

Plastics Interlaboratory Testing Program

Web Summary Report #109, 1st Qtr 2019

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About CTS and the Plastics Interlaboratory Program

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color and wine, 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.

Collaborative Testing Services initiated the Collaborative Reference Program for PLASTICS in 1992 at the request of industry, ASTM committee D-20 members, and accrediting bodies. Additional test methods are always under review and are incorporated into the program when possible.

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 plastics testing proficiency.

For each test there is a summary of the statistics for the analysis 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. Refer to the KEY FOR SUMMARY REPORT for an explanation of terms and guidelines for interpreting the results.

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Key for Web Summary Report (Page 1 of 2)

WebCode	Assigned laboratory identification number (temporary) used to ensure lab confidentiality while permitting a lab to locate its data in the Plastics Web Summary 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	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	A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section) if instruments are tracked.
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.

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 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.

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.



Plastics Interlaboratory Testing Program

Results Summary for Report #109, 1st Qtr 2019

Analysis 704 - Tensile Stress at Yield

Material: HIPS	Sample F57	3,723.34	psi	2.84% COV
	Sample F58	4,181.69	psi	2.84% COV

Analysis 705 - Tensile Stress at Break

Material: HIPS	Sample F57	3,358.31	psi	3.43% COV
	Sample F58	3,471.64	psi	4.25% COV

Analysis 706 - Percent Elongation at Yield

Material: HIPS	Sample F57	1.3088	Percent	7.05% COV
	Sample F58	1.4836	Percent	6.47% COV

Analysis 708 - Modulus of Elasticity

Material: HIPS	Sample F57	334.59	ksi	6.15% COV
	Sample F58	325.19	ksi	5.06% COV

Analysis 710 - Deflection Temp. Under Flexural Load (1.82 MPa)

Material: HIPS	Sample E57	76.847	Degrees C	0.796% COV
	Sample E58	76.798	Degrees C	0.994% COV

Analysis 711 - Deflection Temp. Under Flexural Load (0.455 MPa)

Material: PP	Sample G57	83.400	Degrees C	2.01% COV
	Sample G58	69.423	Degrees C	1.10% COV

Analysis 712 - Temperature of Deflection (1.80 MPa)

Material: ABS	Sample N57	81.880	Degrees C	1.08% COV
	Sample N58	81.882	Degrees C	1.09% COV

Analysis 715 - Vicat Temperature (Rate A)

Material: HIPS	Sample H57	95.079	Degrees C	0.481% COV
	Sample H58	95.016	Degrees C	0.594% COV

Analysis 716 - Vicat Temperature (Rate B)

Material: HIPS	Sample R57	97.347	Degrees C	0.806% COV
	Sample R58	97.255	Degrees C	0.747% COV

Analysis 718 - Specific Gravity

Material: HIPS	Sample T57	1.0350	sp gr 23/23 C	0.204% COV
	Sample T58	1.0350	sp gr 23/23 C	0.195% COV

Analysis 720 - Flexural Modulus

Material: HIPS	Sample J57	341.09	ksi	6.08% COV
	Sample J58	340.74	ksi	5.90% COV

Analysis 721 - Flexural Stress at 5% Strain

Material: HIPS	Sample J57	6,028.05	psi	6.69% COV
	Sample J58	6,017.48	psi	5.92% COV

Analysis 722 - Flexural Stress at Yield

Material: HIPS	Sample J57	6,059.61	psi	7.56% COV
	Sample J58	6,009.43	psi	7.59% COV

Analysis 730 - Tensile Stress at Yield, ISO Method

Material: ABS	Sample C57	43.734	MPa	2.45% COV
	Sample C58	43.736	MPa	2.37% COV

Analysis 731 - Tensile Stress at Break, ISO Method

Material: ABS	Sample C57	32.919	MPa	2.99% COV
	Sample C58	33.007	MPa	3.17% COV



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Analysis 732 - Strain at Yield, ISO Method

Material: ABS	Sample C57	2.3770	Percent	4.09% COV
	Sample C58	2.3833	Percent	4.28% COV

Analysis 734 - Modulus of Elasticity, ISO Method

Material: ABS	Sample C57	2,325.62	MPa	4.00% COV
	Sample C58	2,321.84	MPa	3.70% COV

Analysis 736 - Flexural Modulus

Material: ABS	Sample K57	2,313.97	MPa	3.99% COV
	Sample K58	2,315.79	MPa	3.96% COV

Analysis 737 - Flexural Stress at 3.5% Strain

Material: ABS	Sample K57	65.111	MPa	2.92% COV
	Sample K58	65.153	MPa	2.82% COV

Analysis 738 - Flexural Stress at Yield

Material: ABS	Sample K57	66.258	MPa	2.31% COV
	Sample K58	66.310	MPa	2.27% COV

Analysis 750 - Flow Rate (190C or 230C/2.16 kg)

Material: HDPE	Sample X57	6.5765	grams/10 mins	2.90% COV
	Sample X58	6.5840	grams/10 mins	2.66% COV

Analysis 755 - Moisture Content

Material: ABS	Sample Y57	0.20640	Percent	10.1% COV
	Sample Y58	0.22422	Percent	9.79% COV

Analysis 757 - Ash Content

Material: PP	Sample L57	19.736	Percent	0.520% COV
	Sample L58	19.746	Percent	0.450% COV

Analysis 760 - DSC Crystallization Temperature

Material: PP	Sample W57	119.51	Degrees Celsius	20.3% COV
	Sample W58	119.34	Degrees Celsius	20.1% COV

Analysis 761 - DSC Melt Temperature

Material: PP	Sample W57	165.44	Degrees Celsius	0.914% COV
	Sample W58	165.48	Degrees Celsius	0.917% COV

Analysis 762 - DSC Enthalpy of Crystallization

Material: PP	Sample W57	94.415	Joules Per Gram	6.34% COV
	Sample W58	94.649	Joules Per Gram	5.82% COV

Analysis 763 - DSC Enthalpy of Fusion

Material: PP	Sample W57	88.383	Joules Per Gram	10.2% COV
	Sample W58	90.177	Joules Per Gram	8.86% COV

Analysis 764 - DSC Glass Transition Temperature

Material: PET	Sample V57	87.104	Degrees Celsius	3.39% COV
	Sample V58	87.012	Degrees Celsius	4.07% COV

Analysis 770 - Tensile Stress at Yield, Films

Material: LDPE	Sample B57	1,609.72	psi	9.85% COV
	Sample B58	1,571.12	psi	10.4% COV

Analysis 771 - Tensile Stress at Break, Films

Material: LDPE	Sample B57	2,974.53	psi	16.0% COV
	Sample B58	2,926.66	psi	16.4% COV



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Analysis 772 - Elongation at Yield, Films

Material: LDPE	Sample B57	47.400	Percent	43.5% COV
	Sample B58	48.144	Percent	44.3% COV

Analysis 773 - Elongation at Break, Films

Material: LDPE	Sample B57	836.20	Percent	21.5% COV
	Sample B58	857.74	Percent	23.5% COV

Analysis 774 - Thickness of Film Specimens

Material: LDPE	Sample B57	3.5316	mils	2.66% COV
	Sample B58	3.5568	mils	2.95% COV

Analysis 775 - Secant Modulus at 1% Strain

Material: LDPE	Sample B57	29,980.56	psi	21.1% COV
	Sample B58	29,038.10	psi	23.1% COV

Analysis 776 - Secant Modulus at 2% Strain

Material: LDPE	Sample B57	25,274.19	psi	22.5% COV
	Sample B58	24,181.34	psi	20.8% COV

Analysis 780 - Static Friction

Material: LDPE	Sample P57	0.13864	COF	25.1% COV
	Sample P58	0.13292	COF	26.3% COV

Analysis 781 - Kinetic Friction

Material: LDPE	Sample P57	0.12039	COF	27.2% COV
	Sample P58	0.11211	COF	26.8% COV

Analysis 782 - Tear Resistance of Film

Material: LDPE	Sample Q57	273.18	grams-force	13.3% COV
	Sample Q58	259.88	grams-force	7.00% COV

Analysis 785 - Percent Haze

Material: LDPE	Sample D57	12.665	Percent	5.05% COV
	Sample D58	12.610	Percent	4.69% COV

Analysis 786 - Total Transmittance

Material: LDPE	Sample D57	92.273	Percent	1.65% COV
	Sample D58	92.283	Percent	1.65% COV

Analysis 790 - Notched Izod Impact

Material: ABS	Sample S57	5.0489	ft.lbf/in	8.32% COV
	Sample S58	4.8982	ft.lbf/in	11.7% COV

Analysis 791 - Notched Izod Impact

Material: HIPS	Sample Z57	8.2607	kJ/m ²	4.11% COV
	Sample Z58	8.2674	kJ/m ²	4.59% COV

Analysis 792 - Notched Charpy Impact

Material: HIPS	Sample M57	8.1186	kJ/m ²	3.72% COV
	Sample M58	8.0521	kJ/m ²	3.40% COV



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Analysis 704

1st Qtr 2019

Tensile Stress at Yield - psi

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2C8L4K		3,539.0	-184.4	-1.75	4,014.7	-167.0	-1.41
2NWRQM		3,664.0	-59.3	-0.56	4,240.0	58.3	0.49
389WTQ		3,504.2	-219.1	-2.07	4,000.8	-180.9	-1.52
39ZM6W		3,732.4	9.1	0.09	4,120.2	-61.5	-0.52
3YJWPZ		3,680.2	-43.1	-0.41	4,159.1	-22.6	-0.19
3ZNTLN		3,681.1	-42.3	-0.40	4,119.1	-62.6	-0.53
46JVDU		3,620.6	-102.7	-0.97	4,084.0	-97.7	-0.82
4XU8QC		3,749.3	25.9	0.25	4,150.1	-31.5	-0.27
62DQ6E	X	3,292.0	-431.3	-4.08	4,433.3	251.6	2.12
67MHDX		3,597.6	-125.7	-1.19	4,005.8	-175.9	-1.48
6X9BJU		3,567.1	-156.3	-1.48	4,084.9	-96.8	-0.82
74WZXC		3,737.0	13.7	0.13	4,257.0	75.3	0.63
798BNL		3,707.2	-16.1	-0.15	4,136.5	-45.2	-0.38
7VLXCC		3,668.5	-54.8	-0.52	4,118.7	-63.0	-0.53
8BPU9F		3,763.5	40.1	0.38	4,158.3	-23.4	-0.20
8DVFWF		3,563.6	-159.7	-1.51	4,075.8	-105.9	-0.89
9XZQGF		3,688.0	-35.3	-0.33	4,122.0	-59.7	-0.50
9ZLWZ7		3,727.2	3.9	0.04	4,197.2	15.5	0.13
B69NZY		3,761.6	38.3	0.36	4,213.0	31.3	0.26
B72L96		3,770.0	46.7	0.44	4,240.0	58.3	0.49
BKMQK9		3,797.7	74.4	0.70	4,298.4	116.7	0.98
BY8TGJ		3,800.4	77.1	0.73	4,284.6	102.9	0.87
D69NDP		3,698.0	-25.3	-0.24	4,214.0	32.3	0.27
DRHB2U		3,814.9	91.5	0.87	4,346.4	164.7	1.39
DX7ZFC		3,770.0	46.7	0.44	4,204.0	22.3	0.19
E89TAN		3,712.0	-11.3	-0.11	4,198.0	16.3	0.14
ECH9JD	X	3,752.8	29.4	0.28	3,984.6	-197.1	-1.66
EDVG8F		3,657.2	-66.1	-0.63	4,016.2	-165.5	-1.39
EX32RL		3,567.0	-156.3	-1.48	3,964.8	-216.9	-1.83
FGRM2C		3,804.0	80.7	0.76	4,318.0	136.3	1.15
FYVM6Q		3,772.4	49.1	0.46	4,163.0	-18.7	-0.16
GR4FL4		3,857.7	134.4	1.27	4,206.4	24.7	0.21
GTYEYM		3,574.2	-149.1	-1.41	4,088.8	-92.9	-0.78
H3HU4V		3,790.4	67.1	0.63	4,284.4	102.7	0.87
HGK4AQ	*	3,986.0	262.7	2.49	4,548.0	366.3	3.09



Plastics Interlaboratory Testing Program

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Analysis 704

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Tensile Stress at Yield - psi

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
HKLAMB		3,677.6	-45.7	-0.43	4,076.0	-105.7	-0.89
JBQQL8		3,791.8	68.5	0.65	4,135.0	-46.7	-0.39
JZ8CH6		3,639.6	-83.7	-0.79	4,054.2	-127.5	-1.07
KCFCR4	X	4,402.0	678.7	6.42	4,792.4	610.7	5.15
KRUFFJ		3,834.2	110.9	1.05	4,384.6	202.9	1.71
KZR4DB		3,701.4	-21.9	-0.21	4,162.6	-19.1	-0.16
MFVLVL	X	3,219.2	-504.1	-4.77	3,567.6	-614.1	-5.17
PFAB94		3,620.0	-103.3	-0.98	4,100.0	-81.7	-0.69
PNKA3E		3,827.8	104.5	0.99	4,263.0	81.3	0.69
RBJ6QD		3,493.0	-230.3	-2.18	3,903.4	-278.3	-2.34
RMZCLY		3,625.0	-98.3	-0.93	4,095.6	-86.1	-0.73
RNBUMX		3,687.4	-35.9	-0.34	4,137.4	-44.3	-0.37
T3RWVE		3,785.8	62.5	0.59	4,258.1	76.4	0.64
U764N7		3,700.2	-23.1	-0.22	4,167.4	-14.3	-0.12
UTDMTD		3,851.0	127.6	1.21	4,332.2	150.5	1.27
W7YPE3		3,929.1	205.8	1.95	4,364.8	183.1	1.54
XLZ6KM		3,839.4	116.1	1.10	4,202.0	20.3	0.17
Y6BDYT		3,715.1	-8.2	-0.08	4,187.6	5.9	0.05
Y6XZWW		3,887.0	163.7	1.55	4,351.2	169.5	1.43
YDM9H2		3,829.6	106.2	1.01	4,299.3	117.6	0.99
YLH92Z		3,783.2	59.9	0.57	4,174.6	-7.1	-0.06
YPGML6		3,653.3	-70.0	-0.66	4,149.8	-31.9	-0.27
Z2E7U4		3,852.4	129.1	1.22	4,344.8	163.1	1.37
ZR7BJQ		3,735.9	12.5	0.12	4,217.3	35.6	0.30

Summary Statistics

	Sample F57	Sample F58
Grand Means	3,723.34 psi	4,181.69 psi
Stnd Dev Btwn Labs	105.65 psi	118.68 psi

Statistics based on 55 of 59 reporting participants

Sample F57: HIPS & Sample F58: HIPS



Plastics Interlaboratory Testing Program

Analysis 704

Tensile Stress at Yield - psi

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Comments on Assigned Data Flags for Test #704

ECH9JD (X) - Inconsistent in testing between samples.

KCFCR4 (X) - Data for both samples are high. Possible Systematic Error.

MFVLVL (X) - Data for both samples are low. Possible Systematic Error.

62DQ6E (X) - Data for sample F57 are low.



Plastics Interlaboratory Testing Program

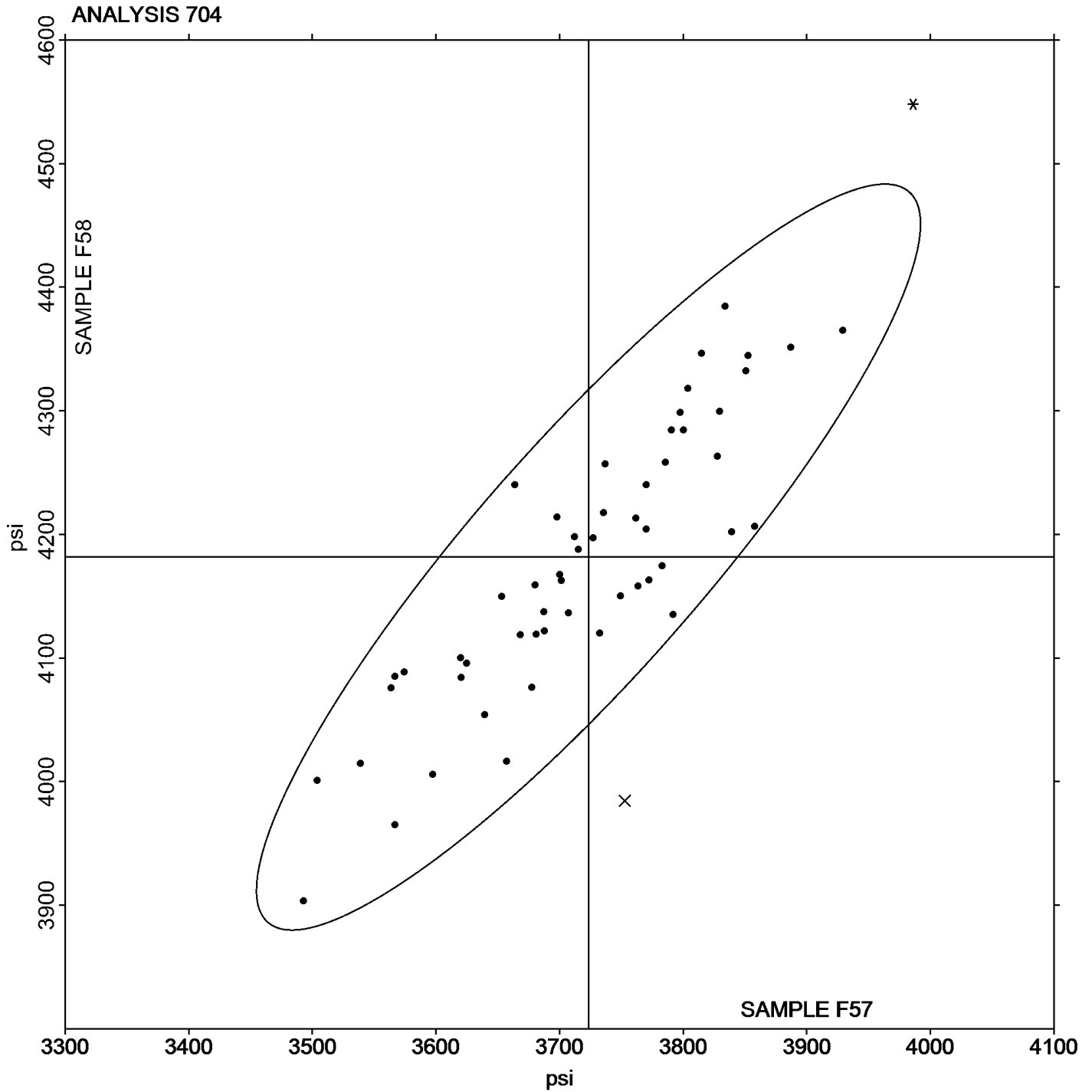
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Tensile Stress at Yield - psi

Grand Mean Sample F57: 3,723.34 psi Grand Mean Sample F58: 4,181.69 psi





Plastics Interlaboratory Testing Program

Report #109

Analysis 705

1st Qtr 2019

Tensile Stress at Break - psi

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2C8L4K		3,150.2	-208.1	-1.81	3,106.7	-364.9	-2.47
2NWRQM		3,274.0	-84.3	-0.73	3,536.0	64.4	0.44
389WTQ	*	3,056.4	-301.9	-2.62	3,229.2	-242.4	-1.64
3YJWPZ		3,395.1	36.8	0.32	3,420.3	-51.3	-0.35
3ZNTLN		3,350.4	-7.9	-0.07	3,408.4	-63.2	-0.43
4XU8QC		3,322.8	-35.5	-0.31	3,437.4	-34.2	-0.23
62DQ6E	X	3,090.6	-267.7	-2.32	3,571.3	99.7	0.68
67MHDX		3,450.4	92.1	0.80	3,324.6	-147.0	-1.00
6X9BJU		3,119.4	-238.9	-2.07	3,330.4	-141.3	-0.96
74WZXC		3,252.0	-106.3	-0.92	3,434.2	-37.4	-0.25
798BNL		3,382.3	24.0	0.21	3,451.9	-19.7	-0.13
7VLXCC	X	3,332.6	-25.7	-0.22	2,415.5	-1,056.1	-7.15
8BPU9F		3,343.2	-15.1	-0.13	3,472.5	0.8	0.01
8DVFWF		3,229.2	-129.1	-1.12	3,472.0	0.4	0.00
9YY2BX		3,620.2	261.9	2.27	3,754.6	282.9	1.92
9ZLWZ7	X	45.8	-3,312.5	-28.74	38.4	-3,433.3	-23.26
B69NZY		3,417.6	59.3	0.51	3,544.4	72.8	0.49
B72L96		3,454.0	95.7	0.83	3,610.0	138.4	0.94
BKMQK9		3,372.5	14.2	0.12	3,498.2	26.5	0.18
BY8TGJ		3,411.6	53.3	0.46	3,435.2	-36.4	-0.25
D69NDP		3,298.0	-60.3	-0.52	3,366.0	-105.6	-0.72
DRHB2U		3,534.2	175.9	1.53	3,660.6	188.9	1.28
DX7ZFC		3,350.2	-8.1	-0.07	3,510.0	38.4	0.26
ECH9JD		3,470.1	111.8	0.97	3,566.4	94.7	0.64
EDVG8F	*	3,233.2	-125.1	-1.09	3,059.8	-411.8	-2.79
EX32RL		3,161.2	-197.1	-1.71	3,233.2	-238.4	-1.62
FGRM2C		3,251.5	-106.8	-0.93	3,584.1	112.5	0.76
FYVM6Q		3,411.6	53.3	0.46	3,455.8	-15.8	-0.11
GR4FL4		3,378.2	19.9	0.17	3,402.6	-69.0	-0.47
GTYEYM		3,277.6	-80.7	-0.70	3,288.0	-183.6	-1.24
HGK4AQ		3,508.2	149.9	1.30	3,746.9	275.2	1.86
HKLAMB		3,363.0	4.7	0.04	3,446.4	-25.2	-0.17
JBQQL8		3,404.6	46.3	0.40	3,474.0	2.4	0.02
JZ8CH6		3,333.8	-24.5	-0.21	3,458.0	-13.6	-0.09
KCFCR4	X	4,106.4	748.1	6.49	4,090.8	619.2	4.19



Plastics Interlaboratory Testing Program

Report #109

Analysis 705

1st Qtr 2019

Tensile Stress at Break - psi

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
KRUFFJ		3,375.6	17.3	0.15	3,649.0	177.4	1.20
KZR4DB		3,321.4	-36.9	-0.32	3,518.6	47.0	0.32
MFVLVL		3,167.6	-190.7	-1.65	3,215.4	-256.2	-1.74
PFAB94		3,316.0	-42.3	-0.37	3,418.0	-53.6	-0.36
PNKA3E		3,425.0	66.7	0.58	3,504.8	33.2	0.22
RBJ6QD	X	3,175.0	-183.3	-1.59	3,744.0	272.4	1.85
RNBUMX		3,421.0	62.7	0.54	3,650.2	178.6	1.21
T3RWVE		3,340.8	-17.5	-0.15	3,404.9	-66.7	-0.45
U764N7		3,480.0	121.7	1.06	3,536.1	64.4	0.44
UTDMTD		3,559.7	201.3	1.75	3,729.5	257.9	1.75
W7YPE3		3,522.4	164.1	1.42	3,502.7	31.1	0.21
XLZ6KM		3,453.6	95.3	0.83	3,598.4	126.8	0.86
Y6BDYT		3,395.7	37.4	0.32	3,592.3	120.7	0.82
Y6XZWW		3,364.9	6.6	0.06	3,539.0	67.3	0.46
YDM9H2		3,371.5	13.2	0.11	3,537.2	65.6	0.44
YLH92Z		3,420.0	61.7	0.54	3,400.0	-71.6	-0.49
YPGML6		3,273.5	-84.8	-0.74	3,437.4	-34.3	-0.23
Z2E7U4		3,465.2	106.9	0.93	3,575.2	103.6	0.70
ZR7BJQ		3,306.5	-51.8	-0.45	3,583.8	112.1	0.76

Summary Statistics		
	Sample F57	Sample F58
Grand Means	3,358.31 psi	3,471.64 psi
Std Dev Btwn Labs	115.24 psi	147.61 psi
Statistics based on 49 of 54 reporting participants		

Sample F57: HIPS & Sample F58: HIPS

Comments on Assigned Data Flags for Test #705

- 7VLXCC (X) - Data for sample F58 are low. Inconsistent within the determinations of sample F58.
- 9ZLWZ7 (X) - Extreme data.
- KCFCR4 (X) - Data for both samples are high.
- RBJ6QD (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample F58.
- 62DQ6E (X) - Inconsistent in testing between samples.



Plastics Interlaboratory Testing Program

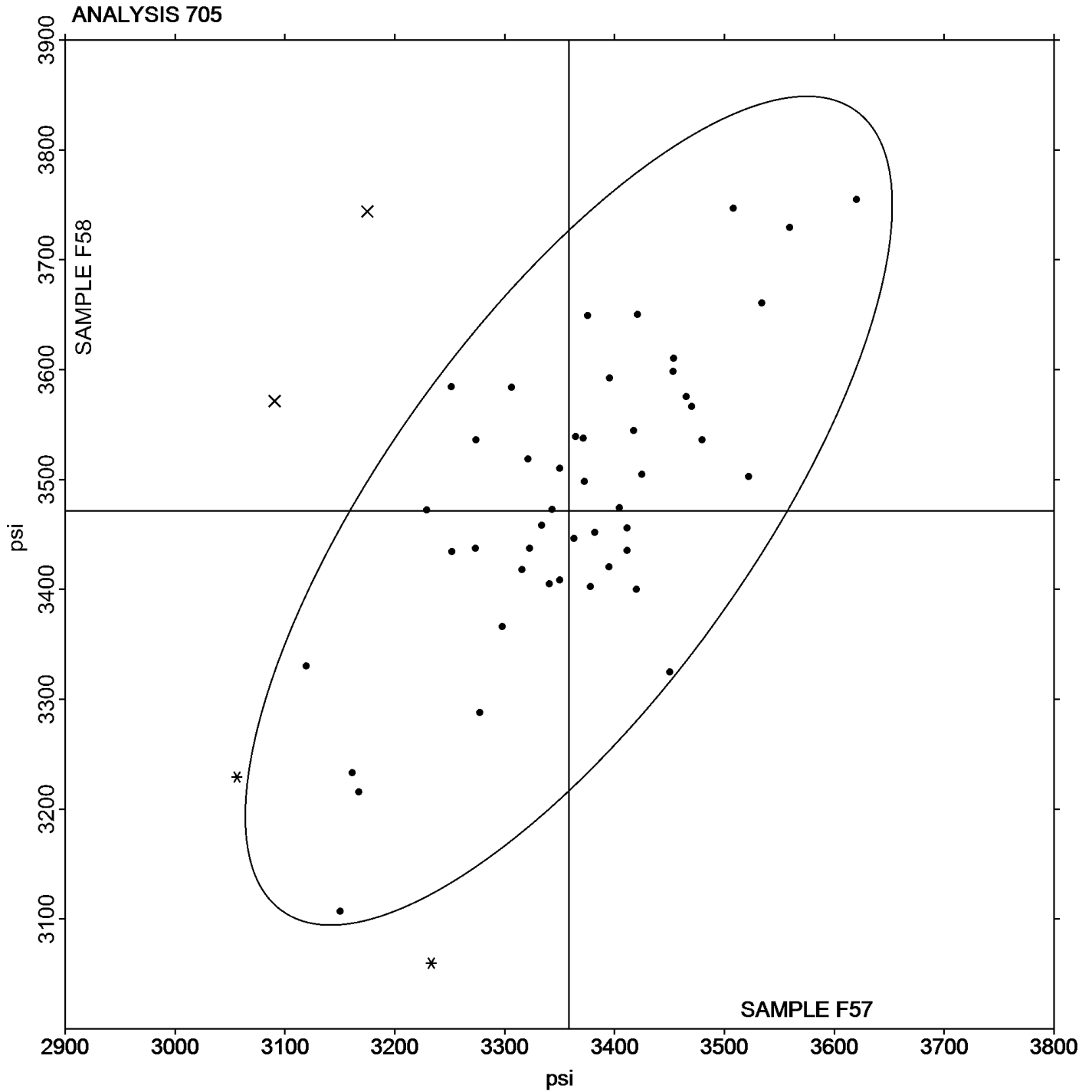
Report #109

Analysis 705

1st Qtr 2019

Tensile Stress at Break - psi

Grand Mean Sample F57: 3,358.31 psi Grand Mean Sample F58: 3,471.64 psi





Plastics Interlaboratory Testing Program

Report #109

Analysis 706

1st Qtr 2019

Percent Elongation at Yield - Percent

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2C8L4K		1.152	-0.157	-1.70	1.404	-0.080	-0.83
2NWRQM		1.272	-0.037	-0.40	1.470	-0.014	-0.14
389WTQ		1.238	-0.071	-0.77	1.424	-0.060	-0.62
3ZNTLN		1.218	-0.091	-0.98	1.426	-0.058	-0.60
46JVDU		1.266	-0.043	-0.46	1.504	0.020	0.21
4XU8QC		1.358	0.049	0.53	1.540	0.056	0.59
62DQ6E	X	1.034	-0.275	-2.98	1.560	0.076	0.79
67MHDX		1.242	-0.067	-0.72	1.382	-0.102	-1.06
6X9BJU		1.190	-0.119	-1.29	1.485	0.001	0.01
74WZXC		1.310	0.001	0.01	1.488	0.004	0.05
798BNL		1.400	0.091	0.99	1.540	0.056	0.59
7VLXCC	X	0.883	-0.426	-4.61	1.163	-0.321	-3.34
B69NZY		1.330	0.021	0.23	1.378	-0.106	-1.10
B72L96	X	1.750	0.441	4.78	1.902	0.418	4.36
BKMQK9		1.374	0.065	0.71	1.576	0.092	0.96
BY8TGJ		1.344	0.035	0.38	1.524	0.040	0.42
D69NDP		1.360	0.051	0.55	1.500	0.016	0.17
DX7ZFC		1.318	0.009	0.10	1.508	0.024	0.25
EDVG8F		1.380	0.071	0.77	1.540	0.056	0.59
EX32RL		1.262	-0.047	-0.51	1.364	-0.120	-1.25
FGRM2C		1.352	0.043	0.47	1.514	0.030	0.32
FYVM6Q		1.338	0.029	0.32	1.490	0.006	0.07
GR4FL4		1.348	0.039	0.42	1.542	0.058	0.61
GTYEYM		1.260	-0.049	-0.53	1.422	-0.062	-0.64
HGK4AQ		1.304	-0.005	-0.05	1.524	0.040	0.42
HKLAMB	*	1.450	0.141	1.53	1.500	0.016	0.17
JBQQL8		1.240	-0.069	-0.75	1.492	0.008	0.09
JZ8CH6		1.416	0.107	1.16	1.574	0.090	0.94
KCFCR4		1.400	0.091	0.99	1.600	0.116	1.21
KRUFFJ		1.510	0.201	2.18	1.722	0.238	2.48
KZR4DB		1.380	0.071	0.77	1.440	-0.044	-0.45
MFVLVL	*	1.077	-0.232	-2.52	1.242	-0.242	-2.52
PFAB94	X	37.940	36.631	396.82	26.860	25.376	264.22
PNKA3E		1.344	0.035	0.38	1.496	0.012	0.13
RBJ6QD	X	0.910	-0.399	-4.32	1.138	-0.346	-3.60



Plastics Interlaboratory Testing Program

Report #109

Analysis 706

1st Qtr 2019

Percent Elongation at Yield - Percent

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
RMZCLY		1.300	-0.009	-0.10	1.502	0.018	0.19
RNBUMX	*	1.095	-0.214	-2.31	1.189	-0.294	-3.07
T3RWVE		1.346	0.037	0.40	1.536	0.052	0.55
U764N7		1.346	0.037	0.40	1.496	0.012	0.13
UTDMTD		1.360	0.051	0.55	1.560	0.076	0.79
W7YPE3		1.464	0.155	1.68	1.648	0.164	1.71
XLZ6KM		1.294	-0.015	-0.16	1.436	-0.048	-0.50
Y6BDYT	X	1.200	-0.109	-1.18	2.000	0.516	5.38
Y6XZWW		1.314	0.005	0.06	1.532	0.048	0.50
YDM9H2		1.311	0.002	0.02	1.531	0.048	0.50
YLH92Z		1.284	-0.025	-0.27	1.488	0.004	0.05
YPGML6		1.107	-0.202	-2.19	1.326	-0.158	-1.64
Z2E7U4		1.350	0.041	0.45	1.552	0.068	0.71
ZR7BJQ		1.274	-0.034	-0.37	1.390	-0.094	-0.98

Summary Statistics		
	Sample F57	Sample F58
Grand Means	1.3088 Percent	1.4836 Percent
Stnd Dev Btwn Labs	0.0923 Percent	0.0960 Percent

Statistics based on 43 of 49 reporting participants

Sample F57: HIPS & Sample F58: HIPS

Comments on Assigned Data Flags for Test #706

- PFAB94 (X) - Extreme data.
- 7VLXCC (X) - Data for both samples are low. Possible Systematic Error.
- Y6BDYT (X) - Data for sample F58 are high. Inconsistent within the determinations of sample F57.
- RBJ6QD (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- 62DQ6E (X) - Data for sample F57 are low.
- B72L96 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample F57.



Plastics Interlaboratory Testing Program

Report #109

Analysis 708

1st Qtr 2019

Modulus of Elasticity - ksi

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2C8L4K		354.68	20.09	0.98	337.10	11.91	0.72
2NWRQM		340.40	5.81	0.28	334.00	8.81	0.54
389WTQ		361.30	26.71	1.30	337.82	12.63	0.77
3ZNTLN	X	434.54	99.95	4.86	404.66	79.47	4.83
46JVDU		342.36	7.77	0.38	324.32	-0.87	-0.05
4LKQK7		340.58	6.00	0.29	331.84	6.65	0.40
4XU8QC		330.29	-4.30	-0.21	316.17	-9.02	-0.55
62DQ6E		340.80	6.21	0.30	321.67	-3.53	-0.21
67MHDX		346.70	12.11	0.59	330.16	4.97	0.30
6X9BJU	*	380.52	45.93	2.23	345.64	20.45	1.24
74WZXC		327.86	-6.73	-0.33	336.22	11.03	0.67
798BNL		313.08	-21.51	-1.04	311.37	-13.82	-0.84
7VLXCC	X	510.67	176.08	8.55	444.57	119.37	7.26
B69NZY		309.86	-24.73	-1.20	308.70	-16.49	-1.00
B72L96	*	271.60	-62.99	-3.06	281.00	-44.19	-2.69
BKMQK9		319.27	-15.31	-0.74	311.55	-13.64	-0.83
BY8TGJ		342.06	7.47	0.36	334.72	9.53	0.58
D69NDP		317.00	-17.59	-0.85	307.80	-17.39	-1.06
DX7ZFC		338.54	3.95	0.19	326.46	1.27	0.08
EDVG8F		323.88	-10.71	-0.52	321.72	-3.47	-0.21
EX32RL	X	347.58	12.99	0.63	453.96	128.77	7.83
FGRM2C		348.06	13.47	0.65	345.68	20.49	1.25
FYVM6Q		346.84	12.25	0.60	334.54	9.35	0.57
GR4FL4		329.44	-5.15	-0.25	315.60	-9.59	-0.58
GTYEYM		342.18	7.59	0.37	329.40	4.21	0.26
H3HU4V		337.40	2.81	0.14	327.50	2.30	0.14
HGK4AQ		350.22	15.64	0.76	335.40	10.21	0.62
HKLAMB		343.70	9.11	0.44	322.24	-2.96	-0.18
JBQQL8		324.94	-9.65	-0.47	314.30	-10.89	-0.66
JZ8CH6		304.60	-29.99	-1.46	306.60	-18.59	-1.13
KCFCR4	X	545.58	210.99	10.25	487.33	162.14	9.86
KRUFFJ		320.66	-13.93	-0.68	312.10	-13.09	-0.80
KZR4DB		325.99	-8.60	-0.42	311.11	-14.08	-0.86
MFVLVL		347.73	13.14	0.64	332.63	7.44	0.45
PFAB94		336.20	1.61	0.08	334.40	9.21	0.56



Plastics Interlaboratory Testing Program

Report #109

Analysis 708

1st Qtr 2019

Modulus of Elasticity - ksi

WebCode	Data Flag	Sample F57			Sample F58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
PNKA3E		339.96	5.37	0.26	330.64	5.45	0.33
RBJ6QD	X	243.18	-91.41	-4.44	562.26	237.07	14.41
RMZCLY	*	278.77	-55.81	-2.71	278.42	-46.77	-2.84
RNBUMX	X	46.23	-288.36	-14.01	49.25	-275.95	-16.78
T3RWVE		319.64	-14.95	-0.73	314.47	-10.72	-0.65
U764N7		331.23	-3.36	-0.16	327.88	2.69	0.16
UTDMTD		354.22	19.63	0.95	348.94	23.75	1.44
W7YPE3		317.55	-17.04	-0.83	305.19	-20.00	-1.22
XLZ6KM	*	340.26	5.67	0.28	351.22	26.03	1.58
Y6BDYT	X	449.02	114.43	5.56	432.90	107.70	6.55
Y6XZWW		342.73	8.14	0.40	339.80	14.60	0.89
YDM9H2		335.41	0.82	0.04	321.00	-4.19	-0.25
YLH92Z		351.80	17.21	0.84	332.00	6.81	0.41
YPGML6		376.38	41.79	2.03	360.33	35.14	2.14
Z2E7U4		340.56	5.97	0.29	333.62	8.43	0.51

Summary Statistics		
	Sample F57	Sample F58
Grand Means	334.587 ksi	325.193 ksi
Stnd Dev Btw Labs	20.585 ksi	16.449 ksi
Statistics based on 43 of 50 reporting participants		

Sample F57: HIPS & Sample F58: HIPS

Comments on Assigned Data Flags for Test #708

- EX32RL (X) - Data for sample F58 are high. Inconsistent within the determinations of sample F58.
- 7VLXCC (X) - Data for both samples are high. Inconsistent within the determinations of both samples.
- KCFCR4 (X) - Data for both samples are high. Inconsistent within the determinations of sample F57.
- Y6BDYT (X) - Data for both samples are high.
- 3ZNTLN (X) - Data for both samples are high. Inconsistent within the determinations of both samples.
- RNBUMX (X) - Data for both samples are low.
- RBJ6QD (X) - Data for sample F57 are low and data for sample F58 are high. Inconsistent within the determinations of both samples.



