

Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 142, 2nd Qtr 2023

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<u>Analysis</u>	<u>Test Group</u>
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Impact Tests	
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1003	Charpy V-Notch (-30 degrees)
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Tensile Tests	
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1131	Tensile Strength: Lab-Machined Flat Steel
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1132	Yield Strength: Lab-Machined Flat Steel
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1133	Elongation: Lab-Machined Flat Steel
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1134	r-Value: Lab-Machined Flat Steel
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1135	n-Value: Lab-Machined Flat Steel
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Fasteners	
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1201	Fastener Wedge Tensile (10 degree)
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1202	Fastener Axial Tensile
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1203	Fastener Wedge Tensile (10 degree) - Metric
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1204	Fastener Axial Tensile - Metric
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1210	Rockwell Hardness: Externally Threaded Fasteners
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1211	Vickers Hardness: Externally Threaded Fasteners
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1220	Fastener Double Shear
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Hardness / Metallography Tests	
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1301	Rockwell Hardness: C & B Scales
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1303	Rockwell Hardness: C Scale
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1311	Vickers Hardness 10 kgf
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1351	Rockwell Superficial Hardness (30N Scale)
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1401	Total Case Depth
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1402	Effective Case Depth
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1421	Alpha Case Depth
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1422	Alloy Depletion: Inconel
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Chemical Analyses	
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1500 - 1507	Chemical Analysis: Nickel-based Alloy
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1540 - 1549	Chemical Analysis: Aluminum Alloy
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1640 - 1654	Chemical Analysis: Corrosion Resistant Steel
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ABOUT THE FASTENERS & METALS PROGRAM

Collaborative Testing Services operates and maintains the program for Fasteners and Metals as part of a series of Proficiency and Interlaboratory Testing Programs offered by CTS in cooperation with various associations for a wide range of industries. Personnel from the National Institute of Standards and Technology (formerly the National Bureau of Standards), Industrial Fasteners Institute (IFI), and the Naval Shipyard Laboratories provide technical guidance and advice to this program.

The purpose of the program is to give participating laboratories a means to compare periodically the level and uniformity of their testing with that of other laboratories in the industry. It also provides a realistic assessment of the state of fasteners and metals testing proficiency.

In each report, there is a summary of the statistics for the analysis and a graphical representation of the data for each test. 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 TO TABLES AND GRAPHS for an explanation of terms and guidelines to interpreting the results.

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries including rubber, plastics, fasteners and metals, containerboard, paper, color, hemp, 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 100 countries, currently participate in the CTS programs.

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Key for Fasteners & Metals Program Web Summary Report

- WebCode** - Assigned laboratory identification number(temporary)used to ensure lab confidentiality while permitting a lab to locate its data in the report published on the CTS website.

- 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.

- 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 (CPV)** - 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. $CPV = (LAB\ MEAN - GRAND\ MEAN) / BETWEEN-LAB\ STANDARD\ DEVIATION$. 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).

- Instr. Code** - A code indicating the manufacturer of the instrument used to perform the test (see separate INSTRUMENT CODE LIST for each test section).

- Data Flag** - DATA FLAGS are assigned based on the simultaneous analysis of both samples tested. Refer to the following chart for an explanation of each symbol:

Data Flags

Data Flag Type	Statistically Included/Excluded	ACTION REQUIRED
*	INCLUDED	CAUTION - review testing procedure and monitor future results. Results fall outside the drawn 95% ellipse but within a 99% ellipse that is calculated but not drawn. Labs flagged with an * do not typically receive a specific note regarding the flag. If this error is repeated in future rounds, however, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm.
X	EXCLUDED	STOP - immediate review of data and/or testing procedure is required (all tests except Chemical Analyses). Results fall outside the 99% ellipse. See the specific note following the data for more information on why the data are excluded. For Chemical Analyses see an additional Memo.
M	EXCLUDED	PROCEED - lab was unable to report data for at least one sample. However, a lab receiving two or more M flags for a test may need to stop and review its testing procedures.
Graph		- For each laboratory, the Lab Mean for the second sample (y-axis) is plotted against the Lab Mean for the first sample (x-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 included 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. Labs not receiving a data flag appear as points on the plot.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1003

2nd Qtr
2023

Charpy V-Notch (-30 degrees)
ASTM E23

WebCode	Data Flag	Sample U91			Sample U92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3R9C93		21.42	-2.16	-0.81	24.68	1.33	0.48
4YMVN8		23.67	0.08	0.03	21.67	-1.69	-0.61
92ZCCA		24.67	1.08	0.40	21.67	-1.69	-0.61
B6QW73		23.17	-0.41	-0.15	24.36	1.00	0.36
BQT3EU		29.80	6.22	2.33	30.14	6.79	2.46
DW9KML		22.73	-0.85	-0.32	23.43	0.08	0.03
E4NJU7		21.67	-1.92	-0.72	23.67	0.31	0.11
EE7DER		20.12	-3.47	-1.30	19.97	-3.39	-1.23
EKQ23P		23.85	0.26	0.10	23.90	0.54	0.20
FQUYXT		22.67	-0.92	-0.34	19.33	-4.02	-1.46
G9MWKZ		23.67	0.08	0.03	24.33	0.98	0.36
G9TYEE		24.23	0.64	0.24	24.25	0.90	0.33
GCAVHD		23.93	0.35	0.13	24.40	1.04	0.38
GXNJFE		27.35	3.77	1.41	27.82	4.46	1.62
JKV7A2		23.70	0.11	0.04	24.50	1.14	0.42
JP9RFM		28.23	4.65	1.74	26.67	3.31	1.20
KCEMAE		18.70	-4.89	-1.83	21.97	-1.39	-0.50
LH4UKF		20.80	-2.79	-1.04	18.57	-4.79	-1.74
LZ4CJ4		23.67	0.08	0.03	22.33	-1.02	-0.37
NX2XWG		24.00	0.41	0.15	25.67	2.31	0.84
Q6XZ37		24.78	1.19	0.45	24.25	0.89	0.32
T8XH7Y		27.21	3.62	1.36	26.20	2.84	1.03
TETK9B		20.33	-3.25	-1.22	20.00	-3.36	-1.22
UJ7K62		24.33	0.75	0.28	22.33	-1.02	-0.37
WAT83N		24.33	0.75	0.28	23.33	-0.02	-0.01
XCCL64		18.45	-5.14	-1.92	18.17	-5.19	-1.88
ZGHYY8		25.33	1.75	0.65	23.00	-0.36	-0.13

Summary Statistics

	Sample U91		Sample U92	
Grand Means	23.59	Joules	23.36	Joules
Std Dev Btwn Labs	2.67	Joules	2.75	Joules

Samples U91, U92 : AISI 4340, AISI 4340

Statistics based on 27 of 27 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1131

2nd Qtr
2023

Tensile Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2EPKR9	*	46.40	-1.82	-2.66	43.30	-1.24	-1.26
2Z66NA		48.10	-0.12	-0.17	45.40	0.86	0.88
3GQX6Z		47.40	-0.82	-1.20	43.00	-1.54	-1.57
3YT3K3		48.17	-0.05	-0.07	44.14	-0.40	-0.41
4JTB7Y		47.80	-0.42	-0.61	43.30	-1.24	-1.26
4KB679		49.00	0.78	1.14	46.00	1.46	1.49
4LJDD8		49.40	1.18	1.73	45.20	0.66	0.67
4R43HU		48.00	-0.22	-0.32	44.50	-0.04	-0.04
4VNUTX		48.72	0.50	0.73	44.76	0.22	0.22
4WHMNF		47.50	-0.72	-1.05	43.90	-0.64	-0.65
6LECNR	X	47.63	-0.59	-0.87	41.63	-2.91	-2.97
6X72LC		47.00	-1.22	-1.78	43.00	-1.54	-1.57
7J3238		48.01	-0.21	-0.31	44.67	0.13	0.13
7NZGYA	X	44.50	-3.72	-5.44	35.10	-9.44	-9.62
7VKGC2		47.50	-0.72	-1.05	44.50	-0.04	-0.04
7WCD2V		48.15	-0.07	-0.10	44.96	0.42	0.43
8CXK8T		48.59	0.37	0.54	44.67	0.13	0.13
92ZCCA		47.50	-0.72	-1.05	44.30	-0.24	-0.24
93RUAN		48.54	0.32	0.47	44.44	-0.10	-0.10
9MZZWX		47.90	-0.32	-0.47	43.40	-1.14	-1.16
AN7774		47.93	-0.29	-0.43	44.61	0.07	0.07
ANPNUJ		47.81	-0.41	-0.59	43.25	-1.29	-1.31
BA4TRR		48.20	-0.02	-0.03	45.20	0.66	0.67
BGYVU4		47.61	-0.61	-0.90	43.58	-0.96	-0.97
BPXFZ6		47.50	-0.72	-1.05	42.90	-1.64	-1.67
BYJLT3		47.43	-0.79	-1.16	43.37	-1.17	-1.20
BYYDTR		47.57	-0.65	-0.95	43.42	-1.12	-1.14
BZBPH4		47.70	-0.52	-0.76	43.90	-0.64	-0.65
C2NDHU		46.60	-1.62	-2.37	42.80	-1.74	-1.77
C6Q8K7		48.90	0.68	1.00	44.50	-0.04	-0.04
CC3T6U	X	51.08	2.86	4.19	47.76	3.22	3.28
EACJF7		48.20	-0.02	-0.03	44.30	-0.24	-0.24
EATVXB		48.90	0.68	1.00	45.10	0.56	0.57
EBLB3Z		48.20	-0.02	-0.03	44.60	0.06	0.06
EFYWAL		49.35	1.13	1.66	45.68	1.14	1.16
EHJDCJ		48.80	0.58	0.85	44.80	0.26	0.26
EJY6EV		47.57	-0.65	-0.95	43.37	-1.17	-1.20
EMWYJ6		48.75	0.53	0.78	44.92	0.38	0.38
EMZ984		48.30	0.08	0.12	44.00	-0.54	-0.55
EXJM9K		48.33	0.11	0.16	45.34	0.80	0.82
EYAQXL		48.73	0.51	0.75	44.53	-0.01	-0.01
F42FXP		47.60	-0.62	-0.91	43.80	-0.74	-0.75
F7TBMJ		48.40	0.18	0.26	44.00	-0.54	-0.55
F8ZQTP		46.80	-1.42	-2.08	42.80	-1.74	-1.77
FT722Y		48.00	-0.22	-0.32	44.40	-0.14	-0.14
G9MWKZ		48.86	0.64	0.94	46.58	2.04	2.07
G9TYEE		47.94	-0.28	-0.41	44.24	-0.30	-0.31



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1131

2nd Qtr
2023

Tensile Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GCA83D		48.70	0.48	0.70	44.70	0.16	0.16
GCAYHD		47.43	-0.79	-1.16	43.37	-1.17	-1.20
GF9AED		47.98	-0.24	-0.35	43.67	-0.87	-0.89
GGLMJA		47.60	-0.62	-0.91	43.70	-0.84	-0.86
GR6NRC		48.44	0.22	0.33	45.83	1.29	1.32
H8AF8L		48.04	-0.18	-0.27	43.34	-1.20	-1.23
HJKK6M		48.34	0.12	0.18	44.57	0.03	0.03
HNZTTL	X	45.40	-2.82	-4.13	41.40	-3.14	-3.20
HTUCPX	X	44.50	-3.72	-5.44	47.90	3.36	3.42
JF3AHP		49.30	1.08	1.58	45.60	1.06	1.08
JNVH3F		48.10	-0.12	-0.17	44.50	-0.04	-0.04
JTNJ6U		48.60	0.38	0.56	44.20	-0.34	-0.35
JUFMTV		48.10	-0.12	-0.18	44.39	-0.15	-0.15
KH762R		48.78	0.56	0.82	45.24	0.70	0.71
KTMG4A		47.57	-0.65	-0.95	43.35	-1.19	-1.21
KUUWBF	X	46.58	-1.64	-2.40	44.82	0.28	0.29
KYQKRM		49.58	1.36	1.99	45.49	0.95	0.97
LH4UKF		48.40	0.18	0.26	45.83	1.29	1.32
M7878R	X	43.70	-4.52	-6.61	47.82	3.28	3.34
MJ7ELK		48.20	-0.02	-0.03	45.00	0.46	0.47
MN3YRP	X	48.10	-0.12	-0.17	50.60	6.06	6.18
MVMY83	*	49.70	1.48	2.17	47.50	2.96	3.02
MYJMMN		48.30	0.08	0.12	45.20	0.66	0.67
N246NM		47.96	-0.25	-0.37	44.02	-0.52	-0.53
NAYWP9	X	51.59	3.37	4.94	48.45	3.91	3.99
NU73F3		49.40	1.18	1.73	46.40	1.86	1.90
NVJQGU		48.44	0.22	0.33	44.24	-0.30	-0.31
NX2XWG		48.89	0.67	0.99	44.80	0.26	0.27
P8TUFX		48.48	0.26	0.39	45.94	1.40	1.42
P9KP4Q		48.10	-0.12	-0.17	44.70	0.16	0.16
P9ZJMT		48.36	0.14	0.21	44.50	-0.04	-0.04
PGWQGE		48.80	0.58	0.85	44.90	0.36	0.37
PQ3QUM		48.60	0.38	0.56	45.00	0.46	0.47
PTTR3W		47.10	-1.12	-1.64	43.40	-1.14	-1.16
PYV284		47.10	-1.12	-1.64	44.50	-0.04	-0.04
Q43PHJ		48.00	-0.22	-0.32	43.90	-0.64	-0.65
Q6XZ37		48.19	-0.03	-0.04	43.91	-0.63	-0.64
QAE9Q7		47.60	-0.62	-0.91	44.20	-0.34	-0.35
QP6DUT		49.36	1.14	1.67	45.04	0.49	0.50
QTQKBN		49.00	0.78	1.14	45.30	0.76	0.77
R3ABBK		47.92	-0.30	-0.44	44.89	0.35	0.36
RAPUUK		48.80	0.58	0.85	45.30	0.76	0.77
RKRRM8		49.17	0.95	1.39	44.96	0.42	0.43
RNPV8L		48.73	0.51	0.75	45.54	1.00	1.02
T69LPD		48.15	-0.07	-0.10	44.24	-0.30	-0.31
TGJNWB		48.59	0.37	0.54	43.66	-0.88	-0.90
TK2G24		47.40	-0.82	-1.20	42.70	-1.84	-1.88



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1131

2nd Qtr
2023

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
TXAYYX	X	45.30	-2.92	-4.27	38.60	-5.94	-6.05
U8EYY7		48.60	0.38	0.56	45.30	0.76	0.77
UA43WK		49.28	1.06	1.55	45.42	0.88	0.90
V9Y384		47.60	-0.62	-0.91	44.40	-0.14	-0.14
VPRWJU		47.65	-0.57	-0.83	45.29	0.75	0.76
VZ7YWF		48.30	0.08	0.12	44.20	-0.34	-0.35
WDR LNT	*	49.10	0.88	1.29	47.10	2.56	2.61
X7MDDH		47.80	-0.42	-0.61	44.80	0.26	0.26
X7RYG7	*	48.96	0.74	1.09	43.42	-1.12	-1.14
XCCL64		47.86	-0.36	-0.52	44.96	0.42	0.43
XG8DDZ		48.30	0.08	0.12	43.95	-0.59	-0.60
XH22XG	X	48.64	0.43	0.62	35.47	-9.07	-9.24
XH2BHL	X	44.56	-3.66	-5.35	48.19	3.65	3.72
XKNDGZ		48.44	0.22	0.33	44.67	0.13	0.13
XNMNCZ	*	49.46	1.24	1.81	47.28	2.74	2.80
XZHAQ6	X	1.700	-46.52	-68.10	1.200	-43.34	-44.17
YBVUM7		48.11	-0.11	-0.16	45.46	0.92	0.93
YLZZLE		49.13	0.91	1.33	45.92	1.38	1.41
ZAHFYW		47.36	-0.86	-1.25	43.34	-1.20	-1.22
ZGHYY8		47.20	-1.02	-1.49	44.10	-0.44	-0.45

Summary Statistics

	Sample F91		Sample F92	
Grand Means	48.22	ksi	44.54	ksi
Std Dev Btwn Labs	0.68	ksi	0.98	ksi

Samples F91, F92 : AISI 1008 - 14G, AISI 1008 - 16G

Statistics based on 101 of 114 reporting participants



Comments on Assigned Data Flags for Test #1131

- 6LECNR (X) - Data for sample F92 are low.
- 7NZGYA (X) - Data for both samples are low.
- CC3T6U (X) - Data for both samples are high.
- HNZTTL (X) - Data for both samples are low.
- HTUCPX (X) - Data appear to be transposed between samples.
- KUUWBF (X) - Inconsistent in testing between samples.
- M7878R (X) - Data appear to be transposed between samples.
- MN3YRP (X) - Data for sample F92 are high.
- NAYWP9 (X) - Data for both samples are high.
- TXAYYX (X) - Data for both samples are low.
- XH22XG (X) - Data for sample F92 are low.
- XH2BHL (X) - Data appear to be transposed between samples.
- XZHAQ6 (X) - Extreme data.



Analysis 1131

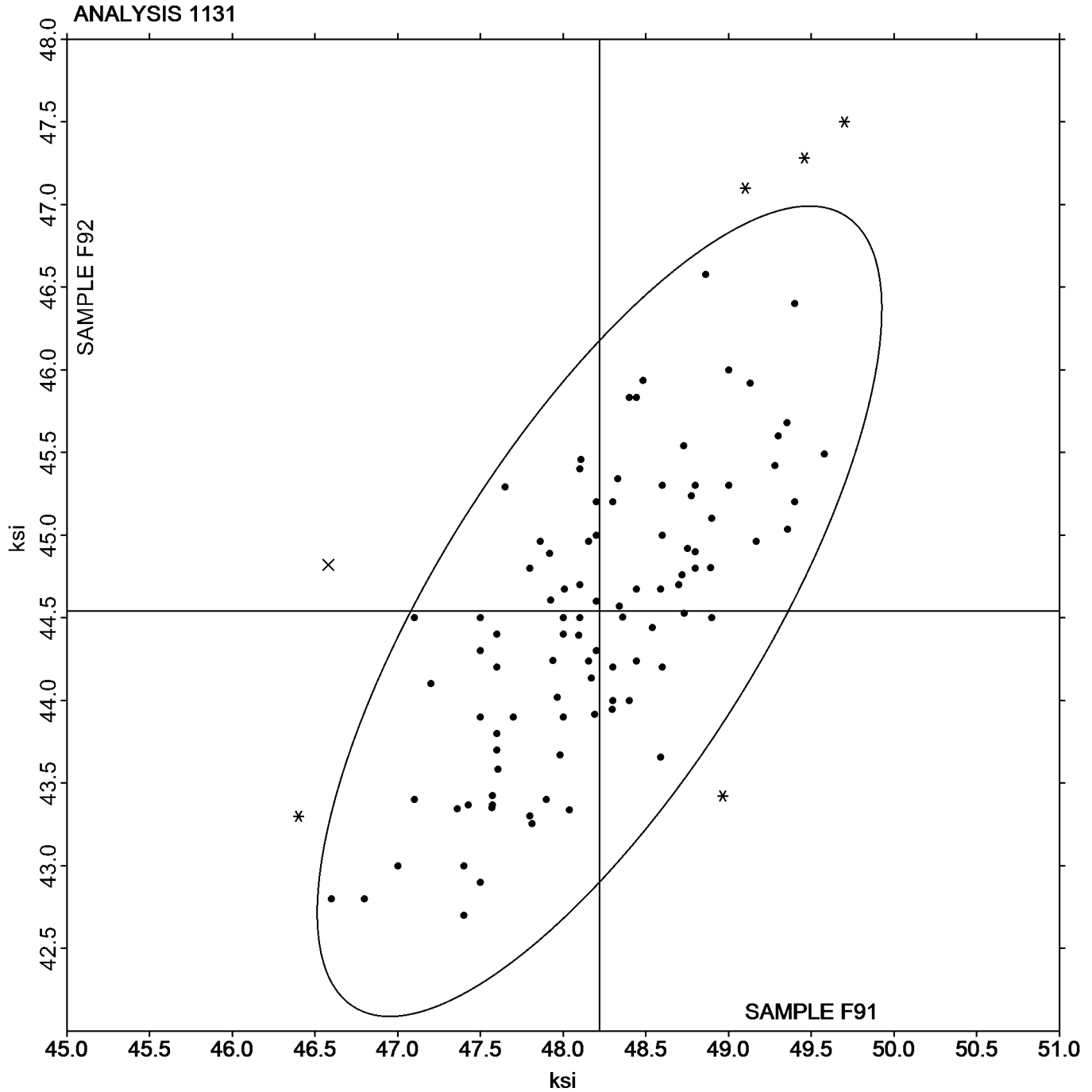
Tensile Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F91

SAMPLE F92

48.22 ksi

44.54 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1132

2nd Qtr
2023

Yield Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2EPKR9		25.60	-1.60	-1.13	23.30	-1.47	-1.30
2Z66NA		27.30	0.10	0.07	25.70	0.93	0.82
3GQX6Z		26.60	-0.60	-0.42	23.10	-1.67	-1.48
3YT3K3		26.79	-0.41	-0.29	24.70	-0.07	-0.06
4JTB7Y		28.70	1.50	1.06	25.10	0.33	0.29
4KB679		26.70	-0.50	-0.35	25.10	0.33	0.29
4LJDD8	*	30.70	3.50	2.47	28.00	3.23	2.85
4R43HU		27.40	0.20	0.14	25.40	0.63	0.55
4VNUTX		26.12	-1.08	-0.76	23.99	-0.78	-0.69
4WHMNF		26.20	-1.00	-0.70	24.60	-0.17	-0.15
6LECNR	*	27.77	0.57	0.40	23.60	-1.18	-1.04
6X72LC		26.00	-1.20	-0.85	25.00	0.23	0.20
7J3238		27.99	0.79	0.56	25.82	1.04	0.92
7NZGYA	X	28.00	0.80	0.57	20.60	-4.17	-3.68
7VKGC2		27.20	0.00	0.00	24.30	-0.47	-0.42
7WCD2V		26.54	-0.66	-0.46	23.93	-0.84	-0.74
8CXK8T		26.98	-0.22	-0.16	23.93	-0.84	-0.74
92ZCCA		25.10	-2.10	-1.48	23.80	-0.97	-0.86
93RUAN		29.36	2.16	1.52	25.77	1.00	0.88
9MZZWX		27.70	0.50	0.35	25.00	0.23	0.20
AN7774		26.37	-0.83	-0.59	23.62	-1.15	-1.02
ANPNUJ		27.64	0.44	0.31	24.15	-0.62	-0.55
BA4TRR		28.50	1.30	0.92	25.70	0.93	0.82
BGYVU4		28.44	1.24	0.88	25.87	1.09	0.96
BPXFZ6	*	30.90	3.70	2.61	27.20	2.43	2.14
BYJLT3		29.15	1.95	1.38	26.25	1.48	1.30
BYYDTR		26.12	-1.08	-0.76	23.66	-1.12	-0.99
BZBPH4	*	28.10	0.90	0.64	26.90	2.13	1.88
C2NDHU		27.60	0.40	0.28	24.30	-0.47	-0.42
C6Q8K7		27.90	0.70	0.49	24.90	0.13	0.11
CC3T6U	X	28.89	1.69	1.19	27.93	3.16	2.79
EACJF7		27.90	0.70	0.49	25.90	1.13	0.99
EATVXB		26.40	-0.80	-0.56	24.50	-0.27	-0.24
EBLB3Z		29.90	2.70	1.91	27.00	2.23	1.96
EFYWAL		26.73	-0.47	-0.33	24.72	-0.05	-0.05
EHJDCJ		26.50	-0.70	-0.49	24.50	-0.27	-0.24
EJY6EV		29.44	2.24	1.58	26.40	1.62	1.43
EMWYJ6		26.73	-0.46	-0.33	24.88	0.11	0.09
EMZ984		26.60	-0.60	-0.42	24.70	-0.07	-0.06
EXJM9K		28.07	0.87	0.62	26.20	1.43	1.26
EYAQXL	X	29.44	2.24	1.58	28.57	3.80	3.35
F42FXP		27.30	0.10	0.07	24.80	0.03	0.02
F7TBMJ		26.70	-0.50	-0.35	23.90	-0.87	-0.77
F8ZQTP		26.20	-1.00	-0.70	24.10	-0.67	-0.59
FT722Y		30.50	3.30	2.33	27.00	2.23	1.96
G9MWKZ	X	29.59	2.39	1.68	21.90	-2.88	-2.54
G9TYEE		25.77	-1.43	-1.01	23.92	-0.85	-0.75



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1132

2nd Qtr
2023

Yield Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GCA83D		26.00	-1.20	-0.85	24.00	-0.77	-0.68
GCAYHD		26.25	-0.95	-0.67	24.08	-0.70	-0.61
GF9AED		25.30	-1.89	-1.34	23.50	-1.27	-1.12
GGLMJA		25.80	-1.40	-0.99	24.20	-0.57	-0.51
GR6NRC		28.28	1.08	0.76	25.53	0.75	0.66
H8AF8L		26.69	-0.51	-0.36	23.37	-1.41	-1.24
HJJK6M		26.31	-0.89	-0.63	24.00	-0.77	-0.68
HNZTTL	*	23.10	-4.10	-2.89	21.70	-3.07	-2.71
HTUCPX	X	25.70	-1.50	-1.06	30.50	5.73	5.05
JF3AHP	X	25.80	-1.40	-0.99	26.90	2.13	1.88
JNVH3F		26.50	-0.70	-0.49	23.80	-0.97	-0.86
JTNJ6U		27.00	-0.20	-0.14	24.70	-0.07	-0.06
JUFMTV		26.10	-1.10	-0.78	24.41	-0.36	-0.32
KH762R		26.41	-0.79	-0.56	24.11	-0.67	-0.59
KTMG4A	X	26.95	-0.25	-0.18	30.60	5.83	5.14
KUUWBF		26.21	-0.99	-0.70	23.92	-0.85	-0.75
KYQKRM		28.36	1.16	0.82	24.87	0.10	0.09
LH4UKF		26.53	-0.67	-0.47	24.19	-0.58	-0.51
M7878R	X	25.04	-2.16	-1.52	28.71	3.94	3.47
MJ7ELK		25.75	-1.44	-1.02	24.72	-0.06	-0.05
MN3YRP	X	27.60	0.40	0.28	30.80	6.03	5.31
MVMY83	X	25.30	-1.90	-1.34	25.20	0.43	0.38
MYJMMN		26.60	-0.60	-0.42	24.90	0.13	0.11
N246NM		26.76	-0.44	-0.31	24.89	0.12	0.10
NAYWP9		29.49	2.29	1.61	27.03	2.25	1.99
NU73F3		29.40	2.20	1.55	26.50	1.73	1.52
NVJQGU		30.46	3.26	2.30	27.56	2.78	2.45
NX2XWG		28.25	1.05	0.74	25.18	0.41	0.36
P8TUFX		27.53	0.33	0.23	25.20	0.43	0.38
P9KP4Q	*	30.60	3.40	2.40	26.70	1.93	1.70
P9ZJMT		26.74	-0.46	-0.33	24.61	-0.16	-0.14
PGWQGE		27.80	0.60	0.42	24.70	-0.07	-0.06
PQ3QUM		26.90	-0.30	-0.21	24.00	-0.77	-0.68
PTTR3W		26.26	-0.94	-0.66	23.41	-1.36	-1.20
PYV284		26.60	-0.60	-0.42	24.30	-0.47	-0.42
Q43PHJ		26.40	-0.80	-0.56	24.30	-0.47	-0.42
Q6XZ37		26.10	-1.10	-0.77	24.06	-0.71	-0.63
QAE9Q7		27.20	0.00	0.00	25.30	0.53	0.46
QP6DUT		26.10	-1.10	-0.77	25.07	0.30	0.27
QTQKBN	X	30.80	3.60	2.54	25.50	0.73	0.64
R3ABBK		26.85	-0.35	-0.25	23.90	-0.87	-0.77
RAPUUK		27.10	-0.10	-0.07	24.70	-0.07	-0.06
RKRRM8		25.53	-1.67	-1.18	23.50	-1.28	-1.13
T69LPD		26.25	-0.95	-0.67	24.37	-0.41	-0.36
TGJNWB	*	31.33	4.13	2.91	27.27	2.49	2.20
TK2G24		26.20	-1.00	-0.70	24.60	-0.17	-0.15
TXAYYX	X	24.30	-2.90	-2.04	19.00	-5.77	-5.09



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1132

2nd Qtr
2023

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
U8EYY7		27.10	-0.10	-0.07	24.20	-0.57	-0.51
V9Y384		26.90	-0.30	-0.21	24.10	-0.67	-0.59
VPRWJU		27.00	-0.20	-0.14	25.50	0.73	0.64
VZ7YWF		26.90	-0.30	-0.21	24.00	-0.77	-0.68
WDRLNT		26.50	-0.70	-0.49	24.80	0.03	0.02
X7MDDH		26.50	-0.70	-0.49	24.10	-0.67	-0.59
X7RYG7		26.39	-0.81	-0.57	24.16	-0.62	-0.55
XCCL64		26.54	-0.66	-0.46	24.51	-0.26	-0.23
XG8DDZ		27.41	0.21	0.15	24.80	0.03	0.03
XH22XG	X	27.12	-0.08	-0.06	19.57	-5.21	-4.59
XH2BHL	X	26.20	-1.00	-0.71	29.05	4.28	3.77
XKNDGZ		26.25	-0.95	-0.67	24.22	-0.55	-0.49
XNMNCZ	X	27.27	0.07	0.05	27.41	2.64	2.33
XZHAQ6	X	2.600	-24.60	-17.35	2.500	-22.27	-19.64
YBVUM7		27.22	0.03	0.02	25.00	0.23	0.20
YLZZLE		28.99	1.79	1.26	26.41	1.64	1.44
ZAHFYW	*	26.61	-0.59	-0.42	22.79	-1.98	-1.75
ZGHYY8		25.50	-1.70	-1.20	23.30	-1.47	-1.30

Summary Statistics

	Sample F91		Sample F92	
Grand Means	27.20	ksi	24.77	ksi
Stnd Dev Btwn Labs	1.42	ksi	1.13	ksi

Samples F91, F92 : AISI 1008 - 14G, AISI 1008 - 16G

Statistics based on 96 of 112 reporting participants



Comments on Assigned Data Flags for Test #1132

- 7NZGYA (X) - Data for sample F92 are low.
- CC3T6U (X) - Data for sample F92 are high.
- EYAQXL (X) - Data for sample F92 are high.
- G9MWKZ (X) - Inconsistent in testing between samples.
- HTUCPX (X) - Data appear to be transposed between samples.
- JF3AHP (X) - Inconsistent in testing between samples.
- KTMG4A (X) - Data for sample F92 are high.
- M7878R (X) - Data for sample F92 are high.
- MN3YRP (X) - Data for sample F92 are high.
- MVMY83 (X) - Inconsistent in testing between samples.
- QTQKBN (X) - Inconsistent in testing between samples.
- TXAYYX (X) - Data for sample F92 are low.
- XH22XG (X) - Data for sample F92 are low.
- XH2BHL (X) - Data for sample F92 are high.
- XNMNCZ (X) - Inconsistent in testing between samples.
- XZHAQ6 (X) - Extreme data.



Analysis 1132

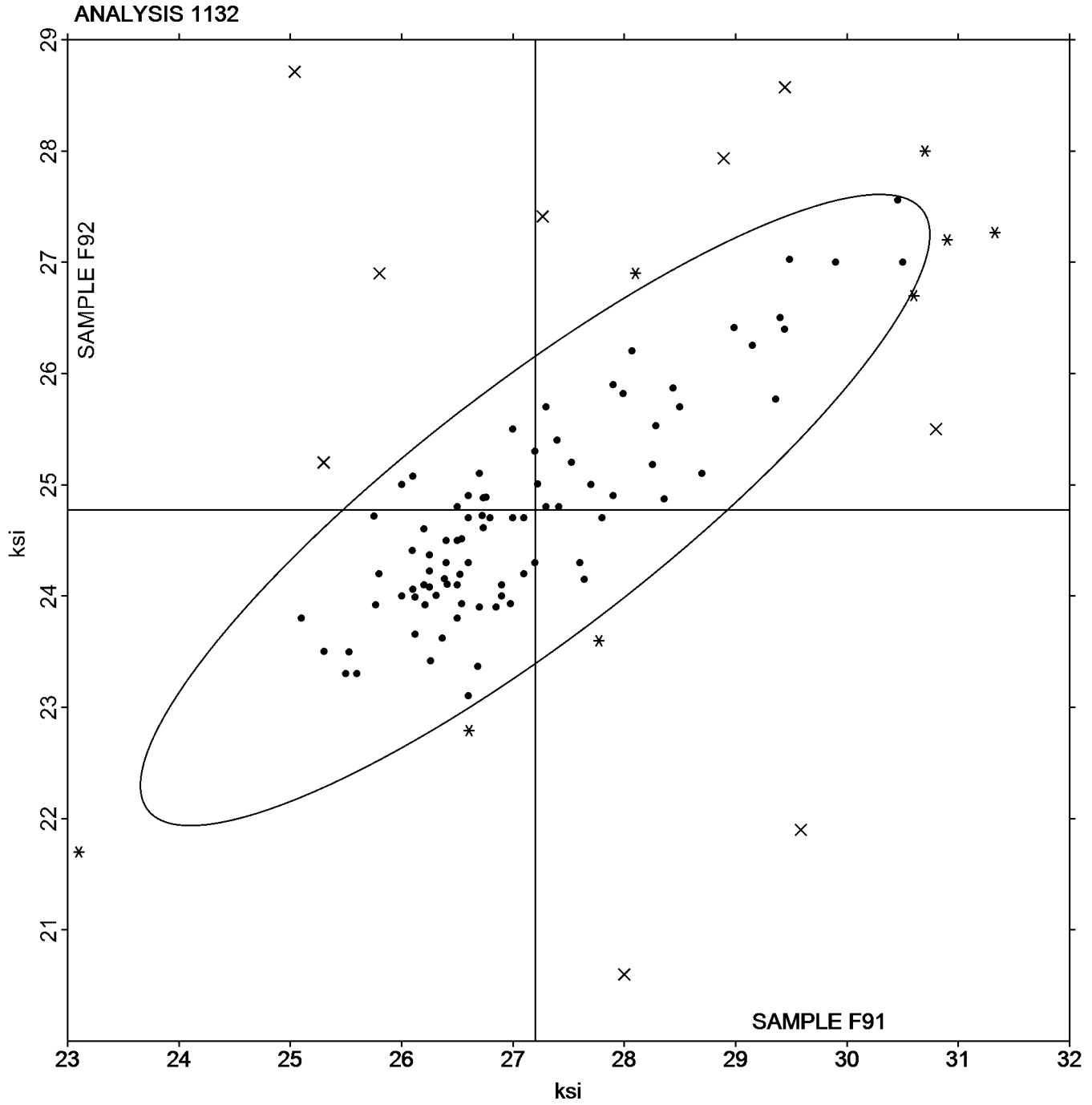
Yield Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F91

SAMPLE F92

27.20 ksi

24.77 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1133

2nd Qtr
2023

Elongation: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2EPKR9		40.60	-2.51	-0.88	42.50	-1.76	-0.65
2Z66NA		43.50	0.39	0.14	46.00	1.74	0.64
3GQX6Z		45.90	2.79	0.99	45.90	1.64	0.61
3YT3K3		46.50	3.39	1.20	47.00	2.74	1.01
4JTB7Y		40.80	-2.31	-0.81	40.80	-3.46	-1.28
4KB679		45.80	2.69	0.95	45.20	0.94	0.35
4LJDD8		39.30	-3.81	-1.34	38.80	-5.46	-2.02
4R43HU		40.00	-3.11	-1.10	41.30	-2.96	-1.10
4VNUTX		39.30	-3.81	-1.34	40.70	-3.56	-1.32
4WHMNF		43.00	-0.11	-0.04	44.80	0.54	0.20
6LECNR		44.50	1.39	0.49	47.50	3.24	1.20
6X72LC		44.70	1.59	0.56	45.40	1.14	0.42
7J3238		43.40	0.29	0.10	43.30	-0.96	-0.36
7NZGYA		41.00	-2.11	-0.74	44.00	-0.26	-0.10
7VKGC2		43.60	0.49	0.17	43.80	-0.46	-0.17
7WCD2V		45.60	2.49	0.88	46.90	2.64	0.98
8CXK8T		42.00	-1.11	-0.39	42.90	-1.36	-0.50
92ZCCA		43.00	-0.11	-0.04	44.50	0.24	0.09
93RUAN		39.37	-3.74	-1.32	41.43	-2.83	-1.05
9MZZWX		44.10	0.99	0.35	45.90	1.64	0.61
AN7774		42.51	-0.60	-0.21	42.58	-1.68	-0.62
ANPNUJ		48.50	5.39	1.90	50.20	5.94	2.20
BA4TRR		41.00	-2.11	-0.74	42.80	-1.46	-0.54
BGYVU4		45.74	2.63	0.93	45.67	1.41	0.52
BPXFZ6	*	37.40	-5.71	-2.01	42.10	-2.16	-0.80
BYJLT3		47.00	3.89	1.37	49.00	4.74	1.76
BYYDTR		46.80	3.69	1.30	47.00	2.74	1.01
BZBPH4		37.00	-6.11	-2.16	38.00	-6.26	-2.32
C2NDHU		44.90	1.79	0.63	45.60	1.34	0.50
C6Q8K7		44.30	1.19	0.42	46.20	1.94	0.72
CC3T6U		44.50	1.39	0.49	47.70	3.44	1.27
EACJF7		40.50	-2.61	-0.92	44.10	-0.16	-0.06
EATVXB		45.00	1.89	0.67	46.00	1.74	0.64
EBLB3Z	*	38.10	-5.01	-1.77	42.70	-1.56	-0.58
EFYWAL		43.00	-0.11	-0.04	44.00	-0.26	-0.10
EHJDCJ		45.10	1.99	0.70	46.80	2.54	0.94
EJY6EV		47.00	3.89	1.37	50.00	5.74	2.13
EMWYJ6		43.90	0.79	0.28	43.70	-0.56	-0.21
EMZ984		41.40	-1.71	-0.60	42.40	-1.86	-0.69
EXJM9K	*	35.70	-7.41	-2.62	36.00	-8.26	-3.06
EYAQXL		43.70	0.59	0.21	45.00	0.74	0.27
F42FXP		42.30	-0.81	-0.28	44.50	0.24	0.09
F7TBMJ		43.60	0.49	0.17	45.60	1.34	0.50
F8ZQTP		44.30	1.19	0.42	46.10	1.84	0.68
FT722Y	X	37.10	-6.01	-2.12	43.20	-1.06	-0.39
G9MWKZ	*	36.10	-7.01	-2.47	37.80	-6.46	-2.39
G9TYEE		44.20	1.09	0.39	45.60	1.34	0.50



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1133

2nd Qtr
2023

Elongation: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GCA83D		43.70	0.59	0.21	45.20	0.94	0.35
GCAYHD		44.70	1.59	0.56	44.80	0.54	0.20
GF9AED		43.50	0.39	0.14	44.50	0.24	0.09
GGLMJA		44.30	1.19	0.42	45.00	0.74	0.27
GR6NRC		46.80	3.69	1.30	47.60	3.34	1.24
H8AF8L		43.60	0.49	0.17	45.10	0.84	0.31
HJJK6M		44.40	1.29	0.46	45.80	1.54	0.57
HNZTTL		39.40	-3.71	-1.31	43.40	-0.86	-0.32
HTUCPX		41.00	-2.11	-0.74	39.40	-4.86	-1.80
JF3AHP		40.00	-3.11	-1.10	39.50	-4.76	-1.76
JNVH3F		47.00	3.89	1.37	49.00	4.74	1.76
JTNJ6U		42.80	-0.31	-0.11	41.60	-2.66	-0.99
JUFMTV		44.00	0.89	0.32	46.00	1.74	0.64
KH762R		43.20	0.09	0.03	44.50	0.24	0.09
KTMG4A	X	48.64	5.53	1.95	44.06	-0.20	-0.07
KUUWBF		46.62	3.51	1.24	44.51	0.25	0.09
KYQKRM		45.11	2.00	0.71	47.16	2.90	1.07
LH4UKF		45.00	1.89	0.67	45.00	0.74	0.27
M7878R		43.20	0.09	0.03	42.90	-1.36	-0.50
MJ7ELK		46.75	3.64	1.29	47.15	2.89	1.07
MN3YRP		41.75	-1.36	-0.48	45.50	1.24	0.46
MVMY83		44.30	1.19	0.42	43.80	-0.46	-0.17
MYJMMN	X	47.50	4.39	1.55	41.10	-3.16	-1.17
N246NM		42.40	-0.71	-0.25	43.70	-0.56	-0.21
NAYWP9		42.15	-0.96	-0.34	44.10	-0.16	-0.06
NU73F3		40.70	-2.41	-0.85	42.00	-2.26	-0.84
NVJQGU	X	37.90	-5.21	-1.84	35.80	-8.46	-3.14
NX2XWG		47.10	3.99	1.41	45.20	0.94	0.35
P8TUFX	X	50.88	7.77	2.74	35.84	-8.42	-3.12
P9KP4Q		39.00	-4.11	-1.45	39.80	-4.46	-1.65
P9ZJMT		46.00	2.89	1.02	47.00	2.74	1.01
PGWQGE		38.00	-5.11	-1.80	40.00	-4.26	-1.58
PQ3QUM		46.20	3.09	1.09	48.30	4.04	1.50
PTTR3W		39.70	-3.41	-1.20	43.69	-0.57	-0.21
PYV284	*	49.00	5.89	2.08	47.00	2.74	1.01
Q43PHJ		46.00	2.89	1.02	46.00	1.74	0.64
Q6XZ37		44.07	0.96	0.34	46.28	2.02	0.75
QAE9Q7		40.00	-3.11	-1.10	41.70	-2.56	-0.95
QP6DUT		42.25	-0.86	-0.30	43.21	-1.05	-0.39
QTQKBN		39.60	-3.51	-1.24	41.90	-2.36	-0.88
R3ABBK		43.52	0.41	0.15	42.78	-1.48	-0.55
RAPUUK		43.00	-0.11	-0.04	44.50	0.24	0.09
RKRRM8		39.40	-3.71	-1.31	41.20	-3.06	-1.13
RNPV8L	*	42.50	-0.61	-0.21	40.00	-4.26	-1.58
T69LPD		39.00	-4.11	-1.45	41.00	-3.26	-1.21
TGJNWB		39.00	-4.11	-1.45	41.00	-3.26	-1.21
TK2G24	*	42.00	-1.11	-0.39	47.10	2.84	1.05



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1133

2nd Qtr
2023

Elongation: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
TXAYYX		49.00	5.89	2.08	49.80	5.54	2.05
U8EYY7		42.22	-0.89	-0.31	44.17	-0.09	-0.03
UA43WK		40.00	-3.11	-1.10	41.25	-3.01	-1.12
V9Y384		47.10	3.99	1.41	46.70	2.44	0.90
VPRWJU		44.30	1.19	0.42	45.10	0.84	0.31
VZ7YWF		43.50	0.39	0.14	45.00	0.74	0.27
WDRLNT		43.30	0.19	0.07	45.50	1.24	0.46
X7MDDH		46.00	2.89	1.02	47.00	2.74	1.01
X7RYG7		43.60	0.49	0.17	45.45	1.19	0.44
XCCL64		42.70	-0.41	-0.14	43.50	-0.76	-0.28
XG8DDZ		41.60	-1.51	-0.53	43.90	-0.36	-0.13
XH22XG		45.08	1.97	0.70	46.75	2.49	0.92
XH2BHL		46.38	3.27	1.16	46.06	1.80	0.67
XKNDGZ		40.90	-2.21	-0.78	42.90	-1.36	-0.50
XNMNCZ		39.30	-3.81	-1.34	40.50	-3.76	-1.39
XZHAQ6		44.50	1.39	0.49	46.50	2.24	0.83
YBVUM7		42.60	-0.51	-0.18	42.70	-1.56	-0.58
YLZZLE		43.75	0.64	0.23	42.50	-1.76	-0.65
ZAHFYW		43.60	0.49	0.17	42.40	-1.86	-0.69
ZGHYY8		47.90	4.79	1.69	46.20	1.94	0.72

Summary Statistics

	Sample F91		Sample F92	
Grand Means	43.11	Percent	44.26	Percent
Stnd Dev Btwn Labs	2.83	Percent	2.70	Percent

Samples F91, F92 : AISI 1008 - 14G, AISI 1008 - 16G

Statistics based on 109 of 114 reporting participants

Comments on Assigned Data Flags for Test #1133

- FT722Y (X) - Inconsistent in testing between samples.
- KTMG4A (X) - Inconsistent in testing between samples.
- MYJMMN (X) - Inconsistent in testing between samples.
- NVJQGU (X) - Data for sample F92 are low.
- P8TUFX (X) - Data for sample F92 are low.



