

## Rubber Interlaboratory Testing Program

### Summary Report #213- 3rd Qtr 2022

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<a href="#">606</a>	<a href="#">Ultimate Elongation: Precured Rubber Samples</a>	<a href="#">684</a>	<a href="#">MDR Vulcanization Charac.: Cure Time 10%</a>
<a href="#">607</a>	<a href="#">Stress at 300% Elongation: Precured Samples</a>	<a href="#">685</a>	<a href="#">MDR Vulcanization Charac.: Scorch Time, Ts1</a>
<a href="#">608</a>	<a href="#">Stress at 100% Elongation: Precured Samples</a>	<a href="#">686</a>	<a href="#">MDR Vulcanization Charac.: Cure Time 50%</a>
<a href="#">620</a>	<a href="#">Hardness (Type A): Precured Rubber Samples</a>	<a href="#">687</a>	<a href="#">MDR Vulcanization Charac.: Cure Time 90%</a>
<a href="#">621</a>	<a href="#">Density: Precured Rubber Samples @ 25C</a>	<a href="#">688</a>	<a href="#">MDR Vulcanization Charac.: Minimum Torque</a>
<a href="#">625</a>	<a href="#">Hardness (Shore D/Type D)</a>	<a href="#">689</a>	<a href="#">MDR Vulcanization Charac.: Maximum Torque</a>
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<a href="#">631</a>	<a href="#">Ultimate Elongation: Participant-Cured Samples</a>	<a href="#">691</a>	<a href="#">RPA Rheological Properties: Part A - G'' at 20Hz</a>
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## **ABOUT THE PROGRAM**

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

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

## **ABOUT CTS**

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

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

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

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

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

**Graph** - For each laboratory, the LAB MEAN for the first sample (x-axis) is plotted against the LAB MEAN for the second sample (y-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the GRAND MEANS for each sample. When 20 or more laboratories are in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained above.

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### Common Problems Highlighted in Footnotes

1. **Extreme data** - The laboratory's results for one or both samples are so inconsistent with those of the other participants that the lab mean(s) fall outside the plot. (The data usually vary by more than three standard deviations from the grand mean.) The participant is advised to immediately review his data and/or testing procedure.
2. **Systematic bias** - The laboratory's results are either consistently high or low for both samples when compared to the other participants (the plotted point falls near the top or bottom of the ellipse). This indicates that the participant is performing the test with a constant bias. Causes of systematic errors include improper calibration, the particular make/model of equipment or a modification to the testing procedure.
3. **Inconsistency in testing between samples/sample sets** - The laboratory's results indicate that there are differences in the way the two samples tested (the plotted point falls to the side of the ellipse). This type of error may be attributed to the analyst deviating from the procedure when testing one of the samples or a material interaction occurrence with the instrument or room conditions. The inconsistency is reflected in the CPVs for the two samples, such as a +1.5 CPV for sample A and a -2.2 CPV for sample B. CTS also will specify if the laboratory's data for one sample are high/low compared to the other participants. If this inconsistency is slight, the lab's plotted point will be an \* that falls on the edge of the ellipse.
4. **Inconsistency in testing within a sample** - The laboratory's within-lab standard deviation for a specified sample is high when compared to the other participants, often causing the lab's plotted point to fall outside of the ellipse.
5. **Data appeared to be off by a factor of # and was corrected by CTS** - In tests that involve computations, the results reported to CTS may be off by a factor. If this factor can easily be determined, CTS may correct the data and flag the participant. Occasionally CTS will correct a laboratory's results even though the data are still high or low when compared to the other participants. This is done so that the laboratory may be alerted to other possible errors in its testing procedure.
6. **Data for two samples (or two tests) appeared to be switched by the lab, and the error was corrected by CTS.**

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Labs flagged with an \* are not typically included in the footnotes of a data table. These labs may locate their position in the control ellipse and use the definitions above to help identify the type of testing error. An \* should serve as a caution flag, a "yellow light", to a lab. If this error is repeated in future rounds, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm. Interlaboratory tests conducted at regular intervals permit a lab to recognize trends in testing.



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JUWC2		3,264.5	-76.7	-0.52	3,187.5	-134.8	-0.88
2KZLB6		3,208.0	-133.2	-0.91	3,166.5	-155.8	-1.01
2X9AJ2		3,535.0	193.8	1.33	3,470.0	147.7	0.96
2XQBAB		3,308.1	-33.1	-0.23	3,469.9	147.7	0.96
2ZWXME		3,486.5	145.3	0.99	3,375.5	53.2	0.35
32NYH6		3,415.7	74.4	0.51	3,393.9	71.6	0.47
38PD7R		3,319.0	-22.2	-0.15	3,354.5	32.2	0.21
3BT3UU		3,238.0	-103.2	-0.71	3,233.8	-88.5	-0.58
3J3TUC		3,408.5	67.3	0.46	3,272.5	-49.8	-0.32
3KWG9Z		3,323.3	-18.0	-0.12	3,369.5	47.2	0.31
3M4GRL		3,159.7	-181.6	-1.24	2,997.2	-325.0	-2.11
3U29XV		3,270.5	-70.7	-0.48	3,324.5	2.2	0.01
3VZCUQ		3,569.5	228.3	1.56	3,537.5	215.2	1.40
47V837		3,196.0	-145.2	-0.99	3,146.0	-176.3	-1.15
6QVM4U		3,495.0	153.8	1.05	3,440.0	117.7	0.76
72VHVX		3,440.0	98.8	0.68	3,480.0	157.7	1.02
7MNN4L		3,415.7	74.4	0.51	3,394.6	72.4	0.47
7QU6H4		3,188.1	-153.2	-1.05	3,242.1	-80.2	-0.52
87JGNJ		3,471.0	129.8	0.89	3,395.5	73.2	0.48
8DG8AU		3,141.8	-199.4	-1.36	3,076.9	-245.4	-1.59
8ECRZZ		3,157.5	-183.7	-1.26	3,151.0	-171.3	-1.11
8R3LDT		3,391.1	49.9	0.34	3,303.5	-18.8	-0.12
8TVBVN		3,285.0	-56.2	-0.38	3,360.0	37.7	0.25
99KXHT		3,435.0	93.8	0.64	3,522.0	199.7	1.30
9KZRUL		3,385.2	44.0	0.30	3,325.7	3.5	0.02
9PPCVF	X	2,182.8	-1,158.4	-7.92	2,422.2	-900.1	-5.85
9TRBBE		3,455.0	113.8	0.78	3,435.0	112.7	0.73
9ZQRPR		3,257.5	-83.7	-0.57	3,356.5	34.2	0.22
ARTL6N		3,334.4	-6.8	-0.05	3,307.6	-14.7	-0.10
AYA3TR	*	2,943.5	-397.7	-2.72	3,023.3	-299.0	-1.94
BD6YC3		3,334.5	-6.7	-0.05	3,280.5	-41.8	-0.27
BZHRGM		3,373.0	31.8	0.22	3,328.5	6.2	0.04
C3837U		3,547.6	206.4	1.41	3,396.1	73.8	0.48
CCEZWJ		3,380.0	38.8	0.27	3,375.0	52.7	0.34
CL3NVR		3,118.3	-222.9	-1.52	3,002.3	-320.0	-2.08
CN7L4Y		3,244.2	-97.1	-0.66	3,177.0	-145.3	-0.94
CPXMYP		3,293.5	-47.7	-0.33	3,299.0	-23.3	-0.15
DEB7QE		3,142.0	-199.2	-1.36	3,120.0	-202.3	-1.31



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DF34XL		3,320.5	-20.7	-0.14	3,320.5	-1.8	-0.01
DGHJCM		3,314.1	-27.1	-0.19	3,234.4	-87.9	-0.57
DLXVBP		3,231.5	-109.7	-0.75	3,269.0	-53.3	-0.35
E3ZQLV		3,350.8	9.6	0.07	3,374.5	52.2	0.34
EX7VJM	*	3,784.1	442.8	3.03	3,709.4	387.1	2.51
FGCQQK		3,253.5	-87.7	-0.60	3,219.0	-103.3	-0.67
FT78FL	X	4,142.2	801.0	5.48	4,043.9	721.6	4.69
G47U8H		3,451.0	109.8	0.75	3,511.0	188.7	1.23
GGRELJ		3,388.0	46.8	0.32	3,372.5	50.2	0.33
H36LBH		3,295.3	-45.9	-0.31	3,205.4	-116.9	-0.76
H3NM2R		3,487.3	146.1	1.00	3,432.8	110.5	0.72
HMPKFD		3,343.1	1.9	0.01	3,292.4	-29.9	-0.19
J7KD2B		3,188.0	-153.3	-1.05	3,237.3	-85.0	-0.55
J8UK44		3,352.6	11.3	0.08	3,346.2	23.9	0.16
JFA3ZK		3,497.6	156.4	1.07	3,499.1	176.8	1.15
JM8RJA		3,289.0	-52.2	-0.36	3,155.5	-166.8	-1.08
JN2F36		3,333.0	-8.2	-0.06	3,319.5	-2.8	-0.02
JNZPRF		3,314.5	-26.7	-0.18	3,269.0	-53.3	-0.35
KG2EQ		3,688.5	347.3	2.38	3,657.7	335.5	2.18
KNXGXM	X	2,367.0	-974.2	-6.66	2,397.6	-924.7	-6.01
L63YTR		3,157.0	-184.2	-1.26	3,134.0	-188.3	-1.22
L7XM8G		3,270.2	-71.0	-0.49	3,338.7	16.4	0.11
LAWX8M		3,447.6	106.3	0.73	3,490.4	168.1	1.09
LH43N7		3,257.4	-83.9	-0.57	3,269.5	-52.8	-0.34
LRBCKC		3,261.9	-79.3	-0.54	3,404.8	82.5	0.54
LW4ELQ		3,325.7	-15.5	-0.11	3,294.6	-27.7	-0.18
M3BM7R		3,406.6	65.4	0.45	3,368.9	46.6	0.30
M7TJW3		3,514.7	173.5	1.19	3,423.0	100.8	0.65
MFCZK4		3,095.5	-245.7	-1.68	3,106.9	-215.4	-1.40
MX24AK		3,420.8	79.6	0.54	3,390.2	67.9	0.44
NMUTCT	*	3,626.0	284.7	1.95	3,401.2	78.9	0.51
NVM7A8		3,152.4	-188.9	-1.29	3,274.1	-48.2	-0.31
NVQJ2B		3,358.0	16.8	0.11	3,365.5	43.2	0.28
P2RFXF		3,542.5	201.3	1.38	3,520.5	198.2	1.29
PYXREK		3,378.8	37.5	0.26	3,352.8	30.5	0.20
Q8Q7XW	X	3,229.3	-111.9	-0.77	2,919.6	-402.6	-2.62
QZQRAA		3,438.5	97.3	0.67	3,333.5	11.2	0.07



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
RFYZQ4	*	3,323.6	-17.7	-0.12	3,540.4	218.1	1.42
RNVVR9	*	3,019.5	-321.7	-2.20	3,131.0	-191.3	-1.24
TLX7HC		3,216.5	-124.7	-0.85	3,244.5	-77.8	-0.51
UEXZMA		3,442.5	101.3	0.69	3,443.5	121.2	0.79
V8W642		3,414.0	72.8	0.50	3,332.0	9.7	0.06
VDHZ2Y		3,451.4	110.2	0.75	3,508.5	186.3	1.21
VMQUXD		3,242.5	-98.7	-0.68	3,058.5	-263.8	-1.71
VNHUT3		3,192.8	-148.5	-1.02	3,199.6	-122.7	-0.80
VNXWZB		3,314.1	-27.1	-0.19	3,324.3	2.0	0.01
VVGDE7		3,473.0	131.7	0.90	3,573.8	251.5	1.63
W49VN9		3,129.2	-212.0	-1.45	3,119.1	-203.2	-1.32
WC3ZGA	*	3,091.0	-250.2	-1.71	2,931.5	-390.8	-2.54
WU46KC	X	2,910.0	-431.2	-2.95	2,555.0	-767.3	-4.98
WVGLYB		3,586.0	244.8	1.67	3,609.0	286.7	1.86
WVXT38		3,373.8	32.6	0.22	3,339.7	17.4	0.11
X3DWPZ		3,375.8	34.6	0.24	3,417.8	95.6	0.62
X48J4P		3,324.6	-16.6	-0.11	3,306.6	-15.7	-0.10
XAU6FH		3,334.1	-7.1	-0.05	3,375.6	53.4	0.35
XD8AMC		3,436.7	95.5	0.65	3,313.4	-8.9	-0.06
XFEKK2		3,173.5	-167.7	-1.15	3,041.0	-281.3	-1.83
YY7ZGG		3,492.5	151.3	1.03	3,578.5	256.2	1.66
ZK6GMW		3,365.0	23.8	0.16	3,255.0	-67.3	-0.44
ZMURC6		3,158.2	-183.0	-1.25	3,053.8	-268.5	-1.74
ZRNP3G		3,612.9	271.7	1.86	3,571.6	249.3	1.62
ZV8YXZ		3,406.5	65.3	0.45	3,362.5	40.2	0.26

Grand Means		Summary Statistics	
	3,341.23 psi		3,322.27 psi
Std Dev Btwn Labs	146.20 psi		153.92 psi
Statistics based on 95 of 100 reporting participants			



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

**Report #213**  
**3rd Qtr 2022**

		Summary Statistics in SI Units	
Grand Means	23.037 MPa	22.910 MPa	
Stnd Dev Btwn Labs	1.008 MPa	1.060 MPa	
Statistics based on 95 of 100 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & C23-C24: Polyisoprene compound, batch #2

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

- 9PPCVF (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C23-C24.
- FT78FL (X) - Data for all samples are high. Possible Systematic Error.
- KNXGXM (X) - Data for all samples are low. Possible Systematic Error.
- Q8Q7XW (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C23-C24.
- WU46KC (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C21-C22.



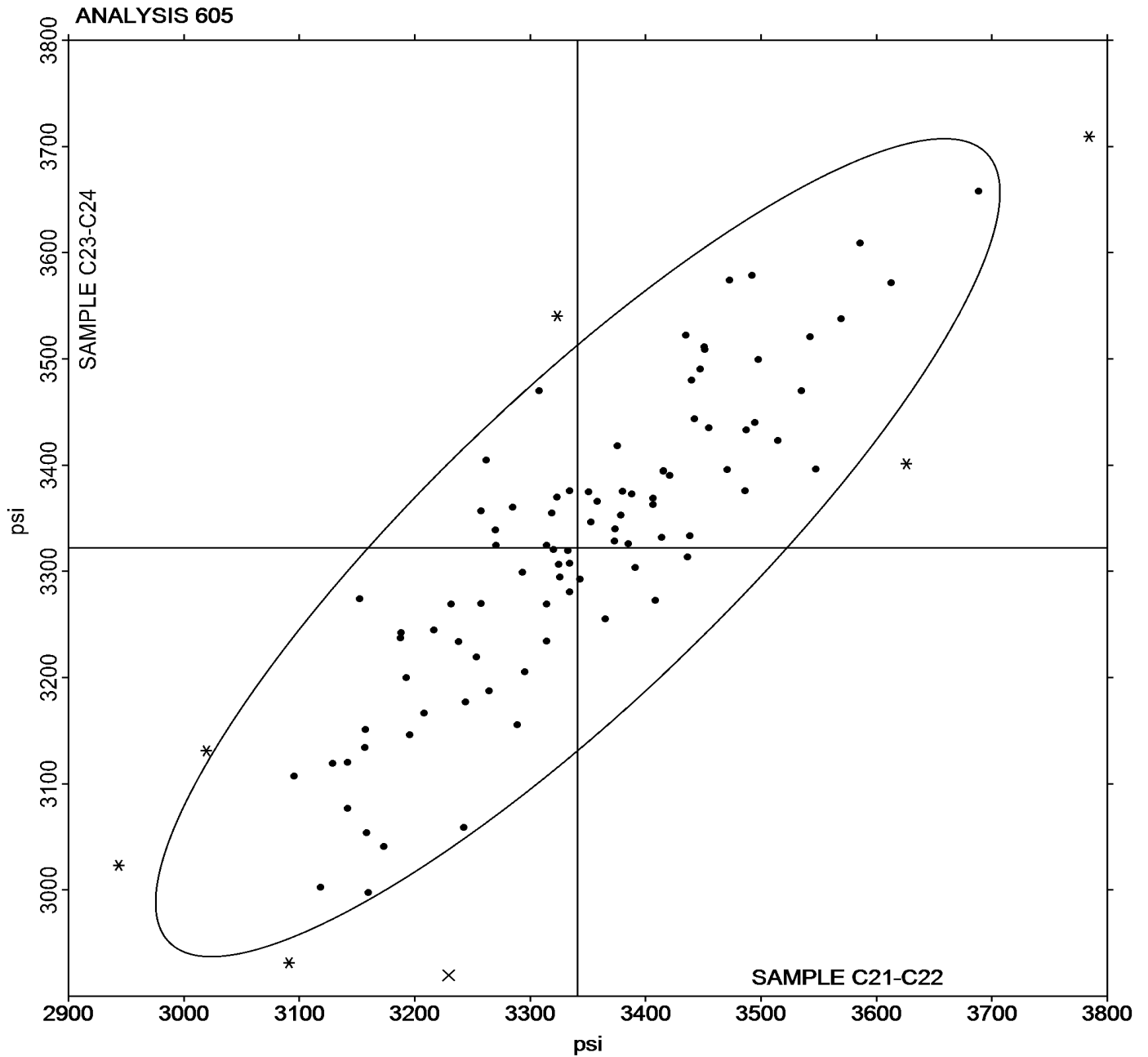


**Rubber Interlaboratory Testing Program**  
**Analysis 605**  
**Tensile Strength (psi)**

**Report #213**  
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Grand Mean Sample **C21-C22** = 3,341.23 psi

Grand Mean Sample **C23-C24** = 3,322.27 psi





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JUWC2		680.0	32.2	1.06	667.5	19.8	0.64
2KZLB6		627.5	-20.3	-0.66	627.0	-20.7	-0.67
2X9AJ2		692.5	44.7	1.46	697.0	49.3	1.60
2XQBAB		631.2	-16.6	-0.54	634.4	-13.3	-0.43
2ZWXME		649.5	1.7	0.06	647.5	-0.2	-0.01
32NYH6		672.0	24.2	0.79	670.0	22.3	0.72
38PD7R		651.5	3.7	0.12	643.5	-4.2	-0.14
3BT3UU		626.5	-21.3	-0.70	626.0	-21.7	-0.70
3J3TUC		676.0	28.2	0.92	664.5	16.8	0.55
3KWG9Z		656.7	8.9	0.29	664.6	16.9	0.55
3M4GRL		637.2	-10.6	-0.35	617.6	-30.1	-0.98
3U29XV		639.5	-8.3	-0.27	642.5	-5.2	-0.17
3VZCUQ		685.0	37.2	1.22	693.0	45.3	1.47
47V837		606.0	-41.8	-1.37	622.5	-25.2	-0.82
6QVM4U		676.5	28.7	0.94	670.5	22.8	0.74
72VHVX		624.0	-23.8	-0.78	641.0	-6.7	-0.22
7MNN4L		674.5	26.7	0.87	661.0	13.3	0.43
7QU6H4		639.0	-8.8	-0.29	646.5	-1.2	-0.04
87JGNJ		673.5	25.7	0.84	666.5	18.8	0.61
8DG8AU		613.7	-34.1	-1.12	634.1	-13.6	-0.44
8ECRZZ		669.0	21.2	0.69	672.0	24.3	0.79
8R3LDT		603.6	-44.1	-1.45	595.1	-52.5	-1.70
8TVBVN		665.0	17.2	0.56	649.5	1.8	0.06
99KXHT		622.0	-25.8	-0.85	646.0	-1.7	-0.05
9KZRUL		608.5	-39.3	-1.29	623.5	-24.2	-0.78
9PPCVF	X	905.5	257.7	8.44	957.5	309.8	10.05
9TRBBE		650.0	2.2	0.07	645.0	-2.7	-0.09
9ZQRPR	X	538.5	-109.3	-3.58	544.0	-103.7	-3.36
ARTL6N		709.5	61.7	2.02	690.0	42.3	1.37
AYA3TR		608.4	-39.4	-1.29	592.3	-55.4	-1.80
BD6YC3		625.0	-22.8	-0.75	607.0	-40.7	-1.32
BZHRGM		645.5	-2.3	-0.08	677.5	29.8	0.97
C3837U		686.3	38.5	1.26	674.8	27.1	0.88
CCEZWJ		636.5	-11.3	-0.37	640.0	-7.7	-0.25
CL3NVR		656.1	8.3	0.27	644.1	-3.6	-0.12
CN7L4Y		642.5	-5.3	-0.17	651.0	3.3	0.11
CPXMYP		671.0	23.2	0.76	685.0	37.3	1.21
DEB7QE		661.0	13.2	0.43	655.0	7.3	0.24



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DF34XL		638.5	-9.3	-0.30	628.5	-19.2	-0.62
DGHJCM		600.4	-47.4	-1.55	592.8	-54.9	-1.78
DLXVBP		632.0	-15.8	-0.52	633.0	-14.7	-0.48
E3ZQLV		687.6	39.8	1.30	687.4	39.7	1.29
EX7VJM		680.6	32.8	1.08	688.1	40.4	1.31
FGCQQK		623.5	-24.3	-0.80	635.0	-12.7	-0.41
FT78FL		646.2	-1.6	-0.05	655.4	7.7	0.25
G47U8H		651.5	3.7	0.12	661.5	13.8	0.45
GGRELJ		694.0	46.2	1.51	677.5	29.8	0.97
H36LBH	*	611.0	-36.8	-1.21	649.0	1.3	0.04
H3NM2R		648.0	0.2	0.01	665.5	17.8	0.58
HMPKFD		664.0	16.2	0.53	675.0	27.3	0.89
J7KD2B		663.5	15.7	0.51	664.0	16.3	0.53
J8UK44		653.9	6.1	0.20	644.4	-3.3	-0.11
JM8RJA	*	661.5	13.7	0.45	622.0	-25.7	-0.83
JN2F36		626.0	-21.8	-0.71	620.0	-27.7	-0.90
JNZPRF		621.0	-26.8	-0.88	627.0	-20.7	-0.67
KGf2EQ		582.2	-65.6	-2.15	580.2	-67.5	-2.19
KNXGXM		637.6	-10.2	-0.33	612.0	-35.7	-1.16
L63YTR		632.0	-15.8	-0.52	618.5	-29.2	-0.95
L7XM8G	X	758.7	110.9	3.63	787.5	139.8	4.54
LAWX8M		597.1	-50.7	-1.66	621.2	-26.5	-0.86
LH43N7		624.1	-23.7	-0.78	652.2	4.5	0.14
LRBCKC		591.5	-56.3	-1.84	609.5	-38.2	-1.24
LW4ELQ		669.8	22.0	0.72	674.7	27.0	0.88
M3BM7R		632.0	-15.8	-0.52	652.0	4.3	0.14
M7TJW3		671.9	24.1	0.79	683.5	35.8	1.16
MFCZK4		640.3	-7.5	-0.25	659.8	12.1	0.39
MX24AK		669.1	21.3	0.70	657.1	9.4	0.31
NMUTCT		670.0	22.2	0.73	637.0	-10.7	-0.35
NVM7A8		666.5	18.7	0.61	688.5	40.8	1.32
NVQJ2B		636.5	-11.3	-0.37	647.0	-0.7	-0.02
P2RFXF		672.0	24.2	0.79	664.5	16.8	0.55
PYXREK		673.5	25.7	0.84	662.5	14.8	0.48
Q8Q7XW	*	616.5	-31.3	-1.03	585.0	-62.7	-2.03
QZQRAA		695.5	47.7	1.56	705.5	57.8	1.88
RFYZQ4		671.0	23.2	0.76	643.0	-4.7	-0.15



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
RNVVR9	X	512.0	-135.8	-4.45	533.0	-114.7	-3.72
TLX7HC		640.0	-7.8	-0.26	651.5	3.8	0.12
UEXZMA		643.5	-4.3	-0.14	658.5	10.8	0.35
V8W642		680.0	32.2	1.06	671.0	23.3	0.76
VDHZ2Y		663.8	16.0	0.52	665.7	18.0	0.58
VMQUXD		594.5	-53.3	-1.75	577.5	-70.2	-2.28
VNHUT3		680.0	32.2	1.06	691.5	43.8	1.42
VVGDE7		611.5	-36.3	-1.19	601.0	-46.7	-1.52
W49VN9		637.5	-10.3	-0.34	637.5	-10.2	-0.33
WC3ZGA	*	575.0	-72.8	-2.38	568.5	-79.2	-2.57
WU46KC	X	595.5	-52.3	-1.71	533.5	-114.2	-3.71
WVGLYB		648.5	0.7	0.02	656.5	8.8	0.29
WVXT38		660.1	12.3	0.40	646.8	-0.9	-0.03
X3DWPZ		667.5	19.7	0.65	670.0	22.3	0.72
X48J4P		687.3	39.5	1.29	683.0	35.3	1.15
XAU6FH		662.3	14.5	0.47	660.4	12.7	0.41
XD8AMC		687.5	39.7	1.30	678.3	30.7	0.99
XFEKK2	*	726.5	78.7	2.58	719.5	71.8	2.33
YY7ZGG		636.5	-11.3	-0.37	627.5	-20.2	-0.66
ZK6GMW		665.0	17.2	0.56	663.5	15.8	0.51
ZMURC6		618.5	-29.3	-0.96	620.2	-27.5	-0.89
ZRNP3G	*	569.5	-78.3	-2.57	570.5	-77.2	-2.50
ZV8YXZ		645.5	-2.3	-0.08	652.0	4.3	0.14

Grand Means		Summary Statistics	
	647.79 percent		647.69 percent
Std Dev Btwn Labs	30.52 percent		30.82 percent
Statistics based on 93 of 98 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & C23-C24: Polyisoprene compound, batch #2

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

- 9PPCVF (X) - Data for all samples are high. Inconsistent within the determinations of sample group C23-C24.
- 9ZQRPR (X) - Data for all samples are low. Possible Systematic Error.
- L7XM8G (X) - Data for all samples are high. Possible Systematic Error.
- RNVVR9 (X) - Data for all samples are low. Possible Systematic Error.
- WU46KC (X) - Data for sample group C23-C24 are low.

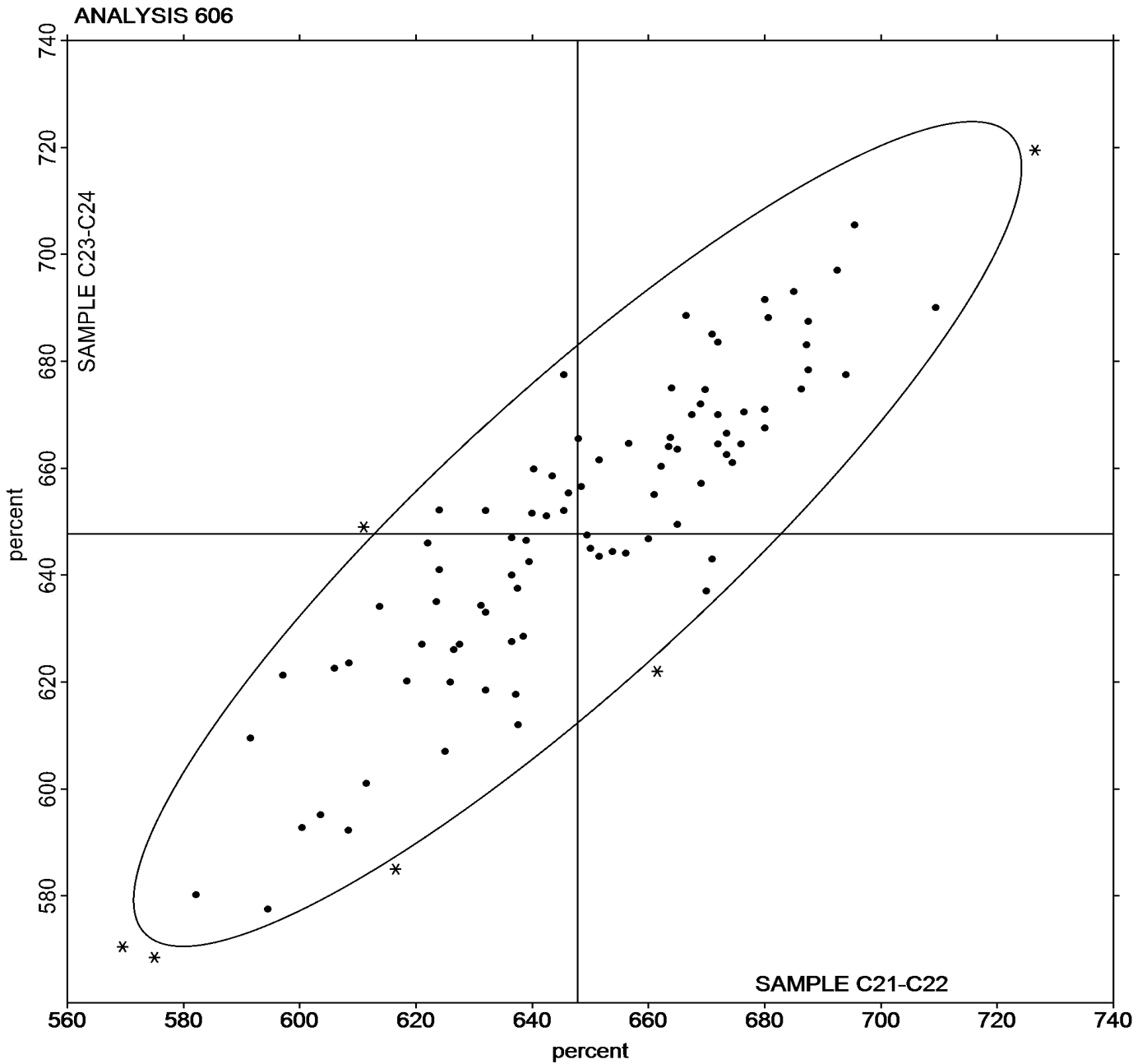


Rubber Interlaboratory Testing Program  
Analysis 606  
Ultimate Elongation (percent)

Report #213  
3rd Qtr 2022

Grand Mean Sample C21-C22 = 647.79 percent

Grand Mean Sample C23-C24 = 647.69 percent





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 607

3rd Qtr 2022

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JUWC2		766.5	-67.0	-1.02	754.0	-71.2	-1.04
2KZLB6		845.0	11.5	0.18	845.5	20.3	0.30
2X9AJ2		774.1	-59.3	-0.91	706.7	-118.5	-1.74
2XQBAB		877.6	44.1	0.67	881.0	55.8	0.82
2ZWXME		889.0	55.5	0.85	874.5	49.3	0.72
32NYH6		863.0	29.5	0.45	871.0	45.8	0.67
38PD7R		802.5	-31.0	-0.47	825.0	-0.2	0.00
3J3TUC		760.5	-73.0	-1.12	753.5	-71.7	-1.05
3KWG9Z		856.2	22.8	0.35	829.9	4.7	0.07
3M4GRL	*	803.7	-29.8	-0.46	897.8	72.6	1.07
3U29XV		822.5	-11.0	-0.17	847.0	21.8	0.32
3VZCUQ		784.5	-49.0	-0.75	776.5	-48.7	-0.71
47V837		834.5	1.0	0.02	769.0	-56.2	-0.82
6QVM4U		837.5	4.0	0.06	831.5	6.3	0.09
72VHVX		956.3	122.8	1.88	910.1	84.9	1.25
7MNN4L		831.1	-2.4	-0.04	832.5	7.3	0.11
7QU6H4		787.3	-46.2	-0.71	814.3	-10.9	-0.16
87JGNJ		807.5	-26.0	-0.40	790.0	-35.2	-0.52
8DG8AU		887.5	54.0	0.83	799.5	-25.7	-0.38
8ECRZZ		728.8	-104.6	-1.60	749.9	-75.3	-1.11
8R3LDT	*	990.2	156.8	2.40	1,005.8	180.6	2.65
8TVBVN		700.5	-133.0	-2.03	744.5	-80.7	-1.18
99KXHT		875.0	41.5	0.64	851.0	25.8	0.38
9KZRUL		921.0	87.5	1.34	867.3	42.1	0.62
9PPCVF	X	456.9	-376.6	-5.76	477.9	-347.3	-5.10
9TRBBE		815.0	-18.5	-0.28	817.0	-8.2	-0.12
9ZQRPR	X	1,153.0	319.5	4.89	1,166.5	341.3	5.01
ARTL6N		780.3	-53.1	-0.81	811.5	-13.7	-0.20
AYA3TR	*	978.4	145.0	2.22	1,019.0	193.8	2.84
BD6YC3		870.0	36.5	0.56	853.5	28.3	0.42
BZHRGM		816.0	-17.5	-0.27	740.5	-84.7	-1.24
C3837U		776.9	-56.6	-0.87	766.3	-58.9	-0.86
CCEZWJ		853.0	19.5	0.30	888.0	62.8	0.92
CL3NVR		794.1	-39.4	-0.60	731.0	-94.2	-1.38
CN7L4Y		819.8	-13.7	-0.21	763.2	-62.0	-0.91
CPXMYP		757.0	-76.5	-1.17	732.0	-93.2	-1.37
DEB7QE		739.5	-94.0	-1.44	723.0	-102.2	-1.50
DF34XL		884.5	51.0	0.78	838.8	13.6	0.20



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 607

3rd Qtr 2022

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DGHJCM		935.5	102.1	1.56	954.4	129.2	1.90
DLXVBP		827.0	-6.5	-0.10	852.5	27.3	0.40
E3ZQLV		704.0	-129.5	-1.98	750.8	-74.4	-1.09
EX7VJM	X	681.0	-152.5	-2.33	905.8	80.6	1.18
FGCQQK		822.0	-11.5	-0.18	798.0	-27.2	-0.40
FT78FL		969.4	135.9	2.08	974.0	148.8	2.18
G47U8H		792.5	-41.0	-0.63	783.5	-41.7	-0.61
GGRELJ		803.0	-30.5	-0.47	809.0	-16.2	-0.24
H36LBH	X	928.2	94.8	1.45	791.9	-33.3	-0.49
H3NM2R		860.7	27.2	0.42	790.9	-34.3	-0.50
HMPKFD		775.2	-58.2	-0.89	730.3	-94.9	-1.39
J7KD2B		732.4	-101.0	-1.55	737.5	-87.7	-1.29
J8UK44		819.5	-14.0	-0.21	839.1	13.9	0.20
JM8RJA		768.0	-65.5	-1.00	812.0	-13.2	-0.19
JN2F36		898.9	65.5	1.00	899.4	74.2	1.09
JNZPRF		885.0	51.6	0.79	915.0	89.8	1.32
KGf2EQ	X	1,092.9	259.4	3.97	1,116.1	290.9	4.27
KNXGXM	X	615.6	-217.8	-3.33	713.4	-111.8	-1.64
L63YTR		839.0	5.5	0.08	860.5	35.3	0.52
LAWX8M		911.6	78.1	1.20	915.9	90.7	1.33
LH43N7	X	981.1	147.6	2.26	865.7	40.5	0.59
LRBCKC		955.8	122.4	1.87	913.0	87.8	1.29
LW4ELQ		787.6	-45.9	-0.70	763.6	-61.6	-0.90
M3BM7R	*	910.5	77.0	1.18	810.5	-14.7	-0.22
M7TJW3		814.1	-19.4	-0.30	780.5	-44.7	-0.66
MFCZK4		754.3	-79.2	-1.21	729.9	-95.3	-1.40
MX24AK		787.5	-45.9	-0.70	828.3	3.1	0.05
NMUTCT		921.0	87.5	1.34	834.0	8.8	0.13
NVM7A8		751.0	-82.5	-1.26	743.2	-82.0	-1.20
NVQJ2B		870.5	37.0	0.57	841.0	15.8	0.23
P2RFXF		818.0	-15.5	-0.24	835.5	10.3	0.15
PYXREK		803.7	-29.8	-0.46	826.6	1.4	0.02
Q8Q7XW		886.9	53.5	0.82	921.7	96.5	1.42
QZQRAA		831.0	-2.5	-0.04	764.0	-61.2	-0.90
RFYZQ4	X	778.9	-54.6	-0.84	923.9	98.7	1.45
RNVVR9	X	1,176.5	343.0	5.25	1,172.0	346.8	5.09
V8W642		791.5	-42.0	-0.64	781.0	-44.2	-0.65



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 607

3rd Qtr 2022

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
VDHZ2Y		831.5	-2.0	-0.03	856.2	31.0	0.45
VMQUXD		903.0	69.5	1.06	894.0	68.8	1.01
VNHUT3		747.9	-85.6	-1.31	719.4	-105.8	-1.55
VVGDE7		877.0	43.5	0.67	879.5	54.3	0.80
W49VN9		823.1	-10.4	-0.16	809.3	-15.9	-0.23
WC3ZGA		980.0	146.5	2.24	956.5	131.3	1.93
WU46KC		862.5	29.0	0.44	903.0	77.8	1.14
WVGLYB		882.0	48.5	0.74	866.0	40.8	0.60
WVXT38		813.6	-19.9	-0.30	826.2	1.0	0.02
X3DWPZ		788.3	-45.2	-0.69	779.6	-45.6	-0.67
X48J4P		724.8	-108.7	-1.66	763.9	-61.3	-0.90
XAU6FH		823.7	-9.7	-0.15	844.3	19.1	0.28
XD8AMC		782.5	-51.0	-0.78	755.7	-69.5	-1.02
YY7ZGG		856.5	23.0	0.35	883.5	58.3	0.86
ZK6GMW		815.0	-18.5	-0.28	784.0	-41.2	-0.60
ZMURC6		864.4	31.0	0.47	826.7	1.5	0.02
ZV8YXZ		887.0	53.5	0.82	836.5	11.3	0.17

		Summary Statistics	
Grand Means		833.45 psi	825.20 psi
Std Dev Btwn Labs		65.36 psi	68.15 psi
Statistics based on 83 of 92 reporting participants			

		Summary Statistics in SI Units	
Grand Means		5.7464 MPa	5.6900 MPa
Std Dev Btwn Labs		0.4506 MPa	0.4700 MPa
Statistics based on 83 of 92 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & C23-C24: Polyisoprene compound, batch #2





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

- 9PPCVF (X) - Data for all samples are low. Possible Systematic Error.
- 9ZQRPR (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group C21-C22.
- EX7VJM (X) - Inconsistent in testing between samples.
- H36LBH (X) - Inconsistent in testing between samples.
- KGF2EQ (X) - Data for all samples are high. Possible Systematic Error.
- KNXGXM (X) - Data for sample group C21-C22 are low.
- LH43N7 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C21-C22.
- RFYZQ4 (X) - Inconsistent in testing between samples.
- RNVWR9 (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group C21-C22.