Plastics Interlaboratory Testing Program

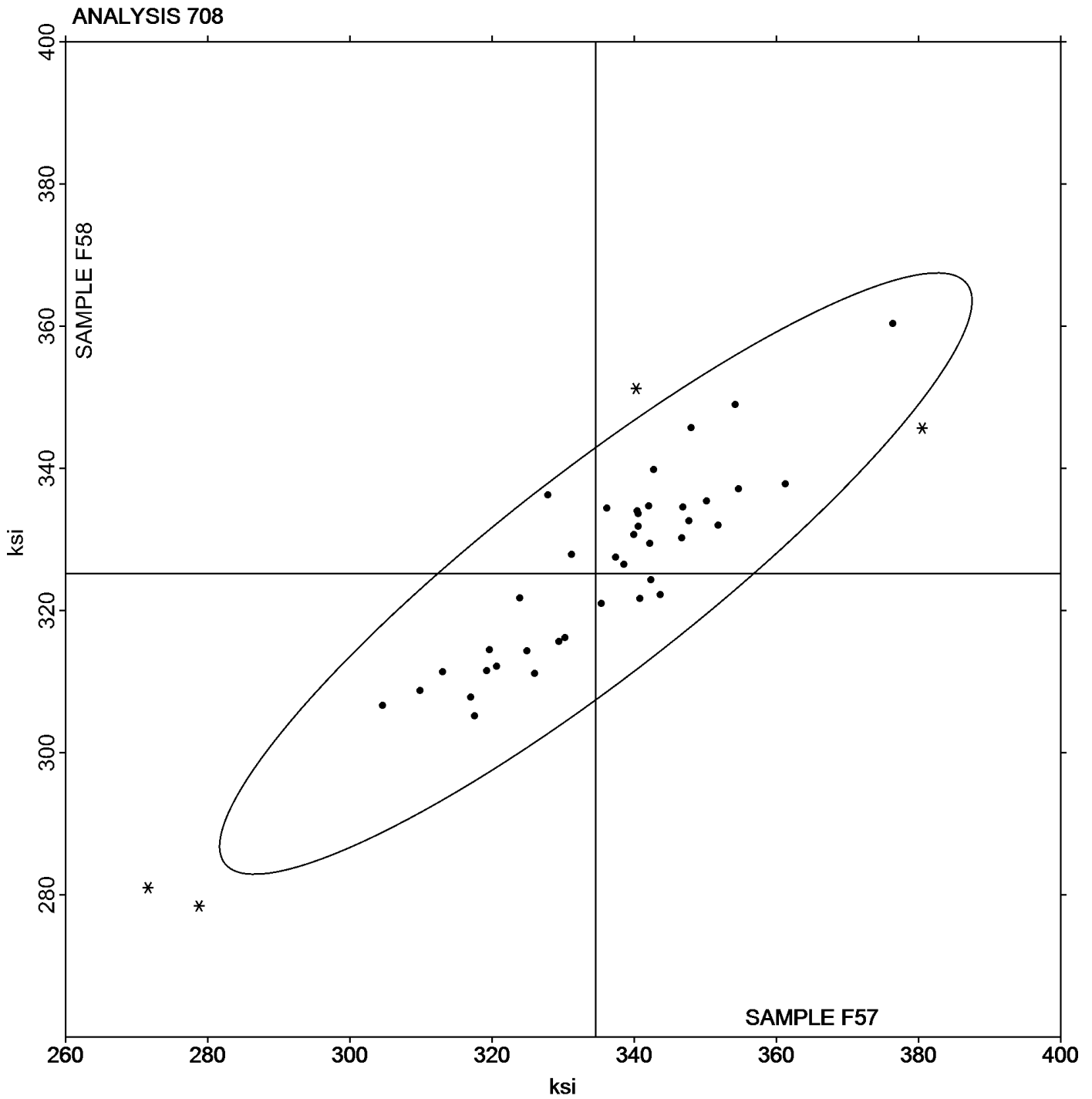
Report #109

Analysis 708

1st Qtr 2019

Modulus of Elasticity - ksi

Grand Mean Sample F57: 334.59 ksi Grand Mean Sample F58: 325.19 ksi





Plastics Interlaboratory Testing Program

Report #109

Analysis 710

1st Qtr 2019

Deflection Temp. Under Flexural Load (1.82 MPa) - Degrees C

WebCode	Data Flag	Sample E57			Sample E58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3DTW8H		75.95	-0.90	-1.47	75.30	-1.50	-1.96	TO
3YJWPZ		76.64	-0.20	-0.33	76.38	-0.42	-0.55	TO
46JVDU		75.45	-1.40	-2.28	75.33	-1.47	-1.93	TO
74WZXC		76.40	-0.45	-0.73	76.33	-0.47	-0.62	CF
798BNL		77.55	0.70	1.15	77.68	0.88	1.15	CF
BKMQK9		76.83	-0.02	-0.04	77.08	0.28	0.36	TO
DRHB2U		77.08	0.23	0.37	76.90	0.10	0.13	CE
ENXUCL		76.58	-0.27	-0.45	76.73	-0.07	-0.10	CE
GR4FL4		77.73	0.88	1.43	77.65	0.85	1.12	AT
HFR72J		77.00	0.15	0.25	76.88	0.08	0.10	TO
JZ8CH6		77.08	0.24	0.38	77.64	0.84	1.10	XX
KCFCR4		77.13	0.28	0.45	77.03	0.23	0.30	TO
RE9WYF		76.50	-0.35	-0.57	76.53	-0.27	-0.36	CE
T3RWVE		77.98	1.13	1.84	77.93	1.13	1.48	AT
W7YPE3		77.25	0.40	0.66	77.65	0.85	1.12	ZW
WJZAQZ		76.63	-0.22	-0.36	76.63	-0.17	-0.23	CS
XLZ6KM		77.40	0.55	0.90	77.33	0.53	0.69	IN
Y6XZWW		76.43	-0.42	-0.69	76.10	-0.70	-0.91	RO
Z2E7U4		76.53	-0.32	-0.53	76.13	-0.67	-0.88	XX

Summary Statistics		
	Sample E57	Sample E58
Grand Means	76.847 Degrees C	76.798 Degrees C
Stnd Dev Btwn Labs	0.612 Degrees C	0.763 Degrees C
Statistics based on 19 of 19 reporting participants		

Sample E57: HIPS & Sample E58: HIPS

Key to Instrument Codes Reported by Participants

AT Atlas	CE Ceast
CF Coesfeld	CS CSI
IN Instron	RO Rosand
TO Tinius Olsen	XX Instrument manufacturer not specified by lab
ZW Zwick	



Plastics Interlaboratory Testing Program

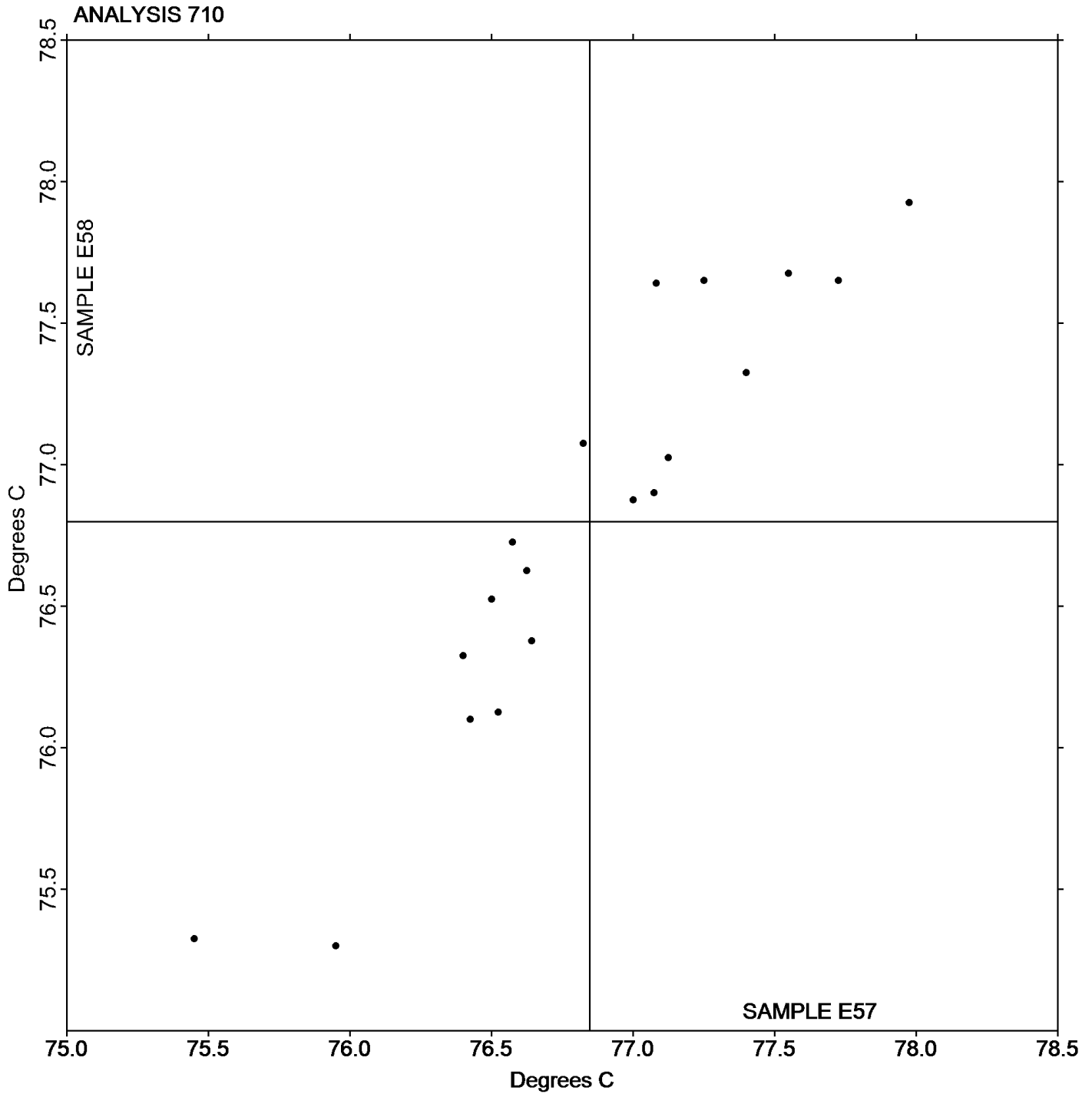
Report #109

Analysis 710

1st Qtr 2019

Deflection Temp. Under Flexural Load (1.82 MPa) - Degrees C

Grand Mean Sample E57: 76.847 Degrees C Grand Mean Sample E58: 76.798 Degrees C



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 711

1st Qtr 2019

Deflection Temp. Under Flexural Load (0.455 MPa) - Degrees C

WebCode	Data Flag	<u>Sample G57</u>			<u>Sample G58</u>			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
3DTW8H		85.2	1.8	1.09	69.6	0.2	0.20	XX
3YJWPZ		82.5	-1.0	-0.57	69.6	0.2	0.20	TO
46JVDU		81.1	-2.3	-1.38	68.4	-1.0	-1.37	TO
BKMQK9		83.4	0.0	0.00	69.9	0.5	0.63	TO
DRHB2U		86.5	3.1	1.83	70.5	1.1	1.38	CE
GT32EF		81.7	-1.7	-1.00	68.5	-0.9	-1.24	CE
KCFCR4		84.7	1.3	0.74	69.3	-0.2	-0.23	TO
Q7DDLL		83.3	-0.2	-0.09	70.6	1.2	1.54	CE
RE9WYF		82.1	-1.4	-0.80	69.2	-0.2	-0.29	CE
T3RWVE		83.7	0.3	0.18	68.8	-0.6	-0.82	AT

Summary Statistics		
	<u>Sample G57</u>	<u>Sample G58</u>
Grand Means	83.40 Degrees C	69.42 Degrees C
Std Dev Btwn Labs	1.68 Degrees C	0.76 Degrees C
Statistics based on 10 of 10 reporting participants		

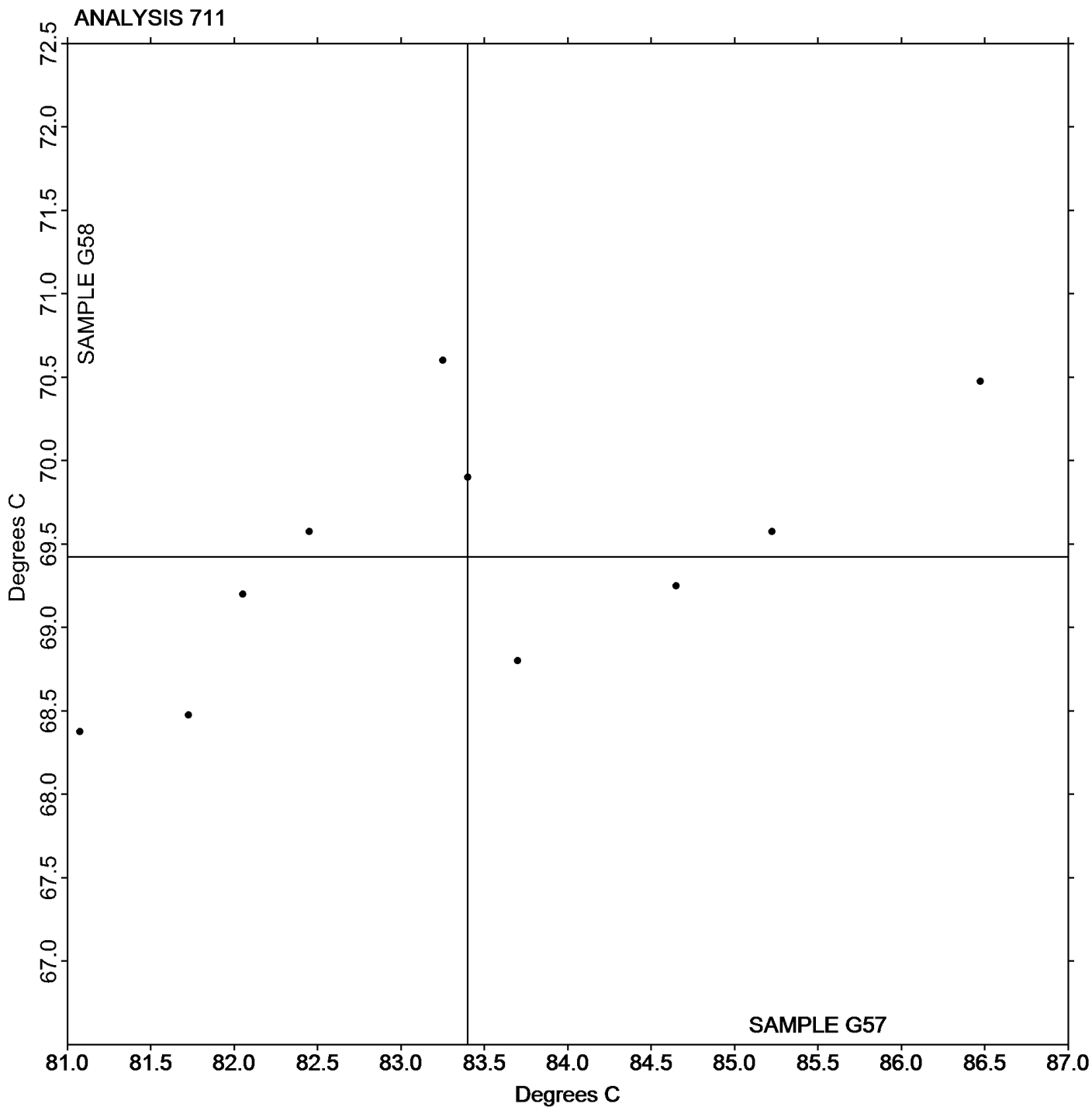
Sample G57: PP & Sample G58: PP

Key to Instrument Codes Reported by Participants

- | | |
|-----------------|---|
| AT Atlas | CE Ceast |
| TO Tinius Olsen | XX Instrument manufacturer not specified by lab |



Grand Mean Sample G57: 83.400 Degrees C Grand Mean Sample G58: 69.423 Degrees C



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 712

1st Qtr 2019

Temp. of Deflection Under Flexural Load (1.80 MPa) - Degrees C

WebCode	Data Flag	Sample N57			Sample N58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2A33YW		81.48	-0.40	-0.46	81.63	-0.26	-0.29	CE
3YJWPZ		82.33	0.45	0.50	82.31	0.43	0.48	TO
4T33X8		83.08	1.20	1.35	83.00	1.12	1.26	CF
6FYGAU		81.70	-0.18	-0.20	81.40	-0.48	-0.54	IN
7THLUV		81.08	-0.80	-0.91	81.30	-0.58	-0.65	DN
7WU4WR		81.55	-0.33	-0.37	81.63	-0.26	-0.29	AT
98QK6T	X	86.88	5.00	5.65	85.45	3.57	4.01	TO
9DEH72		83.47	1.59	1.79	83.30	1.42	1.60	DN
9XZQGF		82.60	0.72	0.81	82.15	0.27	0.30	XX
BKMQK9		82.13	0.25	0.28	82.30	0.42	0.47	TO
BLWYPL		81.40	-0.48	-0.54	81.56	-0.33	-0.37	CE
DC93ZB		81.83	-0.05	-0.06	82.00	0.12	0.13	RO
DRHB2U		82.20	0.32	0.36	82.40	0.52	0.58	CE
E89TAN		80.05	-1.83	-2.07	80.20	-1.68	-1.89	XX
EDVG8F		82.13	0.25	0.28	82.10	0.22	0.25	IN
EKTBYL		81.73	-0.15	-0.17	81.03	-0.86	-0.96	TO
FP9LNG		82.08	0.20	0.22	82.48	0.59	0.67	CE
JDXYWD	*	84.08	2.20	2.48	84.53	2.64	2.97	CE
JRZQVH		83.10	1.22	1.38	82.53	0.64	0.72	DN
JZ8CH6		82.78	0.90	1.02	82.50	0.62	0.70	XX
KJXPQ3	X	84.92	3.04	3.43	83.77	1.89	2.12	ZW
KZR4DB		81.98	0.10	0.11	81.90	0.02	0.02	CE
NTVNRZ		82.80	0.92	1.04	83.25	1.37	1.54	CE
PRXR6B		81.73	-0.15	-0.17	81.80	-0.08	-0.09	TO
Q7DDLL		80.80	-1.08	-1.22	80.87	-1.02	-1.14	CF
QHQUTX		80.55	-1.33	-1.50	80.68	-1.21	-1.36	AT
QLQ4X9		81.93	0.05	0.05	81.73	-0.16	-0.18	TO
RE9WYF		81.28	-0.60	-0.68	81.48	-0.41	-0.46	CE
RMHVFR		80.48	-1.40	-1.59	80.55	-1.33	-1.50	XX
RMZCLY		82.43	0.55	0.62	82.33	0.44	0.50	CE
T3RWVE		82.13	0.25	0.28	81.78	-0.11	-0.12	AT
TDNAMY		82.03	0.15	0.16	82.35	0.47	0.53	TY
W7YPE3		81.65	-0.23	-0.26	81.45	-0.43	-0.49	ZW
WWQMZA		81.13	-0.75	-0.85	81.58	-0.31	-0.35	TO
WYB9EX		82.80	0.92	1.04	82.60	0.72	0.81	DN



Plastics Interlaboratory Testing Program

Report #109

Analysis 712

1st Qtr 2019

Temp. of Deflection Under Flexural Load (1.80 MPa) - Degrees C

WebCode	Data Flag	Sample N57			Sample N58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
YLH92Z		81.85	-0.03	-0.03	81.93	0.04	0.05	MR
Z2E7U4		80.75	-1.13	-1.28	80.23	-1.66	-1.86	IN
ZR7BJQ		80.65	-1.23	-1.39	80.98	-0.91	-1.02	CE

Summary Statistics

	Sample N57	Sample N58
Grand Means	81.880 Degrees C	81.882 Degrees C
Std Dev Btwn Labs	0.885 Degrees C	0.889 Degrees C

Statistics based on 36 of 38 reporting participants

Sample N57: ABS & Sample N58: ABS

Comments on Assigned Data Flags for Test #712

98QK6T (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

KJXPQ3 (X) - Data for sample N57 are high. Inconsistent within the determinations of sample N57.

Key to Instrument Codes Reported by Participants

AT Atlas	CE Ceast
CF Coesfeld	DN DYNISCO
IN Instron	MR MRC
RO Rosand	TO Tinius Olsen
TY Toyoseiki	XX Instrument manufacturer not specified by lab
ZW Zwick	



Plastics Interlaboratory Testing Program

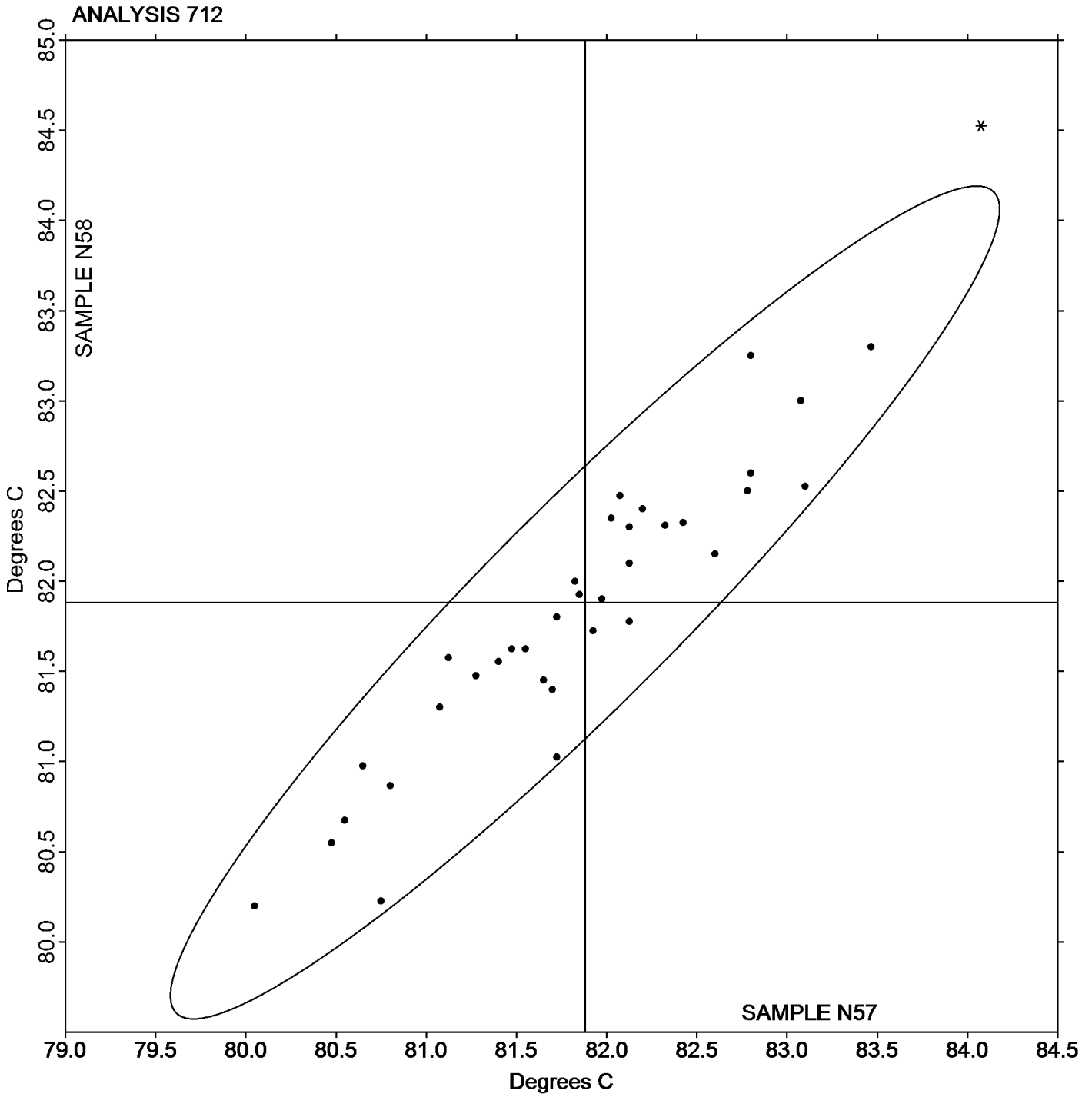
Report #109

Analysis 712

1st Qtr 2019

Temp. of Deflection Under Flexural Load (1.80 MPa) - Degrees C

Grand Mean Sample N57: 81.880 Degrees C Grand Mean Sample N58: 81.882 Degrees C





Plastics Interlaboratory Testing Program

Report #109

Analysis 715

1st Qtr 2019

Vicat Softening Temperature (Rate A)

WebCode	Data Flag	Sample H57			Sample H58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2C8L4K		95.65	0.57	1.25	95.65	0.63	1.12	CE
773M8B		94.78	-0.30	-0.65	94.80	-0.22	-0.38	TO
798BNL		94.90	-0.18	-0.39	95.38	0.37	0.65	CF
AYRPVZ		94.73	-0.35	-0.76	94.87	-0.15	-0.26	CE
BKMQK9		94.98	-0.10	-0.21	94.83	-0.18	-0.32	TO
DC93ZB		94.88	-0.20	-0.43	94.88	-0.13	-0.23	RO
EDY4L9		95.03	-0.05	-0.10	94.98	-0.03	-0.06	CE
ELAV3B		94.80	-0.28	-0.61	94.72	-0.30	-0.53	CE
FYVM6Q		95.02	-0.06	-0.14	94.83	-0.18	-0.32	CE
GT32EF		94.20	-0.88	-1.92	94.03	-0.98	-1.74	CE
JDXYWD		95.78	0.70	1.54	96.02	1.00	1.77	CF
JZ8CH6	X	94.26	-0.82	-1.79	95.74	0.72	1.28	XX
KZR4DB		95.25	0.17	0.37	95.20	0.18	0.33	CE
M2YM8A		95.17	0.09	0.19	95.08	0.07	0.12	CE
PRXR6B		94.58	-0.50	-1.08	94.05	-0.97	-1.71	CE
Q7DDLL		95.10	0.02	0.05	95.27	0.25	0.44	CF
QHQUTX		95.13	0.05	0.12	94.62	-0.40	-0.71	AT
RE9WYF		94.80	-0.28	-0.61	94.68	-0.33	-0.59	CE
T3RWVE		95.35	0.27	0.59	95.27	0.25	0.44	AT
W7YPE3	*	96.33	1.25	2.74	96.38	1.37	2.42	CF
Y6XZWW		95.10	0.02	0.05	94.77	-0.25	-0.44	RO

Summary Statistics		Sample H57	Sample H58
Grand Means		95.079 Degrees C	95.016 Degrees C
Std Dev Btwn Labs		0.457 Degrees C	0.564 Degrees C
Statistics based on 20 of 21 reporting participants			

Sample H57: HIPS & Sample H58: HIPS

Comments on Assigned Data Flags for Test #715

JZ8CH6 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.



Plastics Interlaboratory Testing Program

Report #109

Analysis 715

1st Qtr 2019

Vicat Softening Temperature (Rate A)

Key to Instrument Codes Reported by Participants

AT	Atlas	CE	Ceast
CF	Coesfeld	RO	Rosand
TO	Tinius Olsen	XX	Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

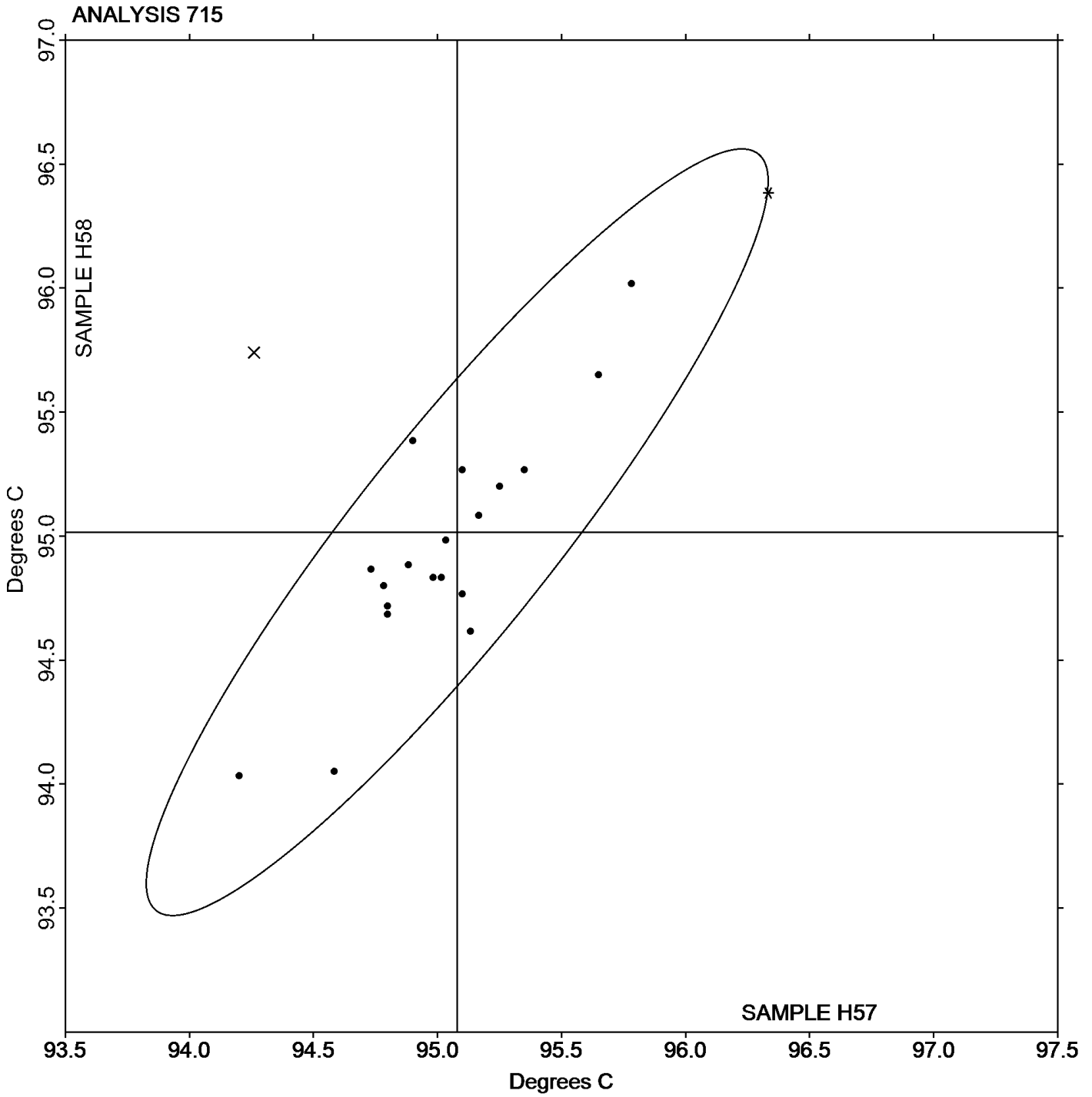
Report #109

Analysis 715

1st Qtr 2019

Vicat Softening Temperature (Rate A)

Grand Mean Sample H57: 95.079 Degrees C Grand Mean Sample H58: 95.016 Degrees C





Plastics Interlaboratory Testing Program

Report #109

Analysis 716

1st Qtr 2019

Vicat Softening Temperature (Rate B)

WebCode	Data Flag	Sample R57			Sample R58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2C8L4K		98.57	1.22	1.55	98.47	1.21	1.67	CE
3YJWPZ		97.38	0.03	0.04	97.38	0.12	0.17	TO
773M8B		96.77	-0.58	-0.74	96.82	-0.44	-0.60	TO
798BNL		97.22	-0.13	-0.17	97.80	0.55	0.75	CF
AYRPVZ		96.80	-0.55	-0.70	96.83	-0.42	-0.58	CE
BKMQK9		96.97	-0.38	-0.48	96.90	-0.35	-0.49	TO
DC93ZB		96.90	-0.45	-0.57	96.92	-0.34	-0.47	RO
FYVM6Q		97.42	0.07	0.09	96.97	-0.29	-0.40	CE
GT32EF		95.92	-1.43	-1.82	95.90	-1.35	-1.87	CE
JDXYWD		97.88	0.53	0.67	97.72	0.46	0.64	CF
JZ8CH6		96.30	-1.05	-1.34	96.85	-0.40	-0.55	XX
KZR4DB		97.78	0.44	0.56	97.40	0.15	0.20	CE
M2YM8A		97.00	-0.35	-0.44	97.07	-0.19	-0.26	CE
PRXR6B	*	97.65	0.30	0.39	96.37	-0.89	-1.22	XX
Q7DDL		97.70	0.35	0.45	97.33	0.08	0.11	CF
QHQUITX		97.58	0.24	0.30	97.50	0.25	0.34	AT
T3RWVE		97.88	0.54	0.68	97.83	0.58	0.80	AT
U74Y49		96.18	-1.16	-1.48	96.20	-1.05	-1.45	TO
W7YPE3		98.05	0.70	0.90	98.10	0.85	1.16	CF
WJZAQZ		99.25	1.90	2.42	98.92	1.66	2.29	CS
Y6XZWW		97.10	-0.25	-0.31	97.08	-0.17	-0.24	RO

Summary Statistics		
	Sample R57	Sample R58
Grand Means	97.347 Degrees C	97.255 Degrees C
Std Dev Btwn Labs	0.785 Degrees C	0.726 Degrees C
Statistics based on 21 of 21 reporting participants		

Sample R57: HIPS & Sample R58: HIPS

Key to Instrument Codes Reported by Participants

- | | |
|---|-----------------|
| AT Atlas | CE Ceast |
| CF Coesfeld | CS CSI |
| RO Rosand | TO Tinius Olsen |
| XX Instrument manufacturer not specified by lab | |



Plastics Interlaboratory Testing Program

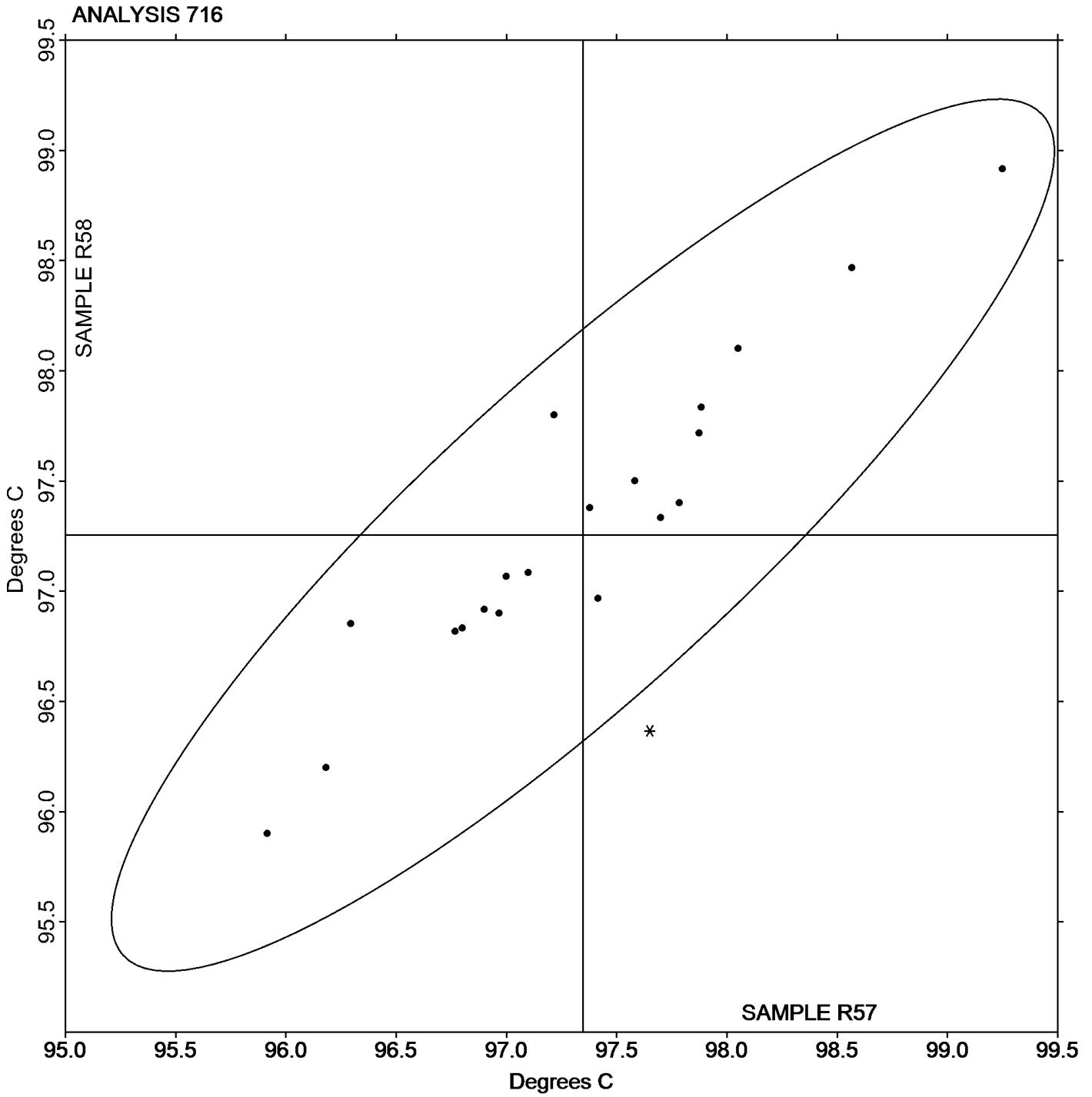
Report #109

Analysis 716

1st Qtr 2019

Vicat Softening Temperature (Rate B)

Grand Mean Sample R57: 97.347 Degrees C Grand Mean Sample R58: 97.255 Degrees C





Plastics Interlaboratory Testing Program

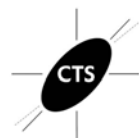
Report #109

Analysis 718

1st Qtr 2019

Specific Gravity - sp gr 23/23 C

WebCode	Data Flag	Sample T57			Sample T58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		1.03600	0.00102	0.48	1.03667	0.00165	0.82
2C8L4K		1.03487	-0.00012	-0.05	1.03533	0.00032	0.16
2WD7VD		1.03490	-0.00008	-0.04	1.03473	-0.00028	-0.14
3YJWPZ		1.03380	-0.00118	-0.56	1.03360	-0.00141	-0.70
46JVDU		1.03547	0.00048	0.23	1.03530	0.00029	0.14
4HLFN7		1.03610	0.00112	0.53	1.03643	0.00142	0.70
4KCE6Q		1.03700	0.00202	0.95	1.03600	0.00099	0.49
4LKQK7		1.03520	0.00022	0.10	1.03533	0.00032	0.16
4LN3TW		1.03443	-0.00055	-0.26	1.03480	-0.00021	-0.11
4NCQZQ		1.03482	-0.00016	-0.08	1.03501	0.00000	0.00
4W3RDZ		1.03550	0.00052	0.24	1.03540	0.00039	0.19
67MHDX		1.03863	0.00365	1.73	1.03903	0.00402	1.99
6DTJRT		1.03403	-0.00095	-0.45	1.03387	-0.00115	-0.57
6FYGAU		1.03613	0.00115	0.54	1.03587	0.00085	0.42
6X9BJU		1.03550	0.00052	0.24	1.03583	0.00082	0.41
798BNL		1.03427	-0.00072	-0.34	1.03420	-0.00081	-0.40
7RH84B		1.03100	-0.00398	-1.88	1.03333	-0.00168	-0.83
7THLUV		1.03467	-0.00032	-0.15	1.03400	-0.00101	-0.50
7WU4WR	X	1.21733	0.18235	86.20	1.03733	0.00232	1.15
8DVFWF		1.03400	-0.00098	-0.46	1.03500	-0.00001	-0.01
8FMRWR		1.03670	0.00172	0.81	1.03680	0.00179	0.88
9DEH72		1.03723	0.00225	1.06	1.03713	0.00212	1.05
9XZQGF		1.03300	-0.00198	-0.94	1.03267	-0.00235	-1.16
9YY2BX		1.03197	-0.00302	-1.43	1.03283	-0.00218	-1.08
BK4ZGF		1.03467	-0.00032	-0.15	1.03500	-0.00001	-0.01
BKMQK9		1.03517	0.00018	0.09	1.03523	0.00022	0.11
BLWYPL		1.03547	0.00048	0.23	1.03490	-0.00011	-0.06
C6WWZV		1.03557	0.00058	0.28	1.03597	0.00095	0.47
D7FDM8		1.03363	-0.00135	-0.64	1.03353	-0.00148	-0.73
DRHB2U		1.03400	-0.00098	-0.46	1.03233	-0.00268	-1.33
DX7ZFC		1.03673	0.00175	0.83	1.03710	0.00209	1.03
E84HAC		1.03663	0.00165	0.78	1.03660	0.00159	0.78
E89TAN		1.03400	-0.00098	-0.46	1.03433	-0.00068	-0.34
ECH9JD		1.03533	0.00035	0.17	1.03467	-0.00035	-0.17
EKTBYL	*	1.03247	-0.00252	-1.19	1.03543	0.00042	0.21



