



Rubber Interlaboratory Testing Program

Summary Report #218- 4th Qtr 2023

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

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Analysis	Analysis Name	Analysis	Analysis Name
605	Tensile Strength: Precured Rubber Samples	689	MDR Vulcanization Charac.: Maximum Torque
606	Ultimate Elongation: Precured Rubber Samples	690	RPA Rheological Properties: Part A - G' at 20Hz
607	Stress at 300% Elongation: Precured Samples	691	RPA Rheological Properties: Part A - G'' at 20Hz
608	Stress at 100% Elongation: Precured Samples	695	RPA Rheological Properties: Part B - G' at 1.0Hz
620	Hardness (Type A): Precured Rubber Samples	696	RPA Rheological Properties: Part B - G'' at 1.0Hz
621	Density: Precured Rubber Samples @ 25C		
625	Hardness (Shore D/Type D)		
630	Tensile Strength: Participant-Cured Rubber		
631	Ultimate Elongation: Participant-Cured Samples		
632	Tensile Stress at 300% Elongation: Lab-Cured		
633	Tensile Stress at 100% Elongation: Lab-Cured		
635	Compression Set		
640	O-Ring Tensile Strength at Break		
641	O-Ring Ultimate Elongation		
642	O-Ring Stress at 100% Elongation		
647	O-Ring Hardness (Shore A/Type A)		
648	O-Ring Hardness (Shore M)		
649	O-Ring Density		
650	O-Ring Compression Set		
660	Mooney Viscosity (4-minute readings)		
661	Mooney Viscosity (8-minute butyl readings)		
662	Mooney Stress Relaxation: t80		
663	Mooney Stress Relaxation: X30		
664	Mooney Stress Relaxation: Area under curve		
684	MDR Vulcanization Charac.: Cure Time 10%		
685	MDR Vulcanization Charac.: Scorch Time, Ts1		
686	MDR Vulcanization Charac.: Cure Time 50%		
687	MDR Vulcanization Charac.: Cure Time 90%		
688	MDR Vulcanization Charac.: Minimum Torque		

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 industries including rubber, plastics, fasteners and metals, containerboard, paper and color, wine, and hemp, 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 100 countries, currently participate in CTS programs.

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

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

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

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

Common Problems Highlighted in Footnotes

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

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



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
247Q8A		2,889.5	-241.7	-1.89	2,827.5	-290.2	-1.88
24MMZ9		3,181.3	50.1	0.39	2,968.8	-148.9	-0.96
28MYV9	M	3,083.3	-47.9	-0.38	3,043.5	-74.2	-0.48
2DQX8Y		3,095.0	-36.2	-0.28	2,820.0	-297.7	-1.93
2LLZ9A		2,993.0	-138.2	-1.08	3,005.0	-112.7	-0.73
2Q39WA		2,934.9	-196.3	-1.54	3,323.9	206.3	1.34
2RU4L4		3,343.1	212.0	1.66	3,183.6	65.9	0.43
2ZP7ME		3,087.9	-43.3	-0.34	3,356.2	238.5	1.55
3MYWEE		2,972.7	-158.5	-1.24	2,873.1	-244.6	-1.58
46UM8M		3,050.2	-81.0	-0.63	2,966.0	-151.6	-0.98
474RKB		3,326.3	195.1	1.53	3,275.1	157.4	1.02
49WMA6		3,121.5	-9.7	-0.08	3,232.0	114.3	0.74
4D4BLL		3,055.0	-76.2	-0.60	3,175.0	57.3	0.37
4UUE7W		3,186.3	55.1	0.43	3,190.9	73.2	0.47
6FNHK9		3,268.0	136.8	1.07	3,342.5	224.8	1.46
79JZPT	M	3,037.6	-93.6	-0.73	3,062.4	-55.2	-0.36
7DGLEB		2,949.0	-182.1	-1.43	2,713.7	-404.0	-2.62
7M4MUK		3,470.0	338.8	2.65	3,490.0	372.3	2.41
7M7BBY		3,330.8	199.6	1.56	3,132.1	14.5	0.09
8FX7Y6	*	3,470.7	339.5	2.66	3,686.9	569.3	3.69
8GCTBR		3,077.5	-53.7	-0.42	3,026.5	-91.2	-0.59
8H7L7B		3,285.0	153.8	1.20	3,141.0	23.3	0.15
8MHA78	*	2,605.3	-525.9	-4.12	2,781.3	-336.3	-2.18
8RVA3Y		2,973.3	-157.9	-1.24	3,038.6	-79.1	-0.51
8XG8RL		3,110.0	-21.2	-0.17	3,355.0	237.3	1.54
9N767L		2,945.0	-186.2	-1.46	2,725.0	-392.7	-2.54
ABFNUT		3,082.2	-49.0	-0.38	3,053.0	-64.7	-0.42
APYDQA		3,252.9	121.7	0.95	3,319.5	201.8	1.31
AV2MX3		3,234.9	103.7	0.81	3,229.7	112.0	0.73
AZJKQY		3,092.5	-38.7	-0.30	2,990.0	-127.7	-0.83
BHUWVV		3,137.2	6.0	0.05	3,110.4	-7.3	-0.05
BNK76T		2,960.5	-170.7	-1.34	2,949.5	-168.2	-1.09
BWCNJ2		3,076.8	-54.4	-0.43	3,112.0	-5.7	-0.04
CP9268		3,214.1	82.9	0.65	3,198.8	81.2	0.53
CREMVR		2,919.0	-212.1	-1.66	3,005.2	-112.5	-0.73



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DN9L7E		3,143.0	11.8	0.09	3,084.0	-33.7	-0.22
E2XZMM		3,070.7	-60.5	-0.47	3,217.6	100.0	0.65
E7BKT9		3,240.0	108.8	0.85	3,160.0	42.3	0.27
E83GH3		3,235.0	103.8	0.81	3,127.0	9.3	0.06
E8G3R6		3,061.0	-70.1	-0.55	2,982.0	-135.7	-0.88
EKRDFH		3,108.9	-22.3	-0.17	3,214.8	97.1	0.63
EN9ZVK		3,085.0	-46.2	-0.36	3,054.5	-63.2	-0.41
F4Y6Y8	*	2,720.9	-410.3	-3.21	2,579.0	-538.7	-3.49
FDMWLZ		3,135.0	3.8	0.03	3,140.5	22.8	0.15
FEXYAJ		3,153.0	21.8	0.17	3,011.5	-106.2	-0.69
FG3QZC		3,062.5	-68.7	-0.54	3,103.0	-14.7	-0.09
FJTT8L		3,276.0	144.8	1.13	3,294.0	176.3	1.14
FVM74B		3,336.2	205.0	1.60	3,424.1	306.4	1.99
G9N6Q9		3,170.5	39.3	0.31	3,176.0	58.3	0.38
GZWJMV		3,110.0	-21.2	-0.17	3,180.0	62.3	0.40
HULVMY		3,377.5	246.3	1.93	3,251.0	133.3	0.86
HUZE8W		3,138.0	6.8	0.05	3,126.8	9.1	0.06
J2EM9X		3,139.5	8.3	0.07	3,003.0	-114.7	-0.74
JHP4GL		3,280.0	148.8	1.16	3,108.9	-8.8	-0.06
JNVXBG		3,314.1	183.0	1.43	3,270.6	153.0	0.99
JXF9K9		3,189.5	58.3	0.46	3,178.5	60.8	0.39
KEH7JX		3,083.5	-47.7	-0.37	3,238.5	120.8	0.78
KRBRPT		3,241.2	110.0	0.86	3,298.8	181.1	1.17
KT3NEM		3,198.8	67.6	0.53	3,170.0	52.3	0.34
L6UWCF		3,268.9	137.7	1.08	3,245.5	127.9	0.83
M76YXE		3,219.9	88.7	0.69	3,167.7	50.0	0.32
MHXFMF		3,102.4	-28.8	-0.23	3,076.3	-41.4	-0.27
NCNL44		3,093.7	-37.5	-0.29	3,161.1	43.5	0.28
NW8MY3		3,253.5	122.3	0.96	3,187.2	69.5	0.45
NY2CJJ		3,054.0	-77.2	-0.60	3,137.5	19.8	0.13
NZAN2L		2,785.0	-346.2	-2.71	2,955.0	-162.7	-1.05
P6J49N		3,011.5	-119.7	-0.94	3,167.5	49.8	0.32
RJUNHR		2,919.3	-211.9	-1.66	2,847.2	-270.5	-1.75
RQRGQL		3,060.3	-70.9	-0.55	2,857.3	-260.4	-1.69
TBVJ3V		3,272.9	141.7	1.11	3,233.6	115.9	0.75



Rubber Interlaboratory Testing Program

Report #218

Analysis 605

4th Qtr 2023

Tensile Strength (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
TCP8MC		3,105.3	-25.9	-0.20	3,118.5	0.9	0.01
TRZQGX		3,185.1	53.9	0.42	3,191.6	73.9	0.48
TU6EX9		3,075.5	-55.7	-0.44	3,097.0	-20.7	-0.13
UZ24X		3,153.9	22.7	0.18	3,000.9	-116.8	-0.76
V2H9PM		3,212.6	81.4	0.64	3,285.1	167.5	1.09
V6GKLM		3,233.9	102.7	0.80	3,191.9	74.2	0.48
W42K2X		3,217.7	86.5	0.68	3,165.5	47.8	0.31
WFU88T		3,170.9	39.7	0.31	3,179.8	62.1	0.40
WZ2CXM		2,963.2	-168.0	-1.31	2,899.5	-218.2	-1.41
XCN28D		3,064.5	-66.7	-0.52	3,137.0	19.3	0.13
XYN3KG		2,927.0	-204.2	-1.60	2,935.0	-182.7	-1.18
Y6KETH		3,155.8	24.6	0.19	3,165.3	47.7	0.31
YWCMQF		2,970.4	-160.8	-1.26	2,984.9	-132.8	-0.86
Z7EJP3		3,014.0	-117.2	-0.92	3,292.5	174.8	1.13
ZJLDGF		2,970.0	-161.2	-1.26	2,860.0	-257.7	-1.67
ZQKY7U		3,205.0	73.8	0.58	3,252.0	134.3	0.87

Grand Means		Summary Statistics	
	3,131.19 psi		3,117.66 psi
Std Dev Btwn Labs	127.78 psi		154.34 psi
Statistics based on 80 of 86 reporting participants			

Grand Means		Summary Statistics in SI Units	
	21.589 MPa		21.500 MPa
Std Dev Btwn Labs	0.881 MPa		1.060 MPa
Statistics based on 80 of 86 reporting participants			

Samples D31-D32: Polyisoprene Compound & D33-D34: Polyisoprene Compound

Comments on Assigned Data Flags for Test #605

28MYV9 (M) - Lab omitted data for D34 sample due to thickness variation issue. Data for samples D31-D33 would not have received a data flag.

79JZPT (M) - Lab omitted data for D31 sample due to thickness variation issue. Data for samples D32-D34 would not have received a data flag.

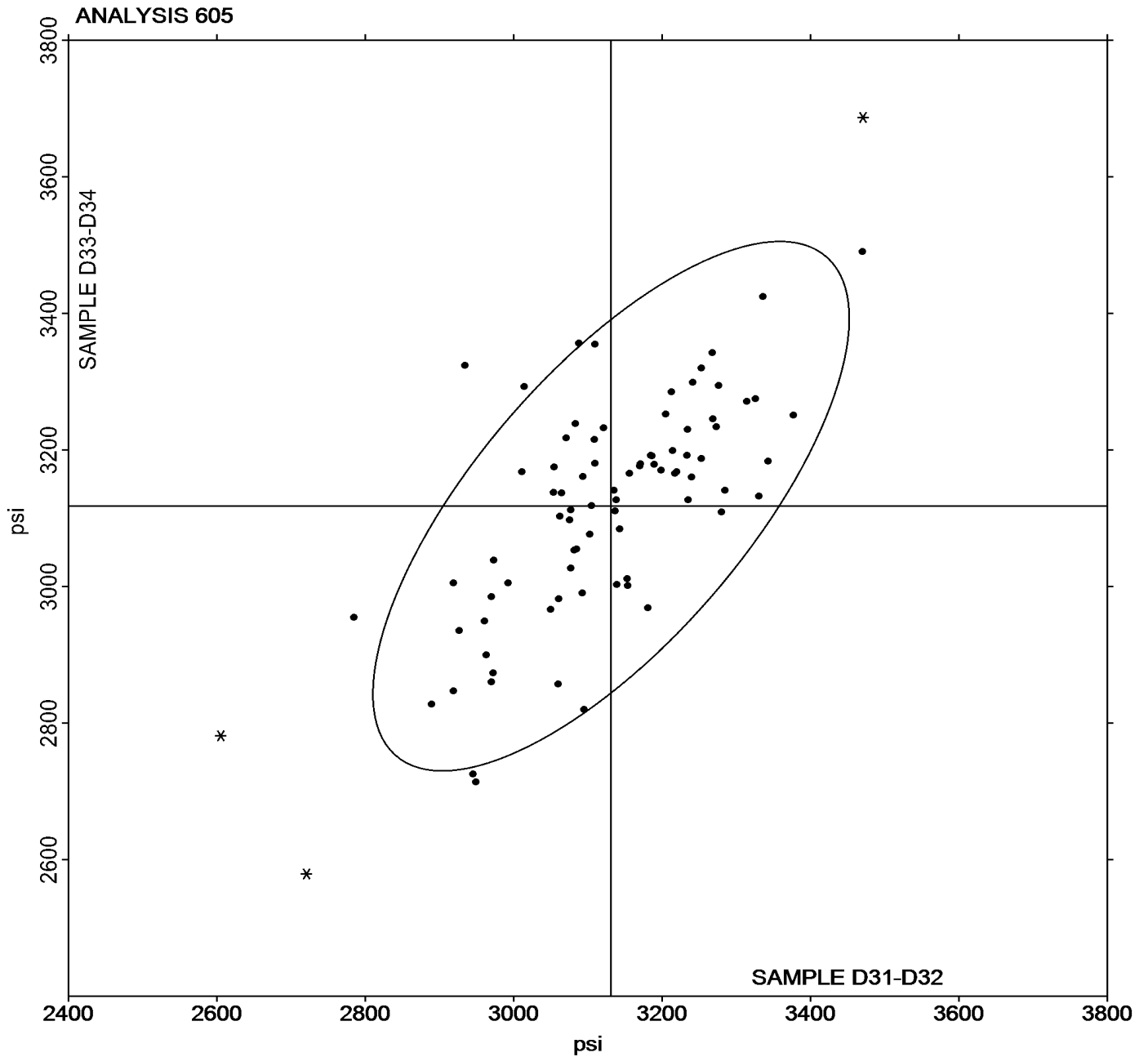


Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #218
4th Qtr 2023

Grand Mean Sample **D31-D32** = 3,131.19 psi

Grand Mean Sample **D33-D34** = 3,117.66 psi





Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
247Q8A	*	588.0	-22.1	-0.65	644.5	40.5	1.13
24MMZ9		628.3	18.1	0.53	597.3	-6.8	-0.19
28MYV9	M	601.5	-8.6	-0.25	600.0	-4.0	-0.11
2DQX8Y		679.5	69.4	2.03	699.0	95.0	2.64
2LLZ9A		562.0	-48.1	-1.41	552.0	-52.0	-1.45
2Q39WA		598.5	-11.6	-0.34	590.5	-13.5	-0.38
2RU4L4		626.0	15.9	0.47	578.0	-26.0	-0.72
2ZP7ME		615.5	5.4	0.16	625.5	21.5	0.60
3MYWEE		581.1	-29.0	-0.85	568.3	-35.7	-0.99
46UM8M		603.5	-6.6	-0.19	595.0	-9.0	-0.25
474RKB		663.9	53.7	1.58	627.5	23.5	0.66
49WMA6		571.0	-39.1	-1.15	584.0	-20.0	-0.56
4D4BLL		599.4	-10.7	-0.31	605.2	1.2	0.03
4UUE7W		599.9	-10.3	-0.30	602.2	-1.9	-0.05
6FNHK9		631.0	20.9	0.61	613.5	9.5	0.26
79JZPT	M	613.0	2.9	0.08	606.0	2.0	0.06
7DGLEB		599.9	-10.2	-0.30	571.9	-32.1	-0.89
7M4MUK		600.0	-10.1	-0.30	599.0	-5.0	-0.14
7M7BBY		603.5	-6.6	-0.19	578.5	-25.5	-0.71
8FX7Y6		632.3	22.2	0.65	626.6	22.6	0.63
8GCTBR		612.0	1.9	0.05	609.5	5.5	0.15
8H7L7B		625.5	15.4	0.45	622.5	18.5	0.51
8MHA78		586.0	-24.1	-0.71	575.8	-28.3	-0.79
8RVA3Y		583.0	-27.1	-0.80	579.0	-25.0	-0.70
8XG8RL		685.5	75.4	2.21	695.5	91.5	2.55
9N767L		608.0	-2.1	-0.06	584.5	-19.5	-0.54
ABFNUT		595.4	-14.8	-0.43	589.8	-14.2	-0.40
APYDQA		648.4	38.3	1.12	639.1	35.1	0.98
AV2MX3		660.5	50.4	1.48	660.5	56.5	1.57
AZJKQY		566.7	-43.4	-1.27	537.0	-67.0	-1.87
BHUWVV		630.2	20.1	0.59	616.4	12.3	0.34
BNK76T		557.5	-52.6	-1.54	540.5	-63.5	-1.77
BWCNJ2		596.8	-13.4	-0.39	591.5	-12.5	-0.35
CP9268		619.0	8.9	0.26	625.5	21.5	0.60
CREMVR		519.5	-90.7	-2.66	522.8	-81.3	-2.26



Rubber Interlaboratory Testing Program

Report #218

Analysis 606

4th Qtr 2023

Ultimate Elongation (percent)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DN9L7E		579.5	-30.6	-0.90	569.5	-34.5	-0.96
E2XZMM		580.8	-29.4	-0.86	556.4	-47.6	-1.33
E7BKT9		650.0	39.9	1.17	625.0	21.0	0.58
E83GH3		592.0	-18.1	-0.53	576.5	-27.5	-0.77
E8G3R6		627.1	17.0	0.50	621.6	17.6	0.49
EKRDFH		651.0	40.9	1.20	646.0	42.0	1.17
EN9ZVK		619.5	9.4	0.27	604.5	0.5	0.01
F4Y6Y8		562.3	-47.8	-1.40	543.4	-60.7	-1.69
FDMWLZ		621.5	11.4	0.33	614.0	10.0	0.28
FEXYAJ		631.5	21.4	0.63	611.5	7.5	0.21
FG3QZC		588.5	-21.6	-0.63	580.5	-23.5	-0.65
FJTT8L		609.0	-1.1	-0.03	621.0	17.0	0.47
FVM74B		625.7	15.5	0.45	661.1	57.0	1.59
G9N6Q9		551.0	-59.1	-1.73	544.0	-60.0	-1.67
GZWJMV		616.5	6.4	0.19	623.0	19.0	0.53
HULVMY		616.5	6.4	0.19	632.5	28.5	0.79
HUZE8W		662.5	52.4	1.53	650.5	46.5	1.29
J2EM9X		647.0	36.9	1.08	607.5	3.5	0.10
JHP4GL		601.0	-9.1	-0.27	587.0	-17.0	-0.47
JNVXBG		643.0	32.9	0.96	634.0	30.0	0.84
JXF9K9		615.5	5.4	0.16	613.0	9.0	0.25
KEH7JX		652.0	41.9	1.23	639.5	35.5	0.99
KRBRPT		611.1	1.0	0.03	620.9	16.9	0.47
KT3NEM		641.6	31.4	0.92	638.8	34.8	0.97
L6UWCF		641.5	31.4	0.92	644.0	40.0	1.11
M76YXE		635.0	24.9	0.73	638.5	34.5	0.96
NCNL44		597.5	-12.6	-0.37	613.5	9.5	0.26
NW8MY3		614.4	4.3	0.13	602.5	-1.5	-0.04
NY2CJJ		581.0	-29.1	-0.85	587.0	-17.0	-0.47
NZAN2L		515.5	-94.6	-2.77	503.5	-100.5	-2.80
P6J49N		564.5	-45.6	-1.34	585.0	-19.0	-0.53
RJUNHR		556.7	-53.5	-1.57	559.7	-44.3	-1.23
RQRGQL		611.9	1.7	0.05	590.8	-13.3	-0.37
TBVJ3V		641.3	31.2	0.91	640.4	36.4	1.01
TCP8MC		615.5	5.4	0.16	621.1	17.1	0.47



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
TRZQGX		637.2	27.1	0.79	644.4	40.4	1.12
TU6EX9		590.0	-20.1	-0.59	596.3	-7.7	-0.21
UZN24X		537.1	-73.0	-2.14	540.4	-63.6	-1.77
V2H9PM		623.5	13.4	0.39	625.5	21.5	0.60
V6GKLM		628.0	17.9	0.52	626.5	22.5	0.63
W42K2X		609.0	-1.1	-0.03	610.0	6.0	0.17
WAQZUB	X	22.0	-588.1	-17.24	21.9	-582.1	-16.21
WFU88T		614.6	4.4	0.13	608.6	4.6	0.13
WZ2CXM		585.3	-24.8	-0.73	597.1	-6.9	-0.19
XCN28D		653.0	42.9	1.26	634.5	30.5	0.85
XYN3KG		654.5	44.4	1.30	641.0	37.0	1.03
Y6KETH		624.6	14.4	0.42	609.4	5.3	0.15
YWCMQF		632.3	22.1	0.65	607.6	3.6	0.10
Z7EJP3		557.5	-52.6	-1.54	559.5	-44.5	-1.24
ZJLDGF		586.5	-23.6	-0.69	580.5	-23.5	-0.65
ZQKY7U		638.0	27.9	0.82	636.0	32.0	0.89

Summary Statistics	
Grand Means	610.13 percent
Std Dev Btwn Labs	34.12 percent
	604.01 percent
	35.92 percent
Statistics based on 82 of 86 reporting participants	

Samples D31-D32: Polyisoprene Compound & D33-D34: Polyisoprene Compound

Comments on Assigned Data Flags for Test #606

- 28MYV9 (M) - Lab omitted data for D34 sample due to thickness variation issue. Data for samples D31-D33 would not have received a data flag.
- 79JZPT (M) - Lab omitted data for D31 sample due to thickness variation issue. Data for samples D32-D34 would not have received a data flag.
- WAQZUB (X) - Extreme Data.

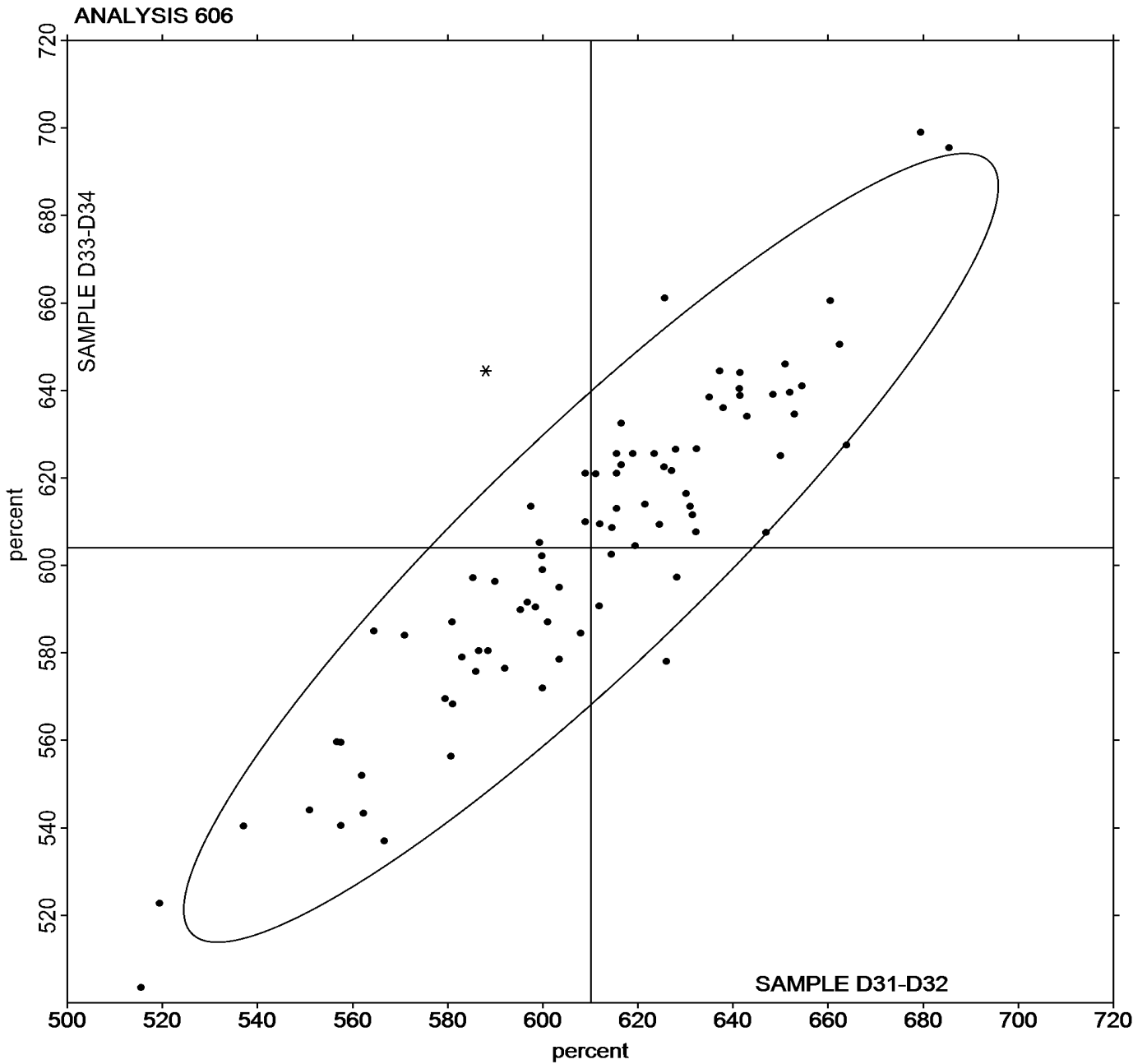


Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #218
4th Qtr 2023

Grand Mean Sample D31-D32 = 610.13 percent

Grand Mean Sample D33-D34 = 604.01 percent





Rubber Interlaboratory Testing Program

Report #218

Analysis 607

4th Qtr 2023

Stress at 300% Elongation (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		903.5	-34.0	-0.41	925.8	-26.1	-0.30
28MYV9	M	941.5	4.0	0.05	928.0	-23.8	-0.27
2DQX8Y		854.0	-83.5	-1.01	774.5	-177.3	-2.01
2LLZ9A		1,048.0	110.5	1.34	1,068.5	116.7	1.32
2Q39WA		830.7	-106.7	-1.30	954.4	2.5	0.03
2RU4L4		993.5	56.1	0.68	1,066.0	114.2	1.29
2ZP7ME		869.5	-67.9	-0.82	937.7	-14.1	-0.16
3MYWEE		976.8	39.3	0.48	994.9	43.1	0.49
46UM8M		944.9	7.5	0.09	967.4	15.6	0.18
474RKB		815.9	-121.5	-1.48	889.9	-61.9	-0.70
49WMA6		1,027.0	89.5	1.09	1,001.0	49.2	0.56
4D4BLL		964.0	26.5	0.32	964.0	12.2	0.14
4UUE7W		956.1	18.6	0.23	927.1	-24.7	-0.28
79JZPT		1,007.2	69.7	0.85	1,008.4	56.6	0.64
7DGLEB		945.6	8.1	0.10	934.5	-17.3	-0.20
7M4MUK		1,052.5	115.0	1.40	1,094.5	142.7	1.62
7M7BBY		904.3	-33.1	-0.40	892.7	-59.1	-0.67
8FX7Y6		965.0	27.5	0.33	1,079.2	127.4	1.44
8GCTBR		954.0	16.5	0.20	909.0	-42.8	-0.49
8H7L7B		926.5	-11.0	-0.13	879.5	-72.3	-0.82
8MHA78		823.5	-114.0	-1.38	901.6	-50.2	-0.57
8RVA3Y		984.8	47.4	0.57	1,014.5	62.7	0.71
8XG8RL		898.0	-39.4	-0.48	1,029.8	78.0	0.88
9N767L		889.5	-48.0	-0.58	839.5	-112.3	-1.27
APYDQA		863.0	-74.4	-0.90	907.8	-44.0	-0.50
AV2MX3		882.6	-54.9	-0.67	904.9	-47.0	-0.53
AZJKQY		1,109.2	171.7	2.08	1,143.9	192.1	2.18
BHUWVV		841.2	-96.2	-1.17	878.9	-72.9	-0.83
BNK76T		1,098.5	161.0	1.95	1,147.5	195.7	2.22
BWCNJ2		936.5	-1.0	-0.01	925.5	-26.3	-0.30
CP9268		926.8	-10.7	-0.13	964.5	12.7	0.14
CREMVR		1,042.5	105.1	1.28	1,044.9	93.1	1.05
DN9L7E		988.5	51.0	0.62	974.5	22.7	0.26
E2XZMM		899.5	-38.0	-0.46	1,078.8	127.0	1.44
E7BKT9		850.5	-87.0	-1.06	915.5	-36.3	-0.41



Rubber Interlaboratory Testing Program

Report #218

Analysis 607

4th Qtr 2023

Stress at 300% Elongation (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
E83GH3		986.5	49.0	0.60	941.0	-10.8	-0.12
E8G3R6		818.7	-118.7	-1.44	828.2	-123.6	-1.40
EKRDFH		852.1	-85.4	-1.04	892.7	-59.1	-0.67
EN9ZVK		857.5	-80.0	-0.97	915.5	-36.3	-0.41
F4Y6Y8		963.7	26.2	0.32	901.2	-50.7	-0.57
FDMWLZ		920.0	-17.5	-0.21	910.5	-41.3	-0.47
FEXYAJ		841.5	-96.0	-1.16	863.0	-88.8	-1.01
FG3QZC		958.0	20.5	0.25	1,004.0	52.2	0.59
FJTT8L		983.5	46.0	0.56	890.5	-61.3	-0.69
FVM74B		933.7	-3.8	-0.05	810.2	-141.6	-1.60
G9N6Q9		1,065.5	128.0	1.55	1,095.0	143.2	1.62
HULVMY		951.0	13.5	0.16	866.5	-85.3	-0.97
HUZE8W		787.8	-149.7	-1.82	804.0	-147.9	-1.68
J2EM9X		840.5	-97.0	-1.18	901.0	-50.8	-0.58
JHP4GL		999.3	61.8	0.75	959.8	8.0	0.09
JNVXBG		1,006.6	69.1	0.84	1,062.4	110.6	1.25
JXF9K9		943.0	5.5	0.07	941.5	-10.3	-0.12
KEH7JX		792.5	-145.0	-1.76	873.0	-78.8	-0.89
KRBRPT		1,031.2	93.7	1.14	960.7	8.9	0.10
KT3NEM		851.6	-85.8	-1.04	879.5	-72.3	-0.82
L6UWCF		890.7	-46.8	-0.57	901.5	-50.3	-0.57
M76YXE		882.6	-54.9	-0.67	869.5	-82.3	-0.93
NCNL44		956.5	19.1	0.23	900.0	-51.8	-0.59
NW8MY3		945.7	8.2	0.10	946.0	-5.9	-0.07
NY2CJJ		1,005.5	68.0	0.83	983.0	31.2	0.35
NZAN2L		1,100.0	162.5	1.97	1,195.0	243.2	2.75
P6J49N		1,104.0	166.5	2.02	1,130.5	178.7	2.02
RJUNHR		1,005.3	67.8	0.82	982.9	31.0	0.35
RQRGQL		929.7	-7.8	-0.09	909.4	-42.4	-0.48
TBVJ3V		937.2	-0.3	0.00	951.8	-0.1	0.00
TCP8MC		867.3	-70.1	-0.85	859.4	-92.5	-1.05
TRZQGX		960.9	23.4	0.28	905.8	-46.0	-0.52
TU6EX9		1,015.5	78.0	0.95	1,004.3	52.5	0.59
UZN24X		1,105.9	168.5	2.04	1,077.6	125.8	1.43
V2H9PM		914.5	-23.0	-0.28	919.5	-32.3	-0.37



Rubber Interlaboratory Testing Program

Report #218

Analysis 607

4th Qtr 2023

Stress at 300% Elongation (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
V6GKLM		886.9	-50.6	-0.61	942.9	-8.9	-0.10
W42K2X		987.0	49.5	0.60	961.6	9.8	0.11
WAQZUB	X	1.4	-936.0	-11.36	1.3	-950.5	-10.77
WFU88T		909.3	-28.2	-0.34	902.4	-49.4	-0.56
WZ2CXM		1,033.5	96.0	1.17	949.3	-2.5	-0.03
XCN28D		843.0	-94.5	-1.15	993.0	41.2	0.47
XYN3KG		751.5	-186.0	-2.26	820.0	-131.8	-1.49
Y6KETH		898.5	-38.9	-0.47	910.1	-41.7	-0.47
YWCMQF		836.1	-101.3	-1.23	879.7	-72.2	-0.82
Z7EJP3		1,052.5	115.0	1.40	1,185.5	233.7	2.65
ZJLDGF		955.3	17.8	0.22	933.0	-18.8	-0.21
ZQKY7U		864.0	-73.5	-0.89	890.5	-61.3	-0.69

Grand Means		Summary Statistics	
	937.46 psi		951.82 psi
Stnd Dev Btwn Labs	82.40 psi		88.27 psi
			Statistics based on 80 of 82 reporting participants

Grand Means		Summary Statistics in SI Units	
	6.4635 MPa		6.5600 MPa
Stnd Dev Btwn Labs	0.5681 MPa		0.6100 MPa
			Statistics based on 80 of 82 reporting participants

Samples D31-D32: Polyisoprene Compound & D33-D34: Polyisoprene Compound

Comments on Assigned Data Flags for Test #607

28MYV9 (M) - Lab omitted data for D34 sample due to thickness variation issue. Data for samples D31-D33 would not have received a data flag.