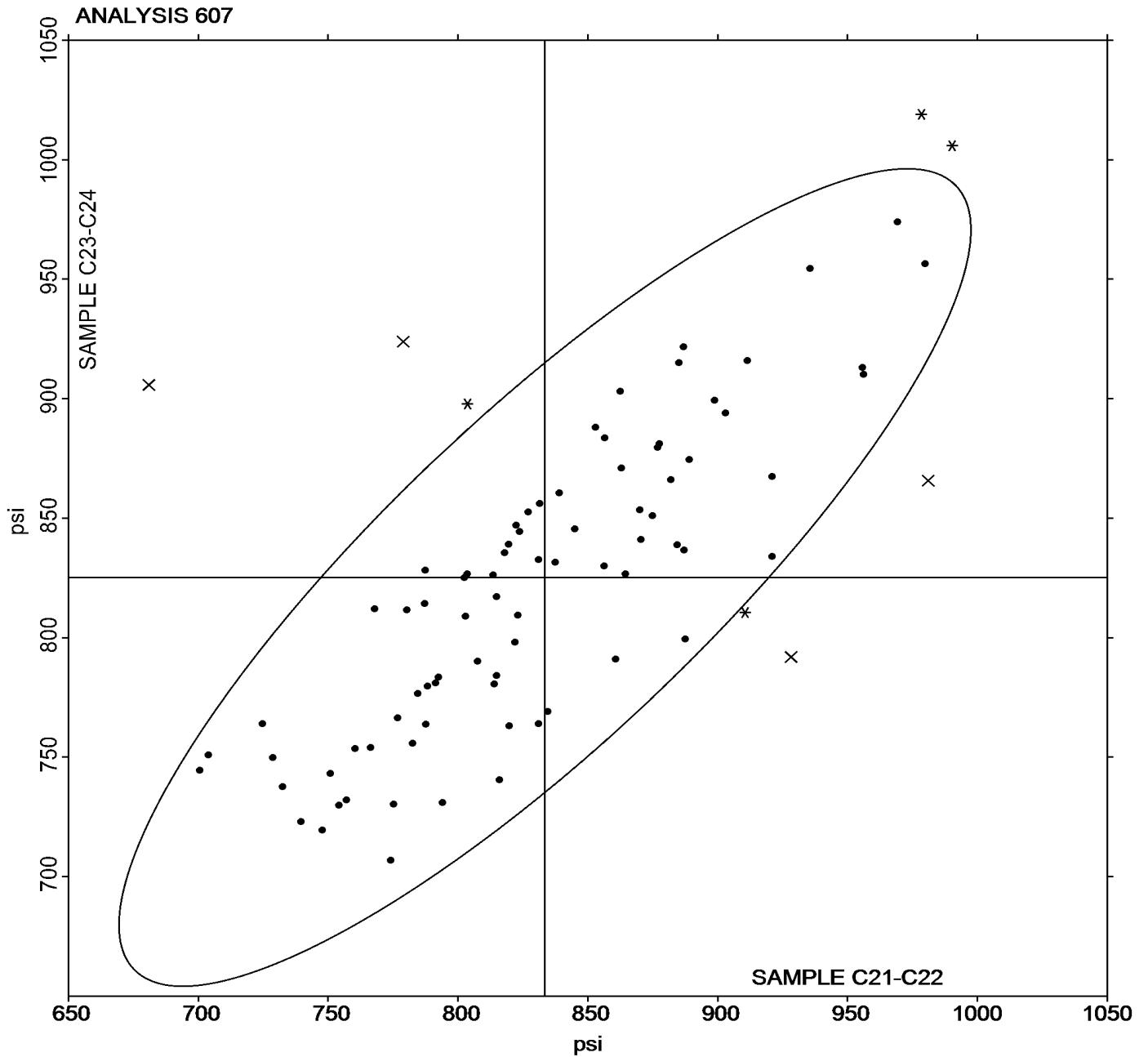


**Rubber Interlaboratory Testing Program**  
**Analysis 607**  
**Stress at 300% Elongation (psi)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **C21-C22** = 833.45 psi

Grand Mean Sample **C23-C24** = 825.20 psi





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 608

3rd Qtr 2022

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JUWC2		186.5	-1.2	-0.09	180.0	-5.9	-0.42
2KZLB6		194.5	6.8	0.48	191.0	5.1	0.36
2X9AJ2	*	207.7	20.0	1.42	184.4	-1.5	-0.10
2XQBAB		197.5	9.8	0.70	195.8	9.9	0.70
2ZWXME		191.0	3.3	0.23	194.5	8.6	0.61
32NYH6	*	222.0	34.3	2.44	225.5	39.6	2.80
38PD7R		187.5	-0.2	-0.02	193.5	7.6	0.54
3J3TUC		177.5	-10.2	-0.73	175.5	-10.4	-0.73
3KWG9Z		192.0	4.3	0.31	188.5	2.6	0.18
3M4GRL		170.4	-17.3	-1.23	173.3	-12.6	-0.89
3U29XV		181.5	-6.2	-0.44	190.0	4.1	0.29
3VZCUQ		174.5	-13.2	-0.94	175.5	-10.4	-0.73
47V837		186.5	-1.2	-0.09	175.5	-10.4	-0.73
6QVM4U		189.5	1.8	0.13	191.0	5.1	0.36
72VHVX		217.9	30.2	2.15	205.4	19.5	1.38
7MNN4L		195.1	7.4	0.52	194.4	8.5	0.60
7QU6H4		174.7	-13.0	-0.93	181.0	-4.9	-0.35
87JGNJ		180.0	-7.7	-0.55	179.0	-6.9	-0.49
8DG8AU		185.0	-2.7	-0.19	170.5	-15.4	-1.09
8ECRZZ		185.6	-2.1	-0.15	196.5	10.6	0.75
8R3LDT		200.7	13.0	0.93	205.7	19.8	1.40
8TVBVN		167.0	-20.7	-1.48	174.0	-11.9	-0.84
99KXHT		188.0	0.3	0.02	181.0	-4.9	-0.35
9KZRUL		176.9	-10.8	-0.77	183.5	-2.4	-0.17
9PPCVF		166.1	-21.6	-1.54	179.1	-6.8	-0.48
9TRBBE		177.5	-10.2	-0.73	174.0	-11.9	-0.84
9ZQRPR		207.0	19.3	1.37	207.5	21.6	1.53
ARTL6N		175.5	-12.2	-0.87	180.6	-5.3	-0.38
AYA3TR		211.4	23.7	1.69	213.6	27.7	1.95
BD6YC3		190.0	2.3	0.16	183.0	-2.9	-0.20
BZHRGM		183.5	-4.2	-0.30	172.0	-13.9	-0.98
C3837U		179.9	-7.8	-0.56	180.6	-5.3	-0.37
CCEZWJ		188.0	0.3	0.02	195.5	9.6	0.68
CL3NVR		175.5	-12.2	-0.87	161.7	-24.2	-1.71
CN7L4Y		182.3	-5.4	-0.39	170.3	-15.6	-1.10
CPXMYP		175.0	-12.7	-0.91	172.0	-13.9	-0.98
DEB7QE		171.0	-16.7	-1.19	165.5	-20.4	-1.44
DF34XL		200.0	12.3	0.88	193.5	7.6	0.54



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 608

3rd Qtr 2022

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DGHJCM		192.2	4.5	0.32	196.5	10.6	0.75
DLXVBP		177.5	-10.2	-0.73	181.0	-4.9	-0.35
E3ZQLV		167.1	-20.6	-1.47	178.7	-7.2	-0.51
EX7VJM		201.4	13.7	0.97	195.5	9.6	0.68
FGCQQK		184.0	-3.7	-0.26	186.0	0.1	0.01
FT78FL		207.7	20.0	1.42	216.3	30.4	2.15
G47U8H		175.5	-12.2	-0.87	178.0	-7.9	-0.56
GGRELJ		198.0	10.3	0.73	198.0	12.1	0.86
H36LBH		192.9	5.2	0.37	172.6	-13.3	-0.94
H3NM2R		189.6	1.8	0.13	177.7	-8.2	-0.58
HMPKFD		179.1	-8.6	-0.61	172.6	-13.3	-0.94
J7KD2B	*	150.1	-37.6	-2.68	150.1	-35.8	-2.53
J8UK44		184.9	-2.8	-0.20	190.7	4.8	0.34
JM8RJA		174.0	-13.7	-0.98	181.0	-4.9	-0.35
JN2F36		193.7	6.0	0.43	193.1	7.2	0.51
JNZPRF	X	175.0	-12.7	-0.91	209.0	23.1	1.63
KGf2EQ		220.5	32.7	2.33	219.0	33.1	2.34
KNXGXM	X	127.2	-60.5	-4.31	142.1	-43.8	-3.10
L63YTR		190.5	2.8	0.20	192.5	6.6	0.47
L7XM8G		171.0	-16.7	-1.19	172.7	-13.2	-0.93
LAWX8M		201.6	13.9	0.99	208.1	22.2	1.57
LH43N7	X	222.3	34.5	2.46	198.2	12.3	0.87
LRBCKC		198.7	11.0	0.78	184.9	-1.0	-0.07
LW4ELQ		173.3	-14.4	-1.03	166.8	-19.1	-1.35
M3BM7R		197.5	9.8	0.70	177.5	-8.4	-0.59
M7TJW3		171.5	-16.3	-1.16	164.0	-21.9	-1.55
MFCZK4		170.4	-17.3	-1.23	167.5	-18.4	-1.30
MX24AK		184.7	-3.0	-0.21	190.4	4.5	0.32
NMUTCT	X	246.6	58.9	4.19	203.1	17.2	1.21
NVM7A8		176.2	-11.6	-0.82	174.0	-11.9	-0.84
NVQJ2B		190.5	2.8	0.20	187.0	1.1	0.08
P2RFXF		185.0	-2.7	-0.19	189.0	3.1	0.22
PYXREK		178.6	-9.2	-0.65	181.7	-4.2	-0.30
Q8Q7XW		190.0	2.3	0.16	196.5	10.6	0.75
QZQRAA		201.5	13.8	0.98	190.0	4.1	0.29
RFYZQ4	X	176.9	-10.8	-0.77	215.4	29.5	2.08
RNVVR9		209.0	21.3	1.52	202.0	16.1	1.14



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 608

3rd Qtr 2022

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
UEXZMA		187.5	-0.2	-0.02	173.5	-12.4	-0.88
V8W642		184.5	-3.2	-0.23	183.0	-2.9	-0.20
VDHZ2Y		187.2	-0.6	-0.04	191.0	5.1	0.36
VMQUXD		201.5	13.8	0.98	198.0	12.1	0.86
VNHUT3		180.6	-7.1	-0.51	174.5	-11.4	-0.80
VVGDE7		188.5	0.8	0.06	189.0	3.1	0.22
W49VN9		194.4	6.6	0.47	192.2	6.3	0.44
WC3ZGA	*	227.0	39.3	2.80	220.5	34.6	2.45
WU46KC		188.5	0.8	0.06	204.5	18.6	1.31
WVGLYB		187.5	-0.2	-0.02	186.5	0.6	0.04
WVXT38		177.0	-10.7	-0.76	180.1	-5.8	-0.41
X3DWPZ		176.9	-10.8	-0.77	176.9	-8.9	-0.63
X48J4P		163.3	-24.5	-1.74	169.7	-16.2	-1.15
XAU6FH	X	172.4	-15.3	-1.09	203.1	17.2	1.21
XD8AMC		179.8	-7.9	-0.56	170.4	-15.5	-1.09
YY7ZGG		220.5	32.8	2.34	216.5	30.6	2.16
ZK6GMW		191.0	3.3	0.23	184.5	-1.4	-0.10
ZMURC6		189.3	1.6	0.11	183.5	-2.4	-0.17
ZRNP3G		193.6	5.9	0.42	178.4	-7.5	-0.53
ZV8YXZ		197.5	9.8	0.70	186.0	0.1	0.01

Summary Statistics	
Grand Means	187.71 psi      185.89 psi
Std Dev Btwn Labs	14.03 psi      14.15 psi
Statistics based on 89 of 95 reporting participants	

Summary Statistics in SI Units	
Grand Means	1.2942 MPa      1.2800 MPa
Std Dev Btwn Labs	0.0968 MPa      0.1000 MPa
Statistics based on 89 of 95 reporting participants	

Samples C21-C22: Polyisoprene compound, batch #1 & C23-C24: Polyisoprene compound, batch #2



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

JNZPRF (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C23-C24.

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

LH43N7 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C21-C22.

NMUTCT (X) - Data for sample group C21-C22 are high. Inconsistent within the determinations of sample group C21-C22.

RFYZQ4 (X) - Inconsistent in testing between samples.

XAU6FH (X) - Inconsistent in testing between samples.



# Rubber Interlaboratory Testing Program

Report #213

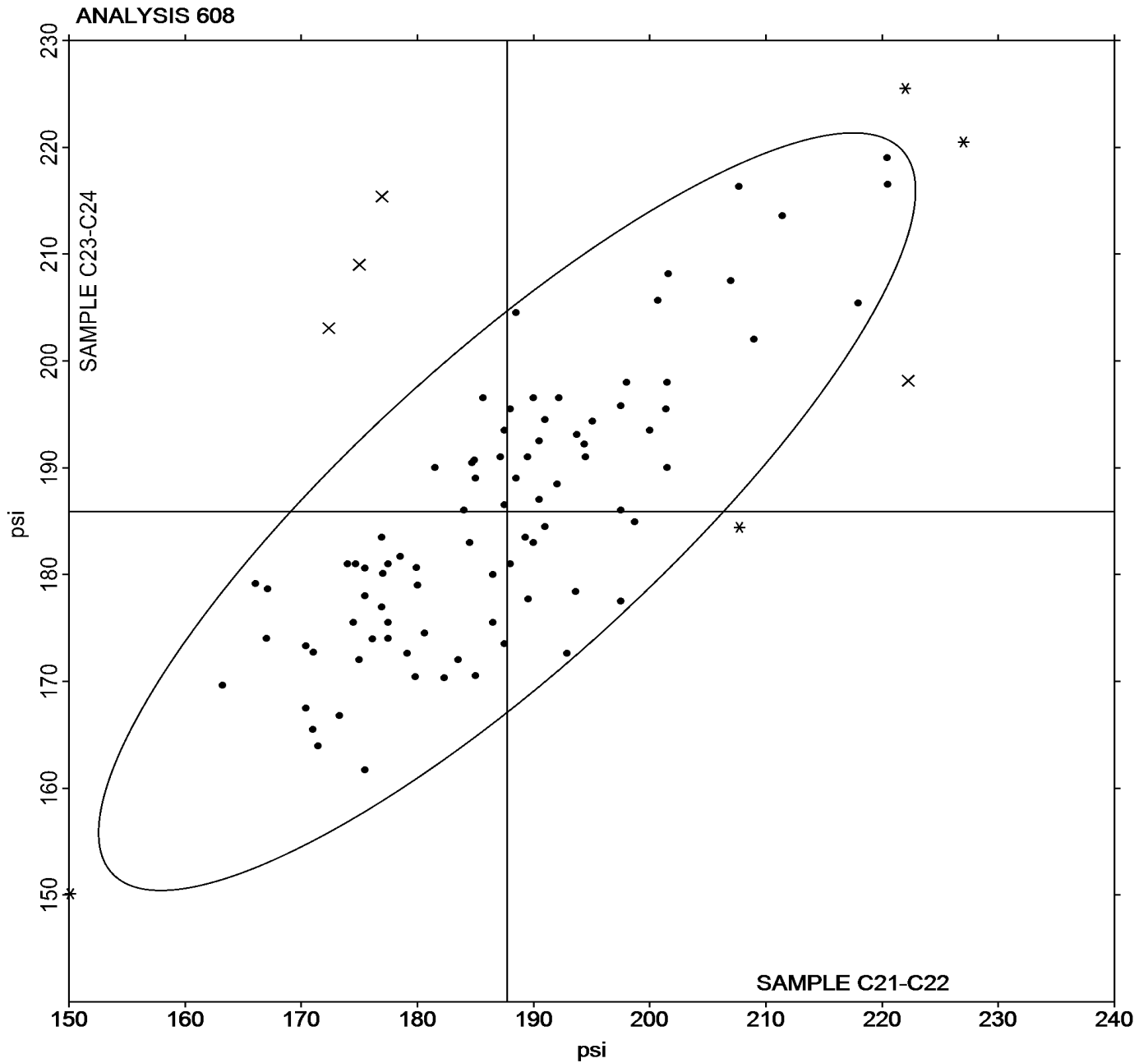
## Analysis 608

3rd Qtr 2022

### Stress at 100% Elongation (psi)

Grand Mean Sample C21-C22 = 187.71 psi

Grand Mean Sample C23-C24 = 185.89 psi





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		47.00	-0.54	-0.35	46.00	-1.65	-1.10	BT
2KZLB6		50.50	2.96	1.93	51.00	3.35	2.23	XX
2X9AJ2		48.25	0.71	0.46	47.50	-0.15	-0.10	HH
2XQBAB		47.25	-0.29	-0.19	47.40	-0.25	-0.17	BT
2ZWXME		48.20	0.66	0.43	47.95	0.30	0.20	BT
32NYH6		47.00	-0.54	-0.35	47.50	-0.15	-0.10	BT
38PD7R		47.05	-0.49	-0.32	47.40	-0.25	-0.17	BT
3BT3UU		47.00	-0.54	-0.35	47.50	-0.15	-0.10	BT
3J3TUC		48.50	0.96	0.62	48.50	0.85	0.57	BT
3KWG9Z		47.50	-0.04	-0.03	47.25	-0.40	-0.27	BT
3M4GRL		47.00	-0.54	-0.35	47.00	-0.65	-0.43	BT
3U29XV		49.50	1.96	1.28	49.50	1.85	1.23	HH
3VZCUQ		48.55	1.01	0.66	49.40	1.75	1.17	BT
47V837		49.00	1.46	0.95	49.50	1.85	1.23	BT
4GBUER	X	56.50	8.96	5.84	56.00	8.35	5.56	HH
6QVM4U		47.98	0.44	0.29	47.56	-0.09	-0.06	BT
72VHVX	X	46.50	-1.04	-0.68	49.00	1.35	0.90	BT
73MQNY		46.50	-1.04	-0.68	47.50	-0.15	-0.10	BT
7MNN4L		46.85	-0.69	-0.45	48.45	0.80	0.53	BT
7QU6H4		47.15	-0.39	-0.26	47.55	-0.10	-0.07	BT
87JGNJ		49.05	1.51	0.98	48.80	1.15	0.77	BT
8DG8AU		48.25	0.71	0.46	47.85	0.20	0.13	BT
8ECRZZ		45.95	-1.59	-1.04	46.80	-0.85	-0.57	BT
8R3LDT		50.00	2.46	1.60	51.00	3.35	2.23	HH
8TVBVN		49.50	1.96	1.28	49.00	1.35	0.90	BT
8VJ7Y9		50.50	2.96	1.93	50.00	2.35	1.57	HH
92JTKG		46.45	-1.09	-0.71	45.75	-1.90	-1.27	BT
99KXHT		48.00	0.46	0.30	47.50	-0.15	-0.10	BT
9KZRUL		47.30	-0.24	-0.16	46.70	-0.95	-0.63	BT
9PPCVF		46.10	-1.44	-0.94	47.80	0.15	0.10	BT
9TRBBE		51.00	3.46	2.25	50.50	2.85	1.90	BT
9ZQRPR	*	45.00	-2.54	-1.66	47.00	-0.65	-0.43	BT
ARTL6N		49.00	1.46	0.95	49.80	2.15	1.43	BT
AYA3TR		48.00	0.46	0.30	48.50	0.85	0.57	BT
BD6YC3		47.85	0.31	0.20	47.40	-0.25	-0.17	HH
BZHRGM		47.50	-0.04	-0.03	46.50	-1.15	-0.77	BT
C3837U		49.30	1.76	1.15	48.90	1.25	0.83	XX
CCEZWJ		49.00	1.46	0.95	49.50	1.85	1.23	HH





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
CK7B9Y		46.80	-0.74	-0.48	46.25	-1.40	-0.93	BT
CL3NVR		47.95	0.41	0.27	47.90	0.25	0.17	BT
CMXCC3		47.70	0.16	0.10	46.85	-0.80	-0.53	BT
CPXMYP		49.00	1.46	0.95	50.00	2.35	1.57	HH
DEB7QE		47.50	-0.04	-0.03	47.00	-0.65	-0.43	BT
DF34XL		46.00	-1.54	-1.01	46.00	-1.65	-1.10	HH
DGHJCM		50.00	2.46	1.60	50.00	2.35	1.57	HH
DLXVBP		48.25	0.71	0.46	49.10	1.45	0.97	BT
E3ZQLV		47.10	-0.44	-0.29	47.45	-0.20	-0.13	BT
EX7VJM		45.75	-1.79	-1.17	45.85	-1.80	-1.20	BT
FGCQQK		45.00	-2.54	-1.66	46.50	-1.15	-0.77	BT
FT78FL	X	43.00	-4.54	-2.96	45.50	-2.15	-1.43	HH
G47U8H		48.50	0.96	0.62	48.00	0.35	0.23	HH
GGRELJ		48.00	0.46	0.30	48.00	0.35	0.23	BT
H36LBH		44.20	-3.34	-2.18	44.65	-3.00	-2.00	BT
H3NM2R		49.45	1.91	1.24	48.80	1.15	0.77	BT
HMPKFD		48.35	0.81	0.53	48.30	0.65	0.43	BT
J7KD2B		49.00	1.46	0.95	49.00	1.35	0.90	BT
J8UK44		48.00	0.46	0.30	47.00	-0.65	-0.43	BT
JCLPW9		49.00	1.46	0.95	49.00	1.35	0.90	BT
JFA3ZK		45.25	-2.29	-1.50	46.00	-1.65	-1.10	BT
JM8RJA		47.70	0.16	0.10	48.70	1.05	0.70	BT
JN2F36		44.50	-3.04	-1.98	44.50	-3.15	-2.10	BT
JNZPRF		47.00	-0.54	-0.35	47.50	-0.15	-0.10	HH
KGF2EQ		45.90	-1.64	-1.07	46.05	-1.60	-1.07	BT
KNXGXM		47.55	0.01	0.00	48.55	0.90	0.60	BT
L63YTR		46.00	-1.54	-1.01	45.00	-2.65	-1.77	HH
L7XM8G		47.90	0.36	0.23	48.95	1.30	0.87	BT
LAWX8M	*	43.50	-4.04	-2.64	44.00	-3.65	-2.43	BT
LH43N7		48.55	1.01	0.66	48.80	1.15	0.77	BT
LRBCKC		48.25	0.71	0.46	48.35	0.70	0.47	BT
LW4ELQ		48.50	0.96	0.62	48.00	0.35	0.23	BT
M3BM7R		46.50	-1.04	-0.68	46.50	-1.15	-0.77	HH
M7TJW3		50.50	2.96	1.93	50.50	2.85	1.90	HH
MFCZK4		46.20	-1.34	-0.88	45.70	-1.95	-1.30	XX
MX24AK		48.30	0.76	0.49	48.55	0.90	0.60	BT
NMUTCT		45.00	-2.54	-1.66	45.00	-2.65	-1.77	BT



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
NVM7A8		49.85	2.31	1.50	48.90	1.25	0.83	BT
NVQJ2B		48.25	0.71	0.46	48.00	0.35	0.23	BT
P2RFXF		46.50	-1.04	-0.68	47.25	-0.40	-0.27	BT
PXNQAD		48.15	0.61	0.40	48.00	0.35	0.23	BT
PYXREK		47.85	0.31	0.20	48.25	0.60	0.40	BT
Q8Q7XW	X	42.75	-4.79	-3.13	45.45	-2.20	-1.47	BT
QZQRAA		49.15	1.61	1.05	48.75	1.10	0.73	BT
RFYZQ4		47.50	-0.04	-0.03	47.00	-0.65	-0.43	BT
RNVVR9	X	53.50	5.96	3.88	51.50	3.85	2.56	HH
UEXZMA		48.45	0.91	0.59	48.05	0.40	0.27	BT
V8W642		46.00	-1.54	-1.01	47.00	-0.65	-0.43	BT
VDHZ2Y		46.50	-1.04	-0.68	46.70	-0.95	-0.63	BT
VMQUXD		44.40	-3.14	-2.05	44.80	-2.85	-1.90	BT
VNHUT3		47.60	0.06	0.04	46.85	-0.80	-0.53	BT
VNXWZB		45.50	-2.04	-1.33	45.50	-2.15	-1.43	BT
VVGDE7		46.50	-1.04	-0.68	47.50	-0.15	-0.10	XX
W49VN9		47.00	-0.54	-0.35	47.00	-0.65	-0.43	HH
WC3ZGA	X	53.50	5.96	3.88	53.50	5.85	3.90	HH
WU46KC		47.50	-0.04	-0.03	47.00	-0.65	-0.43	BT
WVGLYB		47.50	-0.04	-0.03	47.00	-0.65	-0.43	BT
WVXT38		45.50	-2.04	-1.33	46.00	-1.65	-1.10	BT
X3DWPZ		47.00	-0.54	-0.35	47.50	-0.15	-0.10	BT
X48J4P		46.50	-1.04	-0.68	47.00	-0.65	-0.43	BT
XAU6FH		48.00	0.46	0.30	48.00	0.35	0.23	HH
XFEKK2	X	56.50	8.96	5.84	54.50	6.85	4.56	HH
YY7ZGG		45.45	-2.09	-1.36	46.55	-1.10	-0.73	BT
ZD3EC6		48.00	0.46	0.30	48.00	0.35	0.23	HH
ZK6GMW		50.50	2.96	1.93	51.00	3.35	2.23	BT
ZMURC6		48.50	0.96	0.62	49.00	1.35	0.90	BT
ZRNP3G		45.25	-2.29	-1.50	44.90	-2.75	-1.83	BT
ZV8YXZ		46.65	-0.89	-0.58	45.95	-1.70	-1.13	BT

Grand Means		Summary Statistics	
	47.543 Type A		47.652 Type A
Std Dev Btw Labs	1.534 Type A		1.500 Type A
Statistics based on 99 of 106 reporting participants			



# Rubber Interlaboratory Testing Program

## Analysis 620

### Hardness (Shore A/Type A)

Report #213  
3rd Qtr 2022

Samples C21-C22: Polyisoprene compound, batch #1 & C23-C24: Polyisoprene compound, batch #2

#### Comments on Assigned Data Flags for Test #620

- 4GBUER (X) - Data for all samples are high. Possible Systematic Error.
- 72VHVX (X) - Inconsistent in testing between samples.
- FT78FL (X) - Data for sample group C21-C22 are low.
- Q8Q7XW (X) - Data for sample group C21-C22 are low.
- RNVVR9 (X) - Data for sample group C21-C22 are high. Inconsistent within the determinations of sample group C21-C22.
- WC3ZGA (X) - Data for all samples are high. Possible Systematic Error.
- XFEKK2 (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

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

Reading Time	Sample C21-C22 <i>Polyisoprene compound, batch #1</i>			Sample C23-C24 <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	50.50	0.00	2.96	51.00	0.00	3.35	1	1
Readings taken within 0 - 5 seconds	47.80	1.45	0.26	47.90	1.48	0.25	68	73
Readings taken at 5 seconds	47.03	1.53	-0.51	47.13	1.26	-0.52	11	13
Readings taken after 5+ seconds	46.87	1.11	-0.68	46.68	1.17	-0.97	9	9
Maximum hardness indicator used	47.25	1.36	-0.29	47.44	0.98	-0.21	8	10

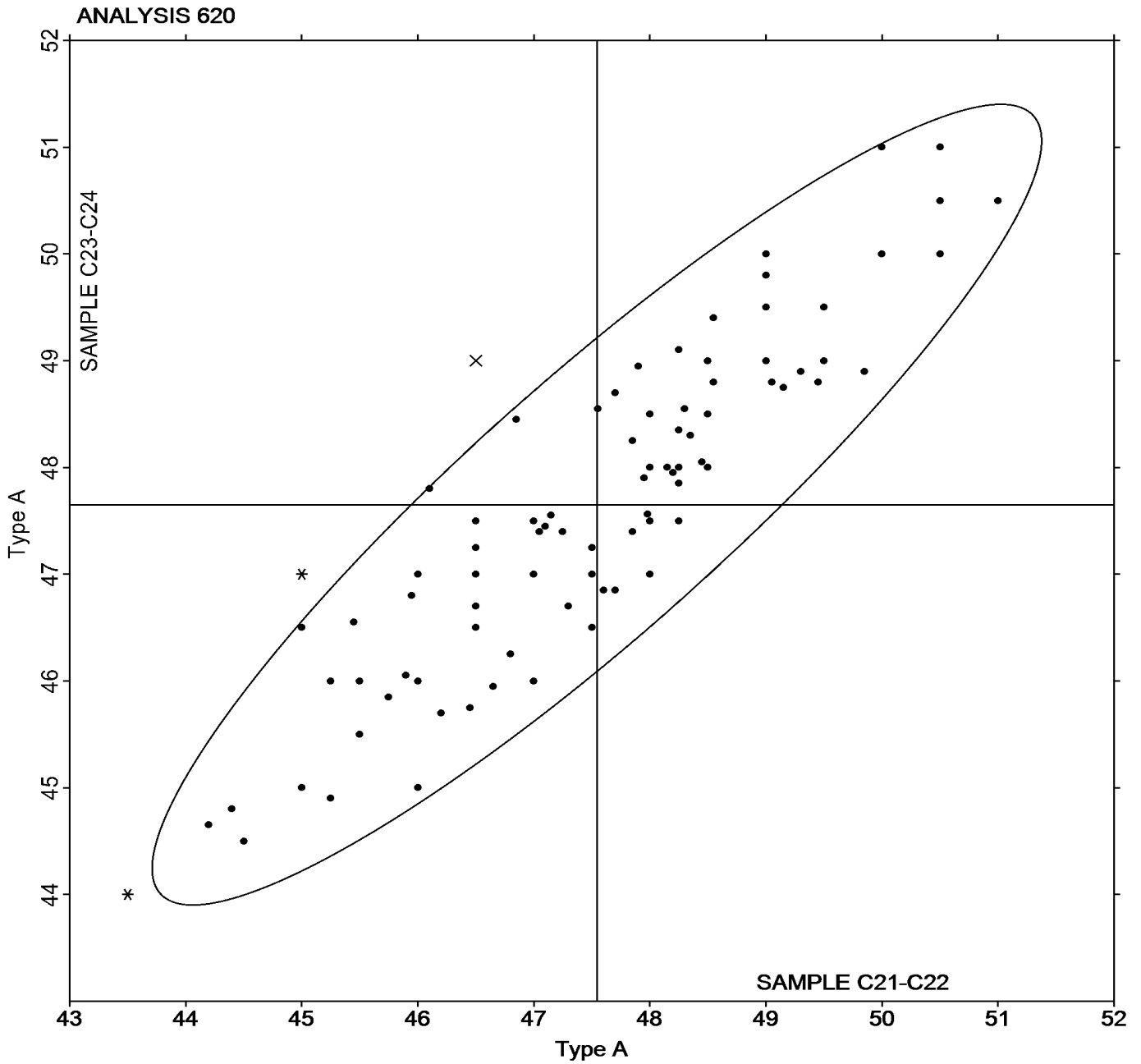


Rubber Interlaboratory Testing Program  
Analysis 620  
Hardness (Shore A/Type A)

Report #213  
3rd Qtr 2022

Grand Mean Sample C21-C22 = 47.543 Type A

Grand Mean Sample C23-C24 = 47.652 Type A





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JUWC2		1.135	0.003	0.92	1.134	0.002	0.66
2KZLB6		1.134	0.002	0.75	1.134	0.002	0.52
2X9AJ2		1.134	0.002	0.75	1.134	0.002	0.52
2XQBAB	X	1.115	-0.016	-5.48	1.117	-0.014	-4.12
2ZWXME		1.134	0.002	0.67	1.133	0.001	0.28
32NYH6		1.130	-0.002	-0.70	1.131	-0.001	-0.27
3BT3UU		1.130	-0.002	-0.58	1.129	-0.003	-0.77
3J3TUC		1.133	0.001	0.25	1.133	0.001	0.38
3KWG9Z		1.132	0.001	0.19	1.133	0.001	0.28
3M4GRL		1.137	0.005	1.77	1.137	0.005	1.38
3U29XV		1.128	-0.004	-1.28	1.129	-0.003	-0.74
3VZCUQ		1.132	0.000	0.07	1.133	0.001	0.41
4GBUER		1.136	0.004	1.44	1.136	0.004	1.28
72VHVX		1.135	0.003	1.09	1.136	0.004	1.24
73MQNY		1.130	-0.002	-0.75	1.132	0.000	0.09
7MNN4L		1.133	0.001	0.27	1.135	0.003	0.81
7QU6H4		1.133	0.002	0.52	1.134	0.002	0.64
87JGNJ		1.133	0.001	0.45	1.135	0.003	0.92
8DG8AU		1.130	-0.001	-0.50	1.129	-0.003	-0.74
8ECRZZ		1.133	0.001	0.47	1.131	0.000	-0.09
8R3LDT		1.128	-0.003	-1.11	1.127	-0.005	-1.40
8TVBVN		1.134	0.002	0.75	1.134	0.002	0.66
99KXHT	X	1.118	-0.014	-4.59	1.116	-0.016	-4.53
9PPCVF		1.128	-0.004	-1.25	1.125	-0.007	-2.06
9TRBBE		1.134	0.002	0.59	1.134	0.002	0.52
9ZQRPR		1.128	-0.004	-1.36	1.127	-0.004	-1.24
ARTL6N		1.135	0.003	1.09	1.135	0.003	0.81
BD6YC3		1.131	0.000	-0.11	1.131	-0.001	-0.27
CCEZWJ		1.137	0.005	1.59	1.137	0.005	1.38
CK7B9Y		1.131	-0.001	-0.25	1.129	-0.003	-0.77
CL3NVR		1.132	0.000	-0.08	1.132	0.000	-0.05
CPXMYP	*	1.130	-0.002	-0.58	1.125	-0.007	-1.91
DEB7QE	X	1.136	0.004	1.27	1.145	0.014	3.91
DF34XL		1.131	-0.001	-0.23	1.134	0.002	0.55
DLXVBP		1.132	0.000	-0.03	1.134	0.002	0.69
E3ZQLV		1.134	0.002	0.75	1.133	0.001	0.38
EX7VJM		1.129	-0.002	-0.80	1.132	0.000	0.13
FGCQQK		1.134	0.002	0.59	1.132	0.000	-0.05



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
G47U8H		1.128	-0.004	-1.25	1.129	-0.003	-0.91
GGRELJ		1.131	-0.001	-0.31	1.133	0.001	0.36
H36LBH		1.135	0.003	1.09	1.134	0.002	0.66
H3NM2R	X	1.127	-0.005	-1.66	1.132	0.001	0.15
HMPKFD		1.130	-0.002	-0.58	1.133	0.001	0.38
J7KD2B		1.131	-0.001	-0.25	1.131	-0.001	-0.19
JFA3ZK		1.136	0.004	1.44	1.136	0.005	1.32
JM8RJA	X	1.113	-0.019	-6.24	1.115	-0.017	-4.77
JN2F36		1.128	-0.004	-1.41	1.128	-0.004	-1.05
JNZPRF		1.132	0.001	0.22	1.130	-0.001	-0.41
KNXGXM		1.128	-0.004	-1.25	1.129	-0.003	-0.77
L63YTR	X	1.116	-0.016	-5.41	1.115	-0.017	-4.77
L7XM8G		1.131	-0.001	-0.25	1.133	0.001	0.38
LAWX8M	X	1.109	-0.023	-7.57	1.127	-0.005	-1.48
LRBCKC	X	1.118	-0.014	-4.58	1.122	-0.010	-2.77
LW4ELQ		1.137	0.005	1.75	1.137	0.005	1.52
M3BM7R		1.133	0.001	0.29	1.133	0.001	0.32
MFCZK4		1.133	0.002	0.57	1.134	0.002	0.66
MX24AK		1.131	-0.001	-0.35	1.131	-0.001	-0.17
NMUTCT	*	1.134	0.002	0.59	1.129	-0.003	-0.77
NVM7A8		1.133	0.001	0.30	1.133	0.001	0.32
NVQJ2B	X	1.122	-0.010	-3.41	1.127	-0.005	-1.34
P2RFXF		1.132	0.000	0.09	1.134	0.002	0.66
PXNQAD		1.137	0.005	1.59	1.136	0.004	1.24
PYXREK		1.133	0.001	0.27	1.133	0.001	0.38
Q8Q7XW		1.131	0.000	-0.15	1.133	0.001	0.39
QZQRAA		1.133	0.002	0.57	1.134	0.002	0.54
RFYZQ4		1.132	0.000	0.04	1.132	0.001	0.18
RNVVR9		1.135	0.003	0.94	1.134	0.003	0.78
UEXZMA		1.136	0.004	1.42	1.135	0.003	0.95
V8W642		1.132	0.000	-0.08	1.135	0.003	0.81
VNHUT3	*	1.123	-0.009	-2.88	1.124	-0.008	-2.16
VVGDE7		1.131	-0.001	-0.25	1.131	-0.001	-0.34
WC3ZGA		1.131	0.000	-0.11	1.130	-0.002	-0.44
WU46KC	*	1.124	-0.008	-2.58	1.122	-0.010	-2.91
WVGLYB	X	1.096	-0.036	-11.90	1.098	-0.034	-9.78
WVXT38	X	1.130	-0.002	-0.58	1.120	-0.012	-3.34



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample C21-C22			Sample C23-C24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
X48J4P		1.126	-0.006	-1.94	1.123	-0.009	-2.47
XAU6FH	*	1.126	-0.006	-1.91	1.122	-0.010	-2.77
YY7ZGG		1.128	-0.004	-1.35	1.128	-0.003	-0.94
ZD3EC6		1.135	0.003	1.09	1.134	0.002	0.52
ZK6GMW		1.132	0.000	0.00	1.133	0.001	0.34
ZMURC6		1.130	-0.002	-0.75	1.130	-0.002	-0.62

Grand Means		Summary Statistics	
	1.1317 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	1.1317 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	
Std Dev Btwn Labs	0.0030 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	0.0035 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	
Statistics based on 70 of 81 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & C23-C24: Polyisoprene compound, batch #2

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

- 2XQBAB (X) - Data for all samples are low. Possible Systematic Error.
- 99KXHT (X) - Data for all samples are low. Possible Systematic Error.
- DEB7QE (X) - Data for sample group C23-C24 are high. Inconsistent within the determinations of sample group C23-C24.
- H3NM2R (X) - Inconsistent in testing between samples.
- JM8RJA (X) - Data for all samples are low. Possible Systematic Error.
- L63YTR (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C21-C22.
- LAWX8M (X) - Data for sample group C21-C22 are low. Inconsistent within the determinations of sample group C23-C24.
- LRBCKC (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C21-C22.
- NVQJ2B (X) - Data for sample group C21-C22 are low. Inconsistent in testing between samples.
- WVGLYB (X) - Data for all Samples are low.
- WVXT38 (X) - Data for sample group C23-C24 are low.

