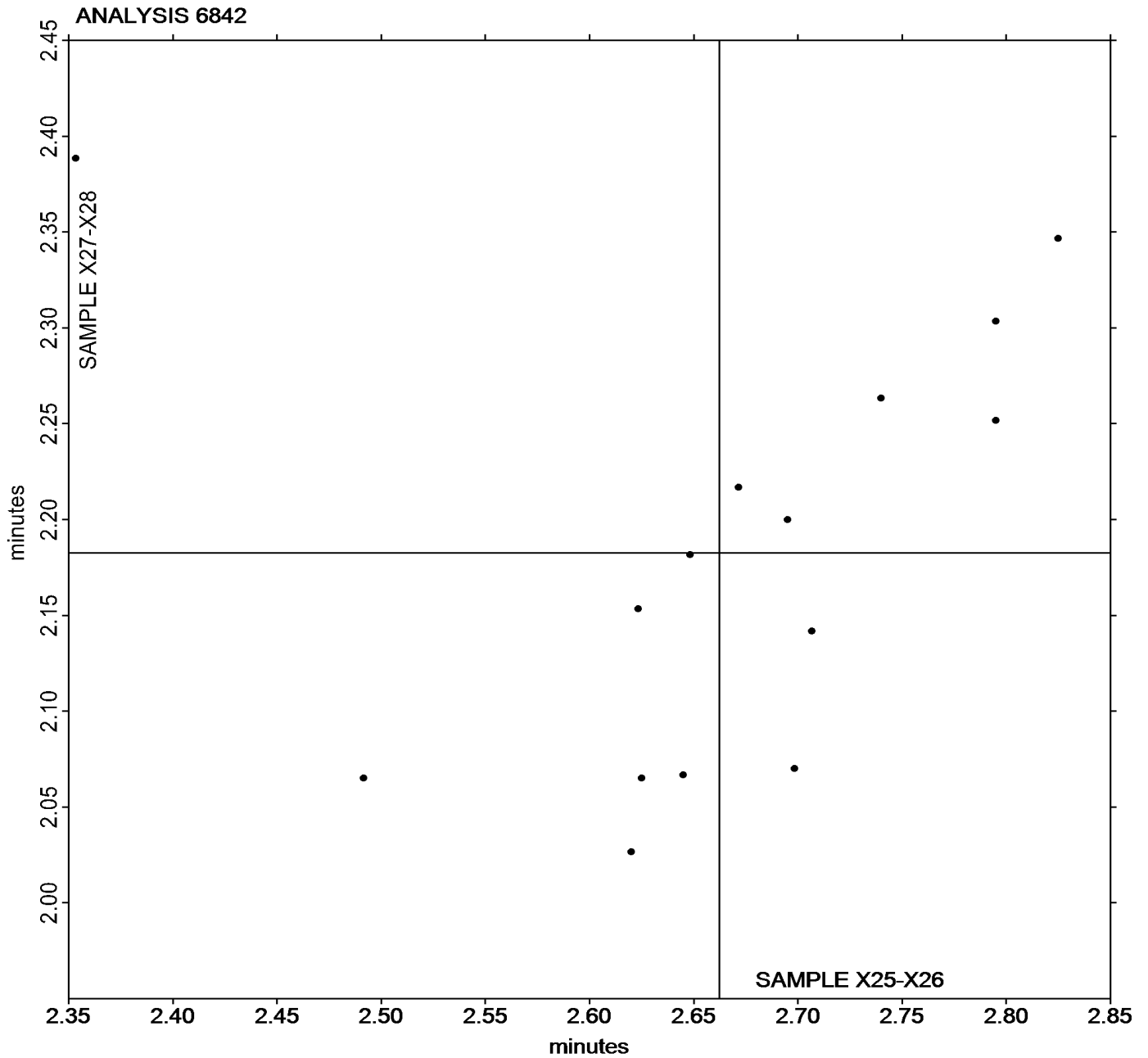


Rubber Interlaboratory Testing Program
Analysis 6842
MDR Vulcanization-Cure Time 10% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 2.6622 minutes

Grand Mean Sample **X27-X28** = 2.1827 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 #212

Analysis 6851

2nd Qtr 2022

MDR Vulcanization-Scorch Time, Ts1 (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
 If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BLVGJ		2.620	0.013	0.12	2.758	0.051	0.49	ME
4FF9GD		2.728	0.122	1.08	2.735	0.028	0.27	MC
6QPJ7F		2.687	0.080	0.71	2.793	0.086	0.82	MC
AGCTTE		2.676	0.070	0.62	2.778	0.071	0.67	MM
AV7HMP		2.638	0.032	0.28	2.780	0.073	0.69	MC
BCB7FG		2.670	0.063	0.56	2.763	0.056	0.54	MC
C9QJCV		2.645	0.038	0.34	2.737	0.030	0.28	ME
CUNACT		2.518	-0.088	-0.78	2.600	-0.107	-1.02	MC
CYFE6W		2.388	-0.218	-1.93	2.525	-0.182	-1.73	MR
CZ9DD4		2.737	0.130	1.15	2.813	0.106	1.01	ME
DX6RA4		2.597	-0.010	-0.09	2.683	-0.024	-0.23	ME
HLVLK7		2.553	-0.053	-0.47	2.720	0.013	0.12	MC
KMGAVW		2.568	-0.038	-0.34	2.647	-0.060	-0.57	MC
LZZBQU		2.647	0.040	0.35	2.767	0.060	0.57	MD
MQAWGW		2.527	-0.080	-0.71	2.608	-0.099	-0.94	XX
NFRRQC		2.695	0.088	0.78	2.823	0.116	1.11	MC
PX4YHY		2.553	-0.054	-0.48	2.650	-0.057	-0.54	MC
QJ2PC4		2.500	-0.107	-0.95	2.615	-0.092	-0.87	MC
QT4CYU		2.565	-0.042	-0.37	2.658	-0.049	-0.46	MC
UJ7JGE		2.792	0.185	1.64	2.873	0.166	1.58	ME
UY3XG9		2.728	0.122	1.08	2.815	0.108	1.03	MM
WTNYXD		2.675	0.068	0.60	2.747	0.040	0.38	XX
WUFYXA		2.662	0.055	0.49	2.757	0.050	0.47	XX
X6XUVN		2.677	0.070	0.62	2.775	0.068	0.65	XX
YPF7GK		2.365	-0.242	-2.14	2.483	-0.224	-2.13	MC
Z9RC88		2.367	-0.240	-2.13	2.478	-0.229	-2.17	MC

Summary Statistics	
Grand Means	2.6068 minutes
Std Dev Btwn Labs	0.1130 minutes
	2.7070 minutes
	0.1052 minutes
Statistics based on 26 of 26 reporting participants	



Rubber Interlaboratory Testing Program
Analysis 6851
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #212
2nd Qtr 2022

Samples X25-X26: EPDM compound, batch #1 & X27-X28: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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



Rubber Interlaboratory Testing Program

Report #212

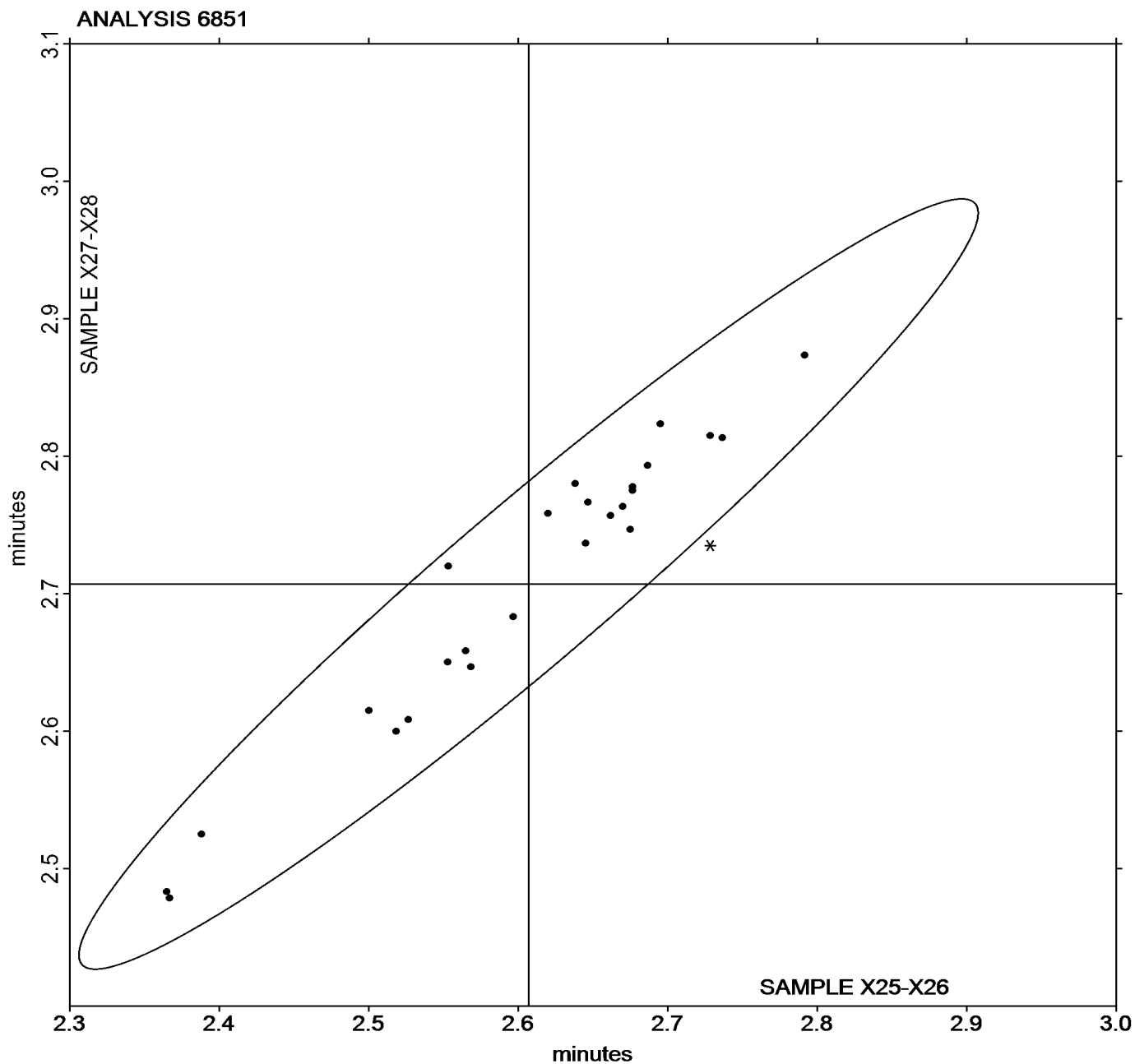
Analysis 6851

2nd Qtr 2022

MDR Vulcanization-Scorch Time, Ts1 (minutes)