Plastics Interlaboratory Testing Program

Report #109

Analysis 718

1st Qtr 2019

Specific Gravity - sp gr 23/23 C

WebCode	Data Flag	Sample T57			Sample T58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
ENXUCL		1.03167	-0.00332	-1.57	1.03067	-0.00435	-2.15
FGRM2C	*	1.03970	0.00472	2.23	1.03747	0.00245	1.21
FYVM6Q		1.03717	0.00218	1.03	1.03700	0.00199	0.98
G9EFVD		1.03600	0.00102	0.48	1.03667	0.00165	0.82
GR4FL4		1.03623	0.00125	0.59	1.03673	0.00172	0.85
GT32EF		1.03407	-0.00092	-0.43	1.03297	-0.00205	-1.01
HD27F9		1.03733	0.00235	1.11	1.03807	0.00305	1.51
HWDWUR		1.03503	0.00005	0.02	1.03567	0.00065	0.32
JRZQVH		1.03393	-0.00105	-0.50	1.03370	-0.00131	-0.65
JZ8CH6	X	1.03273	-0.00225	-1.06	1.02790	-0.00711	-3.52
KZR4DB		1.03643	0.00145	0.69	1.03533	0.00032	0.16
M34YM6		1.03333	-0.00165	-0.78	1.03500	-0.00001	-0.01
MNABWE		1.03340	-0.00158	-0.75	1.03243	-0.00258	-1.28
ND43BY		1.03423	-0.00075	-0.35	1.03240	-0.00261	-1.29
P7F3NC		1.03727	0.00228	1.08	1.03670	0.00169	0.83
P8A887		1.03067	-0.00432	-2.04	1.03100	-0.00401	-1.99
PTPPDG		1.03390	-0.00108	-0.51	1.03573	0.00072	0.36
Q7DDL		1.03700	0.00202	0.95	1.03500	-0.00001	-0.01
QC2YQM	*	1.02933	-0.00565	-2.67	1.03067	-0.00435	-2.15
QC4DQ3		1.03777	0.00278	1.32	1.03810	0.00309	1.53
QHQUTX		1.03487	-0.00012	-0.05	1.03583	0.00082	0.41
RBJ6QD	X	1.03067	-0.00432	-2.04	1.02533	-0.00968	-4.79
RDB44C		1.03443	-0.00055	-0.26	1.03450	-0.00051	-0.25
RE9WYF		1.03677	0.00178	0.84	1.03583	0.00082	0.41
RMZCLY		1.03743	0.00245	1.16	1.03777	0.00275	1.36
RNBUMX		1.03233	-0.00265	-1.25	1.03133	-0.00368	-1.82
T3RWVE		1.03657	0.00158	0.75	1.03617	0.00115	0.57
UTDMTD	*	1.03000	-0.00498	-2.36	1.03200	-0.00301	-1.49
V7JFUV		1.03760	0.00262	1.24	1.03747	0.00245	1.21
VFPXET		1.03467	-0.00032	-0.15	1.03233	-0.00268	-1.33
W7YPE3		1.03730	0.00232	1.10	1.03730	0.00229	1.13
WJFTBX		1.03390	-0.00108	-0.51	1.03370	-0.00131	-0.65
WTTTV2		1.03810	0.00312	1.47	1.03903	0.00402	1.99
WZ47M6		1.03357	-0.00142	-0.67	1.03270	-0.00231	-1.15
XLZ6KM	*	1.03013	-0.00485	-2.29	1.02990	-0.00511	-2.53



Plastics Interlaboratory Testing Program

Report #109

Analysis 718

1st Qtr 2019

Specific Gravity - sp gr 23/23 C

WebCode	Data Flag	Sample T57			Sample T58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
YCVA AV		1.03637	0.00138	0.65	1.03430	-0.00071	-0.35
YLH92Z		1.03683	0.00185	0.88	1.03673	0.00172	0.85
YPGML6		1.03710	0.00212	1.00	1.03773	0.00272	1.35
YR9NL2	*	1.03120	-0.00378	-1.79	1.03430	-0.00071	-0.35
Z2E7U4		1.03517	0.00018	0.09	1.03653	0.00152	0.75
ZTX9RW		1.03600	0.00102	0.48	1.03500	-0.00001	-0.01

Summary Statistics

	Sample T57	Sample T58
Grand Means	1.034982 sp gr 23/23 C	1.035014 sp gr 23/23 C
Std Dev Btwn Labs	0.002115 sp gr 23/23 C	0.002020 sp gr 23/23 C

Statistics based on 73 of 76 reporting participants

Sample T57: HIPS & Sample T58: HIPS

Comments on Assigned Data Flags for Test #718

- 7WU4WR (X) - Data for sample T57 are high. Inconsistent within the determinations of sample T57.
- JZ8CH6 (X) - Data for sample T58 are low. Inconsistent within the determinations of sample T57.
- RBJ6QD (X) - Data for sample T58 are low. Inconsistent within the determinations of sample T58.



Plastics Interlaboratory Testing Program

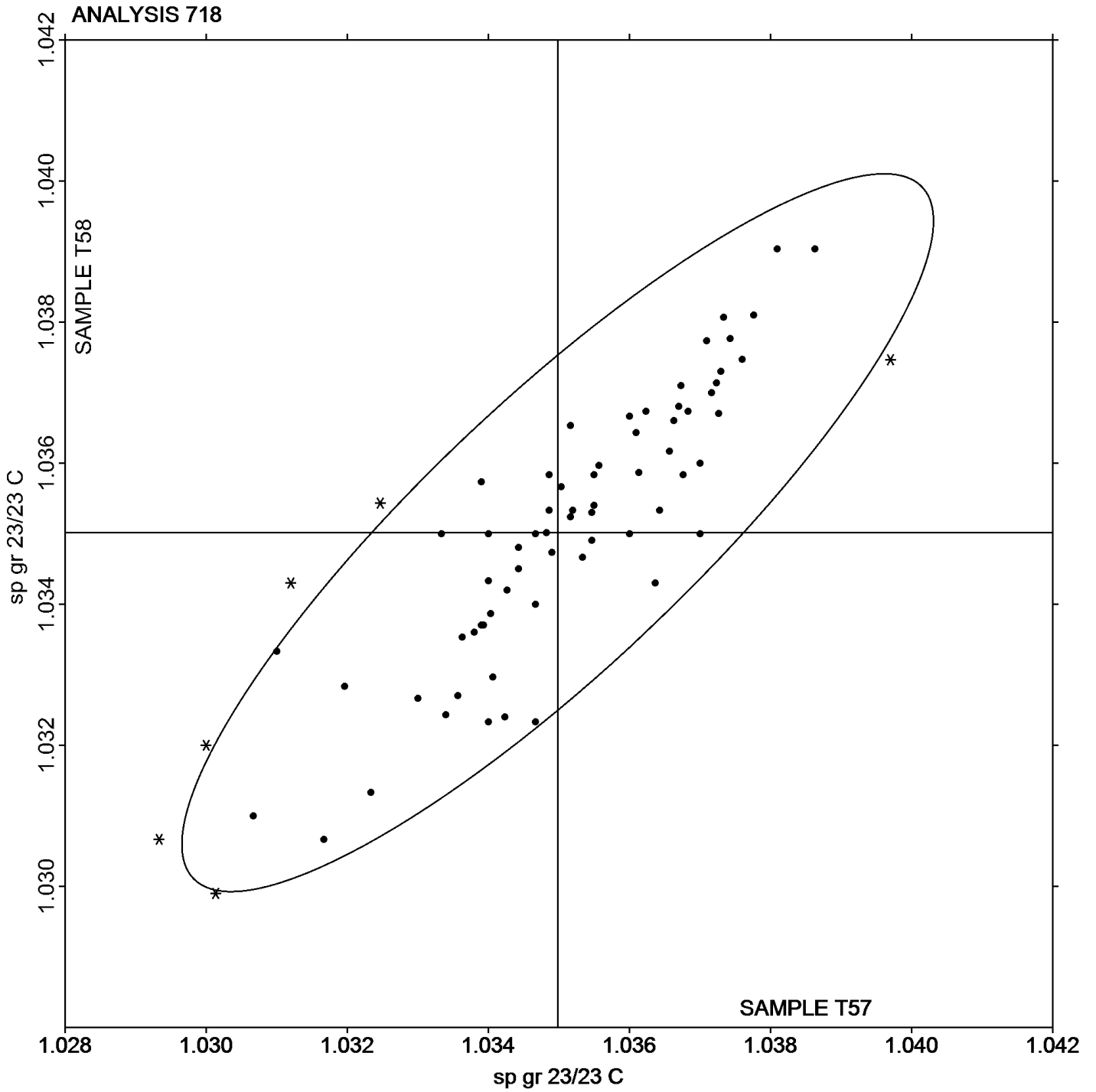
Report #109

Analysis 718

1st Qtr 2019

Specific Gravity - sp gr 23/23 C

Grand Mean Sample T57: 1.0350 sp gr 23/23 C Grand Mean Sample T58: 1.0350 sp gr 23/23 C





Plastics Interlaboratory Testing Program

Report #109

Analysis 720

1st Qtr 2019

Flexural Modulus- ksi

WebCode	Data Flag	Sample J57			Sample J58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2NWRQM		318.6	-22.5	-1.08	325.0	-15.7	-0.78
39ZM6W		313.9	-27.2	-1.31	313.9	-26.9	-1.34
3ATLD4		341.8	0.7	0.04	322.7	-18.0	-0.90
3DTW8H		350.1	9.0	0.44	353.3	12.6	0.63
4LKQK7		357.0	16.0	0.77	362.3	21.6	1.07
4XU8QC		356.2	15.1	0.73	365.1	24.4	1.21
67MHDX		358.7	17.6	0.85	365.1	24.4	1.21
6X9BJU		334.1	-6.9	-0.33	333.7	-7.0	-0.35
74WZXC		370.7	29.6	1.43	345.8	5.0	0.25
798BNL		293.1	-48.0	-2.32	290.9	-49.8	-2.48
8DVFWF		316.1	-25.0	-1.21	319.1	-21.6	-1.08
9XZQGF		331.9	-9.2	-0.44	334.6	-6.1	-0.31
9ZLWZ7		340.4	-0.7	-0.03	332.4	-8.3	-0.41
B72L96		388.4	47.3	2.28	390.6	49.9	2.48
BKMQK9		347.7	6.6	0.32	356.3	15.5	0.77
DRHB2U		360.0	18.9	0.91	341.1	0.4	0.02
E89TAN		351.0	9.9	0.48	354.5	13.7	0.68
EDVG8F	X	631.5	290.4	14.00	627.6	286.9	14.27
EX32RL	*	388.6	47.5	2.29	367.0	26.3	1.31
FGRM2C		344.8	3.7	0.18	346.8	6.1	0.30
FYVM6Q		352.0	10.9	0.52	353.8	13.1	0.65
GR4FL4		326.9	-14.1	-0.68	327.6	-13.1	-0.65
H3HU4V		322.3	-18.8	-0.90	346.5	5.8	0.29
HEWUUX		344.8	3.7	0.18	347.0	6.3	0.31
HGK4AQ		331.0	-10.1	-0.49	338.6	-2.1	-0.11
HLEATM		346.9	5.8	0.28	346.5	5.8	0.29
JBQQL8		359.4	18.3	0.88	366.1	25.3	1.26
JZ8CH6		316.6	-24.5	-1.18	316.6	-24.1	-1.20
K6KTQE		322.6	-18.5	-0.89	328.5	-12.3	-0.61
KCFCR4		351.0	9.9	0.48	353.6	12.9	0.64
KRUFFJ	X	418.9	77.8	3.75	405.2	64.4	3.20
KZR4DB		311.4	-29.7	-1.43	301.0	-39.8	-1.98
MFVLVL		339.5	-1.6	-0.08	319.8	-21.0	-1.04
MPKQ37		345.1	4.0	0.19	343.3	2.5	0.13
NMRVLB	X	243.6	-97.5	-4.70	243.9	-96.8	-4.82



Plastics Interlaboratory Testing Program

Report #109

Analysis 720

1st Qtr 2019

Flexural Modulus- ksi

WebCode	Data Flag	Sample J57			Sample J58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
PFAB94	*	337.8	-3.3	-0.16	310.0	-30.7	-1.53
PNKA3E	*	399.0	57.9	2.79	381.7	40.9	2.04
PTPPDG		329.2	-11.9	-0.57	328.4	-12.3	-0.61
QTNC6F	X	298.0	-43.1	-2.08	268.7	-72.0	-3.58
T3RWVE		340.1	-0.9	-0.05	342.0	1.3	0.06
TEKM87		335.6	-5.5	-0.26	349.8	9.1	0.45
U764N7		326.2	-14.9	-0.72	329.1	-11.6	-0.58
UTDMTD		351.6	10.5	0.51	349.0	8.2	0.41
VRHD4U		349.8	8.7	0.42	353.0	12.3	0.61
VTBCC2		332.9	-8.2	-0.39	334.2	-6.5	-0.32
W7YPE3		319.8	-21.3	-1.03	320.0	-20.8	-1.03
XLZ6KM		331.9	-9.2	-0.44	336.9	-3.8	-0.19
Y6BDYT		323.7	-17.4	-0.84	328.6	-12.2	-0.61
Y6XZWW		343.9	2.8	0.13	347.5	6.8	0.34
YDM9H2		343.9	2.8	0.13	353.3	12.6	0.62
YLH92Z		302.4	-38.7	-1.87	309.6	-31.1	-1.55
YR9NL2		339.2	-1.9	-0.09	336.5	-4.2	-0.21
Z2E7U4		356.3	15.2	0.73	349.4	8.7	0.43
ZR7BJQ		358.7	17.6	0.85	368.8	28.1	1.40

Summary Statistics		
	Sample J57	Sample J58
Grand Means	341.09 ksi	340.74 ksi
Stnd Dev Btwn Labs	20.74 ksi	20.10 ksi

Statistics based on 50 of 54 reporting participants

Sample J57: HIPS & Sample J58: HIPS

Comments on Assigned Data Flags for Test #720

- EDVG8F (X) - Data for both samples are high. Possible Systematic Error.
- NMRVLB (X) - Data for both samples are low. Possible Systematic Error.
- QTNC6F (X) - Data for sample J58 are low. Inconsistent within the determinations of both samples.
- KRUFFJ (X) - Data for both samples are high. Possible Systematic Error.



Plastics Interlaboratory Testing Program

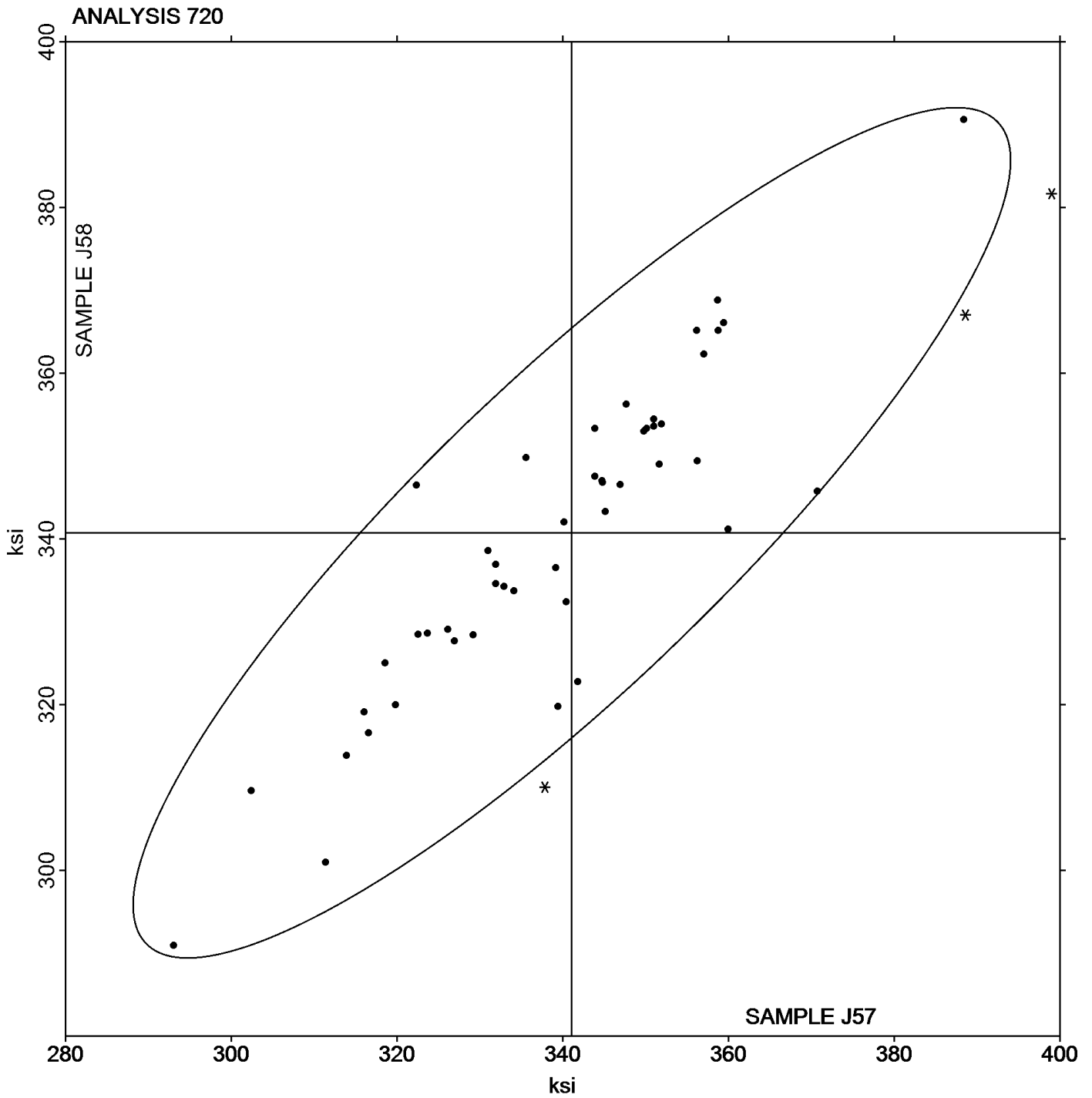
Report #109

Analysis 720

1st Qtr 2019

Flexural Modulus- ksi

Grand Mean Sample J57: 341.09 ksi Grand Mean Sample J58: 340.74 ksi





Plastics Interlaboratory Testing Program

Report #109

Analysis 721

1st Qtr 2019

Flexural Stress at 5% Strain - psi

WebCode	Data Flag	Sample J57			Sample J58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4LKQK7		5,959	-69	-0.17	6,045	27	0.08
4XU8QC		6,170	142	0.35	6,299	282	0.79
67MHDX		5,421	-607	-1.51	5,552	-465	-1.31
6X9BJU		5,838	-191	-0.47	5,805	-212	-0.60
74WZXC		6,451	423	1.05	5,900	-117	-0.33
798BNL		5,616	-412	-1.02	5,637	-381	-1.07
8DVFWF		5,834	-194	-0.48	5,829	-188	-0.53
B72L96		6,598	570	1.41	6,668	651	1.83
BKMQK9		5,814	-214	-0.53	6,383	365	1.02
DRHB2U		6,602	574	1.42	5,987	-30	-0.09
EDVG8F	X	7,387	1,359	3.37	7,431	1,414	3.97
EX32RL		6,220	192	0.48	5,713	-304	-0.85
FGRM2C		5,880	-148	-0.37	5,942	-75	-0.21
FYVM6Q		5,988	-40	-0.10	6,104	87	0.24
GR4FL4		5,982	-46	-0.11	5,978	-40	-0.11
H3HU4V		5,893	-135	-0.33	6,555	537	1.51
HEWUUX		6,224	196	0.49	6,242	225	0.63
HGK4AQ		5,713	-315	-0.78	5,741	-277	-0.78
HLEATM		5,578	-450	-1.12	5,651	-366	-1.03
JBQQL8		6,141	113	0.28	6,191	174	0.49
JZ8CH6		5,199	-829	-2.06	5,833	-184	-0.52
K6KTQE		5,694	-334	-0.83	5,724	-294	-0.82
KCFCR4		6,016	-12	-0.03	6,068	51	0.14
KRUFFJ		6,981	953	2.36	6,390	373	1.05
KZR4DB		5,806	-222	-0.55	5,761	-256	-0.72
MFVLVL		6,625	597	1.48	5,987	-31	-0.09
MPKQ37		5,959	-69	-0.17	5,983	-34	-0.10
NMRVLB		5,626	-402	-1.00	5,500	-517	-1.45
PFAB94		6,312	284	0.70	6,106	89	0.25
PNKA3E	*	7,111	1,083	2.69	6,502	485	1.36
PTPPDG		6,284	256	0.63	6,296	279	0.78
QTNC6F	*	5,846	-182	-0.45	5,147	-870	-2.44
T3RWVE		6,021	-7	-0.02	6,067	50	0.14
TEKM87		6,119	91	0.23	6,631	613	1.72
U764N7		5,879	-149	-0.37	5,900	-117	-0.33



Plastics Interlaboratory Testing Program

Report #109

Analysis 721

1st Qtr 2019

Flexural Stress at 5% Strain - psi

WebCode	Data Flag	<u>Sample J57</u>			<u>Sample J58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
VRHD4U		5,896	-132	-0.33	5,946	-71	-0.20
VTBCC2		5,751	-277	-0.69	5,758	-260	-0.73
W7YPE3		5,923	-105	-0.26	5,936	-82	-0.23
XLZ6KM		5,881	-147	-0.36	6,065	48	0.13
Y6BDYT		5,472	-556	-1.38	5,490	-527	-1.48
Y6XZWW		5,509	-519	-1.29	5,566	-452	-1.27
YDM9H2		6,032	4	0.01	6,428	410	1.15
YLH92Z		6,124	96	0.24	6,538	521	1.46
YR9NL2		6,793	765	1.90	6,872	855	2.40
Z2E7U4		6,514	486	1.21	6,065	48	0.13
ZR7BJQ		5,966	-62	-0.15	6,005	-13	-0.04

Summary Statistics		
	<u>Sample J57</u>	<u>Sample J58</u>
Grand Means	6,028.1 psi	6,017.5 psi
Stnd Dev Btwn Labs	403.1 psi	356.2 psi
Statistics based on 45 of 46 reporting participants		

Sample J57: HIPS & Sample J58: HIPS

Comments on Assigned Data Flags for Test #721

EDVG8F (X) - Data for both samples are high.



Plastics Interlaboratory Testing Program

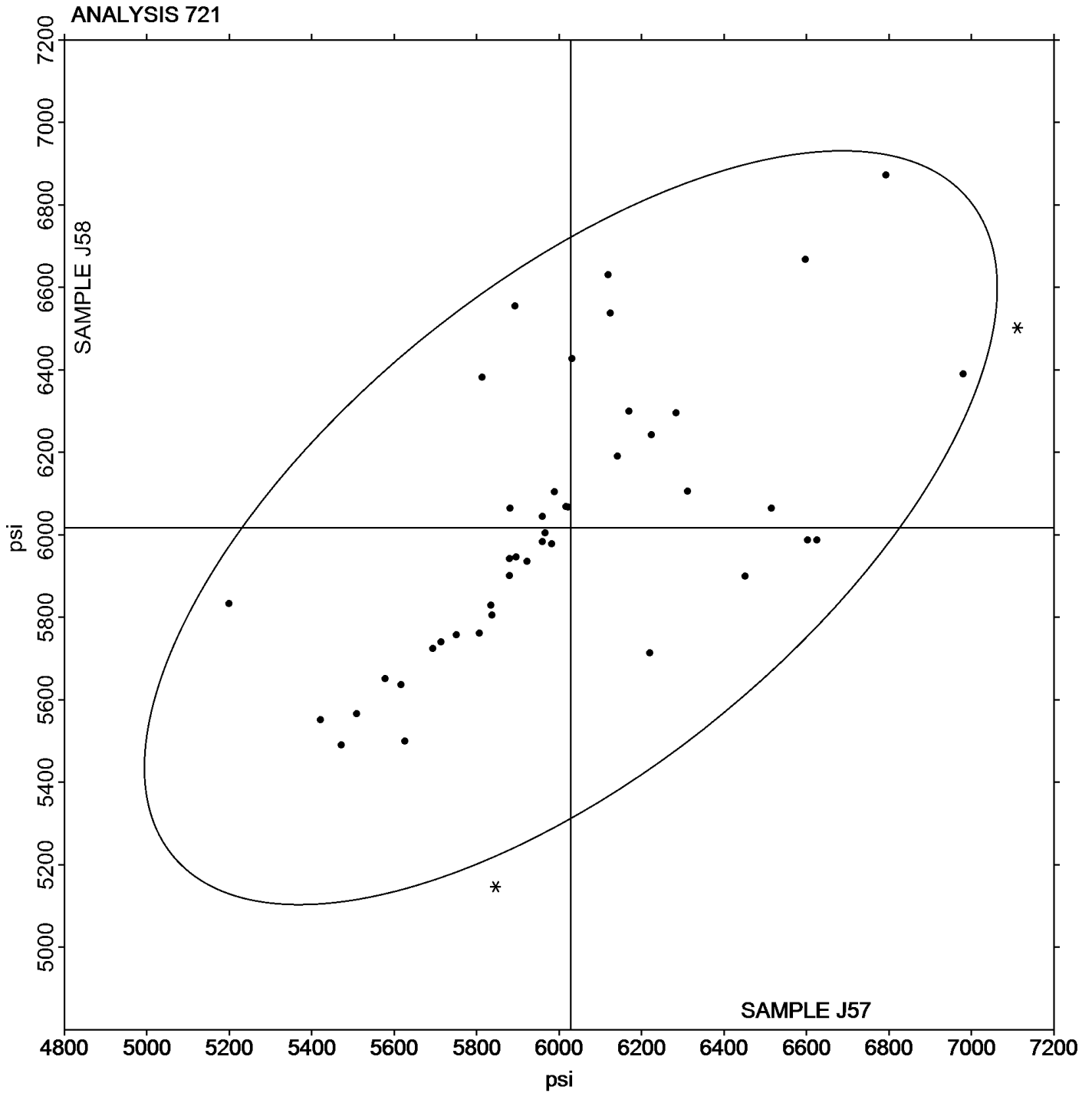
Report #109

Analysis 721

1st Qtr 2019

Flexural Stress at 5% Strain - psi

Grand Mean Sample J57: 6,028.05 psi Grand Mean Sample J58: 6,017.48 psi





Plastics Interlaboratory Testing Program

Report #109

Analysis 722

1st Qtr 2019

Flexural Stress at Yield - psi

WebCode	Data Flag	Sample J57			Sample J58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2NWRQM		5,606	-454	-0.99	5,690	-319	-0.70
3ATLD4		6,324	264	0.58	5,705	-305	-0.67
4XU8QC		6,218	158	0.35	6,315	306	0.67
67MHDX		5,456	-604	-1.32	5,599	-411	-0.90
6X9BJU		5,815	-245	-0.53	5,805	-204	-0.45
74WZXC		6,471	411	0.90	5,918	-92	-0.20
8DVFWF		5,843	-217	-0.47	5,840	-169	-0.37
B72L96		6,158	98	0.21	6,192	183	0.40
BKMQK9		5,817	-243	-0.53	6,394	384	0.84
DRHB2U		6,102	42	0.09	5,487	-522	-1.14
EDVG8F	*	7,375	1,315	2.87	7,415	1,406	3.08
EX32RL		6,148	88	0.19	5,686	-324	-0.71
FGRM2C		5,898	-162	-0.35	5,956	-53	-0.12
GR4FL4		6,006	-54	-0.12	5,949	-61	-0.13
HEWUUX		6,224	164	0.36	6,242	233	0.51
HGK4AQ		5,703	-357	-0.78	5,734	-275	-0.60
HLEATM		5,646	-413	-0.90	5,688	-321	-0.70
JBQQL8		6,044	-15	-0.03	6,058	48	0.11
K6KTQE	X	4,499	-1,561	-3.40	5,732	-278	-0.61
KRUFFJ		5,957	-103	-0.22	5,383	-626	-1.37
KZR4DB		5,845	-215	-0.47	5,807	-203	-0.44
MFVLVL		6,625	565	1.23	5,987	-23	-0.05
NMRVLB		5,922	-137	-0.30	5,790	-220	-0.48
PFAB94		6,422	362	0.79	6,228	219	0.48
PNKA3E		7,101	1,041	2.27	6,483	474	1.04
PTPPDG		5,070	-990	-2.16	5,048	-961	-2.11
T3RWVE		6,046	-14	-0.03	6,084	75	0.16
TEKM87		6,129	69	0.15	6,691	682	1.49
U764N7		5,887	-172	-0.38	5,906	-103	-0.23
UTDMDT		6,240	181	0.39	6,256	247	0.54
VRHD4U		5,912	-148	-0.32	5,962	-47	-0.10
VTBCC2		5,756	-304	-0.66	5,767	-242	-0.53
W7YPE3		5,855	-204	-0.45	5,880	-129	-0.28
XLZ6KM		5,817	-243	-0.53	6,002	-7	-0.02
Y6BDYT		5,472	-588	-1.28	5,490	-520	-1.14



Plastics Interlaboratory Testing Program

Report #109

Analysis 722

1st Qtr 2019

Flexural Stress at Yield - psi

WebCode	Data Flag	<u>Sample J57</u>			<u>Sample J58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
Y6XZWW		5,511	-548	-1.20	5,569	-440	-0.96
YDM9H2		6,061	2	0.00	6,456	447	0.98
YLH92Z		6,158	98	0.21	6,574	565	1.24
YR9NL2	*	7,211	1,152	2.51	7,245	1,235	2.71
Z2E7U4		6,542	483	1.05	6,070	60	0.13
ZR7BJQ		5,992	-67	-0.15	6,026	17	0.04

Summary Statistics		<u>Sample J57</u>	<u>Sample J58</u>
Grand Means		6,059.6 psi	6,009.4 psi
Stnd Dev Btwn Labs		458.4 psi	456.4 psi
Statistics based on 40 of 41 reporting participants			

Sample J57: HIPS & Sample J58: HIPS

Comments on Assigned Data Flags for Test #722

K6KTQE (X) - Data for sample J57 are low. Inconsistent within the determinations of sample J57.



Plastics Interlaboratory Testing Program

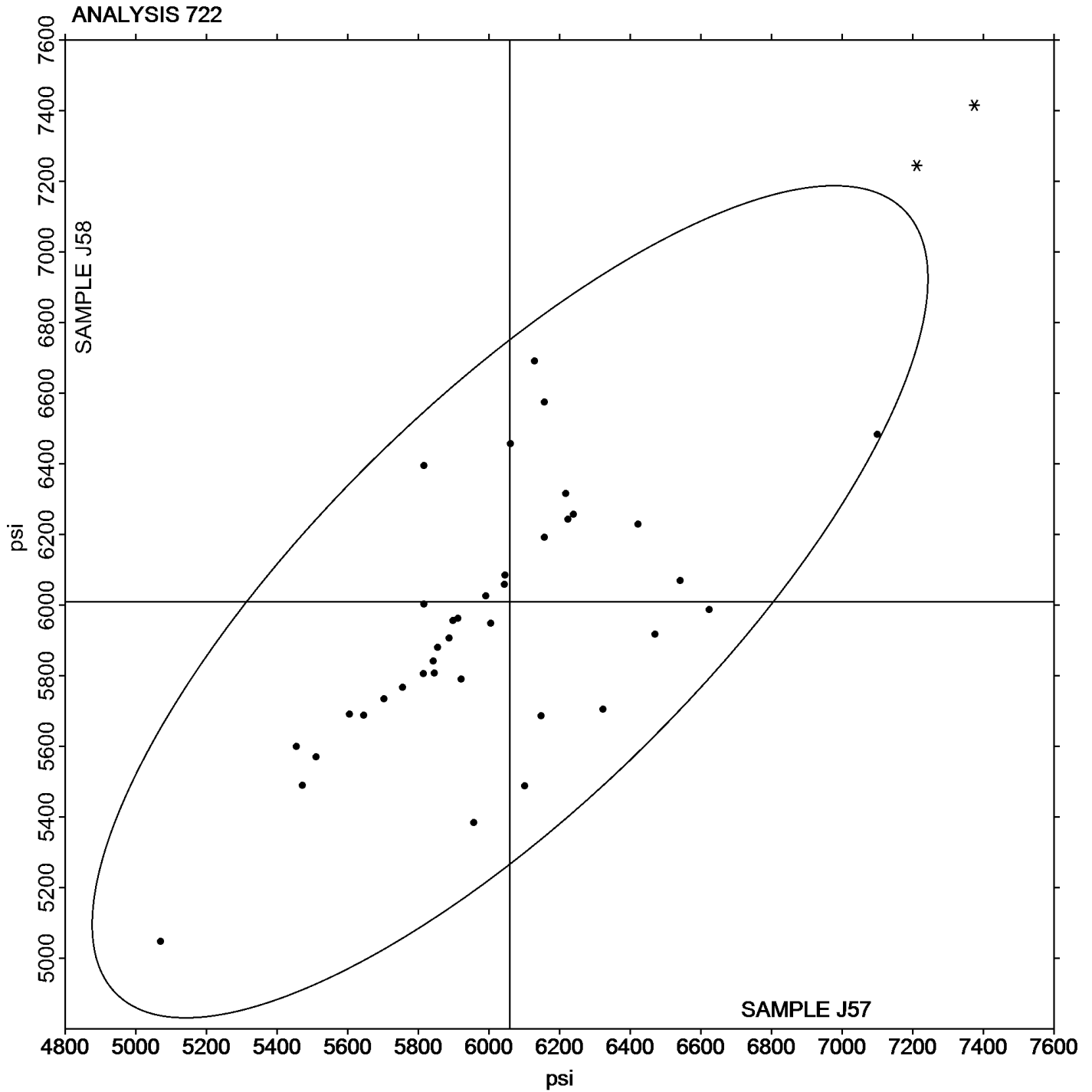
Report #109

Analysis 722

1st Qtr 2019

Flexural Stress at Yield - psi

Grand Mean Sample J57: 6,059.61 psi Grand Mean Sample J58: 6,009.43 psi





Plastics Interlaboratory Testing Program

Report #109

Analysis 730

1st Qtr 2019

Tensile Stress at Yield - MPa

WebCode	Data Flag	Sample C57			Sample C58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		45.18	1.45	1.36	45.02	1.28	1.24
2WW6UW		42.21	-1.52	-1.42	42.30	-1.44	-1.39
3YJWPZ		42.62	-1.12	-1.04	42.70	-1.03	-1.00
4T33X8		44.30	0.57	0.53	44.46	0.72	0.70
6FYGAU		43.28	-0.46	-0.43	43.32	-0.41	-0.40
7THLUV		42.92	-0.81	-0.76	42.34	-1.40	-1.35
7WU4WR		42.65	-1.08	-1.01	42.65	-1.09	-1.05
98QK6T		42.49	-1.24	-1.16	43.02	-0.71	-0.69
9DEH72		45.74	2.00	1.87	45.58	1.85	1.78
9XZQGF		44.04	0.31	0.29	43.46	-0.28	-0.27
B72L96		44.76	1.03	0.96	44.44	0.70	0.68
BLWYPL		45.19	1.45	1.36	45.21	1.47	1.42
D2QZLK		44.62	0.89	0.83	44.84	1.10	1.07
DRHB2U		44.28	0.55	0.51	44.00	0.26	0.25
E89TAN		43.94	0.21	0.19	43.85	0.11	0.11
EJ2CQF		43.28	-0.45	-0.42	43.36	-0.38	-0.36
EKTBYL		43.34	-0.39	-0.37	43.48	-0.26	-0.25
ELAV3B		44.63	0.89	0.83	44.72	0.98	0.95
FP9LNG		43.79	0.06	0.05	43.79	0.05	0.05
G9EFVD		43.40	-0.33	-0.31	43.90	0.16	0.16
GT32EF		43.08	-0.65	-0.61	43.13	-0.61	-0.59
HFR72J		45.65	1.91	1.79	45.38	1.64	1.59
HWDWUR		44.78	1.04	0.98	45.08	1.35	1.30
JDXYWD		45.08	1.35	1.26	45.06	1.32	1.28
JLBXKW		43.30	-0.43	-0.41	43.72	-0.02	-0.02
JRZQVH		44.34	0.61	0.57	44.43	0.69	0.67
KJXPQ3		44.42	0.69	0.64	44.48	0.74	0.72
KZR4DB		42.80	-0.93	-0.87	42.78	-0.96	-0.92
ND43BY		41.88	-1.86	-1.73	41.59	-2.15	-2.07
NM4G9Q	*	40.70	-3.04	-2.84	41.42	-2.32	-2.24
Q7DDLL		43.10	-0.63	-0.59	42.88	-0.86	-0.83
QHQUTX		43.63	-0.10	-0.10	43.41	-0.33	-0.32
QLQ4X9		42.40	-1.33	-1.25	42.60	-1.14	-1.10
RMZCLY		42.77	-0.97	-0.90	42.53	-1.20	-1.16
RVBUX6		43.33	-0.40	-0.38	43.06	-0.67	-0.65