WAQZUB (X) - Extreme Data.



Rubber Interlaboratory Testing Program

Report #218

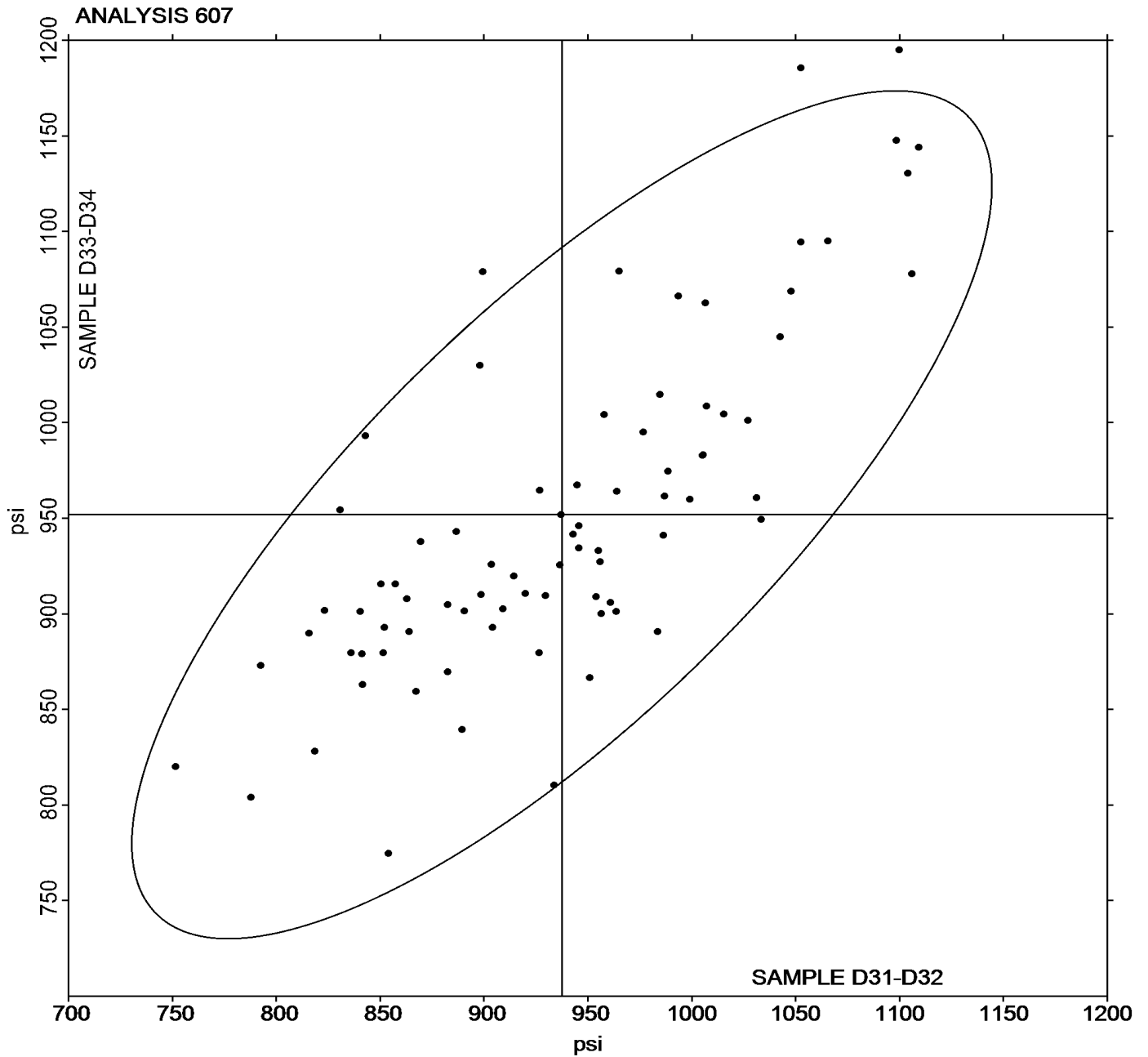
Analysis 607

4th Qtr 2023

Stress at 300% Elongation (psi)

Grand Mean Sample **D31-D32** = 937.46 psi

Grand Mean Sample **D33-D34** = 951.82 psi





Rubber Interlaboratory Testing Program

Report #218

Analysis 608

4th Qtr 2023

Stress at 100% Elongation (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		199.5	-6.9	-0.51	209.0	4.3	0.38
28MYV9	M	213.3	6.8	0.50	209.0	4.3	0.38
2DQX8Y		231.5	25.1	1.85	214.0	9.3	0.82
2LLZ9A		226.0	19.6	1.44	226.0	21.3	1.88
2Q39WA		180.9	-25.5	-1.87	211.0	6.3	0.56
2RU4L4	*	240.8	34.4	2.53	245.8	41.2	3.63
2ZP7ME		199.4	-7.0	-0.51	213.9	9.2	0.81
3MYWEE		214.8	8.4	0.62	210.8	6.1	0.54
46UM8M		201.6	-4.8	-0.35	213.2	8.5	0.75
474RKB		188.5	-17.9	-1.32	200.9	-3.8	-0.33
49WMA6		233.0	26.6	1.96	222.0	17.3	1.53
4D4BLL		219.0	12.6	0.93	219.0	14.3	1.26
4UUE7W		215.8	9.4	0.69	205.1	0.4	0.04
6FNHK9		200.5	-5.9	-0.43	223.5	18.8	1.66
79JZPT		217.6	11.2	0.82	206.2	1.5	0.14
7DGLEB		208.0	1.6	0.12	196.6	-8.1	-0.71
7M4MUK		222.0	15.6	1.15	226.5	21.8	1.92
7M7BBY		196.5	-9.9	-0.73	195.8	-8.9	-0.78
8FX7Y6	*	223.4	17.0	1.25	249.1	44.4	3.91
8GCTBR		221.0	14.6	1.07	205.0	0.3	0.03
8H7L7B		207.5	1.1	0.08	197.5	-7.2	-0.63
8MHA78		178.9	-27.5	-2.03	193.3	-11.4	-1.00
8RVA3Y		216.1	9.7	0.71	225.5	20.8	1.84
8XG8RL	X	236.5	30.1	2.21	270.7	66.0	5.82
9N767L		199.5	-6.9	-0.51	191.0	-13.7	-1.21
APYDQA		197.1	-9.3	-0.69	204.0	-0.7	-0.06
AV2MX3		206.3	-0.1	-0.01	207.5	2.8	0.25
AZJKQY	X	282.8	76.3	5.62	261.7	57.0	5.02
BHUWVV		180.6	-25.8	-1.90	183.5	-21.2	-1.87
BNK76T	X	271.5	65.1	4.79	254.5	49.8	4.39
BWCNJ2		208.0	1.6	0.12	195.5	-9.2	-0.81
CP9268		205.2	-1.2	-0.09	206.0	1.3	0.11
CREMVR		191.6	-14.8	-1.09	188.1	-16.6	-1.46
DN9L7E		213.5	7.1	0.52	209.5	4.8	0.42
E2XZMM	*	186.6	-19.8	-1.46	228.8	24.1	2.13



Rubber Interlaboratory Testing Program

Report #218

Analysis 608

4th Qtr 2023

Stress at 100% Elongation (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
E7BKT9		191.5	-14.9	-1.10	205.5	0.8	0.07
E83GH3		227.0	20.6	1.51	211.5	6.8	0.60
E8G3R6		186.4	-20.0	-1.47	187.1	-17.6	-1.55
EKRDFH		195.8	-10.6	-0.78	203.8	-0.9	-0.08
EN9ZVK		195.0	-11.4	-0.84	202.0	-2.7	-0.24
F4Y6Y8		206.7	0.3	0.02	189.2	-15.5	-1.37
FDMWLZ		213.5	7.1	0.52	206.5	1.8	0.16
FEXYAJ		192.0	-14.4	-1.06	196.0	-8.7	-0.77
FG3QZC		205.0	-1.4	-0.10	216.0	11.3	1.00
FJTT8L		217.0	10.6	0.78	197.0	-7.7	-0.68
FVM74B		210.9	4.5	0.33	184.9	-19.8	-1.74
G9N6Q9		209.0	2.6	0.19	216.5	11.8	1.04
HULVMY		204.5	-1.9	-0.14	189.0	-15.7	-1.38
HUZE8W		183.8	-22.6	-1.66	188.9	-15.8	-1.40
J2EM9X		196.5	-9.9	-0.73	201.5	-3.2	-0.28
JHP4GL		218.6	12.1	0.89	201.9	-2.8	-0.25
JNVXBG		216.8	10.4	0.77	227.0	22.3	1.97
JXF9K9		206.0	-0.4	-0.03	203.5	-1.2	-0.10
KEH7JX		184.0	-22.4	-1.65	199.5	-5.2	-0.46
KRBRPT		235.5	29.0	2.14	215.7	11.0	0.97
KT3NEM		198.6	-7.8	-0.58	203.7	-1.0	-0.09
L6UWCF		216.7	10.3	0.76	196.3	-8.4	-0.74
M76YXE		203.8	-2.6	-0.19	200.9	-3.8	-0.34
NCNL44		199.4	-7.0	-0.51	188.6	-16.1	-1.42
NW8MY3		213.0	6.5	0.48	214.0	9.3	0.82
NY2CJJ		231.5	25.1	1.85	225.0	20.3	1.79
NZAN2L	X	240.0	33.6	2.47	259.0	54.3	4.79
P6J49N	X	268.0	61.6	4.53	271.0	66.3	5.84
RJUNHR		219.2	12.8	0.94	209.0	4.3	0.38
RQRGQL		205.2	-1.2	-0.09	198.7	-6.0	-0.53
TBVJ3V		190.1	-16.3	-1.20	192.4	-12.3	-1.08
TCP8MC		200.2	-6.3	-0.46	192.9	-11.8	-1.04
TRZQGX		211.5	5.1	0.37	199.7	-5.0	-0.44
TU6EX9		229.6	23.1	1.70	220.7	16.0	1.41
UZ24X		227.7	21.3	1.57	224.1	19.4	1.71



Rubber Interlaboratory Testing Program

Report #218

Analysis 608

4th Qtr 2023

Stress at 100% Elongation (psi)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
V2H9PM		210.3	3.9	0.29	205.2	0.5	0.05
V6GKLM		202.6	-3.8	-0.28	210.4	5.7	0.50
W42K2X		211.0	4.6	0.34	209.6	4.9	0.43
WAQZUB	X	86,878.4	86,672.0	6,375.82	88,473.8	88,269.1	7,778.31
WFU88T		202.0	-4.4	-0.32	202.8	-1.9	-0.17
WZ2CXM		216.1	9.7	0.71	204.0	-0.7	-0.06
XCN28D	X	249.5	43.1	3.17	279.5	74.8	6.59
XYN3KG		185.0	-21.4	-1.57	196.5	-8.2	-0.72
Y6KETH		202.3	-4.1	-0.30	201.6	-3.1	-0.27
YWCMQF		192.2	-14.2	-1.05	182.0	-22.7	-2.00
Z7EJP3	X	228.5	22.1	1.63	282.0	77.3	6.81
ZJLDGF		210.0	3.6	0.26	203.5	-1.2	-0.10
ZQKY7U		201.5	-4.9	-0.36	208.5	3.8	0.34

Summary Statistics	
Grand Means	206.41 psi 204.69 psi
Stnd Dev Btwn Labs	13.59 psi 11.35 psi
Statistics based on 71 of 83 reporting participants	

Summary Statistics in SI Units	
Grand Means	1.4231 MPa 1.4100 MPa
Stnd Dev Btwn Labs	0.0937 MPa 0.0800 MPa
Statistics based on 71 of 83 reporting participants	

Samples D31-D32: Polyisoprene Compound & D33-D34: Polyisoprene Compound



Rubber Interlaboratory Testing Program

Report #218

Analysis 608

4th Qtr 2023

Stress at 100% Elongation (psi)

- 8XG8RL (X) - Data for sample group D33-D34 are high. Results exceeded CPV > 4, therefore data flag was not downgraded.
- AZJKQY (X) - Data for all samples are high. Results exceeded CPV > 4, therefore data flag was not downgraded.
- BNK76T (X) - Data for all samples are high. Results exceeded CPV > 4, therefore data flag was not downgraded.
- NZAN2L (X) - Data for sample group D33-D34 are high. Results exceeded CPV > 4, therefore data flag was not downgraded.
- P6J49N (X) - Data for all samples are high. Results exceeded CPV > 4, therefore data flag was not downgraded.
- WAQZUB (X) - Extreme Data.
- XCN28D (X) - Data for all samples are high. Results exceeded CPV > 4, therefore data flag was not downgraded.
- Z7EJP3 (X) - Data for sample group D33-D34 are high. Results exceeded CPV > 4, therefore data flag was not downgraded.



Rubber Interlaboratory Testing Program

Report #218

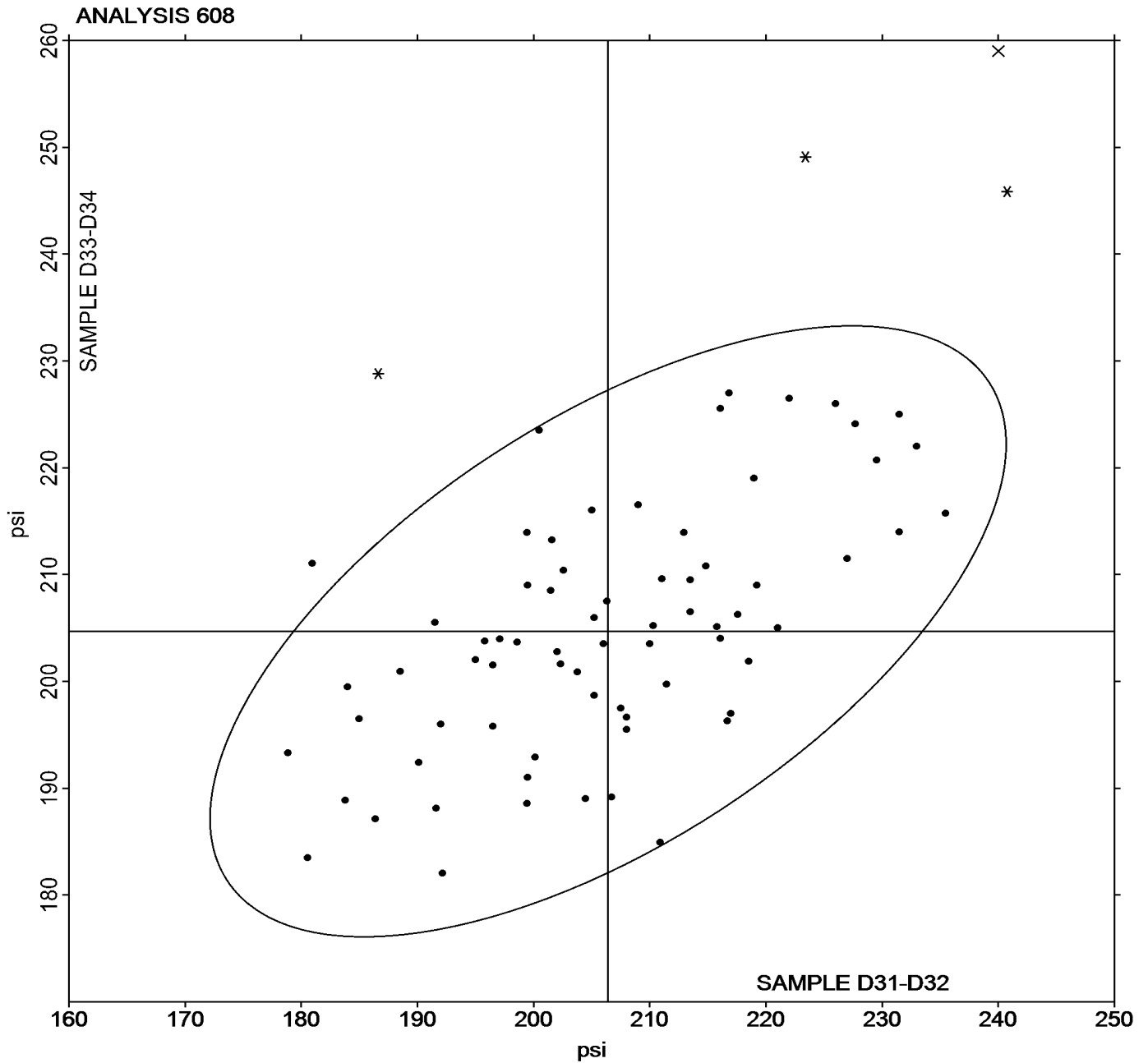
Analysis 608

4th Qtr 2023

Stress at 100% Elongation (psi)

Grand Mean Sample **D31-D32** = 206.41 psi

Grand Mean Sample **D33-D34** = 204.69 psi





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

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
247Q8A		52.00	2.40	1.30	52.00	2.40	1.33	HH
28MYV9		49.50	-0.10	-0.05	49.00	-0.60	-0.33	BT
2DQX8Y		49.00	-0.60	-0.33	49.00	-0.60	-0.33	BT
2LLZ9A		49.25	-0.35	-0.19	49.20	-0.40	-0.22	BT
2Q39WA	*	47.95	-1.65	-0.90	50.53	0.92	0.51	BT
2RU4L4		48.50	-1.10	-0.60	49.00	-0.60	-0.33	BT
2ZP7ME		48.30	-1.30	-0.71	50.05	0.45	0.25	BT
3MYWEE		48.00	-1.60	-0.87	49.50	-0.10	-0.06	BT
46UM8M		48.50	-1.10	-0.60	47.50	-2.10	-1.17	HH
474RKB		48.85	-0.75	-0.41	49.50	-0.10	-0.06	BT
49WMA6		51.50	1.90	1.03	51.00	1.40	0.77	BT
4D4BLL		49.30	-0.30	-0.16	48.50	-1.10	-0.61	BT
4FTFHY		49.95	0.35	0.19	49.65	0.05	0.03	BT
4UUE7W		48.80	-0.80	-0.43	47.90	-1.70	-0.94	BT
6FNHK9		49.20	-0.40	-0.22	49.25	-0.35	-0.20	BT
79JZPT		49.00	-0.60	-0.33	48.50	-1.10	-0.61	BT
7DGLEB		51.50	1.90	1.03	51.00	1.40	0.77	HH
7M4MUK		49.00	-0.60	-0.33	49.00	-0.60	-0.33	HH
7M7BBY	X	46.30	-3.30	-1.79	50.50	0.90	0.50	BT
8FX7Y6		50.50	0.90	0.49	49.40	-0.20	-0.11	BT
8GCTBR		49.75	0.15	0.08	49.60	0.00	0.00	BT
8H7L7B		50.05	0.45	0.24	49.50	-0.10	-0.06	BT
8MHA78		47.40	-2.20	-1.20	47.15	-2.45	-1.36	BT
8RVA3Y		50.20	0.60	0.33	49.80	0.20	0.11	BT
8XG8RL		52.50	2.90	1.58	53.00	3.40	1.88	HH
9N767L		50.00	0.40	0.22	50.50	0.90	0.50	HH
ABFNUT		50.00	0.40	0.22	50.00	0.40	0.22	BT
APYDQA	X	46.00	-3.60	-1.96	49.50	-0.10	-0.06	BT
AV2MX3		51.20	1.60	0.87	51.35	1.75	0.97	BT
BHUWVV		50.00	0.40	0.22	50.00	0.40	0.22	BT
BNK76T		51.50	1.90	1.03	51.45	1.85	1.02	HH
BWCNJ2		49.30	-0.30	-0.16	48.10	-1.50	-0.83	BT
CP9268		48.50	-1.10	-0.60	48.00	-1.60	-0.89	BT
CREMVR	*	44.50	-5.10	-2.77	45.00	-4.60	-2.55	BT
DN9L7E		50.00	0.40	0.22	49.00	-0.60	-0.33	BT



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

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
DU3HU7		50.50	0.90	0.49	50.50	0.90	0.50	BT
E2XZMM		48.20	-1.40	-0.76	48.40	-1.20	-0.67	BT
E7BKT9		50.50	0.90	0.49	52.00	2.40	1.33	BT
E83GH3		50.00	0.40	0.22	50.50	0.90	0.50	BT
E8G3R6		48.65	-0.95	-0.52	47.05	-2.55	-1.41	BT
EKRDFH		48.00	-1.60	-0.87	49.00	-0.60	-0.33	BT
EN9ZVK		48.50	-1.10	-0.60	49.50	-0.10	-0.06	BT
F4Y6Y8		50.00	0.40	0.22	49.50	-0.10	-0.06	BT
FDMWLZ		48.05	-1.55	-0.84	48.30	-1.30	-0.72	HH
FEXYAJ		48.90	-0.70	-0.38	49.45	-0.15	-0.08	BT
FG3QZC		48.40	-1.20	-0.65	48.65	-0.95	-0.53	BT
FJTT8L		48.50	-1.10	-0.60	49.00	-0.60	-0.33	BT
FVM74B		48.55	-1.05	-0.57	46.75	-2.85	-1.58	BT
G9N6Q9		51.50	1.90	1.03	51.50	1.90	1.05	HH
GZWJMV		48.50	-1.10	-0.60	49.00	-0.60	-0.33	BT
HULVMY		51.45	1.85	1.01	50.30	0.70	0.39	BT
HUZE8W		49.90	0.30	0.16	50.75	1.15	0.64	BT
J2EM9X		50.50	0.90	0.49	51.50	1.90	1.05	HH
JHP4GL		48.65	-0.95	-0.52	47.55	-2.05	-1.14	BT
JNVXBG		46.65	-2.95	-1.60	47.15	-2.45	-1.36	BT
JXF9K9		50.80	1.20	0.65	50.15	0.55	0.30	BT
KEH7JX		50.50	0.90	0.49	51.50	1.90	1.05	HH
KRBRPT		51.25	1.65	0.90	50.75	1.15	0.64	BT
KT3NEM	X	23.00	-26.60	-14.45	25.50	-24.10	-13.35	BT
L6UWCF		48.50	-1.10	-0.60	49.00	-0.60	-0.33	BT
M34V67		48.00	-1.60	-0.87	47.50	-2.10	-1.17	BT
M76YXE		50.00	0.40	0.22	50.00	0.40	0.22	BT
MHXFMF		47.50	-2.10	-1.14	47.00	-2.60	-1.44	BT
NCNL44		49.15	-0.45	-0.24	47.65	-1.95	-1.08	BT
NW8MY3		47.70	-1.90	-1.03	49.30	-0.30	-0.17	BT
NY2CJJ		51.50	1.90	1.03	50.00	0.40	0.22	HH
NZAN2L		50.50	0.90	0.49	50.00	0.40	0.22	BT
P6J49N	*	54.90	5.30	2.88	54.60	5.00	2.77	BT
PJF9H		53.50	3.90	2.12	53.50	3.90	2.16	HH
QR9BUG		50.50	0.90	0.49	52.00	2.40	1.33	BT



Rubber Interlaboratory Testing Program

Report #218

Analysis 620

4th Qtr 2023

Hardness (Shore A/Type A)

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
RJUNHR		46.10	-3.50	-1.90	47.00	-2.60	-1.44	BT
RQRGQL		52.95	3.35	1.82	52.40	2.80	1.55	BT
TBVJ3V		51.75	2.15	1.17	52.25	2.65	1.47	HH
TCP8MC		48.00	-1.60	-0.87	48.50	-1.10	-0.61	BT
TRZQGX		48.55	-1.05	-0.57	49.10	-0.50	-0.28	BT
TU6EX9		50.50	0.90	0.49	50.85	1.25	0.69	BT
UZN24X		53.00	3.40	1.85	53.50	3.90	2.16	HH
V2H9PM		49.50	-0.10	-0.05	48.50	-1.10	-0.61	BT
V6GKLM		50.85	1.25	0.68	49.45	-0.15	-0.08	BT
W42K2X		51.25	1.65	0.90	50.60	1.00	0.55	BT
WAQZUB		47.65	-1.95	-1.06	47.15	-2.45	-1.36	BT
WFU88T		52.50	2.90	1.58	52.09	2.49	1.38	BT
WHL3WM		46.45	-3.15	-1.71	46.10	-3.50	-1.94	BT
WQEBGD		51.50	1.90	1.03	50.50	0.90	0.50	BT
WZ2CXM		53.50	3.90	2.12	53.50	3.90	2.16	BT
XCN28D	*	45.50	-4.10	-2.23	47.50	-2.10	-1.17	BT
XYN3KG		48.00	-1.60	-0.87	48.00	-1.60	-0.89	BT
Y6KETH		49.00	-0.60	-0.33	49.00	-0.60	-0.33	BT
YWCMQF		46.85	-2.75	-1.49	47.30	-2.30	-1.28	BT
Z7EJP3		52.00	2.40	1.30	51.55	1.95	1.08	HH
ZJLDGF		49.00	-0.60	-0.33	49.00	-0.60	-0.33	BT
ZQKY7U		48.27	-1.33	-0.72	49.59	-0.01	-0.01	BT

Grand Means		Summary Statistics	
	49.600 Type A		49.603 Type A
Stnd Dev Btwn Labs	1.841 Type A		1.805 Type A
Statistics based on 89 of 92 reporting participants			

Samples D31-D32: Polyisoprene Compound & D33-D34: Polyisoprene Compound

Comments on Assigned Data Flags for Test #620

7M7BBY (X) - Inconsistent in testing between samples.

APYDQA (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group D31-D32.

KT3NEM (X) - Extreme Data.