Grand Mean Sample X25-X26 = 2.6068 minutes

Grand Mean Sample X27-X28 = 2.7070 minutes





Rubber Interlaboratory Testing Program

Report #212

Analysis 6852

2nd Qtr 2022

MDR Vulcanization-Scorch Time, Ts1 (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		2.227	-0.343	-1.90	2.288	0.202	1.29	MC
46VZU6		2.605	0.035	0.20	2.143	0.057	0.36	MM
69VNTR		2.458	-0.111	-0.62	1.998	-0.088	-0.56	ME
6APCCM		2.558	-0.011	-0.06	2.090	0.004	0.02	MC
BCB7FG		2.670	0.100	0.56	2.103	0.017	0.11	MC
KL82QH		2.238	-0.331	-1.83	1.700	-0.386	-2.48	MR
KMGAVW		2.568	-0.001	-0.01	1.933	-0.153	-0.98	MC
L9D8TF		2.665	0.095	0.53	2.080	-0.006	-0.04	MC
LN68EM		2.565	-0.005	-0.02	2.108	0.022	0.14	MC
NAZR7P		2.633	0.064	0.35	2.168	0.082	0.52	ME
PVFP7C		2.585	0.015	0.09	2.115	0.029	0.18	MC
QFXYZH		2.757	0.187	1.04	2.212	0.125	0.80	MC
TKHZWD		2.865	0.295	1.64	2.370	0.284	1.82	MM
TUT3HE		2.687	0.117	0.65	2.087	0.000	0.00	MX
U3KVA6		2.268	-0.301	-1.67	1.857	-0.230	-1.47	MC
WCLYC6		2.590	0.020	0.11	2.048	-0.038	-0.24	ME
XYQ83K		2.742	0.172	0.95	2.168	0.082	0.52	MC

Grand Means		Summary Statistics	
	2.5695 minutes		2.0865 minutes
Std Dev Btwn Labs	0.1805 minutes		0.1561 minutes
Statistics based on 17 of 17 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: 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	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha		



Rubber Interlaboratory Testing Program

Report #212

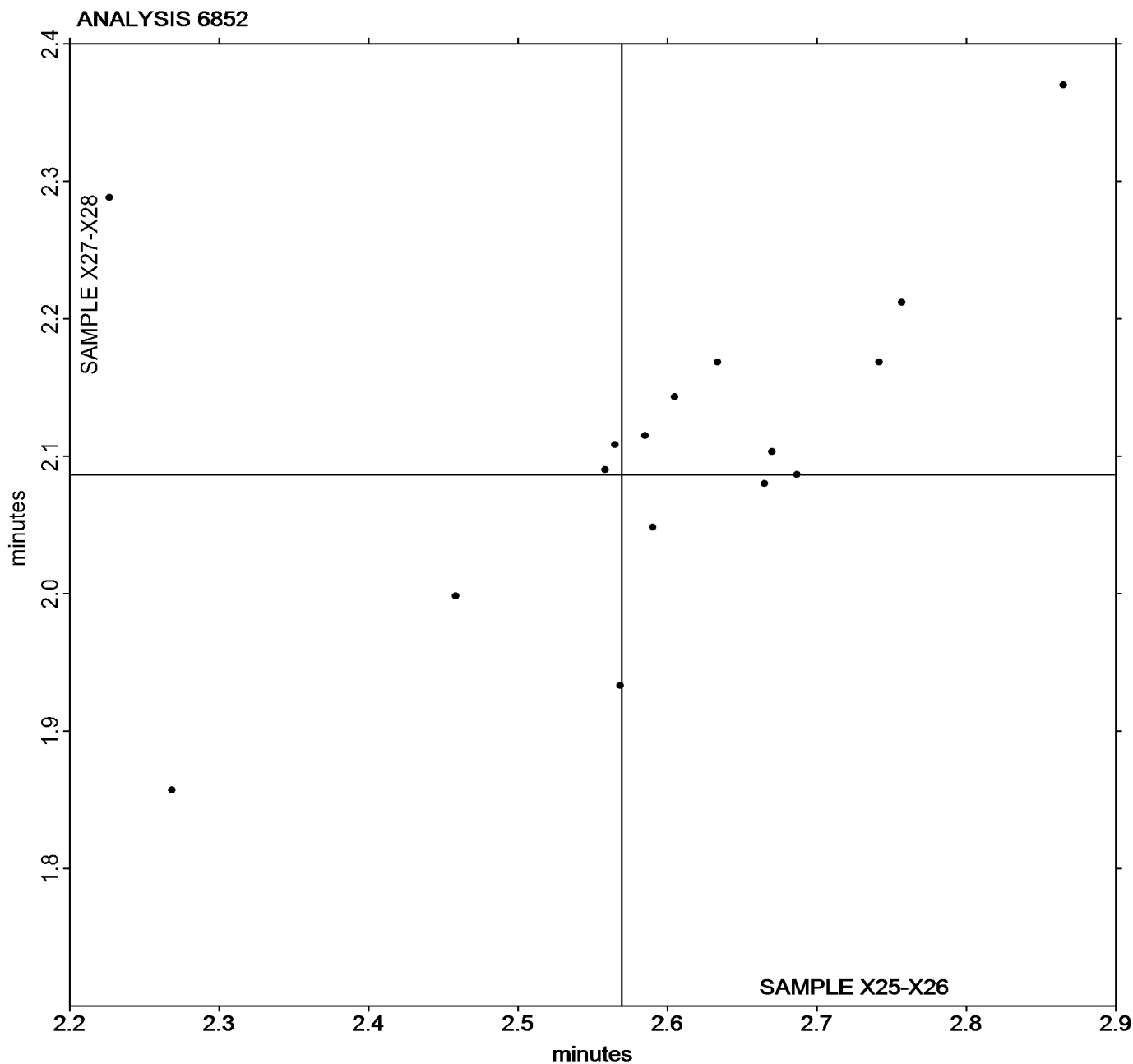
Analysis 6852

2nd Qtr 2022

MDR Vulcanization-Scorch Time, Ts1 (minutes)

Grand Mean Sample X25-X26 = 2.5695 minutes

Grand Mean Sample X27-X28 = 2.0865 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 #212

Analysis 6861

2nd Qtr 2022

MDR Vulcanization-Cure Time 50% (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BLVGJ		5.720	-0.161	-0.85	5.968	-0.146	-0.70	ME
4FF9GD		5.955	0.074	0.39	6.058	-0.056	-0.27	MC
6QPJ7F		6.133	0.253	1.33	6.415	0.301	1.45	MC
AGCTTE		5.945	0.064	0.34	6.189	0.075	0.36	MM
AV7HMP		5.853	-0.027	-0.14	6.132	0.017	0.08	MC
BCB7FG		5.447	-0.434	-2.29	5.640	-0.474	-2.29	MC
C9QJCV		5.947	0.066	0.35	6.185	0.071	0.34	ME
CUNACT		5.665	-0.216	-1.14	5.845	-0.269	-1.30	MC
CYFE6W		5.893	0.013	0.07	6.195	0.081	0.39	MR
CZ9DD4		6.242	0.361	1.90	6.432	0.317	1.53	ME
DX6RA4		5.740	-0.141	-0.74	5.893	-0.221	-1.06	ME
HLVLK7		5.482	-0.399	-2.11	5.703	-0.411	-1.98	MC
KMGAVW		5.838	-0.042	-0.22	6.153	0.039	0.19	MC
LZZBQU		5.928	0.048	0.25	6.177	0.062	0.30	MD
MQAWGW		5.973	0.093	0.49	6.188	0.074	0.36	ME
NFRRQC		5.918	0.038	0.20	6.222	0.107	0.52	MC
PX4YHY		5.928	0.047	0.25	6.206	0.091	0.44	MC
QJ2PC4		5.930	0.049	0.26	6.195	0.081	0.39	MC
QT4CYU		5.870	-0.011	-0.06	6.062	-0.053	-0.25	MC
UJ7JGE		6.193	0.313	1.65	6.437	0.322	1.55	ME
UY3XG9		6.008	0.128	0.67	6.148	0.034	0.16	MM
WTNYXD		5.652	-0.229	-1.21	5.847	-0.268	-1.29	XX
WUFYXA		5.795	-0.086	-0.45	6.003	-0.111	-0.53	XX
X6XUVN		6.423	0.543	2.86	6.463	0.349	1.68	XX
YPF7GK		5.994	0.113	0.60	6.277	0.162	0.78	MC
Z9RC88		5.970	0.089	0.47	6.287	0.172	0.83	MC

Grand Means		Summary Statistics	
	5.8808 minutes		6.1142 minutes
Std Dev Btwn Labs	0.1895 minutes		0.2075 minutes
Statistics based on 25 of 26 reporting participants			



Rubber Interlaboratory Testing Program
Analysis 6861
MDR Vulcanization-Cure Time 50% (minutes)

Report #212
2nd Qtr 2022

Samples X25-X26: EPDM compound, batch #1 & X27-X28: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #6861

X6XUVN (X) - Data for Sample group X25-X26 are high.

Key to Instrument Codes Reported by Participants

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

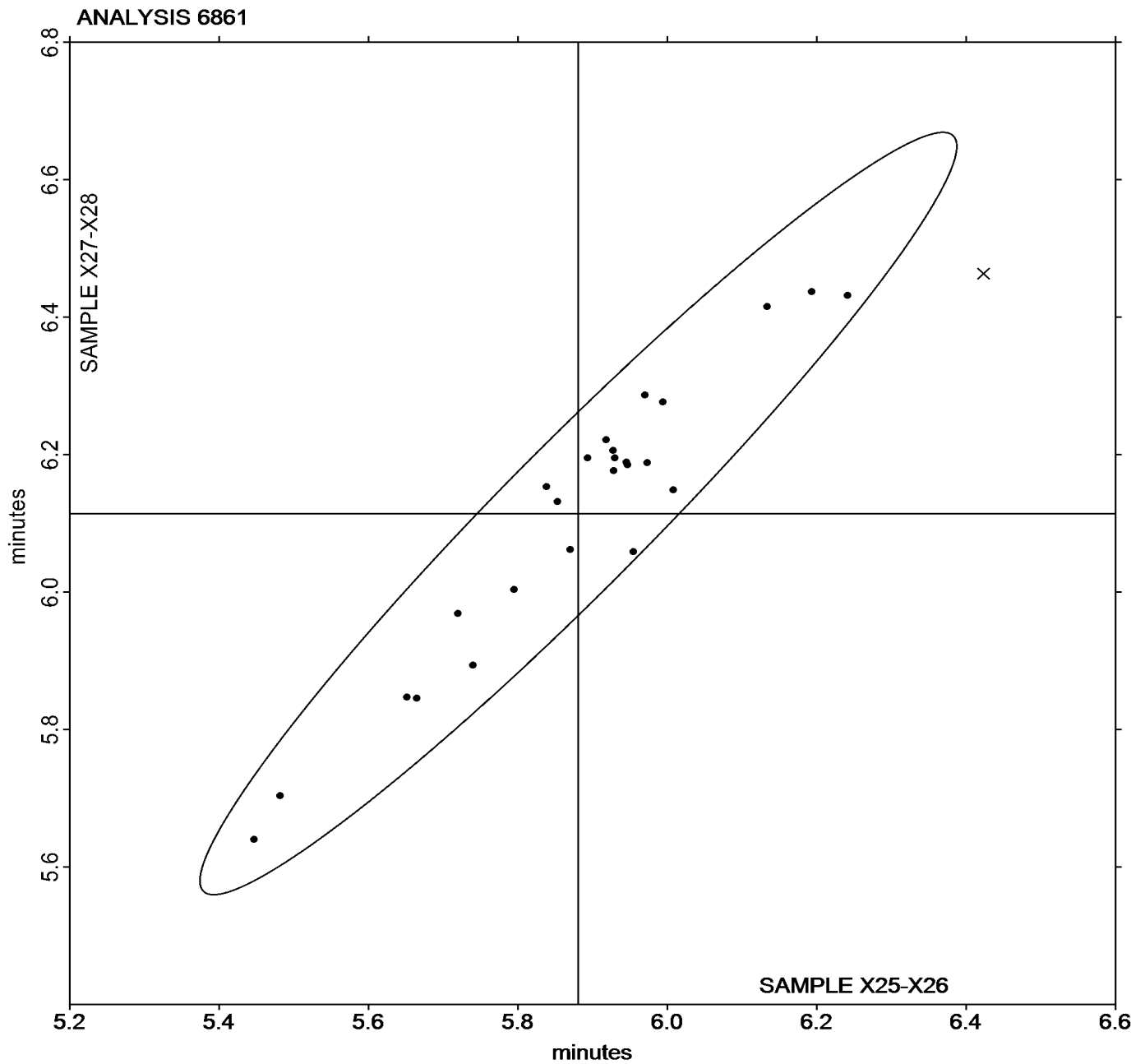


Rubber Interlaboratory Testing Program
Analysis 6861
MDR Vulcanization-Cure Time 50% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 5.8808 minutes