Plastics Interlaboratory Testing Program

Report #109

Analysis 730

1st Qtr 2019

Tensile Stress at Yield - MPa

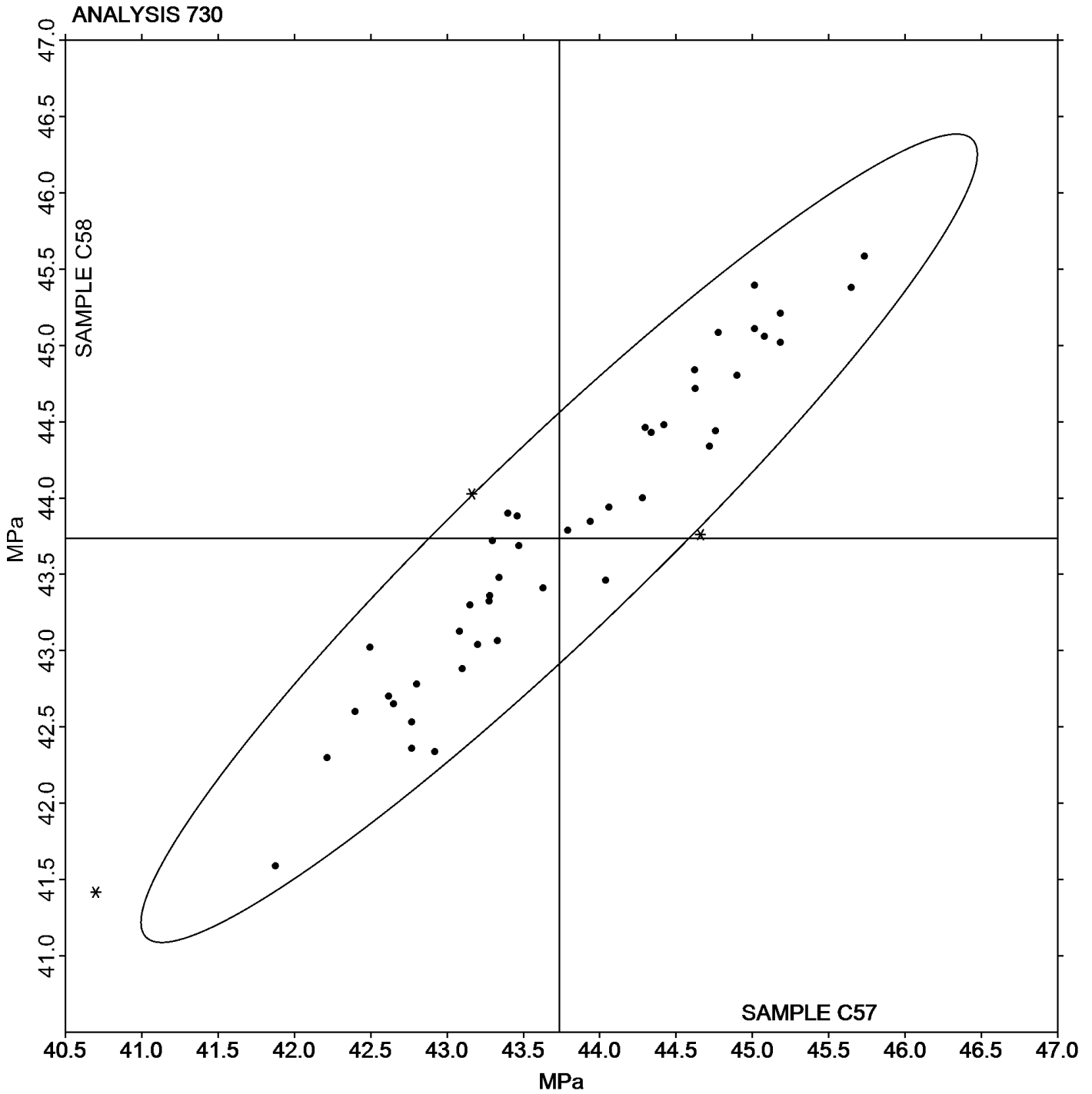
WebCode	Data Flag	<u>Sample C57</u>			<u>Sample C58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
T3RWVE		43.47	-0.26	-0.25	43.69	-0.05	-0.05
TDNAMY		45.01	1.28	1.20	45.39	1.66	1.60
UTDMTD		44.72	0.99	0.92	44.34	0.60	0.58
W7YPE3		45.01	1.28	1.20	45.11	1.37	1.33
WDCKBW		44.90	1.17	1.09	44.80	1.07	1.03
WWQMZA		44.06	0.33	0.30	43.94	0.20	0.20
WYB9EX		43.15	-0.58	-0.54	43.30	-0.44	-0.42
WZ47M6		43.20	-0.53	-0.50	43.04	-0.70	-0.67
XLZ6KM		42.77	-0.97	-0.90	42.36	-1.38	-1.33
Y6VX7K	*	44.66	0.93	0.87	43.76	0.02	0.02
Z2E7U4		43.46	-0.27	-0.26	43.88	0.14	0.14
ZR7BJQ	*	43.16	-0.57	-0.53	44.03	0.29	0.28

Summary Statistics		
	<u>Sample C57</u>	<u>Sample C58</u>
Grand Means	43.734 MPa	43.736 MPa
Std Dev Btwn Labs	1.070 MPa	1.035 MPa
Statistics based on 47 of 47 reporting participants		

Sample C57: ABS & Sample C58: ABS



Grand Mean Sample C57: 43.734 MPa Grand Mean Sample C58: 43.736 MPa





Plastics Interlaboratory Testing Program

Report #109

Analysis 731

1st Qtr 2019

Tensile Stress at Break - MPa

WebCode	Data Flag	Sample C57			Sample C58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW	X	24.30	-8.62	-8.76	27.92	-5.09	-4.86
3YJWPZ		33.16	0.24	0.24	34.45	1.44	1.38
4T33X8		32.66	-0.26	-0.26	33.26	0.25	0.24
6FYGAU		33.54	0.62	0.63	33.49	0.48	0.46
7THLUV		33.04	0.12	0.12	32.15	-0.85	-0.82
7WU4WR		31.87	-1.05	-1.07	32.70	-0.31	-0.30
98QK6T		32.11	-0.81	-0.82	32.88	-0.13	-0.12
9DEH72		34.52	1.60	1.63	34.32	1.31	1.26
B72L96		33.32	0.40	0.41	32.58	-0.43	-0.41
BLWYPL		33.22	0.30	0.30	33.62	0.62	0.59
D2QZLK		33.63	0.71	0.73	33.16	0.16	0.15
DRHB2U	X	39.88	6.96	7.07	33.44	0.43	0.41
EJ2CQF		32.78	-0.14	-0.14	32.42	-0.59	-0.56
FP9LNG		32.98	0.06	0.06	33.17	0.17	0.16
G9EFVD		32.20	-0.72	-0.73	33.52	0.51	0.49
GT32EF		31.83	-1.09	-1.11	32.11	-0.90	-0.86
HFR72J	*	35.69	2.77	2.82	35.41	2.40	2.30
HWDWUR		33.28	0.36	0.37	33.91	0.91	0.87
JDXYWD		33.44	0.52	0.53	33.54	0.53	0.51
JLBXKW		31.80	-1.12	-1.14	31.86	-1.15	-1.10
JRZQVH		33.14	0.22	0.22	33.40	0.39	0.38
KJXPQ3		33.12	0.20	0.20	33.66	0.65	0.62
KZR4DB	*	32.10	-0.82	-0.83	34.38	1.37	1.31
NM4G9Q	X	36.40	3.48	3.54	33.76	0.75	0.72
NTVNRZ	X	46.42	13.50	13.71	46.33	13.33	12.74
Q7DDLL		31.52	-1.40	-1.42	31.54	-1.47	-1.40
QHOUTX		33.47	0.55	0.56	33.04	0.03	0.03
QLQ4X9		31.80	-1.12	-1.14	32.20	-0.81	-0.77
RMZCLY		31.27	-1.65	-1.67	31.30	-1.71	-1.63
RVBUX6		32.23	-0.69	-0.70	31.77	-1.23	-1.18
T3RWVE		32.79	-0.13	-0.13	32.35	-0.66	-0.63
TDNAMY		34.82	1.90	1.93	35.40	2.40	2.29
UTDMTD		34.41	1.49	1.52	33.38	0.37	0.36
W7YPE3		33.29	0.37	0.38	34.18	1.18	1.13
WDCKBW		34.30	1.38	1.40	33.75	0.75	0.71



Plastics Interlaboratory Testing Program

Report #109

Analysis 731

1st Qtr 2019

Tensile Stress at Break - MPa

WebCode	Data Flag	<u>Sample C57</u>			<u>Sample C58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WWQMZA		33.10	0.18	0.18	32.04	-0.97	-0.92
WYB9EX		32.21	-0.71	-0.72	31.89	-1.12	-1.07
WZ47M6		32.94	0.02	0.02	32.34	-0.67	-0.64
XLZ6KM		31.68	-1.24	-1.26	31.39	-1.62	-1.55
Z2E7U4		32.08	-0.84	-0.85	32.54	-0.47	-0.45
ZR7BJQ		32.68	-0.24	-0.24	32.14	-0.86	-0.83

Summary Statistics

	<u>Sample C57</u>	<u>Sample C58</u>
Grand Means	32.919 MPa	33.007 MPa
Std Dev Btwn Labs	0.984 MPa	1.046 MPa

Statistics based on 37 of 41 reporting participants

Sample C57: ABS & Sample C58: ABS

Comments on Assigned Data Flags for Test #731

- 2A33YW (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample C58.
- DRHB2U (X) - Data for sample C57 are high. Inconsistent within the determinations of sample C57.
- NM4G9Q (X) - Data for sample C57 are high. Inconsistent within the determinations of sample C57.
- NTVNRZ (X) - Data for both samples are high. Possible Systematic Error.



Plastics Interlaboratory Testing Program

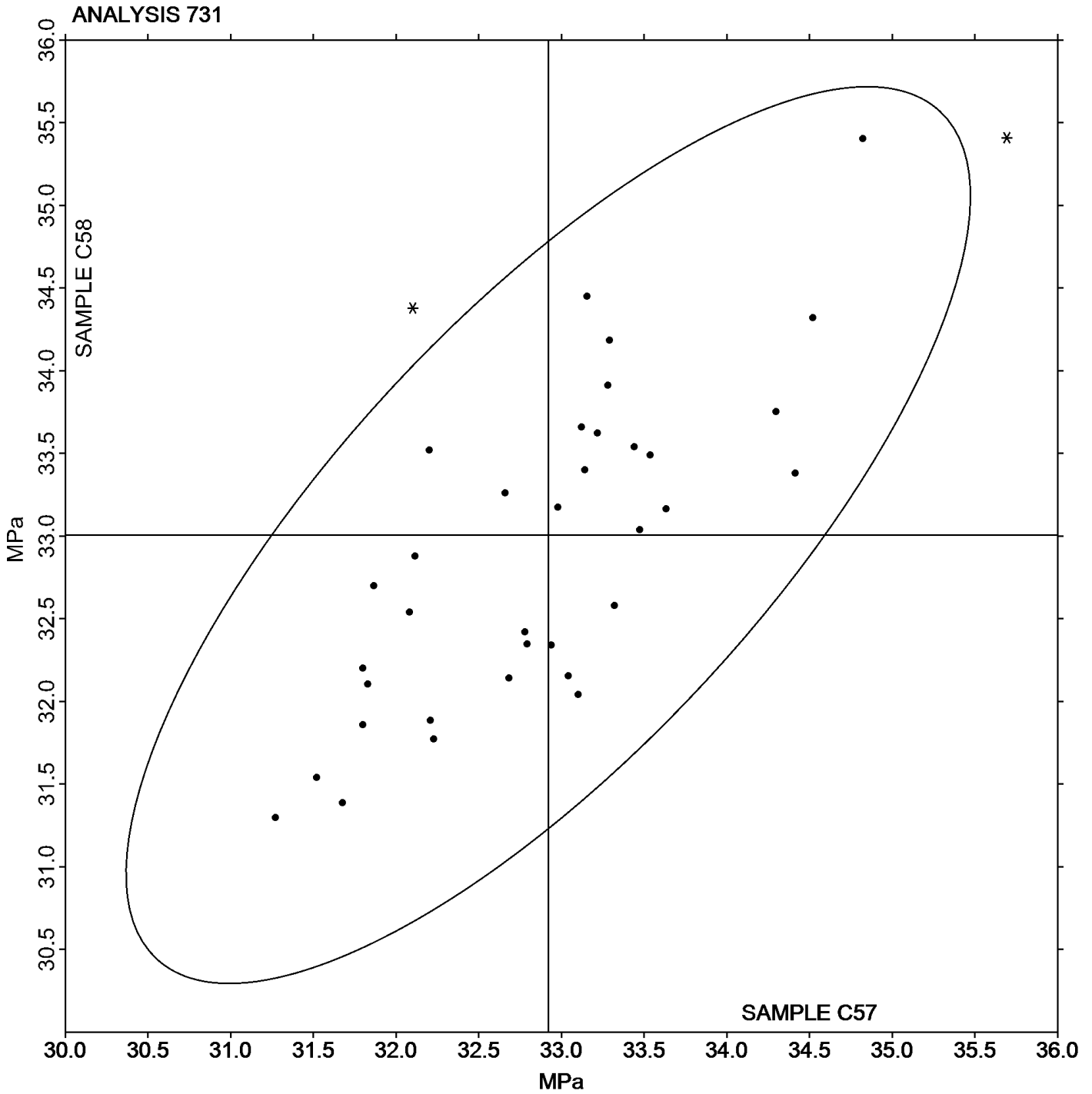
Report #109

Analysis 731

1st Qtr 2019

Tensile Stress at Break - MPa

Grand Mean Sample C57: 32.919 MPa Grand Mean Sample C58: 33.007 MPa





Plastics Interlaboratory Testing Program

Report #109

Analysis 732

1st Qtr 2019

Percent Strain at Yield

WebCode	Data Flag	Sample C57			Sample C58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		2.436	0.059	0.61	2.450	0.067	0.65
4T33X8		2.292	-0.085	-0.87	2.298	-0.085	-0.83
6FYGAU	X	7.816	5.439	55.99	7.974	5.591	54.74
7THLUV		2.316	-0.061	-0.63	2.406	0.023	0.22
7WU4WR		2.332	-0.045	-0.46	2.290	-0.093	-0.91
98QK6T		2.304	-0.073	-0.75	2.394	0.011	0.11
9DEH72		2.378	0.001	0.01	2.372	-0.011	-0.11
B72L96		2.570	0.193	1.99	2.604	0.221	2.16
BLWYPL		2.564	0.187	1.93	2.566	0.183	1.79
D2QZLK		2.344	-0.033	-0.34	2.336	-0.047	-0.46
EJ2CQF		2.622	0.245	2.52	2.644	0.261	2.55
EKTBYL		2.288	-0.089	-0.92	2.262	-0.121	-1.19
FP9LNG		2.420	0.043	0.45	2.408	0.024	0.24
G9EFVD		2.320	-0.057	-0.59	2.380	-0.003	-0.03
GT32EF		2.324	-0.053	-0.55	2.322	-0.061	-0.60
HFR72J		2.482	0.105	1.08	2.478	0.095	0.93
HWDWUR		2.352	-0.025	-0.26	2.368	-0.015	-0.15
JDXYWD		2.320	-0.057	-0.59	2.380	-0.003	-0.03
JLBXKW		2.380	0.003	0.03	2.400	0.017	0.16
JRZQVH		2.386	0.009	0.09	2.360	-0.023	-0.23
KJXPQ3		2.380	0.003	0.03	2.380	-0.003	-0.03
KZR4DB		2.320	-0.057	-0.59	2.340	-0.043	-0.42
ND43BY	*	2.142	-0.235	-2.42	2.112	-0.271	-2.66
NM4G9Q	X	3.566	1.189	12.24	3.710	1.327	12.99
Q7DDLL		2.460	0.083	0.85	2.480	0.097	0.95
QHQUTX		2.378	0.001	0.01	2.356	-0.027	-0.27
QLQ4X9		2.382	0.005	0.05	2.370	-0.013	-0.13
RMZCLY	X	19.505	17.128	176.31	15.658	13.274	129.99
RVBUX6		2.322	-0.055	-0.57	2.310	-0.073	-0.72
T3RWVE		2.367	-0.010	-0.10	2.382	-0.001	-0.01
TDNAMY		2.226	-0.151	-1.55	2.240	-0.143	-1.40
UTDMTD		2.322	-0.055	-0.57	2.350	-0.033	-0.33
W7YPE3		2.512	0.135	1.39	2.504	0.121	1.18
WDCKBW		2.399	0.022	0.22	2.400	0.016	0.16
WWQMZA		2.300	-0.077	-0.79	2.300	-0.083	-0.82



Plastics Interlaboratory Testing Program

Report #109

Analysis 732

1st Qtr 2019

Percent Strain at Yield

WebCode	Data Flag	<u>Sample C57</u>			<u>Sample C58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WYB9EX		2.352	-0.025	-0.26	2.366	-0.017	-0.17
WZ47M6		2.500	0.123	1.27	2.520	0.137	1.34
XLZ6KM		2.388	0.011	0.11	2.336	-0.047	-0.46
Y6VX7K		2.382	0.005	0.05	2.302	-0.081	-0.80
Z2E7U4		2.500	0.123	1.27	2.500	0.117	1.14
ZR7BJQ		2.262	-0.115	-1.18	2.298	-0.085	-0.83

Summary Statistics		
	<u>Sample C57</u>	<u>Sample C58</u>
Grand Means	2.3770 Percent	2.3833 Percent
Stnd Dev Btwn Labs	0.0971 Percent	0.1021 Percent
Statistics based on 38 of 41 reporting participants		

Sample C57: ABS & Sample C58: ABS

Comments on Assigned Data Flags for Test #732

- RMZCLY (X) - Extreme data.
- 6FYGAU (X) - Extreme data.
- NM4G9Q (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample C57.



Plastics Interlaboratory Testing Program

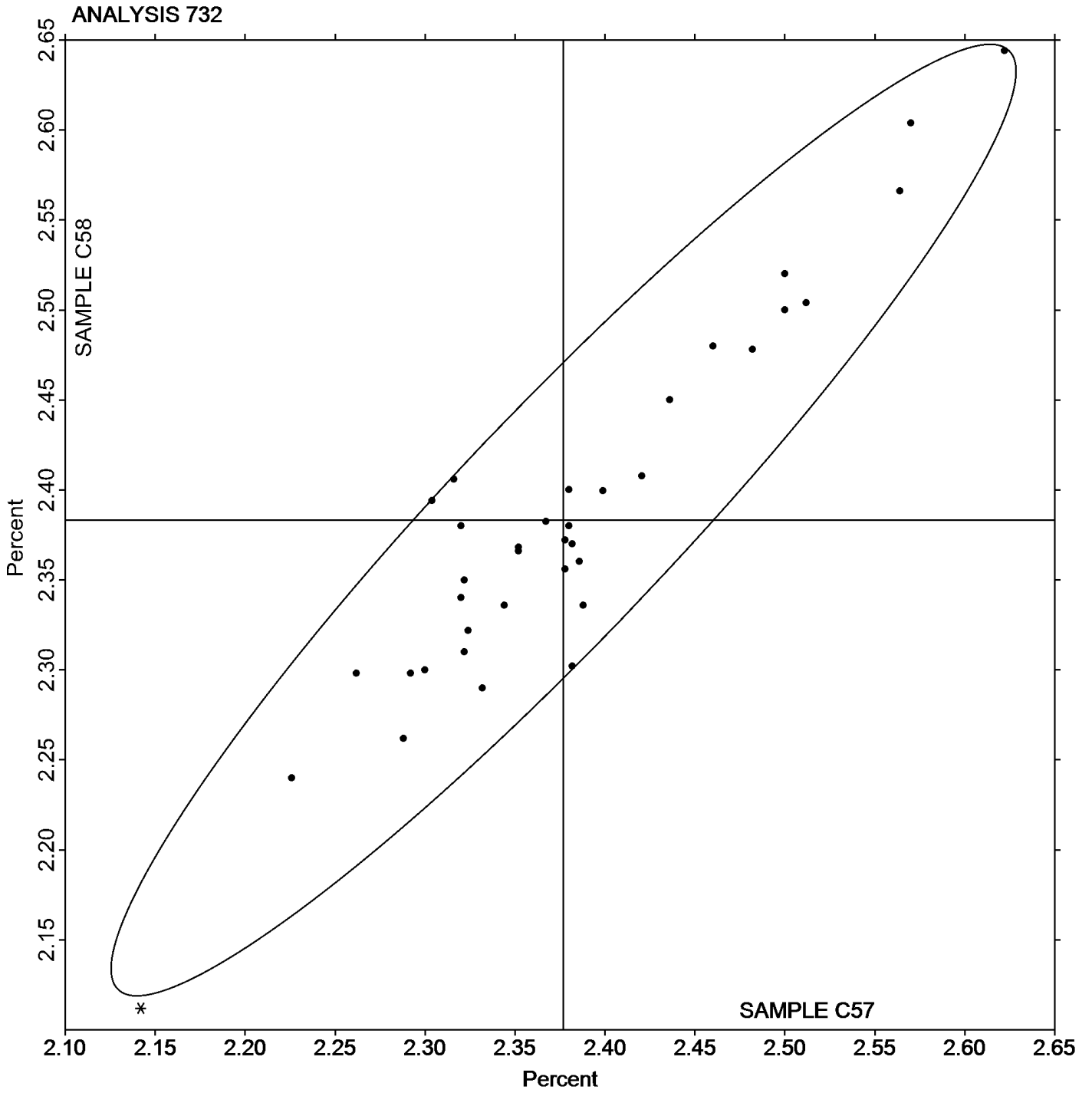
Report #109

Analysis 732

1st Qtr 2019

Percent Strain at Yield

Grand Mean Sample C57: 2.3770 Percent Grand Mean Sample C58: 2.3833 Percent





Plastics Interlaboratory Testing Program

Report #109

Analysis 734

1st Qtr 2019

Modulus of Elasticity - MPa

WebCode	Data Flag	Sample C57			Sample C58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW	X	2,375	50	0.53	2,504	182	2.13
3YJWPZ		2,233	-93	-1.00	2,230	-92	-1.08
4T33X8		2,330	4	0.04	2,331	9	0.10
6FYGAU		2,172	-153	-1.65	2,161	-161	-1.88
7THLUV		2,476	151	1.62	2,438	116	1.35
7WU4WR		2,333	7	0.07	2,352	30	0.35
98QK6T	X	2,274	-51	-0.55	2,156	-165	-1.93
9DEH72		2,404	78	0.84	2,407	86	1.00
B72L96		2,450	124	1.34	2,410	88	1.03
BLWYPL	X	1,896	-429	-4.61	1,852	-470	-5.47
D2QZLK		2,392	67	0.71	2,371	49	0.57
EJ2CQF		2,247	-78	-0.84	2,284	-38	-0.44
EKTBYL		2,286	-40	-0.43	2,280	-41	-0.48
ELAV3B		2,466	140	1.51	2,464	142	1.66
FP9LNG		2,187	-139	-1.49	2,222	-100	-1.17
G9EFVD		2,302	-24	-0.25	2,292	-30	-0.35
GT32EF		2,313	-13	-0.14	2,347	25	0.29
HFR72J		2,354	29	0.31	2,316	-6	-0.07
HWDWUR		2,253	-72	-0.78	2,246	-76	-0.89
JDXYWD		2,351	25	0.27	2,343	22	0.25
JLBXKW		2,243	-82	-0.88	2,282	-40	-0.47
JRZQVH		2,294	-31	-0.34	2,325	3	0.03
KJXPQ3		2,316	-10	-0.10	2,324	2	0.03
KZR4DB		2,265	-61	-0.66	2,245	-77	-0.90
ND43BY		2,394	68	0.73	2,372	50	0.58
NM4G9Q	X	1,528	-798	-8.57	1,495	-827	-9.63
Q7DDLL		2,252	-74	-0.79	2,244	-78	-0.91
QHOUTX		2,263	-63	-0.67	2,262	-60	-0.69
QLQ4X9		2,273	-52	-0.56	2,308	-14	-0.16
RMZCLY		2,398	72	0.78	2,371	50	0.58
RVBUX6		2,479	153	1.64	2,489	167	1.95
T3RWVE		2,235	-91	-0.97	2,235	-86	-1.01
TDNAMY	*	2,586	261	2.80	2,572	251	2.92
UTDMTD		2,425	99	1.06	2,383	61	0.72
W7YPE3		2,203	-122	-1.31	2,220	-102	-1.19



Plastics Interlaboratory Testing Program

Report #109

Analysis 734

1st Qtr 2019

Modulus of Elasticity - MPa

WebCode	Data Flag	Sample C57			Sample C58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WDCKBW		2,164	-162	-1.74	2,178	-144	-1.68
WWQMZA		2,362	36	0.39	2,364	43	0.50
WYB9EX		2,300	-25	-0.27	2,312	-10	-0.12
WZ47M6		2,325	-1	-0.01	2,265	-57	-0.66
XLZ6KM		2,338	13	0.14	2,361	40	0.46
Y6VX7K	*	2,375	50	0.53	2,290	-32	-0.37
Z2E7U4		2,276	-50	-0.54	2,260	-61	-0.72
ZR7BJQ		2,384	58	0.62	2,396	74	0.86

Summary Statistics

	Sample C57	Sample C58
Grand Means	2,325.6 MPa	2,321.8 MPa
Std Dev Btwn Labs	93.1 MPa	85.8 MPa

Statistics based on 39 of 43 reporting participants

Sample C57: ABS & Sample C58: ABS

Comments on Assigned Data Flags for Test #734

- 98QK6T (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- BLWYPL (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample C57.
- 2A33YW (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample C57.
- NM4G9Q (X) - Data for both samples are low. Possible Systematic Error.



Plastics Interlaboratory Testing Program

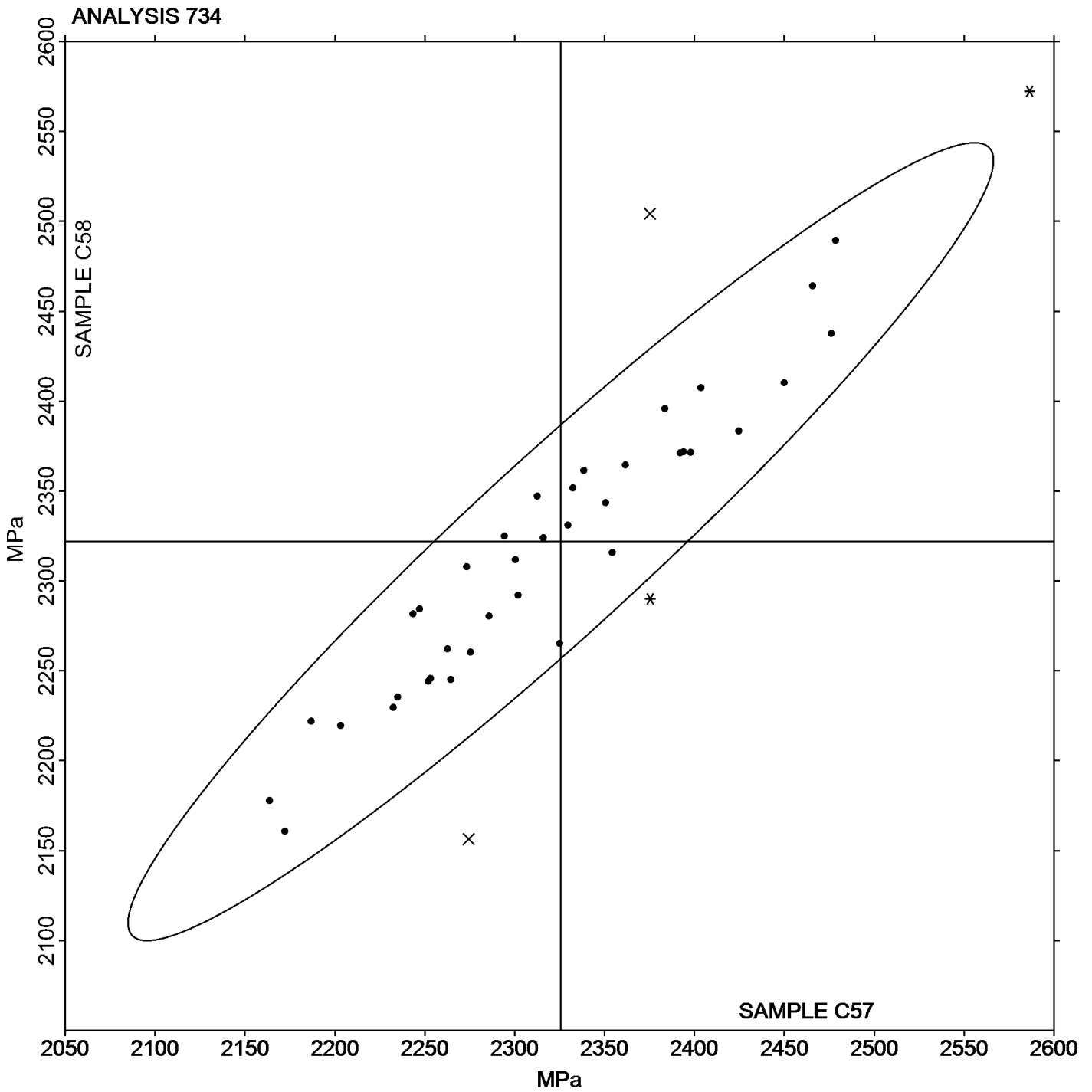
Report #109

Analysis 734

1st Qtr 2019

Modulus of Elasticity - MPa

Grand Mean Sample C57: 2,325.62 MPa Grand Mean Sample C58: 2,321.84 MPa





Plastics Interlaboratory Testing Program

Report #109

Analysis 736

1st Qtr 2019

Flexural Modulus - MPa

WebCode	Data Flag	Sample K57			Sample K58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		2,482	168	1.82	2,488	173	1.88
2C8L4K		2,101	-213	-2.31	2,112	-204	-2.23
3DTW8H		2,341	27	0.29	2,337	21	0.23
3YJWPZ		2,453	139	1.50	2,445	130	1.41
4T33X8		2,360	46	0.50	2,373	57	0.62
6FYGAU		2,377	63	0.69	2,386	70	0.76
7THLUV		2,289	-25	-0.27	2,310	-6	-0.06
7WU4WR		2,265	-49	-0.53	2,269	-47	-0.51
98QK6T		2,305	-9	-0.10	2,338	22	0.24
9DEH72		2,452	138	1.49	2,448	133	1.45
B72L96	X	2,772	458	4.96	2,772	456	4.98
BLWYPL		2,475	161	1.74	2,446	130	1.42
DC93ZB		2,265	-49	-0.53	2,261	-55	-0.60
DRHB2U		2,287	-27	-0.29	2,278	-37	-0.41
EJ2CQF		2,259	-55	-0.59	2,294	-21	-0.23
EKTBYL		2,271	-43	-0.46	2,249	-67	-0.73
FP9LNG		2,286	-28	-0.30	2,296	-20	-0.22
GT32EF		2,252	-62	-0.67	2,278	-38	-0.41
HFR72J		2,374	60	0.65	2,408	92	1.00
HWDWUR		2,464	150	1.63	2,466	151	1.64
JDXYWD	*	2,344	30	0.32	2,278	-37	-0.41
JLBXKW		2,322	8	0.08	2,326	10	0.11
JRZQVH		2,411	97	1.05	2,406	91	0.99
K4KGPY		2,296	-18	-0.19	2,299	-17	-0.19
KUPFT4		2,392	78	0.84	2,393	77	0.84
KZR4DB		2,214	-100	-1.09	2,183	-133	-1.45
ND43BY		2,409	95	1.03	2,407	92	1.00
NM4G9Q		2,186	-128	-1.39	2,188	-128	-1.39
NTVNRZ		2,503	189	2.04	2,505	189	2.06
PRXR6B		2,441	127	1.38	2,458	142	1.55
Q7DDL		2,284	-30	-0.32	2,286	-30	-0.33
QHOUTX		2,177	-137	-1.48	2,177	-138	-1.51
QLQ4X9		2,365	51	0.55	2,407	91	1.00
RMHVFR		2,313	-1	-0.01	2,305	-11	-0.12
RMZCLY		2,158	-156	-1.69	2,199	-116	-1.27



Plastics Interlaboratory Testing Program

Report #109

Analysis 736

1st Qtr 2019

Flexural Modulus - MPa

WebCode	Data Flag	<u>Sample K57</u>			<u>Sample K58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
T3RWVE		2,287	-27	-0.30	2,284	-31	-0.34
TDNAMY		2,290	-24	-0.26	2,286	-30	-0.32
UTDMTD		2,284	-30	-0.32	2,259	-57	-0.62
W7YPE3		2,330	16	0.17	2,337	21	0.23
WDCKBW	*	2,214	-100	-1.09	2,288	-28	-0.30
WWQMZA		2,223	-91	-0.99	2,217	-98	-1.07
WYB9EX		2,269	-45	-0.49	2,283	-33	-0.36
WZ47M6		2,181	-133	-1.44	2,176	-139	-1.52
XLZ6KM		2,261	-53	-0.57	2,247	-69	-0.75
Y6VX7K	*	2,360	46	0.50	2,284	-32	-0.35
Z2E7U4		2,290	-24	-0.26	2,262	-53	-0.58
ZR7BJQ		2,282	-32	-0.34	2,301	-14	-0.16

Summary Statistics		
	<u>Sample K57</u>	<u>Sample K58</u>
Grand Means	2,314.0 MPa	2,315.8 MPa
Std Dev Btwn Labs	92.3 MPa	91.7 MPa
Statistics based on 46 of 47 reporting participants		

Sample K57: ABS & Sample K58: ABS

Comments on Assigned Data Flags for Test #736

B72L96 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample K58.



Plastics Interlaboratory Testing Program

Report #109

Analysis 737

1st Qtr 2019

Flexural Stress at 3.5% Strain - MPa

WebCode	Data Flag	Sample K57			Sample K58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		67.46	2.35	1.24	67.14	1.98	1.08
2C8L4K	X	61.71	-3.40	-1.79	63.91	-1.24	-0.68
4T33X8		66.54	1.43	0.75	66.91	1.76	0.96
6FYGAU		61.51	-3.60	-1.90	62.04	-3.12	-1.69
7THLUV		64.35	-0.77	-0.40	64.76	-0.40	-0.22
7WU4WR		62.74	-2.37	-1.25	62.68	-2.47	-1.34
98QK6T	X	32.86	-32.25	-16.98	32.96	-32.19	-17.49
9DEH72		68.25	3.14	1.65	68.06	2.91	1.58
B72L96	X	73.56	8.45	4.45	74.58	9.43	5.12
BLWYPL		66.97	1.86	0.98	66.73	1.57	0.85
DC93ZB		65.33	0.22	0.12	65.26	0.10	0.06
DRHB2U		66.10	0.99	0.52	67.00	1.85	1.00
EJ2CQF		63.26	-1.85	-0.98	63.28	-1.87	-1.02
ELAV3B		69.18	4.07	2.14	68.77	3.61	1.96
FP9LNG		65.15	0.04	0.02	65.20	0.05	0.03
GT32EF		63.96	-1.15	-0.61	64.23	-0.92	-0.50
HFR72J		65.41	0.30	0.16	66.08	0.93	0.50
HWDWUR		69.15	4.04	2.13	68.54	3.39	1.84
JDXYWD	*	64.88	-0.23	-0.12	63.64	-1.51	-0.82
JLBXKW		64.76	-0.35	-0.19	64.92	-0.23	-0.13
JRZQVH		66.30	1.19	0.63	66.07	0.91	0.50
K4KGPY		62.92	-2.19	-1.15	62.88	-2.27	-1.24
KUPFT4		69.30	4.19	2.21	69.46	4.31	2.34
KZR4DB		62.75	-2.36	-1.24	62.59	-2.56	-1.39
ND43BY		65.25	0.14	0.07	65.38	0.23	0.13
NM4G9Q		64.63	-0.49	-0.26	64.89	-0.26	-0.14
Q7DDLL		65.65	0.54	0.29	65.34	0.18	0.10
QHQUTX		63.14	-1.97	-1.04	63.29	-1.87	-1.01
QLQ4X9		65.40	0.29	0.15	66.40	1.25	0.68
RMZCLY		63.00	-2.11	-1.11	63.40	-1.75	-0.95
T3RWVE		64.40	-0.72	-0.38	64.25	-0.90	-0.49
TDNAMY		65.76	0.65	0.34	66.22	1.07	0.58
UTDMTD		64.22	-0.89	-0.47	64.50	-0.65	-0.35
W7YPE3		67.46	2.35	1.24	67.66	2.51	1.36
WDCKBW		63.21	-1.90	-1.00	63.77	-1.39	-0.75



Plastics Interlaboratory Testing Program

Report #109

Analysis 737

1st Qtr 2019

Flexural Stress at 3.5% Strain - MPa

WebCode	Data Flag	Sample K57			Sample K58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
WWQMZA		65.46	0.35	0.18	65.22	0.07	0.04
WYB9EX		64.11	-1.00	-0.53	63.81	-1.34	-0.73
WZ47M6		63.18	-1.93	-1.02	63.14	-2.01	-1.09
XLZ6KM		63.31	-1.80	-0.95	63.61	-1.54	-0.84
Y6VX7K		65.50	0.39	0.21	64.63	-0.53	-0.29
Z2E7U4		65.01	-0.10	-0.05	64.85	-0.30	-0.16
ZR7BJQ		64.34	-0.77	-0.40	64.38	-0.77	-0.42

Summary Statistics		
	Sample K57	Sample K58
Grand Means	65.111 MPa	65.153 MPa
Std Dev Btwn Labs	1.899 MPa	1.840 MPa
Statistics based on 39 of 42 reporting participants		

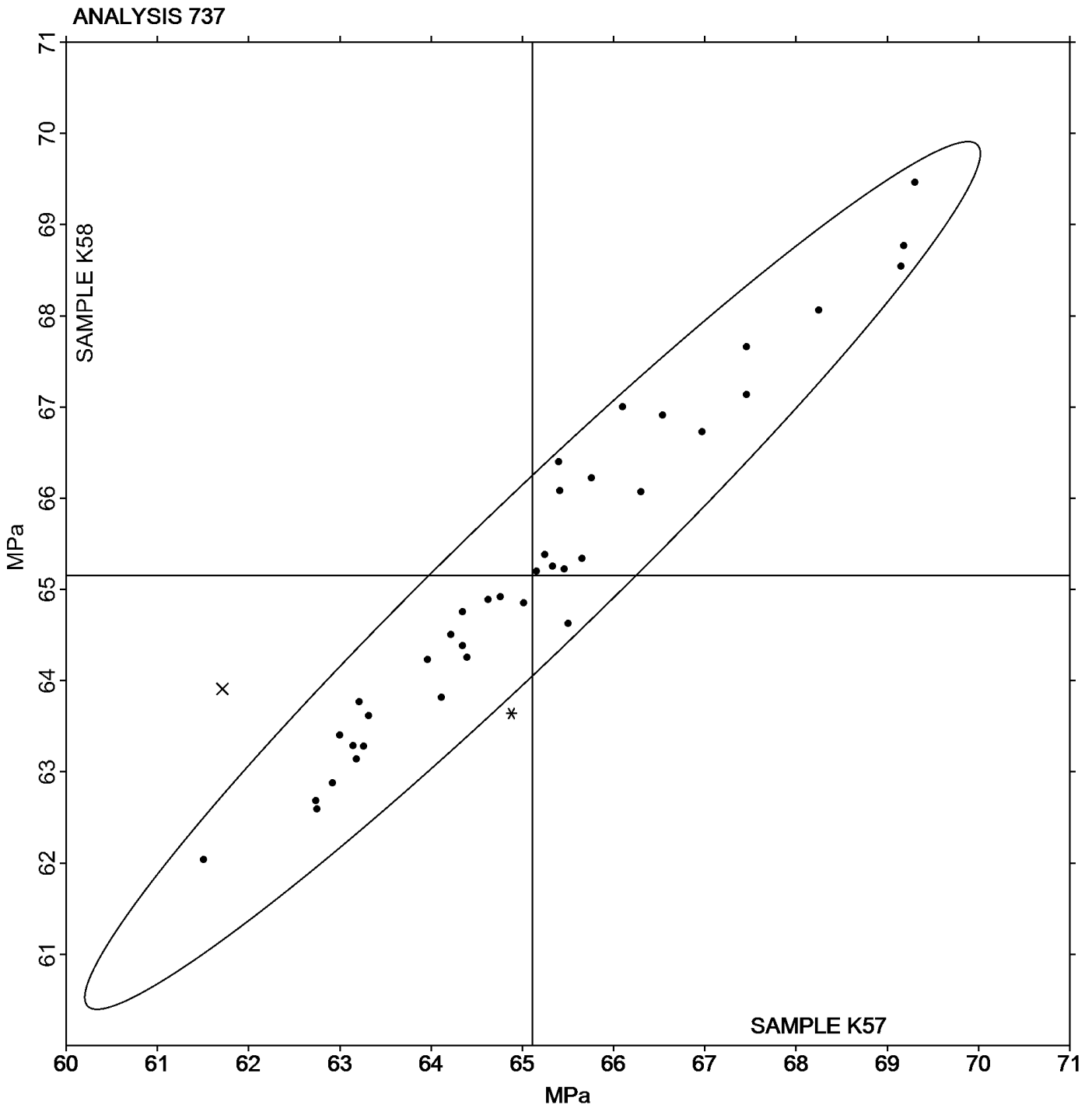
Sample K57: ABS & Sample K58: ABS

Comments on Assigned Data Flags for Test #737

- 98QK6T (X) - Data for both samples are low. Possible Systematic Error.
- 2C8L4K (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample K57.
- B72L96 (X) - Data for both samples are high. Possible Systematic Error.



