



## Rubber Interlaboratory Testing Program

### Summary Report #209- 3rd Qtr 2021

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<a href="#">605</a>	<a href="#">Tensile Strength: Precured Rubber Samples</a>	<a href="#">690</a>	<a href="#">RPA Rheological Properties: Part A - G' at 20Hz</a>
<a href="#">606</a>	<a href="#">Ultimate Elongation: Precured Rubber Samples</a>	<a href="#">691</a>	<a href="#">RPA Rheological Properties: Part A - G'' at 20Hz</a>
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<a href="#">608</a>	<a href="#">Stress at 100% Elongation: Precured Samples</a>	<a href="#">696</a>	<a href="#">RPA Rheological Properties: Part B - G'' at 1.0Hz</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 #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		2,864.5	-239.8	-1.83	3,045.8	-108.2	-0.73
23VT2L		3,121.2	17.0	0.13	3,159.7	5.7	0.04
24LXUT	X	2,425.8	-678.5	-5.19	2,527.3	-626.7	-4.22
27TBF2		3,073.0	-31.3	-0.24	2,983.5	-170.5	-1.15
2FKJ7J		3,227.0	122.7	0.94	3,098.0	-56.0	-0.38
2X3K2L		3,201.0	96.7	0.74	3,229.0	75.0	0.51
3NRMN2		3,036.0	-68.3	-0.52	2,975.2	-178.7	-1.20
3WJZN2	*	2,980.6	-123.7	-0.95	2,813.8	-340.2	-2.29
469B9G		2,974.5	-129.8	-0.99	3,040.5	-113.5	-0.76
4A3693		3,078.0	-26.3	-0.20	3,237.9	83.9	0.57
4BZHRP		3,135.1	30.8	0.24	3,235.6	81.6	0.55
4EUEEV		3,273.0	168.7	1.29	3,310.0	156.0	1.05
4JQ4XM		3,072.0	-32.3	-0.25	3,016.0	-138.0	-0.93
4UC3RY		3,328.3	224.0	1.71	3,230.7	76.7	0.52
6KGJQV		3,188.0	83.7	0.64	3,203.0	49.0	0.33
6VVFJ2E		2,976.4	-127.9	-0.98	2,966.3	-187.7	-1.26
6VGCX2		2,890.0	-214.3	-1.64	3,015.0	-139.0	-0.94
7FKEBW	X	2,620.7	-483.6	-3.70	2,650.7	-503.3	-3.39
7GDDKN		3,071.2	-33.1	-0.25	3,082.1	-71.9	-0.48
7L838M		3,359.5	255.2	1.95	3,365.0	211.0	1.42
7Q4V2H		3,339.5	235.2	1.80	3,346.5	192.5	1.30
7R2WBG		2,972.0	-132.3	-1.01	3,113.0	-41.0	-0.28
7XJFKH		3,014.6	-89.7	-0.69	3,131.0	-22.9	-0.15
7XL32V		3,071.3	-33.0	-0.25	3,086.4	-67.6	-0.46
8PQJZR	*	3,359.8	255.6	1.96	3,558.5	404.5	2.73
8XHYPW		3,044.3	-60.0	-0.46	3,122.0	-32.0	-0.22
9QDKEE		3,246.3	142.0	1.09	3,181.2	27.2	0.18
A34TFT		2,910.6	-193.7	-1.48	3,062.4	-91.6	-0.62
AAJCVL	*	2,919.3	-185.0	-1.42	2,787.6	-366.3	-2.47
AG3DGQ		3,138.7	34.4	0.26	3,160.6	6.6	0.04
AHH2DB		3,259.5	155.2	1.19	3,379.5	225.5	1.52
AKLMCA		3,219.9	115.6	0.88	3,166.2	12.2	0.08
ATZDUU		3,225.0	120.7	0.92	3,181.0	27.0	0.18
BM3GH9		3,041.0	-63.3	-0.48	3,268.5	114.5	0.77
CJNURB		3,027.8	-76.5	-0.59	3,079.1	-74.9	-0.51
CLTUJU		3,037.5	-66.8	-0.51	3,100.0	-54.0	-0.36
CM74UF		2,955.0	-149.3	-1.14	3,144.0	-10.0	-0.07
DFEDMB		3,145.0	40.7	0.31	3,115.0	-39.0	-0.26



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DP6YTA		3,096.6	-7.7	-0.06	3,183.6	29.6	0.20
DQJGXZ		3,135.0	30.7	0.24	3,300.0	146.0	0.98
E2D4GG		3,059.6	-44.7	-0.34	3,077.7	-76.3	-0.51
E43HUX		3,157.1	52.8	0.40	3,104.0	-50.0	-0.34
E8KRUH		2,990.0	-114.3	-0.87	2,983.5	-170.5	-1.15
EP2VGA		3,141.4	37.2	0.28	3,196.5	42.6	0.29
EQWEHC		2,932.8	-171.5	-1.31	3,039.9	-114.1	-0.77
FCD2Q3		3,127.5	23.2	0.18	2,984.0	-170.0	-1.15
FGLCWB	*	2,782.6	-321.7	-2.46	2,724.6	-429.4	-2.89
FWKCV7		3,305.0	200.7	1.54	3,288.5	134.5	0.91
GBVEMD		3,161.5	57.2	0.44	3,234.0	80.0	0.54
GJA4LL		2,965.5	-138.8	-1.06	3,074.5	-79.5	-0.54
GKFTMA		3,098.0	-6.3	-0.05	3,216.0	62.0	0.42
GUTKC8		3,172.7	68.5	0.52	3,185.1	31.1	0.21
H2KD3D		3,337.0	232.7	1.78	3,437.0	283.0	1.91
JACG4D		3,256.1	151.9	1.16	3,227.1	73.1	0.49
JAWVWW		2,956.3	-148.0	-1.13	2,977.0	-177.0	-1.19
JXF9LB		2,980.6	-123.7	-0.95	2,894.3	-259.7	-1.75
KCXFYM		3,251.0	146.8	1.12	3,292.4	138.4	0.93
KXYA8D		2,989.0	-115.3	-0.88	3,069.5	-84.5	-0.57
LJBRRE		3,037.5	-66.8	-0.51	3,196.5	42.5	0.29
LQR6TX		3,128.4	24.1	0.18	3,119.4	-34.6	-0.23
LQUXPK		3,005.2	-99.1	-0.76	3,142.2	-11.8	-0.08
LTYMP9		3,079.0	-25.3	-0.19	3,288.5	134.5	0.91
LUBHAF		3,057.4	-46.9	-0.36	3,154.6	0.6	0.00
LURGNX		3,161.3	57.0	0.44	3,161.7	7.7	0.05
LYZYL7		2,963.5	-140.8	-1.08	2,950.0	-204.0	-1.37
LZVHM8		3,103.0	-1.2	-0.01	3,214.6	60.6	0.41
M4EYFC		3,128.7	24.5	0.19	3,238.2	84.2	0.57
MA3HZE		3,285.1	180.9	1.38	3,350.4	196.4	1.32
MAF7YK	X	3,040.0	-64.3	-0.49	2,735.0	-419.0	-2.82
MTCEF6		3,262.5	158.2	1.21	3,222.0	68.0	0.46
NGW486		3,108.5	4.2	0.03	3,102.5	-51.5	-0.35
P2XNAH	*	2,755.0	-349.3	-2.67	2,728.2	-425.8	-2.87
PGTY3F		3,146.4	42.1	0.32	3,121.2	-32.8	-0.22
PHNKW8		3,230.5	126.2	0.97	3,172.5	18.5	0.12
PZA27V		3,320.0	215.7	1.65	3,420.0	266.0	1.79



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
Q3M8W2		3,080.6	-23.6	-0.18	3,129.2	-24.8	-0.17
QCDQDV		2,993.5	-110.8	-0.85	3,153.5	-0.5	0.00
R3GDQ2		3,067.0	-37.2	-0.28	3,156.9	3.0	0.02
REGY4R		3,060.3	-43.9	-0.34	3,188.0	34.0	0.23
RJAXHM		3,010.0	-94.3	-0.72	3,272.5	118.5	0.80
RUC9Z6		3,219.4	115.2	0.88	3,267.8	113.8	0.77
RYKTN3		3,103.5	-0.8	-0.01	3,126.0	-28.0	-0.19
U2LERT		3,133.5	29.2	0.22	3,239.9	85.9	0.58
U4D8T4	*	2,761.0	-343.3	-2.63	2,824.0	-330.0	-2.22
U66JAN	X	3,939.3	835.0	6.39	3,901.1	747.1	5.03
UADUFW		3,272.1	167.8	1.28	3,309.0	155.0	1.04
UM4L22		2,995.0	-109.3	-0.84	3,225.5	71.5	0.48
UPA3KQ		3,193.6	89.3	0.68	3,302.5	148.5	1.00
VH8EZ4		3,173.4	69.1	0.53	3,156.8	2.8	0.02
WE32ZG		3,101.0	-3.3	-0.03	3,124.0	-30.0	-0.20
WPKM26		3,102.5	-1.8	-0.01	3,054.5	-99.5	-0.67
WVNMHM		3,105.0	0.7	0.01	3,242.0	88.0	0.59
WXWJ8X		3,135.0	30.7	0.24	3,365.0	211.0	1.42
XFAM3N		3,122.0	17.7	0.14	3,294.0	140.0	0.94
YC6ED4		3,177.4	73.1	0.56	3,233.1	79.1	0.53
YMPLA8		3,210.0	105.7	0.81	3,209.0	55.0	0.37
YUNDGG		3,183.0	78.7	0.60	3,339.0	185.0	1.25
YVLJYV		3,129.9	25.7	0.20	3,325.0	171.0	1.15
YWWKLU	X	2,740.0	-364.3	-2.79	3,160.5	6.5	0.04
ZF4ACW		2,956.0	-148.3	-1.13	3,160.5	6.5	0.04
ZGWYZK		3,172.7	68.5	0.52	3,151.7	-2.3	-0.02
ZNF39M		2,981.0	-123.3	-0.94	2,914.5	-239.5	-1.61
ZPMQZX		3,336.6	232.3	1.78	3,266.3	112.3	0.76

Grand Means		Summary Statistics	
	3,104.27 psi		3,153.99 psi
Std Dev Btwn Labs	130.71 psi		148.39 psi
Statistics based on 98 of 103 reporting participants			



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

**Report #209**  
**3rd Qtr 2021**

		Summary Statistics in SI Units	
Grand Means	21.403 MPa	21.75	MPa
Stnd Dev Btwn Labs	0.901 MPa	1.02	MPa
Statistics based on 98 of 103 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & C13-C14: Polyisoprene compound, batch #2

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

- 24LXUT (X) - Data for all samples are low. Possible Systematic Error.
- 7FKEBW (X) - Data for all samples are low. Possible Systematic Error.
- MAF7YK (X) - Inconsistency in testing between samples, data for sample group C13-C14 are low.
- U66JAN (X) - Data for all samples are high. Possible Systematic Error.
- YWWKLU (X) - Inconsistency in testing between samples, data for sample group C11-C12 are low.



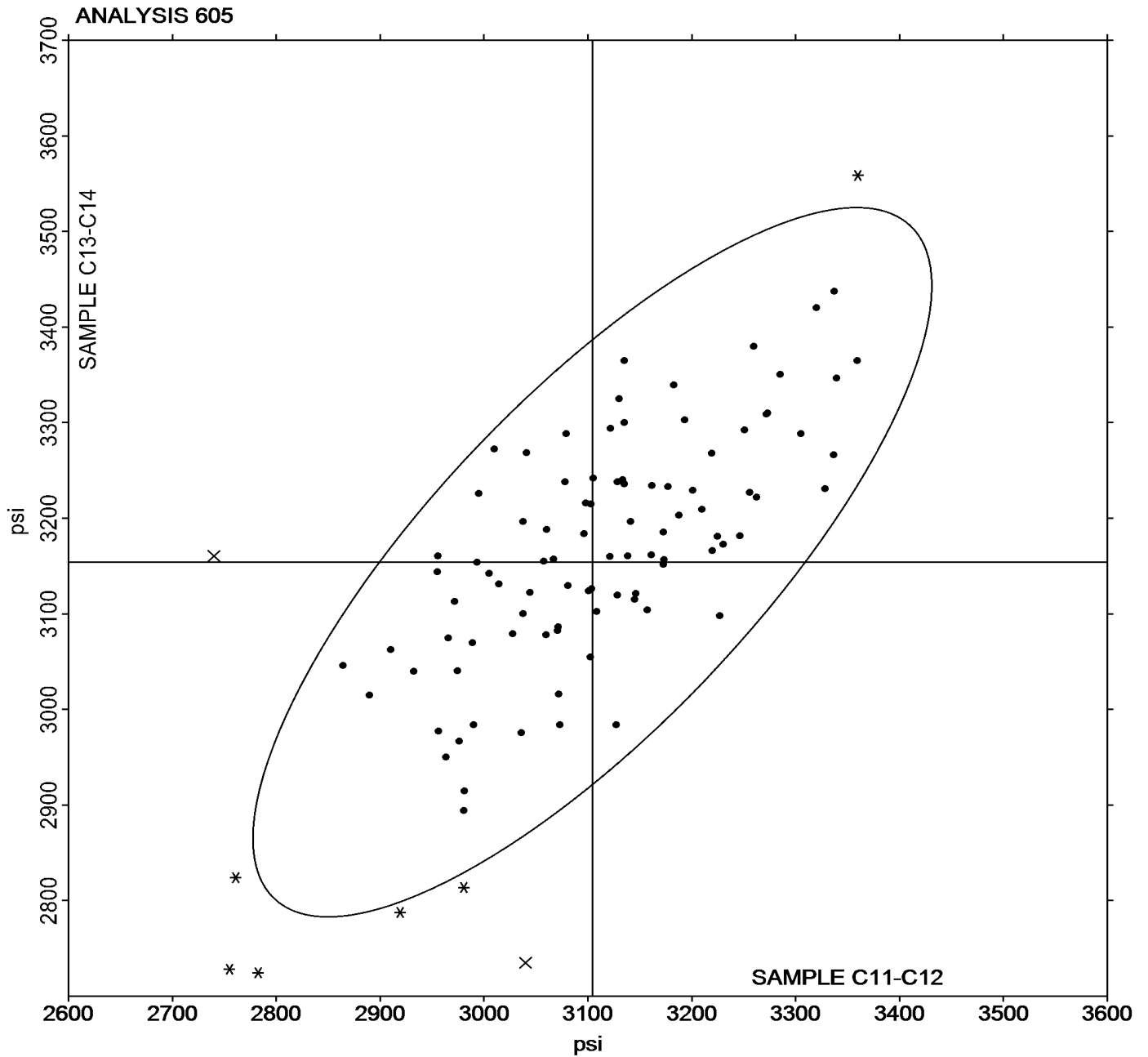


**Rubber Interlaboratory Testing Program**  
**Analysis 605**  
**Tensile Strength (psi)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **C11-C12** = 3,104.27 psi

Grand Mean Sample **C13-C14** = 3,153.99 psi





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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		648.0	-14.7	-0.46	652.1	-6.2	-0.20
23VT2L		671.5	8.9	0.28	684.5	26.3	0.83
24LXUT	X	773.0	110.4	3.49	756.5	98.3	3.12
27TBF2		679.9	17.3	0.55	658.3	0.1	0.00
2FKJ7J		664.0	1.4	0.04	647.5	-10.7	-0.34
2X3K2L		695.0	32.4	1.02	693.5	35.3	1.12
3NRMN2		685.8	23.2	0.73	673.7	15.4	0.49
3WJZN2		607.0	-55.6	-1.76	608.0	-50.2	-1.60
469B9G		675.5	12.9	0.41	673.5	15.3	0.49
4A3693	X	824.5	161.9	5.12	730.1	71.9	2.28
4BZHRP		680.0	17.4	0.55	676.5	18.3	0.58
4EUEEV		607.0	-55.6	-1.76	602.5	-55.7	-1.77
4JQ4XM		672.0	9.4	0.30	655.5	-2.7	-0.09
4UC3RY		694.4	31.8	1.00	674.8	16.5	0.53
6KGJQV		662.0	-0.6	-0.02	678.0	19.8	0.63
6VFJ2E		643.5	-19.1	-0.61	620.0	-38.2	-1.22
7FKEBW		629.5	-33.2	-1.05	615.9	-42.4	-1.35
7GDDKN		638.0	-24.6	-0.78	640.5	-17.7	-0.56
7L838M		666.5	3.9	0.12	638.0	-20.2	-0.64
7Q4V2H	X	728.0	65.4	2.07	750.5	92.3	2.93
7R2WBG		674.5	11.9	0.38	664.0	5.8	0.18
7XJFKH		648.3	-14.3	-0.45	647.8	-10.5	-0.33
7XL32V		646.0	-16.6	-0.53	640.0	-18.2	-0.58
8PQJZR		636.1	-26.5	-0.84	622.9	-35.4	-1.12
8XHYPW		636.2	-26.4	-0.84	622.4	-35.8	-1.14
9QDKEE		638.0	-24.6	-0.78	610.0	-48.2	-1.53
A34TFT		642.5	-20.1	-0.64	659.0	0.8	0.02
AAJCVL	X	1,088.5	425.9	13.47	885.0	226.8	7.21
AG3DGQ		655.0	-7.6	-0.24	667.5	9.3	0.29
AHH2DB		719.0	56.4	1.78	708.0	49.8	1.58
AKLMCA		690.5	27.9	0.88	687.0	28.8	0.91
ATZDUU		678.5	15.9	0.50	671.5	13.3	0.42
BM3GH9		671.5	8.9	0.28	666.5	8.3	0.26
CJNURB		601.1	-61.6	-1.95	604.8	-53.4	-1.70
CLTUJU		621.5	-41.1	-1.30	640.5	-17.7	-0.56
CM74UF		648.5	-14.1	-0.45	651.5	-6.7	-0.21
DFEDMB		640.5	-22.1	-0.70	632.5	-25.7	-0.82



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 606

3rd Qtr 2021

### Ultimate Elongation (percent)

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DP6YTA		692.0	29.4	0.93	688.0	29.8	0.95
DQJGXZ		620.0	-42.6	-1.35	620.0	-38.2	-1.22
E2D4GG		642.0	-20.6	-0.65	632.5	-25.7	-0.82
E43HUX		651.1	-11.5	-0.36	653.7	-4.5	-0.14
E8KRUH		638.5	-24.2	-0.77	614.9	-43.3	-1.38
EP2VGA		647.5	-15.1	-0.48	658.0	-0.2	-0.01
EQWEHC		693.0	30.4	0.96	675.5	17.3	0.55
FCD2Q3		587.0	-75.6	-2.39	593.5	-64.7	-2.06
FGLCWB		634.0	-28.6	-0.91	636.0	-22.2	-0.71
FWKCV7		674.0	11.4	0.36	670.5	12.3	0.39
GBVEMD		679.0	16.4	0.52	671.0	12.8	0.41
GJA4LL		707.5	44.9	1.42	699.5	41.3	1.31
GKFTMA		667.5	4.9	0.15	649.5	-8.7	-0.28
GUTKC8		638.3	-24.4	-0.77	633.7	-24.5	-0.78
H2KD3D		663.0	0.4	0.01	670.0	11.8	0.37
JACG4D		697.5	34.9	1.10	700.5	42.3	1.34
JAWVWW		656.5	-6.1	-0.19	635.8	-22.5	-0.71
JXF9LB	X	1,213.5	550.9	17.42	1,203.0	544.8	17.31
KCXFYM		661.0	-1.6	-0.05	660.5	2.3	0.07
KXYA8D		618.5	-44.1	-1.40	618.5	-39.7	-1.26
LJBRRE		654.5	-8.1	-0.26	666.0	7.8	0.25
LQR6TX	X	336.6	-326.0	-10.31	339.7	-318.5	-10.12
LQUXPK		697.3	34.7	1.10	668.3	10.1	0.32
LTYPMP9		703.5	40.9	1.29	705.0	46.8	1.49
LUBHAF		693.0	30.3	0.96	687.8	29.5	0.94
LURGNX		626.8	-35.9	-1.14	638.5	-19.8	-0.63
LYZYL7	X	701.0	38.4	1.21	640.0	-18.2	-0.58
LZVHM8		698.5	35.9	1.13	689.6	31.4	1.00
M4EYFC	*	758.2	95.6	3.02	743.5	85.3	2.71
MA3HZE		659.0	-3.6	-0.12	654.0	-4.2	-0.13
MAF7YK	*	648.0	-14.6	-0.46	610.0	-48.2	-1.53
MTCEF6		663.0	0.4	0.01	661.0	2.8	0.09
NGW486		680.5	17.9	0.56	687.0	28.8	0.91
PGTY3F		682.7	20.0	0.63	681.5	23.2	0.74
PHNKW8		660.0	-2.6	-0.08	667.5	9.3	0.29
PZA27V		714.5	51.9	1.64	699.5	41.3	1.31
QCDQDV		671.0	8.4	0.26	676.5	18.3	0.58
R3GDQ2		639.3	-23.4	-0.74	663.4	5.2	0.17



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
REGY4R		629.0	-33.6	-1.06	622.0	-36.2	-1.15
RJAXHM		696.0	33.4	1.06	709.0	50.8	1.61
RUC9Z6		698.6	36.0	1.14	685.4	27.2	0.86
RYKTN3		644.5	-18.1	-0.57	635.5	-22.7	-0.72
U2LERT		654.0	-8.6	-0.27	659.5	1.3	0.04
U4D8T4		689.0	26.4	0.83	695.0	36.8	1.17
U66JAN	X	779.8	117.1	3.71	780.6	122.4	3.89
UADUFW		637.2	-25.4	-0.80	623.1	-35.1	-1.12
UM4L22		623.0	-39.6	-1.25	629.5	-28.7	-0.91
UPA3KQ		595.5	-67.1	-2.12	604.0	-54.2	-1.72
VH8EZ4		652.1	-10.6	-0.34	636.2	-22.0	-0.70
WE32ZG	X	548.5	-114.1	-3.61	557.5	-100.7	-3.20
WPKM26		660.0	-2.6	-0.08	657.5	-0.7	-0.02
WVNMHM		669.5	6.9	0.22	657.0	-1.2	-0.04
WXWJ8X		663.0	0.4	0.01	653.5	-4.7	-0.15
XFAM3N		708.0	45.4	1.43	709.0	50.8	1.61
YC6ED4		693.5	30.9	0.98	704.5	46.3	1.47
YMPA8		702.0	39.4	1.24	689.0	30.8	0.98
YUNDGG		656.0	-6.6	-0.21	663.0	4.8	0.15
YVLJYV		643.0	-19.6	-0.62	627.0	-31.2	-0.99
YWWKLU	X	599.0	-63.6	-2.01	649.5	-8.7	-0.28
ZF4ACW		611.5	-51.1	-1.62	606.0	-52.2	-1.66
ZGWYZK		710.0	47.4	1.50	690.0	31.8	1.01
ZNF39M		700.0	37.4	1.18	694.5	36.3	1.15
ZPMQZX		717.8	55.1	1.74	721.7	63.5	2.02

Grand Means		Summary Statistics	
	662.64 percent		658.24 percent
Std Dev Btwn Labs	31.61 percent		31.46 percent
Statistics based on 90 of 100 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & C13-C14: Polyisoprene compound, batch #2



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

- 24LXUT (X) - Data for all samples are high. Possible Systematic Error.
- 4A3693 (X) - Inconsistency in testing between samples, data for sample group C11-C12 are high. Inconsistent within the determinations of sample group C11-C12.
- 7Q4V2H (X) - Inconsistency in testing between samples, data for sample group C13-C14 are high. Inconsistent in testing between sample groups.
- AAJCVL (X) - Inconsistency in testing between samples, data for sample group C11-C12 are high. Also Inconsistent within the determinations of sample group C13-C11.
- JXF9LB (X) - Extreme Data for both sample groups.
- LQR6TX (X) - Data for all samples are low.
- LYZYL7 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C11-C12.
- U66JAN (X) - Data for all samples are high. Possible Systematic Error.
- WE32ZG (X) - Data for all samples are low. Possible Systematic Error.
- YWWKLU (X) - Inconsistent in testing between samples.

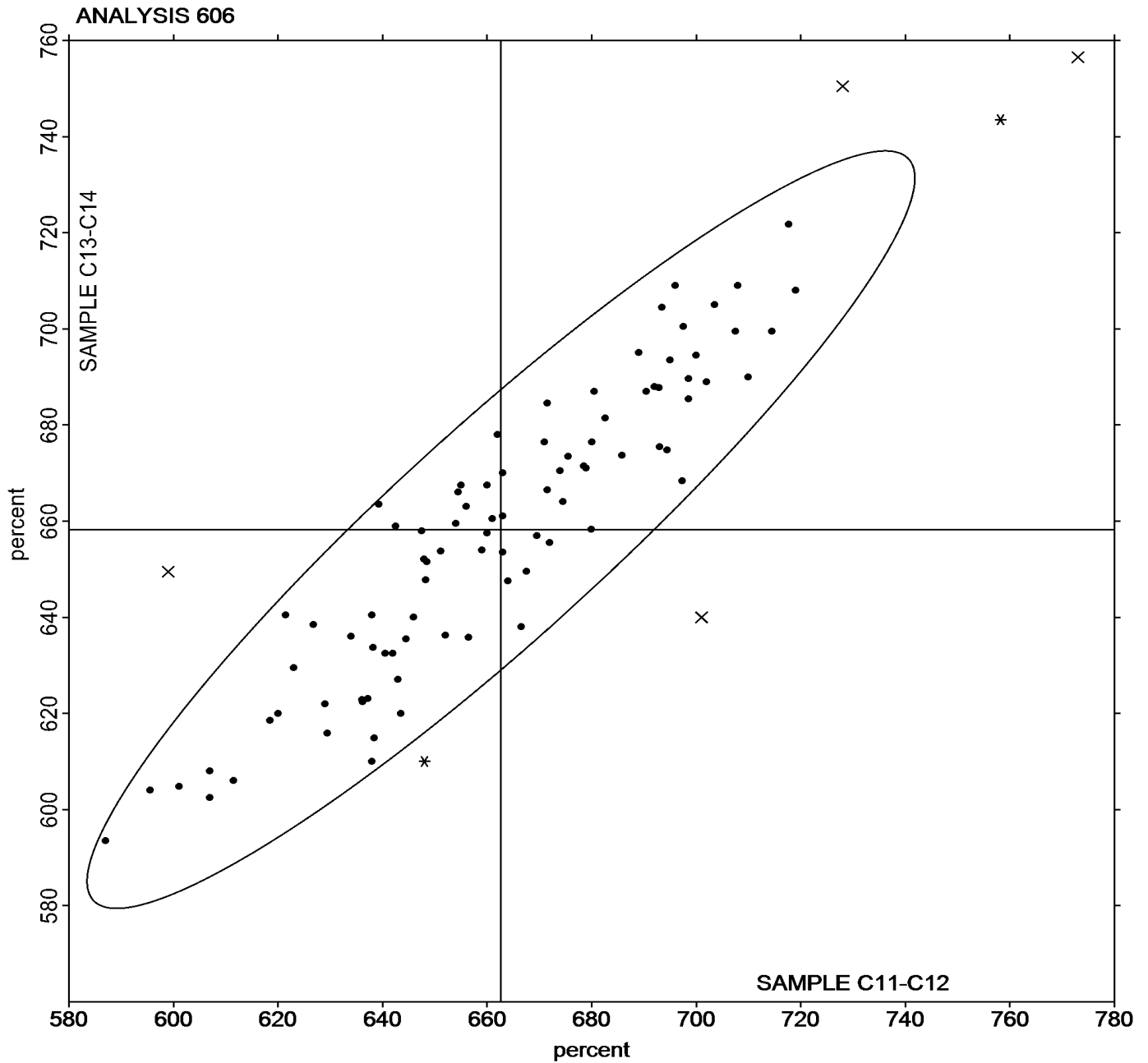


Rubber Interlaboratory Testing Program  
Analysis 606  
Ultimate Elongation (percent)

Report #209  
3rd Qtr 2021

Grand Mean Sample C11-C12 = 662.64 percent

Grand Mean Sample C13-C14 = 658.24 percent





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 607

3rd Qtr 2021

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		672.3	-32.3	-0.54	730.3	1.9	0.03
23VT2L		706.3	1.8	0.03	700.5	-27.8	-0.45
24LXUT	X	421.3	-283.2	-4.78	451.1	-277.3	-4.50
27TBF2		680.7	-23.9	-0.40	654.2	-74.2	-1.20
2FKJ7J		679.0	-25.5	-0.43	682.5	-45.8	-0.74
2X3K2L		647.5	-57.0	-0.96	674.0	-54.3	-0.88
3NRMN2		607.8	-96.7	-1.63	648.3	-80.0	-1.30
3WJZN2	X	1,059.5	355.0	5.99	940.6	212.2	3.45
469B9G		649.0	-55.5	-0.94	689.5	-38.8	-0.63
4A3693		683.9	-20.6	-0.35	749.2	20.8	0.34
4BZHRP		669.8	-34.7	-0.59	709.3	-19.1	-0.31
4EUEEV	*	857.0	152.5	2.57	882.0	153.7	2.50
4JQ4XM		721.0	16.5	0.28	752.0	23.7	0.38
4UC3RY		699.2	-5.3	-0.09	719.3	-9.1	-0.15
6KGJQV		719.0	14.5	0.24	698.0	-30.3	-0.49
6VFJ2E		706.1	1.6	0.03	748.3	19.9	0.32
7FKEBW		646.5	-58.0	-0.98	707.1	-21.2	-0.34
7GDDKN		723.0	18.5	0.31	750.6	22.2	0.36
7L838M		738.0	33.5	0.57	809.5	81.2	1.32
7Q4V2H		660.5	-44.0	-0.74	625.5	-102.8	-1.67
7R2WBG		620.5	-84.0	-1.42	647.0	-81.3	-1.32
7XJFKH		716.6	12.0	0.20	787.7	59.3	0.96
7XL32V		714.1	9.5	0.16	702.0	-26.3	-0.43
8PQJZR	X	806.6	102.0	1.72	1,029.7	301.4	4.89
8XHYPW		716.8	12.3	0.21	776.4	48.1	0.78
9QDKEE	*	844.9	140.4	2.37	886.6	158.3	2.57
A34TFT		711.9	7.3	0.12	739.7	11.4	0.18
AAJCVL	X	319.8	-384.7	-6.50	475.0	-253.3	-4.11
AG3DGQ		704.0	-0.5	-0.01	663.0	-65.3	-1.06
AHH2DB		659.5	-45.0	-0.76	694.0	-34.3	-0.56
AKLMCA		698.4	-6.2	-0.10	702.7	-25.6	-0.42
ATZDUU		717.5	13.0	0.22	698.5	-29.8	-0.48
BM3GH9		674.5	-30.0	-0.51	707.5	-20.8	-0.34
CJNURB		809.0	104.5	1.76	818.5	90.2	1.46
CLTUJU		757.0	52.5	0.89	753.0	24.7	0.40
CM74UF		755.0	50.5	0.85	781.0	52.7	0.86
DFEDMB	*	871.0	166.5	2.81	855.0	126.7	2.06



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 607

3rd Qtr 2021

### Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DP6YTA		655.6	-48.9	-0.83	645.4	-82.9	-1.35
DQJGXZ		813.5	109.0	1.84	844.5	116.2	1.89
E2D4GG		730.3	25.8	0.43	752.0	23.7	0.38
E43HUX		770.5	66.0	1.11	709.1	-19.2	-0.31
E8KRUH		725.8	21.3	0.36	756.8	28.4	0.46
EQWEHC		642.0	-62.6	-1.06	696.9	-31.4	-0.51
FCD2Q3		790.0	85.5	1.44	803.5	75.2	1.22
FGLCWB		706.3	1.8	0.03	667.2	-61.2	-0.99
FWKCV7		670.5	-34.0	-0.57	731.5	3.2	0.05
GBVEMD		711.0	6.5	0.11	744.5	16.2	0.26
GJA4LL		615.0	-89.5	-1.51	638.5	-89.8	-1.46
GKFTMA		686.5	-18.0	-0.30	689.5	-38.8	-0.63
GUTKC8		736.1	31.6	0.53	744.8	16.4	0.27
H2KD3D		745.0	40.5	0.68	763.0	34.7	0.56
JACG4D		729.5	25.0	0.42	675.9	-52.5	-0.85
JAWVWW		686.2	-18.3	-0.31	704.1	-24.3	-0.39
JXF9LB	X	333.6	-370.9	-6.26	337.9	-390.4	-6.34
KCXFYM		733.9	29.4	0.50	729.5	1.2	0.02
KXYA8D		749.5	45.0	0.76	783.5	55.2	0.90
LJBRRE		674.5	-30.0	-0.51	725.5	-2.8	-0.05
LQR6TX	X	2,546.0	1,841.5	31.09	2,497.9	1,769.5	28.74
LQUXPK		603.7	-100.8	-1.70	702.3	-26.0	-0.42
LTYP9		596.0	-108.5	-1.83	644.0	-84.3	-1.37
LUBHAF		649.4	-55.1	-0.93	690.5	-37.9	-0.62
LURGNX	X	917.8	213.2	3.60	917.7	189.3	3.07
LYZYL7		699.0	-5.5	-0.09	797.0	68.7	1.12
LZVHM8		623.6	-80.9	-1.37	672.7	-55.6	-0.90
MA3HZE		665.0	-39.5	-0.67	654.0	-74.3	-1.21
MAF7YK		789.0	84.5	1.43	784.5	56.2	0.91
MTCEF6		752.0	47.5	0.80	758.5	30.2	0.49
PGTY3F		681.0	-23.6	-0.40	681.0	-47.4	-0.77
PHNKW8	*	759.5	55.0	0.93	693.0	-35.3	-0.57
PZA27V		653.0	-51.5	-0.87	688.5	-39.8	-0.65
QCDQDV		680.5	-24.0	-0.41	675.0	-53.3	-0.87
R3GDQ2		734.4	29.9	0.50	723.4	-5.0	-0.08
REGY4R		739.7	35.2	0.59	810.8	82.4	1.34
RJAXHM		643.0	-61.5	-1.04	684.0	-44.3	-0.72
RUC9Z6		696.2	-8.3	-0.14	721.8	-6.5	-0.11





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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
RYKTN3		776.0	71.5	1.21	805.5	77.2	1.25
U2LERT		712.6	8.1	0.14	731.5	3.2	0.05
U66JAN		659.2	-45.3	-0.77	664.3	-64.1	-1.04
UADUFW		785.5	81.0	1.37	785.1	56.7	0.92
UM4L22		693.4	-11.1	-0.19	758.6	30.3	0.49
UPA3KQ		840.2	135.7	2.29	855.1	126.8	2.06
VH8EZ4		755.4	50.9	0.86	775.5	47.1	0.77
WE32ZG	X	977.5	273.0	4.61	1,029.5	301.2	4.89
WVNMHM		662.5	-42.0	-0.71	739.0	10.7	0.17
WXWJ8X		754.5	50.0	0.84	825.0	96.7	1.57
XFAM3N		632.0	-72.5	-1.22	695.0	-33.3	-0.54
YC6ED4		651.7	-52.9	-0.89	635.0	-93.4	-1.52
YMPLA8		678.5	-26.0	-0.44	673.0	-55.3	-0.90
YUNDGG		756.5	52.0	0.88	783.5	55.2	0.90
YVLJYV	*	683.9	-20.7	-0.35	813.7	85.3	1.39
YWWKLU		674.0	-30.5	-0.52	743.0	14.7	0.24
ZF4ACW		716.0	11.5	0.19	803.5	75.2	1.22
ZGWYZK		663.6	-41.0	-0.69	702.0	-26.3	-0.43
ZNF39M		572.0	-132.5	-2.24	592.5	-135.8	-2.21
ZPMQZX		652.0	-52.6	-0.89	655.6	-72.8	-1.18

Summary Statistics			
Grand Means	704.52 psi	728.34 psi	
Std Dev Btwn Labs	59.23 psi	61.58 psi	
Statistics based on 87 of 95 reporting participants			

Summary Statistics in SI Units			
Grand Means	4.8575 MPa	5.02 MPa	
Std Dev Btwn Labs	0.4084 MPa	0.42 MPa	
Statistics based on 87 of 95 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & C13-C14: Polyisoprene compound, batch #2



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

- 24LXUT (X) - Data for all samples are low. Possible Systematic Error.
- 3WJZN2 (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group C11-C12.
- 8PQJZR (X) - Inconsistency in testing between samples, data for sample group C13-C14 are high. Inconsistent within the determinations of sample group C13-C14.
- AAJCVL (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C13-C14.
- JXF9LB (X) - Data for all samples are low. Possible Systematic Error.
- LQR6TX (X) - Extreme Data.
- LURGNX (X) - Data for all samples are high. Possible Systematic Error.
- WE32ZG (X) - Data for all samples are high. Possible Systematic Error.



