



Rubber Interlaboratory Testing Program

Summary Report #189- 3rd Qtr 2016

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[Key for Web Summary Report](#)

<u>Analysis</u>	<u>Analysis Name</u>
605	Tensile Strength: Precured Rubber Samples
606	Ultimate Elongation: Precured Rubber Samples
607	Stress at 300% Elongation: Precured Samples
608	Stress at 100% Elongation: Precured Samples
620	Hardness (Type A): Precured Rubber Samples
621	Density: Precured Rubber Samples @ 25C
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
660	Mooney Viscosity (4-minute readings)
661	Mooney Viscosity (8-minute butyl readings)
662	Mooney Stress Relaxation: t80
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672	ODR Vulcanization Charac.: Cure Time 90%
673	ODR Vulcanization Charac.: Minimum Torque
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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
689	MDR Vulcanization Charac.: Maximum Torque

ABOUT THE PROGRAM

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

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

ABOUT CTS

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

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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 #189
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WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
27X2MM		3,306.9	-22.6	-0.15	3,277.9	-34.6	-0.23
2WB42N	X	3,190.3	-139.2	-0.95	3,429.6	117.1	0.77
2Z9LYG		3,460.3	130.9	0.90	3,463.1	150.6	0.99
3E6XA7		3,573.8	244.3	1.68	3,606.4	293.9	1.93
3E9MBH		3,625.3	295.9	2.03	3,501.0	188.5	1.24
3GYR6N		3,641.0	311.5	2.14	3,554.0	241.5	1.59
3KX33A		3,295.0	-34.5	-0.24	3,264.5	-48.0	-0.32
44JE4Z		3,127.8	-201.7	-1.38	3,163.3	-149.2	-0.98
47C84P	*	3,077.5	-252.0	-1.73	2,927.5	-385.0	-2.53
4CZPHZ		3,260.5	-69.0	-0.47	3,247.4	-65.1	-0.43
6GM2RM		3,231.5	-98.0	-0.67	3,176.4	-136.1	-0.90
6JC9CJ		3,202.5	-127.0	-0.87	3,162.5	-150.0	-0.99
6JRP8C	X	3,249.0	-80.5	-0.55	2,991.5	-321.0	-2.11
6QUYFQ		3,364.9	35.4	0.24	3,422.9	110.4	0.73
6R6JPZ		3,439.6	110.1	0.76	3,410.6	98.1	0.65
6XWNFJ		3,494.5	165.0	1.13	3,520.0	207.5	1.37
72RYQA		3,397.8	68.3	0.47	3,511.4	198.9	1.31
78WX4K		3,504.0	174.5	1.20	3,444.5	132.0	0.87
7AL6NG		3,441.3	111.9	0.77	3,377.3	64.8	0.43
7BUJQG		3,476.5	147.0	1.01	3,465.5	153.0	1.01
7NK72H		3,318.5	-11.0	-0.08	3,342.0	29.5	0.19
7PWNH3		3,254.0	-75.5	-0.52	3,366.5	54.0	0.36
7PZDKE		3,433.9	104.4	0.72	3,398.7	86.2	0.57
8C4LEZ		3,382.5	53.0	0.36	3,304.5	-8.0	-0.05
8PTL73		3,250.0	-79.5	-0.54	3,245.0	-67.5	-0.44
A774QY		3,335.9	6.4	0.04	3,340.9	28.4	0.19
A774TK		3,361.5	32.0	0.22	3,358.0	45.5	0.30
AHKY9J		3,359.4	29.9	0.20	3,322.3	9.8	0.06
AUFETE		3,040.0	-289.5	-1.99	2,967.5	-345.0	-2.27
AV89T4		3,456.5	127.0	0.87	3,353.0	40.5	0.27
AXCWAE		3,266.0	-63.5	-0.44	3,302.5	-10.0	-0.07
B74EKG		3,636.5	307.0	2.11	3,635.0	322.5	2.12
BA88HL		3,328.6	-0.8	-0.01	3,393.9	81.4	0.54
BA97EF		3,264.5	-65.0	-0.45	3,275.0	-37.5	-0.25
BK73GG		3,481.2	151.8	1.04	3,463.3	150.8	0.99
CC9RLC		3,309.5	-20.0	-0.14	3,387.0	74.5	0.49
CF89UZ		3,438.5	109.0	0.75	3,515.5	203.0	1.34
CKKT37		3,174.0	-155.5	-1.07	3,146.5	-166.0	-1.09



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
CRM3AY		3,190.9	-138.6	-0.95	3,180.7	-131.8	-0.87
CX9TXF		3,323.6	-5.9	-0.04	3,325.7	13.3	0.09
CXATU9		3,320.0	-9.5	-0.06	3,293.5	-19.0	-0.13
DC3Z6F		3,408.4	78.9	0.54	3,241.6	-70.9	-0.47
DQLPYC		3,145.0	-184.5	-1.27	3,261.5	-51.0	-0.34
DVDWK7		3,521.3	191.8	1.32	3,494.6	182.1	1.20
EEMBE6		3,453.5	124.0	0.85	3,433.5	121.0	0.80
EMFGCD		3,278.8	-50.7	-0.35	3,261.3	-51.2	-0.34
ENTTC3		3,148.5	-181.0	-1.24	3,173.0	-139.5	-0.92
EUZKGU	*	2,972.4	-357.1	-2.45	3,033.8	-278.7	-1.83
F48EE9		3,342.5	13.0	0.09	3,367.5	55.0	0.36
FGULB9		3,267.0	-62.5	-0.43	3,247.0	-65.5	-0.43
GDNMBZ		3,472.5	143.0	0.98	3,493.5	181.0	1.19
GY8UK9		3,344.5	15.0	0.10	3,318.5	6.0	0.04
H67V3D		3,370.0	40.5	0.28	3,342.4	29.9	0.20
H6PFA7	X	1,942.0	-1,387.5	-9.51	1,944.0	-1,368.5	-9.01
HECFLA		3,278.0	-51.5	-0.35	3,228.0	-84.5	-0.56
HFAQJX		3,615.0	285.5	1.96	3,550.5	238.0	1.57
HJCM78		3,214.5	-115.0	-0.79	3,236.0	-76.5	-0.50
HKJ8TL		3,081.4	-248.1	-1.70	3,112.2	-200.3	-1.32
HQ7UPC		3,364.9	35.4	0.24	3,205.4	-107.1	-0.71
HTDE97		3,176.4	-153.1	-1.05	3,132.8	-179.7	-1.18
HTE6HA		3,345.0	15.5	0.11	3,380.0	67.5	0.44
J3GR6Z		3,193.6	-135.9	-0.93	3,303.6	-8.9	-0.06
K2F9KB		3,123.4	-206.1	-1.41	3,100.9	-211.6	-1.39
KJHTHY	*	3,420.5	91.0	0.62	3,217.5	-95.0	-0.63
KWBBC7		3,300.5	-29.0	-0.20	3,293.0	-19.5	-0.13
KZP6R4		3,317.5	-12.0	-0.08	3,318.5	6.0	0.04
L9JDB9		3,309.5	-20.0	-0.14	3,312.0	-0.5	0.00
LFJWC6		3,533.5	204.0	1.40	3,522.0	209.5	1.38
LHJ6ET		3,297.5	-32.0	-0.22	3,225.0	-87.5	-0.58
LXB3GN		3,245.0	-84.5	-0.58	3,255.0	-57.5	-0.38
MBKXDY	X	3,062.5	-267.0	-1.83	3,400.5	88.0	0.58
MG9K96	*	3,309.1	-20.4	-0.14	3,098.8	-213.7	-1.41
NECRLK		3,235.5	-94.0	-0.64	3,257.0	-55.5	-0.37
NFTNCY		3,337.5	8.0	0.06	3,262.5	-50.0	-0.33
NPCXZT		3,287.3	-42.2	-0.29	3,272.8	-39.7	-0.26



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

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WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
P8V947		3,324.0	-5.5	-0.04	3,268.5	-44.0	-0.29
PHPU7V		3,303.5	-26.0	-0.18	3,289.0	-23.5	-0.15
Q7DGT2		3,500.5	171.0	1.17	3,392.0	79.5	0.52
Q7RA6U		3,038.0	-291.5	-2.00	3,002.5	-310.0	-2.04
QQYD87		3,520.5	191.0	1.31	3,557.5	245.0	1.61
QQZD3Z		3,418.5	89.0	0.61	3,490.0	177.5	1.17
QWNVJW	X	3,363.3	33.8	0.23	3,130.6	-181.9	-1.20
QXL7GK		3,434.0	104.5	0.72	3,373.5	61.0	0.40
R3B67Z	X	3,550.6	221.1	1.52	3,019.0	-293.5	-1.93
R3DUE3		3,124.9	-204.6	-1.40	3,152.4	-160.1	-1.05
RGTTGH		3,140.0	-189.5	-1.30	3,145.0	-167.5	-1.10
RH338U	*	3,092.7	-236.8	-1.62	2,931.6	-380.9	-2.51
RJYD6H		3,306.9	-22.6	-0.15	3,357.7	45.2	0.30
RXT6NY		3,488.2	158.7	1.09	3,430.2	117.7	0.77
T3KRYX		3,339.0	9.5	0.07	3,357.5	45.0	0.30
TJEWPF		3,424.0	94.5	0.65	3,379.5	67.0	0.44
TKN7FR		3,408.4	78.9	0.54	3,485.3	172.8	1.14
TR8AMU		3,432.5	103.0	0.71	3,423.5	111.0	0.73
U8DVNV		3,450.5	121.0	0.83	3,462.5	150.0	0.99
UX8B3E		3,364.5	35.0	0.24	3,209.5	-103.0	-0.68
V4AEUY		3,416.0	86.5	0.59	3,355.5	43.0	0.28
V7GYFD		3,384.0	54.5	0.37	3,447.0	134.5	0.89
W3YYXC		3,425.2	95.7	0.66	3,323.0	10.5	0.07
WFZVUJ		3,571.1	241.6	1.66	3,579.7	267.3	1.76
WHMAJU		3,335.9	6.4	0.04	3,285.1	-27.4	-0.18
WJHVCK		3,318.0	-11.5	-0.08	3,332.0	19.5	0.13
WMH2VW		3,135.7	-193.7	-1.33	3,056.7	-255.8	-1.68
WNDJTR		3,379.0	49.5	0.34	3,407.0	94.5	0.62
WPAZ6N	*	2,905.0	-424.5	-2.91	2,961.5	-351.0	-2.31
WREKWV	X	3,977.3	647.8	4.44	3,975.7	663.2	4.37
XCJNBQ		3,506.2	176.7	1.21	3,594.6	282.1	1.86
XYVLRV		3,496.2	166.7	1.14	3,433.1	120.6	0.79
Y7MHQK		3,125.0	-204.5	-1.40	3,130.5	-182.0	-1.20
YC9DRP		3,196.7	-132.8	-0.91	3,240.3	-72.2	-0.48
Z69DU9		3,180.0	-149.5	-1.03	3,124.9	-187.6	-1.23
ZA48PN		3,386.4	56.9	0.39	3,380.6	68.1	0.45
ZBV2ND		3,253.5	-76.0	-0.52	3,202.5	-110.0	-0.72
ZEW84J		3,194.5	-135.0	-0.93	3,169.0	-143.5	-0.94



Rubber Interlaboratory Testing Program
Analysis 605
Tensile Strength (psi)

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
ZKNC2U		3,379.0	49.6	0.34	3,341.6	29.1	0.19

Summary Statistics			
Grand Means	3,329.47 psi		3,312.49 psi
Std Dev Btwn Labs	145.82 psi		151.94 psi
Statistics based on 107 of 114 reporting participants			

Summary Statistics in SI Units			
Grand Means	22.956 MPa		22.84 MPa
Std Dev Btwn Labs	1.005 MPa		1.05 MPa
Statistics based on 107 of 114 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & C63-C64: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #605

- 2WB42N (X) - Inconsistent in testing between samples.
- 6JRP8C (X) - Inconsistent in testing between samples.
- H6PFA7 (X) - Extreme Data.
- MBKXDY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C61-C62.
- QWNVJW (X) - Inconsistent in testing between samples.
- R3B67Z (X) - Inconsistent in testing between samples.
- WREKWV (X) - Data for all samples are high. Possible Systematic Error.

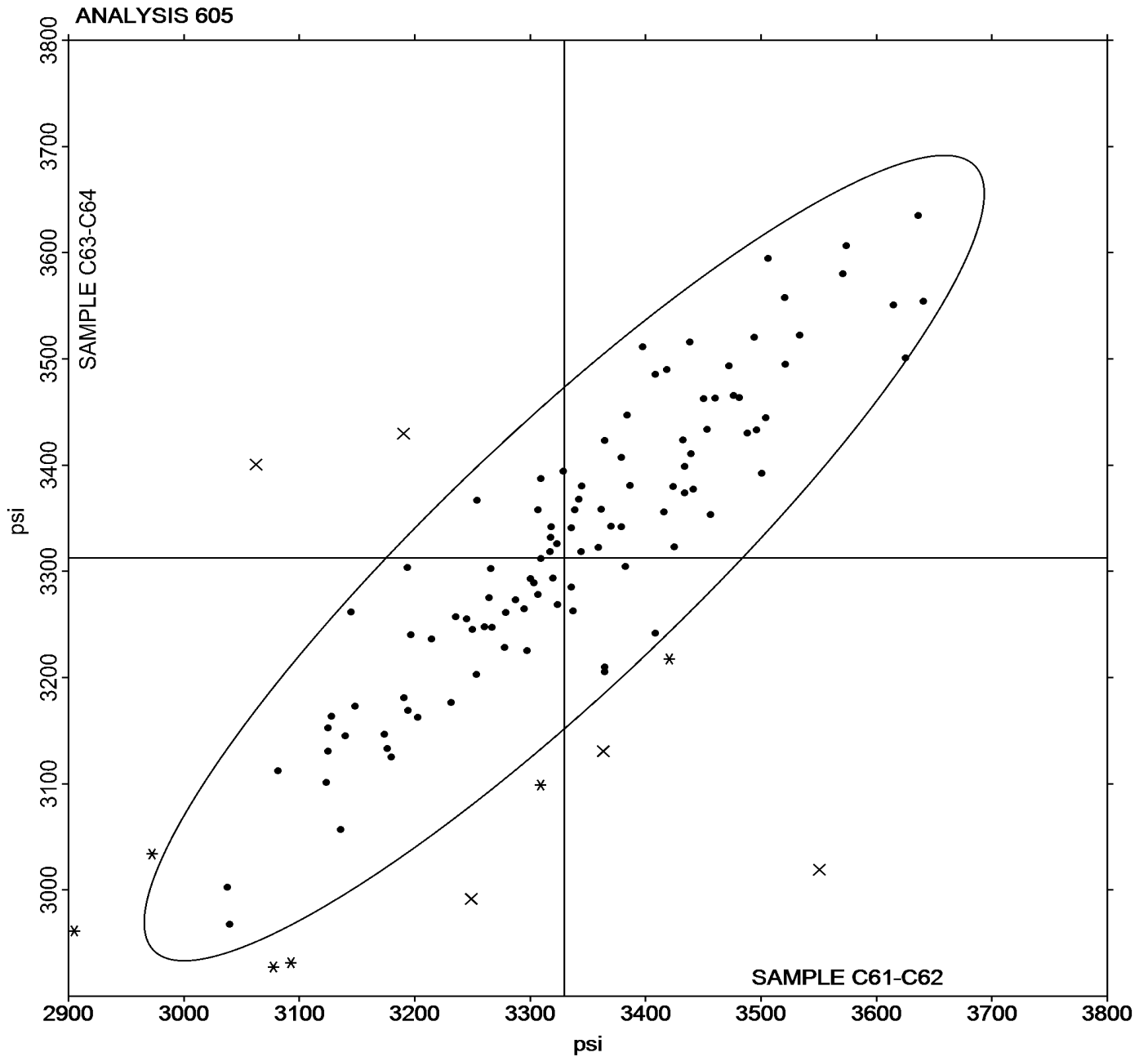


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Grand Mean Sample C61-C62 = 3,329.47 psi

Grand Mean Sample C63-C64 = 3,312.49 psi





Rubber Interlaboratory Testing Program

Report #189

Analysis 606

3rd Qtr 2016

Ultimate Elongation (percent)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
27X2MM		651.5	47.7	1.43	646.0	29.2	0.86
2WB42N		612.0	8.2	0.25	616.0	-0.8	-0.02
2Z9LYG		600.6	-3.2	-0.10	643.7	26.9	0.79
3E6XA7		572.0	-31.8	-0.95	600.5	-16.3	-0.48
3E9MBH		636.9	33.2	1.00	649.8	33.1	0.97
3GYR6N		616.5	12.7	0.38	631.5	14.7	0.43
3KX33A		583.0	-20.8	-0.62	591.0	-25.8	-0.76
44JE4Z		604.5	0.7	0.02	606.0	-10.8	-0.32
47C84P		565.0	-38.8	-1.16	569.5	-47.3	-1.39
4CZPHZ		549.1	-54.7	-1.64	573.2	-43.6	-1.28
6GM2RM		617.2	13.4	0.40	625.8	9.0	0.26
6JC9CJ		611.0	7.2	0.22	628.5	11.7	0.35
6JRP8C		609.5	5.7	0.17	601.5	-15.3	-0.45
6QUYFQ		586.6	-17.2	-0.52	607.1	-9.7	-0.29
6R6JPZ		607.7	3.9	0.12	625.0	8.2	0.24
6XWNFJ		605.5	1.7	0.05	616.5	-0.3	-0.01
72RYQA		637.1	33.3	1.00	650.8	34.0	1.00
78WX4K		548.5	-55.3	-1.66	572.0	-44.8	-1.32
7AL6NG		595.7	-8.1	-0.24	603.4	-13.4	-0.39
7BUJQG		635.5	31.7	0.95	645.5	28.7	0.85
7NK72H		628.0	24.2	0.73	654.0	37.2	1.10
7PWNH3		568.0	-35.8	-1.07	604.0	-12.8	-0.37
7PZDKE		585.4	-18.4	-0.55	604.0	-12.8	-0.37
8C4LEZ		582.5	-21.3	-0.64	596.0	-20.8	-0.61
8PTL73		582.5	-21.3	-0.64	578.0	-38.8	-1.14
A774QY		596.5	-7.3	-0.22	617.5	0.7	0.02
A774TK		624.0	20.2	0.61	629.0	12.2	0.36
AHKY9J		571.5	-32.3	-0.97	581.6	-35.2	-1.04
AUFETE		548.0	-55.8	-1.67	548.3	-68.5	-2.01
AV89T4		617.0	13.2	0.40	636.0	19.2	0.57
AXCWAE		611.5	7.7	0.23	641.0	24.2	0.71
B74EKG		610.0	6.2	0.19	632.0	15.2	0.45
BA88HL		617.5	13.7	0.41	629.0	12.2	0.36
BA97EF		628.2	24.4	0.73	658.5	41.7	1.23
BK73GG		618.6	14.8	0.45	635.9	19.2	0.56
CC9RLC		596.0	-7.8	-0.23	621.5	4.7	0.14
CF89UZ		635.5	31.7	0.95	651.0	34.2	1.01



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
CKKT37		614.0	10.2	0.31	609.5	-7.3	-0.21
CRM3AY		638.0	34.2	1.03	645.0	28.2	0.83
CXATU9		582.0	-21.8	-0.65	592.5	-24.3	-0.71
DC3Z6F		581.5	-22.3	-0.67	601.5	-15.3	-0.45
DQLPYC		556.5	-47.3	-1.42	587.5	-29.3	-0.86
DVDWK7		597.4	-6.4	-0.19	613.3	-3.5	-0.10
EEMBE6		611.5	7.7	0.23	627.0	10.2	0.30
EMFGCD		611.8	8.0	0.24	607.4	-9.4	-0.28
ENTTC3	*	511.5	-92.3	-2.77	526.5	-90.3	-2.65
EUZKGU		570.0	-33.8	-1.01	600.0	-16.8	-0.49
F48EE9		592.5	-11.3	-0.34	618.0	1.2	0.04
FGULB9		573.0	-30.8	-0.92	577.0	-39.8	-1.17
GDNMBZ		573.5	-30.3	-0.91	596.0	-20.8	-0.61
GY8UK9		627.5	23.7	0.71	651.0	34.2	1.01
H67V3D	X	458.5	-145.3	-4.36	450.0	-166.8	-4.90
H6PFA7	X	409.5	-194.3	-5.83	419.0	-197.8	-5.81
HECFLA		559.0	-44.8	-1.34	572.0	-44.8	-1.32
HFAQJX		664.0	60.2	1.81	670.0	53.2	1.57
HJCM78		644.0	40.2	1.21	654.0	37.2	1.10
HKJ8TL		647.5	43.8	1.31	650.3	33.5	0.99
HQ7UPC		611.4	7.6	0.23	592.5	-24.3	-0.71
HTDE97	*	699.5	95.7	2.87	714.0	97.2	2.86
HTE6HA		582.5	-21.3	-0.64	612.0	-4.8	-0.14
J3GR6Z		560.5	-43.3	-1.30	590.5	-26.3	-0.77
K2F9KB		588.5	-15.3	-0.46	605.5	-11.3	-0.33
KJHTHY		623.5	19.7	0.59	618.5	1.7	0.05
KWBBC7		625.5	21.7	0.65	629.0	12.2	0.36
KZP6R4		587.0	-16.8	-0.50	603.5	-13.3	-0.39
L9JDB9		615.0	11.2	0.34	630.5	13.7	0.40
LHJ6ET		594.0	-9.8	-0.29	591.5	-25.3	-0.74
LXB3GN		537.5	-66.3	-1.99	551.5	-65.3	-1.92
MBKXDY	X	610.5	6.7	0.20	671.0	54.2	1.60
MG9K96		542.0	-61.8	-1.85	539.0	-77.8	-2.29
NECRLK	*	623.5	19.7	0.59	595.5	-21.3	-0.62
NFTNCY		592.5	-11.3	-0.34	623.5	6.7	0.20
NPCXZT		649.5	45.7	1.37	647.5	30.7	0.90
P8V947		601.0	-2.8	-0.08	616.5	-0.3	-0.01
PHPU7V		622.5	18.7	0.56	630.0	13.2	0.39



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
Q7DGT2		579.0	-24.8	-0.74	596.0	-20.8	-0.61
Q7RA6U		542.0	-61.8	-1.85	547.5	-69.3	-2.04
QQYD87		600.5	-3.3	-0.10	619.0	2.2	0.07
QQZD3Z		640.0	36.2	1.09	656.5	39.7	1.17
QWNVJW		590.5	-13.3	-0.40	601.0	-15.8	-0.46
QXL7GK		588.5	-15.3	-0.46	585.0	-31.8	-0.93
R3B67Z		617.5	13.7	0.41	632.5	15.7	0.46
R3DUE3		624.5	20.7	0.62	654.5	37.7	1.11
RGTTGH		646.0	42.2	1.27	679.5	62.7	1.85
RH338U	*	547.8	-55.9	-1.68	538.5	-78.2	-2.30
RJYD6H		587.8	-16.0	-0.48	620.1	3.3	0.10
RXT6NY	*	687.5	83.7	2.51	690.0	73.2	2.15
T3KRYX		588.5	-15.3	-0.46	617.5	0.7	0.02
TJEWPF	*	653.0	49.2	1.48	636.5	19.7	0.58
TKN7FR		574.9	-28.9	-0.87	612.9	-3.9	-0.11
TR8AMU		596.5	-7.3	-0.22	607.0	-9.8	-0.29
U8DVNV		662.5	58.7	1.76	664.0	47.2	1.39
UX8B3E	*	609.5	5.7	0.17	582.5	-34.3	-1.01
V4AEUY		593.5	-10.3	-0.31	615.0	-1.8	-0.05
V7GYFD		633.0	29.2	0.88	647.5	30.7	0.90
W3YYXC		624.4	20.6	0.62	645.9	29.2	0.86
WFZVUJ		638.6	34.8	1.04	668.1	51.3	1.51
WHMAJU		605.2	1.4	0.04	620.6	3.8	0.11
WJHVCK		622.5	18.7	0.56	625.5	8.7	0.26
WMH2VV		552.5	-51.3	-1.54	574.5	-42.3	-1.24
WNDJTR		634.5	30.7	0.92	657.5	40.7	1.20
WREKWA		635.6	31.8	0.95	634.9	18.1	0.53
XCJNBQ		635.7	31.9	0.96	657.9	41.1	1.21
XYVLRV		628.5	24.7	0.74	655.0	38.2	1.12
Y7MHQK		633.0	29.2	0.88	651.5	34.7	1.02
YC9DRP		583.9	-19.9	-0.60	591.2	-25.5	-0.75
Z69DU9		600.5	-3.3	-0.10	603.0	-13.8	-0.40
ZA48PN		654.7	50.9	1.53	667.8	51.0	1.50
ZBV2ND		597.5	-6.3	-0.19	615.0	-1.8	-0.05
ZEW84J		549.0	-54.8	-1.64	556.0	-60.8	-1.79
ZKNC2U		572.3	-31.5	-0.95	572.1	-44.7	-1.31



Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means	603.78 percent		616.75 percent
Std Dev Btwn Labs	33.32 percent		34.01 percent
Statistics based on 108 of 111 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & C63-C64: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #606

- H67V3D (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C61-C62.
- H6PFA7 (X) - Data for all samples are low. Possible Systematic Error.
- MBKXDY (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C61-C62.