Rubber Interlaboratory Testing Program

Report #218

Analysis 620

4th Qtr 2023

Hardness (Shore A/Type A)

Key to Instrument Codes Reported by Participants

BT Benchtop

HH Handheld

Results by Reading Time (as reported by laboratory)

Reading Time	Sample D31-D32 <i>Polyisoprene Compound</i>			Sample D33-D34 <i>Polyisoprene Compound</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Readings taken within 0 - 5 seconds	49.98	1.51	0.38	49.97	1.53	0.37	57	61
Readings taken at 5 seconds	48.68	1.71	-0.92	48.58	1.65	-1.03	9	10
Readings taken after 5+ seconds	48.91	2.08	-0.69	48.56	2.20	-1.04	9	10
Maximum hardness indicator used	49.46	1.44	-0.14	49.44	1.37	-0.16	10	11

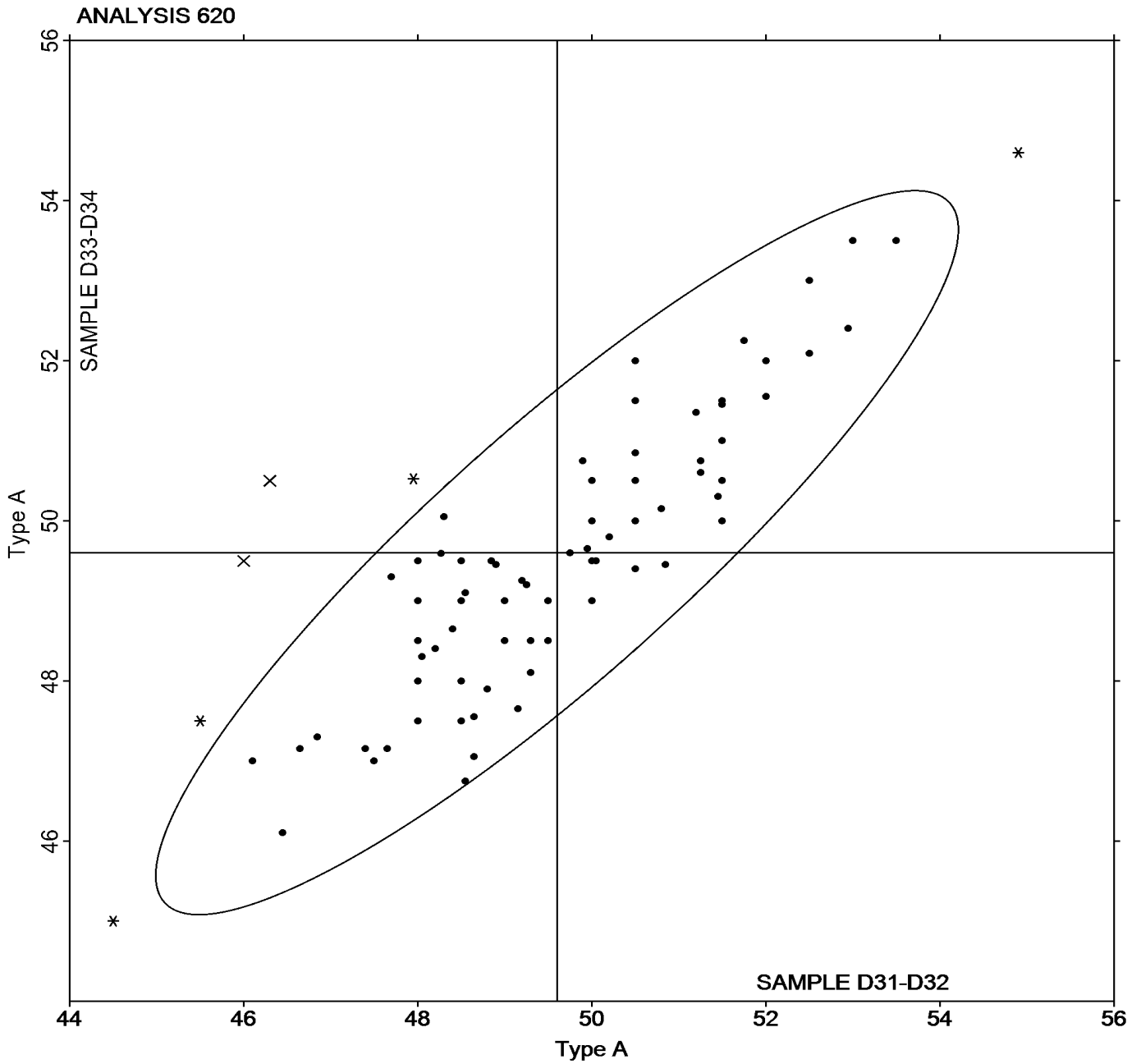


Rubber Interlaboratory Testing Program
Analysis 620
Hardness (Shore A/Type A)

Report #218
4th Qtr 2023

Grand Mean Sample **D31-D32** = 49.600 Type A

Grand Mean Sample **D33-D34** = 49.603 Type A





Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
247Q8A		1.130	-0.003	-1.11	1.131	-0.002	-0.72
24MMZ9		1.137	0.004	1.33	1.139	0.005	1.66
28MYV9		1.133	0.000	-0.11	1.135	0.002	0.50
2DQX8Y	X	1.229	0.096	34.35	1.203	0.070	22.95
2LLZ9A		1.132	-0.001	-0.46	1.131	-0.003	-0.98
2RU4L4		1.134	0.000	0.15	1.134	0.000	0.14
2ZP7ME	X	1.135	0.001	0.47	1.130	-0.003	-1.07
3MYWEE	*	1.127	-0.006	-2.26	1.125	-0.008	-2.80
474RKB		1.133	-0.001	-0.25	1.133	-0.001	-0.27
4UUE7W		1.135	0.002	0.65	1.136	0.002	0.75
6FNHK9		1.138	0.005	1.69	1.137	0.004	1.16
7DGLEB		1.131	-0.002	-0.86	1.130	-0.004	-1.26
7M4MUK		1.136	0.003	0.97	1.136	0.002	0.67
7M7BBY		1.130	-0.003	-1.15	1.130	-0.003	-1.08
8FX7Y6		1.137	0.004	1.49	1.136	0.002	0.82
8GCTBR		1.133	-0.001	-0.29	1.136	0.002	0.67
8H7L7B		1.132	-0.002	-0.64	1.133	0.000	-0.16
8XG8RL	X	1.122	-0.011	-4.05	1.123	-0.011	-3.62
9N767L	X	1.123	-0.010	-3.70	1.122	-0.011	-3.79
ABFNUT		1.136	0.003	0.94	1.136	0.003	0.92
APYDQA		1.132	-0.001	-0.38	1.130	-0.003	-1.00
AV2MX3		1.131	-0.002	-0.86	1.131	-0.003	-0.87
AZJKQY		1.136	0.003	1.09	1.139	0.006	1.86
BHUWVV		1.137	0.004	1.33	1.138	0.005	1.49
BNK76T		1.127	-0.006	-2.26	1.126	-0.007	-2.37
BWCNJ2		1.136	0.003	1.02	1.136	0.003	0.95
CP9268	*	1.135	0.001	0.43	1.132	-0.002	-0.64
CREMVR	X	1.110	-0.024	-8.54	1.106	-0.027	-9.07
DN9L7E	*	1.126	-0.007	-2.62	1.128	-0.006	-1.97
E2XZMM		1.133	-0.001	-0.29	1.134	0.001	0.17
E7BKT9		1.134	0.000	0.07	1.132	-0.002	-0.65
E83GH3		1.134	0.000	0.07	1.133	-0.001	-0.32
E8G3R6		1.134	0.001	0.31	1.134	0.001	0.21
EN9ZVK		1.133	0.000	-0.12	1.133	-0.001	-0.26
F4Y6Y8		1.133	0.000	-0.02	1.134	0.000	0.01



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #218
4th Qtr 2023

Samples for Cycle 218 Tests 605-621, Pack RT, contained individual plaques that exceeded the tolerance limits for thickness variation. Data flags were downgraded for participant results close to the ellipse for Tests 605-608. Results should be interpreted with caution.

WebCode	Data Flag	Sample D31-D32			Sample D33-D34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
FDMWLZ		1.133	0.000	-0.14	1.134	0.000	0.02
FEXYAJ		1.134	0.000	0.15	1.134	0.001	0.29
FVM74B		1.139	0.005	1.89	1.139	0.006	1.86
G9N6Q9		1.136	0.002	0.79	1.136	0.002	0.78
GZWJMV		1.133	0.000	-0.09	1.136	0.003	0.95
HULVMY		1.133	0.000	-0.16	1.133	0.000	-0.06
HUZE8W		1.135	0.001	0.52	1.135	0.001	0.37
J2EM9X		1.135	0.002	0.61	1.133	0.000	-0.16
JHP4GL		1.133	0.000	0.06	1.133	0.000	-0.06
JNVXBG		1.131	-0.002	-0.82	1.132	-0.002	-0.65
JXF9K9	X	1.136	0.003	0.97	1.132	-0.002	-0.65
KEH7JX		1.132	-0.001	-0.46	1.133	-0.001	-0.26
KRBRPT		1.130	-0.003	-1.11	1.130	-0.003	-1.00
KT3NEM	X	0.082	-1.051	-377.40	0.085	-1.048	-345.91
L6UWCF		1.131	-0.003	-0.93	1.130	-0.003	-1.10
M76YXE		1.130	-0.004	-1.36	1.130	-0.003	-1.15
NY2CJJ		1.132	-0.001	-0.39	1.131	-0.002	-0.67
NZAN2L		1.134	0.001	0.25	1.135	0.001	0.34
PJFJ9H		1.132	-0.002	-0.64	1.133	0.000	-0.16
QR9BUG		1.133	-0.001	-0.29	1.133	-0.001	-0.27
RJUNHR		1.133	-0.001	-0.20	1.134	0.001	0.29
RQRGQL		1.137	0.004	1.33	1.138	0.005	1.49
TCP8MC		1.134	0.001	0.25	1.134	0.001	0.17
TRZQGX		1.135	0.001	0.43	1.135	0.001	0.42
V2H9PM		1.132	-0.001	-0.46	1.132	-0.001	-0.49
V6GKLM		1.138	0.005	1.71	1.139	0.005	1.79
W42K2X		1.132	-0.001	-0.46	1.132	-0.001	-0.49
WAQZUB		1.132	-0.001	-0.52	1.131	-0.002	-0.82
WFU88T		1.138	0.005	1.71	1.137	0.003	1.06
WQEBGD		1.136	0.003	0.97	1.136	0.003	0.83
WZ2CXM		1.136	0.003	1.04	1.137	0.003	1.03
XYN3KG		1.129	-0.004	-1.54	1.131	-0.003	-0.98
Z7EJP3	X	1.124	-0.009	-3.19	1.129	-0.005	-1.53



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	1.1333 g/cm ³ (Mg/m ³)	1.1335 g/cm ³ (Mg/m ³)	
Stnd Dev Btwn Labs	0.0028 g/cm ³ (Mg/m ³)	0.0030 g/cm ³ (Mg/m ³)	
Statistics based on 60 of 68 reporting participants			

Samples D31-D32: Polyisoprene Compound & D33-D34: Polyisoprene Compound

Comments on Assigned Data Flags for Test #621

- 2DQX8Y (X) - Extreme Data.
- 2ZP7ME (X) - Inconsistent in testing between samples.
- 8XG8RL (X) - Data for all samples are low. Possible Systematic Error.
- 9N767L (X) - Data for all samples are low. Possible Systematic Error.
- CREMVR (X) - Extreme Data.
- JXF9K9 (X) - Inconsistent in testing between samples.
- KT3NEM (X) - Extreme Data.
- Z7EJP3 (X) - Data for sample group D31-D32 are low.

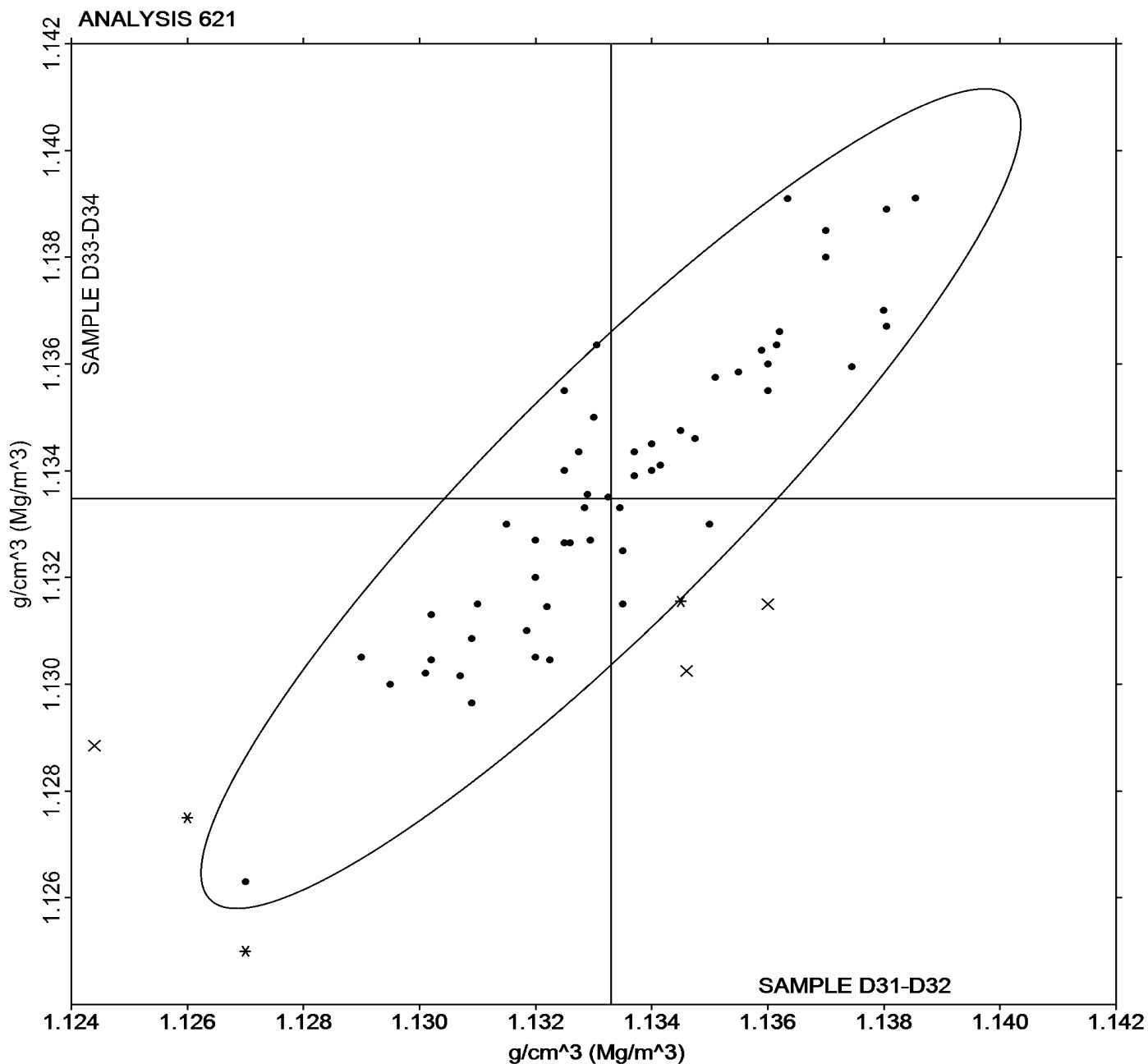


Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #218
4th Qtr 2023

Grand Mean Sample **D31-D32** = 1.1333 g/cm³
(Mg/m³)

Grand Mean Sample **D33-D34** = 1.1335 g/cm³
(Mg/m³)





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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample HD31-HD32			Sample HD33-HD34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4FTFHY		73.30	-1.90	-0.89	82.55	-1.14	-0.63	BT
6BTQEW		76.40	1.20	0.56	83.95	0.26	0.15	XX
6DXJ7B	X	47.85	-27.35	-12.75	62.60	-21.09	-11.70	BT
79JZPT		75.00	-0.20	-0.09	81.00	-2.69	-1.49	XX
7GWU3B	X	67.00	-8.20	-3.82	83.00	-0.69	-0.38	HH
7M7BBY		73.05	-2.15	-1.00	81.65	-2.04	-1.13	BT
8MHA78		74.65	-0.55	-0.26	84.00	0.31	0.17	BT
8RVA3Y		71.90	-3.30	-1.54	81.45	-2.24	-1.24	BT
BF6RXG		76.50	1.30	0.61	83.45	-0.24	-0.13	BT
CREMVR		75.00	-0.20	-0.09	83.50	-0.19	-0.10	HH
E7BKT9		72.50	-2.70	-1.26	82.00	-1.69	-0.94	BT
ER4R2W		77.50	2.30	1.07	86.50	2.81	1.56	HH
EXV2CU		74.95	-0.25	-0.12	83.85	0.16	0.09	XX
H3HMVT		77.60	2.40	1.12	85.70	2.01	1.12	HH
HUZE8W		75.60	0.40	0.19	83.25	-0.44	-0.24	BT
J2EM9X		80.50	5.30	2.47	88.00	4.31	2.39	HH
JFKGZA		74.50	-0.70	-0.33	83.50	-0.19	-0.10	XX
JXF9K9	X	94.60	19.40	9.04	94.60	10.91	6.06	BT
KT3NEM		72.50	-2.70	-1.26	82.00	-1.69	-0.94	BT
LMVJ2T		77.00	1.80	0.84	83.15	-0.54	-0.30	BT
MJ46N4		77.00	1.80	0.84	85.00	1.31	0.73	HH
NKGUPU		75.45	0.25	0.12	83.90	0.21	0.12	HH
NPCKWR		77.25	2.05	0.95	83.75	0.06	0.04	BT
RQRGQL		75.00	-0.20	-0.09	84.10	0.41	0.23	BT
T2T2TE	X	103.75	28.55	13.31	104.25	20.56	11.41	BT
U3E62C		77.50	2.30	1.07	87.50	3.81	2.12	BT
WAQZUB		71.40	-3.80	-1.77	81.90	-1.79	-0.99	BT
WHL3WM	X	73.40	-1.80	-0.84	76.45	-7.24	-4.02	BT
Z927HQ		74.00	-1.20	-0.56	82.00	-1.69	-0.94	BT
ZJLDGF		74.00	-1.20	-0.56	84.50	0.81	0.45	BT

Summary Statistics			
Grand Means	75.202	Type D	83.686
			Type D
Std Dev Btwn Labs	2.145	Type D	1.802
			Type D
Statistics based on 25 of 30 reporting participants			



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

Report #218
4th Qtr 2023

Samples HD31-HD32: Hardness Disc & HD33-HD34: Hardness Disc

Comments on Assigned Data Flags for Test #625

6DXJ7B (X) - Data for all samples are low.

7GWU3B (X) - Data for sample group HD31-HD32 are low. Inconsistent within the determinations of sample group HD31-HD32.

JXF9K9 (X) - Data for all Samples are high.

T2T2TE (X) - Data for all Samples are high.

WHL3WM (X) - Data for sample group HD33-HD34 are low.

Key to Instrument Codes Reported by Participants

BT	Benchtop	HH	Handheld
XX	Specify Benchtop or Handheld Instrument		

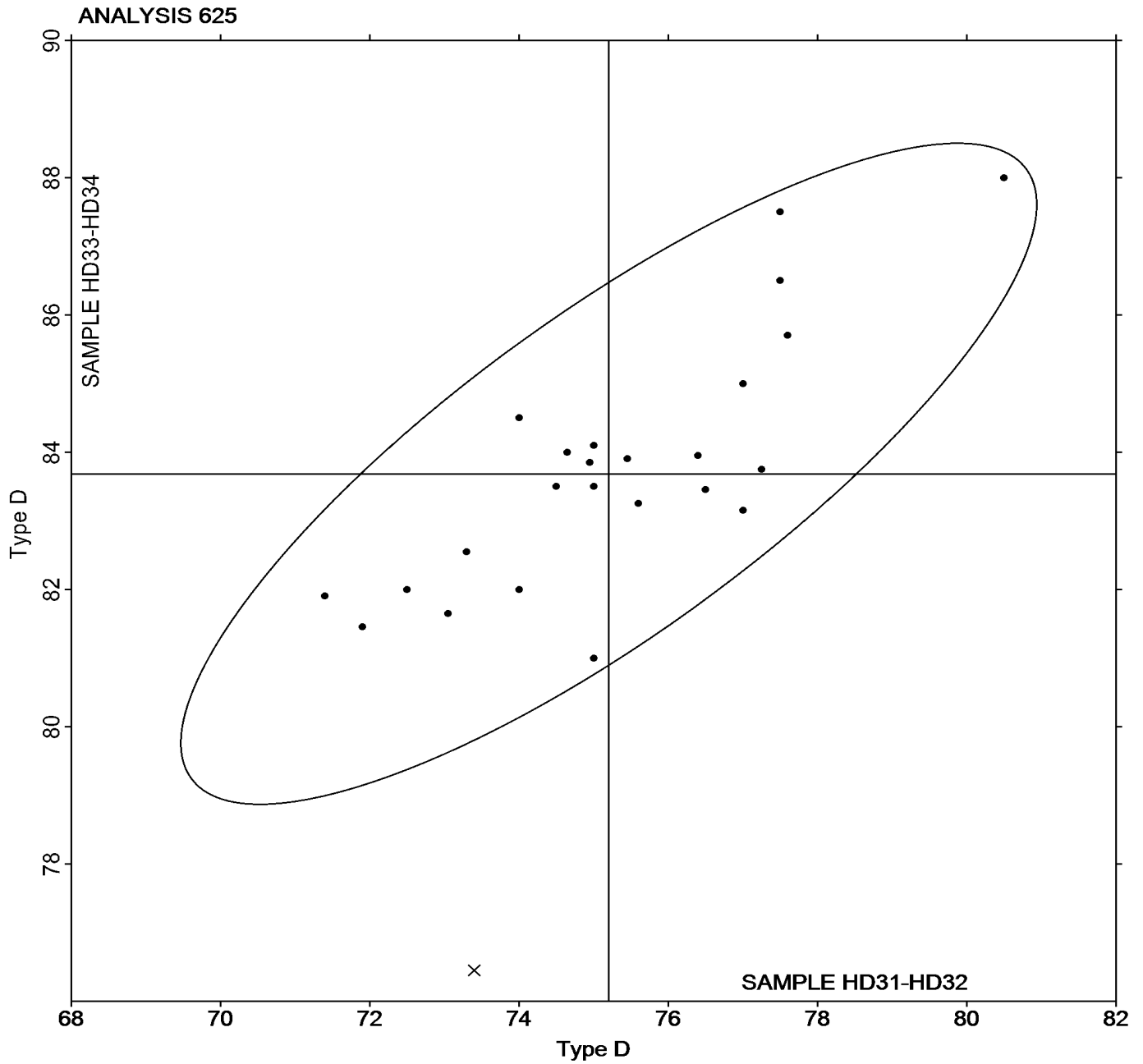


Rubber Interlaboratory Testing Program
Analysis 625
Hardness (Shore D/Type D)

Report #218
4th Qtr 2023

Grand Mean Sample **HD31-HD32** = 75.202 Type D

Grand Mean Sample **HD33-HD34** = 83.686 Type D





Rubber Interlaboratory Testing Program

Report #218

Analysis 630

4th Qtr 2023

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

WebCode	Data Flag	Sample D31-D32			Sample M31-M32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
46UM8M		3,050.2	-109.3	-0.70	3,230.7	118.1	0.48
474RKB		3,326.3	166.8	1.07	3,169.8	57.1	0.23
7DGLEB		2,949.0	-210.5	-1.35	3,026.7	-86.0	-0.35
7M4MUK		3,470.0	310.5	2.00	3,540.0	427.3	1.72
7M7BBY		3,330.8	171.3	1.10	3,160.4	47.7	0.19
8XG8RL		3,110.0	-49.5	-0.32	3,190.0	77.3	0.31
9N767L		2,945.0	-214.5	-1.38	2,568.0	-544.7	-2.19
APYDQA		3,252.9	93.4	0.60	2,671.3	-441.3	-1.78
AV2MX3		3,234.9	75.3	0.48	2,651.0	-461.7	-1.86
BHUWVV		3,137.2	-22.3	-0.14	2,765.2	-347.5	-1.40
CREMVR		2,919.0	-240.5	-1.55	3,022.6	-90.0	-0.36
E83GH3		3,235.0	75.5	0.49	3,222.0	109.3	0.44
FDMWLZ		3,135.0	-24.5	-0.16	2,866.5	-246.2	-0.99
FJTT8L		3,276.0	116.5	0.75	3,189.5	76.8	0.31
FVM74B		3,336.2	176.6	1.14	3,452.0	339.3	1.37
HUZE8W		3,138.0	-21.5	-0.14	3,347.5	234.8	0.95
JXF9K9		3,189.5	30.0	0.19	3,139.0	26.3	0.11
KRBRPT		3,241.2	81.6	0.52	3,348.4	235.7	0.95
NZAN2L		2,785.0	-374.5	-2.41	3,095.0	-17.7	-0.07
RQRGQL		3,060.3	-99.2	-0.64	3,234.4	121.7	0.49
TRZQGX		3,185.1	25.5	0.16	3,203.9	91.3	0.37
TU6EX9		3,075.5	-84.0	-0.54	3,115.5	2.8	0.01
V2H9PM		3,212.6	53.1	0.34	3,285.1	172.5	0.70
V6GKLM		3,233.9	74.3	0.48	3,209.2	96.5	0.39

Grand Means		Summary Statistics	
	3,159.52 psi		3,112.65 psi
Stnd Dev Btwn Labs	155.51 psi		248.16 psi
Statistics based on 24 of 24 reporting participants			

Grand Means		Summary Statistics in SI Units	
	21.784 MPa		21.460 MPa
Stnd Dev Btwn Labs	1.072 MPa		1.710 MPa
Statistics based on 24 of 24 reporting participants			



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

Report #218
4th Qtr 2023

Samples D31-D32: Polyisoprene Compound & M31-M32: Polyisoprene Compound

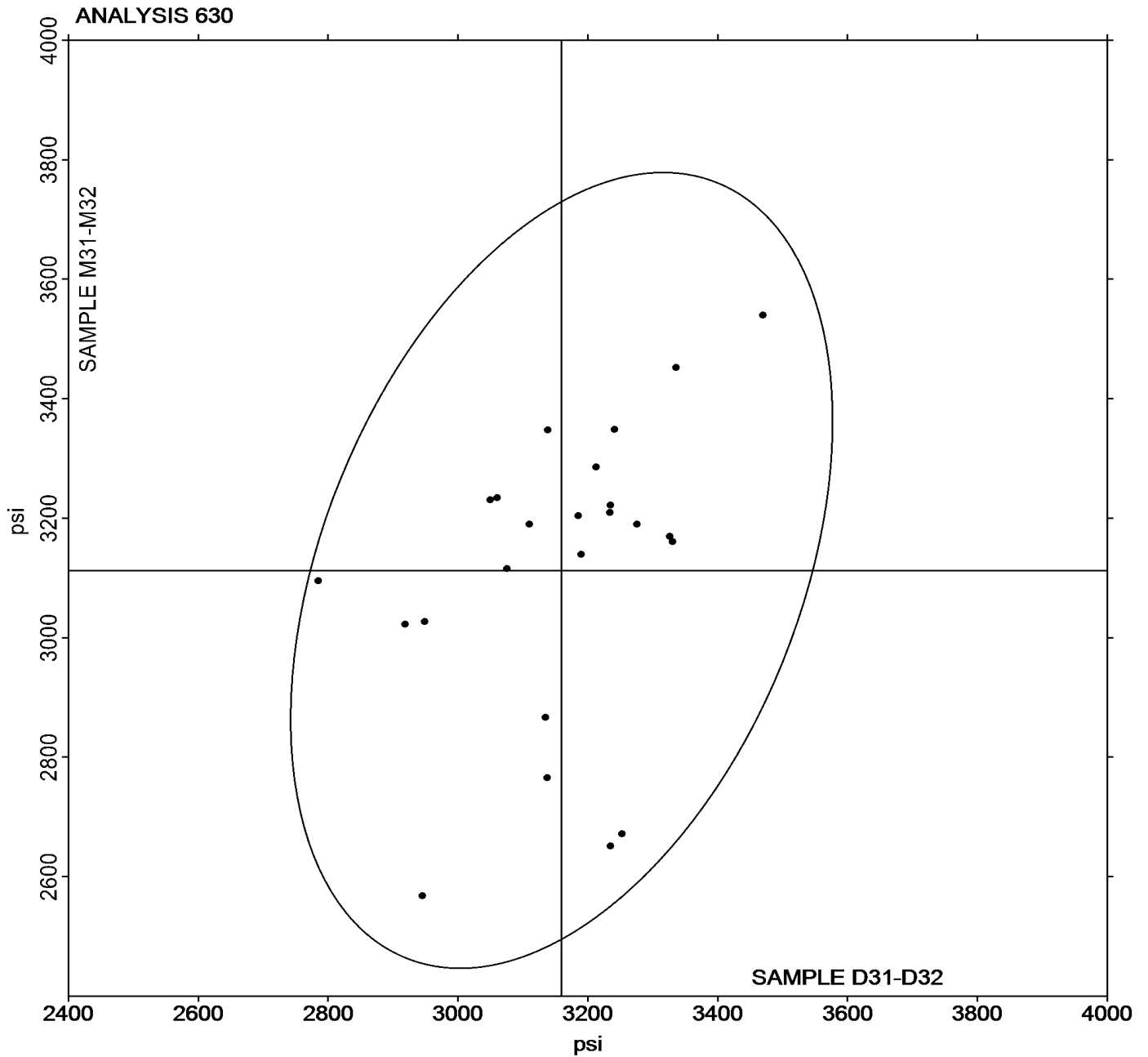


Rubber Interlaboratory Testing Program
Analysis 630
Tensile Strength: Precured vs. Lab-Cured Samples (psi)

Report #218
4th Qtr 2023

Grand Mean Sample **D31-D32** = 3,159.52 psi

Grand Mean Sample **M31-M32** = 3,112.65 psi





Rubber Interlaboratory Testing Program

Report #218

Analysis 631

4th Qtr 2023

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

WebCode	Data Flag	Sample D31-D32			Sample M31-M32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
46UM8M		603.5	-11.8	-0.30	607.0	32.4	0.78
474RKB	*	663.9	48.6	1.25	524.1	-50.5	-1.22
7DGLEB		599.9	-15.4	-0.39	558.8	-15.8	-0.38
7M4MUK		600.0	-15.3	-0.39	555.5	-19.1	-0.46
7M7BBY		603.5	-11.8	-0.30	539.5	-35.1	-0.85
8XG8RL		685.5	70.2	1.80	682.5	107.9	2.60
9N767L		608.0	-7.3	-0.19	543.0	-31.6	-0.76
APYDQA		648.4	33.1	0.85	608.1	33.4	0.81
AV2MX3		660.5	45.2	1.16	571.5	-3.1	-0.07
BHUWVV		630.2	14.9	0.38	589.9	15.2	0.37
CREMVR		519.5	-95.8	-2.46	478.2	-96.4	-2.32
E83GH3		592.0	-23.3	-0.60	551.5	-23.1	-0.56
FDMWLZ		621.5	6.2	0.16	558.0	-16.6	-0.40
FJTT8L		609.0	-6.3	-0.16	564.0	-10.6	-0.26
FVM74B		625.7	10.4	0.27	630.5	55.9	1.35
HUZE8W		662.5	47.2	1.21	628.5	53.9	1.30
JXF9K9		615.5	0.2	0.01	571.0	-3.6	-0.09
KRBRPT		611.1	-4.2	-0.11	570.1	-4.5	-0.11
NZAN2L	*	515.5	-99.8	-2.56	532.0	-42.6	-1.03
RQRGQL		611.9	-3.4	-0.09	583.7	9.0	0.22
TRZQGX		637.2	21.9	0.56	609.0	34.4	0.83
TU6EX9		590.0	-25.3	-0.65	554.8	-19.9	-0.48
V2H9PM		623.5	8.2	0.21	586.5	11.9	0.29
V6GKLM		628.0	12.7	0.33	593.0	18.4	0.44

Grand Means		Summary Statistics	
	615.26 percent		574.60 percent
Std Dev Btwn Labs	38.97 percent		41.53 percent
Statistics based on 24 of 24 reporting participants			