Grand Mean Sample **X27-X28** = 6.1142 minutes





Rubber Interlaboratory Testing Program

Report #212

Analysis 6862

2nd Qtr 2022

MDR Vulcanization-Cure Time 50% (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		5.763	-0.138	-0.68	5.922	1.135	3.17	MC
46VZU6		6.275	0.374	1.85	5.065	0.279	0.78	MM
69VNTR		5.873	-0.028	-0.14	4.797	0.010	0.03	ME
6APCCM		5.813	-0.088	-0.43	4.642	-0.145	-0.40	MC
BCB7FG		5.447	-0.454	-2.25	4.390	-0.396	-1.11	MC
KL82QH		5.880	-0.021	-0.10	4.452	-0.335	-0.93	MR
KMGAVW		5.838	-0.063	-0.31	4.550	-0.236	-0.66	MC
L9D8TF		5.862	-0.039	-0.19	4.562	-0.225	-0.63	MC
LN68EM		5.933	0.032	0.16	4.822	0.035	0.10	MC
NAZR7P		6.038	0.137	0.68	4.932	0.145	0.41	ME
PVFP7C		6.107	0.206	1.02	4.915	0.129	0.36	MC
QFXYZH		6.125	0.224	1.11	4.898	0.112	0.31	MC
TKHZWD		6.122	0.221	1.09	5.050	0.264	0.74	MM
TUT3HE		5.813	-0.088	-0.43	4.568	-0.218	-0.61	MX
U3KVA6		5.658	-0.243	-1.20	4.640	-0.146	-0.41	MC
WCLYC6		5.737	-0.164	-0.81	4.482	-0.305	-0.85	ME
XYQ83K		6.030	0.129	0.64	4.682	-0.105	-0.29	MC

Grand Means		Summary Statistics	
	5.9009 minutes		4.7863 minutes
Std Dev Btwn Labs	0.2017 minutes		0.3585 minutes
Statistics based on 17 of 17 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: 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	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha		

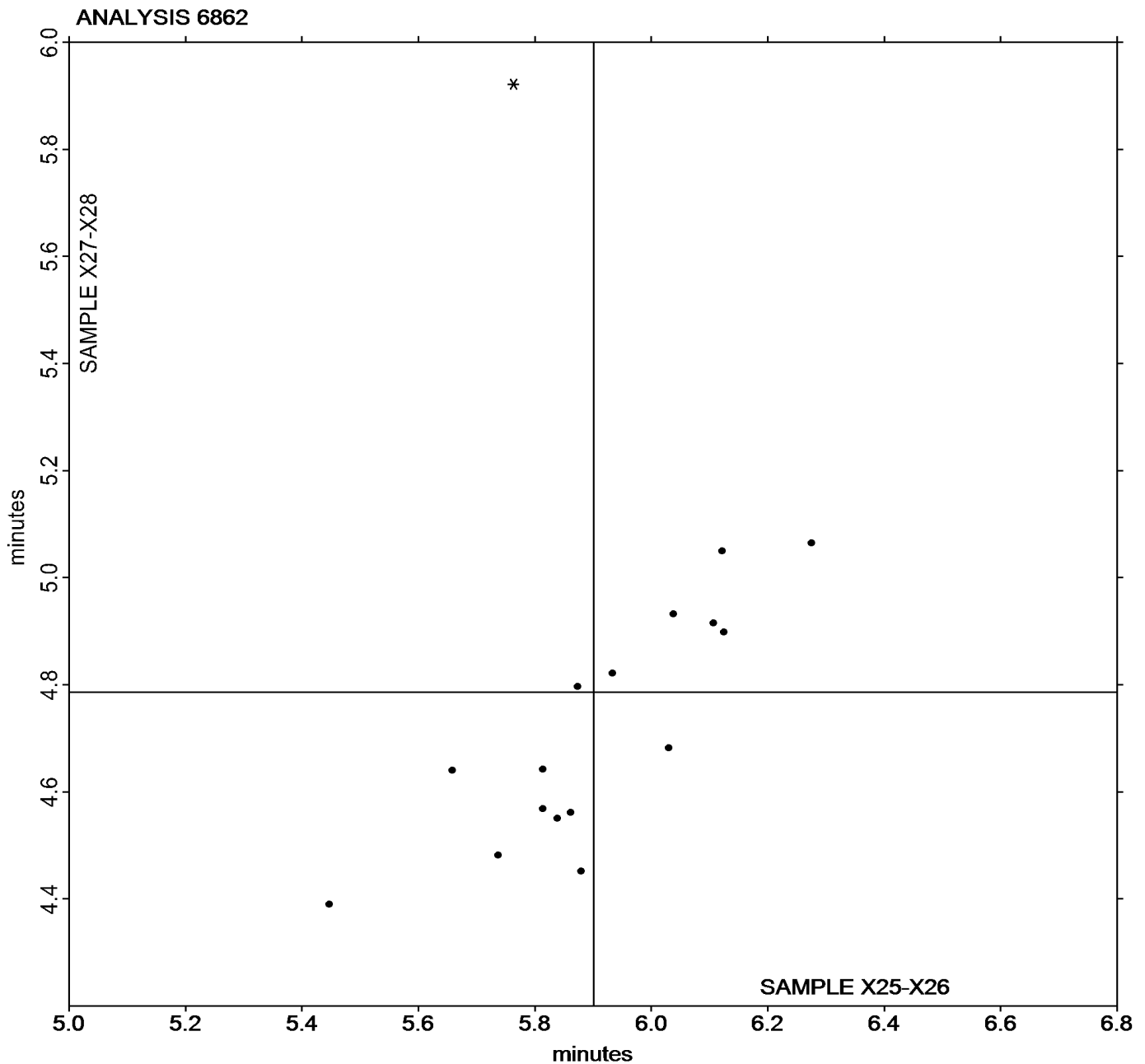


Rubber Interlaboratory Testing Program
Analysis 6862
MDR Vulcanization-Cure Time 50% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample X25-X26 = 5.9009 minutes

Grand Mean Sample X27-X28 = 4.7863 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 #212

Analysis 6871

2nd Qtr 2022

MDR Vulcanization-Cure Time 90% (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BLVGJ		9.295	-0.271	-0.91	9.687	-0.172	-0.63	ME
4FF9GD		9.920	0.354	1.18	10.057	0.198	0.72	MC
6QPJ7F		9.700	0.134	0.45	10.115	0.256	0.93	MC
AGCTTE		9.542	-0.025	-0.08	9.949	0.090	0.33	MM
AV7HMP		9.668	0.102	0.34	10.063	0.205	0.75	MC
BCB7FG		9.233	-0.333	-1.12	9.403	-0.455	-1.66	MC
C9QJCV		9.323	-0.243	-0.82	9.723	-0.135	-0.49	ME
CUNACT		9.332	-0.235	-0.79	9.535	-0.324	-1.18	MC
CYFE6W		9.582	0.015	0.05	10.067	0.208	0.76	MR
CZ9DD4		9.960	0.394	1.32	10.205	0.346	1.26	ME
DX6RA4		9.537	-0.030	-0.10	9.627	-0.232	-0.85	ME
HLVLK7		9.097	-0.470	-1.57	9.298	-0.560	-2.04	MC
KMGAVW		9.353	-0.213	-0.71	9.823	-0.035	-0.13	MC
LZZBQU		9.650	0.084	0.28	10.005	0.146	0.53	MD
MQAWGW		9.568	0.002	0.01	9.873	0.015	0.05	XX
NFRRQC		9.682	0.115	0.39	10.155	0.296	1.08	MC
PX4YHY		9.714	0.148	0.49	9.995	0.136	0.50	MC
QJ2PC4		9.455	-0.111	-0.37	9.825	-0.034	-0.12	MC
QT4CYU		9.207	-0.360	-1.21	9.475	-0.384	-1.40	MC
UJ7JGE		9.638	0.072	0.24	9.940	0.081	0.30	ME
UY3XG9		10.147	0.580	1.94	10.210	0.351	1.28	MM
WTNYXD		9.292	-0.275	-0.92	9.507	-0.352	-1.28	XX
WUFYXA		9.412	-0.155	-0.52	9.680	-0.179	-0.65	XX
X6XUVN		10.395	0.829	2.78	10.377	0.518	1.89	XX
YPF7GK		9.643	0.076	0.26	9.903	0.044	0.16	MC
Z9RC88		9.385	-0.181	-0.61	9.830	-0.029	-0.10	MC

Summary Statistics	
Grand Means	9.5665 minutes
Std Dev Btwn Labs	0.2983 minutes
	9.8587 minutes
	0.2743 minutes
Statistics based on 26 of 26 reporting participants	



Rubber Interlaboratory Testing Program
Analysis 6871
MDR Vulcanization-Cure Time 90% (minutes)

Report #212
2nd Qtr 2022

Samples X25-X26: EPDM compound, batch #1 & X27-X28: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