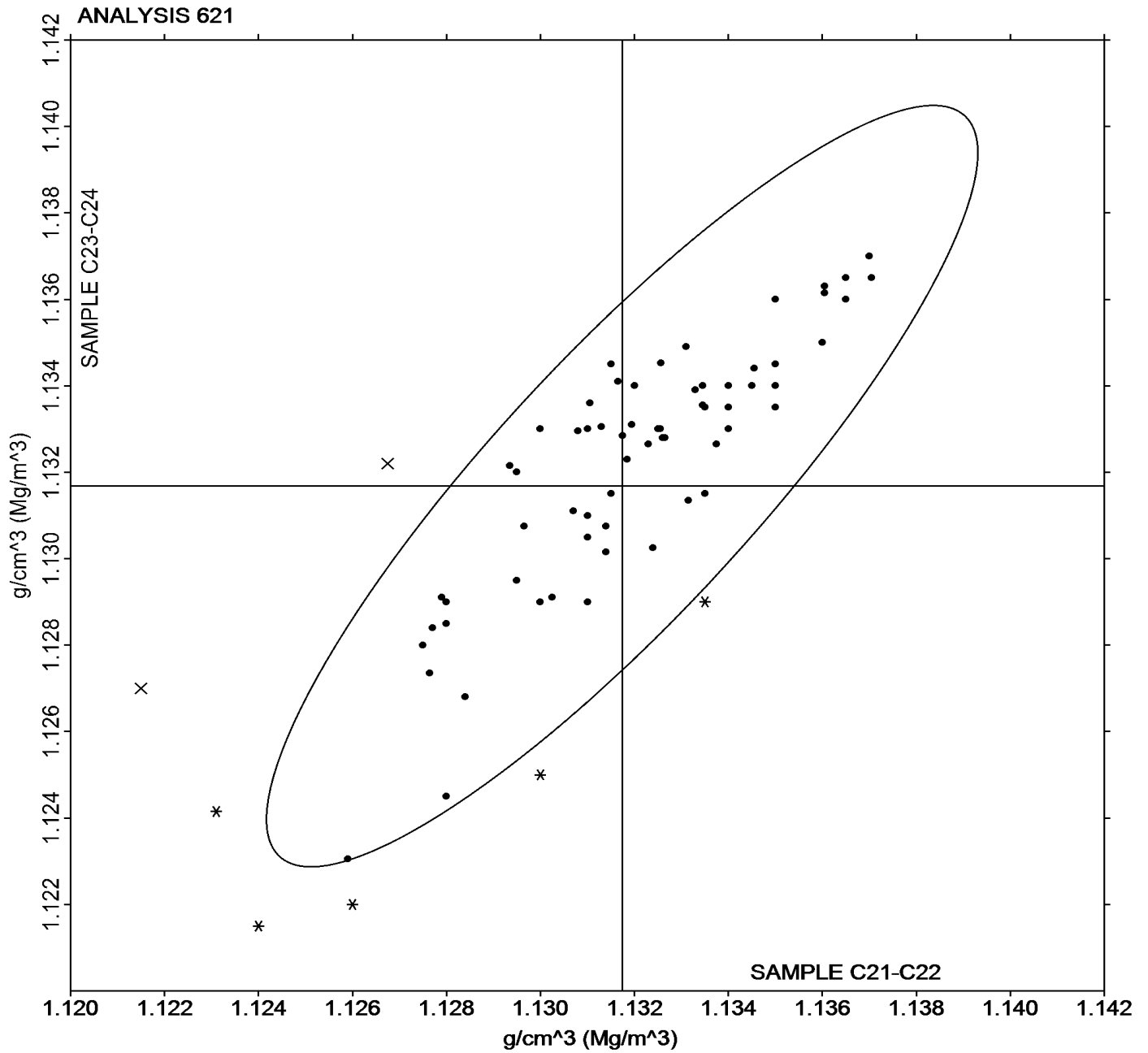


Rubber Interlaboratory Testing Program  
Analysis 621  
Density

Report #213  
3rd Qtr 2022

Grand Mean Sample **C21-C22** = 1.1317 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)

Grand Mean Sample **C23-C24** = 1.1317 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)







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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample HC21-HC22			Sample HC23-HC24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
22PPXZ	X	67.95	14.80	4.67	55.05	-11.87	-4.44	HH
4GBUER		53.50	0.35	0.11	69.25	2.33	0.87	HH
7QU6H4		53.95	0.80	0.25	67.40	0.48	0.18	BT
92JTKG	X	37.55	-15.60	-4.92	65.10	-1.82	-0.68	BT
9TRBBE		52.00	-1.15	-0.36	66.50	-0.42	-0.16	BT
AYA3TR		54.00	0.85	0.27	67.00	0.08	0.03	XX
BBLK93		57.00	3.85	1.21	69.75	2.83	1.06	BT
CK7B9Y		49.00	-4.15	-1.31	63.95	-2.97	-1.11	BT
CL3NVR		52.40	-0.75	-0.24	66.85	-0.07	-0.03	BT
CMXCC3		52.15	-1.00	-0.32	66.50	-0.42	-0.16	BT
DF4U9B		48.05	-5.10	-1.61	62.20	-4.72	-1.76	BT
DLXVBP		50.45	-2.70	-0.85	65.05	-1.87	-0.70	BT
DUQ7KK		54.65	1.50	0.47	65.85	-1.07	-0.40	BT
EHAJ8D		48.30	-4.85	-1.53	62.25	-4.67	-1.74	BT
G2X2VV	X	45.50	-7.65	-2.41	51.50	-15.42	-5.76	HH
HEVFMC		55.70	2.55	0.80	68.95	2.03	0.76	BT
JM8RJA	X	93.20	40.05	12.63	93.70	26.78	10.01	BT
KNX8DH		57.75	4.60	1.45	69.65	2.73	1.02	BT
L63YTR		56.50	3.35	1.06	70.00	3.08	1.15	HH
MFCZK4		49.20	-3.95	-1.25	64.50	-2.42	-0.90	XX
PH8T8X		54.00	0.85	0.27	68.65	1.73	0.65	HH
PWRB2M		54.00	0.85	0.27	68.50	1.58	0.59	BT
RKRCA8		50.50	-2.65	-0.84	65.50	-1.42	-0.53	XX
RNVVR9		56.00	2.85	0.90	70.50	3.58	1.34	HH
T6X8F4		56.50	3.35	1.06	69.00	2.08	0.78	HH
TTKQ97		57.00	3.85	1.21	70.50	3.58	1.34	BT
VQQ349		58.10	4.95	1.56	70.25	3.33	1.24	HH
WVGLYB		53.00	-0.15	-0.05	65.00	-1.92	-0.72	HH
WVXT38		50.00	-3.15	-0.99	63.50	-3.42	-1.28	BT
ZRNP3G		48.20	-4.95	-1.56	62.85	-4.07	-1.52	BT

Summary Statistics			
Grand Means	53.150	Type D	66.919
Std Dev Btwn Labs	3.172	Type D	2.676
Statistics based on 26 of 30 reporting participants			



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

**Report #213**  
**3rd Qtr 2022**

Samples HC21-HC22: Hardness Disc, batch #1 & HC23-HC24: Hardness Disc, batch #2

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

- 22PPXZ (X) - Data for sample group HC21-HC22 are high and data for sample group HC23-HC24 are low. Inconsistent in testing between sample groups. Inconsistent within the determinations of sample group HC23-HC24.
- 92JTKG (X) - Data for sample group HC21-HC22 are low.
- G2X2VW (X) - Data for sample group HC23-HC24 are low. Inconsistent within the determinations of sample group HC23-HC24.
- JM8RJA (X) - Extreme Data.

**Key to Instrument Codes Reported by Participants**

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

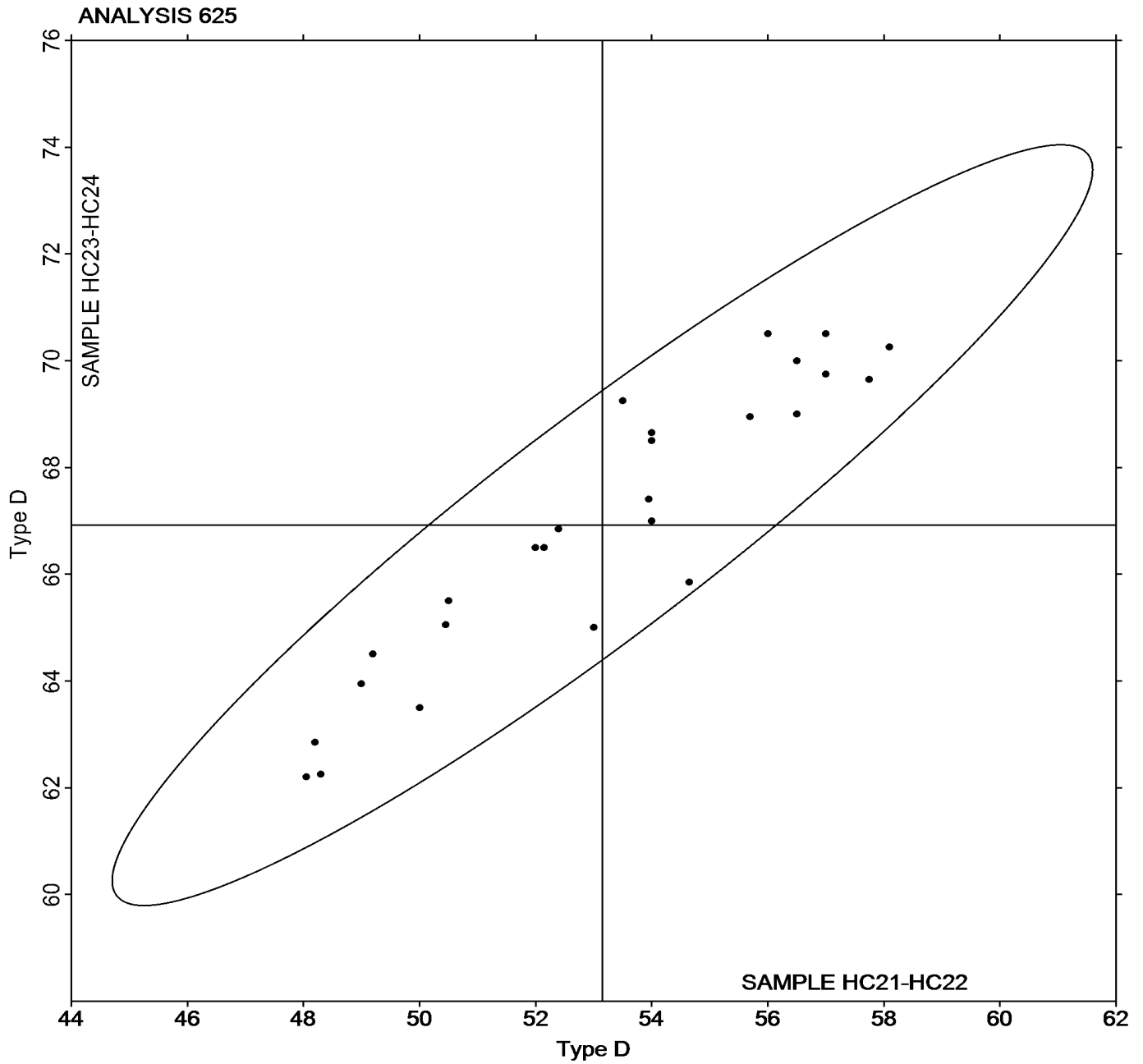


Rubber Interlaboratory Testing Program  
Analysis 625  
Hardness (Shore D/Type D)

Report #213  
3rd Qtr 2022

Grand Mean Sample **HC21-HC22** = 53.150 Type D

Grand Mean Sample **HC23-HC24** = 66.919 Type D





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 630

3rd Qtr 2022

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

WebCode	Data Flag	Sample C21-C22			Sample L21-L22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2KZLB6		3,208.0	-115.0	-0.69	2,863.5	-21.3	-0.08
2X9AJ2		3,535.0	212.0	1.27	2,740.0	-144.8	-0.53
2XQBAB		3,308.1	-14.9	-0.09	2,823.2	-61.6	-0.23
38PD7R		3,319.0	-4.0	-0.02	2,921.0	36.2	0.13
3J3TUC		3,408.5	85.5	0.51	3,058.0	173.2	0.64
3VZCUQ		3,569.5	246.5	1.47	3,231.5	346.7	1.27
72VHVX	*	3,440.0	117.0	0.70	2,085.0	-799.8	-2.94
7QU6H4		3,188.1	-134.9	-0.81	2,952.4	67.6	0.25
8ECRZZ		3,157.5	-165.5	-0.99	2,852.2	-32.6	-0.12
8R3LDT		3,391.1	68.1	0.41	3,005.4	120.6	0.44
ARTL6N		3,334.4	11.5	0.07	2,955.2	70.4	0.26
BD6YC3		3,334.5	11.5	0.07	2,922.0	37.2	0.14
CCEZWJ		3,380.0	57.0	0.34	2,865.0	-19.8	-0.07
CL3NVR		3,118.3	-204.6	-1.22	2,821.0	-63.8	-0.23
CN7L4Y		3,244.2	-78.8	-0.47	2,897.6	12.8	0.05
DEB7QE		3,142.0	-181.0	-1.08	3,044.5	159.7	0.59
DLXVBP		3,231.5	-91.5	-0.55	3,172.5	287.7	1.06
EX7VJM	*	3,784.1	461.1	2.75	3,358.4	473.6	1.74
FT78FL	X	4,142.2	819.3	4.89	2,996.1	111.3	0.41
G47U8H		3,451.0	128.0	0.76	2,709.5	-175.3	-0.64
H3NM2R		3,487.3	164.3	0.98	2,883.9	-0.9	0.00
HMPKFD		3,343.1	20.2	0.12	2,908.0	23.2	0.09
JM8RJA		3,289.0	-34.0	-0.20	3,085.5	200.7	0.74
LH43N7		3,257.4	-65.6	-0.39	3,077.4	192.6	0.71
LW4ELQ		3,325.7	2.8	0.02	2,343.1	-541.7	-1.99
M3BM7R		3,406.6	83.6	0.50	3,236.4	351.6	1.29
MX24AK		3,420.8	97.8	0.58	3,137.8	253.0	0.93
NVM7A8		3,152.4	-170.6	-1.02	3,067.9	183.1	0.67
PYXREK		3,378.8	55.8	0.33	2,778.0	-106.8	-0.39
W49VN9		3,129.2	-193.7	-1.16	2,724.6	-160.2	-0.59
WC3ZGA		3,091.0	-232.0	-1.39	3,014.5	129.7	0.48
WU46KC		2,910.0	-413.0	-2.47	2,575.0	-309.8	-1.14
WVGLYB		3,586.0	263.0	1.57	3,107.0	222.2	0.82
X48J4P		3,324.6	1.7	0.01	2,300.4	-584.4	-2.15
XAU6FH		3,334.1	11.1	0.07	2,566.1	-318.7	-1.17



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 630

3rd Qtr 2022

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

		Summary Statistics	
Grand Means			
	3,322.96 psi		2,884.80 psi
Stnd Dev Btwn Labs			
	167.42 psi		272.23 psi
Statistics based on 34 of 35 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	22.911 MPa		19.890 MPa
Stnd Dev Btwn Labs			
	1.154 MPa		1.880 MPa
Statistics based on 34 of 35 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & L21-L22: Polyisoprene compound, batch #1

#### **Comments on Assigned Data Flags for Test #630**

FT78FL (X) - Data for sample group C21-C22 are high.

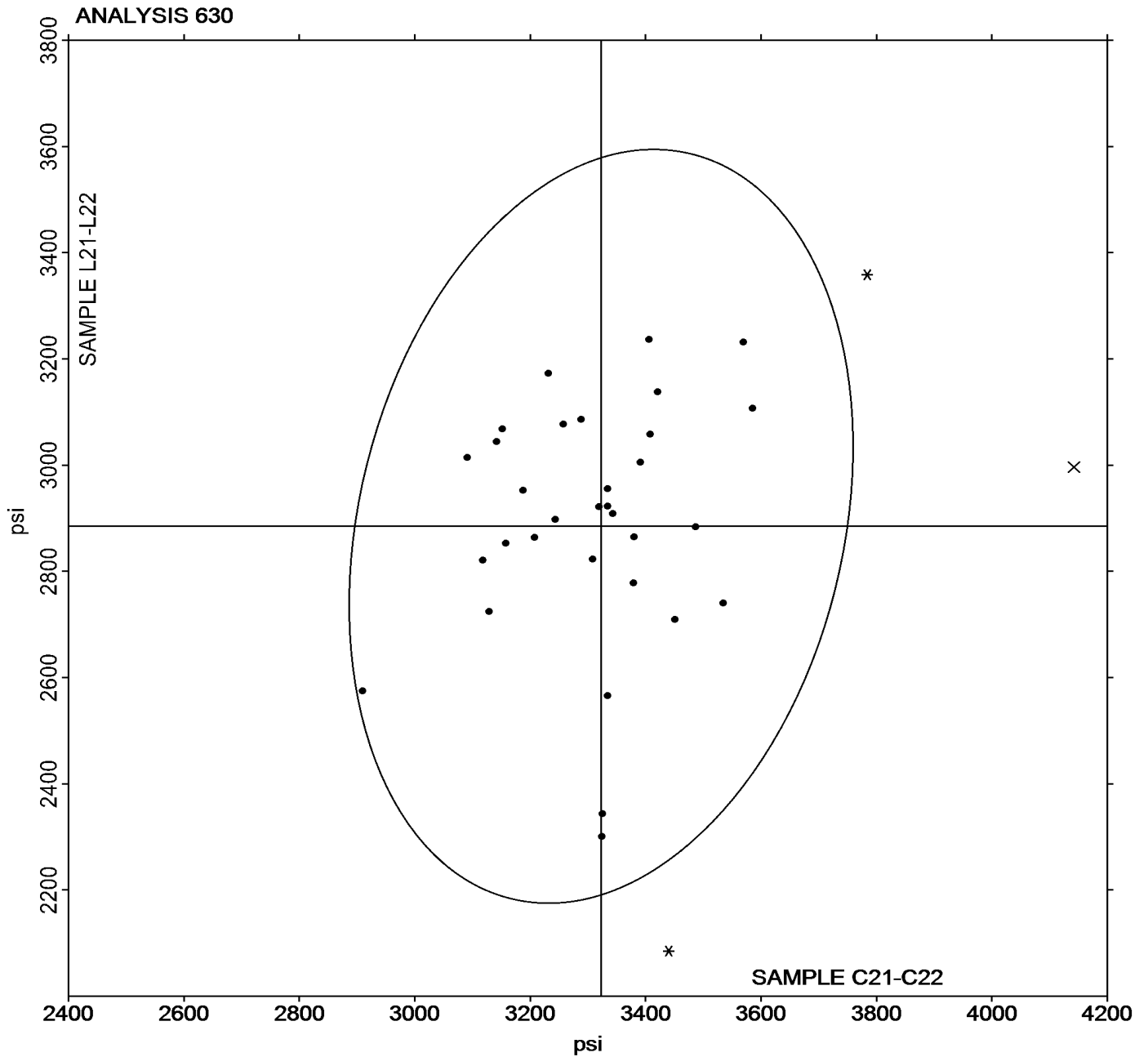


**Rubber Interlaboratory Testing Program**  
**Analysis 630**  
**Tensile Strength: Precured vs. Lab-Cured Samples (psi)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **C21-C22** = 3,322.96 psi

Grand Mean Sample **L21-L22** = 2,884.80 psi





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 631

3rd Qtr 2022

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

WebCode	Data Flag	Sample C21-C22			Sample L21-L22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2KZLB6		627.5	-22.6	-0.80	567.0	-26.7	-0.87
2X9AJ2		692.5	42.4	1.51	666.0	72.3	2.36
2XQBAB		631.2	-18.9	-0.67	589.1	-4.6	-0.15
38PD7R		651.5	1.4	0.05	546.5	-47.2	-1.54
3J3TUC		676.0	25.9	0.92	594.0	0.3	0.01
3VZCUQ		685.0	34.9	1.24	632.0	38.3	1.25
72VHVX		624.0	-26.1	-0.93	580.5	-13.2	-0.43
7QU6H4		639.0	-11.1	-0.40	573.0	-20.7	-0.67
8ECRZZ		669.0	18.9	0.67	617.5	23.8	0.78
8R3LDT		603.6	-46.5	-1.65	548.1	-45.6	-1.49
ARTL6N		709.5	59.4	2.11	624.5	30.8	1.00
BD6YC3		625.0	-25.1	-0.89	584.5	-9.2	-0.30
CCEZWJ		636.5	-13.6	-0.48	585.0	-8.7	-0.28
CL3NVR		656.1	6.0	0.21	590.4	-3.3	-0.11
CN7L4Y		642.5	-7.6	-0.27	583.5	-10.2	-0.33
DEB7QE		661.0	10.9	0.39	599.5	5.8	0.19
DLXVBP		632.0	-18.1	-0.64	600.5	6.8	0.22
EX7VJM		680.6	30.5	1.08	629.4	35.7	1.16
FT78FL		646.2	-3.9	-0.14	608.6	14.9	0.48
G47U8H		651.5	1.4	0.05	580.5	-13.2	-0.43
H3NM2R		648.0	-2.1	-0.08	593.0	-0.7	-0.02
HMPKFD		664.0	13.9	0.49	593.0	-0.7	-0.02
JM8RJA		661.5	11.4	0.40	604.5	10.8	0.35
LH43N7		624.1	-26.1	-0.93	590.3	-3.5	-0.11
LW4ELQ		669.8	19.7	0.70	576.9	-16.8	-0.55
M3BM7R		632.0	-18.1	-0.64	583.0	-10.7	-0.35
MX24AK		669.1	19.0	0.67	615.5	21.8	0.71
NVM7A8		666.5	16.4	0.58	639.5	45.8	1.49
PYXREK		673.5	23.4	0.83	612.5	18.8	0.61
W49VN9		637.5	-12.6	-0.45	601.5	7.8	0.25
WC3ZGA	*	575.0	-75.1	-2.67	541.5	-52.2	-1.70
WU46KC	*	595.5	-54.6	-1.94	500.0	-93.7	-3.05
WVGLYB		648.5	-1.6	-0.06	595.0	1.3	0.04
X48J4P		687.3	37.1	1.32	611.2	17.5	0.57
XAU6FH		662.3	12.1	0.43	622.2	28.5	0.93



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 631

3rd Qtr 2022

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

		Summary Statistics	
Grand Means	650.14 percent		593.70 percent
Stnd Dev Btwn Labs	28.14 percent		30.69 percent
Statistics based on 35 of 35 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & L21-L22: Polyisoprene compound, batch #1

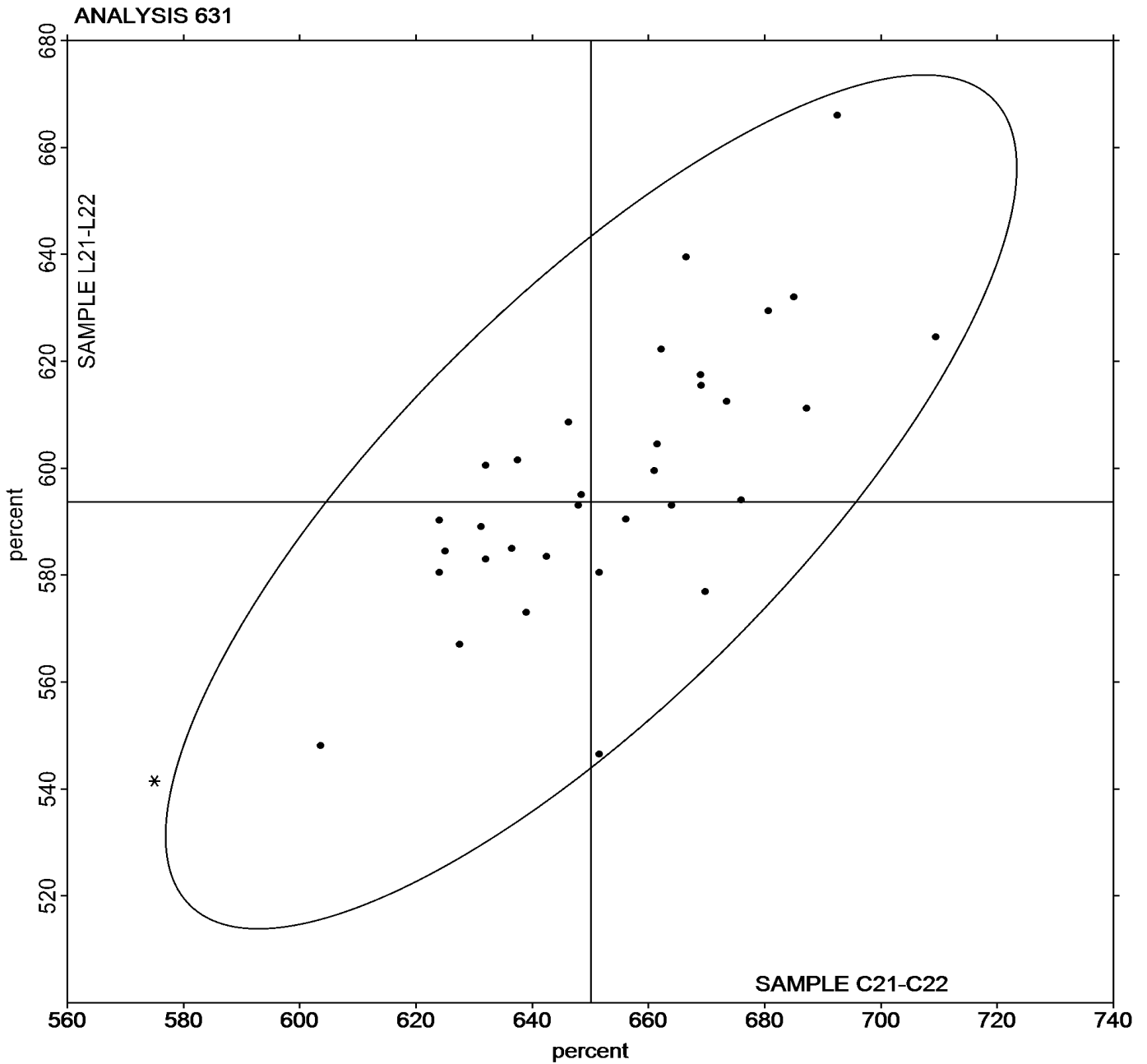




Ultimate Elongation: Precured vs. Lab-Cured Samples (percent)

Grand Mean Sample C21-C22 = 650.14 percent

Grand Mean Sample L21-L22 = 593.70 percent





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 632

3rd Qtr 2022

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

WebCode	Data Flag	Sample C21-C22			Sample L21-L22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2KZLB6		845.0	14.7	0.19	894.5	-11.0	-0.10
2X9AJ2		774.1	-56.2	-0.72	788.5	-117.0	-1.09
2XQBAB		877.6	47.3	0.61	887.9	-17.6	-0.16
38PD7R		802.5	-27.8	-0.36	974.0	68.5	0.64
3J3TUC		760.5	-69.8	-0.90	919.5	14.0	0.13
3VZCUQ		784.5	-45.8	-0.59	889.5	-16.0	-0.15
72VHVX	*	956.3	126.0	1.63	634.1	-271.3	-2.54
7QU6H4		787.3	-43.0	-0.55	962.2	56.7	0.53
8ECRZZ		728.8	-101.5	-1.31	847.0	-58.4	-0.55
8R3LDT		990.2	159.9	2.06	1,098.4	193.0	1.80
ARTL6N		780.3	-50.0	-0.64	876.8	-28.7	-0.27
BD6YC3		870.0	39.7	0.51	900.0	-5.5	-0.05
CCEZWJ		853.0	22.7	0.29	912.0	6.5	0.06
CL3NVR		794.1	-36.2	-0.47	876.8	-28.7	-0.27
CN7L4Y		819.8	-10.5	-0.14	937.0	31.5	0.29
DEB7QE		739.5	-90.8	-1.17	929.0	23.5	0.22
DLXVBP		827.0	-3.3	-0.04	940.5	35.0	0.33
EX7VJM		681.0	-149.3	-1.93	1,005.8	100.4	0.94
FT78FL		969.4	139.1	1.79	817.7	-87.7	-0.82
G47U8H		792.5	-37.8	-0.49	819.5	-86.0	-0.80
H3NM2R		860.7	30.4	0.39	857.9	-47.6	-0.45
HMPKFD		775.2	-55.1	-0.71	916.6	11.2	0.10
JM8RJA		768.0	-62.3	-0.80	926.0	20.5	0.19
LH43N7		981.1	150.8	1.95	1,040.8	135.3	1.27
LW4ELQ		787.6	-42.7	-0.55	810.8	-94.7	-0.89
M3BM7R		910.5	80.2	1.04	1,050.5	145.0	1.36
MX24AK		787.5	-42.8	-0.55	937.3	31.9	0.30
NVM7A8		751.0	-79.3	-1.02	838.5	-67.0	-0.63
PYXREK		803.7	-26.6	-0.34	807.5	-98.0	-0.92
W49VN9		823.1	-7.2	-0.09	803.5	-101.9	-0.95
WC3ZGA		980.0	149.7	1.93	1,023.5	118.0	1.10
WU46KC	*	862.5	32.2	0.42	1,190.0	284.5	2.66
WVGLYB		882.0	51.7	0.67	958.5	53.0	0.50
X48J4P	M	724.8	-105.5	-1.36	687.0	-218.4	-2.04
XAU6FH		823.7	-6.6	-0.08	713.5	-191.9	-1.79



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 632

3rd Qtr 2022

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

		Summary Statistics	
Grand Means	830.29 psi		905.45 psi
Stnd Dev Btwn Labs	77.49 psi		106.97 psi
Statistics based on 34 of 35 reporting participants			

		Summary Statistics in SI Units	
Grand Means	5.7246 MPa		6.2400 MPa
Stnd Dev Btwn Labs	0.5343 MPa		0.7400 MPa
Statistics based on 34 of 35 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & L21-L22: Polyisoprene compound, batch #1

#### **Comments on Assigned Data Flags for Test #632**

X48J4P (M) - Missing data for sample L21.



# Rubber Interlaboratory Testing Program

Report #213

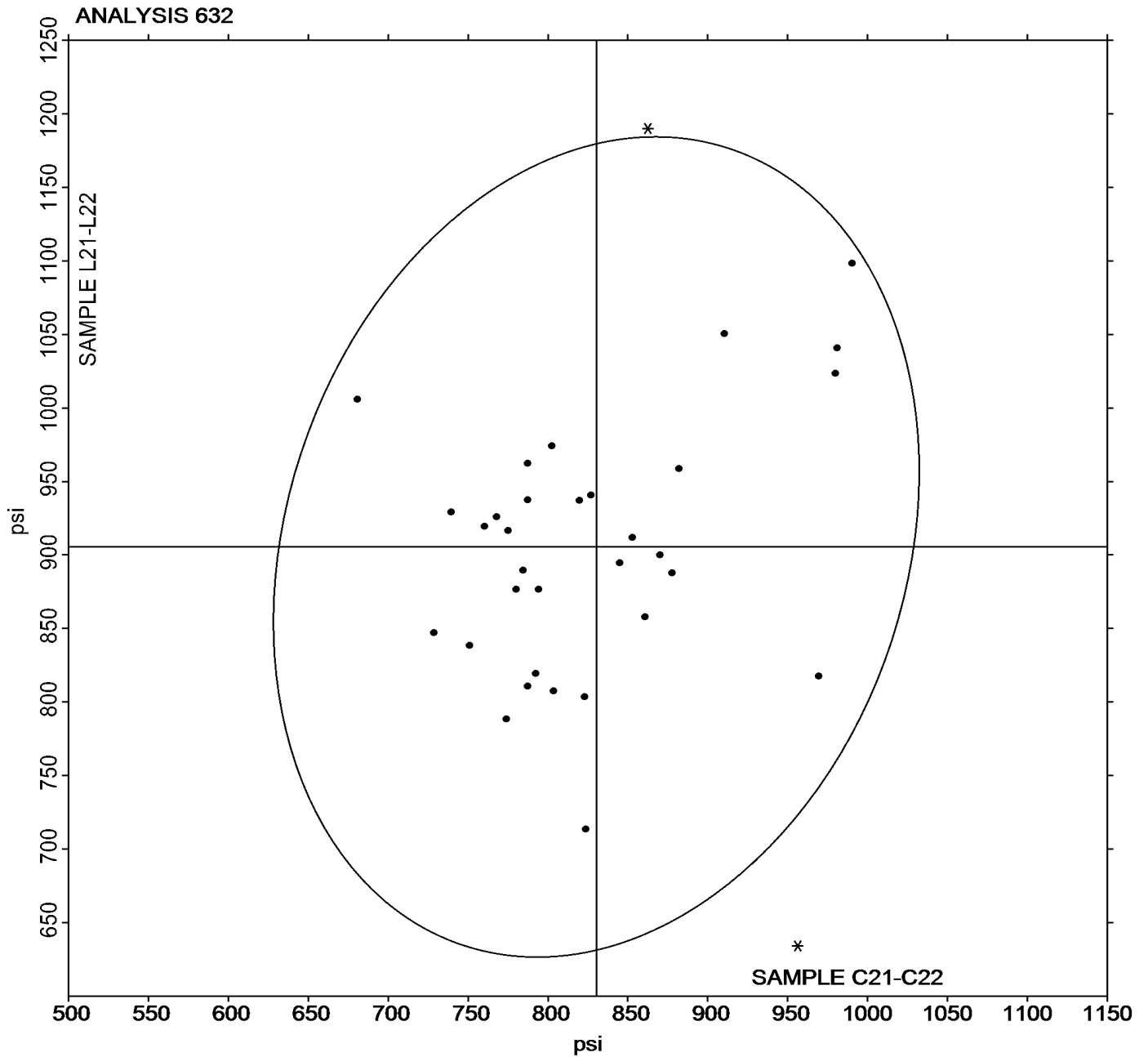
## Analysis 632

3rd Qtr 2022

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

Grand Mean Sample **C21-C22** = 830.29 psi

Grand Mean Sample **L21-L22** = 905.45 psi





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 633

3rd Qtr 2022

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

WebCode	Data Flag	Sample C21-C22			Sample L21-L22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2KZLB6		194.5	7.7	0.53	205.5	0.5	0.02
2X9AJ2		207.7	20.9	1.43	212.2	7.2	0.31
2XQBAB		197.5	10.7	0.73	209.0	4.0	0.17
38PD7R		187.5	0.7	0.04	215.0	10.0	0.44
3J3TUC		177.5	-9.3	-0.64	208.5	3.5	0.15
3VZCUQ		174.5	-12.3	-0.85	202.5	-2.5	-0.11
72VHVX	X	217.9	31.1	2.14	305.7	100.7	4.37
7QU6H4		174.7	-12.1	-0.83	213.8	8.8	0.38
8ECRZZ		185.6	-1.2	-0.08	222.6	17.7	0.77
8R3LDT		200.7	13.9	0.95	229.2	24.2	1.05
ARTL6N		175.5	-11.3	-0.78	192.2	-12.8	-0.56
BD6YC3		190.0	3.2	0.22	184.5	-20.5	-0.89
CCEZWJ		188.0	1.2	0.08	198.5	-6.5	-0.28
CL3NVR		175.5	-11.3	-0.78	195.1	-9.9	-0.43
CN7L4Y		182.3	-4.5	-0.31	209.1	4.1	0.18
DEB7QE		171.0	-15.8	-1.09	203.5	-1.5	-0.06
DLXVBP		177.5	-9.3	-0.64	206.5	1.5	0.07
EX7VJM		201.4	14.5	1.00	220.6	15.6	0.68
FT78FL	*	207.7	20.8	1.43	174.5	-30.5	-1.32
G47U8H		175.5	-11.3	-0.78	182.0	-23.0	-1.00
H3NM2R		189.6	2.7	0.19	185.8	-19.2	-0.83
HMPKFD		179.1	-7.7	-0.53	211.8	6.8	0.29
JM8RJA		174.0	-12.8	-0.88	209.5	4.5	0.20
LH43N7		222.3	35.4	2.43	239.6	34.6	1.50
LW4ELQ		173.3	-13.5	-0.93	166.8	-38.2	-1.66
M3BM7R		197.5	10.7	0.73	230.5	25.5	1.11
MX24AK		184.7	-2.1	-0.15	221.7	16.7	0.73
NVM7A8		176.2	-10.7	-0.73	200.5	-4.5	-0.19
PYXREK		178.6	-8.3	-0.57	176.1	-28.9	-1.26
W49VN9		194.4	7.5	0.52	198.7	-6.3	-0.27
WC3ZGA	*	227.0	40.2	2.76	237.0	32.0	1.39
WU46KC	*	188.5	1.7	0.11	271.5	66.5	2.89
WVGLYB		187.5	0.7	0.04	205.0	0.0	0.00
X48J4P		163.3	-23.6	-1.62	152.3	-52.7	-2.29
XAU6FH		172.4	-14.5	-0.99	177.7	-27.3	-1.19



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 633

3rd Qtr 2022

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

		Summary Statistics	
Grand Means	186.85 psi		204.97 psi
Stnd Dev Btwn Labs	14.56 psi		23.03 psi
Statistics based on 34 of 35 reporting participants			

		Summary Statistics in SI Units	
Grand Means	1.2883 MPa		1.4100 MPa
Stnd Dev Btwn Labs	0.1004 MPa		0.1600 MPa
Statistics based on 34 of 35 reporting participants			

Samples C21-C22: Polyisoprene compound, batch #1 & L21-L22: Polyisoprene compound, batch #1

#### **Comments on Assigned Data Flags for Test #633**

72VHVX (X) - Data for sample group L21-L22 are high. Inconsistent within the determinations of sample group L21-L22.