Samples D31-D32: Polyisoprene Compound & M31-M32: Polyisoprene Compound



Rubber Interlaboratory Testing Program

Report #218

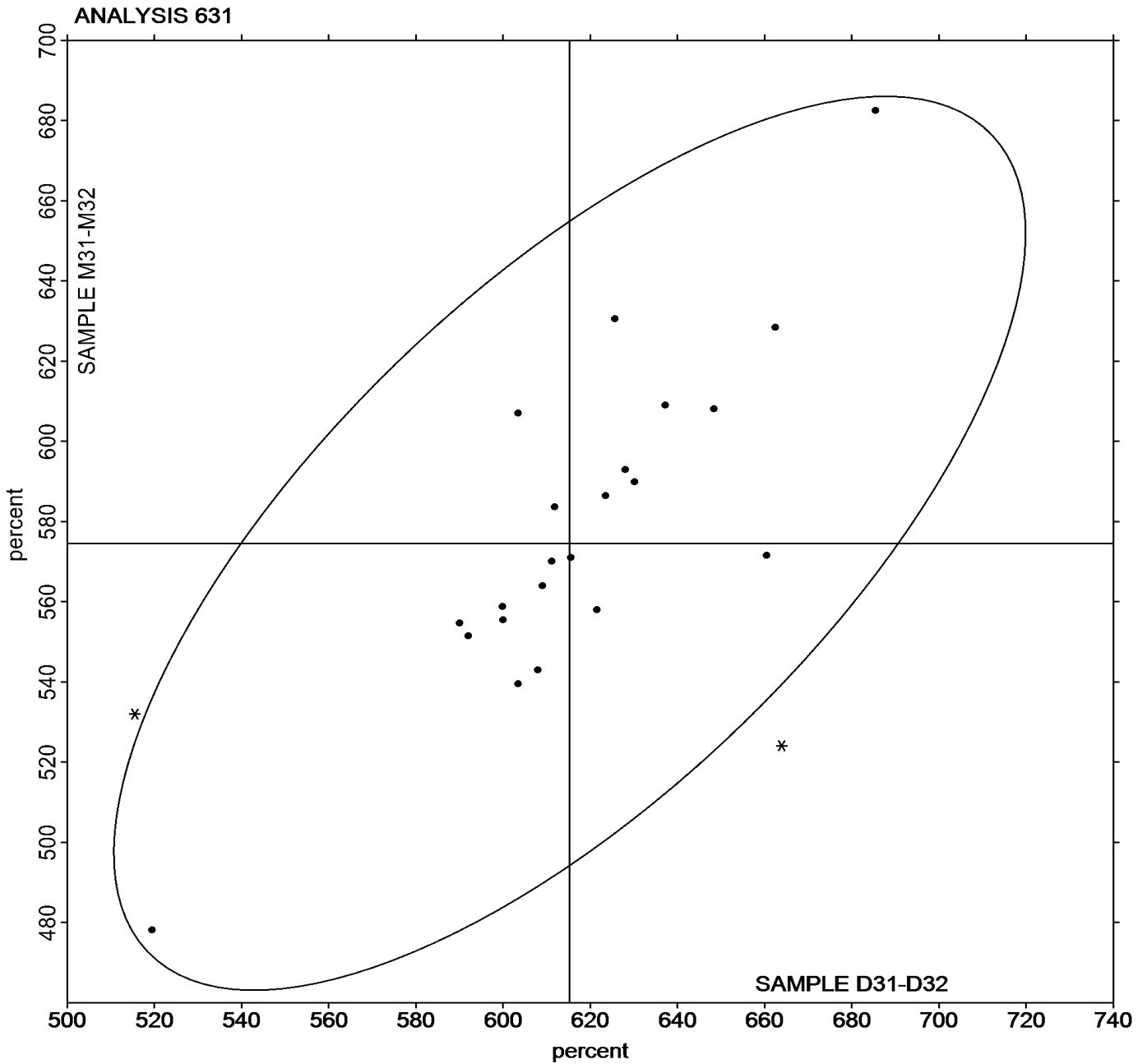
Analysis 631

4th Qtr 2023

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

Grand Mean Sample **D31-D32** = 615.26 percent

Grand Mean Sample **M31-M32** = 574.60 percent





Rubber Interlaboratory Testing Program

Report #218

Analysis 632

4th Qtr 2023

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

WebCode	Data Flag	Sample D31-D32			Sample M31-M32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
46UM8M		944.9	3.3	0.04	1,055.2	-35.3	-0.26
474RKB	X	815.9	-125.7	-1.71	1,309.4	219.0	1.59
7DGLEB		945.6	4.0	0.05	1,182.3	91.9	0.67
7M4MUK		1,052.5	110.9	1.51	1,371.5	281.1	2.04
7M7BBY		904.3	-37.3	-0.51	1,078.4	-12.1	-0.09
8XG8RL		898.0	-43.6	-0.59	1,015.0	-75.4	-0.55
9N767L		889.5	-52.1	-0.71	958.0	-132.4	-0.96
APYDQA		863.0	-78.6	-1.07	793.8	-296.6	-2.15
AV2MX3		882.6	-59.0	-0.80	977.0	-113.4	-0.82
BHUWVV		841.2	-100.4	-1.37	890.5	-199.9	-1.45
CREMVR		1,042.5	100.9	1.37	1,314.3	223.8	1.62
E83GH3		986.5	44.9	0.61	1,257.5	167.1	1.21
FDMWLZ		920.0	-21.6	-0.29	1,043.0	-47.4	-0.34
FJTT8L		983.5	41.9	0.57	1,096.5	6.1	0.04
FVM74B		933.7	-7.9	-0.11	936.5	-153.9	-1.12
HUZE8W		787.8	-153.8	-2.09	982.9	-107.6	-0.78
JXF9K9		943.0	1.4	0.02	1,093.5	3.1	0.02
KRBRPT		1,031.2	89.6	1.22	1,224.8	134.4	0.98
NZAN2L		1,100.0	158.4	2.15	1,200.0	109.6	0.79
RQRGQL		929.7	-11.9	-0.16	1,119.0	28.6	0.21
TRZQGX		960.9	19.3	0.26	1,087.1	-3.3	-0.02
TU6EX9		1,015.5	73.8	1.00	1,223.0	132.6	0.96
V2H9PM		914.5	-27.2	-0.37	1,113.9	23.5	0.17
V6GKLM		886.9	-54.8	-0.74	1,066.0	-24.4	-0.18

Summary Statistics

Grand Means

941.62 psi

1,090.42 psi

Stnd Dev Btwn Labs

73.55 psi

137.85 psi

Statistics based on 23 of 24 reporting participants

Summary Statistics in SI Units

Grand Means

6.4922 MPa

7.5200 MPa

Stnd Dev Btwn Labs

0.5071 MPa

0.9500 MPa

Statistics based on 23 of 24 reporting participants



Rubber Interlaboratory Testing Program

Analysis 632

Report #218

4th Qtr 2023

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

Samples D31-D32: Polyisoprene Compound & M31-M32: Polyisoprene Compound

Comments on Assigned Data Flags for Test #632

474RKB (X) - Inconsistent in testing between samples.



Rubber Interlaboratory Testing Program

Report #218

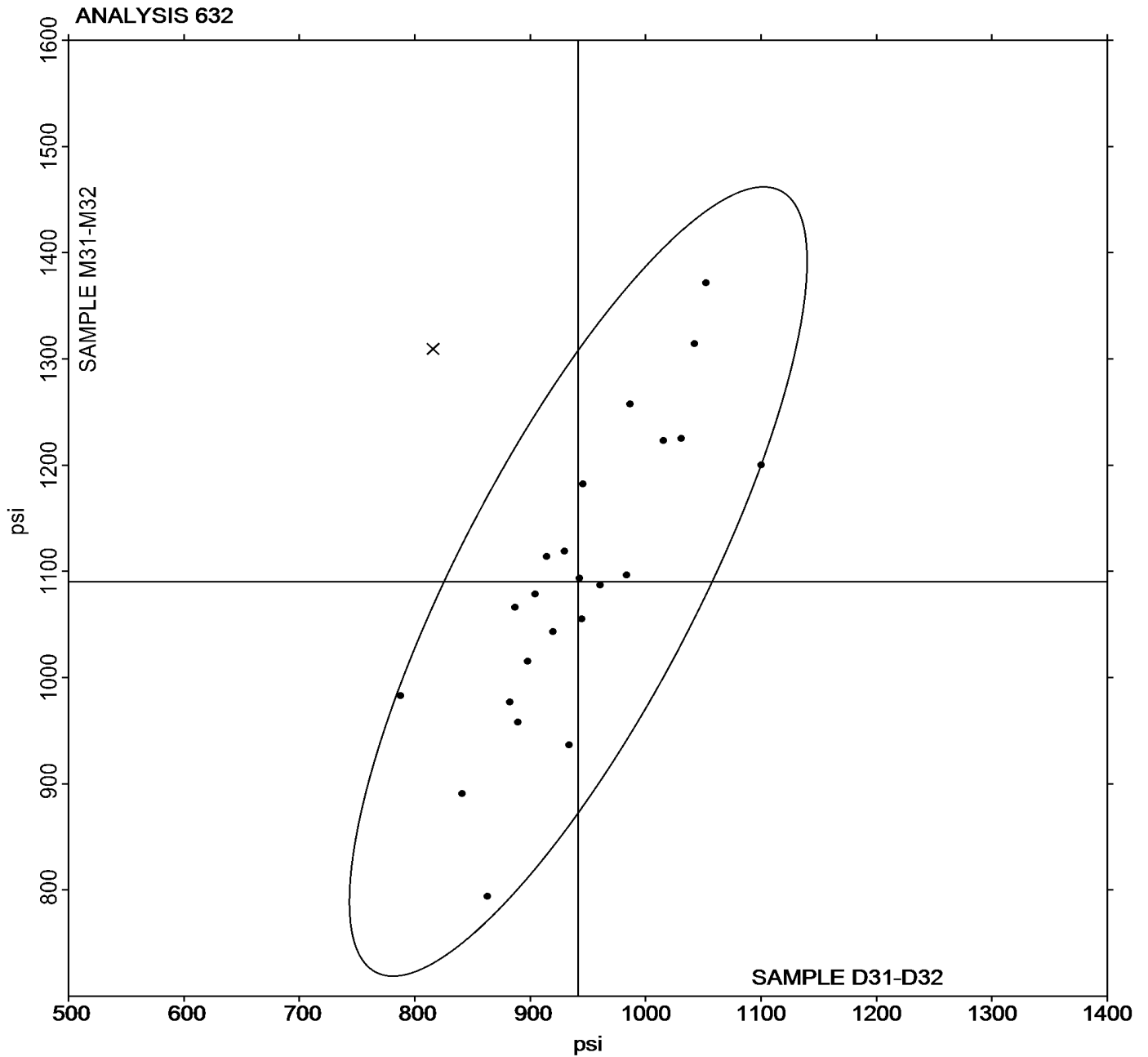
Analysis 632

4th Qtr 2023

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

Grand Mean Sample **D31-D32** = 941.62 psi

Grand Mean Sample **M31-M32** = 1,090.42 psi





Rubber Interlaboratory Testing Program

Report #218

Analysis 633

4th Qtr 2023

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

WebCode	Data Flag	Sample D31-D32			Sample M31-M32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
46UM8M		201.6	-7.6	-0.47	236.4	-1.9	-0.06
474RKB	*	188.5	-20.7	-1.27	295.5	57.1	1.86
7DGLEB		208.0	-1.2	-0.07	251.9	13.6	0.44
7M4MUK		222.0	12.8	0.79	290.5	52.2	1.70
7M7BBY		196.5	-12.7	-0.78	232.1	-6.3	-0.20
8XG8RL		236.5	27.3	1.67	271.4	33.1	1.08
9N767L		199.5	-9.7	-0.60	200.0	-38.3	-1.25
APYDQA		197.1	-12.1	-0.74	184.6	-53.7	-1.75
AV2MX3		206.3	-2.9	-0.18	196.5	-41.8	-1.36
BHUWVV		180.6	-28.6	-1.76	176.2	-62.1	-2.02
CREMVR		191.6	-17.6	-1.08	222.4	-15.9	-0.52
E83GH3		227.0	17.8	1.09	262.0	23.7	0.77
FDMWLZ		213.5	4.3	0.26	225.0	-13.3	-0.43
FJTT8L		217.0	7.8	0.48	240.5	2.2	0.07
FVM74B		210.9	1.7	0.10	208.5	-29.8	-0.97
HUZE8W		183.8	-25.4	-1.56	223.3	-15.1	-0.49
JXF9K9		206.0	-3.2	-0.20	241.5	3.2	0.10
KRBRPT		235.5	26.2	1.61	276.3	38.0	1.24
NZAN2L		240.0	30.8	1.89	253.0	14.7	0.48
RQRGQL		205.2	-4.0	-0.24	240.0	1.7	0.06
TRZQGX		211.5	2.3	0.14	238.2	-0.2	-0.01
TU6EX9		229.6	20.3	1.25	259.8	21.4	0.70
V2H9PM		210.3	1.1	0.07	252.4	14.0	0.46
V6GKLM		202.6	-6.6	-0.41	242.2	3.9	0.13

Grand Means		Summary Statistics	
	209.21 psi		238.34 psi
Stnd Dev Btwn Labs	16.29 psi		30.74 psi
Statistics based on 24 of 24 reporting participants			

Grand Means		Summary Statistics in SI Units	
	1.4424 MPa		1.6400 MPa
Stnd Dev Btwn Labs	0.1123 MPa		0.2100 MPa
Statistics based on 24 of 24 reporting participants			



Rubber Interlaboratory Testing Program

Analysis 633

Report #218

4th Qtr 2023

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

Samples D31-D32: Polyisoprene Compound & M31-M32: Polyisoprene Compound



Rubber Interlaboratory Testing Program

Report #218

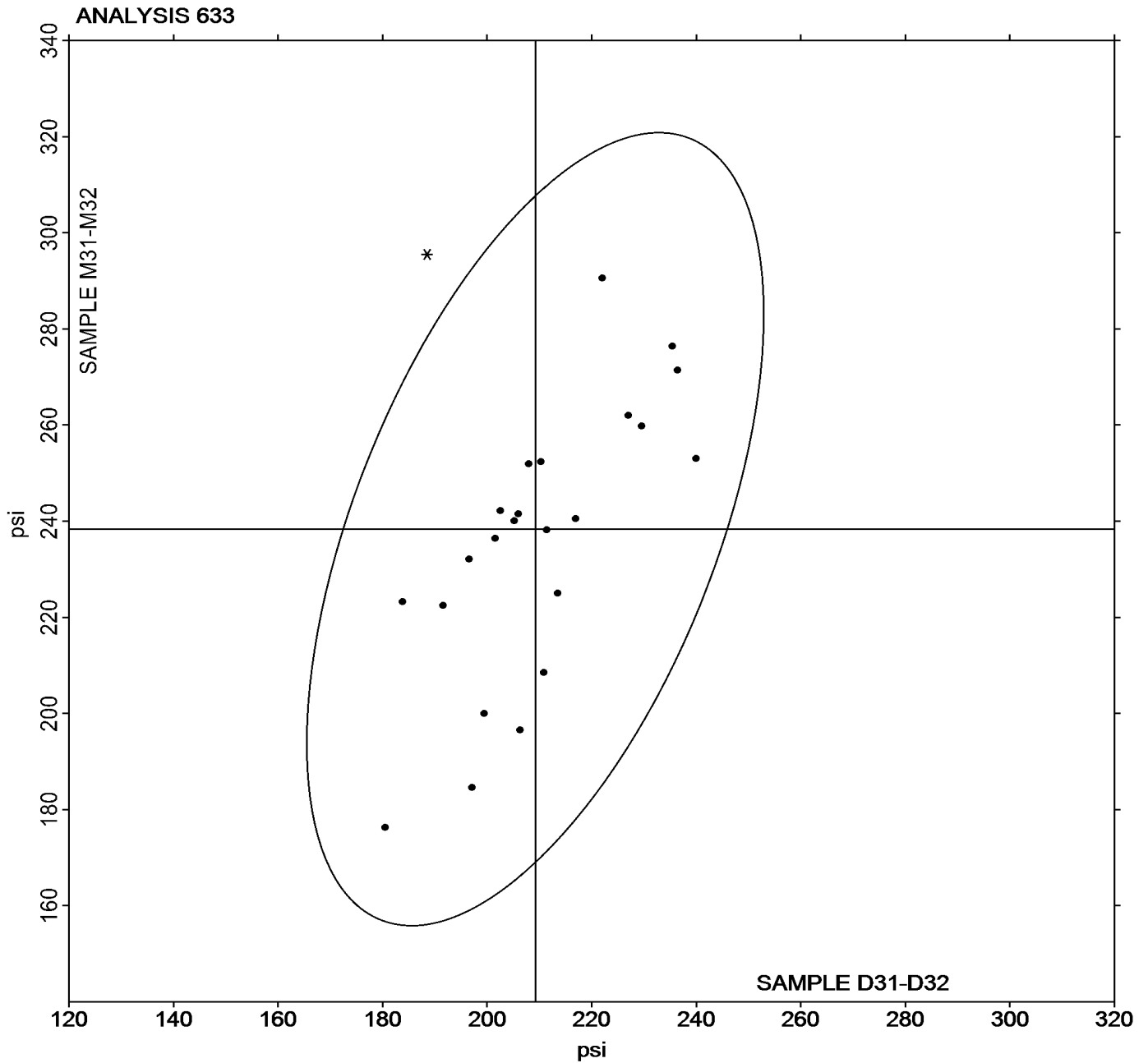
Analysis 633

4th Qtr 2023

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

Grand Mean Sample **D31-D32** = 209.21 psi

Grand Mean Sample **M31-M32** = 238.34 psi





Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample Q31			Sample Q32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
28MYV9		33.33	-1.74	-0.38	34.33	-0.62	-0.14
2RU4L4		28.33	-6.74	-1.46	26.67	-8.28	-1.90
6BTQEW		36.17	1.09	0.24	34.63	-0.32	-0.07
6FNHK9		31.00	-4.08	-0.88	33.43	-1.52	-0.35
7BPQPG		37.67	2.59	0.56	36.00	1.05	0.24
7M4MUK		39.33	4.26	0.92	37.33	2.38	0.55
7M7BBY		36.00	0.92	0.20	37.33	2.38	0.55
8RVA3Y		34.13	-0.94	-0.21	32.67	-2.28	-0.52
8XG8RL	*	22.28	-12.79	-2.78	25.95	-9.00	-2.06
9N767L		42.00	6.92	1.50	36.67	1.72	0.39
AGMEWY	X	6.87	-28.21	-6.12	7.62	-27.33	-6.27
AV2MX3		42.33	7.26	1.57	41.33	6.38	1.46
CP9268		34.45	-0.63	-0.14	36.53	1.58	0.36
CREMVR		35.16	0.08	0.02	38.33	3.38	0.78
DN9L7E		34.67	-0.41	-0.09	36.00	1.05	0.24
E2XZMM		30.73	-4.34	-0.94	34.40	-0.55	-0.13
E7BKT9		38.00	2.92	0.63	38.00	3.05	0.70
E83GH3	X	81.67	46.59	10.11	80.67	45.72	10.48
E8G3R6		35.13	0.06	0.01	33.97	-0.98	-0.23
EKRDFH		35.57	0.49	0.11	35.46	0.51	0.12
EN9ZVK		30.00	-5.08	-1.10	33.33	-1.62	-0.37
FDMWLZ		35.13	0.06	0.01	35.13	0.18	0.04
FEXYAJ		35.33	0.26	0.06	34.00	-0.95	-0.22
GZWJMV	*	39.00	3.92	0.85	32.00	-2.95	-0.68
HUZE8W		37.76	2.68	0.58	36.24	1.29	0.30
JNVXBG		35.43	0.35	0.08	33.93	-1.02	-0.23
JXF9K9		26.00	-9.08	-1.97	25.67	-9.28	-2.13
KEH7JX		34.93	-0.14	-0.03	36.17	1.22	0.28
KRBRPT		33.17	-1.91	-0.41	33.93	-1.02	-0.23
LDKHFT		36.10	1.02	0.22	31.57	-3.38	-0.78
LWW64L		30.80	-4.28	-0.93	28.00	-6.95	-1.59
RJUNHR		39.70	4.62	1.00	43.07	8.12	1.86
TU6EX9		45.67	10.59	2.30	46.17	11.22	2.57
XYN3KG		34.63	-0.44	-0.10	36.97	2.02	0.46
Y6KETH		37.63	2.56	0.55	38.15	3.20	0.73



Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	35.078 % Compression	34.951 % Compression	
Std Dev Btwn Labs	4.608 % Compression	4.363 % Compression	
Statistics based on 33 of 35 reporting participants			

Samples Q31: EPDM Compound & Q32: EPDM Compound

Comments on Assigned Data Flags for Test #635

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

E83GH3 (X) - Extreme Data.

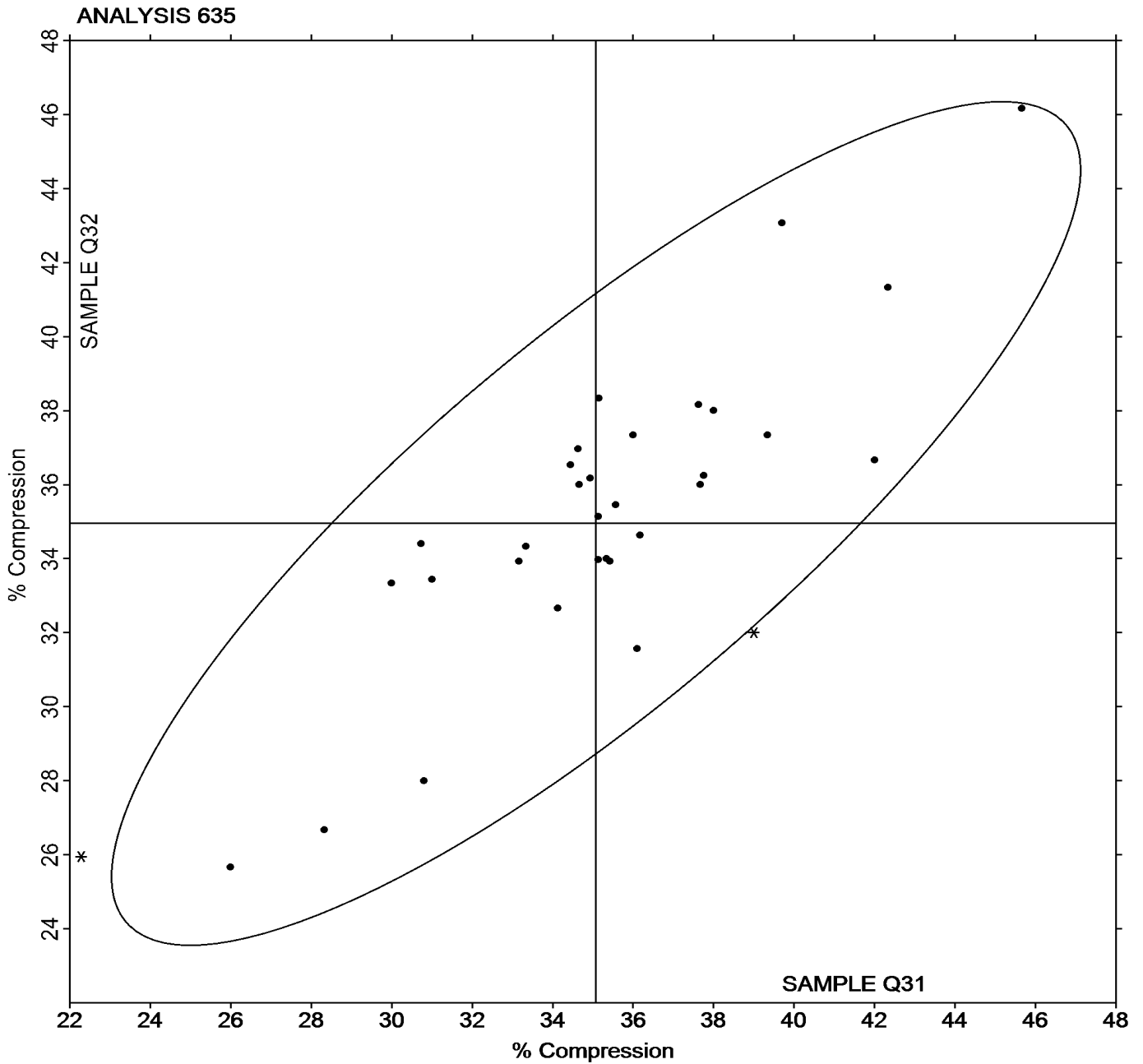


Rubber Interlaboratory Testing Program
Analysis 635
Compression Set Method B

Report #218
4th Qtr 2023

Grand Mean Sample Q31 = 35.078 % Compression

Grand Mean Sample Q32 = 34.951 % Compression





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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD31			Sample RD32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		2,441.0	-23.4	-0.26	2,437.0	-18.1	-0.22
28MYV9		2,404.0	-60.4	-0.67	2,406.4	-48.7	-0.60
7BPQPG		2,626.8	162.4	1.80	2,639.2	184.1	2.28
7M7BBY		2,439.3	-25.1	-0.28	2,397.2	-57.9	-0.72
AV2MX3		2,525.4	61.0	0.68	2,499.3	44.2	0.55
EN9ZVK		2,340.6	-123.8	-1.37	2,359.4	-95.7	-1.19
FDMWLZ		2,363.0	-101.4	-1.13	2,381.8	-73.3	-0.91
FEXYAJ		2,406.4	-58.0	-0.64	2,424.6	-30.5	-0.38
HULVMY		2,576.8	112.4	1.25	2,541.4	86.3	1.07
HUZE8W		2,453.6	-10.8	-0.12	2,453.4	-1.7	-0.02
LWW64L		2,531.6	67.2	0.75	2,466.4	11.3	0.14

Summary Statistics	
Grand Means	
	2,464.41 psi 2,455.10 psi
Std Dev Btwn Labs	
	90.09 psi 80.59 psi
Statistics based on 11 of 11 reporting participants	

Samples RD31: Nitrile O-Ring & RD32: Nitrile O-Ring

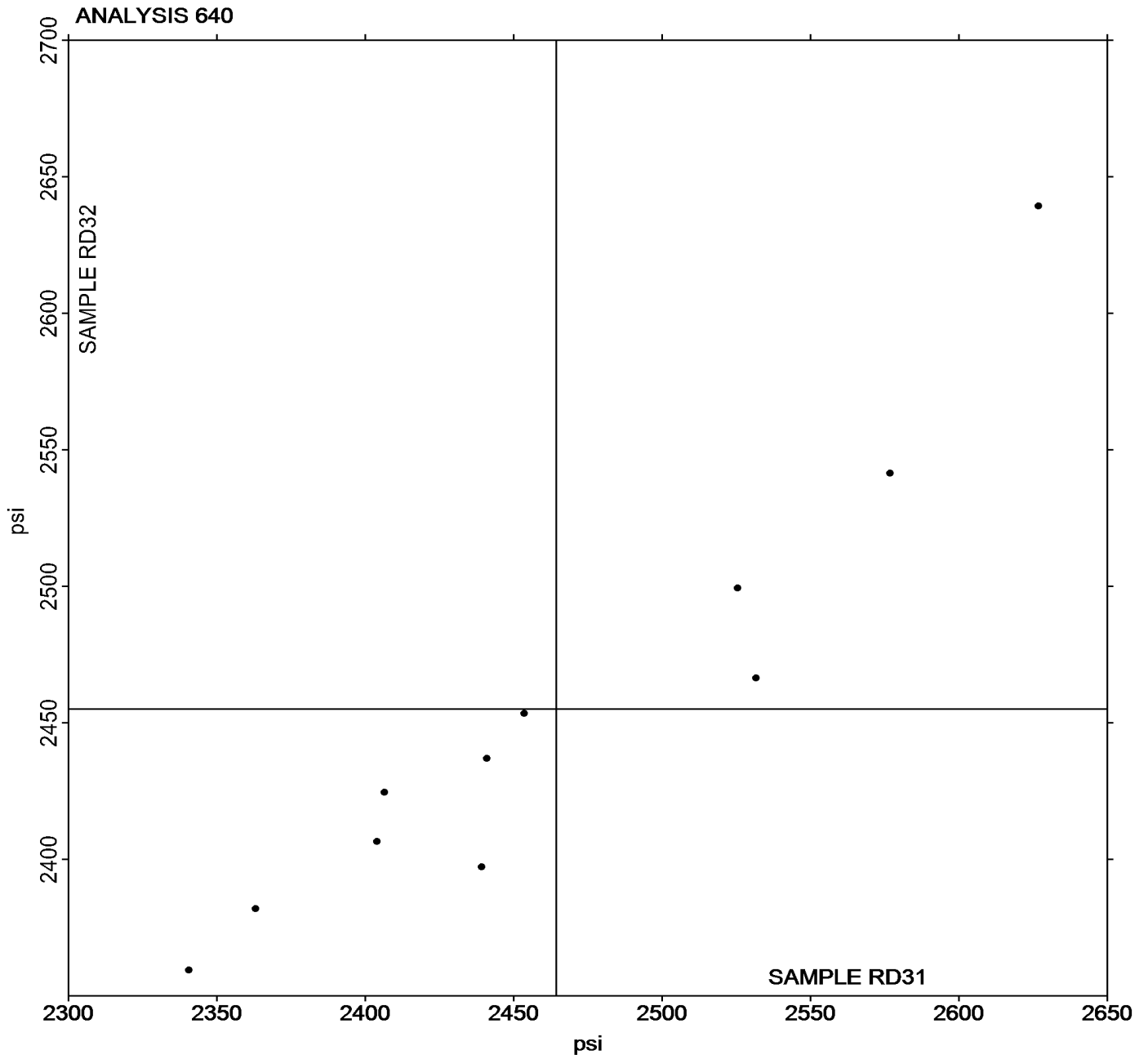


Rubber Interlaboratory Testing Program
Analysis 640
O-Ring Tensile Strength at Break (psi)

Report #218
4th Qtr 2023

Grand Mean Sample **RD31** = 2,464.41 psi

Grand Mean Sample **RD32** = 2,455.10 psi



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



Rubber Interlaboratory Testing Program
Analysis 641
O-Ring Ultimate Elongation (%)

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD31			Sample RD32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		414.4	13.8	0.36	415.2	17.0	0.52
28MYV9		407.8	7.2	0.19	405.2	7.0	0.21
7BPQPG		320.6	-80.0	-2.10	326.4	-71.8	-2.17
7M7BBY		435.6	35.0	0.92	429.0	30.8	0.93
AV2MX3		433.8	33.2	0.87	433.4	35.2	1.07
EN9ZVK		360.6	-40.0	-1.05	366.2	-32.0	-0.97
FDMWLZ		395.0	-5.6	-0.15	394.2	-4.0	-0.12
FEXYAJ		358.8	-41.8	-1.10	363.6	-34.6	-1.05
HULVMY		422.2	21.6	0.57	410.4	12.2	0.37
HUZE8W		423.8	23.2	0.61	423.0	24.8	0.75
LWW64L		433.6	33.0	0.87	413.2	15.0	0.46