# Rubber Interlaboratory Testing Program

Report #209

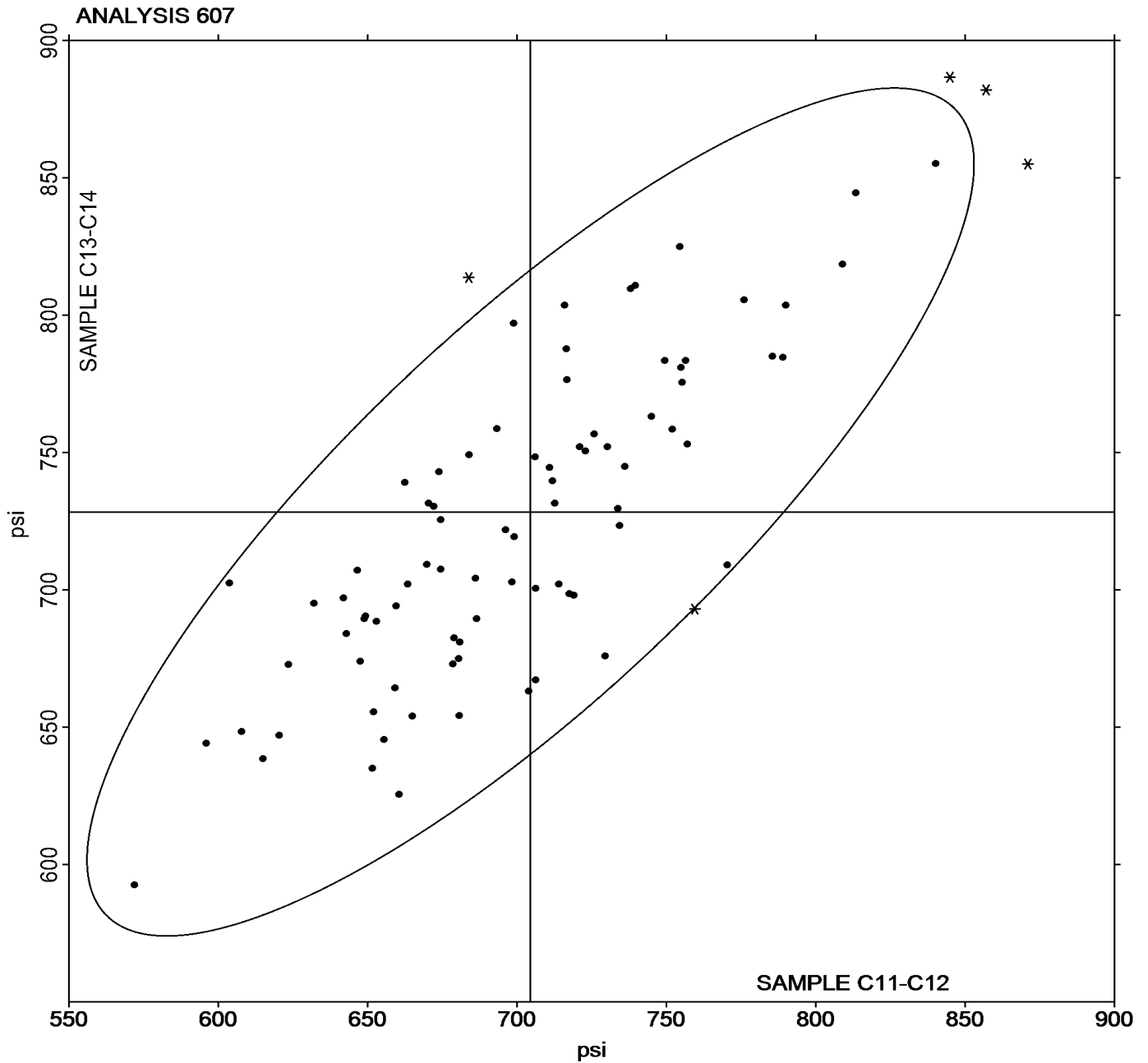
## Analysis 607

3rd Qtr 2021

### Stress at 300% Elongation (psi)

Grand Mean Sample C11-C12 = 704.52 psi

Grand Mean Sample C13-C14 = 728.34 psi





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 608

3rd Qtr 2021

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		152.3	-11.6	-1.01	166.1	-2.8	-0.24
23VT2L		174.8	10.9	0.95	168.2	-0.6	-0.05
24LXUT	X	111.7	-52.2	-4.55	118.9	-49.9	-4.23
27TBF2		162.6	-1.2	-0.11	159.1	-9.8	-0.83
2FKJ7J		156.5	-7.4	-0.64	155.0	-13.9	-1.17
2X3K2L		157.0	-6.9	-0.60	157.5	-11.4	-0.96
3NRMN2		137.9	-26.0	-2.26	147.5	-21.4	-1.81
3WJZN2	X	248.7	84.9	7.39	221.2	52.3	4.43
469B9G		159.5	-4.4	-0.38	169.0	0.1	0.01
4A3693		161.8	-2.1	-0.18	179.8	10.9	0.92
4BZHRP		149.7	-14.2	-1.24	159.5	-9.4	-0.79
4EUEEV		179.0	15.1	1.32	182.0	13.1	1.11
4JQ4XM		177.0	13.1	1.14	183.0	14.1	1.20
4UC3RY		168.1	4.2	0.37	168.0	-0.8	-0.07
6KGJQV		164.5	0.6	0.05	161.0	-7.9	-0.67
6VFJ2E		162.9	-1.0	-0.09	173.6	4.7	0.40
7FKEBW		140.3	-23.6	-2.05	151.7	-17.2	-1.46
7GDDKN		158.1	-5.8	-0.50	163.9	-5.0	-0.42
7L838M		169.0	5.1	0.45	182.5	13.6	1.16
7Q4V2H		160.0	-3.9	-0.34	160.0	-8.9	-0.75
7R2WBG		149.0	-14.9	-1.30	153.5	-15.4	-1.30
7XJFKH		164.3	0.4	0.03	179.6	10.7	0.91
7XL32V		159.5	-4.4	-0.39	155.5	-13.4	-1.14
8PQJZR	X	174.5	10.6	0.92	331.7	162.8	13.80
8XHYPW		160.1	-3.8	-0.33	169.6	0.8	0.06
9QDKEE	X	187.0	23.1	2.01	216.5	47.6	4.03
A34TFT		184.2	20.3	1.76	190.9	22.0	1.87
AAJCVL	X	123.6	-40.2	-3.50	131.3	-37.6	-3.19
AG3DGQ		165.0	1.1	0.10	156.5	-12.4	-1.05
AHH2DB		178.0	14.1	1.23	187.0	18.1	1.54
AKLMCA		158.1	-5.8	-0.50	158.8	-10.0	-0.85
ATZDUU		165.5	1.6	0.14	164.0	-4.9	-0.41
BM3GH9		156.0	-7.9	-0.69	162.5	-6.4	-0.54
CJNURB		175.5	11.6	1.01	176.0	7.1	0.60
CLTUJU		168.5	4.6	0.40	170.0	1.1	0.10
CM74UF	X	207.0	43.1	3.75	202.0	33.1	2.81
DFEDMB	X	215.0	51.1	4.45	208.5	39.6	3.36



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 608

3rd Qtr 2021

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DP6YTA		158.8	-5.1	-0.44	159.5	-9.3	-0.79
DQJGXZ		175.5	11.6	1.01	182.5	13.6	1.16
E2D4GG		160.3	-3.6	-0.32	164.6	-4.2	-0.36
E43HUX		157.6	-6.3	-0.55	151.0	-17.9	-1.51
E8KRUH		155.7	-8.1	-0.71	161.8	-7.1	-0.60
EQWEHC		175.5	11.6	1.01	186.1	17.2	1.46
FCD2Q3		179.0	15.1	1.32	181.0	12.1	1.03
FGLCWB		166.8	2.9	0.25	163.2	-5.7	-0.48
FWKCV7		159.0	-4.9	-0.43	167.5	-1.4	-0.12
GBVEMD		174.0	10.1	0.88	183.0	14.1	1.20
GJA4LL		155.0	-8.9	-0.77	158.0	-10.9	-0.92
GKFTMA		161.0	-2.9	-0.25	177.0	8.1	0.69
GUTKC8		164.3	0.4	0.03	169.0	0.1	0.01
H2KD3D		172.5	8.6	0.75	177.0	8.1	0.69
JACG4D		166.8	2.9	0.25	163.2	-5.7	-0.48
JAVVWW		157.7	-6.2	-0.54	157.7	-11.1	-0.94
JXF9LB	X	116.0	-47.9	-4.17	117.5	-51.4	-4.35
KCXFYM		170.4	6.5	0.57	168.2	-0.6	-0.05
KXYA8D		162.5	-1.4	-0.12	168.0	-0.9	-0.07
LJBRRE		166.0	2.1	0.18	174.0	5.1	0.44
LQR6TX	X	356.3	192.4	16.76	340.6	171.7	14.55
LQUXPK		147.1	-16.8	-1.46	167.4	-1.5	-0.13
LTYP9		156.0	-7.9	-0.69	161.0	-7.9	-0.67
LUBHAF		159.3	-4.6	-0.40	171.0	2.1	0.18
LURGNX	X	206.3	42.4	3.69	204.4	35.6	3.01
LYZYL7	X	171.0	7.1	0.62	204.0	35.1	2.98
LZVHM8		150.3	-13.6	-1.19	160.0	-8.9	-0.75
M4EYFC		149.5	-14.4	-1.25	159.7	-9.2	-0.78
MA3HZE		160.0	-3.9	-0.34	164.5	-4.4	-0.37
MAF7YK		181.3	17.4	1.52	171.9	3.0	0.25
MTCEF6		173.5	9.6	0.84	172.5	3.6	0.31
PGTY3F		155.9	-8.0	-0.69	159.5	-9.3	-0.79
PHNKW8	*	172.5	8.6	0.75	158.5	-10.4	-0.88
PZA27V		153.5	-10.4	-0.90	163.0	-5.9	-0.50
QCDQDV		165.0	1.1	0.10	164.5	-4.4	-0.37
R3GDQ2		174.3	10.5	0.91	168.1	-0.8	-0.06
REGY4R		168.2	4.4	0.38	182.0	13.2	1.11
RJAXHM		154.0	-9.9	-0.86	165.0	-3.9	-0.33



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 608

3rd Qtr 2021

### Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
RUC9Z6		164.3	0.4	0.03	167.1	-1.7	-0.15
RYKTN3		182.0	18.1	1.58	183.5	14.6	1.24
U2LERT		154.5	-9.4	-0.82	156.3	-12.6	-1.07
U66JAN		189.3	25.4	2.21	191.5	22.6	1.91
UADUFW		184.7	20.8	1.81	186.4	17.5	1.48
UM4L22		155.3	-8.6	-0.75	176.6	7.7	0.65
UPA3KQ		170.4	6.5	0.56	175.3	6.4	0.55
VH8EZ4		180.7	16.8	1.46	176.9	8.0	0.68
WE32ZG	*	196.5	32.6	2.84	201.5	32.6	2.77
WPKM26		152.5	-11.4	-0.99	154.5	-14.4	-1.22
WVNMHM		161.5	-2.4	-0.21	169.0	0.1	0.01
WXWJ8X	*	182.5	18.6	1.62	198.5	29.6	2.51
XFAM3N		176.0	12.1	1.05	191.0	22.1	1.88
YC6ED4		148.5	-15.4	-1.34	147.2	-21.7	-1.84
YMPLA8		173.5	9.6	0.84	179.0	10.1	0.86
YUNDGG		169.5	5.6	0.49	177.0	8.1	0.69
YVLJYV	X	142.9	-21.0	-1.83	174.8	5.9	0.50
YWWKLU		151.5	-12.4	-1.08	168.0	-0.9	-0.07
ZF4ACW		154.0	-9.9	-0.86	174.5	5.6	0.48
ZGWYZK		155.9	-8.0	-0.69	160.3	-8.6	-0.73
ZNF39M		138.5	-25.4	-2.21	144.5	-24.4	-2.06
ZPMQZX		155.9	-8.0	-0.69	163.2	-5.7	-0.48

Summary Statistics	
Grand Means	163.89 psi      168.87 psi
Std Dev Btwn Labs	11.48 psi      11.80 psi
Statistics based on 85 of 97 reporting participants	

Summary Statistics in SI Units	
Grand Means	1.1300 MPa      1.16 MPa
Std Dev Btwn Labs	0.0792 MPa      0.08 MPa
Statistics based on 85 of 97 reporting participants	



Samples C11-C12: Polyisoprene compound, batch #1 & C13-C14: Polyisoprene compound, batch #2

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

- 24LXUT (X) - Data for all samples are low. Possible Systematic Error.
- 3WJZN2 (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group C11-C12.
- 8PQJZR (X) - Inconsistency in testing between samples, data for sample group C13-C14 are high. Inconsistent within the determinations of sample C13.
- 9QDKKE (X) - Inconsistency in testing between samples, data for sample group C13-C14 are high. Inconsistent within the determinations of both sample groups.
- AAJCVL (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C13-C14.
- CM74UF (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group C13-C14.
- DFEDMB (X) - Data for all samples are high. Possible Systematic Error.
- JXF9LB (X) - Data for all samples are low. Possible Systematic Error.
- LQR6TX (X) - Data for all samples are high.
- LURGNX (X) - Data for all samples are high. Possible Systematic Error.
- LYZYL7 (X) - Inconsistency in testing between samples, data for sample group C13-C14 are high.
- YVLJYV (X) - Inconsistent in testing between samples.



# Rubber Interlaboratory Testing Program

Report #209

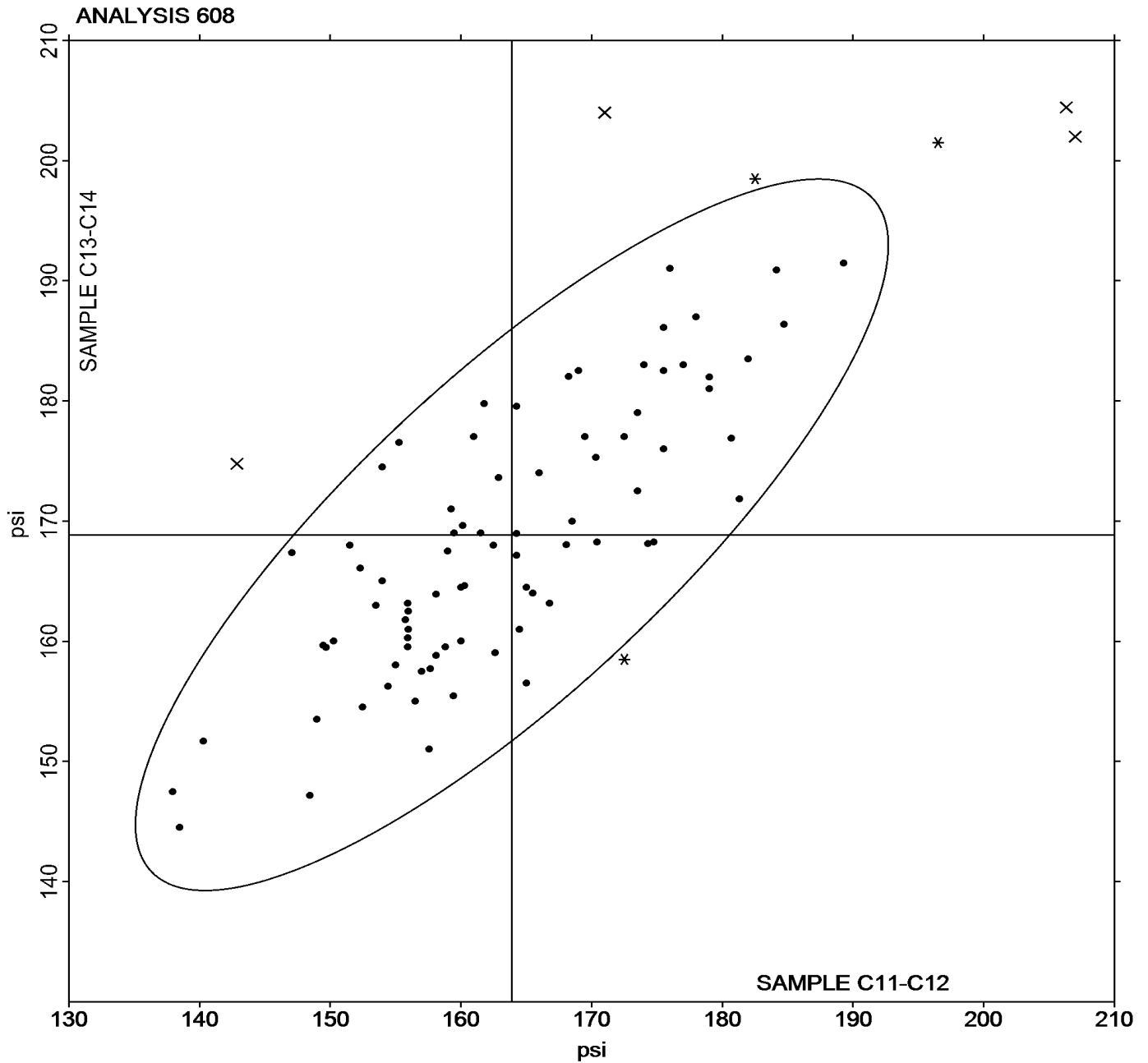
## Analysis 608

3rd Qtr 2021

### Stress at 100% Elongation (psi)

Grand Mean Sample C11-C12 = 163.89 psi

Grand Mean Sample C13-C14 = 168.87 psi







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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
22FKXC	*	41.50	-4.60	-2.55	44.00	-2.64	-1.54	BT
23TYJ2		45.70	-0.40	-0.22	47.15	0.51	0.30	BT
23VT2L		44.50	-1.60	-0.89	44.50	-2.14	-1.25	BT
24LXUT		48.00	1.90	1.06	48.70	2.06	1.20	BT
27TBF2		49.50	3.40	1.89	49.00	2.36	1.38	BT
2FKJ7J		46.50	0.40	0.22	48.00	1.36	0.79	HH
2X3K2L		45.40	-0.70	-0.39	47.10	0.46	0.27	BT
3JU4KH		44.60	-1.50	-0.83	44.05	-2.59	-1.51	BT
3NRMN2		45.00	-1.10	-0.61	45.50	-1.14	-0.67	BT
3WJZN2		45.10	-1.00	-0.55	45.15	-1.49	-0.87	BT
469B9G		45.50	-0.60	-0.33	46.00	-0.64	-0.37	BT
4A3693	*	46.00	-0.10	-0.05	48.50	1.86	1.09	HH
4BZHRP		43.70	-2.40	-1.33	44.15	-2.49	-1.46	BT
4EUEEV		46.95	0.85	0.47	47.55	0.91	0.53	BT
4JQ4XM		47.00	0.90	0.50	48.00	1.36	0.79	BT
4UC3RY		45.75	-0.35	-0.19	45.70	-0.94	-0.55	BT
6GH9VV		43.00	-3.10	-1.72	43.50	-3.14	-1.83	XX
6KGJQV		46.95	0.85	0.47	46.75	0.11	0.06	BT
6VFJ2E		46.00	-0.10	-0.05	45.50	-1.14	-0.67	BT
6VGCX2		42.00	-4.10	-2.28	43.50	-3.14	-1.83	BT
7FKEBW		44.00	-2.10	-1.17	45.50	-1.14	-0.67	BT
7GDDKN		47.00	0.90	0.50	46.50	-0.14	-0.08	HH
7L838M		47.60	1.50	0.84	48.40	1.76	1.03	BT
7Q4V2H		45.70	-0.40	-0.22	45.80	-0.84	-0.49	BT
7R2WBG		47.30	1.20	0.67	48.20	1.56	0.91	BT
7XJFKH		46.10	0.00	0.00	46.25	-0.39	-0.23	BT
7XL32V		45.70	-0.40	-0.22	46.10	-0.54	-0.32	BT
8PQJZR	*	41.30	-4.80	-2.67	42.55	-4.09	-2.39	BT
8XHYPW		45.00	-1.10	-0.61	45.00	-1.64	-0.96	BT
9QDKEE		47.50	1.40	0.78	48.00	1.36	0.79	BT
AAJCVL		45.50	-0.60	-0.33	45.00	-1.64	-0.96	HH
AG3DGQ		47.50	1.40	0.78	48.50	1.86	1.09	HH
AHH2DB		46.50	0.40	0.22	48.00	1.36	0.79	BT
AKLMCA		47.75	1.65	0.92	48.15	1.51	0.88	BT
ATZDUU		49.00	2.90	1.61	49.50	2.86	1.67	BT
BM3GH9		47.50	1.40	0.78	48.00	1.36	0.79	HH
CJNURB		45.85	-0.25	-0.14	46.70	0.06	0.03	BT
CLTUJU		47.00	0.90	0.50	47.00	0.36	0.21	HH



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
CM74UF		46.00	-0.10	-0.05	47.00	0.36	0.21	HH
DFEDMB		47.50	1.40	0.78	47.50	0.86	0.50	HH
DP6YTA		45.70	-0.40	-0.22	44.95	-1.69	-0.99	BT
DQJGXZ		49.00	2.90	1.61	50.00	3.36	1.96	BT
E2D4GG		47.00	0.90	0.50	47.50	0.86	0.50	HH
E43HUX		48.25	2.15	1.20	48.00	1.36	0.79	HH
E8KRUH	X	40.50	-5.60	-3.11	41.00	-5.64	-3.29	BT
E9CLWT		48.00	1.90	1.06	47.50	0.86	0.50	BT
EQWEHC		43.00	-3.10	-1.72	44.50	-2.14	-1.25	BT
FCD2Q3		50.50	4.40	2.45	50.50	3.86	2.25	HH
FGLCWB		46.00	-0.10	-0.05	46.00	-0.64	-0.37	HH
FWKCV7		46.25	0.15	0.09	46.45	-0.19	-0.11	BT
GBVEMD		46.00	-0.10	-0.05	47.00	0.36	0.21	BT
GJA4LL		44.60	-1.50	-0.83	46.00	-0.64	-0.37	BT
GKFTMA		48.75	2.65	1.48	49.75	3.11	1.82	XX
GUTKC8		44.75	-1.35	-0.75	46.20	-0.44	-0.26	BT
JACG4D		45.55	-0.55	-0.30	45.70	-0.94	-0.55	BT
JAWVWW		45.00	-1.10	-0.61	44.25	-2.39	-1.40	HH
JXF9LB		45.50	-0.60	-0.33	45.50	-1.14	-0.67	BT
KCXFYM		44.75	-1.35	-0.75	45.70	-0.94	-0.55	BT
KN67ZA		48.85	2.75	1.53	48.90	2.26	1.32	XX
KXYA8D		44.50	-1.60	-0.89	45.00	-1.64	-0.96	BT
LJBRRE		47.50	1.40	0.78	48.50	1.86	1.09	BT
LQR6TX		47.00	0.90	0.50	47.00	0.36	0.21	BT
LQUXPK		44.90	-1.20	-0.66	44.95	-1.69	-0.99	BT
LYMP9		44.50	-1.60	-0.89	44.50	-2.14	-1.25	BT
LUBHAF		44.05	-2.05	-1.14	45.30	-1.34	-0.78	BT
LURGNX		47.00	0.90	0.50	46.50	-0.14	-0.08	BT
LYZYL7		48.00	1.90	1.06	48.00	1.36	0.79	HH
LZVHM8		46.30	0.20	0.11	48.50	1.86	1.09	XX
M4EYFC		43.00	-3.10	-1.72	43.85	-2.79	-1.63	BT
MA3HZE		43.40	-2.70	-1.50	44.05	-2.59	-1.51	BT
MAF7YK		45.00	-1.10	-0.61	44.00	-2.64	-1.54	BT
MTCEF6		47.25	1.15	0.64	49.00	2.36	1.38	HH
NGW486		45.00	-1.10	-0.61	46.00	-0.64	-0.37	BT
P2XNAH		45.20	-0.90	-0.50	45.60	-1.04	-0.61	BT
PGTY3F		47.60	1.50	0.84	48.10	1.46	0.85	BT



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
PHNKW8		45.50	-0.60	-0.33	45.00	-1.64	-0.96	BT
PZA27V		48.00	1.90	1.06	48.00	1.36	0.79	HH
Q3M8W2		42.50	-3.60	-2.00	43.50	-3.14	-1.83	BT
QCDQDV		46.50	0.40	0.22	45.50	-1.14	-0.67	BT
QJWUN4		46.00	-0.10	-0.05	47.00	0.36	0.21	BT
R3GDQ2		47.10	1.00	0.56	47.10	0.46	0.27	BT
REGY4R	*	45.45	-0.65	-0.36	48.10	1.46	0.85	BT
RJAXHM		47.00	0.90	0.50	47.00	0.36	0.21	BT
RUC9Z6		45.00	-1.10	-0.61	45.50	-1.14	-0.67	BT
RYKTN3		45.50	-0.60	-0.33	45.25	-1.39	-0.81	BT
U2LERT		49.30	3.20	1.78	49.50	2.86	1.67	BT
U4D8T4		46.00	-0.10	-0.05	47.00	0.36	0.21	HH
U66JAN	X	54.00	7.90	4.39	54.00	7.36	4.30	HH
UADUFW		49.50	3.40	1.89	49.50	2.86	1.67	HH
UM4L22		44.50	-1.60	-0.89	46.50	-0.14	-0.08	BT
UPA3KQ		50.00	3.90	2.17	50.50	3.86	2.25	HH
VH8EZ4		47.05	0.95	0.53	47.90	1.26	0.73	BT
VQJDRU		47.00	0.90	0.50	46.50	-0.14	-0.08	HH
WE32ZG		48.00	1.90	1.06	48.00	1.36	0.79	HH
WPKM26		45.20	-0.90	-0.50	45.30	-1.34	-0.78	BT
WVNMHM		44.96	-1.14	-0.63	45.74	-0.90	-0.53	BT
WXWJ8X		49.50	3.40	1.89	49.00	2.36	1.38	BT
XFAM3N		46.00	-0.10	-0.05	46.00	-0.64	-0.37	BT
Y328UX		43.95	-2.15	-1.19	44.90	-1.74	-1.02	XX
YC6ED4		47.35	1.25	0.70	47.65	1.01	0.59	BT
YMPA8		45.00	-1.10	-0.61	45.50	-1.14	-0.67	HH
YUNDGG		46.85	0.75	0.42	47.85	1.21	0.71	HH
YVLJYV		46.90	0.80	0.45	47.55	0.91	0.53	BT
YWWKLU	*	43.50	-2.60	-1.44	46.00	-0.64	-0.37	BT
ZF4ACW		46.00	-0.10	-0.05	48.00	1.36	0.79	BT
ZGWYZK		45.00	-1.10	-0.61	46.00	-0.64	-0.37	BT
ZNF39M		46.50	0.40	0.22	47.00	0.36	0.21	BT
ZPMQZX		46.00	-0.10	-0.05	47.00	0.36	0.21	BT