# Rubber Interlaboratory Testing Program

Report #213

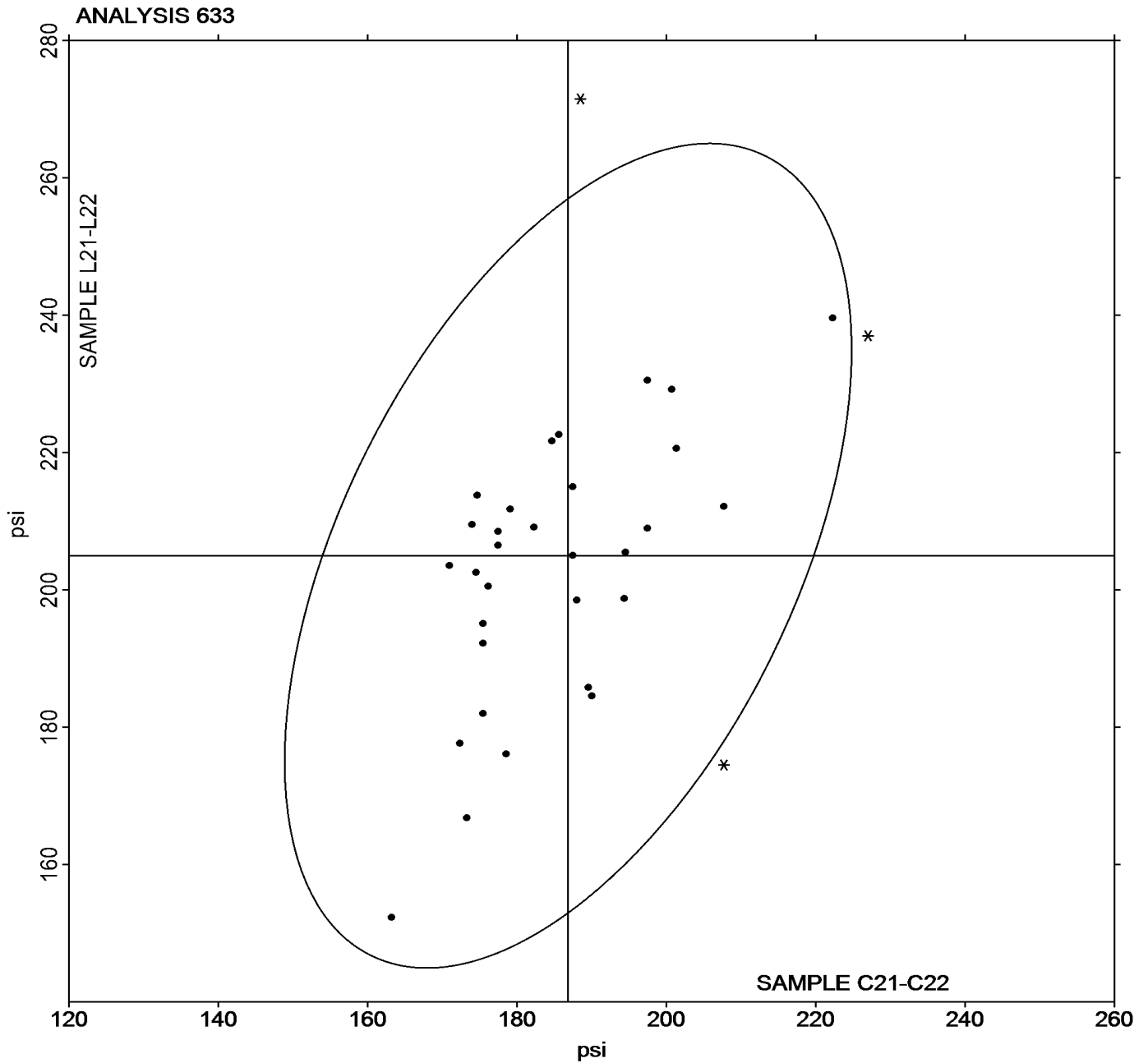
## Analysis 633

3rd Qtr 2022

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

Grand Mean Sample **C21-C22** = 186.85 psi

Grand Mean Sample **L21-L22** = 204.97 psi





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample P21			Sample P22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2JUWC2		28.10	-1.26	-0.43	27.97	-1.20	-0.40
2ZWXME		27.77	-1.59	-0.54	26.29	-2.87	-0.96
32NYH6		26.67	-2.69	-0.92	27.00	-2.16	-0.72
3BT3UU		24.00	-5.36	-1.83	24.00	-5.16	-1.73
3J3TUC		29.67	0.31	0.11	29.00	-0.16	-0.06
7QU6H4		32.59	3.23	1.10	31.90	2.74	0.91
8DG8AU		26.50	-2.86	-0.98	26.03	-3.13	-1.05
8R3LDT		25.43	-3.93	-1.34	26.12	-3.05	-1.02
8TVBVN		29.00	-0.36	-0.12	29.33	0.17	0.06
99KXHT		32.67	3.31	1.13	33.67	4.50	1.51
9NVNDK		28.13	-1.23	-0.42	28.43	-0.73	-0.24
9TRBBE		27.00	-2.36	-0.81	26.00	-3.16	-1.06
9VWZB3		30.35	0.99	0.34	30.50	1.34	0.45
9ZQRPR		25.33	-4.03	-1.37	27.00	-2.16	-0.72
BD6YC3		31.70	2.34	0.80	31.70	2.54	0.85
CCEZWJ		31.33	1.97	0.67	30.33	1.17	0.39
DEB7QE		25.60	-3.76	-1.28	25.17	-4.00	-1.34
DLXVBP		30.67	1.31	0.45	29.67	0.50	0.17
EHP3TV		27.23	-2.13	-0.73	25.57	-3.60	-1.20
G47U8H		31.00	1.64	0.56	31.67	2.50	0.84
GGRELJ		26.00	-3.36	-1.15	26.33	-2.83	-0.95
H36LBH		28.33	-1.03	-0.35	28.67	-0.50	-0.17
H3NM2R		34.37	5.01	1.71	34.80	5.64	1.88
J8UK44		33.80	4.44	1.52	33.58	4.41	1.47
JM8RJA		28.33	-1.03	-0.35	28.00	-1.16	-0.39
LAWX8M		29.67	0.31	0.11	28.33	-0.83	-0.28
LH43N7	X	34.83	5.47	1.87	30.60	1.44	0.48
M3BM7R		29.45	0.09	0.03	31.26	2.09	0.70
MFCZK4		29.03	-0.33	-0.11	29.57	0.40	0.13
MX24AK		30.97	1.61	0.55	29.77	0.60	0.20
PYXREK		33.00	3.64	1.24	32.33	3.17	1.06
Q8Q7XW	*	32.41	3.06	1.04	29.85	0.69	0.23
QJ4LLG		31.67	2.31	0.79	31.67	2.50	0.84
QZQRAA		25.33	-4.03	-1.37	25.00	-4.16	-1.39
RFYZQ4		34.46	5.10	1.74	34.50	5.34	1.78
RNVVR9		34.43	5.07	1.73	35.23	6.07	2.03
UEXZMA		26.13	-3.23	-1.10	26.63	-2.53	-0.85
V8W642		28.67	-0.69	-0.24	28.33	-0.83	-0.28





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample P21			Sample P22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WVGLYB		33.23	3.87	1.32	32.37	3.20	1.07
X3DWPZ		27.49	-1.87	-0.64	27.80	-1.36	-0.46
ZVPQA6		26.83	-2.53	-0.86	25.23	-3.93	-1.31

		Summary Statistics	
Grand Means		29.359 % Compression	29.165 % Compression
Stnd Dev Btwn Labs		2.929 % Compression	2.990 % Compression
		Statistics based on 40 of 41 reporting participants	

Samples P21: EPDM compound, batch #1 & P22: EPDM compound, batch #1

**Comments on Assigned Data Flags for Test #635**

LH43N7 (X) - Inconsistent in testing between samples.

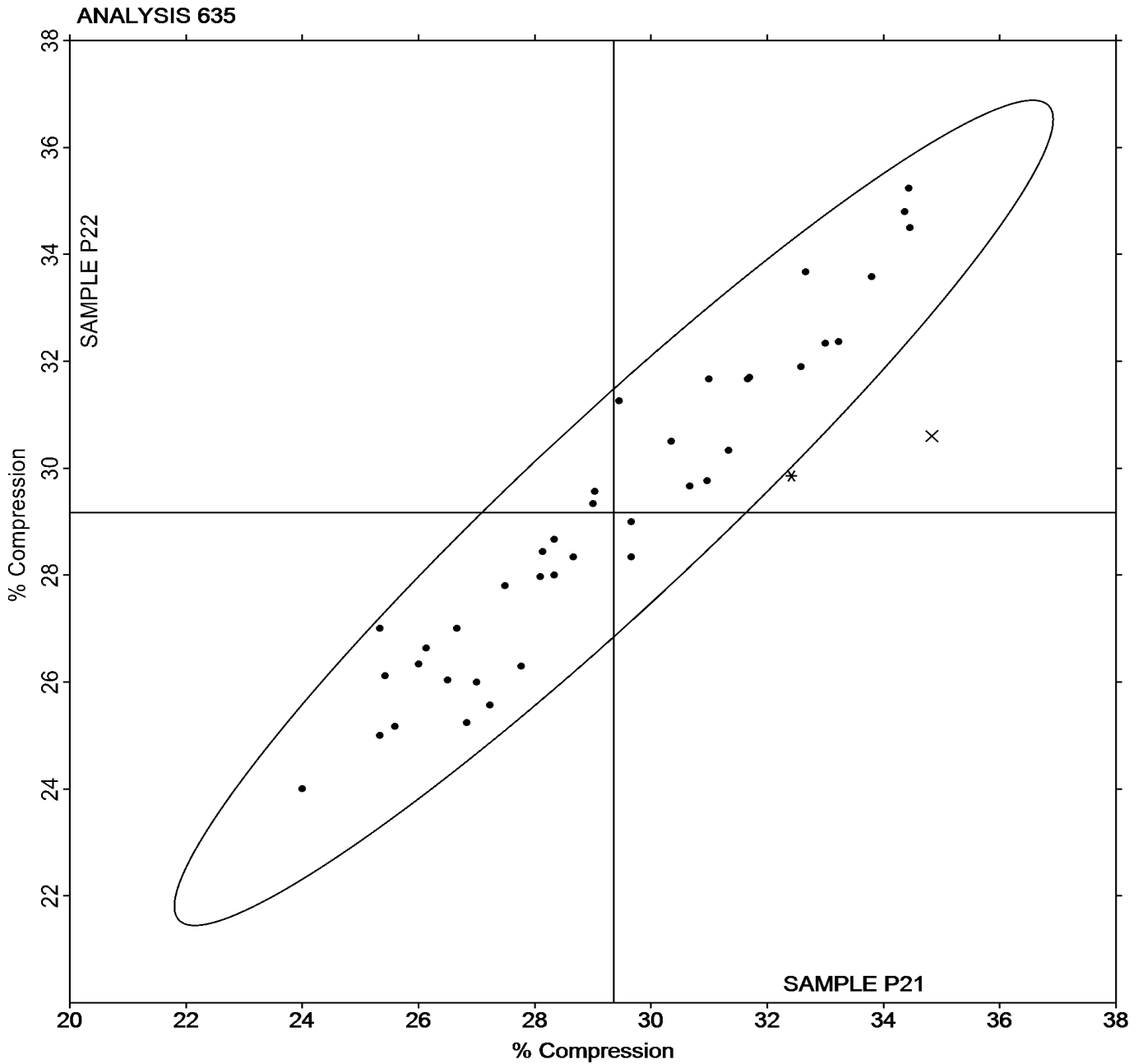


**Rubber Interlaboratory Testing Program**  
**Analysis 635**  
**Compression Set Method B**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **P21** = 29.359 % Compression

Grand Mean Sample **P22** = 29.165 % Compression





**Rubber Interlaboratory Testing Program**  
**Analysis 640**  
**O-Ring Tensile Strength at Break (psi)**

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample RC21			Sample RC22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		2,461.6	45.2	0.96	2,459.8	31.3	0.64
7QU6H4		2,482.6	66.2	1.41	2,491.0	62.5	1.27
87JGNJ		2,442.6	26.2	0.56	2,471.4	42.9	0.87
8BVE8Y		2,434.0	17.6	0.38	2,394.9	-33.6	-0.68
9ZQRPR		2,484.2	67.8	1.45	2,490.0	61.5	1.25
BD6YC3		2,415.2	-1.2	-0.03	2,323.8	-104.7	-2.13
DLXVBP		2,337.8	-78.6	-1.68	2,409.4	-19.1	-0.39
GGRELJ		2,378.2	-38.2	-0.82	2,455.0	26.5	0.54
H3NM2R		2,354.6	-61.8	-1.32	2,392.0	-36.5	-0.74
JGXMGN		2,357.4	-59.0	-1.26	2,391.8	-36.7	-0.74
P2RFXF		2,437.4	21.0	0.45	2,419.2	-9.3	-0.19
PYXREK		2,438.4	22.0	0.47	2,488.1	59.6	1.21
QZQRAA		2,415.6	-0.8	-0.02	2,422.6	-5.9	-0.12
V8W642		2,390.2	-26.2	-0.56	2,389.6	-38.9	-0.79

**Summary Statistics**

Grand Means

2,416.42 psi

2,428.47 psi

Std Dev Btwn Labs

46.88 psi

49.25 psi

Statistics based on 14 of 14 reporting participants

Samples RC21: Nitrile O-Ring & RC22: Nitrile O-Ring

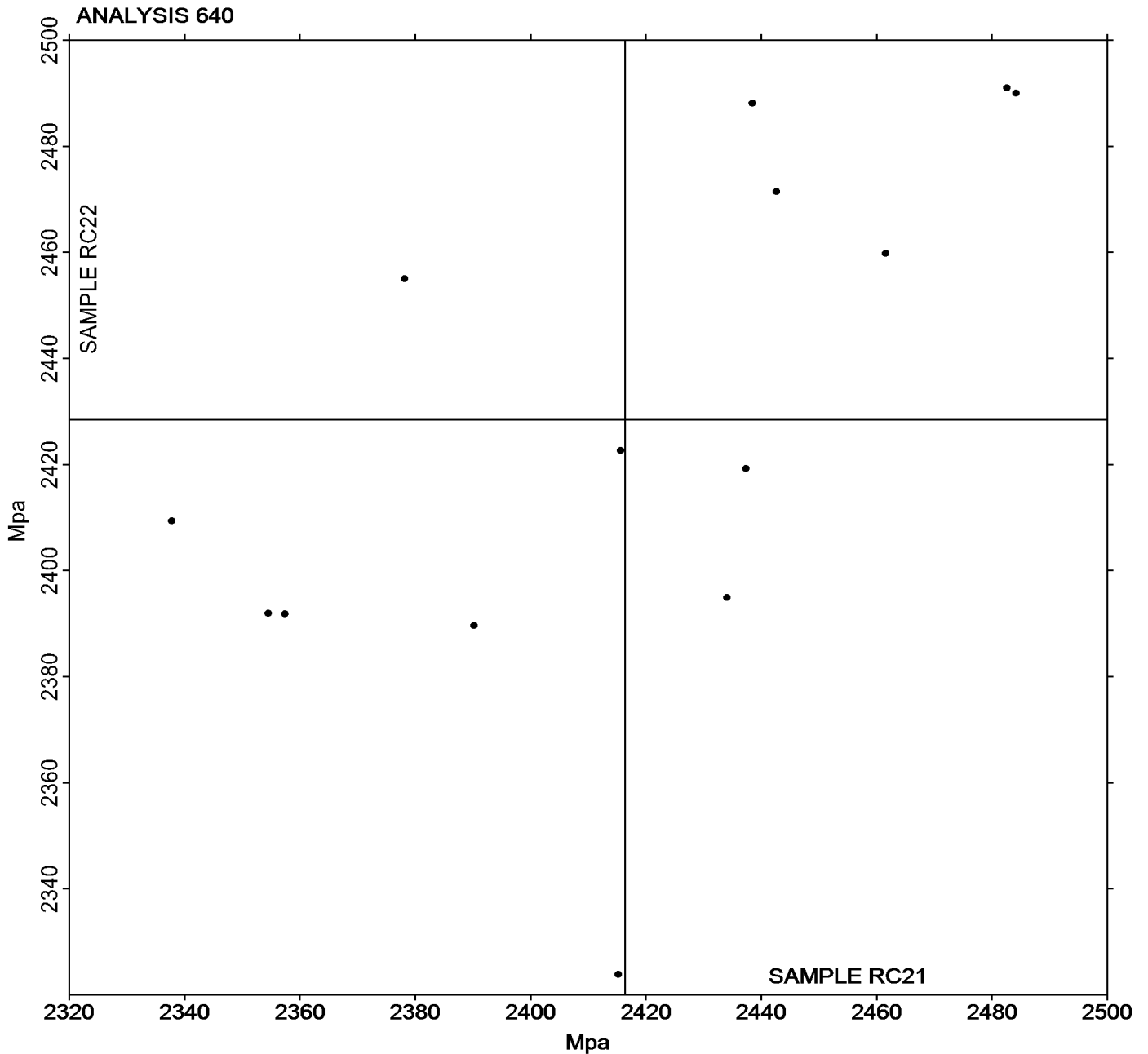


**Rubber Interlaboratory Testing Program**  
**Analysis 640**  
**O-Ring Tensile Strength at Break (psi)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **RC21** = 2,416.42 psi

Grand Mean Sample **RC22** = 2,428.47 psi



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 #213

## Analysis 641

3rd Qtr 2022

### O-Ring Ultimate Elongation (%)

WebCode	Data Flag	Sample RC21			Sample RC22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		416.6	3.8	0.16	416.6	-0.3	-0.01
7QU6H4		433.4	20.6	0.86	445.2	28.3	1.16
87JGNJ		413.0	0.2	0.01	422.2	5.3	0.22
8BVE8Y		416.0	3.2	0.13	408.2	-8.7	-0.36
9ZQRPR		430.8	18.0	0.75	418.6	1.7	0.07
BD6YC3		426.8	14.0	0.58	403.4	-13.5	-0.55
DLXVBP		439.4	26.6	1.11	460.2	43.3	1.77
GGRELJ		355.6	-57.2	-2.38	372.6	-44.3	-1.81
H3NM2R		408.2	-4.6	-0.19	423.2	6.3	0.26
JGXMGN		410.6	-2.2	-0.09	423.0	6.1	0.25
P2RFXF		429.0	16.2	0.67	424.8	7.9	0.32
PYXREK		420.1	7.3	0.30	435.0	18.1	0.74
QZQRAA		365.6	-47.2	-1.96	368.4	-48.5	-1.99
V8W642		413.8	1.0	0.04	414.8	-2.1	-0.08

#### Summary Statistics

Grand Means

412.78 percent

416.87 percent

Stnd Dev Btwn Labs

24.05 percent

24.42 percent

Statistics based on 14 of 14 reporting participants

Samples RC21: Nitrile O-Ring & RC22: Nitrile O-Ring



# Rubber Interlaboratory Testing Program

Report #213

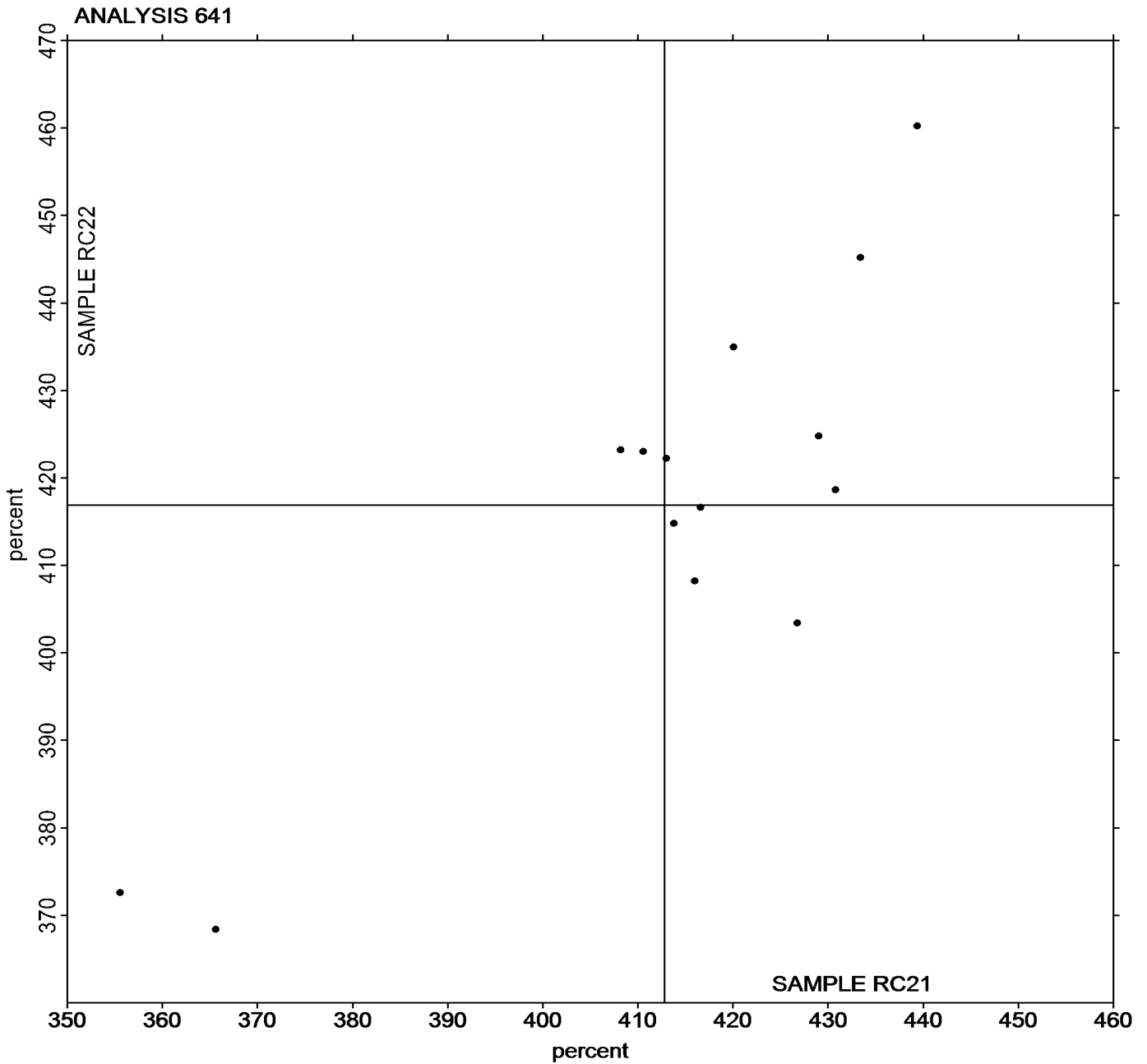
## Analysis 641

3rd Qtr 2022

### O-Ring Ultimate Elongation (%)

Grand Mean Sample **RC21** = 412.78 percent

Grand Mean Sample **RC22** = 416.87 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**  
**Analysis 642**  
**O-Ring Stress at 100% Elongation (psi)**

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample RC21			Sample RC22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		457.6	-13.5	-0.18	456.4	-16.2	-0.22
7QU6H4		475.2	4.1	0.06	470.6	-2.0	-0.03
87JGNJ		476.6	5.5	0.07	480.6	8.0	0.11
8BVE8Y		548.8	77.7	1.05	526.5	53.9	0.72
9ZQRPR	X	3,074.4	2,603.3	35.04	3,146.4	2,673.8	35.56
BD6YC3		565.6	94.5	1.27	582.4	109.8	1.46
DLXVBP		300.6	-170.5	-2.30	301.4	-171.2	-2.28
GGRELJ		558.6	87.5	1.18	568.6	96.0	1.28
H3NM2R		384.7	-86.4	-1.16	384.4	-88.1	-1.17
JGXMGN		442.2	-28.9	-0.39	440.4	-32.2	-0.43
P2RFXF		439.2	-31.9	-0.43	459.0	-13.6	-0.18
PYXREK		467.2	-3.9	-0.05	468.7	-3.9	-0.05
QZQRAA		541.4	70.3	0.95	542.6	70.0	0.93
V8W642		466.6	-4.5	-0.06	462.0	-10.6	-0.14

Summary Statistics	
Grand Means	471.10 psi                      472.58 psi
Stnd Dev Btwn Labs	74.29 psi                              75.19 psi
Statistics based on 13 of 14 reporting participants	

Samples RC21: Nitrile O-Ring & RC22: Nitrile O-Ring

**Comments on Assigned Data Flags for Test #642**

9ZQRPR (X) - Extreme data.

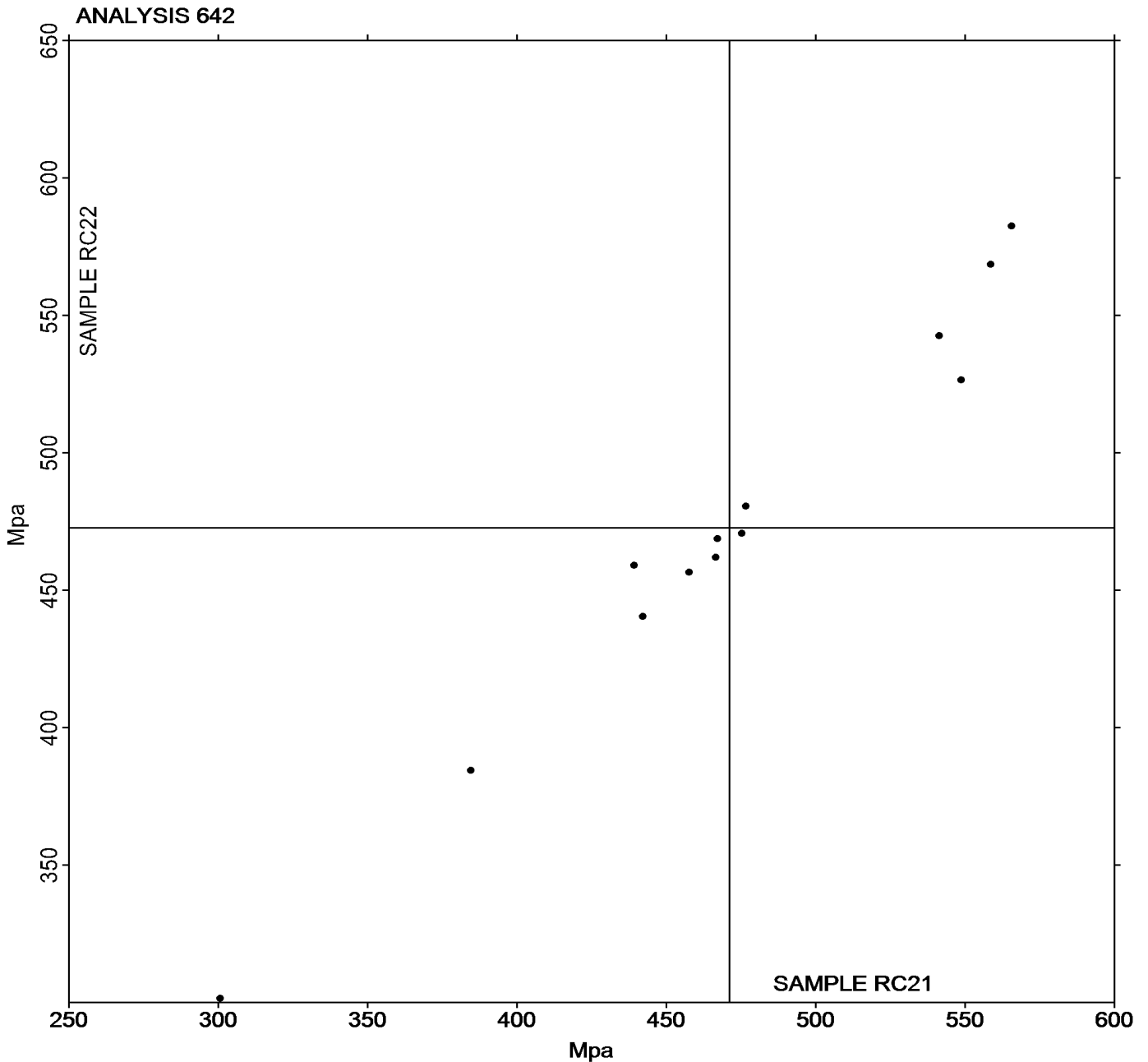


Rubber Interlaboratory Testing Program  
Analysis 642  
O-Ring Stress at 100% Elongation (psi)

Report #213  
3rd Qtr 2022

Grand Mean Sample **RC21** = 471.10 psi

Grand Mean Sample **RC22** = 472.58 psi



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 647**  
**O-Ring Hardness (Shore A)**

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample RC21			Sample RC22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		64.40	-3.52	-1.36	64.80	-3.40	-1.33
73MQNY		70.40	2.48	0.96	70.80	2.60	1.02
7QU6H4		69.12	1.20	0.47	69.78	1.58	0.62
87JGNJ		68.96	1.04	0.40	69.04	0.84	0.33
8BVE8Y		66.00	-1.92	-0.74	66.00	-2.20	-0.86
97UP4X		61.84	-6.08	-2.36	61.60	-6.60	-2.58
9ZQRPR		66.40	-1.52	-0.59	66.60	-1.60	-0.63
BD6YC3		65.46	-2.46	-0.95	66.86	-1.34	-0.52
DLXVBP		68.16	0.24	0.09	68.46	0.26	0.10
GGRELJ		70.40	2.48	0.96	70.80	2.60	1.02
H3NM2R		67.42	-0.50	-0.19	68.70	0.50	0.19
JGXMGN		70.00	2.08	0.81	69.00	0.80	0.31
P2RFXF		67.10	-0.82	-0.32	67.42	-0.78	-0.31
PYXREK		69.80	1.88	0.73	70.00	1.80	0.70
QZQRAA		70.84	2.92	1.13	70.56	2.36	0.92
V8W642		70.40	2.48	0.96	70.80	2.60	1.02

Summary Statistics	
Grand Means	67.919 Type A                      68.201 Type A
Std Dev Btwn Labs	2.579 Type A                              2.558 Type A
Statistics based on 16 of 16 reporting participants	

Samples RC21: Nitrile O-Ring & RC22: Nitrile O-Ring

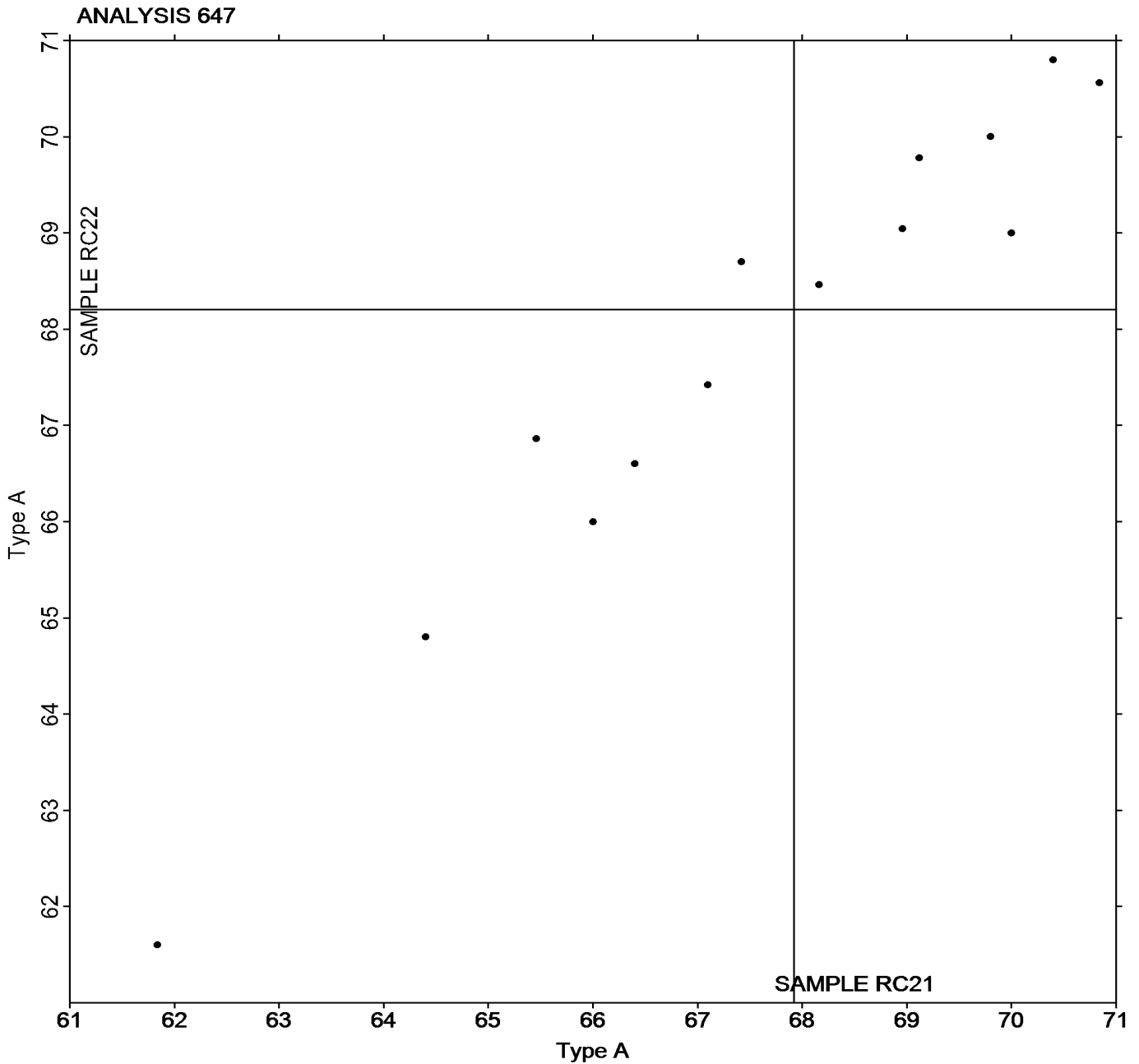


Rubber Interlaboratory Testing Program  
Analysis 647  
O-Ring Hardness (Shore A)

Report #213  
3rd Qtr 2022

Grand Mean Sample RC21 = 67.919 Type A

Grand Mean Sample RC22 = 68.201 Type A



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 648**  
**O-Ring Hardness (Shore M)**

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample RC21			Sample RC22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		76.52	1.20	0.80	77.04	1.52	1.13
7QU6H4		74.80	-0.52	-0.35	75.40	-0.12	-0.09
87JGNJ		73.40	-1.92	-1.28	74.00	-1.52	-1.13
8BVE8Y		73.60	-1.72	-1.15	73.40	-2.12	-1.58
9ZQRPR		75.92	0.60	0.40	76.08	0.56	0.41
BD6YC3		74.36	-0.96	-0.64	74.56	-0.96	-0.72
GGRELJ		75.46	0.14	0.09	75.72	0.20	0.15
JGXMGN		73.60	-1.72	-1.15	74.40	-1.12	-0.84
PYXREK		77.60	2.28	1.52	77.00	1.48	1.10
QZQRAA		75.84	0.52	0.34	75.58	0.06	0.04
V8W642		77.44	2.12	1.41	77.58	2.06	1.53

Summary Statistics	
Grand Means	75.322 Type M      75.524 Type M
Std Dev Btwn Labs	1.503 Type M      1.345 Type M
Statistics based on 11 of 11 reporting participants	