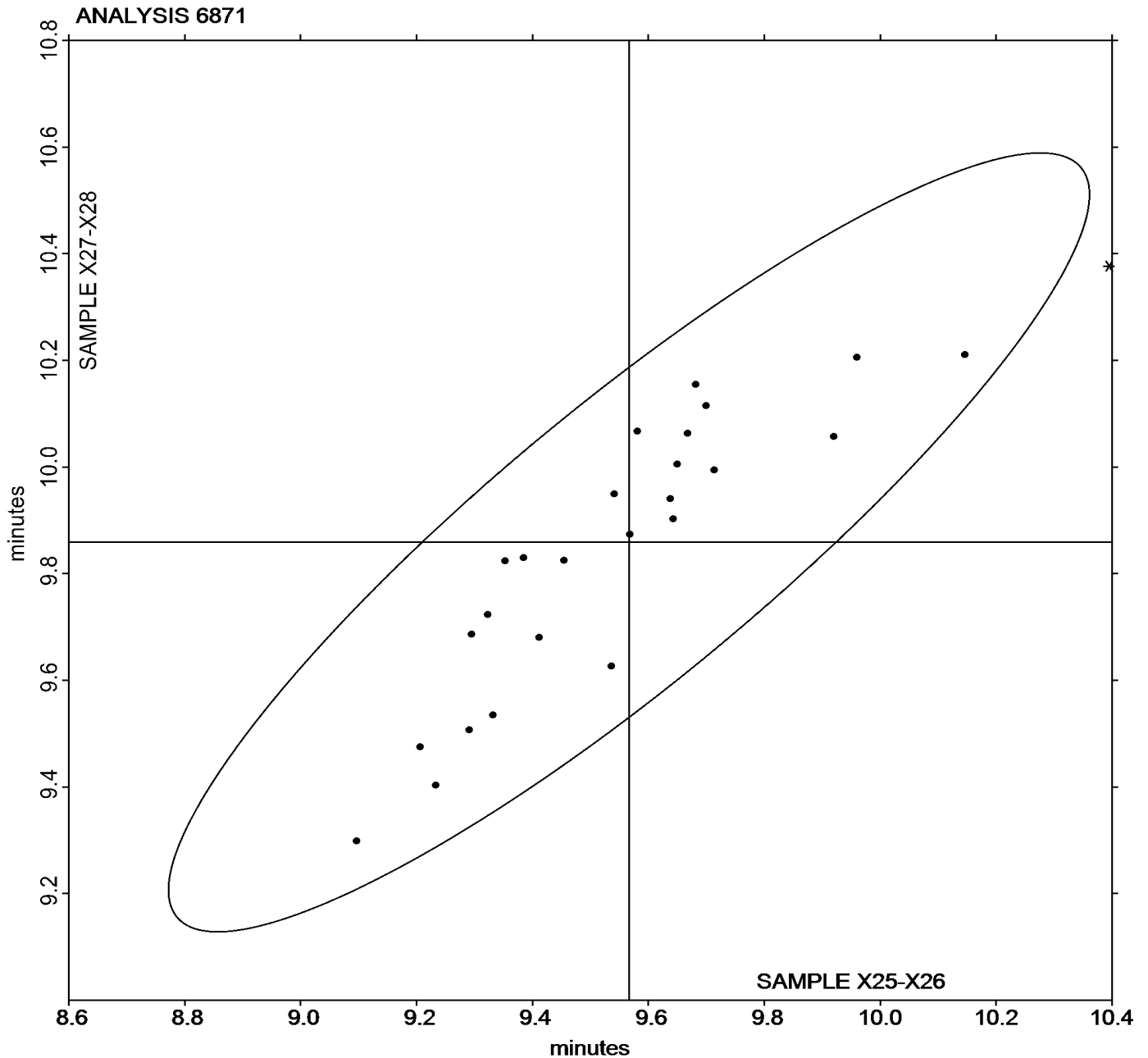


Rubber Interlaboratory Testing Program
Analysis 6871
MDR Vulcanization-Cure Time 90% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 9.5665 minutes

Grand Mean Sample **X27-X28** = 9.8587 minutes





Rubber Interlaboratory Testing Program

Report #212

Analysis 6872

2nd Qtr 2022

MDR Vulcanization-Cure Time 90% (minutes)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		9.430	-0.131	-0.43	9.707	1.598	2.89	MC
46VZU6		10.132	0.571	1.88	8.692	0.583	1.06	MM
69VNTR		9.593	0.032	0.11	8.460	0.352	0.64	ME
6APCCM		9.450	-0.111	-0.36	7.898	-0.210	-0.38	MC
BCB7FG		9.233	-0.328	-1.08	7.857	-0.252	-0.46	MC
KL82QH		9.740	0.179	0.59	7.755	-0.353	-0.64	MR
KMGAVW		9.353	-0.208	-0.68	7.777	-0.332	-0.60	MC
L9D8TF		9.433	-0.128	-0.42	7.562	-0.547	-0.99	MC
LN68EM		9.430	-0.131	-0.43	7.870	-0.238	-0.43	MC
NAZR7P		9.723	0.162	0.53	8.212	0.103	0.19	ME
PVFP7C		9.723	0.162	0.53	8.120	0.012	0.02	MC
QFXYZH		10.245	0.684	2.25	8.783	0.675	1.22	MC
TKHZWD		9.585	0.024	0.08	8.102	-0.007	-0.01	MM
TUT3HE		9.627	0.066	0.22	7.908	-0.200	-0.36	MX
U3KVA6		9.056	-0.504	-1.66	7.830	-0.279	-0.50	MC
WCLYC6		9.202	-0.359	-1.18	7.365	-0.743	-1.35	ME
XYQ83K		9.578	0.017	0.06	7.947	-0.162	-0.29	MC

Grand Means		Summary Statistics	
	9.5609 minutes		8.1084 minutes
Std Dev Btwn Labs	0.3043 minutes		0.5522 minutes
Statistics based on 17 of 17 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: 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	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha		

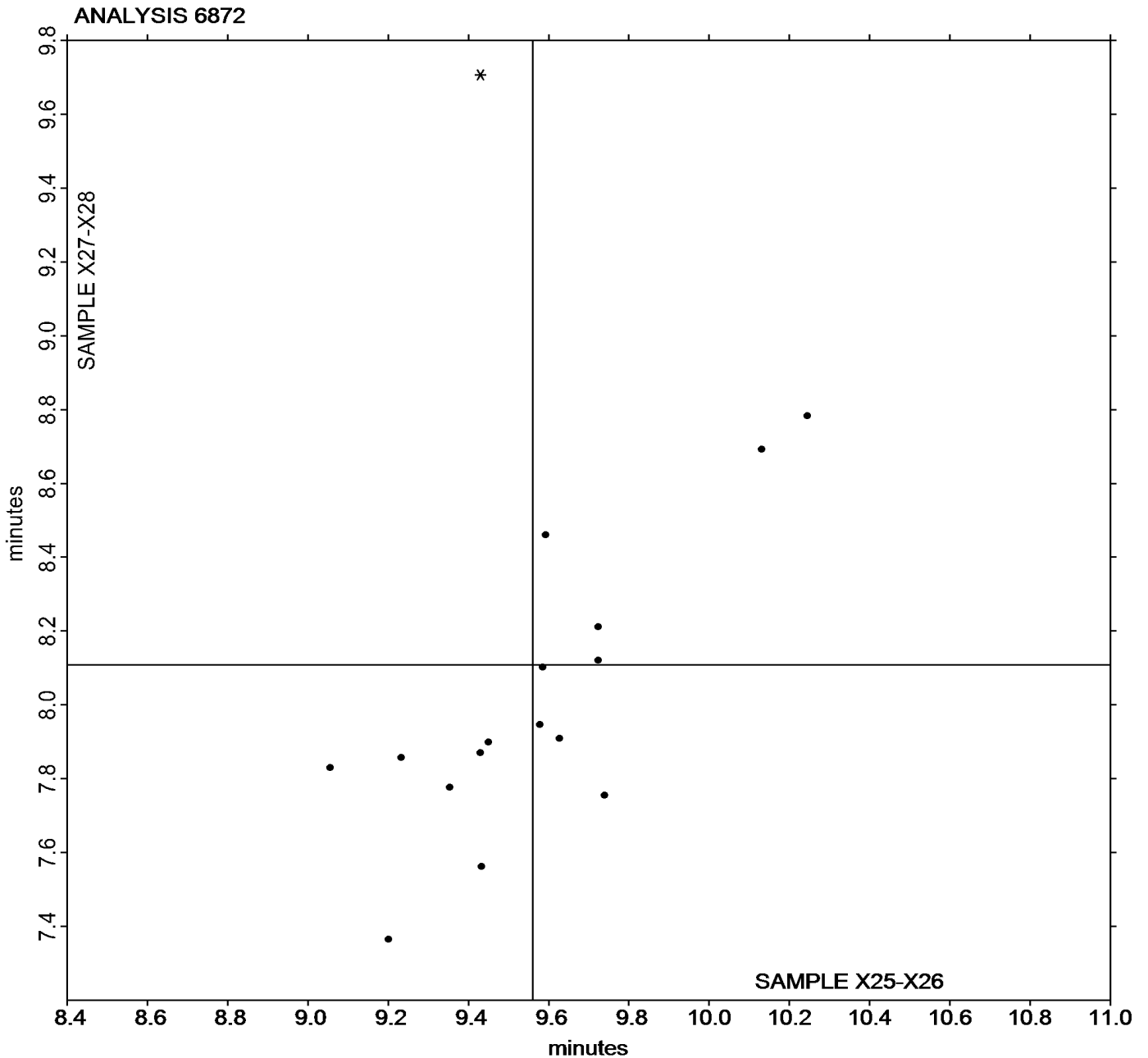


Rubber Interlaboratory Testing Program
Analysis 6872
MDR Vulcanization-Cure Time 90% (minutes)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 9.5609 minutes

Grand Mean Sample **X27-X28** = 8.1084 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 #212

Analysis 6881

2nd Qtr 2022

MDR Vulcanization: Minimum Torque (lbf.in)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BLVGJ		2.695	0.325	0.94	2.838	0.388	1.06	ME
4FF9GD		2.668	0.299	0.87	2.660	0.210	0.57	MC
6QPJ7F		2.105	-0.265	-0.77	2.157	-0.294	-0.80	MC
AGCTTE		1.978	-0.392	-1.13	2.073	-0.378	-1.03	MM
AV7HMP		2.718	0.349	1.01	2.877	0.426	1.17	MC
BCB7FG		2.437	0.067	0.19	2.450	0.000	0.00	MC
C9QJCV		2.028	-0.341	-0.99	2.120	-0.330	-0.90	ME
CUNACT		2.603	0.234	0.68	2.698	0.248	0.68	MC
CYFE6W		2.237	-0.133	-0.39	2.253	-0.197	-0.54	MR
CZ9DD4		2.045	-0.325	-0.94	2.082	-0.369	-1.01	ME
DX6RA4		2.450	0.080	0.23	2.555	0.105	0.29	ME
HLVLK7		3.052	0.682	1.98	3.283	0.833	2.28	MC
KMGAVW		2.823	0.454	1.31	2.924	0.473	1.30	MC
LZZBQU		1.906	-0.464	-1.34	2.018	-0.432	-1.18	MD
MQAWGW		2.110	-0.260	-0.75	2.185	-0.265	-0.73	ME
NFRRQC		2.793	0.424	1.23	2.933	0.483	1.32	MC
PX4YHY		2.245	-0.125	-0.36	2.310	-0.140	-0.38	MC
QJ2PC4		2.045	-0.325	-0.94	2.140	-0.310	-0.85	MC
QT4CYU		2.052	-0.318	-0.92	2.123	-0.327	-0.90	MC
UJ7JGE		1.913	-0.456	-1.32	1.952	-0.499	-1.37	ME
UY3XG9		2.672	0.302	0.87	2.667	0.216	0.59	MM
WTNYXD		2.615	0.245	0.71	2.617	0.166	0.46	MM
WUFYXA		2.780	0.410	1.19	2.878	0.428	1.17	XX
X6XUVN		2.556	0.187	0.54	2.645	0.195	0.53	XX
YPF7GK		2.055	-0.315	-0.91	2.109	-0.341	-0.93	MC
Z9RC88		2.031	-0.338	-0.98	2.163	-0.288	-0.79	MC

Summary Statistics	
Grand Means	2.3697 lbf.in 2.4504 lbf.in
Std Dev Btwn Labs	0.3451 lbf.in 0.3653 lbf.in
Statistics based on 26 of 26 reporting participants	