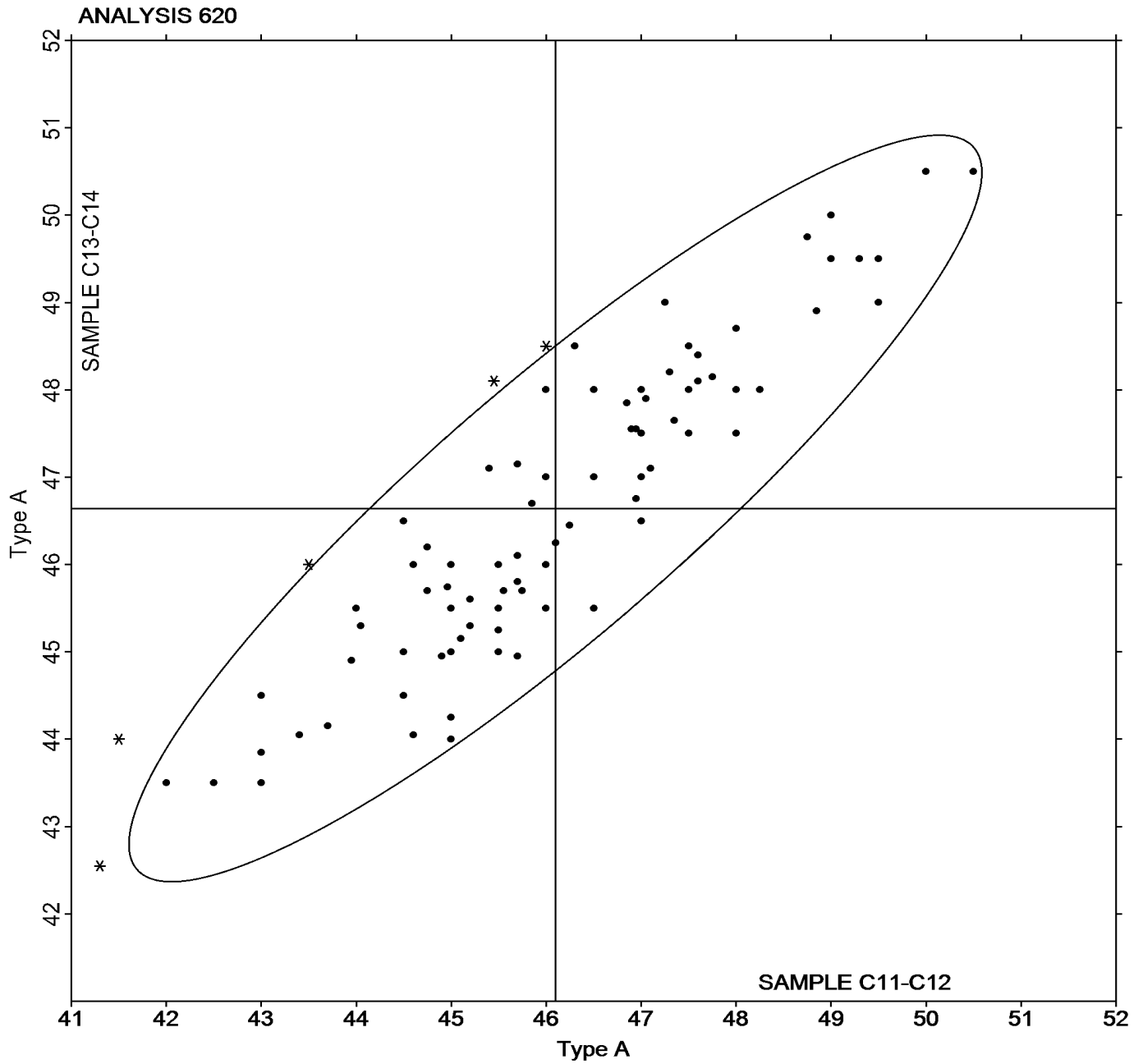


Rubber Interlaboratory Testing Program  
Analysis 620  
Hardness (Shore A/Type A)

Report #209  
3rd Qtr 2021

Grand Mean Sample C11-C12 = 46.096 Type A

Grand Mean Sample C13-C14 = 46.642 Type A





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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22FKXC		1.137	0.003	0.75	1.134	0.001	0.14
23VT2L		1.134	0.000	0.09	1.131	-0.002	-0.45
24LXUT		1.133	-0.001	-0.19	1.133	0.000	-0.09
27TBF2	*	1.135	0.002	0.41	1.130	-0.004	-0.88
2FKJ7J		1.132	-0.001	-0.30	1.131	-0.002	-0.55
2X3K2L		1.138	0.005	1.13	1.139	0.006	1.29
3JU4KH		1.128	-0.006	-1.35	1.126	-0.007	-1.70
3NRMN2		1.132	-0.001	-0.29	1.131	-0.002	-0.55
3WJZN2	X	1.117	-0.017	-3.92	1.121	-0.012	-2.85
469B9G	*	1.145	0.012	2.73	1.147	0.014	3.14
4A3693		1.124	-0.009	-2.17	1.126	-0.008	-1.81
4BZHRP	*	1.121	-0.013	-2.98	1.122	-0.011	-2.62
4EUEEV		1.135	0.002	0.43	1.134	0.001	0.17
4JQ4XM		1.132	-0.001	-0.24	1.130	-0.003	-0.79
4UC3RY		1.137	0.003	0.75	1.132	-0.002	-0.43
6KGJQV		1.136	0.003	0.61	1.135	0.002	0.45
7FKEBW		1.130	-0.004	-0.89	1.133	-0.001	-0.20
7GDDKN		1.132	-0.001	-0.30	1.131	-0.002	-0.55
7L838M		1.133	0.000	-0.07	1.133	-0.001	-0.20
7Q4V2H		1.139	0.005	1.21	1.139	0.006	1.29
7R2WBG		1.126	-0.007	-1.70	1.126	-0.007	-1.70
7XL32V		1.139	0.005	1.26	1.139	0.006	1.29
8XHYPW		1.138	0.004	1.03	1.139	0.005	1.25
9QDKKE		1.131	-0.002	-0.49	1.132	-0.002	-0.42
A34TFT		1.140	0.007	1.55	1.139	0.006	1.32
AG3DGQ		1.134	0.001	0.25	1.135	0.002	0.37
AHH2DB		1.135	0.002	0.44	1.136	0.003	0.59
AKLMCA		1.133	-0.001	-0.19	1.134	0.001	0.14
ATZDUU		1.134	0.000	0.05	1.135	0.002	0.37
BM3GH9		1.128	-0.005	-1.14	1.126	-0.008	-1.78
CJNURB		1.132	-0.001	-0.31	1.133	0.000	-0.05
CLTUJU		1.134	0.000	0.05	1.131	-0.002	-0.55
CM74UF		1.129	-0.004	-1.02	1.132	-0.002	-0.40
DFEDMB		1.135	0.002	0.44	1.135	0.001	0.32
DP6YTA		1.133	0.000	-0.07	1.133	-0.001	-0.20
DQJGXZ		1.136	0.002	0.51	1.136	0.003	0.60
E2D4GG		1.133	0.000	-0.07	1.133	0.000	-0.09



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
E8KRUH		1.127	-0.007	-1.58	1.124	-0.010	-2.27
EQWEHC		1.135	0.002	0.40	1.135	0.001	0.27
FCD2Q3		1.135	0.002	0.43	1.135	0.002	0.48
GBVEMD		1.130	-0.003	-0.77	1.132	-0.002	-0.43
GJA4LL		1.132	-0.001	-0.34	1.132	-0.002	-0.40
GKFTMA		1.132	-0.001	-0.30	1.135	0.001	0.26
GUTKC8		1.134	0.001	0.25	1.135	0.002	0.44
H2KD3D		1.134	0.000	0.05	1.135	0.001	0.26
JXF9LB	X	1.076	-0.057	-13.36	1.129	-0.005	-1.12
KCXFYM	*	1.125	-0.008	-1.93	1.130	-0.003	-0.78
KN67ZA	X	1.108	-0.026	-6.02	1.107	-0.027	-6.18
KXYA8D		1.136	0.003	0.65	1.131	-0.002	-0.49
LJBRRE		1.131	-0.003	-0.65	1.135	0.001	0.26
LQR6TX		1.137	0.003	0.75	1.137	0.003	0.72
LQUXPK		1.132	-0.002	-0.38	1.132	-0.001	-0.29
LTYMP9	*	1.124	-0.009	-2.21	1.129	-0.004	-0.96
LYZYL7		1.127	-0.007	-1.53	1.131	-0.003	-0.62
M4EYFC	X	1.124	-0.009	-2.17	1.131	-0.003	-0.66
MTCEF6		1.132	-0.001	-0.30	1.136	0.002	0.49
NGW486		1.132	-0.001	-0.30	1.131	-0.003	-0.66
P2XNAH	X	1.166	0.032	7.51	1.172	0.038	8.77
PZA27V		1.139	0.005	1.21	1.139	0.005	1.18
QJWUN4		1.131	-0.002	-0.54	1.130	-0.004	-0.89
R3GDQ2		1.134	0.000	0.05	1.135	0.002	0.37
REGY4R		1.132	-0.001	-0.30	1.133	-0.001	-0.20
RJAXHM		1.134	0.000	0.05	1.132	-0.001	-0.32
RUC9Z6		1.133	0.000	-0.02	1.134	0.000	0.03
RYKTN3		1.133	-0.001	-0.19	1.134	0.000	0.03
U2LERT		1.137	0.003	0.76	1.137	0.003	0.79
UADUFW		1.141	0.008	1.89	1.142	0.009	2.00
UPA3KQ	X	1.128	-0.006	-1.30	1.121	-0.012	-2.76
VH8EZ4		1.131	-0.002	-0.44	1.132	-0.002	-0.41
VQJDRU		1.136	0.002	0.51	1.136	0.002	0.49
WE32ZG		1.140	0.006	1.45	1.139	0.006	1.33
WPKM26		1.138	0.005	1.10	1.139	0.006	1.29
WXWJ8X		1.136	0.002	0.54	1.136	0.002	0.56
XFAM3N		1.136	0.002	0.54	1.137	0.004	0.87
YC6ED4		1.135	0.002	0.42	1.131	-0.002	-0.45



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample C11-C12			Sample C13-C14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
YMPLA8		1.131	-0.002	-0.44	1.132	-0.001	-0.28
YUNDGG		1.129	-0.004	-0.91	1.128	-0.005	-1.17
ZF4ACW		1.130	-0.003	-0.69	1.127	-0.006	-1.48
ZNF39M		1.141	0.008	1.87	1.142	0.009	2.03
ZPMQZX		1.138	0.004	0.98	1.139	0.005	1.18

Summary Statistics			
Grand Means	1.1333	g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	1.1334
			g/cm <sup>3</sup> (Mg/m <sup>3</sup> )
Std Dev Btwn Labs	0.0043	g/cm <sup>3</sup> (Mg/m <sup>3</sup> )	0.0043
			g/cm <sup>3</sup> (Mg/m <sup>3</sup> )
Statistics based on 74 of 80 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & C13-C14: Polyisoprene compound, batch #2

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

- 3WJZN2 (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C11-C12.
- JXF9LB (X) - Inconsistency in testing between samples, high data for sample group C11-C12.
- KN67ZA (X) - Data for all samples are low. Possible Systematic Error.
- M4EYFC (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C13-C14.
- P2XNAH (X) - Data for all samples are high. Possible Systematic Error.
- UPA3KQ (X) - Inconsistency in testing between samples, data for sample group C13-C14 are low.



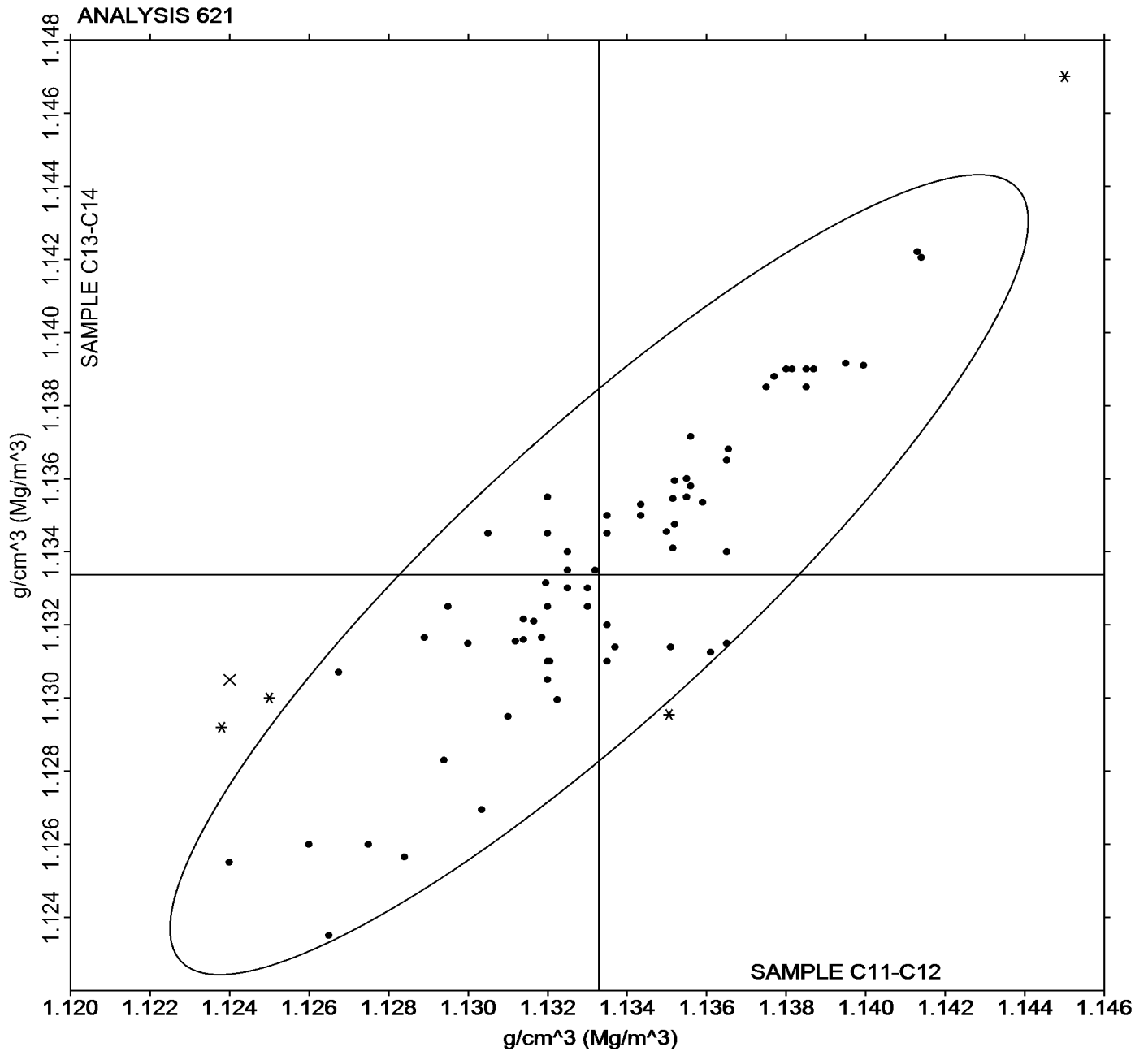


Rubber Interlaboratory Testing Program  
Analysis 621  
Density

Report #209  
3rd Qtr 2021

Grand Mean Sample C11-C12 = 1.1333 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)

Grand Mean Sample C13-C14 = 1.1334 g/cm<sup>3</sup>  
(Mg/m<sup>3</sup>)





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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample HC11-HC12			Sample HC13-HC14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
22FKXC		49.00	-4.09	-1.32	64.50	-3.11	-1.10	BT
23TYJ2		52.60	-0.49	-0.16	67.80	0.19	0.07	BT
2P7PXV		55.90	2.81	0.91	68.65	1.04	0.37	BT
69QT7R		56.25	3.16	1.02	70.00	2.39	0.85	HH
7FKEBW	*	46.00	-7.09	-2.29	59.50	-8.11	-2.87	BT
7GDDKN		51.50	-1.59	-0.51	68.00	0.39	0.14	HH
7XL32V		52.50	-0.59	-0.19	67.30	-0.31	-0.11	BT
AG3HUE		54.25	1.16	0.38	70.00	2.39	0.85	HH
AN4WEF		50.10	-2.99	-0.96	66.00	-1.61	-0.57	BT
BPW6Z4		49.00	-4.09	-1.32	65.50	-2.11	-0.75	HH
CLTUJU		57.00	3.91	1.27	73.00	5.39	1.91	HH
DQJGXZ		52.00	-1.09	-0.35	67.00	-0.61	-0.21	BT
E8KRUH		49.50	-3.59	-1.16	63.50	-4.11	-1.45	BT
ECDPNF		57.05	3.96	1.28	70.80	3.19	1.13	HH
FCD2Q3		57.00	3.91	1.27	71.00	3.39	1.20	HH
FG3TPH		48.25	-4.84	-1.56	62.50	-5.11	-1.81	BT
FJQXPG		50.50	-2.59	-0.84	66.50	-1.11	-0.39	BT
GUTKC8		50.70	-2.39	-0.77	65.65	-1.96	-0.69	BT
HEACTF		57.50	4.41	1.43	69.50	1.89	0.67	BT
JACG4D		52.05	-1.04	-0.33	66.80	-0.81	-0.29	BT
JG9C4W		59.50	6.41	2.07	73.50	5.89	2.09	BT
LMPCQM		53.00	-0.09	-0.03	68.00	0.39	0.14	HH
LQR6TX		53.00	-0.09	-0.03	68.00	0.39	0.14	BT
LURGNX		54.00	0.91	0.30	67.00	-0.61	-0.21	XX
N264DK		56.00	2.91	0.94	69.50	1.89	0.67	HH
R2V9H4		56.00	2.91	0.94	70.00	2.39	0.85	BT
UWQQRD		53.00	-0.09	-0.03	66.00	-1.61	-0.57	BT
VNCXH3		54.50	1.41	0.46	69.00	1.39	0.49	XX
WE32ZG		53.00	-0.09	-0.03	68.00	0.39	0.14	HH
WJGLZB		50.20	-2.89	-0.93	65.65	-1.96	-0.69	BT
X2P8YN		56.00	2.91	0.94	69.75	2.14	0.76	BT
XBHDWW		54.50	1.41	0.46	68.00	0.39	0.14	HH
Y8CLU9		51.05	-2.04	-0.66	67.75	0.14	0.05	BT
YZXLRJ		52.50	-0.59	-0.19	65.00	-2.61	-0.92	BT



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

**Report #209**  
**3rd Qtr 2021**

		Summary Statistics	
Grand Means	53.085 Type D	67.607 Type D	
Stnd Dev Btwn Labs	3.094 Type D	2.825 Type D	
Statistics based on 34 of 34 reporting participants			

Samples HC11-HC12: Hardness Disc, batch #1 & HC13-HC14: Hardness Disc, batch #2

**Key to Instrument Codes Reported by Participants**

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

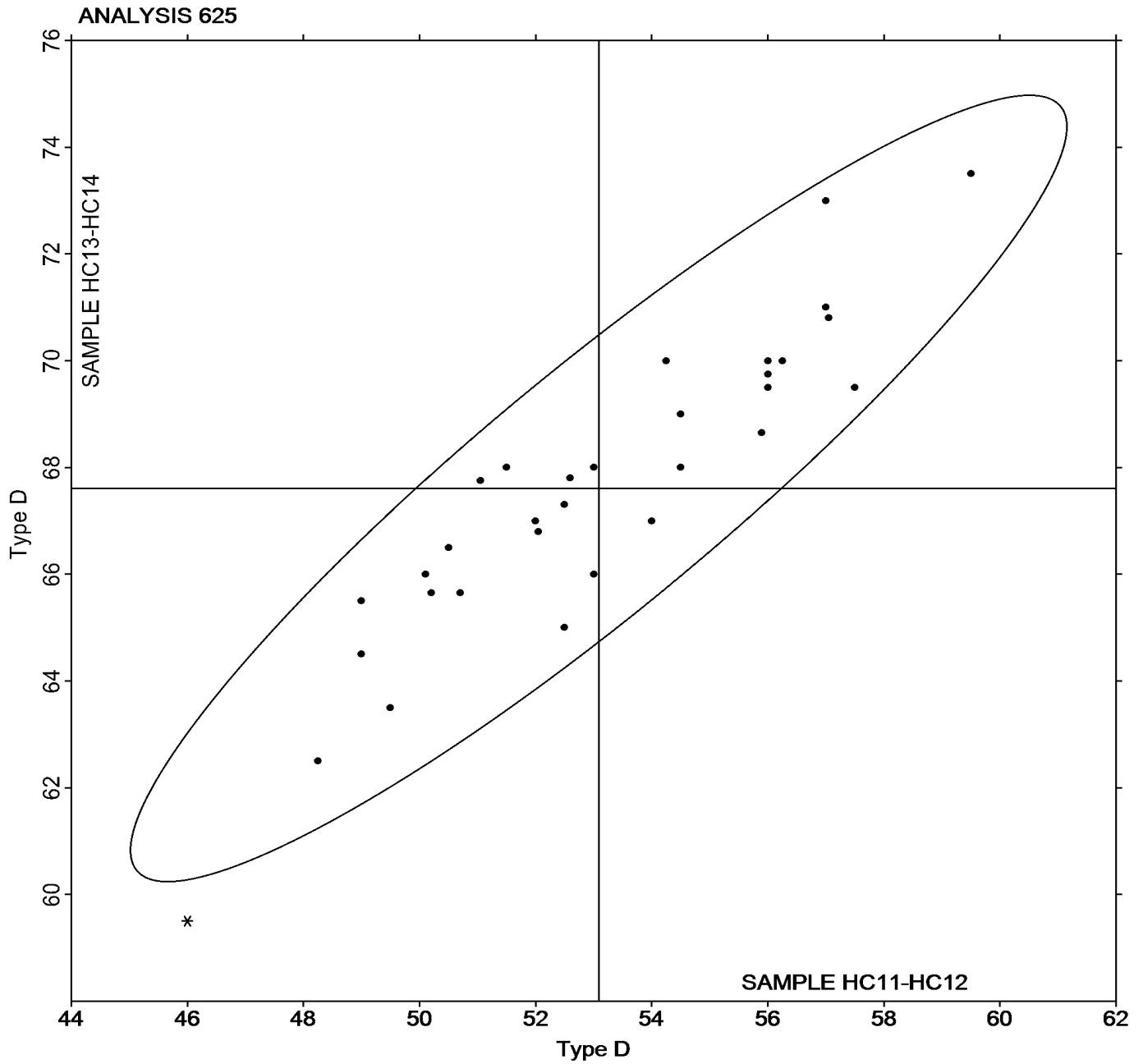


Rubber Interlaboratory Testing Program  
Analysis 625  
Hardness (Shore D/Type D)

Report #209  
3rd Qtr 2021

Grand Mean Sample HC11-HC12 = 53.085 Type D

Grand Mean Sample HC13-HC14 = 67.607 Type D





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 630

3rd Qtr 2021

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

WebCode	Data Flag	Sample C11-C12			Sample L11-L12		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		2,864.5	-252.8	-1.97	3,161.9	82.5	0.48
2X3K2L		3,201.0	83.7	0.65	3,166.0	86.7	0.50
3NRMN2		3,036.0	-81.4	-0.63	2,926.7	-152.6	-0.89
4A3693		3,078.0	-39.3	-0.31	3,098.1	18.8	0.11
4EUEEV		3,273.0	155.7	1.21	3,234.0	154.7	0.90
7Q4V2H		3,339.5	222.2	1.73	3,020.5	-58.8	-0.34
7R2WBG		2,972.0	-145.3	-1.13	3,146.0	66.7	0.39
7XJFKH		3,014.6	-102.7	-0.80	3,015.7	-63.6	-0.37
7XL32V		3,071.3	-46.0	-0.36	3,281.2	201.9	1.17
A34TFT		2,910.6	-206.7	-1.61	3,091.6	12.3	0.07
AG3DGQ		3,138.7	21.4	0.17	3,230.6	151.3	0.88
AKLMCA		3,219.9	102.5	0.80	3,074.8	-4.5	-0.03
DFEDMB		3,145.0	27.7	0.22	3,030.0	-49.3	-0.29
DP6YTA		3,096.6	-20.7	-0.16	3,169.1	89.8	0.52
EQWEHC		2,932.8	-184.5	-1.44	3,043.8	-35.5	-0.21
FGLCWB	X	2,782.6	-334.7	-2.61	799.2	-2,280.1	-13.27
GJA4LL		2,965.5	-151.8	-1.18	2,676.2	-403.1	-2.35
GKFTMA		3,098.0	-19.3	-0.15	3,109.5	30.2	0.18
GUTKC8		3,172.7	55.4	0.43	2,973.3	-106.0	-0.62
LJBRRE		3,037.5	-79.8	-0.62	2,803.0	-276.3	-1.61
LQR6TX		3,128.4	11.0	0.09	3,136.9	57.6	0.34
LQUXPK		3,005.2	-112.1	-0.87	2,956.1	-123.2	-0.72
MTCEF6		3,262.5	145.2	1.13	3,295.5	216.2	1.26
PZA27V		3,320.0	202.7	1.58	3,460.0	380.7	2.21
QCDQDV		2,993.5	-123.8	-0.96	3,010.5	-68.8	-0.40
U2LERT		3,133.5	16.1	0.13	3,241.2	161.9	0.94
U66JAN	X	3,939.3	821.9	6.41	4,049.5	970.2	5.64
UADUFW		3,272.1	154.7	1.21	3,048.0	-31.3	-0.18
UPA3KQ		3,193.6	76.2	0.59	3,143.3	63.9	0.37
VH8EZ4		3,173.4	56.1	0.44	3,316.0	236.6	1.38
YC6ED4		3,177.4	60.1	0.47	2,991.8	-87.5	-0.51
YMPLA8		3,210.0	92.7	0.72	2,758.0	-321.3	-1.87
ZNF39M		2,981.0	-136.3	-1.06	3,159.0	79.7	0.46
ZPMQZX	*	3,336.6	219.3	1.71	2,769.5	-309.8	-1.80



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 630

3rd Qtr 2021

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

		Summary Statistics	
Grand Means			
	3,117.32 psi		3,079.30 psi
Stnd Dev Btwn Labs			
	128.33 psi		171.88 psi
Statistics based on 32 of 34 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	21.493 MPa		21.23 MPa
Stnd Dev Btwn Labs			
	0.885 MPa		1.19 MPa
Statistics based on 32 of 34 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & L11-L12: Polyisoprene compound, batch #1

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

FGLCWB (X) - Data for sample group L11-L12 are high.

U66JAN (X) - Data for all samples are high.

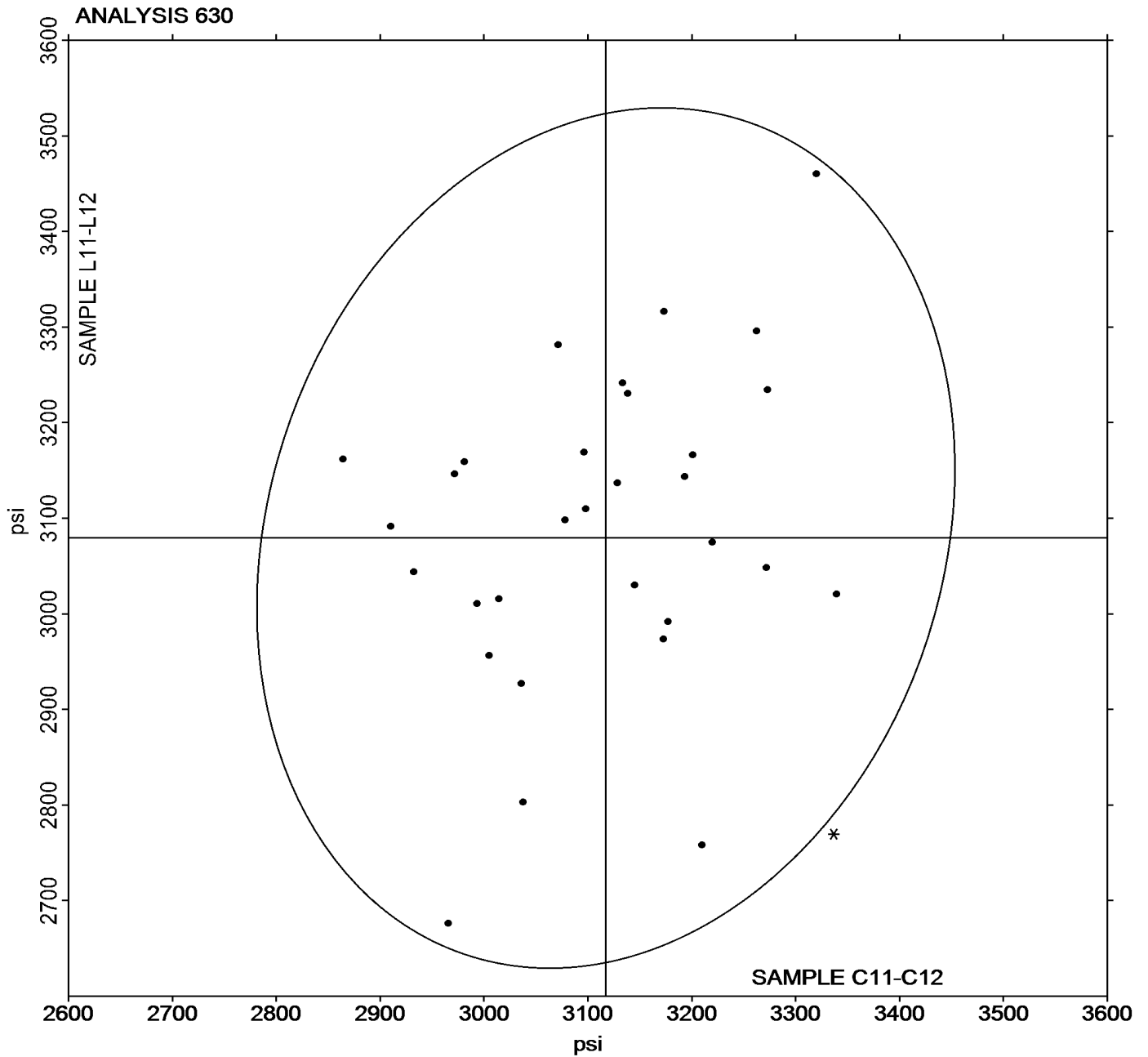


**Rubber Interlaboratory Testing Program**  
**Analysis 630**  
**Tensile Strength: Precured vs. Lab-Cured Samples (psi)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **C11-C12** = 3,117.32 psi

Grand Mean Sample **L11-L12** = 3,079.30 psi





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 631

3rd Qtr 2021

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

WebCode	Data Flag	Sample C11-C12			Sample L11-L12		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		648.0	-24.7	-0.66	573.8	-8.4	-0.31
2X3K2L		695.0	22.3	0.60	595.5	13.3	0.49
3NRMN2		685.8	13.1	0.35	586.8	4.7	0.17
4A3693	X	824.5	151.8	4.05	563.5	-18.7	-0.69
4EUEEV		607.0	-65.7	-1.75	541.5	-40.7	-1.50
7Q4V2H		728.0	55.3	1.48	619.0	36.8	1.36
7R2WBG		674.5	1.8	0.05	599.0	16.8	0.62
7XJFKH		648.3	-24.4	-0.65	554.8	-27.4	-1.01
7XL32V		646.0	-26.7	-0.71	562.0	-20.2	-0.74
A34TFT		642.5	-30.2	-0.80	574.5	-7.7	-0.28
AG3DGQ		655.0	-17.7	-0.47	591.5	9.3	0.34
AKLMCA		690.5	17.8	0.48	578.5	-3.7	-0.13
DFEDMB	*	640.5	-32.2	-0.86	609.0	26.8	0.99
DP6YTA		692.0	19.3	0.52	596.5	14.3	0.53
EQWEHC		693.0	20.3	0.54	578.5	-3.7	-0.13
FGLCWB		634.0	-38.7	-1.03	577.0	-5.2	-0.19
GJA4LL		707.5	34.8	0.93	595.5	13.3	0.49
GKFTMA		667.5	-5.2	-0.14	584.5	2.3	0.09
GUTKC8		638.3	-34.4	-0.92	543.2	-39.0	-1.44
LJBRRE		654.5	-18.2	-0.48	578.0	-4.2	-0.15
LQR6TX	X	336.6	-336.1	-8.97	602.1	20.0	0.74
LQUXPK		697.3	24.6	0.66	599.4	17.2	0.63
MTCEF6		663.0	-9.7	-0.26	581.0	-1.2	-0.04
PZA27V		714.5	41.8	1.12	621.0	38.8	1.43
QCDQDV		671.0	-1.7	-0.04	572.5	-9.7	-0.36
U2LERT		654.0	-18.7	-0.50	556.0	-26.2	-0.96
U66JAN	*	779.8	107.1	2.86	646.8	64.6	2.38
UADUFW		637.2	-35.5	-0.95	545.1	-37.0	-1.36
UPA3KQ		595.5	-77.1	-2.06	519.7	-62.4	-2.30
VH8EZ4		652.1	-20.6	-0.55	579.2	-3.0	-0.11
YC6ED4		693.5	20.8	0.56	614.5	32.3	1.19
YMPLA8		702.0	29.3	0.78	562.5	-19.7	-0.72
ZNF39M		700.0	27.3	0.73	569.5	-12.7	-0.47
ZPMQZX		717.8	45.1	1.20	622.6	40.4	1.49





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 631

3rd Qtr 2021

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

		Summary Statistics	
Grand Means	672.67 percent	582.15 percent	
Stnd Dev Btwn Labs	37.48 percent	27.13 percent	
Statistics based on 32 of 34 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & L11-L12: Polyisoprene compound, batch #1

#### **Comments on Assigned Data Flags for Test #631**

4A3693 (X) - Data for sample group C11-C12 are high. Inconsistent within the determinations of sample group C11-C12.

LQR6TX (X) - Data for sample group C11-C12 are low.