Samples RC21: Nitrile O-Ring & RC22: Nitrile O-Ring

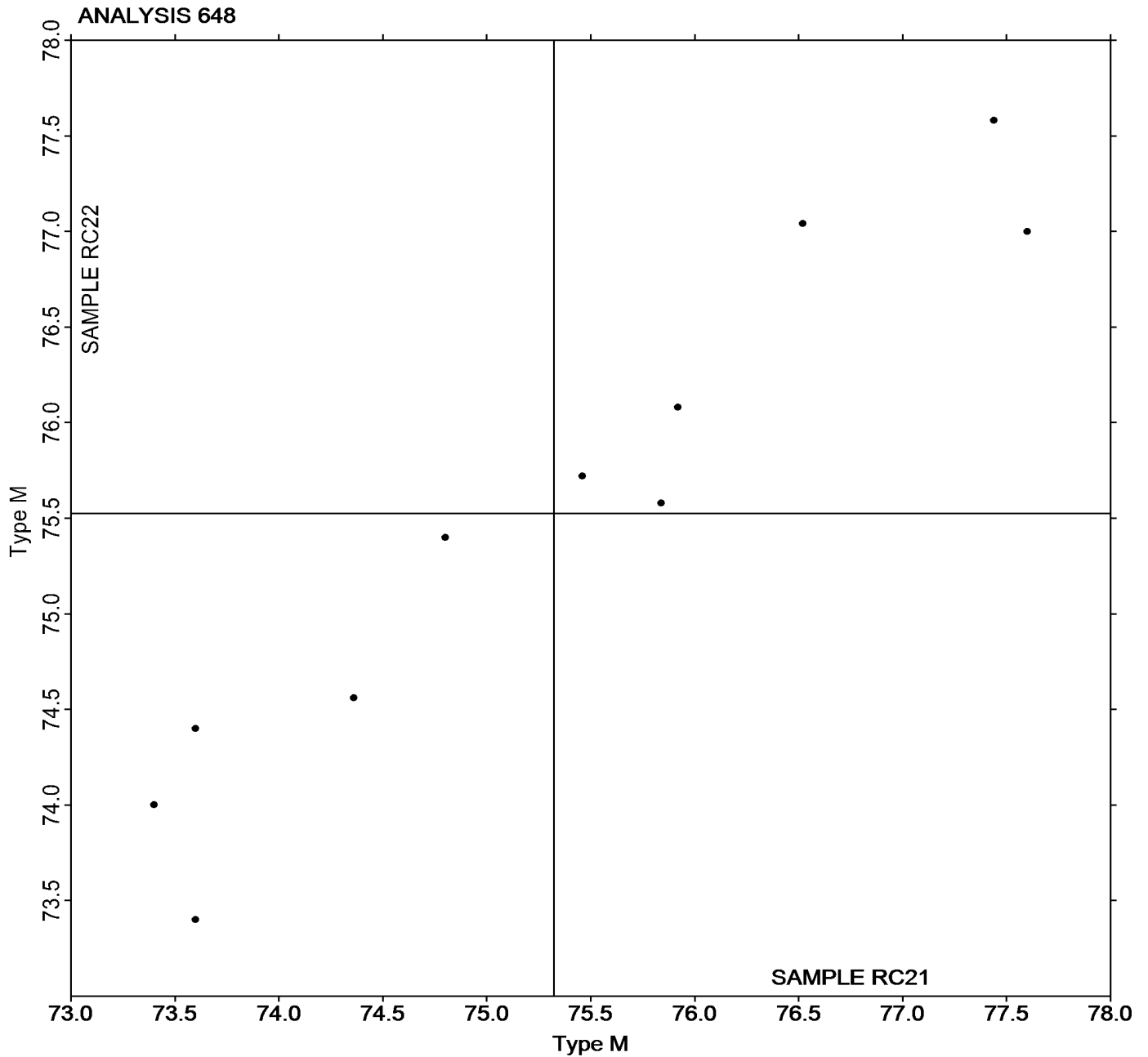


**Rubber Interlaboratory Testing Program**  
**Analysis 648**  
**O-Ring Hardness (Shore M)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **RC21** = 75.322 Type M

Grand Mean Sample **RC22** = 75.524 Type M



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 649**  
**O-Ring Density**

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample RC21			Sample RC22		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		1.212	-0.001	-0.40	1.208	-0.005	-0.84
73MQNY		1.215	0.002	0.71	1.216	0.004	0.61
7QU6H4		1.218	0.005	1.92	1.216	0.003	0.51
87JGNJ		1.212	-0.001	-0.52	1.214	0.001	0.15
8BVE8Y		1.217	0.003	1.23	1.216	0.004	0.61
97UP4X		1.213	0.000	-0.18	1.208	-0.004	-0.73
9ZQRPR	*	1.208	-0.005	-1.96	1.193	-0.019	-3.33
BD6YC3		1.213	0.000	-0.03	1.213	0.000	0.02
DLXVBP		1.216	0.003	1.14	1.218	0.006	1.00
GGRELJ		1.214	0.001	0.31	1.215	0.002	0.35
H3NM2R		1.213	0.000	0.06	1.214	0.001	0.16
JGXMGN		1.210	-0.004	-1.37	1.214	0.001	0.23
P2RFXF		1.215	0.002	0.56	1.215	0.002	0.37
PYXREK		1.211	-0.003	-1.04	1.214	0.002	0.31
QZQRAA		1.214	0.000	0.11	1.214	0.001	0.16
V8W642		1.212	-0.001	-0.55	1.215	0.002	0.41

Summary Statistics			
Grand Means	1.2133 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	1.2126 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	
Std Dev Btwn Labs	0.0027 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	0.0058 g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	
Statistics based on 16 of 16 reporting participants			

Samples RC21: Nitrile O-Ring & RC22: Nitrile O-Ring



# Rubber Interlaboratory Testing Program

## Analysis 649

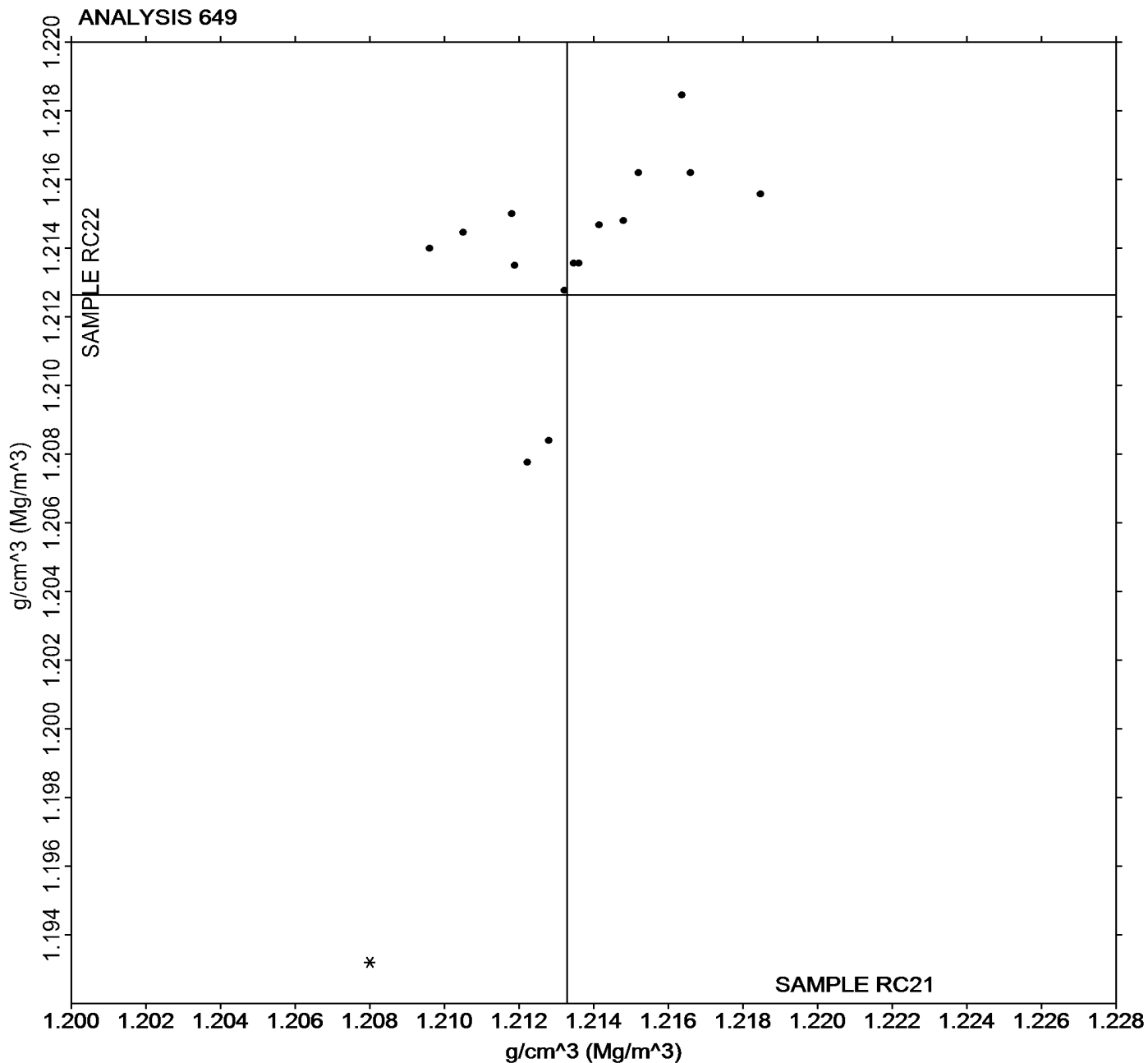
### O-Ring Density

Report #213

3rd Qtr 2022

Grand Mean Sample **RC21** = 1.2133 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)

Grand Mean Sample **RC22** = 1.2126 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)



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 650**  
**O-Ring Compression Set Method B**

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample RC23			Sample RC24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2ZWXME		10.540	1.900	1.49	10.597	1.904	1.55
7QU6H4		9.703	1.064	0.83	10.677	1.984	1.62
87JGNJ		9.800	1.160	0.91	8.800	0.108	0.09
9ZQRPR		9.000	0.360	0.28	9.000	0.308	0.25
BD6YC3		8.800	0.160	0.13	8.800	0.108	0.09
DLXVBP		9.233	0.594	0.47	9.200	0.508	0.41
GGRELJ		9.000	0.360	0.28	9.000	0.308	0.25
H3NM2R		8.800	0.160	0.13	8.800	0.108	0.09
JGXMGN		7.333	-1.306	-1.02	7.333	-1.359	-1.11
PYXREK		8.000	-0.640	-0.50	7.000	-1.692	-1.38
QZQRAA		7.667	-0.973	-0.76	8.333	-0.359	-0.29
V8W642		5.800	-2.840	-2.23	6.767	-1.926	-1.57

Summary Statistics			
Grand Means	8.6397 % Compression	8.6922 % Compression	
Stnd Dev Btwn Labs	1.2749 % Compression	1.2282 % Compression	Statistics based on 12 of 12 reporting participants

Samples RC23: Nitrile O-Ring & RC24: Nitrile O-Ring

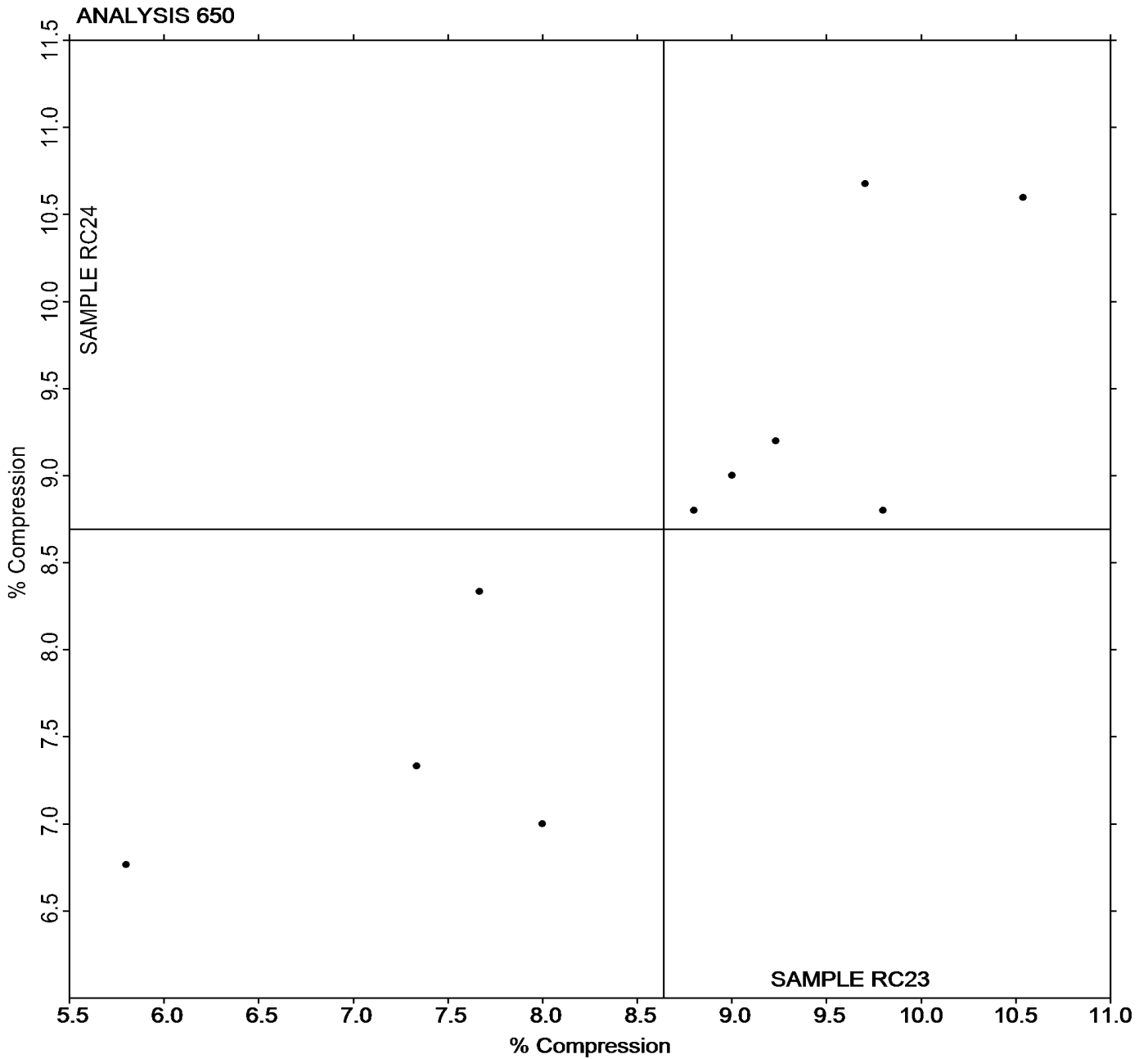


Rubber Interlaboratory Testing Program  
Analysis 650  
O-Ring Compression Set Method B

Report #213  
3rd Qtr 2022

Grand Mean Sample RC23 = 8.6397 % Compression

Grand Mean Sample RC24 = 8.6922 % Compression



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 #213

## Analysis 660

3rd Qtr 2022

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

WebCode	Data Flag	Sample U21-U22			Sample U23-U24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		47.76	0.05	0.06	53.59	0.71	0.65	MR
2KZLB6		47.33	-0.38	-0.45	51.38	-1.50	-1.38	XX
2X9AJ2	X	53.66	5.94	7.10	59.04	6.15	5.66	MR
2XQBAB		47.88	0.16	0.20	52.82	-0.07	-0.06	MR
37VPMW		48.70	0.99	1.18	54.05	1.17	1.07	MR
38PD7R		47.98	0.27	0.33	52.92	0.03	0.03	MR
3VZCUQ		48.58	0.87	1.04	53.80	0.92	0.84	MR
4VVAJD		46.60	-1.11	-1.33	51.35	-1.53	-1.41	MR
72VHVX		48.57	0.86	1.03	54.87	1.98	1.82	MV
86L7TF	*	48.48	0.76	0.91	51.28	-1.60	-1.48	MR
8ECRZZ		49.66	1.95	2.33	54.19	1.30	1.20	XX
ARTL6N	*	47.45	-0.26	-0.31	55.25	2.37	2.18	MR
C3837U		47.87	0.16	0.19	53.12	0.23	0.21	MR
CCEZWJ		48.37	0.66	0.78	52.83	-0.05	-0.05	MR
CL3NVR		46.62	-1.09	-1.31	52.35	-0.53	-0.49	MR
CN7L4Y		47.75	0.04	0.05	52.90	0.02	0.02	MR
DEB7QE		46.60	-1.12	-1.33	51.65	-1.23	-1.13	MV
DLXVBP		48.32	0.61	0.72	53.75	0.87	0.80	ML
E7XANT		46.44	-1.27	-1.51	51.77	-1.11	-1.02	MV
EX7VJM		46.15	-1.56	-1.86	51.52	-1.37	-1.26	MV
G2FT4F		48.50	0.79	0.94	53.92	1.03	0.95	MR
G47U8H		46.90	-0.81	-0.97	52.57	-0.32	-0.29	MP
H36LBH		48.29	0.58	0.69	54.34	1.46	1.34	MR
JM8RJA		46.83	-0.88	-1.05	51.95	-0.93	-0.86	MM
KZQZED		47.31	-0.40	-0.48	53.79	0.91	0.83	TA
M3BM7R		49.17	1.46	1.75	55.01	2.13	1.95	ML
MX24AK		46.18	-1.53	-1.83	52.08	-0.80	-0.74	MR
NLFJZ8		47.79	0.08	0.09	52.93	0.05	0.05	MR
NVM7A8		47.37	-0.34	-0.41	52.02	-0.87	-0.80	MR
PXNQAD		47.50	-0.21	-0.25	51.33	-1.55	-1.43	MV
UVMCUA		48.07	0.36	0.43	53.87	0.99	0.91	MR
V8W642		47.23	-0.48	-0.57	52.08	-0.80	-0.74	MR
VDHZ2Y		46.40	-1.31	-1.57	51.51	-1.37	-1.26	MR
VNHUT3		47.96	0.24	0.29	53.32	0.43	0.40	TA
W49VN9		47.74	0.03	0.03	52.90	0.01	0.01	MV
WC3ZGA		47.95	0.24	0.29	52.85	-0.03	-0.03	MR
X48J4P		48.27	0.56	0.67	52.59	-0.29	-0.27	TV
XUJN9F		47.65	-0.06	-0.07	51.92	-0.97	-0.89	MR



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 660

3rd Qtr 2022

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

WebCode	Data Flag	Sample U21-U22			Sample U23-U24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
YP4FFA		47.69	-0.02	-0.03	52.95	0.07	0.06	MV
ZD3EC6		48.82	1.11	1.32	53.15	0.27	0.25	MR

Grand Means		Summary Statistics	
	47.710 ML 1 + 4		52.884 ML 1 + 4
Std Dev Btwn Labs	0.837 ML 1 + 4		1.087 ML 1 + 4
Statistics based on 39 of 40 reporting participants			

Samples U21-U22: SBR & U23-U24: Butyl

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

2X9AJ2 (X) - Data for all samples are high. Inconsistent within the determinations of both sample groups.

#### Key to Instrument Codes Reported by Participants

<b>ML</b>	Alpha Technologies/Monsanto model not specified	<b>MM</b>	Alpha Technologies Model 1xxx or OSM
<b>MP</b>	Monsanto Compact Mooney Viscometer	<b>MR</b>	Alpha Technologies Model MV2000/MV2000E
<b>MV</b>	MonTech	<b>TA</b>	TA Instruments (any model)
<b>TV</b>	Tech Pro Visc Tech (any model)	<b>XX</b>	Instrument make/model not specified by lab

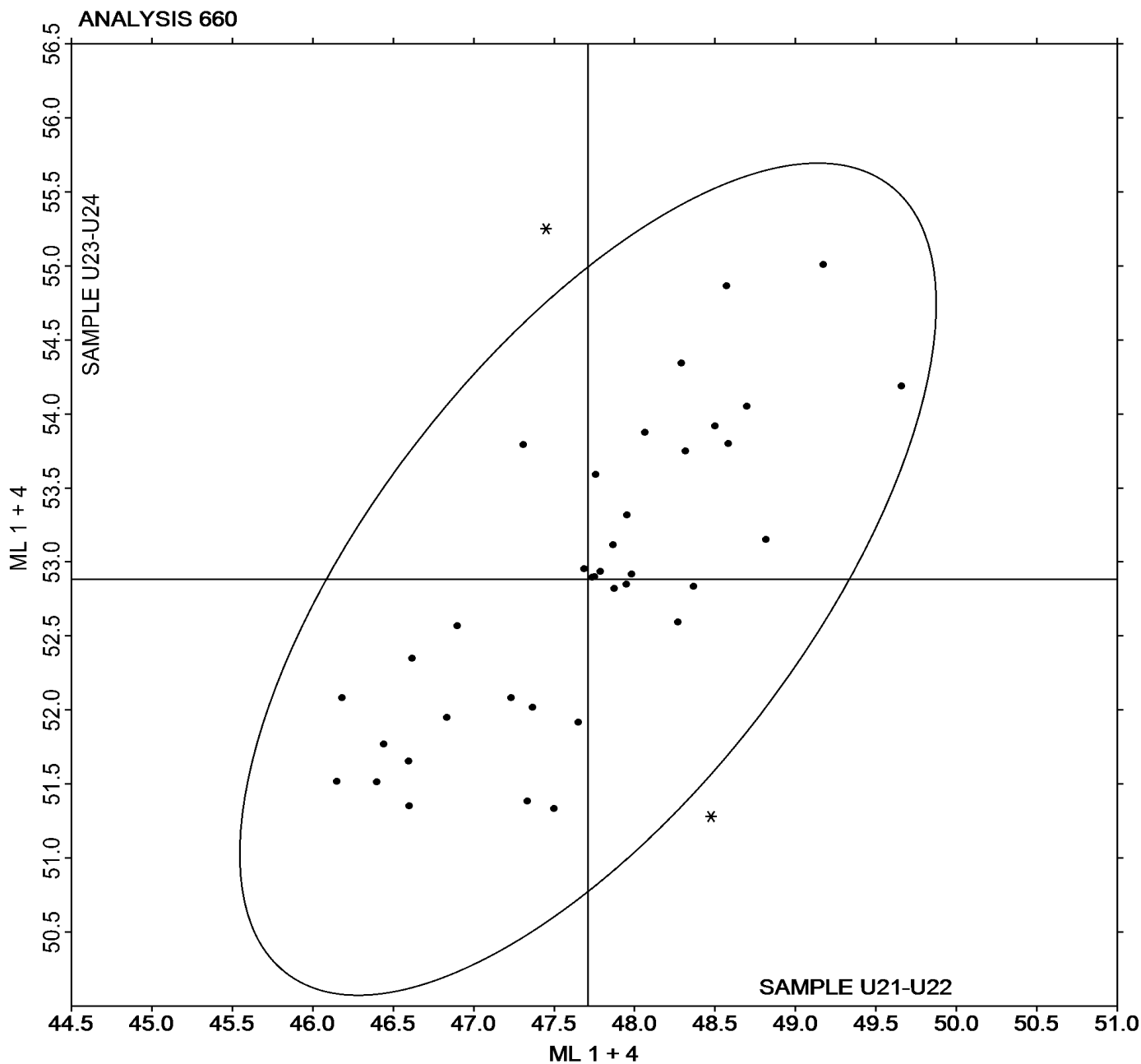


**Rubber Interlaboratory Testing Program**  
**Analysis 660**  
**Mooney Viscosity: 4-minute readings (ML 1 + 4)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **U21-U22** = 47.710 ML 1 + 4

Grand Mean Sample **U23-U24** = 52.884 ML 1 + 4





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 661

3rd Qtr 2022

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

WebCode	Data Flag	Sample U21-U22			Sample U23-U24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		47.76	0.09	0.10	51.09	0.58	0.58	MR
2KZLB6		47.33	-0.34	-0.39	48.92	-1.60	-1.62	XX
2X9AJ2	X	53.66	5.98	6.87	54.88	4.37	4.42	MR
2XQBAB		47.88	0.20	0.23	50.39	-0.12	-0.12	MR
37VPMW		48.70	1.03	1.18	51.15	0.64	0.64	MR
38PD7R		47.98	0.31	0.36	50.75	0.24	0.24	MR
3VZCUQ		48.58	0.91	1.04	51.08	0.57	0.58	MR
4VVAJD		46.60	-1.07	-1.23	49.30	-1.21	-1.23	MR
72VHVX		48.57	0.90	1.03	51.90	1.39	1.40	MV
8ECRZZ	*	49.66	1.99	2.28	50.43	-0.08	-0.08	XX
ARTL6N		47.45	-0.22	-0.26	52.40	1.89	1.91	MR
C3837U		47.87	0.19	0.22	50.73	0.22	0.22	MR
CCEZWJ		48.37	0.69	0.80	52.25	1.74	1.76	MR
CL3NVR		46.62	-1.06	-1.21	49.78	-0.73	-0.74	MR
CN7L4Y		47.75	0.08	0.09	50.87	0.35	0.36	MR
DEB7QE		46.60	-1.08	-1.24	49.45	-1.07	-1.08	MV
DLXVBP		48.32	0.64	0.74	51.12	0.60	0.61	ML
E7XANT		46.44	-1.23	-1.41	50.09	-0.42	-0.43	MV
EX7VJM		46.15	-1.52	-1.75	48.92	-1.59	-1.61	MV
G2FT4F		48.50	0.83	0.95	51.12	0.60	0.61	MR
G47U8H		46.90	-0.77	-0.89	48.95	-1.56	-1.58	MP
H36LBH		48.29	0.62	0.71	51.44	0.93	0.94	MR
JM8RJA		46.83	-0.84	-0.96	51.83	1.32	1.34	MR
KZQZED		47.31	-0.36	-0.42	51.19	0.68	0.68	TA
M3BM7R		49.17	1.50	1.72	52.04	1.53	1.54	ML
MX24AK		46.18	-1.49	-1.71	49.74	-0.77	-0.78	MR
NLFJZ8		47.79	0.11	0.13	50.15	-0.36	-0.37	MR
NVM7A8		47.37	-0.31	-0.35	49.33	-1.18	-1.19	MR
PXNQAD		47.50	-0.17	-0.20	49.28	-1.23	-1.24	MV
V8W642		47.23	-0.44	-0.50	49.73	-0.78	-0.79	MR
VDHZ2Y		46.40	-1.27	-1.46	49.23	-1.28	-1.29	MR
W49VN9		47.74	0.07	0.07	50.77	0.26	0.26	MV
WC3ZGA		47.95	0.28	0.32	50.50	-0.01	-0.01	MR
X48J4P		48.27	0.60	0.68	50.15	-0.36	-0.37	TV
YP4FFA		47.69	0.02	0.02	51.03	0.52	0.53	MV
ZD3EC6		48.82	1.14	1.31	50.83	0.32	0.32	MR



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 661

3rd Qtr 2022

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

		Summary Statistics	
Grand Means	47.673 ML 1 + 8	50.513 ML 1 + 8	
Stnd Dev Btwn Labs	0.871 ML 1 + 8	0.988 ML 1 + 8	
Statistics based on 35 of 36 reporting participants			

Samples U21-U22: SBR & U23-U24: Butyl

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

2X9AJ2 (X) - Data for all samples are high. Inconsistent within the determinations of sample group U21-U22.

#### **Key to Instrument Codes Reported by Participants**

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



Rubber Interlaboratory Testing Program

Report #213

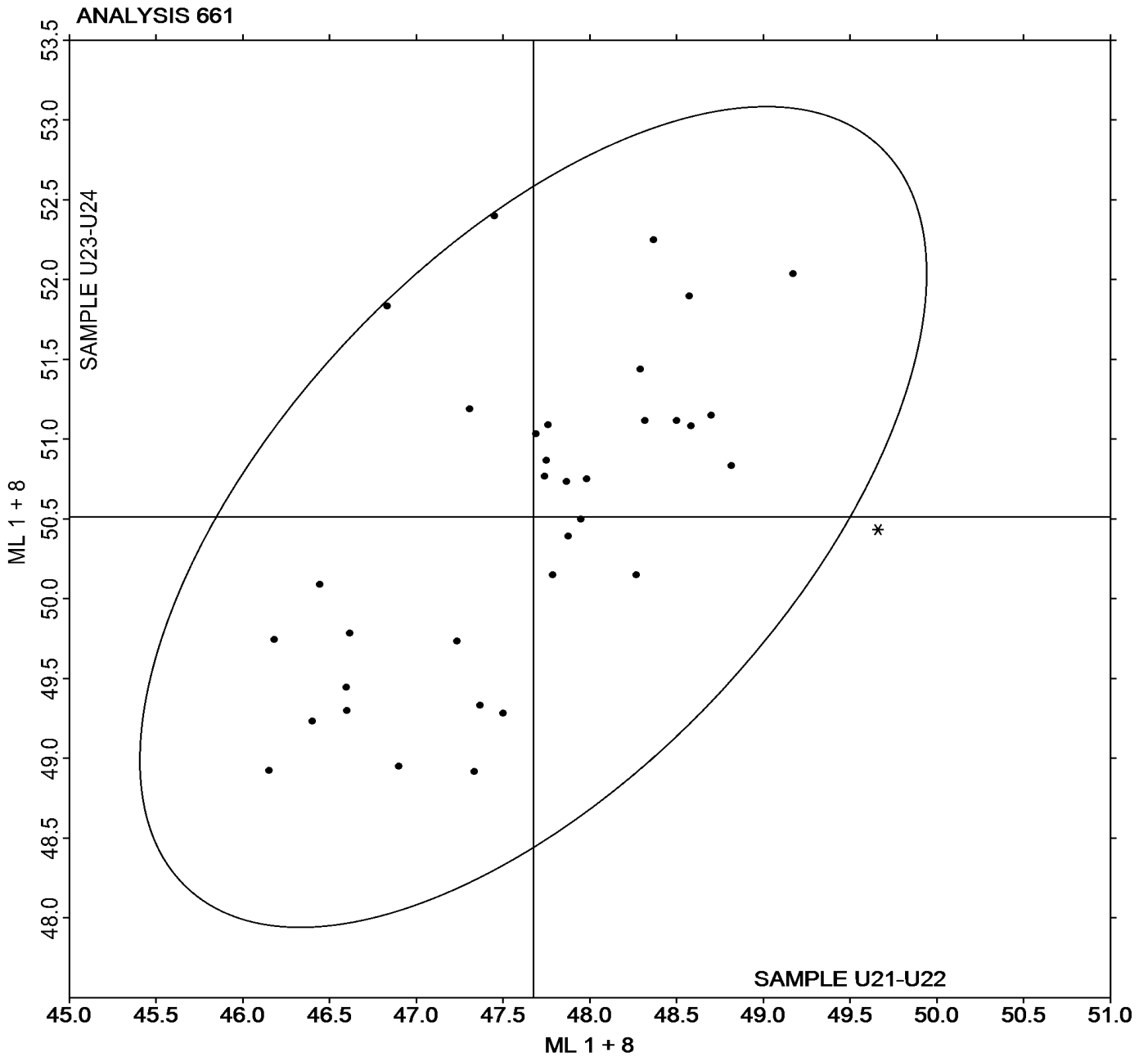
Analysis 661

3rd Qtr 2022

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

Grand Mean Sample **U21-U22** = 47.673 ML 1 + 8

Grand Mean Sample **U23-U24** = 50.513 ML 1 + 8





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 662

3rd Qtr 2022

### Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample U21-U22			Sample U23-U24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2KZLB6		12.28	0.44	0.16	5.750	-0.289	-0.53	XX
2X9AJ2		8.20	-3.64	-1.31	6.233	0.194	0.36	MR
38PD7R		12.94	1.10	0.40	5.847	-0.193	-0.35	MR
72VHVX	X	547.63	535.80	193.33	546.033	539.994	993.83	MV
8ECRZZ		13.83	2.00	0.72	7.333	1.294	2.38	XX
ARTL6N		13.00	1.16	0.42	6.000	-0.039	-0.07	MR
CL3NVR		12.81	0.97	0.35	6.030	-0.009	-0.02	MR
DEB7QE		9.93	-1.90	-0.69	5.205	-0.834	-1.54	MV
DLXVBP		13.75	1.91	0.69	6.157	0.117	0.22	ML
EX7VJM		5.14	-6.70	-2.42	5.090	-0.949	-1.75	MV
G2FT4F		13.10	1.26	0.46	6.367	0.327	0.60	MR
H36LBH	X	41.46	29.62	10.69	10.038	3.999	7.36	MR
M3BM7R		14.40	2.56	0.92	6.452	0.413	0.76	ML
MX24AK		13.07	1.23	0.44	6.207	0.167	0.31	MR
NVM7A8		12.36	0.52	0.19	5.765	-0.274	-0.50	MR
PXNQAD		5.77	-6.07	-2.19	5.200	-0.839	-1.54	MV
W49VN9		12.00	0.16	0.06	6.000	-0.039	-0.07	MV
WC3ZGA		12.82	0.98	0.35	6.017	-0.023	-0.04	MR
X48J4P	X	11.11	-0.73	-0.26	11.095	5.056	9.30	TV
XUJN9F		12.90	1.06	0.38	6.600	0.561	1.03	MR
ZD3EC6		14.77	2.93	1.06	6.453	0.414	0.76	MR

Grand Means		Summary Statistics	
	11.836 seconds		6.0392 seconds
Std Dev Btwn Labs	2.771 seconds		0.5433 seconds
Statistics based on 18 of 21 reporting participants			

Samples U21-U22: SBR & U23-U24: Butyl

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

72VHVX (X) - Extreme Data.

H36LBH (X) - Extreme Data.

X48J4P (X) - Data for sample group U23-U24 are high.



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

**Report #213**  
**3rd Qtr 2022**

**Key to Instrument Codes Reported by Participants**

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



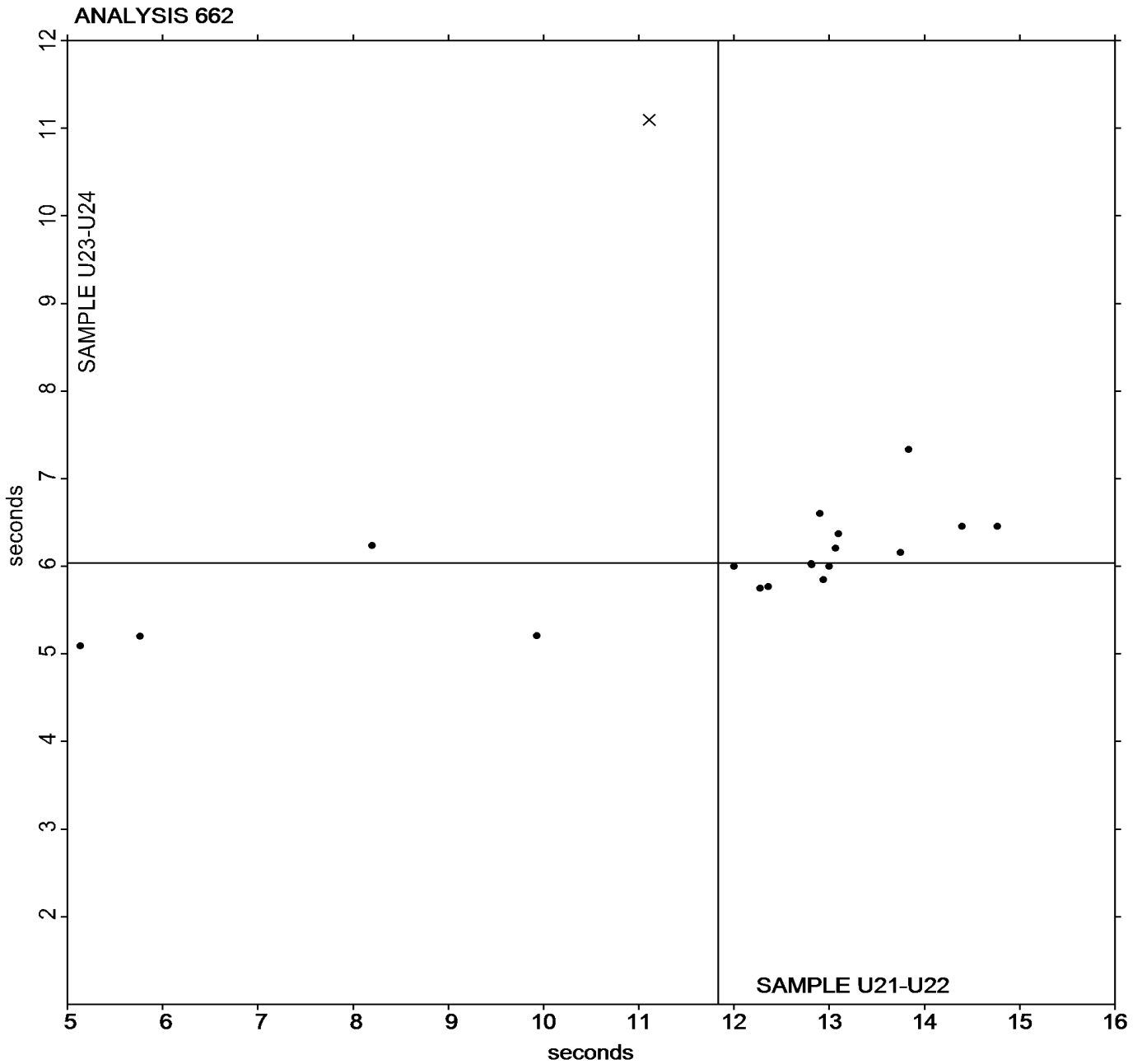


**Rubber Interlaboratory Testing Program**  
**Analysis 662**  
**Mooney Stress Relaxation: t80 (seconds)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **U21-U22** = 11.836 seconds

Grand Mean Sample **U23-U24** = 6.0392 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 #213

## Analysis 663

3rd Qtr 2022

### Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample U21-U22			Sample U23-U24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2KZLB6		85.97	-0.29	-0.10	94.63	0.50	0.44	XX
2X9AJ2		87.68	1.42	0.47	92.74	-1.39	-1.22	MR
38PD7R		85.46	-0.79	-0.26	94.09	-0.04	-0.04	MR
72VHVX		88.88	2.62	0.86	94.38	0.25	0.22	MV
8ECRZZ		85.00	-1.26	-0.41	92.62	-1.52	-1.34	XX
ARTL6N	X	1,468.18	1,381.92	453.59	715.04	620.91	546.82	MR
CL3NVR		85.70	-0.56	-0.18	94.68	0.55	0.48	MR
DEB7QE		87.44	1.19	0.39	95.68	1.54	1.36	MV
DLXVBP	X	14.95	-71.31	-23.40	6.35	-87.79	-77.31	ML
EX7VJM		89.04	2.78	0.91	96.26	2.13	1.88	MV
G2FT4F		85.43	-0.82	-0.27	93.83	-0.30	-0.26	MR
H36LBH	*	77.39	-8.87	-2.91	91.99	-2.15	-1.89	MR
M3BM7R		84.75	-1.51	-0.50	93.06	-1.08	-0.95	ML
MX24AK		85.48	-0.78	-0.26	93.75	-0.38	-0.34	MR
NVM7A8		86.03	-0.23	-0.08	95.13	1.00	0.88	MR
PXNQAD		92.72	6.46	2.12	95.62	1.49	1.31	MV
W49VN9		86.00	-0.26	-0.08	94.50	0.37	0.32	MV
WC3ZGA		85.57	-0.69	-0.23	93.88	-0.25	-0.22	MR
X48J4P		89.45	3.19	1.05	94.27	0.13	0.12	TV
ZD3EC6		84.67	-1.59	-0.52	93.29	-0.85	-0.75	MR

Grand Means		Summary Statistics	
	86.257 percent		94.134 percent
Std Dev Btwn Labs	3.047 percent		1.135 percent
Statistics based on 18 of 20 reporting participants			

Samples U21-U22: SBR & U23-U24: Butyl

### Comments on Assigned Data Flags for Test #663

ARTL6N (X) - Extreme Data.