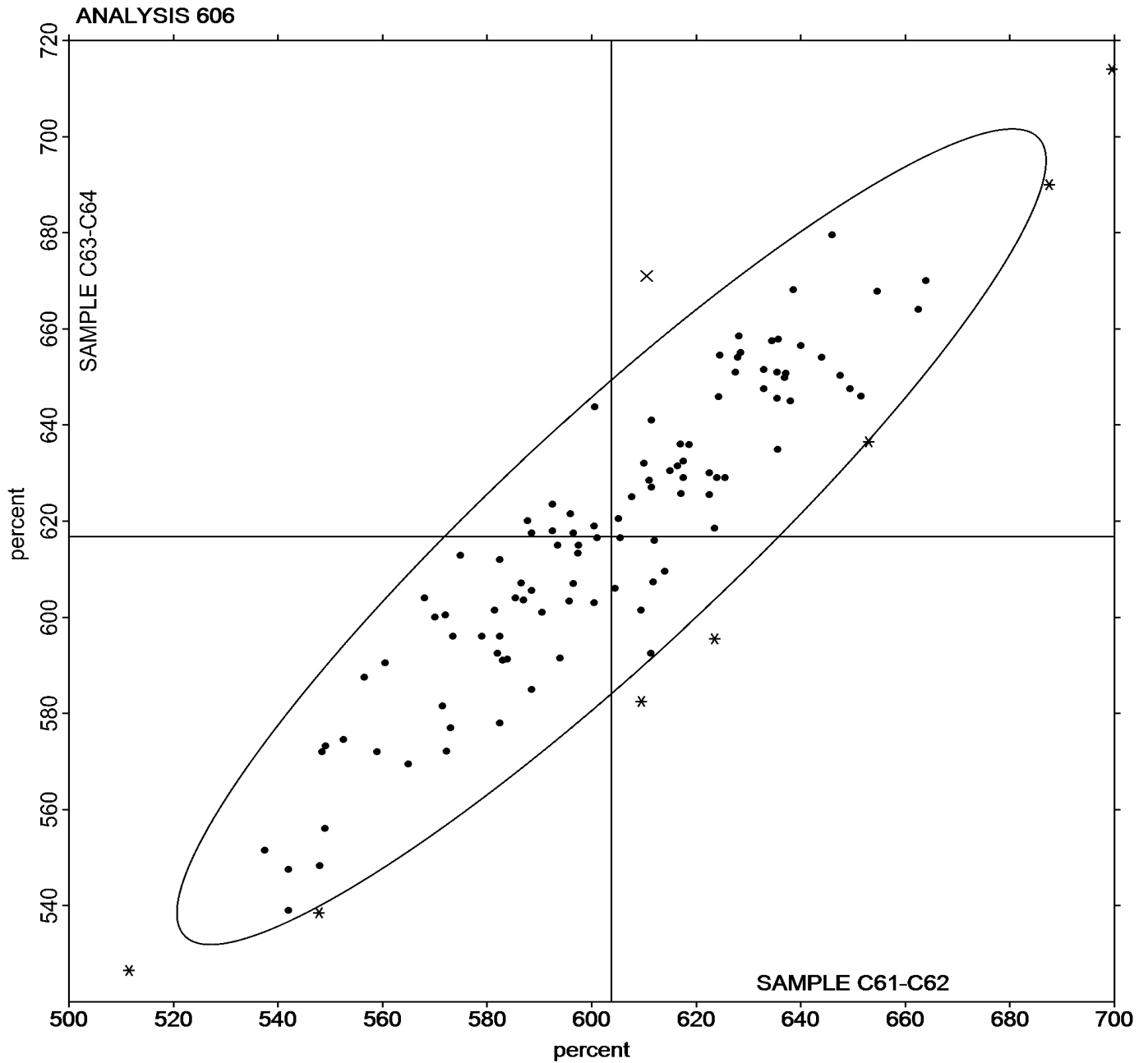


Rubber Interlaboratory Testing Program
Analysis 606
Ultimate Elongation (percent)

Report #189
3rd Qtr 2016

Grand Mean Sample **C61-C62** = 603.78 percent

Grand Mean Sample **C63-C64** = 616.75 percent





Rubber Interlaboratory Testing Program

Report #189

Analysis 607

3rd Qtr 2016

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Z9LYG		1,113.2	19.8	0.23	987.4	-23.9	-0.29
3E6XA7		1,174.1	80.7	0.92	1,095.8	84.4	1.04
3E9MBH		1,082.4	-11.1	-0.13	975.6	-35.7	-0.44
3KX33A		1,143.5	50.1	0.57	1,055.0	43.7	0.54
44JE4Z		986.5	-106.9	-1.22	968.5	-42.8	-0.53
47C84P		1,128.5	35.1	0.40	982.5	-28.8	-0.35
4CZPHZ		1,228.5	135.1	1.54	1,094.3	83.0	1.02
6GM2RM		1,013.6	-79.8	-0.91	956.0	-55.3	-0.68
6JC9CJ	X	345.0	-748.4	-8.53	314.5	-696.8	-8.55
6JRP8C		1,081.0	-12.4	-0.14	982.0	-29.3	-0.36
6QUYFQ		1,143.6	50.2	0.57	1,068.2	56.9	0.70
6R6JPZ		1,023.3	-70.2	-0.80	1,025.8	14.5	0.18
6XWNFJ		1,118.0	24.6	0.28	1,031.0	19.7	0.24
72RYQA		1,012.3	-81.2	-0.92	1,009.0	-2.4	-0.03
78WX4K		1,168.0	74.6	0.85	1,051.0	39.7	0.49
7AL6NG		1,116.3	22.9	0.26	1,050.0	38.6	0.47
7BUJQG		1,037.0	-56.4	-0.64	998.0	-13.3	-0.16
7NK72H		1,006.0	-87.4	-1.00	906.0	-105.3	-1.29
7PWNH3		1,144.5	51.1	0.58	1,061.5	50.2	0.62
7PZDKE		1,184.1	90.6	1.03	1,085.7	74.3	0.91
8C4LEZ		1,182.5	89.1	1.02	1,081.5	70.2	0.86
8PTL73		1,125.0	31.6	0.36	1,050.0	38.7	0.47
A774QY		1,080.8	-12.6	-0.14	1,009.2	-2.1	-0.03
A774TK		1,047.5	-45.9	-0.52	952.5	-58.8	-0.72
AHKY9J		1,144.4	51.0	0.58	1,080.2	68.9	0.85
AUFETE		1,175.0	81.6	0.93	1,117.5	106.2	1.30
AV89T4		1,107.0	13.6	0.15	1,010.0	-1.3	-0.02
AXCWAE		1,035.5	-57.9	-0.66	954.0	-57.3	-0.70
B74EKG		1,095.0	1.6	0.02	1,023.0	11.7	0.14
BA88HL		1,006.6	-86.8	-0.99	1,000.8	-10.6	-0.13
BA97EF		993.8	-99.7	-1.14	859.2	-152.1	-1.87
BK73GG		1,102.1	8.6	0.10	1,009.9	-1.4	-0.02
CC9RLC		1,126.5	33.1	0.38	994.5	-16.8	-0.21
CF89UZ		1,041.0	-52.4	-0.60	983.5	-27.8	-0.34
CKKT37		999.0	-94.4	-1.08	995.0	-16.3	-0.20
CRM3AY		1,103.0	9.6	0.11	1,061.7	50.4	0.62
CXATU9		1,139.0	45.6	0.52	1,066.0	54.7	0.67
DC3Z6F		1,103.0	9.6	0.11	970.3	-41.0	-0.50



Rubber Interlaboratory Testing Program

Report #189

Analysis 607

3rd Qtr 2016

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DQLPYC		1,150.0	56.6	0.64	1,068.5	57.2	0.70
DVDWK7		1,115.9	22.5	0.26	1,035.8	24.5	0.30
EEMBE6		1,084.5	-8.9	-0.10	1,025.0	13.7	0.17
EMFGCD		991.3	-102.1	-1.16	1,004.4	-6.9	-0.09
ENTTC3	*	1,360.0	266.6	3.04	1,255.0	243.7	2.99
EUZKGU		1,056.5	-36.9	-0.42	951.5	-59.8	-0.73
F48EE9		1,143.5	50.1	0.57	1,080.5	69.2	0.85
FGULB9		1,124.5	31.1	0.35	1,059.0	47.7	0.59
GDNMBZ		1,241.5	148.1	1.69	1,101.5	90.2	1.11
GY8UK9		1,062.5	-30.9	-0.35	956.5	-54.8	-0.67
H67V3D	X	1,660.7	567.3	6.46	1,668.7	657.3	8.07
H6PFA7		1,237.0	143.6	1.64	1,173.0	161.7	1.98
HECFLA		1,128.0	34.6	0.39	1,019.0	7.7	0.09
HFAQJX		1,008.0	-85.4	-0.97	930.0	-81.3	-1.00
HJCM78		987.0	-106.4	-1.21	897.0	-114.3	-1.40
HTE6HA		1,165.0	71.6	0.82	1,048.0	36.7	0.45
J3GR6Z		1,164.5	71.1	0.81	1,086.5	75.2	0.92
K2F9KB		1,103.7	10.3	0.12	1,037.0	25.7	0.32
KJHTHY		1,071.5	-21.9	-0.25	979.0	-32.3	-0.40
KWBBC7		1,045.5	-47.9	-0.55	1,010.0	-1.3	-0.02
KZP6R4		1,147.5	54.1	0.62	1,057.5	46.2	0.57
L9JDB9		1,010.5	-82.9	-0.94	961.0	-50.3	-0.62
LHJ6ET		1,078.5	-14.9	-0.17	1,020.5	9.2	0.11
LXB3GN	*	1,315.0	221.6	2.53	1,260.0	248.7	3.05
MBKXDY		1,022.0	-71.4	-0.81	917.5	-93.8	-1.15
MG9K96	*	1,326.4	233.0	2.65	1,199.5	188.1	2.31
NECRLK	*	968.0	-125.4	-1.43	992.5	-18.8	-0.23
NFTNCY		1,126.0	32.6	0.37	982.5	-28.8	-0.35
NPCXZT		966.7	-126.7	-1.44	918.8	-92.5	-1.14
P8V947		1,123.5	30.1	0.34	1,014.0	2.7	0.03
PHPU7V		1,025.0	-68.4	-0.78	967.0	-44.3	-0.54
Q7DGT2		1,124.0	30.6	0.35	1,002.0	-9.3	-0.11
Q7RA6U		1,160.0	66.6	0.76	1,086.0	74.7	0.92
QQYD87		1,127.5	34.1	0.39	1,033.5	22.2	0.27
QQZD3Z		1,009.0	-84.4	-0.96	943.5	-67.8	-0.83
QWNVJW	*	1,104.5	11.1	0.13	927.5	-83.8	-1.03
QXL7GK		1,175.0	81.6	0.93	1,087.0	75.7	0.93



Rubber Interlaboratory Testing Program

Report #189

Analysis 607

3rd Qtr 2016

Stress at 300% Elongation (psi)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
R3B67Z	X	1,015.3	-78.1	-0.89	822.4	-189.0	-2.32
R3DUE3		993.5	-99.9	-1.14	878.9	-132.4	-1.62
RGTTGH	*	885.5	-207.9	-2.37	780.0	-231.3	-2.84
RH338U		1,166.1	72.7	0.83	1,114.0	102.7	1.26
RJYD6H		1,100.8	7.4	0.08	1,062.4	51.1	0.63
RXT6NY	*	848.5	-244.9	-2.79	805.0	-206.4	-2.53
T3KRYX		1,058.5	-34.9	-0.40	970.5	-40.8	-0.50
TJEWPF		1,026.5	-66.9	-0.76	922.5	-88.8	-1.09
TKN7FR		1,210.4	116.9	1.33	1,061.7	50.4	0.62
TR8AMU		1,138.5	45.1	0.51	1,057.0	45.7	0.56
U8DVNV		924.0	-169.4	-1.93	921.5	-89.8	-1.10
UX8B3E		1,081.0	-12.4	-0.14	1,073.0	61.7	0.76
V4AEUY		1,138.5	45.1	0.51	991.0	-20.3	-0.25
V7GYFD		1,016.0	-77.4	-0.88	966.0	-45.3	-0.56
W3YYXC		1,046.9	-46.5	-0.53	967.0	-44.3	-0.54
WFZVUJ		1,070.9	-22.5	-0.26	952.2	-59.2	-0.73
WHMAJU		1,117.5	24.1	0.27	996.4	-14.9	-0.18
WMH2VW		1,189.3	95.9	1.09	1,020.3	9.0	0.11
WNDJTR		1,055.5	-37.9	-0.43	964.5	-46.8	-0.57
WREKWV	X	1,855.6	762.2	8.69	1,825.1	813.8	9.99
XCJNBQ		1,032.4	-61.1	-0.70	971.3	-40.1	-0.49
XYVLRV		1,088.5	-4.9	-0.06	967.4	-43.9	-0.54
Y7MHQK		925.0	-168.4	-1.92	826.5	-184.8	-2.27
YC9DRP		1,163.9	70.5	0.80	1,071.5	60.2	0.74
Z69DU9		1,018.2	-75.2	-0.86	933.3	-78.0	-0.96
ZA48PN		974.8	-118.7	-1.35	901.2	-110.1	-1.35
ZBV2ND		1,099.0	5.6	0.06	978.5	-32.8	-0.40
ZEW84J		1,209.9	116.5	1.33	1,130.8	119.5	1.47
ZKNC2U		1,200.9	107.4	1.22	1,158.7	147.4	1.81

Summary Statistics

Grand Means

1,093.41 psi

1,011.33 psi

Std Dev Btwn Labs

87.76 psi

81.49 psi

Statistics based on 100 of 104 reporting participants



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

Report #189
3rd Qtr 2016

Summary Statistics in SI Units			
Grand Means	7.5387 MPa	6.97 MPa	
Std Dev Btwn Labs	0.6051 MPa	0.56 MPa	
Statistics based on 100 of 104 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & C63-C64: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #607

- 6JC9CJ (X) - Data for all samples are low. Possible Systematic Error.
- H67V3D (X) - Data for all samples are high. Possible Systematic Error. Inconsistent within the determinations of sample group C61-C62.
- R3B67Z (X) - Inconsistent in testing between samples.
- WREKVV (X) - Extreme Data.



Rubber Interlaboratory Testing Program

Report #189

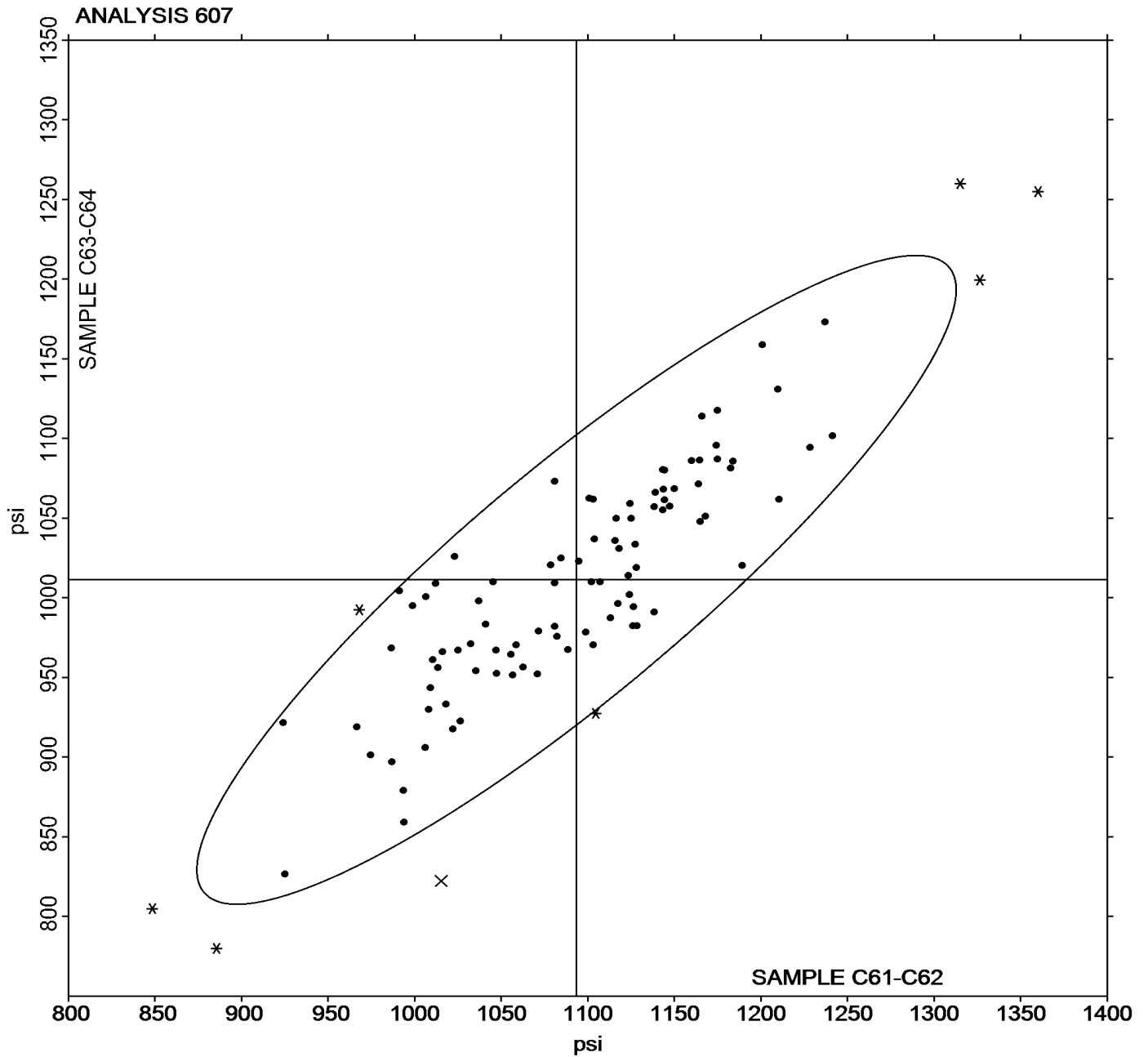
Analysis 607

3rd Qtr 2016

Stress at 300% Elongation (psi)

Grand Mean Sample C61-C62 = 1,093.41 psi

Grand Mean Sample C63-C64 = 1,011.33 psi





Rubber Interlaboratory Testing Program

Report #189

Analysis 608

3rd Qtr 2016

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Z9LYG		243.5	8.9	0.60	214.2	1.7	0.13
3E6XA7		250.9	16.4	1.10	232.8	20.3	1.54
3E9MBH		237.9	3.4	0.23	209.9	-2.7	-0.20
3GYR6N		240.0	5.5	0.37	209.0	-3.5	-0.27
3KX33A		235.0	0.5	0.03	206.0	-6.5	-0.50
44JE4Z		214.8	-19.7	-1.32	201.9	-10.6	-0.81
47C84P		248.5	14.0	0.94	217.5	5.0	0.38
4CZPHZ		240.0	5.5	0.37	208.1	-4.4	-0.33
6GM2RM		220.5	-14.1	-0.94	203.4	-9.1	-0.69
6JC9CJ		233.0	-1.5	-0.10	207.5	-5.0	-0.38
6JRP8C		227.5	-7.0	-0.47	202.5	-10.0	-0.76
6QUYFQ		239.3	4.8	0.32	215.4	2.9	0.22
6XWNFJ		249.5	15.0	1.01	228.0	15.5	1.18
72RYQA		217.4	-17.2	-1.15	215.4	2.9	0.22
78WX4K		237.0	2.5	0.17	211.5	-1.0	-0.08
7AL6NG		239.1	4.6	0.31	218.5	6.0	0.46
7BUJQG		222.0	-12.5	-0.84	215.5	3.0	0.23
7NK72H		217.0	-17.5	-1.18	193.0	-19.5	-1.49
7PWNH3		249.5	15.0	1.01	217.5	5.0	0.38
7PZDKE		247.5	12.9	0.87	223.7	11.2	0.85
8C4LEZ		249.0	14.5	0.97	222.0	9.5	0.72
8PTL73		245.0	10.5	0.70	230.0	17.5	1.33
A774QY		232.8	-1.7	-0.12	214.8	2.3	0.17
A774TK		231.0	-3.5	-0.24	209.5	-3.0	-0.23
AHKY9J		244.5	10.0	0.67	226.9	14.4	1.10
AUFETE	X	309.5	75.0	5.03	288.3	75.7	5.76
AV89T4		220.0	-14.5	-0.97	198.0	-14.5	-1.11
AXCWAE		227.0	-7.5	-0.50	208.5	-4.0	-0.31
B74EKG		236.5	2.0	0.13	219.0	6.5	0.49
BA88HL		220.5	-14.1	-0.94	213.9	1.4	0.11
BA97EF		221.5	-13.0	-0.87	188.4	-24.1	-1.83
BK73GG		236.0	1.5	0.10	207.5	-5.0	-0.38
CC9RLC		264.0	29.5	1.98	233.5	21.0	1.60
CF89UZ		230.5	-4.0	-0.27	212.0	-0.5	-0.04
CKKT37		222.0	-12.5	-0.84	216.5	4.0	0.30
CRM3AY		227.7	-6.8	-0.46	218.3	5.8	0.44
CXATU9		234.0	-0.5	-0.03	214.5	2.0	0.15



Rubber Interlaboratory Testing Program

Report #189

Analysis 608

3rd Qtr 2016

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
DC3Z6F		227.0	-7.5	-0.51	195.8	-16.7	-1.27
DQLPYC		232.5	-2.0	-0.14	210.5	-2.0	-0.15
DVDWK7		249.6	15.0	1.01	232.9	20.3	1.55
EEMBE6		241.5	7.0	0.47	222.0	9.5	0.72
EMFGCD		213.9	-20.6	-1.38	212.5	0.0	0.00
ENTTC3	X	295.5	61.0	4.09	272.5	60.0	4.57
EUZKGU		217.0	-17.5	-1.18	204.5	-8.0	-0.61
F48EE9	X	288.0	53.5	3.59	274.0	61.5	4.68
FGULB9		232.5	-2.0	-0.14	212.5	0.0	0.00
GDNMBZ		255.0	20.5	1.38	216.0	3.5	0.26
GY8UK9		236.5	2.0	0.13	209.5	-3.0	-0.23
H67V3D	X	322.0	87.5	5.87	331.4	118.9	9.05
H6PFA7	X	292.5	58.0	3.89	270.5	58.0	4.41
HECFLA		237.0	2.5	0.17	216.0	3.5	0.26
HFAQJX		228.0	-6.5	-0.44	207.0	-5.5	-0.42
HJCM78		215.0	-19.5	-1.31	194.5	-18.0	-1.37
HTE6HA		233.5	-1.0	-0.07	218.0	5.5	0.42
J3GR6Z		251.7	17.2	1.15	229.2	16.6	1.27
K2F9KB		222.6	-11.9	-0.80	196.5	-16.0	-1.22
KJHTHY		237.0	2.5	0.17	212.0	-0.5	-0.04
KWBBC7		235.0	0.5	0.03	228.0	15.5	1.18
KZP6R4		268.0	33.5	2.25	243.0	30.5	2.32
L9JDB9		222.0	-12.5	-0.84	210.0	-2.5	-0.19
LFJWC6	X	592.0	357.5	24.00	608.5	396.0	30.14
LHJ6ET		226.5	-8.0	-0.54	210.0	-2.5	-0.19
LXB3GN	X	319.5	85.0	5.71	306.0	93.5	7.11
MBKXDY		219.5	-15.0	-1.01	196.0	-16.5	-1.26
MG9K96	X	295.2	60.6	4.07	264.7	52.2	3.97
NECRLK	X	206.0	-28.5	-1.91	216.0	3.5	0.26
NFTNCY		238.0	3.5	0.23	207.5	-5.0	-0.38
NPCXZT		213.9	-20.6	-1.38	197.3	-15.3	-1.16
P8V947		253.5	19.0	1.27	224.5	12.0	0.91
PHPU7V		226.5	-8.0	-0.54	214.5	2.0	0.15
Q7DGT2		222.5	-12.0	-0.81	191.5	-21.0	-1.60
Q7RA6U		255.0	20.5	1.38	234.5	22.0	1.67
QQYD87		248.0	13.5	0.91	221.5	9.0	0.68
QQZD3Z		217.5	-17.0	-1.14	200.0	-12.5	-0.95
QWNVJW	*	231.5	-3.0	-0.20	188.0	-24.5	-1.87



Rubber Interlaboratory Testing Program

Report #189

Analysis 608

3rd Qtr 2016

Stress at 100% Elongation (psi)

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
QXL7GK		248.5	14.0	0.94	224.5	12.0	0.91
R3B67Z	X	219.7	-14.8	-0.99	175.5	-37.0	-2.82
R3DUE3	*	278.5	44.0	2.95	252.4	39.8	3.03
RGTTGH		215.5	-19.0	-1.28	191.0	-21.5	-1.64
RH338U		226.3	-8.2	-0.55	199.9	-12.6	-0.96
RJYD6H		231.3	-3.2	-0.21	217.6	5.0	0.38
RXT6NY		200.2	-34.4	-2.31	186.4	-26.1	-1.99
T3KRYX		225.5	-9.0	-0.61	205.5	-7.0	-0.53
TJEWPF		230.5	-4.0	-0.27	203.0	-9.5	-0.72
TKN7FR		262.5	28.0	1.88	230.6	18.1	1.38
TR8AMU		243.5	9.0	0.60	221.5	9.0	0.68
U8DVNV		215.5	-19.0	-1.28	207.5	-5.0	-0.38
UX8B3E		234.5	0.0	0.00	224.0	11.5	0.87
V4AEUY		265.5	31.0	2.08	230.0	17.5	1.33
V7GYFD		222.5	-12.0	-0.81	208.0	-4.5	-0.34
W3YYXC		215.6	-18.9	-1.27	198.7	-13.8	-1.05
WFZVUJ		230.2	-4.3	-0.29	203.4	-9.1	-0.70
WHMAJU		236.4	1.9	0.13	206.7	-5.8	-0.44
WMH2VW	*	263.2	28.7	1.93	221.2	8.7	0.66
WNDJTR		234.0	-0.5	-0.03	212.5	0.0	0.00
WREKWA	X	317.3	82.8	5.56	307.2	94.6	7.20
XCJNBQ		241.8	7.2	0.49	219.3	6.8	0.52
XYVLRV		240.0	5.5	0.37	210.3	-2.2	-0.17
Y7MHQK	*	197.5	-37.0	-2.48	174.5	-38.0	-2.89
YC9DRP	X	302.1	67.6	4.54	281.5	69.0	5.25
Z69DU9		220.5	-14.1	-0.94	198.0	-14.5	-1.11
ZA48PN		227.8	-6.7	-0.45	211.9	-0.6	-0.05
ZBV2ND		242.5	8.0	0.54	207.5	-5.0	-0.38
ZEW84J		257.1	22.6	1.52	233.0	20.5	1.56
ZKNC2U		243.5	9.0	0.60	225.3	12.8	0.97

Summary Statistics

Grand Means

234.51 psi

212.52 psi

Std Dev Btwn Labs

14.90 psi

13.14 psi

Statistics based on 93 of 105 reporting participants



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

Report #189
3rd Qtr 2016

		Summary Statistics in SI Units	
Grand Means	1.6169 MPa	1.47	MPa
Stnd Dev Btwn Labs	0.1027 MPa	0.09	MPa
Statistics based on 93 of 105 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & C63-C64: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #608

- AUFETE (X) - Data for all samples are high. Possible Systematic Error.
- ENTTC3 (X) - Data for all samples are high. Possible Systematic Error.
- F48EE9 (X) - Data for all samples are high. Possible Systematic Error.
- H67V3D (X) - Extreme Data.
- H6PFA7 (X) - Data for all samples are high. Possible Systematic Error.
- LFJWC6 (X) - Extreme Data.
- LXB3GN (X) - Data for all samples are high. Possible Systematic Error.
- MG9K96 (X) - Data for all samples are high. Possible Systematic Error.
- NECRLK (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample group C61-C62.
- R3B67Z (X) - Data for sample group C63-C64 are low.
- WREKVV (X) - Data for all samples are high. Possible Systematic Error.
- YC9DRP (X) - Data for all samples are high. Possible Systematic Error.