Analysis 1133

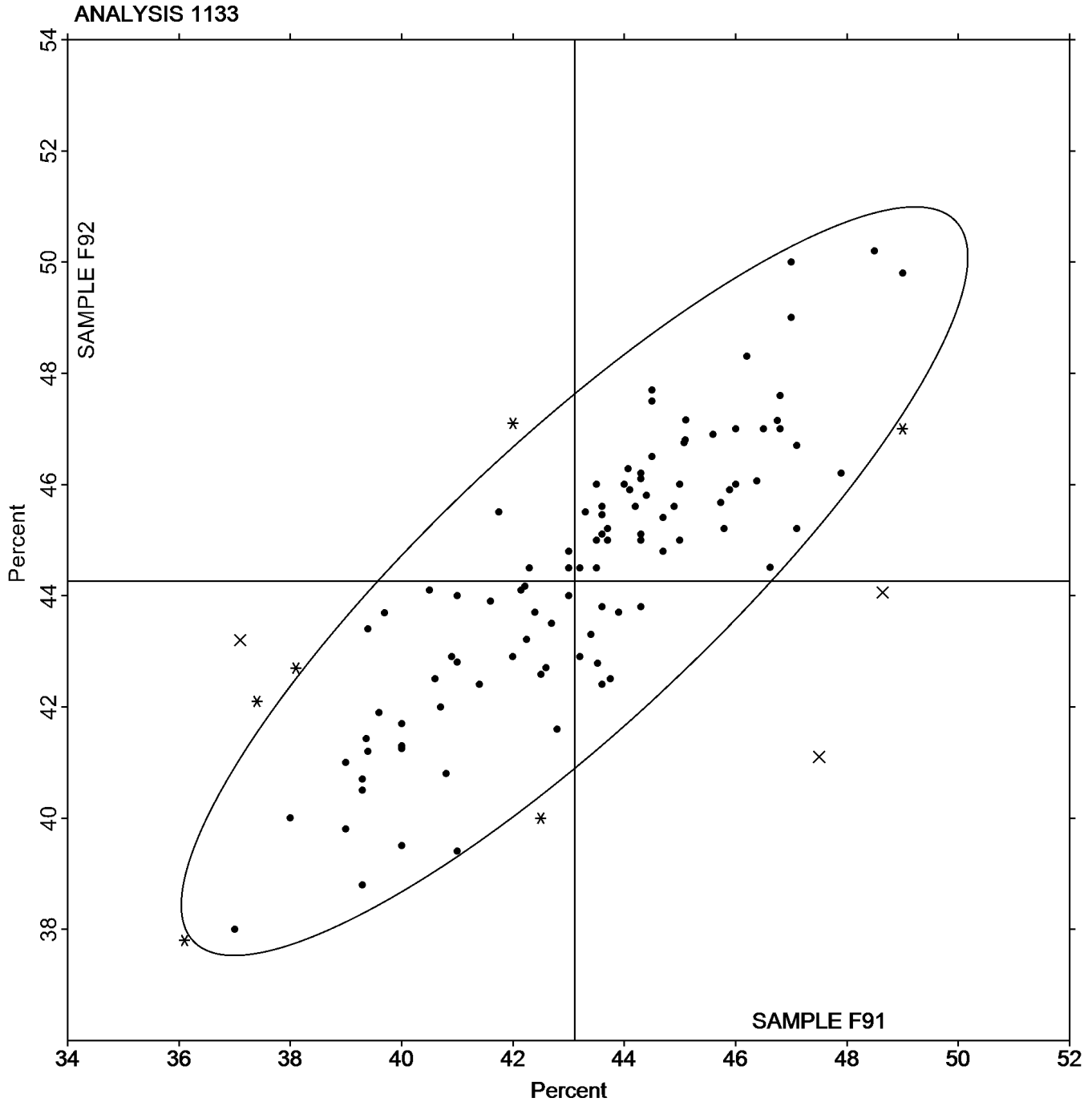
Elongation: Lab-Machined Flat Steel
ASTM E8

SAMPLE F91

43.11 Percent

SAMPLE F92

44.26 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1134

2nd Qtr
2023

r-Value: Lab-Machined Flat Steel
ASTM E517

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2Z66NA		1.610	-0.014	-0.07	1.660	-0.118	-0.48
3YT3K3		2.115	0.491	2.50	2.320	0.542	2.22
4VNUTX		1.526	-0.098	-0.50	1.757	-0.021	-0.09
7J3238	X	1.030	-0.594	-3.02	1.710	-0.068	-0.28
7WCD2V		1.436	-0.188	-0.96	1.548	-0.230	-0.94
8CXK8T		1.550	-0.074	-0.38	1.680	-0.098	-0.40
9MZZWX		1.610	-0.014	-0.07	1.950	0.172	0.71
BYDTR		1.740	0.116	0.59	1.830	0.052	0.21
C6Q8K7		1.596	-0.028	-0.14	1.750	-0.028	-0.11
CC3T6U		1.690	0.066	0.34	1.940	0.162	0.66
EBLB3Z	X	0.5000	-1.124	-5.72	0.5000	-1.278	-5.23
EHJDCJ		1.530	-0.094	-0.48	1.700	-0.078	-0.32
EMZ984		1.790	0.166	0.84	1.740	-0.038	-0.15
F8ZQTP		1.630	0.006	0.03	1.860	0.082	0.34
G9TYEE		1.540	-0.084	-0.43	1.890	0.112	0.46
GCAYHD	X	1.250	-0.374	-1.90	1.790	0.012	0.05
HJJK6M		1.570	-0.054	-0.27	1.680	-0.098	-0.40
JF3AHP	*	2.240	0.616	3.13	2.500	0.722	2.96
JNVH3F		1.635	0.011	0.06	1.734	-0.044	-0.18
KTMG4A	X	1.710	0.086	0.44	0.7860	-0.992	-4.06
KYQKRM		1.460	-0.164	-0.83	1.680	-0.098	-0.40
LH4UKF		1.482	-0.142	-0.72	1.567	-0.211	-0.86
MYJMMN		1.926	0.302	1.54	1.901	0.123	0.50
NVJQGU		1.528	-0.096	-0.49	1.673	-0.105	-0.43
NX2XWG	X	0.3000	-1.324	-6.73	0.3700	-1.408	-5.76
P9ZJMT		1.600	-0.024	-0.12	1.800	0.022	0.09
PGWQGE		1.410	-0.214	-1.09	1.580	-0.198	-0.81
Q43PHJ		1.648	0.024	0.12	1.869	0.091	0.37
Q6XZ37		1.491	-0.133	-0.67	1.628	-0.149	-0.61
TXAYYX		1.480	-0.144	-0.73	1.510	-0.268	-1.10
U8EYY7		1.520	-0.104	-0.53	1.580	-0.198	-0.81
VZ7YWF		1.720	0.096	0.49	1.780	0.002	0.01
XCCL64		1.518	-0.106	-0.54	1.637	-0.141	-0.58
XG8DDZ		1.520	-0.104	-0.53	1.860	0.082	0.34
XH2BHL		1.580	-0.044	-0.22	1.540	-0.238	-0.97
XKNDGZ		1.422	-0.202	-1.03	1.592	-0.186	-0.76
YBVUM7		1.460	-0.164	-0.83	1.480	-0.298	-1.22
ZGHYY8	*	2.020	0.396	2.01	2.450	0.672	2.75

Summary Statistics

	Sample F91	Sample F92
Grand Means	1.624	1.778
Std Dev Btwn Labs	0.197	0.244

Samples F91, F92 : AISI 1008 - 14G, AISI 1008 - 16G

Statistics based on 33 of 38 reporting participants



Comments on Assigned Data Flags for Test #1134

7J3238 (X) - Data for sample F91 are low.

EBLB3Z (X) - Data for both samples are low.

GCAYHD (X) - Inconsistent in testing between samples.

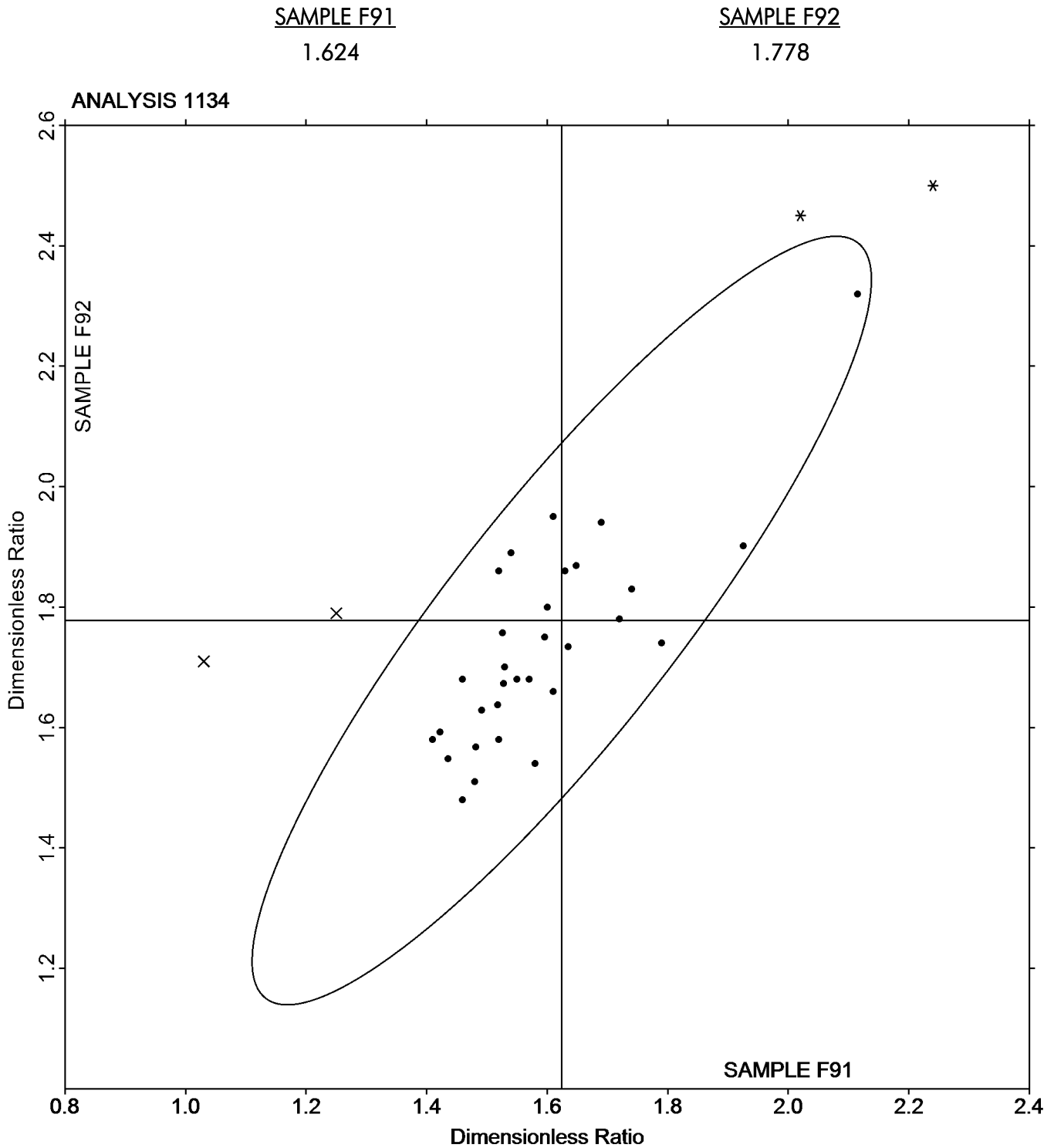
KTMG4A (X) - Data for sample F92 are low.

NX2XWG (X) - Data for both samples are low.



Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1135

2nd Qtr
2023

n-Value: Lab-Machined Flat Steel
ASTM E646

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2EPKR9		0.2330	0.0132	1.71	0.2270	0.0033	0.37
2Z66NA		0.2080	-0.0118	-1.52	0.2150	-0.0087	-0.98
3YT3K3		0.2210	0.0012	0.16	0.2190	-0.0047	-0.53
4JTB7Y		0.2250	0.0052	0.68	0.2380	0.0143	1.60
4LJDD8		0.2060	-0.0138	-1.78	0.2040	-0.0197	-2.21
4R43HU		0.2230	0.0032	0.42	0.2290	0.0053	0.59
4VNUTX		0.2190	-0.0008	-0.10	0.2190	-0.0047	-0.53
4WHMNF		0.2220	0.0022	0.29	0.2270	0.0033	0.37
6X72LC		0.2190	-0.0008	-0.10	0.2220	-0.0017	-0.19
7J3238		0.2200	0.0002	0.03	0.2200	-0.0037	-0.42
7WCD2V		0.2080	-0.0118	-1.52	0.2140	-0.0097	-1.09
8CXK8T		0.2150	-0.0048	-0.61	0.2220	-0.0017	-0.19
9MZZWX		0.2180	-0.0018	-0.23	0.2240	0.0003	0.03
BA4TRR		0.2130	-0.0068	-0.87	0.2230	-0.0007	-0.08
BGYVU4		0.2304	0.0106	1.37	0.2347	0.0110	1.23
BYDTR		0.2290	0.0092	1.19	0.2320	0.0083	0.93
C6Q8K7		0.2110	-0.0088	-1.13	0.2180	-0.0057	-0.64
CC3T6U		0.2160	-0.0038	-0.49	0.2150	-0.0087	-0.98
EBLB3Z	X	0.5000	0.2802	36.17	0.5000	0.2763	30.94
EHJDCJ		0.2200	0.0002	0.03	0.2230	-0.0007	-0.08
EMZ984		0.2220	0.0022	0.29	0.2240	0.0003	0.03
EXJM9K		0.2100	-0.0098	-1.26	0.2170	-0.0067	-0.75
EYAQXL	*	0.2150	-0.0048	-0.61	0.2030	-0.0207	-2.32
F7TBMJ		0.2260	0.0062	0.81	0.2310	0.0073	0.81
F8ZQTP		0.2240	0.0042	0.55	0.2300	0.0063	0.70
G9TYEE		0.2200	0.0002	0.03	0.2300	0.0063	0.70
GCAYHD		0.2290	0.0092	1.19	0.2330	0.0093	1.04
H8AF8L		0.2140	-0.0058	-0.74	0.2210	-0.0027	-0.31
HJKK6M		0.2210	0.0012	0.16	0.2250	0.0013	0.14
JF3AHP		0.2160	-0.0038	-0.49	0.2200	-0.0037	-0.42
JNVH3F		0.2370	0.0172	2.23	0.2360	0.0123	1.37
JTNJ6U		0.2120	-0.0078	-1.00	0.2140	-0.0097	-1.09
KTMG4A	X	0.1990	-0.0208	-2.68	0.1300	-0.0937	-10.50
KYQKRM		0.2260	0.0062	0.81	0.2270	0.0033	0.37
LH4UKF		0.2190	-0.0008	-0.10	0.2290	0.0053	0.59
MYJMMN		0.2290	0.0092	1.19	0.2390	0.0153	1.71
NU73F3	*	0.2000	-0.0198	-2.55	0.2100	-0.0137	-1.54
NVJQGU	X	0.2700	0.0502	6.48	0.2800	0.0563	6.30
NX2XWG		0.2230	0.0032	0.42	0.2210	-0.0027	-0.31
P9ZJMT		0.2300	0.0102	1.32	0.2300	0.0063	0.70
PGWQGE		0.2090	-0.0108	-1.39	0.2180	-0.0057	-0.64
PQ3QUM		0.2180	-0.0018	-0.23	0.2310	0.0073	0.81
Q43PHJ		0.2200	0.0002	0.03	0.2210	-0.0027	-0.31
Q6XZ37		0.2183	-0.0015	-0.19	0.2208	-0.0029	-0.33
QAE9Q7		0.2230	0.0032	0.42	0.2260	0.0023	0.25
QP6DUT		0.2298	0.0100	1.30	0.2248	0.0011	0.12
T69LPD		0.2230	0.0032	0.42	0.2250	0.0013	0.14



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1135

2nd Qtr
2023

n-Value: Lab-Machined Flat Steel
ASTM E646

WebCode	Data Flag	Sample F91			Sample F92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
TXAYYX	X	0.2290	0.0092	1.19	0.2510	0.0273	3.05
U8EYY7		0.2180	-0.0018	-0.23	0.2260	0.0023	0.25
V9Y384		0.2200	0.0002	0.03	0.2270	0.0033	0.37
VZ7YWF		0.2140	-0.0058	-0.74	0.2230	-0.0007	-0.08
XCCL64		0.2120	-0.0078	-1.00	0.2210	-0.0027	-0.31
XG8DDZ		0.2260	0.0062	0.81	0.2330	0.0093	1.04
XH2BHL	*	0.2100	-0.0098	-1.26	0.2000	-0.0237	-2.66
XKNDGZ		0.2220	0.0022	0.29	0.2230	-0.0007	-0.08
YBVUM7	*	0.2350	0.0152	1.97	0.2490	0.0253	2.83
ZGHYY8	X	0.2180	-0.0018	-0.23	0.2670	0.0433	4.85

Summary Statistics

	Sample F91	Sample F92
Grand Means	0.2198	0.2237
Stnd Dev Btwn Labs	0.0077	0.0089

Samples F91, F92 : AISI 1008 - 14G, AISI 1008 - 16G

Statistics based on 52 of 57 reporting participants

Comments on Assigned Data Flags for Test #1135

- EBLB3Z (X) - Data for both samples are high.
- KTMG4A (X) - Data for sample F92 are low.
- NVJQGU (X) - Data for both samples are high.
- TXAYYX (X) - Data for sample F92 are high.
- ZGHYY8 (X) - Data for sample F92 are high.



Analysis 1135

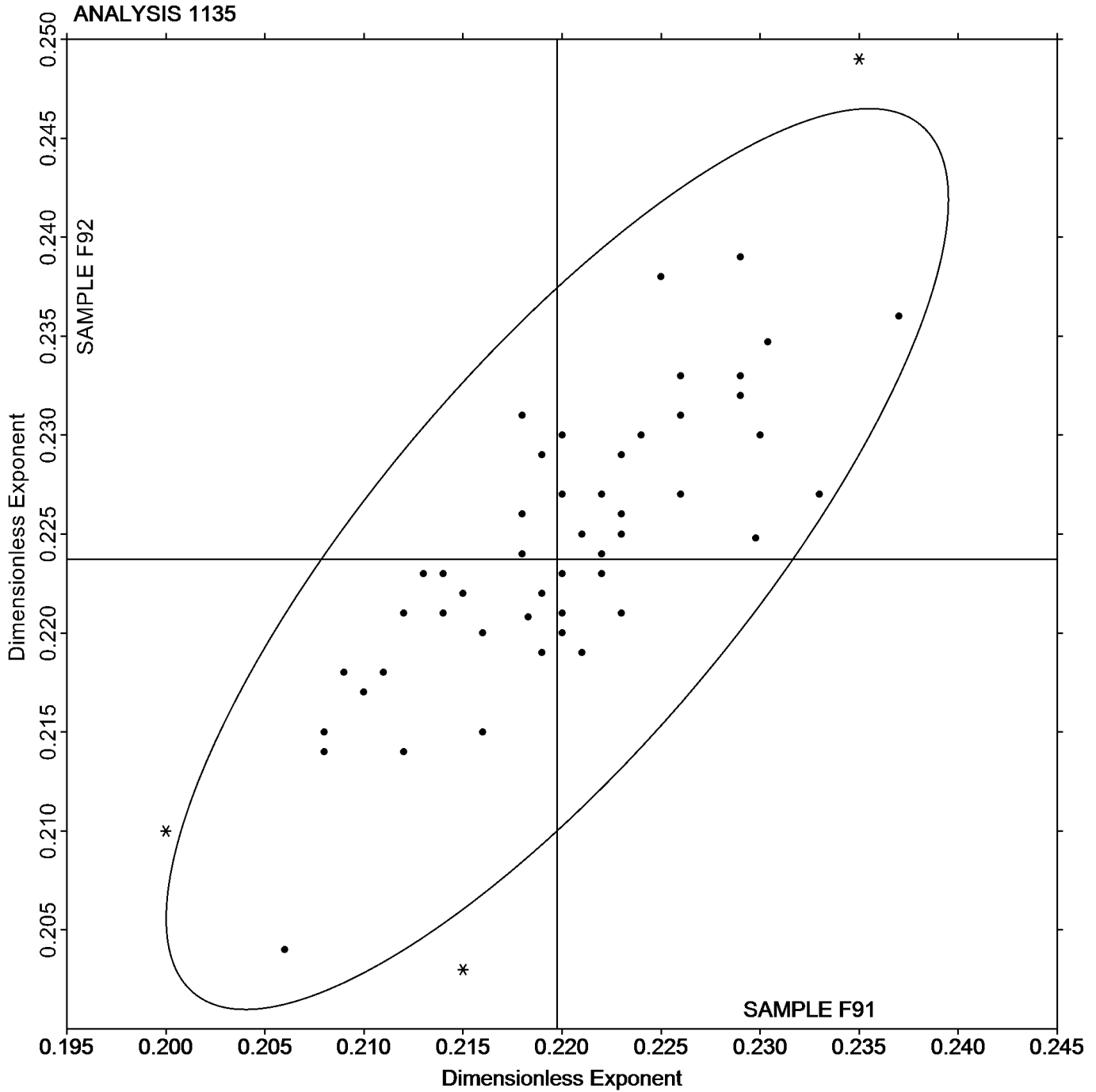
n-Value: Lab-Machined Flat Steel
ASTM E646

SAMPLE F91

SAMPLE F92

0.2198

0.2237





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1201

2nd Qtr
2023

Fastener Wedge Tensile (10 degree) ASTM F606

WebCode	Data Flag	Sample X91			Sample X92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2NTC2F		135.30	-0.73	-0.54	137.97	-0.81	-0.66
724NU7		133.83	-2.19	-1.62	137.37	-1.41	-1.15
7ZFBCN		135.64	-0.38	-0.28	139.53	0.76	0.61
8JFKDA		135.27	-0.76	-0.56	138.50	-0.27	-0.22
9ZK8HH		137.77	1.74	1.28	139.57	0.79	0.64
A7NDXK		135.44	-0.59	-0.44	138.21	-0.56	-0.46
AFEY2X		135.83	-0.20	-0.14	139.08	0.30	0.25
ANPNUJ		134.69	-1.34	-0.99	138.99	0.22	0.18
B2R9GL	*	138.00	1.97	1.46	138.33	-0.44	-0.36
C8DLUT		138.03	2.01	1.48	140.17	1.39	1.13
CB9D2Q		137.33	1.31	0.96	139.40	0.62	0.51
CHDG6Q		136.41	0.38	0.28	138.14	-0.63	-0.52
CLFH89		133.73	-2.29	-1.69	136.00	-2.77	-2.26
D3D3H2		137.29	1.26	0.93	140.56	1.78	1.45
D8P8X9		139.28	3.26	2.40	141.39	2.62	2.13
DERR46		137.74	1.71	1.26	140.20	1.43	1.16
DX2LZH		135.03	-0.99	-0.73	139.13	0.36	0.29
DXZJ2K		135.78	-0.25	-0.19	137.82	-0.96	-0.78
EK9CJA		135.26	-0.76	-0.56	138.24	-0.54	-0.44
F9A9YT		138.10	2.07	1.53	140.20	1.43	1.16
FQUYXT		133.77	-2.26	-1.67	136.33	-2.44	-1.99
FT3EKL		136.57	0.54	0.40	137.96	-0.81	-0.66
GXNJFE		136.53	0.51	0.37	138.83	0.06	0.05
H7HJHR	X	140.67	4.64	3.42	143.33	4.56	3.71
HJ6YVK		136.43	0.41	0.30	138.63	-0.14	-0.12
HQ88ZR		136.70	0.67	0.50	140.10	1.33	1.08
JKV7A2		135.76	-0.27	-0.20	138.71	-0.06	-0.05
JPMDRA	*	135.66	-0.36	-0.27	136.51	-2.27	-1.85
LNT8M4		135.34	-0.69	-0.51	138.34	-0.44	-0.36
LZ4CJ4		138.97	2.94	2.17	141.23	2.46	2.00
MJ7ELK		135.90	-0.13	-0.10	138.04	-0.73	-0.60
NZC9ZT		135.66	-0.37	-0.27	138.71	-0.06	-0.05
P6HP29		136.43	0.41	0.30	139.57	0.79	0.64
PBQKV3		137.63	1.61	1.18	140.17	1.39	1.13
Q4MXF8		135.00	-1.03	-0.76	137.70	-1.07	-0.88
QT3QGH	*	136.20	0.17	0.13	141.03	2.26	1.84
QYML6M		137.07	1.04	0.77	139.10	0.33	0.26
QYT2RG		134.20	-1.83	-1.35	136.80	-1.97	-1.61
R3MHGF		136.71	0.68	0.50	139.93	1.16	0.94
RZJCWM	X	141.12	5.10	3.76	146.86	8.09	6.59
RZVLR		136.33	0.31	0.23	139.33	0.56	0.45
U63QKX		135.50	-0.53	-0.39	137.87	-0.91	-0.74
UJ9KCA		134.63	-1.39	-1.03	137.60	-1.17	-0.96
V3CPDN		136.83	0.81	0.59	139.47	0.69	0.56
V7CZ9N		133.70	-2.33	-1.72	138.37	-0.41	-0.33
VCLGHC		135.03	-1.00	-0.74	137.58	-1.20	-0.97
WAT83N		136.30	0.27	0.20	139.45	0.68	0.55



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1201

2nd Qtr
2023

Fastener Wedge Tensile (10 degree)
ASTM F606

WebCode	Data Flag	Sample X91			Sample X92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Y7ZQMR		135.77	-0.26	-0.19	138.77	-0.01	-0.01
YCBBNQ		134.80	-1.23	-0.91	138.37	-0.41	-0.33
YHFKZ7		134.17	-1.86	-1.37	137.90	-0.87	-0.71

Summary Statistics

	Sample X91		Sample X92	
Grand Means	136.03	ksi	138.77	ksi
Stnd Dev Btwn Labs	1.36	ksi	1.23	ksi

Samples X91, X92 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 48 of 50 reporting participants

Comments on Assigned Data Flags for Test #1201

H7HJHR (X) - Data for both samples are high. Possible Systematic Error.

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



Analysis 1201

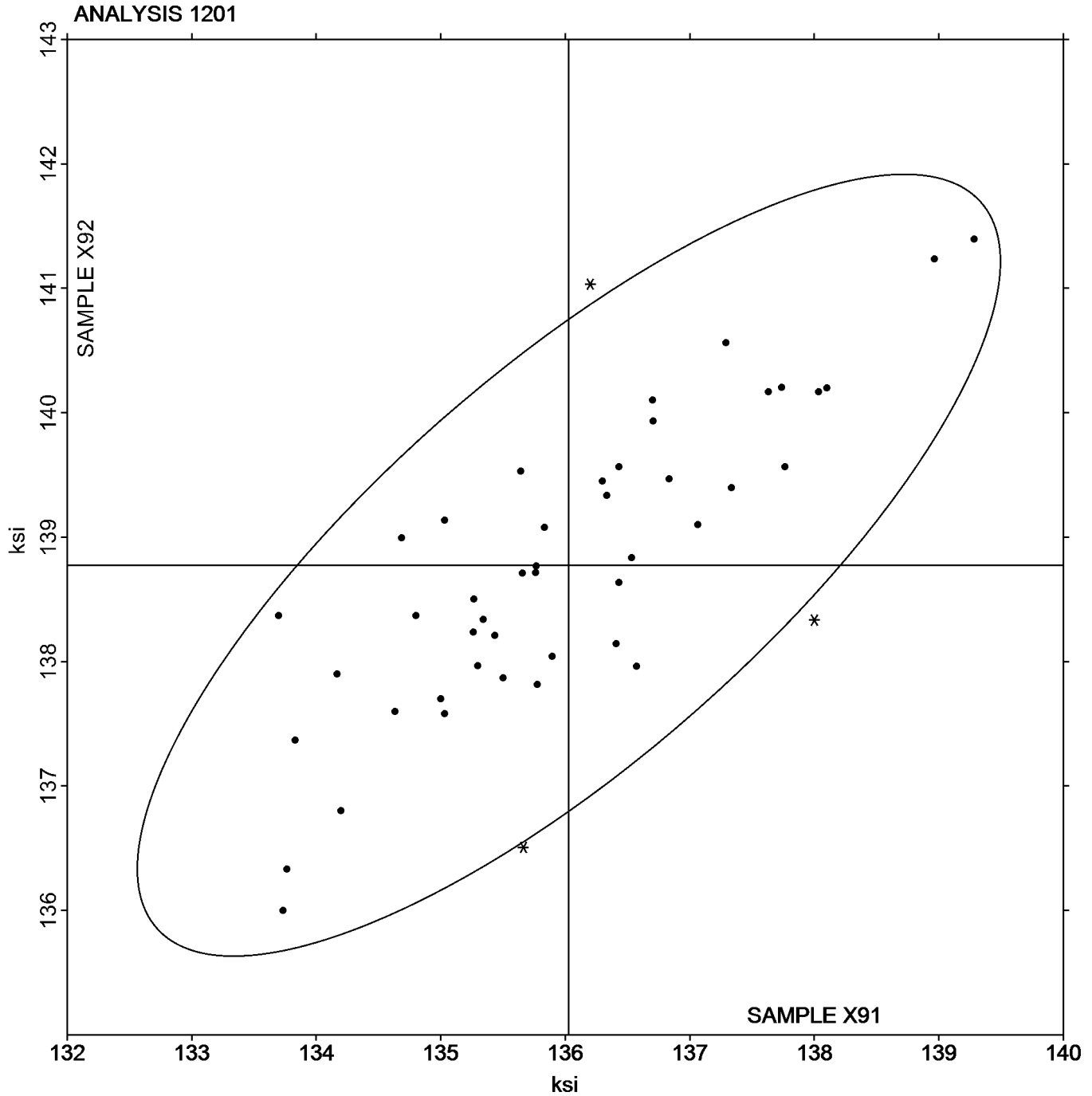
Fastener Wedge Tensile (10 degree)
ASTM F606

SAMPLE X91

SAMPLE X92

136.03 ksi

138.77 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1202

2nd Qtr
2023

Fastener Axial Tensile ASTM F606

WebCode	Data Flag	Sample Q91			Sample Q92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2GC8KW	X	10,675	10,538.78	6,751.01	10,880	10,741.09	6,729.49
2NTC2F		135.83	-0.72	-0.46	138.20	-1.04	-0.65
2RWEJK		135.60	-0.96	-0.61	138.43	-0.81	-0.51
4L29VA		135.31	-1.25	-0.80	139.15	-0.09	-0.05
6QC7T2		133.23	-3.32	-2.13	137.06	-2.18	-1.37
724NU7		136.93	0.38	0.24	138.77	-0.47	-0.30
7Q8V6F		136.81	0.25	0.16	140.45	1.21	0.76
7ZFBCN		137.01	0.45	0.29	139.51	0.27	0.17
8JFKDA		136.83	0.28	0.18	139.23	-0.01	0.00
92ZCCA		135.93	-0.62	-0.40	138.90	-0.34	-0.21
A7NDXK		135.63	-0.92	-0.59	138.50	-0.74	-0.46
A9FWRD		136.33	-0.22	-0.14	138.67	-0.57	-0.36
AFEY2X		136.46	-0.10	-0.06	139.10	-0.14	-0.09
AMXPGK		137.07	0.51	0.33	139.52	0.28	0.18
B73ME8	X	150.37	13.81	8.85	152.53	13.29	8.33
BCPAUP	X	149.70	13.14	8.42	153.10	13.86	8.68
BJQXH4		137.26	0.71	0.45	138.90	-0.34	-0.21
BUQG2J	*	138.85	2.30	1.47	143.42	4.18	2.62
BYJLT3		134.67	-1.89	-1.21	137.33	-1.91	-1.19
C8DLUT		138.77	2.21	1.42	140.33	1.09	0.68
CB9D2Q		138.02	1.46	0.94	140.43	1.19	0.75
CHDG6Q		135.20	-1.35	-0.87	137.74	-1.50	-0.94
CLFH89		133.83	-2.72	-1.74	135.67	-3.57	-2.24
D8P8X9	*	139.01	2.46	1.57	143.42	4.18	2.62
DCM23G		137.56	1.01	0.65	141.23	1.99	1.25
DERR46		136.53	-0.03	-0.02	140.78	1.54	0.97
DULECH	X	93.78	-42.78	-27.40	95.37	-43.87	-27.49
E6Y7QY		135.23	-1.32	-0.85	138.83	-0.41	-0.26
EJY6EV		136.67	0.11	0.07	137.33	-1.91	-1.19
EKBCQH		137.44	0.89	0.57	140.17	0.93	0.58
FQUYXT		136.47	-0.09	-0.06	138.57	-0.67	-0.42
FT3EKL		134.24	-2.31	-1.48	137.74	-1.50	-0.94
HJ6YVK		137.33	0.78	0.50	138.77	-0.47	-0.30
HQ88ZR		137.37	0.81	0.52	139.27	0.03	0.02
JKV7A2		135.01	-1.55	-0.99	137.94	-1.30	-0.81
JNVH3F	*	140.67	4.11	2.63	142.00	2.76	1.73
JPMDRA		134.99	-1.57	-1.00	136.57	-2.67	-1.67
KBPNB4		134.66	-1.90	-1.21	139.20	-0.04	-0.03
LPHK6L	*	140.91	4.36	2.79	142.41	3.17	1.99
LZ4CJ4	*	138.23	1.68	1.07	143.20	3.96	2.48
MJ7ELK		136.47	-0.09	-0.06	138.49	-0.75	-0.47
NZC9ZT		136.22	-0.34	-0.22	139.36	0.11	0.07
P6HP29		137.87	1.31	0.84	139.97	0.73	0.45
PBQKV3		138.24	1.68	1.08	140.81	1.57	0.99
RZJCWM	X	143.31	6.76	4.33	144.30	5.06	3.17
RZVLRL		136.67	0.11	0.07	139.00	-0.24	-0.15
U3HAHY		135.10	-1.46	-0.93	138.67	-0.57	-0.36



Fasteners and Metals Interlaboratory Testing Program
Analysis 1202
Fastener Axial Tensile
ASTM F606

Cycle 142
2nd Qtr
2023

WebCode	Data Flag	Sample Q91			Sample Q92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
U63QKX		136.20	-0.36	-0.23	138.50	-0.74	-0.46
UJ9KCA		135.50	-1.06	-0.68	138.10	-1.14	-0.71
URHJYD	X	142.04	5.49	3.52	142.23	2.99	1.87
V3CPDN		138.57	2.01	1.29	140.30	1.06	0.66
VCLGHC		135.20	-1.36	-0.87	137.75	-1.49	-0.94
VZ7YWF	*	134.47	-2.09	-1.34	139.60	0.36	0.23
WHMFNF	X	112.04	-24.52	-15.70	113.49	-25.75	-16.13
XEFGN7		136.07	-0.48	-0.31	138.54	-0.70	-0.44
XNK2VL		136.77	0.21	0.14	139.53	0.29	0.18
Y7ZQMR		136.83	0.28	0.18	138.43	-0.81	-0.51
YBGXBR		137.34	0.79	0.50	140.34	1.10	0.69
YCBBNQ		135.33	-1.22	-0.78	137.80	-1.44	-0.90
YQ73EE		138.53	1.98	1.27	139.63	0.39	0.25
YUCYD6		135.93	-0.62	-0.40	138.67	-0.57	-0.36
ZCPV9N		135.33	-1.22	-0.78	138.00	-1.24	-0.78

Summary Statistics

	Sample Q91		Sample Q92	
Grand Means	136.56	ksi	139.24	ksi
Std Dev Btwn Labs	1.56	ksi	1.60	ksi

Samples Q91, Q92 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 55 of 62 reporting participants

Comments on Assigned Data Flags for Test #1202

- 2GC8KW (X) - Extreme data.
- B73ME8 (X) - Data for both samples are high. Possible Systematic Error.
- BCPAUP (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample Q92.
- DULECH (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample Q91.
- RZJCWM (X) - Data for both samples are high. Possible Systematic Error.
- URHJYD (X) - Data for sample Q91 are high.
- WHMFNF (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1202

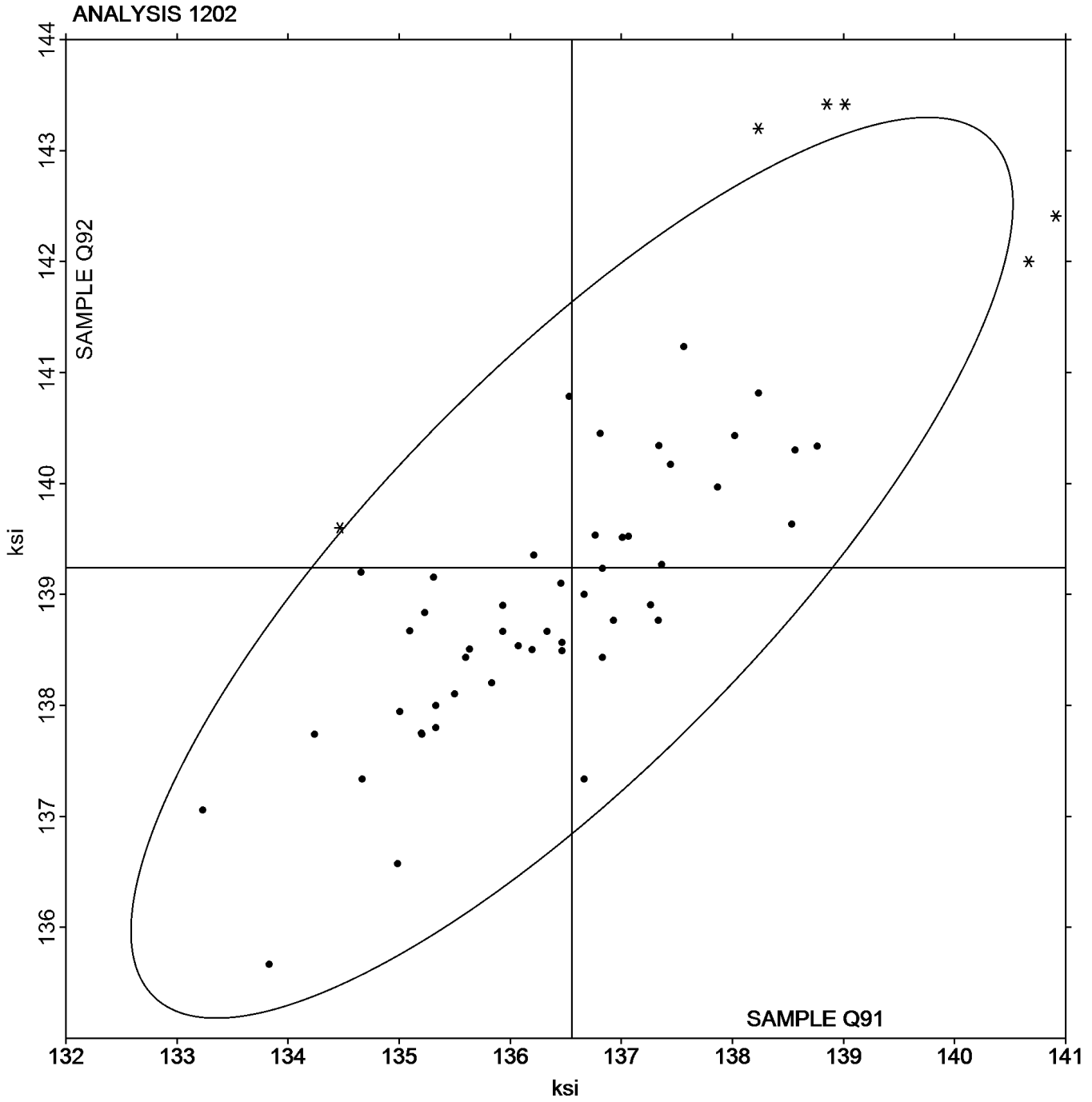
Fastener Axial Tensile
ASTM F606

SAMPLE Q91

SAMPLE Q92

136.56 ksi

139.24 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1203

2nd Qtr
2023

Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

WebCode	Data Flag	Sample B91			Sample B92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3FYUFY		1,107	4	0.15	1,101	3	0.24
4RNLPM		1,091	-12	-0.43	1,084	-13	-0.89
4TJTK8		1,080	-23	-0.85	1,096	-1	-0.06
7L9KAF		1,082	-21	-0.76	1,086	-11	-0.75
7ZUWLQ		1,090	-13	-0.47	1,102	5	0.32
88PYM2		1,112	10	0.35	1,095	-2	-0.15
8U22FC		1,093	-10	-0.37	1,091	-7	-0.45
92EZDZ		1,127	24	0.88	1,107	9	0.65
9MX39Z		1,091	-11	-0.42	1,086	-11	-0.75
9QTTEB		1,122	19	0.69	1,096	-2	-0.11
AFEY2X		1,100	-3	-0.10	1,100	3	0.19
BTDWAA		1,089	-14	-0.51	1,104	7	0.49
HJ6YVK		1,098	-4	-0.16	1,108	11	0.74
J3BFA3		1,147	44	1.61	1,101	4	0.24
JGDL8Y		1,095	-7	-0.27	1,100	2	0.17
JRU9HK		1,086	-17	-0.62	1,106	9	0.61
KQXC7W		1,103	0	0.00	1,076	-21	-1.47
LGLDCK	*	1,077	-26	-0.96	1,061	-36	-2.50
MG4ELN		1,078	-25	-0.91	1,094	-3	-0.20
NWQL86		1,092	-11	-0.41	1,098	0	0.03
PLPHFG		1,097	-6	-0.20	1,100	2	0.16
RKN67T		1,090	-12	-0.46	1,078	-19	-1.31
WFKHDM	*	1,190	88	3.21	1,125	28	1.92
X3M3HH	*	1,164	61	2.24	1,135	38	2.63
YBZA8		1,084	-18	-0.68	1,102	5	0.35
YCBBNQ		1,088	-15	-0.55	1,096	-2	-0.11

Summary Statistics

	Sample B91		Sample B92	
Grand Means	1,103	MPa	1,097	MPa
Stnd Dev Btw Labs	27	MPa	14	MPa

Samples B91, B92 : M-10x1.5x70, M-10x1.5x70

Statistics based on 26 of 26 reporting participants



Analysis 1203

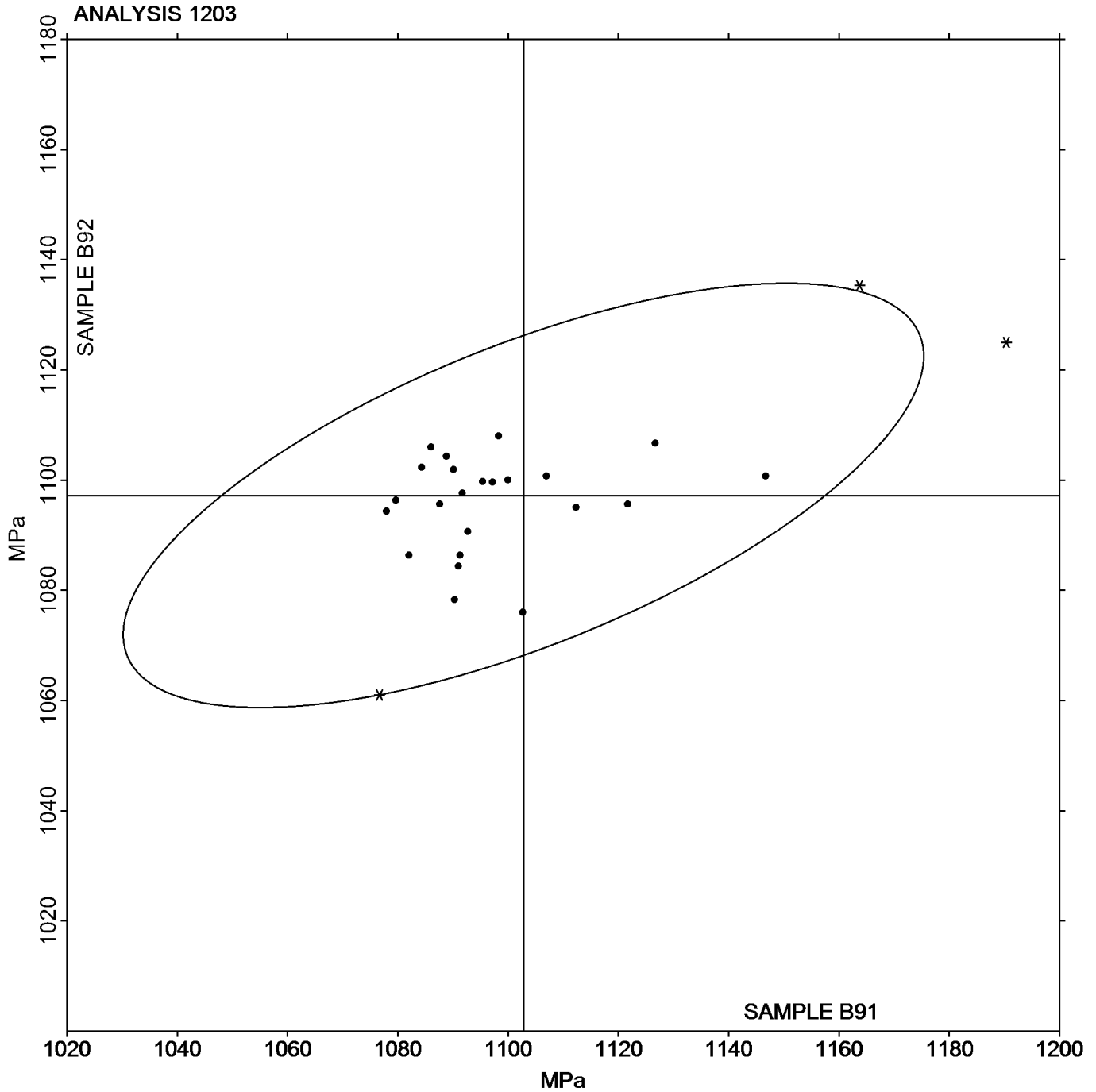
Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

SAMPLE B91

SAMPLE B92

1,103 MPa

1,097 MPa





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1204

**2nd Qtr
2023**

**Fastener Axial Tensile - Metric
ASTM F606M**

WebCode	Data Flag	Sample T91			Sample T92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
34KZ3L		1,089	-8	-0.54	1,079	-19	-1.02
39Z9QK		1,119	22	1.51	1,115	17	0.88
4RNLPM		1,093	-4	-0.29	1,085	-13	-0.71
64D6GX	*	1,057	-40	-2.74	1,071	-27	-1.44
92EZDZ		1,100	3	0.21	1,103	5	0.27
92ZCCA		1,085	-12	-0.80	1,093	-5	-0.25
9QTTEB		1,093	-4	-0.29	1,097	-1	-0.08
AFEY2X		1,093	-4	-0.27	1,115	17	0.89
J3BFA3		1,122	25	1.73	1,146	48	2.51
LJTVBG		1,100	3	0.23	1,095	-3	-0.17
NWQL86		1,097	0	0.03	1,089	-9	-0.46
PLPHFG		1,092	-4	-0.30	1,095	-3	-0.17
RKN67T		1,088	-9	-0.59	1,074	-24	-1.25
RXCUXR		1,101	4	0.26	1,116	18	0.92
U8B78Q	X	795.67	-301	-20.69	771.33	-327	-17.16
UZBRK4		1,109	12	0.81	1,092	-6	-0.34
VCLGHC		1,095	-2	-0.15	1,089	-9	-0.48
WVCCMR		1,112	15	1.04	1,092	-6	-0.34
X3M3HH		1,117	20	1.39	1,136	38	1.99
YBZAZ8		1,088	-9	-0.59	1,092	-6	-0.31
YCBBNQ		1,088	-9	-0.64	1,090	-8	-0.45

Summary Statistics

	Sample T91		Sample T92	
Grand Means	1,097	MPa	1,098	MPa
Std Dev Btwn Labs	15	MPa	19	MPa

Samples T91, T92 : M-10x1.5x70, M-10x1.5x70

Statistics based on 20 of 21 reporting participants

Comments on Assigned Data Flags for Test #1204

U8B78Q (X) - Data for both samples are low.