Grand Mean Sample K57: 65.111 MPa Grand Mean Sample K58: 65.153 MPa





Plastics Interlaboratory Testing Program

Report #109

Analysis 738

1st Qtr 2019

Flexural Stress at Yield - MPa

WebCode	Data Flag	Sample K57			Sample K58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		68.66	2.40	1.57	68.47	2.16	1.44
2C8L4K		63.61	-2.65	-1.73	64.06	-2.25	-1.50
3YJWPZ		66.74	0.48	0.31	66.79	0.48	0.32
4T33X8		67.63	1.38	0.90	68.05	1.74	1.16
7WU4WR		64.15	-2.11	-1.38	63.97	-2.34	-1.55
98QK6T	X	33.07	-33.19	-21.68	33.24	-33.07	-21.99
B72L96	X	72.50	6.24	4.08	74.04	7.73	5.14
BLWYPL		68.09	1.83	1.20	67.83	1.52	1.01
DC93ZB		66.58	0.32	0.21	66.49	0.18	0.12
DRHB2U		66.10	-0.16	-0.10	67.00	0.69	0.46
EJ2CQF		64.98	-1.28	-0.83	65.16	-1.15	-0.76
EKTBYL		63.36	-2.90	-1.89	64.32	-1.99	-1.32
FP9LNG		67.32	1.06	0.70	67.45	1.14	0.76
GT32EF		65.09	-1.17	-0.76	65.41	-0.90	-0.60
HFR72J		67.08	0.83	0.54	67.68	1.37	0.91
JDXYWD	*	66.30	0.04	0.03	64.88	-1.43	-0.95
JLBXKW		66.34	0.08	0.05	66.52	0.21	0.14
K4KGPY		65.32	-0.94	-0.61	65.27	-1.04	-0.69
KZR4DB		64.73	-1.53	-1.00	64.32	-1.99	-1.32
NM4G9Q		66.56	0.30	0.20	67.06	0.75	0.50
PRXR6B		68.46	2.20	1.44	68.68	2.37	1.58
Q7DDLL		67.43	1.17	0.77	67.37	1.06	0.70
QHQUTX		64.73	-1.53	-1.00	64.95	-1.36	-0.90
QLQ4X9		68.00	1.74	1.14	67.80	1.49	0.99
RMZCLY		64.00	-2.26	-1.47	64.60	-1.71	-1.14
T3RWVE		65.82	-0.44	-0.29	65.70	-0.61	-0.40
TDNAMY		67.02	0.76	0.50	67.48	1.17	0.78
UTDMTD	X	66.08	-0.18	-0.11	68.09	1.78	1.19
W7YPE3		69.48	3.23	2.11	69.76	3.45	2.29
WWQMZA		68.08	1.82	1.19	67.56	1.25	0.83
WYB9EX		65.34	-0.92	-0.60	64.99	-1.32	-0.88
WZ47M6		64.96	-1.30	-0.85	64.74	-1.57	-1.04
XLZ6KM		65.03	-1.22	-0.80	65.37	-0.94	-0.63
Y6VX7K		66.74	0.48	0.32	65.92	-0.39	-0.26
Z2E7U4		66.64	0.38	0.25	66.27	-0.04	-0.03



Plastics Interlaboratory Testing Program

Report #109

Analysis 738

1st Qtr 2019

Flexural Stress at Yield - MPa

WebCode	Data Flag	Sample K57			Sample K58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
ZR7BJQ		66.13	-0.13	-0.08	66.32	0.01	0.01

Summary Statistics		Sample K57	Sample K58
Grand Means		66.258 MPa	66.310 MPa
Stnd Dev Btwn Labs		1.531 MPa	1.504 MPa
Statistics based on 33 of 36 reporting participants			

Sample K57: ABS & Sample K58: ABS

Comments on Assigned Data Flags for Test #738

- 98QK6T (X) - Data for both samples are low. Possible Systematic Error.
- UTDMTD (X) - Inconsistent in testing between samples.
- B72L96 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.



Plastics Interlaboratory Testing Program

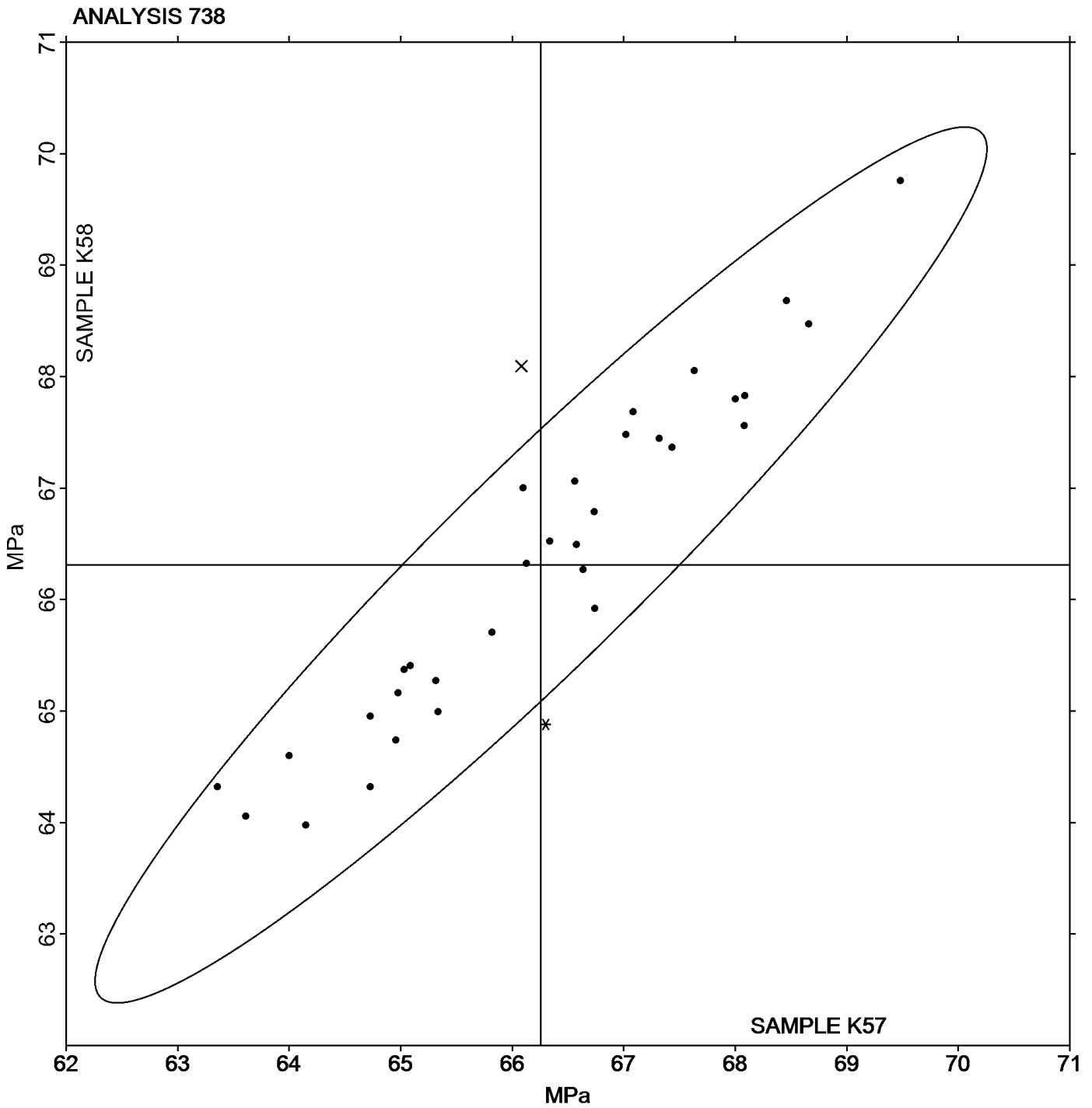
Report #109

Analysis 738

1st Qtr 2019

Flexural Stress at Yield - MPa

Grand Mean Sample K57: 66.258 MPa Grand Mean Sample K58: 66.310 MPa





Plastics Interlaboratory Testing Program

Report #109

Analysis 750

1st Qtr 2019

Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

WebCode	Data Flag	Sample X57			Sample X58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2A33YW		6.53	-0.05	-0.27	6.53	-0.05	-0.31	TO
2NWRQM	*	6.05	-0.53	-2.79	6.20	-0.38	-2.19	TO
2WD7VD		6.60	0.02	0.12	6.70	0.12	0.66	DY
389WTQ		6.60	0.02	0.12	6.60	0.02	0.09	TO
39ZM6W		6.78	0.20	1.07	6.74	0.16	0.89	TO
3ATLD4	*	7.10	0.52	2.75	7.00	0.41	2.34	RR
3YJWPZ		6.56	-0.02	-0.11	6.66	0.07	0.40	TO
3ZNTLN		6.23	-0.34	-1.80	6.32	-0.27	-1.53	XX
46JVDU		6.65	0.07	0.39	6.45	-0.13	-0.76	CE
4LN3TW		6.59	0.01	0.04	6.58	-0.01	-0.05	DY
4T33X8		6.42	-0.16	-0.85	6.45	-0.14	-0.79	GO
6FYGAU	X	8.23	1.65	8.67	8.40	1.82	10.38	DY
74WZXC		6.59	0.01	0.04	6.68	0.09	0.52	DY
798BNL		6.47	-0.11	-0.58	6.46	-0.13	-0.74	WZ
7THLUV		6.43	-0.15	-0.77	6.55	-0.04	-0.22	TO
8QNKGY		6.26	-0.32	-1.69	6.29	-0.29	-1.68	TO
98QK6T		6.65	0.07	0.39	6.55	-0.03	-0.19	TO
9DDGMN		6.32	-0.26	-1.35	6.45	-0.13	-0.76	TO
9DEH72		6.67	0.09	0.49	6.65	0.07	0.38	DY
9XZQGF		6.46	-0.12	-0.61	6.38	-0.20	-1.16	XX
9YHKHP		6.68	0.11	0.56	6.66	0.07	0.42	TO
9YY2BX	X	6.60	0.02	0.12	6.30	-0.28	-1.62	TY
9ZLWZ7		6.65	0.07	0.39	6.65	0.07	0.38	TO
B72L96		6.42	-0.15	-0.80	6.59	0.01	0.03	TO
BLWYPL		6.50	-0.07	-0.38	6.52	-0.07	-0.37	TO
D69NDP		6.50	-0.08	-0.40	6.55	-0.03	-0.19	CE
DRHB2U		6.50	-0.08	-0.40	6.55	-0.03	-0.19	TO
DX7ZFC		6.69	0.12	0.61	6.70	0.12	0.69	AT
E84HAC	*	6.55	-0.03	-0.14	6.80	0.22	1.23	DY
E89TAN		6.57	-0.01	-0.03	6.61	0.03	0.15	XX
EDVG8F		6.47	-0.11	-0.56	6.43	-0.16	-0.91	WZ
EJ2CQF	X	6.67	0.09	0.49	7.18	0.59	3.39	CE
ENXUCL		6.66	0.08	0.41	6.65	0.07	0.38	TO
FP9LNG		6.30	-0.28	-1.48	6.29	-0.29	-1.68	WZ
FYVM6Q		6.80	0.22	1.17	6.85	0.27	1.52	TO



Plastics Interlaboratory Testing Program

Report #109

Analysis 750

1st Qtr 2019

Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

WebCode	Data Flag	Sample X57			Sample X58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
GT32EF		6.67	0.09	0.46	6.59	0.01	0.03	DY
HD27F9		6.15	-0.43	-2.26	6.21	-0.37	-2.13	CE
HFR72J		6.90	0.32	1.70	6.70	0.12	0.66	AT
HWDWUR		6.71	0.13	0.70	6.67	0.09	0.49	DY
J23W66		6.59	0.01	0.07	6.53	-0.05	-0.31	DY
JDXYWD		6.41	-0.17	-0.87	6.58	-0.01	-0.05	GO
JEQX6K		6.82	0.24	1.26	6.80	0.21	1.23	TO
JRZQVH		6.52	-0.06	-0.30	6.58	0.00	-0.02	DY
JZ8CH6	X	14.05	7.47	39.20	12.85	6.27	35.74	XX
KCFCR4		6.75	0.17	0.91	6.55	-0.03	-0.19	TO
KUPFT4		6.30	-0.28	-1.45	6.30	-0.28	-1.62	TO
KVXRB6		6.70	0.12	0.65	6.80	0.22	1.23	TO
KZR4DB	X	6.09	-0.49	-2.55	6.40	-0.18	-1.05	GO
LKVUZA	X	6.96	0.38	2.01	7.65	1.07	6.08	DY
MGCYXH		6.86	0.28	1.49	6.88	0.30	1.69	TO
MK9ALA		6.70	0.12	0.62	6.73	0.15	0.83	TO
MNABWE		6.51	-0.07	-0.37	6.49	-0.10	-0.55	TO
Q7DDLL		6.51	-0.07	-0.35	6.53	-0.06	-0.34	GO
Q87CTT		6.50	-0.08	-0.40	6.50	-0.08	-0.48	DA
QC2YQM		6.80	0.22	1.17	6.80	0.22	1.23	TO
QHQUTX		6.50	-0.08	-0.40	6.50	-0.08	-0.48	TO
RCH6W6		6.80	0.22	1.17	6.85	0.27	1.52	TO
RE9WYF		6.69	0.11	0.57	6.75	0.16	0.92	TO
RJKJR		6.60	0.02	0.12	6.49	-0.10	-0.55	CE
RKBHRX		6.60	0.02	0.12	6.43	-0.16	-0.91	TO
RMZCLY		6.80	0.22	1.17	6.80	0.22	1.23	TO
T3RWVE		6.64	0.06	0.31	6.66	0.08	0.43	TO
U4BPNU	X	5.71	-0.86	-4.53	5.73	-0.86	-4.89	XX
U74Y49		6.51	-0.07	-0.37	6.69	0.11	0.60	TO
U764N7		6.75	0.17	0.91	6.85	0.27	1.52	XX
UTDMTD		6.45	-0.13	-0.66	6.50	-0.08	-0.48	TO
V7JFUV		6.45	-0.13	-0.66	6.55	-0.03	-0.19	DY
VGGVMZ		6.58	0.01	0.03	6.49	-0.10	-0.55	TO
W7YPE3		6.58	0.00	0.03	6.50	-0.08	-0.45	TO
WF4LAT		6.81	0.23	1.22	6.78	0.19	1.09	DY



Plastics Interlaboratory Testing Program

Report #109

Analysis 750

1st Qtr 2019

Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

WebCode	Data Flag	Sample X57			Sample X58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
WWQMZA		6.52	-0.06	-0.30	6.56	-0.03	-0.17	WZ
WYB9EX	*	6.10	-0.48	-2.50	6.10	-0.48	-2.76	DY
WYUYHQ		6.75	0.17	0.91	6.67	0.09	0.49	TM
WZ47M6		6.35	-0.23	-1.19	6.31	-0.28	-1.59	WZ
X2HTYR	X	6.98	0.40	2.09	7.13	0.55	3.11	DY
Y6XZWW		6.60	0.02	0.12	6.60	0.02	0.09	TO
YLH92Z		6.75	0.18	0.93	6.75	0.16	0.93	KA
Z2E7U4		6.72	0.14	0.75	6.60	0.02	0.09	TO
ZR7BJQ		6.80	0.22	1.16	6.79	0.21	1.17	TO

Summary Statistics

	Sample X57	Sample X58
Grand Means	6.576 grams/10 mins	6.584 grams/10 mins
Stnd Dev Btwn Labs	0.191 grams/10 mins	0.175 grams/10 mins

Statistics based on 71 of 79 reporting participants

Sample X57: HDPE & Sample X58: HDPE

Comments on Assigned Data Flags for Test #750

- LKVUZA (X) - Data for sample X58 are high.
- 6FYGAU (X) - Data for both samples are high. Possible Systematic Error.
- 9YY2BX (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample X57.
- KZR4DB (X) - Inconsistent in testing between samples.
- EJ2CQF (X) - Data for sample X58 are high. Inconsistent within the determinations of sample X58.
- JZ8CH6 (X) - Data for both samples are high. Possible Systematic Error.
- X2HTYR (X) - Data for sample X58 are high.
- U4BPNU (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

AT Atlas	CE Ceast
DA Davenport	DY Dynisco
GO Gottfert	KA Kayeness
RR Ray Ran	TM TMI
TO Tinius Olsen	TY Toyoseiki Seisakusho
WZ Zwick	XX Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

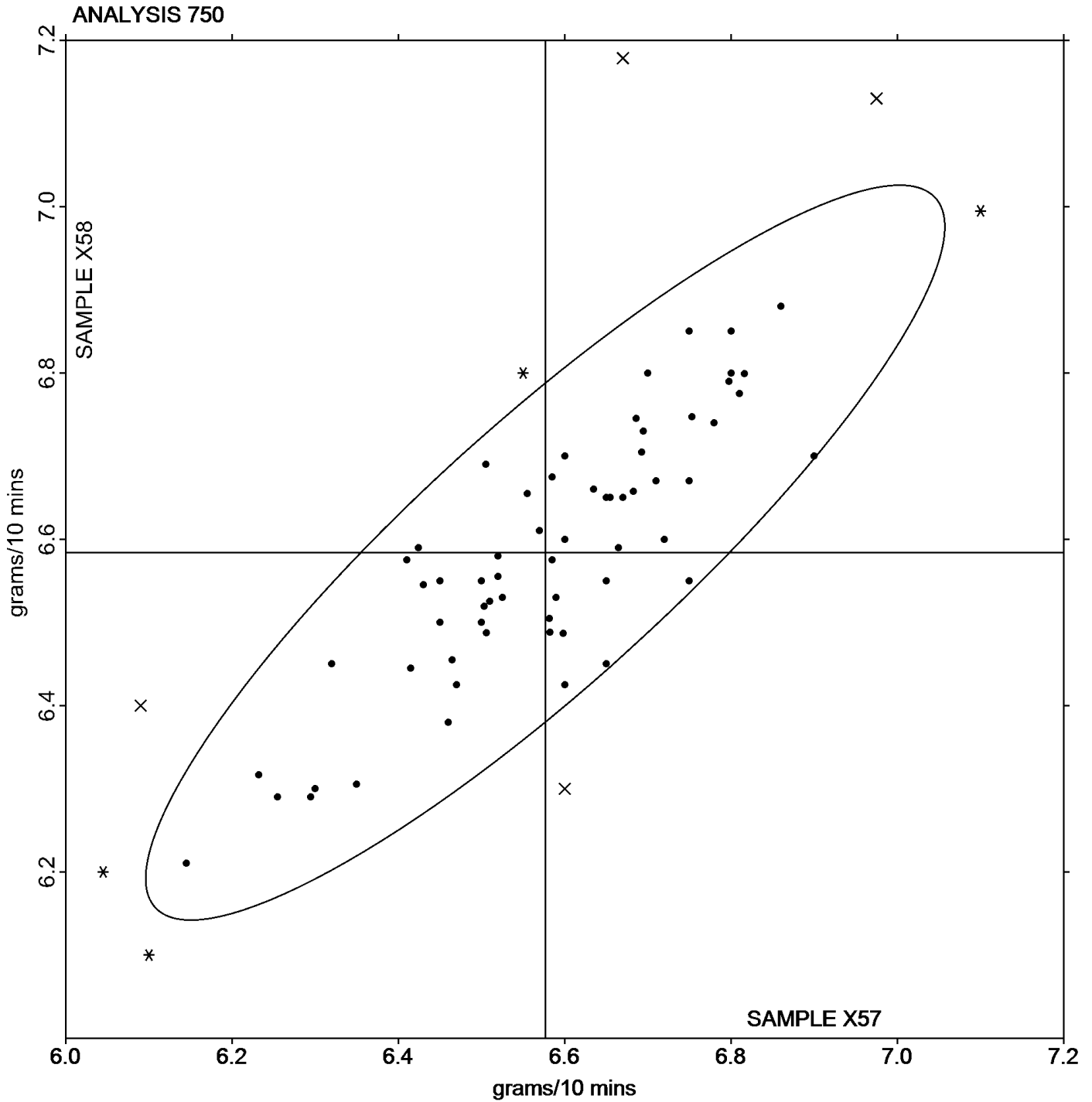
Report #109

Analysis 750

1st Qtr 2019

Flow Rates of Thermoplastics (190 or 230C/2.16 kg) - g/10 mins

Grand Mean Sample X57: 6.5765 grams/10 mins Grand Mean Sample X58: 6.5840 grams/10 mins





Plastics Interlaboratory Testing Program

Report #109

Analysis 755

1st Qtr 2019

Moisture Content of Plastics

WebCode	Data Flag	Sample Y57			Sample Y58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2NWRQM		0.18887	-0.01753	-0.84	0.20887	-0.01536	-0.70	AZ
2WD7VD		0.22533	0.01894	0.91	0.24333	0.01911	0.87	AZ
3DTW8H		0.19363	-0.01276	-0.61	0.22857	0.00434	0.20	MK
4LN3TW	*	0.26020	0.05380	2.58	0.29003	0.06581	3.00	AZ
6X9BJU		0.18643	-0.01996	-0.96	0.19690	-0.02732	-1.24	MD
7THLUV		0.20120	-0.00520	-0.25	0.21573	-0.00849	-0.39	MS
7WU4WR		0.16267	-0.04373	-2.09	0.18367	-0.04056	-1.85	CT
9DEH72		0.24150	0.03510	1.68	0.26000	0.03578	1.63	CT
9E7EVV		0.20333	-0.00306	-0.15	0.22133	-0.00289	-0.13	ML
AZ74PN		0.21300	0.00660	0.32	0.22500	0.00078	0.04	MB
CLDJQB		0.23770	0.03130	1.50	0.25487	0.03064	1.40	AZ
DMPBLD		0.23333	0.02694	1.29	0.24333	0.01911	0.87	CS
E84HAC		0.21300	0.00660	0.32	0.22300	-0.00122	-0.06	MS
EJ2CQF		0.19533	-0.01106	-0.53	0.22400	-0.00022	-0.01	AZ
FBQB6E	X	0.10600	-0.10039	-4.81	0.11660	-0.10762	-4.90	MU
FCJ9DL		0.19367	-0.01273	-0.61	0.21573	-0.00849	-0.39	ML
FYVM6Q	X	0.19133	-0.01506	-0.72	0.17267	-0.05156	-2.35	ML
G9EFVD		0.17950	-0.02690	-1.29	0.20100	-0.02322	-1.06	AZ
HD27F9		0.19433	-0.01206	-0.58	0.20867	-0.01556	-0.71	MU
HGK4AQ		0.21047	0.00407	0.19	0.23087	0.00664	0.30	AZ
JRZQVH		0.20183	-0.00456	-0.22	0.22103	-0.00319	-0.15	AZ
KUPFT4		0.19800	-0.00840	-0.40	0.21533	-0.00889	-0.40	ML
M34YM6		0.20567	-0.00073	-0.04	0.23067	0.00644	0.29	MU
MNABWE	X	0.31167	0.10527	5.04	0.35267	0.12844	5.85	XX
QHQUTX		0.19933	-0.00706	-0.34	0.22300	-0.00122	-0.06	SA
U3JQGN		0.21133	0.00494	0.24	0.22300	-0.00122	-0.06	MU
V7JFUV		0.20500	-0.00140	-0.07	0.22100	-0.00322	-0.15	MJ
W2LXXA		0.19067	-0.01573	-0.75	0.19287	-0.03136	-1.43	MT
WF4LAT		0.22100	0.01460	0.70	0.22800	0.00378	0.17	MB
Z2E7U4	X	0.29833	0.09194	4.40	0.19100	-0.03322	-1.51	MK



Plastics Interlaboratory Testing Program

Report #109

Analysis 755

1st Qtr 2019

Moisture Content of Plastics

Summary Statistics		
	<u>Sample Y57</u>	<u>Sample Y58</u>
Grand Means	0.206397 Percent	0.224223 Percent
Stnd Dev Btwn Labs	0.020875 Percent	0.021953 Percent
Statistics based on 26 of 30 reporting participants		

Sample Y57: ABS & Sample Y58: ABS

Comments on Assigned Data Flags for Test #755

FYVM6Q (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

Z2E7U4 (X) - Data for sample Y57 are high.

FBQB6E (X) - Data for both samples are low. Possible Systematic Error.

MNABWE (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

Key to Instrument Codes Reported by Participants

- | | |
|--|---|
| AZ Arizona Instruments Moisture Analyzer | CS Cosa Instruments |
| CT Computrac Moisture Analyzer | MB Omnimark Mark 3 |
| MD Mettler Toledo DL37 | MJ Mitsubishi KF Analyzer Series |
| MK Mitsubishi KF Analyzer CA | ML Metrohm Coulometer |
| MS Metrohm Coulometer 831 KF | MT Mettler Toledo DL39 |
| MU Mettler Toledo | SA Sartorius MA30 |
| XX Instrument manufacturer not specified by lab | |



Plastics Interlaboratory Testing Program

Report #109

Analysis 757

1st Qtr 2019

Ash Content in Thermoplastics - Percent

WebCode	Data Flag	Sample L57			Sample L58		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
2A33YW		19.805	0.069	0.67	19.820	0.074	0.83
2WD7VD		19.790	0.054	0.53	19.760	0.014	0.16
3YJWPZ		19.700	-0.036	-0.35	19.740	-0.006	-0.07
798BNL		19.723	-0.014	-0.13	19.722	-0.024	-0.27
7THLUV		19.660	-0.076	-0.74	19.730	-0.016	-0.18
7WU4WR		19.790	0.054	0.53	19.590	-0.156	-1.76
8BPU9F		19.756	0.019	0.19	19.759	0.013	0.14
9DEH72		19.800	0.064	0.62	19.845	0.099	1.11
9XZQGF		19.695	-0.041	-0.40	19.680	-0.066	-0.75
9YHKHP		19.762	0.026	0.25	19.808	0.061	0.69
9ZLWZ7	X	19.300	-0.436	-4.25	19.300	-0.446	-5.02
AZ74PN	*	19.490	-0.246	-2.40	19.510	-0.236	-2.66
BLWYPL		19.761	0.025	0.24	19.768	0.022	0.25
CLDJQB		19.755	0.019	0.18	19.780	0.034	0.38
DD2FNH		19.764	0.028	0.27	19.732	-0.014	-0.16
E84HAC		19.780	0.044	0.43	19.800	0.054	0.61
E89TAN	*	19.455	-0.281	-2.74	19.690	-0.056	-0.63
EDY4L9		19.755	0.019	0.18	19.785	0.039	0.44
EJ2CQF		19.795	0.059	0.57	19.810	0.063	0.71
ELAV3B		19.830	0.094	0.92	19.775	0.029	0.32
ENXUCL	X	21.000	1.264	12.31	19.700	-0.046	-0.52
FP9LNG		19.775	0.039	0.38	19.730	-0.016	-0.18
FYVM6Q		19.825	0.089	0.87	19.745	-0.001	-0.01
G9EFVD	X	19.830	0.094	0.92	26.545	6.799	76.56
GR4FL4		19.750	0.014	0.14	19.800	0.054	0.61
GT32EF		19.695	-0.041	-0.40	19.780	0.034	0.38
HD27F9	*	19.967	0.230	2.25	19.705	-0.041	-0.46
HWDWUR		19.790	0.054	0.53	19.840	0.094	1.06
JDXYWD		19.560	-0.176	-1.71	19.585	-0.161	-1.82
JRZQVH		19.780	0.044	0.43	19.780	0.034	0.38
JZ8CH6	X	20.155	0.419	4.08	19.435	-0.311	-3.50
KCFCR4	*	19.750	0.014	0.14	19.515	-0.231	-2.60
KUPFT4		19.775	0.039	0.38	19.805	0.059	0.66
PTPPDG		19.750	0.014	0.14	19.810	0.064	0.72
Q7DDLL	X	19.665	-0.071	-0.69	20.100	0.354	3.98



Plastics Interlaboratory Testing Program

Report #109

Analysis 757

1st Qtr 2019

Ash Content in Thermoplastics - Percent

WebCode	Data Flag	<u>Sample L57</u>			<u>Sample L58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
Q87CTT		19.675	-0.061	-0.59	19.755	0.009	0.10
QHOUTX		19.805	0.069	0.67	19.795	0.049	0.55
RCH6W6		19.795	0.059	0.57	19.770	0.024	0.27
RMHVFR		19.770	0.034	0.33	19.755	0.009	0.10
T3RWVE		19.790	0.054	0.53	19.740	-0.006	-0.07
TPYPKQ		19.620	-0.116	-1.13	19.660	-0.086	-0.97
V7JFUV		19.775	0.039	0.38	19.840	0.094	1.06
W2LXXA		19.810	0.074	0.72	19.795	0.049	0.55
W7YPE3		19.485	-0.251	-2.45	19.580	-0.166	-1.87
WF4LAT		19.815	0.079	0.77	19.760	0.014	0.16
WWQMZA	*	19.565	-0.171	-1.67	19.870	0.124	1.39
WYB9EX		19.750	0.014	0.14	19.745	-0.001	-0.01
XLZ6KM		19.555	-0.181	-1.76	19.575	-0.171	-1.93
YPGML6		19.800	0.064	0.62	19.880	0.134	1.51
Z2E7U4		19.830	0.094	0.92	19.860	0.114	1.28

Summary Statistics		
	<u>Sample L57</u>	<u>Sample L58</u>
Grand Means	19.7360 Percent	19.7462 Percent
Stnd Dev Btwn Labs	0.1026 Percent	0.0888 Percent
<i>Statistics based on 45 of 50 reporting participants</i>		

Sample L57: PP & Sample L58: PP

Comments on Assigned Data Flags for Test #757

- G9EFVD (X) - Data for sample L58 are high. Inconsistent within the determinations of sample L58.
- ENXUCL (X) - Data for sample L57 are high. Inconsistent within the determinations of sample L57.
- Q7DDLL (X) - Data for sample L58 are high. Inconsistent within the determinations of sample L58.
- 9ZLWZ7 (X) - Data for both samples are low.
- JZ8CH6 (X) - Data for sample L57 are high and data for sample L58 are low.



Plastics Interlaboratory Testing Program

Report #109

Analysis 760

1st Qtr 2019

DSC Crystallization Temperature

WebCode	Data Flag	Sample W57			Sample W58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2NWRQM		169.11	49.60	2.04	169.22	49.88	2.08	MT
62DQ6E		106.65	-12.86	-0.53	106.67	-12.67	-0.53	PE
6FYGAU		107.86	-11.65	-0.48	106.96	-12.38	-0.51	TA
8J7MZK		104.07	-15.45	-0.64	106.93	-12.41	-0.52	PE
9XZQGF		105.99	-13.53	-0.56	106.50	-12.84	-0.53	TA
9YY2BX		118.53	-0.98	-0.04	117.94	-1.40	-0.06	SH
9Z63ZW		108.68	-10.83	-0.45	107.67	-11.67	-0.49	MT
E89TAN		106.41	-13.10	-0.54	105.89	-13.45	-0.56	TA
FP9LNG		103.86	-15.65	-0.65	104.81	-14.53	-0.60	TA
JDXYWD		108.43	-11.08	-0.46	108.87	-10.47	-0.44	TA
KJLYQY		172.70	53.19	2.19	173.10	53.76	2.24	PE
KZR4DB		108.44	-11.08	-0.46	107.68	-11.66	-0.48	TA
M4XM2U		104.84	-14.68	-0.60	105.65	-13.69	-0.57	MT
MNABWE		104.50	-15.01	-0.62	103.67	-15.67	-0.65	NZ
NTVNRZ		161.30	41.79	1.72	158.50	39.16	1.63	NZ
U74Y49		109.71	-9.80	-0.40	108.92	-10.42	-0.43	TA
W2LXXA		161.70	42.19	1.74	161.53	42.19	1.76	TA
W7YPE3		111.47	-8.04	-0.33	109.71	-9.63	-0.40	TA
WYB9EX		109.40	-10.11	-0.42	108.87	-10.47	-0.44	TA
WZ47M6		106.60	-12.91	-0.53	107.71	-11.63	-0.48	TA

Summary Statistics

	Sample W57	Sample W58
Grand Means	119.513 Degrees Celsius	119.340 Degrees Celsius
Std Dev Btwn Labs	24.267 Degrees Celsius	24.040 Degrees Celsius

Statistics based on 20 of 20 reporting participants

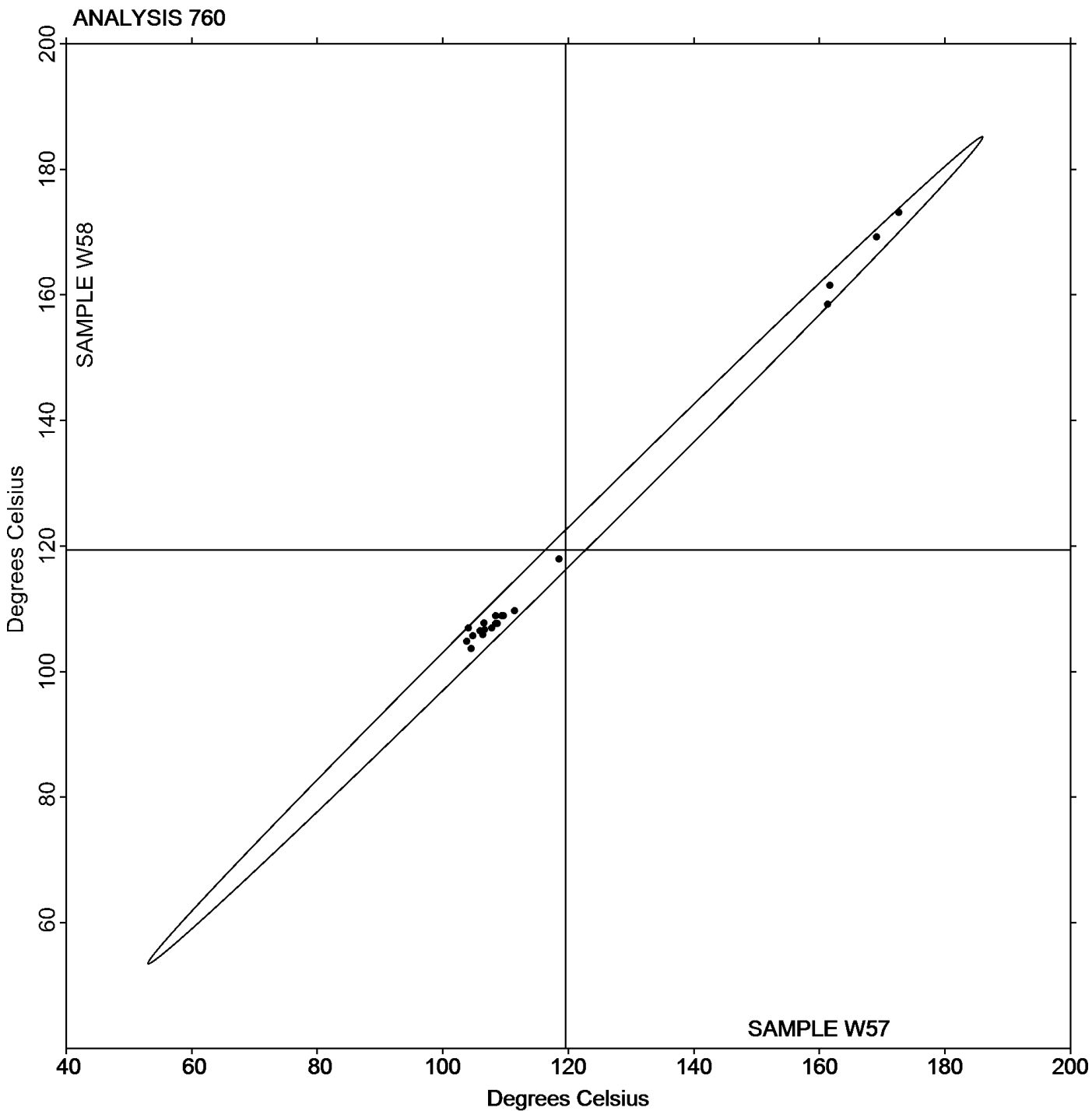
Sample W57: PP & Sample W58: PP

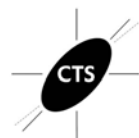
Key to Instrument Codes Reported by Participants

MT	Mettler Toledo Instruments	NZ	Netzsch Instruments
PE	Perkins Elmer Instruments	SH	Shimadzu
TA	TA Instruments		



Grand Mean Sample W57: 119.51 Degrees Celsius Grand Mean Sample W58: 119.34 Degrees Celsius





Plastics Interlaboratory Testing Program

Report #109

Analysis 761

1st Qtr 2019

DSC Melt Temperature

WebCode	Data Flag	Sample W57			Sample W58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2NWRQM	X	104.55	-60.89	-40.26	106.00	-59.48	-39.20	MT
62DQ6E		166.83	1.39	0.92	166.82	1.34	0.88	PE
6FYGAU		167.15	1.71	1.13	166.70	1.22	0.80	TA
8J7MZK		167.20	1.76	1.16	167.00	1.52	1.00	PE
9XZQGF		166.05	0.60	0.40	167.39	1.90	1.25	XX
9YHKHP		165.12	-0.32	-0.21	165.62	0.14	0.09	TA
9YY2BX		162.47	-2.97	-1.96	162.21	-3.27	-2.16	SH
9Z63ZW		166.24	0.80	0.53	166.45	0.96	0.63	MT
E89TAN		165.47	0.02	0.01	166.73	1.24	0.82	XX
ELAV3B		165.49	0.04	0.03	165.76	0.27	0.18	TA
FP9LNG		166.80	1.36	0.90	165.12	-0.36	-0.24	TA
JDXYWD		163.43	-2.01	-1.33	163.73	-1.75	-1.15	TA
KZR4DB		167.35	1.91	1.26	166.91	1.42	0.94	TA
M4XM2U		164.68	-0.77	-0.51	163.81	-1.68	-1.11	MT
MNABWE		165.53	0.09	0.06	166.43	0.95	0.63	NZ
U74Y49		163.48	-1.97	-1.30	163.13	-2.35	-1.55	TA
W7YPE3		163.95	-1.50	-0.99	163.99	-1.49	-0.98	TA
WYB9EX		163.83	-1.61	-1.07	165.50	0.02	0.01	TA
WZ47M6		166.93	1.49	0.98	165.42	-0.06	-0.04	TA