# Rubber Interlaboratory Testing Program

## Analysis 631

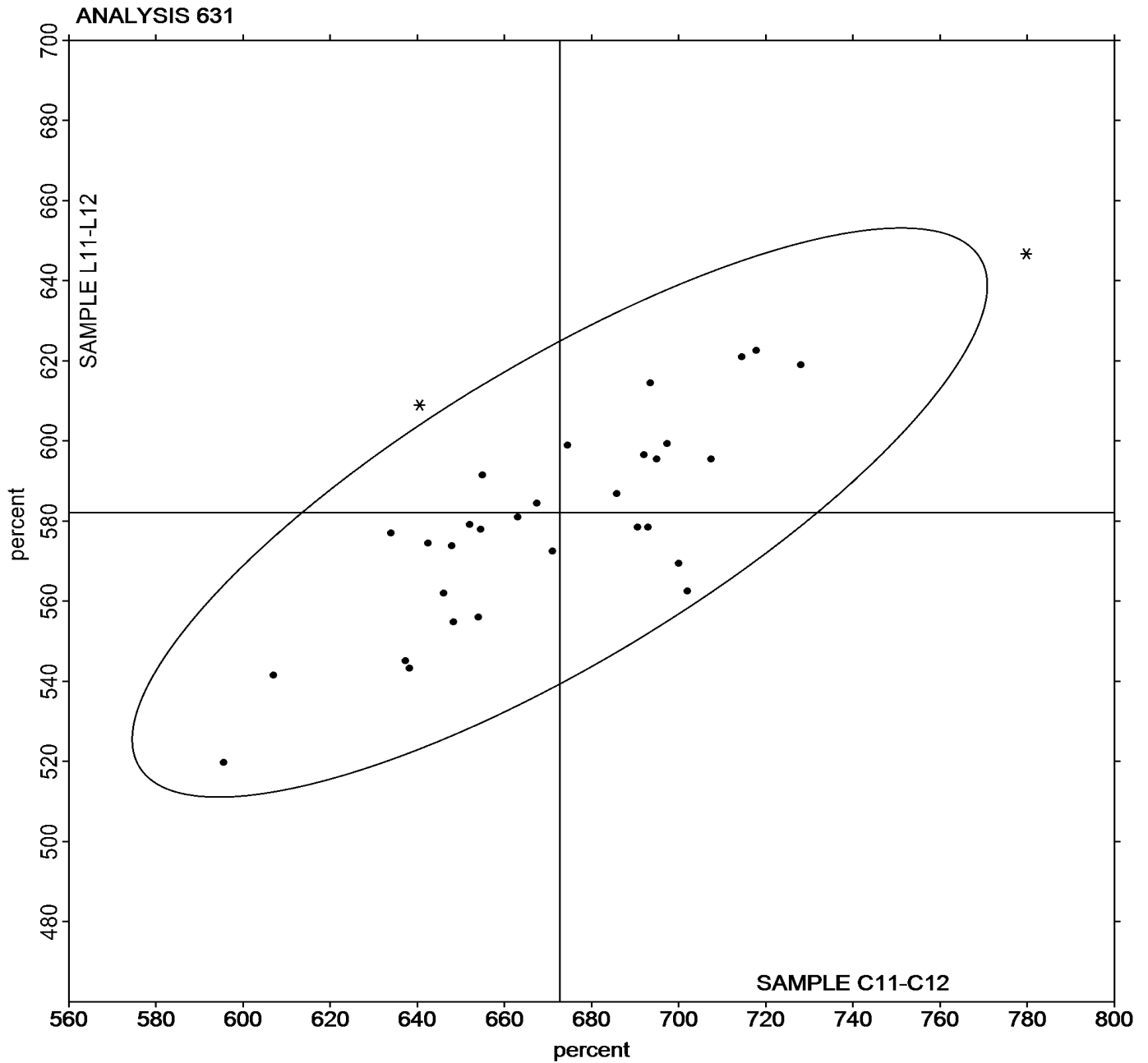
Report #209

3rd Qtr 2021

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

Grand Mean Sample C11-C12 = 672.67 percent

Grand Mean Sample L11-L12 = 582.15 percent





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 632

3rd Qtr 2021

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

WebCode	Data Flag	Sample C11-C12			Sample L11-L12		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		672.3	-20.6	-0.29	1,148.0	103.5	0.93
2X3K2L		647.5	-45.3	-0.64	948.5	-96.0	-0.86
3NRMN2		607.8	-85.1	-1.20	941.8	-102.7	-0.92
4A3693		683.9	-8.9	-0.13	1,102.0	57.5	0.52
4EUEEV		857.0	164.2	2.32	1,207.5	163.0	1.47
7Q4V2H		660.5	-32.3	-0.46	898.0	-146.5	-1.32
7R2WBG		620.5	-72.3	-1.02	1,017.0	-27.5	-0.25
7XJFKH		716.6	23.7	0.33	1,156.8	112.3	1.01
7XL32V		714.1	21.2	0.30	1,208.1	163.6	1.47
A34TFT		711.9	19.0	0.27	1,072.7	28.2	0.25
AG3DGQ		704.0	11.2	0.16	1,016.0	-28.5	-0.26
AKLMCA		698.4	5.5	0.08	1,026.9	-17.6	-0.16
DFEDMB	*	871.0	178.2	2.51	971.0	-73.5	-0.66
DP6YTA		655.6	-37.3	-0.53	995.7	-48.8	-0.44
EQWEHC		642.0	-50.9	-0.72	1,108.4	63.9	0.58
FGLCWB	X	706.3	13.5	0.19	218.3	-826.2	-7.44
GJA4LL		615.0	-77.8	-1.10	899.8	-144.7	-1.30
GKFTMA		686.5	-6.3	-0.09	1,012.5	-32.0	-0.29
GUTKC8		736.1	43.2	0.61	1,066.4	21.9	0.20
LJBRRE		674.5	-18.3	-0.26	936.5	-108.0	-0.97
LQR6TX	X	2,546.0	1,853.1	26.15	2,541.2	1,496.7	13.47
LQUXPK		603.7	-89.1	-1.26	873.5	-171.0	-1.54
MTCEF6		752.0	59.2	0.83	1,149.5	105.0	0.95
PZA27V		653.0	-39.8	-0.56	1,065.0	20.5	0.18
QCDQDV		680.5	-12.3	-0.17	1,066.5	22.0	0.20
U2LERT		712.6	19.8	0.28	1,204.4	159.9	1.44
U66JAN		659.2	-33.6	-0.47	1,146.3	101.8	0.92
UADUFW		785.5	92.6	1.31	1,039.4	-5.1	-0.05
UPA3KQ		840.2	147.4	2.08	1,228.4	183.9	1.66
VH8EZ4		755.4	62.6	0.88	1,185.3	140.8	1.27
YC6ED4		651.7	-41.2	-0.58	886.4	-158.1	-1.42
YMPLA8		678.5	-14.3	-0.20	938.0	-106.5	-0.96
ZNF39M		572.0	-120.8	-1.71	1,074.5	30.0	0.27
ZPMQZX		652.0	-40.9	-0.58	833.2	-211.3	-1.90



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 632

3rd Qtr 2021

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

		Summary Statistics	
Grand Means			
	692.85 psi		1,044.50 psi
Stnd Dev Btwn Labs			
	70.86 psi		111.08 psi
Statistics based on 32 of 34 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	4.7770 MPa		7.20 MPa
Stnd Dev Btwn Labs			
	0.4886 MPa		0.77 MPa
Statistics based on 32 of 34 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & L11-L12: Polyisoprene compound, batch #1

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

FGLCWB (X) - Data for sample group L11-L12 are low.

LQR6TX (X) - Extreme Data for all sample groups.



# Rubber Interlaboratory Testing Program

Report #209

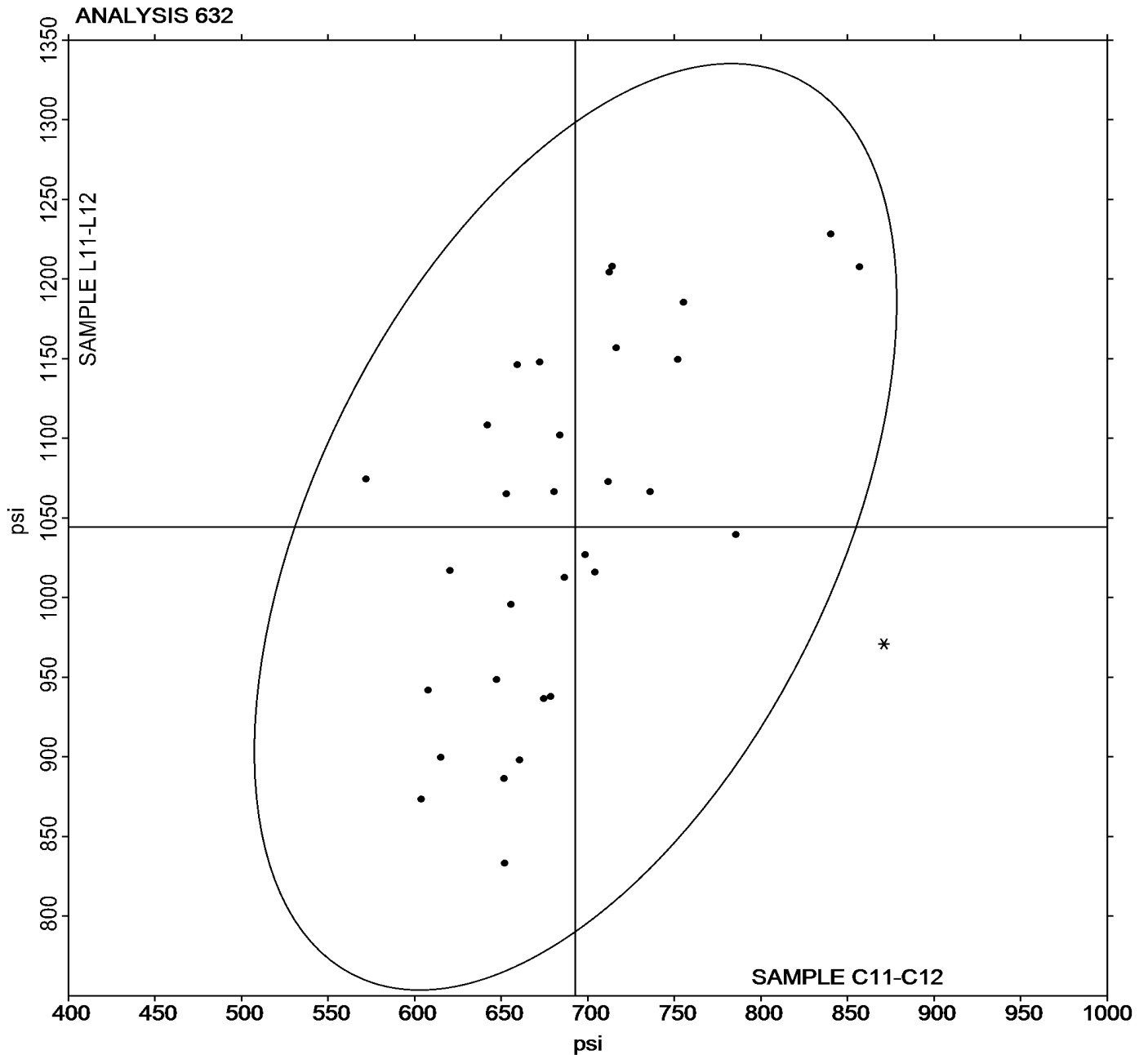
## Analysis 632

3rd Qtr 2021

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

Grand Mean Sample C11-C12 = 692.85 psi

Grand Mean Sample L11-L12 = 1,044.50 psi





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 633

3rd Qtr 2021

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

WebCode	Data Flag	Sample C11-C12			Sample L11-L12		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
23TYJ2		152.3	-10.4	-0.80	245.1	13.0	0.56
2X3K2L		157.0	-5.7	-0.44	201.5	-30.6	-1.32
3NRMN2		137.9	-24.8	-1.92	202.9	-29.2	-1.26
4A3693		161.8	-0.9	-0.07	238.0	5.9	0.25
4EUEEV		179.0	16.3	1.26	240.0	7.9	0.34
7Q4V2H		160.0	-2.7	-0.21	209.0	-23.1	-0.99
7R2WBG		149.0	-13.7	-1.06	233.5	1.4	0.06
7XJFKH		164.3	1.6	0.12	253.8	21.6	0.93
7XL32V		159.5	-3.2	-0.25	252.6	20.5	0.88
A34TFT		184.2	21.5	1.66	249.8	17.7	0.76
AG3DGQ		165.0	2.3	0.18	224.0	-8.1	-0.35
AKLMCA		158.1	-4.6	-0.36	229.2	-2.9	-0.13
DFEDMB	X	215.0	52.3	4.05	218.0	-14.1	-0.61
DP6YTA		158.8	-3.9	-0.30	234.2	2.1	0.09
EQWEHC		175.5	12.8	0.99	273.1	41.0	1.76
FGLCWB	X	166.8	4.1	0.32	71.1	-161.0	-6.93
GJA4LL		155.0	-7.7	-0.60	209.7	-22.4	-0.96
GKFTMA		161.0	-1.7	-0.13	230.5	-1.6	-0.07
GUTKC8		164.3	1.6	0.12	224.8	-7.3	-0.31
LJBRRE		166.0	3.3	0.26	215.0	-17.1	-0.74
LQR6TX	X	356.3	193.6	14.98	249.6	17.5	0.75
LQUXPK		147.1	-15.6	-1.21	198.8	-33.3	-1.43
MTCEF6		173.5	10.8	0.84	258.5	26.4	1.14
PZA27V		153.5	-9.2	-0.71	242.0	9.9	0.43
QCDQDV		165.0	2.3	0.18	236.5	4.4	0.19
U2LERT		154.5	-8.2	-0.64	254.2	22.1	0.95
U66JAN		189.3	26.6	2.06	278.9	46.8	2.01
UADUFW		184.7	22.0	1.70	236.0	3.9	0.17
UPA3KQ		170.4	7.7	0.59	236.5	4.4	0.19
VH8EZ4		180.7	18.0	1.39	264.4	32.2	1.39
YC6ED4		148.5	-14.2	-1.10	191.5	-40.7	-1.75
YMPLA8		173.5	10.8	0.84	227.0	-5.1	-0.22
ZNF39M		138.5	-24.2	-1.87	220.0	-12.1	-0.52
ZPMQZX		155.9	-6.8	-0.52	184.2	-47.9	-2.06



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 633

3rd Qtr 2021

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

		Summary Statistics	
Grand Means	162.69 psi	232.10 psi	
Stnd Dev Btwn Labs	12.93 psi	23.24 psi	
Statistics based on 31 of 34 reporting participants			

		Summary Statistics in SI Units	
Grand Means	1.1217 MPa	1.60 MPa	
Stnd Dev Btwn Labs	0.0891 MPa	0.16 MPa	
Statistics based on 31 of 34 reporting participants			

Samples C11-C12: Polyisoprene compound, batch #1 & L11-L12: Polyisoprene compound, batch #1

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

DFEDMB (X) - Data for sample group C11-C12 are high.

FGLCWB (X) - Data for sample group L11-L12 are low.

LQR6TX (X) - Extreme Data for sample group C11-C12. Inconsistent within the determinations of sample group L11-L12.



# Rubber Interlaboratory Testing Program

Report #209

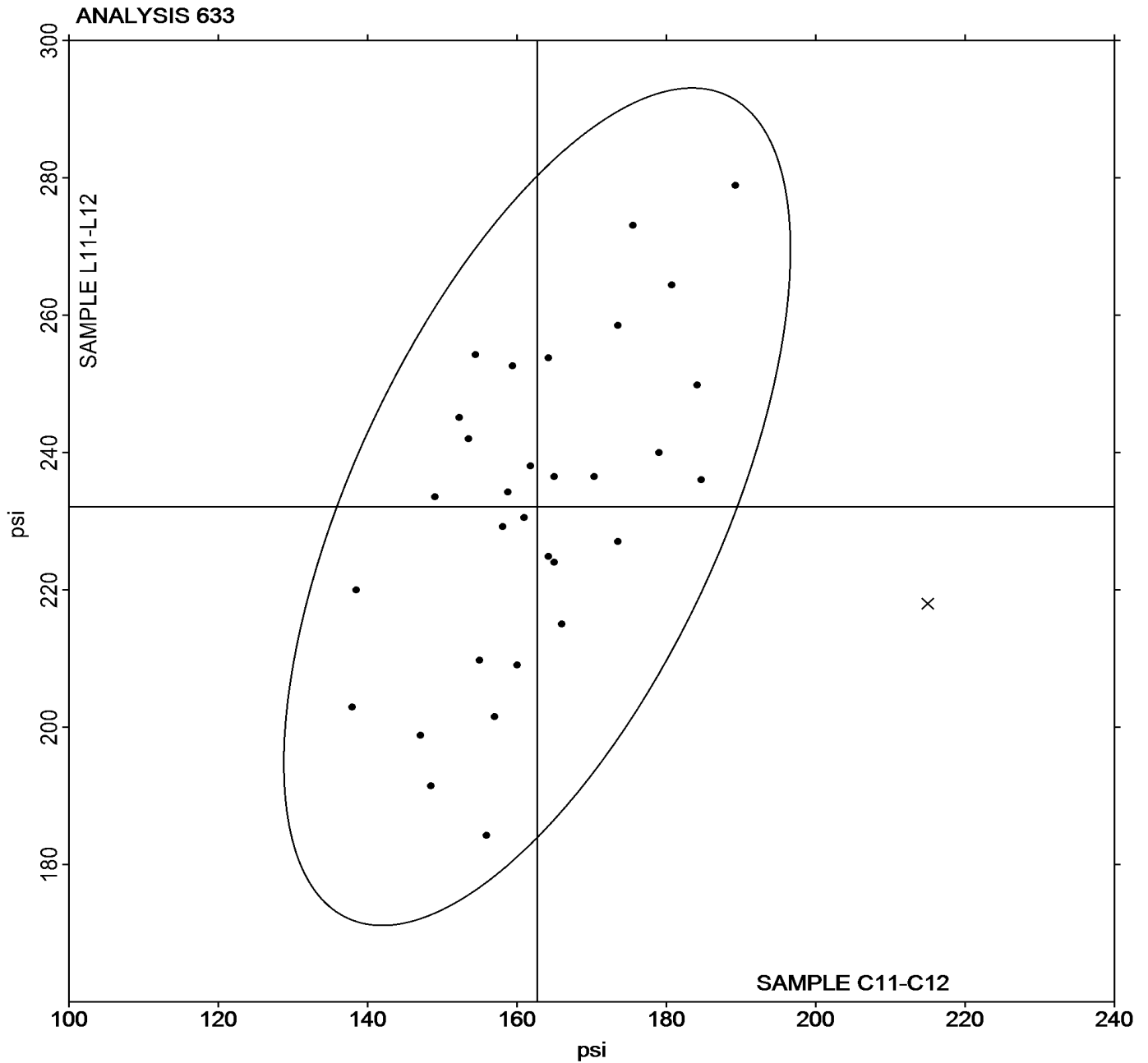
## Analysis 633

3rd Qtr 2021

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

Grand Mean Sample C11-C12 = 162.69 psi

Grand Mean Sample L11-L12 = 232.10 psi







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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
22FKXC		31.97	-0.97	-0.17	35.60	2.18	0.38
23VT2L		34.67	1.73	0.30	39.00	5.58	0.98
24LXUT		24.52	-8.42	-1.45	26.53	-6.89	-1.21
27TBF2	*	48.53	15.60	2.69	45.87	12.45	2.19
38FF36	X	25.77	-7.17	-1.24	37.60	4.18	0.74
3JU4KH	*	38.00	5.07	0.87	31.00	-2.42	-0.43
4EUEEV		31.89	-1.04	-0.18	30.49	-2.93	-0.52
6KGJQV		29.09	-3.84	-0.66	29.71	-3.70	-0.65
7GDDKN		35.33	2.40	0.41	36.00	2.58	0.46
7R2WBG		26.00	-6.93	-1.20	25.33	-8.08	-1.42
7XJFKH		39.33	6.40	1.10	40.80	7.38	1.30
7XL32V		33.46	0.53	0.09	33.00	-0.41	-0.07
AAJCVL		26.68	-6.25	-1.08	26.88	-6.54	-1.15
AG3DGQ		28.92	-4.01	-0.69	31.19	-2.23	-0.39
AHH2DB		30.33	-2.60	-0.45	29.00	-4.42	-0.78
DQJGXZ		30.00	-2.93	-0.51	35.00	1.58	0.28
E2D4GG		31.00	-1.93	-0.33	33.33	-0.08	-0.01
FCD2Q3		42.80	9.87	1.70	42.90	9.48	1.67
GBVEMD		32.33	-0.60	-0.10	33.40	-0.02	0.00
GJA4LL		40.33	7.40	1.28	36.67	3.25	0.57
GUTKC8		39.87	6.93	1.20	37.47	4.05	0.71
J9YHDA		38.36	5.42	0.94	34.53	1.11	0.20
JACG4D		39.20	6.27	1.08	40.33	6.92	1.22
KN67ZA		34.45	1.52	0.26	34.01	0.59	0.10
KXYA8D		38.00	5.07	0.87	38.00	4.58	0.81
LJBRRE		31.33	-1.60	-0.28	32.33	-1.08	-0.19
LQR6TX		29.06	-3.87	-0.67	32.35	-1.06	-0.19
MA3HZE		35.43	2.50	0.43	34.53	1.12	0.20
NGW486		25.00	-7.93	-1.37	27.00	-6.42	-1.13
P2XNAH	*	33.97	1.03	0.18	42.43	9.02	1.59
PGTY3F		32.83	-0.10	-0.02	32.60	-0.81	-0.14
PZA27V		31.33	-1.60	-0.28	33.33	-0.08	-0.01
R3GDQ2		25.50	-7.43	-1.28	26.90	-6.52	-1.15
UPA3KQ		32.59	-0.34	-0.06	37.40	3.99	0.70
VH8EZ4		30.30	-2.63	-0.45	30.23	-3.18	-0.56
WPKM26		28.87	-4.07	-0.70	25.43	-7.98	-1.41
XFAM3N		30.00	-2.93	-0.51	30.33	-3.08	-0.54



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample P11			Sample P12		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
YC6ED4		42.27	9.33	1.61	45.17	11.75	2.07
YMPLA8	*	17.43	-15.50	-2.68	18.63	-14.78	-2.60
YUNDGG		30.33	-2.60	-0.45	32.33	-1.08	-0.19
ZF4ACW		34.63	1.70	0.29	29.97	-3.45	-0.61
ZGWYZK		34.33	1.40	0.24	33.00	-0.42	-0.07

Summary Statistics	
Grand Means	
	32.934 % Compression
	33.415 % Compression
Stnd Dev Btwn Labs	
	5.794 % Compression
	5.676 % Compression
	Statistics based on 41 of 42 reporting participants

Samples P11: EPDM compound, batch #1 & P12: EPDM compound, batch #1

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

38FF36 (X) - Inconsistent in testing between samples.

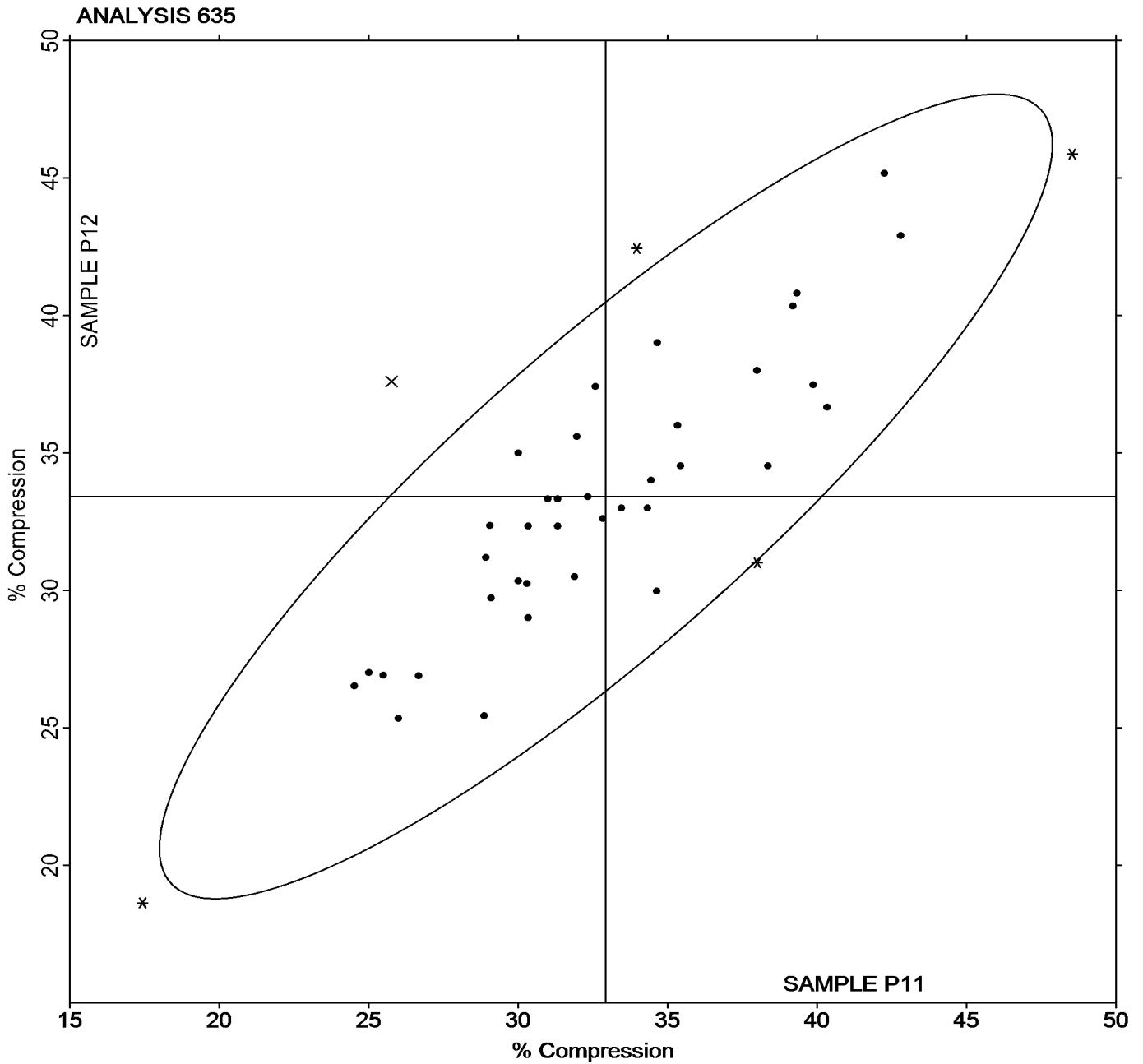


**Rubber Interlaboratory Testing Program**  
**Analysis 635**  
**Compression Set Method B**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **P11** = 32.934 % Compression

Grand Mean Sample **P12** = 33.415 % Compression





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 660

3rd Qtr 2021

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

WebCode	Data Flag	Sample U11-U12			Sample U13-U14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		41.00	-1.00	-1.27	53.47	-0.73	-0.78	MR
27TBF2		42.10	0.10	0.13	54.57	0.37	0.40	MR
2FKJ7J		41.47	-0.53	-0.68	54.87	0.67	0.73	MP
2X3K2L		42.11	0.11	0.14	54.62	0.42	0.46	MR
3JU4KH		41.34	-0.66	-0.84	53.94	-0.25	-0.27	MR
3NRMN2	*	44.38	2.37	3.02	56.70	2.51	2.71	TV
4EUEEV		41.24	-0.76	-0.97	53.68	-0.52	-0.56	MR
4VJKQV		42.00	0.00	0.00	54.02	-0.18	-0.19	MR
4VM843		42.50	0.50	0.63	53.20	-0.99	-1.07	MR
7EAH2L		43.45	1.45	1.84	56.40	2.21	2.38	MR
7Q4V2H		42.00	0.00	0.00	54.17	-0.03	-0.03	MV
7R2WBG		41.08	-0.92	-1.17	52.65	-1.54	-1.67	MR
A34TFT		42.92	0.92	1.16	54.82	0.62	0.67	MR
AG3DGQ		42.86	0.86	1.10	54.89	0.69	0.75	ML
AKLMCA		41.50	-0.50	-0.64	53.85	-0.34	-0.37	MR
DFEDMB		42.72	0.72	0.91	54.94	0.75	0.80	MZ
EQWEHC		42.70	0.70	0.89	55.56	1.36	1.47	XX
FGLCWB		41.30	-0.71	-0.90	54.20	0.01	0.01	MV
FWKCV7		40.75	-1.25	-1.59	52.02	-2.18	-2.35	MR
GBVEMD		41.83	-0.17	-0.21	53.95	-0.24	-0.26	MR
GKFTMA		41.28	-0.72	-0.91	53.62	-0.58	-0.62	XX
GUTKC8		42.52	0.52	0.66	53.75	-0.44	-0.48	MR
JAWVWW		40.94	-1.06	-1.34	54.23	0.03	0.04	XX
JJ3QY2		41.20	-0.80	-1.02	53.48	-0.71	-0.77	MR
LC9K96		42.98	0.98	1.25	54.87	0.67	0.73	MR
LQUXPK		42.14	0.13	0.17	54.45	0.26	0.28	MR
LZVHM8		42.62	0.62	0.78	54.18	-0.01	-0.01	MR
MTCEF6		42.60	0.60	0.76	55.06	0.86	0.93	MV
PZA27V		41.88	-0.12	-0.15	53.18	-1.01	-1.09	MR
Q9E9LV		41.97	-0.03	-0.04	53.20	-0.99	-1.07	MR
QCDQDV		42.37	0.37	0.47	54.03	-0.16	-0.17	MR
QQW8QT		41.36	-0.64	-0.81	53.65	-0.54	-0.59	MV
RQCW66		41.55	-0.45	-0.57	53.30	-0.89	-0.96	MR
U2LERT		42.02	0.02	0.02	54.23	0.04	0.04	MR
U66JAN	*	40.83	-1.17	-1.48	54.57	0.37	0.40	MR
UADUFW		43.21	1.21	1.53	55.71	1.51	1.63	ML
V624QW	X	44.65	2.65	3.36	55.24	1.04	1.12	TA
VH8EZ4		41.87	-0.13	-0.17	53.67	-0.53	-0.57	MR



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 660

3rd Qtr 2021

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

WebCode	Data Flag	Sample U11-U12			Sample U13-U14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VNQG6K		41.69	-0.31	-0.39	53.68	-0.52	-0.56	MR
VQJDRU		41.68	-0.32	-0.40	53.62	-0.58	-0.62	MR
ZNF39M		42.09	0.08	0.11	54.80	0.61	0.66	MV

Grand Means		Summary Statistics	
	42.001 ML 1 + 4		54.194 ML 1 + 4
Stnd Dev Btwn Labs	0.787 ML 1 + 4		0.927 ML 1 + 4
Statistics based on 40 of 41 reporting participants			

Samples U11-U12: SBR & U13-U14: Butyl

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

V624QW (X) - Data for sample group U11-U12 are high.