Analysis 1204

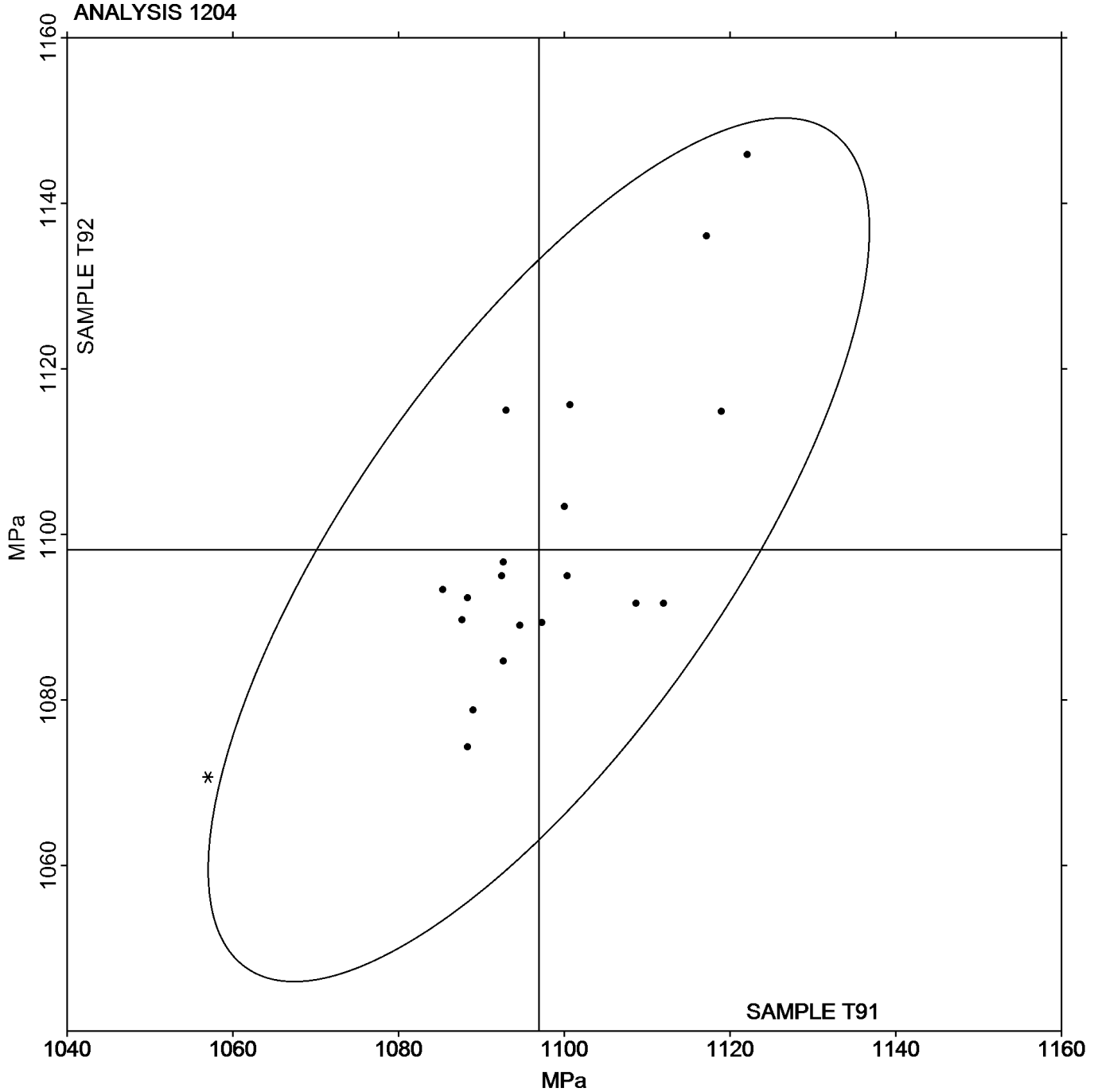
Fastener Axial Tensile - Metric
ASTM F606M

SAMPLE T91

1,097 MPa

SAMPLE T92

1,098 MPa





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1210

2nd Qtr
2023

Rockwell Hardness: Externally Threaded Fasteners ASTM F606/F606M AND ASTM E18

WebCode	Data Flag	Sample G91			Sample G92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2GC8KW	X	34.61	-1.31	-2.09	31.09	-5.39	-9.60
2M3GUU		35.58	-0.34	-0.55	36.61	0.13	0.23
3FYUFY		35.72	-0.20	-0.32	36.48	0.00	0.00
4RNLPM		35.77	-0.15	-0.24	36.73	0.24	0.43
64D6GX		35.41	-0.51	-0.81	35.36	-1.12	-2.00
698Y EY		36.49	0.57	0.91	36.79	0.31	0.55
724NU7		35.62	-0.30	-0.48	36.46	-0.02	-0.04
72MURC		36.27	0.35	0.56	36.98	0.49	0.88
7L9KAF		35.59	-0.32	-0.52	36.41	-0.08	-0.14
8U22FC		35.55	-0.37	-0.59	36.51	0.03	0.05
9MX39Z	*	34.66	-1.26	-2.01	34.93	-1.56	-2.78
9QTTEB		36.12	0.20	0.32	36.31	-0.18	-0.32
9ZK8HH		36.34	0.43	0.68	37.07	0.58	1.04
A7NDXK		36.52	0.60	0.96	37.43	0.94	1.68
AFEY2X		36.97	1.05	1.68	37.01	0.52	0.93
AN7774		35.99	0.08	0.12	36.43	-0.05	-0.09
B73ME8		35.95	0.03	0.04	36.66	0.17	0.31
BCPAUP		36.84	0.92	1.47	36.49	0.00	0.01
BJQXH4		36.24	0.33	0.52	36.60	0.12	0.21
C8DLUT		36.29	0.38	0.60	36.48	0.00	0.00
CB9D2Q	X	34.11	-1.81	-2.88	34.26	-2.23	-3.97
CHDG6Q		36.20	0.28	0.44	36.38	-0.10	-0.18
DCM23G		35.99	0.07	0.11	36.78	0.30	0.53
DERR46		35.81	-0.11	-0.18	35.71	-0.77	-1.37
DGXCTQ		37.16	1.24	1.98	37.11	0.63	1.12
EKBCQH	*	34.35	-1.56	-2.50	36.25	-0.24	-0.42
FPKGTN		36.59	0.67	1.07	35.86	-0.62	-1.11
FQUYXT		35.75	-0.17	-0.27	35.31	-1.17	-2.09
GXNJFE		35.09	-0.82	-1.32	36.15	-0.33	-0.59
HJ6YVK		35.46	-0.46	-0.73	36.14	-0.35	-0.62
HQ88ZR		35.33	-0.59	-0.95	36.82	0.33	0.60
J3BFA3		36.61	0.69	1.11	37.55	1.07	1.90
JGDL8Y		35.91	-0.01	-0.02	36.22	-0.27	-0.47
KCEMAE		36.59	0.67	1.07	37.41	0.93	1.65
KQXC7W		36.15	0.23	0.37	37.34	0.86	1.53
LJTVBG	*	37.86	1.94	3.10	37.89	1.41	2.51
NZC9ZT		35.44	-0.48	-0.77	36.32	-0.17	-0.29
PLPHFG		36.21	0.29	0.47	36.69	0.20	0.36
RKN67T		35.51	-0.41	-0.66	36.44	-0.05	-0.08
RZJCWM	X	34.26	-1.65	-2.64	33.86	-2.62	-4.67
T69LPD		35.69	-0.22	-0.36	36.31	-0.18	-0.32
U63QKX		36.13	0.21	0.34	35.99	-0.49	-0.87
UD2NJG		35.98	0.06	0.10	37.01	0.53	0.94
URHJYD		35.91	-0.01	-0.01	36.71	0.22	0.40
UZ9WKB		35.44	-0.47	-0.76	35.76	-0.73	-1.30
V3CPDN		35.33	-0.59	-0.94	36.22	-0.27	-0.47
XNK2VL		36.39	0.48	0.76	36.78	0.29	0.52



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1210

2nd Qtr
2023

Rockwell Hardness: Externally Threaded Fasteners ASTM F606/F606M AND ASTM E18

WebCode	Data Flag	Sample G91			Sample G92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Y7ZQMR		35.46	-0.46	-0.73	36.29	-0.19	-0.34
YBGXBR		36.21	0.29	0.47	36.39	-0.09	-0.16
YCBBNQ		34.75	-1.17	-1.87	36.17	-0.32	-0.56
YHFKZ7		35.39	-0.53	-0.85	36.19	-0.29	-0.52
YQ73EE	X	34.19	-1.73	-2.76	32.94	-3.55	-6.32
YTTY39		35.88	-0.04	-0.07	35.88	-0.61	-1.08
Z2JMBF		35.58	-0.34	-0.54	36.61	0.13	0.23
ZRHPHU		35.75	-0.17	-0.27	36.27	-0.22	-0.38

Summary Statistics

	Sample G91		Sample G92	
Grand Means	35.92	HRC	36.48	HRC
Stnd Dev Brwn Labs	0.63	HRC	0.56	HRC

Samples G91, G92 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 51 of 55 reporting participants

Comments on Assigned Data Flags for Test #1210

- 2GC8KW (X) - Data for sample G92 are low. Inconsistent within the determinations of both samples.
- CB9D2Q (X) - Data for both samples are low.
- RZJCWM (X) - Data for sample G92 are low. Inconsistent within the determinations of sample G92.
- YQ73EE (X) - Data for both samples are low. Inconsistent within the determinations of both samples.



Analysis 1210

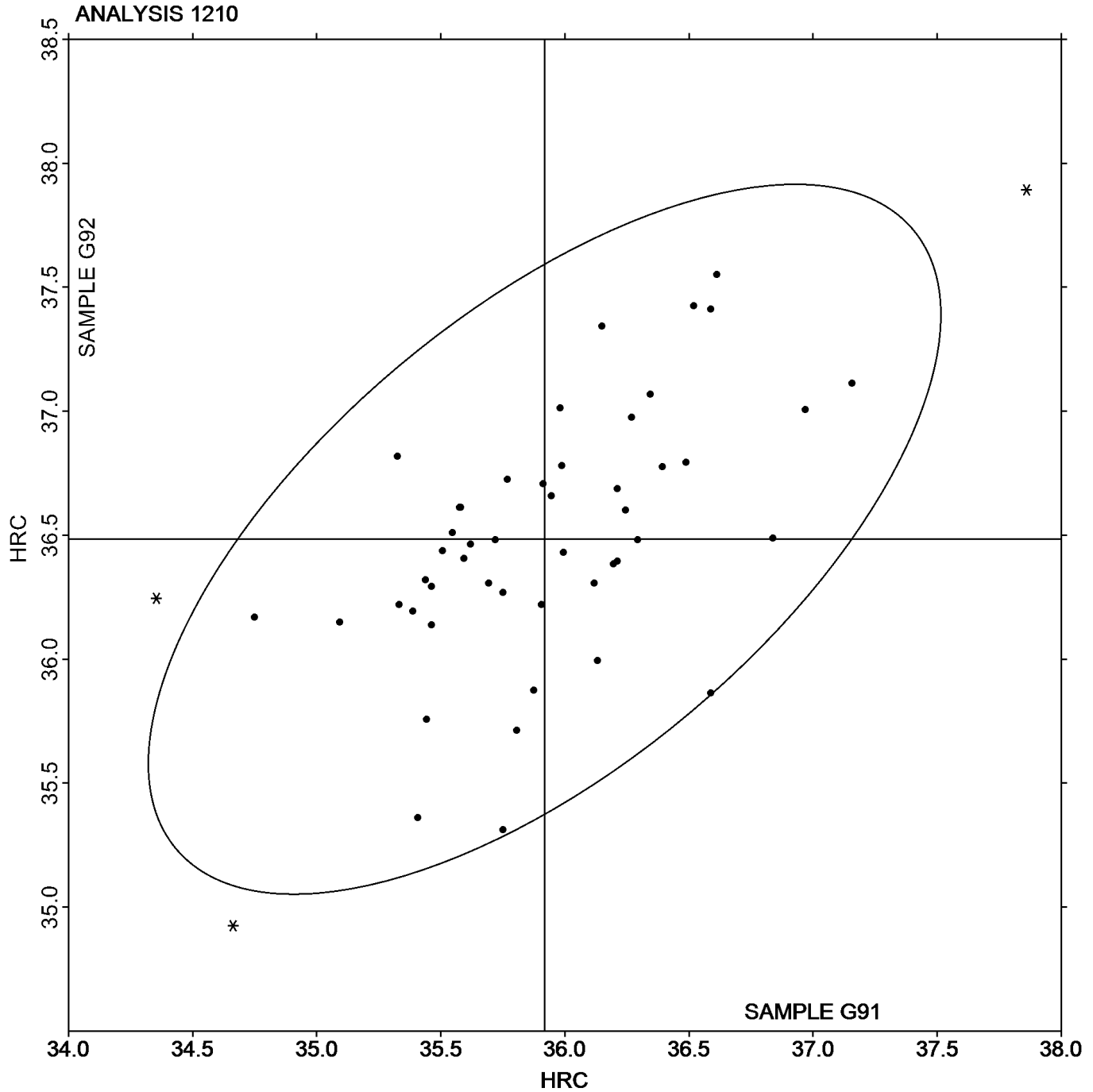
Rockwell Hardness: Externally Threaded Fasteners
ASTM F606/F606M AND ASTM E18

SAMPLE G91

SAMPLE G92

35.92 HRC

36.48 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1211

2nd Qtr
2023

Vickers Hardness: Externally Threaded Fasteners ASTM E92

WebCode	Data Flag	Sample V91			Sample V92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4RNLPM		354.73	1.26	0.20	361.01	1.20	0.14
4TJTK8		356.75	3.28	0.53	360.63	0.81	0.10
6QC7T2		350.10	-3.37	-0.55	361.08	1.26	0.15
7ZUWLQ		342.38	-11.09	-1.80	350.94	-8.88	-1.07
92EZDZ		358.13	4.66	0.75	375.69	15.87	1.91
AN7774	*	337.30	-16.17	-2.62	338.76	-21.06	-2.53
B73ME8		362.88	9.41	1.52	372.13	12.31	1.48
BJQXH4		354.38	0.91	0.15	358.19	-1.63	-0.20
DCM23G		353.50	0.03	0.01	361.75	1.93	0.23
DGXCTQ		358.56	5.10	0.83	369.63	9.81	1.18
J3BFA3		357.54	4.07	0.66	357.78	-2.04	-0.25
JPMDRA		357.71	4.24	0.69	372.77	12.95	1.56
KCEMAE		353.28	-0.19	-0.03	364.11	4.30	0.52
LGLDCK		353.38	-0.09	-0.01	359.50	-0.32	-0.04
PLPHFG		350.25	-3.22	-0.52	354.38	-5.44	-0.65
RKN67T		352.69	-0.78	-0.13	357.88	-1.94	-0.23
T69LPD	*	361.98	8.51	1.38	351.98	-7.84	-0.94
V3CPDN		351.94	-1.53	-0.25	361.75	1.93	0.23
Y3MPP2		350.63	-2.84	-0.46	354.00	-5.82	-0.70
YBZA8		355.81	2.35	0.38	360.06	0.25	0.03
ZC8THF		343.78	-9.69	-1.57	350.21	-9.61	-1.16
ZRHPHU		358.63	5.16	0.84	361.75	1.93	0.23

Summary Statistics

	<u>Sample V91</u>		<u>Sample V92</u>	
Grand Means	353.47	HV	359.82	HV
Stnd Dev Btwn Labs	6.17	HV	8.31	HV

Samples V91, V92 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 22 of 22 reporting participants



Analysis 1211

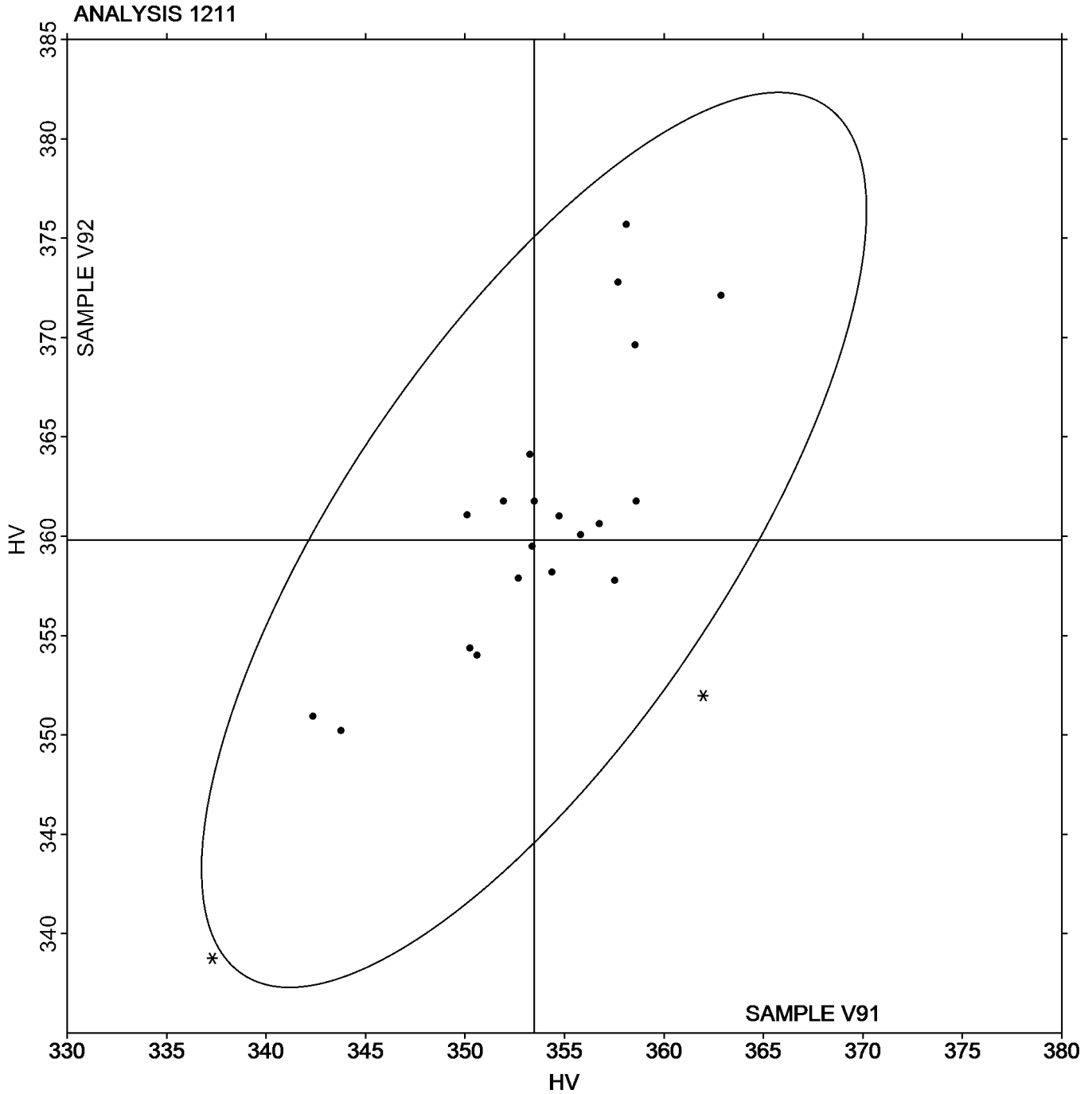
Vickers Hardness: Externally Threaded Fasteners
ASTM E92

SAMPLE V91

SAMPLE V92

353.47 HV

359.82 HV





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1220

2nd Qtr
2023

Fastener Double Shear NASM 1312-13

WebCode	Data Flag	Sample Z91			Sample Z92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2GC8KW		18,997	348	0.45	19,466	312	0.36
A7NDXK		18,972	323	0.42	19,672	518	0.60
B73ME8		18,448	-201	-0.26	19,046	-107	-0.12
C8DLUT		18,451	-199	-0.26	18,989	-165	-0.19
EKBCQH		18,623	-26	-0.03	19,160	7	0.01
F9A9YT		17,833	-816	-1.05	18,133	-1,020	-1.18
HQ88ZR		18,272	-378	-0.49	18,647	-507	-0.58
KQXC7W	*	20,925	2,276	2.93	21,819	2,665	3.07
LZ4CJ4		18,617	-33	-0.04	19,188	35	0.04
TVHZKZ		17,992	-657	-0.85	18,208	-946	-1.09
URHJYD		17,981	-669	-0.86	18,723	-430	-0.50
V3CPDN		18,487	-163	-0.21	18,826	-327	-0.38
WVCCMR		18,333	-316	-0.41	18,961	-193	-0.22
XNK2VL		18,187	-463	-0.59	18,730	-424	-0.49
YBGXBR		19,623	973	1.25	19,731	578	0.67

Summary Statistics

	Sample Z91		Sample Z92	
Grand Means	18,650	1b	19,153	1b
Stnd Dev Btwn Labs	777	1b	868	1b

Samples Z91, Z92 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 15 of 15 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1301

2nd Qtr
2023

Rockwell Hardness: C & B Scales
ASTM E18

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2NTC2F		61.26	-0.57	-1.62	54.02	-0.52	-1.31
3GQX6Z		61.60	-0.23	-0.66	54.50	-0.04	-0.09
3XE4GZ		62.20	0.37	1.03	55.00	0.46	1.18
4JTNXD	X	60.57	-1.27	-3.58	54.77	0.24	0.60
4VAXGK		62.28	0.45	1.26	54.80	0.26	0.67
4YQ6W8	X	61.92	0.09	0.24	55.68	1.14	2.90
6H2CRZ		62.40	0.57	1.60	55.20	0.66	1.68
6QC7T2		61.74	-0.09	-0.26	54.34	-0.20	-0.50
7BBJWC		61.78	-0.05	-0.15	54.62	0.08	0.21
7VKGC2		61.34	-0.49	-1.39	54.00	-0.54	-1.36
826YAA		61.44	-0.39	-1.11	53.98	-0.56	-1.41
8JJFC3		62.04	0.21	0.58	54.56	0.02	0.06
8U2PMU		61.82	-0.01	-0.04	54.44	-0.10	-0.24
9MZZWX	X	62.74	0.91	2.56	61.64	7.10	18.01
9T37CZ		61.86	0.03	0.08	54.40	-0.13	-0.34
AFEY2X		62.50	0.67	1.88	55.16	0.62	1.58
B2BFWY	*	61.08	-0.75	-2.13	54.44	-0.10	-0.24
BBVVG T		61.42	-0.41	-1.17	54.20	-0.34	-0.85
BCUUZ2		62.34	0.51	1.43	54.70	0.16	0.42
BLF3H3		61.80	-0.03	-0.09	54.50	-0.04	-0.09
BQT3EU	X	62.52	0.69	1.94	54.32	-0.22	-0.55
BUQG2J		62.16	0.33	0.92	54.64	0.10	0.26
BYDTR		62.20	0.37	1.03	55.00	0.46	1.18
BZBPH4		62.36	0.53	1.49	54.98	0.44	1.13
CB9D2Q	*	61.66	-0.17	-0.49	53.68	-0.86	-2.17
CLCVQU		61.26	-0.57	-1.62	54.18	-0.36	-0.90
D3D3H2		61.28	-0.55	-1.56	53.72	-0.82	-2.07
D49PV6		61.76	-0.07	-0.21	54.44	-0.10	-0.24
DERR46		62.30	0.47	1.32	54.34	-0.20	-0.50
DPMZQE		61.88	0.05	0.13	54.86	0.32	0.82
DW9KML	X	62.10	0.27	0.75	56.52	1.98	5.03
DWPEMW	*	60.96	-0.87	-2.47	53.64	-0.90	-2.27
E4NJU7	*	62.40	0.57	1.60	54.44	-0.10	-0.24
EATVXB		61.50	-0.33	-0.94	54.32	-0.22	-0.55
EHQRYF		61.54	-0.29	-0.83	54.20	-0.34	-0.85
EKQ23P		61.92	0.09	0.24	54.74	0.20	0.52
EMWYJ6		61.34	-0.49	-1.39	53.96	-0.58	-1.46
F7TBMJ		62.42	0.59	1.66	54.66	0.12	0.31
F9A9YT	X	61.48	-0.35	-1.00	55.66	1.12	2.85
FAKKN6		61.94	0.11	0.30	54.80	0.26	0.67
FHEFET		61.74	-0.09	-0.26	54.22	-0.32	-0.80
FPKGTN		62.08	0.25	0.70	55.32	0.78	1.99
G9TYEE	X	63.16	1.33	3.75	55.42	0.88	2.24
GCA83D		61.84	0.01	0.02	54.76	0.22	0.57
GCA YHD		62.06	0.23	0.64	55.10	0.56	1.43
GF9AED		62.50	0.67	1.88	55.22	0.68	1.73
GGLMJA	*	61.90	0.07	0.19	55.36	0.82	2.09



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1301

2nd Qtr
2023

Rockwell Hardness: C & B Scales
ASTM E18

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GR6NRC		61.64	-0.20	-0.55	54.30	-0.23	-0.59
H7HJHR		61.86	0.03	0.07	54.88	0.34	0.87
HJKK6M		61.26	-0.57	-1.62	53.90	-0.64	-1.61
HM43FY	X	59.54	-2.29	-6.48	52.50	-2.04	-5.16
HNZTTL		61.98	0.15	0.41	55.04	0.50	1.28
JB7HCD		61.98	0.15	0.41	54.94	0.40	1.02
JDYE28	X	61.27	-0.57	-1.60	118.20	63.66	161.44
JKV7A2		61.64	-0.19	-0.55	53.94	-0.60	-1.51
JP9RFM	X	61.62	-0.21	-0.60	55.98	1.44	3.66
JPMDRA		61.76	-0.07	-0.21	54.62	0.08	0.21
JRU9HK		61.92	0.09	0.24	54.24	-0.30	-0.75
JVFD9Q		61.96	0.13	0.36	55.02	0.48	1.23
K7QBNE	X	60.26	-1.57	-4.44	54.80	0.26	0.67
KBPNB4		62.22	0.39	1.09	55.06	0.52	1.33
KKAVAT		61.62	-0.21	-0.60	54.90	0.36	0.92
KLJ39F		61.25	-0.58	-1.64	54.22	-0.32	-0.80
KPL4BX		61.86	0.03	0.07	54.62	0.08	0.21
KQXC7W		61.94	0.11	0.30	54.40	-0.14	-0.35
KTMG4A	X	61.64	-0.19	-0.55	56.84	2.30	5.84
KUUWBF		62.02	0.19	0.53	54.22	-0.32	-0.80
KWHVJR		61.90	0.07	0.19	54.60	0.06	0.16
LFCXWL		61.54	-0.29	-0.83	54.18	-0.36	-0.90
LNQPFR		62.28	0.45	1.26	54.64	0.10	0.26
LZ4CJ4		61.00	-0.83	-2.35	54.00	-0.54	-1.36
MHW376		62.02	0.19	0.53	54.68	0.14	0.36
NU73F3		61.90	0.07	0.19	54.20	-0.34	-0.85
P6HP29		62.14	0.31	0.87	54.98	0.44	1.13
PNXX3A		61.56	-0.27	-0.77	54.26	-0.28	-0.70
PT8ECX		62.14	0.31	0.87	54.72	0.18	0.47
PXMLZX		61.68	-0.15	-0.43	54.40	-0.14	-0.35
Q6XZ37		61.74	-0.09	-0.26	54.54	0.00	0.01
Q7NTT3		62.18	0.35	0.98	54.98	0.44	1.13
QBNM6L	X	59.62	-2.21	-6.25	53.78	-0.76	-1.92
QGABRG		61.68	-0.15	-0.43	54.28	-0.26	-0.65
QHNW44		61.50	-0.33	-0.94	54.42	-0.12	-0.30
QT3QGH		61.74	-0.09	-0.26	54.60	0.06	0.16
QYP4BX	X	60.73	-1.10	-3.11	120.73	66.20	167.86
RCD3KT		62.04	0.21	0.58	55.14	0.60	1.53
T69LPD		61.96	0.13	0.36	54.92	0.38	0.97
T8XH7Y	X	61.70	-0.13	-0.38	56.58	2.04	5.18
TF9C9Y	X	61.98	0.15	0.41	55.96	1.42	3.61
TGJNWB	X	62.16	0.33	0.92	57.42	2.88	7.31
TK2G24		61.50	-0.33	-0.94	54.14	-0.40	-1.01
UJ7K62		62.52	0.69	1.94	55.02	0.48	1.23
UJ9KCA		62.12	0.29	0.81	54.94	0.40	1.02
UJN4W8		62.00	0.17	0.47	54.26	-0.27	-0.70
UKYHBM	X	60.00	-1.83	-5.18	54.20	-0.34	-0.85



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1301

2nd Qtr
2023

Rockwell Hardness: C & B Scales
ASTM E18

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
UNEQYM		61.30	-0.53	-1.51	53.94	-0.60	-1.51
V7CZ9N		61.40	-0.43	-1.22	54.34	-0.20	-0.50
VCLGHC		61.50	-0.33	-0.94	54.36	-0.18	-0.45
VNWR8M		61.62	-0.21	-0.60	54.72	0.18	0.47
WAT83N		62.00	0.17	0.47	54.90	0.36	0.92
WCYX4C		62.28	0.45	1.26	54.68	0.14	0.36
WUYMKF		61.81	-0.02	-0.06	54.12	-0.41	-1.05
X847VF		61.92	0.09	0.24	54.18	-0.36	-0.90
XEFGN7		61.82	-0.01	-0.04	54.76	0.22	0.57
XG8DDZ		61.74	-0.09	-0.26	54.18	-0.36	-0.90
XH2BHL	X	61.70	-0.13	-0.38	56.78	2.24	5.69
XNK2VL		61.80	-0.03	-0.09	54.82	0.28	0.72
XNMNCZ		62.02	0.19	0.53	54.56	0.02	0.06
XQW4YT	X	61.80	-0.03	-0.09	51.74	-2.80	-7.09
YCBBNQ		61.78	-0.05	-0.15	54.32	-0.22	-0.55
YJ8GNZ	X	62.50	0.67	1.88	56.74	2.20	5.59
YQT2K9		62.08	0.25	0.70	54.74	0.20	0.52
Z63CLZ	X	61.34	-0.49	-1.39	43.44	-11.10	-28.14
ZGHYY8	X	62.12	0.29	0.81	55.70	1.16	2.95

Summary Statistics

	Sample E91		Sample E92	
Grand Means	61.83	HRC	54.54	HRC
Stnd Dev Btwn Labs	0.35	HRC	0.39	HRC

Samples E91, E92 : Steel, Steel

Statistics based on 90 of 113 reporting participants



Comments on Assigned Data Flags for Test #1301

- 4JTNXD (X) - Data for sample E91 are low.
- 4YQ6W8 (X) - Data for sample E92 are high.
- 9MZZWX (X) - Data for sample E92 are high.
- BQT3EU (X) - Inconsistent in testing between samples.
- DW9KML (X) - Data for sample E92 are high. Inconsistent within the determinations of sample E92.
- F9A9YT (X) - Data for sample E92 are high.
- G9TYEE (X) - Data for sample E91 are high. Inconsistent within the determinations of sample E92.
- HM43FY (X) - Data for both samples are low.
- JDYE28 (X) - Data sample E92 appear to be HRB rather than HRC.
- JP9RFM (X) - Data for sample E92 are high.
- K7QBNE (X) - Data for sample E91 are low.
- KTMG4A (X) - Data for sample E92 are high. Inconsistent within the determinations of sample E92.
- QBNM6L (X) - Data for sample E91 are low.
- QYP4BX (X) - Data for sample E91 are low and data for sample E92 appear to be HRB rather than HRC. Inconsistent within the determinations of both samples.
- T8XH7Y (X) - Data for sample E92 are high.
- TF9C9Y (X) - Data for sample E92 are high.
- TGJNWB (X) - Data for sample E92 are high.
- UKYHBM (X) - Data for sample E91 are low. Inconsistent within the determinations of both samples.
- XH2BHL (X) - Data for sample E92 are high. Inconsistent within the determinations of sample E92.
- XQW4YT (X) - Data for sample E92 are low. Inconsistent within the determinations of sample E92.
- YJ8GNZ (X) - Data for sample E92 are high.
- Z63CLZ (X) - Data for sample E92 are low. Inconsistent within the determinations of both samples.
- ZGHYY8 (X) - Data for sample E92 are high. Inconsistent within the determinations of sample E92.



Analysis 1301

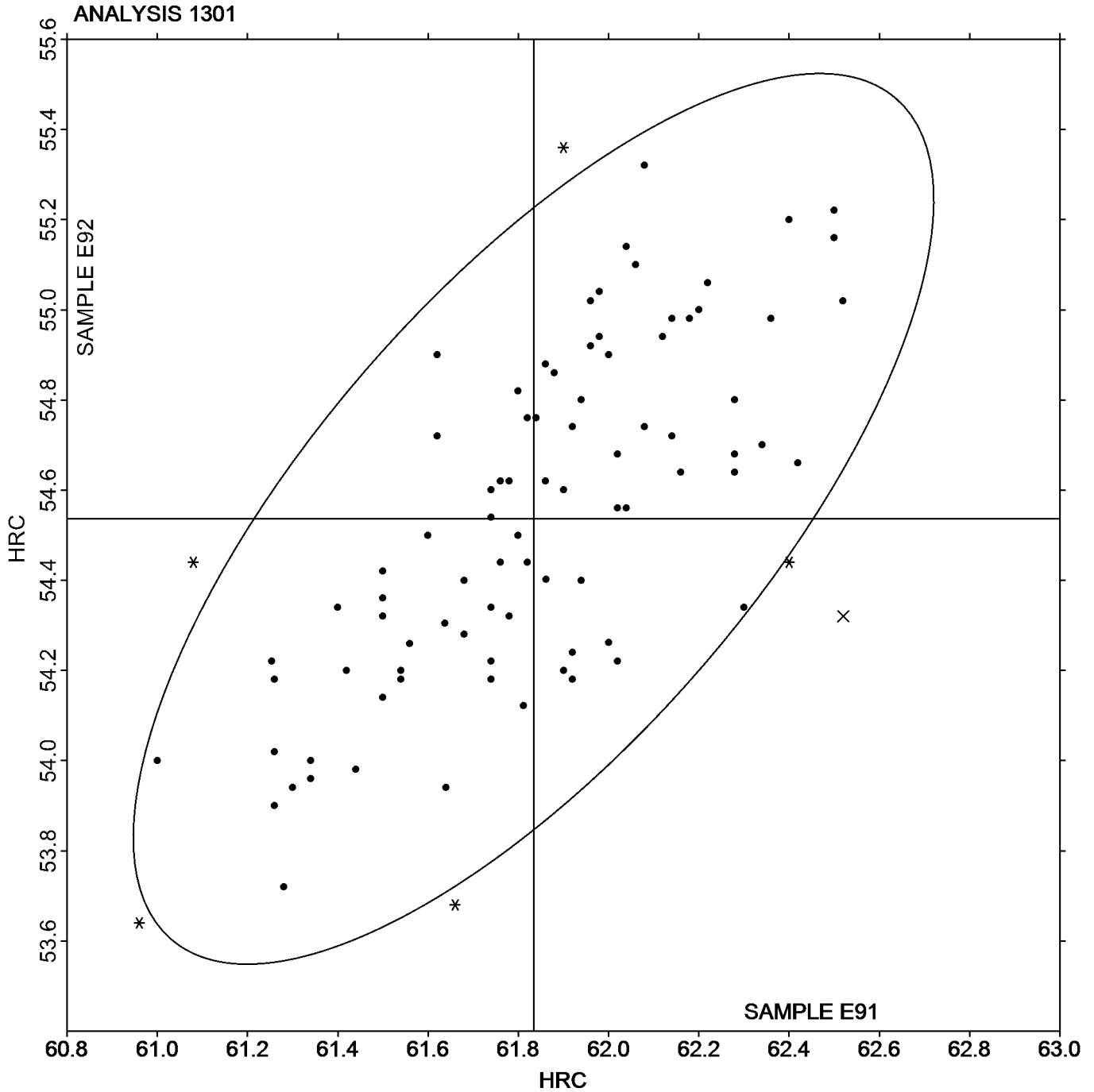
Rockwell Hardness: C & B Scales
ASTM E18

SAMPLE E91

SAMPLE E92

61.83 HRC

54.54 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1303

2nd Qtr
2023

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
26HQVV	X	61.00	-0.56	-1.23	52.80	-1.31	-3.46
3FDUJ2		60.54	-1.02	-2.23	53.32	-0.79	-2.08
3KQ7AB	*	60.70	-0.86	-1.88	54.10	-0.01	-0.02
3QGFJ9		62.00	0.44	0.96	55.00	0.89	2.37
4KB679		62.46	0.90	1.96	54.20	0.09	0.25
4YMVN8	X	54.00	-7.56	-16.53	62.00	7.89	20.93
6H2CRZ		61.84	0.28	0.61	54.32	0.21	0.57
6TD26V		61.80	0.24	0.52	54.34	0.23	0.62
87FJZ9	*	61.36	-0.20	-0.44	53.14	-0.97	-2.56
88PYM2		62.24	0.68	1.48	54.96	0.85	2.26
8JZ2TC		61.48	-0.08	-0.18	53.92	-0.19	-0.49
8VGCE6		61.66	0.10	0.21	54.24	0.13	0.35
8VTBAD		62.00	0.44	0.96	54.42	0.31	0.83
A6WH9Q		61.08	-0.48	-1.05	53.84	-0.27	-0.71
AD7AT2		61.00	-0.56	-1.23	53.76	-0.35	-0.92
AHHUKZ		61.28	-0.28	-0.62	54.20	0.09	0.25
B6CN29		61.82	0.26	0.56	54.12	0.01	0.04
BLF3H3		61.66	0.10	0.21	54.22	0.11	0.30
E9E7WJ		61.29	-0.27	-0.60	53.88	-0.23	-0.60
EE7DER		61.40	-0.16	-0.35	54.04	-0.07	-0.18
EGREXL		61.00	-0.56	-1.23	54.10	-0.01	-0.02
EK9CJA		61.30	-0.26	-0.57	54.12	0.01	0.04
FELJ8A		61.20	-0.36	-0.79	54.10	-0.01	-0.02
FQUYXT		60.60	-0.96	-2.10	53.40	-0.71	-1.87
GMAUUB		61.56	0.00	0.00	54.50	0.39	1.04
GXNJFE		61.36	-0.20	-0.44	54.16	0.05	0.14
HF6LJZ		62.40	0.84	1.83	54.88	0.77	2.05
HLC422		62.06	0.50	1.09	54.48	0.37	0.99
JNVH3F		61.68	0.12	0.26	53.74	-0.37	-0.97
JPCEX2		61.28	-0.28	-0.62	53.98	-0.13	-0.33
KCEMAE		60.94	-0.62	-1.36	54.04	-0.07	-0.18
KNB7XF		61.36	-0.20	-0.44	54.30	0.19	0.51
KYAUXP		62.00	0.44	0.96	54.68	0.57	1.52
L8YELF		61.00	-0.56	-1.23	53.46	-0.65	-1.71
LH4UKF		61.72	0.16	0.35	54.06	-0.05	-0.12
LNT8M4		61.22	-0.34	-0.75	53.94	-0.17	-0.44
M67FRW		62.07	0.51	1.11	54.67	0.56	1.49
MTDLBE	X	63.48	1.92	4.19	55.66	1.55	4.12
MV4KNC		62.16	0.60	1.31	54.14	0.03	0.09
NBRUVU		61.60	0.04	0.08	54.16	0.05	0.14
NVEEVJ		60.61	-0.96	-2.09	53.71	-0.40	-1.06
P7BM8U		61.80	0.24	0.52	53.60	-0.51	-1.34
PJ49FB		61.40	-0.16	-0.35	54.34	0.23	0.62
PX29CK		62.60	1.04	2.27	54.90	0.79	2.10
QT64VL		61.94	0.38	0.83	54.48	0.37	0.99
R7AL7K		61.56	0.00	0.00	53.86	-0.25	-0.65
RKN67T		61.39	-0.17	-0.38	54.00	-0.11	-0.28



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1303

2nd Qtr
2023

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RKNRDD		61.94	0.38	0.83	54.12	0.01	0.04
RXCUXR		62.14	0.58	1.26	54.14	0.03	0.09
RZVLRL		62.00	0.44	0.96	54.00	-0.11	-0.28
T8F9FJ		61.76	0.20	0.43	54.48	0.37	0.99
U6L3BC		61.46	-0.10	-0.22	53.98	-0.13	-0.33
UNLTT2		61.44	-0.12	-0.27	53.88	-0.23	-0.60
VBNFPM		62.14	0.58	1.26	54.32	0.21	0.57
VZ9G4Q		62.24	0.68	1.49	54.27	0.16	0.43
VZQ3K2		61.36	-0.21	-0.45	54.12	0.01	0.03
W6JYU8		61.70	0.14	0.30	54.22	0.11	0.30
W8JU7Z		61.44	-0.12	-0.27	53.62	-0.49	-1.29
WFKHDM		61.70	0.14	0.30	54.32	0.21	0.57
WHMFNF	X	91.50	29.94	65.44	84.00	29.89	79.25
X2H99D	X	60.66	-0.90	-1.97	54.44	0.33	0.89
X7RYG7		61.16	-0.40	-0.88	53.44	-0.67	-1.77
XXR724		61.26	-0.30	-0.66	53.78	-0.33	-0.86
YA3WGK		61.64	0.08	0.17	53.94	-0.17	-0.44
YEWXGE		61.24	-0.32	-0.70	54.00	-0.11	-0.28
YN6X2U		61.60	0.04	0.08	54.14	0.03	0.09
ZRHPHU		61.48	-0.08	-0.18	53.92	-0.19	-0.49
ZUNA9E		61.28	-0.28	-0.62	54.18	0.07	0.20

Summary Statistics

	Sample E91		Sample E92	
Grand Means	61.56	HRC	54.11	HRC
Std Dev Btwn Labs	0.46	HRC	0.38	HRC

Samples E91, E92 : Steel, Steel

Statistics based on 63 of 68 reporting participants

Comments on Assigned Data Flags for Test #1303

- 26HQV (X) - Data for sample E92 are low.
- 4YMVN8 (X) - Data appear to be transposed between samples.
- MTDLBE (X) - Data for both samples are high.
- WHMFNF (X) - Extreme data.
- X2H99D (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample E91.



Analysis 1303

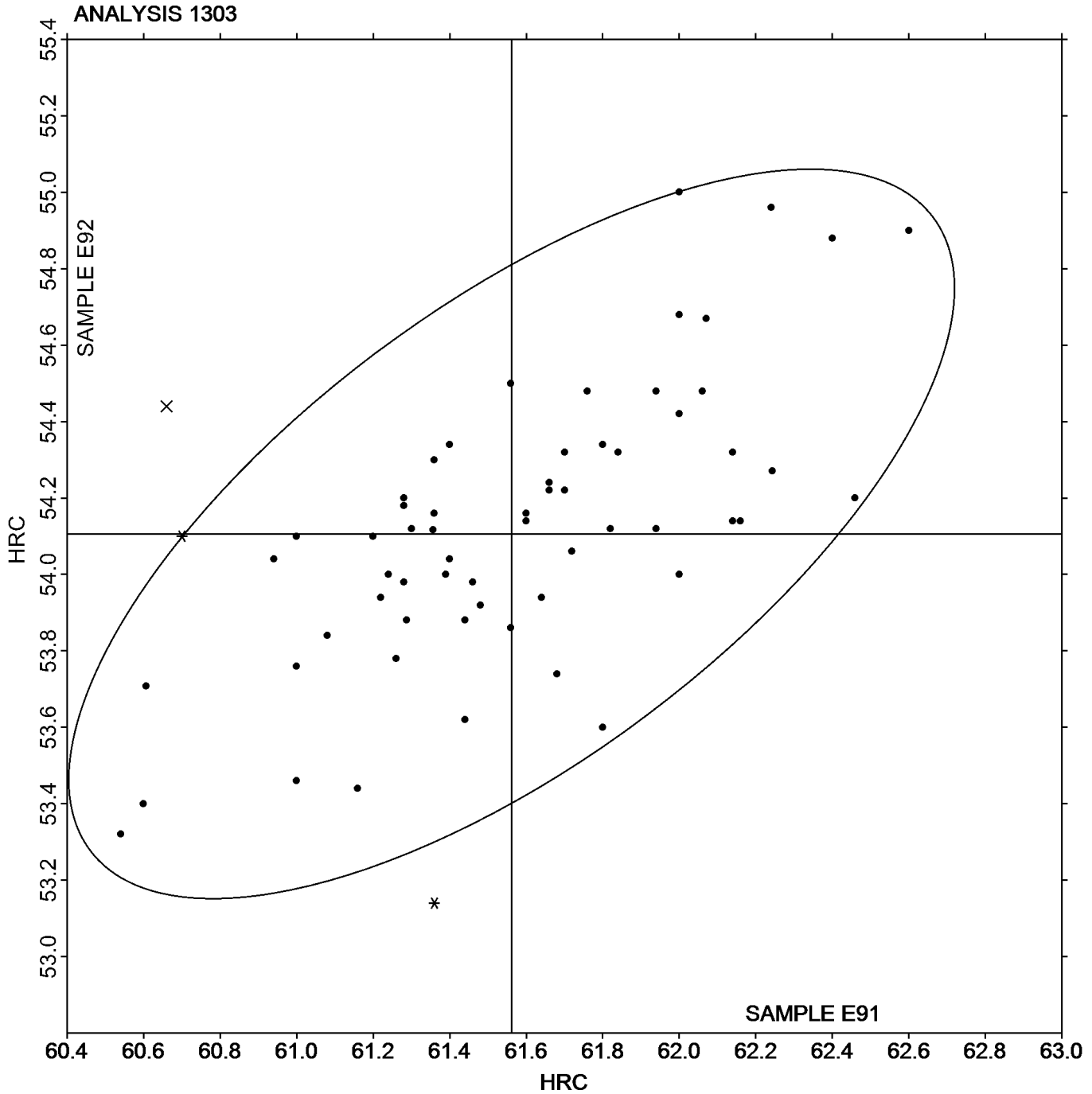
Rockwell Hardness: C Scale
ASTM E18

SAMPLE E91

SAMPLE E92

61.56 HRC

54.11 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1311

2nd Qtr
2023

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2UKR24		774.20	41.65	1.05	573.00	-0.73	-0.04
3NQDU9		701.60	-30.95	-0.78	568.20	-5.53	-0.28
3R9C93		754.80	22.25	0.56	580.40	6.67	0.34
4RNLPM		741.72	9.17	0.23	579.10	5.37	0.28
4YMVN8		763.82	31.27	0.79	588.16	14.43	0.74
6H2CRZ		723.40	-9.15	-0.23	566.60	-7.13	-0.37
6LECNR		780.40	47.85	1.21	589.60	15.87	0.82
826YAA		744.40	11.85	0.30	573.80	0.07	0.00
8CXK8T		737.40	4.85	0.12	589.60	15.87	0.82
8JFKDA		713.80	-18.75	-0.47	572.60	-1.13	-0.06
92ZCCA	X	568.80	-163.75	-4.15	720.40	146.67	7.53
A6WH9Q		744.34	11.79	0.30	573.30	-0.43	-0.02
B2R9GL		685.44	-47.11	-1.19	543.08	-30.65	-1.57
BZBPH4		697.58	-34.97	-0.89	568.60	-5.13	-0.26
DEA9CZ		693.00	-39.55	-1.00	562.40	-11.33	-0.58
DL7ZME		743.72	11.17	0.28	579.98	6.25	0.32
DW9KML		744.34	11.79	0.30	569.10	-4.63	-0.24
DXZJ2K		753.60	21.05	0.53	598.00	24.27	1.25
E9E7WJ		673.60	-58.95	-1.49	544.60	-29.13	-1.50
EE7DER		700.20	-32.35	-0.82	544.40	-29.33	-1.51
EFDHL9		757.44	24.89	0.63	588.50	14.77	0.76
JRU9HK		687.00	-45.55	-1.15	572.40	-1.33	-0.07
KCEMAE	*	607.14	-125.41	-3.18	530.72	-43.01	-2.21
KYAUXP		728.80	-3.75	-0.10	562.80	-10.93	-0.56
LZ4CJ4		772.40	39.85	1.01	613.60	39.87	2.05
P6HP29		727.08	-5.47	-0.14	563.82	-9.91	-0.51
QVUPVG		739.60	7.05	0.18	568.40	-5.33	-0.27
U3HAHY		777.32	44.77	1.13	611.90	38.17	1.96
U6L3BC		736.20	3.65	0.09	580.20	6.47	0.33
UNLTT2		730.80	-1.75	-0.04	564.20	-9.53	-0.49
UTDUJY		703.60	-28.95	-0.73	561.00	-12.73	-0.65
V3CPDN		739.20	6.65	0.17	550.40	-23.33	-1.20
XZHAQ6		817.80	85.25	2.16	610.00	36.27	1.86
ZAHFYW		778.50	45.95	1.16	590.66	16.93	0.87

Summary Statistics

	Sample E91		Sample E92	
Grand Means	732.55	HV 10	573.73	HV 10
Stnd Dev Btwn Labs	39.49	HV 10	19.47	HV 10

Samples E91, E92 : Steel, Steel

Statistics based on 33 of 34 reporting participants

Comments on Assigned Data Flags for Test #1311

92ZCCA (X) - Data appear to be transposed between samples.