Summary Statistics	
Grand Means	400.56 percent 398.16 percent
Std Dev Btwn Labs	38.00 percent 33.03 percent
Statistics based on 11 of 11 reporting participants	

Samples RD31: Nitrile O-Ring & RD32: Nitrile O-Ring

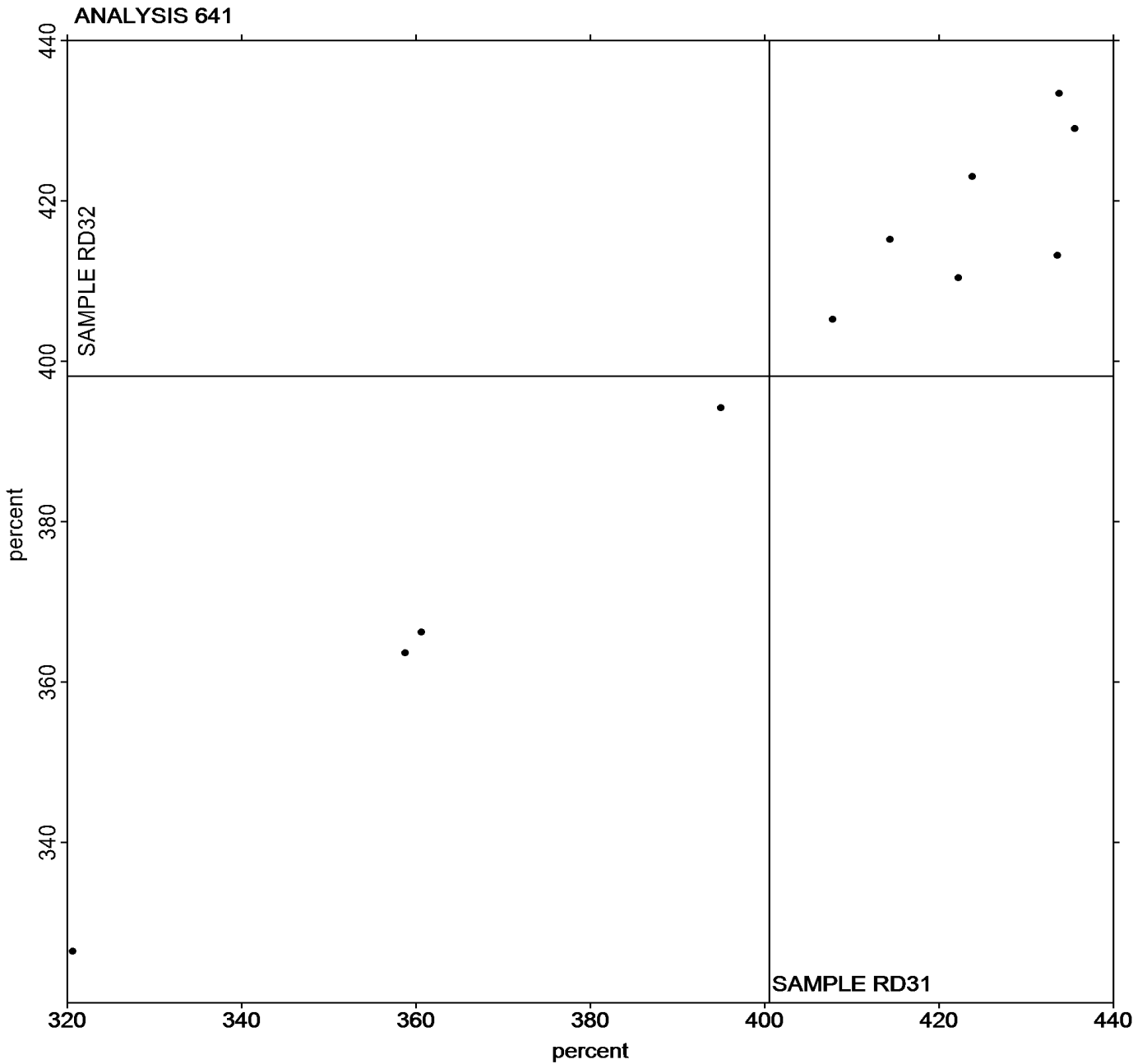


Rubber Interlaboratory Testing Program
Analysis 641
O-Ring Ultimate Elongation (%)

Report #218
4th Qtr 2023

Grand Mean Sample **RD31** = 400.56 percent

Grand Mean Sample **RD32** = 398.16 percent



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



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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD31			Sample RD32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		458.0	-13.6	-0.21	466.0	-12.4	-0.19
28MYV9		450.0	-21.6	-0.33	464.0	-14.4	-0.22
7M7BBY		348.7	-122.9	-1.89	348.7	-129.7	-1.95
AV2MX3		405.1	-66.6	-1.02	401.3	-77.1	-1.16
EN9ZVK		552.2	80.6	1.24	558.0	79.6	1.20
FDMWLZ		469.4	-2.2	-0.03	493.0	14.6	0.22
FEXYAJ		574.6	103.0	1.58	572.0	93.6	1.41
HULVMY		496.0	24.4	0.37	513.6	35.2	0.53
HUZE8W		487.2	15.6	0.24	490.2	11.8	0.18
LWW64L		475.0	3.4	0.05	477.4	-1.0	-0.02

Summary Statistics	
Grand Means	471.61 psi 478.42 psi
Std Dev Btwn Labs	65.11 psi 66.51 psi
Statistics based on 10 of 10 reporting participants	

Samples RD31: Nitrile O-Ring & RD32: Nitrile O-Ring

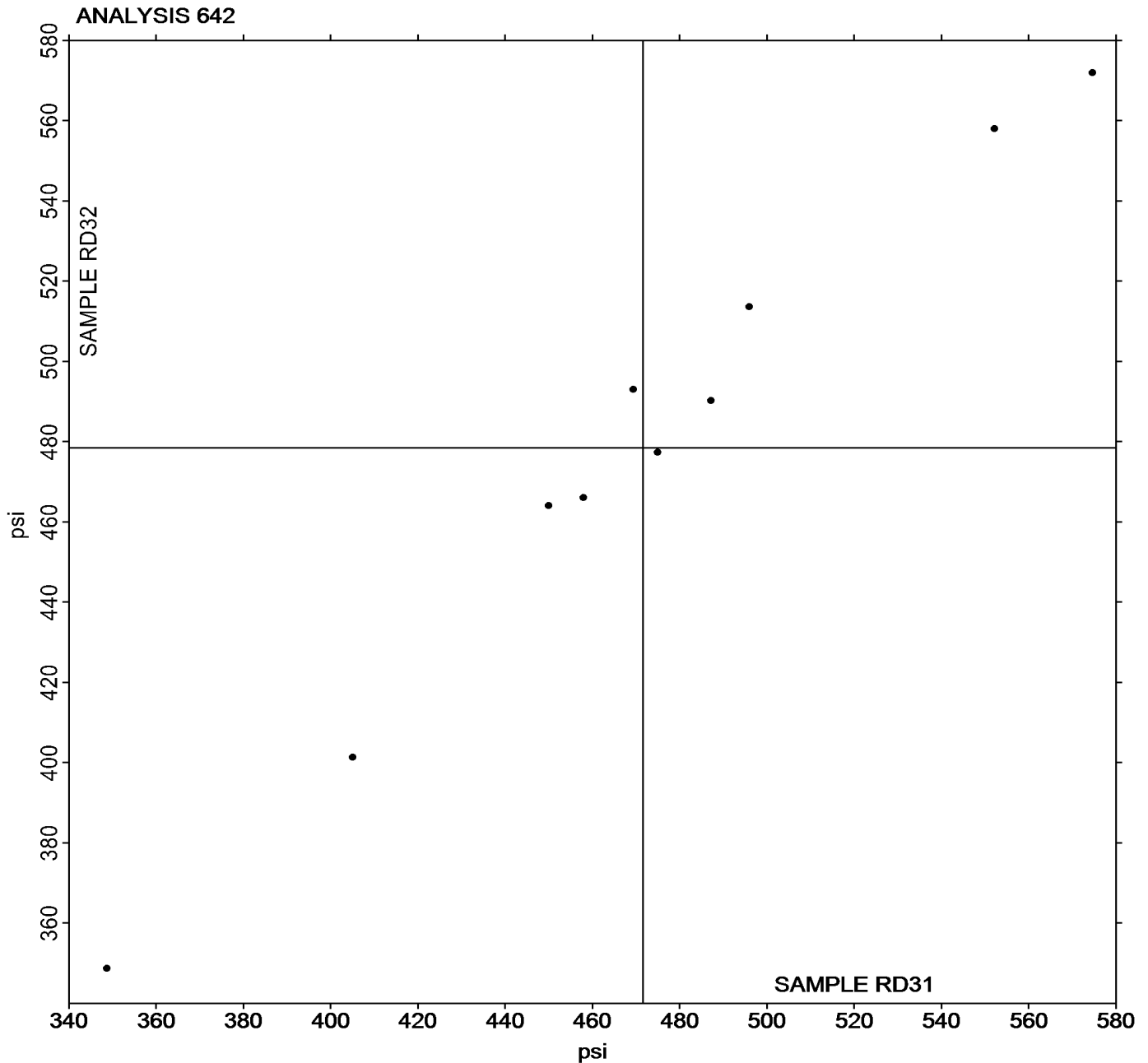


Rubber Interlaboratory Testing Program
Analysis 642
O-Ring Stress at 100% Elongation (psi)

Report #218
4th Qtr 2023

Grand Mean Sample **RD31** = 471.61 psi

Grand Mean Sample **RD32** = 478.42 psi



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



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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD31			Sample RD32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		70.80	1.15	0.52	70.20	0.59	0.29
28MYV9		69.20	-0.45	-0.20	69.20	-0.41	-0.20
7BPQPG		67.20	-2.45	-1.09	67.60	-2.01	-0.98
7M7BBY		67.10	-2.55	-1.14	67.22	-2.39	-1.17
AV2MX3		70.40	0.75	0.34	70.56	0.95	0.47
EN9ZVK		72.60	2.95	1.32	71.80	2.19	1.08
FDMWLZ		70.52	0.87	0.39	70.68	1.07	0.53
FEXYAJ		71.60	1.95	0.87	71.60	1.99	0.98
HULVMY		65.82	-3.83	-1.71	65.92	-3.69	-1.81
HUZE8W		71.22	1.57	0.70	71.28	1.67	0.82

Summary Statistics	
Grand Means	69.646 Type A 69.606 Type A
Std Dev Btwn Labs	2.236 Type A 2.041 Type A
Statistics based on 10 of 10 reporting participants	

Samples RD31: Nitrile O-Ring & RD32: Nitrile O-Ring

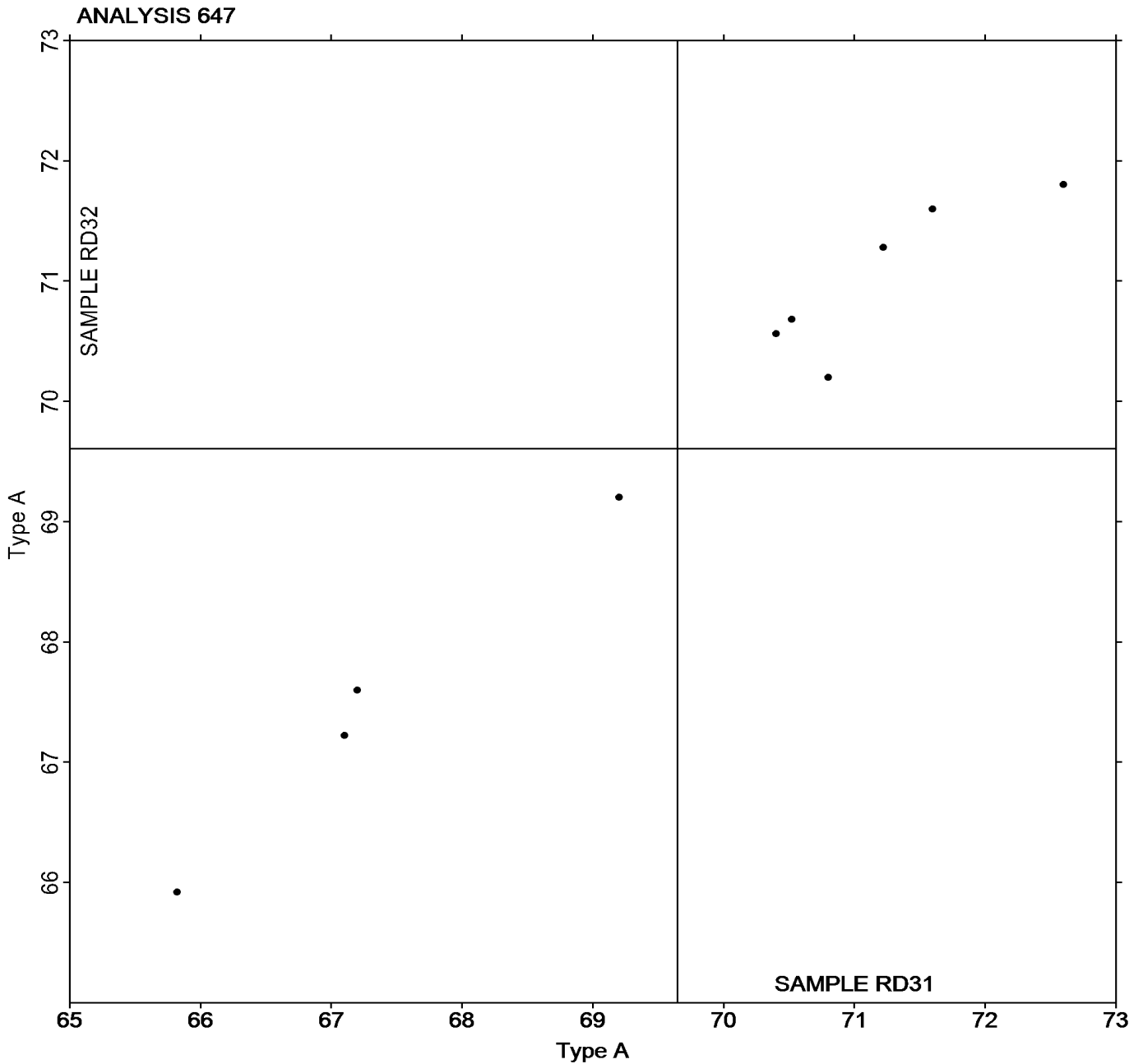


Rubber Interlaboratory Testing Program
Analysis 647
O-Ring Hardness (Shore A)

Report #218
4th Qtr 2023

Grand Mean Sample **RD31** = 69.646 Type A

Grand Mean Sample **RD32** = 69.606 Type A



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



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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD31			Sample RD32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
28MYV9		77.78	1.52	1.32	77.76	1.62	1.36
EN9ZVK		77.00	0.74	0.64	77.16	1.02	0.86
FDMWLZ		76.40	0.14	0.12	76.36	0.22	0.19
FEXYAJ		75.40	-0.86	-0.74	75.12	-1.02	-0.85
HULVMY		77.28	1.02	0.88	76.84	0.70	0.59
HUZE8W		75.16	-1.10	-0.95	74.92	-1.22	-1.02
LWW64L		74.80	-1.46	-1.26	74.80	-1.34	-1.12

Grand Means		Summary Statistics	
	76.260 Type M		76.137 Type M
Std Dev Btwn Labs	1.155 Type M		1.192 Type M
Statistics based on 7 of 7 reporting participants			

Samples RD31: Nitrile O-Ring & RD32: Nitrile O-Ring

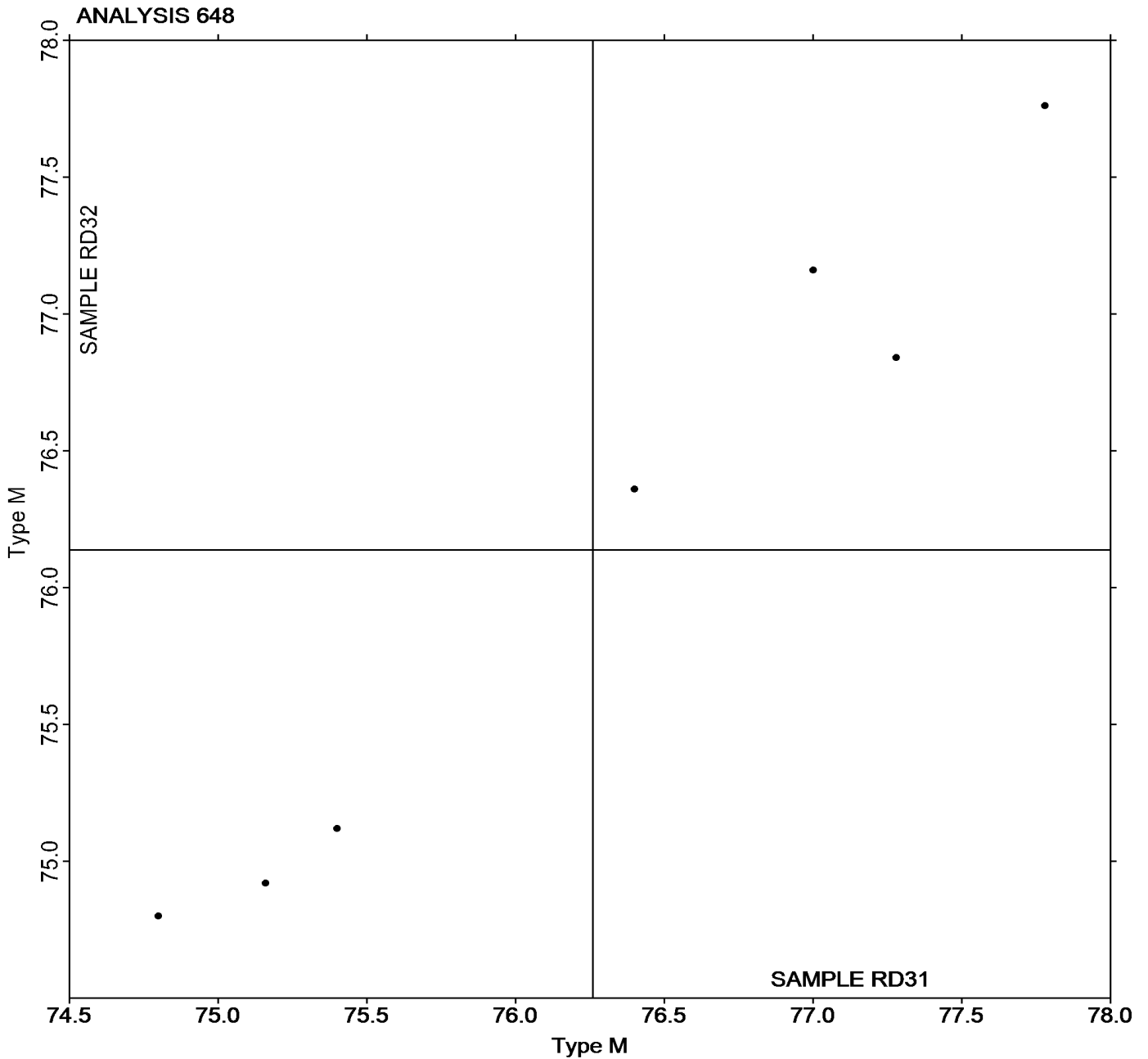


Rubber Interlaboratory Testing Program
Analysis 648
O-Ring Hardness (Shore M)

Report #218
4th Qtr 2023

Grand Mean Sample **RD31** = 76.260 Type M

Grand Mean Sample **RD32** = 76.137 Type M



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



Rubber Interlaboratory Testing Program
Analysis 649
O-Ring Density

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD31			Sample RD32		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
24MMZ9		1.211	-0.005	-0.98	1.215	-0.001	-0.40
28MYV9		1.215	-0.001	-0.24	1.218	0.002	1.36
7BPQPG		1.233	0.016	2.92	1.217	0.001	0.77
7M7BBY		1.216	-0.001	-0.11	1.216	0.001	0.33
AV2MX3		1.215	-0.001	-0.23	1.216	0.000	0.14
EN9ZVK		1.213	-0.003	-0.60	1.215	0.000	-0.27
FDMWLZ		1.214	-0.003	-0.46	1.213	-0.002	-1.40
FEXYAJ		1.213	-0.004	-0.69	1.215	-0.001	-0.35
HULVMY		1.216	-0.001	-0.11	1.215	-0.001	-0.55
HUZE8W		1.219	0.002	0.37	1.218	0.003	1.66
LWW64L		1.215	-0.001	-0.24	1.213	-0.003	-1.69
WQEBGD		1.219	0.002	0.38	1.216	0.001	0.42

Summary Statistics	
Grand Means	1.2167 g/cm ³ (Mg/m ³) 1.2155 g/cm ³ (Mg/m ³)
Stnd Dev Btwn Labs	0.0054 g/cm ³ (Mg/m ³) 0.0017 g/cm ³ (Mg/m ³)
Statistics based on 12 of 12 reporting participants	

Samples RD31: Nitrile O-Ring & RD32: Nitrile O-Ring



Rubber Interlaboratory Testing Program

Analysis 649

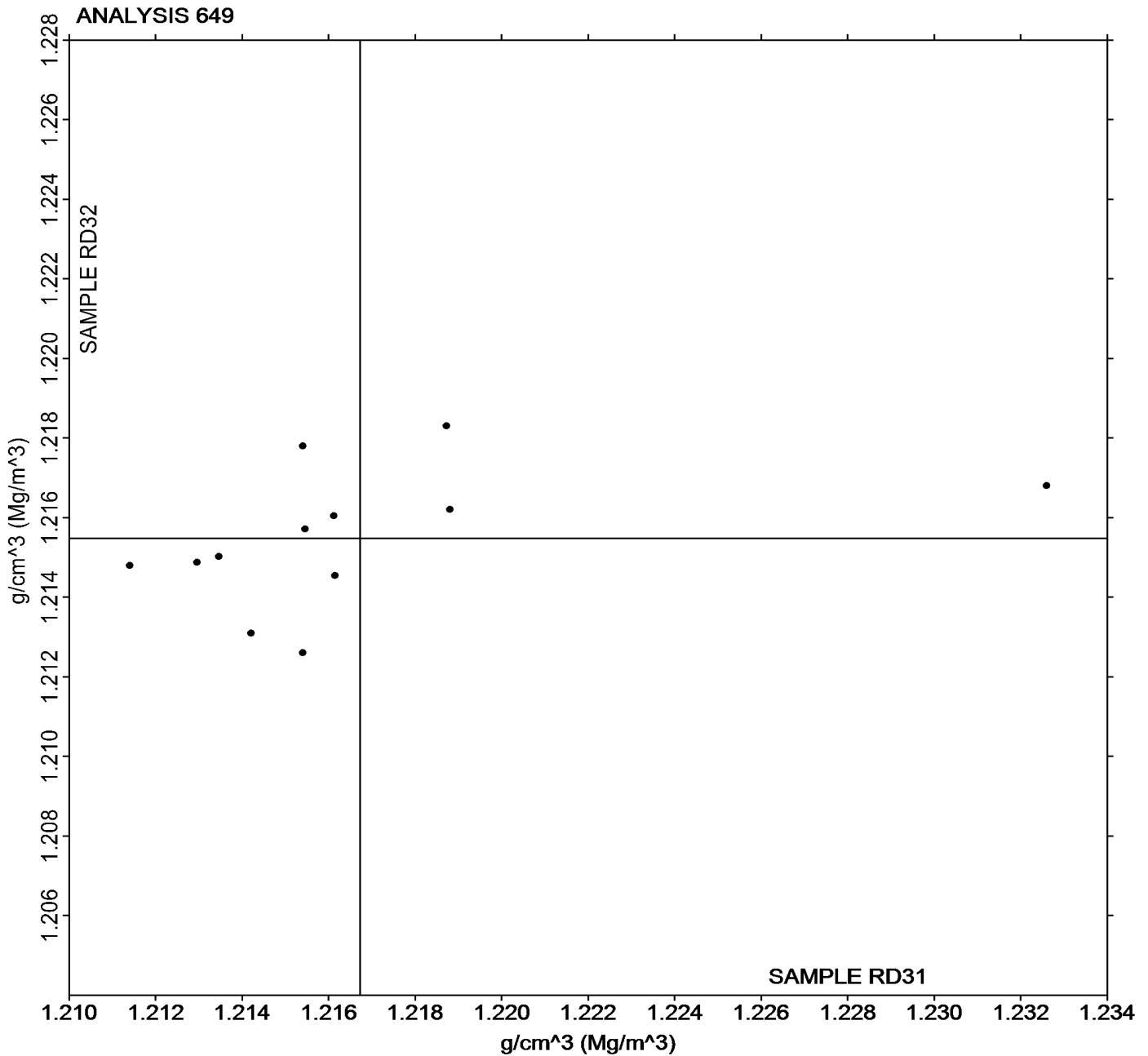
O-Ring Density

Report #218

4th Qtr 2023

Grand Mean Sample **RD31** = 1.2167 g/cm³
(Mg/m³)

Grand Mean Sample **RD32** = 1.2155 g/cm³
(Mg/m³)



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



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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample RD33			Sample RD34		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
28MYV9		8.43	-2.17	-1.05	9.50	-0.77	-0.39
7M7BBY		11.77	1.16	0.56	11.97	1.70	0.86
AV2MX3		10.80	0.20	0.09	10.80	0.53	0.27
EN9ZVK		9.67	-0.94	-0.45	9.00	-1.27	-0.65
FDMWLZ		8.80	-1.80	-0.87	8.80	-1.47	-0.75
FEXYAJ		8.33	-2.27	-1.09	8.00	-2.27	-1.16
HULVMY		13.90	3.30	1.59	12.25	1.98	1.01
HUZE8W		10.70	0.09	0.04	10.70	0.43	0.22
LWW64L		9.92	-0.68	-0.33	7.99	-2.28	-1.16
MJ46N4		14.57	3.96	1.91	14.30	4.03	2.05
WFU88T		9.77	-0.84	-0.40	9.67	-0.60	-0.31

Summary Statistics	
Grand Means	10.605 % Compression
Std Dev Btwn Labs	2.077 % Compression
	10.270 % Compression
	1.964 % Compression
Statistics based on 11 of 11 reporting participants	

Samples RD33: Nitrile O-Ring & RD34: Nitrile O-Ring

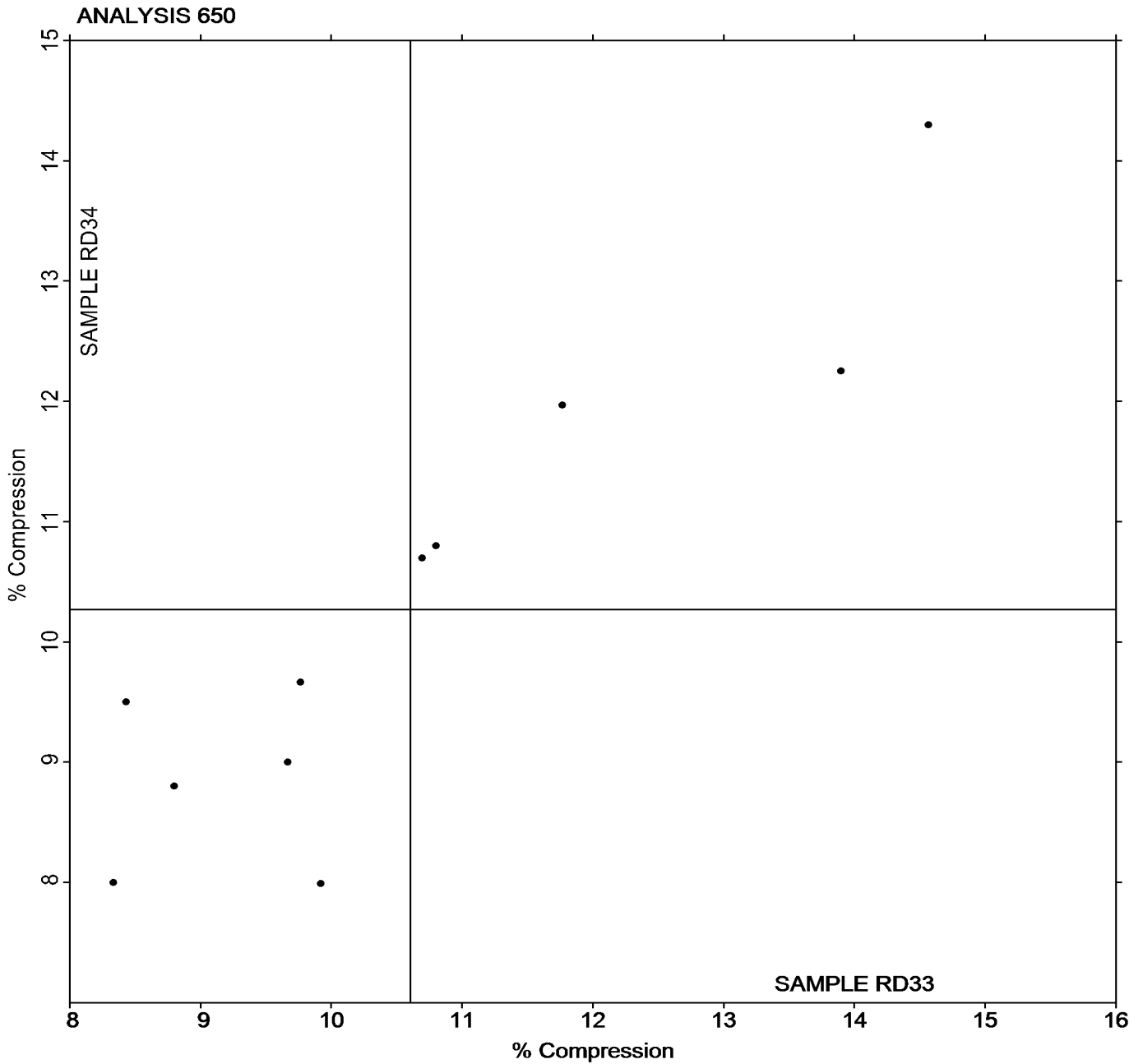


Rubber Interlaboratory Testing Program
Analysis 650
O-Ring Compression Set Method B

Report #218
4th Qtr 2023

Grand Mean Sample **RD33** = 10.605 % Compression

Grand Mean Sample **RD34** = 10.270 % Compression



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



Rubber Interlaboratory Testing Program

Report #218

Analysis 660

4th Qtr 2023

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

WebCode	Data Flag	Sample V31-V32			Sample V33-V34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		46.10	-1.31	-1.37	54.23	-0.94	-0.71	MR
2VAYYF		47.17	-0.24	-0.25	55.00	-0.18	-0.13	MR
3UG3BL		46.77	-0.64	-0.67	55.48	0.31	0.23	MR
46UM8M		48.32	0.91	0.95	56.32	1.14	0.86	MR
474RKB		47.15	-0.26	-0.27	54.56	-0.62	-0.46	MR
78DHQX		48.70	1.29	1.36	56.55	1.37	1.03	MR
7M4MUK		47.30	-0.11	-0.11	53.42	-1.76	-1.32	MR
7M7BBY		47.72	0.31	0.32	55.27	0.09	0.07	ML
9N767L		47.42	0.01	0.01	54.90	-0.28	-0.21	MR
APYDQA		48.19	0.78	0.82	55.42	0.24	0.18	MV
FJTT8L		47.12	-0.29	-0.31	55.02	-0.16	-0.12	MR
FVM74B	*	49.79	2.38	2.50	56.58	1.40	1.05	MR
HUZE8W		47.90	0.49	0.52	55.37	0.19	0.14	MR
JNVXBG		46.73	-0.68	-0.71	52.43	-2.74	-2.06	MR
JQYTUJ	*	49.45	2.04	2.14	59.34	4.16	3.12	TA
JXF9K9		47.10	-0.31	-0.32	54.47	-0.71	-0.53	MM
KRBRPT		46.54	-0.87	-0.92	54.58	-0.60	-0.45	MR
NW8MY3		46.41	-1.00	-1.05	53.69	-1.48	-1.11	MR
QFEU6F		46.97	-0.44	-0.46	54.65	-0.53	-0.39	MR
RFRQ8Y		46.83	-0.58	-0.60	55.20	0.02	0.02	MR
RQRGQL		46.22	-1.19	-1.25	54.27	-0.91	-0.68	MR
TRZQGX		46.90	-0.51	-0.54	54.78	-0.40	-0.30	MV
V6GKLM		46.53	-0.88	-0.92	55.10	-0.08	-0.06	MR
VL2BKL		47.60	0.19	0.20	55.82	0.64	0.48	MR
WFU88T	X	51.78	4.37	4.59	61.46	6.28	4.71	MV
XYN3KG		48.31	0.90	0.95	56.97	1.79	1.35	MR

Grand Means		Summary Statistics	
	47.409 ML 1 + 4		55.175 ML 1 + 4
Std Dev Btwn Labs	0.952 ML 1 + 4		1.333 ML 1 + 4
Statistics based on 25 of 26 reporting participants			

Samples V31-V32: SBR & V33-V34: Butyl

Comments on Assigned Data Flags for Test #660

WFU88T (X) - Data for all samples are high.