Rubber Interlaboratory Testing Program
Analysis 6881
MDR Vulcanization: Minimum Torque (lbf.in)

Report #212
2nd Qtr 2022

Samples X25-X26: EPDM compound, batch #1 & X27-X28: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

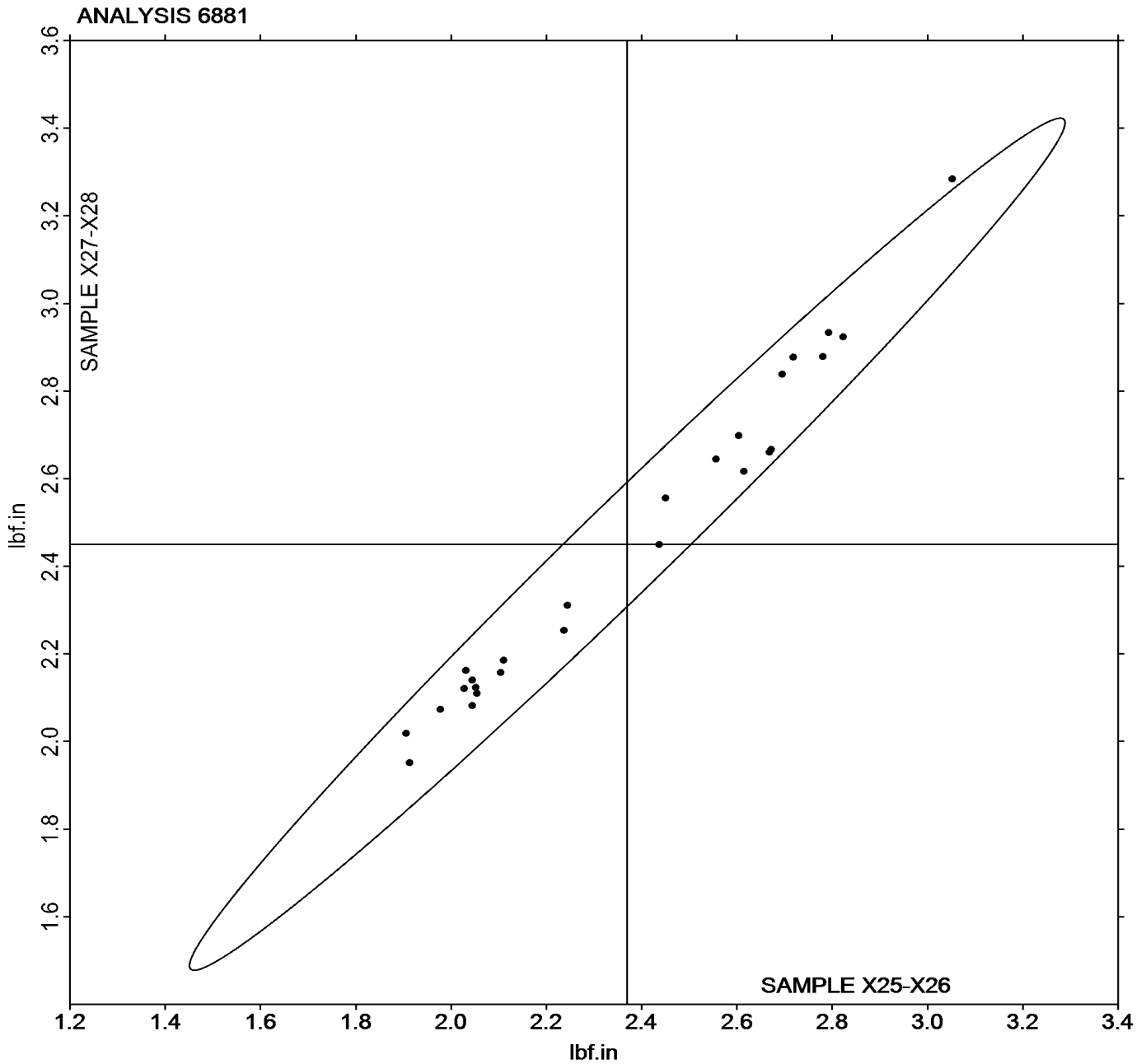


Rubber Interlaboratory Testing Program
Analysis 6881
MDR Vulcanization: Minimum Torque (lbf.in)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 2.3697 lbf.in

Grand Mean Sample **X27-X28** = 2.4504 lbf.in





Rubber Interlaboratory Testing Program

Report #212

Analysis 6882

2nd Qtr 2022

MDR Vulcanization: Minimum Torque (lbf.in)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		2.413	0.087	0.42	2.470	-0.068	-0.42	MC
46VZU6		2.278	-0.048	-0.24	2.527	-0.012	-0.07	MM
69VNTR		2.340	0.013	0.06	2.589	0.051	0.31	ME
6APCCM		2.294	-0.033	-0.16	2.676	0.138	0.85	MC
BCB7FG		2.437	0.110	0.54	2.410	-0.128	-0.80	MC
KL82QH		2.170	-0.157	-0.77	2.352	-0.187	-1.16	MR
KMGAVW		2.823	0.497	2.43	2.897	0.359	2.23	MC
L9D8TF		2.347	0.020	0.10	2.547	0.008	0.05	MC
LN68EM		2.245	-0.082	-0.40	2.510	-0.028	-0.17	MC
NAZR7P		2.163	-0.164	-0.80	2.453	-0.085	-0.53	ME
PVFP7C		2.088	-0.238	-1.17	2.415	-0.123	-0.76	MC
QFXYZH		2.180	-0.147	-0.72	2.392	-0.147	-0.91	MC
TKHZWD		2.228	-0.098	-0.48	2.485	-0.053	-0.33	MM
TUT3HE		2.723	0.397	1.94	2.853	0.315	1.95	MX
U3KVA6		2.304	-0.023	-0.11	2.533	-0.005	-0.03	MC
WCLYC6		2.467	0.140	0.68	2.697	0.158	0.98	ME
XYQ83K		2.055	-0.272	-1.33	2.345	-0.193	-1.20	MC

Grand Means		Summary Statistics	
	2.3268 lbf.in		2.5382 lbf.in
Std Dev Btwn Labs	0.2043 lbf.in		0.1612 lbf.in
Statistics based on 17 of 17 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: 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	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha		

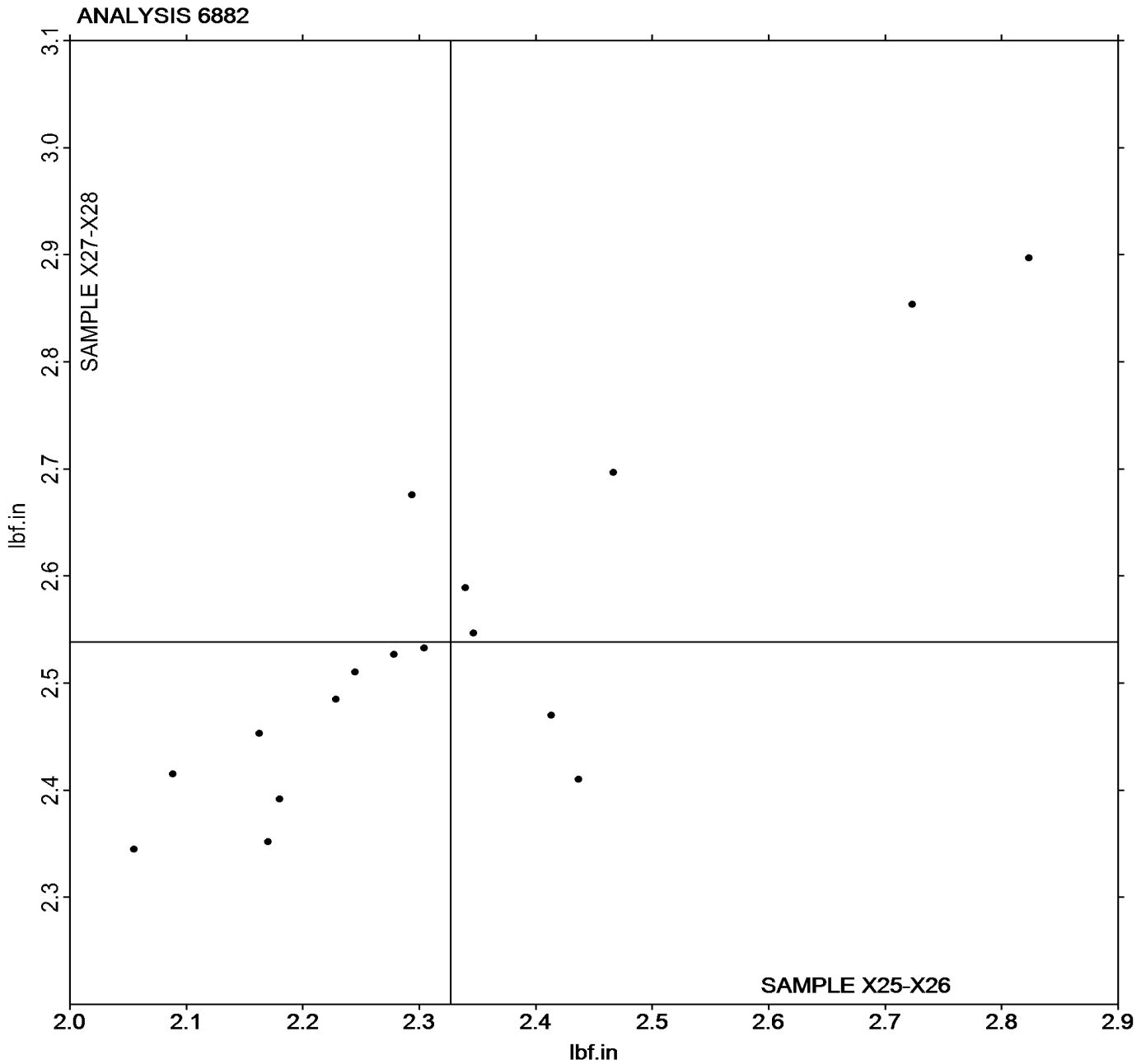


Rubber Interlaboratory Testing Program
Analysis 6882
MDR Vulcanization: Minimum Torque (lbf.in)

Report #212
2nd Qtr 2022

Grand Mean Sample X25-X26 = 2.3268 lbf.in

Grand Mean Sample X27-X28 = 2.5382 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 #212