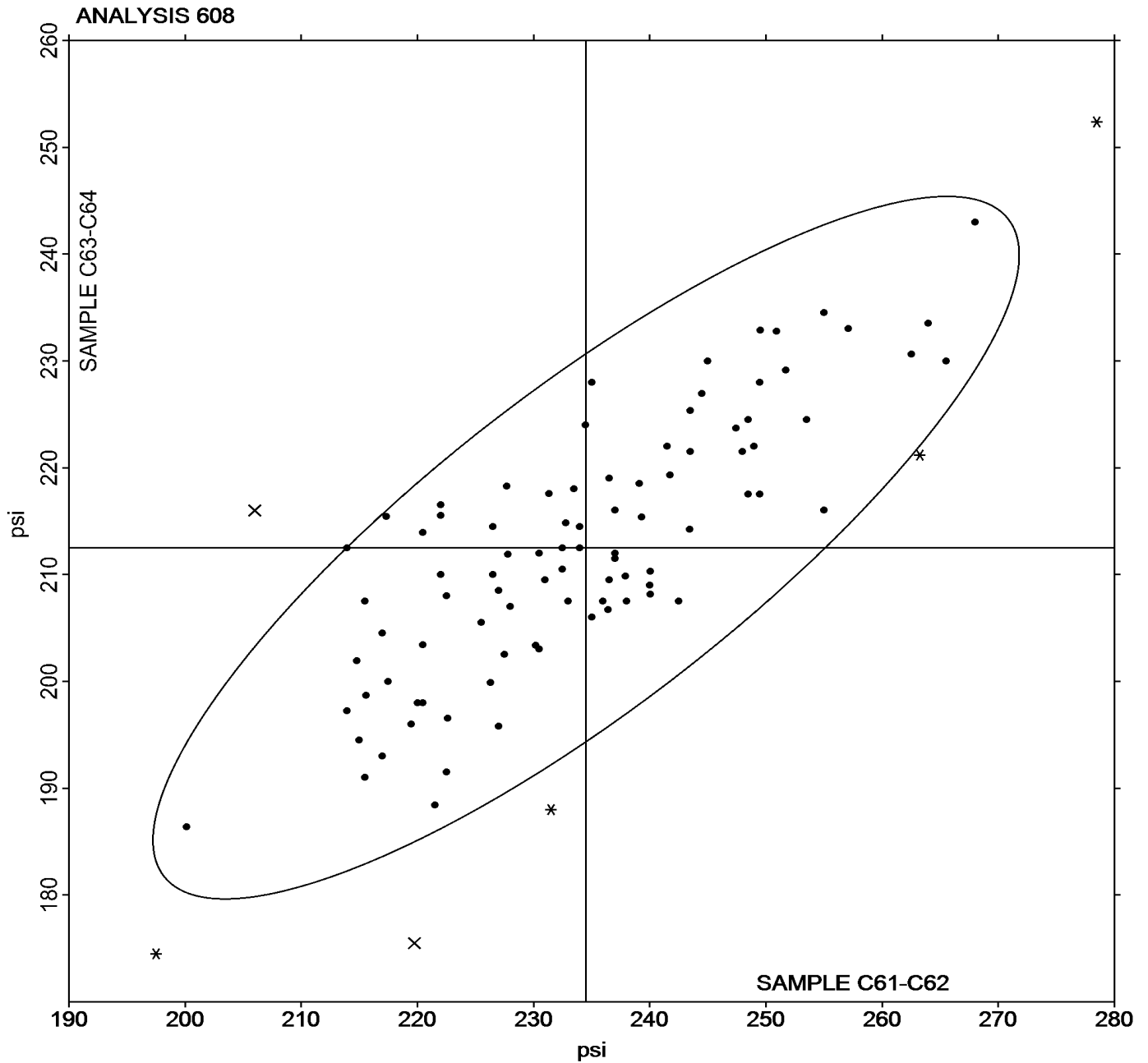


Rubber Interlaboratory Testing Program
Analysis 608
Stress at 100% Elongation (psi)

Report #189
3rd Qtr 2016

Grand Mean Sample **C61-C62** = 234.51 psi

Grand Mean Sample **C63-C64** = 212.52 psi





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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
27X2MM	X	55.00	3.59	2.29	56.00	6.14	4.00	HH
2WB42N		50.00	-1.41	-0.90	48.00	-1.86	-1.21	BT
2Z9LYG		54.45	3.04	1.94	52.35	2.49	1.62	BT
3E6XA7		51.85	0.44	0.28	50.65	0.79	0.52	BT
3E9MBH		52.95	1.54	0.98	50.25	0.39	0.25	BT
3GYR6N		52.00	0.59	0.38	48.50	-1.36	-0.88	XX
3KX33A		50.00	-1.41	-0.90	47.00	-2.86	-1.86	BT
44JE4Z		54.50	3.09	1.97	53.00	3.14	2.05	BT
47C84P		51.25	-0.16	-0.10	48.50	-1.36	-0.88	HH
4CZPHZ		50.00	-1.41	-0.90	49.00	-0.86	-0.56	BT
6GM2RM		51.55	0.14	0.09	49.35	-0.51	-0.33	BT
6JC9CJ		50.05	-1.36	-0.87	48.70	-1.16	-0.75	BT
6JRP8C		50.35	-1.06	-0.68	48.40	-1.46	-0.95	BT
6QUYFQ		49.90	-1.51	-0.97	48.45	-1.41	-0.92	BT
6XWNFJ		49.50	-1.91	-1.22	48.50	-1.36	-0.88	BT
72RYQA		51.45	0.04	0.02	51.15	1.29	0.84	BT
78WX4K		52.00	0.59	0.38	50.00	0.14	0.09	BT
7AL6NG		48.00	-3.41	-2.18	47.50	-2.36	-1.54	BT
7BUJQG		52.25	0.84	0.54	50.80	0.94	0.61	BT
7NK72H		51.00	-0.41	-0.26	50.00	0.14	0.09	BT
7PWNH3		54.00	2.59	1.65	52.00	2.14	1.39	HH
7PZDKE		50.00	-1.41	-0.90	48.00	-1.86	-1.21	XX
8C4LEZ		50.00	-1.41	-0.90	47.00	-2.86	-1.86	XX
8GYDPH		54.80	3.39	2.16	52.65	2.79	1.82	BT
8PTL73		50.50	-0.91	-0.58	50.50	0.64	0.42	HH
A774QY		53.50	2.09	1.33	51.50	1.64	1.07	HH
A774TK		53.00	1.59	1.01	52.00	2.14	1.39	BT
AHKY9J		49.45	-1.96	-1.25	48.80	-1.06	-0.69	BT
AUFETE		51.00	-0.41	-0.26	50.00	0.14	0.09	HH
AV89T4		52.75	1.34	0.85	50.50	0.64	0.42	HH
AXCWAE		51.50	0.09	0.06	50.50	0.64	0.42	BT
B74EKG		51.50	0.09	0.06	51.00	1.14	0.74	BT
BA88HL		48.00	-3.41	-2.18	47.40	-2.46	-1.60	BT
BA97EF	*	50.50	-0.91	-0.58	47.00	-2.86	-1.86	BT
BK73GG		53.00	1.59	1.01	51.00	1.14	0.74	BT
CC9RLC		52.00	0.59	0.38	51.00	1.14	0.74	BT
CF89UZ		51.25	-0.16	-0.10	50.25	0.39	0.25	HH



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
CHVMHA		50.00	-1.41	-0.90	50.00	0.14	0.09	XX
CKKT37		51.80	0.39	0.25	50.55	0.69	0.45	BT
CRM3AY		51.95	0.54	0.34	50.75	0.89	0.58	BT
CX9TXF		49.00	-2.41	-1.54	47.00	-2.86	-1.86	BT
CXATU9		50.50	-0.91	-0.58	49.50	-0.36	-0.23	HH
DC3Z6F		50.50	-0.91	-0.58	49.50	-0.36	-0.23	BT
DQLPYC		52.05	0.64	0.41	50.50	0.64	0.42	BT
DVDWK7		54.00	2.59	1.65	52.00	2.14	1.39	HH
EBPPM3		48.50	-2.91	-1.86	47.50	-2.36	-1.54	HH
EEMBE6		54.00	2.59	1.65	51.50	1.64	1.07	HH
EMFGCD		49.90	-1.51	-0.97	49.40	-0.46	-0.30	BT
ENTTC3		51.50	0.09	0.06	50.00	0.14	0.09	HH
EUZKGU		54.10	2.69	1.72	52.85	2.99	1.95	BT
F48EE9		51.45	0.04	0.02	49.70	-0.16	-0.10	BT
FGULB9		50.00	-1.41	-0.90	50.00	0.14	0.09	HH
GDNMBZ		53.80	2.39	1.53	51.10	1.24	0.81	BT
GT4QVA		48.90	-2.51	-1.60	47.42	-2.44	-1.59	BT
GY8UK9		51.10	-0.31	-0.20	49.75	-0.11	-0.07	BT
H67V3D		49.15	-2.26	-1.44	47.25	-2.61	-1.70	BT
H6PFA7		50.50	-0.91	-0.58	50.00	0.14	0.09	HH
HECFLA		52.50	1.09	0.70	52.00	2.14	1.39	HH
HFAQJX		51.90	0.49	0.31	50.75	0.89	0.58	BT
HJCM78		53.60	2.19	1.40	51.55	1.69	1.10	BT
HQ7UPC	*	51.50	0.09	0.06	52.50	2.64	1.72	HH
HTDE97		51.00	-0.41	-0.26	50.50	0.64	0.42	HH
HTE6HA		50.75	-0.66	-0.42	50.00	0.14	0.09	HH
K2F9KB		52.00	0.59	0.38	51.00	1.14	0.74	BT
KJHTHY		48.75	-2.66	-1.70	47.25	-2.61	-1.70	BT
KWBBC7		51.00	-0.41	-0.26	50.00	0.14	0.09	BT
KZP6R4		51.50	0.09	0.06	50.50	0.64	0.42	BT
L9JDB9		51.50	0.09	0.06	50.00	0.14	0.09	BT
LFJWC6		51.95	0.54	0.34	49.20	-0.66	-0.43	XX
LHJ6ET		51.50	0.09	0.06	50.00	0.14	0.09	HH
LXB3GN		51.00	-0.41	-0.26	49.00	-0.86	-0.56	HH
MBKXDY		49.50	-1.91	-1.22	47.50	-2.36	-1.54	XX
MG9K96		50.55	-0.86	-0.55	49.05	-0.81	-0.53	BT
NECRLK		52.35	0.94	0.60	52.50	2.64	1.72	BT
NFTNCY		52.00	0.59	0.38	49.50	-0.36	-0.23	BT



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
NPCXZT		49.90	-1.51	-0.97	48.45	-1.41	-0.92	BT
NRJEW3		50.50	-0.91	-0.58	50.50	0.64	0.42	BT
P8V947		48.65	-2.76	-1.76	47.40	-2.46	-1.60	XX
PHPU7V		52.00	0.59	0.38	50.00	0.14	0.09	HH
Q7DGT2		51.50	0.09	0.06	49.00	-0.86	-0.56	BT
Q7RA6U		52.00	0.59	0.38	51.00	1.14	0.74	HH
QQYD87		51.50	0.09	0.06	49.75	-0.11	-0.07	BT
QQZD3Z		51.05	-0.36	-0.23	49.50	-0.36	-0.23	BT
QWNVJW	X	59.00	7.59	4.85	57.00	7.14	4.65	HH
QXL7GK		51.00	-0.41	-0.26	48.50	-1.36	-0.88	BT
R3DUE3		51.25	-0.16	-0.10	48.00	-1.86	-1.21	XX
RGTTGH		50.50	-0.91	-0.58	48.50	-1.36	-0.88	HH
RH338U		49.00	-2.41	-1.54	47.00	-2.86	-1.86	HH
RJYD6H		53.50	2.09	1.33	53.00	3.14	2.05	HH
RXT6NY		49.00	-2.41	-1.54	48.50	-1.36	-0.88	XX
T3KRYX		53.50	2.09	1.33	51.50	1.64	1.07	XX
TJEWPF		52.50	1.09	0.70	52.00	2.14	1.39	HH
TKN7FR		52.00	0.59	0.38	50.15	0.29	0.19	BT
TR8AMU		49.80	-1.61	-1.03	48.70	-1.16	-0.75	BT
U8DVNV		52.00	0.59	0.38	50.00	0.14	0.09	HH
UX8B3E		50.50	-0.91	-0.58	50.00	0.14	0.09	BT
V4AEUY		53.50	2.09	1.33	51.25	1.39	0.91	HH
V7GYFD		51.50	0.09	0.06	49.50	-0.36	-0.23	BT
W3YYXC		52.50	1.09	0.70	51.00	1.14	0.74	XX
WFZVUJ		51.35	-0.06	-0.04	49.35	-0.51	-0.33	BT
WHMAJU		54.25	2.84	1.81	50.80	0.94	0.61	BT
WJHVCK		51.20	-0.21	-0.14	49.00	-0.86	-0.56	HH
WMH2VW	*	51.90	0.49	0.31	48.15	-1.71	-1.11	BT
WNDJTR		51.00	-0.41	-0.26	50.50	0.64	0.42	BT
WPAZ6N		50.00	-1.41	-0.90	49.00	-0.86	-0.56	BT
WREKWA		51.35	-0.06	-0.04	49.15	-0.71	-0.46	BT
X82NTP		52.00	0.59	0.38	50.50	0.64	0.42	XX
XCJNBQ		53.30	1.89	1.21	50.55	0.69	0.45	BT
XYVLRV		52.00	0.59	0.38	49.50	-0.36	-0.23	BT
Y7MHQK		48.50	-2.91	-1.86	48.00	-1.86	-1.21	BT
YC9DRP		53.00	1.59	1.01	51.00	1.14	0.74	BT
Z69DU9		53.00	1.59	1.01	50.00	0.14	0.09	BT



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
ZA48PN		51.50	0.09	0.06	49.50	-0.36	-0.23	BT
ZBV2ND	*	56.00	4.59	2.93	54.00	4.14	2.70	BT
ZEW84J		52.20	0.79	0.50	50.50	0.64	0.42	BT
ZKNC2U		51.90	0.49	0.31	50.90	1.04	0.68	XX

Grand Means		Summary Statistics	
	51.412 Type A		49.859 Type A
Std Dev Btwn Labs	1.565 Type A		1.536 Type A
Statistics based on 114 of 116 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & C63-C64: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #620

27X2MM (X) - Data for sample group C63-C64 are high.

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

Key to Instrument Codes Reported by Participants

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

Results by Reading Time (as reported by laboratory)

Reading Time	Sample C61-C62 <i>Polyisoprene compound, batch #1</i>			Sample C63-C64 <i>Polyisoprene compound, batch #2</i>			Labs Incl / Rpt	
	Group Mean	Btwn Lab STD	Diff from GM	Group Mean	Btwn Lab STD	Diff from GM		
Select from list below	50.00	0.00	-1.41	50.00	0.00	0.14	1	1
Readings taken within 0 - 5 seconds	51.59	1.35	0.18	50.08	1.23	0.22	76	81
Readings taken at 5 seconds	50.26	1.31	-1.15	48.47	1.14	-1.39	15	15
Readings taken after 5+ seconds	50.10	1.44	-1.31	49.11	1.32	-0.75	4	5
Maximum hardness indicator used	51.85	2.02	0.44	50.22	2.11	0.36	14	14

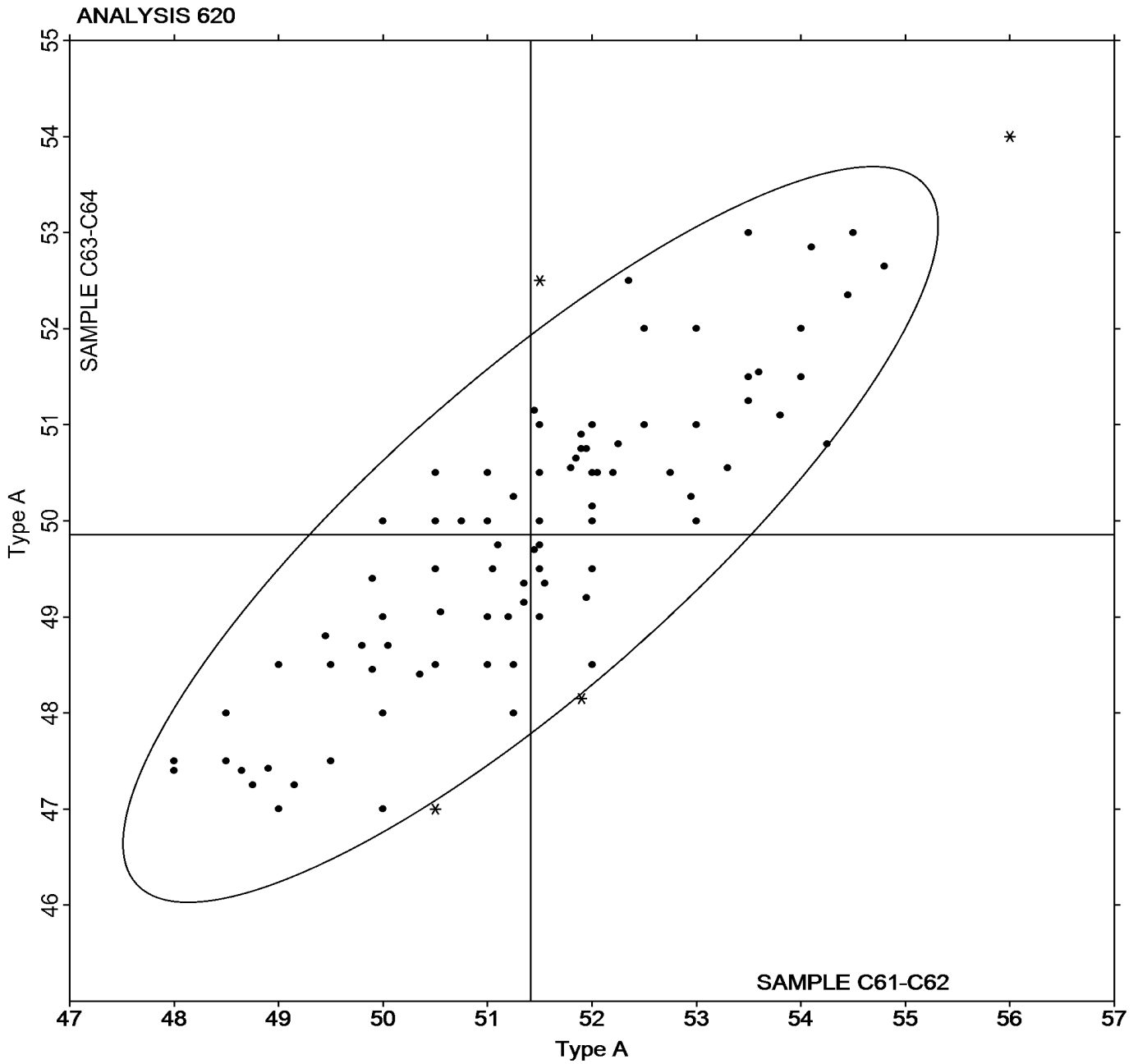


Rubber Interlaboratory Testing Program
Analysis 620
Hardness (Shore A/Type A)

Report #189
3rd Qtr 2016

Grand Mean Sample C61-C62 = 51.412 Type A

Grand Mean Sample C63-C64 = 49.859 Type A





Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
27X2MM		1.136	-0.002	-1.03	1.138	0.001	0.38
2WB42N		1.141	0.002	0.94	1.139	0.002	0.77
2Z9LYG		1.140	0.001	0.30	1.138	0.001	0.38
3GYR6N		1.141	0.002	0.94	1.142	0.004	1.74
44JE4Z		1.143	0.004	1.61	1.139	0.002	0.88
6JC9CJ		1.140	0.001	0.30	1.136	-0.001	-0.40
6QUYFQ		1.139	0.000	-0.02	1.136	-0.001	-0.39
72RYQA		1.142	0.003	1.25	1.141	0.004	1.39
78WX4K		1.140	0.001	0.30	1.139	0.002	0.77
7AL6NG		1.137	-0.002	-0.75	1.134	-0.003	-1.18
7NK72H		1.139	0.000	0.03	1.137	0.000	-0.13
7PWNH3		1.140	0.001	0.54	1.139	0.002	0.63
7PZDKE		1.138	-0.001	-0.54	1.137	0.000	-0.01
8C4LEZ		1.140	0.001	0.45	1.138	0.001	0.28
A774QY		1.140	0.001	0.30	1.138	0.000	0.18
AHKY9J		1.134	-0.005	-2.19	1.132	-0.005	-2.04
AXCWAE		1.140	0.001	0.34	1.136	-0.001	-0.23
B74EKG		1.139	0.000	0.09	1.138	0.000	0.18
BA88HL		1.141	0.002	0.73	1.139	0.001	0.57
BA97EF		1.137	-0.002	-0.88	1.133	-0.004	-1.52
BK73GG		1.137	-0.001	-0.56	1.136	-0.001	-0.23
CC9RLC		1.139	0.001	0.28	1.137	0.000	0.01
CKKT37		1.136	-0.003	-1.20	1.133	-0.004	-1.54
CRM3AY		1.137	-0.002	-0.96	1.135	-0.003	-0.99
DQLPYC		1.140	0.001	0.51	1.139	0.001	0.57
DVDWK7	*	1.143	0.004	1.74	1.137	0.000	0.16
EMFGCD		1.137	-0.002	-0.92	1.135	-0.002	-0.85
ENTTC3		1.136	-0.003	-1.16	1.132	-0.005	-1.89
EUZKGU		1.142	0.003	1.27	1.138	0.001	0.44
F48EE9		1.142	0.003	1.15	1.141	0.003	1.35
FGULB9		1.133	-0.006	-2.40	1.133	-0.004	-1.73
GDNMBZ		1.140	0.001	0.37	1.137	0.000	0.14
GY8UK9		1.141	0.002	0.94	1.138	0.000	0.18
H67V3D	X	1.150	0.011	4.74	1.140	0.003	1.16
HECFLA		1.140	0.002	0.66	1.138	0.001	0.55
HJCM78		1.138	-0.001	-0.54	1.135	-0.002	-0.79
HQ7UPC		1.137	-0.002	-0.96	1.136	-0.001	-0.40
HTE6HA		1.140	0.001	0.32	1.136	-0.001	-0.25



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample C61-C62			Sample C63-C64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
K2F9KB		1.137	-0.002	-0.75	1.136	-0.001	-0.40
KJHTHY		1.137	-0.001	-0.58	1.137	0.000	-0.03
KWBBC7		1.138	-0.001	-0.44	1.137	0.000	-0.17
KZP6R4		1.138	-0.001	-0.31	1.137	0.000	-0.05
L9JDB9		1.138	-0.001	-0.54	1.136	-0.001	-0.40
LFJWC6		1.137	-0.002	-0.96	1.133	-0.005	-1.77
LHJ6ET		1.140	0.001	0.51	1.140	0.003	1.16
MBKXDY	X	1.148	0.009	3.68	1.146	0.008	3.31
MG9K96	X	1.132	-0.007	-2.87	1.137	0.000	-0.01
NFTNCY		1.139	0.000	0.09	1.136	-0.001	-0.40
NRJEW3		1.142	0.003	1.36	1.140	0.002	0.96
PHPU7V		1.137	-0.002	-0.75	1.136	-0.001	-0.40
Q7DGT2		1.143	0.004	1.57	1.142	0.004	1.74
QQYD87		1.137	-0.002	-0.69	1.134	-0.003	-1.01
QWNVJW	X	1.129	-0.010	-4.18	1.127	-0.010	-3.78
R3DUE3		1.141	0.002	0.73	1.138	0.000	0.18
RH338U	X	1.130	-0.009	-3.71	1.120	-0.017	-6.65
T3KRYX		1.143	0.004	1.78	1.141	0.003	1.35
TJEWPF	*	1.133	-0.006	-2.44	1.134	-0.003	-1.18
TKN7FR	*	1.135	-0.004	-1.70	1.130	-0.007	-2.86
TR8AMU		1.138	-0.001	-0.33	1.137	0.000	-0.01
U8DVNV		1.141	0.002	0.73	1.142	0.005	1.94
V4AEUY		1.140	0.002	0.64	1.139	0.002	0.79
V7GYFD		1.139	0.000	-0.12	1.135	-0.002	-0.79
WFZVUJ		1.141	0.002	0.73	1.139	0.002	0.92
WJHVCK		1.140	0.001	0.30	1.138	0.000	0.18
WMH2VW		1.139	0.000	0.13	1.136	-0.001	-0.31
WNDJTR		1.140	0.001	0.30	1.141	0.003	1.35
WREKWV	X	1.133	-0.006	-2.65	1.126	-0.011	-4.31
XCJNBQ		1.138	0.000	-0.14	1.137	0.000	-0.13
XEMF6P		1.134	-0.005	-2.08	1.134	-0.003	-1.36
XYVLRV		1.140	0.001	0.39	1.138	0.000	0.18
YC9DRP		1.142	0.003	1.42	1.141	0.004	1.39
ZA48PN		1.137	-0.002	-0.86	1.135	-0.002	-0.79
ZBV2ND		1.143	0.004	1.78	1.141	0.003	1.35
ZEW84J		1.138	-0.001	-0.54	1.138	0.001	0.38
ZKNC2U	*	1.138	-0.001	-0.44	1.140	0.003	1.22



Rubber Interlaboratory Testing Program
Analysis 621
Density

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means	1.1388 g/cm ³ (Mg/m ³)	1.1370 g/cm ³ (Mg/m ³)	
Stnd Dev Btwn Labs	0.0024 g/cm ³ (Mg/m ³)	0.0026 g/cm ³ (Mg/m ³)	
Statistics based on 69 of 75 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & C63-C64: Polyisoprene compound, batch #2

Comments on Assigned Data Flags for Test #621

H67V3D (X) - Data for sample group C61-C62 are high.

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

MG9K96 (X) - Data for sample group C61-C62 are low. Inconsistent within the determinations of sample group C61-C62.

QWNVJW (X) - Data for all samples are low. Possible Systematic Error. Inconsistent within the determinations of sample group C63-C64.

RH338U (X) - Data for all samples are low. Possible Systematic Error.

WREKWV (X) - Data for sample group C63-C64 are low. Inconsistent within the determinations of sample group C61-C62.