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

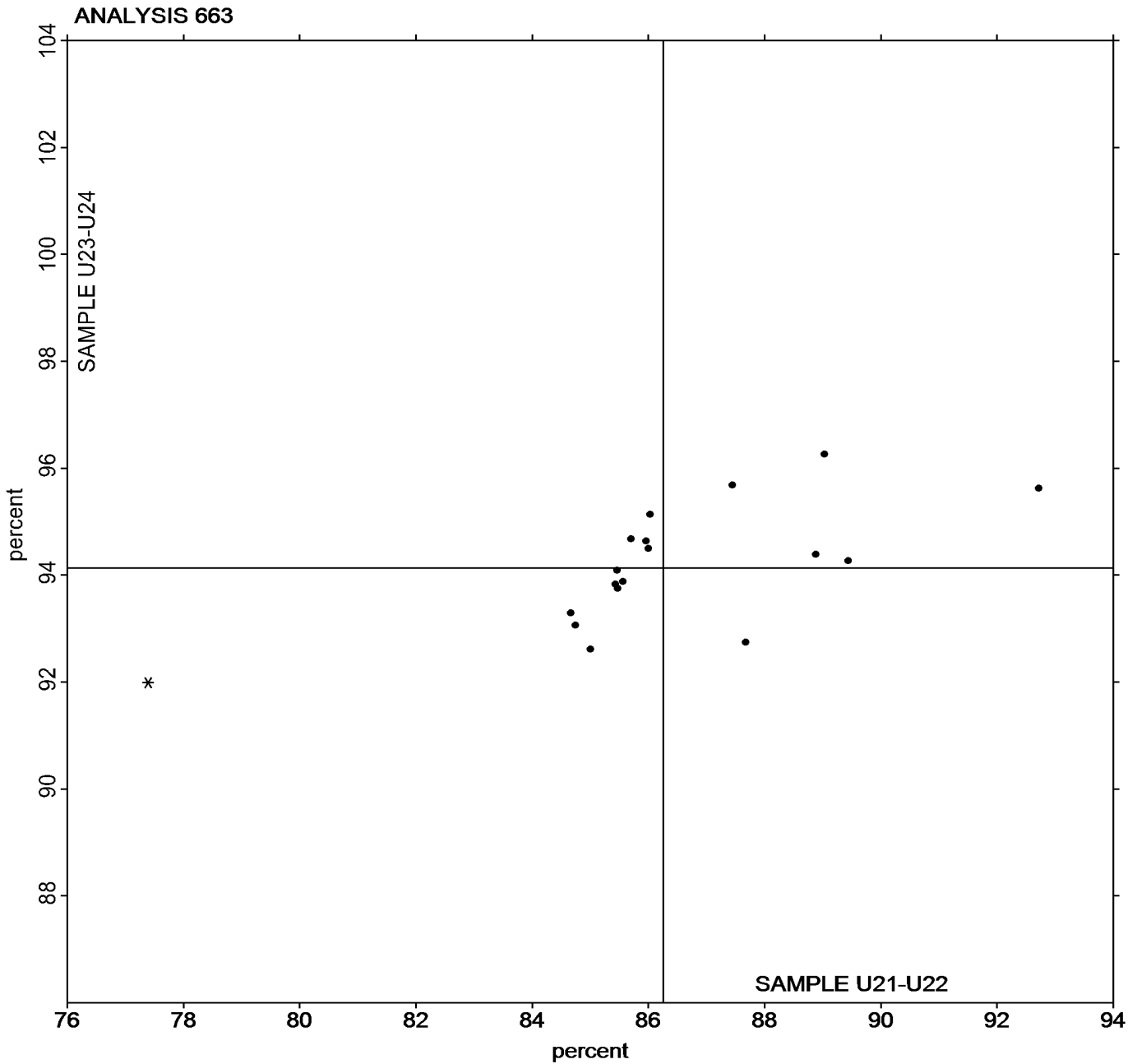


Rubber Interlaboratory Testing Program  
Analysis 663  
Mooney Stress Relaxation: X30 (percent)

Report #213  
3rd Qtr 2022

Grand Mean Sample U21-U22 = 86.257 percent

Grand Mean Sample U23-U24 = 94.134 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 #213

## Analysis 664

3rd Qtr 2022

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

WebCode	Data Flag	Sample U21-U22			Sample U23-U24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2KZLB6		715.1	14.6	0.15	312.2	-42.2	-0.59	XX
2X9AJ2		650.4	-50.1	-0.51	455.3	100.9	1.41	MR
38PD7R		754.3	53.8	0.55	347.2	-7.3	-0.10	MR
72VHVX		539.0	-161.6	-1.64	337.8	-16.6	-0.23	MV
8ECRZZ		808.4	107.9	1.10	464.8	110.4	1.54	XX
ARTL6N		751.5	51.0	0.52	440.9	86.5	1.21	MR
CL3NVR		721.5	21.0	0.21	323.2	-31.3	-0.44	XX
DEB7QE		617.9	-82.6	-0.84	241.2	-113.2	-1.58	MV
DLXVBP		781.7	81.1	0.83	381.0	26.6	0.37	ML
EX7VJM		529.3	-171.3	-1.74	213.8	-140.6	-1.96	MV
G2FT4F		769.0	68.5	0.70	379.0	24.6	0.34	MR
H36LBH		741.4	40.9	0.42	344.1	-10.3	-0.14	MR
M3BM7R		854.4	153.9	1.57	472.5	118.0	1.65	ML
MX24AK		722.4	21.8	0.22	364.1	9.7	0.13	MR
NVM7A8		710.7	10.2	0.10	286.8	-67.6	-0.94	MR
PXNQAD	X	330.0	-370.5	-3.77	245.2	-109.2	-1.52	MV
W49VN9		700.8	0.2	0.00	320.1	-34.3	-0.48	MV
WC3ZGA		746.7	46.1	0.47	362.3	7.9	0.11	MR
X48J4P		495.2	-205.3	-2.09	333.3	-21.1	-0.30	TV

Grand Means		Summary Statistics	
	700.53 M-s		354.43 M-s
Stnd Dev Btw Labs			
	98.23 M-s		71.63 M-s
Statistics based on 18 of 19 reporting participants			

Samples U21-U22: SBR & U23-U24: Butyl

#### Comments on Assigned Data Flags for Test #664

PXNQAD (X) - Data for sample group U21-U22 are low.

#### Key to Instrument Codes Reported by Participants

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

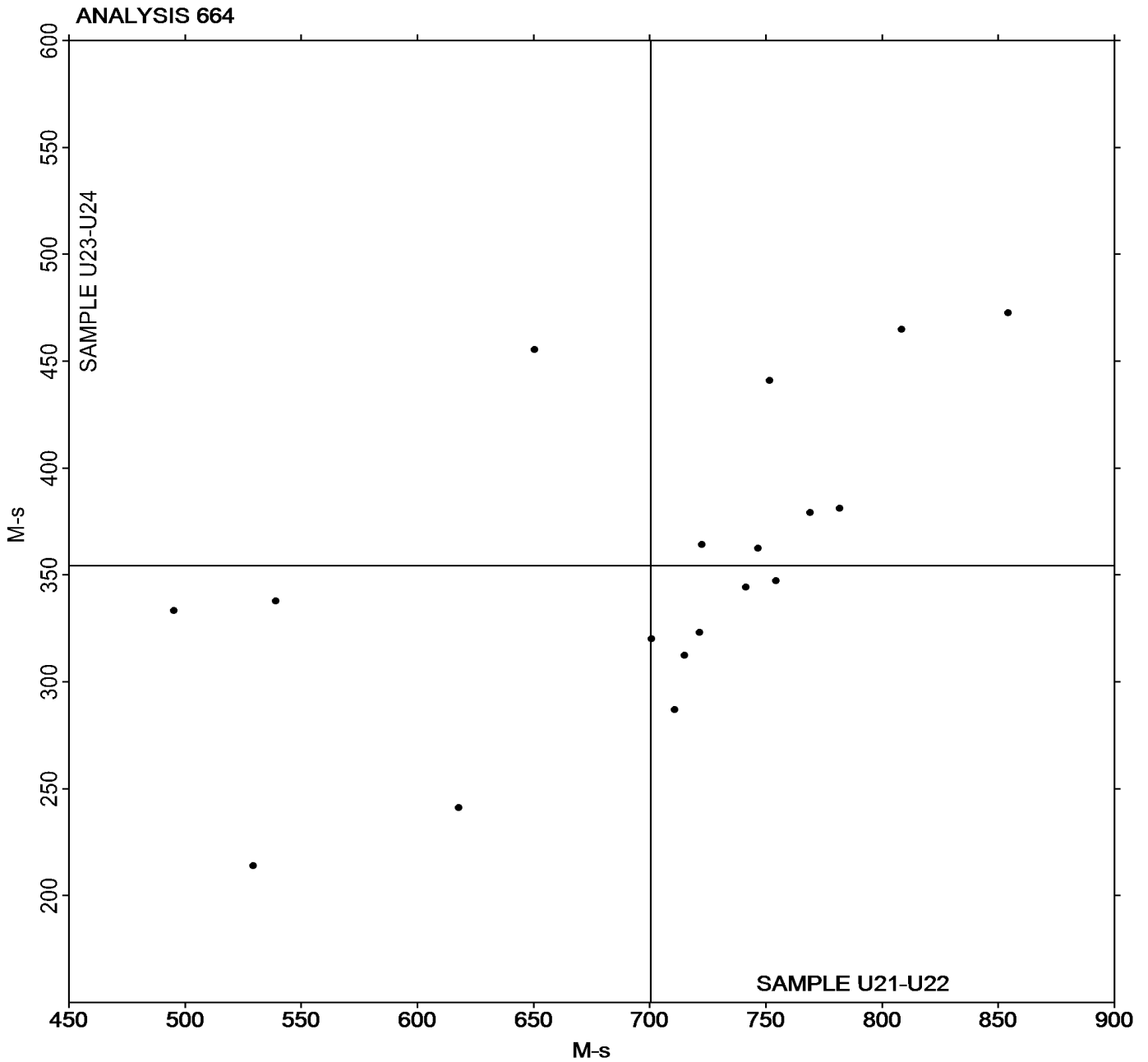


Rubber Interlaboratory Testing Program  
Analysis 664  
Mooney Stress Relaxation: Area under curve (M-s)

Report #213  
3rd Qtr 2022

Grand Mean Sample **U21-U22** = 700.53 M-s

Grand Mean Sample **U23-U24** = 354.43 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 #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y21-Y22			Sample Y23-Y24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XQBAB		1.562	-0.144	-1.59	3.327	-0.202	-1.30
72VHVX		1.748	0.043	0.47	3.468	-0.060	-0.39
8R3LDT		1.752	0.046	0.51	3.515	-0.013	-0.09
DEB7QE		1.677	-0.029	-0.32	3.750	0.222	1.43
FT78FL		1.790	0.084	0.93	3.582	0.053	0.34

		Summary Statistics	
Grand Means		1.7057 minutes	3.5283 minutes
Std Dev Btwn Labs		0.0903 minutes	0.1553 minutes
		Statistics based on 5 of 5 reporting participants	

Samples Y21-Y22: EPDM compound, batch #1 & Y23-Y24: EPDM compound, batch #2

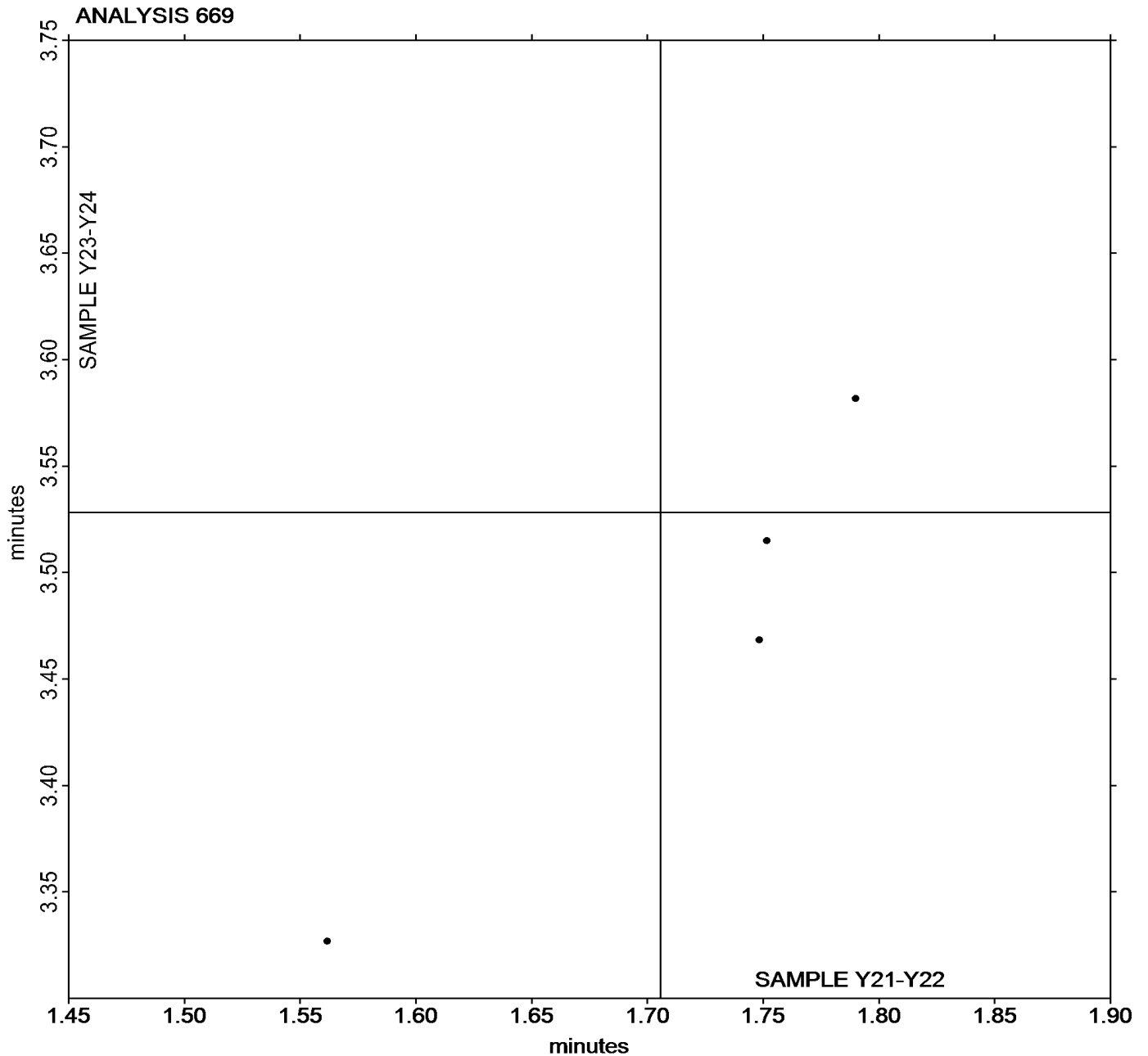


**Rubber Interlaboratory Testing Program**  
**Analysis 669**  
**ODR Vulcanization-Cure Time 10% (minutes)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y21-Y22** = 1.7057 minutes

Grand Mean Sample **Y23-Y24** = 3.5283 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 #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y21-Y22			Sample Y23-Y24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XQBAB		1.190	-0.092	-1.36	2.602	-0.044	-0.31
72VHVX		1.340	0.058	0.87	2.517	-0.129	-0.92
8R3LDT		1.318	0.037	0.54	2.573	-0.072	-0.51
DEB7QE		1.230	-0.052	-0.77	2.880	0.235	1.67
FT78FL		1.330	0.048	0.72	2.655	0.010	0.07

		Summary Statistics	
Grand Means		1.2817 minutes	2.6453 minutes
Std Dev Btwn Labs		0.0674 minutes	0.1404 minutes
		Statistics based on 5 of 5 reporting participants	

Samples Y21-Y22: EPDM compound, batch #1 & Y23-Y24: EPDM compound, batch #2



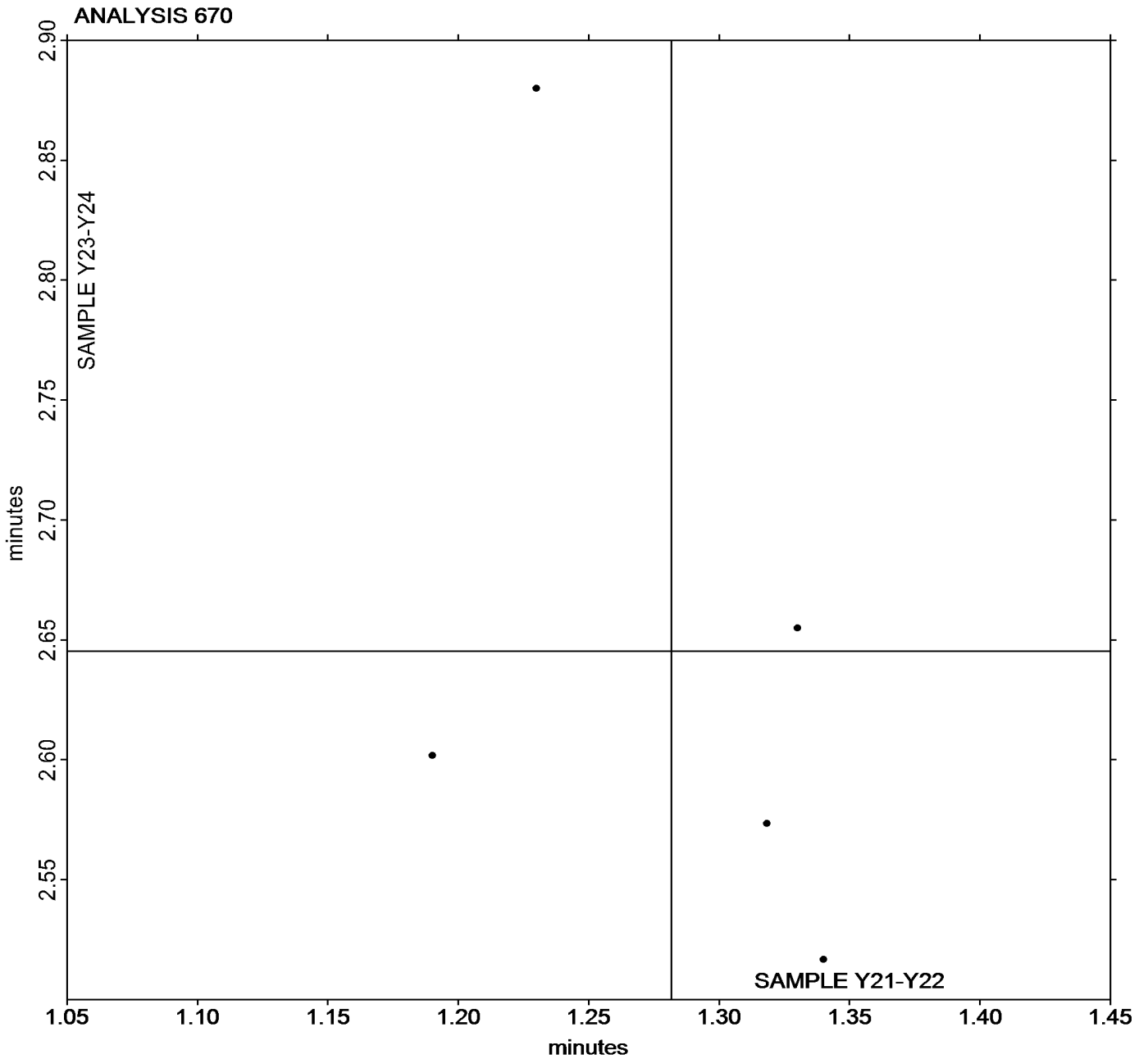


**Rubber Interlaboratory Testing Program**  
**Analysis 670**  
**ODR Vulcanization-Scorch Time, Ts1 (minutes)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y21-Y22** = 1.2817 minutes

Grand Mean Sample **Y23-Y24** = 2.6453 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 #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y21-Y22			Sample Y23-Y24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XQBAB		3.110	-0.113	-0.86	6.170	-0.429	-1.26
72VHVX		3.088	-0.134	-1.02	6.400	-0.199	-0.58
8R3LDT		3.290	0.067	0.51	7.040	0.441	1.30
DEB7QE		3.218	-0.004	-0.03	6.810	0.211	0.62
FT78FL		3.407	0.184	1.40	6.573	-0.025	-0.07

Summary Statistics	
Grand Means	
	3.2228 minutes                      6.5987 minutes
Std Dev Btwn Labs	
	0.1317 minutes                      0.3403 minutes
Statistics based on 5 of 5 reporting participants	

Samples Y21-Y22: EPDM compound, batch #1 & Y23-Y24: EPDM compound, batch #2

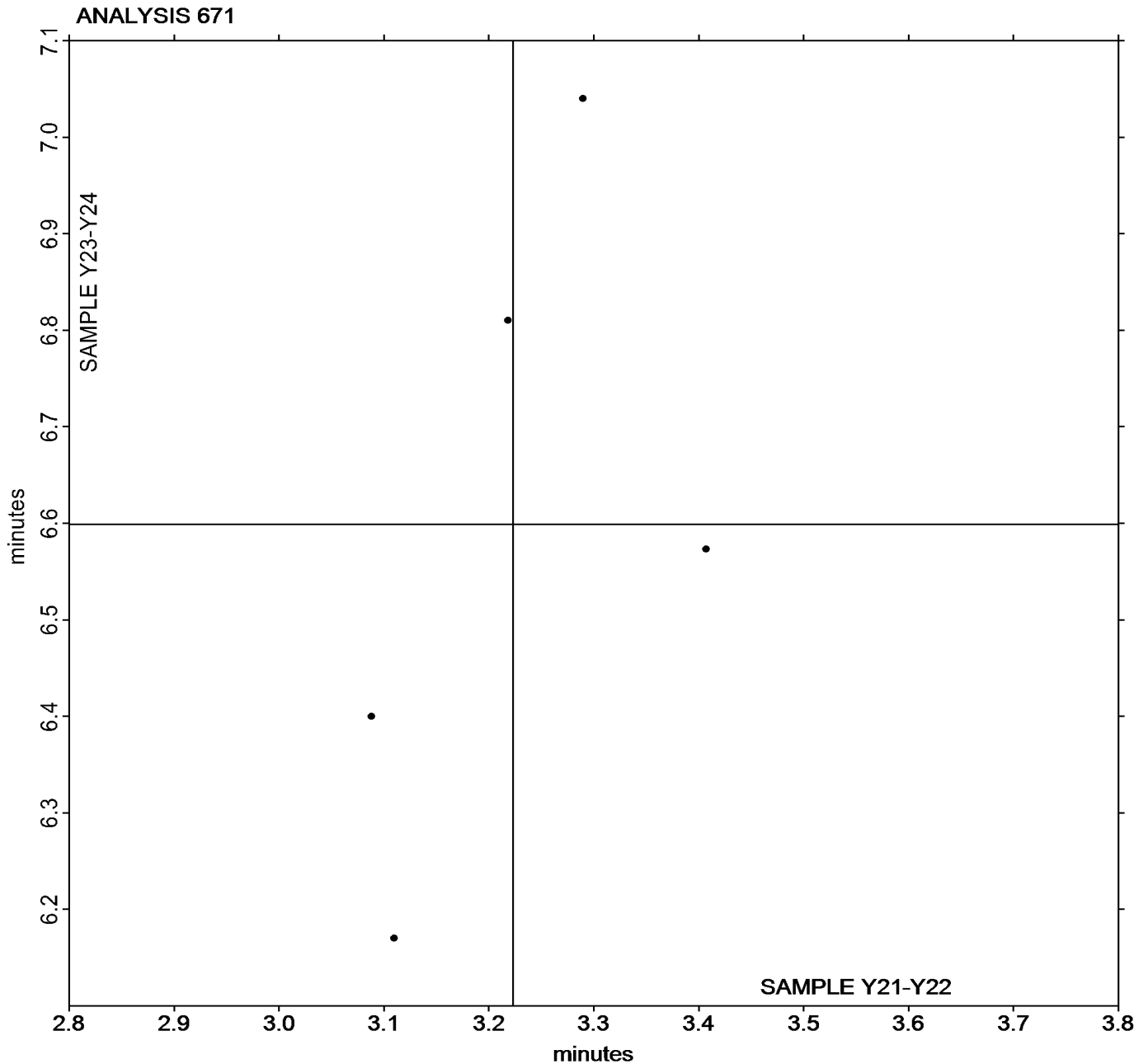


Rubber Interlaboratory Testing Program  
Analysis 671  
ODR Vulcanization-Cure Time 50% (minutes)

Report #213  
3rd Qtr 2022

Grand Mean Sample Y21-Y22 = 3.2228 minutes

Grand Mean Sample Y23-Y24 = 6.5987 minutes



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



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y21-Y22			Sample Y23-Y24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XQBAB		18.37	5.71	1.71	15.92	2.62	1.68
72VHVX		10.68	-1.99	-0.59	12.17	-1.13	-0.72
8R3LDT		10.36	-2.31	-0.69	12.93	-0.37	-0.23
DEB7QE		11.00	-1.66	-0.50	13.36	0.07	0.04
FT78FL		12.91	0.25	0.07	12.10	-1.20	-0.77

		Summary Statistics	
Grand Means		12.662 minutes	13.296 minutes
Std Dev Btwn Labs		3.342 minutes	1.558 minutes
Statistics based on 5 of 5 reporting participants			

Samples Y21-Y22: EPDM compound, batch #1 & Y23-Y24: EPDM compound, batch #2

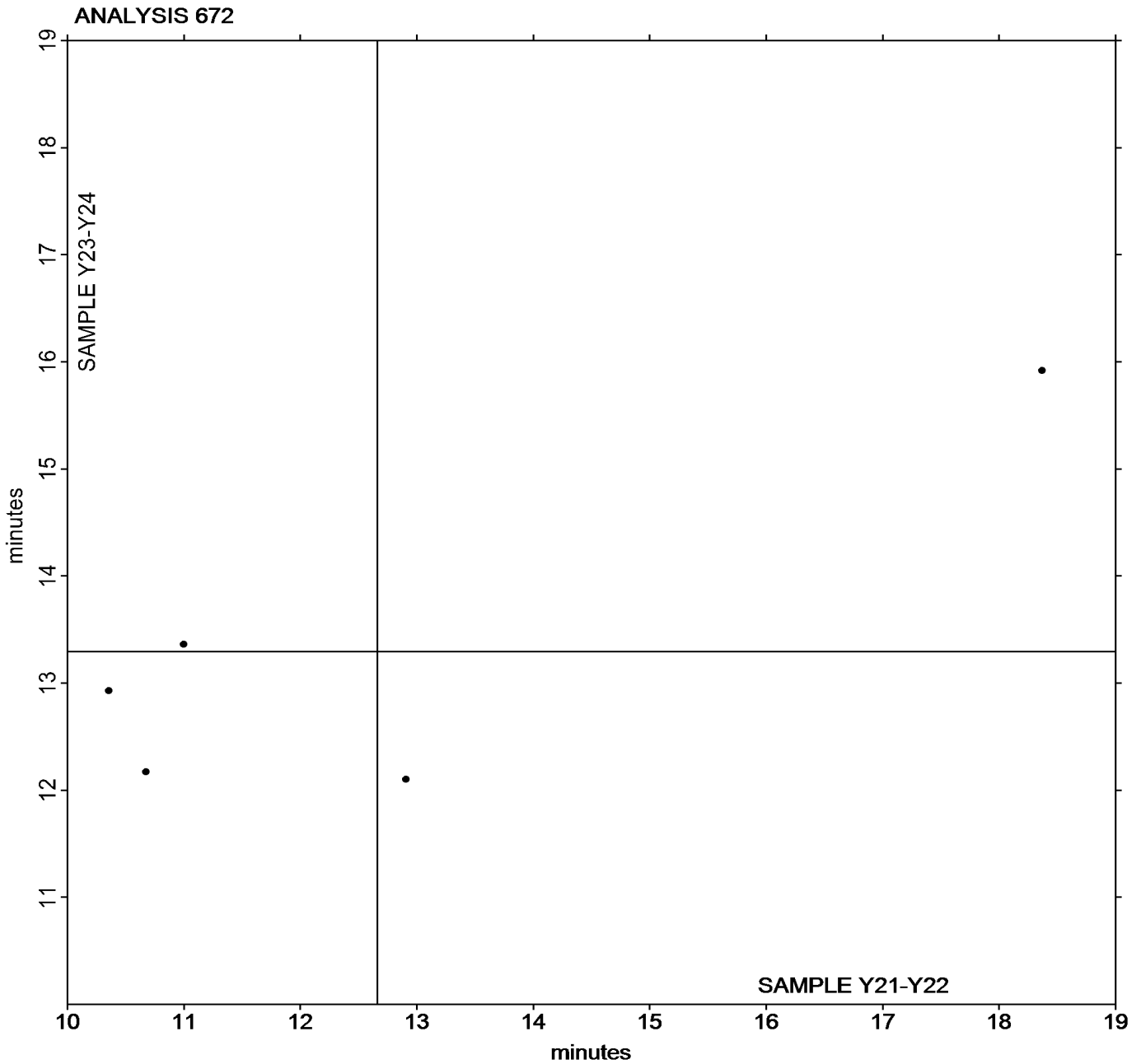


**Rubber Interlaboratory Testing Program**  
**Analysis 672**  
**ODR Vulcanization-Cure Time 90% (minutes)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y21-Y22** = 12.662 minutes

Grand Mean Sample **Y23-Y24** = 13.296 minutes



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



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y21-Y22			Sample Y23-Y24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XQBAB		10.992	2.098	1.28	16.28	4.22	1.36
72VHVX		7.818	-1.075	-0.65	9.98	-2.08	-0.67
8R3LDT		7.378	-1.515	-0.92	8.55	-3.51	-1.13
DEB7QE		10.323	1.430	0.87	13.94	1.88	0.61
FT78FL		7.955	-0.938	-0.57	11.54	-0.52	-0.17

		Summary Statistics	
Grand Means		8.8933 lbf.in	12.057 lbf.in
Std Dev Btwn Labs		1.6416 lbf.in	3.091 lbf.in
Statistics based on 5 of 5 reporting participants			

		Summary Statistics in SI Units	
Grand Means		10.048 dN.m	13.622 dN.m
Std Dev Btwn Labs		1.855 dN.m	3.493 dN.m
Statistics based on 5 of 5 reporting participants			

Samples Y21-Y22: EPDM compound, batch #1 & Y23-Y24: EPDM compound, batch #2

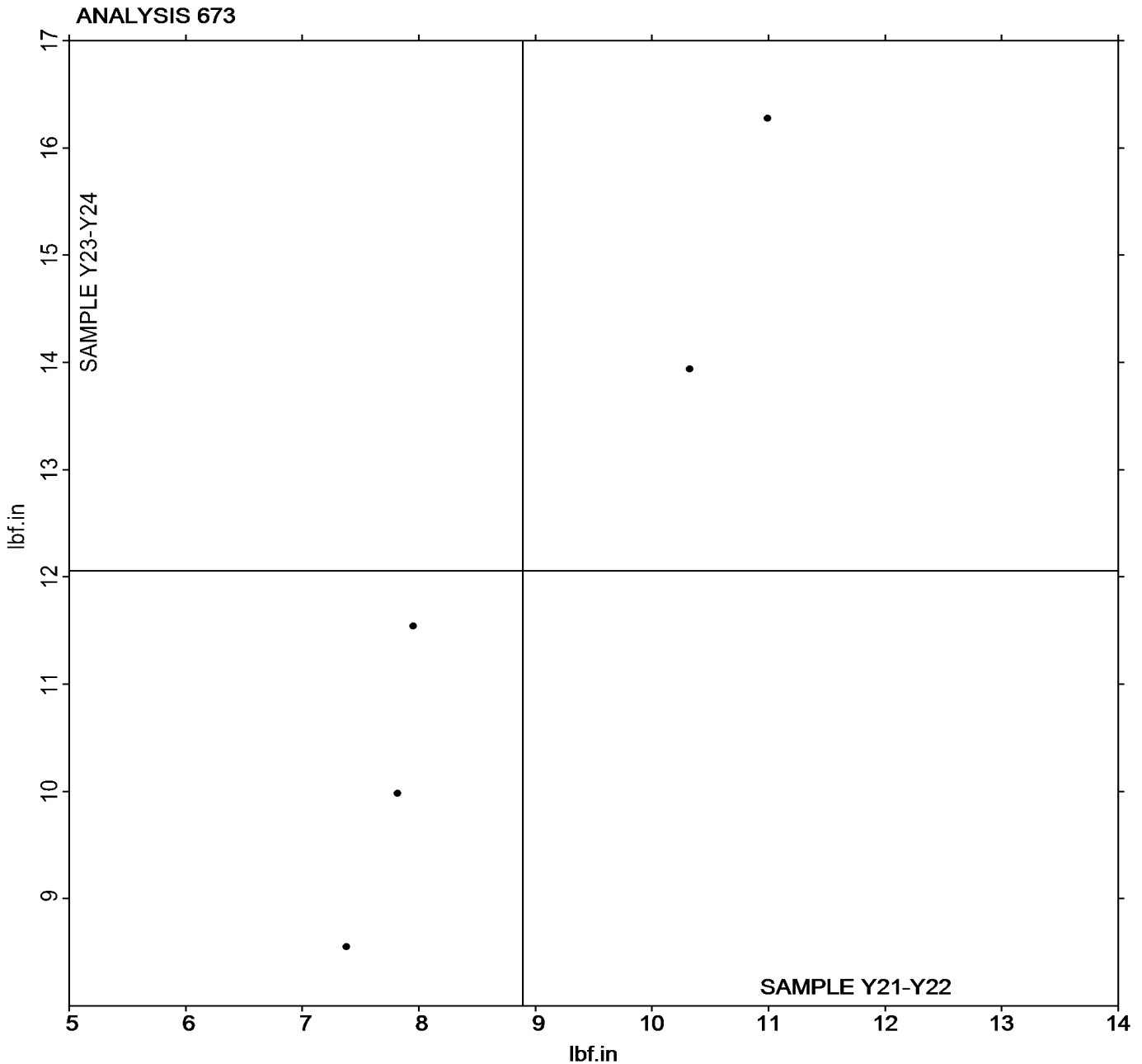


**Rubber Interlaboratory Testing Program**  
**Analysis 673**  
**ODR Vulcanization: Minimum Torque (lbf.in)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y21-Y22** = 8.8933 lbf.in

Grand Mean Sample **Y23-Y24** = 12.057 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 #213  
3rd Qtr 2022**

**ODR Vulcanization: Maximum Torque (lbf.in)**

WebCode	Data Flag	Sample Y21-Y22			Sample Y23-Y24		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2XQBAB		45.70	0.02	0.01	41.76	2.86	1.01
72VHVX		48.44	2.76	0.84	39.72	0.82	0.29
8R3LDT		40.11	-5.57	-1.70	34.16	-4.74	-1.67
DEB7QE		46.55	0.86	0.26	39.71	0.81	0.29
FT78FL		47.62	1.93	0.59	39.14	0.25	0.09

		Summary Statistics	
Grand Means		45.682 lbf.in	38.896 lbf.in
Std Dev Btwn Labs		3.282 lbf.in	2.831 lbf.in
Statistics based on 5 of 5 reporting participants			

		Summary Statistics in SI Units	
Grand Means		51.613 dN.m	43.947 dN.m
Std Dev Btwn Labs		3.708 dN.m	3.198 dN.m
Statistics based on 5 of 5 reporting participants			