Analysis 6891

2nd Qtr 2022

MDR Vulcanization: Maximum Torque (lbf.in)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2BLVGJ		12.63	0.27	0.51	12.84	0.50	0.86	ME
4FF9GD		12.82	0.46	0.85	12.78	0.44	0.75	MC
6QPJ7F		12.29	-0.07	-0.13	12.24	-0.10	-0.17	MC
AGCTTE		11.44	-0.92	-1.70	11.35	-0.99	-1.71	MM
AV7HMP		12.48	0.12	0.23	12.64	0.30	0.52	MC
BCB7FG		10.70	-1.66	-3.08	10.73	-1.61	-2.77	MC
C9QJCV		12.07	-0.29	-0.53	11.88	-0.46	-0.80	ME
CUNACT		13.25	0.89	1.66	13.08	0.74	1.28	MC
CYFE6W		12.70	0.34	0.64	12.66	0.32	0.55	MR
CZ9DD4		12.06	-0.30	-0.55	12.05	-0.29	-0.49	ME
DX6RA4		12.32	-0.04	-0.08	12.37	0.03	0.05	ME
HLVLK7		13.07	0.71	1.31	12.92	0.58	1.00	MC
KMGAVW		12.68	0.32	0.59	13.27	0.93	1.61	MC
LZZBQU		11.63	-0.73	-1.36	11.67	-0.67	-1.16	MD
MQAWGW		12.37	0.01	0.02	12.38	0.03	0.06	XX
NFRRQC		12.70	0.34	0.63	13.08	0.74	1.27	MC
PX4YHY		12.93	0.57	1.06	12.78	0.43	0.75	MC
QJ2PC4		11.86	-0.50	-0.92	11.90	-0.44	-0.75	MC
QT4CYU		12.56	0.20	0.37	12.53	0.19	0.32	MC
UJ7JGE		11.96	-0.40	-0.75	11.87	-0.48	-0.82	ME
UY3XG9		12.36	0.00	0.00	12.02	-0.32	-0.56	MM
WTNYXD		12.20	-0.16	-0.29	11.99	-0.35	-0.60	MM
WUFYXA		12.65	0.29	0.55	12.63	0.29	0.50	XX
X6XUVN		12.47	0.11	0.21	12.07	-0.27	-0.47	XX
YPF7GK		12.66	0.30	0.56	12.46	0.12	0.21	MC
Z9RC88		12.46	0.10	0.19	12.68	0.34	0.58	MC

Grand Means		Summary Statistics	
	12.358 lbf.in		12.340 lbf.in
Std Dev Btwn Labs	0.538 lbf.in		0.580 lbf.in
Statistics based on 26 of 26 reporting participants			



Rubber Interlaboratory Testing Program
Analysis 6891
MDR Vulcanization: Maximum Torque (lbf.in)

Report #212
2nd Qtr 2022

Samples X25-X26: EPDM compound, batch #1 & X27-X28: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

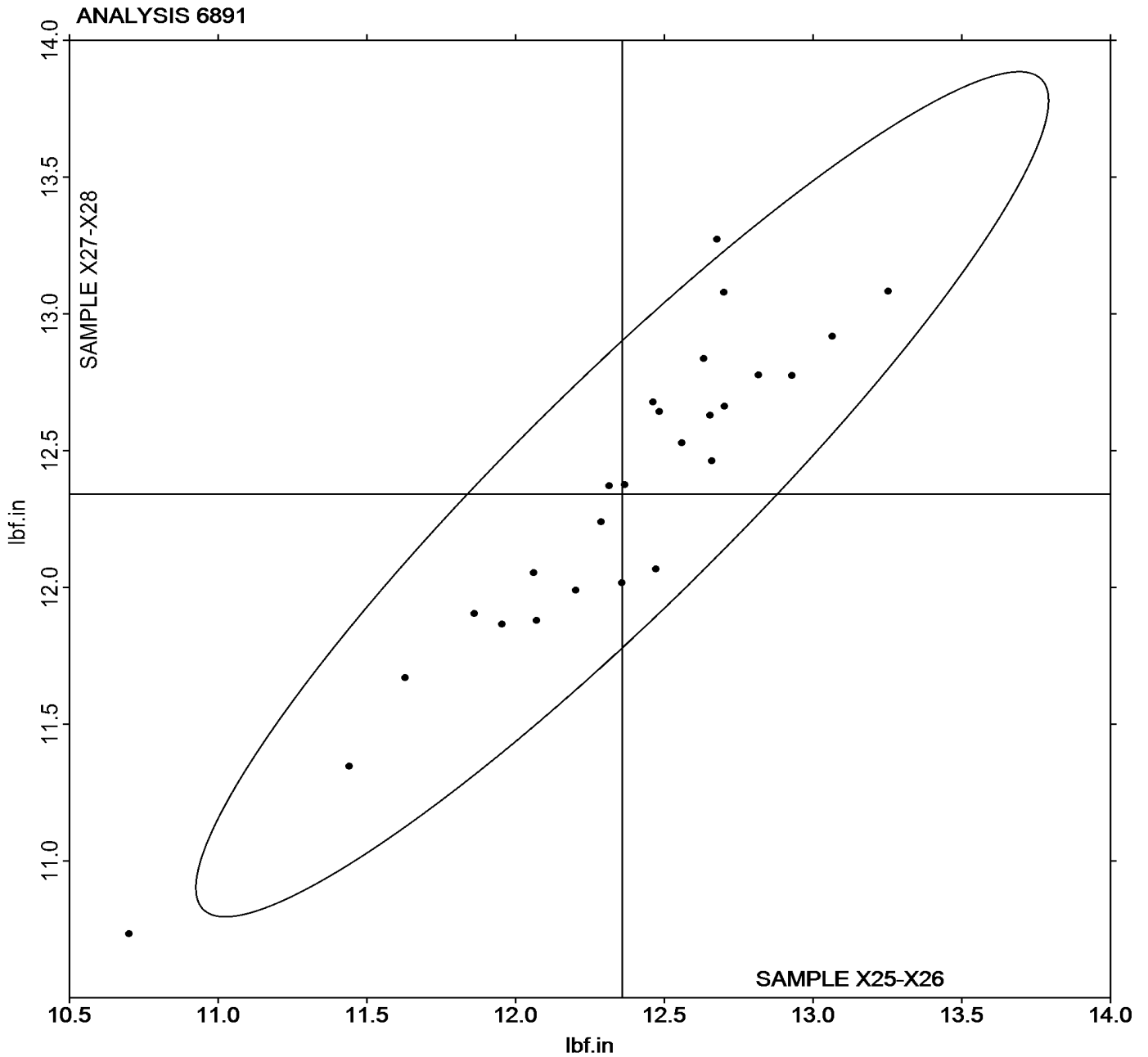


Rubber Interlaboratory Testing Program
Analysis 6891
MDR Vulcanization: Maximum Torque (lbf.in)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 12.358 lbf.in

Grand Mean Sample **X27-X28** = 12.340 lbf.in





Rubber Interlaboratory Testing Program

Report #212

Analysis 6892

2nd Qtr 2022

MDR Vulcanization: Maximum Torque (lbf.in)

Laboratory results for X27-X28 samples exhibited a significant bimodal statistical distribution for cure time and scorch time properties. To ensure that published statistics are meaningful, CTS has split Tests 684 through 689 into Tests 68X1 and 68X2 (e.g., 6841 and 6842). Labs are placed in Group 1 or Group 2 depending on which group of data their X27-X28 results correspond with. All warning (*) and exclusion (X) flags are removed for X27-X28 data. Due to our confidence in the quality of samples X25-X26, any flags remaining are attributed to testing the X25-X26 samples.
If you have any questions, please contact CTS.

WebCode	Data Flag	Sample X25-X26			Sample X27-X28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
287D8E		13.37	1.03	1.40	13.22	0.53	0.69	MC
46VZU6		13.64	1.29	1.76	14.08	1.39	1.79	MM
69VNTR		12.79	0.45	0.61	13.56	0.87	1.12	ME
6APCCM		11.18	-1.16	-1.58	11.61	-1.08	-1.39	MC
BCB7FG		10.70	-1.64	-2.24	10.83	-1.86	-2.39	MC
KL82QH		12.41	0.06	0.09	12.89	0.21	0.26	MR
KMGAVW		12.68	0.33	0.45	13.15	0.46	0.59	MC
L9D8TF		12.20	-0.14	-0.19	12.42	-0.27	-0.34	MC
LN68EM		12.70	0.36	0.49	12.97	0.29	0.37	MC
NAZR7P		11.72	-0.63	-0.86	12.16	-0.52	-0.67	ME
PVFP7C		12.53	0.18	0.25	13.00	0.31	0.40	MC
QFXYZH		12.43	0.09	0.12	12.78	0.09	0.12	MC
TKHZWD		11.89	-0.46	-0.62	12.30	-0.39	-0.50	MM
TUT3HE		12.22	-0.13	-0.18	12.35	-0.34	-0.43	MX
U3KVA6		12.80	0.45	0.62	13.42	0.73	0.94	MC
WCLYC6		12.80	0.46	0.62	12.90	0.22	0.28	ME
XYQ83K		11.81	-0.54	-0.74	12.03	-0.66	-0.84	MC

Grand Means		Summary Statistics	
	12.344 lbf.in		12.686 lbf.in
Std Dev Btwn Labs	0.733 lbf.in		0.777 lbf.in
Statistics based on 17 of 17 reporting participants			

Samples X25-X26: EPDM compound, batch #1 & X27-X28: 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	MR	MonTech D-RPA 3000
MX	Rebuilt MonTech Alpha		

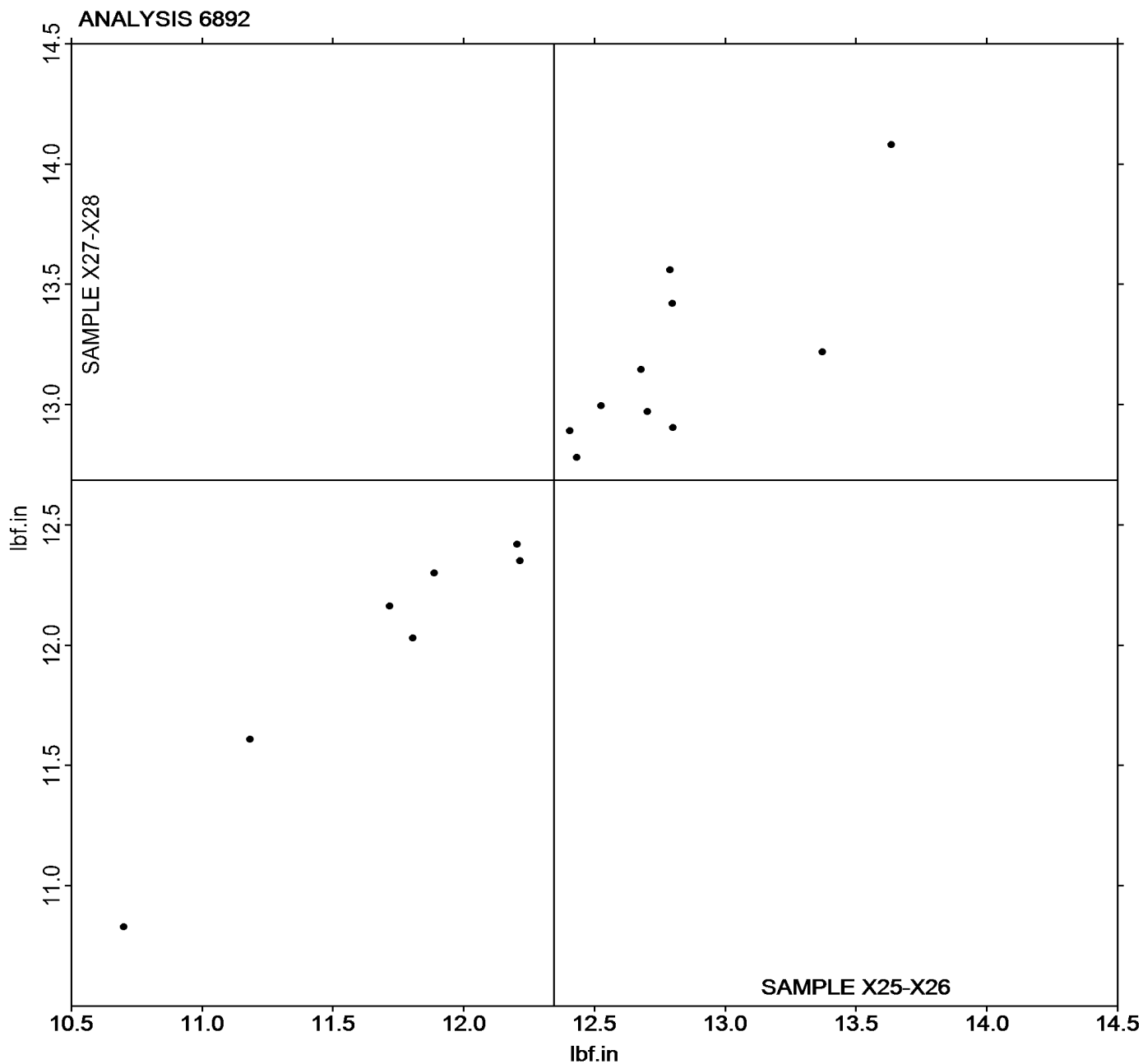


Rubber Interlaboratory Testing Program
Analysis 6892
MDR Vulcanization: Maximum Torque (lbf.in)