Rubber Interlaboratory Testing Program

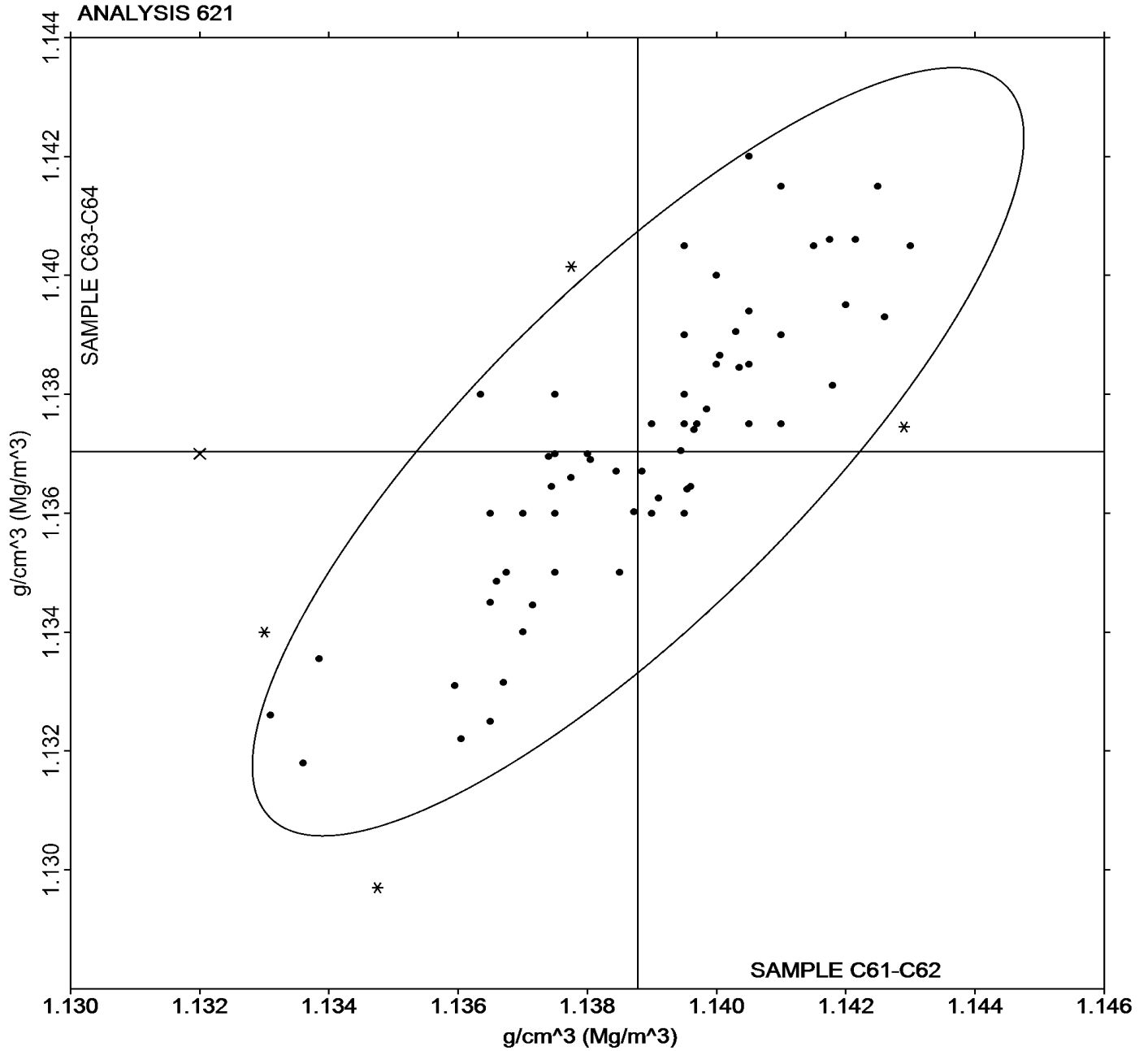
Analysis 621

Density

Report #189
3rd Qtr 2016

Grand Mean Sample **C61-C62** = 1.1388 g/cm³
(Mg/m³)

Grand Mean Sample **C63-C64** = 1.1370 g/cm³
(Mg/m³)





Rubber Interlaboratory Testing Program

Report #189

Analysis 630

3rd Qtr 2016

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

WebCode	Data Flag	Sample C61-C62			Sample L61-L62		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Z9LYG		3,460.3	80.6	0.69	3,384.6	231.2	1.31
3E6XA7		3,573.8	194.0	1.66	3,486.7	333.3	1.88
6QUYFQ		3,364.9	-14.8	-0.13	3,111.1	-42.3	-0.24
6R6JPZ		3,439.6	59.9	0.51	3,028.8	-124.6	-0.70
72RYQA		3,397.8	18.0	0.15	3,395.8	242.4	1.37
78WX4K		3,504.0	124.3	1.07	3,315.5	162.1	0.92
7AL6NG		3,441.3	61.6	0.53	3,268.5	115.1	0.65
7BUJQG	*	3,476.5	96.8	0.83	2,839.5	-313.9	-1.77
7PZDKE		3,433.9	54.2	0.46	3,293.7	140.2	0.79
A774QY		3,335.9	-43.8	-0.38	3,043.3	-110.1	-0.62
A774TK		3,361.5	-18.2	-0.16	3,237.5	84.1	0.48
BA88HL		3,328.6	-51.1	-0.44	3,299.6	146.2	0.83
BK73GG	X	3,481.2	101.5	0.87	2,510.7	-642.7	-3.63
CKKT37		3,174.0	-205.7	-1.76	2,845.5	-307.9	-1.74
CRM3AY		3,190.9	-188.9	-1.62	2,894.3	-259.2	-1.47
CXATU9		3,320.0	-59.7	-0.51	3,218.0	64.6	0.37
DVDWK7		3,521.3	141.5	1.21	3,245.6	92.2	0.52
GY8UK9		3,344.5	-35.2	-0.30	3,148.5	-4.9	-0.03
J3GR6Z		3,193.6	-186.2	-1.60	3,174.3	20.8	0.12
LFJWC6		3,533.5	153.8	1.32	3,307.0	153.6	0.87
LHJ6ET		3,297.5	-82.2	-0.70	2,939.0	-214.4	-1.21
MBKXDY	*	3,062.5	-317.2	-2.72	3,048.5	-104.9	-0.59
NFTNCY		3,337.5	-42.2	-0.36	3,067.5	-85.9	-0.49
P8V947		3,324.0	-55.7	-0.48	3,216.5	63.1	0.36
PHPU7V		3,303.5	-76.2	-0.65	2,730.0	-423.4	-2.39
QQYD87		3,520.5	140.8	1.21	3,254.0	100.6	0.57
QQZD3Z		3,418.5	38.8	0.33	3,250.0	96.6	0.55
QWNVJW		3,363.3	-16.4	-0.14	3,036.6	-116.8	-0.66
RH338U	X	3,092.7	-287.0	-2.46	2,384.6	-768.8	-4.35
RXT6NY		3,488.2	108.5	0.93	3,277.9	124.5	0.70
TJEWPF		3,424.0	44.3	0.38	2,908.5	-244.9	-1.38
TKN7FR		3,408.4	28.7	0.25	3,189.4	36.0	0.20
V4AEUY		3,416.0	36.3	0.31	2,914.0	-239.4	-1.35
V7GYFD		3,384.0	4.3	0.04	3,209.0	55.6	0.31
W3YYXC		3,425.2	45.4	0.39	3,276.1	122.7	0.69
WFZVUJ		3,571.1	191.4	1.64	3,302.7	149.3	0.84
WHMAJU		3,335.9	-43.8	-0.38	3,198.1	44.7	0.25
ZEW84J		3,194.5	-185.3	-1.59	3,167.1	13.7	0.08



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means			
	3,379.73 psi		3,153.41 psi
Stnd Dev Btwn Labs			
	116.66 psi		176.88 psi
Statistics based on 36 of 38 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	23.302 MPa		21.74 MPa
Stnd Dev Btwn Labs			
	0.804 MPa		1.22 MPa
Statistics based on 36 of 38 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & L61-L62: Polyisoprene compound, batch #1

Comments on Assigned Data Flags for Test #630

BK73GG (X) - Data for sample group L61-L62 are low.

RH338U (X) - Data for sample group L61-L62 are low. Inconsistent within the determinations of sample group L61-L62.



Rubber Interlaboratory Testing Program

Report #189

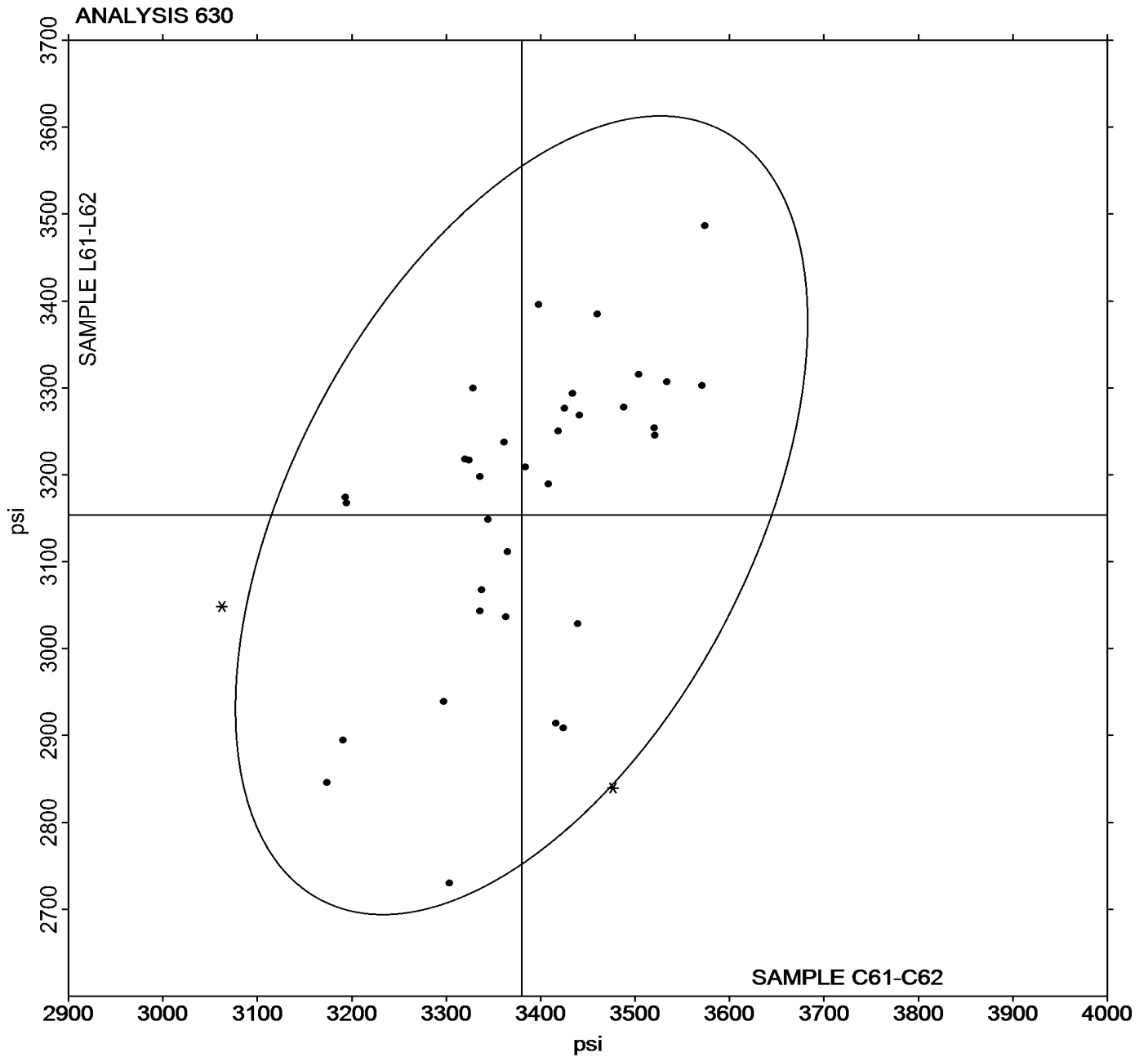
Analysis 630

3rd Qtr 2016

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

Grand Mean Sample C61-C62 = 3,379.73 psi

Grand Mean Sample L61-L62 = 3,153.41 psi





Rubber Interlaboratory Testing Program

Report #189

Analysis 631

3rd Qtr 2016

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

WebCode	Data Flag	Sample C61-C62			Sample L61-L62		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Z9LYG		600.6	-4.9	-0.16	611.0	16.4	0.55
3E6XA7		572.0	-33.5	-1.11	575.5	-19.1	-0.64
6QUYFQ		586.6	-18.9	-0.62	582.1	-12.5	-0.42
6R6JPZ		607.7	2.2	0.07	576.8	-17.8	-0.60
72RYQA		637.1	31.6	1.04	616.8	22.2	0.75
78WX4K		548.5	-57.0	-1.88	564.0	-30.6	-1.03
7AL6NG		595.7	-9.8	-0.32	602.6	8.0	0.27
7BUJQG		635.5	30.0	0.99	633.0	38.4	1.29
7PZDKE		585.4	-20.1	-0.66	585.9	-8.8	-0.29
A774QY		596.5	-9.0	-0.30	573.5	-21.1	-0.71
A774TK		624.0	18.5	0.61	584.5	-10.1	-0.34
BA88HL		617.5	12.0	0.40	611.0	16.4	0.55
BK73GG		618.6	13.1	0.43	572.7	-21.9	-0.74
CKKT37		614.0	8.5	0.28	599.0	4.4	0.15
CRM3AY		638.0	32.5	1.07	634.5	39.9	1.34
CXATU9		582.0	-23.5	-0.78	587.5	-7.1	-0.24
DVDWK7		597.4	-8.1	-0.27	581.0	-13.6	-0.46
GY8UK9		627.5	22.0	0.73	605.5	10.9	0.37
J3GR6Z		560.5	-45.0	-1.49	566.5	-28.1	-0.95
LHJ6ET		594.0	-11.5	-0.38	572.5	-22.1	-0.74
MBKXDY	*	610.5	5.0	0.17	642.0	47.4	1.59
NFTNCY		592.5	-13.0	-0.43	584.5	-10.1	-0.34
P8V947		601.0	-4.5	-0.15	596.0	1.4	0.05
PHPU7V		622.5	17.0	0.56	607.0	12.4	0.42
QQYD87		600.5	-5.0	-0.17	587.5	-7.1	-0.24
QQZD3Z		640.0	34.5	1.14	616.5	21.9	0.74
QWNVJW		590.5	-15.0	-0.50	568.0	-26.6	-0.89
RH338U	*	547.8	-57.7	-1.90	509.2	-85.4	-2.87
RXT6NY	*	687.5	82.0	2.71	670.5	75.9	2.55
TJEWPF		653.0	47.5	1.57	605.0	10.4	0.35
TKN7FR		574.9	-30.6	-1.01	578.1	-16.5	-0.56
V4AEUY		593.5	-12.0	-0.40	589.5	-5.1	-0.17
V7GYFD		633.0	27.5	0.91	621.0	26.4	0.89
W3YYXC		624.4	18.9	0.62	604.3	9.7	0.33
WFZVUJ		638.6	33.1	1.09	638.6	44.0	1.48
WHMAJU		605.2	-0.3	-0.01	607.2	12.6	0.42
ZEW84J		549.0	-56.5	-1.87	539.5	-55.1	-1.85



Rubber Interlaboratory Testing Program

Report #189

Analysis 631

3rd Qtr 2016

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

		Summary Statistics	
Grand Means	605.50 percent		594.60 percent
Std Dev Btwn Labs	30.28 percent		29.73 percent
Statistics based on 37 of 37 reporting participants			

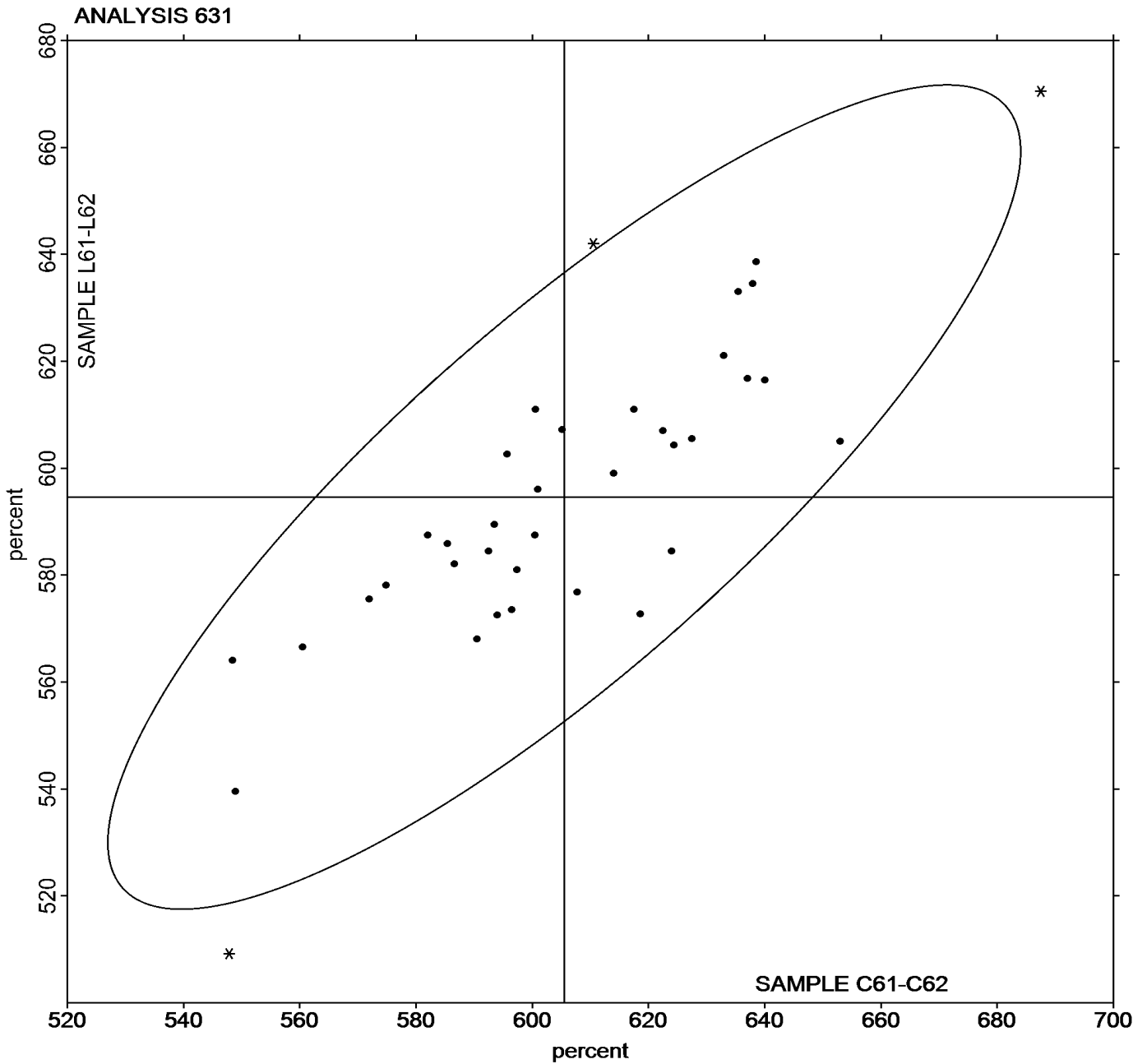
Samples C61-C62: Polyisoprene compound, batch #1 & L61-L62: Polyisoprene compound, batch #1



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

Grand Mean Sample C61-C62 = 605.50 percent

Grand Mean Sample L61-L62 = 594.60 percent





Rubber Interlaboratory Testing Program

Report #189

Analysis 632

3rd Qtr 2016

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

WebCode	Data Flag	Sample C61-C62			Sample L61-L62		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Z9LYG		1,113.2	23.1	0.32	1,024.6	45.2	0.44
3E6XA7		1,174.1	84.0	1.15	1,102.3	122.9	1.18
6QUYFQ		1,143.6	53.5	0.73	1,013.1	33.7	0.32
6R6JPZ		1,023.3	-66.9	-0.91	947.1	-32.3	-0.31
72RYQA		1,012.3	-77.9	-1.06	1,056.1	76.7	0.74
78WX4K		1,168.0	77.9	1.06	1,070.0	90.6	0.87
7AL6NG		1,116.3	26.2	0.36	1,000.4	21.0	0.20
7BUJQG	*	1,037.0	-53.1	-0.72	724.0	-255.4	-2.46
7PZDKE		1,184.1	93.9	1.28	1,028.5	49.1	0.47
A774QY		1,080.8	-9.3	-0.13	992.4	13.0	0.13
A774TK		1,047.5	-42.6	-0.58	1,034.5	55.1	0.53
BA88HL		1,006.6	-83.5	-1.14	1,051.5	72.1	0.69
BK73GG		1,102.1	11.9	0.16	799.2	-180.2	-1.74
CKKT37		999.0	-91.1	-1.24	862.5	-116.9	-1.13
CRM3AY		1,103.0	12.9	0.18	898.5	-80.9	-0.78
CXATU9		1,139.0	48.9	0.67	1,083.0	103.6	1.00
DVDWK7		1,115.9	25.8	0.35	1,045.1	65.6	0.63
GY8UK9		1,062.5	-27.6	-0.38	1,034.0	54.6	0.53
J3GR6Z		1,164.5	74.4	1.01	1,126.3	146.9	1.42
LHJ6ET		1,078.5	-11.6	-0.16	941.5	-37.9	-0.37
MBKXDY		1,022.0	-68.1	-0.93	835.5	-143.9	-1.39
NFTNCY		1,126.0	35.9	0.49	970.0	-9.4	-0.09
P8V947		1,123.5	33.4	0.46	1,025.5	46.1	0.44
PHPU7V		1,025.0	-65.1	-0.89	858.0	-121.4	-1.17
QQYD87		1,127.5	37.4	0.51	1,016.5	37.1	0.36
QQZD3Z		1,009.0	-81.1	-1.11	1,015.5	36.1	0.35
QWNVJW		1,104.5	14.4	0.20	992.0	12.6	0.12
RH338U		1,166.1	76.0	1.04	978.9	-0.6	-0.01
RXT6NY	*	848.5	-241.6	-3.30	761.5	-218.0	-2.10
TJEWPF		1,026.5	-63.6	-0.87	857.5	-121.9	-1.18
TKN7FR		1,210.4	120.2	1.64	1,074.7	95.3	0.92
V4AEUY		1,138.5	48.4	0.66	967.0	-12.4	-0.12
V7GYFD	X	1,016.0	-74.1	-1.01	941.0	-38.4	-0.37
W3YYXC		1,046.9	-43.2	-0.59	965.4	-14.1	-0.14
WFZVUJ		1,070.9	-19.2	-0.26	880.5	-99.0	-0.95
WHMAJU		1,117.5	27.4	0.37	1,025.4	46.0	0.44
ZEW84J		1,209.9	119.8	1.63	1,200.7	221.3	2.13



Rubber Interlaboratory Testing Program

Report #189

Analysis 632

3rd Qtr 2016

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

		Summary Statistics	
Grand Means	1,090.11 psi		979.42 psi
Stnd Dev Btwn Labs	73.32 psi		103.76 psi
Statistics based on 36 of 37 reporting participants			

		Summary Statistics in SI Units	
Grand Means	7.5160 MPa		6.75 MPa
Stnd Dev Btwn Labs	0.5055 MPa		0.72 MPa
Statistics based on 36 of 37 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & L61-L62: Polyisoprene compound, batch #1

Comments on Assigned Data Flags for Test #632

V7GYFD (X) - Data appear to be transposed between Analysis #632 and Analysis #633. Data switched by CTS.



Rubber Interlaboratory Testing Program

Report #189

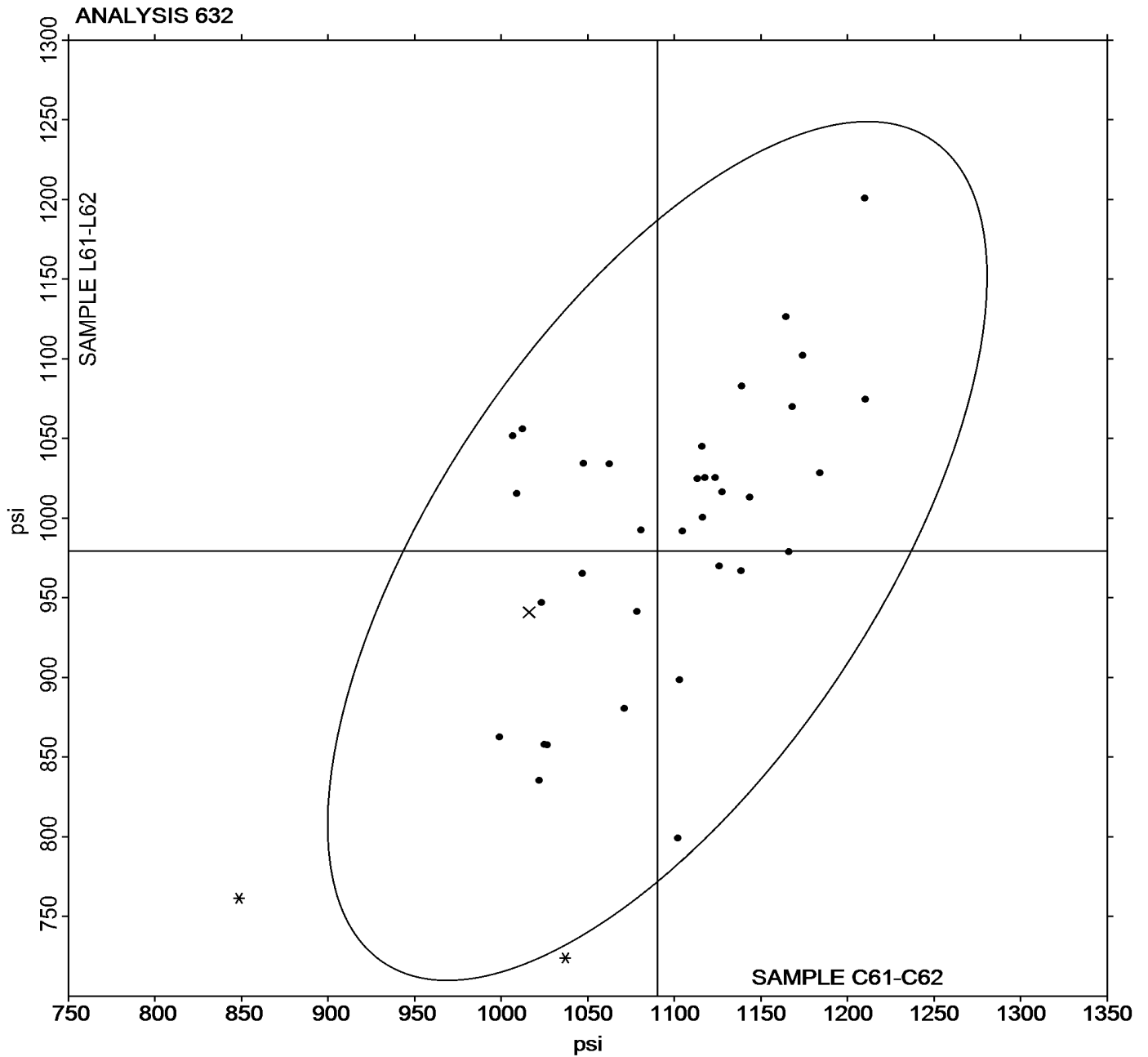
Analysis 632

3rd Qtr 2016

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

Grand Mean Sample C61-C62 = 1,090.11 psi

Grand Mean Sample L61-L62 = 979.42 psi





Rubber Interlaboratory Testing Program

Report #189

Analysis 633

3rd Qtr 2016

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

WebCode	Data Flag	Sample C61-C62			Sample L61-L62		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2Z9LYG		243.5	8.5	0.59	228.0	17.4	0.81
3E6XA7		250.9	16.0	1.11	226.3	15.6	0.73
6QUYFQ		239.3	4.4	0.30	208.1	-2.5	-0.12
72RYQA		217.4	-17.6	-1.22	222.7	12.0	0.56
78WX4K		237.0	2.0	0.14	218.0	7.4	0.35
7AL6NG		239.1	4.2	0.29	215.5	4.8	0.23
7BUJQG		222.0	-13.0	-0.90	164.5	-46.1	-2.16
7PZDKE		247.5	12.5	0.87	215.1	4.5	0.21
A774QY		232.8	-2.2	-0.15	214.3	3.7	0.17
A774TK		231.0	-4.0	-0.27	224.5	13.9	0.65
BA88HL		220.5	-14.5	-1.01	232.1	21.4	1.01
BK73GG	*	236.0	1.0	0.07	165.6	-45.0	-2.11
CKKT37		222.0	-13.0	-0.90	190.0	-20.6	-0.97
CRM3AY		227.7	-7.2	-0.50	189.3	-21.3	-1.00
CXATU9		234.0	-1.0	-0.07	226.0	15.4	0.72
DVDWK7		249.6	14.6	1.01	240.8	30.1	1.41
GY8UK9		236.5	1.5	0.11	232.0	21.4	1.00
J3GR6Z		251.7	16.7	1.16	237.3	26.6	1.25
LFJWC6	X	592.0	357.0	24.78	588.5	377.9	17.72
LHJ6ET		226.5	-8.5	-0.59	194.5	-16.1	-0.76
MBKXDY		219.5	-15.5	-1.07	184.5	-26.1	-1.22
NFTNCY		238.0	3.0	0.21	202.5	-8.1	-0.38
P8V947		253.5	18.5	1.29	237.0	26.4	1.24
PHPU7V		226.5	-8.5	-0.59	190.5	-20.1	-0.94
QQYD87		248.0	13.0	0.90	222.5	11.9	0.56
QQZD3Z		217.5	-17.5	-1.21	213.5	2.9	0.14
QWNVJW		231.5	-3.5	-0.24	205.5	-5.1	-0.24
RH338U		226.3	-8.7	-0.60	187.2	-23.4	-1.10
RXT6NY		200.2	-34.8	-2.42	178.4	-32.2	-1.51
TJEWPF		230.5	-4.5	-0.31	193.0	-17.6	-0.83
TKN7FR		262.5	27.6	1.91	230.6	20.0	0.94
V4AEUY		265.5	30.5	2.12	222.5	11.9	0.56
V7GYFD	X	222.5	-12.5	-0.86	205.5	-5.1	-0.24
W3YYXC		215.6	-19.4	-1.34	202.1	-8.5	-0.40
WFZVUJ		230.2	-4.8	-0.33	193.0	-17.6	-0.83
WHMAJU		236.4	1.5	0.10	214.7	4.0	0.19
ZEW84J		257.1	22.1	1.54	249.8	39.2	1.84



Rubber Interlaboratory Testing Program

Report #189

Analysis 633

3rd Qtr 2016

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

		Summary Statistics	
Grand Means	234.96 psi	210.62 psi	
Stnd Dev Btwn Labs	14.41 psi	21.33 psi	
Statistics based on 35 of 37 reporting participants			

		Summary Statistics in SI Units	
Grand Means	1.6200 MPa	1.45 MPa	
Stnd Dev Btwn Labs	0.0994 MPa	0.15 MPa	
Statistics based on 35 of 37 reporting participants			

Samples C61-C62: Polyisoprene compound, batch #1 & L61-L62: Polyisoprene compound, batch #1

Comments on Assigned Data Flags for Test #633

LFJWC6 (X) - Extreme Data.