#### Key to Instrument Codes Reported by Participants

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

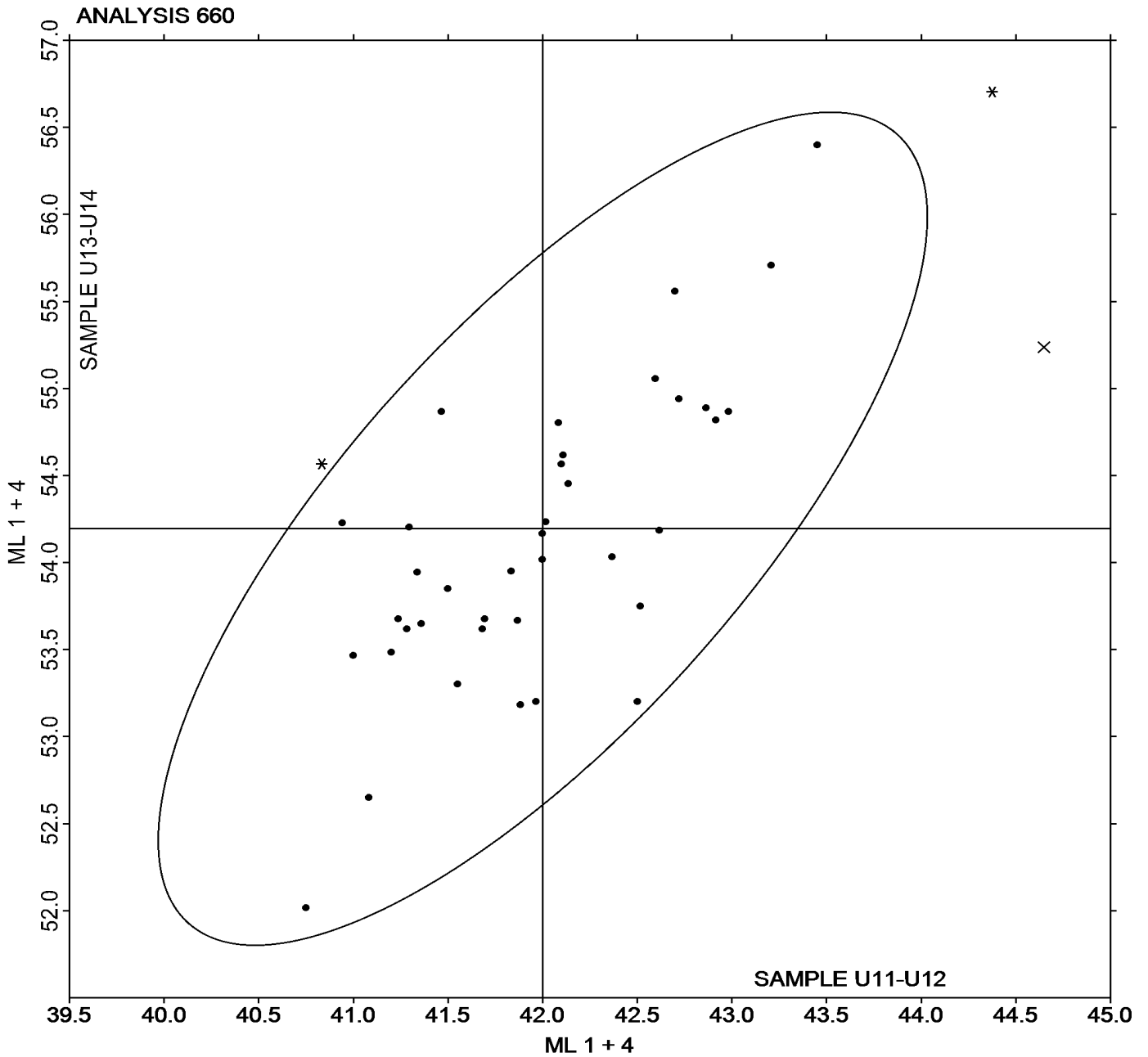


Rubber Interlaboratory Testing Program  
Analysis 660  
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #209  
3rd Qtr 2021

Grand Mean Sample **U11-U12** = 42.001 ML 1 + 4

Grand Mean Sample **U13-U14** = 54.194 ML 1 + 4





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 661

3rd Qtr 2021

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

WebCode	Data Flag	Sample U11-U12			Sample U13-U14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		41.00	-1.10	-1.22	51.12	-0.66	-0.67	MR
27TBF2		42.10	0.00	0.00	52.09	0.32	0.33	MR
2FKJ7J		41.47	-0.64	-0.71	51.88	0.11	0.11	MP
2X3K2L		42.11	0.00	0.00	51.84	0.07	0.07	MR
3JU4KH		41.34	-0.77	-0.85	50.84	-0.93	-0.95	MR
3NRMN2		44.38	2.27	2.51	53.97	2.19	2.26	TV
4EUEEV		41.24	-0.87	-0.96	51.02	-0.75	-0.77	MR
4VJKQV		42.00	-0.10	-0.12	51.27	-0.51	-0.52	MR
7EAH2L		43.45	1.35	1.49	53.63	1.86	1.91	MR
7Q4V2H		42.00	-0.10	-0.12	52.27	0.50	0.51	MV
7R2WBG	X	41.08	-1.02	-1.13	53.07	1.29	1.33	MR
A34TFT		42.92	0.81	0.90	52.52	0.74	0.77	MR
AG3DGQ		42.86	0.76	0.84	52.48	0.71	0.73	ML
AKLMCA		41.50	-0.60	-0.67	50.92	-0.86	-0.88	MR
DFEDMB		42.72	0.62	0.68	52.38	0.61	0.62	MZ
EQWEHC		42.70	0.60	0.66	51.80	0.03	0.03	XX
FGLCWB		41.30	-0.81	-0.90	51.91	0.13	0.14	MV
FWKCV7		40.75	-1.35	-1.50	49.88	-1.89	-1.94	MR
GBVEMD		41.83	-0.27	-0.30	51.20	-0.57	-0.59	MR
GKFTMA		41.28	-0.82	-0.91	50.93	-0.84	-0.86	XX
GUTKC8		42.52	0.41	0.46	51.23	-0.54	-0.55	MR
JAWVWW		40.94	-1.16	-1.28	51.41	-0.36	-0.37	XX
JJ3QY2		41.20	-0.90	-1.00	50.73	-1.04	-1.07	MR
LC9K96		42.98	0.88	0.97	52.13	0.36	0.37	MR
LQUXPK		42.14	0.03	0.03	51.75	-0.02	-0.02	MR
LZVHM8		42.62	0.51	0.57	51.60	-0.17	-0.18	MR
MTCEF6		42.60	0.49	0.55	53.31	1.53	1.58	MV
PZA27V		41.88	-0.22	-0.24	50.45	-1.32	-1.36	MR
Q9E9LV		41.97	-0.14	-0.15	50.93	-0.84	-0.86	MR
QCDQDV		42.37	0.26	0.29	51.78	0.01	0.01	MR
QQW8QT		41.36	-0.74	-0.82	51.24	-0.54	-0.55	MV
U2LERT		42.02	-0.09	-0.10	51.10	-0.67	-0.69	MR
U66JAN		40.83	-1.27	-1.41	51.75	-0.02	-0.02	MR
UADUFW		43.21	1.10	1.22	52.89	1.12	1.15	ML
V624QW	*	44.65	2.54	2.82	54.51	2.73	2.81	TA
VH8EZ4		41.87	-0.24	-0.26	51.32	-0.46	-0.47	MR
VQJDRU		41.68	-0.42	-0.47	51.30	-0.47	-0.49	MR
ZNF39M		42.09	-0.02	-0.02	52.17	0.40	0.41	MV



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 661

3rd Qtr 2021

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

		Summary Statistics	
Grand Means	42.104 ML 1 + 8	51.772 ML 1 + 8	
Stnd Dev Btwn Labs	0.903 ML 1 + 8	0.972 ML 1 + 8	
Statistics based on 37 of 38 reporting participants			

Samples U11-U12: SBR & U13-U14: Butyl

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

7R2WBG (X) - Inconsistent in testing between samples.

#### 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>MZ</b>	Rebuilt Monsanto Mooney Viscometer	<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 #209

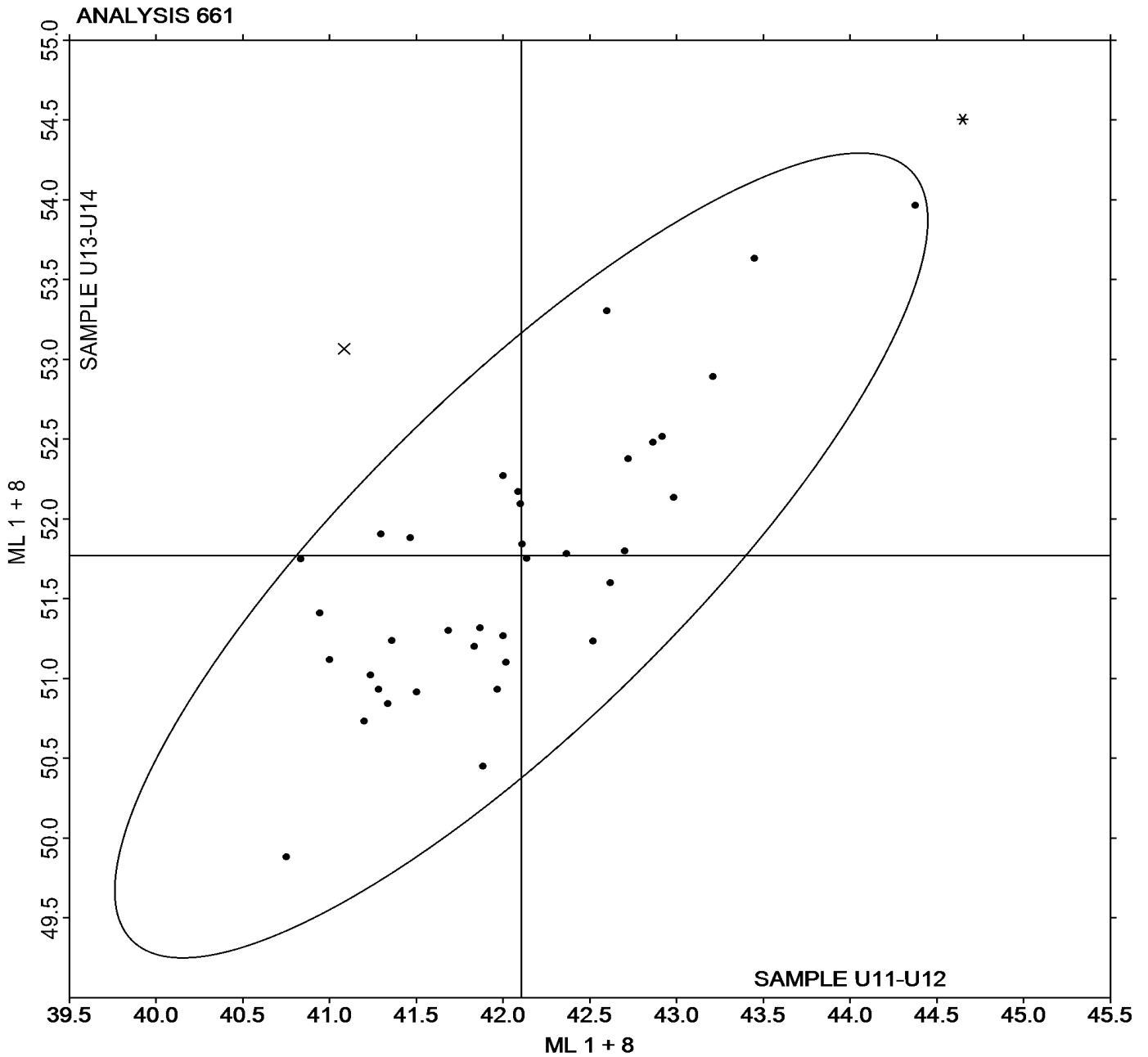
## Analysis 661

3rd Qtr 2021

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

Grand Mean Sample **U11-U12** = 42.104 ML 1 + 8

Grand Mean Sample **U13-U14** = 51.772 ML 1 + 8





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 662

3rd Qtr 2021

### Mooney Stress Relaxation: t80 (seconds)

WebCode	Data Flag	Sample U11-U12			Sample U13-U14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		12.47	1.86	0.65	7.020	0.235	0.27	MR
3JU4KH	X	30.21	19.60	6.78	10.402	3.617	4.10	MR
3NRMN2	X	666.10	655.49	226.81	666.600	659.815	747.64	TV
4EUEEV		11.03	0.42	0.15	6.677	-0.108	-0.12	MR
4VM843		12.10	1.49	0.52	8.100	1.315	1.49	MR
7Q4V2H		12.20	1.59	0.55	7.600	0.815	0.92	MV
AG3DGQ		12.43	1.83	0.63	7.095	0.310	0.35	ML
AKLMCA		11.57	0.97	0.33	6.550	-0.235	-0.27	MR
DFEDMB		5.10	-5.51	-1.90	5.800	-0.985	-1.12	MZ
EQWEHC		11.83	1.23	0.42	8.000	1.215	1.38	XX
FGLCWB		6.90	-3.71	-1.28	5.400	-1.385	-1.57	MV
GKFTMA		12.67	2.06	0.71	6.983	0.198	0.22	XX
JJ3QY2		13.90	3.29	1.14	8.450	1.665	1.89	MR
LC9K96		11.73	1.12	0.39	6.953	0.168	0.19	MR
MTCEF6		4.67	-5.94	-2.05	5.600	-1.185	-1.34	MV
QCDQDV		12.33	1.72	0.60	6.957	0.172	0.19	MR
QQW8QT		5.13	-5.48	-1.90	5.107	-1.678	-1.90	MV
U2LERT		12.42	1.81	0.63	6.800	0.015	0.02	MR
UADUFW		12.38	1.78	0.62	6.973	0.188	0.21	ML
VH8EZ4		10.55	-0.05	-0.02	6.728	-0.057	-0.06	MR
VQJDRU		12.50	1.89	0.66	6.937	0.152	0.17	MR
ZNF39M		8.20	-2.41	-0.83	5.967	-0.818	-0.93	MV

Grand Means		Summary Statistics	
	10.605 seconds		6.7848 seconds
Std Dev Btwn Labs	2.890 seconds		0.8825 seconds
Statistics based on 20 of 22 reporting participants			

Samples U11-U12: SBR & U13-U14: Butyl

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

3JU4KH (X) - Data for all samples are high.

3NRMN2 (X) - Extreme Data. Lab indicated reporting in minutes, but data may be in seconds.



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

**Report #209**  
**3rd Qtr 2021**

**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>MZ</b>	Rebuilt Monsanto Mooney Viscometer
<b>TV</b>	Tech Pro Visc Tech (any model)	<b>XX</b>	Instrument make/model not specified by lab

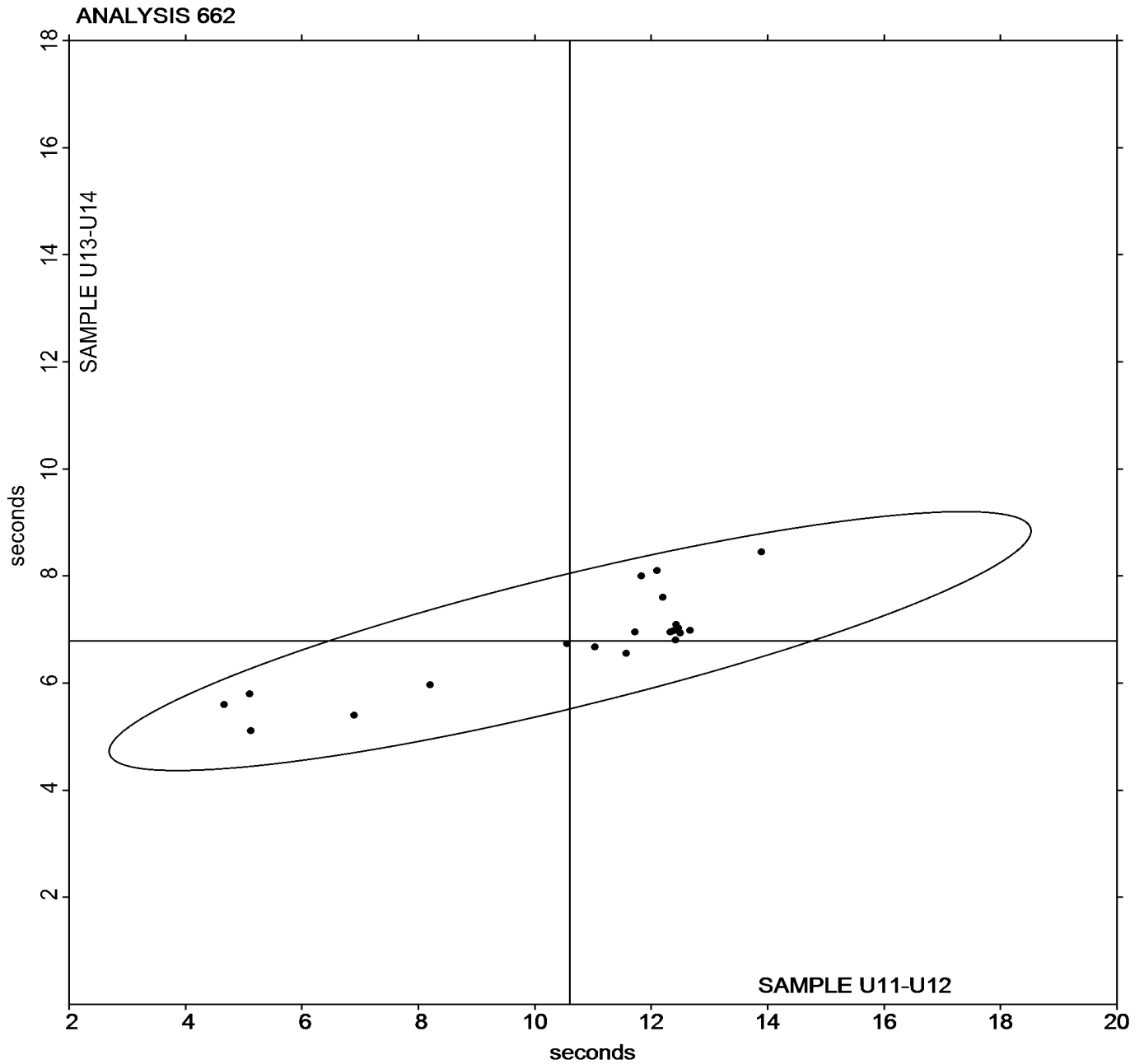


**Rubber Interlaboratory Testing Program**  
**Analysis 662**  
**Mooney Stress Relaxation: t80 (seconds)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **U11-U12** = 10.605 seconds

Grand Mean Sample **U13-U14** = 6.7848 seconds





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 663

3rd Qtr 2021

### Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample U11-U12			Sample U13-U14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		85.73	-1.13	-0.38	93.02	-0.30	-0.21	MR
3JU4KH	*	80.25	-6.61	-2.23	92.21	-1.11	-0.78	MR
3NRMN2		90.49	3.63	1.22	93.63	0.31	0.22	TV
4EUEEV		86.55	-0.31	-0.11	93.40	0.08	0.06	MR
7Q4V2H		83.65	-3.21	-1.08	91.59	-1.74	-1.22	MV
AG3DGQ		85.73	-1.13	-0.38	92.50	-0.82	-0.57	ML
AKLMCA		86.14	-0.72	-0.24	93.46	0.13	0.09	MR
DFEDMB		91.49	4.63	1.56	94.57	1.25	0.87	MZ
EQWEHC		85.94	-0.92	-0.31	92.10	-1.22	-0.85	XX
FGLCWB	*	91.00	4.14	1.40	97.00	3.68	2.58	MV
GKFTMA		85.57	-1.29	-0.44	92.93	-0.39	-0.27	XX
JJ3QY2		84.77	-2.09	-0.71	91.10	-2.22	-1.56	MR
LC9K96		86.01	-0.85	-0.29	92.68	-0.64	-0.45	MR
MTCEF6		93.54	6.68	2.25	96.42	3.10	2.17	MV
QCDQDV		85.54	-1.32	-0.44	92.28	-1.04	-0.73	MR
QQW8QT		89.17	2.31	0.78	94.30	0.98	0.68	MV
U2LERT		85.61	-1.25	-0.42	93.15	-0.17	-0.12	MR
UADUFW		85.68	-1.18	-0.40	92.68	-0.64	-0.45	ML
VH8EZ4		86.94	0.08	0.03	93.44	0.12	0.08	MR
VQJDRU		85.68	-1.18	-0.40	92.85	-0.47	-0.33	MR
ZNF39M		88.59	1.73	0.58	94.44	1.11	0.78	MV

Grand Means		Summary Statistics	
	86.860 percent		93.321 percent
Std Dev Btwn Labs	2.963 percent		1.428 percent
Statistics based on 21 of 21 reporting participants			

Samples U11-U12: SBR & U13-U14: Butyl

### 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>MZ</b>	Rebuilt Monsanto Mooney Viscometer
<b>TV</b>	Tech Pro Visc Tech (any model)	<b>XX</b>	Instrument make/model not specified by lab

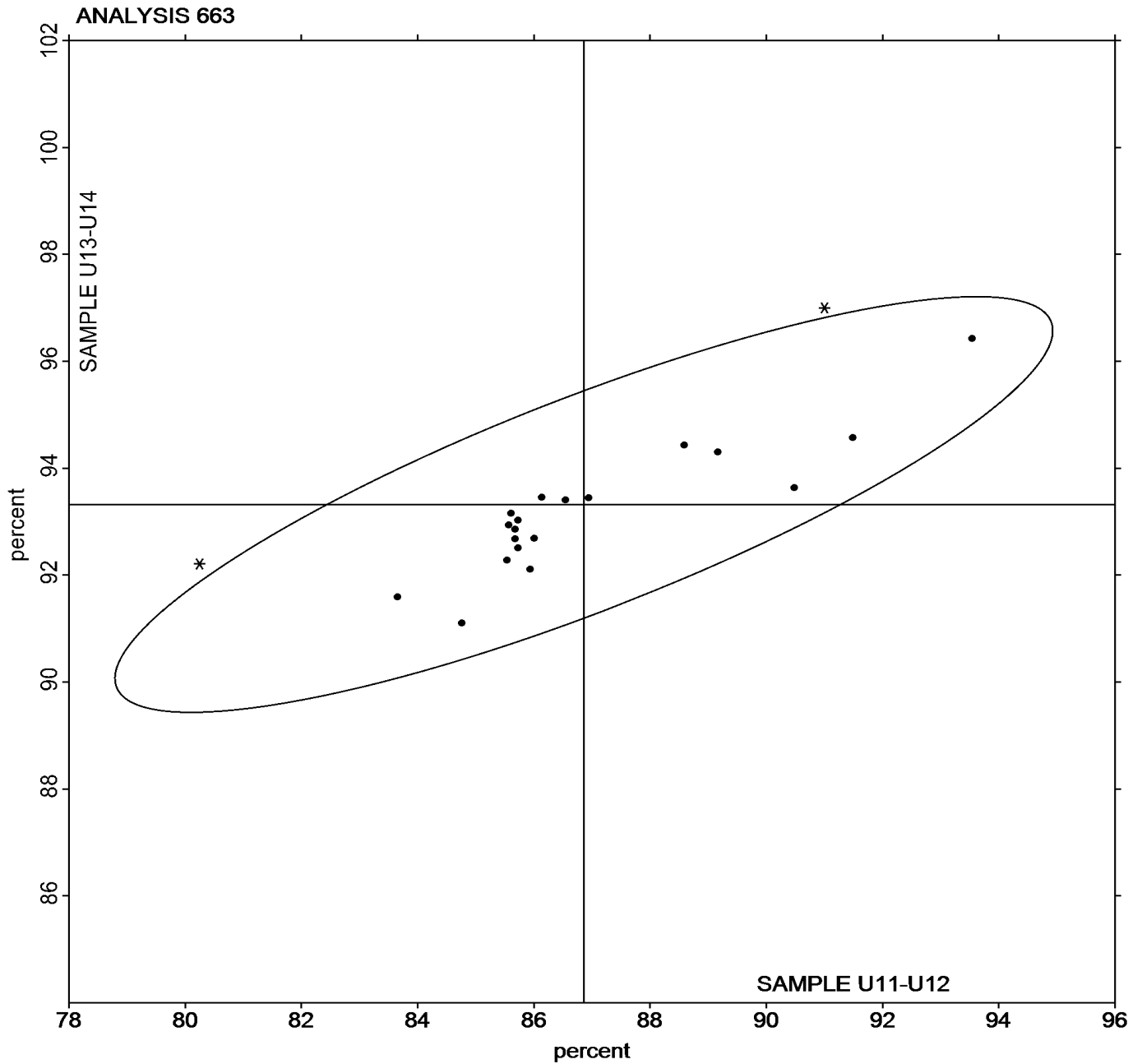


**Rubber Interlaboratory Testing Program**  
**Analysis 663**  
**Mooney Stress Relaxation: X30 (percent)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **U11-U12** = 86.860 percent

Grand Mean Sample **U13-U14** = 93.321 percent





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 664

3rd Qtr 2021

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

WebCode	Data Flag	Sample U11-U12			Sample U13-U14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		629.5	69.0	0.56	412.7	19.1	0.22	XX
3JU4KH		532.0	-28.5	-0.23	343.3	-50.2	-0.59	MR
3NRMN2		419.9	-140.6	-1.14	387.3	-6.3	-0.07	TV
4EUEEV		597.0	36.5	0.30	383.7	-9.8	-0.12	MR
7Q4V2H		648.0	87.5	0.71	488.6	95.1	1.11	MV
AG3DGQ		697.6	137.1	1.11	498.2	104.7	1.23	ML
AKLMCA		621.1	60.6	0.49	382.2	-11.3	-0.13	MR
DFEDMB		351.1	-209.4	-1.69	319.2	-74.3	-0.87	MZ
EQWEHC		646.7	86.2	0.70	497.8	104.3	1.22	XX
FGLCWB		374.1	-186.4	-1.51	200.7	-192.8	-2.26	MV
GKFTMA		636.8	76.3	0.62	413.5	20.0	0.23	XX
JAWVWW		477.2	-83.3	-0.67	420.4	26.9	0.31	XX
JJ3QY2		681.8	121.3	0.98	532.3	138.8	1.62	MR
LC9K96		649.7	89.2	0.72	434.0	40.4	0.47	MR
MTCEF6		266.0	-294.5	-2.38	214.7	-178.8	-2.09	MV
QCDQDV		661.7	101.2	0.82	453.0	59.5	0.70	MR
QQW8QT		471.5	-89.0	-0.72	333.9	-59.7	-0.70	MV
U2LERT		647.8	87.3	0.71	401.4	7.9	0.09	MR
UADUFW		668.5	108.0	0.87	442.7	49.2	0.58	ML
VH8EZ4		586.5	26.0	0.21	386.2	-7.4	-0.09	MR
ZNF39M		505.9	-54.6	-0.44	318.3	-75.2	-0.88	MV

Grand Means		Summary Statistics	
	560.51 M-s		393.53 M-s
Std Dev Btwn Labs	123.71 M-s		85.45 M-s
Statistics based on 21 of 21 reporting participants			

Samples U11-U12: SBR & U13-U14: Butyl

### 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>MZ</b>	Rebuilt Mooney Viscometer
<b>TV</b>	Tech Pro Visc Tech (any model)	<b>XX</b>	Instrument make/model not specified by lab

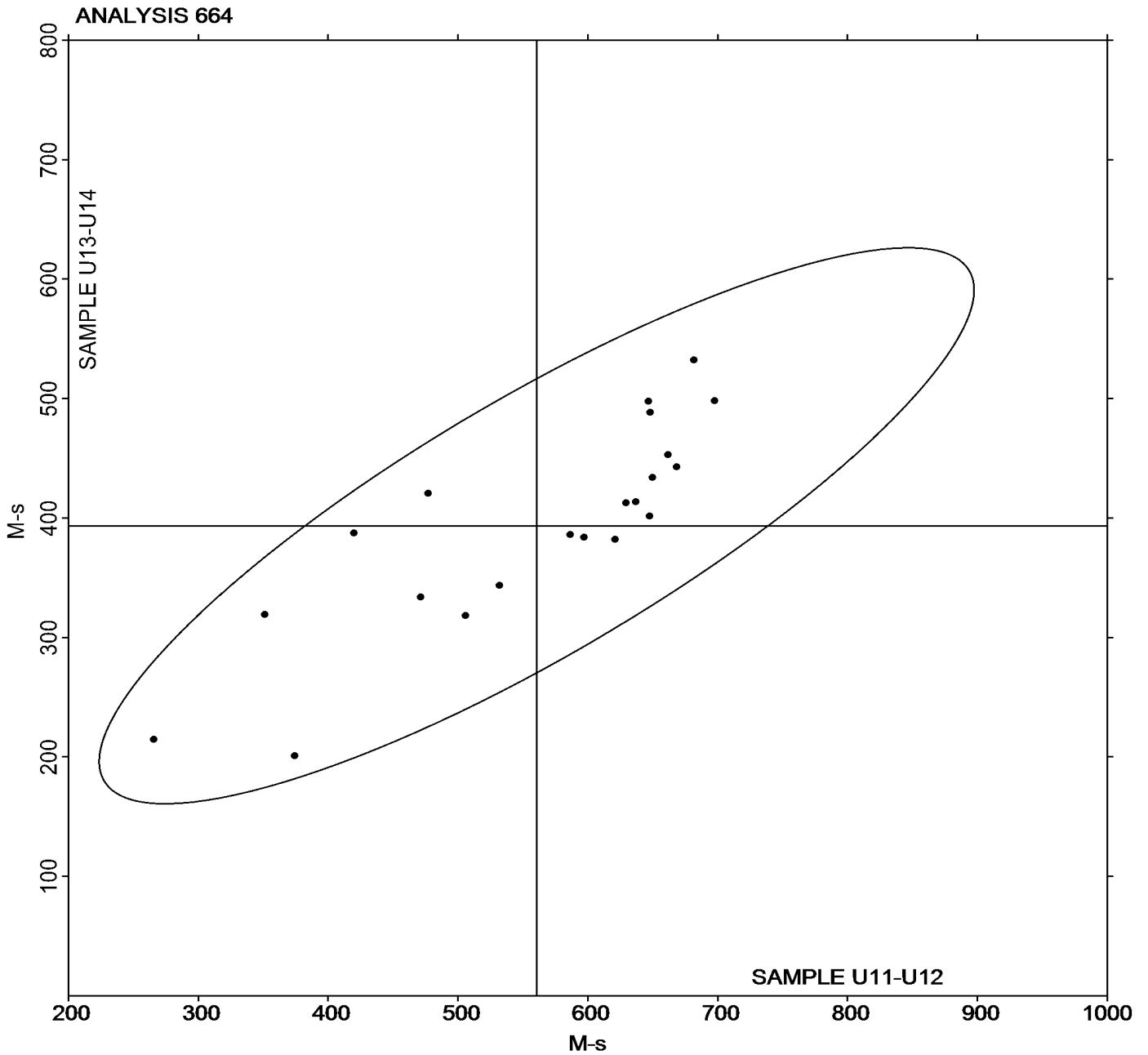


**Rubber Interlaboratory Testing Program**  
**Analysis 664**  
**Mooney Stress Relaxation: Area under curve (M-s)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **U11-U12** = 560.51 M-s

Grand Mean Sample **U13-U14** = 393.53 M-s







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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y11-Y12			Sample Y13-Y14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FWKCV7		2.098	0.393	0.81	3.548	0.765	0.90
LQUXPK		1.808	0.103	0.21	3.078	0.295	0.35
MTCEF6		1.890	0.185	0.38	3.068	0.285	0.34
U66JAN		0.732	-0.974	-1.99	1.133	-1.650	-1.94
UPA3KQ		1.883	0.178	0.36	2.732	-0.052	-0.06
ZNF39M		1.820	0.115	0.23	3.140	0.357	0.42

Summary Statistics	
Grand Means	
	1.7053 minutes                      2.7833 minutes
Std Dev Btwn Labs	
	0.4883 minutes                      0.8492 minutes
Statistics based on 6 of 6 reporting participants	

Samples Y11-Y12: EPDM compound, batch #1 & Y13-Y14: EPDM compound, batch #2

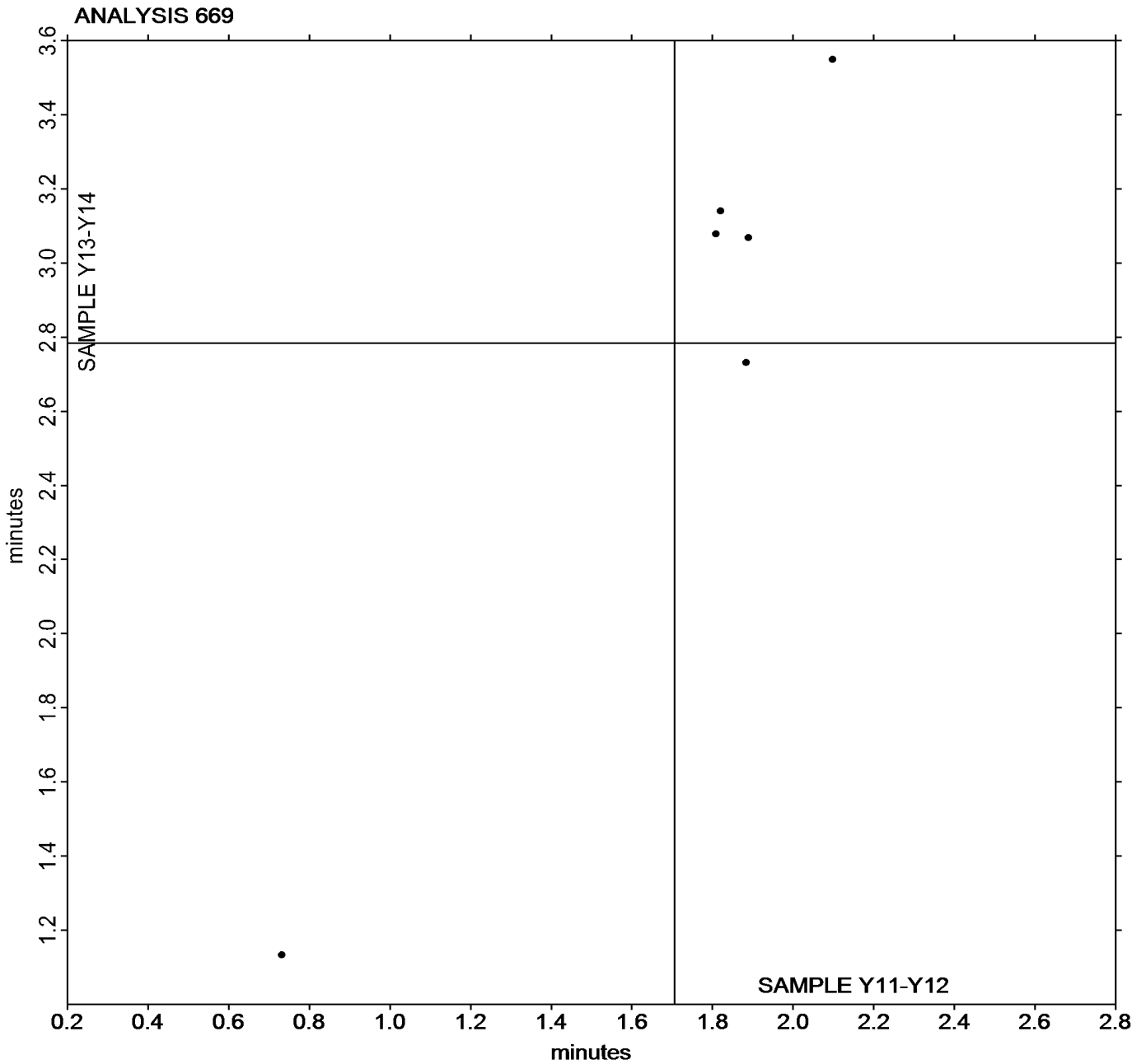


**Rubber Interlaboratory Testing Program**  
**Analysis 669**  
**ODR Vulcanization-Cure Time 10% (minutes)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y11-Y12** = 1.7053 minutes