Report #212
2nd Qtr 2022

Grand Mean Sample **X25-X26** = 12.344 lbf.in

Grand Mean Sample **X27-X28** = 12.686 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 #212

Analysis 690

2nd Qtr 2022

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

WebCode	Data Flag	Sample F21-F22			Sample F23-F24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6QPJ7F		457.7	-63.7	-1.31	491.7	-59.7	-1.20	PR
AGCTTE		494.0	-27.4	-0.56	525.1	-26.4	-0.53	XX
LZZBQU		533.0	11.7	0.24	551.5	0.0	0.00	RP
MQAWGW		574.9	53.6	1.10	597.6	46.1	0.93	RP
NAZR7P		576.1	54.7	1.12	594.3	42.8	0.86	XX
TKHZWD		549.1	27.8	0.57	585.9	34.4	0.69	RP
U3KVA6		477.1	-44.3	-0.91	507.3	-44.2	-0.89	RP
X6XUVN		587.5	66.1	1.36	636.6	85.1	1.71	XX
YPF7GK		469.3	-52.1	-1.07	494.1	-57.4	-1.15	RP
ZG2W9H		495.0	-26.4	-0.54	530.7	-20.8	-0.42	RP

Summary Statistics	
Grand Means	521.37 kPa 551.46 kPa
Stnd Dev Btwn Labs	48.67 kPa 49.81 kPa
Statistics based on 10 of 10 reporting participants	

Samples F21-F22: EPDM compound, batch #1 & F23-F24: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

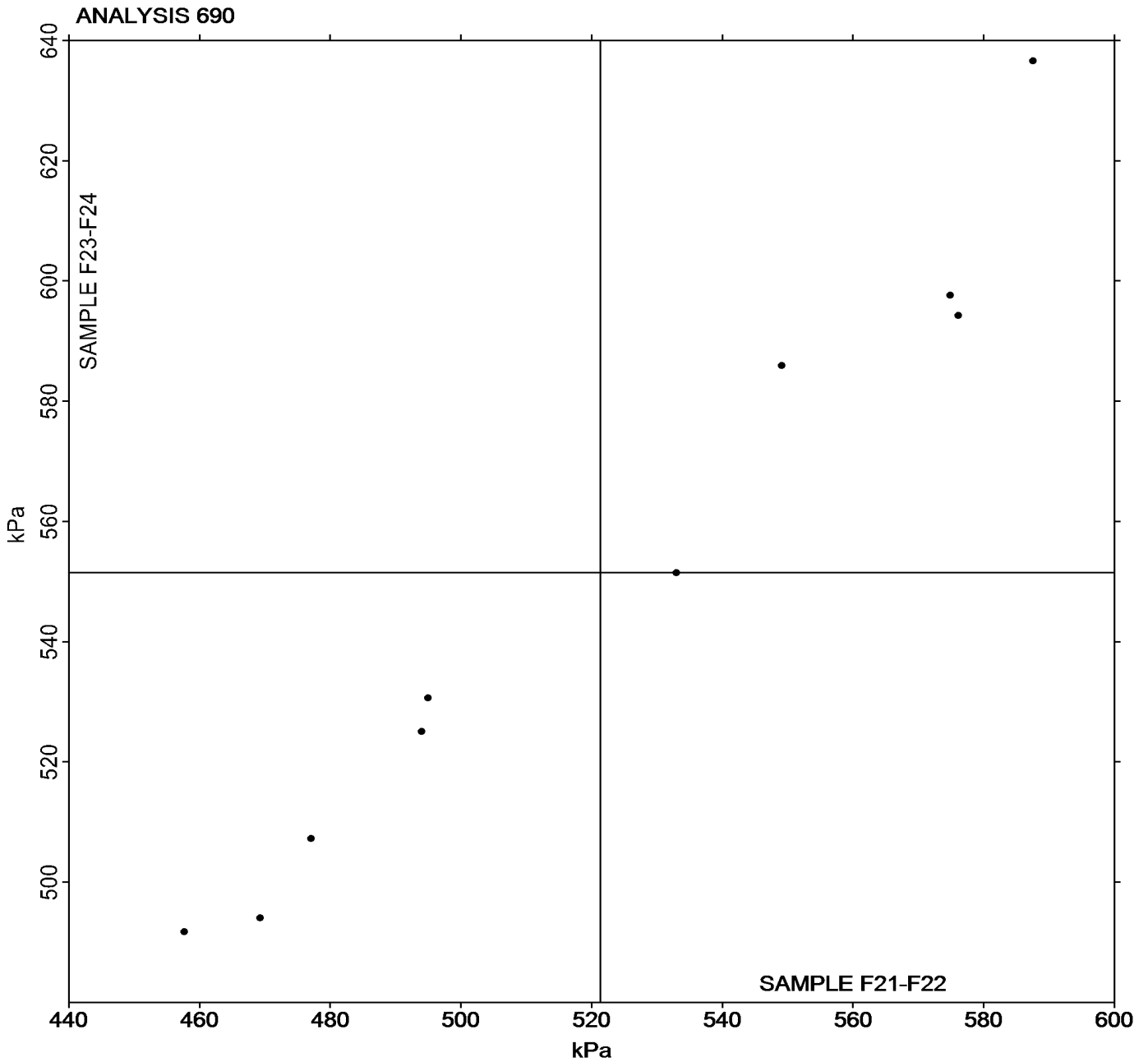


Rubber Interlaboratory Testing Program
Analysis 690
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #212
2nd Qtr 2022

Grand Mean Sample F21-F22 = 521.37 kPa

Grand Mean Sample F23-F24 = 551.46 kPa



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



Rubber Interlaboratory Testing Program

Report #212

Analysis 691

2nd Qtr 2022

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

WebCode	Data Flag	Sample F21-F22			Sample F23-F24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6QPJ7F		201.8	-11.0	-0.66	206.9	-10.8	-0.63	PR
AGCTTE		199.4	-13.4	-0.81	204.6	-13.1	-0.76	XX
LZZBQU		215.4	2.7	0.16	216.8	-1.0	-0.06	RP
MQAWGW		225.3	12.6	0.76	229.6	11.9	0.69	RP
NAZR7P		231.7	19.0	1.15	234.3	16.5	0.96	XX
TKHZWD		197.1	-15.6	-0.94	204.2	-13.5	-0.79	RP
U3KVA6		196.1	-16.6	-1.00	202.3	-15.4	-0.89	RP
X6XUVN		243.5	30.8	1.86	254.1	36.3	2.11	XX
YPF7GK		200.1	-12.6	-0.76	203.1	-14.7	-0.85	RP
ZG2W9H		216.8	4.1	0.25	221.5	3.8	0.22	RP

Summary Statistics	
Grand Means	212.74 kPa
Std Dev Btwn Labs	16.57 kPa
	217.73 kPa
	17.24 kPa
Statistics based on 10 of 10 reporting participants	

Samples F21-F22: EPDM compound, batch #1 & F23-F24: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

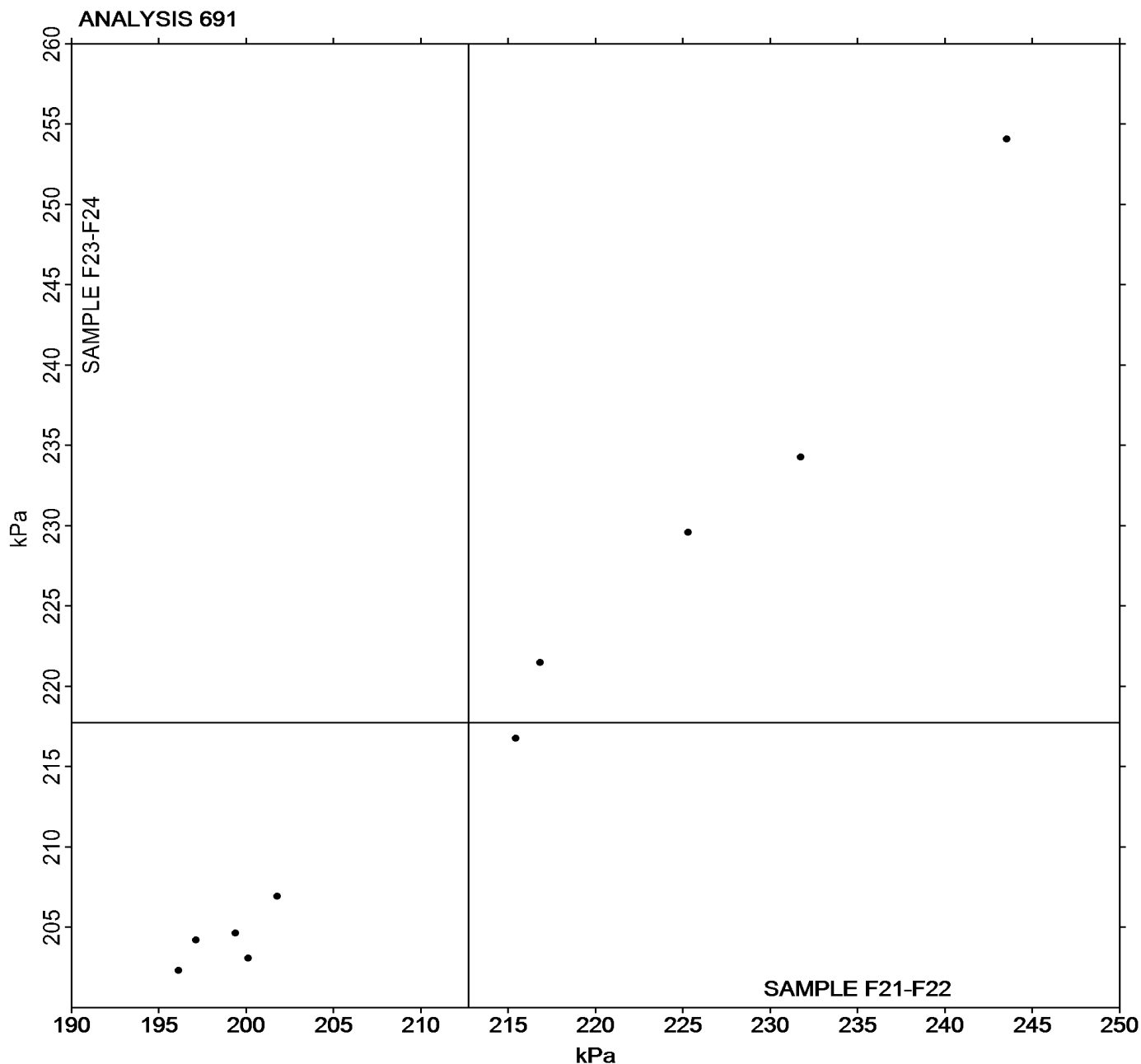
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample F21-F22 = 212.74 kPa