V7GYFD (X) - Data appear to be transposed between Analysis #633 and Analysis #632. Data switched by CTS.



Rubber Interlaboratory Testing Program

Report #189

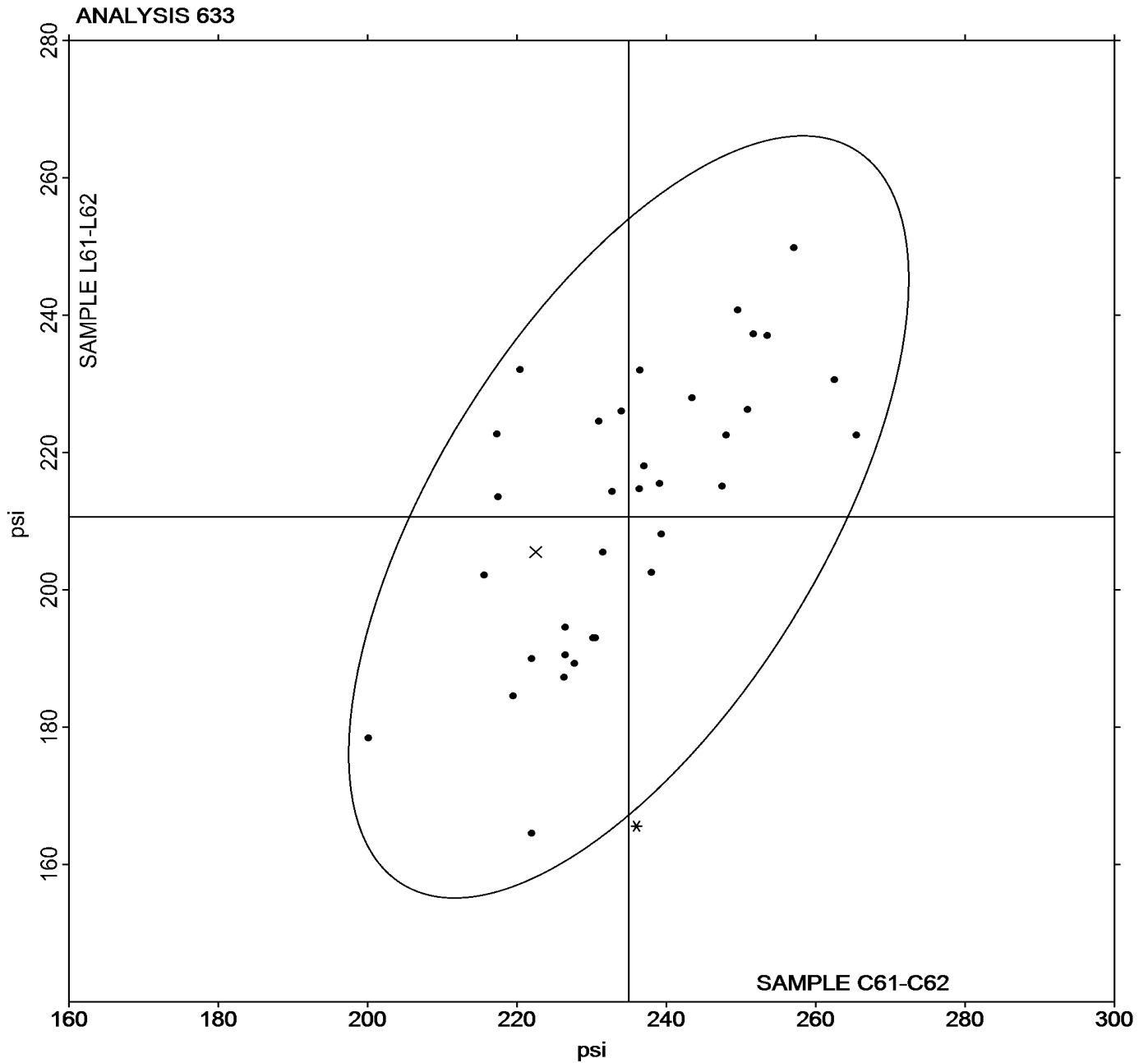
Analysis 633

3rd Qtr 2016

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

Grand Mean Sample C61-C62 = 234.96 psi

Grand Mean Sample L61-L62 = 210.62 psi





Rubber Interlaboratory Testing Program

Report #189

Analysis 660

3rd Qtr 2016

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

WebCode	Data Flag	Sample U61-U62			Sample U63-U64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
27X2MM		42.31	-1.94	-1.88	51.86	-1.94	-2.20	XX
2Z9LYG		45.40	1.15	1.12	54.63	0.83	0.94	MR
3E6XA7		44.03	-0.22	-0.21	53.68	-0.12	-0.14	XX
4QZQWM		43.42	-0.83	-0.81	53.27	-0.53	-0.60	MR
6DNLHE		43.57	-0.68	-0.66	53.07	-0.73	-0.83	MR
6QUYFQ	X	48.15	3.90	3.78	58.68	4.88	5.53	TA
7AL6NG		44.13	-0.12	-0.11	53.65	-0.15	-0.17	XX
A774QY		43.23	-1.02	-0.99	54.07	0.27	0.30	MR
A774TK		45.13	0.88	0.86	53.95	0.15	0.17	MR
AHKY9J		45.44	1.19	1.15	54.28	0.48	0.54	MR
BA97EF		44.84	0.59	0.57	54.42	0.62	0.71	MR
BK73GG		45.04	0.79	0.76	53.25	-0.55	-0.62	TV
CRM3AY		45.58	1.33	1.29	54.55	0.75	0.85	MR
DVDWK7		42.53	-1.72	-1.67	53.35	-0.45	-0.52	TA
GY8UK9		43.57	-0.68	-0.66	53.00	-0.80	-0.91	MR
H4FDJ2		44.62	0.37	0.36	55.02	1.22	1.38	MR
HFAQJX		44.03	-0.22	-0.21	53.17	-0.63	-0.72	MR
HKGEWY		44.28	0.03	0.03	54.30	0.50	0.57	MR
J3GR6Z		45.50	1.25	1.21	54.13	0.33	0.38	MR
L9JDB9		41.68	-2.57	-2.49	52.33	-1.47	-1.66	MP
LHJ6ET		44.96	0.71	0.69	53.67	-0.13	-0.15	MR
MBKXDY		43.55	-0.70	-0.68	52.95	-0.85	-0.96	XX
QQYD87		44.02	-0.23	-0.23	53.55	-0.25	-0.28	MR
QWNVJW		44.20	-0.05	-0.05	53.58	-0.22	-0.25	MR
RGTTGH	*	46.45	2.20	2.14	56.16	2.36	2.67	MR
RXT6NY		43.65	-0.60	-0.58	53.25	-0.55	-0.62	MR
T3KRYX		44.50	0.25	0.24	53.57	-0.23	-0.27	MR
TMUNDN		44.22	-0.03	-0.03	54.45	0.65	0.74	MR
V7GYFD		44.01	-0.24	-0.24	54.11	0.31	0.35	MR
WFZVUJ		45.38	1.13	1.10	53.95	0.15	0.17	MR
WHMAJU		44.17	-0.08	-0.08	52.77	-1.03	-1.17	MR
WNDJTR		43.50	-0.75	-0.73	53.63	-0.17	-0.19	MR
ZLFABL		43.82	-0.43	-0.42	53.92	0.12	0.13	MR
ZXQ3HT		45.48	1.23	1.20	55.88	2.08	2.36	MR



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means			
	44.249 ML 1 + 4		53.800 ML 1 + 4
Stnd Dev Btwn Labs			
	1.030 ML 1 + 4		0.882 ML 1 + 4
Statistics based on 33 of 34 reporting participants			

Samples U61-U62: NBR & U63-U64: Butyl

Comments on Assigned Data Flags for Test #660

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

Key to Instrument Codes Reported by Participants

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

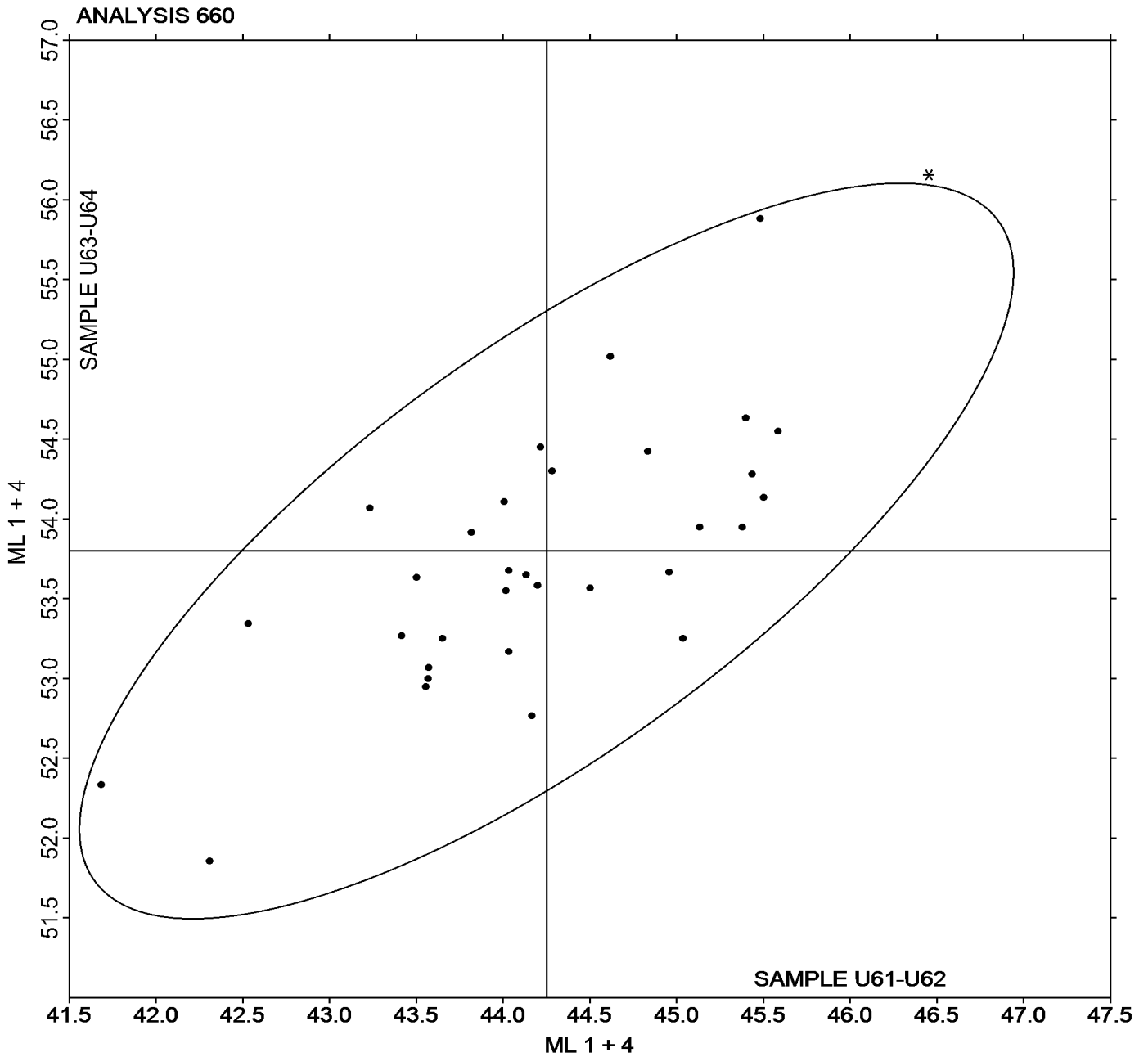


Rubber Interlaboratory Testing Program
Analysis 660
Mooney Viscosity: 4-minute readings (ML 1 + 4)

Report #189
3rd Qtr 2016

Grand Mean Sample **U61-U62** = 44.249 ML 1 + 4

Grand Mean Sample **U63-U64** = 53.800 ML 1 + 4





Rubber Interlaboratory Testing Program

Report #189

Analysis 661

3rd Qtr 2016

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

WebCode	Data Flag	Sample U61-U62			Sample U63-U64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		45.40	1.09	1.09	52.23	0.84	1.08	MR
3E6XA7		44.03	-0.28	-0.28	51.23	-0.17	-0.22	XX
4QZQWM		43.42	-0.90	-0.90	52.58	1.19	1.54	MR
6DNLHE		43.57	-0.74	-0.75	51.32	-0.08	-0.10	MR
7AL6NG		44.13	-0.18	-0.18	52.08	0.69	0.89	XX
A774QY		43.23	-1.08	-1.09	51.42	0.02	0.02	MR
A774TK		45.13	0.82	0.82	51.52	0.12	0.15	MR
AHKY9J		45.44	1.12	1.13	51.72	0.32	0.42	MR
BA97EF		44.84	0.52	0.52	52.17	0.77	1.00	MR
BK73GG		45.04	0.72	0.72	50.53	-0.87	-1.12	MZ
CRM3AY		45.58	1.27	1.27	52.02	0.62	0.80	MR
DVDWK7		42.53	-1.78	-1.79	51.63	0.23	0.30	TA
GY8UK9		43.57	-0.75	-0.75	50.92	-0.48	-0.62	MR
H4FDJ2		44.62	0.30	0.30	51.85	0.45	0.59	MR
HFAQJX		44.03	-0.28	-0.28	50.83	-0.56	-0.73	MR
HKGEWY		44.28	-0.03	-0.03	51.73	0.34	0.43	MR
J3GR6Z		45.50	1.19	1.19	51.80	0.40	0.52	MR
L9JDB9	*	41.68	-2.63	-2.64	49.55	-1.85	-2.39	MP
LHJ6ET		44.96	0.64	0.65	50.63	-0.76	-0.99	MP
MBKXDY		43.55	-0.76	-0.76	49.74	-1.66	-2.15	XX
QQYD87		44.02	-0.30	-0.30	50.82	-0.58	-0.75	MR
QWNVJW		44.20	-0.11	-0.11	51.23	-0.16	-0.21	MR
RGTTGH		46.45	2.14	2.15	52.97	1.57	2.03	MR
RXT6NY		43.65	-0.66	-0.67	51.00	-0.40	-0.52	MR
T3KRYX		44.50	0.19	0.19	51.11	-0.29	-0.37	MR
TMUNDN		44.22	-0.10	-0.10	51.85	0.45	0.59	MR
V7GYFD		44.01	-0.31	-0.31	51.87	0.47	0.60	MR
WFZVUJ		45.38	1.06	1.07	51.70	0.30	0.39	MR
WHMAJU		44.17	-0.15	-0.15	50.50	-0.90	-1.16	MR

Grand Means		Summary Statistics	
	44.315 ML 1 + 8		51.398 ML 1 + 8
Stnd Dev Btwn Labs	0.996 ML 1 + 8		0.772 ML 1 + 8
Statistics based on 29 of 29 reporting participants			

Samples U61-U62: NBR & U63-U64: Butyl



Rubber Interlaboratory Testing Program

Report #189

Analysis 661

3rd Qtr 2016

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

Key to Instrument Codes Reported by Participants

MP	Monsanto Compact Mooney Viscometer	MR	Alpha Technologies Model MV2000/MV2000E
MZ	Rebuilt Monsanto Mooney Viscometer	TA	TA Instruments (any model)
XX	Instrument make/model not specified by lab		



Rubber Interlaboratory Testing Program

Report #189

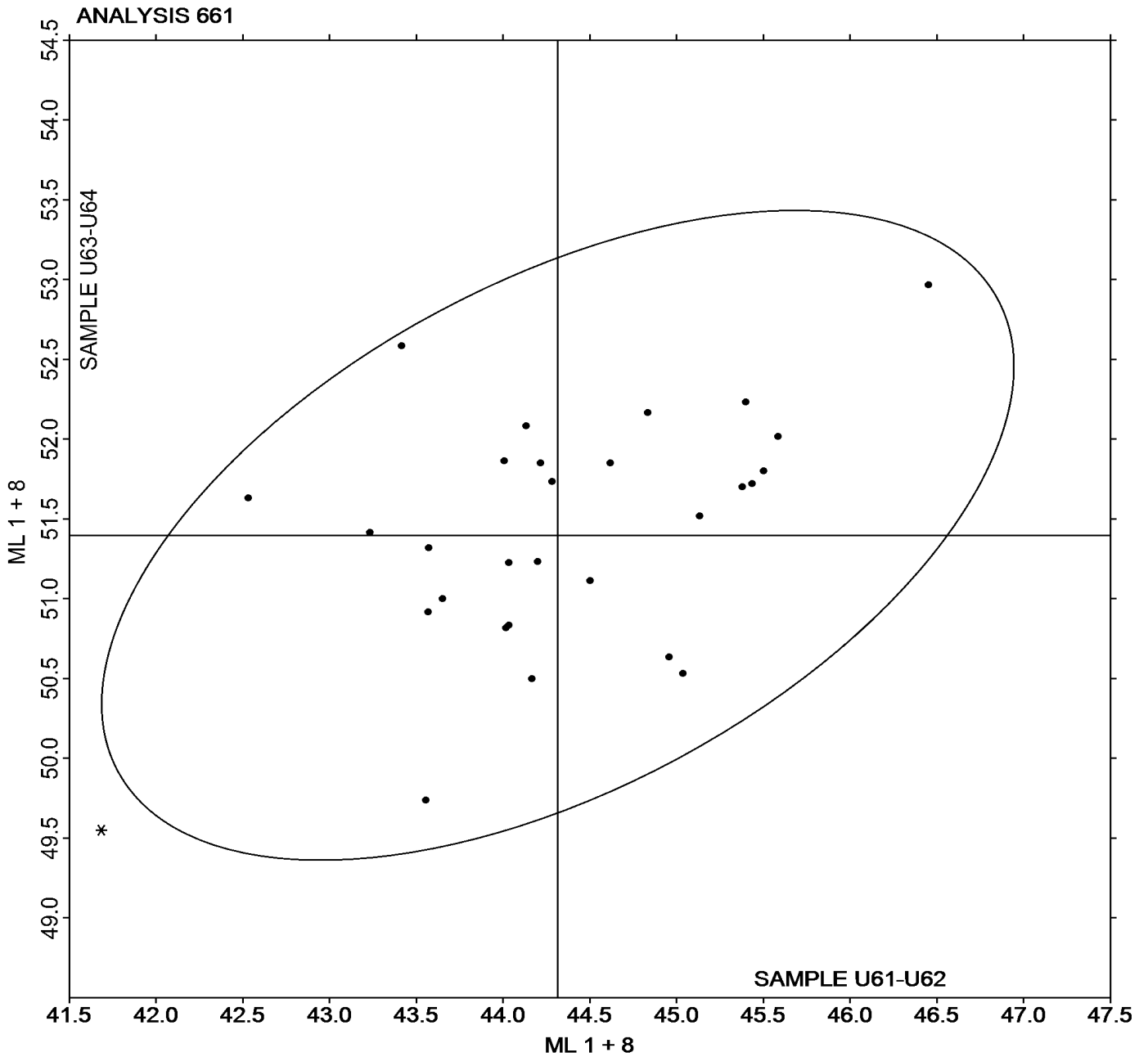
Analysis 661

3rd Qtr 2016

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

Grand Mean Sample **U61-U62** = 44.315 ML 1 + 8

Grand Mean Sample **U63-U64** = 51.398 ML 1 + 8





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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample U61-U62			Sample U63-U64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		4.853	-0.551	-0.33	7.803	0.049	0.03	MR
3E6XA7		5.060	-0.345	-0.20	5.123	-2.631	-1.74	XX
6QUYFQ		4.200	-1.205	-0.71	8.200	0.446	0.30	TA
A774TK		4.593	-0.811	-0.48	7.393	-0.361	-0.24	MR
BK73GG	*	11.060	5.655	3.35	11.120	3.366	2.23	TV
CRM3AY		4.745	-0.660	-0.39	7.585	-0.169	-0.11	MR
DVDWK7		5.060	-0.345	-0.20	5.125	-2.629	-1.74	TA
HKGEWY		5.733	0.329	0.19	8.333	0.579	0.38	MR
QQYD87		4.800	-0.605	-0.36	7.550	-0.204	-0.14	MR
QWNVJW		4.510	-0.895	-0.53	7.443	-0.311	-0.21	MR
RXT6NY		5.880	0.475	0.28	9.245	1.491	0.99	XX
V7GYFD		5.150	-0.255	-0.15	6.973	-0.781	-0.52	MR
WHMAJU		5.220	-0.185	-0.11	8.060	0.306	0.20	MR
ZLFABL		4.800	-0.605	-0.36	8.600	0.846	0.56	MR

Grand Means		Summary Statistics	
	5.4046 seconds		7.7539 seconds
Std Dev Btwn Labs	1.6878 seconds		1.5099 seconds
Statistics based on 14 of 14 reporting participants			

Samples U61-U62: NBR & U63-U64: Butyl

Key to Instrument Codes Reported by Participants

- | | | | |
|-----------|---|-----------|--|
| MR | Alpha Technologies Model MV2000/MV2000E | TA | TA Instruments (any model) |
| TV | Tech Pro Visc Tech (any model) | XX | Instrument make/model not specified by lab |

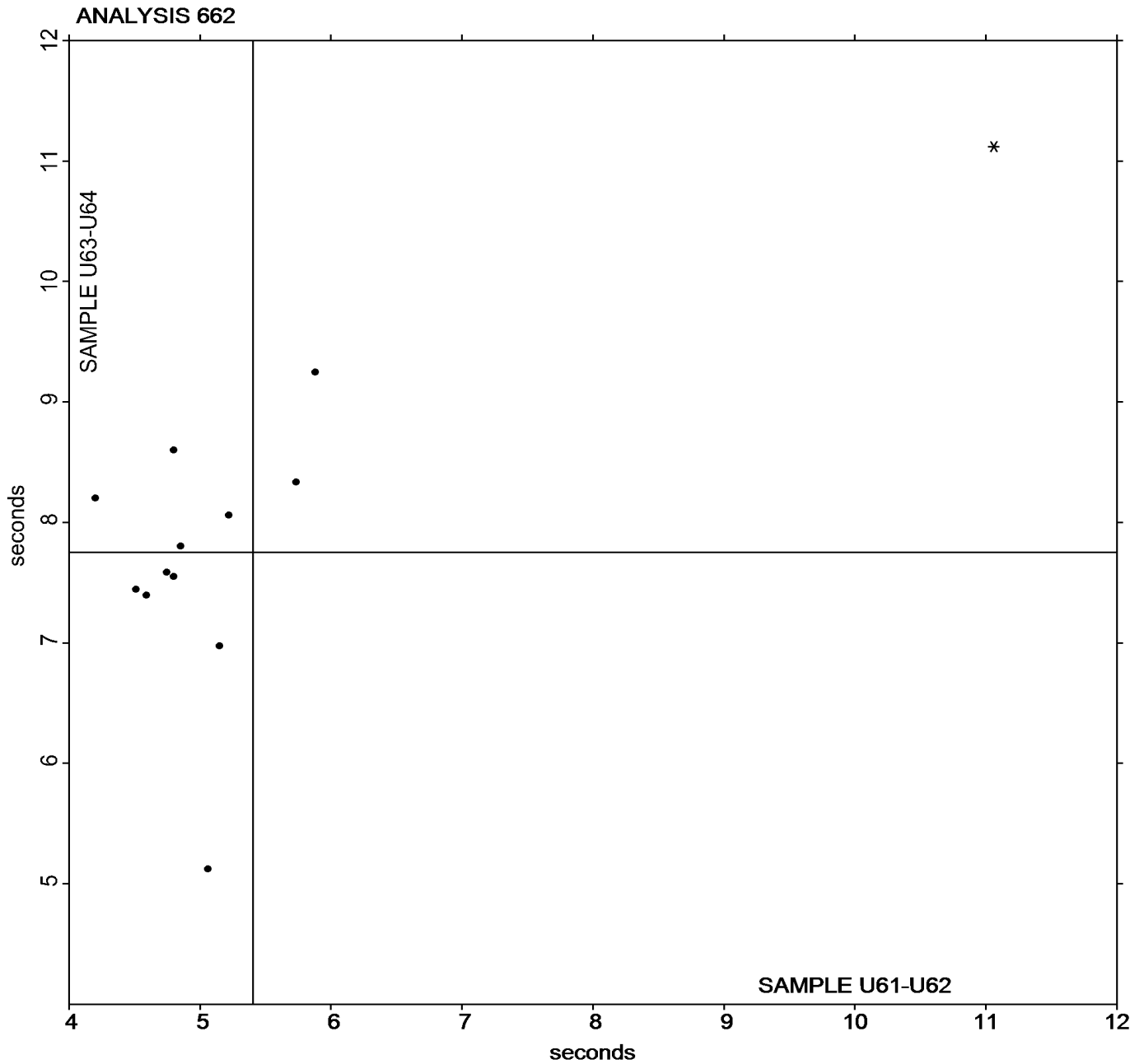


Rubber Interlaboratory Testing Program
Analysis 662
Mooney Stress Relaxation: t80 (seconds)

Report #189
3rd Qtr 2016

Grand Mean Sample **U61-U62** = 5.4046 seconds

Grand Mean Sample **U63-U64** = 7.7539 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 #189

Analysis 663

3rd Qtr 2016

Mooney Stress Relaxation: X30 (percent)

WebCode	Data Flag	Sample U61-U62			Sample U63-U64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		91.19	-0.79	-0.38	91.51	-0.33	-0.29	MR
3E6XA7		93.88	1.90	0.92	92.82	0.98	0.86	XX
6QUYFQ		92.99	1.01	0.49	91.12	-0.72	-0.63	TA
A774TK		91.50	-0.48	-0.24	92.03	0.19	0.17	MR
BK73GG		93.58	1.60	0.78	92.49	0.65	0.57	TV
CRM3AY		91.12	-0.86	-0.42	91.73	-0.11	-0.10	MR
DVDWK7		97.03	5.05	2.46	94.27	2.43	2.13	TA
HKGEWY		89.65	-2.33	-1.13	90.52	-1.32	-1.16	MR
QQYD87		91.47	-0.51	-0.25	92.05	0.21	0.18	MR
QWNVJW		91.90	-0.08	-0.04	92.00	0.16	0.14	MR
RXT6NY		88.87	-3.11	-1.52	89.47	-2.37	-2.08	XX
V7GYFD		91.14	-0.84	-0.41	92.20	0.36	0.32	MR
WHMAJU		91.44	-0.54	-0.27	91.72	-0.12	-0.11	MR

Summary Statistics			
Grand Means	91.980 percent	91.840 percent	
Std Dev Btwn Labs	2.054 percent	1.139 percent	
Statistics based on 13 of 13 reporting participants			

Samples U61-U62: NBR & U63-U64: Butyl

Key to Instrument Codes Reported by Participants

MR	Alpha Technologies Model MV2000/MV2000E	TA	TA Instruments (any model)
TV	Tech Pro Visc Tech (any model)	XX	Instrument make/model not specified by lab