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

Report #218
4th Qtr 2023

Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MM	Alpha Technologies Model 1xxx or OSM
MR	Alpha Technologies Model MV2000/MV2000E	MV	MonTech
TA	TA Instruments (any model)		

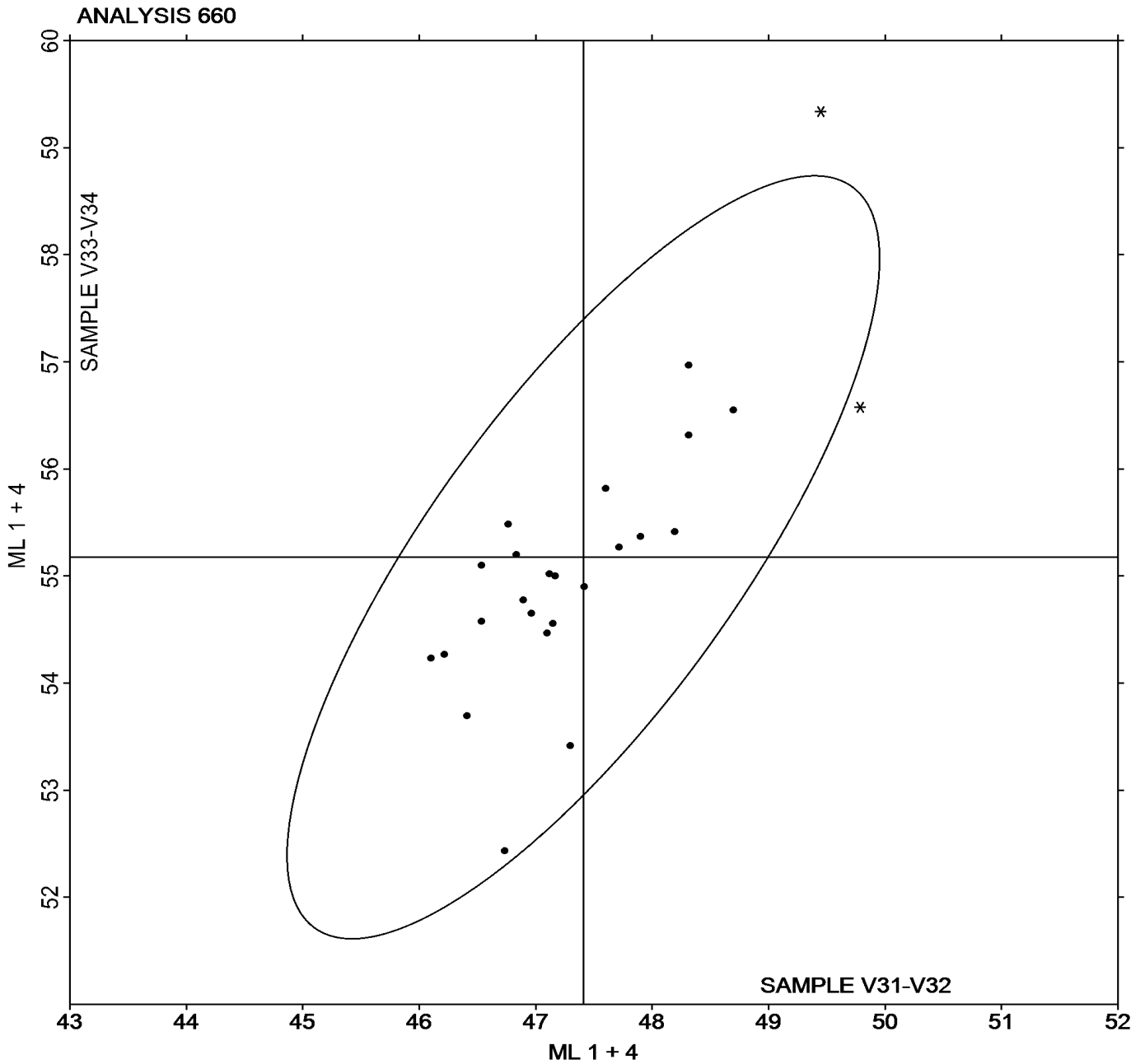


Rubber Interlaboratory Testing Program
Analysis 660
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #218
4th Qtr 2023

Grand Mean Sample **V31-V32** = 47.409 ML 1 + 4

Grand Mean Sample **V33-V34** = 55.175 ML 1 + 4





Rubber Interlaboratory Testing Program

Report #218

Analysis 661

4th Qtr 2023

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

WebCode	Data Flag	Sample V31-V32			Sample V33-V34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		46.10	-1.50	-1.14	51.67	-1.54	-0.87	MR
2VAYYF		47.17	-0.43	-0.33	52.67	-0.54	-0.30	XX
3UG3BL		46.77	-0.83	-0.64	52.45	-0.75	-0.43	MR
46UM8M		48.32	0.72	0.54	53.47	0.26	0.15	MR
474RKB		47.15	-0.45	-0.34	51.84	-1.36	-0.77	MR
78DHQX		48.70	1.10	0.84	54.23	1.03	0.58	MR
7M4MUK		47.30	-0.30	-0.23	50.78	-2.43	-1.37	MR
7M7BBY		47.72	0.12	0.09	53.22	0.01	0.01	ML
9N767L		47.42	-0.18	-0.14	52.83	-0.37	-0.21	MR
APYDQA		48.19	0.59	0.45	52.17	-1.04	-0.59	MV
FJTT8L		47.12	-0.48	-0.37	52.85	-0.35	-0.20	MR
FVM74B		49.79	2.19	1.66	54.82	1.62	0.92	MR
HUZE8W		47.90	0.30	0.23	53.25	0.05	0.03	MR
JNVXBG		46.73	-0.87	-0.66	52.43	-0.77	-0.44	MR
JQYTUJ		49.45	1.85	1.41	56.20	2.99	1.69	TA
JXF9K9		47.10	-0.50	-0.38	54.52	1.31	0.74	MR
KRBRPT		46.54	-1.06	-0.81	52.37	-0.83	-0.47	MR
NW8MY3		46.41	-1.19	-0.91	51.56	-1.64	-0.93	MR
RFRQ8Y		46.83	-0.77	-0.58	52.72	-0.49	-0.27	MR
RQRGQL		46.22	-1.38	-1.05	51.95	-1.25	-0.71	MR
TRZQGX		46.90	-0.71	-0.54	52.45	-0.75	-0.43	MV
V6GKLM		46.53	-1.07	-0.81	52.50	-0.70	-0.40	MR
WFU88T	*	51.78	4.18	3.18	59.20	6.00	3.39	MV
XYN3KG		48.31	0.71	0.54	54.74	1.53	0.87	MR

Grand Means		Summary Statistics	
	47.601 ML 1 + 8		53.203 ML 1 + 8
Stnd Dev Btwn Labs	1.314 ML 1 + 8		1.768 ML 1 + 8
Statistics based on 24 of 24 reporting participants			

Samples V31-V32: SBR & V33-V34: Butyl

Key to Instrument Codes Reported by Participants

ML	Alpha Technologies/Monsanto model not specified	MR	Alpha Technologies Model MV2000/MV2000E
MV	Montech	TA	TA Instruments (any model)
XX	Instrument make/model not specified by lab		



Rubber Interlaboratory Testing Program

Report #218

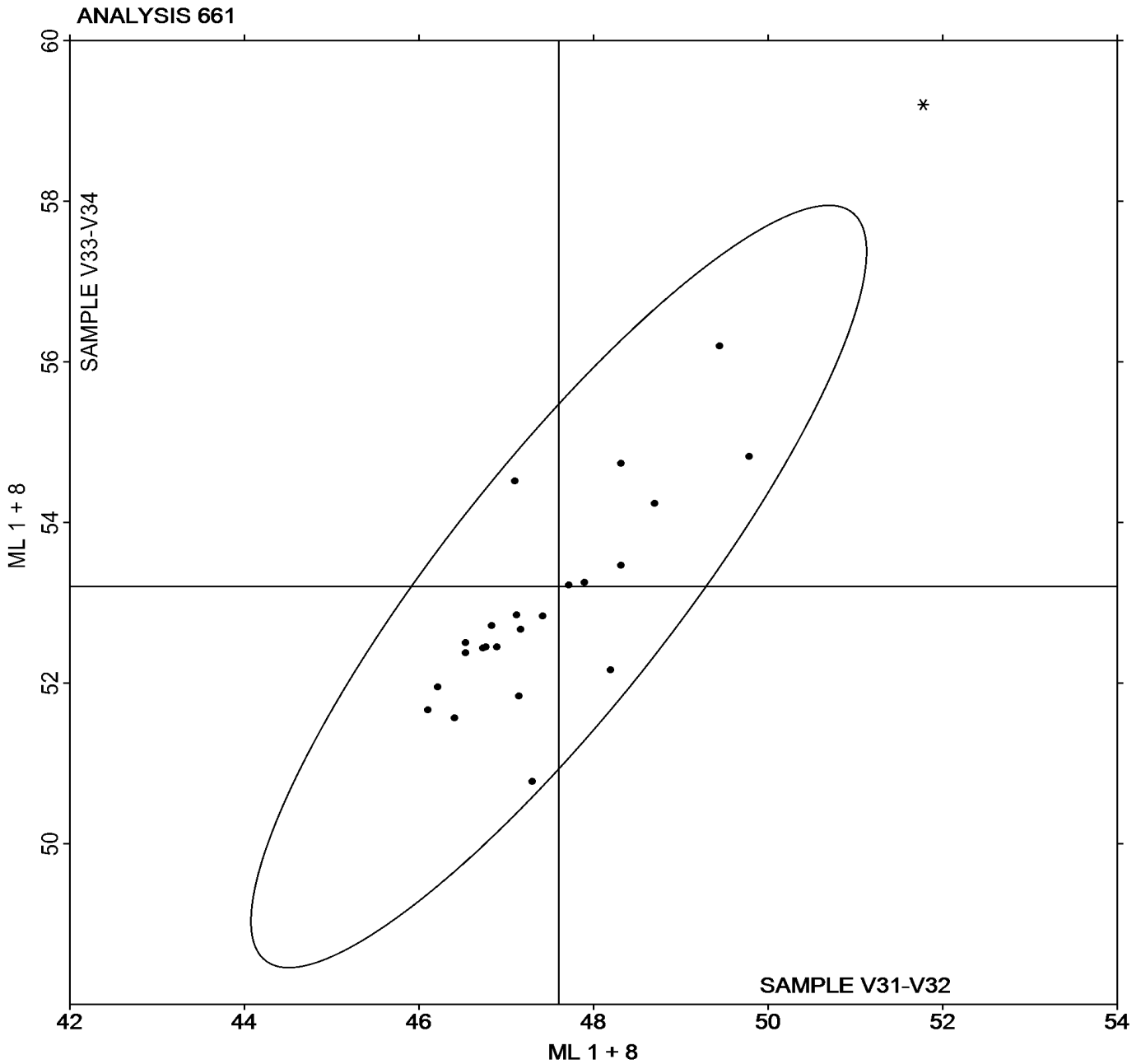
Analysis 661

4th Qtr 2023

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

Grand Mean Sample V31-V32 = 47.601 ML 1 + 8

Grand Mean Sample V33-V34 = 53.203 ML 1 + 8





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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample V31-V32			Sample V33-V34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF		7.100	-2.583	-1.12	7.800	-0.063	-0.04	MR
3UG3BL		11.550	1.867	0.81	8.700	0.837	0.57	MR
7M7BBY		10.970	1.287	0.56	7.562	-0.301	-0.21	ML
APYDQA		11.110	1.427	0.62	11.120	3.257	2.23	MV
FJTT8L		11.093	1.411	0.61	7.738	-0.125	-0.09	MR
KRBRPT		11.082	1.399	0.61	7.742	-0.122	-0.08	MR
RQRGQL		10.390	0.707	0.31	7.630	-0.233	-0.16	MR
TRZQGX		5.208	-4.475	-1.94	5.150	-2.713	-1.86	MV
V6GKLM		11.260	1.577	0.69	7.883	0.020	0.01	MR
WFU88T		7.065	-2.618	-1.14	7.307	-0.557	-0.38	MV

Grand Means		Summary Statistics	
	9.6828 seconds		7.8632 seconds
Std Dev Btwn Labs	2.3012 seconds		1.4590 seconds
Statistics based on 10 of 10 reporting participants			

Samples V31-V32: SBR & V33-V34: Butyl

Key to Instrument Codes Reported by Participants

- ML Alpha Technologies/Monsanto model not specified
- MV MonTech
- MR Alpha Technologies Model MV2000/MV2000E

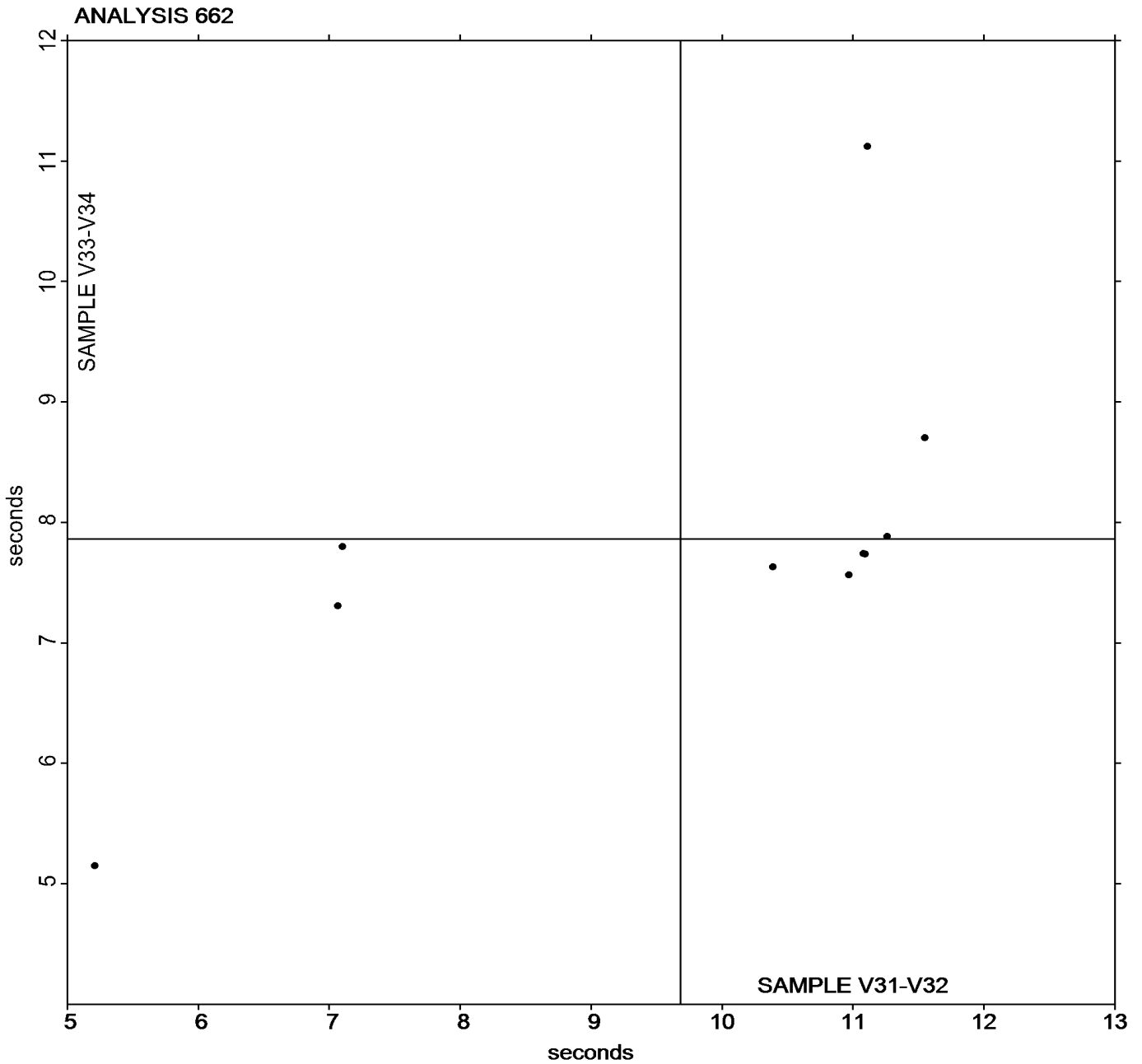


Rubber Interlaboratory Testing Program
Analysis 662
Mooney Stress Relaxation: t80 (seconds)

Report #218
4th Qtr 2023

Grand Mean Sample V31-V32 = 9.6828 seconds

Grand Mean Sample V33-V34 = 7.8632 seconds



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



Rubber Interlaboratory Testing Program

Report #218

Analysis 663

4th Qtr 2023

Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample V31-V32			Sample V33-V34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF	X	10.67	-76.32	-56.06	8.17	-83.67	-112.97	MR
3UG3BL		86.25	-0.74	-0.54	91.33	-0.50	-0.67	MR
7M7BBY		86.60	-0.39	-0.29	92.28	0.45	0.60	ML
APYDQA		89.51	2.52	1.85	92.24	0.41	0.55	MV
FJTT8L		86.59	-0.40	-0.30	92.02	0.19	0.25	MR
KRBRPT		86.53	-0.46	-0.34	92.05	0.22	0.30	MR
RQRGQL		87.27	0.28	0.20	92.81	0.98	1.32	MR
TRZQGX		84.96	-2.03	-1.49	90.19	-1.64	-2.21	MV
V6GKLM		86.50	-0.49	-0.36	91.91	0.07	0.10	MR
WFU88T		88.70	1.71	1.26	91.66	-0.18	-0.24	MV

Grand Means		Summary Statistics	
	86.989 percent		91.832 percent
Std Dev Btwn Labs	1.361 percent		0.741 percent
Statistics based on 9 of 10 reporting participants			

Samples V31-V32: SBR & V33-V34: Butyl

Comments on Assigned Data Flags for Test #663

2VAYYF (X) - Extreme Data.

Key to Instrument Codes Reported by Participants

- ML Alpha Technologies/Monsanto model not specified
- MV Montech
- MR Alpha Technologies Model MV2000/MV2000E

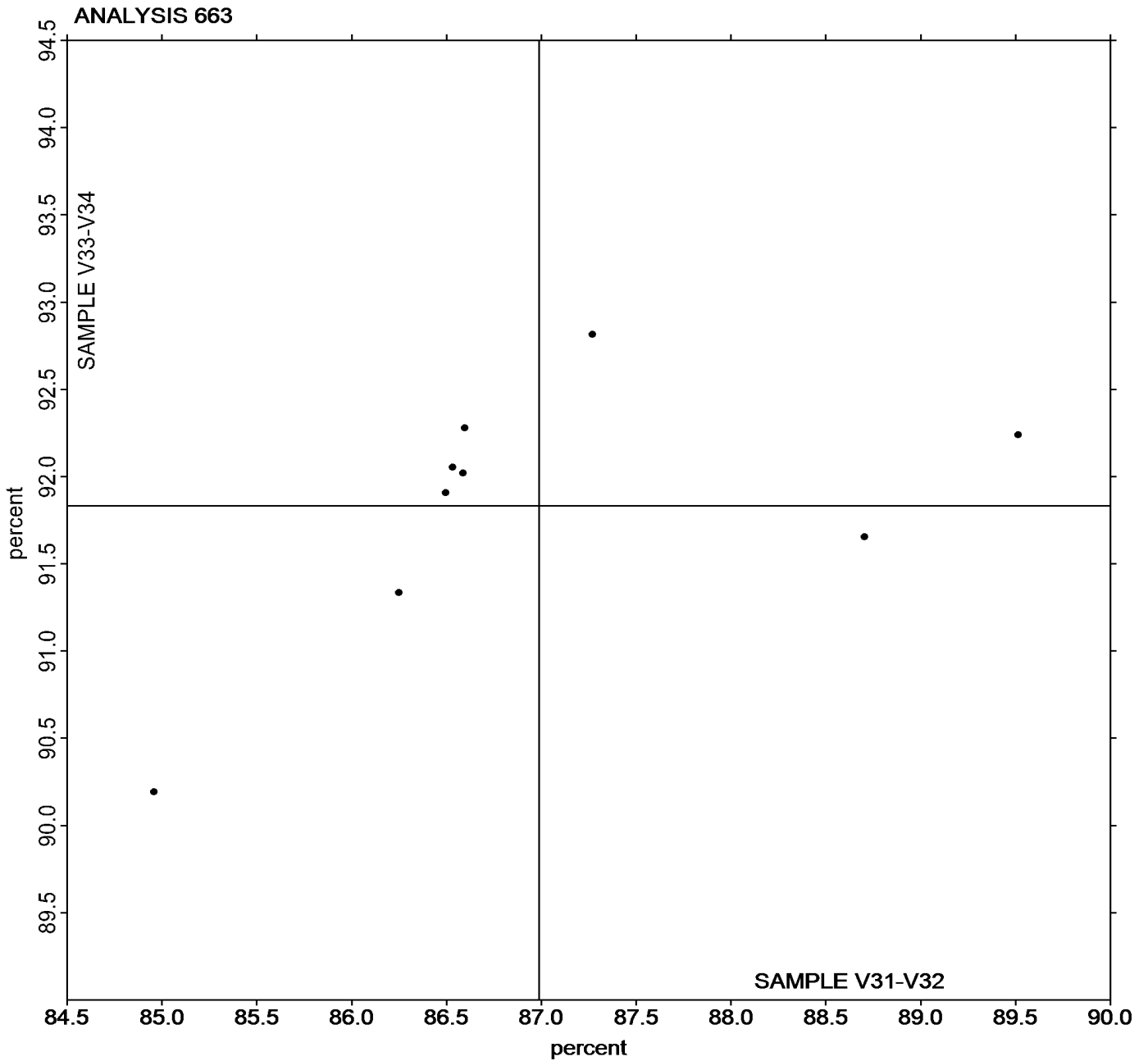


Rubber Interlaboratory Testing Program
Analysis 663
Mooney Stress Relaxation: X30 (percent)

Report #218
4th Qtr 2023

Grand Mean Sample **V31-V32** = 86.989 percent

Grand Mean Sample **V33-V34** = 91.832 percent



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



Rubber Interlaboratory Testing Program

Report #218

Analysis 664

4th Qtr 2023

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

WebCode	Data Flag	Sample V31-V32			Sample V33-V34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF		507.3	-118.3	-1.40	467.2	-11.0	-0.22	MR
3UG3BL		545.2	-80.5	-0.95	419.3	-58.9	-1.16	MR
7M7BBY		688.1	62.4	0.74	462.8	-15.4	-0.30	ML
APYDQA		490.5	-135.1	-1.60	450.1	-28.1	-0.55	MV
FJTT8L		675.5	49.8	0.59	471.2	-7.0	-0.14	MR
KRBRPT		675.8	50.2	0.59	469.8	-8.4	-0.17	MR
RQRGQL		633.2	7.5	0.09	431.2	-47.0	-0.93	XX
TRZQGX		745.2	119.5	1.41	591.0	112.8	2.23	MV
V6GKLM		672.7	47.1	0.56	483.0	4.8	0.10	MR
WFU88T		623.2	-2.4	-0.03	536.3	58.1	1.15	MV

Summary Statistics	
Grand Means	625.67 M-s
Std Dev Btwn Labs	84.45 M-s
	478.19 M-s
	50.62 M-s
Statistics based on 10 of 10 reporting participants	

Samples V31-V32: SBR & V33-V34: Butyl

Key to Instrument Codes Reported by Participants

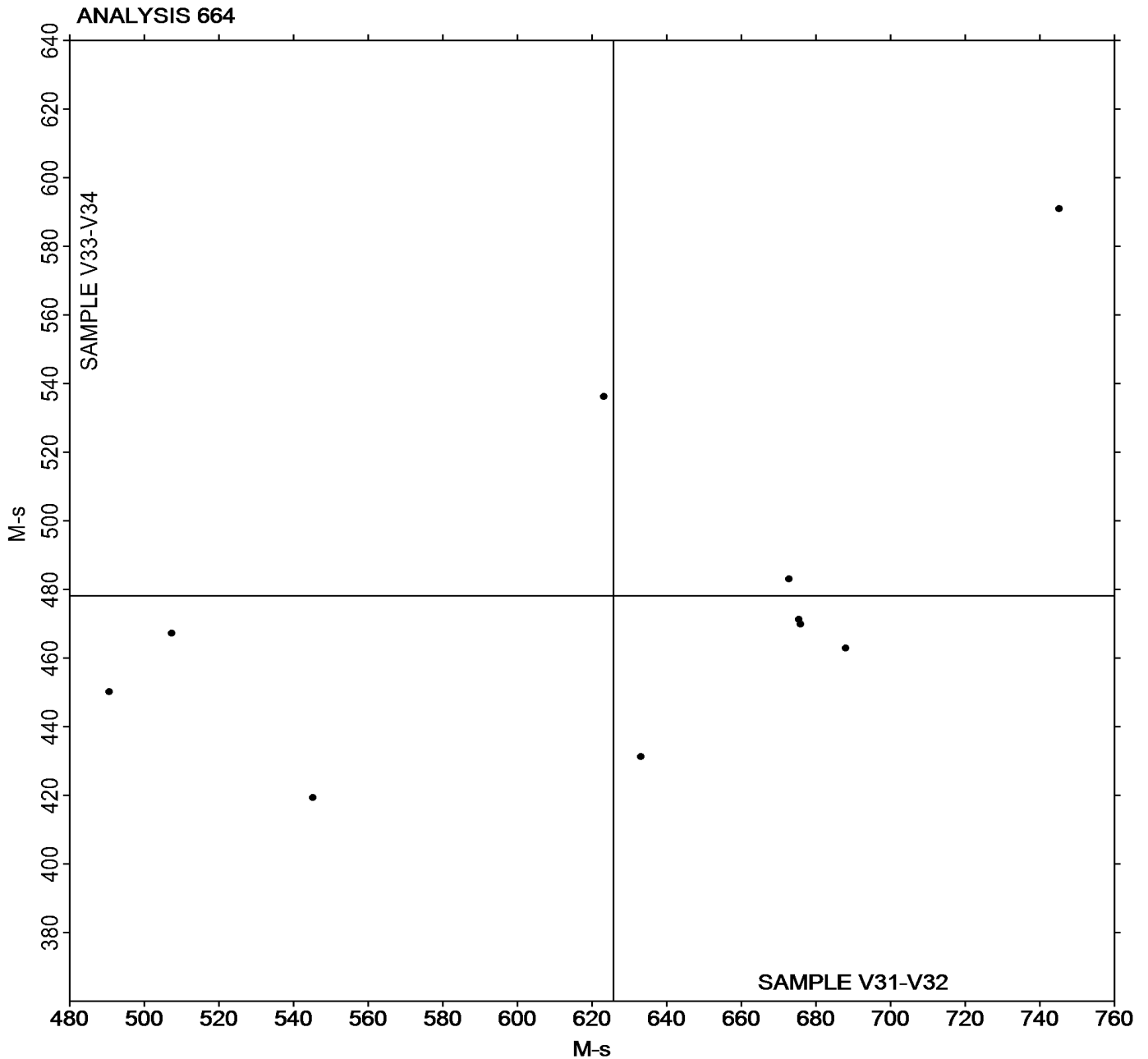
ML	Alpha Technologies/Monsanto model not specified	MR	Alpha Technologies Model MV2000/MV2000E
MV	MonTech	XX	Instrument make/model not specified by lab