Grand Mean Sample F23-F24 = 217.73 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 #212

Analysis 695

2nd Qtr 2022

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

WebCode	Data Flag	Sample F21-F22			Sample F23-F24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6QPJ7F		67.13	-12.63	-1.24	76.98	-12.23	-0.93	PR
AGCTTE		80.62	0.86	0.08	90.77	1.57	0.12	XX
LZZBQU		79.01	-0.75	-0.07	85.14	-4.06	-0.31	RP
MQAWGW		81.81	2.05	0.20	87.06	-2.14	-0.16	RP
NAZR7P		85.55	5.79	0.57	90.16	0.96	0.07	XX
TKHZWD		103.41	23.65	2.32	123.57	34.36	2.60	RP
U3KVA6		77.98	-1.78	-0.18	87.48	-1.73	-0.13	RP
X6XUVN		81.02	1.26	0.12	91.93	2.73	0.21	XX
YPF7GK		69.64	-10.12	-0.99	76.56	-12.65	-0.96	RP
ZG2W9H		71.45	-8.31	-0.82	82.40	-6.81	-0.52	RP

Summary Statistics	
Grand Means	
	79.761 kPa
	89.205 kPa
Stnd Dev Btwn Labs	
	10.187 kPa
	13.215 kPa
Statistics based on 10 of 10 reporting participants	

Samples F21-F22: EPDM compound, batch #1 & F23-F24: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

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

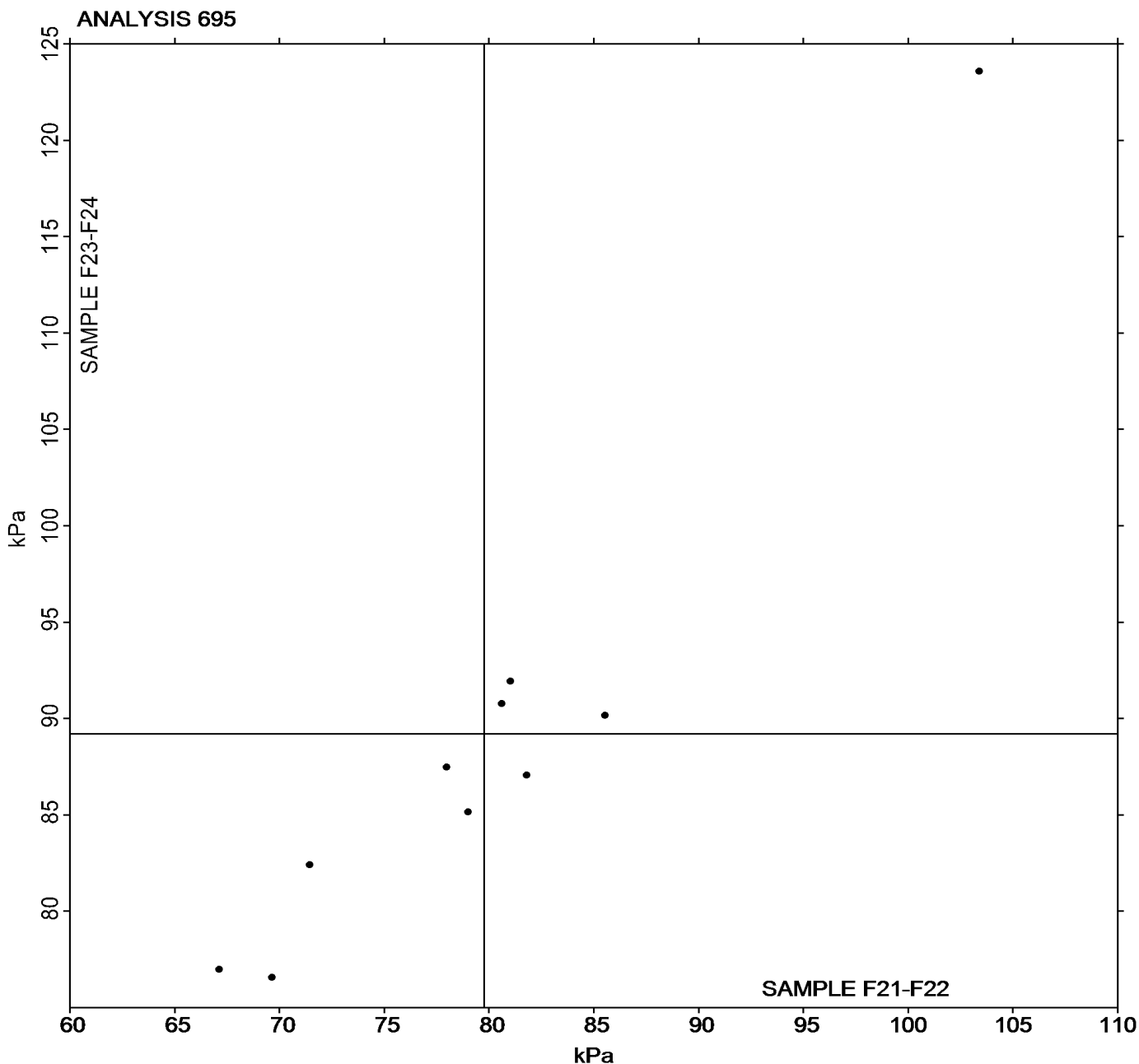


Rubber Interlaboratory Testing Program
Analysis 695
RPA Rheological Properties: Part B - G' at 1.0Hz (kPa)

Report #212
2nd Qtr 2022

Grand Mean Sample F21-F22 = 79.761 kPa

Grand Mean Sample F23-F24 = 89.205 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 #212

Analysis 696

2nd Qtr 2022

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

WebCode	Data Flag	Sample F21-F22			Sample F23-F24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6QPJ7F		63.83	-8.54	-1.14	66.70	-8.25	-1.11	PR
AGCTTE		68.78	-3.58	-0.48	70.85	-4.11	-0.55	XX
LZZBQU		79.67	7.30	0.97	81.53	6.57	0.88	RP
MQAWGW		81.76	9.40	1.25	83.89	8.93	1.20	RP
NAZR7P		83.13	10.76	1.43	84.03	9.08	1.22	XX
TKHZWD		70.12	-2.24	-0.30	73.63	-1.33	-0.18	XX
U3KVA6		67.01	-5.35	-0.71	69.38	-5.58	-0.75	RP
X6XUVN		78.35	5.99	0.80	83.56	8.60	1.16	XX
YPF7GK		64.77	-7.59	-1.01	66.72	-8.24	-1.11	RP
ZG2W9H		66.20	-6.16	-0.82	69.28	-5.68	-0.76	XX

Summary Statistics	
Grand Means	
	72.360 kPa
	74.954 kPa
Stnd Dev Btwn Labs	
	7.515 kPa
	7.434 kPa
Statistics based on 10 of 10 reporting participants	

Samples F21-F22: EPDM compound, batch #1 & F23-F24: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

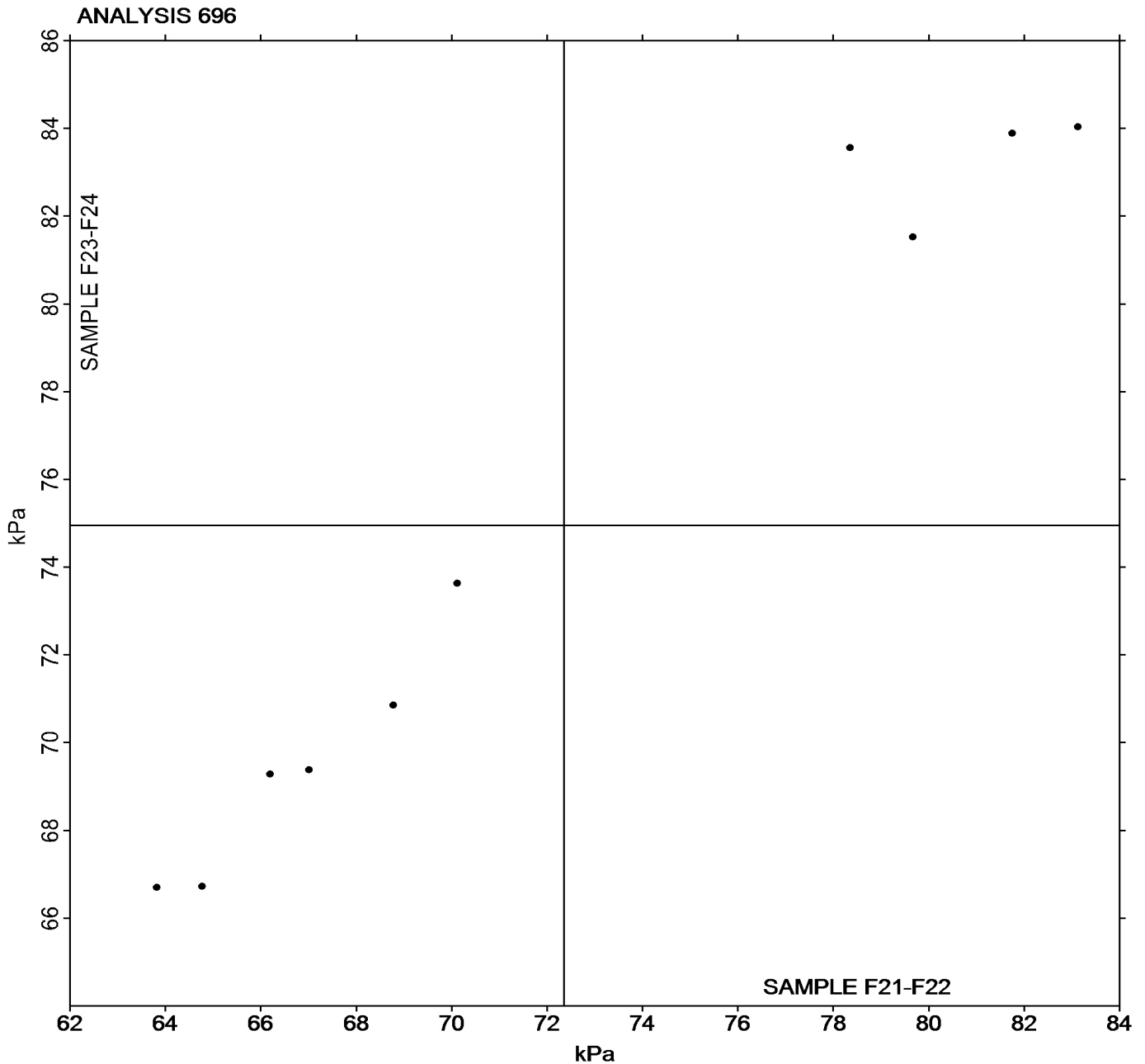
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample F21-F22 = 72.360 kPa

Grand Mean Sample F23-F24 = 74.954 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-