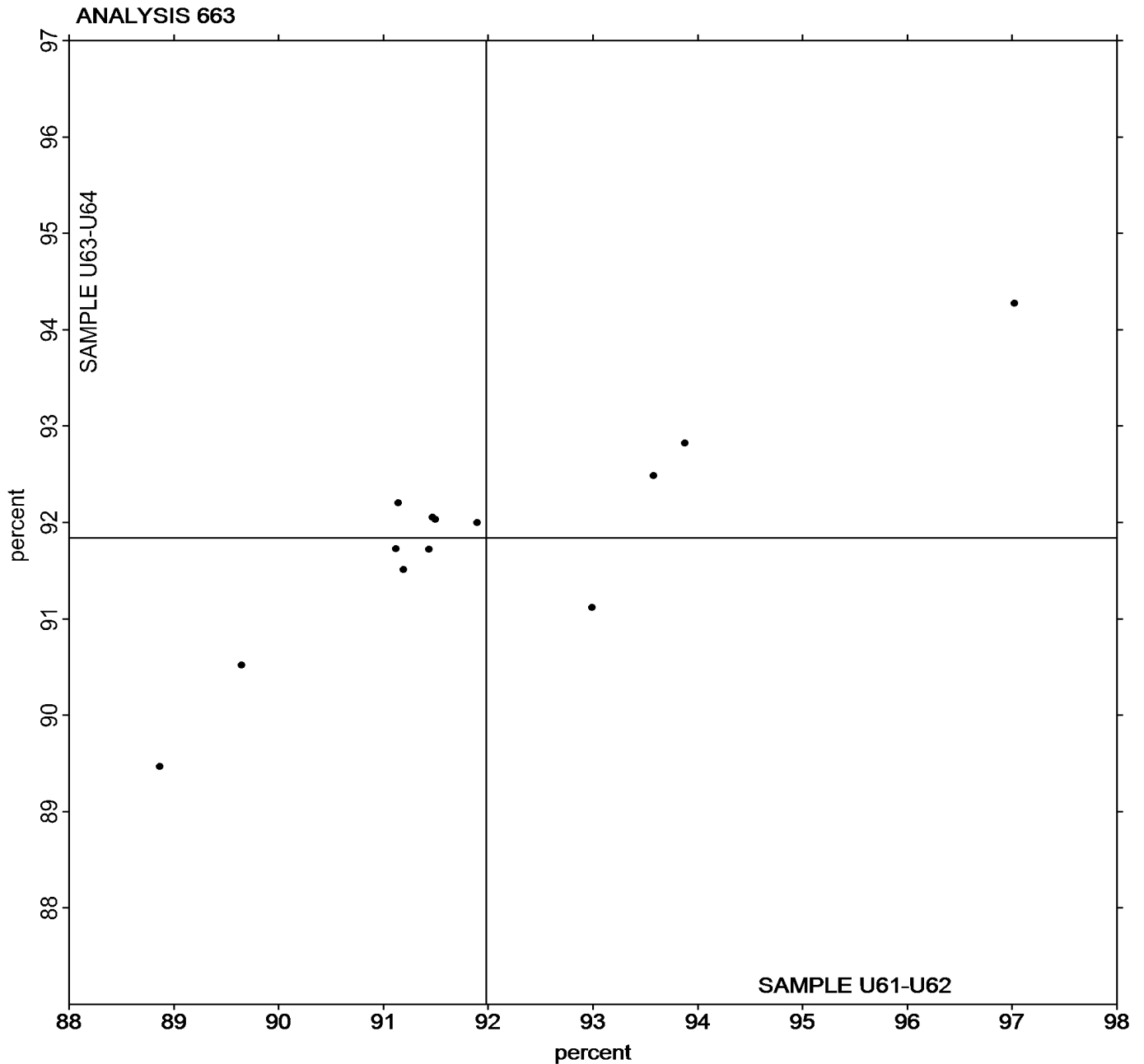


Rubber Interlaboratory Testing Program
Analysis 663
Mooney Stress Relaxation: X30 (percent)

Report #189
3rd Qtr 2016

Grand Mean Sample **U61-U62** = 91.980 percent

Grand Mean Sample **U63-U64** = 91.840 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 #189

Analysis 664

3rd Qtr 2016

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

WebCode	Data Flag	Sample U61-U62			Sample U63-U64			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		432.7	57.4	0.51	498.9	36.6	0.46	MR
3E6XA7		277.2	-98.1	-0.88	410.5	-51.8	-0.66	XX
6QUYFQ		237.6	-137.7	-1.23	376.4	-85.9	-1.09	TA
A774TK		413.7	38.4	0.34	464.3	2.0	0.03	MR
BK73GG		291.3	-84.0	-0.75	425.0	-37.4	-0.47	TV
CRM3AY		437.1	61.8	0.55	485.5	23.2	0.29	MR
DVDWK7		128.6	-246.7	-2.20	310.2	-152.1	-1.93	TA
HKGEWY		501.8	126.6	1.13	555.5	93.2	1.18	MR
QQYD87		403.3	28.0	0.25	458.8	-3.6	-0.05	MR
QWNVJW		387.3	12.0	0.11	462.0	-0.3	0.00	MR
RXT6NY		533.1	157.8	1.41	632.4	170.1	2.16	XX
V7GYFD		422.9	47.6	0.43	457.0	-5.3	-0.07	MR
WHMAJU		412.0	36.7	0.33	473.7	11.3	0.14	XX

Grand Means		Summary Statistics	
	375.26 M-s		462.33 M-s
Stnd Dev Btwn Labs	112.00 M-s		78.66 M-s
Statistics based on 13 of 13 reporting participants			

Samples U61-U62: NBR & U63-U64: Butyl

Key to Instrument Codes Reported by Participants

- MR Alpha Technologies Model MV2000/MV2000E
- TA TA Instruments (any model)
- TV Tech Pro Visc Tech (any model)
- XX Instrument make/model not specified by lab

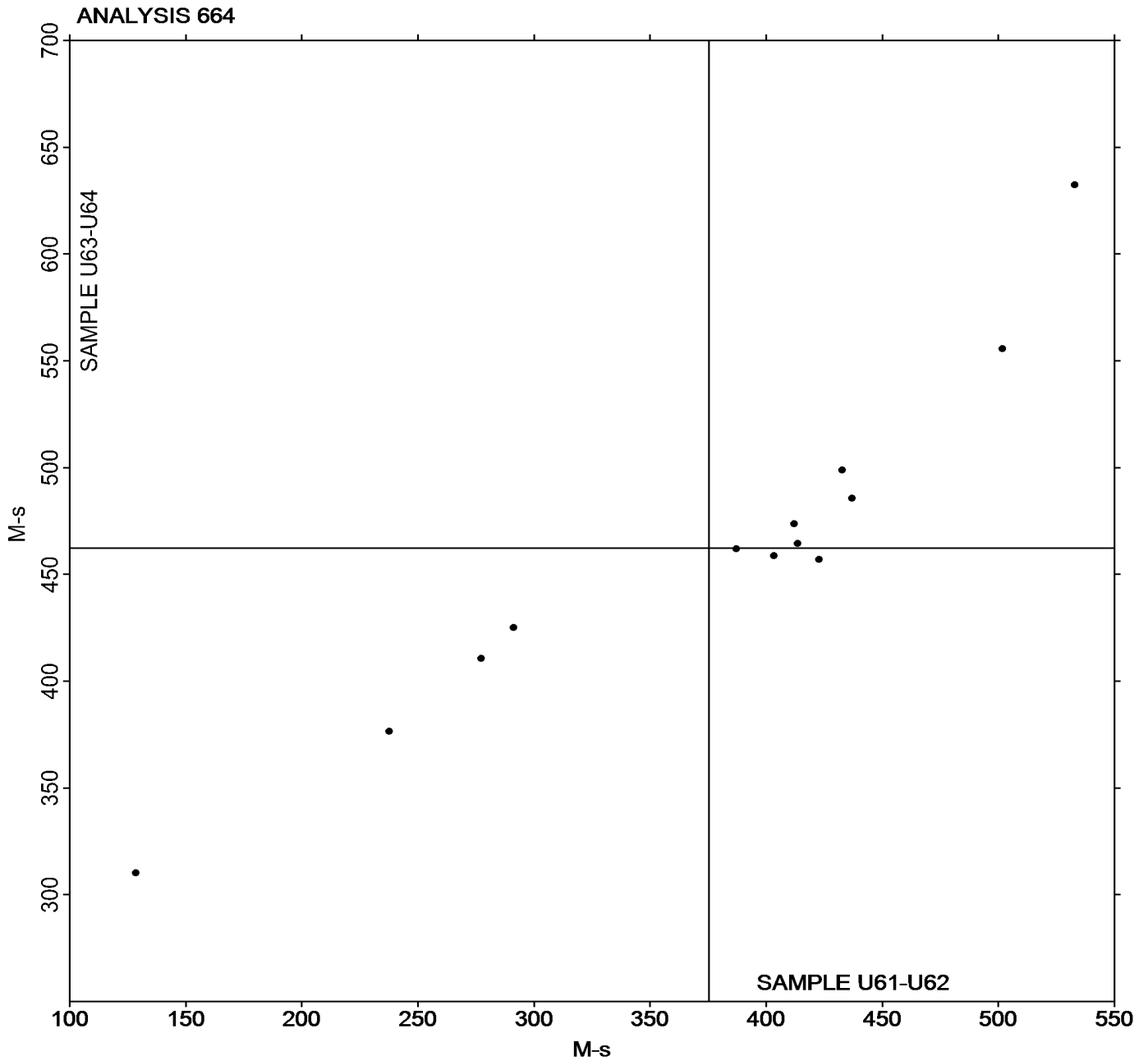


Rubber Interlaboratory Testing Program
Analysis 664
Mooney Stress Relaxation: Area under curve (M-s)

Report #189
3rd Qtr 2016

Grand Mean Sample **U61-U62** = 375.26 M-s

Grand Mean Sample **U63-U64** = 462.33 M-s



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y61-Y62			Sample Y63-Y64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A774QY		0.8967	-0.0543	-0.75	1.803	0.143	0.40
AHKY9J		0.8867	-0.0643	-0.89	1.163	-0.497	-1.38
BA97EF		0.9233	-0.0277	-0.38	1.565	-0.096	-0.26
BK73GG		0.9917	0.0407	0.56	2.190	0.530	1.47
GY8UK9		0.9200	-0.0310	-0.43	1.445	-0.216	-0.60
HFAQJX		1.1383	0.1873	2.58	2.058	0.398	1.10
LHJ6ET		0.9350	-0.0160	-0.22	1.990	0.330	0.91
RXT6NY		0.9683	0.0173	0.24	1.117	-0.544	-1.51
V7GYFD		0.9250	-0.0260	-0.36	1.603	-0.057	-0.16
W3YYXC		0.9250	-0.0260	-0.36	1.670	0.010	0.03

		Summary Statistics	
Grand Means	0.95100 minutes	1.6605 minutes	
Stnd Dev Btwn Labs	0.07263 minutes	0.3605 minutes	
Statistics based on 10 of 10 reporting participants			

Samples Y61-Y62: EPDM compound #1 & Y63-Y64: EPDM compound #2

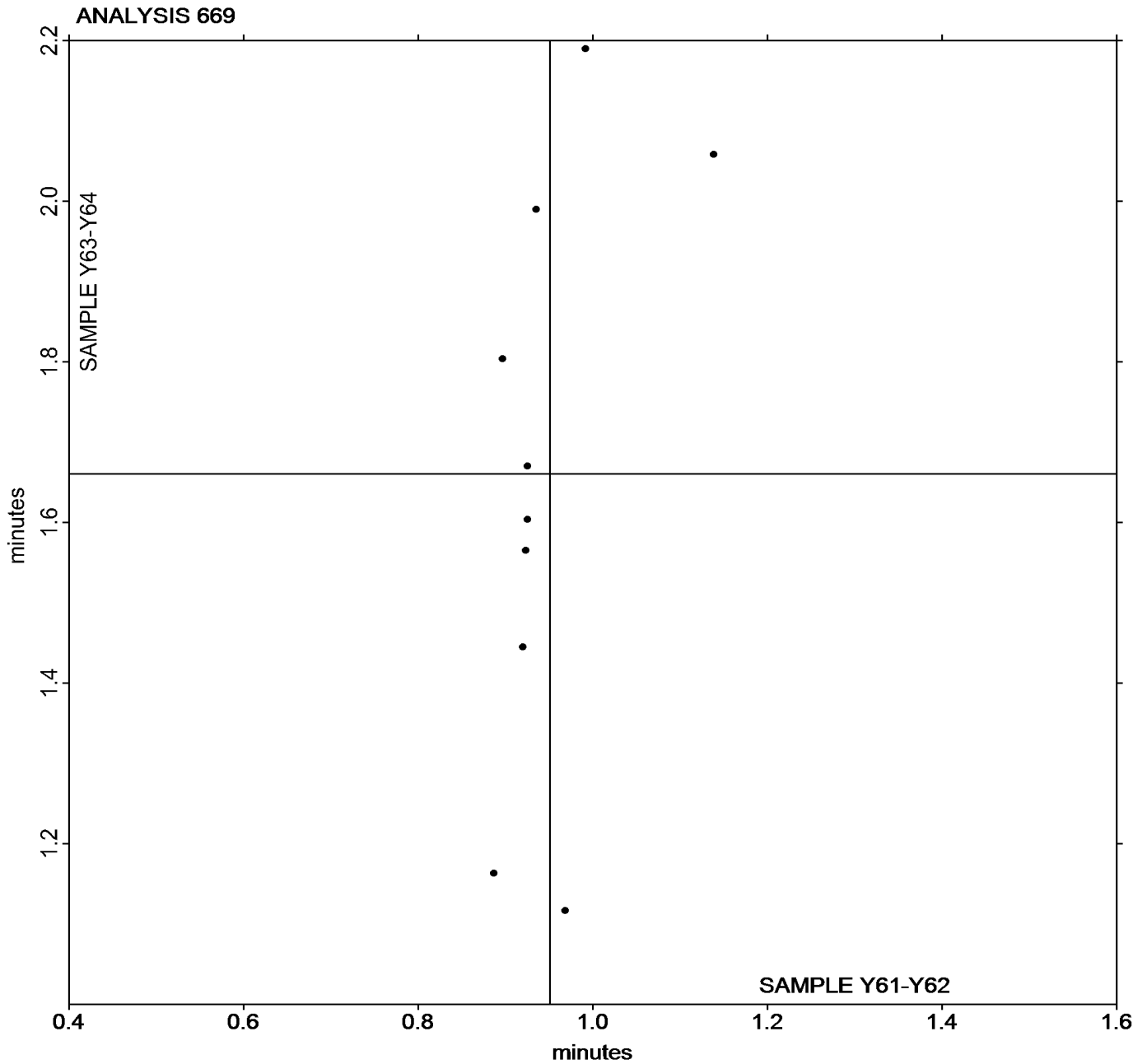


Rubber Interlaboratory Testing Program
Analysis 669
ODR Vulcanization-Cure Time 10% (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y61-Y62** = 0.95100 minutes

Grand Mean Sample **Y63-Y64** = 1.6605 minutes



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y61-Y62			Sample Y63-Y64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A774QY		0.6733	0.0105	0.17	1.525	0.313	0.58
AHKY9J		0.6000	-0.0628	-1.01	0.623	-0.589	-1.10
BA97EF		0.6250	-0.0378	-0.61	1.162	-0.051	-0.09
BK73GG		0.7117	0.0488	0.79	1.900	0.688	1.28
GY8UK9		0.6133	-0.0495	-0.80	0.347	-0.866	-1.61
HFAQJX		0.8150	0.1522	2.45	1.695	0.483	0.90
LHJ6ET		0.6483	-0.0145	-0.23	1.707	0.494	0.92
RXT6NY		0.6600	-0.0028	-0.05	0.552	-0.661	-1.23
V7GYFD		0.6467	-0.0162	-0.26	1.273	0.061	0.11
W3YYXC		0.6350	-0.0278	-0.45	1.342	0.129	0.24

		Summary Statistics	
Grand Means	0.66283 minutes	1.2125 minutes	
Stnd Dev Btwn Labs	0.06212 minutes	0.5379 minutes	
Statistics based on 10 of 10 reporting participants			

Samples Y61-Y62: EPDM compound #1 & Y63-Y64: EPDM compound #2

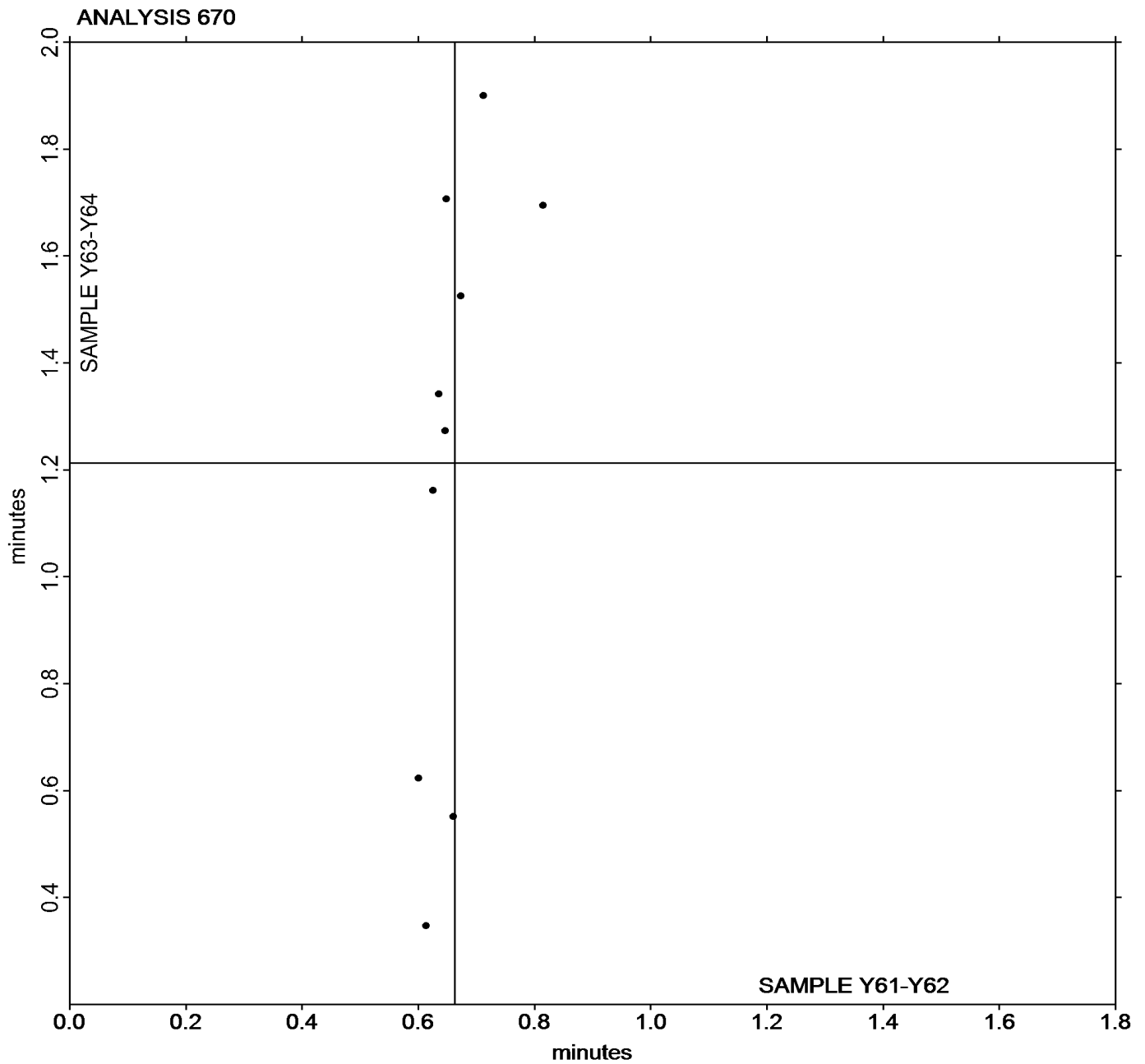


Rubber Interlaboratory Testing Program
Analysis 670
ODR Vulcanization-Scorch Time, Ts1 (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample Y61-Y62 = 0.66283 minutes

Grand Mean Sample Y63-Y64 = 1.2125 minutes



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y61-Y62			Sample Y63-Y64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A774QY		1.863	-0.669	-2.04	3.198	-0.296	-0.94
AHKY9J		2.327	-0.206	-0.63	3.142	-0.352	-1.12
BA97EF		2.475	-0.057	-0.17	3.285	-0.209	-0.66
BK73GG		2.822	0.289	0.88	4.038	0.545	1.73
GY8UK9		2.905	0.373	1.13	3.398	-0.096	-0.30
HFAQJX		2.923	0.391	1.19	3.875	0.381	1.21
LHJ6ET		2.665	0.133	0.40	3.730	0.236	0.75
RXT6NY		2.650	0.118	0.36	3.700	0.206	0.65
V7GYFD		2.382	-0.151	-0.46	3.308	-0.186	-0.59
W3YYXC		2.312	-0.221	-0.67	3.263	-0.231	-0.73

Summary Statistics	
Grand Means	2.5323 minutes 3.4938 minutes
Stnd Dev Btwn Labs	0.3285 minutes 0.3148 minutes
Statistics based on 10 of 10 reporting participants	

Samples Y61-Y62: EPDM compound #1 & Y63-Y64: EPDM compound #2

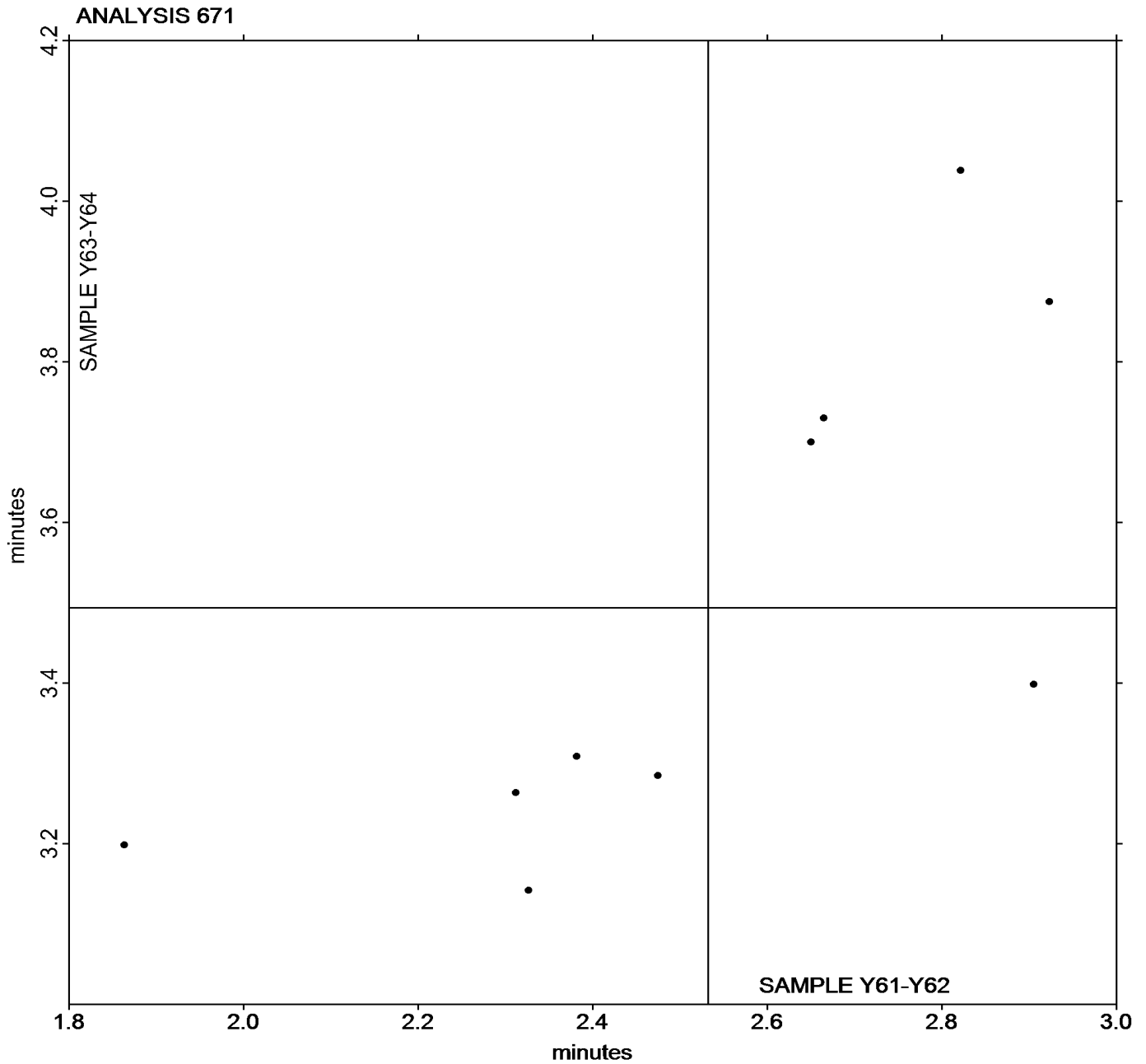


Rubber Interlaboratory Testing Program
Analysis 671
ODR Vulcanization-Cure Time 50% (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y61-Y62** = 2.5323 minutes

Grand Mean Sample **Y63-Y64** = 3.4938 minutes



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y61-Y62			Sample Y63-Y64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A774QY	X	4.61	-8.15	-6.11	5.06	-5.18	-2.73
AHKY9J		11.98	-0.77	-0.58	11.71	1.47	0.78
BA97EF		11.34	-1.41	-1.06	8.26	-1.98	-1.05
BK73GG		13.59	0.84	0.63	13.39	3.15	1.66
GY8UK9		15.66	2.91	2.19	9.29	-0.95	-0.50
HFAQJX		12.80	0.04	0.03	10.05	-0.19	-0.10
LHJ6ET		12.55	-0.20	-0.15	12.73	2.49	1.31
RXT6NY		13.32	0.57	0.42	9.33	-0.91	-0.48
V7GYFD		11.50	-1.25	-0.94	8.65	-1.59	-0.84
W3YYXC		12.03	-0.72	-0.54	8.74	-1.50	-0.79

Summary Statistics	
Grand Means	12.751 minutes
Std Dev Btwn Labs	1.333 minutes
	10.239 minutes
	1.895 minutes
Statistics based on 9 of 10 reporting participants	

Samples Y61-Y62: EPDM compound #1 & Y63-Y64: EPDM compound #2

Comments on Assigned Data Flags for Test #672

A774QY (X) - Data for all samples are low.