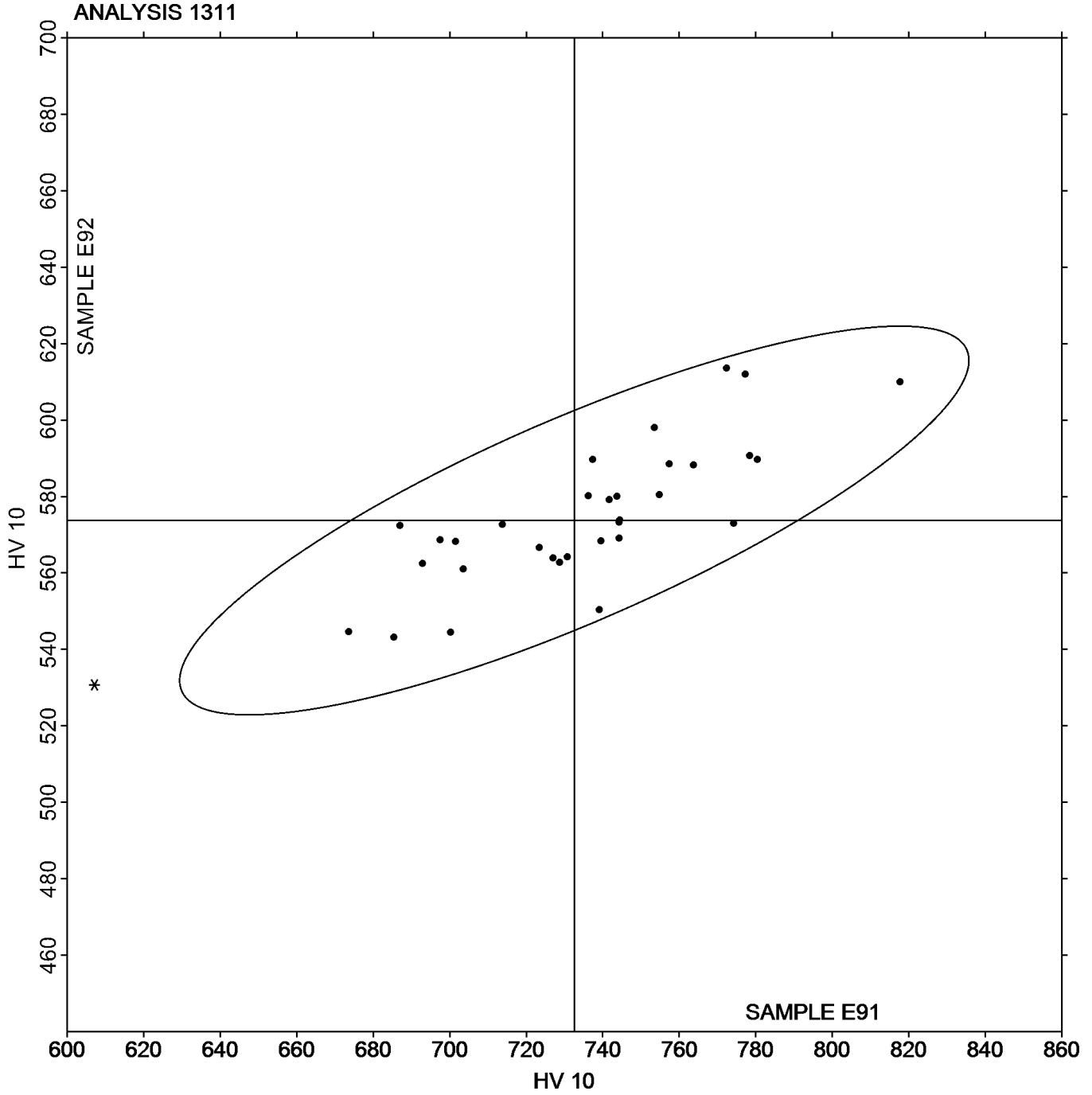


Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

SAMPLE E91
732.55 HV 10

SAMPLE E92
573.73 HV 10





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1351

2nd Qtr
2023

Rockwell Superficial Hardness (30N Scale)
ASTM E18

WebCode	Data Flag	Sample E91			Sample E92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FLDUZ	X	77.14	-1.18	-2.20	67.46	-4.05	-5.11
3FYUFY		78.68	0.37	0.68	71.52	0.00	0.00
6H2CRZ		78.24	-0.08	-0.15	72.00	0.49	0.61
7L9KAF		78.50	0.18	0.34	71.10	-0.41	-0.52
7VKGC2		78.12	-0.20	-0.37	71.06	-0.45	-0.57
8JZ2TC		79.06	0.74	1.37	72.22	0.71	0.90
8VGCE6		77.64	-0.68	-1.26	71.56	0.05	0.06
9QTTEB		79.16	0.84	1.57	72.16	0.65	0.82
AFEY2X		78.90	0.58	1.08	72.44	0.93	1.17
B2BFWY		78.74	0.42	0.78	71.90	0.39	0.49
B2R9GL		77.86	-0.46	-0.85	72.28	0.77	0.97
BQT3EU		78.80	0.48	0.90	71.80	0.29	0.36
BUQG2J		78.84	0.52	0.97	72.10	0.59	0.74
BYDTR		78.10	-0.22	-0.41	71.80	0.29	0.36
D3D3H2		78.40	0.08	0.15	71.86	0.35	0.44
DULECH		79.18	0.86	1.60	71.54	0.03	0.03
E4NJU7		78.50	0.18	0.34	71.00	-0.51	-0.65
E9E7WJ		78.39	0.07	0.14	71.44	-0.08	-0.10
F7TBMJ		78.90	0.58	1.08	72.38	0.87	1.09
FPKGTN		78.08	-0.24	-0.44	71.52	0.01	0.01
FZGMLM	*	79.00	0.68	1.27	73.86	2.35	2.96
GCA83D		78.28	-0.04	-0.07	71.16	-0.35	-0.44
HQ88ZR	X	76.56	-1.76	-3.27	71.20	-0.31	-0.39
JGDL8Y		77.38	-0.94	-1.75	70.12	-1.39	-1.76
KQXC7W		78.76	0.44	0.82	72.26	0.75	0.94
LFCXWL		78.22	-0.10	-0.18	71.58	0.07	0.09
LZ4CJ4		77.60	-0.72	-1.34	71.40	-0.11	-0.14
MQ82KT		77.92	-0.40	-0.74	70.50	-1.01	-1.28
NU73F3		77.96	-0.36	-0.67	71.08	-0.43	-0.55
QHNW44		78.70	0.38	0.71	71.88	0.37	0.46
QT3QGH		78.40	0.08	0.15	71.00	-0.51	-0.65
RTFARM		78.08	-0.24	-0.44	71.46	-0.05	-0.07
RXCUXR		77.32	-1.00	-1.86	71.14	-0.37	-0.47
TK2G24		78.02	-0.30	-0.56	70.98	-0.53	-0.67
U63QKX		78.00	-0.32	-0.59	71.00	-0.51	-0.65
UJ9KCA		77.10	-1.22	-2.27	70.18	-1.33	-1.68
WAT83N		78.94	0.62	1.16	71.14	-0.37	-0.47
X847VF		78.50	0.18	0.34	72.42	0.91	1.14
XEFGN7		79.16	0.84	1.57	72.38	0.87	1.09
XNK2VL		78.28	-0.04	-0.07	71.26	-0.25	-0.32
XZHAQ6		77.70	-0.62	-1.15	70.80	-0.71	-0.90
Y7ZQMR		77.28	-1.04	-1.93	69.58	-1.93	-2.44
YCBBNQ		78.68	0.36	0.67	70.36	-1.15	-1.45
YJ8GNZ		78.56	0.24	0.45	72.64	1.13	1.42
YKFT4G		77.80	-0.52	-0.97	70.34	-1.17	-1.48
ZLTH8T		78.42	0.10	0.19	71.54	0.03	0.03
ZRHPHU		78.20	-0.12	-0.22	72.32	0.81	1.02



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1351

2nd Qtr

Rockwell Superficial Hardness (30N Scale)

2023

ASTM E18

Summary Statistics

	<u>Sample E91</u>		<u>Sample E92</u>	
Grand Means	78.32	HR30N	71.51	HR30N
Std Dev Btwn Labs	0.54	HR30N	0.79	HR30N

Samples E91, E92 : Steel, Steel

Statistics based on 45 of 47 reporting participants

Comments on Assigned Data Flags for Test #1351

2FLDUZ (X) - Data for sample E92 are low.

HQ88ZR (X) - Data for sample E91 are low. Inconsistent within the determinations of both samples.



Analysis 1351

Rockwell Superficial Hardness (30N Scale)

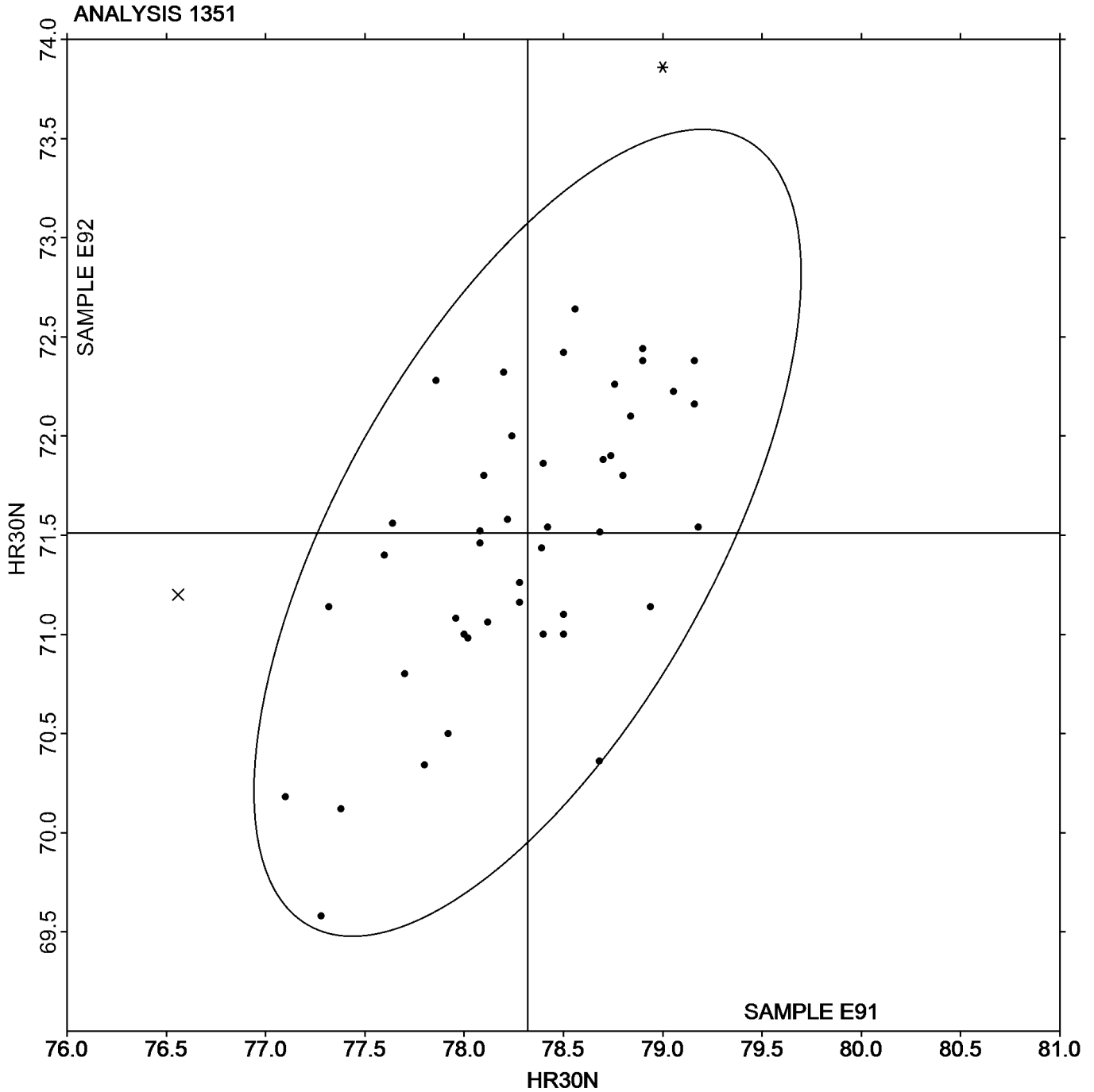
ASTM E18

SAMPLE E91

SAMPLE E92

78.32 HR30N

71.51 HR30N





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1401

2nd Qtr
2023

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C91			Sample C92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3YT3K3	*	0.0368	0.0104	2.18	0.0382	0.0114	2.62
4L29VA		0.0269	0.0004	0.09	0.0260	-0.0007	-0.17
826YAA		0.0330	0.0066	1.38	0.0298	0.0030	0.69
8VGCE6		0.0328	0.0064	1.34	0.0290	0.0022	0.51
92ZCCA		0.0263	-0.0001	-0.03	0.0249	-0.0019	-0.43
AD7AT2		0.0221	-0.0043	-0.91	0.0224	-0.0043	-1.00
BCPAUP		0.0292	0.0028	0.58	0.0296	0.0028	0.65
BYDTR		0.0353	0.0088	1.86	0.0367	0.0099	2.27
CLFH89		0.0214	-0.0050	-1.06	0.0220	-0.0048	-1.10
D49PV6		0.0305	0.0041	0.86	0.0304	0.0036	0.83
DW9KML		0.0222	-0.0043	-0.90	0.0223	-0.0044	-1.02
F7TBMJ		0.0169	-0.0096	-2.01	0.0191	-0.0077	-1.76
FZGMLM		0.0264	0.0000	-0.01	0.0230	-0.0038	-0.87
HJ6YVK		0.0284	0.0020	0.41	0.0278	0.0010	0.23
JGDL8Y		0.0222	-0.0042	-0.89	0.0232	-0.0036	-0.83
JNVH3F		0.0266	0.0001	0.03	0.0275	0.0008	0.17
JRU9HK		0.0287	0.0022	0.47	0.0282	0.0014	0.32
KCEMAE		0.0276	0.0011	0.24	0.0294	0.0026	0.59
LFCXWL		0.0286	0.0022	0.45	0.0274	0.0006	0.14
LZ4CJ4		0.0256	-0.0008	-0.17	0.0241	-0.0027	-0.62
NWQL86		0.0283	0.0019	0.40	0.0258	-0.0010	-0.22
P6HP29		0.0238	-0.0026	-0.56	0.0246	-0.0022	-0.50
PLPHFG		0.0281	0.0017	0.35	0.0276	0.0008	0.18
Q43PHJ		0.0308	0.0043	0.91	0.0274	0.0006	0.14
QGABRG		0.0246	-0.0018	-0.39	0.0258	-0.0010	-0.22
QHNW44		0.0255	-0.0010	-0.20	0.0231	-0.0037	-0.85
RCD3KT		0.0227	-0.0038	-0.79	0.0246	-0.0022	-0.51
RKN67T		0.0248	-0.0016	-0.34	0.0257	-0.0011	-0.25
RXCUXR	*	0.0248	-0.0016	-0.35	0.0312	0.0044	1.01
T69LPD		0.0186	-0.0079	-1.65	0.0192	-0.0076	-1.73
UEBQ8Z		0.0317	0.0053	1.11	0.0352	0.0084	1.93
UTDUJY		0.0314	0.0050	1.05	0.0317	0.0049	1.12
V3CPDN		0.0171	-0.0093	-1.96	0.0212	-0.0056	-1.29
W869UD		0.0205	-0.0059	-1.25	0.0194	-0.0074	-1.70
WAT83N		0.0260	-0.0005	-0.10	0.0262	-0.0006	-0.13
WHJXG4		0.0173	-0.0091	-1.91	0.0226	-0.0042	-0.95
X847VF		0.0265	0.0000	0.00	0.0292	0.0024	0.54
YBGXBR		0.0264	0.0000	-0.01	0.0268	0.0000	0.00
YCBBNQ		0.0342	0.0078	1.63	0.0326	0.0058	1.33
YJ8GNZ		0.0316	0.0051	1.08	0.0315	0.0047	1.09
ZGHYY8		0.0250	-0.0014	-0.30	0.0266	-0.0002	-0.04
ZRHPHU		0.0252	-0.0012	-0.25	0.0271	0.0003	0.06
ZUNA9E		0.0246	-0.0018	-0.39	0.0256	-0.0012	-0.27



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1401

2nd Qtr

Total Case Depth
SAE J423, SAE J78

2023

Summary Statistics

	<u>Sample C91</u>	<u>Sample C92</u>
Grand Means	0.0264 inches	0.0268 inches
Stnd Dev Btwn Labs	0.0048 inches	0.0044 inches

Samples C91, C92 : Steel, Steel

Statistics based on 43 of 43 reporting participants

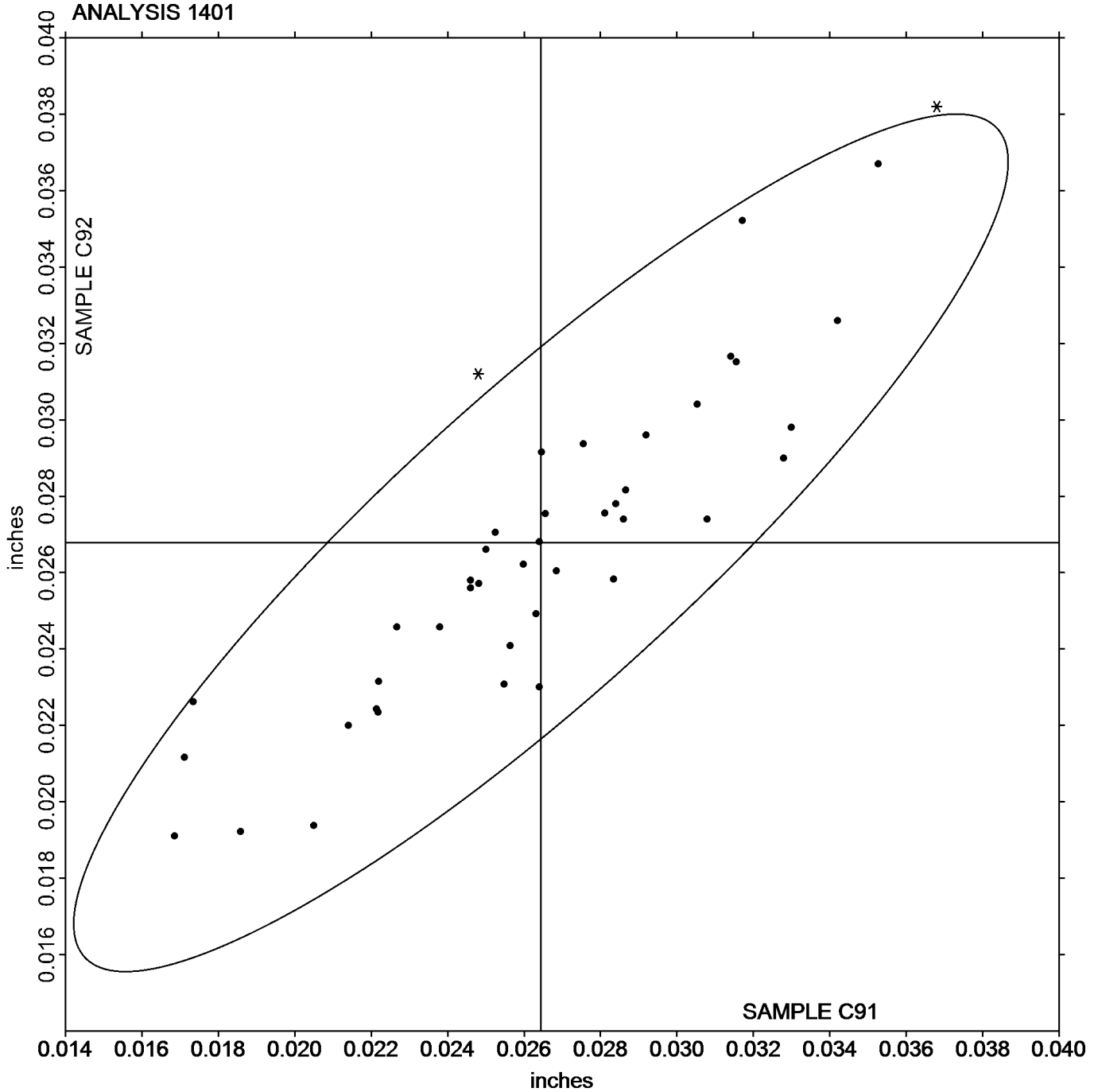


Analysis 1401

Total Case Depth
SAE J423, SAE J78

SAMPLE C91
0.0264 inches

SAMPLE C92
0.0268 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1402

2nd Qtr
2023

Effective Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C91			Sample C92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2M3GUU		0.0261	0.0008	0.53	0.0266	0.0014	1.05
3YT3K3		0.0256	0.0003	0.18	0.0242	-0.0010	-0.75
627AQM		0.0239	-0.0015	-1.04	0.0246	-0.0006	-0.47
72LTAK		0.0260	0.0006	0.44	0.0245	-0.0007	-0.55
7ZFBCN		0.0268	0.0015	1.04	0.0257	0.0005	0.41
826YAA		0.0270	0.0017	1.17	0.0252	0.0000	0.01
8B8GHR		0.0253	0.0000	-0.03	0.0266	0.0014	1.05
8VGCE6		0.0266	0.0013	0.89	0.0258	0.0006	0.47
92ZCCA		0.0240	-0.0013	-0.94	0.0230	-0.0022	-1.66
9T37CZ		0.0232	-0.0021	-1.50	0.0254	0.0002	0.16
9ZK8HH		0.0234	-0.0019	-1.36	0.0256	0.0004	0.32
AD7AT2		0.0238	-0.0015	-1.08	0.0250	-0.0002	-0.14
AMXPGK		0.0274	0.0021	1.45	0.0247	-0.0005	-0.35
BCPAUP	X	0.0292	0.0039	2.71	0.0298	0.0046	3.51
BQT3EU		0.0249	-0.0005	-0.32	0.0243	-0.0009	-0.71
BYDTR		0.0253	0.0000	-0.03	0.0246	-0.0006	-0.48
CLFH89		0.0248	-0.0005	-0.38	0.0252	0.0000	0.01
D49PV6		0.0261	0.0008	0.53	0.0253	0.0001	0.07
DW9KML		0.0229	-0.0025	-1.75	0.0229	-0.0023	-1.77
DX2LZH		0.0240	-0.0013	-0.93	0.0248	-0.0004	-0.29
F7NYYM	X	0.00251	-0.0228	-16.03	0.00249	-0.0227	-17.24
F7TBMJ		0.0251	-0.0002	-0.15	0.0276	0.0024	1.82
FT3EKL		0.0254	0.0001	0.05	0.0247	-0.0005	-0.34
FZGMLM	X	0.0266	0.0013	0.89	0.0216	-0.0036	-2.72
GLEQAT		0.0276	0.0023	1.62	0.0280	0.0028	2.16
HJ6YVK		0.0256	0.0003	0.18	0.0250	-0.0002	-0.14
JGDL8Y		0.0262	0.0009	0.60	0.0251	-0.0001	-0.10
JNVH3F		0.0242	-0.0012	-0.81	0.0253	0.0001	0.07
JRU9HK		0.0263	0.0009	0.65	0.0264	0.0012	0.89
K7TX6R		0.0274	0.0021	1.45	0.0263	0.0011	0.82
KCEMAE		0.0248	-0.0005	-0.38	0.0261	0.0009	0.67
LFCXWL		0.0236	-0.0017	-1.22	0.0222	-0.0030	-2.27
LZ4CJ4		0.0242	-0.0011	-0.80	0.0234	-0.0018	-1.36
NWQL86		0.0259	0.0006	0.40	0.0246	-0.0005	-0.41
P6HP29		0.0232	-0.0021	-1.50	0.0242	-0.0010	-0.75
PLPHFG		0.0253	0.0000	-0.03	0.0252	0.0000	-0.01
Q43PHJ		0.0252	-0.0001	-0.10	0.0235	-0.0017	-1.31
QGABRG		0.0222	-0.0031	-2.20	0.0236	-0.0016	-1.20
QHNW44		0.0246	-0.0007	-0.49	0.0222	-0.0030	-2.25
RCD3KT		0.0249	-0.0005	-0.32	0.0258	0.0006	0.49
RKN67T		0.0255	0.0002	0.12	0.0266	0.0014	1.07
T33QX3		0.0263	0.0009	0.65	0.0243	-0.0008	-0.64
T69LPD		0.0263	0.0010	0.67	0.0250	-0.0002	-0.15
TVHZKZ		0.0264	0.0011	0.75	0.0272	0.0020	1.53
U6L3BC	*	0.0292	0.0039	2.71	0.0272	0.0020	1.53
UEBQ8Z		0.0283	0.0030	2.08	0.0267	0.0015	1.14
UTDUJY		0.0258	0.0005	0.34	0.0252	0.0000	0.01



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1402

2nd Qtr
2023

Effective Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C91			Sample C92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
V3CPDN		0.0260	0.0007	0.46	0.0260	0.0008	0.62
VCLGHC		0.0274	0.0020	1.44	0.0259	0.0007	0.55
W869UD		0.0265	0.0011	0.79	0.0251	-0.0001	-0.05
WHJXG4	X	0.0165	-0.0088	-6.21	0.0217	-0.0035	-2.65
X847VF		0.0249	-0.0005	-0.32	0.0257	0.0006	0.43
XH2BHL		0.0261	0.0007	0.51	0.0274	0.0022	1.69
YBGXBR		0.0240	-0.0013	-0.94	0.0238	-0.0014	-1.05
YCBBNQ		0.0238	-0.0015	-1.08	0.0246	-0.0006	-0.44
YJ8GNZ		0.0247	-0.0007	-0.46	0.0236	-0.0015	-1.17
ZGHYY8		0.0240	-0.0013	-0.94	0.0256	0.0004	0.32
ZRHPHU		0.0257	0.0003	0.24	0.0275	0.0023	1.73
ZUNA9E		0.0242	-0.0011	-0.80	0.0248	-0.0004	-0.29

Summary Statistics

	Sample C91		Sample C92	
Grand Means	0.0253	inches	0.0252	inches
Std Dev Btwn Labs	0.0014	inches	0.0013	inches

Samples C91, C92 : Steel, Steel

Statistics based on 55 of 59 reporting participants

Comments on Assigned Data Flags for Test #1402

- BCPAUP (X) - Data for sample C92 are high. Inconsistent within the determinations of sample C92.
- F7NYYM (X) - Data appear to be off by a factor of ten.
- FZGMLM (X) - Data for sample C92 are low.
- WHJXG4 (X) - Data for sample C91 are low.

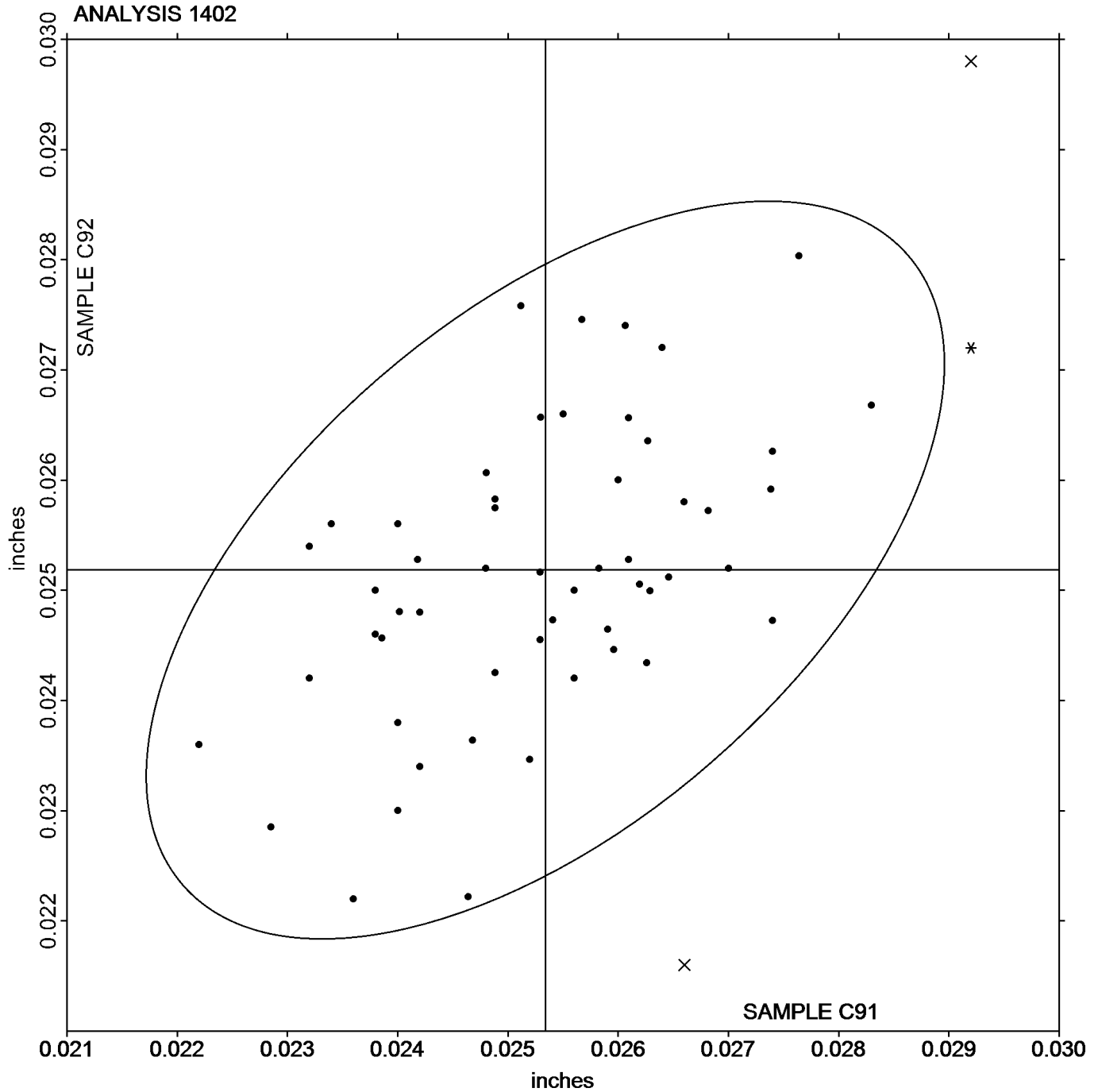


Analysis 1402

Effective Case Depth
SAE J423, SAE J78

SAMPLE C91
0.0253 inches

SAMPLE C92
0.0252 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1421

**2nd Qtr
2023**

**Alpha Case Depth
ASTM E3, E407**

WebCode	Data Flag	Sample W91			Sample W92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2GC8KW		0.000289	0.000007	0.19	0.000282	0.000016	0.65
3KQ7AB	X	0.000026	-0.000256	-6.81	0.000029	-0.000237	-9.39
4YQ6W8		0.000254	-0.000028	-0.76	0.000242	-0.000024	-0.95
7C68B2		0.000317	0.000035	0.93	0.000266	0.000000	0.00
88PNEW		0.000270	-0.000012	-0.33	0.000270	0.000004	0.17
A7NDXK		0.000207	-0.000076	-2.01	0.000207	-0.000059	-2.35
AN7774		0.000269	-0.000013	-0.35	0.000265	-0.000001	-0.03
B73ME8		0.000260	-0.000022	-0.60	0.000276	0.000010	0.40
BLF3H3		0.000257	-0.000026	-0.69	0.000267	0.000002	0.06
C6NK4R		0.000299	0.000017	0.45	0.000260	-0.000006	-0.23
C8DLUT		0.000228	-0.000055	-1.46	0.000248	-0.000018	-0.73
DCM23G		0.000253	-0.000029	-0.78	0.000262	-0.000003	-0.14
DULECH		0.000338	0.000056	1.48	0.000288	0.000022	0.88
EKBCQH		0.000341	0.000059	1.57	0.000257	-0.000009	-0.36
F7TBMJ		0.000320	0.000038	1.00	0.000300	0.000034	1.36
GF9AED		0.000270	-0.000012	-0.33	0.000254	-0.000012	-0.47
GM8CNY		0.000315	0.000033	0.87	0.000276	0.000010	0.39
GMAUUB		0.000313	0.000030	0.80	0.000289	0.000023	0.93
HQ88ZR		0.000268	-0.000014	-0.38	0.000262	-0.000004	-0.14
JUFMTV		0.000280	-0.000002	-0.06	0.000261	-0.000005	-0.20
NT84WU		0.000331	0.000049	1.29	0.000323	0.000057	2.27
P6HP29		0.000291	0.000008	0.22	0.000293	0.000027	1.08
PYV284		0.000334	0.000052	1.37	0.000270	0.000004	0.17
V3CPDN		0.000284	0.000001	0.03	0.000281	0.000015	0.58
WHJXG4		0.000216	-0.000066	-1.77	0.000224	-0.000042	-1.66
Z63CLZ		0.000257	-0.000026	-0.68	0.000223	-0.000043	-1.69

Summary Statistics

	Sample W91		Sample W92	
Grand Means	0.000282	inches	0.000266	inches
Stnd Dev Btwn Labs	0.000038	inches	0.000025	inches

Samples W91, W92 : Ti-6Al-4V, Ti-6Al-4V

Statistics based on 25 of 26 reporting participants

Comments on Assigned Data Flags for Test #1421

3KQ7AB (X) - Data for both samples are low.



Analysis 1421

2nd Qtr

Alpha Case Depth

2023

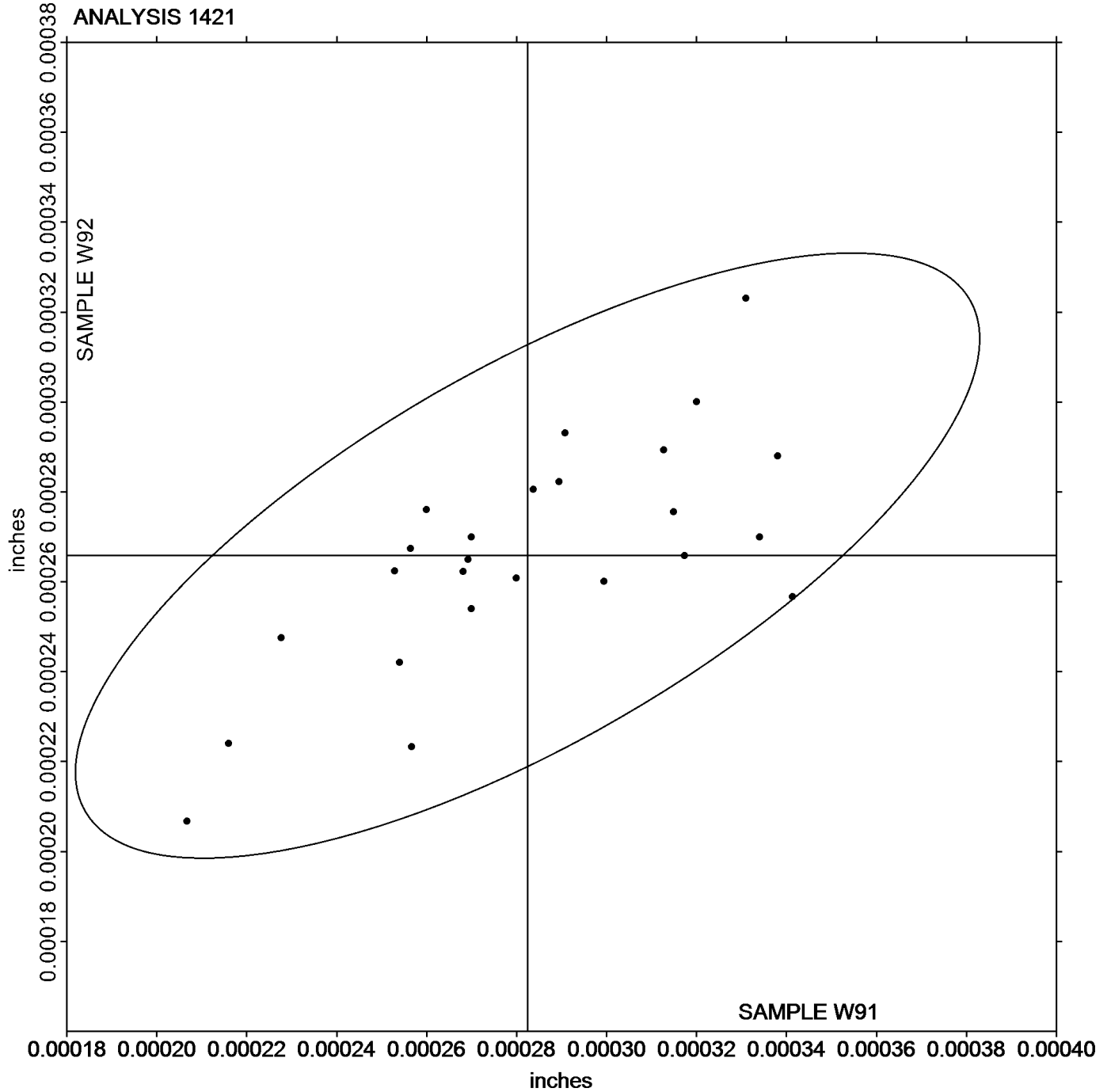
ASTM E3, E407

SAMPLE W91

SAMPLE W92

0.00028 inches

0.00027 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1422

**2nd Qtr
2023**

**Alloy Depletion: Inconel
ASTM E3, E407**

WebCode	Data Flag	Sample K91			Sample K92		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4VAXGK		0.000220	-0.000095	-0.66	0.000300	-0.000015	-0.12
6G8NDB		0.000212	-0.000103	-0.71	0.000376	0.000061	0.48
C8DLUT		0.000158	-0.000157	-1.08	0.000139	-0.000176	-1.38
DULECH		0.000316	0.000001	0.01	0.000400	0.000085	0.67
GCA83D		0.000528	0.000213	1.47	0.000355	0.000040	0.31
GF9AED		0.000498	0.000183	1.26	0.000358	0.000043	0.34
GGLMJA		0.000300	-0.000015	-0.10	0.000240	-0.000075	-0.59
HQ88ZR		0.000152	-0.000163	-1.12	0.000136	-0.000179	-1.40
JUFMTV		0.000451	0.000136	0.94	0.000531	0.000216	1.70

Summary Statistics

	Sample K91		Sample K92	
Grand Means	0.000315	inches	0.000315	inches
Stnd Dev Btrwn Labs	0.000145	inches	0.000127	inches

Samples K91, K92 : Inco 718, Inco 718

Statistics based on 9 of 9 reporting participants

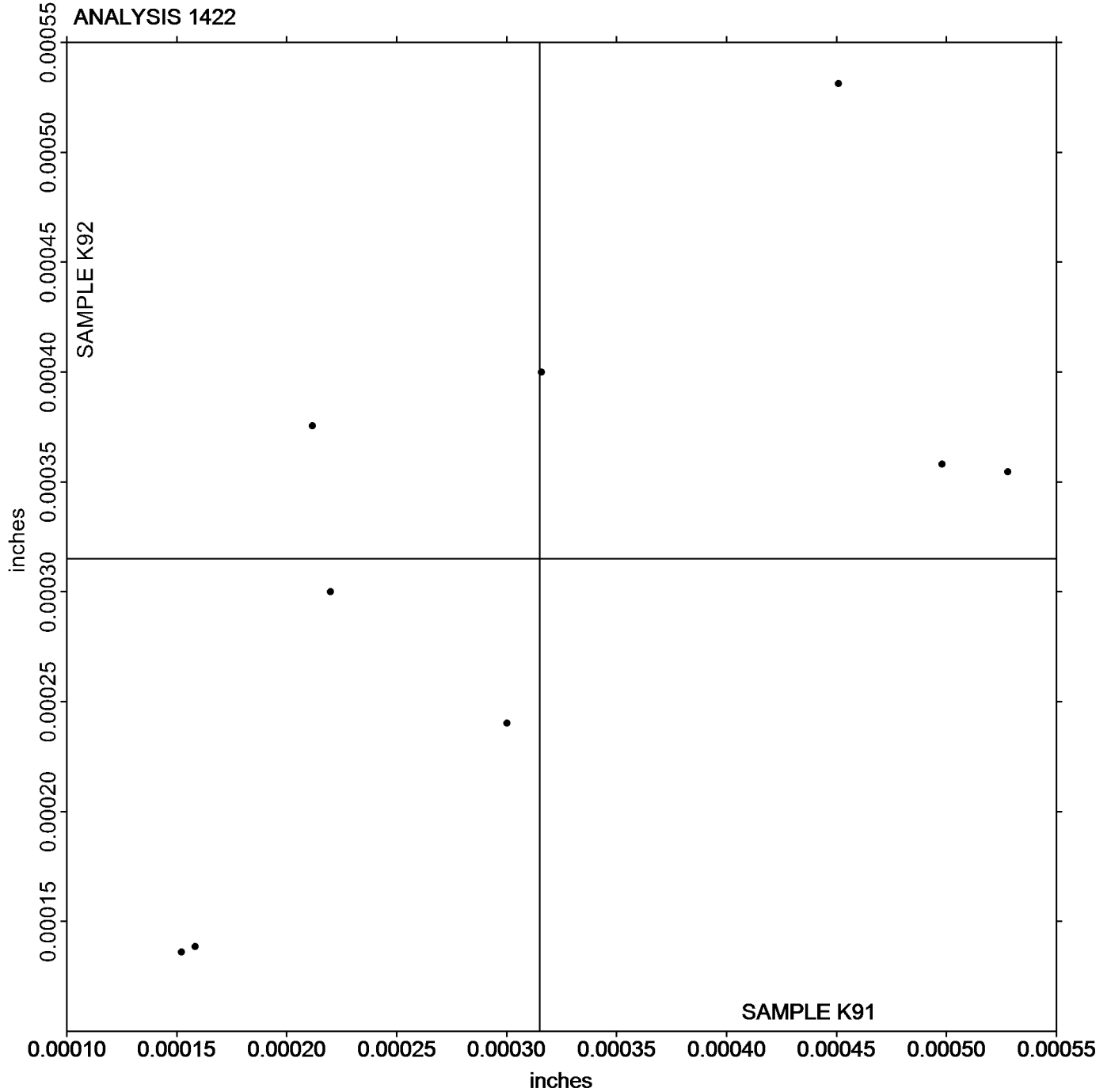


Analysis 1422

Alloy Depletion: Inconel
ASTM E3, E407

SAMPLE K91
0.00032 inches

SAMPLE K92
0.00031 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1500

2nd Qtr
2023

Nickel-based Alloy, CHROMIUM (Cr)
CHROMIUM (Cr)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		17.73	0.02	0.15	19.76	-0.01	-0.07	IC
3QGFJ9		17.74	0.04	0.22	19.92	0.15	0.85	DR
3YT3K3		17.58	-0.12	-0.70	19.65	-0.12	-0.66	DR
4N9D2M		17.51	-0.19	-1.11	19.34	-0.43	-2.39	OE
4YMVN8		17.57	-0.13	-0.76	19.53	-0.24	-1.32	OE
6FQRKC		17.75	0.04	0.26	19.94	0.17	0.95	IC
6G8NDB		17.95	0.25	1.46	20.05	0.28	1.55	WD
7NJAQ8		17.94	0.23	1.38	20.06	0.29	1.61	WD
92ZCCA		17.79	0.08	0.50	19.89	0.12	0.67	WD
94MHLR	X	18.35	0.65	3.80	20.35	0.59	3.23	WD
AN7774		17.43	-0.27	-1.58	19.58	-0.19	-1.03	OE
BQT3EU		17.56	-0.14	-0.84	19.60	-0.17	-0.94	OE
CLCVQU		17.82	0.12	0.70	20.12	0.35	1.94	GD
DAWX74		17.93	0.23	1.36	19.87	0.10	0.54	GD
DHT8PU		17.62	-0.08	-0.46	19.59	-0.18	-0.97	OE
DW9KML		17.41	-0.30	-1.74	19.87	0.10	0.54	OE
E4NJU7		17.61	-0.10	-0.56	19.77	0.00	-0.01	XR
FQUYXT		17.32	-0.38	-2.25	19.61	-0.16	-0.88	OE
GGLMJA		17.69	-0.02	-0.09	19.73	-0.04	-0.22	WD
GMAUUB		17.64	-0.06	-0.36	19.32	-0.45	-2.46	OE
GXNJFE		17.67	-0.04	-0.21	19.72	-0.05	-0.27	OE
HNZTTL		17.73	0.03	0.19	19.63	-0.14	-0.75	XX
J44DFN		17.68	-0.02	-0.11	19.86	0.09	0.48	OE
JKV7A2		17.72	0.02	0.09	19.75	-0.02	-0.10	OE
JLN6EM		17.86	0.15	0.91	19.71	-0.06	-0.31	IC
K9ZKEQ		17.89	0.19	1.11	19.79	0.02	0.10	IC
LR88JV		17.80	0.10	0.61	19.88	0.11	0.61	WD
LZ4CJ4		17.52	-0.18	-1.07	19.89	0.12	0.69	OE
MBGWG7		17.50	-0.21	-1.22	19.56	-0.20	-1.13	WD
P6HP29		17.69	-0.01	-0.05	19.65	-0.12	-0.66	IC
P7BM8U		17.84	0.14	0.81	19.98	0.21	1.15	ED
QGABRG	*	18.16	0.46	2.72	19.85	0.08	0.46	IC
RDMKTJ		17.62	-0.08	-0.48	19.65	-0.11	-0.63	WD
RR6DGQ		17.74	0.04	0.22	19.82	0.05	0.28	IC
RZVLRL		17.59	-0.11	-0.66	19.79	0.02	0.11	OE
TX4EWB		17.99	0.29	1.71	20.03	0.26	1.42	WD
UNLTT2		17.67	-0.04	-0.21	19.81	0.04	0.21	OE
X7RYG7		17.69	-0.01	-0.07	19.69	-0.08	-0.42	OE
XG8DDZ		17.68	-0.02	-0.11	19.77	0.00	0.01	WD
XNK2VL		17.74	0.04	0.24	19.96	0.19	1.07	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1500