Summary Statistics

	Sample W57	Sample W58
Grand Means	165.445 Degrees Celsius	165.484 Degrees Celsius
Std Dev Btwn Labs	1.513 Degrees Celsius	1.518 Degrees Celsius

Statistics based on 18 of 19 reporting participants

Sample W57: PP & Sample W58: PP

Comments on Assigned Data Flags for Test #761

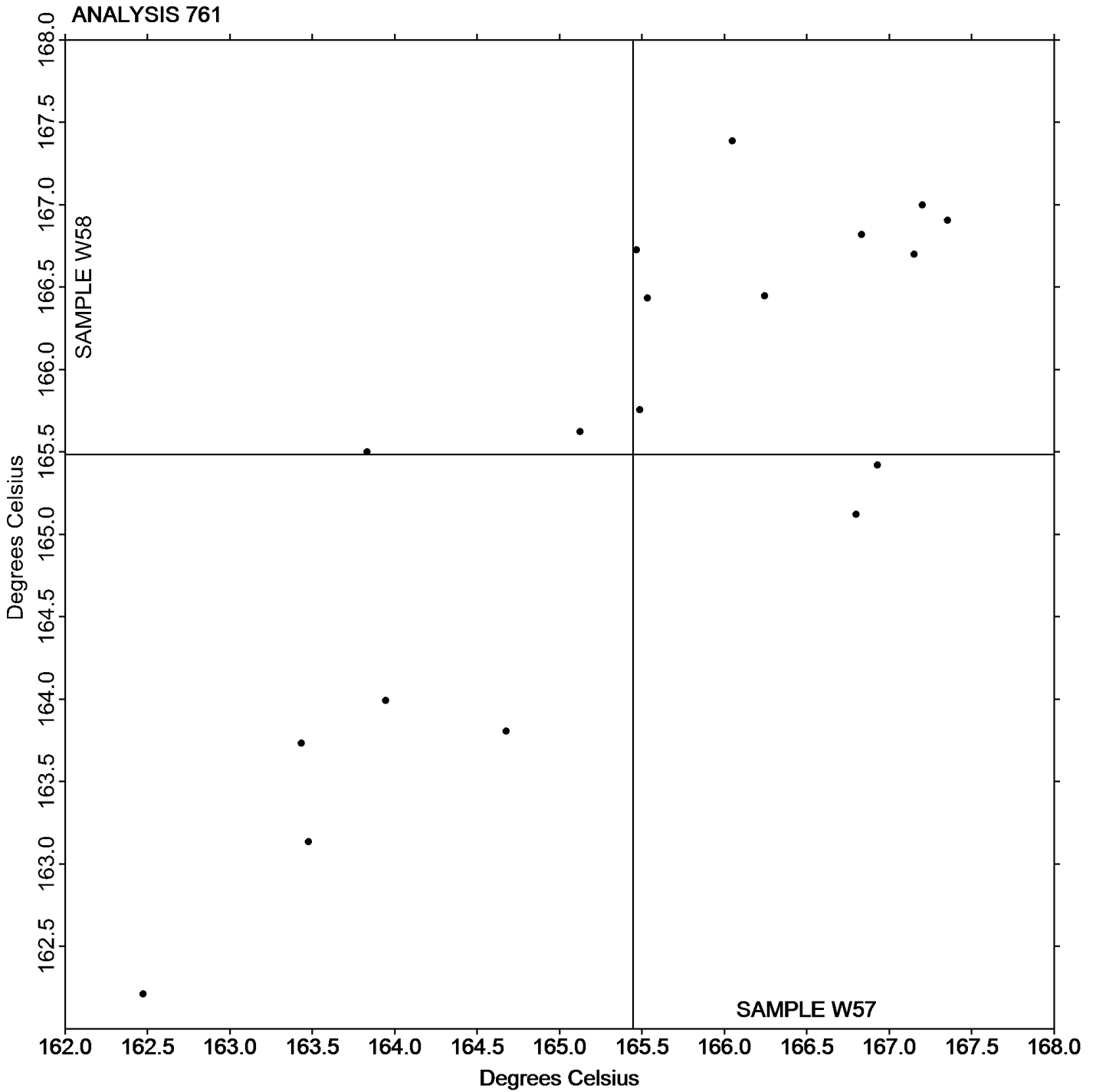
2NWRQM (X) - Data for both samples are low. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

MT	Mettler Toledo Instruments	NZ	Netzsch Instruments
PE	Perkins Elmer Instruments	SH	Shimadzu
TA	TA Instruments	XX	Instrument manufacturer not specified by lab



Grand Mean Sample W57: 165.44 Degrees Celsius Grand Mean Sample W58: 165.48 Degrees Celsius



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 762

1st Qtr 2019

DSC Enthalpy of Crystallization

WebCode	Data Flag	Sample W57			Sample W58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6FYGAU		91.14	-3.28	-0.55	88.24	-6.41	-1.16	TA
8J7MZK		92.90	-1.51	-0.25	92.72	-1.93	-0.35	PE
9YY2BX		85.93	-8.48	-1.42	90.57	-4.08	-0.74	SH
9Z63ZW		96.83	2.41	0.40	93.47	-1.18	-0.21	MT
JDXYWD		99.07	4.65	0.78	100.37	5.72	1.04	TA
KZR4DB		96.08	1.67	0.28	98.39	3.74	0.68	TA
MNABWE		95.28	0.86	0.14	95.90	1.25	0.23	NZ
U74Y49		96.53	2.11	0.35	95.53	0.88	0.16	TA
W7YPE3		105.17	10.75	1.79	104.73	10.08	1.83	TA
WYB9EX		96.17	1.76	0.29	95.95	1.30	0.24	TA
WZ47M6		83.47	-10.95	-1.83	85.26	-9.39	-1.70	TA

Summary Statistics

	Sample W57	Sample W58
Grand Means	94.415 Joules Per Gram	94.649 Joules Per Gram
Std Dev Btwn Labs	5.991 Joules Per Gram	5.508 Joules Per Gram

Statistics based on 11 of 11 reporting participants

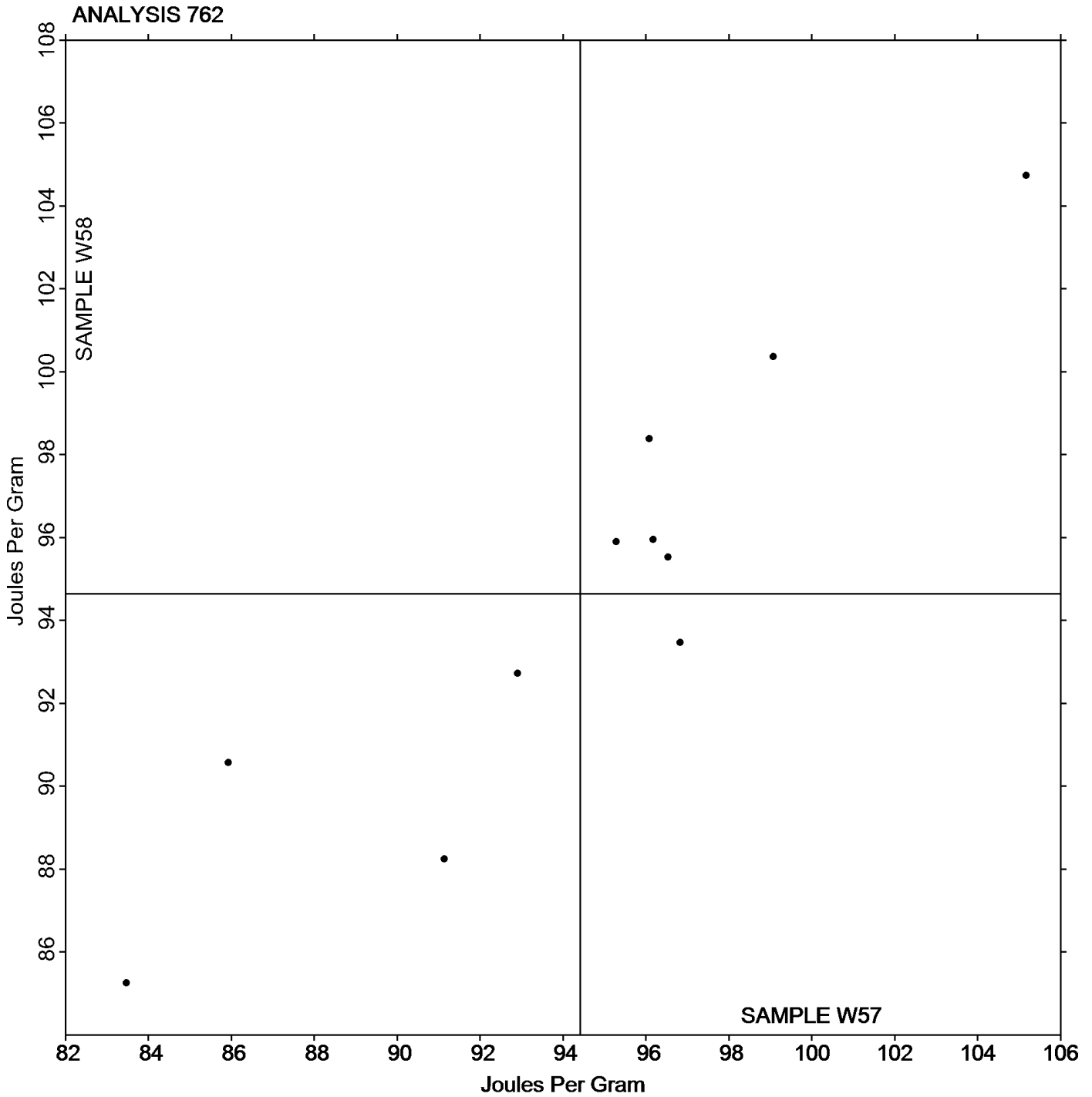
Sample W57: PP & Sample W58: PP

Key to Instrument Codes Reported by Participants

- MT Mettler Toledo Instruments
- PE Perkins Elmer Instruments
- TA TA Instruments
- NZ Netzsch Instruments
- SH Shimadzu



Grand Mean Sample W57: 94.415 Joules Per Gram Grand Mean Sample W58: 94.649 Joules Per Gram



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 763

1st Qtr 2019

DSC Enthalpy of Fusion

WebCode	Data Flag	Sample W57			Sample W58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
6FYGAU		76.50	-11.88	-1.31	80.79	-9.39	-1.17	TA
8J7MZK		83.99	-4.39	-0.48	82.47	-7.70	-0.96	PE
9YY2BX		77.98	-10.40	-1.15	86.05	-4.12	-0.52	SH
9Z63ZW		95.08	6.70	0.74	91.56	1.38	0.17	MT
JDXYWD		102.23	13.85	1.53	103.53	13.36	1.67	TA
KZR4DB		91.24	2.86	0.32	95.01	4.84	0.61	TA
MNABWE		76.32	-12.07	-1.33	77.52	-12.66	-1.58	NZ
U74Y49		96.91	8.52	0.94	96.03	5.85	0.73	TA
W7YPE3		94.93	6.55	0.72	98.12	7.94	0.99	TA
WYB9EX		93.28	4.90	0.54	92.94	2.76	0.35	TA
WZ47M6		83.75	-4.63	-0.51	87.92	-2.26	-0.28	TA

Summary Statistics

	Sample W57	Sample W58
Grand Means	88.383 Joules Per Gram	90.177 Joules Per Gram
Std Dev Btwn Labs	9.056 Joules Per Gram	7.990 Joules Per Gram

Statistics based on 11 of 11 reporting participants

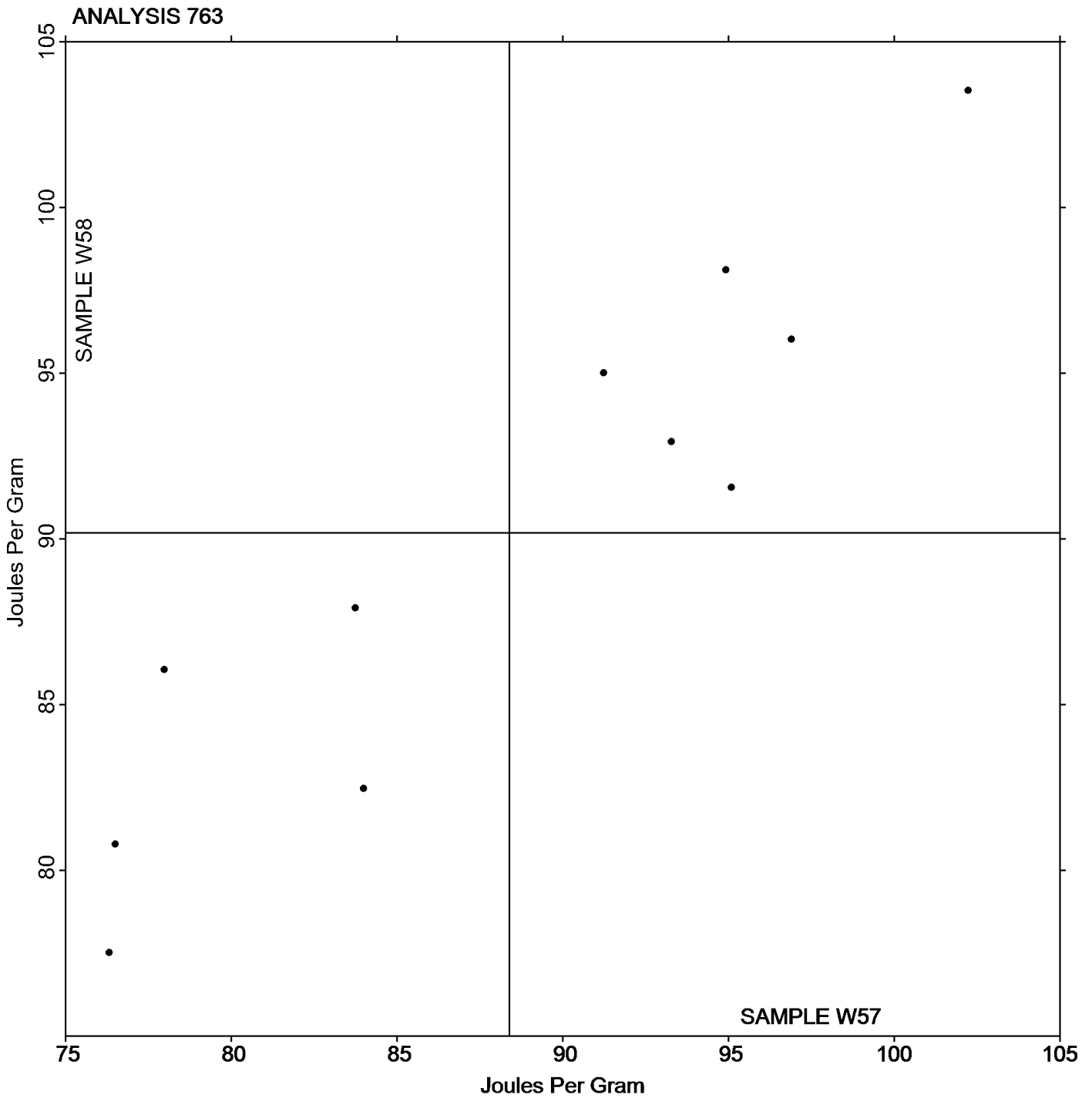
Sample W57: PP & Sample W58: PP

Key to Instrument Codes Reported by Participants

- MT Mettler Toledo Instruments
- PE Perkins Elmer Instruments
- TA TA Instruments
- NZ Netzsch Instruments
- SH Shimadzu



Grand Mean Sample W57: 88.383 Joules Per Gram Grand Mean Sample W58: 90.177 Joules Per Gram



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 764

1st Qtr 2019

DSC Glass Transition Temperature

WebCode	Data Flag	Sample V57			Sample V58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2NWRQM		91.58	4.48	1.52	92.89	5.88	1.66	MT
62DQ6E		87.35	0.25	0.08	88.52	1.51	0.43	XX
8J7MZK		87.83	0.73	0.25	87.87	0.85	0.24	PE
9YY2BX		79.17	-7.93	-2.69	77.45	-9.56	-2.70	SH
9Z63ZW		87.60	0.50	0.17	87.74	0.73	0.21	MT
JDXYWD		85.67	-1.44	-0.49	85.53	-1.48	-0.42	TA
KZR4DB		87.70	0.60	0.20	87.62	0.61	0.17	TA
M4XM2U		88.67	1.57	0.53	87.65	0.63	0.18	MT
MNABWE		87.35	0.25	0.08	87.05	0.04	0.01	NZ
U74Y49		87.48	0.38	0.13	87.05	0.03	0.01	TA
W7YPE3		85.60	-1.50	-0.51	85.75	-1.26	-0.36	TA
WZ47M6		89.23	2.13	0.72	89.02	2.01	0.57	TA

Summary Statistics

Grand Means

Sample V57
87.104 Degrees Celsius

Sample V58
87.012 Degrees Celsius

Std Dev Btwn Labs

2.950 Degrees Celsius

3.543 Degrees Celsius

Statistics based on 12 of 12 reporting participants

Sample V57: PET & Sample V58: PET

Key to Instrument Codes Reported by Participants

MT Mettler Toledo Instruments

NZ Netzsch Instruments

PE Perkins Elmer Instruments

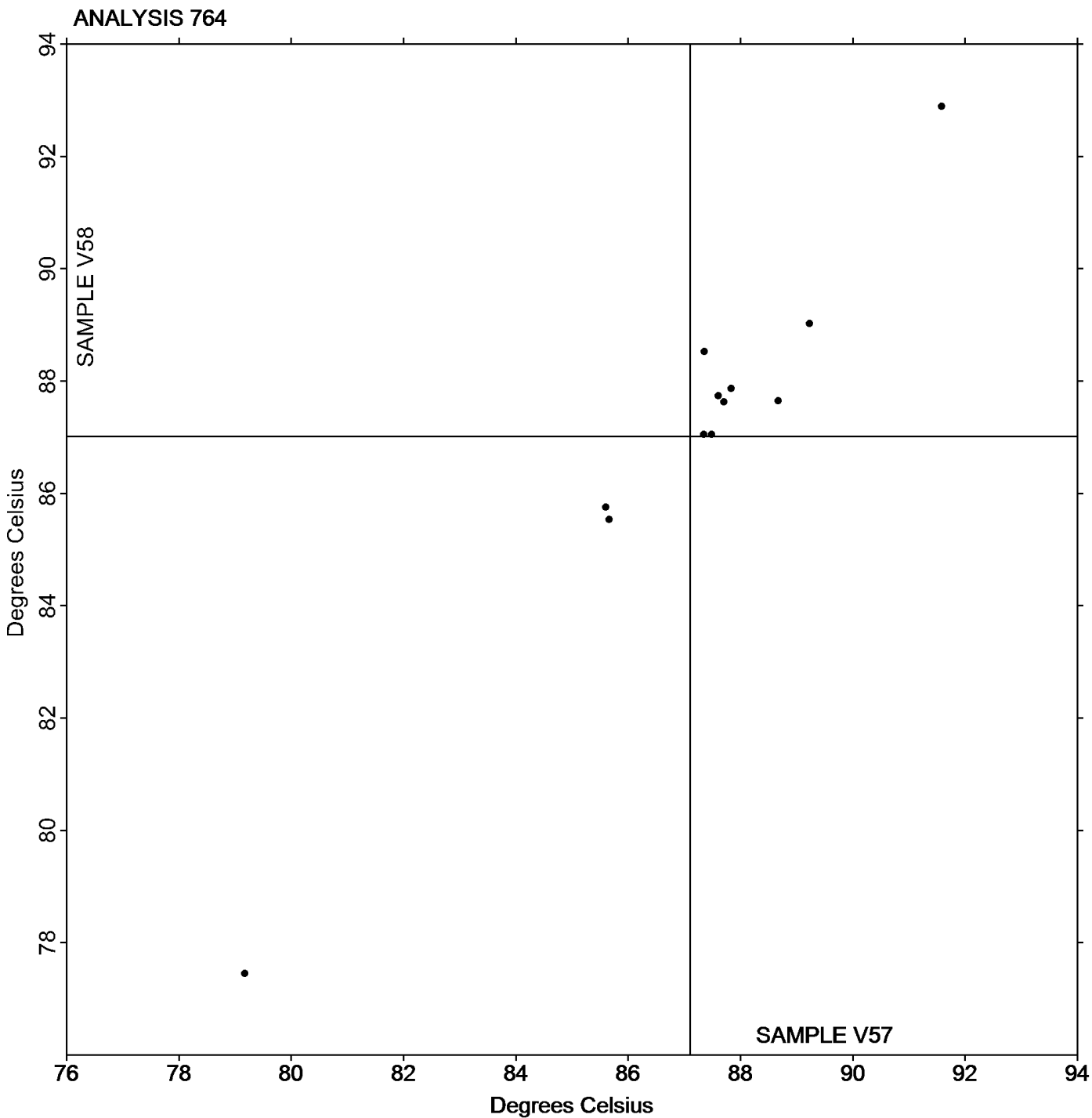
SH Shimadzu

TA TA Instruments

XX Instrument manufacturer not specified by lab



Grand Mean Sample V57: 87.104 Degrees Celsius Grand Mean Sample V58: 87.012 Degrees Celsius



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 770

1st Qtr 2019

Tensile Stress at Yield, Film Samples - psi

WebCode	Data Flag	Sample B57			Sample B58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		1,639	29	0.19	1,554	-17	-0.11	IN
6P7MDQ	X	5	-1,605	-10.12	5	-1,566	-9.57	IN
798BNL		1,652	42	0.27	1,638	67	0.41	WZ
7NKRPL	X	5	-1,604	-10.12	5	-1,566	-9.57	IN
AR7HRA		1,663	53	0.34	1,667	96	0.59	IN
BKMQK9		1,446	-163	-1.03	1,278	-293	-1.79	IN
CUBVKK	X	5	-1,605	-10.12	5	-1,566	-9.57	IN
DEFQRH	X	5	-1,605	-10.12	5	-1,566	-9.57	IN
DQA8GJ	X	5	-1,605	-10.12	5	-1,566	-9.57	IN
DWBFTD		1,718	108	0.68	1,636	65	0.40	IN
DZBU9F	X	5	-1,604	-10.12	5	-1,566	-9.57	IN
EEQ2UE		1,630	21	0.13	1,591	20	0.12	XX
HN2WZF		1,715	105	0.67	1,676	105	0.64	SH
JVMZXB	X	5	-1,605	-10.12	5	-1,566	-9.57	IN
KCFCR4		1,546	-64	-0.40	1,551	-20	-0.12	IN
KKYDD9		1,607	-3	-0.02	1,616	45	0.27	IN
MPKQ37		1,638	28	0.18	1,625	54	0.33	MT
NLYVR7	X	5	-1,605	-10.12	5	-1,566	-9.57	IN
QC4DQ3		1,820	211	1.33	1,652	81	0.49	LI
RE9WYF		1,702	93	0.58	1,707	136	0.83	IN
RJJKJR		1,528	-81	-0.51	1,487	-84	-0.52	IN
RR6RV2	*	1,113	-497	-3.13	1,101	-470	-2.87	TO
T8JFLB	X	33	-1,577	-9.95	32	-1,539	-9.41	XX
VRMQVW	X	5	-1,604	-10.12	5	-1,566	-9.57	IN
VZGWPX	X	5	-1,604	-10.12	5	-1,566	-9.57	IN
WP6DCR		1,628	18	0.11	1,634	63	0.38	IN
WYUYHQ		1,710	100	0.63	1,724	153	0.94	OA

Summary Statistics

	Sample B57	Sample B58
Grand Means	1,609.7 psi	1,571.1 psi
Std Dev Btwn Labs	158.5 psi	163.6 psi

Statistics based on 16 of 27 reporting participants

Sample B57: LDPE & Sample B58: LDPE



Comments on Assigned Data Flags for Test #770

- DQA8GJ (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- CUBVKK (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- NLYVR7 (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- DEFQRH (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- 6P7MDQ (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- DZBU9F (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- VZGWPX (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- JVMZXB (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- VRMQVW (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- 7NKRPL (X) - Extreme Data. Lab may have used incorrect units not used by CTS.
- T8JFLB (X) - Extreme data.

Key to Instrument Codes Reported by Participants

IN	Instron	LI	Lloyd Instruments
MT	MTS/Sintech	OA	Oakland Testing
SH	Shimadzu	TO	Tinius Olsen
WZ	Zwick	XX	Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

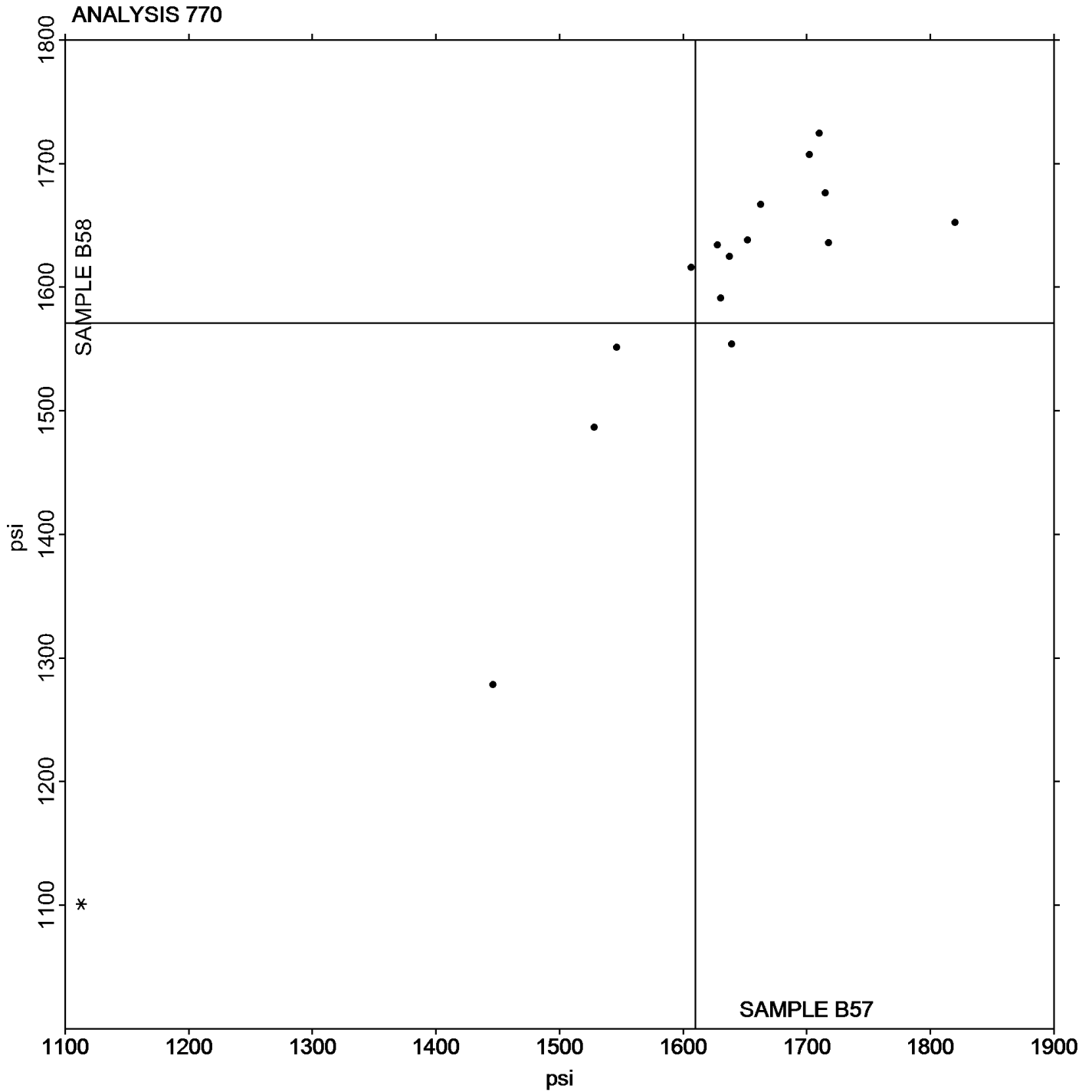
Report #109

Analysis 770

1st Qtr 2019

Tensile Stress at Yield, Film Samples - psi

Grand Mean Sample B57: 1,609.72 psi Grand Mean Sample B58: 1,571.12 psi



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 771

1st Qtr 2019

Tensile Stress at Break, Film Samples - psi

WebCode	Data Flag	Sample B57			Sample B58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		3,145	170	0.36	2,999	73	0.15	IN
67MHDX		2,823	-151	-0.32	2,840	-87	-0.18	UC
798BNL		3,272	298	0.63	3,339	412	0.86	WZ
9YY2BX		2,899	-75	-0.16	2,495	-431	-0.90	SH
AR7HRA		3,266	292	0.61	3,301	375	0.78	IN
BKMQK9	X	3,071	96	0.20	1,898	-1,029	-2.15	IN
DWBFTD		3,400	425	0.90	3,218	292	0.61	IN
EEQ2UE		3,242	268	0.56	3,243	316	0.66	XX
HN2WZF		2,954	-21	-0.04	3,024	97	0.20	SH
KCFCR4		2,446	-529	-1.11	2,674	-253	-0.53	IN
KKYDD9		3,088	114	0.24	3,088	161	0.34	IN
ME3NNE		2,754	-220	-0.46	2,661	-265	-0.55	IN
MPKQ37		2,993	18	0.04	3,019	92	0.19	MT
QC4DQ3		3,315	340	0.72	2,994	68	0.14	LI
RE9WYF		3,491	516	1.09	3,491	565	1.18	IN
RJJKJR		3,097	123	0.26	2,855	-72	-0.15	IN
RR6RV2	*	1,339	-1,636	-3.45	1,332	-1,595	-3.33	TO
T8JFLB		2,679	-296	-0.62	2,524	-403	-0.84	XX
WP6DCR		3,197	222	0.47	3,256	330	0.69	IN
WYUYHQ		3,117	143	0.30	3,254	327	0.68	OA

Summary Statistics		
	Sample B57	Sample B58
Grand Means	2,974.5 psi	2,926.7 psi
Stnd Dev Btwn Labs	474.7 psi	478.6 psi
Statistics based on 19 of 20 reporting participants		

Sample B57: LDPE & Sample B58: LDPE

Comments on Assigned Data Flags for Test #771

BKMQK9 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample B58.



Plastics Interlaboratory Testing Program

Report #109

Analysis 771

1st Qtr 2019

Tensile Stress at Break, Film Samples - psi

Key to Instrument Codes Reported by Participants

IN	Instron	LI	Lloyd Instruments
MT	MTS/Sintech	OA	Oakland Testing
SH	Shimadzu	TO	Tinius Olsen
UC	United	WZ	Zwick
XX	Instrument manufacturer not specified by lab		



Plastics Interlaboratory Testing Program

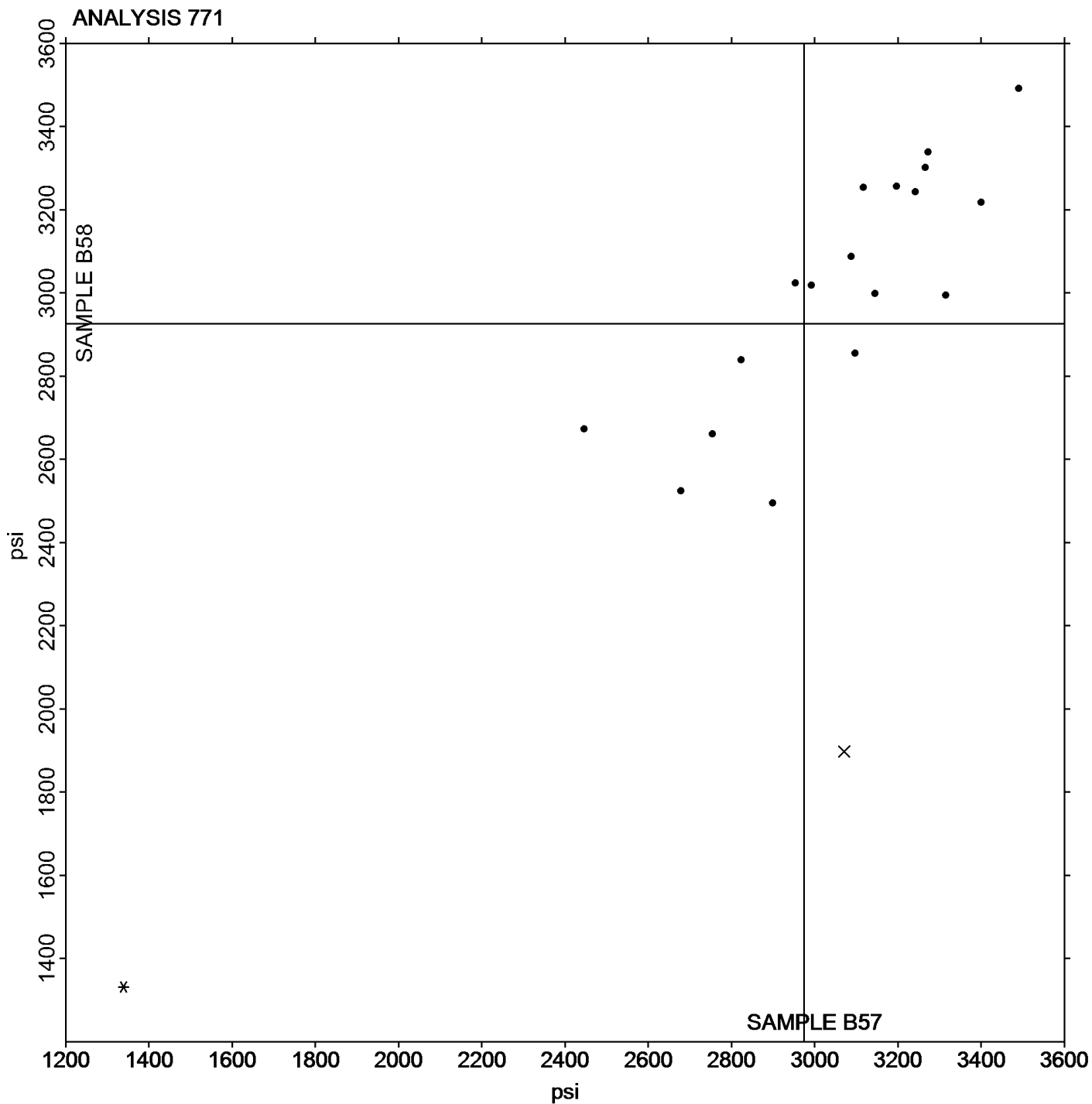
Report #109

Analysis 771

1st Qtr 2019

Tensile Stress at Break, Film Samples - psi

Grand Mean Sample B57: 2,974.53 psi Grand Mean Sample B58: 2,926.66 psi



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 772

1st Qtr 2019

Percent Elongation at Yield, Films

WebCode	Data Flag	Sample B57			Sample B58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		65.95	18.55	0.90	61.29	13.15	0.62	IN
798BNL		25.50	-21.90	-1.06	26.98	-21.16	-0.99	WZ
AR7HRA		64.87	17.47	0.85	64.03	15.89	0.75	IN
BKMQK9		8.44	-38.96	-1.89	7.68	-40.47	-1.90	MT
DWBFTD		59.50	12.10	0.59	59.96	11.82	0.55	IN
EEQ2UE		51.89	4.49	0.22	57.14	9.00	0.42	XX
HN2WZF		58.79	11.39	0.55	63.41	15.26	0.72	SH
KCFCR4		69.10	21.70	1.05	71.94	23.80	1.12	IN
KKYDD9		57.80	10.40	0.50	60.62	12.48	0.59	IN
QC4DQ3		57.78	10.38	0.50	55.29	7.15	0.34	LI
RE9WYF		49.77	2.37	0.11	47.67	-0.47	-0.02	IN
RJJKJR		10.88	-36.52	-1.77	10.82	-37.32	-1.75	IN
RR6RV2		58.18	10.78	0.52	60.94	12.80	0.60	TO
T8JFLB		18.60	-28.80	-1.40	16.90	-31.24	-1.47	XX
WP6DCR		53.95	6.55	0.32	57.49	9.35	0.44	IN

Summary Statistics

	Sample B57	Sample B58
Grand Means	47.400 Percent	48.144 Percent
Stnd Dev Btwn Labs	20.629 Percent	21.310 Percent

Statistics based on 15 of 15 reporting participants

Sample B57: LDPE & Sample B58: LDPE

Note: Results for test 772 exhibit higher variability than historical averages. Use caution when interpreting results.