Grand Mean Sample **Y13-Y14** = 2.7833 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 #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y11-Y12			Sample Y13-Y14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FWKCV7		1.567	0.257	1.25	2.732	0.571	1.26
LQUXPK		1.243	-0.066	-0.32	2.208	0.048	0.11
MTCEF6		1.405	0.096	0.46	2.305	0.144	0.32
U66JAN		0.957	-0.353	-1.72	1.360	-0.801	-1.77
UPA3KQ		1.393	0.084	0.41	2.058	-0.103	-0.23
ZNF39M		1.292	-0.018	-0.09	2.302	0.141	0.31

Grand Means		Summary Statistics	
	1.3094 minutes		2.1608 minutes
Std Dev Btwn Labs	0.2057 minutes		0.4518 minutes
Statistics based on 6 of 6 reporting participants			

Samples Y11-Y12: EPDM compound, batch #1 & Y13-Y14: EPDM compound, batch #2

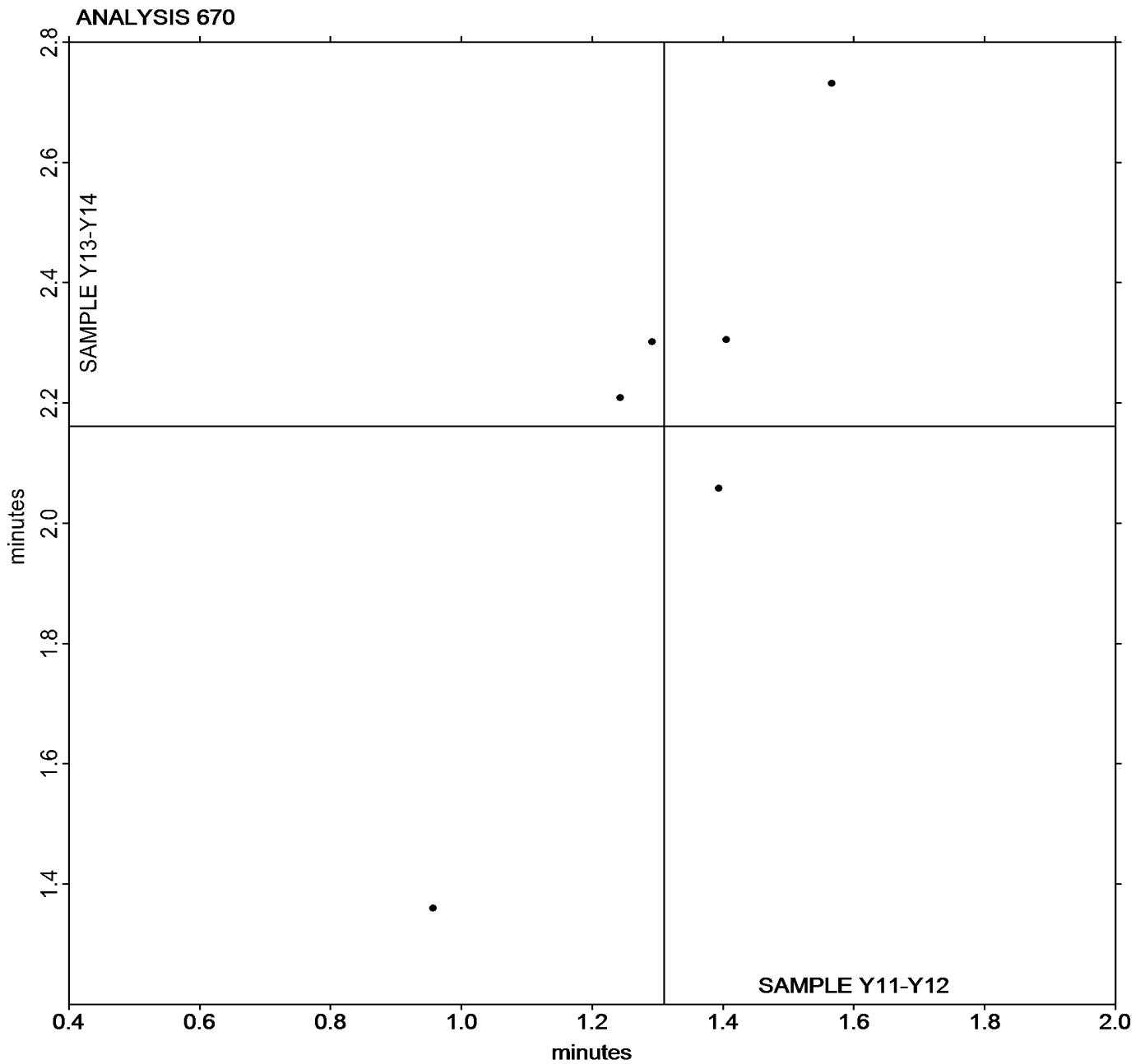


**Rubber Interlaboratory Testing Program**  
**Analysis 670**  
**ODR Vulcanization-Scorch Time, Ts1 (minutes)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y11-Y12** = 1.3094 minutes

Grand Mean Sample **Y13-Y14** = 2.1608 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 #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y11-Y12			Sample Y13-Y14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FWKCV7		3.922	0.632	0.69	6.197	1.034	0.66
LQUXPK		3.630	0.340	0.37	5.702	0.539	0.34
MTCEF6		3.437	0.147	0.16	5.492	0.329	0.21
U66JAN		1.442	-1.848	-2.01	2.005	-3.158	-2.02
UPA3KQ		3.643	0.354	0.39	5.765	0.602	0.39
ZNF39M		3.665	0.375	0.41	5.817	0.654	0.42

Summary Statistics	
Grand Means	
	3.2897 minutes                      5.1628 minutes
Std Dev Btwn Labs	
	0.9185 minutes                      1.5639 minutes
Statistics based on 6 of 6 reporting participants	

Samples Y11-Y12: EPDM compound, batch #1 & Y13-Y14: EPDM compound, batch #2

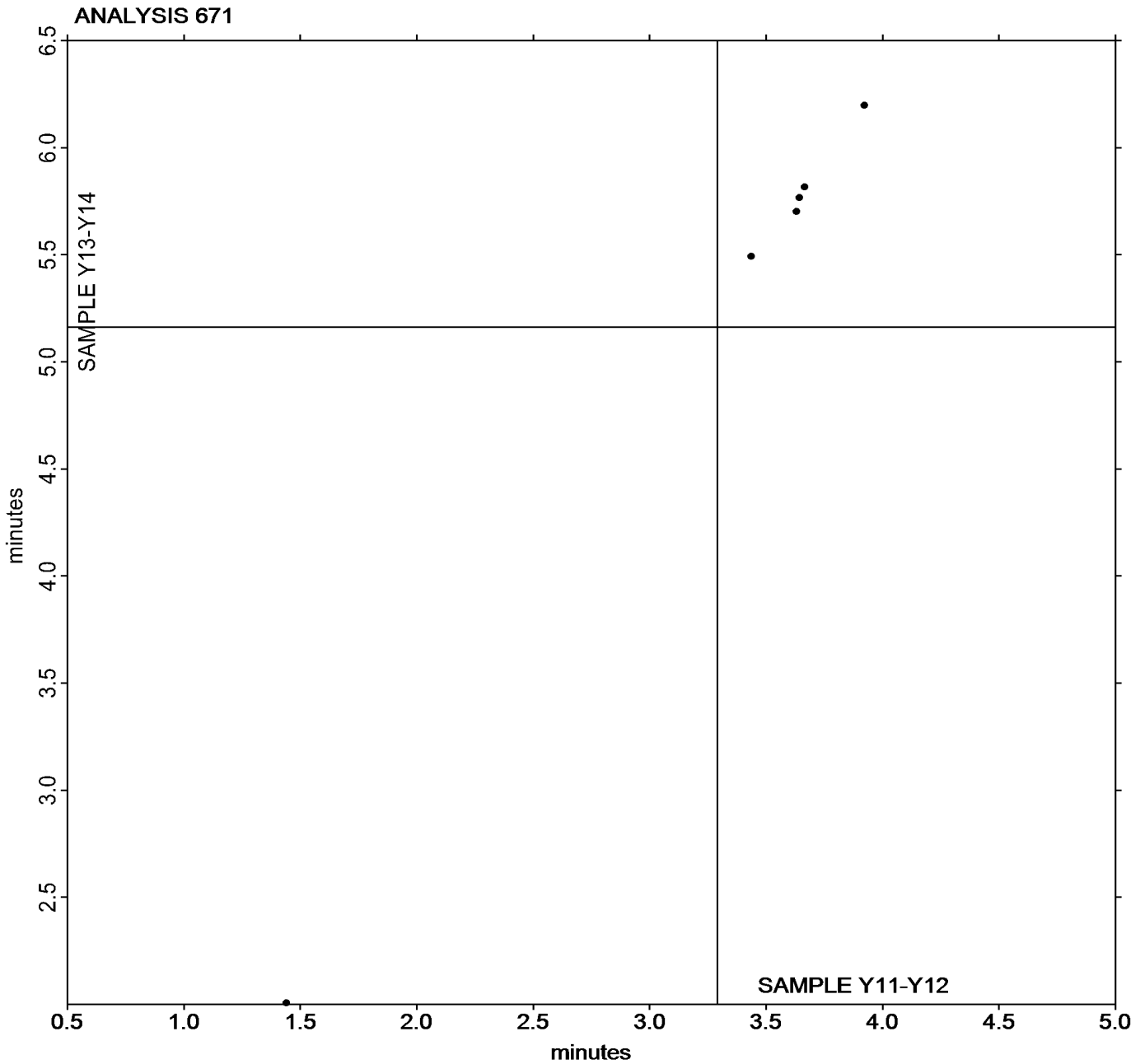


**Rubber Interlaboratory Testing Program**  
**Analysis 671**  
**ODR Vulcanization-Cure Time 50% (minutes)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y11-Y12** = 3.2897 minutes

Grand Mean Sample **Y13-Y14** = 5.1628 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 #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y11-Y12			Sample Y13-Y14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FWKCV7		14.16	3.11	0.77	12.07	1.85	0.50
LQUXPK		14.27	3.22	0.80	11.09	0.87	0.24
MTCEF6		11.66	0.61	0.15	11.40	1.18	0.32
U66JAN		3.27	-7.77	-1.93	2.77	-7.45	-2.03
UPA3KQ		11.28	0.23	0.06	12.13	1.90	0.52
ZNF39M		11.64	0.59	0.15	11.87	1.65	0.45

Summary Statistics	
Grand Means	
	11.045 minutes                      10.220 minutes
Std Dev Btwn Labs	
	4.031 minutes                      3.673 minutes
Statistics based on 6 of 6 reporting participants	

Samples Y11-Y12: EPDM compound, batch #1 & Y13-Y14: EPDM compound, batch #2

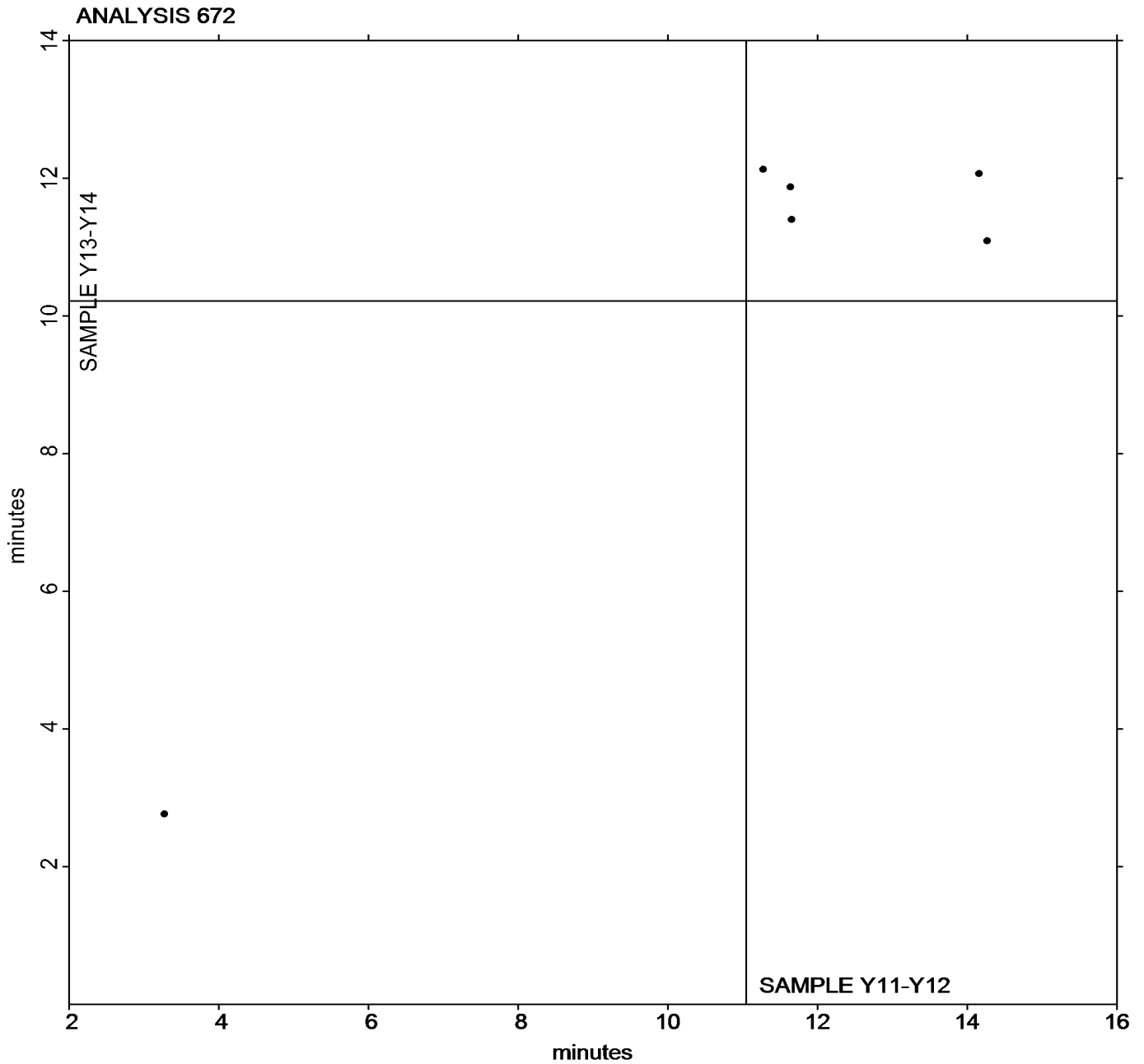


**Rubber Interlaboratory Testing Program**  
**Analysis 672**  
**ODR Vulcanization-Cure Time 90% (minutes)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y11-Y12** = 11.045 minutes

Grand Mean Sample **Y13-Y14** = 10.220 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 #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y11-Y12			Sample Y13-Y14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FWKCV7		7.828	0.520	0.36	9.90	-1.18	-0.41
LQUXPK		5.978	-1.330	-0.93	9.65	-1.44	-0.49
MTCEF6		6.073	-1.235	-0.86	8.69	-2.39	-0.82
U66JAN		6.130	-1.179	-0.82	8.75	-2.34	-0.80
UPA3KQ		8.667	1.358	0.95	14.21	3.13	1.08
ZNF39M		9.175	1.866	1.30	15.30	4.22	1.45

		Summary Statistics	
Grand Means		7.3086 lbf.in	11.083 lbf.in
Std Dev Btwn Labs		1.4341 lbf.in	2.905 lbf.in
Statistics based on 6 of 6 reporting participants			

		Summary Statistics in SI Units	
Grand Means		8.2576 dN.m	12.522 dN.m
Std Dev Btwn Labs		1.6203 dN.m	3.282 dN.m
Statistics based on 6 of 6 reporting participants			

Samples Y11-Y12: EPDM compound, batch #1 & Y13-Y14: EPDM compound, batch #2

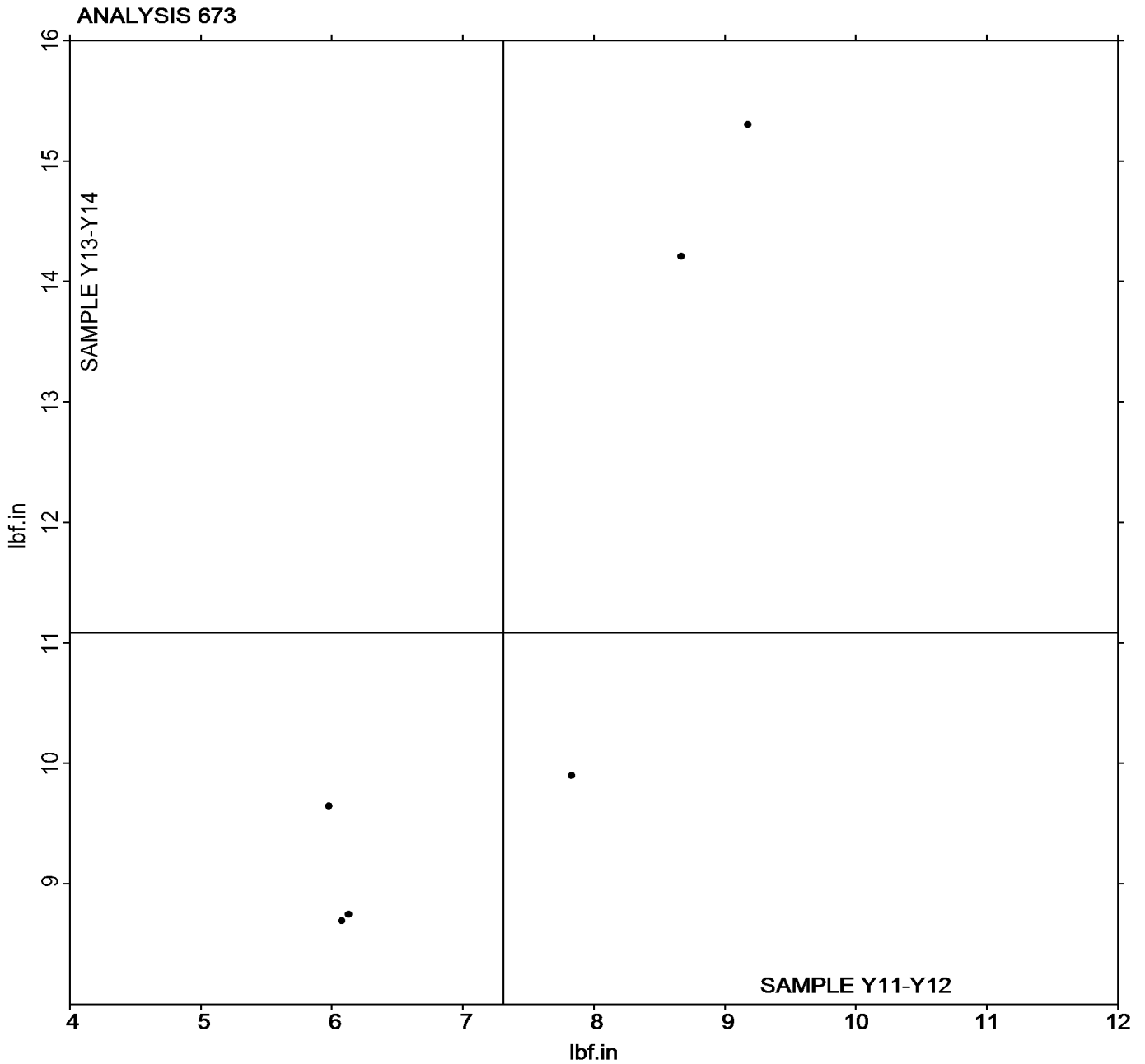


**Rubber Interlaboratory Testing Program**  
**Analysis 673**  
**ODR Vulcanization: Minimum Torque (lbf.in)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y11-Y12** = 7.3086 lbf.in

Grand Mean Sample **Y13-Y14** = 11.083 lbf.in



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



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y11-Y12			Sample Y13-Y14		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FWKCV7		42.60	-2.71	-1.21	36.20	-3.06	-0.77
LQUXPK		48.39	3.09	1.38	40.38	1.12	0.28
MTCEF6		44.86	-0.45	-0.20	36.31	-2.95	-0.74
U66JAN		45.88	0.57	0.26	35.13	-4.13	-1.04
UPA3KQ		43.10	-2.21	-0.98	44.68	5.43	1.37
ZNF39M		47.00	1.69	0.76	42.84	3.58	0.90

		Summary Statistics	
Grand Means		45.304 lbf.in	39.258 lbf.in
Std Dev Btwn Labs		2.241 lbf.in	3.966 lbf.in
Statistics based on 6 of 6 reporting participants			

		Summary Statistics in SI Units	
Grand Means		51.186 dN.m	44.355 dN.m
Std Dev Btwn Labs		2.532 dN.m	4.480 dN.m
Statistics based on 6 of 6 reporting participants			

Samples Y11-Y12: EPDM compound, batch #1 & Y13-Y14: EPDM compound, batch #2

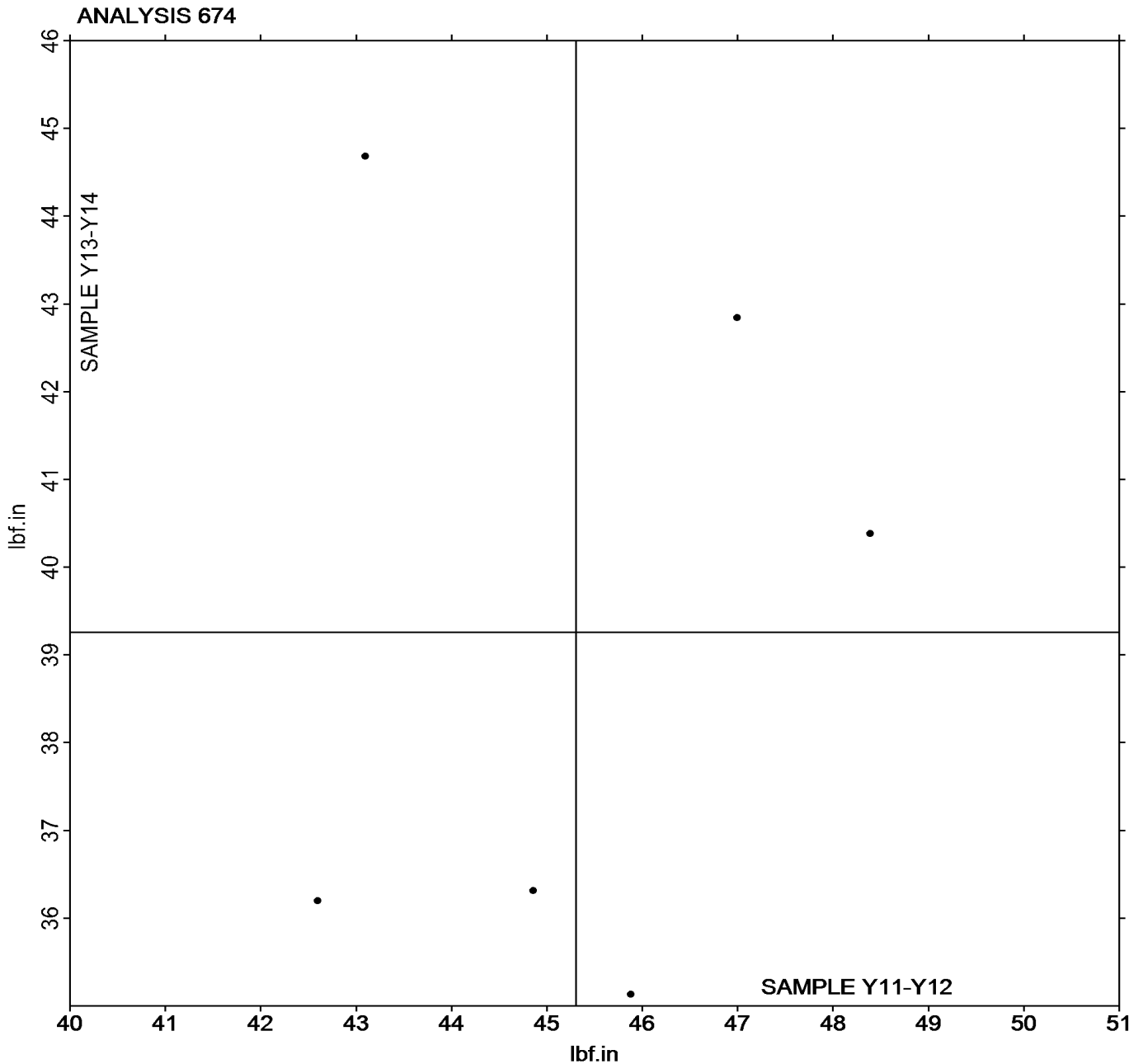


**Rubber Interlaboratory Testing Program**  
**Analysis 674**  
**ODR Vulcanization: Maximum Torque (lbf.in)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample Y11-Y12 = 45.304 lbf.in

Grand Mean Sample Y13-Y14 = 39.258 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 #209

## Analysis 684

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
27TBF2		2.432	0.148	1.49	2.658	0.126	1.35	MC
2NRHFK		2.202	-0.082	-0.83	2.525	-0.008	-0.08	ME
2X3K2L		2.238	-0.045	-0.46	2.543	0.011	0.11	MC
3JU4KH		2.352	0.068	0.68	2.592	0.059	0.64	MC
3NRMN2		2.358	0.075	0.75	2.673	0.141	1.51	MM
469B9G		2.445	0.161	1.62	2.720	0.187	2.02	MP
4EUEEV		2.390	0.106	1.07	2.652	0.119	1.28	ME
7Q4V2H		2.362	0.078	0.78	2.610	0.077	0.83	MM
7XJFKH		2.183	-0.100	-1.01	2.458	-0.074	-0.80	MC
7XL32V		2.352	0.068	0.68	2.523	-0.009	-0.10	MC
AG3DGO		2.277	-0.007	-0.07	2.521	-0.011	-0.12	MM
AKLMCA		2.308	0.025	0.25	2.547	0.014	0.15	MC
ATZDUU		2.080	-0.204	-2.05	2.442	-0.091	-0.98	MD
B9AMAN		2.240	-0.044	-0.44	2.493	-0.039	-0.42	ME
CBCZC9		2.102	-0.182	-1.83	2.340	-0.193	-2.07	MM
CLTUJU		2.433	0.150	1.51	2.747	0.214	2.30	XX
DFEDMB		2.138	-0.145	-1.46	2.347	-0.186	-2.00	MX
DP6YTA		2.508	0.225	2.26	2.675	0.142	1.53	MC
EQWEHC		2.403	0.120	1.20	2.587	0.054	0.58	ME
FGLCWB		2.290	0.006	0.06	2.545	0.012	0.13	MC
FWKCV7		2.343	0.060	0.60	2.625	0.092	0.99	MC
GBVEMD		2.173	-0.110	-1.11	2.482	-0.051	-0.55	MC
GJA4LL		2.277	-0.007	-0.07	2.490	-0.043	-0.46	ME
GKFTMA		2.167	-0.117	-1.18	2.492	-0.041	-0.44	XX
GUTKC8		2.213	-0.070	-0.71	2.373	-0.159	-1.72	MD
KCXFYM		2.170	-0.114	-1.14	2.490	-0.043	-0.46	MC
LC9K96		2.328	0.045	0.45	2.492	-0.041	-0.44	XX
LJBRRE		2.275	-0.009	-0.09	2.481	-0.052	-0.56	MC
LQUXPK		2.223	-0.060	-0.61	2.482	-0.051	-0.55	MC
LZVHM8		2.370	0.086	0.87	2.643	0.110	1.18	MC
MTCEF6		2.230	-0.054	-0.54	2.498	-0.034	-0.37	MM
QCDQDV		2.247	-0.037	-0.37	2.510	-0.023	-0.24	MC
QQW8QT		2.183	-0.100	-1.01	2.460	-0.073	-0.78	MR
U2LERT		2.368	0.085	0.85	2.542	0.009	0.10	MC
UADUFW		2.238	-0.045	-0.46	2.460	-0.073	-0.78	ME
VH8EZ4		2.175	-0.109	-1.09	2.458	-0.074	-0.80	MD
VNQG6K		2.273	-0.010	-0.10	2.485	-0.048	-0.51	MP



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
VQJDRU		2.392	0.108	1.09	2.570	0.037	0.40	MC
WG4XGB		2.260	-0.024	-0.24	2.465	-0.068	-0.73	MR
YC6ED4		2.308	0.025	0.25	2.617	0.084	0.90	MC
ZNF39M		2.323	0.040	0.40	2.528	-0.004	-0.05	XX

Grand Means		Summary Statistics	
	2.2837 minutes		2.5327 minutes
Std Dev Btwn Labs	0.0994 minutes		0.0929 minutes
Statistics based on 41 of 41 reporting participants			

Samples Y15-Y16: EPDM compound, batch #1 & Y17-Y18: 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

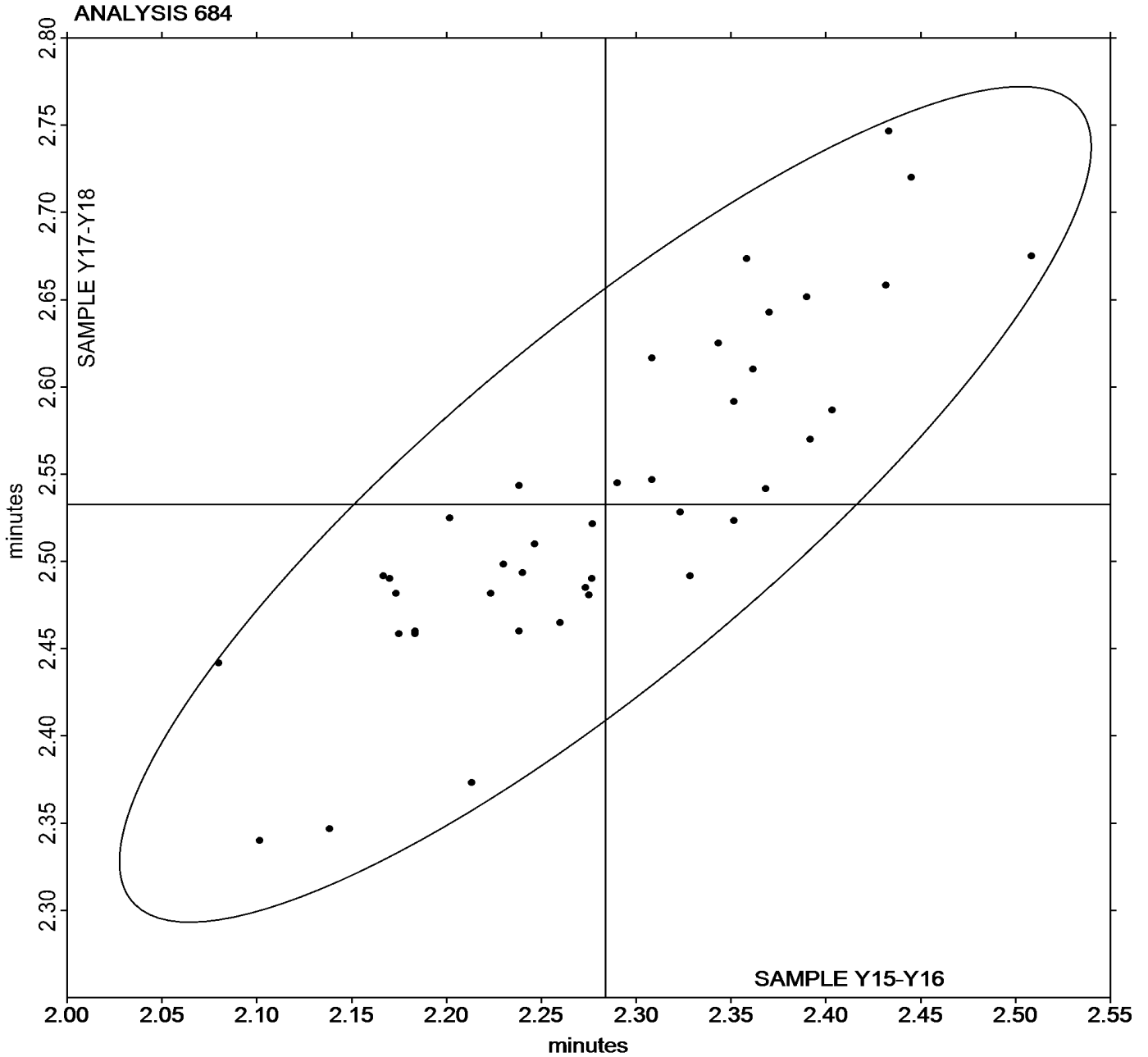


Rubber Interlaboratory Testing Program  
Analysis 684  
MDR Vulcanization-Cure Time 10% (minutes)