Samples Y21-Y22: EPDM compound, batch #1 & Y23-Y24: EPDM compound, batch #2



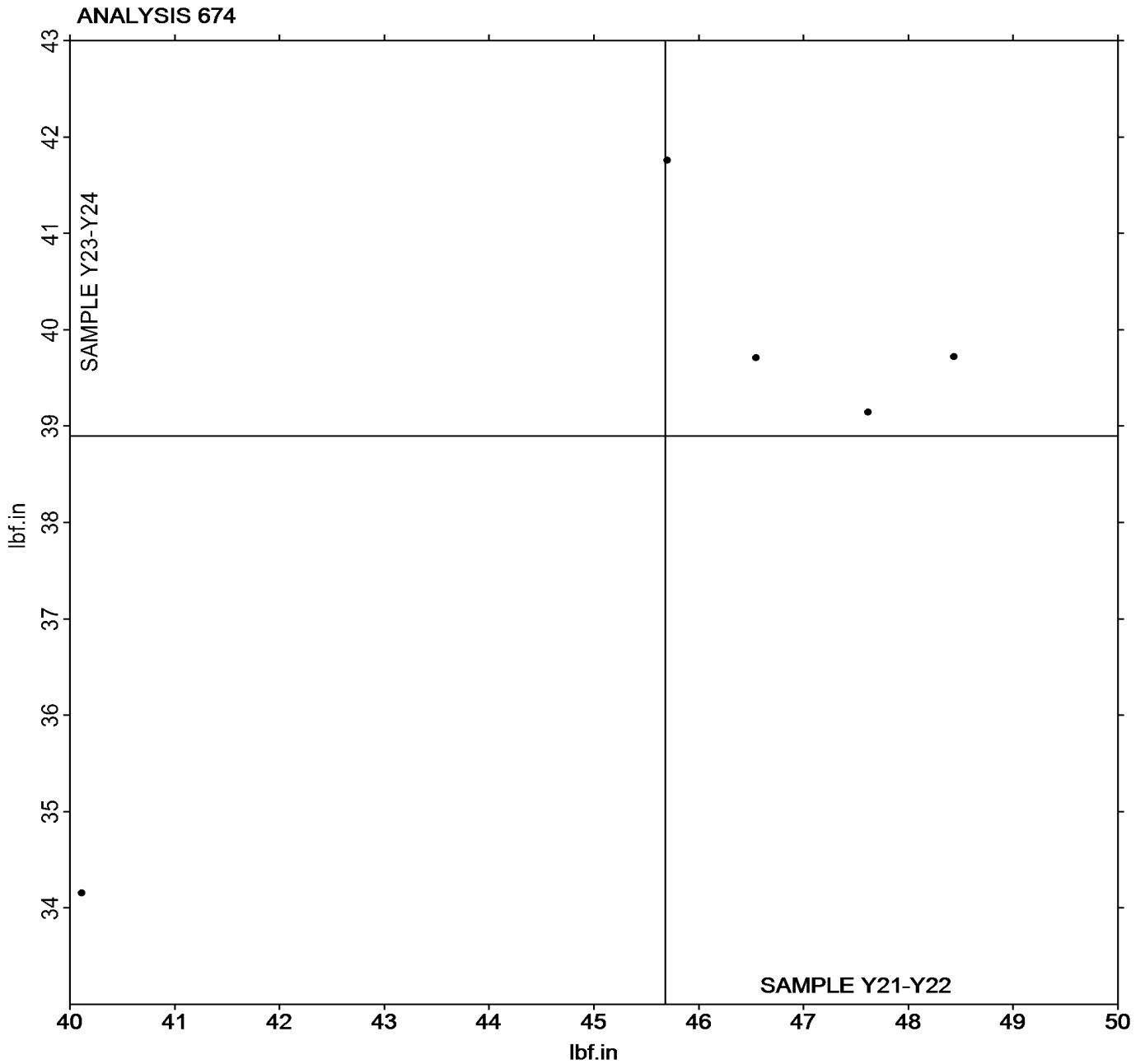


Rubber Interlaboratory Testing Program  
Analysis 674  
ODR Vulcanization: Maximum Torque (lbf.in)

Report #213  
3rd Qtr 2022

Grand Mean Sample Y21-Y22 = 45.682 lbf.in

Grand Mean Sample Y23-Y24 = 38.896 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 #213

## Analysis 684

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		2.783	0.170	1.62	2.840	0.192	1.82	MC
2KZLB6		2.550	-0.063	-0.60	2.573	-0.074	-0.70	XX
2UPA8R		2.593	-0.020	-0.19	2.635	-0.013	-0.12	ME
2X9AJ2		2.788	0.175	1.66	2.813	0.166	1.57	MX
2XQBAB		2.457	-0.157	-1.49	2.475	-0.173	-1.63	MC
38PD7R		2.753	0.140	1.33	2.770	0.122	1.16	MC
3J3TUC		2.525	-0.088	-0.84	2.581	-0.067	-0.63	MC
3VZCUQ		2.613	0.000	0.00	2.650	0.002	0.02	MC
72VHVX		2.425	-0.188	-1.79	2.508	-0.139	-1.32	MM
7MNN4L		2.540	-0.073	-0.70	2.610	-0.038	-0.36	MC
7QU6H4		2.692	0.078	0.74	2.710	0.062	0.59	MC
86L7TF		2.767	0.153	1.46	2.757	0.109	1.03	MC
8ECRZZ		2.632	0.018	0.17	2.635	-0.013	-0.12	ME
ARTL6N		2.608	-0.005	-0.05	2.630	-0.018	-0.17	MC
C3837U		2.781	0.167	1.59	2.782	0.134	1.27	MC
DEB7QE		2.517	-0.097	-0.92	2.580	-0.068	-0.64	XX
DLXVBP	*	2.600	-0.013	-0.13	2.745	0.097	0.92	ME
E7XANT	*	2.362	-0.252	-2.39	2.337	-0.311	-2.94	MC
EX7VJM		2.435	-0.178	-1.70	2.482	-0.166	-1.57	MR
G47U8H		2.745	0.132	1.25	2.783	0.136	1.28	ME
H36LBH		2.645	0.032	0.30	2.665	0.017	0.16	MD
H3NM2R		2.682	0.068	0.65	2.728	0.081	0.76	MC
HMPKFD		2.847	0.234	2.22	2.895	0.247	2.33	MC
L63YTR		2.673	0.060	0.57	2.718	0.071	0.67	XX
LH43N7		2.505	-0.108	-1.03	2.522	-0.126	-1.19	MC
M3BM7R		2.627	0.014	0.13	2.572	-0.075	-0.71	MM
MX24AK		2.562	-0.052	-0.49	2.593	-0.054	-0.51	MD
NDLE87		2.600	-0.013	-0.13	2.637	-0.011	-0.10	MM
NVM7A8		2.635	0.022	0.21	2.680	0.032	0.31	MC
PNZVDH		2.502	-0.112	-1.06	2.607	-0.041	-0.39	MP
PXNQAD		2.563	-0.050	-0.48	2.610	-0.038	-0.36	MM
PYXREK		2.587	-0.027	-0.25	2.638	-0.009	-0.09	ME
QJ4LLG		2.600	-0.013	-0.13	2.688	0.041	0.38	ME
V8W642		2.638	0.025	0.24	2.600	-0.048	-0.45	MC
VDHZ2Y		2.652	0.038	0.36	2.673	0.026	0.24	MC
VNHUT3		2.670	0.057	0.54	2.678	0.031	0.29	MP
W49VN9		2.643	0.030	0.28	2.602	-0.046	-0.44	MC
WC3ZGA		2.553	-0.060	-0.57	2.602	-0.046	-0.44	ME



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
WVGLYB		2.608	-0.005	-0.05	2.703	0.056	0.53	MC
X48J4P	X	2.902	0.288	2.74	2.747	0.099	0.94	MM
YY7ZGG		2.592	-0.022	-0.21	2.618	-0.029	-0.28	ME
ZD3EC6		2.600	-0.013	-0.13	2.630	-0.018	-0.17	MC

Grand Means		Summary Statistics	
	2.6134 minutes		2.6477 minutes
Std Dev Btwn Labs	0.1052 minutes		0.1057 minutes
Statistics based on 41 of 42 reporting participants			

Samples Y25-Y26: EPDM compound, batch #1 & Y27-Y28: EPDM compound, batch #2

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

X48J4P (X) - Data for sample group Y25-Y26 are high. Inconsistent within the determinations of sample group Y27-Y28.

**Key to Instrument Codes Reported by Participants**

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

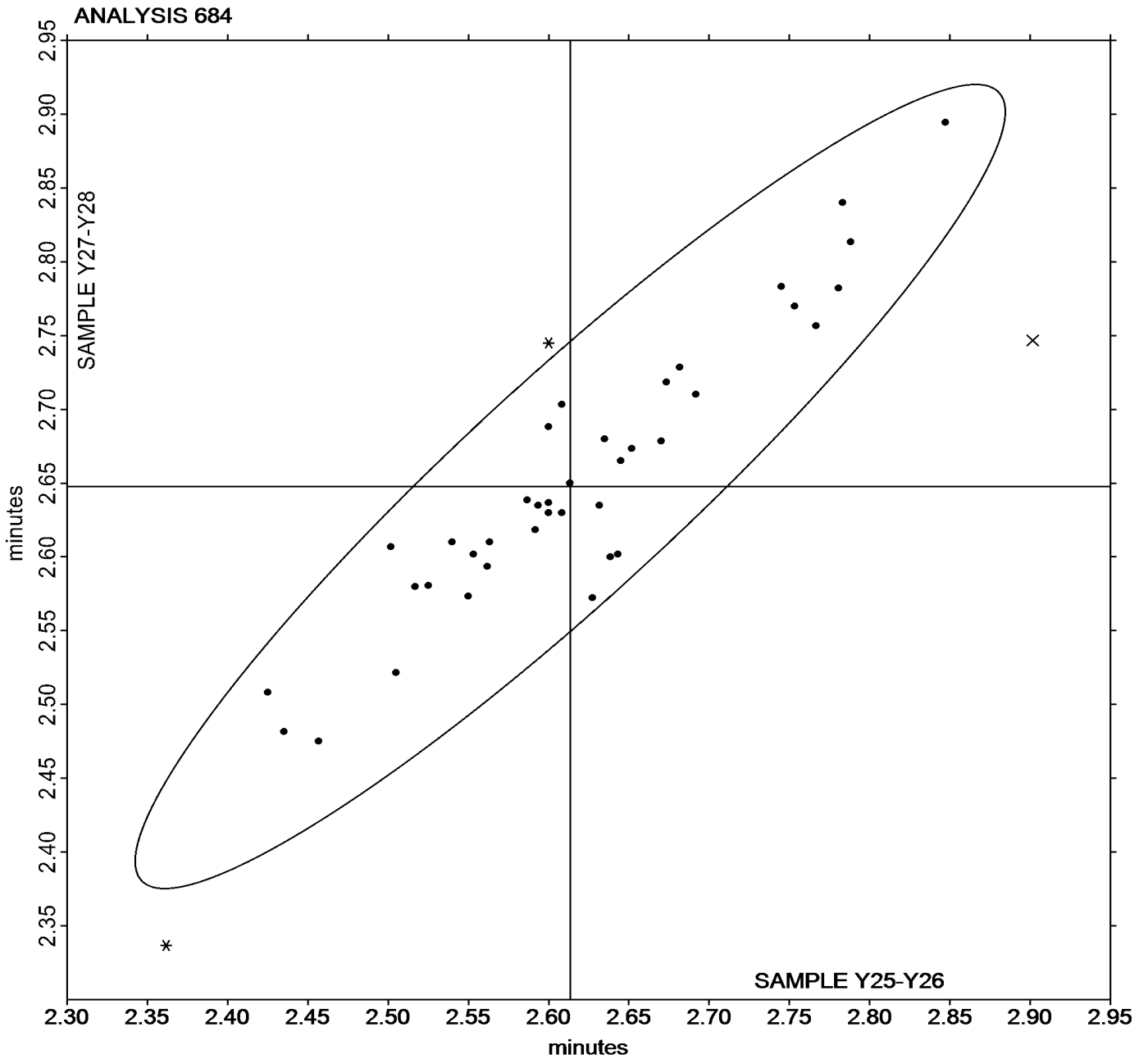


**Rubber Interlaboratory Testing Program**  
**Analysis 684**  
**MDR Vulcanization-Cure Time 10% (minutes)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y25-Y26** = 2.6134 minutes

Grand Mean Sample **Y27-Y28** = 2.6477 minutes





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 685

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		2.793	0.208	1.34	2.837	0.221	1.43	MC
2KZLB6		2.548	-0.037	-0.24	2.588	-0.027	-0.17	XX
2UPA8R		2.675	0.090	0.58	2.675	0.060	0.39	ME
2X9AJ2		2.713	0.128	0.83	2.802	0.186	1.21	MX
2XQBAB		2.467	-0.118	-0.76	2.505	-0.110	-0.71	MC
38PD7R		2.705	0.120	0.77	2.743	0.128	0.83	MC
3J3TUC		2.444	-0.141	-0.91	2.500	-0.115	-0.74	MC
3M4GRL		2.342	-0.243	-1.57	2.372	-0.244	-1.57	MC
3VZCUQ		2.740	0.155	1.00	2.742	0.126	0.82	MC
72VHVX		2.517	-0.068	-0.44	2.588	-0.027	-0.17	MM
7MNN4L		2.545	-0.040	-0.26	2.590	-0.025	-0.16	MC
7QU6H4		2.772	0.187	1.20	2.758	0.143	0.93	MC
86L7TF		2.642	0.057	0.36	2.607	-0.009	-0.06	MC
8ECRZZ		2.657	0.072	0.46	2.648	0.033	0.21	ME
ARTL6N		2.450	-0.135	-0.87	2.477	-0.139	-0.90	MC
C3837U		2.725	0.140	0.90	2.740	0.125	0.81	MC
CCEZWJ	*	2.122	-0.463	-2.98	2.168	-0.447	-2.89	MR
CL3NVR		2.428	-0.158	-1.01	2.509	-0.106	-0.69	MC
DEB7QE		2.805	0.220	1.42	2.828	0.213	1.38	XX
DLXVBP	X	2.505	-0.080	-0.52	2.708	0.093	0.60	ME
E7XANT	*	2.272	-0.313	-2.02	2.247	-0.369	-2.38	MC
EX7VJM	X	3.395	0.810	5.21	3.428	0.813	5.26	MR
G47U8H		2.675	0.090	0.58	2.737	0.121	0.79	ME
H36LBH		2.423	-0.162	-1.04	2.422	-0.194	-1.25	MD
H3NM2R		2.588	0.003	0.02	2.593	-0.022	-0.14	MC
HMPKFD		2.895	0.309	1.99	2.903	0.288	1.86	MC
L63YTR		2.595	0.010	0.06	2.615	0.000	0.00	XX
LH43N7		2.321	-0.264	-1.70	2.316	-0.299	-1.93	MC
M3BM7R		2.658	0.073	0.47	2.620	0.005	0.03	MM
MX24AK		2.757	0.172	1.10	2.802	0.186	1.21	MD
NDLE87		2.712	0.127	0.81	2.720	0.105	0.68	MM
NVM7A8		2.662	0.077	0.49	2.687	0.071	0.46	MC
PNZVDH	*	2.492	-0.093	-0.60	2.630	0.015	0.10	MP
PXNQAD		2.448	-0.137	-0.88	2.488	-0.127	-0.82	MM
PYXREK		2.647	0.062	0.40	2.688	0.073	0.47	ME
QJ4LLG		2.492	-0.093	-0.60	2.562	-0.054	-0.35	ME
V8W642		2.663	0.078	0.50	2.628	0.013	0.08	MC
VDHZ2Y		2.623	0.038	0.25	2.648	0.033	0.21	MC



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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VNHUT3		2.612	0.027	0.17	2.640	0.025	0.16	MP
W49VN9		2.595	0.010	0.06	2.592	-0.024	-0.15	MC
WC3ZGA		2.665	0.080	0.51	2.755	0.140	0.90	ME
WVGLYB		2.543	-0.042	-0.27	2.655	0.040	0.26	MC
X48J4P	X	3.055	0.470	3.03	2.838	0.223	1.44	MM
YY7ZGG		2.545	-0.040	-0.26	2.583	-0.032	-0.21	XX
ZD3EC6		2.603	0.018	0.12	2.630	0.015	0.10	MC

Grand Means		Summary Statistics	
	2.5851 minutes		2.6152 minutes
Std Dev Btwn Labs	0.1553 minutes		0.1546 minutes
Statistics based on 42 of 45 reporting participants			

Samples Y25-Y26: EPDM compound, batch #1 & Y27-Y28: EPDM compound, batch #2

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

DLXVBP (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group Y25-Y26.

EX7VJM (X) - Data for all samples are high. Possible Systematic Error.

X48J4P (X) - Data for sample group Y25-Y26 are high. Inconsistent within the determinations of sample group Y27-Y28.

**Key to Instrument Codes Reported by Participants**

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



# Rubber Interlaboratory Testing Program

## Analysis 685

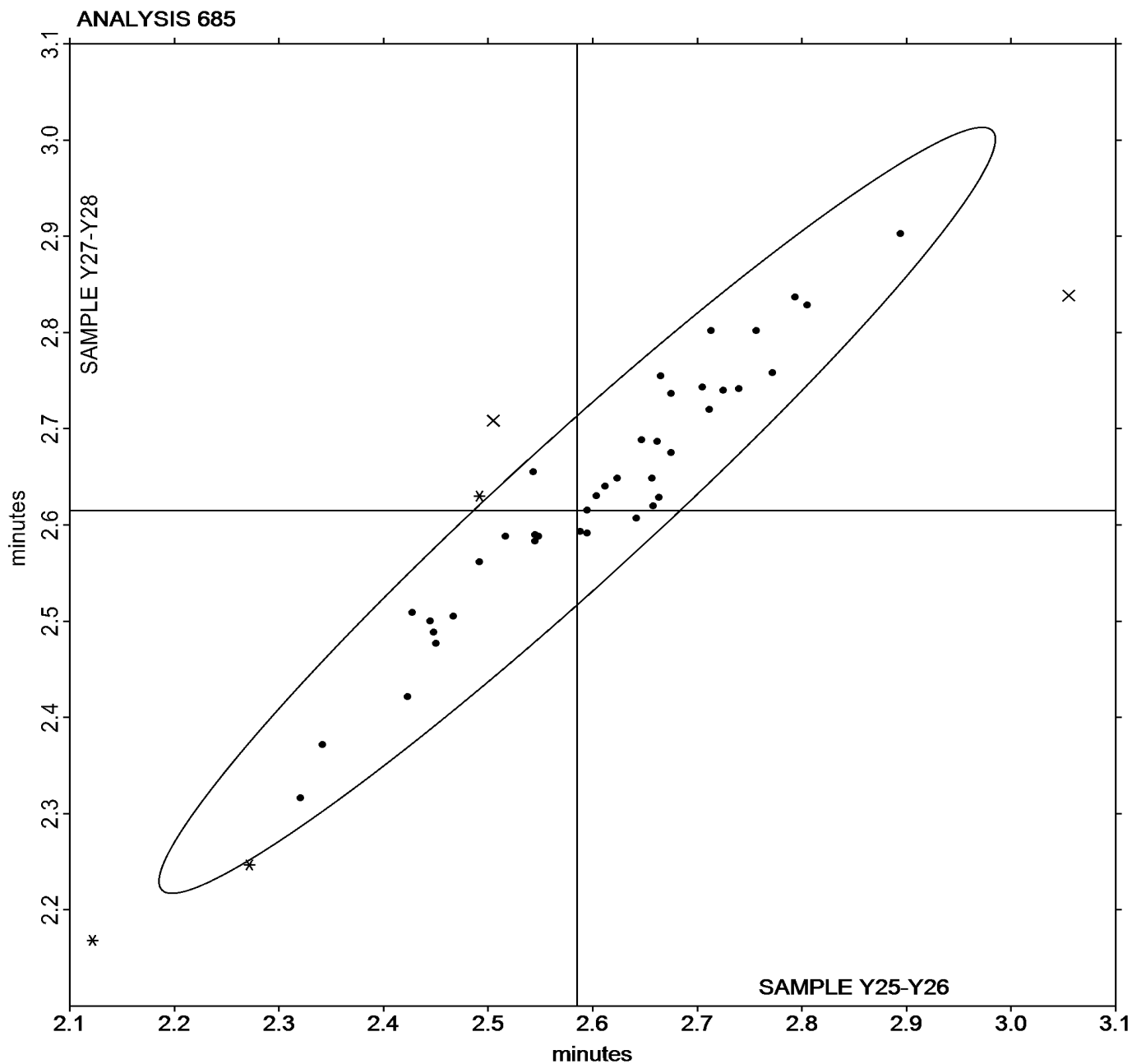
### MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #213

3rd Qtr 2022

Grand Mean Sample Y25-Y26 = 2.5851 minutes

Grand Mean Sample Y27-Y28 = 2.6152 minutes





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 686

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		6.060	0.312	1.61	6.208	0.319	1.57	MC
2KZLB6		5.562	-0.186	-0.96	5.628	-0.261	-1.28	XX
2UPA8R		5.682	-0.066	-0.34	5.782	-0.108	-0.53	ME
2X9AJ2		5.742	-0.006	-0.03	5.932	0.042	0.21	MX
2XQBAB		5.393	-0.354	-1.83	5.453	-0.436	-2.14	MC
38PD7R		6.048	0.301	1.55	6.107	0.217	1.07	MC
3J3TUC		5.770	0.022	0.11	5.947	0.058	0.28	MC
3M4GRL		5.377	-0.371	-1.91	5.508	-0.381	-1.87	MC
3VZCUQ		5.777	0.029	0.15	5.848	-0.041	-0.20	MC
72VHVX	X	4.998	-0.749	-3.86	5.273	-0.616	-3.03	MM
7MNN4L		5.825	0.077	0.40	6.055	0.166	0.81	MC
7QU6H4		5.915	0.167	0.86	6.083	0.194	0.95	MC
86L7TF		5.862	0.114	0.59	5.868	-0.021	-0.10	MC
8ECRZZ		5.818	0.071	0.36	5.950	0.061	0.30	ME
ARTL6N		5.847	0.099	0.51	5.983	0.094	0.46	MC
C3837U		6.022	0.274	1.41	6.048	0.159	0.78	MC
CCEZWJ		5.633	-0.114	-0.59	5.877	-0.013	-0.06	MR
CL3NVR		5.973	0.225	1.16	6.119	0.229	1.13	MC
DEB7QE		5.323	-0.424	-2.19	5.475	-0.414	-2.04	XX
DLXVBP		5.860	0.112	0.58	6.140	0.251	1.23	ME
E7XANT		5.555	-0.193	-0.99	5.668	-0.221	-1.09	MC
EX7VJM		5.478	-0.269	-1.39	5.598	-0.291	-1.43	MR
G47U8H		6.017	0.269	1.39	6.208	0.319	1.57	ME
H36LBH		5.748	0.001	0.00	5.870	-0.019	-0.10	MD
H3NM2R		5.750	0.002	0.01	5.937	0.047	0.23	MC
HMPKFD		6.042	0.294	1.51	6.153	0.264	1.29	MC
L63YTR		5.927	0.179	0.92	6.130	0.241	1.18	XX
LH43N7		5.492	-0.256	-1.32	5.643	-0.246	-1.21	MC
M3BM7R		5.844	0.096	0.49	5.847	-0.043	-0.21	MM
MX24AK		5.740	-0.008	-0.04	5.898	0.009	0.04	MD
NDLE87		5.817	0.069	0.36	6.033	0.144	0.71	MM
NVM7A8		5.715	-0.033	-0.17	5.895	0.006	0.03	MC
PNZVDH		5.580	-0.168	-0.86	5.858	-0.031	-0.15	MP
PXNQAD		5.502	-0.246	-1.27	5.627	-0.263	-1.29	MM
PYXREK		5.620	-0.128	-0.66	5.827	-0.063	-0.31	ME
QJ4LLG		5.692	-0.056	-0.29	5.930	0.041	0.20	ME
V8W642		5.867	0.119	0.61	5.908	0.019	0.09	MC
VDHZ2Y		5.852	0.104	0.54	6.070	0.181	0.89	MC





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

**Report #213**  
**3rd Qtr 2022**

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VNHUT3		5.945	0.197	1.02	6.015	0.126	0.62	MC
W49VN9		5.737	-0.011	-0.06	5.757	-0.133	-0.65	MC
WC3ZGA		5.487	-0.261	-1.34	5.687	-0.203	-1.00	ME
WVGLYB		5.703	-0.044	-0.23	5.968	0.079	0.39	MC
X48J4P	X	5.922	0.174	0.90	5.765	-0.124	-0.61	MM
YY7ZGG		5.970	0.222	1.14	6.113	0.224	1.10	ME
ZD3EC6		5.587	-0.161	-0.83	5.590	-0.299	-1.47	MC

Grand Means		Summary Statistics	
	5.7477 minutes		5.8894 minutes
Std Dev Btwn Labs	0.1942 minutes		0.2035 minutes
Statistics based on 43 of 45 reporting participants			

Samples Y25-Y26: EPDM compound, batch #1 & Y27-Y28: EPDM compound, batch #2

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

72VHVX (X) - Data for all samples are low. Possible Systematic Error.

X48J4P (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group Y27-Y28.

**Key to Instrument Codes Reported by Participants**

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

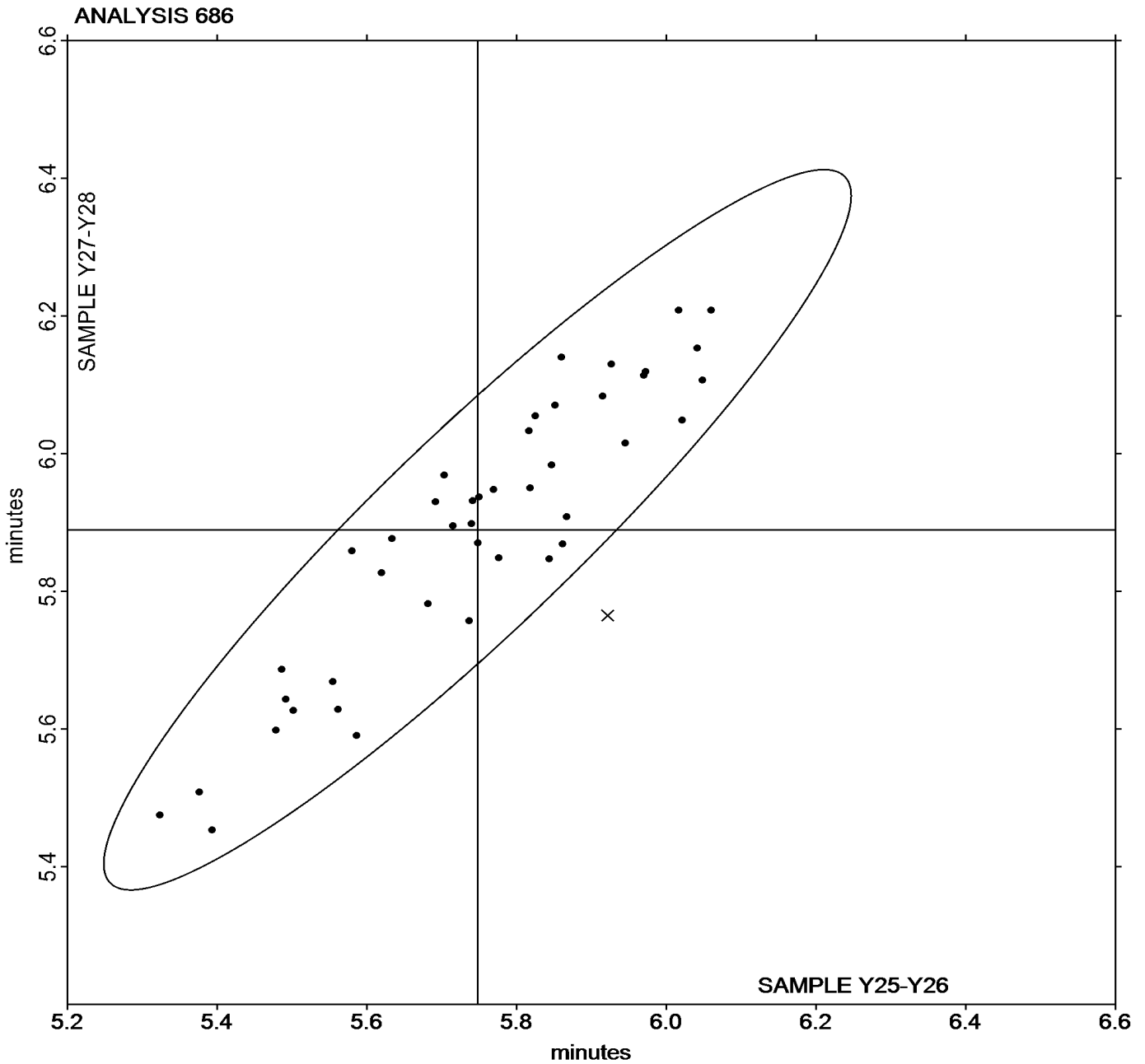


**Rubber Interlaboratory Testing Program**  
**Analysis 686**  
**MDR Vulcanization-Cure Time 50% (minutes)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y25-Y26** = 5.7477 minutes

Grand Mean Sample **Y27-Y28** = 5.8894 minutes





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 687

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		10.050	0.507	1.41	10.257	0.599	1.81	MC
2KZLB6		9.590	0.047	0.13	9.453	-0.205	-0.62	XX
2UPA8R		9.278	-0.265	-0.74	9.320	-0.338	-1.02	ME
2X9AJ2		9.455	-0.088	-0.24	9.720	0.062	0.19	MX
2XQBAB	*	10.530	0.987	2.74	10.283	0.625	1.89	MC
38PD7R		10.210	0.667	1.86	10.200	0.542	1.64	MC
3J3TUC		9.678	0.135	0.38	9.781	0.123	0.37	MC
3M4GRL		9.232	-0.311	-0.87	9.295	-0.363	-1.10	MC
3VZCUQ		9.458	-0.085	-0.24	9.465	-0.193	-0.58	MC
72VHVX	X	7.852	-1.691	-4.70	8.192	-1.466	-4.43	MM
7MNN4L		9.420	-0.123	-0.34	9.700	0.042	0.13	MC
7QU6H4		9.447	-0.096	-0.27	9.703	0.045	0.14	MC
86L7TF		9.713	0.170	0.47	9.695	0.037	0.11	MC
8ECRZZ		9.578	0.035	0.10	9.657	-0.001	0.00	ME
ARTL6N		9.268	-0.275	-0.76	9.378	-0.280	-0.85	MC
C3837U		10.092	0.549	1.53	10.043	0.385	1.16	MC
CCEZWJ		9.487	-0.056	-0.16	9.822	0.164	0.49	MR
CL3NVR		9.686	0.143	0.40	9.808	0.149	0.45	MC
DEB7QE		8.932	-0.611	-1.70	9.127	-0.531	-1.61	XX
DLXVBP		9.720	0.177	0.49	9.820	0.162	0.49	ME
E7XANT		9.325	-0.218	-0.61	9.322	-0.336	-1.02	MC
EX7VJM		8.877	-0.666	-1.85	9.118	-0.540	-1.63	MR
G47U8H		9.873	0.330	0.92	9.942	0.284	0.86	ME
H36LBH		9.493	-0.050	-0.14	9.527	-0.131	-0.40	MD
H3NM2R		9.222	-0.321	-0.89	9.530	-0.128	-0.39	MC
HMPKFD		9.747	0.204	0.57	9.878	0.220	0.66	MC
L63YTR		9.868	0.325	0.90	10.248	0.590	1.78	XX
LH43N7		8.873	-0.670	-1.86	9.148	-0.510	-1.54	MC
M3BM7R		9.530	-0.013	-0.04	9.442	-0.216	-0.65	MM
MX24AK		9.552	0.009	0.02	9.670	0.012	0.04	MD
NDLE87	*	9.930	0.387	1.08	10.323	0.665	2.01	MM
NVM7A8		9.525	-0.018	-0.05	9.740	0.082	0.25	MC
PNZVDH		9.302	-0.241	-0.67	9.475	-0.183	-0.55	MP
PXNQAD		9.287	-0.256	-0.71	9.378	-0.280	-0.85	MM
PYXREK		9.310	-0.233	-0.65	9.590	-0.068	-0.21	ME
QJ4LLG		9.380	-0.163	-0.45	9.673	0.015	0.05	ME
V8W642		9.460	-0.083	-0.23	9.508	-0.150	-0.45	MC
VDHZ2Y		9.682	0.139	0.39	9.750	0.092	0.28	MC



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 687

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VNHUT3		9.718	0.175	0.49	9.685	0.027	0.08	MC
W49VN9		9.758	0.215	0.60	9.743	0.085	0.26	MC
WC3ZGA	*	8.625	-0.918	-2.55	8.817	-0.841	-2.54	ME
WVGLYB		9.438	-0.105	-0.29	9.740	0.082	0.25	MC
X48J4P		9.798	0.255	0.71	9.723	0.065	0.20	MM
YY7ZGG		9.917	0.374	1.04	10.022	0.364	1.10	XX
ZD3EC6		9.577	0.034	0.09	9.435	-0.223	-0.67	MC

Grand Means		Summary Statistics	
	9.5430 minutes		9.6580 minutes
Std Dev Btwn Labs	0.3596 minutes		0.3308 minutes
Statistics based on 44 of 45 reporting participants			

Samples Y25-Y26: EPDM compound, batch #1 & Y27-Y28: EPDM compound, batch #2

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

72VHVX (X) - Data for all samples are low. Possible Systematic Error.