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

Grand Mean Sample V31-V32 = 625.67 M-s

Grand Mean Sample V33-V34 = 478.19 M-s



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



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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample Z35-Z36			Sample Z37-Z38			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		1.255	-0.063	-0.31	2.247	-0.090	-0.88	MC
2VAYYF		0.953	-0.365	-1.79	2.323	-0.014	-0.13	MD
474RKB		1.295	-0.023	-0.11	2.498	0.161	1.57	MC
7M7BBY		1.363	0.045	0.22	2.440	0.103	1.01	ME
8GCTBR		0.975	-0.344	-1.69	2.298	-0.039	-0.38	MP
8H7L7B		1.622	0.303	1.49	2.413	0.076	0.75	MD
8XG8RL		1.585	0.267	1.31	2.280	-0.057	-0.55	XX
9N767L		1.575	0.257	1.26	2.385	0.048	0.47	ME
APYDQA		1.235	-0.083	-0.41	2.523	0.186	1.82	MM
AV2MX3		1.627	0.308	1.51	2.390	0.053	0.52	ME
CPPHXE		1.050	-0.268	-1.32	2.307	-0.030	-0.29	MM
CREMVR		1.000	-0.318	-1.56	2.307	-0.030	-0.29	MC
E83GH3		1.314	-0.004	-0.02	2.242	-0.095	-0.93	MC
FJTT8L		1.258	-0.060	-0.29	2.248	-0.089	-0.86	MC
FVM74B		1.243	-0.075	-0.37	2.258	-0.079	-0.77	MC
HUZE8W		1.280	-0.038	-0.19	2.305	-0.032	-0.31	MC
J2EM9X		1.632	0.313	1.54	2.333	-0.004	-0.03	XX
JNVXBG		1.307	-0.012	-0.06	2.433	0.096	0.94	ME
JXF9K9		1.332	0.013	0.07	2.263	-0.074	-0.72	XX
KRBRPT		1.295	-0.023	-0.11	2.272	-0.065	-0.64	MD
NFMWZ4		1.292	-0.027	-0.13	2.280	-0.057	-0.55	ME
NW8MY3		0.983	-0.335	-1.64	2.255	-0.082	-0.80	MC
NY2CJJ		1.255	-0.063	-0.31	2.187	-0.150	-1.46	ME
QJU3TF		1.370	0.052	0.25	2.497	0.160	1.56	MR
RV8PEL		1.587	0.268	1.32	2.327	-0.010	-0.10	ME
TRZQGX		1.190	-0.128	-0.63	2.188	-0.149	-1.45	MR
TU6EX9		1.568	0.250	1.23	2.417	0.080	0.78	MC
V2H9PM	*	1.094	-0.224	-1.10	2.606	0.269	2.62	MC
V6GKLM		1.287	-0.032	-0.16	2.438	0.101	0.99	MC
VL2BKL		1.465	0.147	0.72	2.220	-0.117	-1.14	MC
WFU88T		1.310	-0.008	-0.04	2.308	-0.029	-0.28	XX
XYN3KG		1.592	0.273	1.34	2.290	-0.047	-0.46	MC



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

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	1.3184 minutes	2.3368 minutes	
Stnd Dev Btwn Labs	0.2040 minutes	0.1026 minutes	
Statistics based on 32 of 32 reporting participants			

Samples Z35-Z36: EPDM Compound & Z37-Z38: EPDM Compound

Key to Instrument Codes Reported by Participants

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

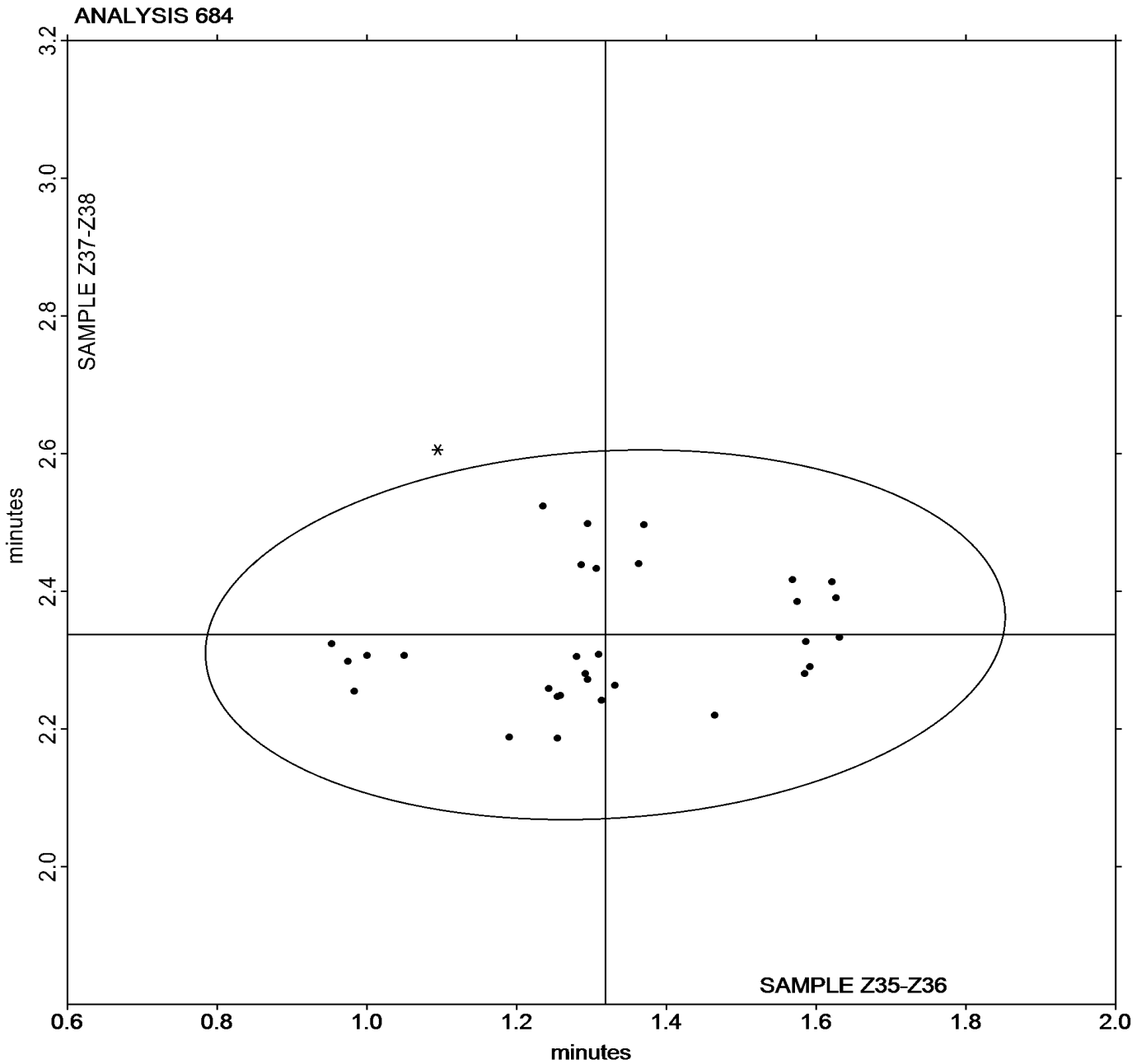


Rubber Interlaboratory Testing Program
Analysis 684
MDR Vulcanization-Cure Time 10% (minutes)

Report #218
4th Qtr 2023

Grand Mean Sample Z35-Z36 = 1.3184 minutes

Grand Mean Sample Z37-Z38 = 2.3368 minutes





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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample Z35-Z36			Sample Z37-Z38			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		1.392	-0.041	-0.20	2.162	0.009	0.06	MC
2VAYYF		1.075	-0.357	-1.75	2.235	0.082	0.51	MD
474RKB		1.400	-0.032	-0.16	2.280	0.127	0.79	MC
7M4MUK	*	0.980	-0.452	-2.21	1.795	-0.358	-2.23	MR
7M7BBY		1.435	0.003	0.01	2.212	0.059	0.37	ME
8GCTBR		1.403	-0.029	-0.14	2.128	-0.024	-0.15	MP
8H7L7B		1.792	0.359	1.76	2.318	0.166	1.03	MD
8XG8RL		1.728	0.296	1.45	2.132	-0.021	-0.13	MR
9N767L		1.717	0.284	1.39	2.187	0.034	0.21	ME
APYDQA		1.415	-0.017	-0.08	2.513	0.361	2.24	MM
AV2MX3		1.682	0.249	1.22	2.152	-0.001	-0.01	ME
CPPHXE		1.200	-0.232	-1.14	2.262	0.109	0.68	MM
CREMVR		1.100	-0.332	-1.63	2.112	-0.041	-0.26	MC
E83GH3		1.447	0.015	0.07	2.053	-0.100	-0.62	MC
FJTT8L		1.380	-0.052	-0.26	2.107	-0.046	-0.29	MC
FVM74B		1.407	-0.026	-0.13	2.163	0.011	0.07	MC
HUZE8W		1.432	-0.001	0.00	2.203	0.051	0.31	MC
J2EM9X		1.648	0.216	1.06	2.030	-0.123	-0.76	XX
JNVXBG		1.353	-0.079	-0.39	2.078	-0.074	-0.46	ME
JXF9K9		1.373	-0.059	-0.29	2.028	-0.124	-0.77	XX
KRBRPT		1.463	0.031	0.15	2.187	0.034	0.21	MD
NFMWZ4		1.440	0.008	0.04	2.177	0.024	0.15	ME
NW8MY3		1.097	-0.336	-1.64	2.092	-0.061	-0.38	MC
NY2CJJ		1.360	-0.072	-0.35	1.948	-0.204	-1.27	ME
QJU3TF		1.592	0.159	0.78	2.480	0.327	2.04	MR
RQRGQL		1.318	-0.115	-0.56	1.989	-0.164	-1.02	MC
RV8PEL		1.660	0.228	1.11	2.138	-0.014	-0.09	ME
TRZQGX		1.288	-0.144	-0.70	2.025	-0.128	-0.80	MR
TU6EX9		1.593	0.160	0.78	2.061	-0.092	-0.57	MC
V2H9PM	*	1.219	-0.213	-1.04	2.511	0.358	2.23	MC
V6GKLM		1.435	0.003	0.01	2.295	0.142	0.89	MC
VL2BKL		1.448	0.016	0.08	1.853	-0.299	-1.86	MC
WFU88T		1.440	0.008	0.04	2.143	-0.009	-0.06	XX
WZ2CXM		1.560	0.128	0.62	1.983	-0.169	-1.05	MC
XYN3KG		1.860	0.428	2.09	2.315	0.162	1.01	MC



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

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	1.4323 minutes	2.1528 minutes	
Stnd Dev Btwn Labs	0.2044 minutes	0.1607 minutes	
Statistics based on 35 of 35 reporting participants			

Samples Z35-Z36: EPDM Compound & Z37-Z38: EPDM Compound

Key to Instrument Codes Reported by Participants

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

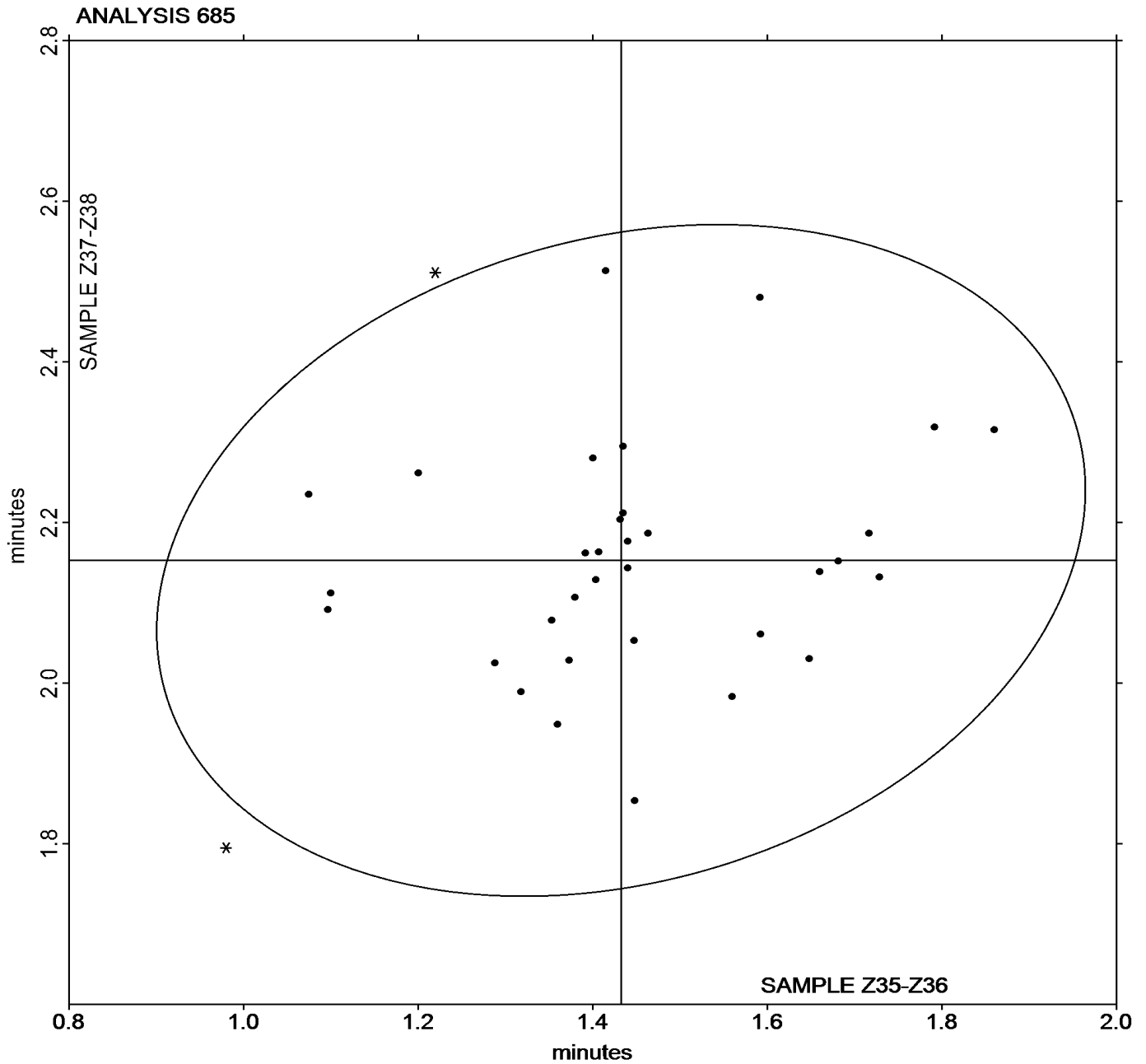


Rubber Interlaboratory Testing Program
Analysis 685
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #218
4th Qtr 2023

Grand Mean Sample Z35-Z36 = 1.4323 minutes

Grand Mean Sample Z37-Z38 = 2.1528 minutes





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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample Z35-Z36			Sample Z37-Z38			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		2.550	-0.185	-0.41	5.420	-0.138	-0.74	MC
2VAYYF		1.862	-0.873	-1.94	5.520	-0.038	-0.20	MD
474RKB		2.537	-0.198	-0.44	5.448	-0.109	-0.59	MC
7M4MUK		1.920	-0.815	-1.81	5.282	-0.276	-1.48	MR
7M7BBY		2.775	0.040	0.09	5.840	0.282	1.52	ME
8GCTBR		2.673	-0.061	-0.14	5.728	0.171	0.92	MC
8H7L7B		3.305	0.570	1.27	5.500	-0.058	-0.31	MD
8XG8RL		3.347	0.612	1.36	5.753	0.196	1.05	MR
9N767L		3.313	0.579	1.28	5.723	0.166	0.89	ME
APYDQA		2.623	-0.111	-0.25	5.745	0.187	1.01	MM
AV2MX3		3.372	0.637	1.41	5.638	0.081	0.43	ME
CPPHXE		1.990	-0.745	-1.65	5.590	0.032	0.17	MM
CREMVR	X	1.462	-1.273	-2.82	2.307	-3.251	-17.47	MC
E83GH3		2.736	0.001	0.00	5.511	-0.046	-0.25	MC
FJTT8L		2.460	-0.275	-0.61	5.232	-0.326	-1.75	MC
FVM74B		2.637	-0.098	-0.22	5.485	-0.073	-0.39	MC
HUZE8W		2.663	-0.071	-0.16	5.622	0.064	0.34	MC
J2EM9X		3.412	0.677	1.50	5.722	0.164	0.88	XX
JNVXBG		2.685	-0.050	-0.11	5.562	0.004	0.02	ME
JXF9K9		2.520	-0.215	-0.48	5.102	-0.456	-2.45	XX
KRBRPT		2.623	-0.111	-0.25	5.473	-0.084	-0.45	MD
NFMWZ4		2.627	-0.108	-0.24	5.473	-0.084	-0.45	ME
NW8MY3		1.977	-0.758	-1.68	5.495	-0.063	-0.34	MC
NY2CJJ		2.693	-0.041	-0.09	5.648	0.091	0.49	ME
QJU3TF		2.763	0.029	0.06	5.860	0.302	1.62	MR
RQRGQL		2.645	-0.090	-0.20	5.511	-0.046	-0.25	MC
RV8PEL		3.278	0.544	1.21	5.547	-0.011	-0.06	ME
TRZQGX		2.617	-0.118	-0.26	5.810	0.252	1.36	MR
TU6EX9		3.275	0.540	1.20	5.677	0.119	0.64	MC
V2H9PM		2.086	-0.649	-1.44	5.747	0.190	1.02	MC
V6GKLM		2.608	-0.126	-0.28	5.782	0.224	1.20	MC
VL2BKL		3.327	0.592	1.31	5.498	-0.059	-0.32	MC
WFU88T		2.553	-0.181	-0.40	5.330	-0.228	-1.22	XX
WZ2CXM		3.258	0.524	1.16	5.222	-0.336	-1.81	MC
XYN3KG		3.273	0.539	1.19	5.463	-0.094	-0.51	MC



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

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	2.7348 minutes	5.5576 minutes	
Stnd Dev Btwn Labs	0.4507 minutes	0.1861 minutes	
Statistics based on 34 of 35 reporting participants			

Samples Z35-Z36: EPDM Compound & Z37-Z38: EPDM Compound

Comments on Assigned Data Flags for Test #686

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

Key to Instrument Codes Reported by Participants

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

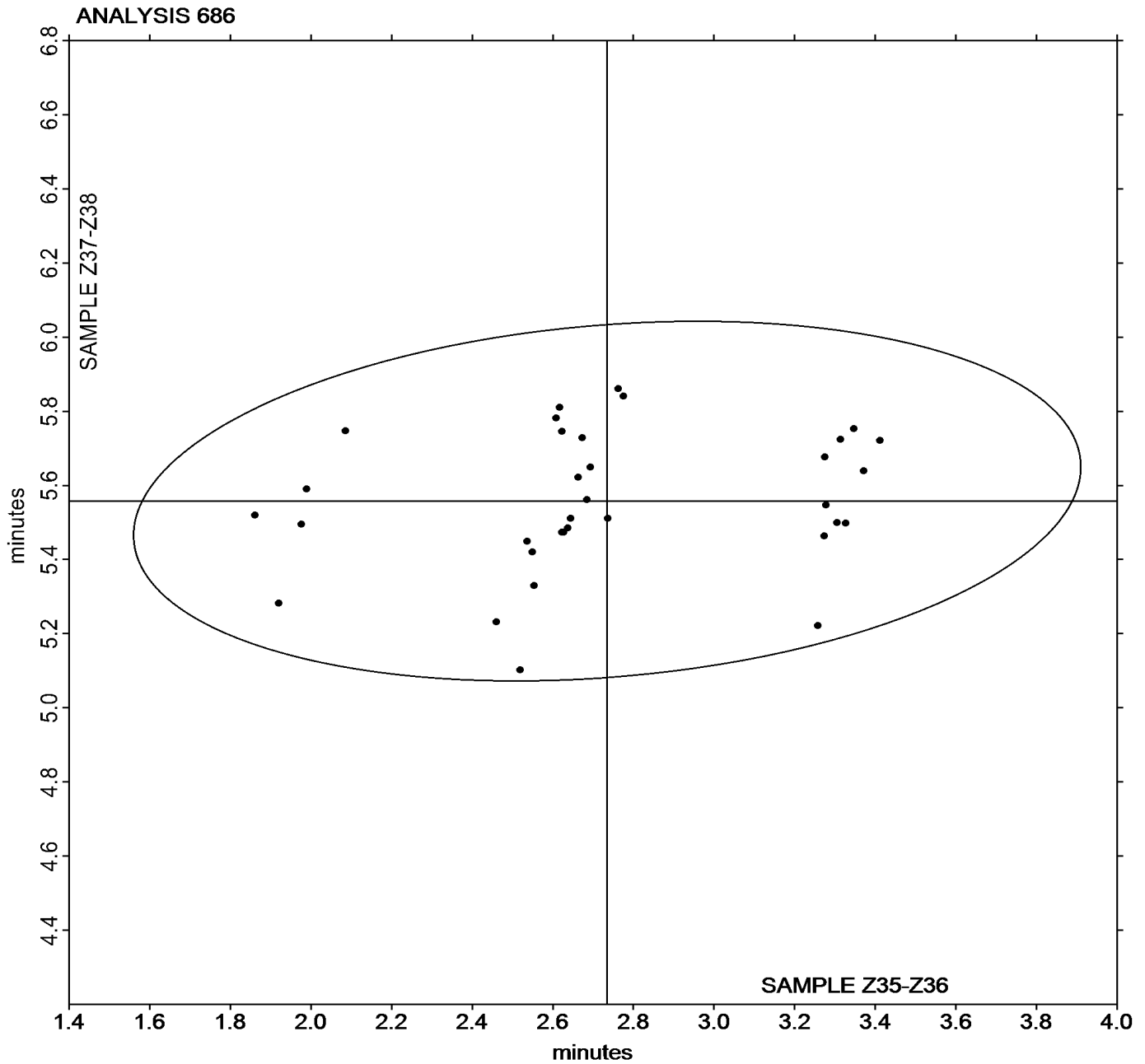


Rubber Interlaboratory Testing Program
Analysis 686
MDR Vulcanization-Cure Time 50% (minutes)

Report #218
4th Qtr 2023

Grand Mean Sample Z35-Z36 = 2.7348 minutes

Grand Mean Sample Z37-Z38 = 5.5576 minutes





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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample Z35-Z36			Sample Z37-Z38			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		4.785	-0.422	-0.61	9.187	-0.364	-1.05	MC
2VAYYF		4.057	-1.150	-1.67	9.455	-0.096	-0.27	MD
474RKB		5.115	-0.092	-0.13	9.643	0.093	0.27	MC
7M4MUK		4.162	-1.045	-1.52	9.038	-0.512	-1.47	MR
7M7BBY		5.252	0.045	0.06	9.878	0.328	0.94	ME
8GCTBR		5.160	-0.047	-0.07	10.047	0.496	1.42	MC
8H7L7B		6.013	0.806	1.17	9.323	-0.227	-0.65	MD
8XG8RL		6.238	1.031	1.50	9.547	-0.004	-0.01	MR
9N767L		6.178	0.971	1.41	9.622	0.071	0.20	ME
APYDQA		5.130	-0.077	-0.11	9.977	0.426	1.22	MM
AV2MX3		6.068	0.861	1.25	9.698	0.148	0.42	ME
CPPHXE		4.315	-0.892	-1.30	9.807	0.256	0.73	MM
CREMVR		3.968	-1.239	-1.80	9.637	0.086	0.25	MC
E83GH3		5.281	0.074	0.11	9.534	-0.017	-0.05	MC
FJTT8L		4.785	-0.422	-0.61	8.998	-0.552	-1.59	MC
FVM74B		5.042	-0.165	-0.24	9.190	-0.361	-1.04	MC
HUZE8W		5.023	-0.184	-0.27	9.647	0.096	0.28	MC
J2EM9X		6.177	0.970	1.41	9.838	0.288	0.83	XX
JNVXBG		5.328	0.121	0.18	9.703	0.153	0.44	ME
JXF9K9	*	4.690	-0.517	-0.75	8.648	-0.902	-2.59	XX
KRBRPT		5.032	-0.175	-0.25	9.527	-0.024	-0.07	MD
NFMWZ4		5.025	-0.182	-0.26	9.093	-0.457	-1.31	ME
NW8MY3		4.020	-1.187	-1.72	9.420	-0.131	-0.38	MC
NY2CJJ		5.298	0.091	0.13	9.718	0.168	0.48	ME
QJU3TF		5.578	0.371	0.54	10.182	0.631	1.81	MR
RQRGQL		5.296	0.089	0.13	9.391	-0.160	-0.46	MC
RV8PEL		5.745	0.538	0.78	9.132	-0.419	-1.20	ME
TRZQGX		4.918	-0.289	-0.42	9.783	0.233	0.67	MR
TU6EX9		6.242	1.036	1.50	9.977	0.426	1.22	MC
V2H9PM		4.114	-1.093	-1.59	9.931	0.380	1.09	MC
V6GKLM		5.115	-0.092	-0.13	9.853	0.303	0.87	MC
VL2BKL		6.283	1.076	1.56	9.762	0.211	0.61	MC
WFU88T		5.092	-0.115	-0.17	9.688	0.138	0.39	XX
WZ2CXM		5.848	0.641	0.93	9.078	-0.472	-1.36	MC
XYN3KG		5.868	0.661	0.96	9.325	-0.226	-0.65	MC



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

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	5.2069 minutes	9.5508 minutes	
Stnd Dev Btwn Labs	0.6882 minutes	0.3484 minutes	
Statistics based on 35 of 35 reporting participants			

Samples Z35-Z36: EPDM Compound & Z37-Z38: EPDM Compound

Key to Instrument Codes Reported by Participants

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



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

Report #218
4th Qtr 2023

WebCode	Data Flag	Sample Z35-Z36			Sample Z37-Z38			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		2.648	-0.019	-0.07	3.310	-0.032	-0.11	MC
2VAYYF		2.925	0.258	0.94	3.510	0.168	0.56	MD
474RKB		2.928	0.261	0.95	3.738	0.396	1.31	MC
7M4MUK		2.552	-0.115	-0.42	3.025	-0.317	-1.05	MR
7M7BBY		2.574	-0.093	-0.34	3.300	-0.042	-0.14	ME
8GCTBR		2.580	-0.087	-0.32	3.178	-0.164	-0.54	MC
8H7L7B		2.458	-0.209	-0.76	3.385	0.043	0.14	MD
8XG8RL		2.405	-0.262	-0.95	3.157	-0.185	-0.61	MR
9N767L		2.415	-0.252	-0.92	3.192	-0.150	-0.50	ME
APYDQA		3.077	0.410	1.49	3.948	0.606	2.00	MM
AV2MX3		2.611	-0.056	-0.20	3.425	0.083	0.28	ME
CPPHXE		2.500	-0.167	-0.61	3.025	-0.317	-1.05	MM
CREMVR		2.900	0.233	0.85	3.370	0.028	0.09	MC
E83GH3		2.488	-0.179	-0.65	3.145	-0.197	-0.65	MC
FJTT8L		2.813	0.146	0.53	3.427	0.085	0.28	MC
FVM74B		2.705	0.038	0.14	3.315	-0.027	-0.09	MC
HUZE8W		2.680	0.013	0.05	3.370	0.028	0.09	MC
J2EM9X		2.884	0.217	0.79	3.728	0.386	1.27	XX
JNVXBG		2.655	-0.012	-0.04	3.350	0.008	0.03	ME
JXF9K9	*	3.550	0.883	3.22	4.257	0.915	3.02	XX
KRBRPT		2.465	-0.202	-0.74	3.041	-0.301	-0.99	MD
NFMWZ4		2.727	0.060	0.22	3.270	-0.072	-0.24	ME
NW8MY3		2.682	0.015	0.05	3.172	-0.170	-0.56	MC
NY2CJJ		2.282	-0.385	-1.40	2.892	-0.450	-1.49	ME
QJU3TF		2.372	-0.295	-1.07	2.955	-0.387	-1.28	MR
RQRGQL		2.493	-0.174	-0.63	3.132	-0.210	-0.69	MC
RV8PEL		2.599	-0.068	-0.25	3.406	0.064	0.21	ME
TRZQGX		2.710	0.043	0.16	3.353	0.011	0.04	MR
TU6EX9		2.887	0.220	0.80	3.701	0.359	1.19	MC
V2H9PM		3.178	0.511	1.86	3.682	0.340	1.12	MC
V6GKLM		2.927	0.260	0.95	3.613	0.271	0.90	MC
VL2BKL		2.322	-0.345	-1.26	3.089	-0.253	-0.84	MC
WFU88T		2.657	-0.010	-0.04	3.440	0.098	0.32	MM
WZ2CXM		2.532	-0.135	-0.49	3.285	-0.057	-0.19	MC
XYN3KG		2.160	-0.507	-1.85	2.785	-0.557	-1.84	MC



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

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means	2.6669 lbf.in	3.3420 lbf.in	
Stnd Dev Btwn Labs	0.2746 lbf.in	0.3026 lbf.in	
Statistics based on 35 of 35 reporting participants			

		Summary Statistics in SI Units	
Grand Means	3.0131 dN.m	3.7759 dN.m	
Stnd Dev Btwn Labs	0.3103 dN.m	0.3419 dN.m	
Statistics based on 35 of 35 reporting participants			