Key to Instrument Codes Reported by Participants

IN	Instron	LI	Lloyd Instruments
MT	MTS/Sintech	SH	Shimadzu
TO	Tinius Olsen	WZ	Zwick
XX	Instrument manufacturer not specified by lab		



Plastics Interlaboratory Testing Program

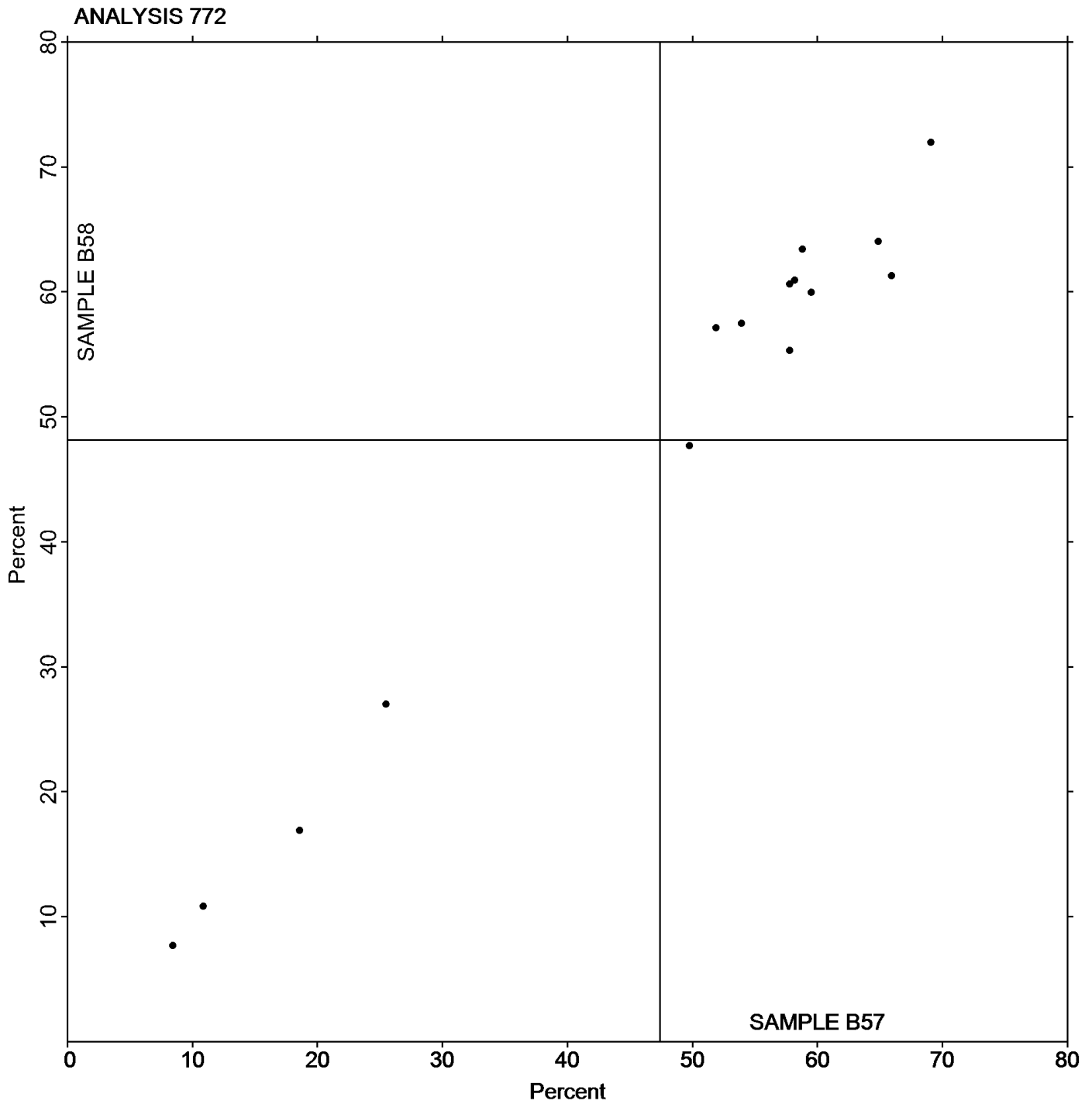
Report #109

Analysis 772

1st Qtr 2019

Percent Elongation at Yield, Films

Grand Mean Sample B57: 47.400 Percent Grand Mean Sample B58: 48.144 Percent



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 773

1st Qtr 2019

Percent Elongation at Break, Film Samples

WebCode	Data Flag	Sample B57			Sample B58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		911.0	74.8	0.42	949.7	92.0	0.46	IN
798BNL		1,019.0	182.8	1.02	1,060.0	202.3	1.01	WZ
9YY2BX		902.9	66.7	0.37	920.0	62.3	0.31	SH
AR7HRA		950.1	113.9	0.63	990.0	132.3	0.66	IN
BKMQK9		736.5	-99.7	-0.56	647.2	-210.5	-1.05	IN
DWBFTD		717.8	-118.4	-0.66	715.8	-141.9	-0.71	IN
EEQ2UE		679.3	-156.9	-0.87	698.2	-159.6	-0.79	XX
HN2WZF		846.7	10.5	0.06	894.1	36.4	0.18	SH
KCFCR4		997.0	160.8	0.90	1,104.1	246.4	1.22	IN
KKYDD9		689.4	-146.8	-0.82	709.6	-148.1	-0.74	IN
ME3NNE		1,281.4	445.2	2.48	1,399.0	541.3	2.69	IN
MPKQ37		769.5	-66.7	-0.37	770.8	-86.9	-0.43	MT
QC4DQ3		824.7	-11.5	-0.06	831.1	-26.6	-0.13	LI
RE9WYF		684.7	-151.5	-0.84	699.0	-158.7	-0.79	IN
RJKJR		687.0	-149.2	-0.83	684.5	-173.3	-0.86	IN
RR6RV2		533.1	-303.1	-1.69	565.1	-292.6	-1.45	TO
T8JFLB	*	1,095.0	258.8	1.44	1,007.0	149.3	0.74	XX
WP6DCR		696.7	-139.5	-0.78	732.8	-125.0	-0.62	IN
WYUYHQ		866.1	29.9	0.17	919.0	61.3	0.30	OA

Summary Statistics		
	Sample B57	Sample B58
Grand Means	836.20 Percent	857.74 Percent
Stnd Dev Btwn Labs	179.47 Percent	201.16 Percent
Statistics based on 19 of 19 reporting participants		

Sample B57: LDPE & Sample B58: LDPE

Key to Instrument Codes Reported by Participants

- | | | | |
|----|-------------|----|--|
| IN | Instron | LI | Lloyd Instruments |
| MT | MTS/Sintech | OA | Oakland Testing |
| SH | Shimadzu | TO | Tinius Olsen |
| WZ | Zwick | XX | Instrument manufacturer not specified by lab |



Plastics Interlaboratory Testing Program

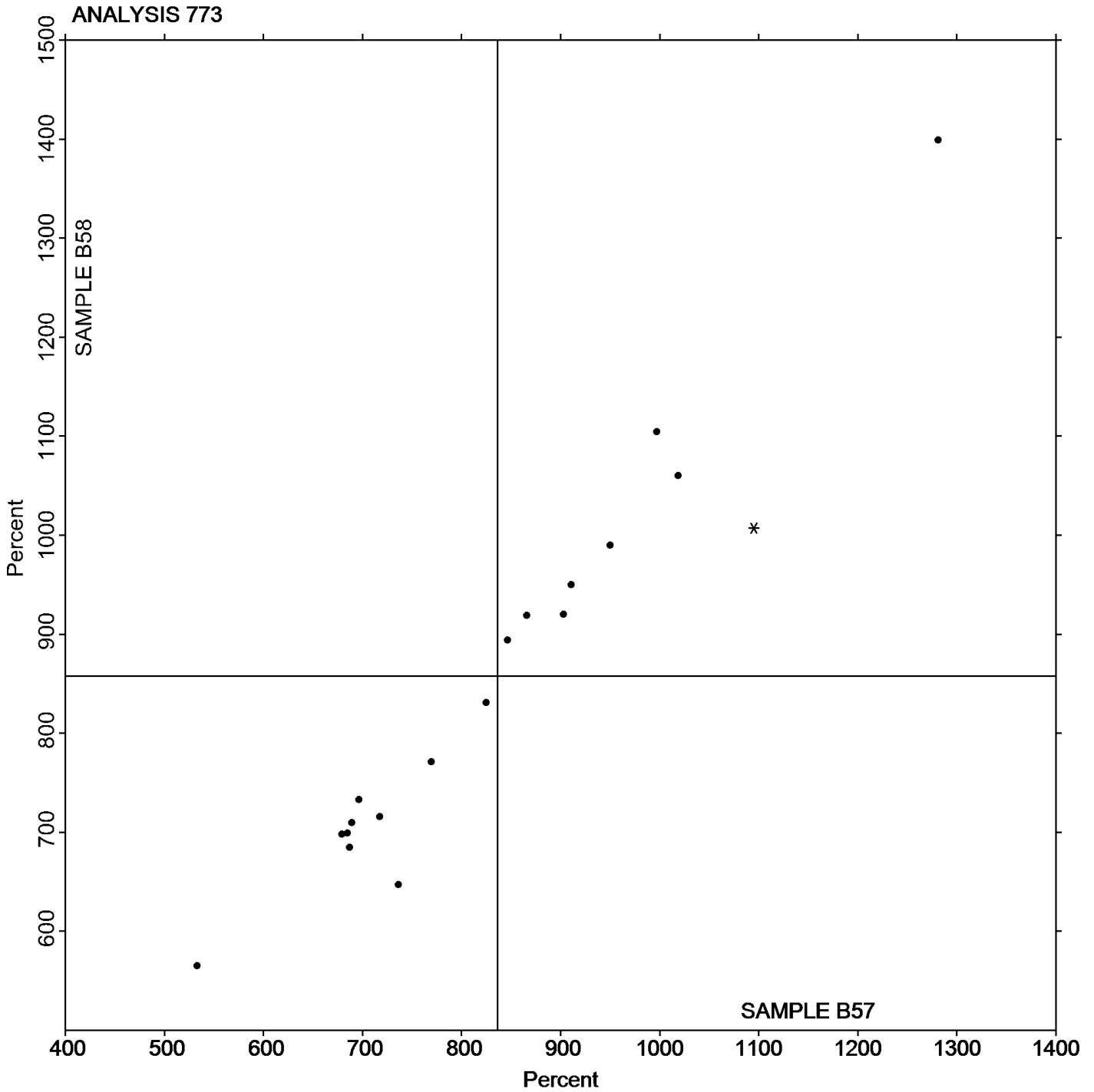
Report #109

Analysis 773

1st Qtr 2019

Percent Elongation at Break, Film Samples

Grand Mean Sample B57: 836.20 Percent Grand Mean Sample B58: 857.74 Percent



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 774

1st Qtr 2019

Thickness of Film Tensile Samples - mils

WebCode	Data Flag	<u>Sample B57</u>			<u>Sample B58</u>		
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV
4W3RDZ		3.6950	0.1634	1.74	3.6850	0.1282	1.22
67MHDX		3.6300	0.0984	1.05	3.5200	-0.0368	-0.35
798BNL		3.6424	0.1108	1.18	3.3886	-0.1681	-1.60
9YY2BX		3.3504	-0.1812	-1.93	3.7756	0.2188	2.08
AR7HRA		3.5500	0.0184	0.20	3.5350	-0.0218	-0.21
BKMQK9		3.6550	0.1234	1.31	3.6130	0.0562	0.54
DWBFTD		3.3860	-0.1456	-1.55	3.5940	0.0372	0.35
EEQ2UE		3.5860	0.0544	0.58	3.5990	0.0422	0.40
HN2WZF		3.4016	-0.1299	-1.38	3.4213	-0.1355	-1.29
KCFCR4		3.4940	-0.0376	-0.40	3.6080	0.0512	0.49
KKYDD9		3.5370	0.0054	0.06	3.6610	0.1042	0.99
MBJYG2		3.4370	-0.0946	-1.01	3.3970	-0.1598	-1.52
ME3NNE		3.4646	-0.0670	-0.71	3.7008	0.1440	1.37
MPKQ37		3.5860	0.0544	0.58	3.5400	-0.0168	-0.16
MXBC96		3.5920	0.0604	0.64	3.6200	0.0632	0.60
QC4DQ3		3.4237	-0.1079	-1.15	3.5335	-0.0232	-0.22
RE9WYF		3.5690	0.0374	0.40	3.5040	-0.0528	-0.50
RJJKJR		3.5316	0.0000	0.00	3.3859	-0.1709	-1.63
RR6RV2		3.5434	0.0118	0.13	3.5591	0.0023	0.02
T8JFLB		3.6299	0.0984	1.05	3.4843	-0.0725	-0.69
WP6DCR		3.4780	-0.0536	-0.57	3.6340	0.0772	0.74
WYUYHQ		3.5120	-0.0196	-0.21	3.4900	-0.0668	-0.64

Summary Statistics

	<u>Sample B57</u>	<u>Sample B58</u>
Grand Means	3.53157 mils	3.55678 mils
Std Dev Btwn Labs	0.09404 mils	0.10496 mils

Statistics based on 22 of 22 reporting participants

Sample B57: LDPE & Sample B58: LDPE



Plastics Interlaboratory Testing Program

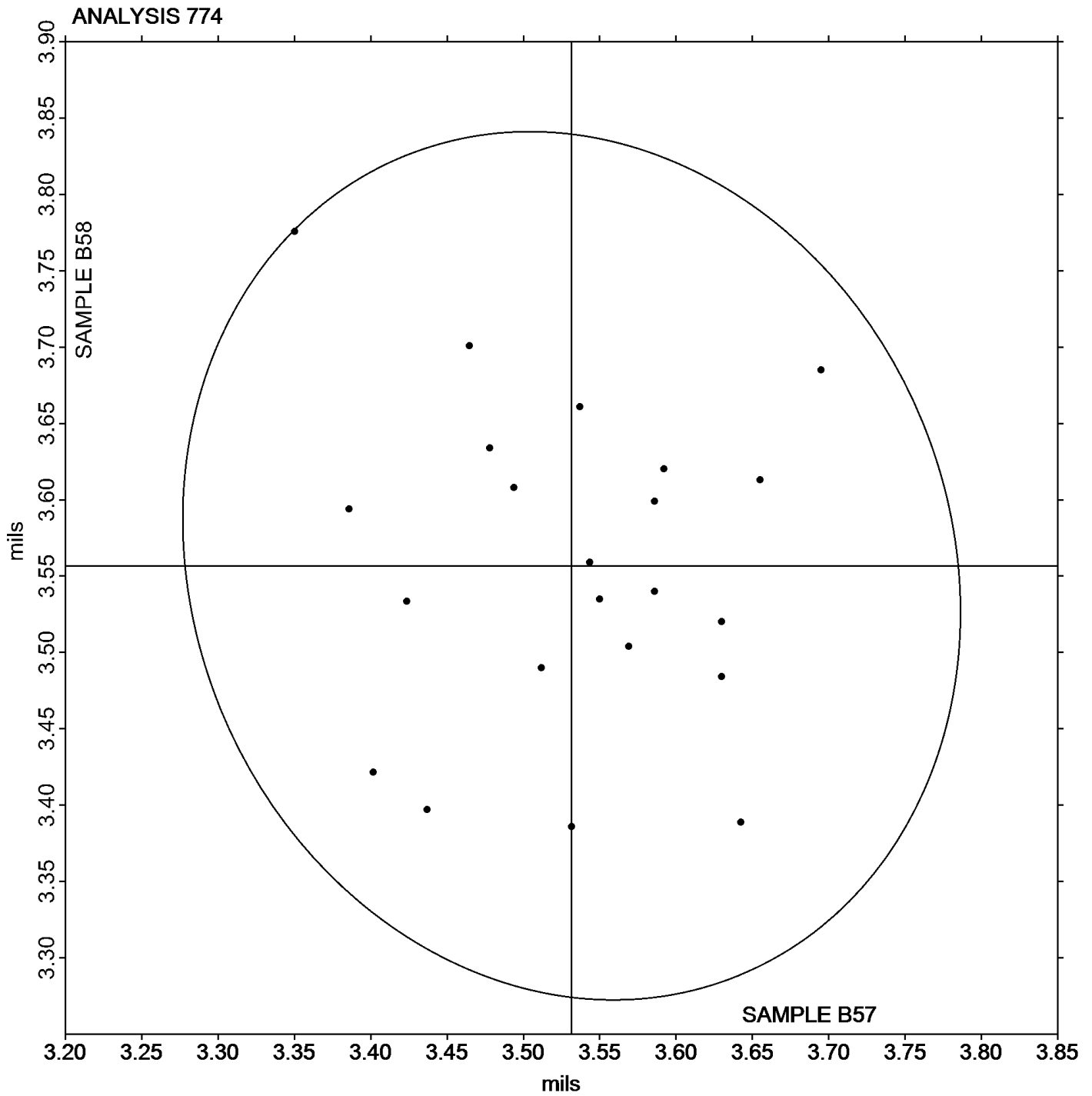
Report #109

Analysis 774

1st Qtr 2019

Thickness of Film Tensile Samples - mils

Grand Mean Sample B57: 3.5316 mils Grand Mean Sample B58: 3.5568 mils





Plastics Interlaboratory Testing Program

Report #109

Analysis 775

1st Qtr 2019

Secant Modulus at 1% Strain - psi

WebCode	Data Flag	Sample B57			Sample B58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		30,707	727	0.11	30,222	1,184	0.18	IN
798BNL		30,241	260	0.04	30,560	1,522	0.23	WZ
BKMQK9		31,555	1,575	0.25	31,254	2,216	0.33	IN
DWBFTD		28,851	-1,130	-0.18	25,524	-3,515	-0.52	IN
EEQ2UE		30,098	118	0.02	30,573	1,535	0.23	XX
HN2WZF		43,483	13,503	2.13	41,415	12,377	1.84	SH
KCFCR4		24,042	-5,939	-0.94	25,503	-3,535	-0.53	IN
KKYDD9		28,758	-1,223	-0.19	27,504	-1,534	-0.23	IN
ME3NNE		19,206	-10,774	-1.70	15,788	-13,250	-1.97	IN
MPKQ37		30,741	760	0.12	31,632	2,594	0.39	MT
QC4DQ3		35,562	5,581	0.88	35,000	5,962	0.89	LI
RE9WYF		33,556	3,576	0.56	32,258	3,220	0.48	IN
RR6RV2		17,283	-12,698	-2.00	16,293	-12,745	-1.90	TO
T8JFLB	X	5,587	-24,394	-3.85	6,077	-22,961	-3.42	XX
WP6DCR		31,965	1,984	0.31	26,511	-2,527	-0.38	IN
WYUYHQ		33,661	3,680	0.58	35,535	6,497	0.97	OA

Summary Statistics		Sample B57	Sample B58
Grand Means		29,980.6 psi	29,038.1 psi
Stnd Dev Btwn Labs		6,340.2 psi	6,711.5 psi
Statistics based on 15 of 16 reporting participants			

Sample B57: LDPE & Sample B58: LDPE

Comments on Assigned Data Flags for Test #775

T8JFLB (X) - Extreme data.

Key to Instrument Codes Reported by Participants

IN	Instron	LI	Lloyd Instruments
MT	MTS/Sintech	OA	Oakland Testing
SH	Shimadzu	TO	Tinius Olsen
WZ	Zwick	XX	Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

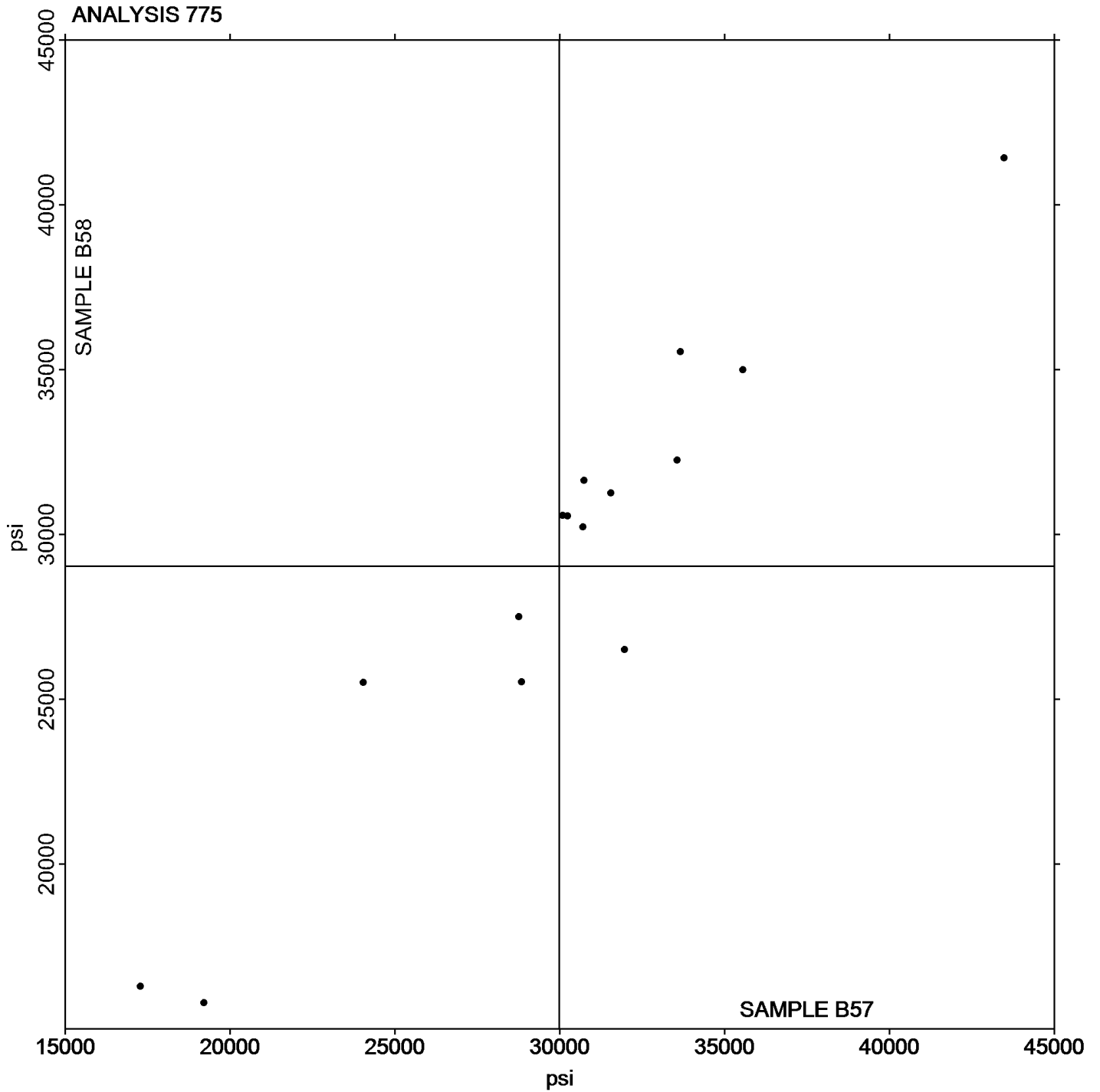
Report #109

Analysis 775

1st Qtr 2019

Secant Modulus at 1% Strain - psi

Grand Mean Sample B57: 29,980.56 psi Grand Mean Sample B58: 29,038.10 psi



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 776

1st Qtr 2019

Secant Modulus at 2% Strain - psi

WebCode	Data Flag	Sample B57			Sample B58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		25,868	594	0.10	25,452	1,271	0.25	IN
BKMQK9		25,959	685	0.12	26,328	2,146	0.43	IN
DWBFTD		29,539	4,265	0.75	25,813	1,631	0.32	IN
EEQ2UE		25,310	36	0.01	25,923	1,742	0.35	XX
HN2WZF		31,019	5,745	1.01	30,062	5,881	1.17	SH
KCFCR4		21,455	-3,819	-0.67	22,480	-1,701	-0.34	IN
KKYDD9		25,447	173	0.03	24,433	252	0.05	IN
ME3NNE		21,116	-4,158	-0.73	18,702	-5,480	-1.09	IN
QC4DQ3		29,505	4,231	0.74	28,966	4,785	0.95	LI
RR6RV2		11,631	-13,643	-2.40	11,990	-12,191	-2.42	TO
T8JFLB	X	2,833	-22,442	-3.95	3,153	-21,028	-4.17	XX
WP6DCR		31,167	5,892	1.04	25,846	1,664	0.33	IN

Summary Statistics		
	Sample B57	Sample B58
Grand Means	25,274.2 psi	24,181.3 psi
Stnd Dev Btwn Labs	5,680.4 psi	5,037.7 psi
Statistics based on 11 of 12 reporting participants		

Sample B57: LDPE & Sample B58: LDPE

Comments on Assigned Data Flags for Test #776

T8JFLB (X) - Extreme data.

Key to Instrument Codes Reported by Participants

- IN Instron
- SH Shimadzu
- XX Instrument manufacturer not specified by lab
- LI Lloyd Instruments
- TO Tinius Olsen



Plastics Interlaboratory Testing Program

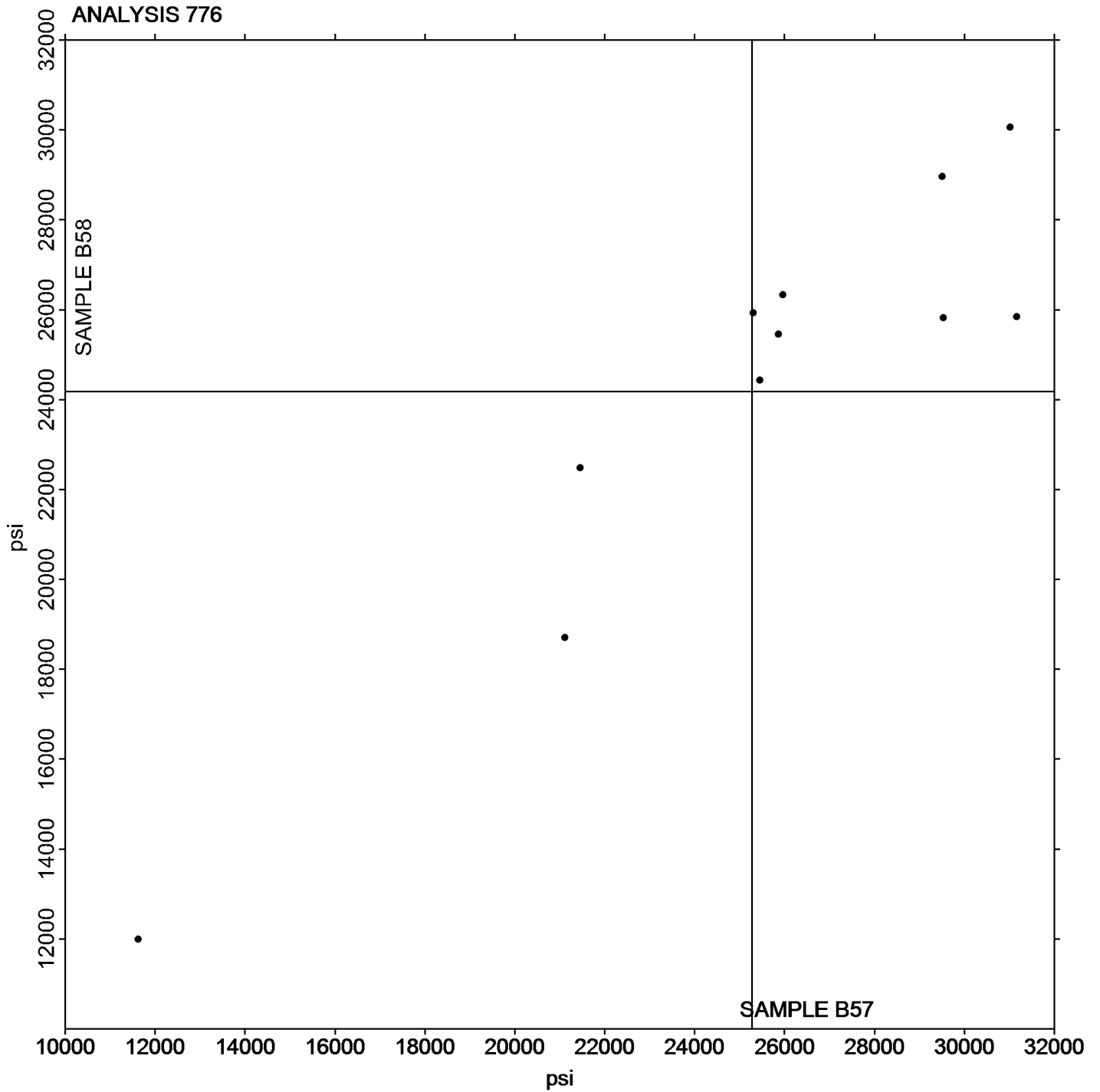
Report #109

Analysis 776

1st Qtr 2019

Secant Modulus at 2% Strain - psi

Grand Mean Sample B57: 25,274.19 psi Grand Mean Sample B58: 24,181.34 psi



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 780

1st Qtr 2019

Coefficient of Static Friction

WebCode	Data Flag	Sample P57			Sample P58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		0.2220	0.0834	2.39	0.1952	0.0623	1.78	TN
798BNL		0.1260	-0.0126	-0.36	0.1134	-0.0195	-0.56	TH
9YY2BX		0.1856	0.0470	1.35	0.1970	0.0641	1.83	SA
AZ74PN		0.0996	-0.0390	-1.12	0.0962	-0.0367	-1.05	TN
BKMQK9		0.1134	-0.0252	-0.73	0.1176	-0.0153	-0.44	MI
DWBFTD		0.1020	-0.0366	-1.05	0.0960	-0.0369	-1.05	XX
FGRM2C		0.1237	-0.0149	-0.43	0.1310	-0.0020	-0.06	IG
HN2WZF		0.1783	0.0397	1.14	0.1799	0.0469	1.34	SA
MPKQ37		0.1506	0.0120	0.34	0.1494	0.0165	0.47	MI
RBJ6QD		0.0954	-0.0432	-1.24	0.0936	-0.0393	-1.12	IG
RE9WYF		0.1360	-0.0026	-0.08	0.1356	0.0027	0.08	TH
RR6RV2		0.1416	0.0030	0.08	0.1492	0.0163	0.46	RD
VFPXET		0.1380	-0.0006	-0.02	0.1156	-0.0173	-0.49	IG
WP6DCR		0.1220	-0.0166	-0.48	0.0980	-0.0349	-1.00	TH
WYUYHQ		0.1454	0.0068	0.19	0.1262	-0.0067	-0.19	DY

Summary Statistics		
	Sample P57	Sample P58
Grand Means	0.13864 COF	0.13292 COF
Stnd Dev Btwn Labs	0.03481 COF	0.03502 COF
Statistics based on 15 of 15 reporting participants		

Sample P57: LDPE & Sample P58: LDPE

Key to Instrument Codes Reported by Participants

- | | | | |
|----|---------------------|----|--|
| DY | Dynisco Model D1055 | IG | Instron |
| MI | MTS Insight | RD | RDM CF |
| SA | Shimadzu Autograph | TH | Thwing Albert Friction/Peel Tester Model 225-1 |
| TN | TMI #32-06 | XX | Instrument make/model not specified by lab |



Plastics Interlaboratory Testing Program

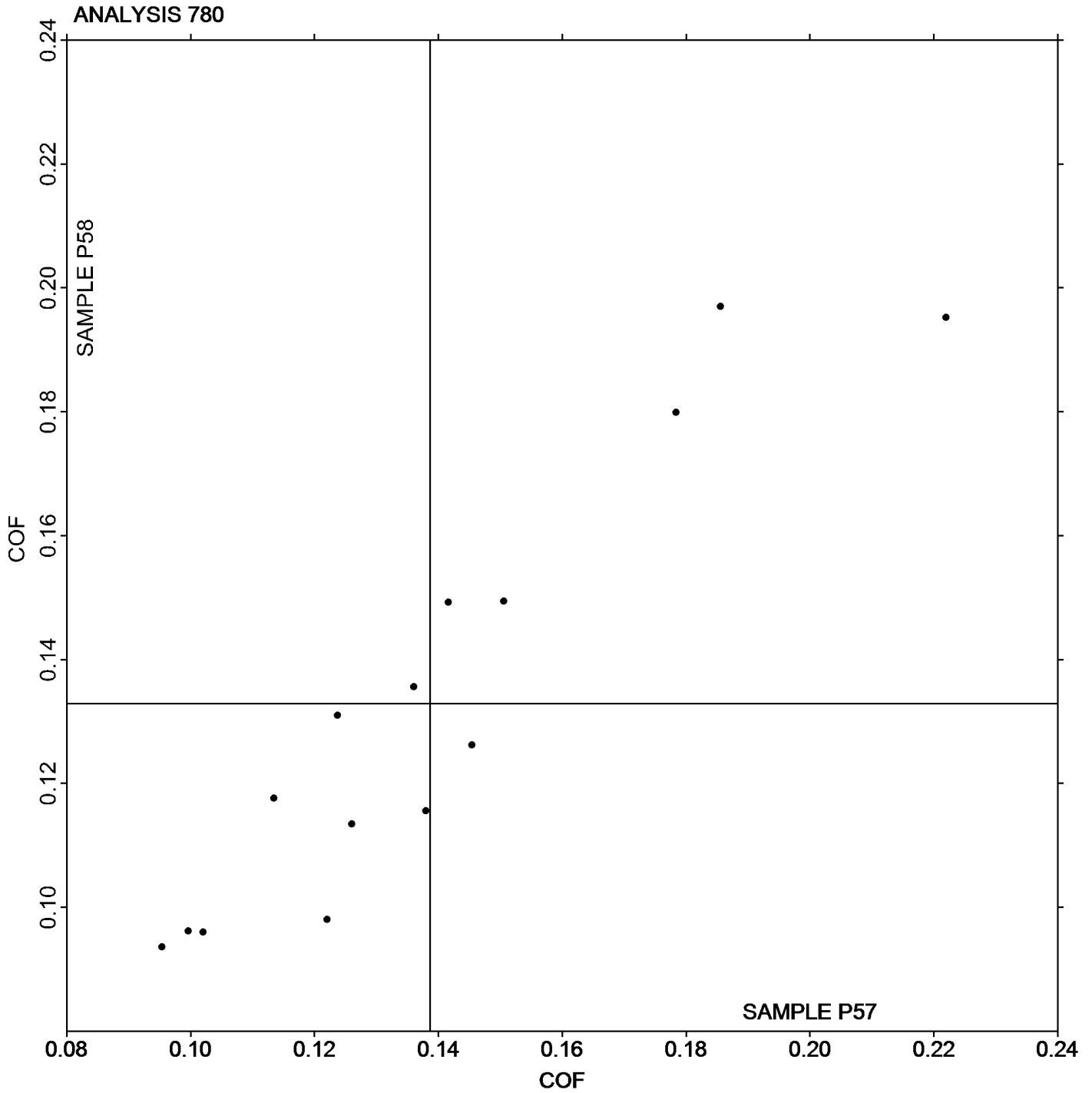
Report #109

Analysis 780

1st Qtr 2019

Coefficient of Static Friction

Grand Mean Sample P57: 0.13864 COF Grand Mean Sample P58: 0.13292 COF



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 781

1st Qtr 2019

Coefficient of Kinetic Friction

WebCode	Data Flag	Sample P57			Sample P58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		0.1684	0.0480	1.47	0.1478	0.0357	1.19	TN
6P7MDQ		0.1200	-0.0004	-0.01	0.1060	-0.0061	-0.20	DY
798BNL		0.0812	-0.0392	-1.20	0.0772	-0.0349	-1.16	TH
7NKRPL		0.1320	0.0116	0.35	0.1280	0.0159	0.53	DY
9YY2BX		0.1170	-0.0034	-0.10	0.1084	-0.0037	-0.12	SA
AZ74PN		0.0796	-0.0408	-1.25	0.0752	-0.0369	-1.23	TN
BKMQK9		0.0712	-0.0492	-1.50	0.0728	-0.0393	-1.31	MI
CUBVKK		0.1380	0.0176	0.54	0.1380	0.0259	0.86	DY
DEFQRH		0.1360	0.0156	0.48	0.1180	0.0059	0.20	XX
DQA8GJ		0.1420	0.0216	0.66	0.1260	0.0139	0.46	DY
DWBFTD		0.0800	-0.0404	-1.24	0.0720	-0.0401	-1.33	XX
DZBU9F		0.1460	0.0256	0.78	0.1460	0.0339	1.13	DY
FGRM2C		0.0684	-0.0520	-1.59	0.0639	-0.0482	-1.60	IG
HN2WZF		0.1405	0.0201	0.61	0.1341	0.0220	0.73	SA
JVMZXB		0.1600	0.0396	1.21	0.1560	0.0439	1.46	DY
MPKQ37		0.0908	-0.0296	-0.91	0.0968	-0.0153	-0.51	MI
NLYVR7		0.1380	0.0176	0.54	0.1320	0.0199	0.66	DY
RBJ6QD		0.0642	-0.0562	-1.72	0.0508	-0.0613	-2.04	IG
RE9WYF		0.1374	0.0170	0.52	0.1364	0.0243	0.81	TH
RR6RV2		0.1362	0.0158	0.48	0.1414	0.0293	0.97	RD
VFPXET		0.1740	0.0536	1.64	0.1420	0.0299	0.99	IG
VRMQVW		0.1500	0.0296	0.91	0.1260	0.0139	0.46	XX
VZGWPX		0.1220	0.0016	0.05	0.1080	-0.0041	-0.14	DY
WP6DCR		0.0900	-0.0304	-0.93	0.0860	-0.0261	-0.87	TH
WYUYHQ		0.1270	0.0066	0.20	0.1140	0.0019	0.06	DY

Summary Statistics		
	Sample P57	Sample P58
Grand Means	0.12039 COF	0.11211 COF
Std Dev Btwn Labs	0.03270 COF	0.03008 COF
Statistics based on 25 of 25 reporting participants		

Sample P57: LDPE & Sample P58: LDPE



Key to Instrument Codes Reported by Participants

DY	Dynisco Model D1055	IG	Instron
MI	MTS Insight	RD	RDM CF
SA	Shimadzu Autograph	TH	Thwing Albert Friction/Peel Tester Model 225-1
TN	TMI #32-06	XX	Instrument make/model not specified by lab



Plastics Interlaboratory Testing Program

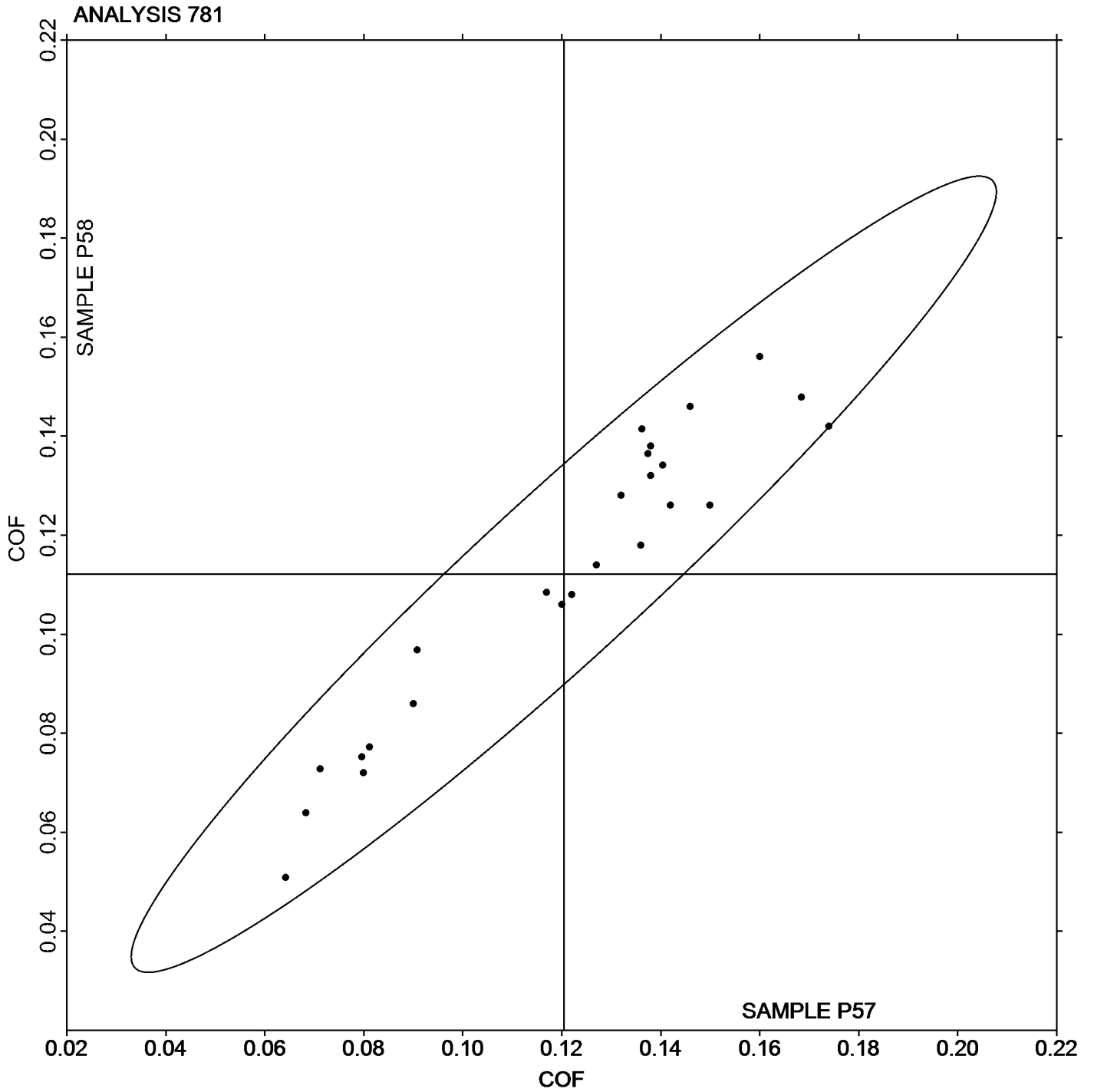
Report #109

Analysis 781

1st Qtr 2019

Coefficient of Kinetic Friction

Grand Mean Sample P57: 0.12039 COF Grand Mean Sample P58: 0.11211 COF





Plastics Interlaboratory Testing Program

Report #109

Analysis 782

1st Qtr 2019

Tear Resistance of Films

WebCode	Data Flag	Sample Q57			Sample Q58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
4W3RDZ		240.9	-32.3	-0.89	269.1	9.2	0.51	TM
798BNL		346.9	73.7	2.02	270.7	10.8	0.60	TA
9YY2BX		318.2	45.0	1.23	254.5	-5.4	-0.29	LO
BKMQK9		261.8	-11.4	-0.31	278.6	18.7	1.03	TE
DC93ZB		260.8	-12.4	-0.34	245.2	-14.7	-0.81	TA
DWBFTD		250.7	-22.5	-0.62	271.9	12.0	0.66	TM
HN2WZF		259.5	-13.7	-0.38	263.1	3.2	0.18	TE
MPKQ37		280.8	7.6	0.21	265.4	5.5	0.30	TE
RE9WYF		324.5	51.3	1.41	266.0	6.1	0.34	TE
RJJKJR		244.3	-28.9	-0.79	212.4	-47.5	-2.61	SZ
WP6DCR		241.2	-32.0	-0.88	274.3	14.4	0.79	TE
WYUYHQ		248.6	-24.5	-0.67	247.4	-12.5	-0.69	TA