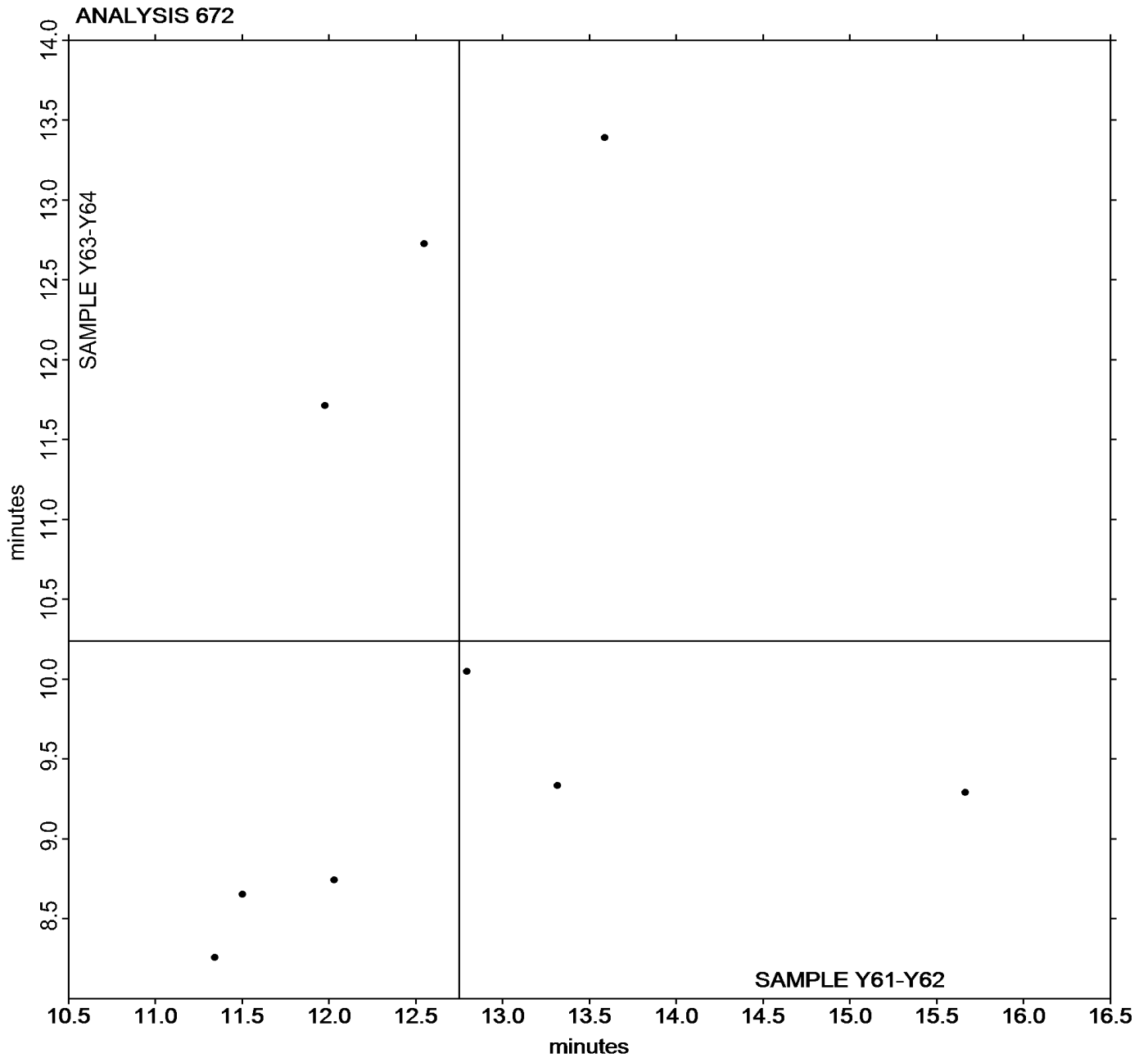


Rubber Interlaboratory Testing Program
Analysis 672
ODR Vulcanization-Cure Time 90% (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample Y61-Y62 = 12.751 minutes

Grand Mean Sample Y63-Y64 = 10.239 minutes



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y61-Y62			Sample Y63-Y64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A774QY		13.88	0.94	0.57	27.75	3.61	0.70
AHKY9J		10.72	-2.22	-1.34	17.34	-6.79	-1.32
BA97EF		11.79	-1.15	-0.69	19.82	-4.31	-0.84
BK73GG		13.95	1.01	0.61	32.13	8.00	1.55
GY8UK9		12.13	-0.82	-0.49	21.80	-2.33	-0.45
HFAQJX		11.68	-1.26	-0.76	22.96	-1.18	-0.23
LHJ6ET		16.54	3.59	2.16	32.90	8.77	1.70
RXT6NY		13.40	0.46	0.28	21.28	-2.85	-0.55
V7GYFD		13.41	0.46	0.28	23.56	-0.57	-0.11
W3YYXC		11.93	-1.02	-0.61	21.78	-2.35	-0.46

		Summary Statistics	
Grand Means		12.942 lbf.in	24.132 lbf.in
Std Dev Btwn Labs		1.660 lbf.in	5.158 lbf.in
Statistics based on 10 of 10 reporting participants			

		Summary Statistics in SI Units	
Grand Means		14.622 dN.m	27.266 dN.m
Std Dev Btwn Labs		1.875 dN.m	5.828 dN.m
Statistics based on 10 of 10 reporting participants			

Samples Y61-Y62: EPDM compound #1 & Y63-Y64: EPDM compound #2

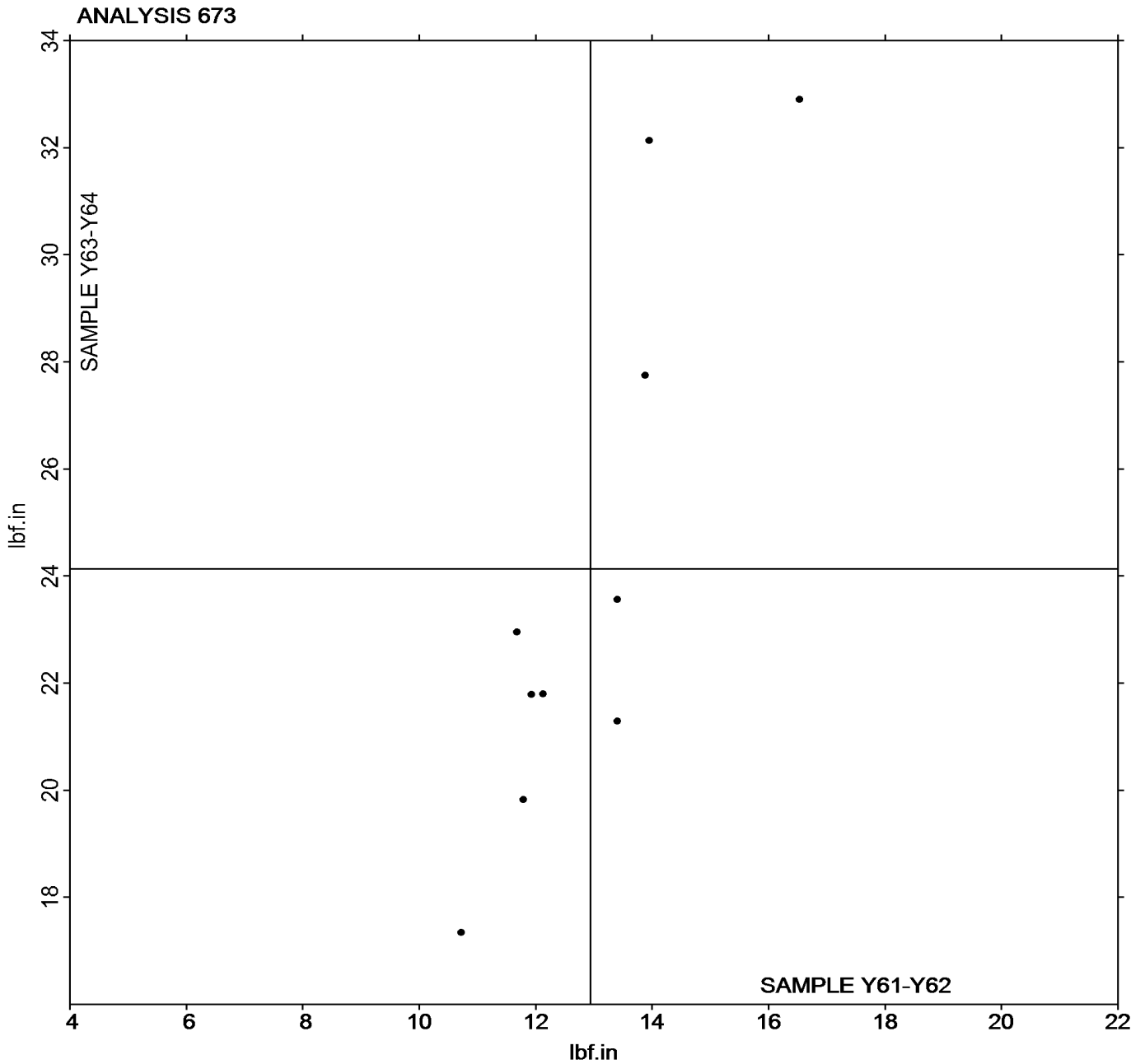


Rubber Interlaboratory Testing Program
Analysis 673
ODR Vulcanization: Minimum Torque (lbf.in)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y61-Y62** = 12.942 lbf.in

Grand Mean Sample **Y63-Y64** = 24.132 lbf.in



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y61-Y62			Sample Y63-Y64		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
A774QY		43.73	-2.70	-1.08	48.11	1.75	0.52
AHKY9J		46.15	-0.28	-0.11	43.27	-3.09	-0.91
BA97EF		47.57	1.14	0.46	45.12	-1.24	-0.37
BK73GG		43.88	-2.55	-1.02	51.46	5.10	1.51
GY8UK9		49.26	2.83	1.13	47.71	1.34	0.40
HFAQJX		44.03	-2.41	-0.96	42.54	-3.83	-1.13
LHJ6ET		50.74	4.31	1.72	50.93	4.57	1.35
RXT6NY		48.67	2.24	0.89	48.30	1.94	0.57
V7GYFD		45.64	-0.79	-0.32	43.61	-2.76	-0.81
W3YYXC		44.65	-1.78	-0.71	42.59	-3.78	-1.12

		Summary Statistics	
Grand Means		46.431 lbf.in	46.363 lbf.in
Std Dev Btwn Labs		2.502 lbf.in	3.384 lbf.in
Statistics based on 10 of 10 reporting participants			

		Summary Statistics in SI Units	
Grand Means		52.460 dN.m	52.383 dN.m
Std Dev Btwn Labs		2.827 dN.m	3.824 dN.m
Statistics based on 10 of 10 reporting participants			

Samples Y61-Y62: EPDM compound #1 & Y63-Y64: EPDM compound #2

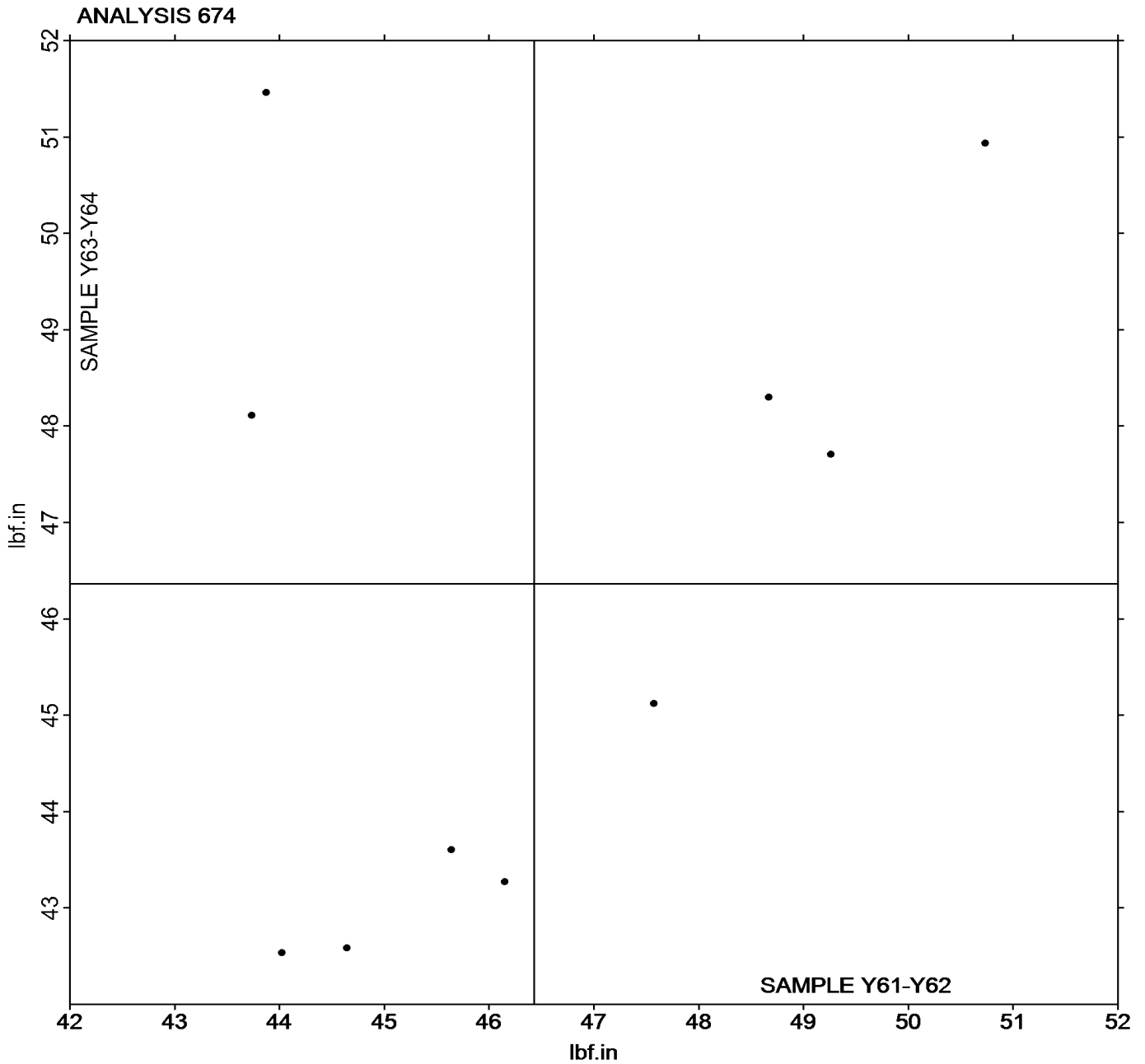


Rubber Interlaboratory Testing Program
Analysis 674
ODR Vulcanization: Maximum Torque (lbf.in)

Report #189
3rd Qtr 2016

Grand Mean Sample Y61-Y62 = 46.431 lbf.in

Grand Mean Sample Y63-Y64 = 46.363 lbf.in



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



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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y65-Y66			Sample Y67-Y68			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		0.9183	-0.0606	-0.39	0.8967	-0.0539	-0.44	MD
3E6XA7		0.9633	-0.0156	-0.10	0.9367	-0.0139	-0.11	XX
6DNLHE		0.6367	-0.3423	-2.23	0.7133	-0.2372	-1.94	MC
6HKCPB		1.2650	0.2860	1.86	1.1833	0.2328	1.90	MC
6QUYFQ		0.7483	-0.2306	-1.50	0.8267	-0.1239	-1.01	MD
6R6JPZ		1.1417	0.1627	1.06	1.1133	0.1628	1.33	MP
72RYQA		1.0967	0.1177	0.77	0.9950	0.0444	0.36	MC
78WX4K		0.9817	0.0027	0.02	0.9300	-0.0206	-0.17	MC
7AL6NG		0.8000	-0.1790	-1.16	0.7400	-0.2106	-1.72	XX
A774TK		0.8183	-0.1606	-1.04	0.8633	-0.0872	-0.71	MC
AHKY9J		0.8750	-0.1040	-0.68	0.9083	-0.0422	-0.35	MC
BA88HL		0.8889	-0.0901	-0.59	1.0111	0.0606	0.50	MC
BA97EF		0.8883	-0.0906	-0.59	0.8667	-0.0839	-0.69	MC
CRM3AY		1.0583	0.0794	0.52	0.9900	0.0394	0.32	MC
HFAQJX		1.0700	0.0910	0.59	0.9867	0.0361	0.30	MC
LFJWC6		1.2467	0.2677	1.74	1.2250	0.2744	2.24	MC
MBKXDY		1.2017	0.2227	1.45	1.0483	0.0978	0.80	MC
NFTNCY		1.0111	0.0322	0.21	0.9667	0.0161	0.13	MC
P8V947		0.7967	-0.1823	-1.19	0.8183	-0.1322	-1.08	MC
PHPU7V		1.0850	0.1060	0.69	1.1400	0.1894	1.55	TP
QQYD87		0.9750	-0.0040	-0.03	0.8250	-0.1256	-1.03	MC
QWNVJW		1.0457	0.0667	0.43	0.8843	-0.0663	-0.54	XX
T3KRYX		1.0867	0.1077	0.70	0.9650	0.0144	0.12	MC
V7GYFD		1.0500	0.0710	0.46	0.9467	-0.0039	-0.03	XX
WFZVUJ		0.9900	0.0110	0.07	0.9867	0.0361	0.30	MD
WMH2VV		1.0500	0.0710	0.46	1.0000	0.0494	0.40	MC
WNDJTR		0.7050	-0.2740	-1.78	0.8867	-0.0639	-0.52	MC
X9HJGH		0.9767	-0.0023	-0.01	0.9650	0.0144	0.12	MC
ZEW84J		0.8967	-0.0823	-0.54	0.8050	-0.1456	-1.19	MC
ZXQ3HT		1.1017	0.1227	0.80	1.0933	0.1428	1.17	MP

Summary Statistics			
Grand Means	0.97897 minutes	0.95057 minutes	
Std Dev Btwn Labs	0.15379 minutes	0.12228 minutes	
Statistics based on 30 of 30 reporting participants			



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

Report #189
3rd Qtr 2016

Samples Y65-Y66: EPDM compound, batch #1 & Y67-Y68: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	MD	Alpha Tech. Rubber Process Analyzer (RPA 2000)
MP	Alpha Technologies [Monsanto] MDR 2000P	TP	Tech Pro MDR model MDPT
XX	Instrument model not specified by lab		

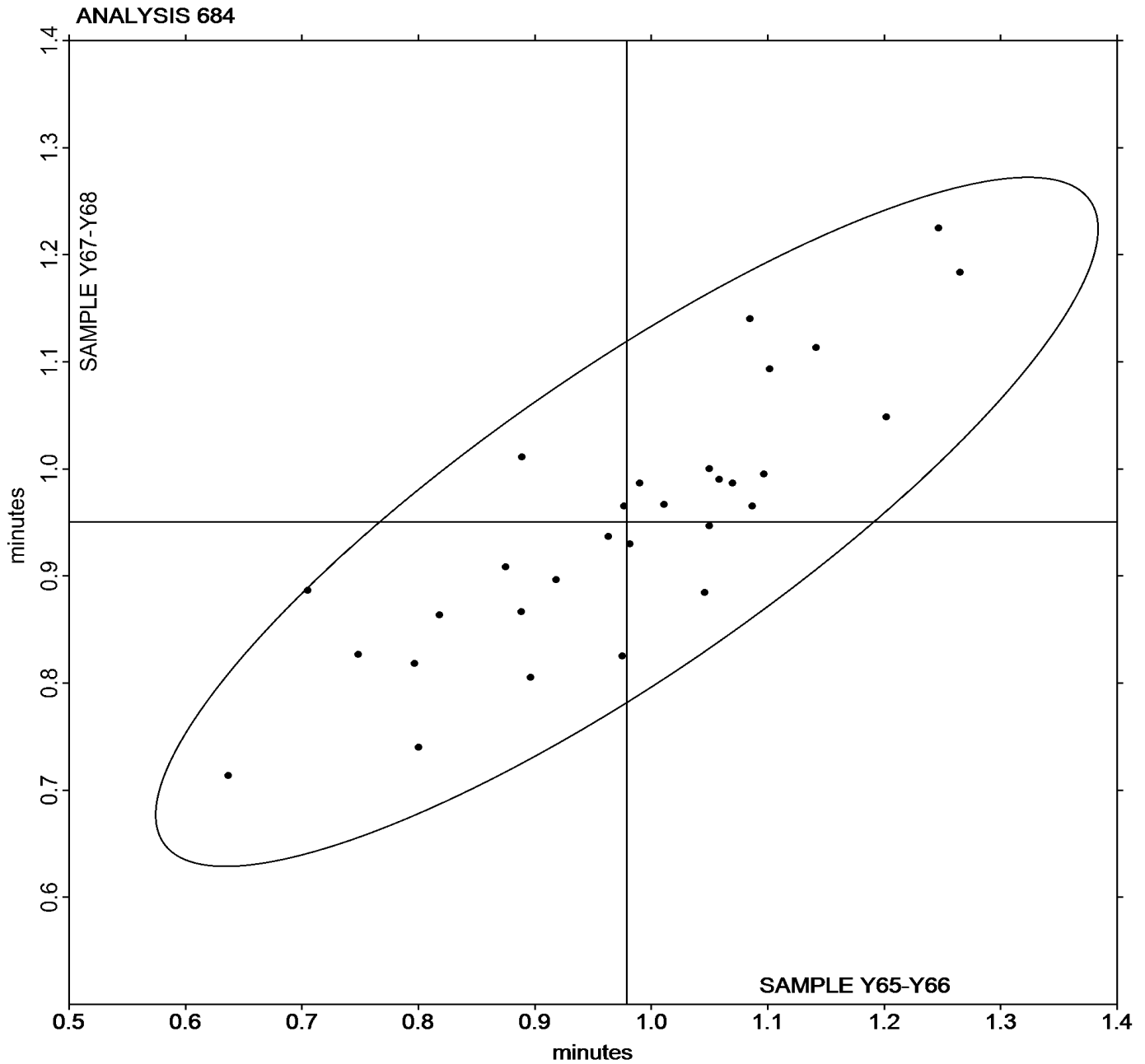


Rubber Interlaboratory Testing Program
Analysis 684
MDR Vulcanization-Cure Time 10% (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y65-Y66** = 0.97897 minutes

Grand Mean Sample **Y67-Y68** = 0.95057 minutes





Rubber Interlaboratory Testing Program

Report #189

Analysis 685

3rd Qtr 2016

MDR Vulcanization-Scorch Time, Ts1 (minutes)

WebCode	Data Flag	Sample Y65-Y66			Sample Y67-Y68			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		0.8800	-0.0767	-0.43	0.8300	-0.0727	-0.47	MD
3E6XA7		0.8783	-0.0783	-0.44	0.8183	-0.0844	-0.54	XX
6DNLHE		0.5100	-0.4467	-2.49	0.5700	-0.3327	-2.14	MC
6HKCPB	*	1.4417	0.4850	2.70	1.3283	0.4256	2.74	MC
6QUYFQ		0.6767	-0.2800	-1.56	0.7283	-0.1744	-1.12	MD
6R6JPZ		1.1117	0.1550	0.86	1.0100	0.1073	0.69	MP
72RYQA		1.0917	0.1350	0.75	0.9517	0.0489	0.32	MC
78WX4K		0.9467	-0.0100	-0.06	0.8583	-0.0444	-0.29	MC
7AL6NG		0.8083	-0.1483	-0.83	0.7450	-0.1577	-1.02	XX
A774TK		0.7933	-0.1633	-0.91	0.8167	-0.0861	-0.55	MC
AHKY9J		0.8350	-0.1217	-0.68	0.8400	-0.0627	-0.40	MC
BA88HL		0.9250	-0.0317	-0.18	1.0278	0.1251	0.81	MC
BA97EF		0.8550	-0.1017	-0.57	0.7983	-0.1044	-0.67	MC
CRM3AY		0.9833	0.0267	0.15	0.8700	-0.0327	-0.21	MC
HFAQJX		1.0750	0.1183	0.66	0.9617	0.0589	0.38	MC
LFJWC6		1.1117	0.1550	0.86	1.0900	0.1873	1.21	MC
MBKXDY		1.2833	0.3267	1.82	1.1017	0.1989	1.28	MC
NFTNCY		0.9945	0.0378	0.21	0.9167	0.0140	0.09	MC
P8V947		0.7220	-0.2346	-1.31	0.7156	-0.1872	-1.21	MC
PHPU7V		1.0350	0.0783	0.44	1.1567	0.2539	1.64	TP
QQYD87		0.9700	0.0133	0.07	0.7850	-0.1177	-0.76	MC
QWNVJW		1.0712	0.1145	0.64	0.8517	-0.0511	-0.33	XX
T3KRYX		0.9033	-0.0533	-0.30	0.7417	-0.1611	-1.04	MC
V7GYFD		1.1533	0.1967	1.10	0.9950	0.0923	0.59	XX
WFZVUJ		0.9700	0.0133	0.07	0.9467	0.0439	0.28	MD
WHMAJU		0.8178	-0.1388	-0.77	0.7233	-0.1794	-1.16	MC
WMH2VV		1.0500	0.0933	0.52	0.9650	0.0623	0.40	MC
WNDJTR	*	0.7467	-0.2100	-1.17	0.9733	0.0706	0.45	MC
X9HJGH		0.8750	-0.0817	-0.46	0.8333	-0.0694	-0.45	MC
ZEW84J		0.8950	-0.0617	-0.34	0.7500	-0.1527	-0.98	MC
ZKNC2U		1.1133	0.1567	0.87	1.0983	0.1956	1.26	MC
ZLFABL		0.9533	-0.0033	-0.02	0.9650	0.0623	0.40	MC
ZXQ3HT		1.0933	0.1367	0.76	1.0267	0.1239	0.80	MP



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means			
	0.95668 minutes		0.90273 minutes
Stnd Dev Btwn Labs			
	0.17951 minutes		0.15530 minutes
Statistics based on 33 of 33 reporting participants			

Samples Y65-Y66: EPDM compound, batch #1 & Y67-Y68: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

- | | |
|--|--|
| <p>MC Alpha Technologies [Monsanto] MDR 2000 or 2000E</p> <p>MP Alpha Technologies [Monsanto] MDR 2000P</p> <p>XX Instrument model not specified by lab</p> | <p>MD Alpha Tech. Rubber Process Analyzer (RPA 2000)</p> <p>TP Tech Pro MDR model MDPT</p> |
|--|--|

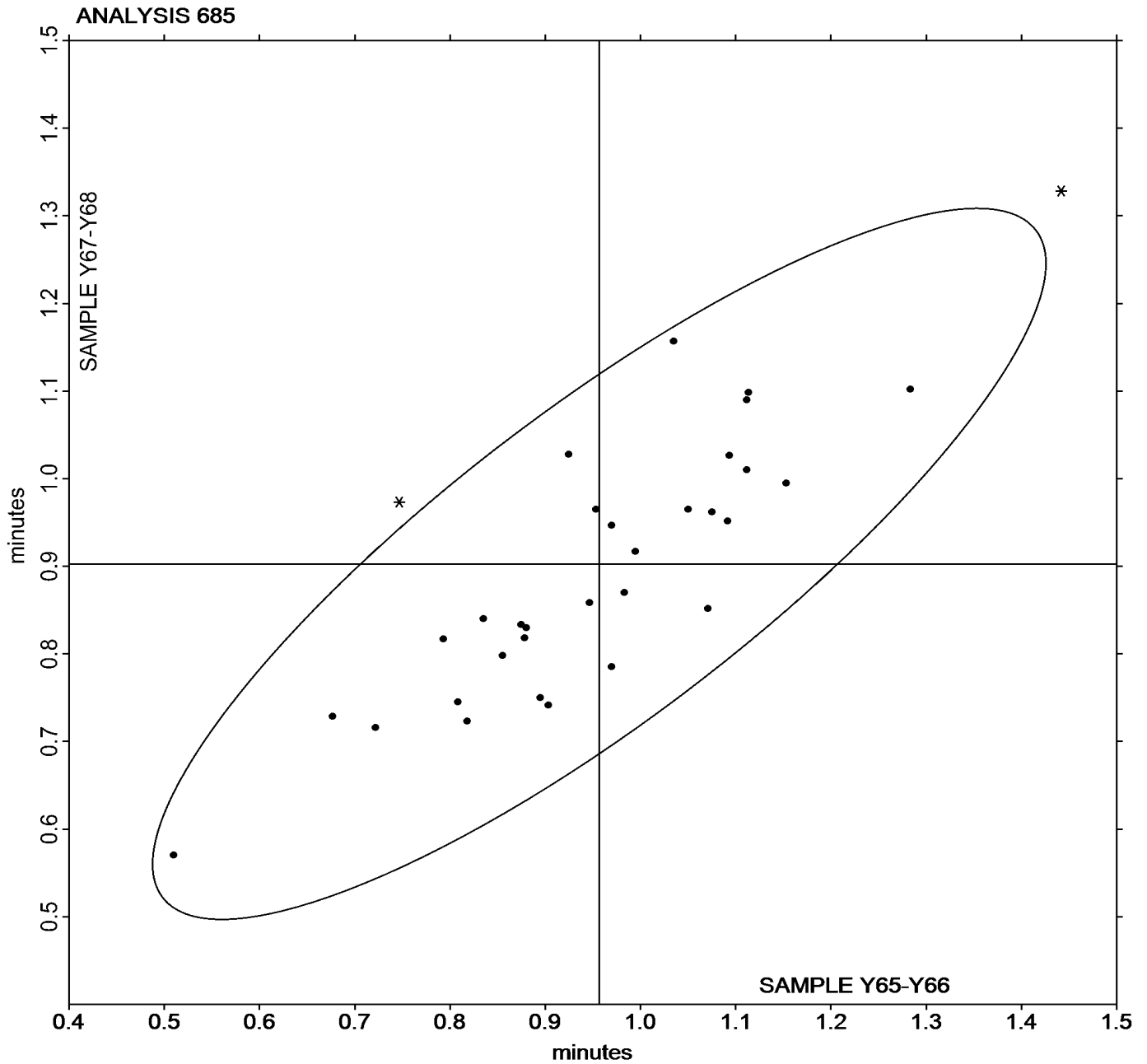


Rubber Interlaboratory Testing Program
Analysis 685
MDR Vulcanization-Scorch Time, Ts1 (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y65-Y66** = 0.95668 minutes