2nd Qtr
2023

Nickel-based Alloy, CHROMIUM (Cr)
CHROMIUM (Cr)

Summary Statistics

	<u>Sample J91</u>		<u>Sample J92</u>	
Grand Means	17.70	Percent	19.77	Percent
Stnd Dev Btwn Labs	0.17	Percent	0.18	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 39 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1500

94MHLR (X) - Data for both samples are high.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1501

2nd Qtr
2023

Nickel-based Alloy, MANGANESE (Mn)
MANGANESE (Mn)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		0.0675	0.0002	0.04	0.1654	-0.0029	-0.28	IC
3QGFJ9		0.0673	0.0000	0.00	0.1622	-0.0062	-0.58	DR
3YT3K3	*	0.0563	-0.0110	-1.88	0.1850	0.0166	1.56	DR
4N9D2M		0.0823	0.0150	2.56	0.1850	0.0166	1.56	OE
4YMVN8		0.0607	-0.0066	-1.14	0.1500	-0.0184	-1.73	OE
6FQRKC		0.0635	-0.0038	-0.64	0.1667	-0.0017	-0.16	IC
6G8NDB		0.0603	-0.0070	-1.19	0.1640	-0.0044	-0.41	WD
7NJAQ8		0.0715	0.0042	0.72	0.1737	0.0053	0.50	WD
92ZCCA		0.0597	-0.0076	-1.31	0.1583	-0.0100	-0.94	WD
94MHLR		0.0612	-0.0061	-1.05	0.1514	-0.0170	-1.60	WD
AN7774		0.0680	0.0007	0.12	0.1490	-0.0194	-1.82	OE
BQT3EU		0.0680	0.0007	0.12	0.1730	0.0046	0.43	OE
CLCVQU		0.0760	0.0087	1.49	0.1920	0.0236	2.22	GD
DAWX74		0.0690	0.0017	0.29	0.1640	-0.0044	-0.41	GD
DHT8PU		0.0823	0.0150	2.57	0.1770	0.0086	0.81	OE
DW9KML		0.0633	-0.0040	-0.68	0.1687	0.0003	0.03	OE
E4NJU7		0.0670	-0.0003	-0.05	0.1633	-0.0050	-0.47	XR
FQUYXT		0.0620	-0.0053	-0.91	0.1663	-0.0020	-0.19	OE
GGLMJA		0.0649	-0.0024	-0.41	0.1687	0.0003	0.03	WD
GMAUUB		0.0672	-0.0001	-0.02	0.1580	-0.0104	-0.97	OE
GXNJFE		0.0680	0.0007	0.12	0.1600	-0.0084	-0.79	OE
HNZTTL		0.0672	-0.0001	-0.02	0.1653	-0.0030	-0.29	XX
J44DFN		0.0795	0.0122	2.09	0.1693	0.0010	0.09	OE
JKV7A2		0.0566	-0.0107	-1.84	0.1735	0.0052	0.48	OE
JLN6EM		0.0677	0.0004	0.06	0.1727	0.0043	0.40	IC
K9ZKEQ		0.0670	-0.0003	-0.05	0.1680	-0.0004	-0.04	IC
LR88JV		0.0691	0.0018	0.31	0.1568	-0.0116	-1.09	WD
LZ4CJ4		0.0660	-0.0013	-0.22	0.1623	-0.0060	-0.57	OE
MBGWG7		0.0677	0.0004	0.06	0.1723	0.0040	0.37	WD
P6HP29		0.0633	-0.0040	-0.68	0.1667	-0.0017	-0.16	IC
P7BM8U	X	0.0459	-0.0214	-3.66	0.0763	-0.0920	-8.65	ED
QGABRG	X	0.0927	0.0254	4.34	0.1900	0.0216	2.03	IC
RDMKTJ		0.0681	0.0008	0.14	0.1713	0.0030	0.28	XX
RR6DGQ		0.0660	-0.0013	-0.22	0.1693	0.0010	0.09	IC
RZVLRL		0.0700	0.0027	0.46	0.1820	0.0136	1.28	OE
TX4EWB		0.0683	0.0010	0.18	0.1703	0.0020	0.18	WD
UNLTT2	*	0.0740	0.0067	1.15	0.2010	0.0326	3.06	OE
X7RYG7		0.0658	-0.0015	-0.26	0.1620	-0.0064	-0.60	OE
XG8DDZ		0.0673	0.0000	0.01	0.1687	0.0003	0.03	WD
XNK2VL		0.0677	0.0004	0.06	0.1650	-0.0034	-0.32	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1501

2nd Qtr

Nickel-based Alloy, MANGANESE (Mn)

2023

MANGANESE (Mn)

Summary Statistics

	<u>Sample J91</u>		<u>Sample J92</u>	
Grand Means	0.0673	Percent	0.1684	Percent
Stnd Dev Btwn Labs	0.0058	Percent	0.0106	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 38 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1501

P7BM8U (X) - Data for both samples are low.

QGABRG (X) - Data for sample J91 are high.



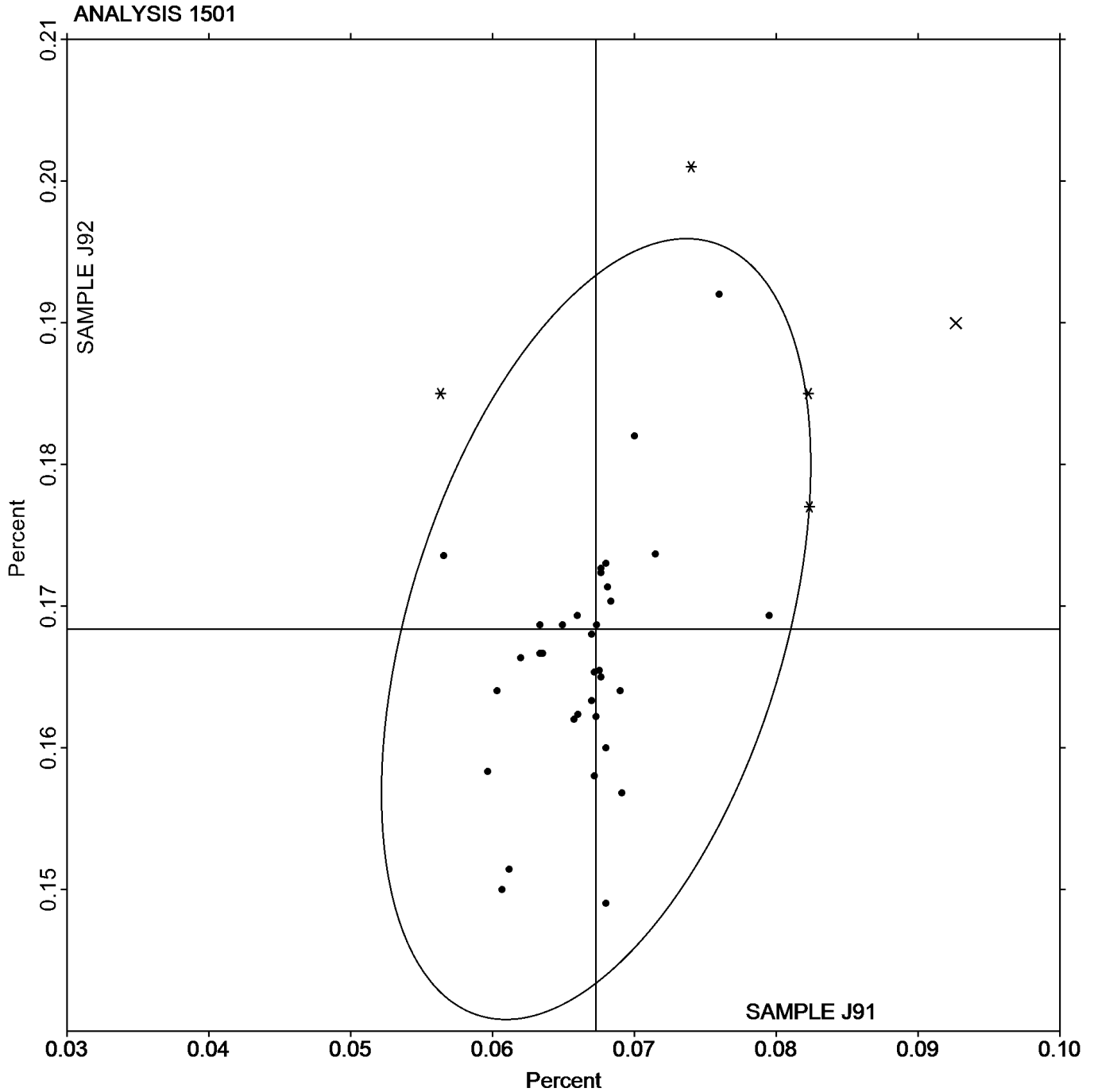
Analysis 1501

Nickel-based Alloy, MANGANESE (Mn)

MANGANESE (Mn)

SAMPLE J91
0.0673 Percent

SAMPLE J92
0.1684 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1502

2nd Qtr
2023

Nickel-based Alloy, IRON (Fe)
IRON (Fe)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		18.53	-0.29	-1.58	16.42	-0.28	-1.64	IC
3QGFJ9		18.73	-0.09	-0.49	16.71	0.01	0.07	DR
3YT3K3		18.55	-0.27	-1.45	16.52	-0.18	-1.06	DR
4N9D2M		18.92	0.10	0.51	17.01	0.31	1.77	OE
4YMVN8		18.78	-0.04	-0.21	16.80	0.10	0.57	OE
6FQRKC		18.90	0.07	0.40	16.76	0.06	0.33	IC
6G8NDB		18.76	-0.06	-0.35	16.65	-0.05	-0.31	WD
7NJAQ8		18.85	0.03	0.15	16.72	0.02	0.13	WD
92ZCCA		18.91	0.09	0.50	16.70	0.00	-0.02	WD
94MHLR		19.16	0.34	1.83	17.08	0.38	2.17	WD
AN7774		18.99	0.17	0.89	16.73	0.03	0.17	OE
CLCVQU	X	18.20	-0.62	-3.36	15.86	-0.84	-4.85	GD
DAWX74		18.67	-0.15	-0.84	16.53	-0.17	-0.96	GD
DHT8PU	X	17.04	-1.78	-9.64	15.36	-1.34	-7.75	OE
DW9KML		18.69	-0.13	-0.73	16.57	-0.13	-0.75	OE
E4NJU7		19.14	0.32	1.74	16.99	0.29	1.67	XR
FQUYXT		18.42	-0.40	-2.17	16.32	-0.38	-2.18	OE
GGLMJA		18.78	-0.04	-0.24	16.72	0.02	0.11	WD
GMAUUB		18.81	-0.01	-0.08	16.61	-0.09	-0.50	OE
GXNJFE		18.55	-0.27	-1.47	16.63	-0.07	-0.41	OE
HNZTTL		18.80	-0.02	-0.12	16.57	-0.13	-0.77	XX
J44DFN		18.82	0.00	-0.01	16.74	0.04	0.23	OE
JKV7A2		19.18	0.36	1.95	17.05	0.35	2.03	OE
JLN6EM		18.75	-0.07	-0.38	16.66	-0.04	-0.22	IC
K9ZKEQ		18.90	0.08	0.42	16.80	0.10	0.55	IC
LR88JV		18.93	0.11	0.58	16.61	-0.09	-0.54	WD
LZ4CJ4	X	18.53	-0.29	-1.58	15.33	-1.37	-7.89	OE
MBGWG7		18.69	-0.13	-0.72	16.49	-0.21	-1.22	WD
P6HP29		18.66	-0.16	-0.89	16.57	-0.13	-0.75	IC
P7BM8U		19.16	0.34	1.83	16.86	0.16	0.92	ED
QGABRG		18.84	0.02	0.10	16.81	0.11	0.63	IC
RDMKTJ		18.77	-0.05	-0.26	16.52	-0.18	-1.03	XX
RR6DGQ		18.79	-0.03	-0.19	16.72	0.02	0.13	IC
RZVLRL		18.87	0.05	0.26	16.89	0.19	1.09	OE
TX4EWB		19.04	0.22	1.19	16.86	0.16	0.92	WD
UNLTT2	X	19.70	0.88	4.75	18.20	1.50	8.65	OE
X7RYG7		18.67	-0.15	-0.82	16.65	-0.05	-0.29	OE
XG8DDZ		18.72	-0.10	-0.53	16.59	-0.11	-0.61	WD
XNK2VL		19.04	0.22	1.16	16.66	-0.04	-0.21	OE

Summary Statistics

	Sample J91		Sample J92	
Grand Means	18.82	Percent	16.70	Percent
Std Dev Btwn Labs	0.19	Percent	0.17	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 35 of 39 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1502

2nd Qtr
2023

Nickel-based Alloy, IRON (Fe)
IRON (Fe)

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1502

- CLCVQU (X) - Data for both samples are low. Possible Systematic Error.
- DHT8PU (X) - Data for both samples are low. Possible Systematic Error.
- LZ4CJ4 (X) - Data for sample J92 are low.
- UNLTT2 (X) - Data for both samples are high. Possible Systematic Error.



Analysis 1502

Nickel-based Alloy, IRON (Fe)

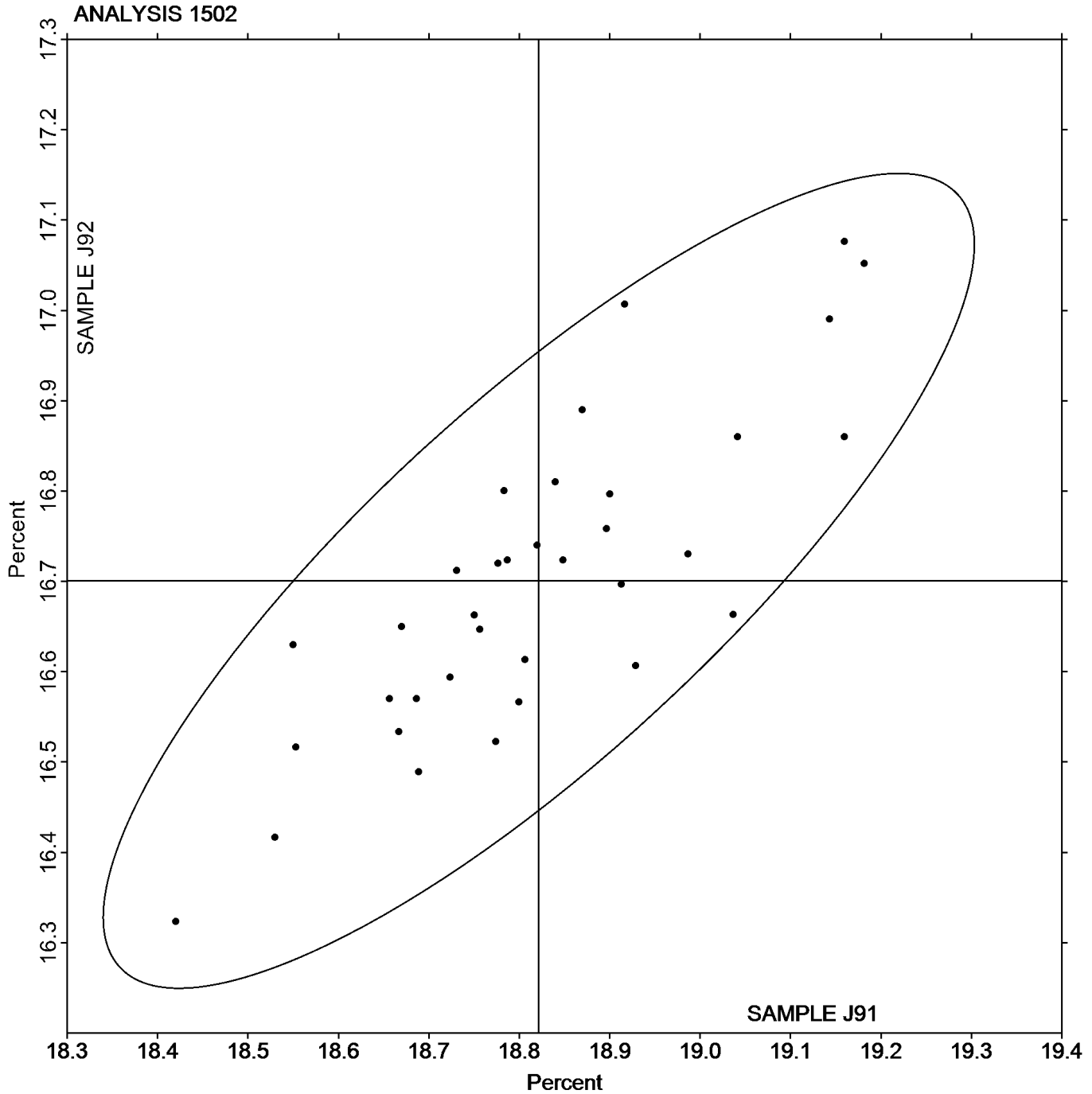
IRON (Fe)

SAMPLE J91

18.82 Percent

SAMPLE J92

16.70 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1503

2nd Qtr
2023

Nickel-based Alloy, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		2.909	0.016	0.36	3.153	-0.018	-0.38	IC
3QGFJ9		2.903	0.010	0.22	3.198	0.026	0.54	DR
3YT3K3		2.932	0.039	0.86	3.198	0.027	0.55	DR
4N9D2M		2.837	-0.057	-1.26	3.117	-0.055	-1.14	OE
4YMVN8		2.897	0.003	0.07	3.217	0.045	0.94	OE
6FQRKC		2.902	0.008	0.18	3.206	0.035	0.72	IC
6G8NDB		2.912	0.019	0.42	3.192	0.021	0.44	WD
7NJAQ8		2.892	-0.002	-0.03	3.172	0.001	0.02	WD
92ZCCA		2.897	0.004	0.08	3.173	0.002	0.04	WD
94MHLR		2.998	0.104	2.32	3.293	0.121	2.53	WD
AN7774		2.897	0.003	0.07	3.187	0.015	0.32	OE
BQT3EU		2.897	0.004	0.08	3.183	0.012	0.24	OE
CLCVQU	X	2.948	0.055	1.22	3.726	0.555	11.56	GD
DAWX74	X	3.150	0.257	5.71	3.433	0.262	5.46	GD
DHT8PU		2.793	-0.100	-2.22	3.097	-0.075	-1.56	OE
DW9KML		2.902	0.009	0.19	3.132	-0.039	-0.81	OE
E4NJU7		2.907	0.014	0.31	3.186	0.015	0.31	XR
FQUYXT		2.883	-0.010	-0.22	3.150	-0.021	-0.45	OE
GGLMJA		2.915	0.022	0.49	3.188	0.017	0.35	WD
GMAUUB	X	2.953	0.060	1.33	3.327	0.155	3.24	OE
GXNJFE		2.893	0.000	0.00	3.197	0.025	0.53	OE
HNZTTL		2.903	0.010	0.22	3.143	-0.028	-0.58	XX
J44DFN		2.810	-0.083	-1.85	3.083	-0.088	-1.84	OE
JKV7A2		2.836	-0.058	-1.28	3.100	-0.071	-1.49	OE
JLN6EM		2.920	0.027	0.60	3.200	0.029	0.60	IC
K9ZKEQ		2.944	0.051	1.13	3.185	0.013	0.28	IC
LR88JV		2.926	0.033	0.72	3.206	0.035	0.72	WD
LZ4CJ4		2.923	0.030	0.67	3.226	0.055	1.15	OE
MBGWG7		2.905	0.012	0.27	3.190	0.018	0.38	WD
P6HP29		2.909	0.016	0.35	3.171	-0.001	-0.01	IC
P7BM8U		2.786	-0.107	-2.38	3.061	-0.110	-2.30	ED
QGABRG	*	3.005	0.112	2.49	3.180	0.009	0.19	IC
RDMKTJ		2.914	0.021	0.46	3.199	0.027	0.57	XX
RR6DGQ		2.907	0.013	0.30	3.187	0.015	0.32	IC
RZVLRL	X	2.968	0.075	1.66	3.353	0.182	3.79	OE
TX4EWB		2.901	0.008	0.18	3.182	0.011	0.22	WD
UNLTT2	X	2.967	0.073	1.63	2.967	-0.205	-4.27	OE
X7RYG7		2.877	-0.017	-0.37	3.193	0.022	0.46	OE
XG8DDZ		2.801	-0.092	-2.05	3.070	-0.102	-2.12	WD
XNK2VL		2.943	0.050	1.11	3.193	0.022	0.46	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1503

2nd Qtr
2023

Nickel-based Alloy, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

Summary Statistics

	<u>Sample J91</u>		<u>Sample J92</u>	
Grand Means	2.893	Percent	3.171	Percent
Stnd Dev Btwn Labs	0.045	Percent	0.048	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 34 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1503

CLCVQU (X) - Data for sample J92 are high.

DAWX74 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

GMAUUB (X) - Data for sample J92 are high.

RZVLRL (X) - Data for sample J92 are high.

UNLTT2 (X) - Data for sample J92 are low. Inconsistent within the determinations of sample J92.

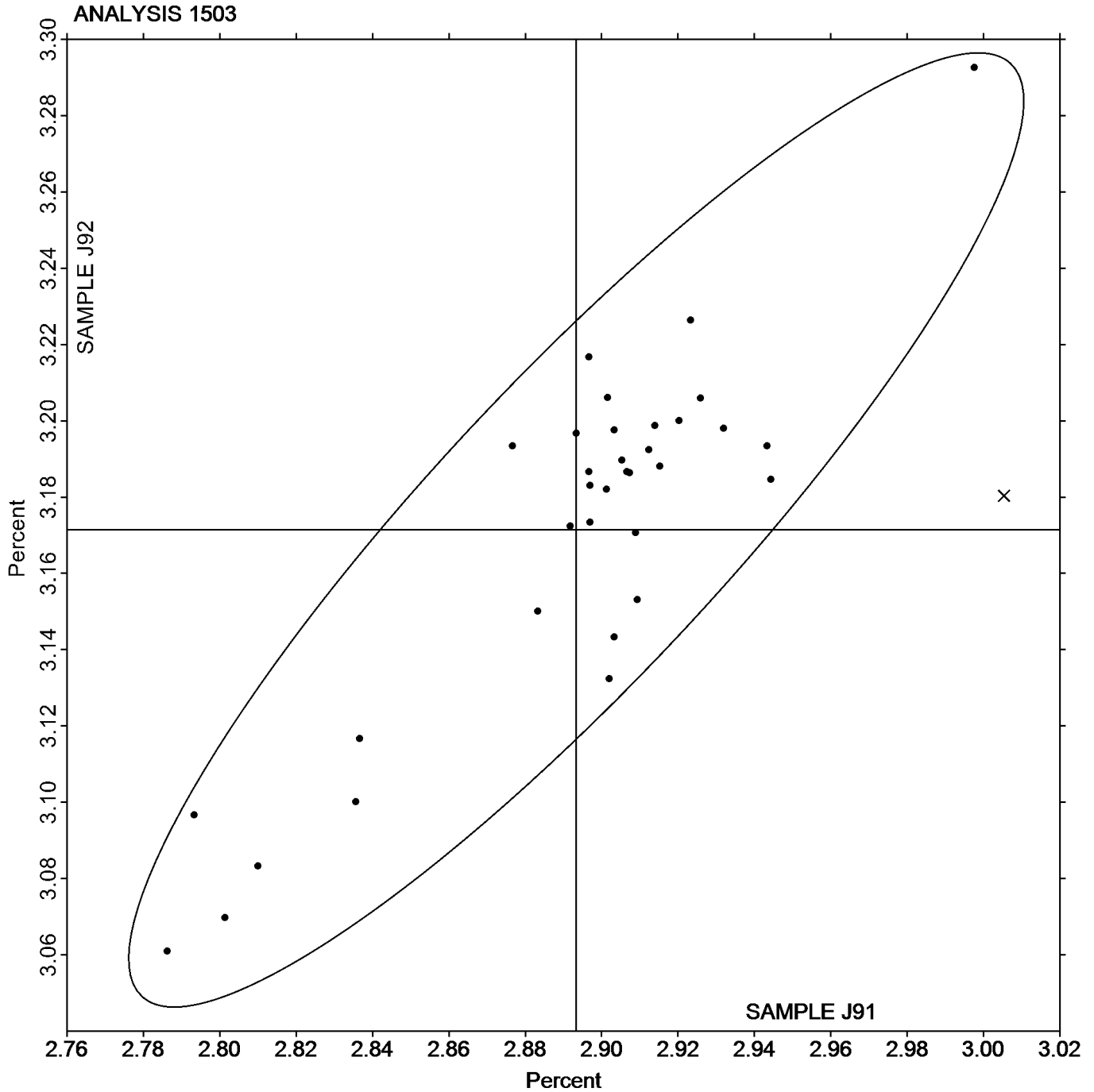


Analysis 1503

Nickel-based Alloy, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

SAMPLE J91
2.893 Percent

SAMPLE J92
3.171 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1504

2nd Qtr
2023

Nickel-based Alloy, ALUMINUM (AI)
ALUMINUM (AI)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		0.4963	-0.0022	-0.11	0.4928	-0.0128	-0.53	XX
3QGFJ9		0.5017	0.0031	0.16	0.5438	0.0383	1.60	DR
3YT3K3		0.4873	-0.0112	-0.56	0.5113	0.0058	0.24	DR
4N9D2M		0.4977	-0.0009	-0.04	0.5013	-0.0042	-0.18	OE
4YMVN8		0.5100	0.0114	0.57	0.5100	0.0044	0.19	OE
6FQRKC		0.4997	0.0012	0.06	0.5033	-0.0022	-0.09	IC
6G8NDB		0.4860	-0.0126	-0.62	0.4907	-0.0149	-0.62	WD
7NJAQ8		0.4708	-0.0277	-1.37	0.4537	-0.0519	-2.16	XX
92ZCCA		0.4883	-0.0102	-0.51	0.4883	-0.0172	-0.72	XX
94MHLR	*	0.4432	-0.0553	-2.74	0.4535	-0.0521	-2.17	WD
AN7774		0.5100	0.0114	0.57	0.5300	0.0244	1.02	OE
BQT3EU		0.5380	0.0394	1.95	0.5570	0.0514	2.15	OE
CLCVQU		0.5270	0.0284	1.41	0.5180	0.0124	0.52	GD
DAWX74		0.4873	-0.0112	-0.56	0.4897	-0.0159	-0.66	GD
DHT8PU		0.5050	0.0064	0.32	0.4997	-0.0059	-0.25	OE
DW9KML		0.5030	0.0044	0.22	0.5153	0.0098	0.41	OE
E4NJU7		0.4943	-0.0042	-0.21	0.4943	-0.0112	-0.47	XR
FQUYXT		0.5073	0.0088	0.43	0.5230	0.0174	0.73	OE
GGLMJA		0.5193	0.0207	1.03	0.5198	0.0142	0.59	OE
GMAUUB		0.5063	0.0078	0.38	0.5047	-0.0009	-0.04	OE
GXNJFE		0.5033	0.0048	0.24	0.5000	-0.0056	-0.23	OE
HNZTTL		0.5043	0.0058	0.29	0.5050	-0.0006	-0.02	XX
J44DFN		0.5210	0.0224	1.11	0.5283	0.0228	0.95	OE
JKV7A2		0.5137	0.0152	0.75	0.5296	0.0240	1.00	OE
JLN6EM		0.4997	0.0011	0.05	0.5043	-0.0012	-0.05	IC
K9ZKEQ		0.5017	0.0031	0.15	0.5097	0.0041	0.17	IC
LR88JV		0.4984	-0.0002	-0.01	0.5043	-0.0013	-0.05	WD
LZ4CJ4		0.4940	-0.0046	-0.23	0.5167	0.0111	0.46	OE
MBGWG7		0.4663	-0.0322	-1.60	0.4827	-0.0229	-0.96	OE
P6HP29		0.4880	-0.0106	-0.52	0.4887	-0.0169	-0.71	IC
P7BM8U		0.4567	-0.0419	-2.07	0.4547	-0.0509	-2.12	ED
QGABRG	X	0.3791	-0.1194	-5.91	0.3899	-0.1157	-4.83	IC
RDMKTJ		0.4611	-0.0374	-1.85	0.4734	-0.0322	-1.34	XX
RR6DGQ		0.4900	-0.0086	-0.42	0.4933	-0.0122	-0.51	XX
RZVLRL		0.5210	0.0224	1.11	0.5270	0.0214	0.90	OE
TX4EWB		0.5299	0.0314	1.55	0.5495	0.0439	1.83	OE
UNLTT2	X	0.6980	0.1994	9.87	0.7353	0.2298	9.59	OE
X7RYG7		0.5177	0.0191	0.95	0.5167	0.0111	0.46	OE
XNK2VL		0.5013	0.0028	0.14	0.5217	0.0161	0.67	OE

Summary Statistics

	Sample J91		Sample J92	
Grand Means	0.4986	Percent	0.5056	Percent
Std Dev Btwn Labs	0.0202	Percent	0.0240	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 37 of 39 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1504

2nd Qtr
2023

Nickel-based Alloy, ALUMINUM (Al)
ALUMINUM (Al)

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1504

QGABRG (X) - Data for both samples are low.

UNLTT2 (X) - Data for both samples are high. Inconsistent within the determinations of sample J92.

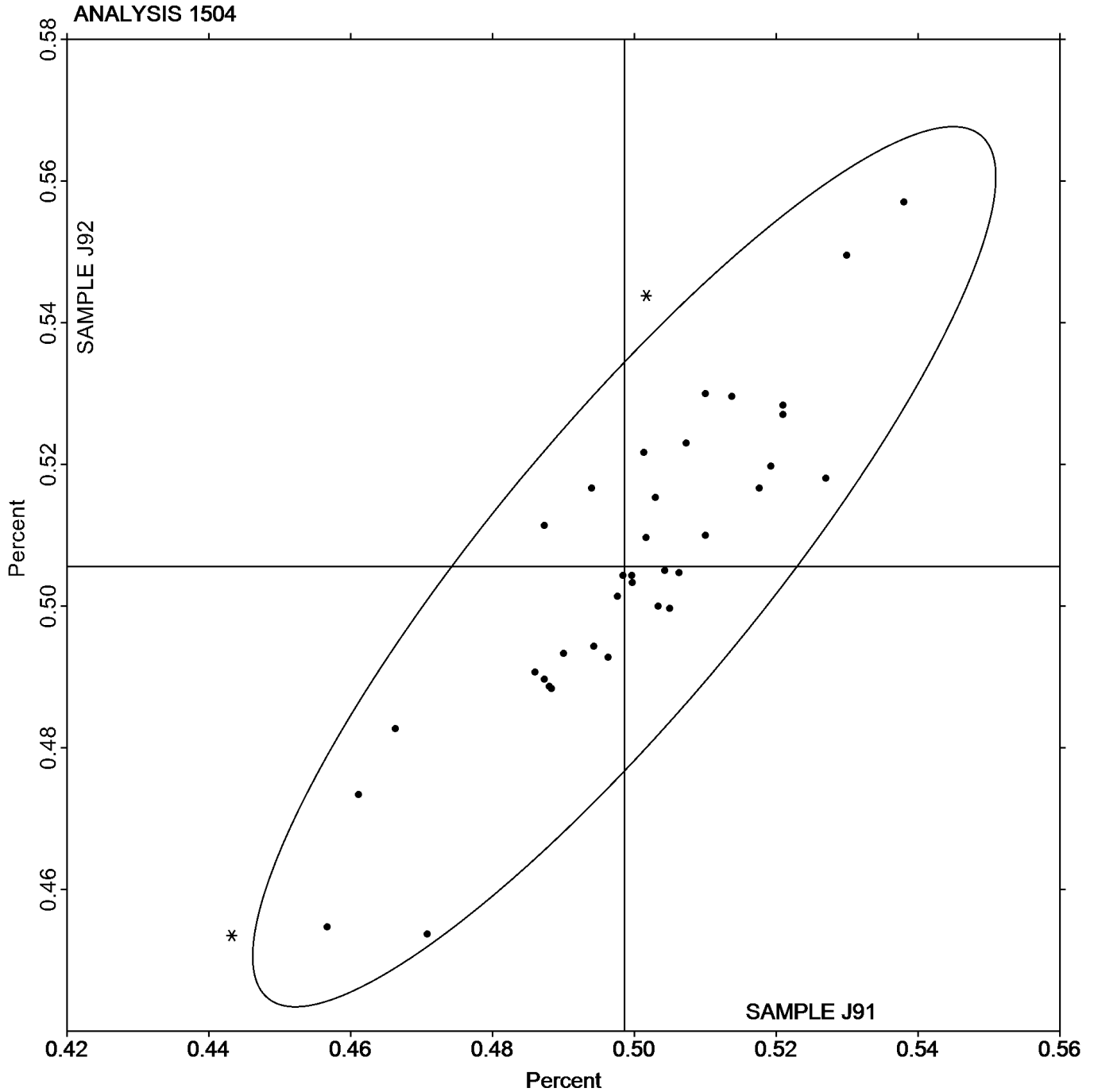


Analysis 1504

Nickel-based Alloy, ALUMINUM (Al)
ALUMINUM (Al)

SAMPLE J91
0.4986 Percent

SAMPLE J92
0.5056 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1505

2nd Qtr
2023

Nickel-based Alloy, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		0.0620	-0.0051	-0.48	0.1036	-0.0054	-0.29	IC
3QGFJ9		0.0660	-0.0011	-0.11	0.0999	-0.0091	-0.49	DR
3YT3K3		0.0653	-0.0018	-0.17	0.1093	0.0004	0.02	DR
4N9D2M	X	0.6393	0.5722	53.78	0.1070	-0.0020	-0.11	OE
4YMVN8		0.0833	0.0162	1.52	0.1100	0.0010	0.05	OE
6FQRKC		0.0607	-0.0064	-0.60	0.1063	-0.0027	-0.15	IC
6G8NDB		0.0637	-0.0034	-0.32	0.1075	-0.0015	-0.08	WD
7NJAQ8		0.0577	-0.0094	-0.88	0.1023	-0.0067	-0.36	WD
92ZCCA	X	0.0251	-0.0420	-3.95	0.0223	-0.0867	-4.64	OE
94MHLR		0.0635	-0.0036	-0.34	0.1038	-0.0051	-0.28	WD
AN7774		0.0673	0.0002	0.02	0.0773	-0.0316	-1.69	XX
BQT3EU		0.0465	-0.0206	-1.94	0.0950	-0.0140	-0.75	OE
CLCVQU		0.0610	-0.0061	-0.57	0.0960	-0.0130	-0.70	GD
DAWX74		0.0707	0.0036	0.33	0.1120	0.0030	0.16	GD
DHT8PU	X	0.1517	0.0846	7.95	0.1920	0.0830	4.45	OE
DW9KML		0.0670	-0.0001	-0.01	0.1133	0.0044	0.23	OE
E4NJU7		0.0630	-0.0041	-0.39	0.1133	0.0044	0.23	XR
FQUYXT		0.0630	-0.0041	-0.39	0.1020	-0.0070	-0.37	OE
GGLMJA		0.0702	0.0031	0.29	0.1076	-0.0014	-0.08	OE
GMAUUB		0.0640	-0.0031	-0.29	0.0861	-0.0229	-1.23	OE
GXNJFE		0.0820	0.0149	1.40	0.1200	0.0110	0.59	OE
HNZTTL		0.0649	-0.0022	-0.21	0.1063	-0.0026	-0.14	XX
J44DFN		0.0692	0.0021	0.19	0.1120	0.0030	0.16	OE
JKV7A2		0.0637	-0.0034	-0.32	0.1045	-0.0044	-0.24	OE
JLN6EM		0.0623	-0.0048	-0.45	0.1083	-0.0006	-0.03	IC
LR88JV		0.0461	-0.0210	-1.98	0.0921	-0.0169	-0.91	WD
LZ4CJ4		0.0462	-0.0209	-1.97	0.1093	0.0004	0.02	OE
MBGWG7		0.0707	0.0036	0.33	0.1133	0.0044	0.23	WD
P6HP29		0.0890	0.0219	2.06	0.1347	0.0257	1.38	IC
P7BM8U		0.0613	-0.0058	-0.54	0.0623	-0.0466	-2.50	ED
QGABRG		0.0818	0.0147	1.38	0.1140	0.0051	0.27	IC
RDMKTJ		0.0682	0.0011	0.11	0.1117	0.0028	0.15	XX
RR6DGQ		0.0643	-0.0028	-0.26	0.1117	0.0027	0.14	IC
RZVLRL		0.0640	-0.0031	-0.29	0.1120	0.0030	0.16	OE
TX4EWB		0.0586	-0.0085	-0.80	0.1009	-0.0080	-0.43	OE
UNLTT2		0.0867	0.0196	1.84	0.1333	0.0244	1.30	OE
X7RYG7		0.0819	0.0148	1.39	0.1040	-0.0050	-0.27	OE
XG8DDZ	*	0.0860	0.0189	1.77	0.1617	0.0527	2.82	WD
XNK2VL	*	0.0743	0.0072	0.68	0.1657	0.0567	3.04	OE

Summary Statistics

	Sample J91		Sample J92	
Grand Means	0.0671	Percent	0.1090	Percent
Std Dev Btwn Labs	0.0106	Percent	0.0187	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 36 of 39 reporting participants



Analysis 1505

**Nickel-based Alloy, SILICON (Si)
SILICON (Si)**

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1505

4N9D2M (X) - Data for sample J91 appear to be off by a factor of ten.

92ZCCA (X) - Data for both samples are low.

DHT8PU (X) - Data for both samples are high.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1506

2nd Qtr
2023

Nickel-based Alloy, NIOBIUM (Nb)
NIOBIUM (Nb)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		5.042	-0.004	-0.07	5.214	-0.025	-0.39	XX
3QGFJ9		5.097	0.051	0.85	5.252	0.013	0.20	DR
3YT3K3		5.057	0.011	0.18	5.206	-0.033	-0.51	DR
4N9D2M		5.007	-0.040	-0.66	5.120	-0.119	-1.85	OE
4YMVN8		5.070	0.024	0.39	5.307	0.068	1.05	OE
6FQRKC		5.085	0.038	0.63	5.302	0.063	0.98	IC
6G8NDB		4.991	-0.055	-0.92	5.196	-0.043	-0.67	WD
7NJAQ8		5.023	-0.023	-0.39	5.215	-0.024	-0.37	WD
92ZCCA		5.029	-0.018	-0.30	5.234	-0.005	-0.08	WD
94MHLR	X	5.399	0.352	5.87	5.638	0.399	6.20	WD
AN7774		5.047	0.000	0.00	5.287	0.048	0.74	OE
BQT3EU		5.074	0.028	0.46	5.207	-0.032	-0.50	OE
CLCVQU	*	5.212	0.166	2.76	5.304	0.065	1.01	GD
DAWX74		5.123	0.077	1.28	5.300	0.061	0.95	GD
DHT8PU		5.010	-0.036	-0.61	5.293	0.054	0.85	OE
DW9KML		5.043	-0.003	-0.06	5.326	0.087	1.35	OE
E4NJU7		5.077	0.030	0.50	5.267	0.028	0.44	XR
FQUYXT	*	4.881	-0.165	-2.75	5.152	-0.087	-1.35	OE
GGLMJA		5.052	0.005	0.09	5.240	0.001	0.02	WD
GMAUUB	X	4.890	-0.156	-2.61	5.293	0.054	0.85	OE
GXNJFE		5.063	0.017	0.28	5.297	0.058	0.90	OE
HNZTTL		5.007	-0.040	-0.66	5.167	-0.072	-1.12	XX
J44DFN		4.987	-0.060	-1.00	5.113	-0.126	-1.95	OE
JKV7A2		4.994	-0.053	-0.88	5.128	-0.110	-1.72	OE
JLN6EM		5.089	0.043	0.71	5.290	0.051	0.80	IC
K9ZKEQ		5.077	0.030	0.50	5.210	-0.029	-0.44	IC
LR88JV		4.961	-0.085	-1.42	5.282	0.043	0.66	WD
LZ4CJ4		5.066	0.019	0.32	5.219	-0.020	-0.31	OE
MBGWG7		5.065	0.019	0.31	5.267	0.028	0.44	WD
P6HP29		5.049	0.002	0.04	5.147	-0.092	-1.43	IC
P7BM8U		5.034	-0.012	-0.21	5.237	-0.002	-0.03	ED
QGABRG		5.093	0.047	0.78	5.261	0.022	0.35	IC
RDMKTJ		5.042	-0.004	-0.07	5.249	0.010	0.16	XX
RR6DGQ		5.037	-0.010	-0.16	5.230	-0.009	-0.14	IC
RZVLRL		5.053	0.007	0.11	5.306	0.067	1.04	OE
TX4EWB		5.096	0.049	0.82	5.300	0.061	0.96	WD
UNLTT2	X	4.931	-0.115	-1.92	4.965	-0.274	-4.25	OE
X7RYG7		5.043	-0.003	-0.05	5.313	0.074	1.16	OE
XG8DDZ		4.898	-0.148	-2.47	5.093	-0.146	-2.26	WD
XNK2VL		5.147	0.100	1.67	5.307	0.068	1.05	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1506

2nd Qtr
2023

Nickel-based Alloy, NIOBIUM (Nb)
NIOBIUM (Nb)

Summary Statistics

	<u>Sample J91</u>		<u>Sample J92</u>	
Grand Means	5.046	Percent	5.239	Percent
Stnd Dev Btwn Labs	0.060	Percent	0.064	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 37 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1506

94MHLR (X) - Data for both samples are high.

GMAUUB (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J91.

UNLTT2 (X) - Data for sample J92 are low. Inconsistent within the determinations of both samples.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1507

2nd Qtr
2023

Nickel-based Alloy, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample J91			Sample J92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		0.9350	-0.0090	-0.38	0.9450	-0.0106	-0.39	XX
3QGFJ9		0.9425	-0.0015	-0.06	0.9655	0.0100	0.37	DR
3YT3K3		0.9440	0.0000	0.00	0.9530	-0.0026	-0.10	DR
4N9D2M		0.9413	-0.0027	-0.11	0.9373	-0.0182	-0.68	OE
4YMVN8		0.9400	-0.0040	-0.17	0.9467	-0.0089	-0.33	OE
6FQRKC		0.9612	0.0172	0.72	0.9760	0.0204	0.76	IC
6G8NDB		0.9547	0.0107	0.45	0.9700	0.0144	0.53	WD
7NJAQ8		0.9635	0.0195	0.82	0.9765	0.0210	0.78	WD
92ZCCA		0.9560	0.0120	0.50	0.9703	0.0148	0.55	WD
94MHLR	X	0.9651	0.0211	0.88	0.9139	-0.0417	-1.54	WD
AN7774		0.9300	-0.0140	-0.59	0.9400	-0.0156	-0.58	OE
BQT3EU		0.9470	0.0030	0.13	0.9690	0.0134	0.50	OE
CLCVQU		0.9120	-0.0320	-1.34	0.9170	-0.0386	-1.43	GD
DAWX74	X	0.9713	0.0273	1.15	0.9463	-0.0092	-0.34	GD
DHT8PU		0.8987	-0.0453	-1.90	0.9090	-0.0466	-1.72	OE
DW9KML		0.9290	-0.0150	-0.63	0.9370	-0.0186	-0.69	OE
E4NJU7		0.9767	0.0327	1.37	0.9880	0.0324	1.20	XR
FQUYXT		0.9453	0.0013	0.06	0.9560	0.0004	0.02	OE
GGLMJA		0.9450	0.0010	0.04	0.9310	-0.0246	-0.91	WD
GMAUUB	*	1.017	0.0727	3.05	1.023	0.0678	2.51	OE
GXNJFE	X	1.040	0.0960	4.03	1.057	0.1011	3.74	OE
HNZTTL		0.9447	0.0007	0.03	0.9457	-0.0099	-0.37	XX
J44DFN		0.9490	0.0050	0.21	0.9710	0.0154	0.57	OE
JKV7A2		0.9418	-0.0022	-0.09	0.9490	-0.0066	-0.24	OE
JLN6EM		0.9587	0.0147	0.62	0.9697	0.0141	0.52	IC
LR88JV		0.9563	0.0123	0.51	0.9724	0.0169	0.62	WD
LZ4CJ4		0.9423	-0.0017	-0.07	0.9657	0.0101	0.37	OE
MBGWG7		0.9497	0.0057	0.24	0.9597	0.0041	0.15	WD
P6HP29		0.9573	0.0133	0.56	0.9653	0.0098	0.36	IC
P7BM8U		0.8907	-0.0533	-2.24	0.8950	-0.0606	-2.24	ED
QGABRG		0.9320	-0.0120	-0.50	0.9455	-0.0101	-0.37	IC
RDMKTJ		0.9728	0.0288	1.21	0.9819	0.0263	0.97	XX
RR6DGQ		0.9500	0.0060	0.25	0.9600	0.0044	0.16	IC
RZVLRL		0.8990	-0.0450	-1.89	0.9120	-0.0436	-1.61	OE
TX4EWB		0.9616	0.0176	0.74	0.9858	0.0302	1.12	OE
UNLTT2		0.8980	-0.0460	-1.93	0.9000	-0.0556	-2.06	OE
X7RYG7		0.9440	0.0000	0.00	0.9633	0.0078	0.29	OE
XG8DDZ		0.9443	0.0003	0.01	0.9550	-0.0006	-0.02	WD
XNK2VL	*	0.9533	0.0093	0.39	0.9933	0.0378	1.40	OE

Summary Statistics

	Sample J91		Sample J92	
Grand Means	0.9440	Percent	0.9556	Percent
Std Dev Btwn Labs	0.0238	Percent	0.0270	Percent

Samples J91, J92 : Alloy 718, Alloy 718

Statistics based on 36 of 39 reporting participants



Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1507

94MHLR (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

DAWX74 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J91.