Summary Statistics

Grand Means

Sample Q57

273.18 grams-force

Sample Q58

259.88 grams-force

Std Dev Btwn Labs

36.46 grams-force

18.19 grams-force

Statistics based on 12 of 12 reporting participants

Sample Q57: LDPE & Sample Q58: LDPE

Key to Instrument Codes Reported by Participants

LO Lorentzen & Wettre Model II

SZ Textest FX 3700

TA Thwing-Albert

TE Thwing-Albert Pro Tear

TM TMI No. 83-1100



Plastics Interlaboratory Testing Program

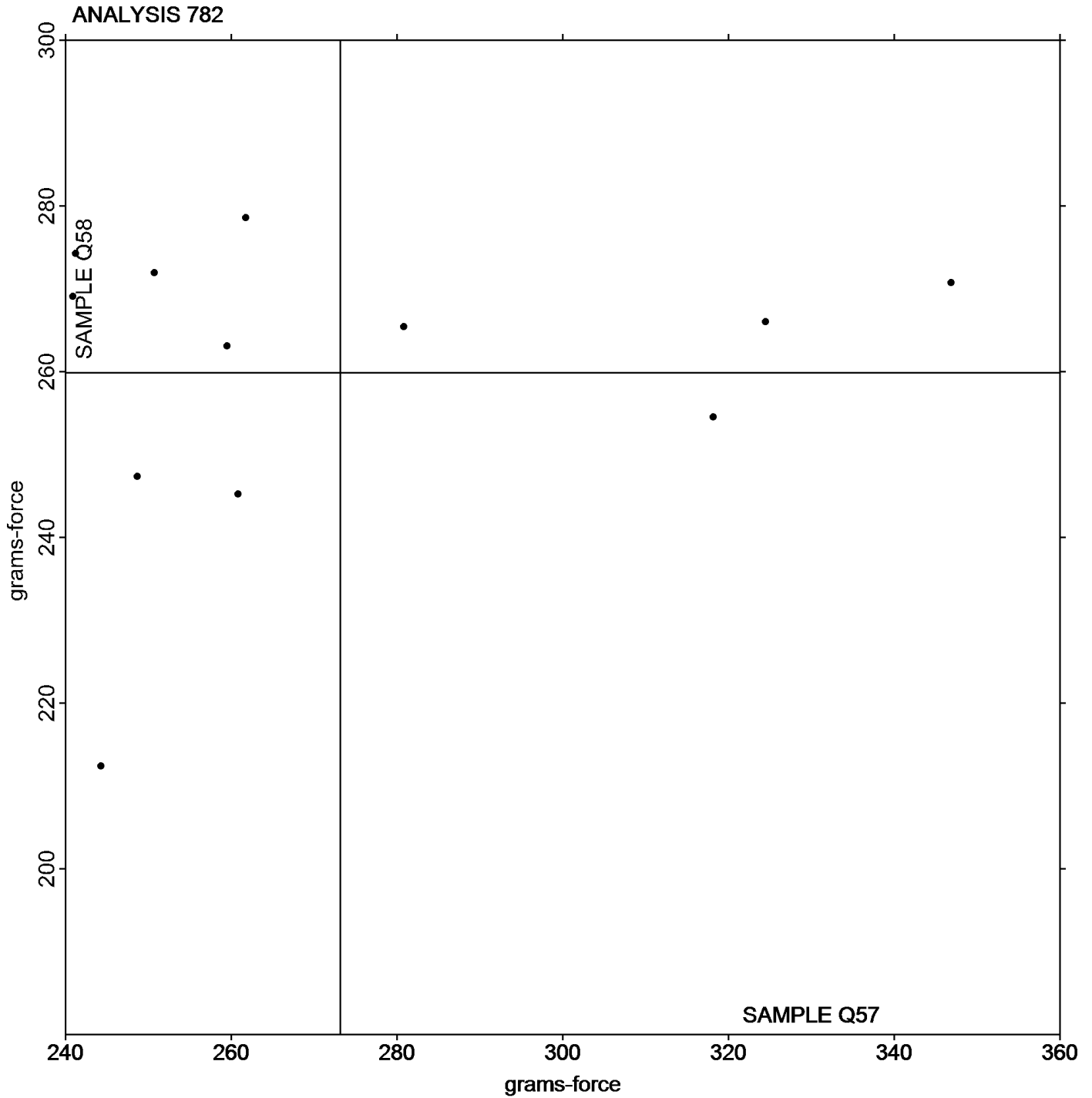
Report #109

Analysis 782

1st Qtr 2019

Tear Resistance of Films

Grand Mean Sample Q57: 273.18 grams-force Grand Mean Sample Q58: 259.88 grams-force



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



Plastics Interlaboratory Testing Program

Report #109

Analysis 785

1st Qtr 2019

Percent Haze of Film

WebCode	Data Flag	Sample D57			Sample D58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
389WTQ		12.600	-0.065	-0.10	12.563	-0.048	-0.08	BJ
4W3RDZ		12.950	0.285	0.45	12.613	0.002	0.00	BJ
6Y3YXJ		13.328	0.663	1.04	12.733	0.122	0.21	XR
74E9NR		12.903	0.238	0.37	12.778	0.167	0.28	BJ
798BNL		12.938	0.273	0.43	12.700	0.090	0.15	BJ
98T74Y		12.725	0.060	0.09	12.088	-0.523	-0.88	BJ
BKMQK9		12.788	0.123	0.19	12.513	-0.098	-0.17	BJ
DC93ZB		13.038	0.373	0.58	13.138	0.527	0.89	BJ
EDY4L9		12.250	-0.415	-0.65	12.375	-0.235	-0.40	BJ
GK9WKE	*	14.695	2.030	3.17	14.481	1.871	3.16	XR
HN2WZF		12.650	-0.015	-0.02	12.400	-0.210	-0.36	BJ
LMXAF8		12.563	-0.102	-0.16	12.913	0.302	0.51	BJ
MBJYG2		12.700	0.035	0.05	13.200	0.590	1.00	BJ
MD4P7R		12.575	-0.090	-0.14	12.748	0.137	0.23	BJ
P7GAZZ		12.356	-0.309	-0.48	12.391	-0.219	-0.37	XX
RE9WYF		12.475	-0.190	-0.30	12.088	-0.523	-0.88	BJ
RH48VU		12.375	-0.290	-0.45	12.263	-0.348	-0.59	BJ
RJJKJR		12.738	0.073	0.11	12.800	0.190	0.32	BJ
UFPPKN		12.325	-0.340	-0.53	12.500	-0.110	-0.19	BJ
VDFYVK		11.664	-1.001	-1.56	11.633	-0.978	-1.65	XR
W2JQQT		12.609	-0.056	-0.09	12.450	-0.160	-0.27	XR
WP6DCR		12.813	0.148	0.23	12.600	-0.010	-0.02	BJ
WYUYHQ		11.933	-0.732	-1.14	12.585	-0.025	-0.04	XR
XYQRYV		11.188	-1.477	-2.31	11.325	-1.285	-2.17	HL
Z2E7U4		13.450	0.785	1.23	13.388	0.777	1.31	BJ

Summary Statistics		
	Sample D57	Sample D58
Grand Means	12.6650 Percent	12.6104 Percent
Std Dev Btwn Labs	0.6398 Percent	0.5916 Percent
Statistics based on 25 of 25 reporting participants		

Sample D57: LDPE & Sample D58: LDPE



Plastics Interlaboratory Testing Program

Report #109

Analysis 785

1st Qtr 2019

Percent Haze of Film

Key to Instrument Codes Reported by Participants

BJ BYK-Gardner Haze-Gard Plus/i

HL Hunterlab Ultrascan

XR X-Rite Spectrocolorimeter (any model)

XX Instrument make/model not specified by lab



Plastics Interlaboratory Testing Program

Report #109

Analysis 786

1st Qtr 2019

Total Luminous transmittance of film

WebCode	Data Flag	Sample D57			Sample D58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
389WTQ		92.49	0.21	0.14	92.53	0.24	0.16	BJ
4W3RDZ		92.09	-0.19	-0.12	92.11	-0.17	-0.11	BJ
6Y3YXJ		91.09	-1.18	-0.78	91.11	-1.17	-0.77	XR
74E9NR		92.55	0.27	0.18	92.48	0.19	0.13	BJ
798BNL		92.88	0.60	0.40	92.81	0.53	0.35	BJ
98T74Y		93.33	1.05	0.69	93.21	0.93	0.61	BJ
BKMQK9	*	91.85	-0.42	-0.28	91.50	-0.78	-0.51	BJ
DC93ZB		93.69	1.41	0.93	93.85	1.57	1.03	BJ
EDY4L9		91.76	-0.51	-0.34	91.98	-0.31	-0.20	BJ
GK9WKE		91.36	-0.92	-0.60	91.35	-0.94	-0.62	XR
HN2WZF		92.43	0.15	0.10	92.55	0.27	0.18	BJ
LMXAF8		92.69	0.41	0.27	92.75	0.47	0.31	BJ
MBJYG2		93.58	1.30	0.86	93.65	1.37	0.90	BJ
MD4P7R		93.33	1.05	0.69	93.28	1.00	0.66	BJ
P7GAZZ		91.64	-0.63	-0.42	91.67	-0.61	-0.40	XX
RE9WYF		91.78	-0.50	-0.33	91.86	-0.42	-0.28	BJ
RH48VU		89.36	-2.91	-1.92	89.45	-2.83	-1.86	BJ
RJJKJR		91.59	-0.69	-0.45	91.58	-0.71	-0.47	BJ
UFPPKN		92.94	0.66	0.44	93.05	0.77	0.50	BJ
VDFYVK		90.66	-1.62	-1.06	90.69	-1.59	-1.05	XR
W2JQQT		91.47	-0.81	-0.53	91.41	-0.88	-0.58	XR
WP6DCR		92.08	-0.20	-0.13	92.04	-0.25	-0.16	BJ
XYQRYV		90.48	-1.80	-1.18	90.43	-1.86	-1.22	HL
Z2E7U4	*	97.49	5.21	3.43	97.46	5.18	3.41	BJ

Summary Statistics		
	Sample D57	Sample D58
Grand Means	92.273 Percent	92.283 Percent
Stnd Dev Btwn Labs	1.519 Percent	1.520 Percent
Statistics based on 24 of 24 reporting participants		

Sample D57: LDPE & Sample D58: LDPE



Plastics Interlaboratory Testing Program

Report #109

Analysis 786

1st Qtr 2019

Total Luminous transmittance of film

Key to Instrument Codes Reported by Participants

BJ	BYK-Gardner Haze-Gard Plus/i	HL	Hunterlab Ultrascan XE
XR	X-Rite Spectrocolorimeter (any model)	XX	Instrument make/model not specified by lab



Plastics Interlaboratory Testing Program

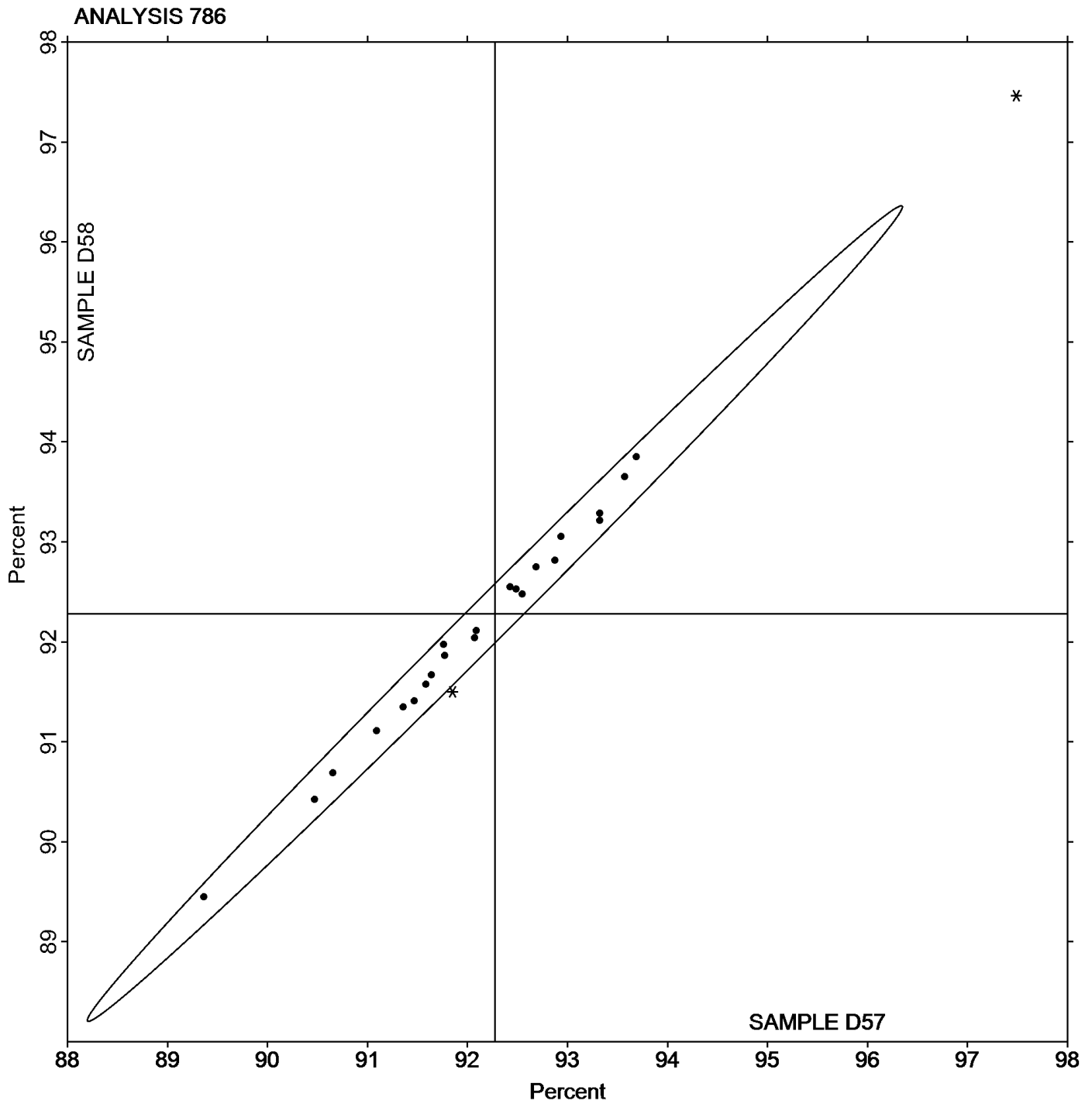
Report #109

Analysis 786

1st Qtr 2019

Total Luminous transmittance of film

Grand Mean Sample D57: 92.273 Percent Grand Mean Sample D58: 92.283 Percent





Plastics Interlaboratory Testing Program

Report #109

Analysis 790

1st Qtr 2019

Notched Izod Impact - ft.lbf/in

WebCode	Data Flag	Sample S57			Sample S58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2C8L4K		4.32	-0.73	-1.73	4.36	-0.53	-0.93	DY
2NWRQM		5.14	0.09	0.21	5.27	0.37	0.65	TM
389WTQ		5.31	0.26	0.62	4.74	-0.15	-0.27	CE
3ATLD4		4.61	-0.44	-1.04	3.95	-0.95	-1.65	TO
3YJWPZ		4.44	-0.61	-1.46	4.56	-0.34	-0.59	CE
46JVDU		4.88	-0.16	-0.39	4.97	0.07	0.12	TO
67MHDX		4.73	-0.32	-0.76	5.13	0.23	0.40	TO
6X9BJU		5.31	0.26	0.63	5.29	0.39	0.68	TM
74WZXC		5.51	0.46	1.10	5.07	0.18	0.31	CE
798BNL		4.63	-0.42	-1.00	4.00	-0.90	-1.56	WZ
7WU4WR		5.35	0.30	0.71	5.39	0.49	0.85	TO
8BPU9F		5.33	0.28	0.66	4.54	-0.36	-0.62	TM
8FMRWR		4.96	-0.08	-0.20	5.55	0.65	1.13	TO
9DDGMN		5.39	0.34	0.81	5.63	0.73	1.27	TM
9XZQGF		5.04	0.00	-0.01	5.18	0.28	0.49	XX
9ZLWZ7		4.50	-0.54	-1.30	4.80	-0.10	-0.17	TO
AZ74PN		5.30	0.25	0.59	5.48	0.58	1.00	TM
B72L96	*	5.87	0.82	1.95	4.87	-0.03	-0.06	TO
BKMQK9		4.96	-0.09	-0.21	4.22	-0.68	-1.19	TO
BY8TGJ		5.20	0.15	0.36	5.21	0.32	0.55	CE
DRHB2U		4.55	-0.50	-1.19	3.91	-0.99	-1.72	TO
DX7ZFC		5.37	0.32	0.77	4.52	-0.38	-0.66	TM
E89TAN		4.94	-0.11	-0.26	4.85	-0.05	-0.09	XX
EDVG8F	*	6.00	0.95	2.26	6.71	1.81	3.15	TM
ENXUCL		4.90	-0.15	-0.35	4.84	-0.06	-0.10	TO
FYVM6Q		5.19	0.14	0.34	5.38	0.48	0.83	TM
GR4FL4		5.44	0.39	0.94	5.11	0.22	0.38	TM
GT32EF		5.30	0.25	0.60	5.36	0.46	0.80	CE
HFR72J		5.92	0.87	2.07	6.01	1.11	1.94	CS
HGK4AQ		5.19	0.14	0.33	4.48	-0.42	-0.73	TO
HKLAMB		5.59	0.54	1.28	5.01	0.12	0.20	TO
JZ8CH6		5.22	0.17	0.40	4.65	-0.25	-0.44	XX
KCFCR4		5.37	0.32	0.76	4.36	-0.54	-0.94	TO
KZR4DB		4.58	-0.47	-1.11	4.66	-0.23	-0.41	CE
LE4MH2		4.88	-0.17	-0.41	4.87	-0.03	-0.05	TM



Plastics Interlaboratory Testing Program

Report #109

Analysis 790

1st Qtr 2019

Notched Izod Impact - ft.lbf/in

WebCode	Data Flag	Sample S57			Sample S58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
M2YM8A		4.75	-0.30	-0.71	4.75	-0.15	-0.26	TO
MK9ALA		4.64	-0.41	-0.98	4.62	-0.28	-0.48	BA
PFAB94		5.45	0.41	0.96	5.48	0.58	1.01	WZ
PNKA3E		5.17	0.12	0.29	5.03	0.13	0.22	CE
QC2YQM		4.54	-0.51	-1.22	4.72	-0.18	-0.31	TO
RE9WYF	*	4.44	-0.60	-1.44	5.37	0.47	0.82	CE
RMZCLY		5.05	0.00	-0.01	5.00	0.10	0.18	CE
T3RWVE		5.27	0.22	0.52	5.27	0.37	0.65	WZ
TPYPKQ		4.30	-0.75	-1.78	3.73	-1.17	-2.03	TO
U764N7		5.01	-0.04	-0.10	5.27	0.37	0.64	XX
UTDMTD		4.74	-0.31	-0.74	4.14	-0.76	-1.32	TM
W7YPE3		5.28	0.23	0.56	5.18	0.29	0.50	WZ
WJZAQZ		5.04	-0.01	-0.02	4.27	-0.63	-1.10	TM
XLZ6KM		4.68	-0.37	-0.87	3.85	-1.05	-1.82	TM
Y6XZWW		5.36	0.31	0.74	5.45	0.55	0.96	TO
YDM9H2	X	6.50	1.45	3.46	5.37	0.47	0.82	WZ
Z2E7U4		5.41	0.36	0.86	5.32	0.42	0.74	TM
ZR7BJQ		4.19	-0.85	-2.03	4.34	-0.56	-0.97	TO

Summary Statistics		
	Sample S57	Sample S58
Grand Means	5.049 ft.lbf/in	4.898 ft.lbf/in
Stnd Dev Btwn Labs	0.420 ft.lbf/in	0.575 ft.lbf/in
Statistics based on 52 of 53 reporting participants		

Sample S57: ABS & Sample S58: ABS

Comments on Assigned Data Flags for Test #790

YDM9H2 (X) - Data for sample S57 are high.

Key to Instrument Codes Reported by Participants

BA Baldwin	CE Ceast
CS CSI	DY Dynatup
TM TMI	TO Tinius Olsen
WZ Zwick	XX Instrument manufacturer not specified by lab



Plastics Interlaboratory Testing Program

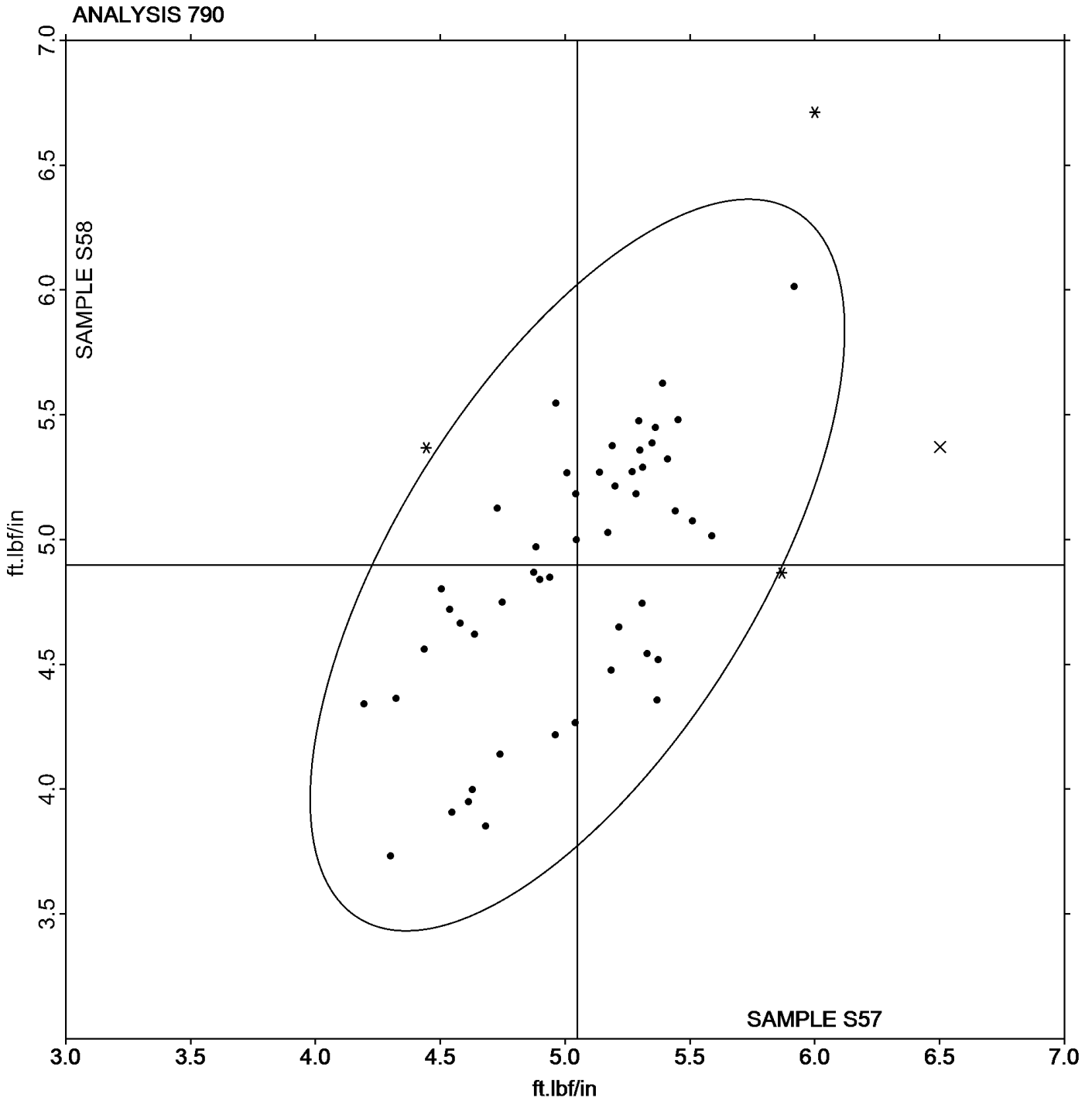
Report #109

Analysis 790

1st Qtr 2019

Notched Izod Impact - ft.lbf/in

Grand Mean Sample S57: 5.0489 ft.lbf/in Grand Mean Sample S58: 4.8982 ft.lbf/in





Plastics Interlaboratory Testing Program

Report #109

Analysis 791

1st Qtr 2019

Notched Izod Impact - kJ/m²

WebCode	Data Flag	Sample Z57			Sample Z58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2A33YW		8.50200	0.24133	0.71	8.34600	0.07863	0.21	TO
4W3RDZ		7.69600	-0.56467	-1.66	7.67000	-0.59737	-1.57	CE
6FYGAU		8.53960	0.27893	0.82	8.42860	0.16123	0.42	CE
7THLUV		8.21600	-0.04467	-0.13	8.28000	0.01263	0.03	TO
98QK6T		7.71400	-0.54667	-1.61	7.34200	-0.92537	-2.44	CE
BLWYPL		8.11096	-0.14971	-0.44	8.06721	-0.20016	-0.53	TO
DRHB2U		8.13000	-0.13067	-0.38	8.22400	-0.04337	-0.11	TO
EDVG8F		8.40200	0.14133	0.42	8.74600	0.47863	1.26	TM
JDXYWD		7.69400	-0.56667	-1.67	8.04000	-0.22737	-0.60	WZ
KJXPQ3		8.74400	0.48333	1.42	8.67200	0.40463	1.07	WZ
LF2WBJ		8.65400	0.39333	1.16	8.72200	0.45463	1.20	CE
ND43BY		8.80400	0.54333	1.60	8.61800	0.35063	0.92	CE
NTVNRZ		8.54000	0.27933	0.82	8.70000	0.43263	1.14	WZ
Q7DDLL		8.46200	0.20133	0.59	8.44200	0.17463	0.46	WZ
QHQUTX		7.73000	-0.53067	-1.56	7.59000	-0.67737	-1.78	TO
RMHVFR		8.05000	-0.21067	-0.62	8.09800	-0.16937	-0.45	XX
RMZCLY		8.28800	0.02733	0.08	8.49400	0.22663	0.60	CE
T3RWVE		8.36400	0.10333	0.30	8.29600	0.02863	0.08	WZ
TEG9U6		8.32800	0.06733	0.20	8.39000	0.12263	0.32	TM
UTDMTD		8.42400	0.16333	0.48	8.70400	0.43663	1.15	TM
W7YPE3		8.71200	0.45133	1.33	8.43000	0.16263	0.43	WZ
WYB9EX		8.10000	-0.16067	-0.47	8.28000	0.01263	0.03	TO
WZ47M6		8.08200	-0.17867	-0.53	8.01200	-0.25537	-0.67	CE
ZR7BJQ		7.96960	-0.29107	-0.86	7.82500	-0.44237	-1.17	TO

Summary Statistics		
	Sample Z57	Sample Z58
Grand Means	8.260673 kJ/m ²	8.267367 kJ/m ²
Stnd Dev Btwn Labs	0.339641 kJ/m ²	0.379481 kJ/m ²
Statistics based on 24 of 24 reporting participants		

Sample Z57: HIPS & Sample Z58: HIPS



Plastics Interlaboratory Testing Program

Report #109

Analysis 791

1st Qtr 2019

Notched Izod Impact - kJ/m^2

Key to Instrument Codes Reported by Participants

CE Ceast

TM TMI

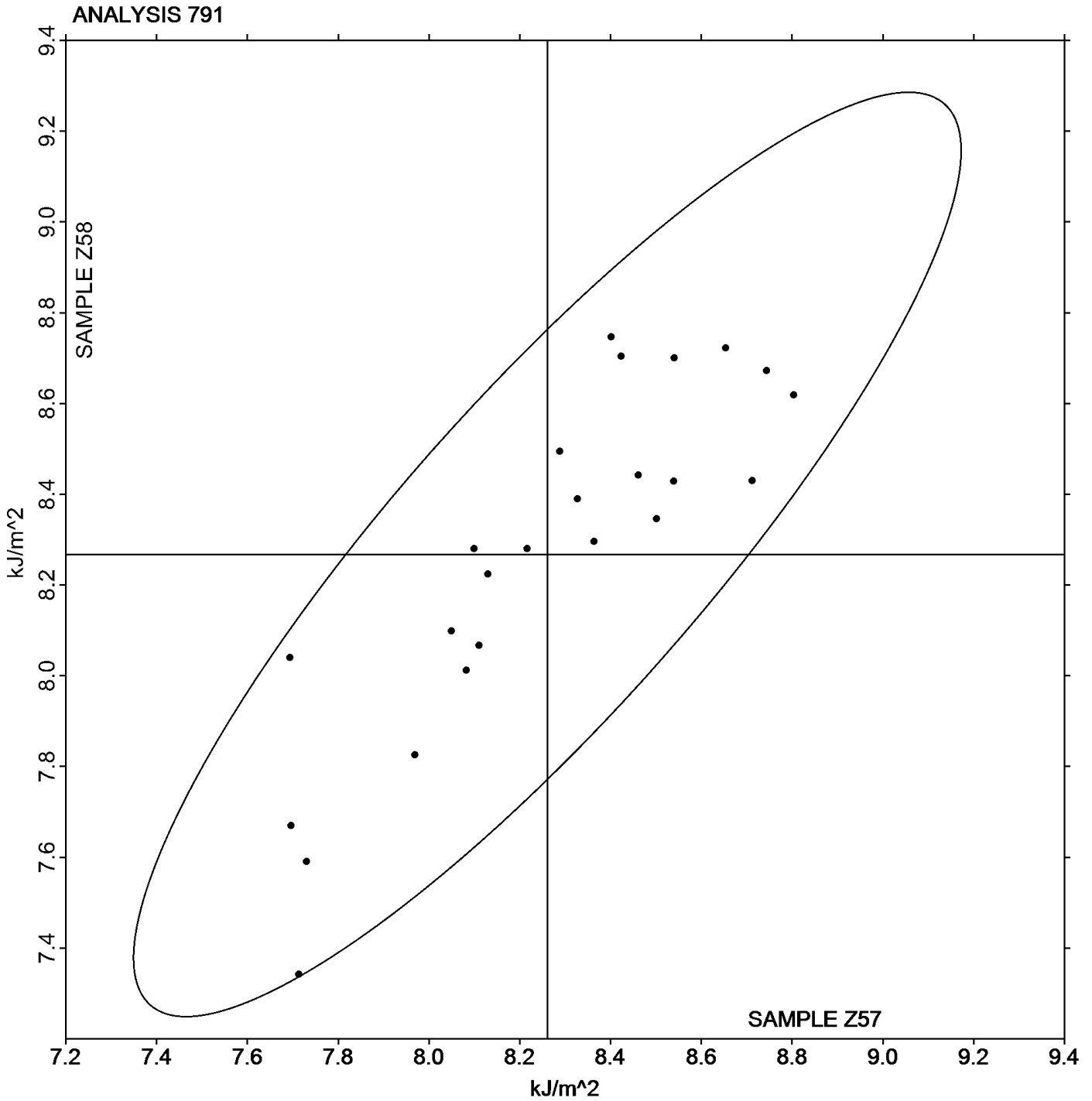
TO Tinius Olsen

WZ Zwick

XX Instrument manufacturer not specified by lab



Grand Mean Sample Z57: 8.2607 kJ/m^2 Grand Mean Sample Z58: 8.2674 kJ/m^2





Plastics Interlaboratory Testing Program

Report #109

Analysis 792

1st Qtr 2019

Notched Charpy Impact - kJ/m²

WebCode	Data Flag	Sample M57			Sample M58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
2A33YW		8.33	0.21	0.69	8.31	0.26	0.96	TO
2WW6UW		7.97	-0.15	-0.49	7.96	-0.09	-0.34	XX
3YJWPZ		8.11	-0.01	-0.04	8.16	0.11	0.39	CE
46JVDU		8.30	0.18	0.59	8.42	0.37	1.35	TO
4T33X8	X	12.99	4.87	16.13	12.50	4.44	16.21	WZ
6FYGAU		8.20	0.08	0.27	8.04	-0.01	-0.05	CE
798BNL		7.80	-0.32	-1.07	7.50	-0.55	-2.01	WZ
7THLUV		7.55	-0.57	-1.88	7.62	-0.44	-1.59	TO
8FMRWR		7.92	-0.20	-0.66	7.91	-0.14	-0.50	TM
98QK6T		8.30	0.18	0.61	8.35	0.30	1.09	CE
9DEH72		8.13	0.02	0.05	8.17	0.12	0.44	WZ
9XZQGF		7.70	-0.42	-1.40	7.71	-0.34	-1.23	XX
AYRPVZ		7.76	-0.36	-1.18	7.77	-0.28	-1.02	TM
B72L96	*	8.37	0.25	0.82	8.67	0.62	2.27	TO
BLWYPL		7.77	-0.35	-1.15	7.78	-0.27	-1.00	TO
DC93ZB		7.81	-0.30	-1.01	7.74	-0.31	-1.15	TO
DRHB2U		8.62	0.50	1.65	8.17	0.12	0.42	TO
E89TAN		7.61	-0.51	-1.69	7.60	-0.45	-1.63	XX
EJ2CQF		7.84	-0.28	-0.93	7.84	-0.21	-0.76	IN
ELAV3B		8.39	0.27	0.89	8.19	0.14	0.50	CE
FP9LNG		8.06	-0.05	-0.18	8.01	-0.04	-0.15	IN
GT32EF		8.16	0.04	0.14	8.13	0.07	0.27	CE
HWDWUR		8.24	0.12	0.40	8.44	0.39	1.41	WZ
JDXYWD		8.06	-0.06	-0.20	7.83	-0.22	-0.81	WZ
JLBXKW		7.86	-0.26	-0.85	7.81	-0.24	-0.87	XX
JRZQVH		8.21	0.09	0.29	8.11	0.06	0.20	IN
JZ8CH6	X	9.90	1.78	5.89	10.04	1.99	7.24	XX
K4KGPY		8.22	0.10	0.34	8.19	0.14	0.51	TO
KZR4DB		8.06	-0.06	-0.19	7.88	-0.17	-0.63	CE
LE4MH2		7.69	-0.42	-1.40	7.73	-0.32	-1.18	TM
LF2WBJ		8.41	0.29	0.96	8.28	0.23	0.84	CE
ND43BY		8.66	0.54	1.80	8.37	0.32	1.17	CE
NTVNRZ		8.82	0.70	2.32	8.62	0.57	2.07	WZ
Q7DDLL		8.04	-0.08	-0.25	7.96	-0.09	-0.34	WZ
QHQUTX		8.47	0.35	1.15	8.28	0.22	0.82	TO



Plastics Interlaboratory Testing Program

Report #109

Analysis 792

1st Qtr 2019

Notched Charpy Impact - kJ/m²

WebCode	Data Flag	Sample M57			Sample M58			Instr Code
		Lab Mean	Diff from Grand Mean	CPV	Lab Mean	Diff from Grand Mean	CPV	
QLQ4X9		8.39	0.27	0.90	8.19	0.14	0.51	TO
RMZCLY		7.92	-0.19	-0.64	8.15	0.09	0.34	IN
T3RWVE	*	8.47	0.35	1.16	7.95	-0.10	-0.37	WZ
TDNAMY		7.96	-0.16	-0.53	7.98	-0.08	-0.28	CE
TEKM87		8.45	0.33	1.10	8.22	0.17	0.61	XX
TPYPKQ		7.78	-0.33	-1.11	7.84	-0.21	-0.77	TO
UTDMTD		8.67	0.55	1.81	8.51	0.46	1.68	TM
W7YPE3		8.13	0.01	0.03	8.14	0.09	0.32	WZ
WWQMZA		8.23	0.12	0.38	8.28	0.22	0.82	TO
WZ47M6		7.73	-0.39	-1.29	7.71	-0.34	-1.25	CE
Y6XZWW		8.16	0.05	0.15	7.88	-0.17	-0.63	TO
Z2E7U4		7.97	-0.15	-0.49	7.91	-0.14	-0.50	TM
ZR7BJQ		8.17	0.05	0.15	8.07	0.02	0.06	TO

Summary Statistics

	Sample M57	Sample M58
Grand Means	8.119 kJ/m ²	8.052 kJ/m ²
Std Dev Btwn Labs	0.302 kJ/m ²	0.274 kJ/m ²

Statistics based on 46 of 48 reporting participants

Sample M57: HIPS & Sample M58: HIPS

Comments on Assigned Data Flags for Test #792

4T33X8 (X) - Data for both samples are high. Possible Systematic Error.

JZ8CH6 (X) - Data for both samples are high. Possible Systematic Error.

Key to Instrument Codes Reported by Participants

CE	Ceast	IN	Instron
TM	TMI	TO	Tinius Olsen
WZ	Zwick	XX	Instrument manufacturer not specified by lab



Grand Mean Sample M57: 8.1186 kJ/m² Grand Mean Sample M58: 8.0521 kJ/m²