Report #209  
3rd Qtr 2021

Grand Mean Sample Y15-Y16 = 2.2837 minutes

Grand Mean Sample Y17-Y18 = 2.5327 minutes





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 685

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		2.051	-0.168	-1.30	2.077	-0.260	-1.82	MC
27TBF2		2.340	0.121	0.94	2.457	0.120	0.84	MC
2NRHFK		2.223	0.004	0.03	2.388	0.051	0.36	ME
2X3K2L		2.293	0.074	0.58	2.438	0.101	0.71	MC
3JU4KH		2.217	-0.002	-0.02	2.347	0.010	0.07	MC
3NRMN2		2.440	0.221	1.71	2.573	0.236	1.66	MM
469B9G		2.447	0.228	1.76	2.542	0.205	1.43	MC
4EUEEV		2.207	-0.012	-0.09	2.297	-0.040	-0.28	ME
4VM843		2.252	0.033	0.25	2.410	0.073	0.51	MC
7Q4V2H		2.185	-0.034	-0.26	2.302	-0.035	-0.25	MM
7R2WBG	X	1.953	-0.266	-2.06	2.323	-0.014	-0.10	XX
7XJFKH		1.971	-0.247	-1.92	2.047	-0.290	-2.03	MC
7XL32V		2.323	0.104	0.81	2.318	-0.019	-0.13	MC
8XHYPW		1.998	-0.221	-1.71	2.095	-0.242	-1.70	MC
AG3DGQ		2.241	0.022	0.17	2.450	0.113	0.79	MM
AKLMCA		2.147	-0.072	-0.56	2.183	-0.154	-1.08	MC
ATZDUU	X	2.072	-0.147	-1.14	2.418	0.081	0.57	MD
B9AMAN		2.125	-0.094	-0.73	2.228	-0.109	-0.76	ME
CBCZC9		2.118	-0.101	-0.78	2.298	-0.039	-0.27	MM
CLTUJU		2.237	0.018	0.14	2.365	0.028	0.20	XX
DFEDMB		1.970	-0.249	-1.93	2.008	-0.329	-2.30	MX
DP6YTA	*	2.486	0.267	2.07	2.517	0.180	1.26	MC
EQWEHC		2.350	0.131	1.02	2.432	0.095	0.66	ME
FGLCWB		2.227	0.008	0.06	2.340	0.003	0.02	MC
FWKCV7		2.267	0.048	0.37	2.387	0.050	0.35	MC
GBVEMD		2.195	-0.024	-0.18	2.397	0.060	0.42	MC
GJA4LL		2.258	0.039	0.31	2.353	0.016	0.11	ME
GKFTMA	*	2.152	-0.067	-0.52	2.405	0.068	0.48	XX
GUTKC8		2.155	-0.064	-0.49	2.250	-0.087	-0.61	MD
KCXFYM		2.120	-0.099	-0.77	2.215	-0.122	-0.86	MC
LC9K96		2.158	-0.061	-0.47	2.295	-0.042	-0.30	MD
LJBRRE		2.281	0.062	0.48	2.372	0.035	0.25	MC
LQUXPK		2.278	0.059	0.46	2.457	0.120	0.84	MC
LZVHM8		2.320	0.101	0.78	2.455	0.118	0.83	MC
MTCEF6		2.272	0.053	0.41	2.413	0.076	0.53	MM
PZA27V		1.977	-0.242	-1.88	2.083	-0.254	-1.78	MR
QCDQDV		2.282	0.063	0.49	2.478	0.141	0.99	MC
QQW8QT	X	2.895	0.676	5.24	3.110	0.773	5.42	MR





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 685

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
U2LERT		2.280	0.061	0.47	2.417	0.080	0.56	MC
UADUFW		2.107	-0.112	-0.87	2.300	-0.037	-0.26	ME
VH8EZ4		2.167	-0.052	-0.40	2.267	-0.070	-0.49	MD
VNQG6K		2.103	-0.116	-0.89	2.163	-0.174	-1.22	MP
VQJDRU		2.380	0.161	1.25	2.457	0.120	0.84	MC
WG4XGB		2.160	-0.059	-0.46	2.248	-0.089	-0.62	MR
YC6ED4		2.157	-0.062	-0.48	2.332	-0.005	-0.04	MC
ZNF39M		2.497	0.278	2.15	2.640	0.303	2.12	XX

Grand Means		Summary Statistics	
	2.2189 minutes		2.3371 minutes
Std Dev Btwn Labs	0.1291 minutes		0.1427 minutes
Statistics based on 43 of 46 reporting participants			

Samples Y15-Y16: EPDM compound, batch #1 & Y17-Y18: EPDM compound, batch #2

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

7R2WBG (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group Y15-Y16.

ATZDUU (X) - Inconsistent in testing between samples.

QQW8QT (X) - Data for all samples are high. 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

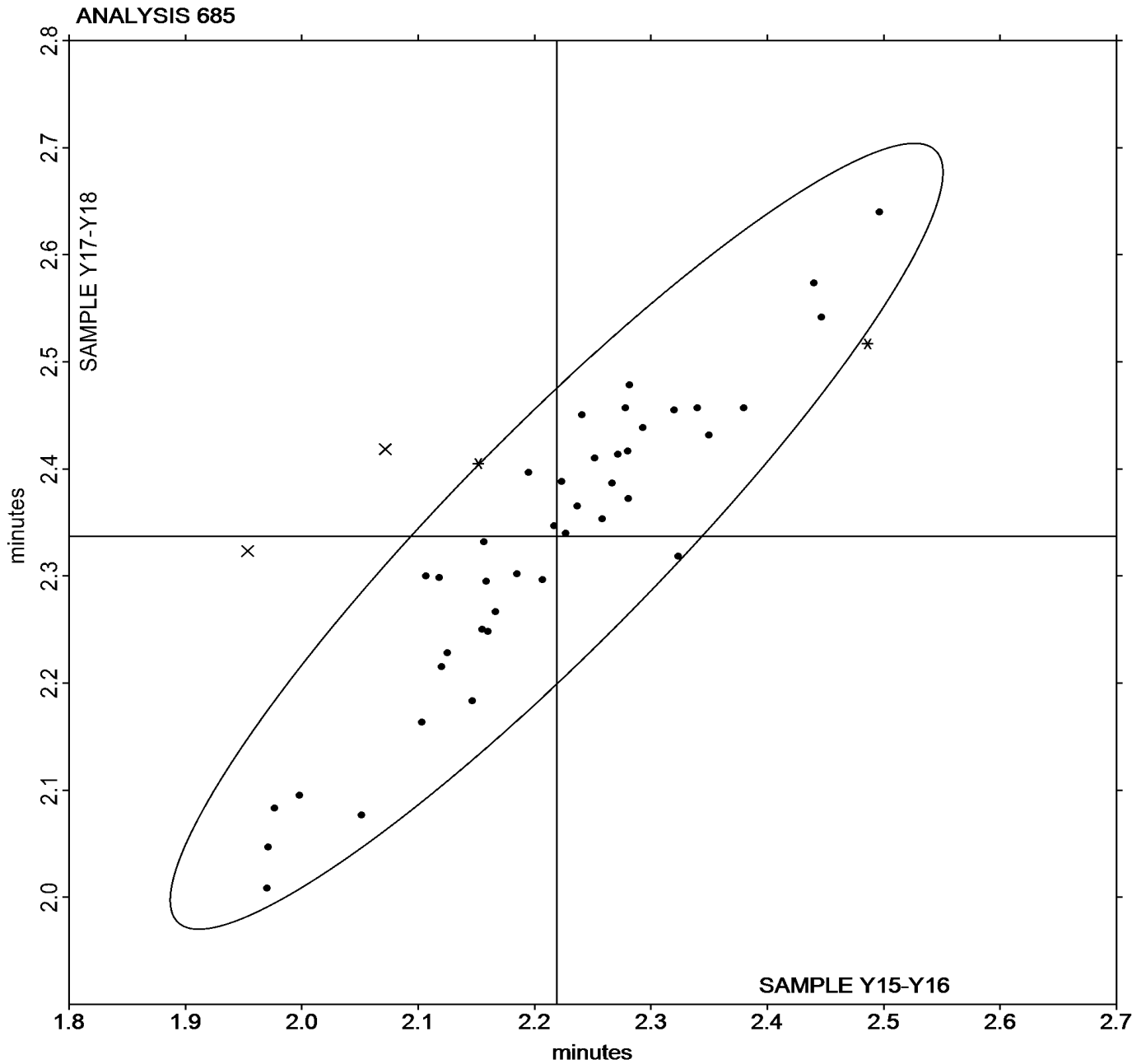


Rubber Interlaboratory Testing Program  
Analysis 685  
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #209  
3rd Qtr 2021

Grand Mean Sample Y15-Y16 = 2.2189 minutes

Grand Mean Sample Y17-Y18 = 2.3371 minutes





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 686

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		5.170	0.143	0.73	5.756	0.124	0.52	MC
27TBF2		5.278	0.252	1.28	5.867	0.234	0.99	MC
2NRHFK		4.902	-0.124	-0.63	5.757	0.124	0.52	ME
2X3K2L		5.038	0.012	0.06	5.870	0.238	1.00	MC
3JU4KH		5.110	0.084	0.42	5.683	0.051	0.22	MC
3NRMN2		5.050	0.024	0.12	5.817	0.184	0.78	MM
469B9G		5.447	0.421	2.13	6.133	0.501	2.11	MC
4EUEEV		5.197	0.171	0.86	5.928	0.296	1.25	ME
4VM843		4.982	-0.044	-0.22	5.417	-0.216	-0.91	MC
7Q4V2H		5.282	0.256	1.29	5.918	0.286	1.21	MM
7R2WBG	X	4.380	-0.646	-3.27	5.222	-0.411	-1.73	XX
7XJFKH		4.983	-0.043	-0.22	5.712	0.079	0.34	MC
7XL32V		5.158	0.132	0.67	5.693	0.061	0.26	MC
8XHYPW		4.678	-0.348	-1.76	5.288	-0.344	-1.45	MC
AG3DGQ		5.144	0.118	0.60	5.753	0.121	0.51	MM
AKLMCA		5.188	0.162	0.82	5.907	0.274	1.16	MC
ATZDUU	*	4.470	-0.556	-2.81	4.952	-0.681	-2.87	MD
B9AMAN		4.967	-0.059	-0.30	5.620	-0.012	-0.05	ME
CBCZC9		4.753	-0.273	-1.38	5.122	-0.511	-2.15	MM
CLTUJU	X	5.533	0.507	2.57	6.552	0.919	3.88	XX
DFEDMB		4.748	-0.278	-1.41	5.303	-0.329	-1.39	MX
DP6YTA		5.272	0.246	1.25	5.808	0.176	0.74	MC
EQWEHC		5.403	0.377	1.91	5.932	0.299	1.26	ME
FGLCWB		5.142	0.116	0.58	5.755	0.123	0.52	MC
FWKCV7		5.187	0.161	0.81	5.930	0.298	1.26	MC
GBVEMD		4.805	-0.221	-1.12	5.533	-0.099	-0.42	MC
GJA4LL		5.060	0.034	0.17	5.597	-0.036	-0.15	ME
GKFTMA		4.768	-0.258	-1.30	5.350	-0.282	-1.19	XX
GUTKC8		4.935	-0.091	-0.46	5.388	-0.244	-1.03	MD
KCXFYM		4.905	-0.121	-0.61	5.780	0.148	0.62	MC
LC9K96		5.083	0.057	0.29	5.588	-0.044	-0.19	MD
LJBRRE		5.070	0.043	0.22	5.561	-0.071	-0.30	MC
LQUXPK		4.887	-0.139	-0.71	5.483	-0.149	-0.63	MC
LZVHM8		5.245	0.219	1.11	5.847	0.214	0.90	MC
MTCEF6		4.870	-0.156	-0.79	5.518	-0.114	-0.48	MM
PZA27V		4.922	-0.104	-0.53	5.400	-0.232	-0.98	MR
QCDQDV		4.880	-0.146	-0.74	5.400	-0.232	-0.98	MC
QQW8QT		4.953	-0.073	-0.37	5.707	0.074	0.31	MR



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
U2LERT		5.258	0.232	1.17	5.620	-0.012	-0.05	MC
UADUFW		4.918	-0.108	-0.55	5.592	-0.041	-0.17	ME
VH8EZ4		4.888	-0.138	-0.70	5.542	-0.091	-0.38	MD
VNQG6K		4.982	-0.044	-0.22	5.630	-0.002	-0.01	MC
VQJDRU		5.228	0.202	1.02	5.750	0.118	0.50	MC
WG4XGB		4.943	-0.083	-0.42	5.428	-0.204	-0.86	MR
YC6ED4		5.037	0.011	0.05	5.755	0.123	0.52	MC
ZNF39M		4.960	-0.066	-0.33	5.428	-0.204	-0.86	XX

Grand Means		Summary Statistics	
	5.0261 minutes		5.6322 minutes
Std Dev Btwn Labs	0.1977 minutes		0.2371 minutes
Statistics based on 44 of 46 reporting participants			

Samples Y15-Y16: EPDM compound, batch #1 & Y17-Y18: EPDM compound, batch #2

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

7R2WBG (X) - Inconsistent in testing between samples, data for sample group Y15-Y16 are low. Inconsistent within the determinations of sample group Y15-Y16.

CLTUJU (X) - Inconsistent in testing between samples, data for sample group Y17-Y18 are high.

**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>MR</b>	MonTech D-RPA 3000	<b>MX</b>	Rebuilt MonTech Alpha
<b>XX</b>	Instrument model not specified by lab		

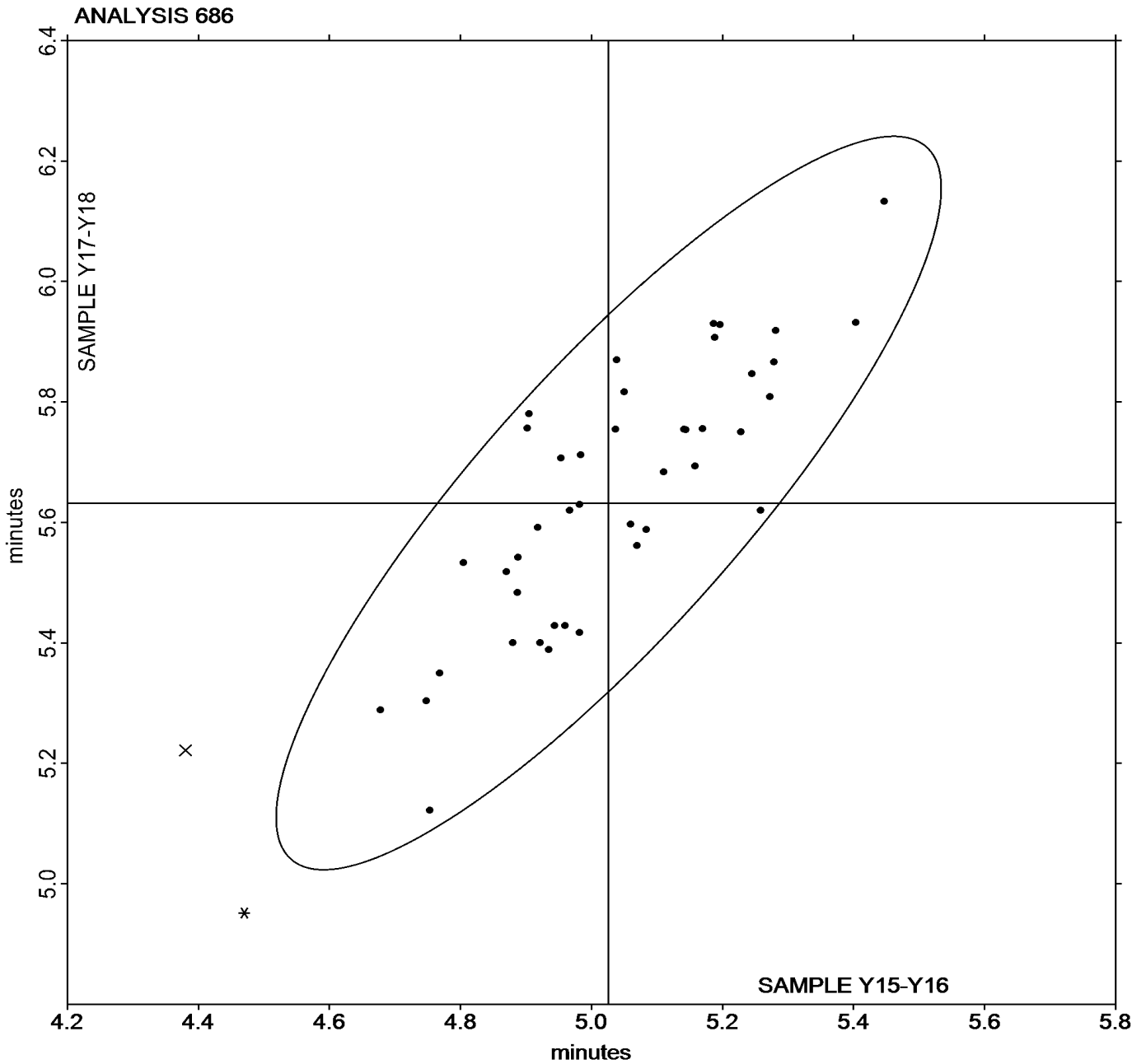


**Rubber Interlaboratory Testing Program**  
**Analysis 686**  
**MDR Vulcanization-Cure Time 50% (minutes)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y15-Y16** = 5.0261 minutes

Grand Mean Sample **Y17-Y18** = 5.6322 minutes





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 687

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		8.465	0.055	0.14	9.344	0.188	0.55	MC
27TBF2		8.927	0.517	1.32	9.452	0.296	0.87	MC
2NRHFK		8.015	-0.395	-1.01	9.022	-0.134	-0.39	ME
2X3K2L		8.318	-0.091	-0.23	9.285	0.129	0.38	MC
3JU4KH		8.482	0.072	0.18	9.162	0.006	0.02	MC
3NRMN2		8.338	-0.071	-0.18	9.295	0.139	0.41	MM
469B9G		9.025	0.615	1.58	9.875	0.719	2.11	MC
4EUEEV		8.667	0.257	0.66	9.463	0.308	0.90	ME
4VM843		8.432	0.022	0.06	8.903	-0.252	-0.74	MC
7Q4V2H	*	9.240	0.830	2.13	10.063	0.908	2.66	MM
7R2WBG	*	7.450	-0.960	-2.46	8.773	-0.382	-1.12	XX
7XJFKH		8.179	-0.230	-0.59	9.161	0.005	0.02	MC
7XL32V		8.382	-0.028	-0.07	9.007	-0.149	-0.44	MC
8XHYPW		7.983	-0.426	-1.09	8.655	-0.501	-1.47	MC
AG3DGQ		8.643	0.233	0.60	9.277	0.121	0.35	MM
AKLMCA		8.472	0.062	0.16	9.445	0.289	0.85	MC
ATZDUU		7.827	-0.583	-1.49	8.563	-0.592	-1.74	MD
B9AMAN		8.312	-0.098	-0.25	9.115	-0.041	-0.12	ME
CBCZC9		8.527	0.117	0.30	9.155	-0.001	0.00	MM
CLTUJU	X	9.630	1.220	3.12	10.640	1.484	4.35	XX
DFEDMB		7.833	-0.576	-1.48	8.647	-0.509	-1.49	MX
DP6YTA		8.645	0.235	0.60	9.172	0.017	0.05	MC
EQWEHC		9.038	0.629	1.61	9.637	0.481	1.41	ME
FGLCWB		8.812	0.402	1.03	9.518	0.363	1.06	MC
FWKCV7		8.472	0.062	0.16	9.403	0.248	0.73	MC
GBVEMD		7.890	-0.520	-1.33	8.737	-0.419	-1.23	MC
GJA4LL		8.605	0.195	0.50	9.242	0.086	0.25	ME
GKFTMA		8.245	-0.165	-0.42	8.932	-0.224	-0.66	XX
GUTKC8		8.302	-0.108	-0.28	8.808	-0.347	-1.02	MD
KCXFYM		7.825	-0.585	-1.50	8.975	-0.181	-0.53	MC
LC9K96		8.718	0.309	0.79	9.190	0.034	0.10	MD
LJBRRE		8.586	0.177	0.45	9.245	0.089	0.26	MC
LQUXPK		8.393	-0.016	-0.04	9.203	0.048	0.14	MC
LZVHM8		8.946	0.536	1.37	9.803	0.647	1.90	MC
MTCEF6		7.763	-0.646	-1.65	8.510	-0.646	-1.89	MM
PZA27V		8.487	0.077	0.20	8.872	-0.284	-0.83	MR
QCDQDV		8.120	-0.290	-0.74	8.837	-0.319	-0.93	MC
QQW8QT		8.108	-0.301	-0.77	9.023	-0.132	-0.39	MR



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

**Report #209**  
**3rd Qtr 2021**

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
U2LERT		8.945	0.535	1.37	9.350	0.194	0.57	MC
UADUFW		8.403	-0.006	-0.02	8.918	-0.237	-0.70	ME
VH8EZ4		8.252	-0.158	-0.40	9.108	-0.047	-0.14	MD
VNQG6K		8.253	-0.156	-0.40	9.137	-0.019	-0.06	MP
VQJDRU		9.128	0.719	1.84	9.695	0.539	1.58	MC
WG4XGB		8.423	0.014	0.04	9.020	-0.136	-0.40	MR
YC6ED4		8.185	-0.225	-0.57	9.077	-0.079	-0.23	MC
ZNF39M		8.368	-0.041	-0.11	8.932	-0.224	-0.66	XX

Grand Means		Summary Statistics	
	8.4095 minutes		9.1557 minutes
Stnd Dev Btwn Labs	0.3906 minutes		0.3413 minutes
Statistics based on 45 of 46 reporting participants			

Samples Y15-Y16: EPDM compound, batch #1 & Y17-Y18: EPDM compound, batch #2

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

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

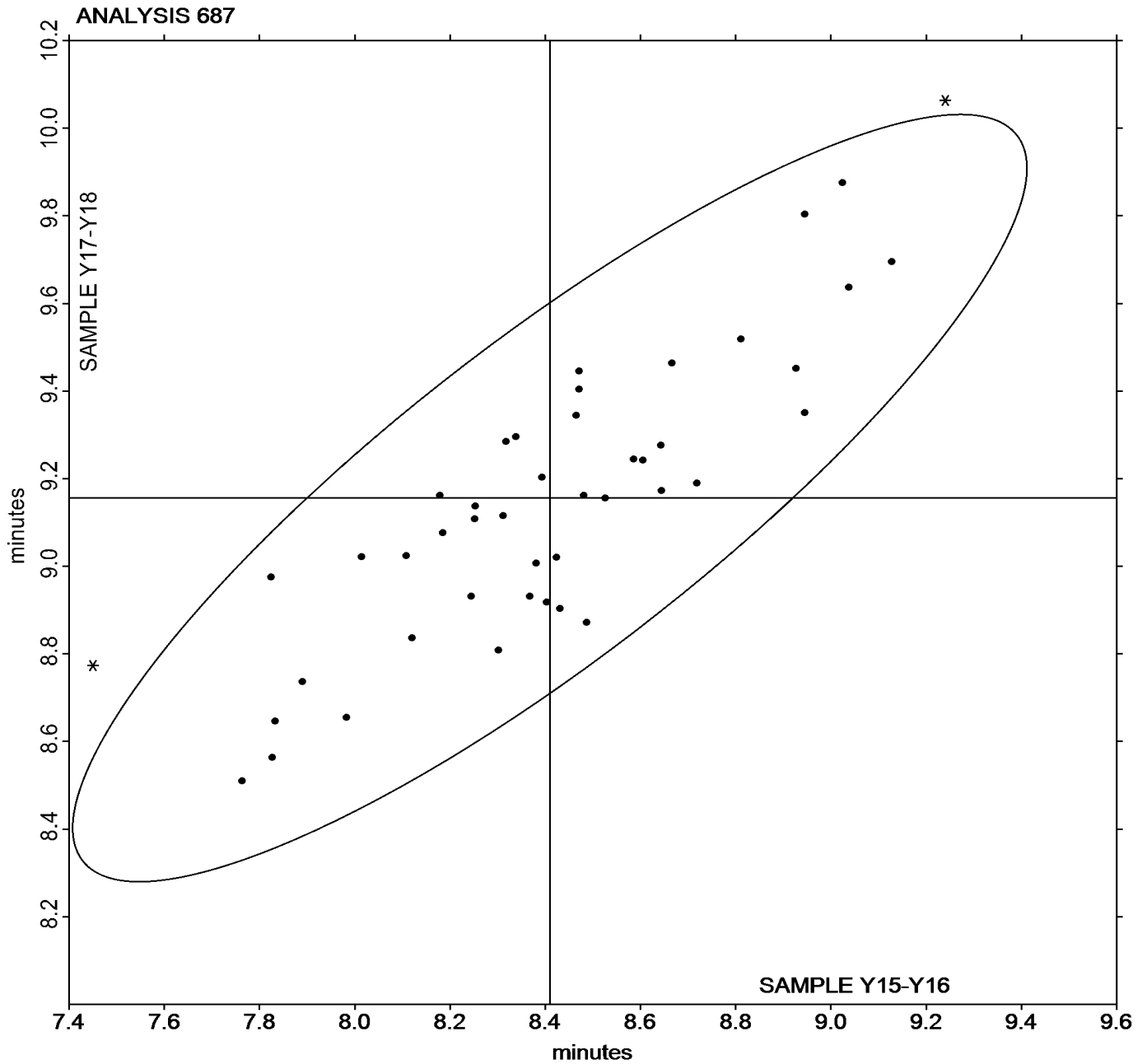


**Rubber Interlaboratory Testing Program**  
**Analysis 687**  
**MDR Vulcanization-Cure Time 90% (minutes)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample Y15-Y16 = 8.4095 minutes

Grand Mean Sample Y17-Y18 = 9.1557 minutes







# Rubber Interlaboratory Testing Program

Report #209

## Analysis 688

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		2.217	-0.195	-0.78	1.839	-0.293	-0.81	MC
27TBF2		2.217	-0.195	-0.79	1.782	-0.350	-0.97	MC
2NRHFK		2.293	-0.118	-0.48	1.912	-0.220	-0.61	ME
2X3K2L		2.243	-0.168	-0.68	1.825	-0.307	-0.85	MC
3JU4KH		2.469	0.058	0.23	2.264	0.132	0.37	MC
3NRMN2		2.458	0.047	0.19	2.182	0.050	0.14	MM
469B9G		2.118	-0.293	-1.18	1.707	-0.425	-1.18	MC
4EUEEV		2.255	-0.156	-0.63	1.804	-0.328	-0.91	ME
4VM843		2.745	0.333	1.34	2.682	0.550	1.52	MC
7Q4V2H		2.735	0.323	1.30	2.548	0.416	1.15	MM
7R2WBG	X	3.673	1.262	5.08	3.800	1.668	4.61	XX
7XJFKH		2.239	-0.172	-0.69	1.940	-0.192	-0.53	MC
7XL32V		2.352	-0.060	-0.24	1.823	-0.309	-0.85	MC
8XHYPW		2.562	0.150	0.60	2.332	0.200	0.55	MC
AG3DGQ		2.419	0.008	0.03	2.294	0.162	0.45	MM
AKLMCA		2.086	-0.326	-1.31	1.602	-0.530	-1.47	MC
ATZDUU	X	3.123	0.712	2.87	3.390	1.258	3.48	MD
B9AMAN		2.373	-0.038	-0.15	2.102	-0.030	-0.08	ME
CBCZC9	*	2.825	0.413	1.67	2.968	0.836	2.31	MM
CLTUJU	X	2.947	0.535	2.16	2.485	0.353	0.98	XX
DFEDMB		2.270	-0.142	-0.57	1.945	-0.187	-0.52	MX
DP6YTA	*	2.483	0.072	0.29	1.975	-0.157	-0.43	MC
EQWEHC		2.152	-0.260	-1.05	1.817	-0.315	-0.87	ME
FGLCWB		2.312	-0.100	-0.40	2.017	-0.115	-0.32	MC
FWKCV7		2.347	-0.065	-0.26	1.907	-0.225	-0.62	MC
GBVEMD		2.428	0.017	0.07	2.205	0.073	0.20	MC
GJA4LL		2.357	-0.055	-0.22	2.035	-0.097	-0.27	ME
GKFTMA	*	3.065	0.653	2.63	3.118	0.986	2.73	XX
GUTKC8		2.181	-0.231	-0.93	1.877	-0.255	-0.71	MD
KCXFYM		2.179	-0.233	-0.94	1.809	-0.324	-0.89	MC
LC9K96	*	2.998	0.587	2.36	2.782	0.650	1.80	MD
LJBRRE		2.598	0.187	0.75	2.360	0.228	0.63	MC
LQUXPK		2.333	-0.078	-0.32	2.203	0.071	0.20	MC
LZVHM8		2.452	0.040	0.16	2.235	0.103	0.28	MC
MTCEF6		2.407	-0.005	-0.02	2.155	0.023	0.06	MM
PZA27V		2.680	0.268	1.08	2.468	0.336	0.93	MR
QCDQDV		2.750	0.338	1.36	2.645	0.513	1.42	MC



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 688

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
QQW8QT		2.573	0.162	0.65	2.230	0.098	0.27	MR
U2LERT		2.815	0.403	1.63	2.728	0.596	1.65	MC
UADUFW		2.382	-0.030	-0.12	2.140	0.008	0.02	ME
VH8EZ4		2.072	-0.340	-1.37	1.741	-0.391	-1.08	MD
VNQG6K		2.353	-0.059	-0.24	1.972	-0.160	-0.44	MP
VQJDRU		2.102	-0.310	-1.25	1.673	-0.459	-1.27	MC
WG4XGB		2.020	-0.392	-1.58	1.732	-0.400	-1.11	MR
YC6ED4		2.505	0.093	0.38	2.235	0.103	0.28	MC
ZNF39M		2.282	-0.130	-0.52	2.068	-0.064	-0.18	MM

Grand Means		Summary Statistics	
	2.4117 lbf.in		2.1320 lbf.in
Std Dev Btw Labs	0.2481 lbf.in		0.3616 lbf.in
Statistics based on 43 of 46 reporting participants			

Grand Means		Summary Statistics in SI Units	
	2.7248 dN.m		2.4089 dN.m
Std Dev Btw Labs	0.2803 dN.m		0.4085 dN.m
Statistics based on 43 of 46 reporting participants			

Samples Y15-Y16: EPDM compound, batch #1 & Y17-Y18: EPDM compound, batch #2

#### Comments on Assigned Data Flags for Test #688

7R2WBG (X) - Data for all samples are high. Inconsistent within the determinations of sample group Y15-Y16.

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

CLTUJU (X) - Inconsistent in testing between samples.