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



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1540

2nd Qtr

Aluminum, ZINC (Zn)

2023

ZINC (Zn)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.0610	-0.0015	-0.55	0.0161	0.0009	0.43	DR
3CZJKZ	M	0.0637	0.0011	0.40	No Data Reported			IC
3FDUJ2		0.0610	-0.0015	-0.55	0.0160	0.0009	0.40	OE
4N9D2M	X	0.6643	0.6018	215.83	0.0185	0.0034	1.56	OE
6X4FPW		0.0619	-0.0006	-0.23	0.0154	0.0003	0.14	OE
7WRZUA		0.0617	-0.0009	-0.31	0.0156	0.0004	0.20	IC
92ZCCA		0.0630	0.0005	0.16	0.0159	0.0008	0.37	OE
99HCJT		0.0658	0.0033	1.17	0.0174	0.0023	1.06	OE
AN7774		0.0623	-0.0002	-0.07	0.0143	-0.0008	-0.37	OE
B7Z2JQ		0.0613	-0.0012	-0.43	0.0128	-0.0024	-1.08	OE
DW9KML		0.0643	0.0018	0.64	0.0150	-0.0001	-0.06	IC
EFDHL9		0.0608	-0.0017	-0.62	0.0154	0.0003	0.12	OE
EMZ984		0.0630	0.0005	0.16	0.0167	0.0015	0.70	OE
EYBJXE	*	0.0590	-0.0036	-1.28	0.00910	-0.0060	-2.76	OE
FVKWFB		0.0632	0.0007	0.24	0.0153	0.0002	0.08	OE
GD369Y		0.0631	0.0005	0.19	0.0168	0.0016	0.75	OE
GF9PXK		0.0573	-0.0052	-1.87	0.0147	-0.0005	-0.21	OE
GMAUUB	*	0.0579	-0.0047	-1.68	0.00870	-0.0064	-2.95	OE
HJKK6M		0.0613	-0.0012	-0.43	0.0173	0.0022	1.01	OE
J44DFN	X	0.7067	0.6441	231.01	0.7817	0.7665	351.35	OE
JKV7A2		0.0665	0.0040	1.43	0.0164	0.0013	0.58	OE
KCEMAE		0.0640	0.0015	0.52	0.0150	-0.0001	-0.06	OE
LJUXAG		0.0670	0.0045	1.60	0.0140	-0.0011	-0.52	XX
LNQPFR	X	0.0567	-0.0059	-2.11	0.00620	-0.0089	-4.09	OE
LZ4CJ4		0.0654	0.0029	1.03	0.0166	0.0015	0.69	OE
MFNYCT		0.0588	-0.0037	-1.34	0.0145	-0.0007	-0.31	OE
MR4LME		0.0598	-0.0028	-0.99	0.0134	-0.0017	-0.79	OE
NYFHPR		0.0690	0.0065	2.32	0.0168	0.0017	0.77	IC
P7BM8U		0.0607	-0.0019	-0.67	0.0139	-0.0012	-0.56	ED
Q2EHUG		0.0626	0.0000	0.01	0.0161	0.0010	0.46	OE
Q43PHJ	X	0.0740	0.0115	4.11	0.0260	0.0109	4.98	GD
QGABRG	M	0.0327	-0.0299	-10.71	No Data Reported			IC
RTFARM		0.0659	0.0034	1.20	0.0206	0.0055	2.51	OE
T9BWRM		0.0639	0.0014	0.50	0.0169	0.0018	0.81	OE
U8EYY7		0.0628	0.0003	0.09	0.0164	0.0012	0.57	OE
V3XVLA		0.0619	-0.0006	-0.23	0.0150	-0.0001	-0.04	IC
VBRYWX		0.0653	0.0028	0.99	0.0163	0.0011	0.52	OE
W2G2JE		0.0643	0.0018	0.64	0.0157	0.0005	0.25	IC
X7RYG7		0.0625	0.0000	0.00	0.0135	-0.0016	-0.75	OE
XNK2VL		0.0616	-0.0009	-0.34	0.0121	-0.0031	-1.40	OE
YJ84WK	X	0.0502	-0.0123	-4.43	0.00293	-0.0122	-5.59	IC
YQT2K9		0.0580	-0.0045	-1.62	0.0146	-0.0005	-0.25	OE
ZFNCKH		0.0670	0.0045	1.60	0.0167	0.0015	0.70	OE
ZGHYY8		0.0590	-0.0035	-1.27	0.0130	-0.0021	-0.98	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1540

2nd Qtr

Aluminum, ZINC (Zn)

2023

ZINC (Zn)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	0.0625	Percent	0.0151	Percent
Std Dev Btwn Labs	0.0028	Percent	0.0022	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 37 of 44 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1540

3CZJKZ (M) - Participant did not submit data for sample A92.

4N9D2M (X) - Data for sample A91 appear to be off by a factor of ten.

J44DFN (X) - Extreme data.

LNQPFR (X) - Data for sample A92 are low.

Q43PHJ (X) - Data for both samples are high.

QGABRG (M) - Participant did not submit data for sample A92.

YJ84WK (X) - Data for both samples are low.



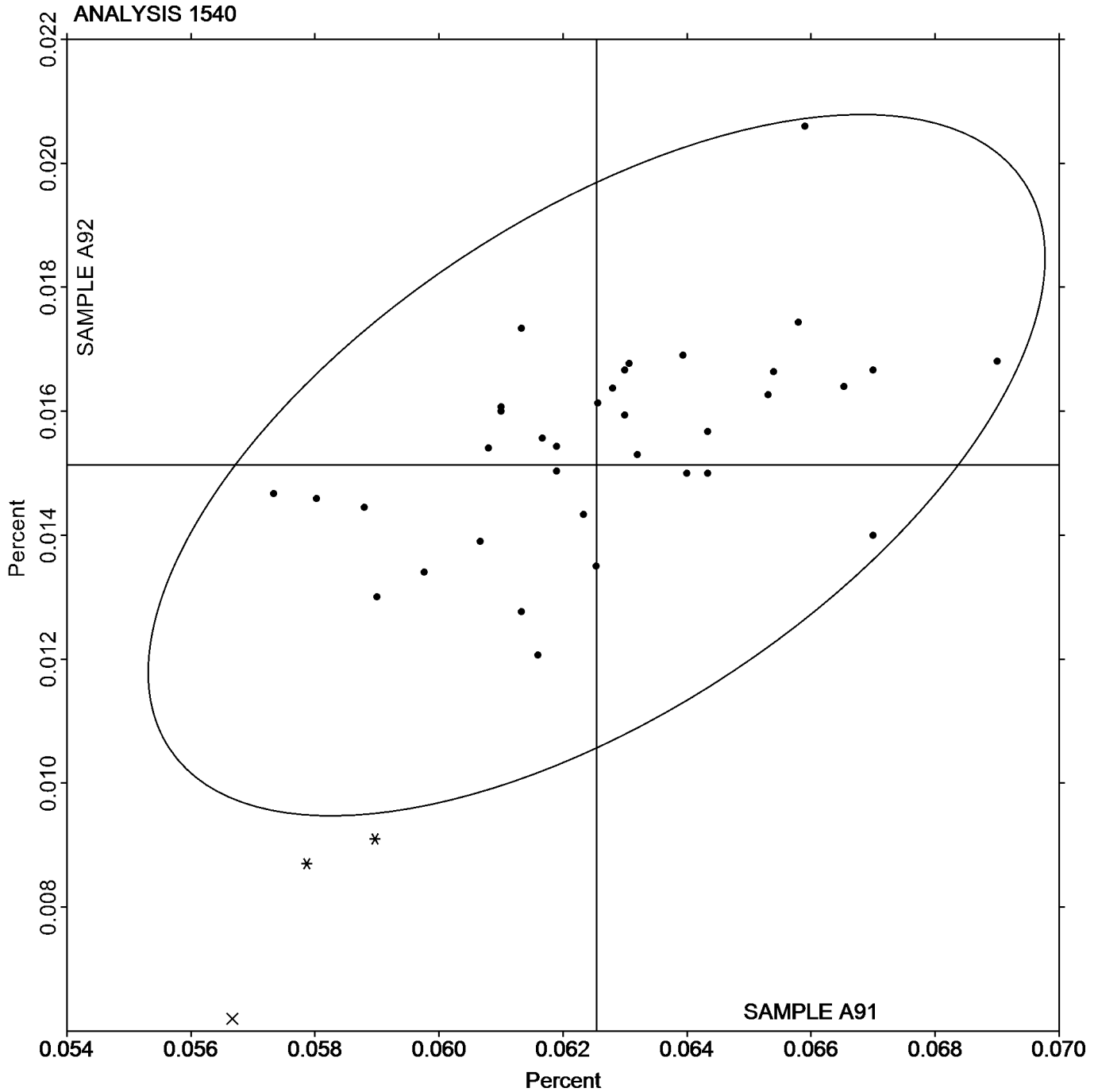
Analysis 1540

Aluminum, ZINC (Zn)

ZINC (Zn)

SAMPLE A91
0.0625 Percent

SAMPLE A92
0.0151 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1541

2nd Qtr

Aluminum, COPPER (Cu)

2023

COPPER (Cu)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.2880	0.0012	0.10	0.3733	0.0072	0.42	DR
3CZJKZ		0.2773	-0.0095	-0.78	0.3580	-0.0081	-0.48	IC
3FDUJ2		0.2893	0.0025	0.21	0.3700	0.0039	0.23	OE
4N9D2M		0.2973	0.0105	0.86	0.3857	0.0195	1.14	OE
6X4FPW		0.2771	-0.0097	-0.80	0.3561	-0.0100	-0.59	OE
7WRZUA		0.2943	0.0075	0.61	0.3760	0.0099	0.58	IC
92ZCCA		0.2813	-0.0055	-0.45	0.3580	-0.0081	-0.48	OE
99HCJT		0.2899	0.0031	0.25	0.3759	0.0098	0.57	OE
AN7774	*	0.3030	0.0162	1.32	0.3630	-0.0031	-0.18	OE
B7Z2JQ		0.2892	0.0023	0.19	0.3674	0.0013	0.08	OE
DW9KML		0.2917	0.0048	0.40	0.3667	0.0005	0.03	IC
EFDHL9		0.2793	-0.0076	-0.62	0.3515	-0.0147	-0.86	XX
EMZ984		0.2683	-0.0185	-1.51	0.3403	-0.0258	-1.51	OE
EYBJXE		0.2880	0.0012	0.10	0.3687	0.0025	0.15	OE
FVKWFB		0.2937	0.0068	0.56	0.3707	0.0045	0.27	OE
GD369Y		0.2875	0.0007	0.06	0.3652	-0.0010	-0.06	OE
GF9P XK		0.2850	-0.0018	-0.15	0.3673	0.0012	0.07	OE
GMAUUB		0.2733	-0.0135	-1.10	0.3510	-0.0151	-0.89	OE
HJKK6M		0.2840	-0.0028	-0.23	0.3673	0.0012	0.07	OE
J44DFN	*	0.3173	0.0305	2.50	0.4010	0.0349	2.04	OE
JKV7A2		0.2954	0.0086	0.70	0.3691	0.0029	0.17	OE
KCEMAE		0.2907	0.0038	0.31	0.3703	0.0042	0.25	OE
LJUXAG		0.2890	0.0022	0.18	0.3630	-0.0031	-0.18	OE
LNQPFR		0.2877	0.0008	0.07	0.3700	0.0039	0.23	OE
LZ4CJ4		0.2867	-0.0002	-0.01	0.3677	0.0015	0.09	OE
MFNYCT		0.3022	0.0153	1.25	0.3904	0.0243	1.42	OE
MR4LME		0.2680	-0.0189	-1.54	0.3427	-0.0234	-1.37	XX
NYFHPR	X	0.3227	0.0358	2.93	0.3947	0.0285	1.67	IC
P7BM8U	X	0.1417	-0.1452	-11.88	0.1827	-0.1835	-10.74	ED
Q2EHUG		0.2803	-0.0065	-0.53	0.3590	-0.0071	-0.42	OE
Q43PHJ	*	0.3200	0.0332	2.71	0.4070	0.0409	2.39	XX
QGABRG		0.2789	-0.0079	-0.65	0.3532	-0.0129	-0.76	IC
RTFARM		0.2769	-0.0100	-0.81	0.3615	-0.0046	-0.27	OE
T9BWRM		0.2874	0.0005	0.04	0.3701	0.0039	0.23	OE
U8EYY7		0.2949	0.0081	0.66	0.3760	0.0099	0.58	OE
V3XVLA	X	0.3344	0.0476	3.89	0.4285	0.0624	3.65	IC
VBRYWX		0.2636	-0.0232	-1.90	0.3290	-0.0372	-2.18	OE
W2G2JE		0.2970	0.0102	0.83	0.3820	0.0159	0.93	IC
X7RYG7		0.2773	-0.0095	-0.78	0.3567	-0.0095	-0.55	OE
XNK2VL		0.2893	0.0024	0.20	0.3725	0.0063	0.37	OE
YJ84WK		0.2756	-0.0112	-0.92	0.3405	-0.0257	-1.50	IC
YQT2K9		0.2621	-0.0247	-2.02	0.3242	-0.0419	-2.46	OE
ZFNCKH		0.2980	0.0112	0.91	0.3827	0.0165	0.97	OE
ZGHYY8		0.3000	0.0132	1.08	0.3880	0.0219	1.28	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1541

2nd Qtr

Aluminum, COPPER (Cu)

2023

COPPER (Cu)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	0.2868	Percent	0.3661	Percent
Std Dev Btwn Labs	0.0122	Percent	0.0171	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 40 of 44 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES)
- ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1541

NYFHPR (X) - Data for sample A91 are high. Inconsistent within the determinations of sample A92.

P7BM8U (X) - Data for both samples are low.

V3XVLA (X) - Data for both samples are high. Inconsistent within the determinations of sample A92.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1542

2nd Qtr

Aluminum, IRON (Fe)

2023

IRON (Fe)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.3873	-0.0086	-0.62	0.3040	-0.0042	-0.39	DR
3CZJKZ		0.3890	-0.0070	-0.50	0.3043	-0.0038	-0.36	IC
3FDUJ2		0.3867	-0.0093	-0.67	0.3020	-0.0062	-0.58	OE
4N9D2M		0.4113	0.0154	1.11	0.3177	0.0095	0.89	OE
6X4FPW		0.3875	-0.0085	-0.61	0.3000	-0.0081	-0.76	OE
7WRZUA		0.4017	0.0057	0.41	0.3087	0.0005	0.05	IC
92ZCCA		0.3910	-0.0050	-0.36	0.3063	-0.0018	-0.17	OE
99HCJT		0.4253	0.0294	2.13	0.3349	0.0267	2.50	OE
AN7774		0.4173	0.0214	1.55	0.3190	0.0108	1.01	OE
B7Z2JQ		0.3974	0.0014	0.10	0.3051	-0.0031	-0.29	OE
DW9KML		0.3973	0.0014	0.10	0.3080	-0.0002	-0.01	IC
EFDHL9		0.3753	-0.0207	-1.50	0.2876	-0.0205	-1.92	XX
EMZ984		0.4037	0.0077	0.56	0.3120	0.0038	0.36	OE
EYBJXE		0.3737	-0.0223	-1.61	0.2977	-0.0105	-0.98	OE
FVKWFB		0.4000	0.0040	0.29	0.3080	-0.0002	-0.01	OE
GD369Y		0.3900	-0.0060	-0.43	0.3039	-0.0043	-0.40	OE
GF9PXK		0.3920	-0.0040	-0.29	0.3120	0.0038	0.36	OE
GMAUUB		0.4050	0.0090	0.66	0.3227	0.0145	1.36	OE
J44DFN		0.4147	0.0187	1.36	0.3140	0.0058	0.55	OE
JKV7A2		0.4057	0.0097	0.70	0.3128	0.0046	0.43	OE
KCEMAE		0.3717	-0.0243	-1.76	0.2903	-0.0178	-1.67	OE
LJUXAG	X	0.4070	0.0110	0.80	0.4100	0.1018	9.52	OE
LNQPFR		0.3957	-0.0003	-0.02	0.3127	0.0045	0.42	OE
LZ4CJ4		0.4017	0.0057	0.41	0.3087	0.0005	0.05	OE
MFNYCT		0.4030	0.0070	0.51	0.3212	0.0130	1.22	OE
MR4LME	X	0.3797	-0.0163	-1.18	0.3140	0.0058	0.54	XX
NYFHPR	X	0.4587	0.0627	4.54	0.3380	0.0298	2.79	IC
P7BM8U		0.3917	-0.0043	-0.31	0.3073	-0.0008	-0.08	ED
Q2EHUG		0.3927	-0.0033	-0.24	0.3110	0.0028	0.27	OE
Q43PHJ		0.4200	0.0240	1.74	0.3260	0.0178	1.67	XX
QGABRG		0.3857	-0.0103	-0.74	0.3038	-0.0044	-0.41	IC
RTFARM		0.3886	-0.0074	-0.53	0.3092	0.0010	0.09	OE
T9BWRM		0.3992	0.0032	0.23	0.3111	0.0030	0.28	OE
U8EYY7		0.4034	0.0074	0.54	0.3064	-0.0018	-0.16	OE
V3XVLA		0.3934	-0.0026	-0.18	0.3025	-0.0057	-0.53	IC
VBRYWX		0.3638	-0.0321	-2.33	0.2840	-0.0242	-2.26	OE
W2G2JE		0.4010	0.0050	0.37	0.3183	0.0102	0.95	IC
X7RYG7		0.3847	-0.0113	-0.82	0.3043	-0.0038	-0.36	OE
XNK2VL		0.4099	0.0139	1.01	0.3173	0.0092	0.86	OE
YJ84WK		0.3800	-0.0160	-1.16	0.2862	-0.0219	-2.05	IC
YQT2K9		0.3813	-0.0147	-1.06	0.2940	-0.0142	-1.33	OE
ZFNCKH		0.3987	0.0027	0.20	0.3100	0.0018	0.17	OE
ZGHYY8		0.4203	0.0244	1.77	0.3213	0.0132	1.23	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1542

2nd Qtr

Aluminum, IRON (Fe)

2023

IRON (Fe)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	0.3960	Percent	0.3082	Percent
Stnd Dev Btwn Labs	0.0138	Percent	0.0107	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 40 of 43 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES)
- ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1542

LJUXAG (X) - Data for sample A92 are high.

MR4LME (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample A92.

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



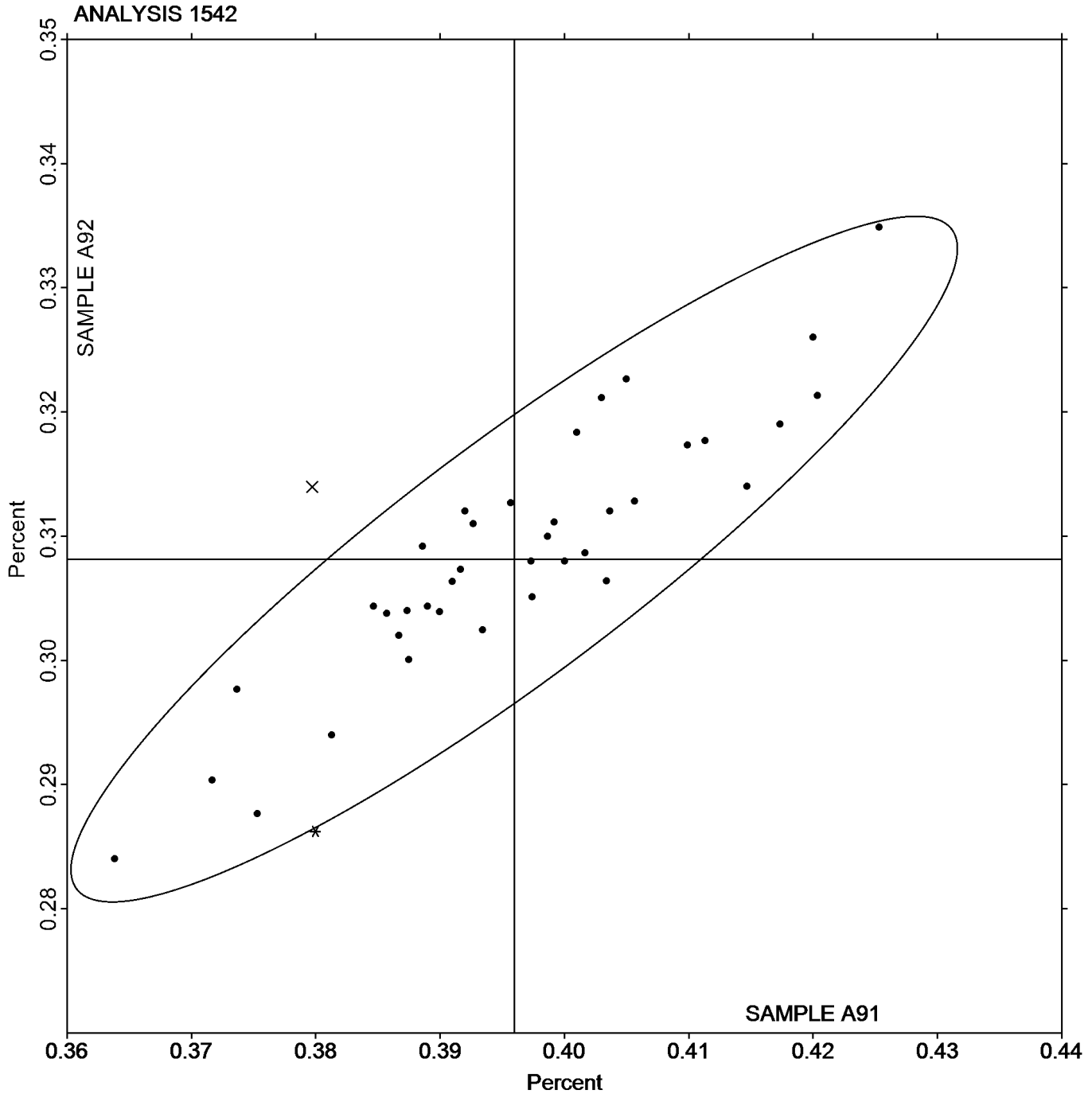
Analysis 1542

Aluminum, IRON (Fe)

IRON (Fe)

SAMPLE A91
0.3960 Percent

SAMPLE A92
0.3082 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1543

2nd Qtr
2023

Aluminum, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.6827	-0.0098	-0.73	0.7633	-0.0068	-0.47	DR
3CZJKZ		0.6813	-0.0111	-0.83	0.7733	0.0032	0.22	IC
3FDUJ2		0.6793	-0.0131	-0.98	0.7600	-0.0101	-0.70	OE
4N9D2M		0.6940	0.0016	0.12	0.7783	0.0082	0.57	OE
6X4FPW		0.6866	-0.0058	-0.44	0.7606	-0.0095	-0.65	OE
7WRZUA		0.6680	-0.0244	-1.83	0.7440	-0.0261	-1.80	WC
92ZCCA		0.6947	0.0022	0.17	0.7677	-0.0024	-0.17	OE
99HCJT		0.7091	0.0167	1.25	0.7940	0.0239	1.65	OE
AN7774		0.6967	0.0042	0.32	0.7600	-0.0101	-0.70	OE
B7Z2JQ		0.7076	0.0152	1.14	0.7887	0.0186	1.29	OE
DW9KML		0.6913	-0.0011	-0.08	0.7650	-0.0051	-0.35	IC
EFDHL9		0.6790	-0.0135	-1.01	0.7452	-0.0249	-1.72	XX
EMZ984		0.7167	0.0242	1.82	0.7873	0.0172	1.19	OE
EYBJXE		0.7090	0.0166	1.24	0.7917	0.0216	1.49	OE
FVKWFB		0.6987	0.0062	0.47	0.7717	0.0016	0.11	OE
GD369Y		0.7167	0.0243	1.82	0.7957	0.0256	1.77	OE
GF9PXK		0.6853	-0.0071	-0.53	0.7757	0.0056	0.39	OE
GMAUUB		0.6970	0.0046	0.34	0.7680	-0.0021	-0.14	OE
HJKK6M		0.6777	-0.0148	-1.11	0.7610	-0.0091	-0.63	OE
J44DFN		0.7067	0.0142	1.07	0.7817	0.0116	0.80	OE
JKV7A2		0.7012	0.0087	0.65	0.7709	0.0008	0.05	OE
KCEMAE		0.6633	-0.0291	-2.18	0.7490	-0.0211	-1.46	OE
LJUXAG		0.7120	0.0196	1.47	0.7860	0.0159	1.10	OE
LNQPFR		0.6900	-0.0024	-0.18	0.7727	0.0026	0.18	OE
LZ4CJ4		0.6807	-0.0118	-0.88	0.7557	-0.0144	-1.00	OE
MFNYCT	X	0.7588	0.0663	4.97	0.8408	0.0707	4.89	OE
MR4LME		0.6710	-0.0214	-1.61	0.7400	-0.0301	-2.08	XX
NYFHPR	X	0.7553	0.0629	4.71	0.8073	0.0372	2.58	IC
P7BM8U	X	0.5113	-0.1811	-13.58	0.5403	-0.2298	-15.89	ED
Q2EHUG		0.6850	-0.0074	-0.56	0.7690	-0.0011	-0.08	OE
Q43PHJ	X	0.6190	-0.0734	-5.51	0.7000	-0.0701	-4.85	XX
QGABRG	X	0.6478	-0.0446	-3.35	0.7697	-0.0004	-0.03	IC
RTFARM		0.6908	-0.0016	-0.12	0.7846	0.0145	1.00	OE
T9BWRM		0.6955	0.0031	0.23	0.7752	0.0051	0.36	OE
U8EYY7		0.7016	0.0092	0.69	0.7774	0.0073	0.51	OE
V3XVLA	*	0.6937	0.0013	0.10	0.8005	0.0304	2.11	WC
VBRYWX		0.6791	-0.0133	-1.00	0.7472	-0.0228	-1.58	OE
W2G2JE		0.7100	0.0176	1.32	0.7827	0.0126	0.87	IC
X7RYG7		0.6903	-0.0021	-0.16	0.7723	0.0022	0.16	OE
XNK2VL		0.7012	0.0087	0.65	0.7861	0.0160	1.11	OE
YJ84WK	X	0.5979	-0.0945	-7.09	0.6293	-0.1408	-9.74	IC
YQT2K9		0.6947	0.0023	0.17	0.7646	-0.0055	-0.38	OE
ZFNCKH		0.6907	-0.0018	-0.13	0.7667	-0.0034	-0.24	OE
ZGHYY8		0.6853	-0.0071	-0.53	0.7603	-0.0098	-0.67	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1543

2nd Qtr
2023

Aluminum, SILICON (Si)
SILICON (Si)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	0.6924	Percent	0.7701	Percent
Std Dev Btwn Labs	0.0133	Percent	0.0145	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 37 of 44 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WC	Wet Chemistry	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1543

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

NYFHPR (X) - Data for sample A91 are high.

P7BM8U (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample A91.

Q43PHJ (X) - Data for both samples are low. Possible Systematic Error.

QGABRG (X) - Data for sample A91 are low.

YJ84WK (X) - Data for both samples are low. Possible Systematic Error.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1544

2nd Qtr
2023

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.1393	-0.0003	-0.05	0.1330	-0.0007	-0.12	DR
3CZJKZ		0.1330	-0.0066	-1.26	0.1273	-0.0063	-1.13	IC
3FDUJ2		0.1413	0.0017	0.33	0.1353	0.0017	0.30	OE
4N9D2M		0.1357	-0.0039	-0.75	0.1300	-0.0037	-0.66	OE
6X4FPW		0.1405	0.0009	0.17	0.1351	0.0015	0.26	XX
7WRZUA		0.1390	-0.0006	-0.11	0.1337	0.0000	0.00	IC
92ZCCA		0.1357	-0.0039	-0.75	0.1297	-0.0040	-0.72	OE
99HCJT		0.1523	0.0127	2.43	0.1484	0.0148	2.64	OE
AN7774		0.1400	0.0004	0.08	0.1330	-0.0007	-0.12	OE
B7Z2JQ		0.1353	-0.0043	-0.83	0.1288	-0.0049	-0.88	OE
DW9KML		0.1420	0.0024	0.46	0.1370	0.0033	0.60	IC
EFDHL9		0.1424	0.0028	0.55	0.1332	-0.0005	-0.09	XX
EMZ984		0.1397	0.0001	0.01	0.1307	-0.0030	-0.54	OE
EYBJXE		0.1300	-0.0096	-1.84	0.1260	-0.0077	-1.37	OE
FVKWFB	*	0.1363	-0.0033	-0.62	0.1353	0.0016	0.29	OE
GD369Y		0.1342	-0.0054	-1.03	0.1283	-0.0054	-0.97	OE
GF9PXK		0.1413	0.0017	0.33	0.1330	-0.0007	-0.12	OE
GMAUUB		0.1347	-0.0049	-0.94	0.1290	-0.0047	-0.84	OE
HJJK6M		0.1407	0.0011	0.21	0.1350	0.0013	0.24	OE
J44DFN		0.1410	0.0014	0.27	0.1353	0.0017	0.30	OE
JKV7A2		0.1471	0.0075	1.45	0.1408	0.0071	1.27	OE
KCEMAE		0.1430	0.0034	0.65	0.1377	0.0040	0.72	OE
LJUXAG		0.1420	0.0024	0.46	0.1360	0.0023	0.42	OE
LNQPFR		0.1417	0.0021	0.40	0.1363	0.0027	0.48	OE
LZ4CJ4		0.1410	0.0014	0.27	0.1347	0.0010	0.18	OE
MFNYCT	X	0.0940	-0.0456	-8.75	0.0899	-0.0438	-7.84	OE
MR4LME		0.1372	-0.0024	-0.45	0.1344	0.0007	0.13	XX
NYFHPR	X	0.1590	0.0194	3.72	0.1460	0.0123	2.21	IC
P7BM8U	X	0.0653	-0.0743	-14.24	0.0627	-0.0710	-12.71	ED
Q2EHUG		0.1400	0.0004	0.08	0.1353	0.0017	0.30	OE
Q43PHJ	*	0.1560	0.0164	3.15	0.1510	0.0173	3.10	XX
QGABRG		0.1386	-0.0010	-0.20	0.1269	-0.0067	-1.21	IC
RTFARM		0.1399	0.0003	0.05	0.1357	0.0020	0.36	OE
T9BWRM		0.1273	-0.0123	-2.35	0.1227	-0.0110	-1.97	OE
U8EYY7		0.1373	-0.0023	-0.44	0.1305	-0.0032	-0.57	OE
V3XVLA		0.1366	-0.0030	-0.58	0.1295	-0.0042	-0.75	IC
VBRYWX		0.1378	-0.0018	-0.35	0.1318	-0.0019	-0.34	OE
W2G2JE		0.1423	0.0027	0.53	0.1387	0.0050	0.90	IC
X7RYG7		0.1407	0.0011	0.21	0.1347	0.0010	0.18	OE
XNK2VL		0.1402	0.0006	0.11	0.1341	0.0004	0.08	OE
YJ84WK		0.1346	-0.0050	-0.96	0.1247	-0.0089	-1.60	IC
YQT2K9		0.1478	0.0082	1.57	0.1419	0.0083	1.48	OE
ZFNCKH		0.1383	-0.0013	-0.24	0.1323	-0.0013	-0.24	OE
ZGHYY8	X	0.2230	0.0834	15.99	0.2113	0.0777	13.91	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1544

2nd Qtr
2023

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	0.1396	Percent	0.1337	Percent
Std Dev Btwn Labs	0.0052	Percent	0.0056	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 40 of 44 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES) ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1544

- MFNYCT (X) - Data for both samples are low. Possible Systematic Error.
- NYFHPR (X) - Data for sample A91 are high. Inconsistent within the determinations of sample A92.
- P7BM8U (X) - Data for both samples are low. Possible Systematic Error.
- ZGHYY8 (X) - Data for both samples are high. Possible Systematic Error.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1545

2nd Qtr
2023

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		1.052	-0.017	-0.36	0.9883	-0.030	-0.68	DR
3CZJKZ		0.9840	-0.085	-1.80	0.9567	-0.062	-1.40	IC
3FDUJ2		1.040	-0.029	-0.62	1.003	-0.015	-0.35	OE
4N9D2M		1.147	0.077	1.62	1.103	0.085	1.93	OE
6X4FPW		1.043	-0.027	-0.56	0.9964	-0.022	-0.50	OE
7WRZUA		0.9993	-0.070	-1.47	0.9680	-0.050	-1.14	IC
92ZCCA		1.021	-0.048	-1.01	0.9657	-0.053	-1.20	OE
99HCJT		1.157	0.087	1.83	1.121	0.103	2.33	OE
AN7774		1.030	-0.039	-0.83	0.9667	-0.052	-1.17	OE
B7Z2JQ		1.042	-0.027	-0.57	1.006	-0.012	-0.28	OE
DW9KML		1.069	-0.001	-0.02	0.9983	-0.020	-0.46	IC
EFDHL9		1.103	0.034	0.71	0.9990	-0.019	-0.44	XX
EMZ984		1.044	-0.025	-0.53	1.002	-0.017	-0.38	OE
EYBJXE		1.153	0.084	1.76	1.093	0.075	1.70	OE
FVKWFB		1.073	0.004	0.08	1.019	0.001	0.01	OE
GD369Y		1.101	0.031	0.66	1.051	0.032	0.73	OE
GF9PXK		1.043	-0.026	-0.55	1.018	0.000	0.00	OE
GMAUUB		1.033	-0.036	-0.76	0.9477	-0.071	-1.60	OE
HJKK6M		1.066	-0.003	-0.07	1.031	0.012	0.28	OE
J44DFN		1.040	-0.029	-0.62	0.9877	-0.031	-0.70	OE
JKV7A2		1.070	0.000	0.01	1.025	0.006	0.14	OE
KCEMAE		1.064	-0.005	-0.11	1.022	0.004	0.08	OE
LJUXAG		1.077	0.008	0.16	1.024	0.006	0.13	OE
LNQPFR		1.080	0.011	0.22	1.027	0.008	0.19	OE
LZ4CJ4		1.061	-0.009	-0.18	1.015	-0.003	-0.08	OE
MFNYCT		1.106	0.036	0.76	1.049	0.031	0.69	OE
MR4LME		1.135	0.065	1.38	1.060	0.041	0.94	XX
NYFHPR		1.117	0.048	1.00	1.012	-0.006	-0.14	IC
P7BM8U		1.126	0.057	1.20	1.070	0.051	1.16	ED
Q2EHUG		1.100	0.031	0.64	1.057	0.039	0.88	OE
Q43PHJ	X	1.050	-0.019	-0.41	0.1510	-0.867	-19.68	XX
QGABRG		0.9896	-0.080	-1.68	0.9506	-0.068	-1.54	IC
RTFARM		1.090	0.021	0.44	1.056	0.037	0.85	XX
T9BWRM		1.020	-0.049	-1.03	0.9717	-0.047	-1.06	OE
U8EYY7		1.145	0.076	1.59	1.082	0.063	1.44	OE
V3XVLA		1.077	0.008	0.17	1.022	0.004	0.08	IC
VBRYWX		1.155	0.085	1.80	1.103	0.085	1.93	OE
W2G2JE		1.027	-0.043	-0.90	0.9967	-0.022	-0.49	IC
X7RYG7		0.9897	-0.080	-1.68	0.9587	-0.060	-1.36	OE
XNK2VL		1.085	0.015	0.32	1.033	0.015	0.34	OE
YJ84WK	X	0.9137	-0.156	-3.28	0.8478	-0.171	-3.87	XX
YQT2K9		1.083	0.013	0.28	1.032	0.014	0.31	OE
ZFNCKH		1.077	0.007	0.15	1.027	0.008	0.19	OE
ZGHYY8		1.002	-0.067	-1.41	0.9583	-0.060	-1.36	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1545

2nd Qtr
2023

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	1.069	Percent	1.018	Percent
Stnd Dev Btwn Labs	0.048	Percent	0.044	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 42 of 44 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES) ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1545

Q43PHJ (X) - Data for sample A92 are extreme.

YJ84WK (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1545

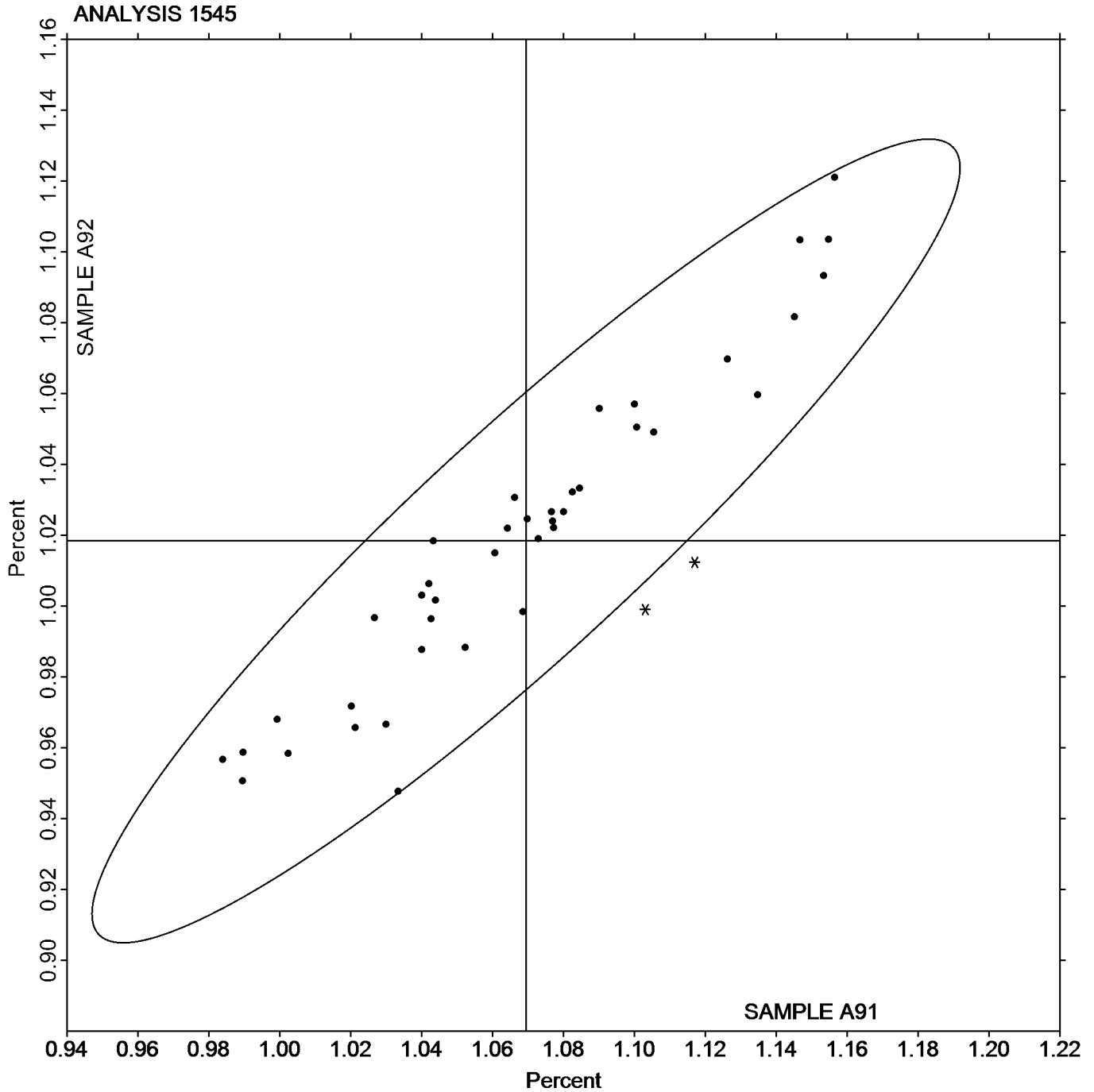
Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

SAMPLE A91

1.069 Percent

SAMPLE A92

1.018 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1546

2nd Qtr
2023

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.1090	0.0004	0.09	0.1067	0.0007	0.15	DR
3CZJKZ		0.1047	-0.0039	-0.88	0.1013	-0.0047	-1.05	IC
3FDUJ2		0.1050	-0.0036	-0.80	0.1030	-0.0030	-0.68	OE
4N9D2M		0.1030	-0.0056	-1.25	0.1007	-0.0053	-1.20	OE
6X4FPW		0.1132	0.0046	1.03	0.1106	0.0046	1.04	OE
7WRZUA		0.1097	0.0011	0.24	0.1093	0.0033	0.75	IC
92ZCCA		0.1097	0.0011	0.24	0.1067	0.0007	0.15	OE
99HCJT		0.1087	0.0001	0.03	0.1053	-0.0007	-0.15	OE
AN7774		0.1183	0.0097	2.18	0.1150	0.0090	2.03	OE
B7Z2JQ	*	0.1207	0.0121	2.70	0.1180	0.0120	2.71	OE
DW9KML		0.1073	-0.0013	-0.28	0.1043	-0.0017	-0.38	IC
EFDHL9		0.1063	-0.0023	-0.52	0.1016	-0.0044	-1.00	XX
EMZ984		0.1087	0.0001	0.02	0.1060	0.0000	0.00	OE
EYBJXE		0.1070	-0.0016	-0.35	0.1043	-0.0017	-0.38	OE
FVKWFB		0.1100	0.0014	0.32	0.1063	0.0003	0.07	OE
GD369Y		0.1111	0.0025	0.57	0.1086	0.0026	0.58	OE
GF9PXK		0.1080	-0.0006	-0.13	0.1080	0.0020	0.45	OE
GMAUUB		0.1170	0.0084	1.88	0.1130	0.0070	1.58	OE
HJKK6M		0.1023	-0.0063	-1.41	0.0991	-0.0069	-1.55	OE
J44DFN		0.1067	-0.0019	-0.43	0.1040	-0.0020	-0.45	OE
JKV7A2		0.1045	-0.0041	-0.91	0.1027	-0.0033	-0.74	OE
KCEMAE		0.1057	-0.0029	-0.65	0.1047	-0.0013	-0.30	OE
LJUXAG		0.1130	0.0044	0.99	0.1100	0.0040	0.90	OE
LNQPFR		0.1057	-0.0029	-0.65	0.1037	-0.0023	-0.53	OE
LZ4CJ4		0.1120	0.0034	0.76	0.1100	0.0040	0.90	OE
MFNYCT		0.1144	0.0058	1.29	0.1107	0.0047	1.06	OE
MR4LME		0.1024	-0.0062	-1.38	0.0996	-0.0064	-1.44	XX
NYFHPR	X	0.1207	0.0121	2.70	0.1117	0.0057	1.28	IC
P7BM8U	X	0.0513	-0.0573	-12.81	0.0510	-0.0550	-12.41	ED
Q2EHUG		0.1096	0.0010	0.23	0.1070	0.0010	0.23	OE
Q43PHJ		0.1150	0.0064	1.44	0.1130	0.0070	1.58	XX
QGABRG		0.1075	-0.0011	-0.24	0.1061	0.0001	0.01	IC
RTFARM		0.1085	-0.0001	-0.01	0.1060	0.0000	0.00	OE
T9BWRM		0.1074	-0.0012	-0.27	0.1045	-0.0015	-0.35	OE
U8EYY7		0.1089	0.0003	0.08	0.1059	-0.0001	-0.03	OE
V3XVLA		0.1064	-0.0022	-0.50	0.1027	-0.0033	-0.74	IC
VBRYWX		0.1062	-0.0024	-0.53	0.1031	-0.0029	-0.65	OE
W2G2JE		0.1123	0.0037	0.84	0.1103	0.0043	0.98	IC
X7RYG7		0.1043	-0.0043	-0.95	0.1013	-0.0047	-1.05	OE
XNK2VL		0.1064	-0.0022	-0.48	0.1036	-0.0024	-0.53	OE
YJ84WK	*	0.1047	-0.0039	-0.87	0.0987	-0.0073	-1.64	XX
YQT2K9		0.1121	0.0035	0.78	0.1100	0.0040	0.89	OE
ZFNCKH		0.1037	-0.0049	-1.10	0.1013	-0.0047	-1.05	OE
ZGHYY8		0.0997	-0.0089	-1.98	0.0980	-0.0080	-1.81	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1546

2nd Qtr
2023

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

Summary Statistics

	<u>Sample A91</u>		<u>Sample A92</u>	
Grand Means	0.1086	Percent	0.1060	Percent
Stnd Dev Btwn Labs	0.0045	Percent	0.0044	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 41 of 44 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES) ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1546

- NYFHPR (X) - Data for sample A91 are high. Inconsistent within the determinations of sample A92.
- P7BM8U (X) - Data for both samples are low. Possible Systematic Error.