Samples Z35-Z36: EPDM Compound & Z37-Z38: EPDM Compound

Key to Instrument Codes Reported by Participants

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

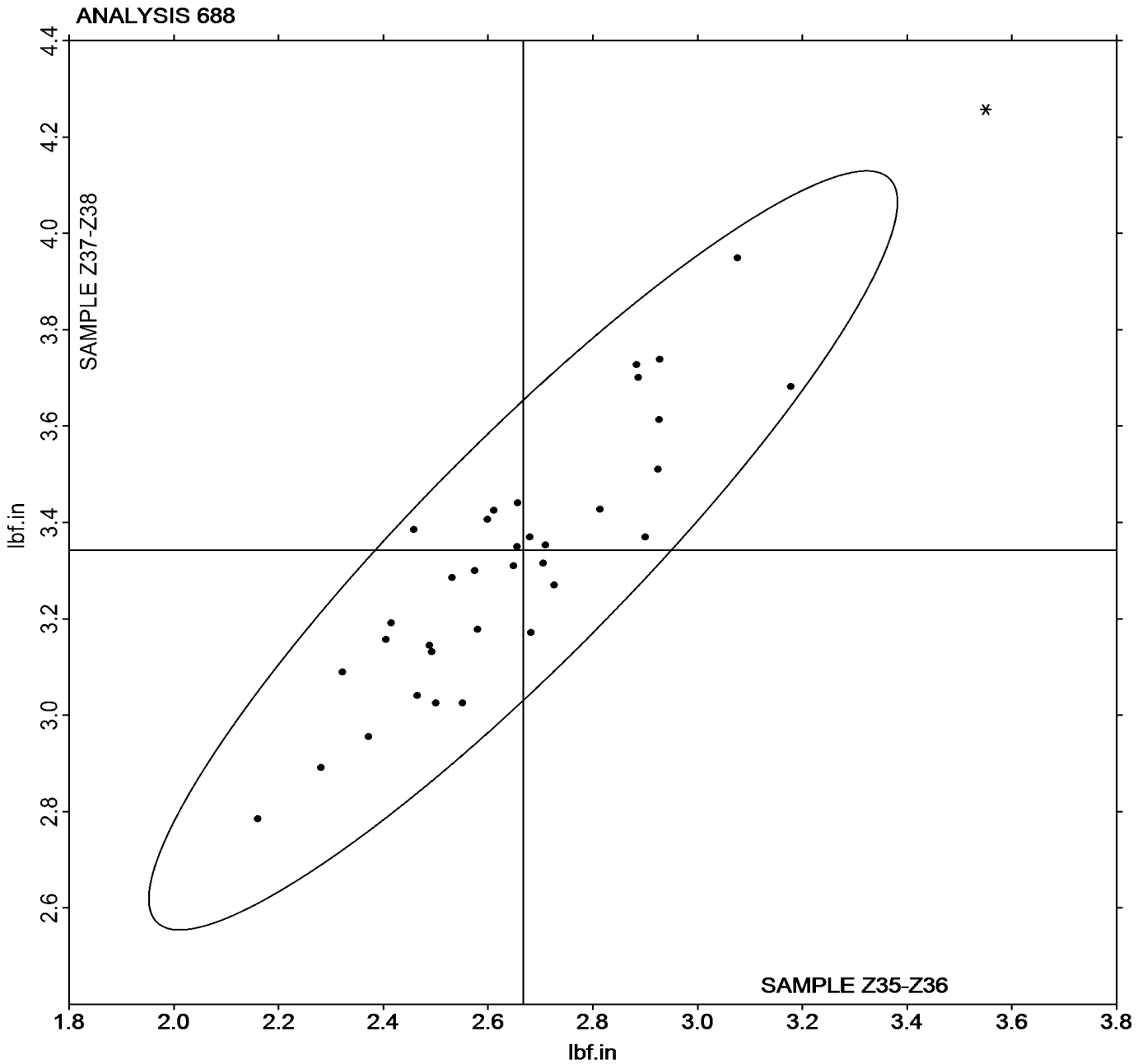


Rubber Interlaboratory Testing Program
Analysis 688
MDR Vulcanization: Minimum Torque (lbf.in)

Report #218
4th Qtr 2023

Grand Mean Sample Z35-Z36 = 2.6669 lbf.in

Grand Mean Sample Z37-Z38 = 3.3420 lbf.in





Rubber Interlaboratory Testing Program

Report #218

Analysis 689

4th Qtr 2023

MDR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample Z35-Z36			Sample Z37-Z38			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
28MYV9		10.62	-0.11	-0.23	14.14	-0.38	-0.57	MC
2VAYYF		10.59	-0.15	-0.31	14.32	-0.20	-0.31	MD
474RKB		11.27	0.54	1.13	15.86	1.34	2.01	MC
7M4MUK		10.66	-0.07	-0.16	14.40	-0.12	-0.18	MR
7M7BBY		10.47	-0.26	-0.54	14.06	-0.46	-0.69	ME
8GCTBR		10.79	0.06	0.12	14.67	0.15	0.22	MC
8H7L7B		10.59	-0.14	-0.30	14.25	-0.27	-0.40	MD
8XG8RL		10.87	0.14	0.28	14.54	0.02	0.02	MR
9N767L		10.94	0.21	0.43	14.99	0.47	0.71	ME
APYDQA		10.85	0.12	0.25	14.05	-0.47	-0.70	MM
AV2MX3		10.90	0.17	0.36	14.36	-0.16	-0.24	ME
CPPHXE		9.62	-1.12	-2.33	13.46	-1.06	-1.59	MM
CREMVR		10.93	0.20	0.41	15.21	0.69	1.04	MC
E83GH3		10.79	0.06	0.11	14.87	0.35	0.52	MC
FJTT8L		10.85	0.12	0.24	14.84	0.32	0.47	MC
FVM74B		10.62	-0.11	-0.24	14.07	-0.45	-0.68	MC
HUZE8W		10.66	-0.07	-0.16	14.29	-0.23	-0.34	MC
J2EM9X		11.58	0.85	1.77	15.43	0.91	1.36	XX
JNVXBG		10.87	0.14	0.28	15.28	0.76	1.14	ME
JXF9K9	X	12.74	2.01	4.19	17.04	2.52	3.77	XX
KRBRPT		10.16	-0.57	-1.20	13.87	-0.65	-0.98	MD
NFMWZ4		10.65	-0.08	-0.17	14.25	-0.27	-0.40	ME
NW8MY3		10.72	-0.01	-0.02	14.58	0.06	0.08	MC
NY2CJJ		10.85	0.12	0.25	14.83	0.31	0.46	ME
QJU3TF		9.65	-1.08	-2.26	13.09	-1.43	-2.15	MR
RQRGQL		10.72	-0.01	-0.02	15.03	0.51	0.77	MC
RV8PEL		10.64	-0.09	-0.19	13.94	-0.58	-0.87	ME
TRZQGX		11.29	0.56	1.17	14.79	0.27	0.40	MR
TU6EX9		11.50	0.77	1.60	15.52	1.00	1.50	MC
V2H9PM		10.85	0.12	0.24	14.49	-0.03	-0.04	MC
V6GKLM		10.85	0.12	0.25	14.83	0.31	0.46	MC
VL2BKL		11.32	0.59	1.24	15.03	0.51	0.77	MC
WFU88T		10.55	-0.18	-0.37	14.99	0.47	0.71	MM
WZ2CXM		11.29	0.56	1.17	14.72	0.20	0.30	MC
XYN3KG	*	9.38	-1.35	-2.83	12.65	-1.87	-2.80	MC



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

Report #218
4th Qtr 2023

		Summary Statistics	
Grand Means			
	10.732 lbf.in		14.520 lbf.in
Stnd Dev Btwn Labs			
	0.480 lbf.in		0.669 lbf.in
Statistics based on 34 of 35 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	12.125 dN.m		16.405 dN.m
Stnd Dev Btwn Labs			
	0.542 dN.m		0.755 dN.m
Statistics based on 34 of 35 reporting participants			

Samples Z35-Z36: EPDM Compound & Z37-Z38: EPDM Compound

Comments on Assigned Data Flags for Test #689

JXF9K9 (X) - Data for all samples are high.

Key to Instrument Codes Reported by Participants

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

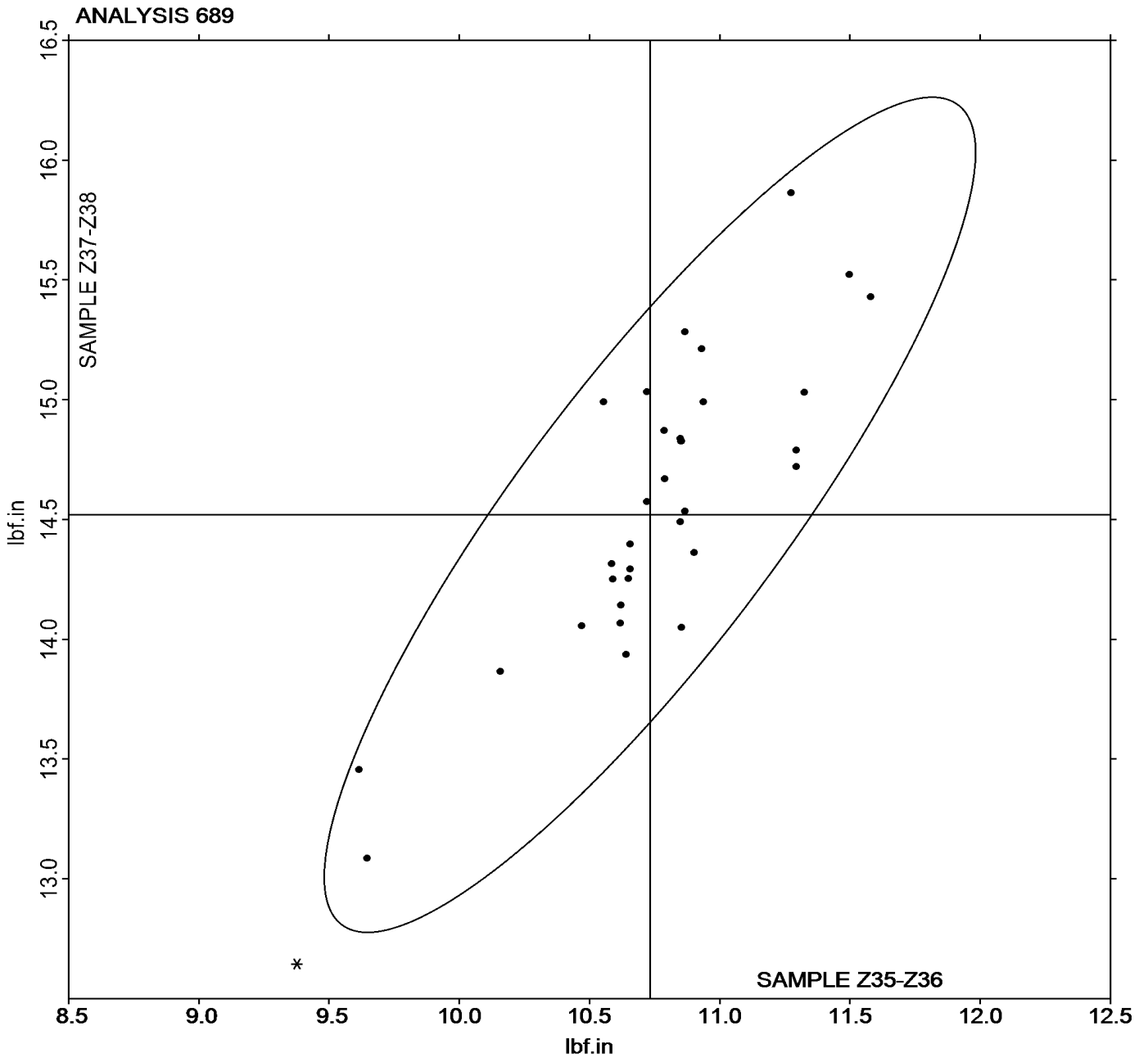


Rubber Interlaboratory Testing Program
Analysis 689
MDR Vulcanization: Maximum Torque (lbf.in)

Report #218
4th Qtr 2023

Grand Mean Sample **Z35-Z36** = 10.732 lbf.in

Grand Mean Sample **Z37-Z38** = 14.520 lbf.in





Rubber Interlaboratory Testing Program

Report #218

Analysis 690

4th Qtr 2023

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

WebCode	Data Flag	Sample H31-H32			Sample H33-H34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF		668.3	23.5	0.59	667.3	-23.9	-0.43	PR
7M7BBY		647.4	2.6	0.07	763.1	71.9	1.29	XX
EUVQFU		656.4	11.6	0.29	665.0	-26.2	-0.47	XX
HUZE8W		632.5	-12.3	-0.31	642.7	-48.5	-0.87	RP
J2EM9X		722.6	77.8	1.97	778.4	87.2	1.56	XX
KRBRPT		604.3	-40.5	-1.02	698.6	7.4	0.13	RP
NY2CJJ		598.2	-46.6	-1.18	696.6	5.4	0.10	RP
RQRGQL		628.7	-16.1	-0.41	617.9	-73.3	-1.31	RP

Grand Means		Summary Statistics	
	644.82 kPa		691.20 kPa
Std Dev Btwn Labs	39.58 kPa		55.86 kPa
Statistics based on 8 of 8 reporting participants			

Samples H31-H32: EPDM Compound & H33-H34: EPDM Compound

Key to Instrument Codes Reported by Participants

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

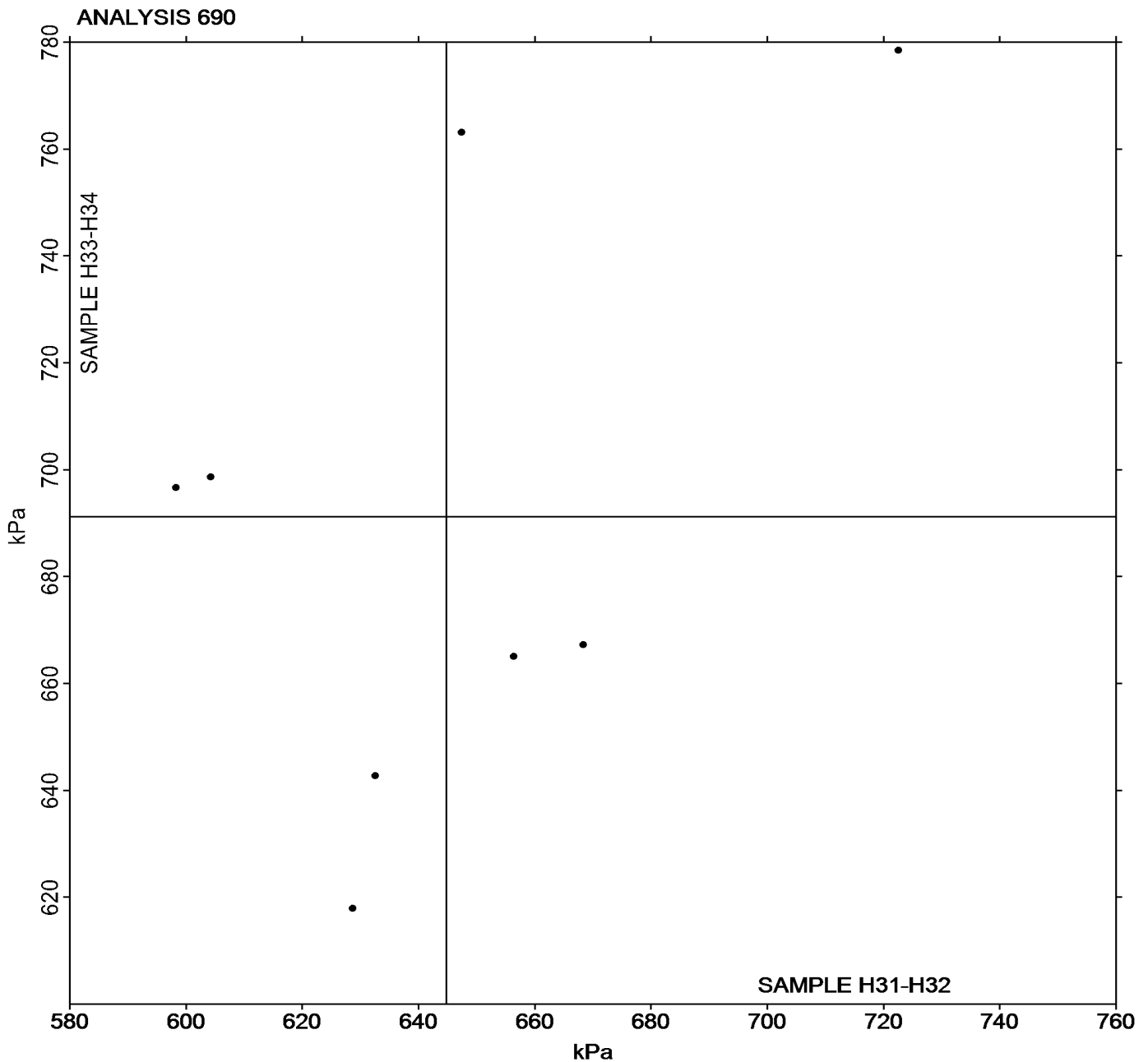


Rubber Interlaboratory Testing Program
Analysis 690
RPA Rheological Properties: Part A - G' at 20Hz (kPa)

Report #218
4th Qtr 2023

Grand Mean Sample H31-H32 = 644.82 kPa

Grand Mean Sample H33-H34 = 691.20 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 #218

Analysis 691

4th Qtr 2023

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

WebCode	Data Flag	Sample H31-H32			Sample H33-H34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF		209.5	-8.0	-0.35	237.4	-6.5	-0.32	PR
7M7BBY		221.3	3.8	0.17	262.1	18.3	0.91	XX
EUVQFU		200.2	-17.2	-0.75	228.2	-15.6	-0.78	XX
HUZE8W		207.8	-9.7	-0.42	233.5	-10.3	-0.51	RP
J2EM9X		246.2	28.7	1.25	282.3	38.5	1.91	XX
KRBRPT		203.1	-14.4	-0.63	243.4	-0.4	-0.02	RP
NY2CJJ		257.8	40.3	1.76	244.7	0.9	0.05	RP
RQRGQL		193.9	-23.5	-1.03	218.9	-25.0	-1.24	RP

Grand Means		Summary Statistics	
	217.48 kPa		243.83 kPa
Std Dev Btwn Labs	22.93 kPa		20.12 kPa
Statistics based on 8 of 8 reporting participants			

Samples H31-H32: EPDM Compound & H33-H34: EPDM Compound

Key to Instrument Codes Reported by Participants

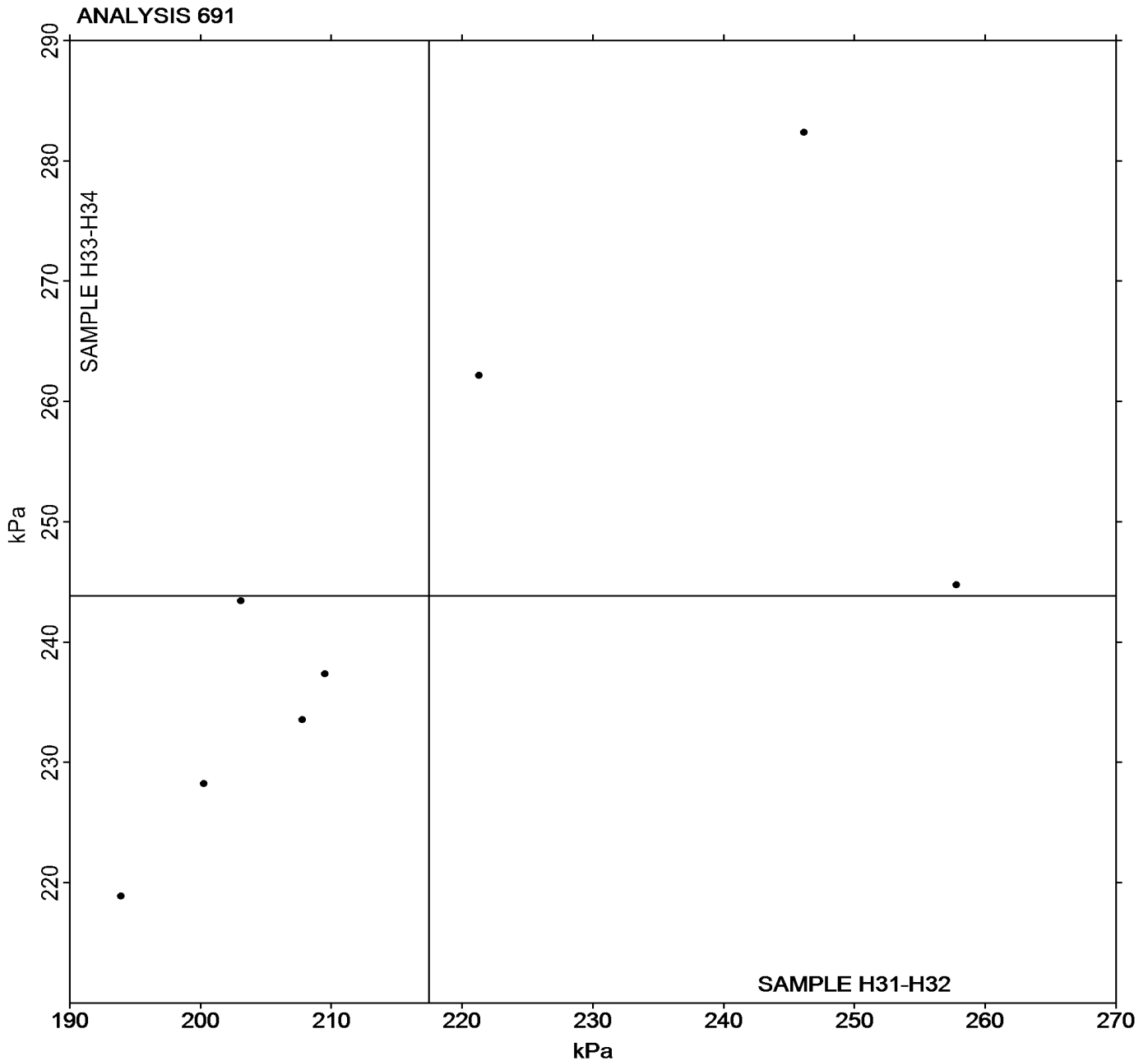
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample H31-H32 = 217.48 kPa

Grand Mean Sample H33-H34 = 243.83 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 #218

Analysis 695

4th Qtr 2023

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

WebCode	Data Flag	Sample H31-H32			Sample H33-H34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF		158.8	29.0	1.05	117.8	3.0	0.44	PR
7M7BBY		105.8	-23.9	-0.87	122.0	7.2	1.07	XX
EUVQFU		174.3	44.6	1.61	124.2	9.3	1.40	XX
HUZE8W		138.8	9.1	0.33	111.0	-3.8	-0.57	RP
J2EM9X		131.6	1.9	0.07	115.1	0.3	0.04	XX
KRBRPT		103.7	-26.1	-0.94	115.0	0.2	0.04	RP
NY2CJJ		95.6	-34.1	-1.24	109.9	-4.9	-0.73	RP
RQRGQL		129.3	-0.4	-0.01	103.5	-11.3	-1.69	RP

Grand Means		Summary Statistics	
	129.73 kPa		114.80 kPa
Std Dev Btwn Labs	27.60 kPa		6.69 kPa
Statistics based on 8 of 8 reporting participants			

Samples H31-H32: EPDM Compound & H33-H34: EPDM Compound

Key to Instrument Codes Reported by Participants

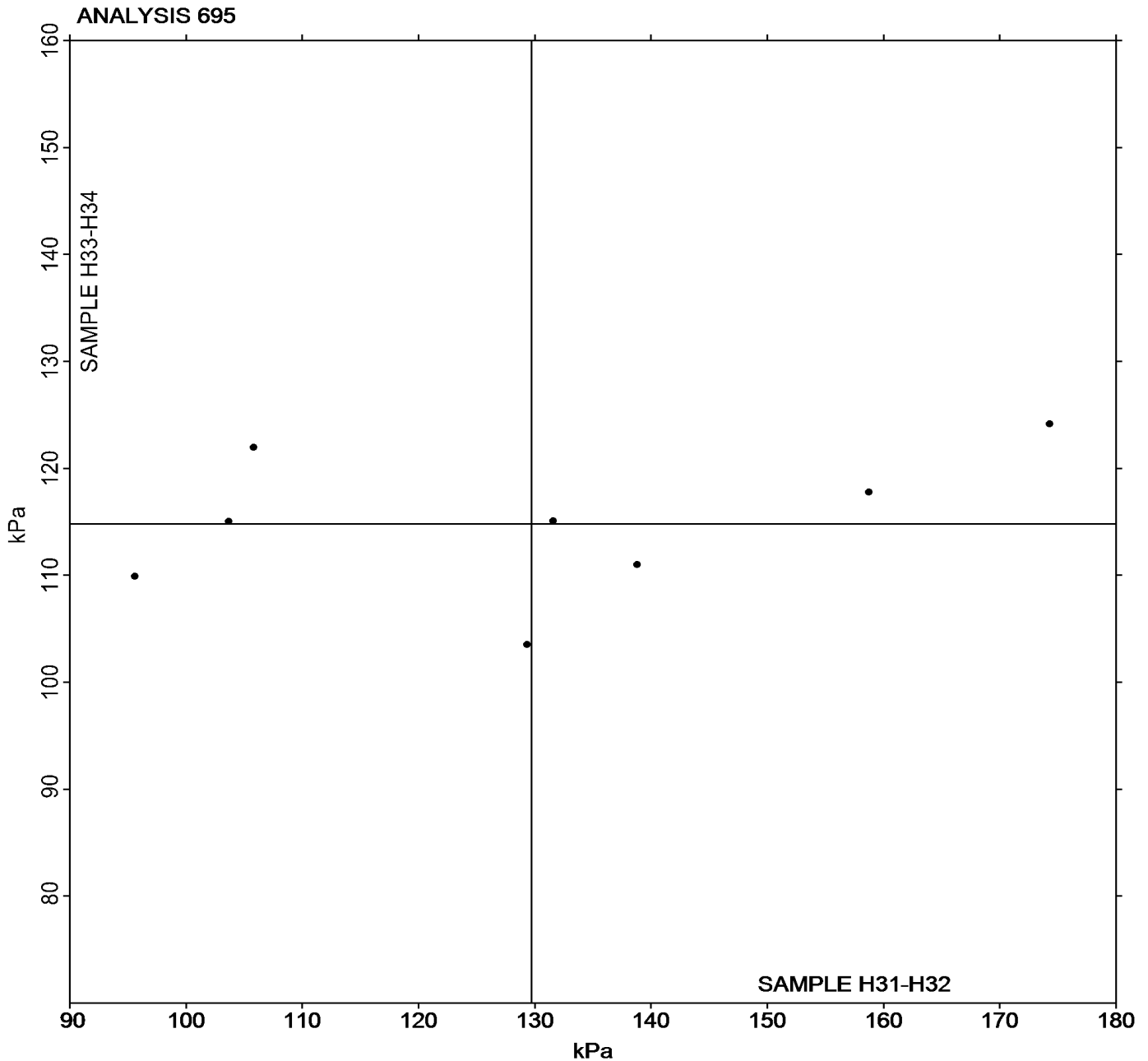
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample H31-H32 = 129.73 kPa

Grand Mean Sample H33-H34 = 114.80 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 #218

Analysis 696

4th Qtr 2023

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

WebCode	Data Flag	Sample H31-H32			Sample H33-H34			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2VAYYF		101.36	2.99	0.38	93.11	-5.23	-0.57	PR
7M7BBY		102.60	4.23	0.54	114.35	16.01	1.75	XX
EUVQFU		109.16	10.78	1.37	93.83	-4.51	-0.49	XX
HUZE8W		93.66	-4.72	-0.60	88.37	-9.97	-1.09	RP
J2EM9X		107.95	9.58	1.22	105.03	6.70	0.73	XX
KRBRPT		90.70	-7.68	-0.98	103.79	5.45	0.60	RP
NY2CJJ		90.02	-8.36	-1.06	100.06	1.72	0.19	RP
RQRGQL		91.58	-6.80	-0.87	88.18	-10.16	-1.11	RP

Grand Means		Summary Statistics	
	98.377 kPa		98.337 kPa
Std Dev Btwn Labs	7.857 kPa		9.135 kPa
Statistics based on 8 of 8 reporting participants			

Samples H31-H32: EPDM Compound & H33-H34: EPDM Compound

Key to Instrument Codes Reported by Participants

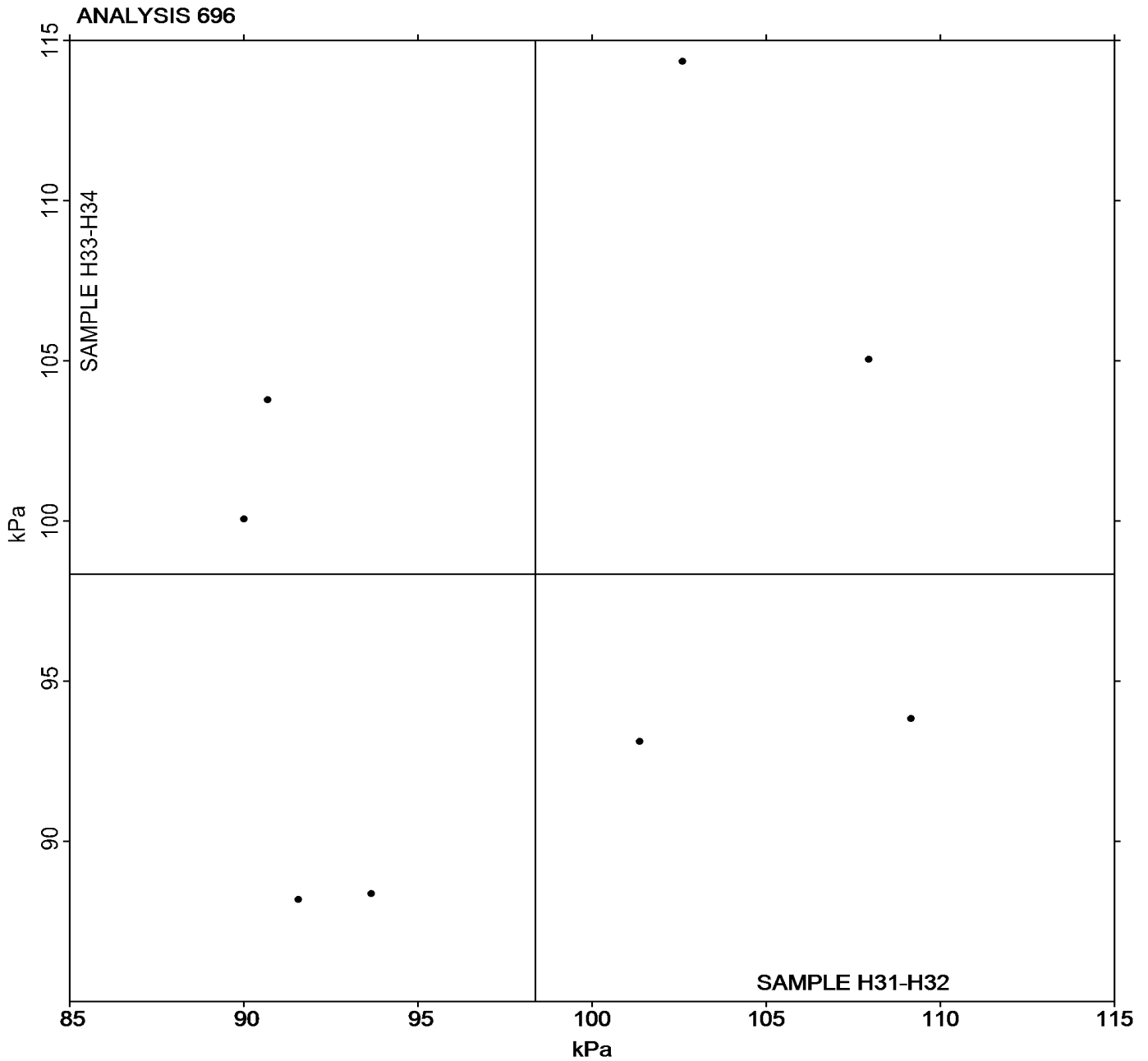
- PR PRPA 2000
- XX Instrument model not specified by lab
- RP RPA 2000



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

Grand Mean Sample H31-H32 = 98.377 kPa

Grand Mean Sample H33-H34 = 98.337 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-