Grand Mean Sample **Y67-Y68** = 0.90273 minutes





Rubber Interlaboratory Testing Program

Report #189

Analysis 686

3rd Qtr 2016

MDR Vulcanization-Cure Time 50% (minutes)

WebCode	Data Flag	Sample Y65-Y66			Sample Y67-Y68			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		2.493	-0.078	-0.85	2.620	0.018	0.19	MD
3E6XA7		2.662	0.090	0.98	2.702	0.100	1.01	XX
6DNLHE		2.492	-0.080	-0.87	2.587	-0.015	-0.15	MC
6HKCPB		2.618	0.047	0.51	2.593	-0.008	-0.08	MC
6QUYFQ		2.492	-0.080	-0.87	2.460	-0.142	-1.42	MD
6R6JPZ		2.743	0.172	1.87	2.787	0.185	1.86	MP
72RYQA		2.597	0.025	0.27	2.612	0.010	0.10	MC
78WX4K		2.592	0.020	0.22	2.612	0.010	0.10	MC
7AL6NG		2.385	-0.187	-2.04	2.425	-0.177	-1.77	XX
A774TK		2.480	-0.092	-1.00	2.513	-0.088	-0.89	MC
AHKY9J		2.500	-0.072	-0.78	2.612	0.010	0.10	MC
BA88HL		2.708	0.137	1.49	2.761	0.160	1.60	MC
BA97EF		2.577	0.005	0.06	2.667	0.065	0.65	MC
CRM3AY		2.640	0.068	0.75	2.682	0.080	0.80	MC
HFAQJX		2.677	0.105	1.15	2.683	0.082	0.82	MC
LFJWC6		2.583	0.012	0.13	2.603	0.002	0.02	MC
MBKXDY	*	2.550	-0.022	-0.24	2.425	-0.177	-1.77	MC
NFTNCY		2.539	-0.033	-0.36	2.631	0.029	0.29	MC
P8V947		2.365	-0.207	-2.26	2.398	-0.203	-2.04	MC
PHPU7V		2.595	0.023	0.26	2.650	0.048	0.49	TP
QQYD87		2.612	0.040	0.44	2.552	-0.050	-0.50	MC
QWNVJW		2.651	0.079	0.86	2.636	0.035	0.35	XX
T3KRYX		2.548	-0.023	-0.25	2.533	-0.068	-0.69	MC
V7GYFD		2.467	-0.105	-1.15	2.440	-0.162	-1.62	XX
WFZVUJ		2.733	0.162	1.76	2.767	0.165	1.66	MD
WHMAJU		2.579	0.007	0.08	2.642	0.041	0.41	MC
WMH2VW		2.650	0.078	0.86	2.680	0.078	0.79	MC
WNDJTR	*	2.437	-0.135	-1.47	2.605	0.003	0.03	MC
X9HJGH		2.572	0.000	0.00	2.622	0.020	0.20	MC
ZEW84J		2.523	-0.048	-0.53	2.513	-0.088	-0.89	MC
ZKNC2U		2.547	-0.025	-0.27	2.517	-0.085	-0.85	MC
ZLFABL		2.658	0.087	0.95	2.693	0.092	0.92	MC
ZXQ3HT		2.600	0.028	0.31	2.630	0.028	0.29	MC



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means	2.5716 minutes	2.6016 minutes	
Stnd Dev Btwn Labs	0.0916 minutes	0.0995 minutes	
Statistics based on 33 of 33 reporting participants			

Samples Y65-Y66: EPDM compound, batch #1 & Y67-Y68: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

- MC Alpha Technologies [Monsanto] MDR 2000 or 2000E
- MP Alpha Technologies [Monsanto] MDR 2000P
- XX Instrument model not specified by lab
- MD Alpha Tech. Rubber Process Analyzer (RPA 2000)
- TP Tech Pro MDR model MDPT

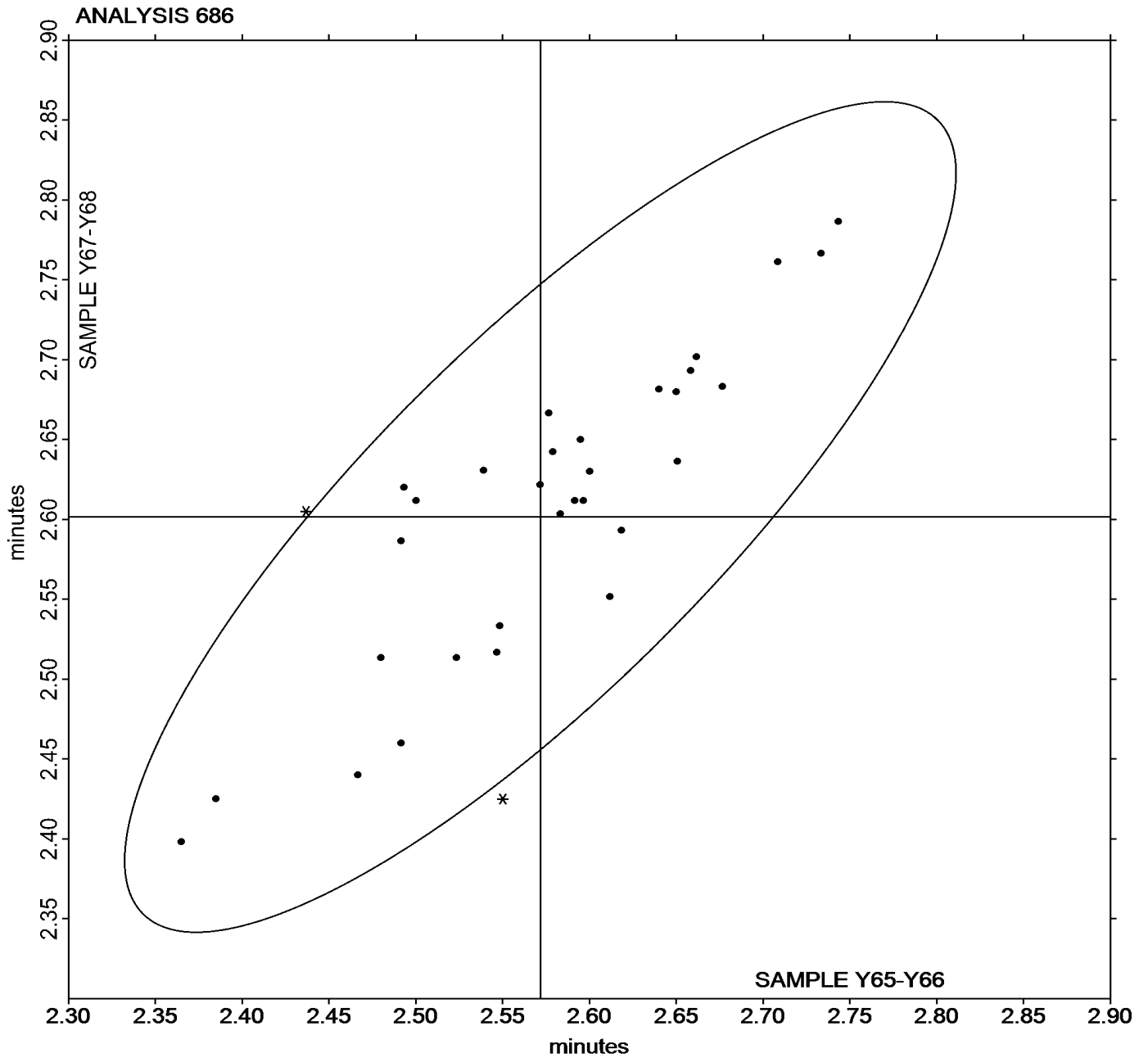


Rubber Interlaboratory Testing Program
Analysis 686
MDR Vulcanization-Cure Time 50% (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y65-Y66** = 2.5716 minutes

Grand Mean Sample **Y67-Y68** = 2.6016 minutes





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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y65-Y66			Sample Y67-Y68			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		5.920	-0.259	-1.03	6.130	-0.070	-0.29	MD
3E6XA7		6.593	0.415	1.66	6.558	0.358	1.50	XX
6DNLHE		5.997	-0.182	-0.73	6.222	0.022	0.09	MC
6HKCPB		6.290	0.111	0.45	6.272	0.072	0.30	MC
6QUYFQ		6.278	0.100	0.40	6.108	-0.092	-0.38	MD
6R6JPZ		6.532	0.353	1.41	6.672	0.472	1.97	MP
72RYQA		6.047	-0.132	-0.53	6.013	-0.187	-0.78	MC
78WX4K		6.330	0.151	0.61	6.365	0.165	0.69	MC
7AL6NG		5.823	-0.355	-1.42	5.882	-0.318	-1.33	XX
A774TK		5.907	-0.272	-1.09	5.952	-0.248	-1.04	MC
AHKY9J		6.038	-0.140	-0.56	6.170	-0.030	-0.13	MC
BA88HL		6.247	0.069	0.27	6.345	0.144	0.60	MC
BA97EF		6.157	-0.022	-0.09	6.252	0.052	0.22	MC
CRM3AY		6.090	-0.089	-0.35	6.152	-0.048	-0.20	MC
HFAQJX		6.278	0.100	0.40	6.273	0.073	0.31	MC
LFJWC6		6.282	0.103	0.41	6.228	0.028	0.12	MC
MBKXDY		6.055	-0.124	-0.49	5.923	-0.277	-1.16	MC
NFTNCY		6.131	-0.048	-0.19	6.222	0.022	0.09	MC
P8V947		5.712	-0.466	-1.86	5.739	-0.461	-1.93	MC
PHPU7V		6.357	0.178	0.71	6.223	0.023	0.10	TP
QQYD87		6.405	0.226	0.90	6.277	0.077	0.32	MC
QWNVJW		6.796	0.618	2.47	6.769	0.569	2.38	XX
T3KRYX		6.322	0.143	0.57	6.288	0.088	0.37	MC
V7GYFD		5.752	-0.427	-1.71	5.703	-0.497	-2.08	XX
WFZVUJ		6.642	0.463	1.85	6.610	0.410	1.72	MD
WHMAJU		6.144	-0.034	-0.14	6.185	-0.015	-0.06	MC
WMH2VW		6.385	0.206	0.82	6.410	0.210	0.88	MC
WNDJTR		6.005	-0.174	-0.69	6.187	-0.013	-0.06	MC
X9HJGH		6.107	-0.072	-0.29	6.193	-0.007	-0.03	MC
ZEW84J		6.035	-0.144	-0.57	5.955	-0.245	-1.03	MC
ZKNC2U		5.923	-0.255	-1.02	6.043	-0.157	-0.66	MC
ZLFABL		6.223	0.045	0.18	6.237	0.037	0.15	MC
ZXQ3HT		6.090	-0.089	-0.35	6.047	-0.153	-0.64	MP



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means	6.1786 minutes	6.2001 minutes	
Std Dev Btwn Labs	0.2503 minutes	0.2388 minutes	
Statistics based on 33 of 33 reporting participants			

Samples Y65-Y66: EPDM compound, batch #1 & Y67-Y68: EPDM compound, batch #2

Key to Instrument Codes Reported by Participants

- | | | | |
|-----------|---|-----------|--|
| MC | Alpha Technologies [Monsanto] MDR 2000 or 2000E | MD | Alpha Tech. Rubber Process Analyzer (RPA 2000) |
| MP | Alpha Technologies [Monsanto] MDR 2000P | TP | Tech Pro MDR model MDPT |
| XX | Instrument model not specified by lab | | |

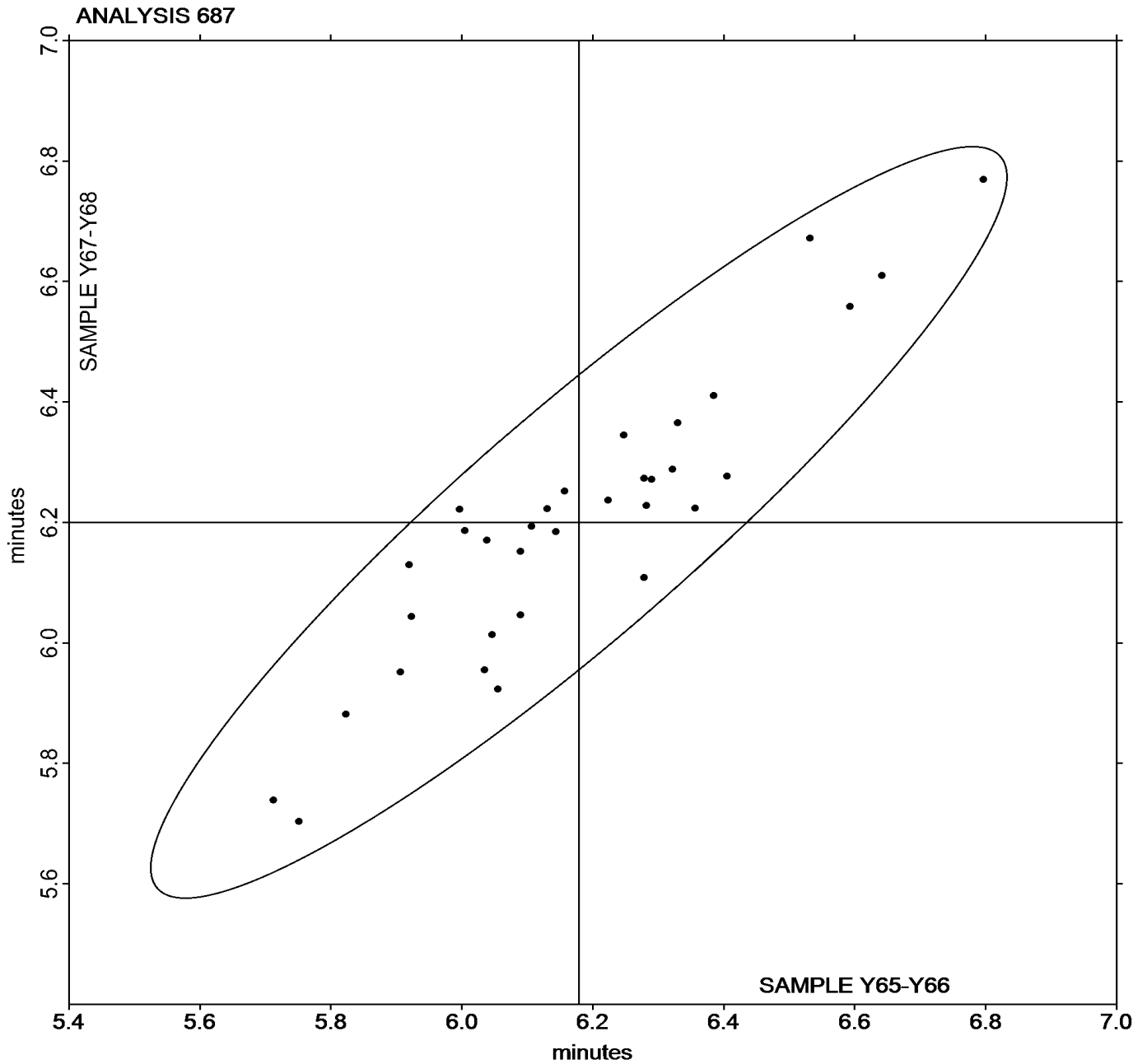


Rubber Interlaboratory Testing Program
Analysis 687
MDR Vulcanization-Cure Time 90% (minutes)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y65-Y66** = 6.1786 minutes

Grand Mean Sample **Y67-Y68** = 6.2001 minutes





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

Report #189
3rd Qtr 2016

WebCode	Data Flag	Sample Y65-Y66			Sample Y67-Y68			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2Z9LYG		4.890	-0.332	-0.62	4.466	-0.496	-1.02	MD
3E6XA7		5.607	0.384	0.72	5.290	0.328	0.67	XX
6DNLHE		5.265	0.043	0.08	5.018	0.056	0.11	MC
6HKCPB		5.790	0.568	1.06	5.292	0.329	0.67	MC
6QUYFQ		4.861	-0.361	-0.67	5.132	0.170	0.35	MD
6R6JPZ		5.165	-0.057	-0.11	4.810	-0.152	-0.31	MP
72RYQA		5.612	0.389	0.73	4.962	-0.001	0.00	MC
78WX4K		5.342	0.119	0.22	4.937	-0.026	-0.05	MC
7AL6NG		4.617	-0.606	-1.13	4.655	-0.307	-0.63	XX
A774TK		4.600	-0.622	-1.16	4.662	-0.301	-0.61	MC
AHKY9J		5.283	0.061	0.11	4.833	-0.129	-0.26	MC
BA88HL		5.918	0.696	1.30	5.912	0.949	1.94	MC
BA97EF		4.555	-0.667	-1.24	4.285	-0.677	-1.39	MC
CRM3AY		5.232	0.010	0.02	4.858	-0.105	-0.21	MC
HFAQJX		5.248	0.026	0.05	4.922	-0.041	-0.08	MC
LFJWC6		6.330	1.107	2.06	5.920	0.957	1.96	MC
MBKXDY		6.552	1.329	2.48	6.102	1.139	2.33	MC
NFTNCY		5.617	0.394	0.73	5.080	0.118	0.24	MC
P8V947		4.825	-0.397	-0.74	4.825	-0.137	-0.28	MC
PHPU7V	X	7.137	1.914	3.57	5.885	0.923	1.89	TP
QQYD87		4.368	-0.854	-1.59	4.108	-0.854	-1.75	MC
QWNVJW		5.182	-0.040	-0.07	4.888	-0.075	-0.15	XX
T3KRYX	X	2.777	-2.446	-4.56	2.547	-2.416	-4.94	MC
V7GYFD		4.710	-0.512	-0.95	4.132	-0.831	-1.70	XX
WFZVUJ		4.662	-0.560	-1.04	4.686	-0.276	-0.56	MD
WHMAJU		4.886	-0.337	-0.63	4.483	-0.479	-0.98	MC
WMH2VW		5.077	-0.145	-0.27	4.799	-0.164	-0.33	MC
WNDJTR		4.607	-0.616	-1.15	4.700	-0.262	-0.54	MC
X9HJGH		6.010	0.788	1.47	5.732	0.769	1.57	MC
ZEW84J		4.957	-0.266	-0.49	4.648	-0.314	-0.64	MC
ZKNC2U		5.492	0.269	0.50	5.388	0.426	0.87	MC
ZLFABL		5.030	-0.192	-0.36	4.983	0.021	0.04	MC
ZXQ3HT		5.603	0.380	0.71	5.327	0.364	0.75	MP



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means			
	5.2223 lbf.in		4.9623 lbf.in
Stnd Dev Btwn Labs			
	0.5367 lbf.in		0.4889 lbf.in
Statistics based on 31 of 33 reporting participants			

		Summary Statistics in SI Units	
Grand Means			
	5.9004 dN.m		5.6067 dN.m
Stnd Dev Btwn Labs			
	0.6064 dN.m		0.5524 dN.m
Statistics based on 31 of 33 reporting participants			

Samples Y65-Y66: EPDM compound, batch #1 & Y67-Y68: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #688

PHPU7V (X) - Data for sample group Y65-Y66 are high.

T3KRYX (X) - Data for all samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

MC	Alpha Technologies [Monsanto] MDR 2000 or 2000E	MD	Alpha Tech. Rubber Process Analyzer (RPA 2000)
MP	Alpha Technologies [Monsanto] MDR 2000P	TP	Tech Pro MDR model MDPT
XX	Instrument model not specified by lab		

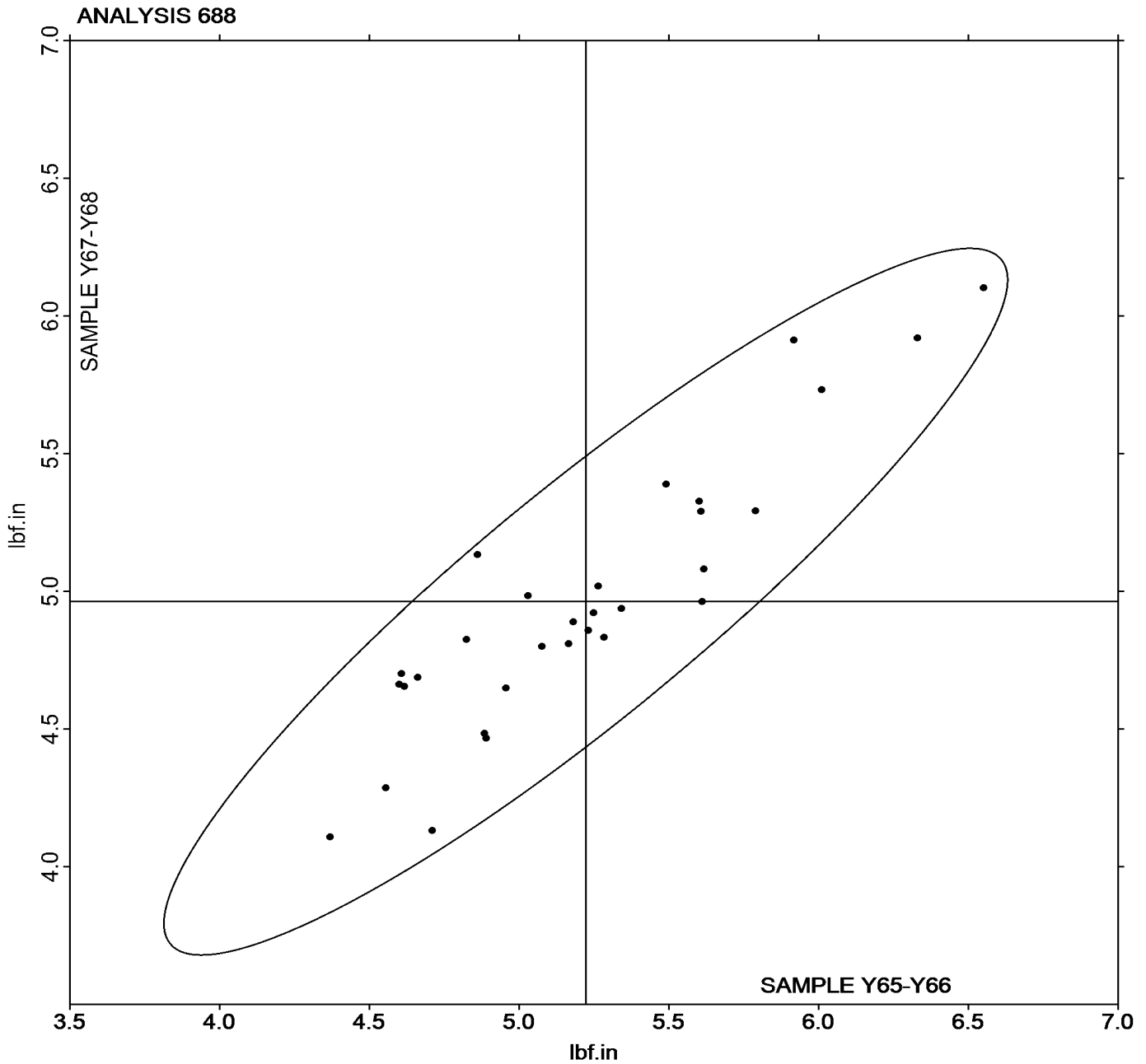


Rubber Interlaboratory Testing Program
Analysis 688
MDR Vulcanization: Minimum Torque (lbf.in)

Report #189
3rd Qtr 2016

Grand Mean Sample **Y65-Y66** = 5.2223 lbf.in

Grand Mean Sample **Y67-Y68** = 4.9623 lbf.in





Rubber Interlaboratory Testing Program

Report #189

Analysis 689

3rd Qtr 2016

MDR Vulcanization: Maximum Torque (lbf.in)

WebCode	Data Flag	Sample Y65-Y66			Sample Y67-Y68			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
Z29LYG		15.73	0.45	0.35	15.86	0.30	0.22	MD
3E6XA7		17.58	2.31	1.79	18.04	2.49	1.84	XX
6DNLHE		17.72	2.45	1.89	18.18	2.62	1.94	MC
6HKCPB		12.80	-2.48	-1.92	12.87	-2.69	-1.99	MC
6QUYFQ		16.10	0.82	0.64	15.85	0.30	0.22	MD
6R6JPZ		15.98	0.71	0.55	16.50	0.94	0.70	MP
72RYQA		15.72	0.44	0.34	15.76	0.20	0.15	MC
78WX4K		15.99	0.71	0.55	16.31	0.75	0.55	MC
7AL6NG		14.61	-0.67	-0.52	15.15	-0.41	-0.30	XX
A774TK		15.09	-0.19	-0.14	15.54	-0.02	-0.02	MC
AHKY9J		16.05	0.78	0.60	16.03	0.47	0.35	MC
BA88HL		15.41	0.13	0.10	15.81	0.25	0.19	MC
BA97EF		15.13	-0.15	-0.11	15.54	-0.02	-0.01	MC
CRM3AY		15.39	0.12	0.09	15.93	0.38	0.28	MC
HFAQJX		15.13	-0.15	-0.12	15.39	-0.17	-0.13	MC
LFJWC6		13.52	-1.75	-1.36	13.70	-1.86	-1.38	MC
MBKXDY		15.00	-0.27	-0.21	14.91	-0.65	-0.48	MC
NFTNCY		15.98	0.70	0.54	16.16	0.60	0.44	MC
P8V947		15.36	0.08	0.06	15.73	0.17	0.12	MC
PHPU7V	X	18.09	2.82	2.18	15.66	0.10	0.07	TP
QQYD87		14.52	-0.75	-0.58	14.79	-0.77	-0.57	MC
QWNVJW		14.76	-0.52	-0.40	15.69	0.13	0.09	XX
T3KRYX		12.32	-2.95	-2.29	12.19	-3.37	-2.49	MC
V7GYFD		12.91	-2.37	-1.83	13.20	-2.36	-1.75	XX
WFZVUJ		14.89	-0.38	-0.30	15.46	-0.10	-0.07	MD
WHMAJU		15.87	0.59	0.46	16.48	0.92	0.68	MC
WMH2VV		14.89	-0.39	-0.30	15.17	-0.39	-0.29	MC
WNDJTR		14.48	-0.79	-0.61	14.30	-1.25	-0.93	MC
X9HJGH		18.37	3.09	2.39	18.61	3.05	2.26	MC
ZEW84J		14.99	-0.29	-0.22	15.76	0.20	0.15	MC
ZKNC2U		15.94	0.66	0.51	15.65	0.09	0.07	MC
ZLFABL		15.95	0.68	0.52	15.97	0.41	0.31	MC
ZXQ3HT		14.63	-0.65	-0.50	15.36	-0.20	-0.15	MC



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

Report #189
3rd Qtr 2016

		Summary Statistics	
Grand Means	15.275 lbf.in	15.558 lbf.in	
Stnd Dev Btwn Labs	1.292 lbf.in	1.350 lbf.in	
Statistics based on 32 of 33 reporting participants			

		Summary Statistics in SI Units	
Grand Means	17.259 dN.m	17.578 dN.m	
Stnd Dev Btwn Labs	1.460 dN.m	1.526 dN.m	
Statistics based on 32 of 33 reporting participants			

Samples Y65-Y66: EPDM compound, batch #1 & Y67-Y68: EPDM compound, batch #2

Comments on Assigned Data Flags for Test #689

PHPU7V (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both sample groups.

Key to Instrument Codes Reported by Participants

- | | |
|---|--|
| MC Alpha Technologies [Monsanto] MDR 2000 or 2000E | MD Alpha Tech. Rubber Process Analyzer (RPA 2000) |
| MP Alpha Technologies [Monsanto] MDR 2000P | TP Tech Pro MDR model MDPT |
| XX Instrument model not specified by lab | |



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

Report #189
3rd Qtr 2016

Grand Mean Sample **Y65-Y66** = 15.275 lbf.in

Grand Mean Sample **Y67-Y68** = 15.558 lbf.in