#### Key to Instrument Codes Reported by Participants

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

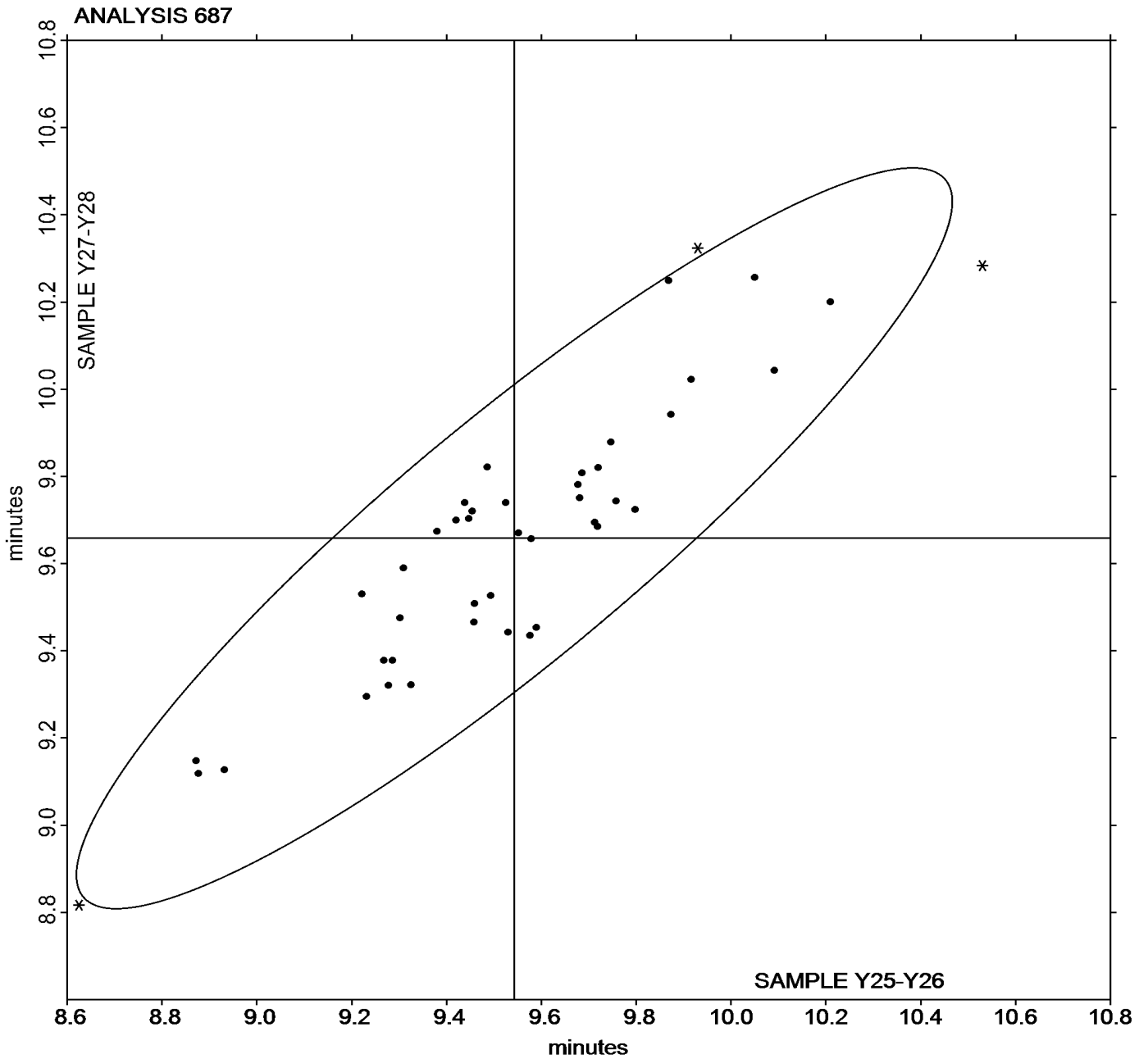


**Rubber Interlaboratory Testing Program**  
**Analysis 687**  
**MDR Vulcanization-Cure Time 90% (minutes)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y25-Y26** = 9.5430 minutes

Grand Mean Sample **Y27-Y28** = 9.6580 minutes





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 688

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		2.363	-0.327	-0.95	2.208	-0.322	-0.91	MC
2KZLB6		2.990	0.300	0.87	2.865	0.335	0.95	XX
2UPA8R		2.647	-0.043	-0.13	2.473	-0.057	-0.16	ME
2X9AJ2		2.723	0.033	0.10	2.577	0.047	0.13	MX
2XQBAB	*	3.717	1.027	2.99	3.643	1.113	3.16	MC
38PD7R		3.333	0.643	1.87	3.198	0.668	1.90	MC
3J3TUC		2.505	-0.185	-0.54	2.435	-0.095	-0.27	MC
3M4GRL		2.692	0.002	0.00	2.515	-0.015	-0.04	MC
3VZCUQ		2.515	-0.175	-0.51	2.383	-0.147	-0.42	MC
72VHVX		2.460	-0.230	-0.67	2.347	-0.183	-0.52	MM
7MNN4L		2.258	-0.432	-1.25	2.196	-0.333	-0.95	MC
7QU6H4		2.488	-0.202	-0.59	2.183	-0.347	-0.98	MC
86L7TF		3.028	0.338	0.98	2.744	0.214	0.61	MC
8ECRZZ		2.403	-0.287	-0.83	2.170	-0.360	-1.02	ME
ARTL6N		2.242	-0.448	-1.30	2.026	-0.504	-1.43	MC
C3837U		2.890	0.200	0.58	2.705	0.175	0.50	MC
CCEZWJ		2.530	-0.160	-0.47	2.383	-0.147	-0.42	MR
CL3NVR		2.400	-0.290	-0.84	2.310	-0.220	-0.62	MC
DEB7QE		2.757	0.067	0.19	2.620	0.090	0.26	MM
DLXVBP		2.286	-0.404	-1.17	2.157	-0.373	-1.06	ME
E7XANT		2.718	0.028	0.08	2.468	-0.062	-0.17	MC
EX7VJM		2.397	-0.293	-0.85	2.193	-0.337	-0.96	MR
G47U8H		2.182	-0.508	-1.48	2.020	-0.510	-1.45	ME
H36LBH		2.724	0.034	0.10	2.464	-0.066	-0.19	MD
H3NM2R		3.025	0.336	0.98	2.857	0.327	0.93	MC
HMPKFD		2.787	0.097	0.28	2.617	0.087	0.25	MC
L63YTR		3.210	0.520	1.51	3.172	0.642	1.82	XX
LH43N7		2.882	0.192	0.56	2.713	0.183	0.52	MC
M3BM7R		2.434	-0.256	-0.74	2.235	-0.295	-0.84	MM
MX24AK		2.060	-0.630	-1.83	1.932	-0.598	-1.70	MD
NDLE87		2.650	-0.040	-0.12	2.602	0.072	0.20	MM
NVM7A8		2.823	0.133	0.39	2.652	0.122	0.35	MC
PNZVDH		2.742	0.052	0.15	2.588	0.058	0.17	MP
PXNQAD		3.147	0.457	1.33	3.070	0.540	1.53	MM
PYXREK		2.765	0.075	0.22	2.732	0.202	0.57	ME
QJ4LLG		2.928	0.238	0.69	2.828	0.298	0.85	ME
V8W642		2.390	-0.300	-0.87	2.177	-0.353	-1.00	MC
VDHZ2Y		2.407	-0.283	-0.82	2.192	-0.338	-0.96	MC



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 688

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VNHUT3		2.662	-0.028	-0.08	2.443	-0.087	-0.25	MC
W49VN9		2.870	0.180	0.52	2.682	0.152	0.43	MC
WC3ZGA		2.503	-0.187	-0.54	2.388	-0.142	-0.40	ME
WVGLYB		2.850	0.160	0.47	2.723	0.193	0.55	MC
X48J4P	*	3.402	0.712	2.07	3.078	0.548	1.56	MM
YY7ZGG		2.342	-0.348	-1.01	2.205	-0.325	-0.92	ME
ZD3EC6		2.922	0.232	0.67	2.678	0.148	0.42	MC

Grand Means		Summary Statistics	
	2.6900 lbf.in		2.5300 lbf.in
Std Dev Btwn Labs	0.3439 lbf.in		0.3525 lbf.in
Statistics based on 45 of 45 reporting participants			

Grand Means		Summary Statistics in SI Units	
	3.0393 dN.m		2.8585 dN.m
Std Dev Btwn Labs	0.3885 dN.m		0.3982 dN.m
Statistics based on 45 of 45 reporting participants			

Samples Y25-Y26: EPDM compound, batch #1 & Y27-Y28: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

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

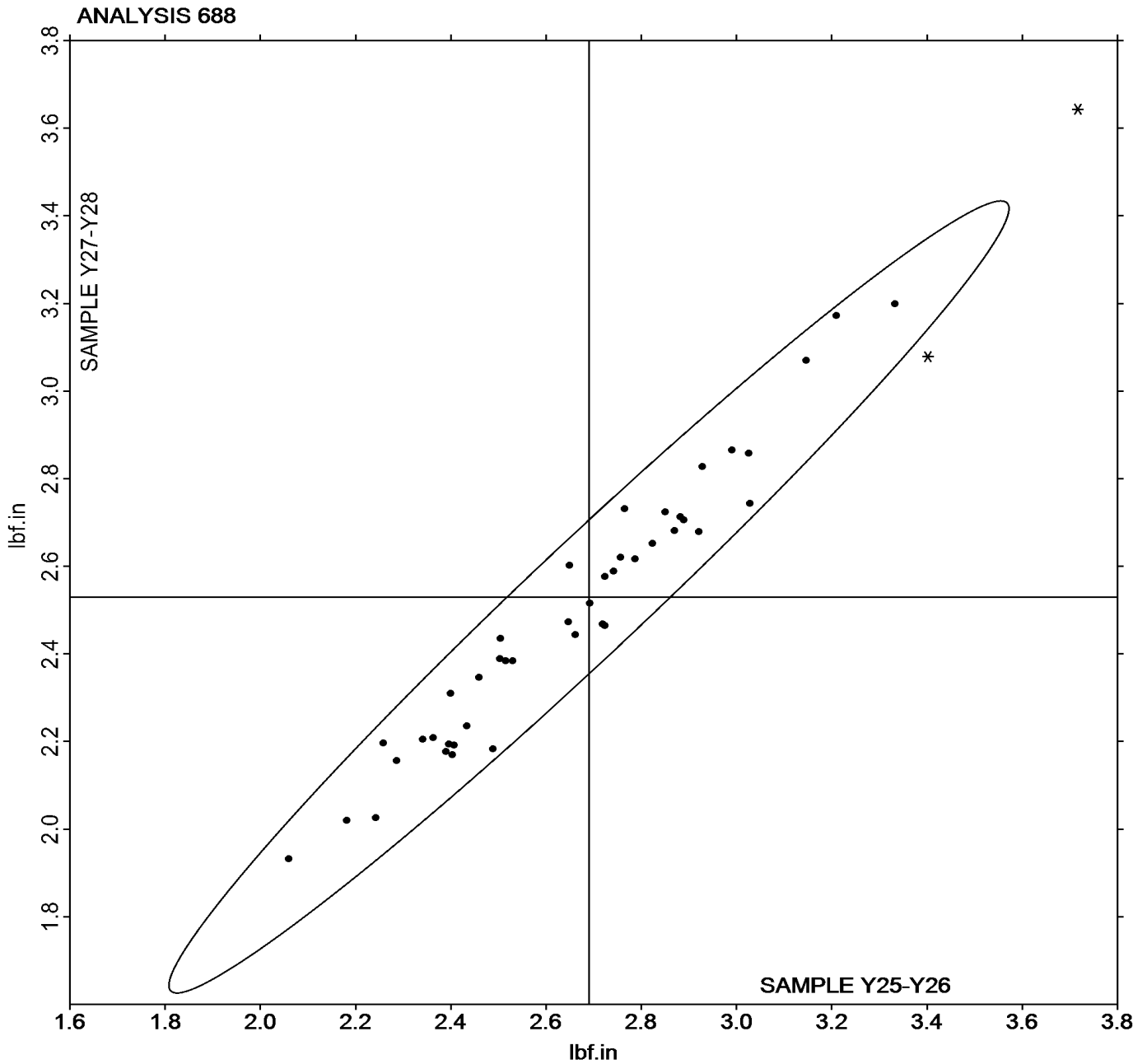


Rubber Interlaboratory Testing Program  
Analysis 688  
MDR Vulcanization: Minimum Torque (lbf.in)

Report #213  
3rd Qtr 2022

Grand Mean Sample Y25-Y26 = 2.6900 lbf.in

Grand Mean Sample Y27-Y28 = 2.5300 lbf.in







# Rubber Interlaboratory Testing Program

Report #213

## Analysis 689

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2JUWC2		12.27	-0.31	-0.44	12.22	-0.22	-0.32	MC
2KZLB6		13.02	0.43	0.62	12.72	0.28	0.40	XX
2UPA8R		11.98	-0.60	-0.85	12.18	-0.27	-0.39	ME
2X9AJ2	*	12.18	-0.40	-0.57	11.53	-0.92	-1.34	MX
2XQBAB		13.61	1.03	1.45	13.42	0.97	1.41	MC
38PD7R		13.70	1.12	1.59	13.42	0.97	1.41	MC
3J3TUC		13.09	0.51	0.72	13.02	0.57	0.83	MC
3M4GRL		12.40	-0.18	-0.26	12.15	-0.30	-0.43	MC
3VZCUQ		11.59	-0.99	-1.40	11.71	-0.74	-1.07	MC
72VHVX		11.60	-0.98	-1.39	11.63	-0.81	-1.18	MM
7MNN4L		11.59	-0.99	-1.40	11.63	-0.81	-1.18	MC
7QU6H4		11.84	-0.74	-1.05	11.80	-0.65	-0.94	MC
86L7TF		12.87	0.29	0.42	12.88	0.43	0.62	MC
8ECRZZ		12.18	-0.40	-0.56	12.06	-0.38	-0.56	ME
ARTL6N		12.31	-0.27	-0.38	12.04	-0.40	-0.59	MC
C3837U		13.25	0.67	0.95	13.01	0.56	0.81	MC
CCEZWJ		13.54	0.95	1.35	13.47	1.02	1.48	MR
CL3NVR		13.34	0.75	1.07	13.05	0.61	0.88	MC
DEB7QE		11.65	-0.93	-1.32	11.84	-0.61	-0.88	MM
DLXVBP		11.80	-0.78	-1.11	11.26	-1.18	-1.72	ME
E7XANT		13.43	0.84	1.20	13.15	0.70	1.02	MC
EX7VJM		12.57	-0.01	-0.02	12.78	0.33	0.48	MR
G47U8H		12.71	0.13	0.18	12.39	-0.06	-0.08	ME
H36LBH		13.40	0.82	1.16	13.24	0.79	1.15	MD
H3NM2R		12.66	0.08	0.11	12.70	0.26	0.37	MC
HMPKFD		12.41	-0.17	-0.24	12.43	-0.02	-0.02	MC
L63YTR		12.69	0.11	0.15	12.81	0.36	0.52	XX
LH43N7		13.24	0.66	0.93	13.15	0.70	1.02	MC
M3BM7R		12.21	-0.37	-0.53	11.89	-0.56	-0.81	MM
MX24AK	*	10.72	-1.86	-2.63	10.60	-1.85	-2.68	MD
NDLE87		11.82	-0.76	-1.08	12.00	-0.45	-0.65	MM
NVM7A8		12.60	0.02	0.02	12.61	0.16	0.23	MC
PNZVDH		12.80	0.22	0.31	12.41	-0.04	-0.05	MP
PXNQAD		14.13	1.55	2.19	14.16	1.71	2.48	MM
PYXREK		12.31	-0.27	-0.38	12.36	-0.09	-0.13	ME
QJ4LLG		12.62	0.03	0.05	12.68	0.24	0.34	ME
V8W642		12.20	-0.38	-0.54	11.97	-0.48	-0.69	MC
VDHZ2Y		12.66	0.08	0.12	12.42	-0.02	-0.03	MC



# Rubber Interlaboratory Testing Program

Report #213

## Analysis 689

3rd Qtr 2022

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

WebCode	Data Flag	Sample Y25-Y26			Sample Y27-Y28			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VNHUT3		13.15	0.57	0.81	12.78	0.33	0.48	MC
W49VN9		13.26	0.68	0.96	12.79	0.34	0.50	MC
WC3ZGA		11.63	-0.96	-1.35	11.22	-1.22	-1.77	ME
WVGLYB		13.38	0.79	1.13	13.09	0.64	0.93	MC
X48J4P		12.18	-0.40	-0.57	12.30	-0.15	-0.22	MM
YY7ZGG		12.69	0.11	0.15	12.48	0.03	0.05	XX
ZD3EC6		12.89	0.31	0.43	12.67	0.23	0.33	MC

Grand Means		Summary Statistics	
	12.580 lbf.in		12.447 lbf.in
Std Dev Btwn Labs	0.706 lbf.in		0.690 lbf.in
Statistics based on 45 of 45 reporting participants			

Grand Means		Summary Statistics in SI Units	
	14.214 dN.m		14.063 dN.m
Std Dev Btwn Labs	0.798 dN.m		0.779 dN.m
Statistics based on 45 of 45 reporting participants			

Samples Y25-Y26: EPDM compound, batch #1 & Y27-Y28: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

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

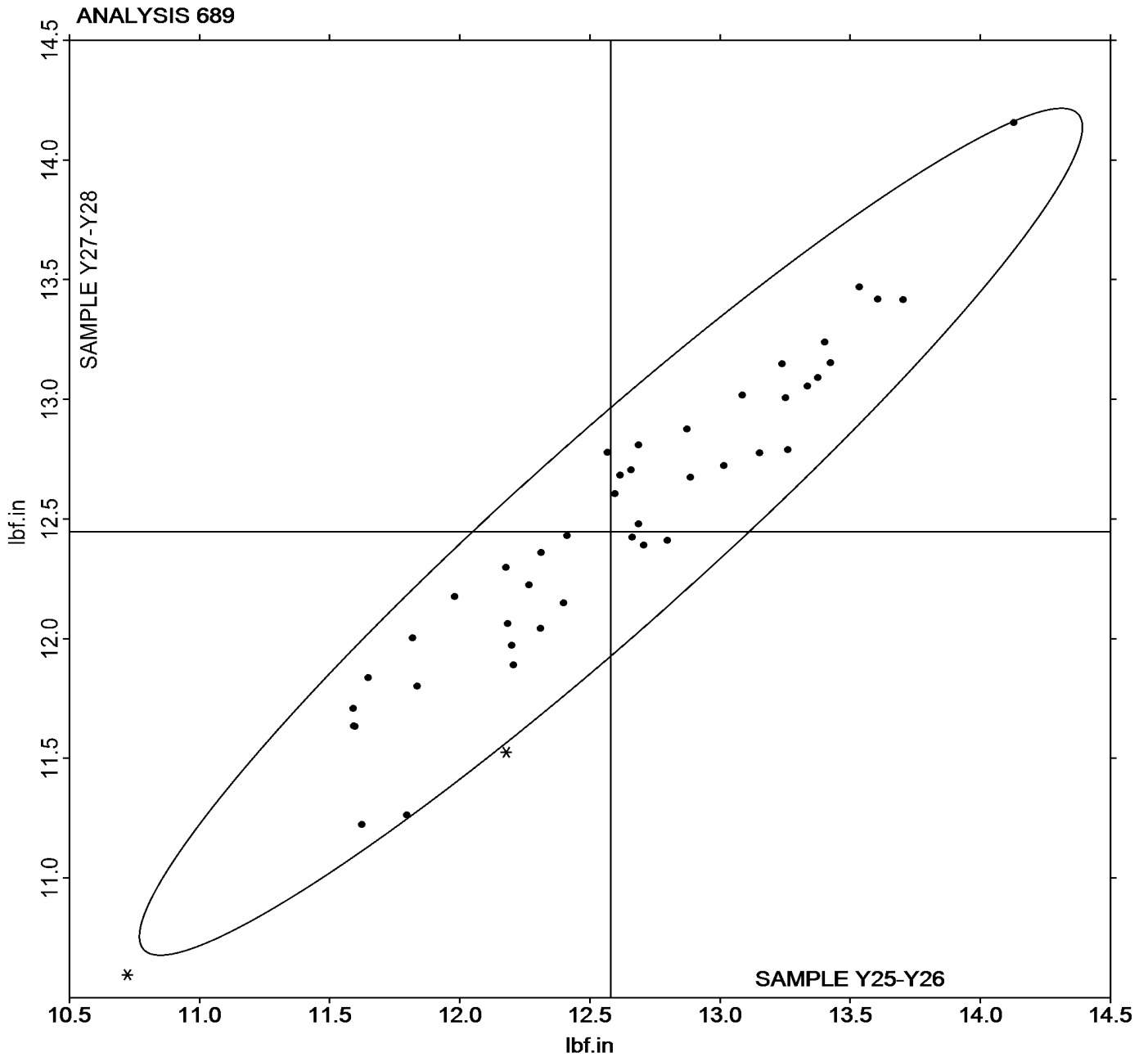


**Rubber Interlaboratory Testing Program**  
**Analysis 689**  
**MDR Vulcanization: Maximum Torque (lbf.in)**

**Report #213**  
**3rd Qtr 2022**

Grand Mean Sample **Y25-Y26** = 12.580 lbf.in

Grand Mean Sample **Y27-Y28** = 12.447 lbf.in





# Rubber Interlaboratory Testing Program

Report #213

## Analysis 690

3rd Qtr 2022

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

WebCode	Data Flag	Sample G21-G22			Sample G23-G24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
72VHVX		590.9	32.9	0.51	560.2	24.5	0.38	RP
7QU6H4		495.3	-62.6	-0.97	468.3	-67.4	-1.04	PR
CL3NVR		486.1	-71.9	-1.11	470.1	-65.6	-1.01	RP
CN7L4Y		502.1	-55.9	-0.86	474.6	-61.1	-0.94	RP
DLXVBP		594.4	36.4	0.56	568.2	32.5	0.50	XX
L63YTR		689.0	131.1	2.03	669.5	133.8	2.07	XX
LH43N7		529.9	-28.1	-0.43	513.9	-21.8	-0.34	RP
M3BM7R		556.0	-2.0	-0.03	533.0	-2.7	-0.04	XX
MX24AK		519.1	-38.8	-0.60	500.9	-34.8	-0.54	RP
YY7ZGG		616.9	58.9	0.91	598.4	62.7	0.97	RP

Summary Statistics	
Grand Means	557.98 kPa      535.71 kPa
Std Dev Btwn Labs	64.62 kPa      64.78 kPa
Statistics based on 10 of 10 reporting participants	

Samples G21-G22: EPDM compound, batch #1 & G23-G24: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

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

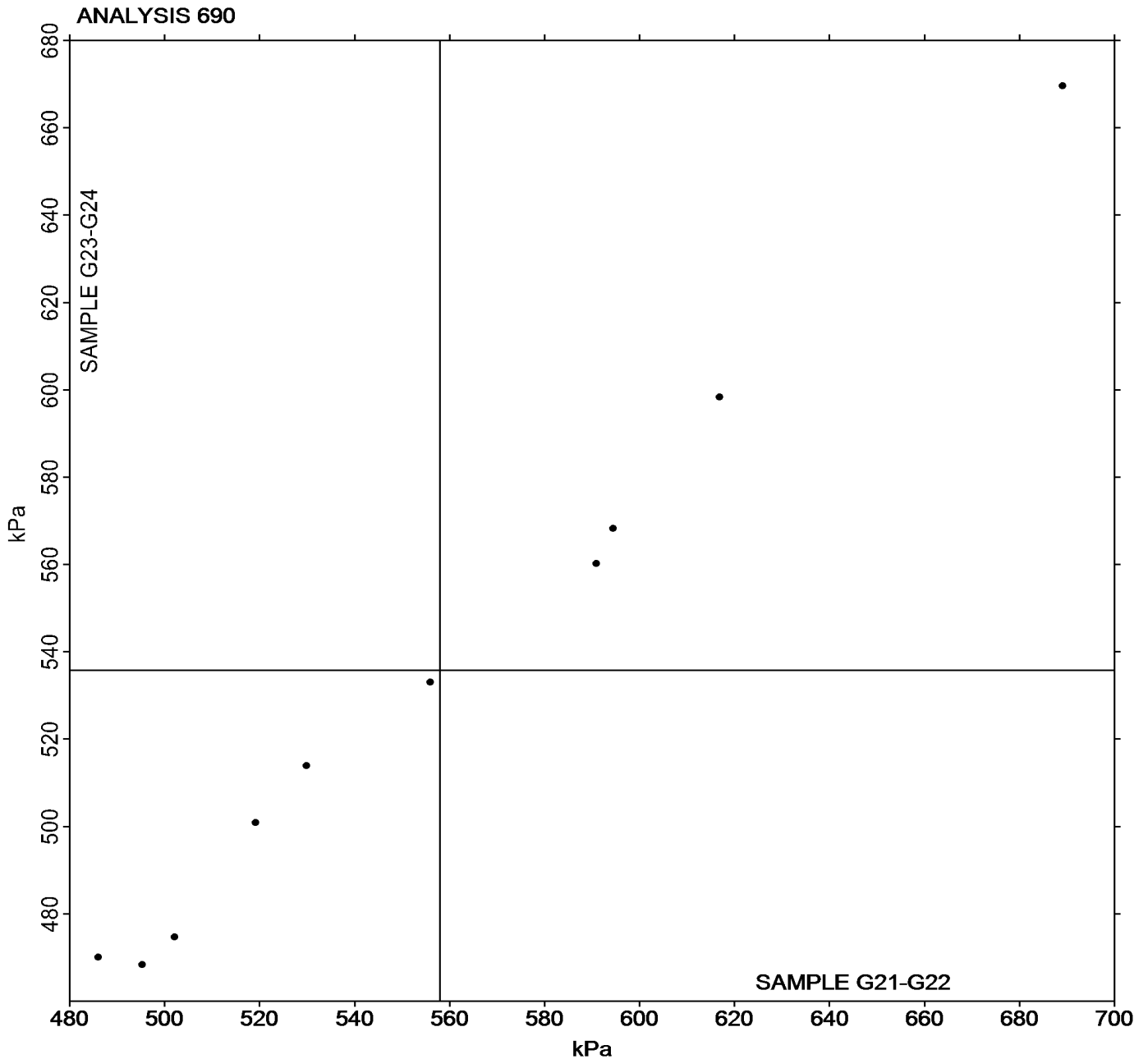


Rubber Interlaboratory Testing Program  
Analysis 690  
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #213  
3rd Qtr 2022

Grand Mean Sample **G21-G22** = 557.98 kPa

Grand Mean Sample **G23-G24** = 535.71 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 #213

## Analysis 691

3rd Qtr 2022

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

WebCode	Data Flag	Sample G21-G22			Sample G23-G24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
72VHVX		212.8	-7.0	-0.33	202.2	-13.5	-0.65	RP
7QU6H4		206.9	-12.9	-0.62	202.1	-13.6	-0.65	PR
CL3NVR		196.8	-23.0	-1.10	195.6	-20.1	-0.96	RP
CN7L4Y		221.7	1.9	0.09	214.2	-1.5	-0.07	RP
DLXVBP		238.9	19.0	0.91	233.6	17.9	0.86	XX
L63YTR		263.1	43.3	2.06	259.6	44.0	2.11	XX
LH43N7		203.7	-16.1	-0.77	203.0	-12.7	-0.61	RP
M3BM7R		213.8	-6.0	-0.29	210.3	-5.4	-0.26	XX
MX24AK		201.8	-18.0	-0.86	199.6	-16.1	-0.77	RP
YY7ZGG		238.7	18.9	0.90	236.7	21.0	1.01	RP

Summary Statistics	
Grand Means	219.83 kPa      215.68 kPa
Std Dev Btwn Labs	20.97 kPa      20.85 kPa
Statistics based on 10 of 10 reporting participants	

Samples G21-G22: EPDM compound, batch #1 & G23-G24: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

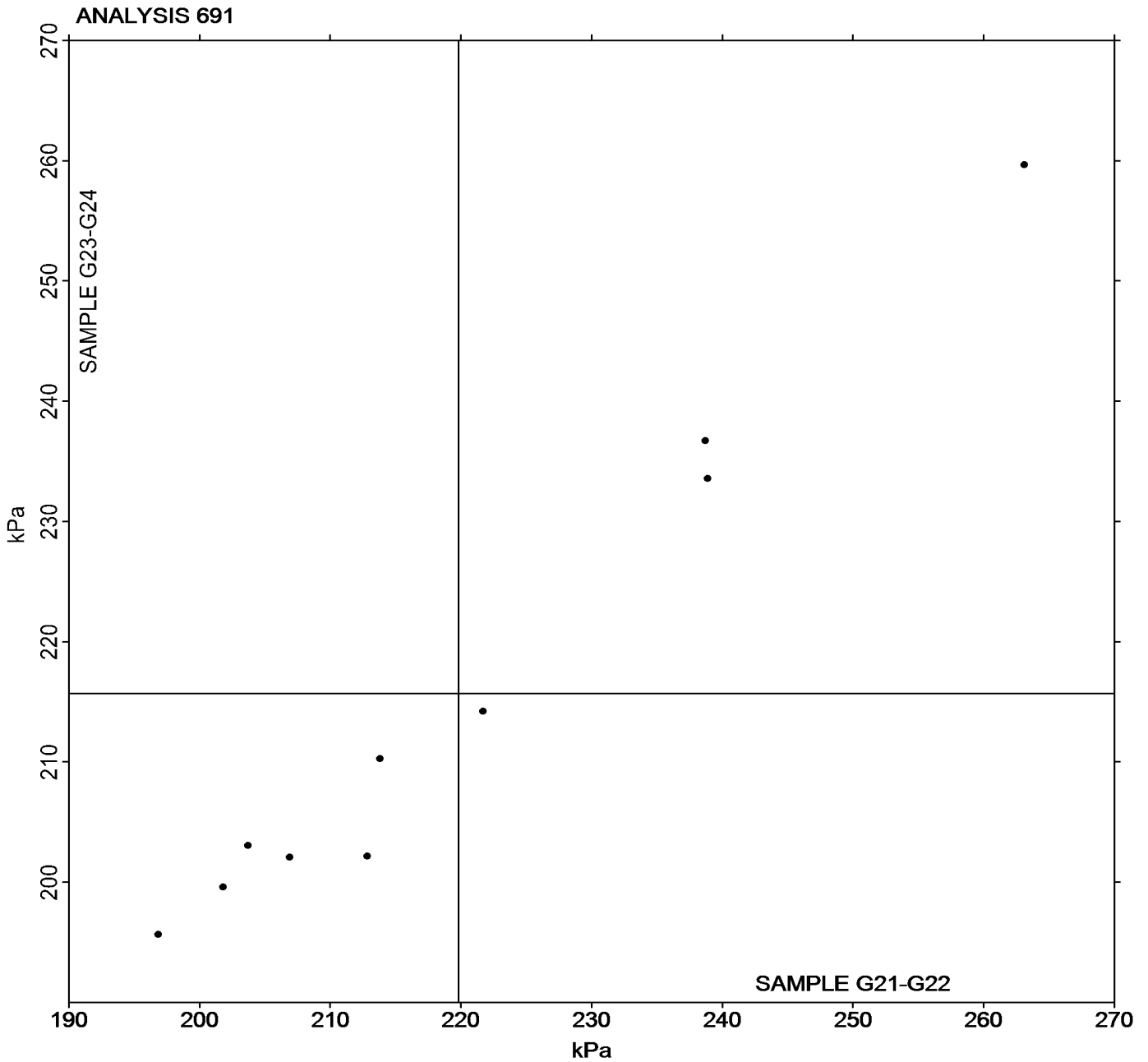
- PR    PRPA 2000
- XX    Instrument model not specified by lab
- RP    RPA 2000



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

Grand Mean Sample G21-G22 = 219.83 kPa

Grand Mean Sample G23-G24 = 215.68 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 #213

## Analysis 695

3rd Qtr 2022

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

WebCode	Data Flag	Sample G21-G22			Sample G23-G24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
72VHVX		117.01	28.83	2.16	109.32	26.02	1.99	RP
7QU6H4		73.50	-14.68	-1.10	67.90	-15.40	-1.18	PR
CL3NVR		75.99	-12.19	-0.91	70.74	-12.56	-0.96	RP
CN7L4Y		77.54	-10.64	-0.80	71.73	-11.57	-0.88	RP
DLXVBP		88.09	-0.08	-0.01	83.19	-0.11	-0.01	XX
L63YTR		102.47	14.29	1.07	99.43	16.13	1.23	XX
LH43N7		89.09	0.91	0.07	83.69	0.39	0.03	RP
M3BM7R		91.44	3.26	0.24	87.37	4.07	0.31	XX
MX24AK		79.43	-8.75	-0.66	75.58	-7.72	-0.59	RP
YY7ZGG		87.21	-0.97	-0.07	84.04	0.74	0.06	RP

Summary Statistics	
Grand Means	88.178 kPa
Stnd Dev Btwn Labs	13.341 kPa
	83.299 kPa
	13.092 kPa
Statistics based on 10 of 10 reporting participants	

Samples G21-G22: EPDM compound, batch #1 & G23-G24: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

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

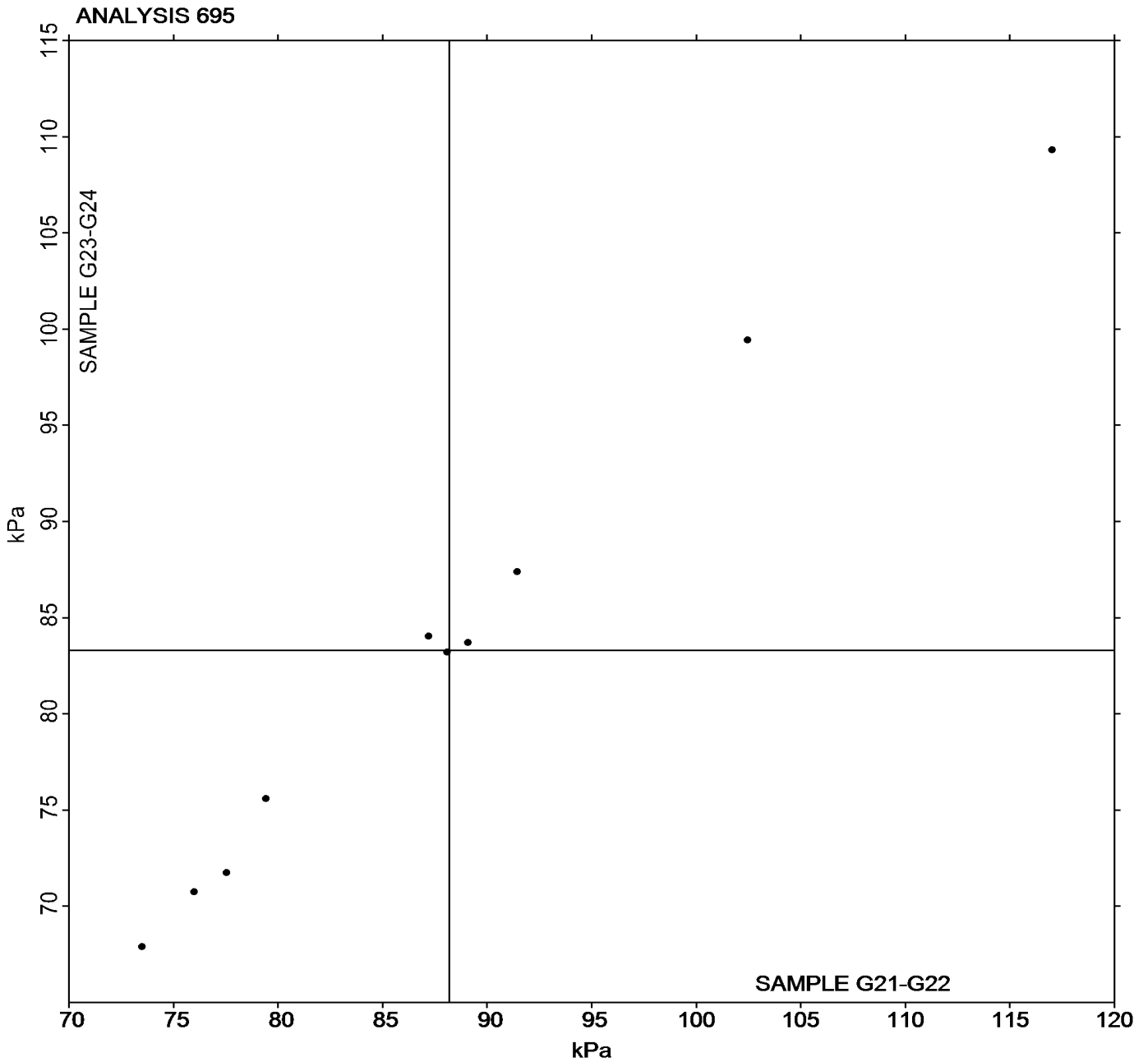




RPA Rheological Properties: Part B - G' at 1.0Hz (kPa)

Grand Mean Sample G21-G22 = 88.178 kPa

Grand Mean Sample G23-G24 = 83.299 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 #213

## Analysis 696

3rd Qtr 2022

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

WebCode	Data Flag	Sample G21-G22			Sample G23-G24			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
72VHVX		74.80	-0.80	-0.11	71.91	-1.66	-0.22	XX
7QU6H4		68.05	-7.55	-1.01	65.01	-8.56	-1.12	PR
CL3NVR		67.00	-8.59	-1.15	65.58	-7.98	-1.04	RP
CN7L4Y		67.71	-7.89	-1.06	65.44	-8.13	-1.06	XX
DLXVBP		83.40	7.80	1.04	81.18	7.61	1.00	XX
L63YTR		88.35	12.75	1.71	86.37	12.80	1.67	XX
LH43N7		72.23	-3.37	-0.45	70.70	-2.86	-0.37	RP
M3BM7R		75.78	0.18	0.02	73.38	-0.19	-0.02	XX
MX24AK		74.50	-1.10	-0.15	73.06	-0.51	-0.07	RP
YY7ZGG		84.16	8.57	1.15	83.05	9.49	1.24	RP

Summary Statistics	
Grand Means	75.597 kPa
Std Dev Btwn Labs	7.477 kPa
	73.566 kPa
	7.647 kPa
Statistics based on 10 of 10 reporting participants	

Samples G21-G22: EPDM compound, batch #1 & G23-G24: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

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



# Rubber Interlaboratory Testing Program

Report #213

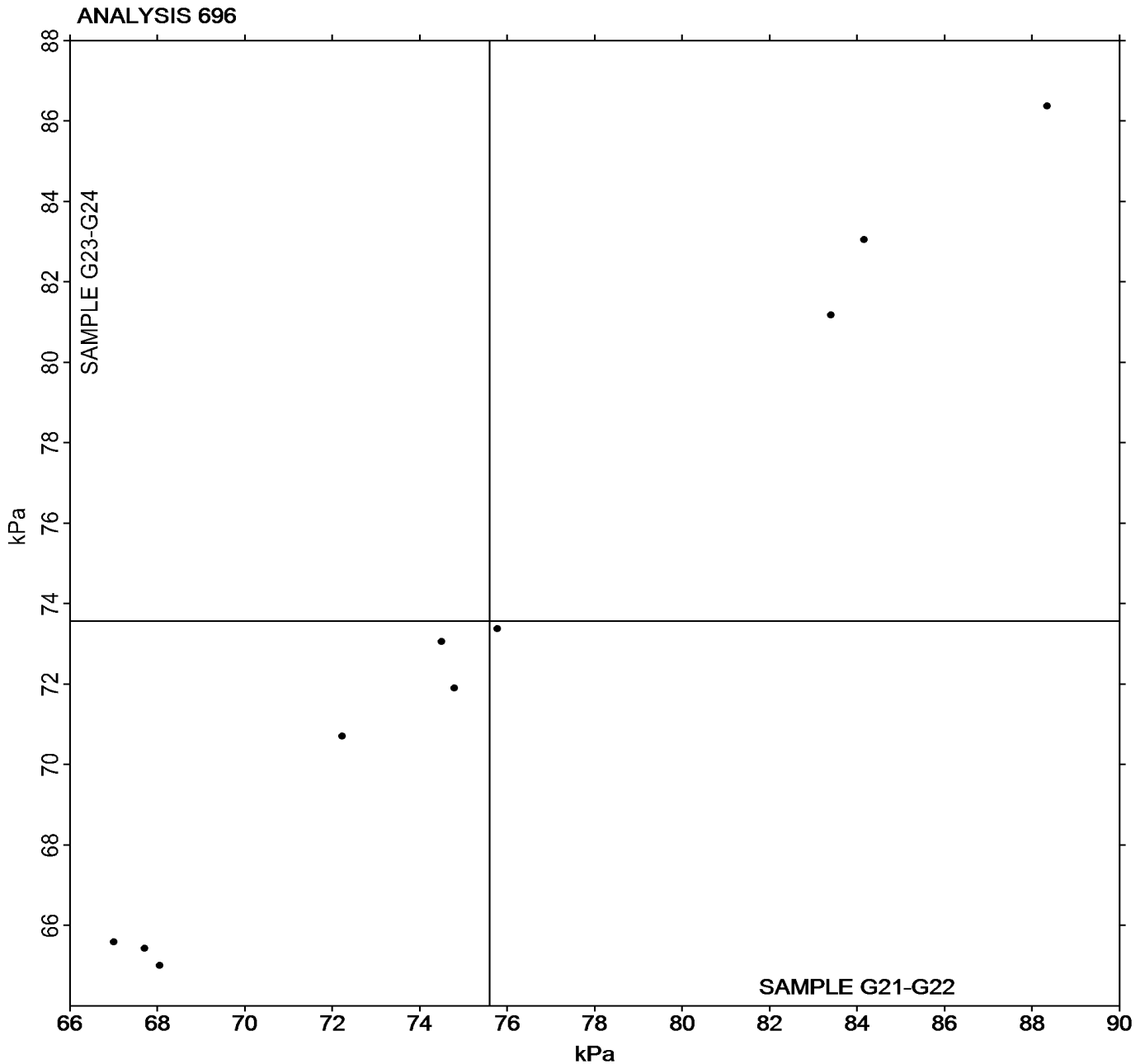
## Analysis 696

3rd Qtr 2022

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

Grand Mean Sample **G21-G22** = 75.597 kPa

Grand Mean Sample **G23-G24** = 73.566 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-