#### 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

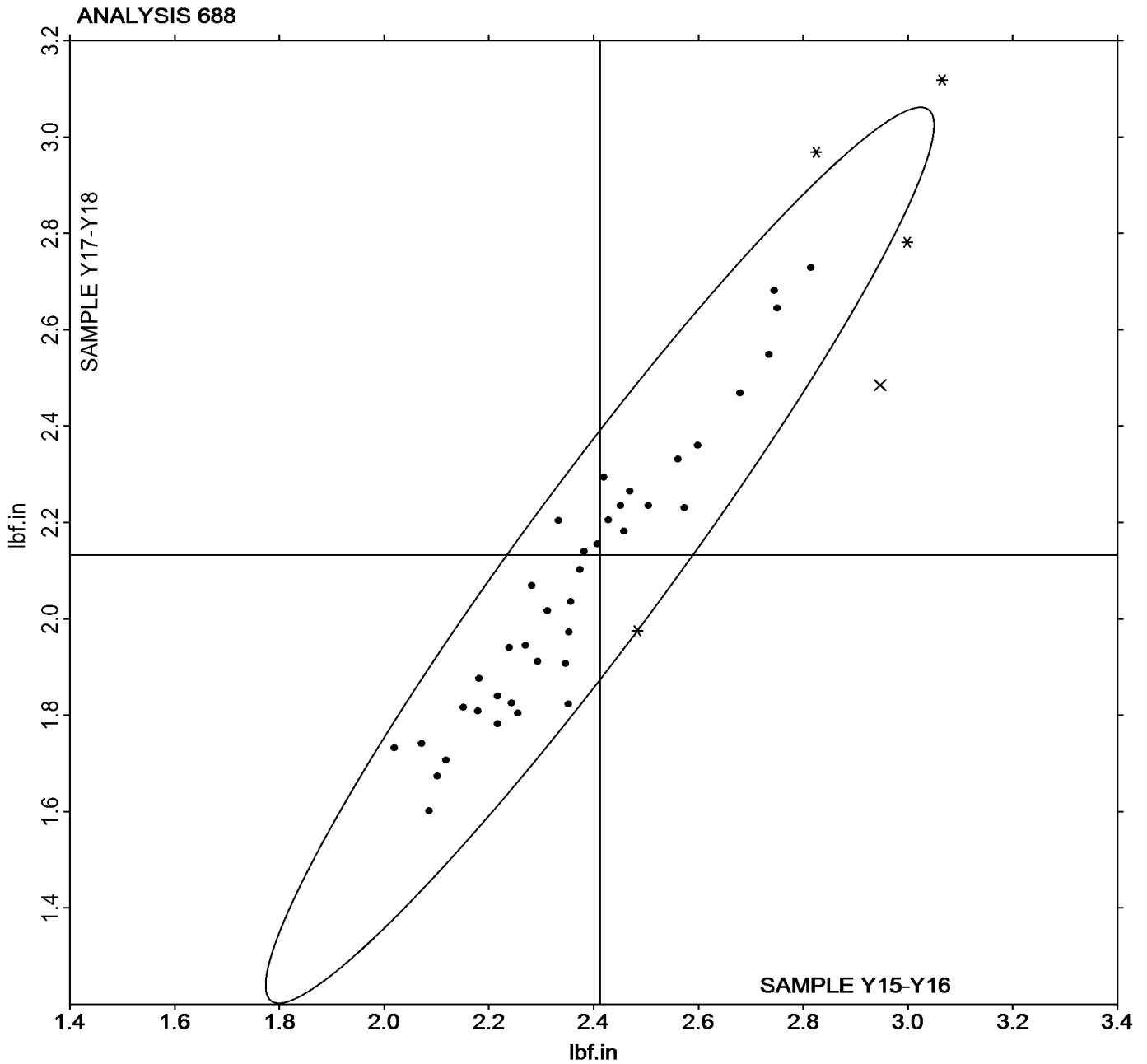


**Rubber Interlaboratory Testing Program**  
**Analysis 688**  
**MDR Vulcanization: Minimum Torque (lbf.in)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y15-Y16** = 2.4117 lbf.in

Grand Mean Sample **Y17-Y18** = 2.1320 lbf.in





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 689

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		13.15	0.34	0.41	14.01	0.57	0.67	MC
27TBF2		13.03	0.22	0.27	13.34	-0.10	-0.11	MC
2NRHFK		12.07	-0.74	-0.90	13.02	-0.42	-0.49	ME
2X3K2L		11.79	-1.02	-1.25	12.55	-0.89	-1.06	MC
3NRMN2		11.75	-1.06	-1.29	12.96	-0.48	-0.57	MM
469B9G		12.14	-0.67	-0.82	12.97	-0.47	-0.56	MC
4EUEEV		12.63	-0.18	-0.22	13.33	-0.11	-0.13	ME
4VM843		13.12	0.31	0.38	13.51	0.07	0.08	MC
7Q4V2H		14.39	1.58	1.93	15.12	1.68	1.99	MM
7R2WBG	*	15.30	2.49	3.04	16.05	2.61	3.10	XX
7XJFKH		12.92	0.11	0.14	13.85	0.41	0.49	MC
7XL32V		12.63	-0.18	-0.23	13.47	0.03	0.04	MC
8XHYPW		12.99	0.18	0.21	13.64	0.20	0.23	MC
AG3DGQ		12.74	-0.07	-0.08	12.85	-0.58	-0.69	MM
AKLMCA		12.35	-0.46	-0.56	13.16	-0.28	-0.33	MC
ATZDUU		13.22	0.41	0.51	13.66	0.22	0.26	MD
B9AMAN		12.33	-0.48	-0.58	12.99	-0.45	-0.53	ME
CBCZC9		12.71	-0.10	-0.13	13.34	-0.10	-0.12	MM
CLTUJU	*	14.90	2.09	2.55	15.68	2.24	2.66	TP
DFEDMB		12.66	-0.15	-0.18	13.58	0.14	0.16	MX
DP6YTA		12.69	-0.12	-0.15	13.30	-0.14	-0.17	MC
EQWEHC		12.59	-0.22	-0.27	12.99	-0.45	-0.53	ME
FGLCWB		12.82	0.01	0.01	13.59	0.15	0.18	MC
FWKCV7		13.08	0.27	0.33	13.73	0.29	0.35	MC
GBVEMD		12.23	-0.58	-0.70	12.91	-0.53	-0.63	MC
GJA4LL		12.49	-0.32	-0.39	13.10	-0.34	-0.40	ME
GKFTMA		13.19	0.38	0.47	13.89	0.45	0.54	XX
GUTKC8		11.52	-1.29	-1.57	11.63	-1.81	-2.15	MD
KCXFYM		12.15	-0.66	-0.80	13.22	-0.22	-0.26	MC
LC9K96		14.17	1.36	1.66	14.69	1.25	1.48	MD
LJBRRE		12.59	-0.22	-0.27	13.22	-0.22	-0.26	MC
LQUXPK		11.87	-0.94	-1.15	12.36	-1.08	-1.28	MC
LZVHM8		12.91	0.10	0.13	13.72	0.28	0.34	MC
MTCEF6		12.05	-0.76	-0.93	12.93	-0.51	-0.61	MM
PZA27V		13.60	0.79	0.97	13.72	0.28	0.33	MR
QCDQDV		12.54	-0.27	-0.33	12.95	-0.49	-0.58	MC
QQW8QT		13.99	1.18	1.44	15.11	1.67	1.98	MR



# Rubber Interlaboratory Testing Program

Report #209

## Analysis 689

3rd Qtr 2021

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

WebCode	Data Flag	Sample Y15-Y16			Sample Y17-Y18			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
U2LERT		13.66	0.85	1.03	13.77	0.33	0.39	MC
UADUFW	*	13.63	0.82	1.00	13.45	0.01	0.01	ME
VH8EZ4		12.18	-0.63	-0.77	13.31	-0.13	-0.16	MD
VNQG6K		11.74	-1.07	-1.31	12.18	-1.26	-1.49	MC
VQJDRU		12.18	-0.63	-0.77	12.59	-0.85	-1.01	MC
WG4XGB		12.97	0.16	0.19	13.47	0.03	0.04	MR
YC6ED4		12.76	-0.05	-0.06	13.42	-0.02	-0.02	MC
ZNF39M		12.01	-0.80	-0.98	12.45	-0.99	-1.18	MM

Grand Means		Summary Statistics	
	12.809 lbf.in		13.439 lbf.in
Std Dev Btwn Labs	0.819 lbf.in		0.842 lbf.in
Statistics based on 45 of 45 reporting participants			

Grand Means		Summary Statistics in SI Units	
	14.473 dN.m		15.184 dN.m
Std Dev Btwn Labs	0.925 dN.m		0.952 dN.m
Statistics based on 45 of 45 reporting participants			

Samples Y15-Y16: EPDM compound, batch #1 & Y17-Y18: 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>MR</b>	MonTech D-RPA 3000	<b>MX</b>	Rebuilt MonTech Alpha
<b>TP</b>	Tech Pro MDR model MDPT	<b>XX</b>	Instrument model not specified by lab

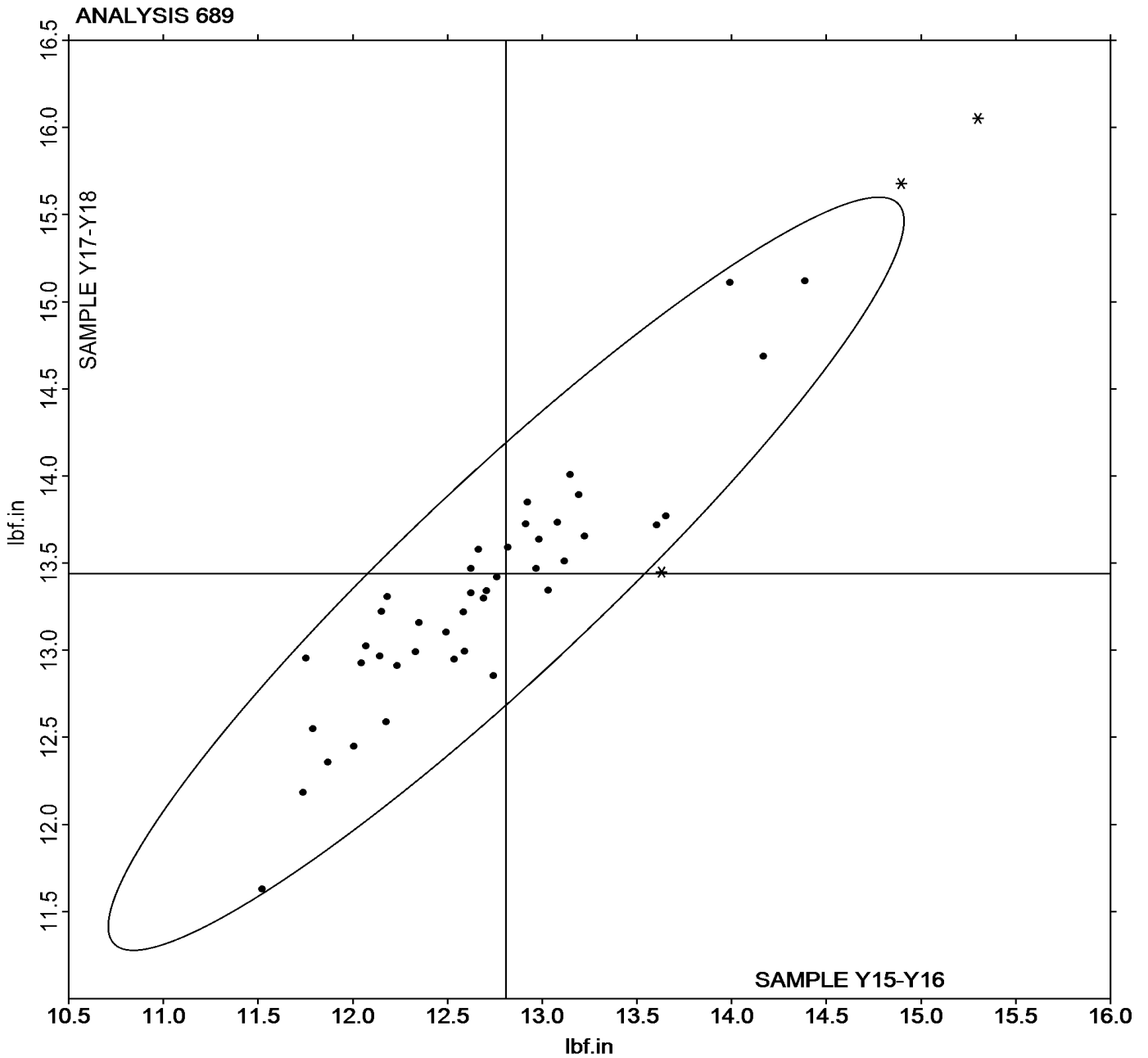


**Rubber Interlaboratory Testing Program**  
**Analysis 689**  
**MDR Vulcanization: Maximum Torque (lbf.in)**

**Report #209**  
**3rd Qtr 2021**

Grand Mean Sample **Y15-Y16** = 12.809 lbf.in

Grand Mean Sample **Y17-Y18** = 13.439 lbf.in





# Rubber Interlaboratory Testing Program

Report #209

## Analysis 690

3rd Qtr 2021

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

WebCode	Data Flag	Sample G11-G12			Sample G13-G14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		476.5	-59.5	-1.12	438.2	-59.0	-1.12	RP
4EUEEV		587.8	51.7	0.97	538.4	41.2	0.78	RP
7XJFKH		493.2	-42.9	-0.81	454.6	-42.6	-0.81	RP
7XL32V		494.8	-41.3	-0.78	456.6	-40.6	-0.77	PR
A34TFT		486.0	-50.1	-0.94	446.9	-50.3	-0.96	RP
AG3DGQ		544.9	8.8	0.17	523.5	26.3	0.50	XX
CLTUJU		622.4	86.4	1.63	571.2	74.0	1.41	XX
JAWVWW		498.6	-37.5	-0.71	459.0	-38.2	-0.73	XX
MTCEF6		595.9	59.9	1.13	573.9	76.7	1.46	RP
VH8EZ4		560.6	24.6	0.46	509.7	12.5	0.24	RP

Summary Statistics	
Grand Means	
	536.07 kPa
	497.20 kPa
Stnd Dev Btwn Labs	
	53.12 kPa
	52.53 kPa
Statistics based on 10 of 10 reporting participants	

Samples G11-G12: EPDM compound, batch #1 & G13-G14: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

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

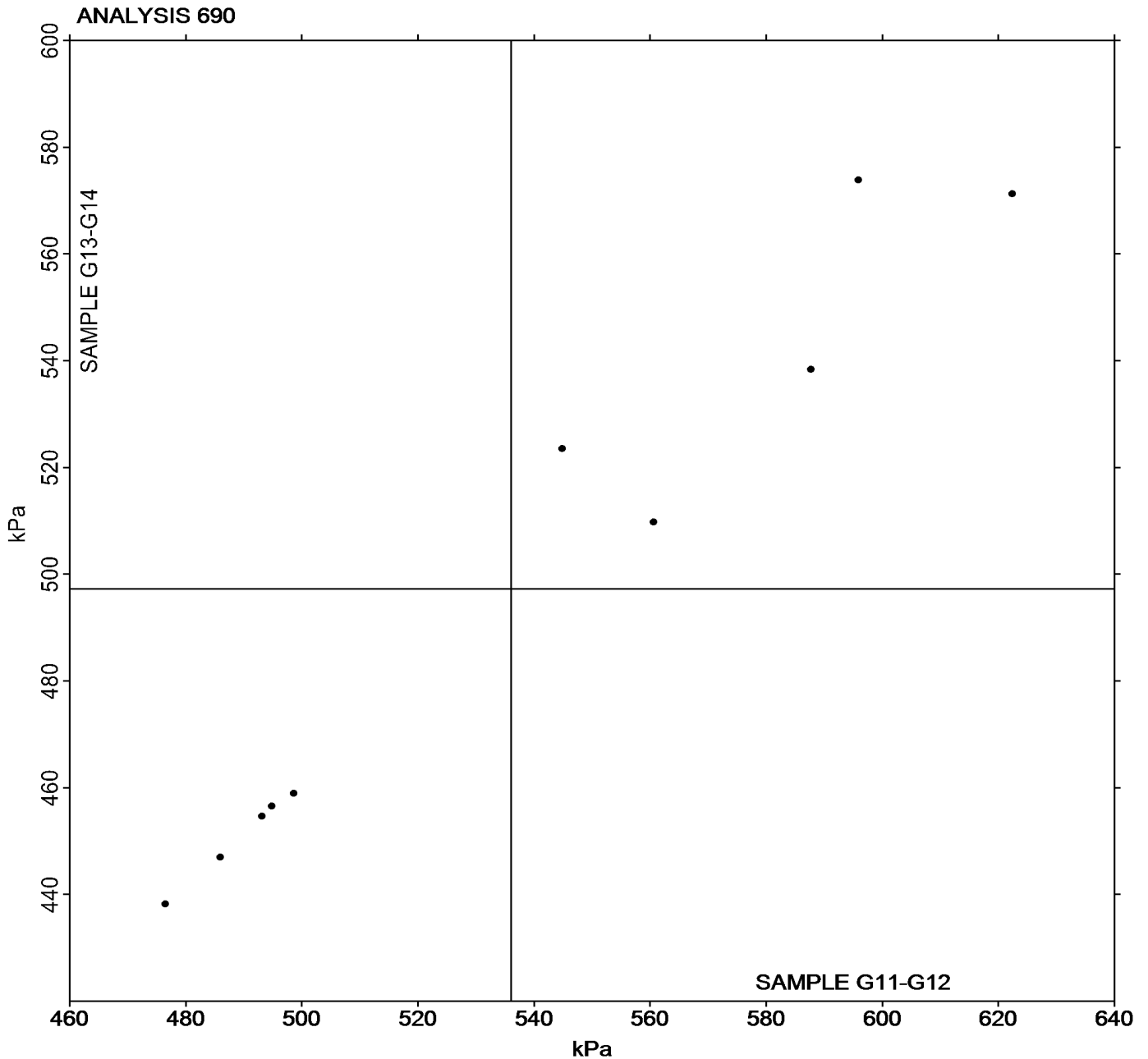


Rubber Interlaboratory Testing Program  
Analysis 690  
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #209  
3rd Qtr 2021

Grand Mean Sample G11-G12 = 536.07 kPa

Grand Mean Sample G13-G14 = 497.20 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 #209

## Analysis 691

3rd Qtr 2021

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

WebCode	Data Flag	Sample G11-G12			Sample G13-G14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		201.0	-16.9	-0.88	200.7	-15.1	-0.80	RP
4EUEEV		236.4	18.6	0.97	233.6	17.7	0.93	XX
7XJFKH		206.1	-11.8	-0.62	203.5	-12.4	-0.65	RP
7XL32V		210.9	-7.0	-0.37	209.5	-6.4	-0.33	PR
A34TFT		208.2	-9.7	-0.51	204.5	-11.4	-0.60	RP
AG3DGQ		212.8	-5.1	-0.27	212.1	-3.8	-0.20	XX
CLTUJU		263.8	45.9	2.41	262.5	46.6	2.45	XX
JAWVWW		213.8	-4.1	-0.21	212.2	-3.7	-0.19	XX
MTCEF6		203.8	-14.1	-0.74	202.1	-13.8	-0.73	RP
VH8EZ4		222.0	4.1	0.22	218.1	2.2	0.12	RP

Summary Statistics	
Grand Means	
	217.86 kPa
	215.88 kPa
Stnd Dev Btwn Labs	
	19.08 kPa
	19.03 kPa
Statistics based on 10 of 10 reporting participants	

Samples G11-G12: EPDM compound, batch #1 & G13-G14: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

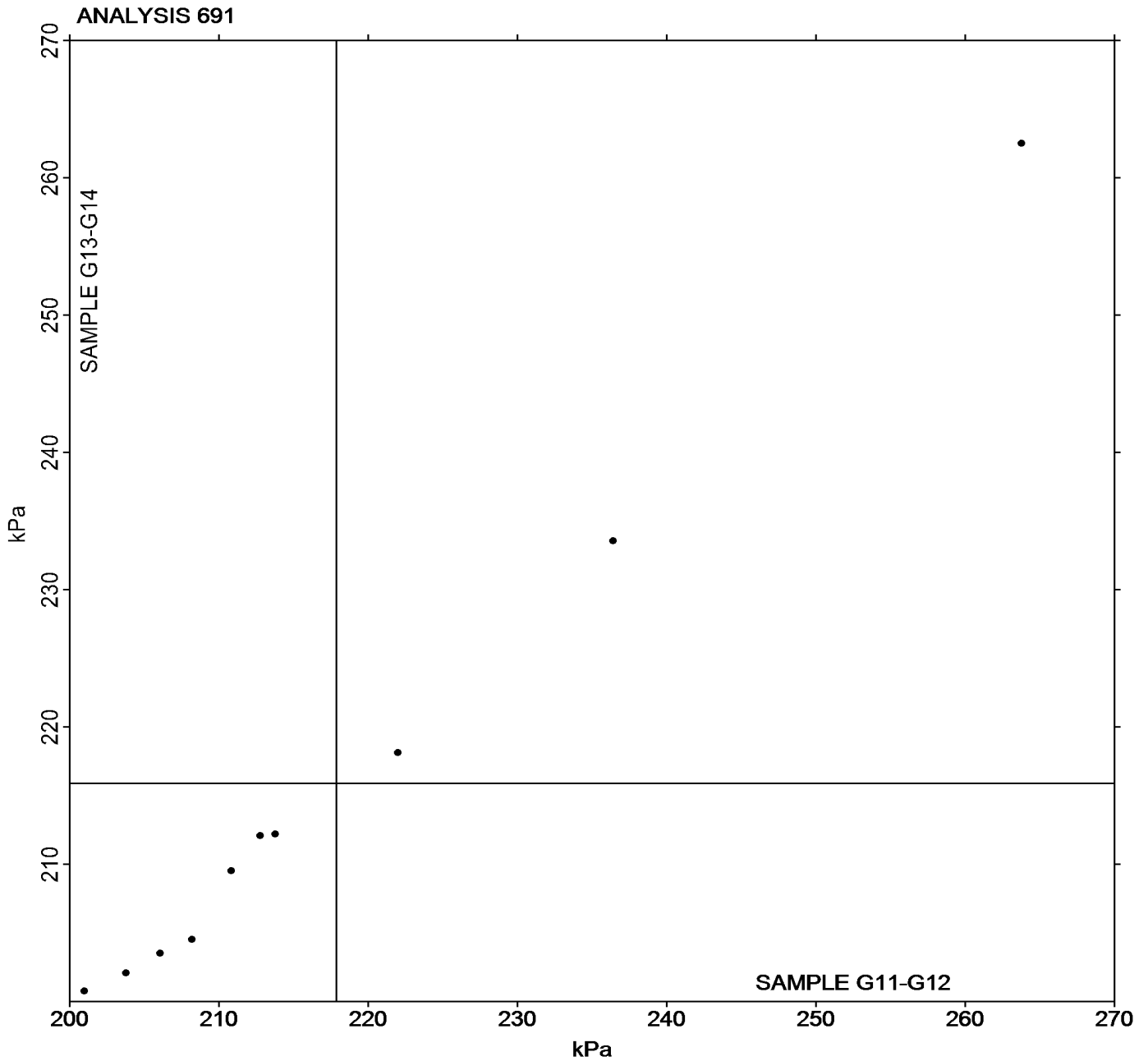
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample G11-G12 = 217.86 kPa

Grand Mean Sample G13-G14 = 215.88 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 #209

## Analysis 695

3rd Qtr 2021

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

WebCode	Data Flag	Sample G11-G12			Sample G13-G14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		71.39	-14.35	-0.99	62.29	-14.25	-0.99	RP
4EUEEV		86.21	0.46	0.03	76.70	0.16	0.01	RP
7XJFKH		79.10	-6.64	-0.46	71.02	-5.52	-0.38	RP
7XL32V		75.70	-10.05	-0.69	66.19	-10.35	-0.72	PR
A34TFT		77.42	-8.32	-0.58	68.01	-8.53	-0.59	RP
AG3DGQ		92.18	6.44	0.45	88.43	11.89	0.82	XX
CLTUJU		84.99	-0.75	-0.05	73.95	-2.59	-0.18	XX
JAWVWW		81.23	-4.51	-0.31	71.97	-4.57	-0.32	XX
MTCEF6		123.17	37.43	2.59	112.49	35.95	2.49	RP
VH8EZ4		86.03	0.29	0.02	74.34	-2.20	-0.15	RP

Summary Statistics	
Grand Means	
	85.742 kPa
	76.538 kPa
Stnd Dev Btwn Labs	
	14.468 kPa
	14.451 kPa
Statistics based on 10 of 10 reporting participants	

Samples G11-G12: EPDM compound, batch #1 & G13-G14: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

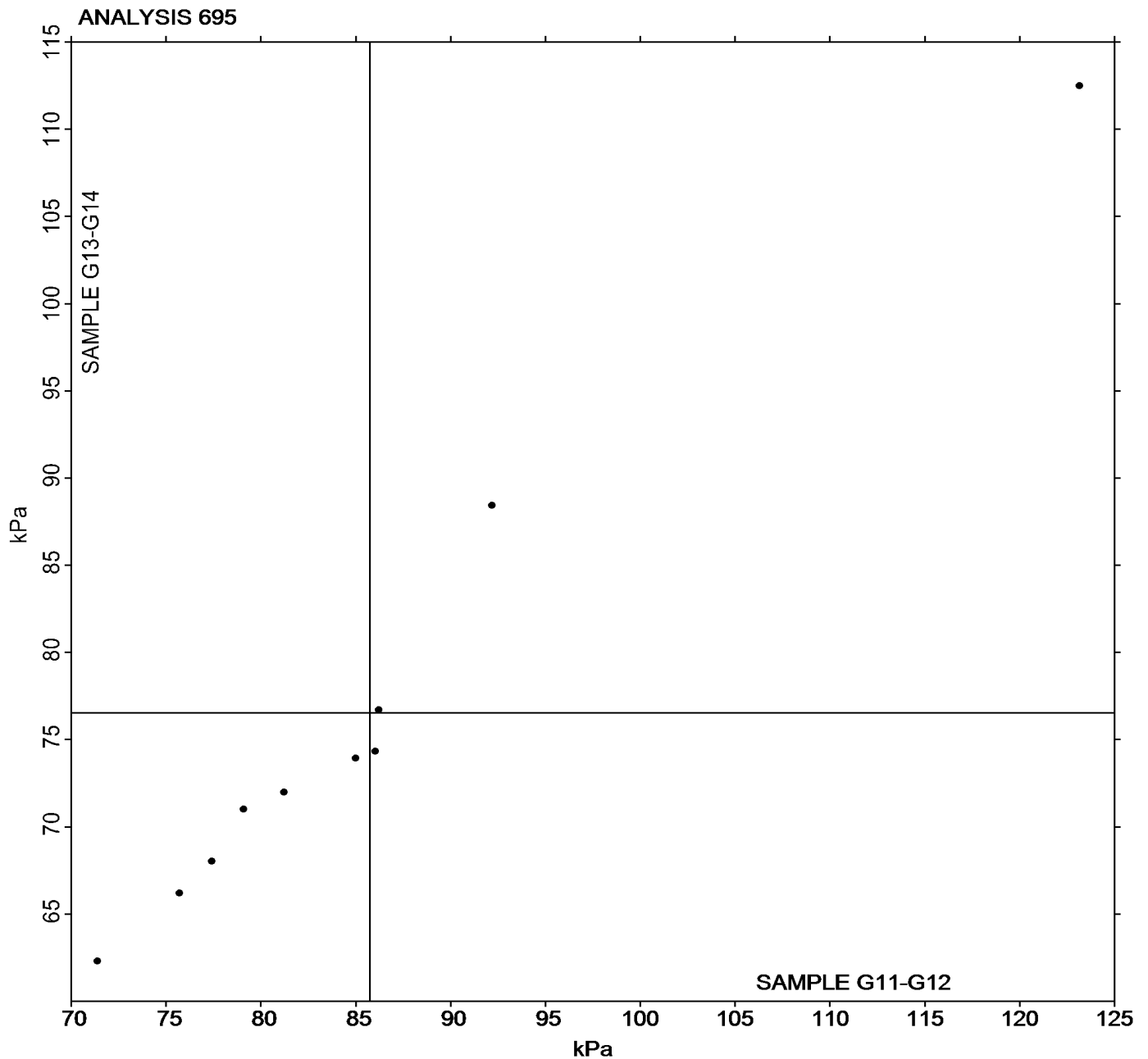
- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab



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

Grand Mean Sample **G11-G12** = 85.742 kPa

Grand Mean Sample **G13-G14** = 76.538 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 #209

## Analysis 696

3rd Qtr 2021

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

WebCode	Data Flag	Sample G11-G12			Sample G13-G14			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
23TYJ2		65.49	-8.04	-1.14	61.56	-7.72	-1.16	RP
4EUEEV		84.71	11.18	1.58	79.81	10.52	1.58	XX
7XJFKH		68.89	-4.65	-0.66	64.83	-4.45	-0.67	RP
7XL32V		67.21	-6.32	-0.89	63.03	-6.26	-0.94	PR
A34TFT		66.26	-7.27	-1.03	62.20	-7.08	-1.06	XX
AG3DGQ		72.79	-0.74	-0.10	70.85	1.56	0.23	XX
CLTUJU		81.49	7.96	1.13	75.86	6.58	0.99	XX
JAWVWW		70.96	-2.57	-0.36	66.03	-3.25	-0.49	XX
MTCEF6		75.56	2.03	0.29	71.57	2.28	0.34	XX
VH8EZ4		81.96	8.43	1.19	77.08	7.80	1.17	RP

Summary Statistics	
Grand Means	
	73.532 kPa
	69.282 kPa
Stnd Dev Btwn Labs	
	7.067 kPa
	6.681 kPa
Statistics based on 10 of 10 reporting participants	

Samples G11-G12: EPDM compound, batch #1 & G13-G14: EPDM compound, batch #2

### Key to Instrument Codes Reported by Participants

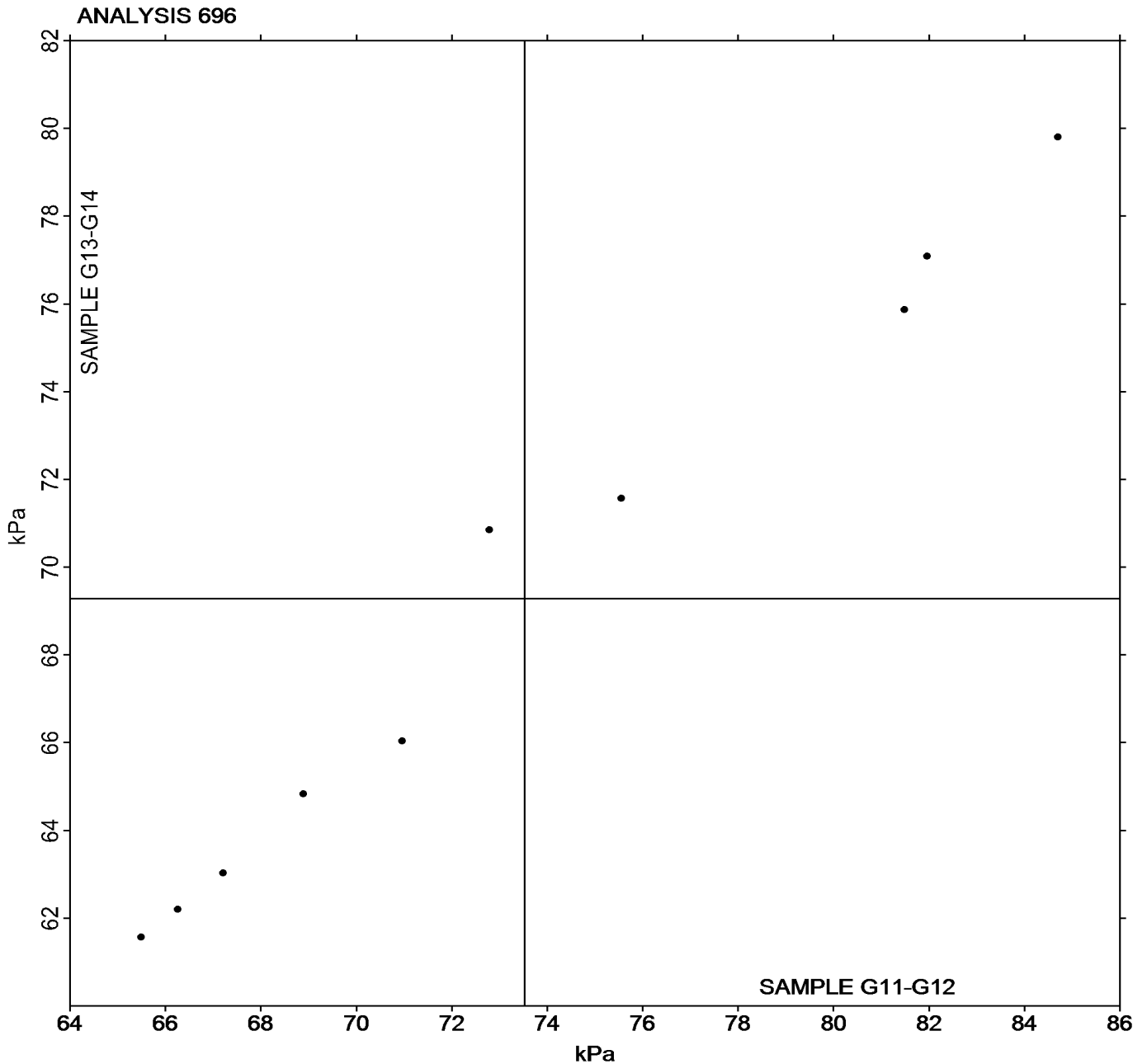
- PR PRPA 2000
- RP RPA 2000
- XX Instrument model not specified by lab



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

Grand Mean Sample G11-G12 = 73.532 kPa

Grand Mean Sample G13-G14 = 69.282 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-