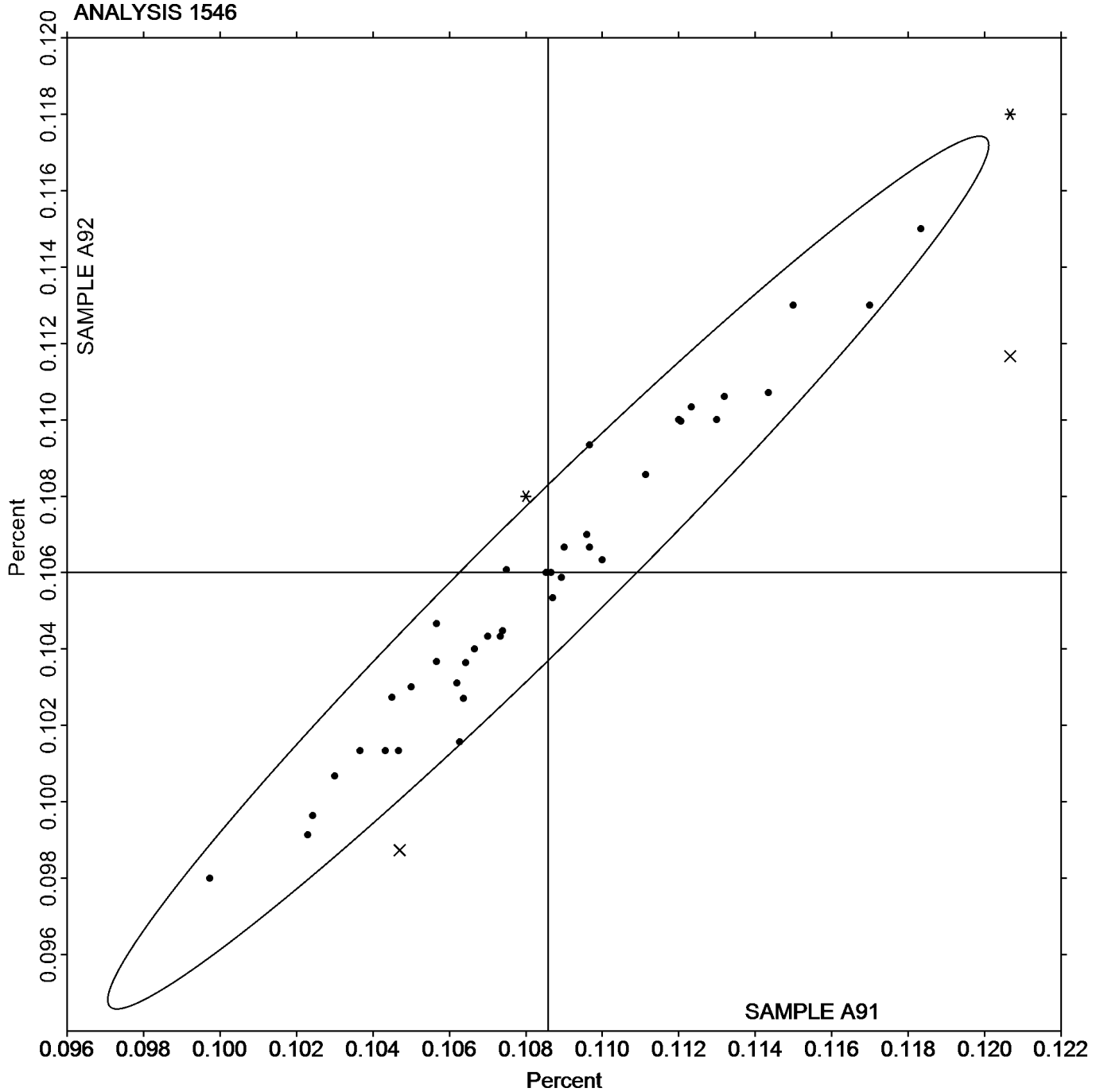
Analysis 1546

2nd Qtr
2023

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE A91
0.1086 Percent

SAMPLE A92
0.1060 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1548

2nd Qtr
2023

Aluminum, BISMUTH (Bi)
BISMUTH (Bi)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.5027	0.0095	0.28	0.5837	-0.0004	-0.01	DR
3CZJKZ		0.4370	-0.0562	-1.68	0.5343	-0.0497	-1.68	IC
3FDUJ2		0.4683	-0.0249	-0.74	0.5790	-0.0050	-0.17	OE
4N9D2M		0.5333	0.0401	1.20	0.6083	0.0243	0.82	OE
6X4FPW		0.4951	0.0019	0.06	0.5630	-0.0211	-0.71	XX
7WRZUA		0.4720	-0.0212	-0.63	0.5747	-0.0094	-0.32	IC
92ZCCA		0.5137	0.0205	0.61	0.6010	0.0170	0.57	OE
99HCJT	X	0.000100	-0.4931	-14.70	0.000100	-0.5839	-19.75	OE
AN7774		0.4533	-0.0399	-1.19	0.5500	-0.0340	-1.15	OE
B7Z2JQ		0.5223	0.0291	0.87	0.6377	0.0536	1.81	OE
DW9KML		0.5010	0.0078	0.23	0.5607	-0.0234	-0.79	IC
EMZ984		0.5450	0.0518	1.54	0.6530	0.0690	2.33	OE
EYBJXE	*	0.5780	0.0848	2.53	0.6163	0.0323	1.09	OE
FVKWFB		0.5047	0.0115	0.34	0.5871	0.0030	0.10	OE
GD369Y		0.4608	-0.0324	-0.96	0.5471	-0.0370	-1.25	OE
GF9P XK		0.4632	-0.0300	-0.90	0.5531	-0.0309	-1.05	OE
GMAUUB	X	0.5511	0.0579	1.73	0.5398	-0.0442	-1.50	OE
JKV7A2		0.4590	-0.0342	-1.02	0.5730	-0.0110	-0.37	IC
KCEMAE		0.4663	-0.0269	-0.80	0.5957	0.0116	0.39	OE
LJUXAG	X	0.000200	-0.4930	-14.69	0.000200	-0.5838	-19.75	OE
LNQPFR		0.5170	0.0238	0.71	0.5913	0.0073	0.25	OE
MFNYCT	X	0.7613	0.2681	7.99	0.8098	0.2258	7.64	OE
MR4LME		0.5011	0.0079	0.23	0.5851	0.0010	0.04	XX
P7BM8U	X	0.2013	-0.2919	-8.70	0.2640	-0.3200	-10.83	ED
Q2EHUG		0.4920	-0.0012	-0.04	0.5880	0.0040	0.13	XX
QGABRG		0.4884	-0.0048	-0.14	0.5923	0.0083	0.28	IC
RTFARM	X	0.1583	-0.3349	-9.98	0.0680	-0.5161	-17.46	OE
T9BWRM		0.5515	0.0583	1.74	0.6282	0.0442	1.49	OE
V3XVLA		0.4802	-0.0130	-0.39	0.5839	-0.0001	0.00	IC
W2G2JE		0.4697	-0.0235	-0.70	0.5760	-0.0080	-0.27	IC
XNK2VL		0.5096	0.0164	0.49	0.6120	0.0279	0.95	OE
YQT2K9		0.4695	-0.0237	-0.71	0.5374	-0.0467	-1.58	OE
ZFNCKH		0.4620	-0.0312	-0.93	0.5570	-0.0270	-0.91	OE

Summary Statistics

	Sample A91		Sample A92	
Grand Means	0.4932	Percent	0.5840	Percent
Stnd Dev Btrwn Labs	0.0336	Percent	0.0296	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 27 of 33 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES)
- ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element



Comments on Assigned Data Flags for Test #1548

99HCJT (X) - Extreme data.

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

LJUXAG (X) - Extreme data.

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

P7BM8U (X) - Data for both samples are low. Possible Systematic Error.

RTFARM (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample A92.



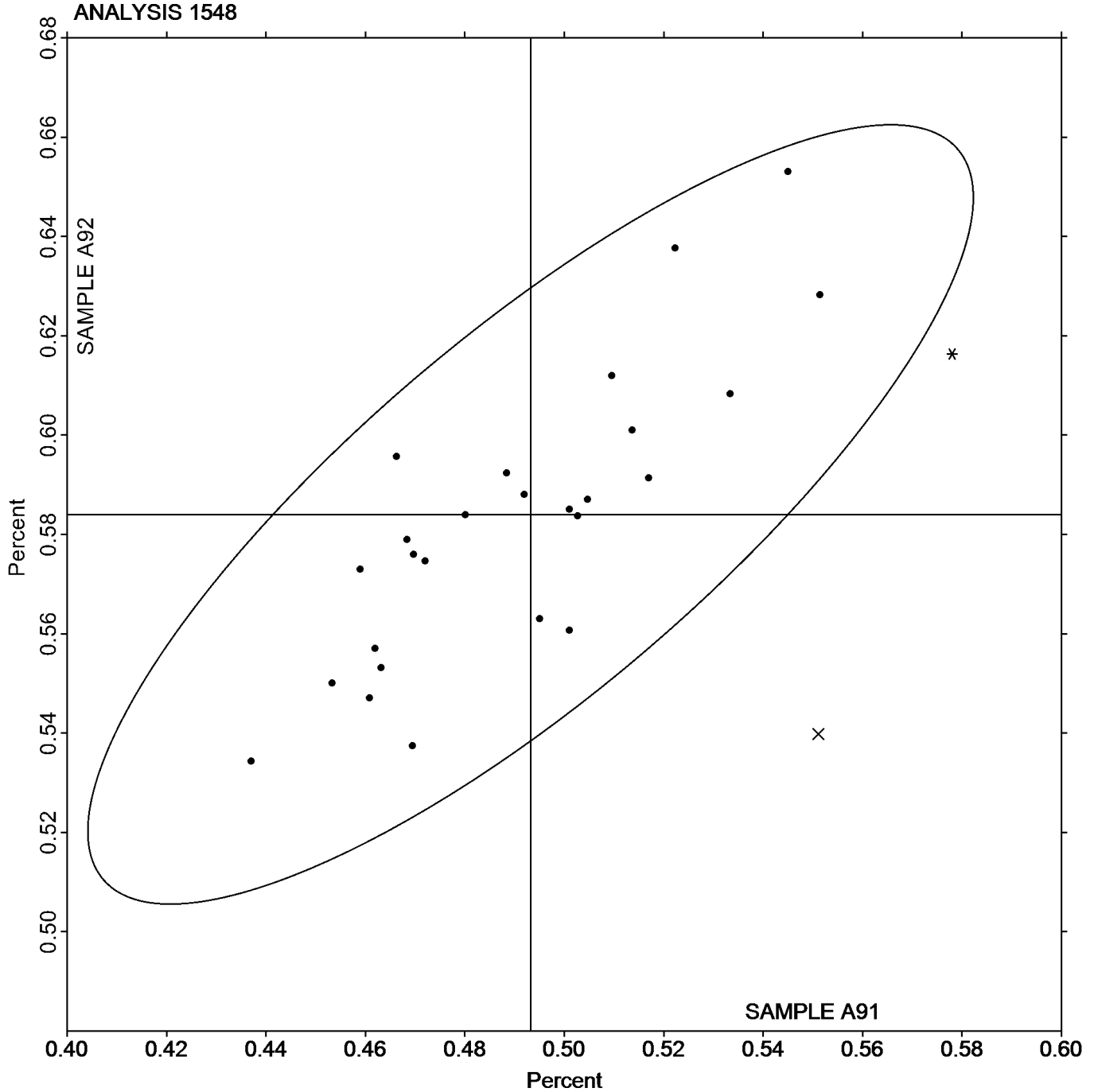
Analysis 1548

2nd Qtr
2023

Aluminum, BISMUTH (Bi)
BISMUTH (Bi)

SAMPLE A91
0.4932 Percent

SAMPLE A92
0.5840 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1549

2nd Qtr

Aluminum, LEAD (Pb)

2023

LEAD (Pb)

WebCode	Data Flag	Sample A91			Sample A92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2NVEZF		0.5893	-0.0029	-0.08	0.6457	-0.0090	-0.24	DR
3CZJKZ		0.5390	-0.0532	-1.54	0.6187	-0.0360	-0.94	IC
3FDUJ2		0.5597	-0.0325	-0.94	0.6167	-0.0380	-0.99	OE
4N9D2M		0.5727	-0.0195	-0.57	0.6420	-0.0127	-0.33	OE
6X4FPW		0.5905	-0.0017	-0.05	0.6503	-0.0044	-0.11	XX
7WRZUA		0.5680	-0.0242	-0.70	0.6523	-0.0024	-0.06	IC
92ZCCA		0.5767	-0.0155	-0.45	0.6303	-0.0244	-0.64	OE
99HCJT	X	0.0450	-0.5472	-15.83	0.00177	-0.6529	-17.04	OE
AN7774		0.6133	0.0211	0.61	0.6633	0.0086	0.23	OE
B7Z2JQ	X	0.8488	0.2566	7.42	1.014	0.3594	9.38	OE
DW9KML		0.5910	-0.0012	-0.03	0.6343	-0.0204	-0.53	IC
EMZ984		0.5863	-0.0059	-0.17	0.6647	0.0100	0.26	OE
EYBJXE		0.5987	0.0065	0.19	0.6260	-0.0287	-0.75	OE
FVKWFB		0.6004	0.0082	0.24	0.6478	-0.0069	-0.18	OE
GD369Y		0.5681	-0.0241	-0.70	0.6194	-0.0353	-0.92	OE
GF9PXK	*	0.6825	0.0903	2.61	0.7571	0.1024	2.67	OE
GMAUUB	*	0.6527	0.0605	1.75	0.6563	0.0016	0.04	OE
HJKK6M		0.6157	0.0235	0.68	0.6800	0.0253	0.66	OE
JKV7A2		0.5790	-0.0132	-0.38	0.6645	0.0098	0.26	IC
KCEMAE		0.5937	0.0015	0.04	0.6603	0.0056	0.15	OE
LJUXAG	X	0.000200	-0.5920	-17.13	0.000200	-0.6545	-17.08	OE
LNQPFR		0.5400	-0.0522	-1.51	0.5940	-0.0607	-1.58	OE
LZ4CJ4		0.6057	0.0135	0.39	0.6663	0.0116	0.30	OE
MFNYCT		0.5813	-0.0109	-0.32	0.6385	-0.0163	-0.42	OE
MR4LME	X	0.9182	0.3260	9.43	1.053	0.3980	10.39	XX
P7BM8U	X	0.2093	-0.3829	-11.08	0.2727	-0.3820	-9.97	ED
Q2EHUG		0.5580	-0.0342	-0.99	0.6080	-0.0467	-1.22	OE
Q43PHJ	*	0.6770	0.0848	2.45	0.7660	0.1113	2.90	XX
QGABRG		0.5557	-0.0365	-1.06	0.6383	-0.0164	-0.43	IC
T9BWRM		0.5761	-0.0161	-0.47	0.6183	-0.0364	-0.95	OE
U8EYY7	X	0.3239	-0.2683	-7.76	0.3484	-0.3063	-7.99	OE
V3XVLA		0.5730	-0.0192	-0.55	0.6607	0.0060	0.16	IC
W2G2JE		0.5770	-0.0152	-0.44	0.6767	0.0220	0.57	IC
X7RYG7		0.5667	-0.0255	-0.74	0.6313	-0.0234	-0.61	OE
XNK2VL		0.6148	0.0226	0.65	0.6869	0.0322	0.84	OE
YQT2K9		0.6491	0.0569	1.65	0.7282	0.0735	1.92	OE
ZFNCKH		0.5910	-0.0012	-0.03	0.6637	0.0090	0.23	OE
ZGHYY8		0.6080	0.0158	0.46	0.6440	-0.0107	-0.28	OE

Summary Statistics

	Sample A91		Sample A92	
Grand Means	0.5922	Percent	0.6547	Percent
Std Dev Btwn Labs	0.0346	Percent	0.0383	Percent

Samples A91, A92 : AA6262, AA6262

Statistics based on 32 of 38 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1549

2nd Qtr

Aluminum, LEAD (Pb)

2023

LEAD (Pb)

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1549

- 99HCJT (X) - Data for both samples are low. Possible Systematic Error.
- B7Z2JQ (X) - Data for both samples are high. Possible Systematic Error.
- LJUXAG (X) - Extreme data.
- MR4LME (X) - Data for both samples are high. Possible Systematic Error.
- P7BM8U (X) - Data for both samples are low. Possible Systematic Error.
- U8EYY7 (X) - Data for both samples are low. Possible Systematic Error.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1640

2nd Qtr

Corrosion Resistant Steel, CARBON (C)

2023

CARBON (C)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.0498	0.0027	0.86	0.0161	-0.0010	-0.30	XX
3ENW3H		0.0495	0.0024	0.76	0.0155	-0.0016	-0.47	CI
3FDUJ2		0.0431	-0.0040	-1.27	0.0137	-0.0035	-1.01	OE
64D6GX		0.0451	-0.0020	-0.63	0.0205	0.0033	0.97	OE
6DM83Y		0.0543	0.0072	2.32	0.0237	0.0065	1.91	OE
6N4GL6		0.0430	-0.0041	-1.31	0.0150	-0.0021	-0.62	CI
7NJAQ8		0.0452	-0.0019	-0.60	0.0157	-0.0014	-0.41	CI
826YAA		0.0450	-0.0021	-0.67	0.0197	0.0025	0.74	OE
8ATYG8		0.0473	0.0002	0.08	0.0160	-0.0011	-0.33	CI
8NVT2A		0.0480	0.0009	0.29	0.0213	0.0042	1.23	OE
8U2PMU	X	0.0566	0.0095	3.05	0.0153	-0.0018	-0.53	OE
A9AH7H		0.0447	-0.0024	-0.77	0.0137	-0.0035	-1.01	CI
AXG79R		0.0457	-0.0014	-0.45	0.0165	-0.0006	-0.18	CI
BLF3H3		0.0470	-0.0001	-0.04	0.0169	-0.0002	-0.07	CO
BQT3EU		0.0451	-0.0020	-0.63	0.0177	0.0006	0.17	CO
CEPC7R		0.0463	-0.0008	-0.24	0.00983	-0.0073	-2.13	OE
CLCVQU		0.0460	-0.0011	-0.35	0.0150	-0.0021	-0.62	GD
DAWX74		0.0493	0.0022	0.71	0.0182	0.0010	0.30	GD
DW9KML		0.0470	-0.0001	-0.03	0.0150	-0.0021	-0.62	CI
E4NJU7		0.0478	0.0007	0.23	0.0175	0.0003	0.10	CO
EHQRYF		0.0507	0.0036	1.15	0.0190	0.0019	0.55	GD
EMZ984	X	0.0693	0.0222	7.11	0.0213	0.0042	1.23	OE
FQUYXT		0.0443	-0.0028	-0.88	0.0173	0.0002	0.06	OE
G6UZBU		0.0475	0.0004	0.12	0.0156	-0.0015	-0.45	CI
G9TYEE		0.0451	-0.0020	-0.62	0.0165	-0.0006	-0.17	XX
GMAUUB		0.0471	0.0000	-0.01	0.0258	0.0087	2.54	OE
GXNJFE		0.0507	0.0036	1.15	0.0213	0.0042	1.23	OE
JKV7A2		0.0469	-0.0002	-0.07	0.0167	-0.0004	-0.12	OE
KCEMAE		0.0513	0.0042	1.36	0.0160	-0.0011	-0.33	OE
LZ4CJ4		0.0445	-0.0026	-0.83	0.0150	-0.0021	-0.61	CO
M2AQB		0.0465	-0.0006	-0.19	0.0193	0.0022	0.64	OE
MBGWG7		0.0454	-0.0017	-0.54	0.0162	-0.0009	-0.27	CI
NBRUVU	*	0.0549	0.0078	2.49	0.0246	0.0075	2.19	OE
NWQL86		0.0469	-0.0002	-0.07	0.0205	0.0034	0.99	OE
P6HP29		0.0489	0.0018	0.59	0.0178	0.0007	0.21	OE
PXMLZX		0.0430	-0.0041	-1.31	0.0213	0.0042	1.23	OE
Q43PHJ		0.0520	0.0049	1.57	0.0180	0.0009	0.25	XX
Q9XJFK		0.0468	-0.0003	-0.09	0.0168	-0.0004	-0.11	CI
QGABRG		0.0457	-0.0014	-0.45	0.0168	-0.0003	-0.09	OE
QRPUWT		0.0460	-0.0011	-0.35	0.0170	-0.0001	-0.04	XX
RCD3KT		0.0438	-0.0033	-1.05	0.00921	-0.0079	-2.31	GD
RZJCWM	X	0.0360	-0.0111	-3.54	0.0145	-0.0026	-0.77	OE
RZVLR		0.0479	0.0008	0.26	0.0182	0.0011	0.31	OE
TVHZKZ		0.0454	-0.0017	-0.53	0.0138	-0.0033	-0.97	OE
TXAYYX		0.0510	0.0039	1.25	0.0190	0.0019	0.55	OE
UNLTT2		0.0397	-0.0074	-2.36	0.0108	-0.0064	-1.86	OE
UWT38Y		0.0447	-0.0024	-0.77	0.0137	-0.0035	-1.01	CI



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1640

**2nd Qtr
2023**

**Corrosion Resistant Steel, CARBON (C)
CARBON (C)**

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X7RYG7		0.0524	0.0053	1.69	0.0173	0.0002	0.06	OE
XG8DDZ		0.0470	-0.0001	-0.03	0.0160	-0.0011	-0.32	CI
XNK2VL		0.0483	0.0012	0.40	0.0237	0.0065	1.91	OE
XXR724		0.0485	0.0014	0.44	0.0151	-0.0020	-0.59	OE
YBZAZ8		0.0410	-0.0061	-1.95	0.0127	-0.0045	-1.30	OE
YCBBNQ		0.0513	0.0042	1.36	0.0177	0.0005	0.16	OE

Summary Statistics		Sample M91		Sample M92	
Grand Means		0.0471	Percent	0.0171	Percent
Stnd Dev Btwn Labs		0.0031	Percent	0.0034	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 50 of 53 reporting participants

Key to Method Codes Reported by Participants

- CI Combustion / IR
- GD Spectrometry - Glow Discharge (GDS)
- XX Please Indicate Method Used for Current Element
- CO Combustion
- OE Spectrometry - Optical Emission (OES)

Comments on Assigned Data Flags for Test #1640

- 8U2PMU (X) - Data for sample M91 are high.
- EMZ984 (X) - Data for sample M91 are high. Inconsistent within the determinations of sample M91.
- RZJCWM (X) - Data for sample M91 are low.



Analysis 1640

Corrosion Resistant Steel, CARBON (C)

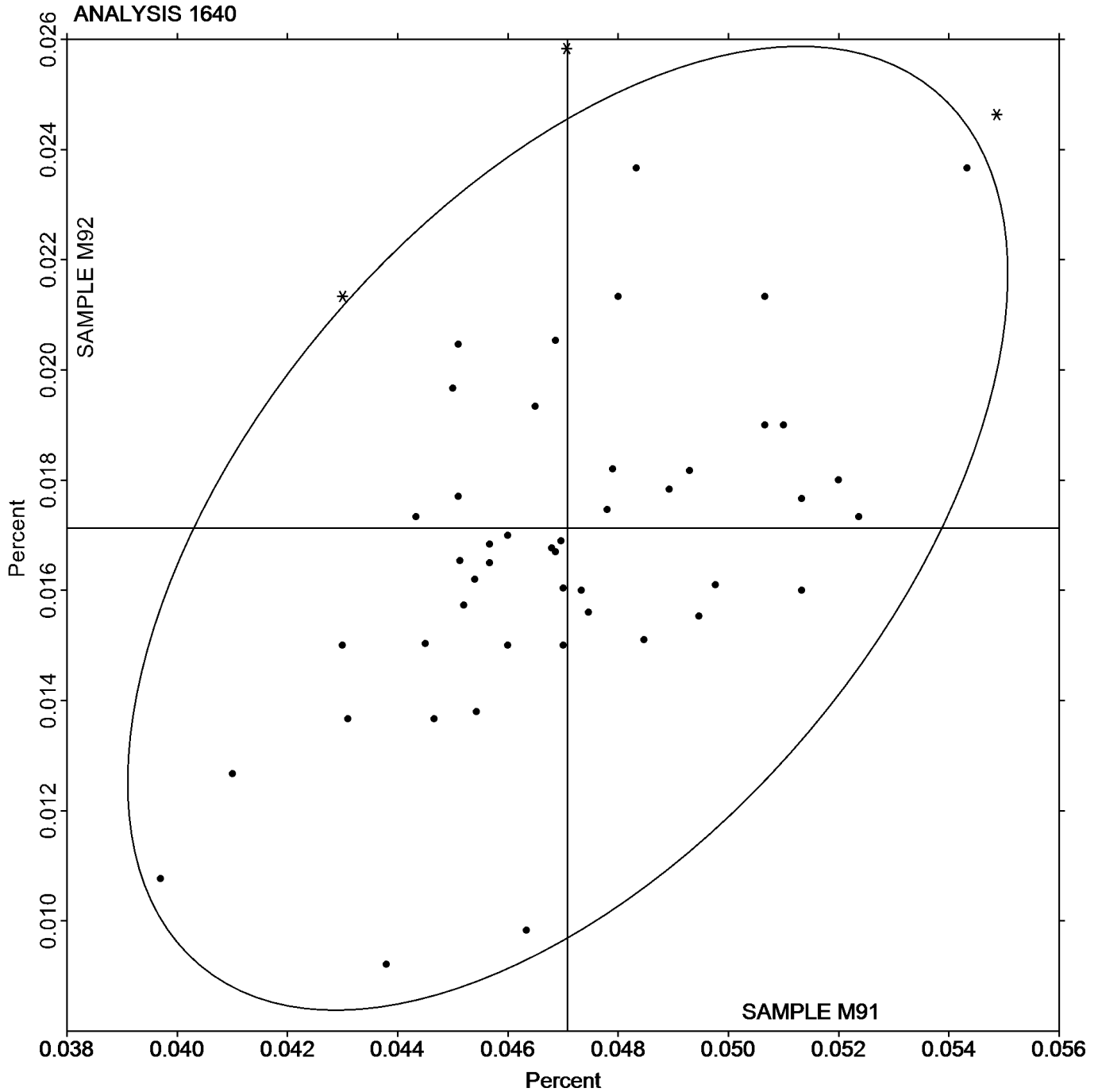
CARBON (C)

SAMPLE M91

SAMPLE M92

0.0471 Percent

0.0171 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1641

2nd Qtr

Corrosion Resistant Steel, MANGANESE (Mn)

2023

MANGANESE (Mn)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		1.444	-0.010	-0.65	1.405	-0.003	-0.16	XX
3ENW3H		1.441	-0.014	-0.89	1.404	-0.004	-0.20	IC
3FDUJ2		1.464	0.010	0.62	1.423	0.015	0.86	ED
64D6GX		1.453	-0.001	-0.07	1.403	-0.004	-0.25	OE
6DM83Y		1.427	-0.028	-1.79	1.380	-0.028	-1.58	OE
6N4GL6		1.462	0.008	0.49	1.418	0.011	0.60	IC
7NJAQ8		1.459	0.004	0.28	1.416	0.008	0.44	WD
826YAA	X	1.363	-0.091	-5.88	1.482	0.074	4.21	OE
8ATYG8		1.450	-0.004	-0.28	1.407	-0.001	-0.04	IC
8NVT2A	X	1.519	0.065	4.17	1.479	0.072	4.06	OE
8U2PMU	*	1.445	-0.009	-0.58	1.436	0.028	1.62	OE
A9AH7H		1.431	-0.024	-1.53	1.387	-0.021	-1.20	XR
AXG79R		1.453	-0.001	-0.09	1.406	-0.002	-0.12	WD
BQT3EU		1.465	0.011	0.69	1.415	0.007	0.41	OE
CEPC7R	*	1.503	0.049	3.16	1.464	0.056	3.17	OE
CLCVQU	*	1.424	-0.030	-1.96	1.431	0.023	1.32	GD
DAWX74		1.470	0.016	1.01	1.413	0.006	0.32	GD
DW9KML		1.458	0.003	0.21	1.397	-0.011	-0.61	WC
E4NJU7		1.460	0.006	0.36	1.410	0.002	0.13	XR
EHQRYF		1.447	-0.008	-0.50	1.393	-0.014	-0.82	GD
EMZ984		1.433	-0.021	-1.36	1.386	-0.022	-1.25	OE
FQUYXT		1.448	-0.007	-0.43	1.388	-0.020	-1.14	OE
G6UZBU		1.456	0.002	0.13	1.414	0.007	0.37	OE
G9TYEE		1.450	-0.005	-0.29	1.405	-0.003	-0.18	XX
GMAUUB		1.437	-0.018	-1.14	1.397	-0.011	-0.63	OE
GXNJFE		1.490	0.036	2.30	1.450	0.042	2.40	OE
JKV7A2		1.448	-0.006	-0.40	1.411	0.003	0.17	OE
KCEMAE		1.454	0.000	-0.02	1.410	0.003	0.15	OE
LZ4CJ4		1.449	-0.005	-0.33	1.405	-0.003	-0.16	OE
M2AQBP		1.443	-0.011	-0.71	1.400	-0.008	-0.44	WD
MBGWG7		1.450	-0.004	-0.28	1.407	-0.001	-0.04	WD
NBRUVU		1.447	-0.008	-0.50	1.400	-0.008	-0.44	OE
NWQL86		1.457	0.002	0.15	1.403	-0.004	-0.25	OE
P6HP29		1.453	-0.001	-0.09	1.413	0.005	0.28	OE
PXMLZX		1.463	0.008	0.53	1.417	0.009	0.52	OE
Q43PHJ	X	1.530	0.076	4.88	1.480	0.072	4.10	XX
Q9XJFK		1.444	-0.010	-0.65	1.403	-0.005	-0.27	OE
QGABRG		1.448	-0.006	-0.38	1.413	0.006	0.31	OE
QRPUWT		1.480	0.026	1.65	1.433	0.026	1.45	WC
RCD3KT		1.460	0.006	0.36	1.420	0.012	0.69	GD
RZJCWM	*	1.497	0.042	2.73	1.447	0.039	2.21	OE
RZVLRL		1.457	0.003	0.17	1.409	0.001	0.07	OE
TVHZKZ	*	1.434	-0.020	-1.32	1.416	0.008	0.45	OE
TXAYYX	X	1.383	-0.071	-4.59	1.363	-0.044	-2.52	OE
UNLTT2		1.432	-0.023	-1.47	1.367	-0.040	-2.30	OE
UWT38Y		1.453	-0.002	-0.11	1.407	-0.001	-0.04	XR
X7RYG7		1.457	0.002	0.15	1.417	0.009	0.51	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1641

2nd Qtr
2023

Corrosion Resistant Steel, MANGANESE (Mn) MANGANESE (Mn)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XG8DDZ		1.452	-0.003	-0.18	1.406	-0.002	-0.10	WD
XNK2VL		1.450	-0.004	-0.28	1.393	-0.014	-0.82	OE
XXR724	X	1.492	0.037	2.41	1.424	0.016	0.92	OE
YBZAZ8		1.450	-0.004	-0.28	1.383	-0.024	-1.39	OE
YCBBNQ		1.450	-0.004	-0.28	1.397	-0.011	-0.63	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	1.454	Percent	1.408	Percent
Std Dev Btwn Labs	0.015	Percent	0.018	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 44 of 52 reporting participants

Key to Method Codes Reported by Participants

ED	X-Ray Fluorescence - Energy Dispersive (EDX)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WC	Wet Chemistry	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1641

- 826YAA (X) - Data for sample M91 are low and data for sample M92 are high. Inconsistent in testing between samples.
- 8NVT2A (X) - Data for both samples are high. Possible Systematic Error.
- Q43PHJ (X) - Data for both samples are high. Possible Systematic Error.
- TXAYYX (X) - Data for sample M91 are low.
- XXR724 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample M92.



Analysis 1641

2nd Qtr

Corrosion Resistant Steel, MANGANESE (Mn)

2023

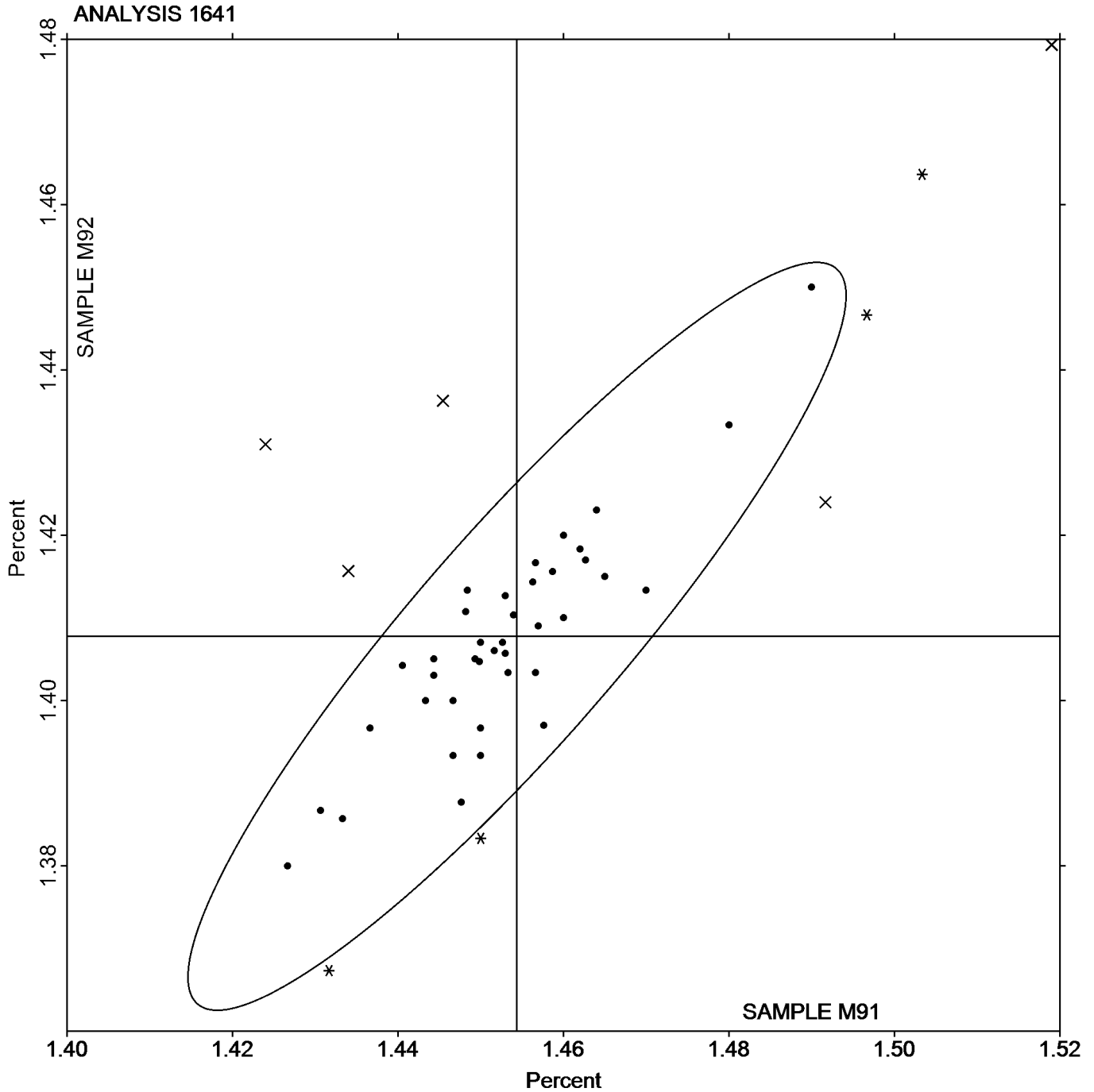
MANGANESE (Mn)

SAMPLE M91

SAMPLE M92

1.454 Percent

1.408 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1642

2nd Qtr
2023

Corrosion Resistant Steel, PHOSPHORUS (P) PHOSPHORUS (P)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.0292	0.0006	0.37	0.0331	0.0003	0.15	XX
3ENW3H		0.0273	-0.0012	-0.73	0.0308	-0.0020	-0.91	IC
3FDUJ2		0.0249	-0.0037	-2.20	0.0281	-0.0047	-2.17	OE
64D6GX		0.0302	0.0016	0.96	0.0334	0.0006	0.26	OE
6DM83Y	X	0.0347	0.0061	3.65	0.0403	0.0075	3.47	OE
6N4GL6		0.0297	0.0011	0.66	0.0333	0.0005	0.24	IC
7NJAQ8		0.0300	0.0014	0.84	0.0338	0.0010	0.46	WD
826YAA		0.0293	0.0008	0.47	0.0300	-0.0028	-1.29	OE
8ATYG8		0.0287	0.0001	0.07	0.0327	-0.0001	-0.06	IC
8NVT2A		0.0303	0.0018	1.06	0.0337	0.0009	0.40	OE
8U2PMU	*	0.0265	-0.0020	-1.21	0.0262	-0.0066	-3.04	OE
A9AH7H		0.0290	0.0005	0.29	0.0329	0.0001	0.05	XR
AXG79R		0.0291	0.0006	0.35	0.0331	0.0003	0.14	WD
BQT3EU		0.0264	-0.0022	-1.29	0.0298	-0.0030	-1.38	OE
CEPC7R	*	0.0317	0.0031	1.86	0.0383	0.0055	2.55	OE
CLCVQU		0.0270	-0.0016	-0.93	0.0360	0.0032	1.47	GD
DAWX74		0.0271	-0.0015	-0.89	0.0332	0.0004	0.17	GD
DW9KML		0.0290	0.0004	0.27	0.0343	0.0015	0.71	IC
E4NJU7		0.0280	-0.0006	-0.33	0.0320	-0.0008	-0.37	XR
EHQRYF		0.0297	0.0011	0.66	0.0340	0.0012	0.55	GD
EMZ984	X	0.0157	-0.0129	-7.69	0.0167	-0.0161	-7.43	OE
FQUYXT		0.0303	0.0018	1.06	0.0330	0.0002	0.09	OE
G6UZBU		0.0289	0.0003	0.19	0.0329	0.0001	0.03	OE
G9TYEE		0.0310	0.0024	1.46	0.0357	0.0029	1.32	XX
GMAUUB		0.0269	-0.0017	-1.01	0.0334	0.0006	0.28	OE
GXNJFE		0.0260	-0.0026	-1.52	0.0330	0.0002	0.09	OE
JKV7A2		0.0268	-0.0018	-1.05	0.0315	-0.0013	-0.58	OE
KCEMAE		0.0288	0.0002	0.15	0.0322	-0.0006	-0.28	OE
LZ4CJ4		0.0279	-0.0007	-0.41	0.0312	-0.0016	-0.72	OE
M2AQB		0.0270	-0.0016	-0.93	0.0312	-0.0016	-0.75	WD
MBGWG7		0.0303	0.0017	1.02	0.0309	-0.0019	-0.88	WD
NBRUVU	X	0.0215	-0.0071	-4.23	0.0269	-0.0059	-2.72	OE
NWQL86		0.0292	0.0007	0.41	0.0335	0.0007	0.32	OE
P6HP29		0.0286	0.0000	0.01	0.0328	0.0000	-0.02	OE
PXMLZX		0.0297	0.0011	0.66	0.0357	0.0029	1.32	OE
Q43PHJ		0.0310	0.0024	1.46	0.0350	0.0022	1.01	XX
Q9XJFK		0.0290	0.0004	0.25	0.0330	0.0002	0.08	OE
QGABRG		0.0285	0.0000	-0.01	0.0322	-0.0006	-0.28	OE
QRPUWT		0.0270	-0.0016	-0.93	0.0303	-0.0025	-1.14	WC
RCD3KT		0.0286	0.0000	0.03	0.0328	0.0000	0.01	GD
RZJCWM		0.0278	-0.0008	-0.47	0.0313	-0.0015	-0.68	OE
RZVLRL		0.0306	0.0020	1.22	0.0344	0.0016	0.74	OE
TVHZKZ		0.0267	-0.0019	-1.13	0.0334	0.0006	0.28	OE
TXAYYX		0.0313	0.0027	1.64	0.0377	0.0049	2.24	OE
UNLTT2		0.0243	-0.0042	-2.52	0.0300	-0.0028	-1.29	OE
UWT38Y		0.0278	-0.0008	-0.45	0.0317	-0.0011	-0.51	XR
X7RYG7		0.0262	-0.0024	-1.40	0.0351	0.0023	1.07	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1642

**2nd Qtr
2023**

**Corrosion Resistant Steel, PHOSPHORUS (P)
PHOSPHORUS (P)**

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XG8DDZ		0.0300	0.0014	0.86	0.0340	0.0012	0.55	WD
XNK2VL		0.0287	0.0001	0.07	0.0327	-0.0001	-0.06	OE
XXR724		0.0298	0.0012	0.72	0.0338	0.0010	0.48	OE
YBZAZ8	X	0.0350	0.0064	3.85	0.0427	0.0099	4.54	OE
YCBBNQ		0.0291	0.0005	0.33	0.0314	-0.0014	-0.65	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	0.0286	Percent	0.0328	Percent
Std Dev Btwn Labs	0.0017	Percent	0.0022	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 48 of 52 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- OE Spectrometry - Optical Emission (OES)
- WD X-Ray Fluorescence - Wavelength Dispersive (WDX)
- XX Please Indicate Method Used for Current Element
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- WC Wet Chemistry
- XR X-Ray Fluorescence - ED or WD not specified

Comments on Assigned Data Flags for Test #1642

- 6DM83Y (X) - Data for both samples are high.
- EMZ984 (X) - Data for both samples are low.
- NBRUVU (X) - Data for both samples are low.
- YBZAZ8 (X) - Data for both samples are high. Inconsistent within the determinations of sample M92.

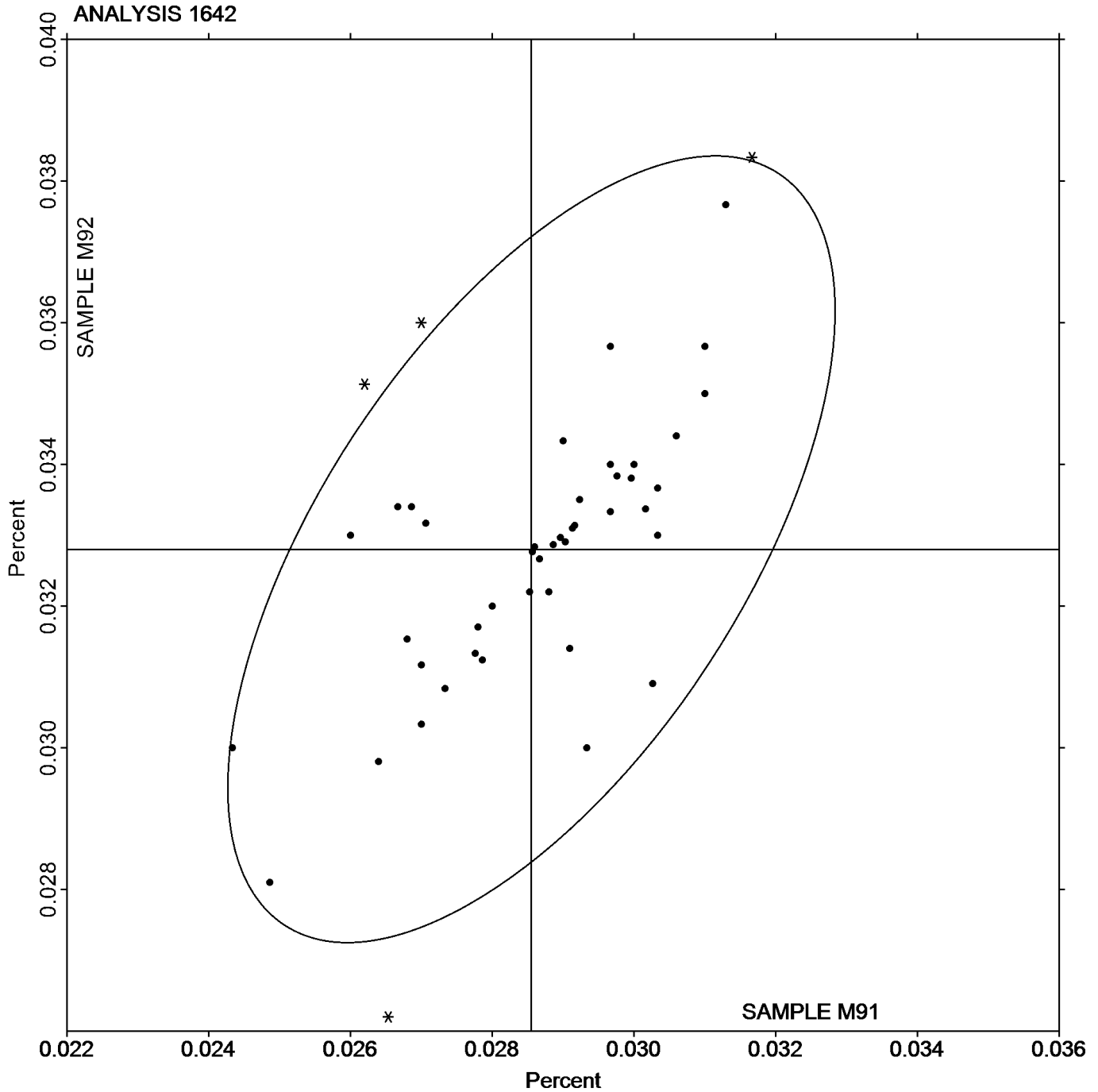


Analysis 1642

Corrosion Resistant Steel, PHOSPHORUS (P)
PHOSPHORUS (P)

SAMPLE M91
0.0286 Percent

SAMPLE M92
0.0328 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1643

2nd Qtr
2023

Corrosion Resistant Steel, SULFUR (S) SULFUR (S)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU	X	0.0318	0.0039	1.46	0.0246	0.0068	3.44	XX
3ENW3H		0.0294	0.0015	0.57	0.0187	0.0009	0.46	CI
3FDUJ2		0.0278	-0.0001	-0.05	0.0173	-0.0005	-0.25	OE
64D6GX		0.0308	0.0029	1.09	0.0217	0.0039	1.96	OE
6DM83Y		0.0297	0.0017	0.65	0.0153	-0.0025	-1.24	OE
6N4GL6		0.0270	-0.0009	-0.34	0.0176	-0.0002	-0.10	CI
7NJAQ8		0.0264	-0.0015	-0.57	0.0173	-0.0005	-0.24	CI
826YAA		0.0260	-0.0019	-0.73	0.0183	0.0005	0.27	OE
8ATYG8		0.0273	-0.0006	-0.23	0.0170	-0.0008	-0.40	CI
8NVT2A		0.0277	-0.0003	-0.10	0.0170	-0.0008	-0.40	OE
8U2PMU		0.0274	-0.0005	-0.20	0.0160	-0.0018	-0.89	OE
A9AH7H		0.0252	-0.0027	-1.03	0.0156	-0.0022	-1.12	IR
AXG79R		0.0268	-0.0011	-0.42	0.0173	-0.0005	-0.26	CI
BLF3H3		0.0254	-0.0025	-0.96	0.0167	-0.0011	-0.55	CO
BQT3EU		0.0284	0.0005	0.17	0.0186	0.0008	0.41	CO
CEPC7R		0.0317	0.0037	1.41	0.0193	0.0015	0.78	OE
CLCVQU		0.0230	-0.0049	-1.87	0.0180	0.0002	0.11	GD
DAWX74		0.0264	-0.0015	-0.58	0.0171	-0.0007	-0.37	GD
DW9KML		0.0294	0.0014	0.54	0.0174	-0.0004	-0.18	CI
E4NJU7		0.0312	0.0033	1.23	0.0214	0.0036	1.82	CO
EHQRYF		0.0343	0.0064	2.42	0.0223	0.0045	2.29	GD
EMZ984		0.0237	-0.0043	-1.61	0.0147	-0.0031	-1.58	OE
FQUYXT		0.0283	0.0004	0.15	0.0167	-0.0011	-0.57	OE
G6UZBU		0.0281	0.0002	0.06	0.0180	0.0002	0.12	CI
G9TYEE		0.0289	0.0009	0.35	0.0176	-0.0002	-0.08	XX
GMAUUB		0.0279	-0.0001	-0.03	0.0164	-0.0014	-0.68	OE
GXNJFE		0.0317	0.0037	1.41	0.0197	0.0019	0.95	OE
JKV7A2		0.0282	0.0002	0.09	0.0181	0.0003	0.17	OE
KCEMAE		0.0242	-0.0037	-1.41	0.0155	-0.0023	-1.16	OE
LZ4CJ4		0.0324	0.0045	1.69	0.0201	0.0023	1.15	CO
M2AQB		0.0289	0.0010	0.36	0.0186	0.0008	0.38	WD
MBGWG7		0.0264	-0.0015	-0.58	0.0169	-0.0009	-0.47	CI
NBRUVU		0.0232	-0.0047	-1.79	0.0144	-0.0034	-1.69	OE
NWQL86		0.0289	0.0009	0.35	0.0178	0.0000	0.00	OE
P6HP29		0.0283	0.0004	0.15	0.0194	0.0016	0.81	OE
PXMLZX		0.0287	0.0007	0.28	0.0190	0.0012	0.61	OE
Q43PHJ		0.0240	-0.0039	-1.49	0.0150	-0.0028	-1.41	XX
Q9XJFK		0.0295	0.0016	0.60	0.0184	0.0006	0.29	CI
QGABRG		0.0243	-0.0036	-1.37	0.0169	-0.0009	-0.43	OE
QRPUWT		0.0283	0.0004	0.15	0.0180	0.0002	0.11	XX
RCD3KT		0.0314	0.0034	1.30	0.0193	0.0015	0.76	GD
RZJCWM		0.0235	-0.0045	-1.69	0.0132	-0.0046	-2.30	OE
RZVLR		0.0282	0.0003	0.10	0.0167	-0.0011	-0.55	OE
TVHZKZ	*	0.0293	0.0014	0.53	0.0225	0.0047	2.38	OE
TXAYYX		0.0309	0.0030	1.13	0.0215	0.0037	1.89	OE
UNLTT2		0.0253	-0.0026	-1.00	0.0167	-0.0011	-0.55	OE
UWT38Y		0.0252	-0.0027	-1.03	0.0156	-0.0022	-1.12	CI



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1643

**2nd Qtr
2023**

**Corrosion Resistant Steel, SULFUR (S)
SULFUR (S)**

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X7RYG7		0.0268	-0.0011	-0.43	0.0177	-0.0001	-0.05	OE
XNK2VL		0.0283	0.0004	0.15	0.0173	-0.0005	-0.23	OE
XXR724		0.0302	0.0023	0.85	0.0170	-0.0008	-0.40	OE
YBZAZ8		0.0333	0.0054	2.04	0.0200	0.0022	1.11	OE
YCBBNQ		0.0272	-0.0008	-0.29	0.0186	0.0008	0.41	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	0.0279	Percent	0.0178	Percent
Std Dev Btwn Labs	0.0026	Percent	0.0020	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 51 of 52 reporting participants

Key to Method Codes Reported by Participants

- CI Combustion / IR
- GD Spectrometry - Glow Discharge (GDS)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element
- CO Combustion
- IR IR (Absorption / Detection)
- WD X-Ray Fluorescence - Wavelength Dispersive (WDX)

Comments on Assigned Data Flags for Test #1643

2J37YU (X) - Data for sample M92 are high.



Analysis 1643

2nd Qtr

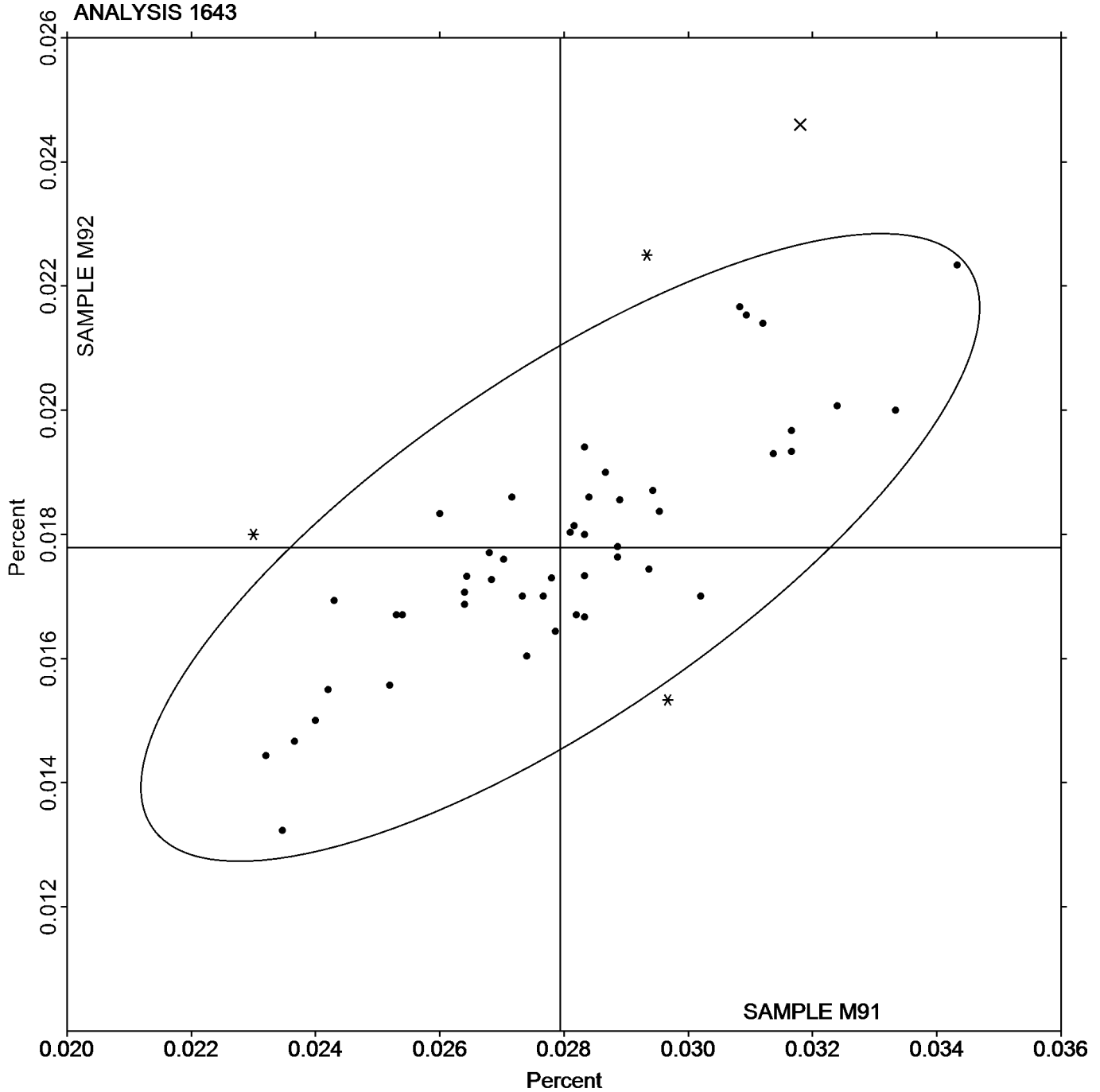
Corrosion Resistant Steel, SULFUR (S)

2023

SULFUR (S)

SAMPLE M91
0.0279 Percent

SAMPLE M92
0.0178 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1644

2nd Qtr

Corrosion Resistant Steel, SILICON (Si)

2023

SILICON (Si)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.5050	0.0030	0.21	0.3190	-0.0012	-0.10	XX
3ENW3H		0.4939	-0.0081	-0.58	0.3204	0.0003	0.02	IC
3FDUJ2		0.5017	-0.0004	-0.03	0.3240	0.0038	0.34	OE
64D6GX	X	0.4083	-0.0937	-6.64	0.2600	-0.0602	-5.28	OE
6DM83Y		0.5133	0.0113	0.80	0.3370	0.0168	1.48	OE
6N4GL6		0.5000	-0.0020	-0.14	0.3150	-0.0052	-0.45	IC
7NJAQ8		0.5092	0.0072	0.51	0.3183	-0.0018	-0.16	WD
826YAA		0.4980	-0.0040	-0.29	0.3120	-0.0082	-0.72	OE
8ATYG8		0.5043	0.0023	0.16	0.3220	0.0018	0.16	IC
8NVT2A		0.5053	0.0033	0.23	0.3247	0.0045	0.39	OE
8U2PMU		0.4985	-0.0036	-0.25	0.3306	0.0104	0.91	OE
A9AH7H		0.4900	-0.0120	-0.85	0.3050	-0.0152	-1.33	XR
AXG79R		0.4987	-0.0034	-0.24	0.3093	-0.0108	-0.95	WD
BQT3EU	*	0.5440	0.0420	2.97	0.3410	0.0208	1.83	OE
CEPC7R		0.5130	0.0110	0.78	0.3147	-0.0055	-0.48	OE
CLCVQU	*	0.5250	0.0230	1.63	0.3540	0.0338	2.97	GD
DAWX74		0.5183	0.0163	1.15	0.3293	0.0092	0.80	GD
DW9KML		0.5033	0.0013	0.09	0.3167	-0.0035	-0.31	GR
E4NJU7		0.5000	-0.0020	-0.14	0.3100	-0.0102	-0.89	XR
EHQRYF		0.5097	0.0076	0.54	0.3147	-0.0055	-0.48	GD
EMZ984		0.4670	-0.0350	-2.48	0.2927	-0.0275	-2.42	OE
FQUYXT		0.4927	-0.0094	-0.66	0.3287	0.0085	0.75	OE
G6UZBU		0.4997	-0.0024	-0.17	0.3213	0.0012	0.10	OE
G9TYEE	*	0.5197	0.0176	1.25	0.3530	0.0328	2.88	XX
GMAUUB		0.5110	0.0090	0.64	0.3300	0.0098	0.86	OE
GXNJFE		0.4867	-0.0154	-1.09	0.3200	-0.0002	-0.02	OE
JKV7A2		0.5010	-0.0010	-0.07	0.3219	0.0017	0.15	OE
KCEMAE		0.5060	0.0040	0.28	0.3287	0.0085	0.75	OE
LZ4CJ4		0.4920	-0.0100	-0.71	0.3137	-0.0065	-0.57	OE
M2AQBP		0.4860	-0.0160	-1.14	0.3133	-0.0068	-0.60	WD
MBGWG7		0.5150	0.0130	0.92	0.3233	0.0032	0.28	WD
NBRUVU		0.5027	0.0006	0.04	0.3307	0.0105	0.92	OE
NWQL86		0.5080	0.0060	0.42	0.3183	-0.0018	-0.16	OE
P6HP29		0.4920	-0.0100	-0.71	0.3110	-0.0092	-0.81	OE
PXMLZX		0.4987	-0.0034	-0.24	0.3213	0.0012	0.10	OE
Q43PHJ		0.5050	0.0030	0.21	0.3260	0.0058	0.51	XX
Q9XJFK		0.5085	0.0064	0.46	0.3227	0.0025	0.22	OE
QGABRG		0.4966	-0.0055	-0.39	0.3085	-0.0116	-1.02	OE
QRPUWT		0.4900	-0.0120	-0.85	0.3100	-0.0102	-0.89	WC
RCD3KT		0.4893	-0.0127	-0.90	0.3093	-0.0108	-0.95	GD
RZJCWM		0.5300	0.0280	1.98	0.3200	-0.0002	-0.02	OE
RZVLRL		0.5120	0.0100	0.71	0.3320	0.0118	1.04	OE
TVHZKZ		0.5010	-0.0010	-0.07	0.3091	-0.0110	-0.97	OE
TXAYYX	X	0.4433	-0.0587	-4.16	0.3167	-0.0035	-0.31	OE
UNLTT2		0.4947	-0.0074	-0.52	0.3120	-0.0082	-0.72	OE
UWT38Y		0.4917	-0.0104	-0.73	0.3137	-0.0065	-0.57	XR
X7RYG7		0.4810	-0.0210	-1.49	0.3180	-0.0022	-0.19	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1644

**2nd Qtr
2023**

**Corrosion Resistant Steel, SILICON (Si)
SILICON (Si)**

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XG8DDZ	X	0.5537	0.0516	3.66	0.3690	0.0488	4.29	WD
XNK2VL		0.4733	-0.0287	-2.03	0.3167	-0.0035	-0.31	OE
XXR724		0.5227	0.0206	1.46	0.3230	0.0028	0.25	OE
YBZAZ8		0.4807	-0.0214	-1.51	0.3017	-0.0185	-1.62	OE
YCBBNQ		0.5140	0.0120	0.85	0.3203	0.0002	0.01	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	0.5020	Percent	0.3202	Percent
Std Dev Btwn Labs	0.0141	Percent	0.0114	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 49 of 52 reporting participants

Key to Method Codes Reported by Participants

GD Spectrometry - Glow Discharge (GDS)	GR Gravimetry
IC Spectrometry - Inductively Coupled Plasma (ICP)	OE Spectrometry - Optical Emission (OES)
WC Wet Chemistry	WD X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR X-Ray Fluorescence - ED or WD not specified	XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1644

64D6GX (X) - Data for both samples are low.

TXAYYX (X) - Data for sample M91 are low.

XG8DDZ (X) - Data for both samples are high.

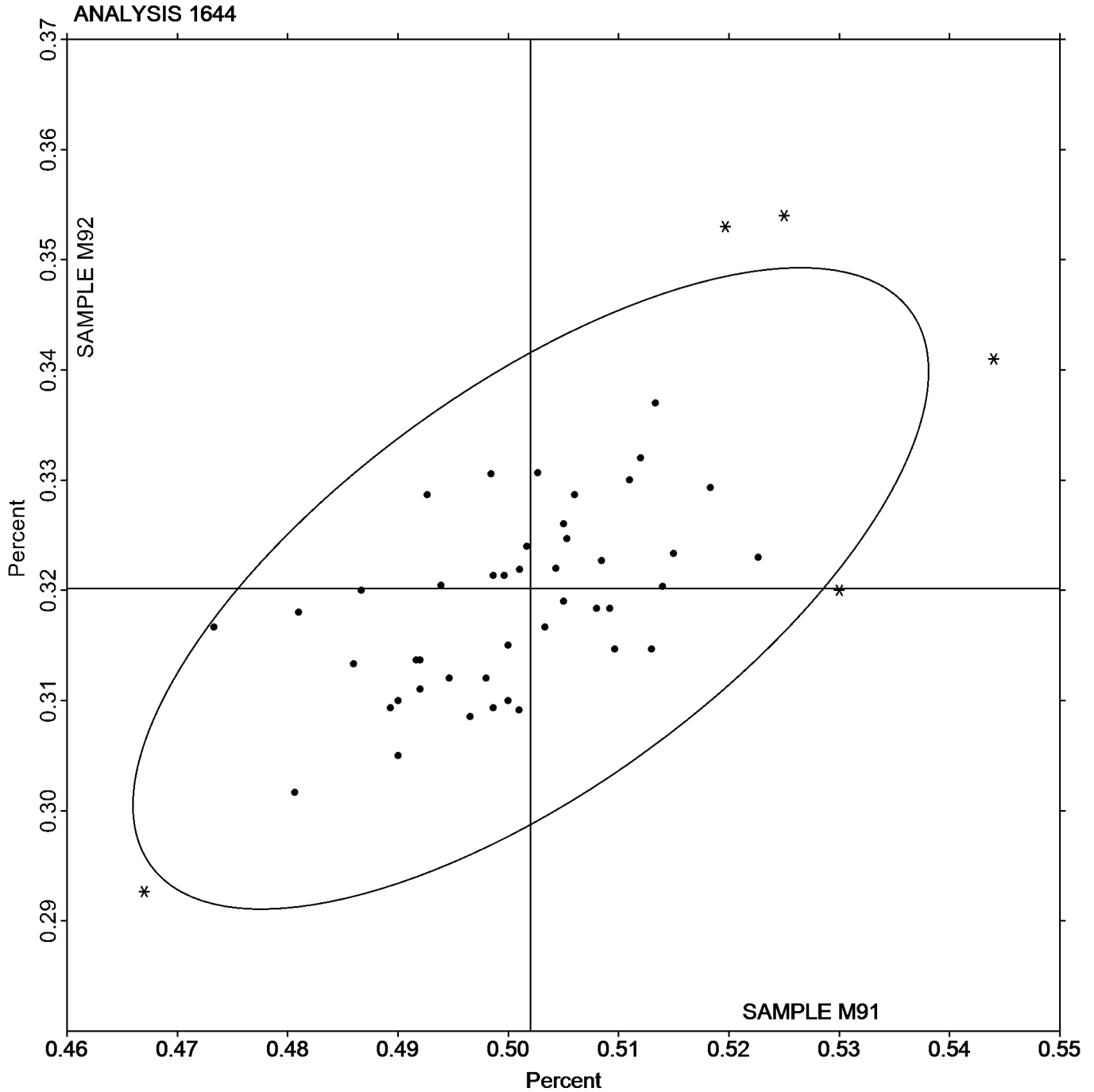


Analysis 1644

Corrosion Resistant Steel, SILICON (Si)
SILICON (Si)

SAMPLE M91
0.5020 Percent

SAMPLE M92
0.3202 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1645

2nd Qtr
2023

Corrosion Resistant Steel, COBALT (Co)
COBALT (Co)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.3687	0.0012	0.08	0.3643	0.0021	0.14	XX
3ENW3H		0.3599	-0.0075	-0.48	0.3562	-0.0061	-0.41	IC
3FDUJ2		0.3723	0.0049	0.31	0.3663	0.0041	0.27	OE
6N4GL6		0.3583	-0.0091	-0.59	0.3527	-0.0096	-0.64	IC
7NJAQ8		0.3720	0.0045	0.29	0.3664	0.0041	0.28	WD
826YAA		0.3603	-0.0071	-0.46	0.3510	-0.0113	-0.76	OE
8ATYG8		0.3750	0.0075	0.48	0.3693	0.0071	0.47	IC
8NVT2A		0.3620	-0.0055	-0.35	0.3620	-0.0003	-0.02	OE
8U2PMU		0.3747	0.0072	0.46	0.3725	0.0103	0.69	OE
A9AH7H		0.3640	-0.0035	-0.22	0.3590	-0.0033	-0.22	XR
AXG79R		0.3740	0.0065	0.42	0.3680	0.0057	0.38	WD
BQT3EU		0.3760	0.0085	0.55	0.3700	0.0077	0.52	OE
CEPC7R		0.3473	-0.0201	-1.29	0.3443	-0.0179	-1.20	OE
DAWX74	*	0.3650	-0.0025	-0.16	0.3673	0.0051	0.34	GD
DW9KML		0.3723	0.0049	0.31	0.3637	0.0014	0.09	IC
E4NJU7		0.3790	0.0115	0.74	0.3727	0.0104	0.70	XR
EHQRYF		0.3603	-0.0071	-0.46	0.3553	-0.0069	-0.47	GD
EMZ984		0.3740	0.0065	0.42	0.3673	0.0051	0.34	OE
FQUYXT		0.3720	0.0045	0.29	0.3650	0.0027	0.18	OE
G6UZBU		0.3713	0.0039	0.25	0.3703	0.0081	0.54	OE
G9TYEE		0.3730	0.0055	0.35	0.3665	0.0043	0.29	XX
GMAUUB		0.3777	0.0102	0.65	0.3743	0.0121	0.81	OE
GXNJFE		0.3700	0.0025	0.16	0.3600	-0.0023	-0.15	OE
JKV7A2		0.3769	0.0094	0.60	0.3724	0.0101	0.68	OE
KCEMAE		0.3470	-0.0205	-1.31	0.3420	-0.0203	-1.36	OE
LZ4CJ4		0.3680	0.0005	0.03	0.3617	-0.0006	-0.04	OE
MBGWG7		0.3457	-0.0218	-1.40	0.3417	-0.0206	-1.38	WD
NBRUVU		0.3943	0.0269	1.72	0.3857	0.0234	1.57	OE
NWQL86		0.3757	0.0082	0.53	0.3737	0.0114	0.76	OE
P6HP29		0.3467	-0.0208	-1.33	0.3420	-0.0203	-1.36	OE
PXMLZX		0.3660	-0.0015	-0.09	0.3617	-0.0006	-0.04	OE
Q43PHJ	*	0.4120	0.0445	2.86	0.4060	0.0437	2.93	XX
Q9XJFK		0.3637	-0.0038	-0.24	0.3593	-0.0029	-0.20	OE
QGABRG		0.3593	-0.0082	-0.52	0.3527	-0.0096	-0.64	OE
QRPUWT		0.3600	-0.0075	-0.48	0.3533	-0.0089	-0.60	AA
RCD3KT	*	0.3193	-0.0481	-3.09	0.3187	-0.0436	-2.93	GD
RZJCWM		0.3400	-0.0275	-1.76	0.3300	-0.0323	-2.17	OE
RZVLR		0.3650	-0.0025	-0.16	0.3640	0.0017	0.12	OE
TXAYYX		0.3767	0.0092	0.59	0.3700	0.0077	0.52	OE
UNLTT2		0.3587	-0.0088	-0.56	0.3560	-0.0063	-0.42	OE
UWT38Y		0.3697	0.0022	0.14	0.3640	0.0017	0.12	XR
X7RYG7	*	0.3843	0.0169	1.08	0.3620	-0.0003	-0.02	OE
XG8DDZ		0.3740	0.0065	0.42	0.3680	0.0057	0.38	WD
XXR724		0.4030	0.0355	2.28	0.3907	0.0284	1.90	OE
YBZAZ8	X	0.3023	-0.0651	-4.18	0.4340	0.0717	4.81	OE
YCBBNQ	*	0.3617	-0.0058	-0.37	0.3467	-0.0156	-1.05	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1645

2nd Qtr

Corrosion Resistant Steel, COBALT (Co)

2023

COBALT (Co)

Summary Statistics

	<u>Sample M91</u>		<u>Sample M92</u>	
Grand Means	0.3675	Percent	0.3623	Percent
Stnd Dev Btwn Labs	0.0156	Percent	0.0149	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 43 of 46 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- WD X-Ray Fluorescence - Wavelength Dispersive (WDX)
- XX Please Indicate Method Used for Current Element
- GD Spectrometry - Glow Discharge (GDS)
- OE Spectrometry - Optical Emission (OES)
- XR X-Ray Fluorescence - ED or WD not specified

Comments on Assigned Data Flags for Test #1645

YBZAZ8 (X) - Data for sample M91 are low and data for sample M92 are high. Inconsistent in testing between samples.



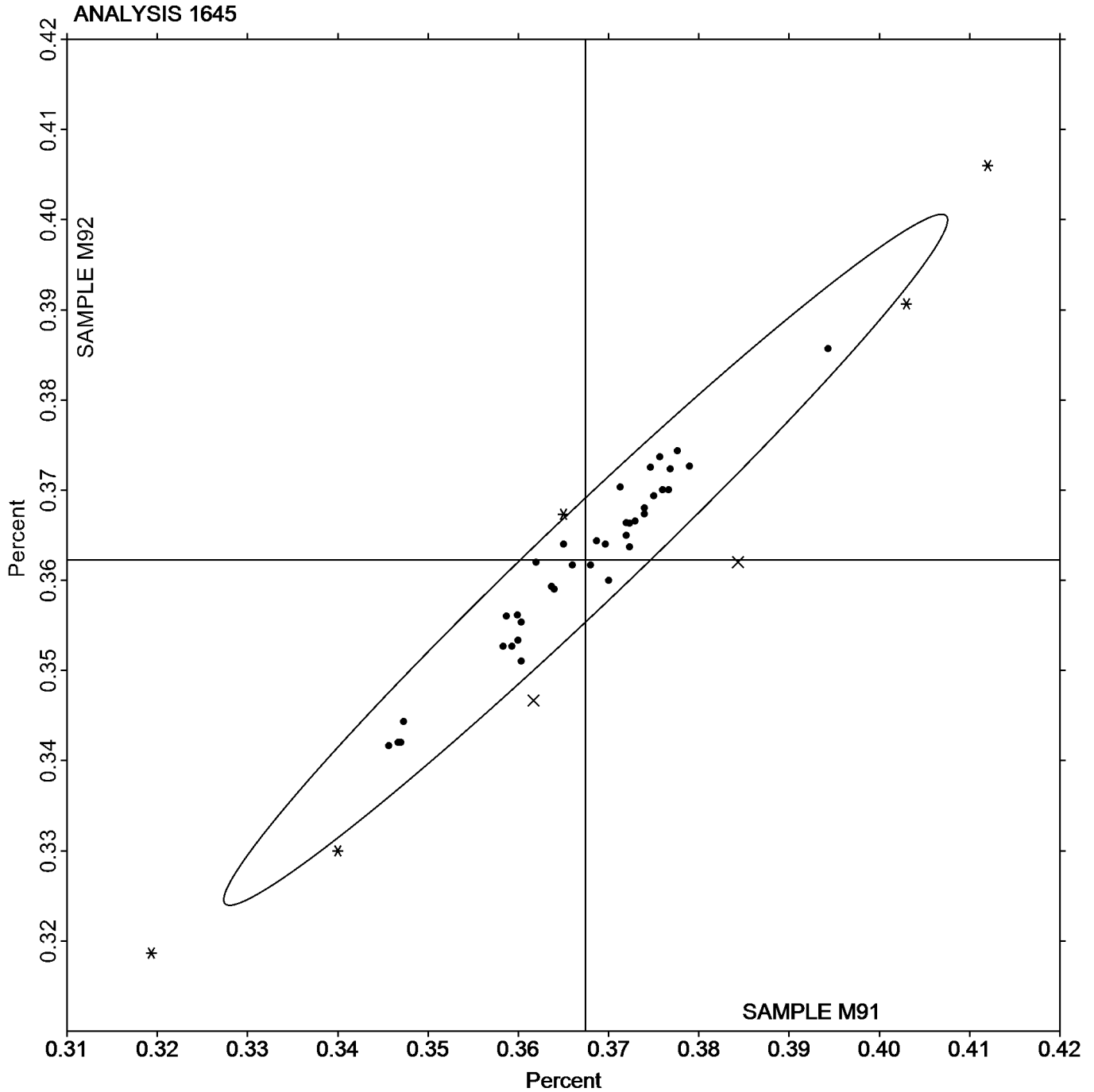
Analysis 1645

Corrosion Resistant Steel, COBALT (Co)

COBALT (Co)

SAMPLE M91
0.3675 Percent

SAMPLE M92
0.3623 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1646

2nd Qtr
2023

Corrosion Resistant Steel, NICKEL (Ni)
NICKEL (Ni)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		9.959	-0.10	-1.12	10.59	0.04	0.40	XX
3ENW3H		10.03	-0.03	-0.33	10.58	0.02	0.21	IC
3FDUJ2		10.08	0.02	0.19	10.65	0.09	1.06	ED
64D6GX	*	9.817	-0.24	-2.70	10.32	-0.23	-2.71	OE
6DM83Y		10.07	0.01	0.08	10.58	0.02	0.21	OE
6N4GL6		10.03	-0.03	-0.33	10.56	0.00	-0.02	IC
7NJAQ8		9.992	-0.07	-0.75	10.51	-0.04	-0.50	WD
826YAA	*	10.18	0.12	1.32	10.50	-0.06	-0.64	OE
8ATYG8		10.05	-0.01	-0.08	10.53	-0.03	-0.34	IC
8NVT2A		10.14	0.08	0.87	10.57	0.01	0.16	OE
8U2PMU	X	9.978	-0.08	-0.90	10.26	-0.30	-3.45	OE
A9AH7H		10.01	-0.05	-0.53	10.53	-0.02	-0.28	XR
ADMZMY		10.03	-0.03	-0.30	10.57	0.01	0.09	WC
AXG79R		10.04	-0.02	-0.18	10.53	-0.03	-0.36	WD
BQT3EU	X	9.700	-0.36	-3.99	10.16	-0.40	-4.59	OE
CEPC7R	*	10.07	0.01	0.11	10.38	-0.17	-2.02	OE
CLCVQU	X	9.893	-0.17	-1.85	10.13	-0.43	-4.90	GD
DAWX74		10.10	0.04	0.45	10.60	0.04	0.48	GD
DW9KML		10.10	0.04	0.45	10.53	-0.02	-0.29	GR
E4NJU7		10.08	0.02	0.22	10.53	-0.03	-0.36	XR
EHQRYF	X	10.70	0.64	7.11	11.27	0.71	8.16	XX
EMZ984		9.935	-0.12	-1.39	10.53	-0.03	-0.36	OE
FQUYXT		10.22	0.16	1.78	10.75	0.19	2.21	OE
G6UZBU		10.04	-0.02	-0.18	10.55	-0.01	-0.07	OE
G9TYEE		10.03	-0.03	-0.35	10.59	0.03	0.31	XX
GMAUUB		10.10	0.04	0.41	10.60	0.04	0.48	OE
GXNJFE		10.08	0.02	0.26	10.60	0.04	0.44	OE
JKV7A2		9.967	-0.09	-1.03	10.56	0.00	-0.01	OE
KCEMAE		10.13	0.07	0.83	10.60	0.04	0.44	OE
LZ4CJ4		9.874	-0.19	-2.07	10.35	-0.20	-2.36	OE
M2AQBP		9.998	-0.06	-0.68	10.57	0.01	0.14	WD
MBGWG7		10.04	-0.02	-0.19	10.58	0.02	0.28	WD
NBRUVU		10.08	0.02	0.19	10.60	0.04	0.48	OE
NWQL86		10.03	-0.03	-0.29	10.59	0.04	0.40	OE
P6HP29		10.09	0.03	0.34	10.67	0.11	1.25	OE
PXMLZX		10.15	0.09	0.95	10.62	0.06	0.74	OE
Q43PHJ		10.29	0.23	2.56	10.69	0.13	1.52	XX
Q9XJFK		10.08	0.02	0.27	10.55	-0.01	-0.09	XX
QGABRG		10.22	0.16	1.79	10.74	0.18	2.11	OE
QRPUWT		10.04	-0.02	-0.22	10.55	-0.01	-0.13	TI
RCD3KT		9.910	-0.15	-1.66	10.37	-0.19	-2.21	GD
RZJCWM		9.913	-0.15	-1.63	10.38	-0.17	-2.02	OE
RZVLRL		10.10	0.04	0.45	10.57	0.01	0.14	OE
TVHZKZ		10.10	0.04	0.49	10.55	-0.01	-0.14	OE
TXAYYX		10.25	0.19	2.11	10.66	0.10	1.17	OE
UNLTT2	X	10.10	0.04	0.41	10.30	-0.26	-3.01	OE
UWT38Y		10.03	-0.03	-0.36	10.53	-0.03	-0.33	XR



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1646

**2nd Qtr
2023**

**Corrosion Resistant Steel, NICKEL (Ni)
NICKEL (Ni)**

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X7RYG7		10.08	0.02	0.26	10.55	-0.01	-0.09	OE
XG8DDZ		10.06	0.00	0.04	10.56	0.01	0.07	WD
XNK2VL		10.01	-0.05	-0.55	10.58	0.02	0.21	OE
XXR724		10.05	-0.01	-0.12	10.48	-0.08	-0.89	OE
YBZAZ8		10.12	0.06	0.67	10.63	0.07	0.79	OE
YCBBNQ		10.06	0.00	-0.03	10.59	0.04	0.40	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	10.06	Percent	10.56	Percent
Stnd Dev Btwn Labs	0.09	Percent	0.09	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 48 of 53 reporting participants

Key to Method Codes Reported by Participants

ED X-Ray Fluorescence - Energy Dispersive (EDX)	GD Spectrometry - Glow Discharge (GDS)
GR Gravimetry	IC Spectrometry - Inductively Coupled Plasma (ICP)
OE Spectrometry - Optical Emission (OES)	TI Titrimetry
WC Wet Chemistry	WD X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR X-Ray Fluorescence - ED or WD not specified	XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1646

8U2PMU (X) - Data for sample M92 are low.

BQT3EU (X) - Data for both samples are low. Possible Systematic Error.

CLCVQU (X) - Data for sample M92 are low.

EHQRYF (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M91.

UNLTT2 (X) - Data for sample M92 are low.



Analysis 1646

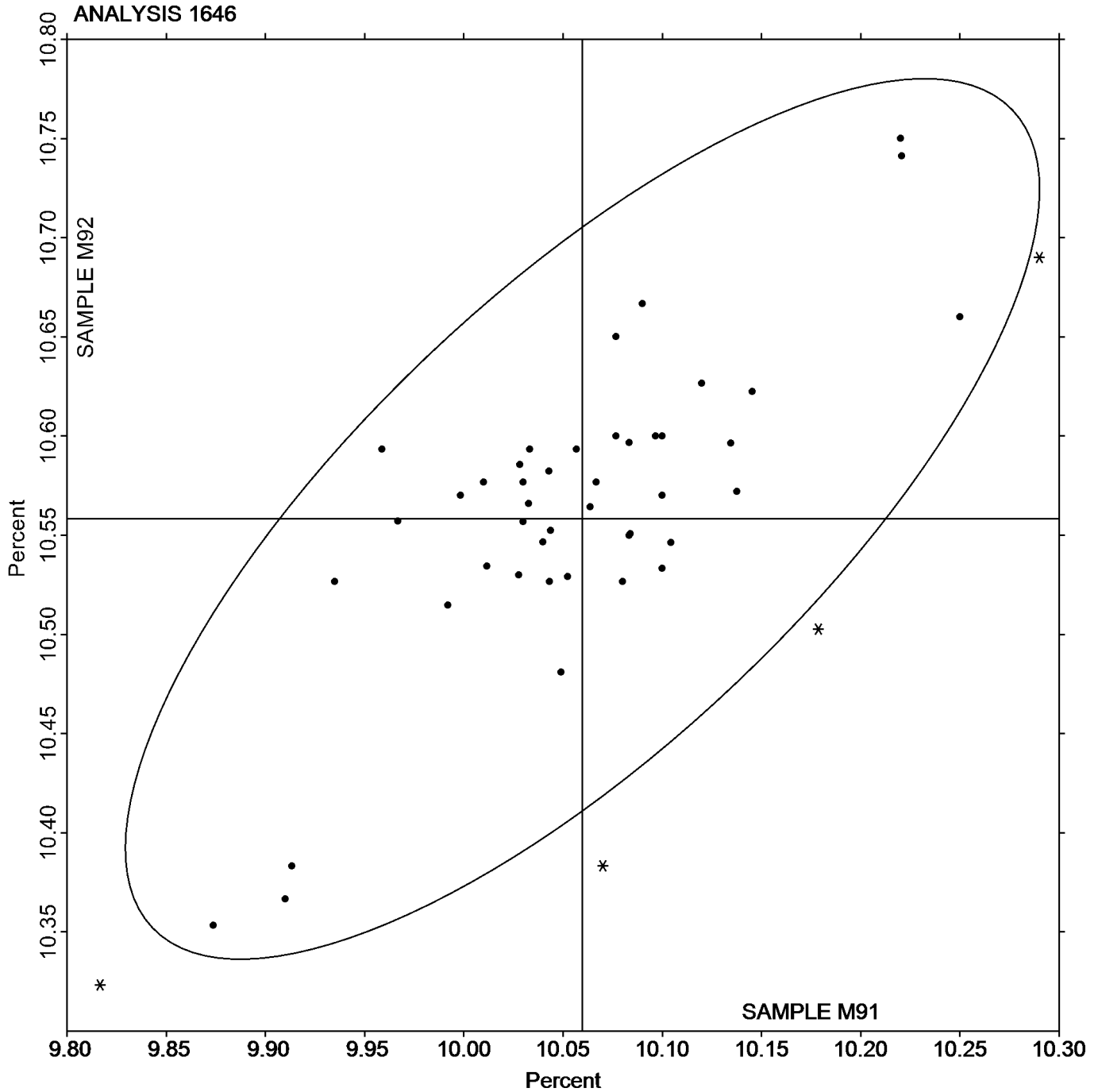
Corrosion Resistant Steel, NICKEL (Ni)
NICKEL (Ni)

SAMPLE M91

10.06 Percent

SAMPLE M92

10.56 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1647

2nd Qtr
2023

Corrosion Resistant Steel, CHROMIUM (Cr) CHROMIUM (Cr)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		16.70	-0.01	-0.15	16.53	-0.02	-0.24	XX
3ENW3H		16.66	-0.05	-0.53	16.60	0.04	0.42	IC
3FDUJ2		16.79	0.08	0.98	16.66	0.10	1.09	OE
64D6GX	X	17.15	0.44	5.08	16.96	0.40	4.21	OE
6DM83Y		16.56	-0.15	-1.73	16.38	-0.18	-1.89	OE
6N4GL6		16.76	0.05	0.59	16.60	0.04	0.42	IC
7NJAQ8		16.68	-0.03	-0.34	16.51	-0.05	-0.49	WD
826YAA	*	16.58	-0.12	-1.44	16.66	0.10	1.07	OE
8ATYG8		16.71	0.00	0.00	16.54	-0.01	-0.13	XX
8NVT2A		16.63	-0.08	-0.97	16.42	-0.14	-1.42	OE
8U2PMU		16.66	-0.05	-0.60	16.33	-0.23	-2.41	OE
A9AH7H		16.69	-0.02	-0.18	16.53	-0.03	-0.33	XR
ADMZMY		16.70	-0.01	-0.10	16.58	0.02	0.26	WC
AXG79R		16.66	-0.05	-0.57	16.47	-0.09	-0.91	WD
BQT3EU		16.70	-0.01	-0.11	16.55	-0.01	-0.07	OE
CEPC7R		16.85	0.15	1.68	16.78	0.23	2.39	OE
CLCVQU	X	16.43	-0.28	-3.22	16.02	-0.53	-5.61	GD
DAWX74		16.50	-0.21	-2.43	16.40	-0.16	-1.65	GD
DW9KML		16.63	-0.08	-0.88	16.57	0.01	0.11	TI
E4NJU7		16.78	0.07	0.86	16.59	0.03	0.35	XR
EHQRYF		16.77	0.06	0.67	16.57	0.01	0.11	GD
EMZ984		16.62	-0.09	-1.07	16.45	-0.11	-1.12	OE
FQUYXT		16.53	-0.18	-2.04	16.48	-0.08	-0.81	OE
G6UZBU		16.70	-0.01	-0.11	16.57	0.01	0.12	OE
G9TYEE		16.79	0.09	0.99	16.65	0.09	0.93	XX
GMAUUB		16.73	0.02	0.28	16.54	-0.02	-0.17	OE
GXNJFE		16.71	0.00	-0.03	16.52	-0.04	-0.42	OE
JKV7A2		16.73	0.02	0.26	16.49	-0.07	-0.75	OE
KCEMAE		16.77	0.06	0.75	16.58	0.03	0.30	OE
LZ4CJ4		16.74	0.03	0.32	16.55	-0.01	-0.07	OE
M2AQB		16.75	0.04	0.49	16.60	0.05	0.49	WD
MBGWG7		16.63	-0.08	-0.91	16.47	-0.09	-0.90	WD
NBRUVU		16.79	0.08	0.94	16.63	0.07	0.74	OE
NWQL86		16.68	-0.03	-0.34	16.54	-0.02	-0.21	OE
P6HP29		16.70	-0.01	-0.11	16.45	-0.11	-1.16	OE
PXMLZX		16.66	-0.05	-0.60	16.51	-0.05	-0.49	OE
Q43PHJ	X	16.20	-0.51	-5.91	16.00	-0.56	-5.86	XX
Q9XJFK		16.78	0.07	0.77	16.55	0.00	-0.03	OE
QGABRG		16.82	0.11	1.26	16.71	0.15	1.58	OE
QRPUWT		16.48	-0.23	-2.66	16.43	-0.13	-1.33	TI
RCD3KT		16.87	0.16	1.83	16.70	0.14	1.51	GD
RZJCWM		16.78	0.07	0.86	16.65	0.09	0.98	OE
RZVLR		16.74	0.03	0.36	16.70	0.14	1.51	OE
TVHZKZ		16.74	0.03	0.35	16.65	0.09	0.99	OE
TXAYYX		16.67	-0.04	-0.45	16.53	-0.03	-0.32	OE
UNLTT2		16.68	-0.03	-0.38	16.49	-0.06	-0.67	OE
UWT38Y		16.64	-0.07	-0.76	16.47	-0.09	-0.96	XR



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1647

**2nd Qtr
2023**

**Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)**

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
X7RYG7		16.65	-0.06	-0.65	16.66	0.10	1.09	OE
XG8DDZ		16.83	0.12	1.40	16.66	0.10	1.06	WD
XNK2VL		16.75	0.04	0.47	16.56	0.01	0.07	OE
XXR724		16.70	-0.01	-0.16	16.53	-0.02	-0.25	OE
YBZAZ8		16.87	0.16	1.83	16.68	0.12	1.26	OE
YCBBNQ		16.79	0.08	0.94	16.69	0.14	1.44	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	16.71	Percent	16.56	Percent
Std Dev Btwn Labs	0.09	Percent	0.10	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 49 of 53 reporting participants

Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	TI	Titrimetry
WC	Wet Chemistry	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1647

64D6GX (X) - Data for both samples are high. Possible Systematic Error.

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

Q43PHJ (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1647

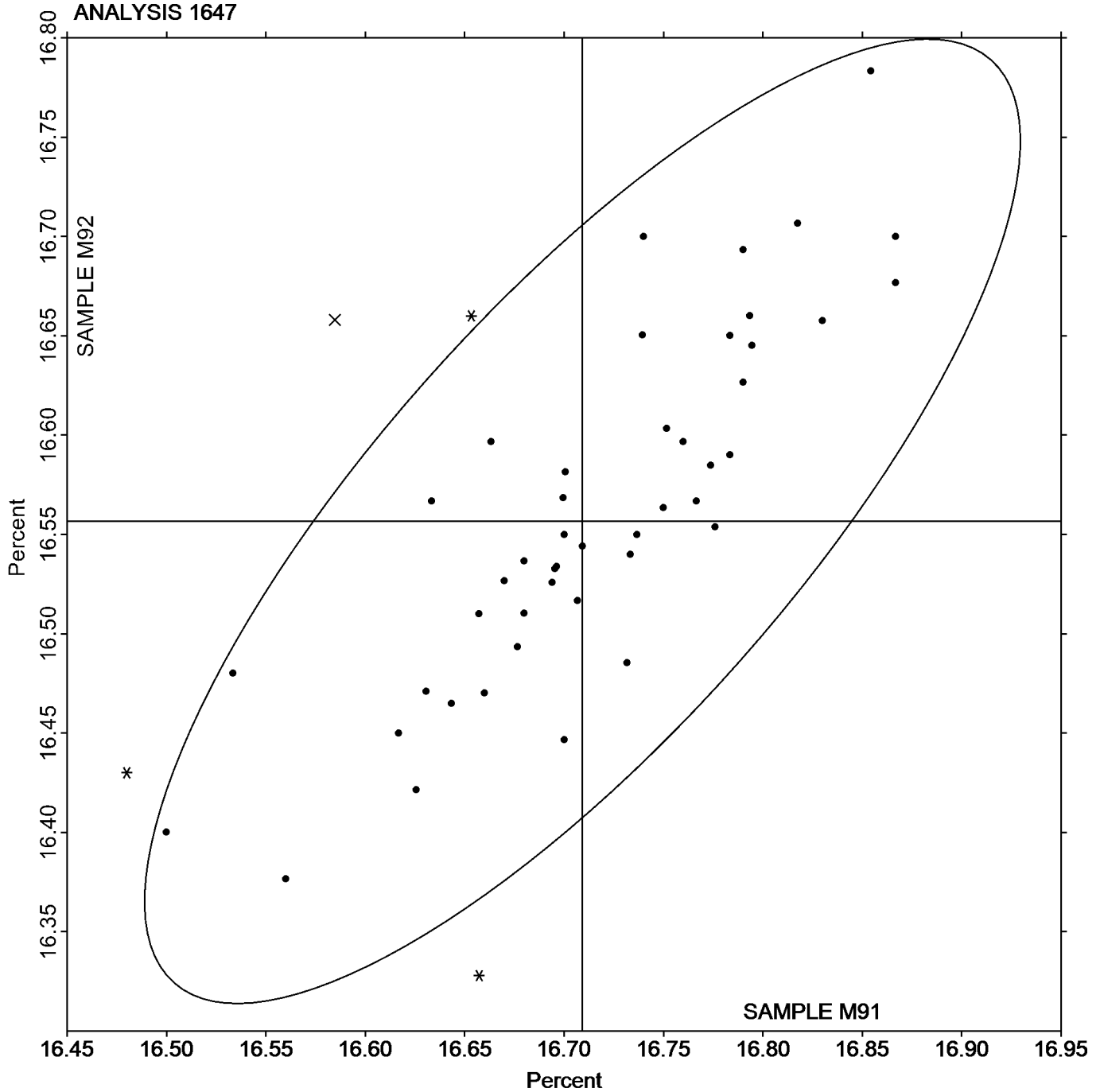
Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE M91

16.71 Percent

SAMPLE M92

16.56 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1648

2nd Qtr
2023

Corrosion Resistant Steel, MOLYBDENUM (Mo) MOLYBDENUM (Mo)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		2.066	0.006	0.23	2.127	0.007	0.23	XX
3ENW3H		2.053	-0.008	-0.28	2.109	-0.012	-0.40	IC
3FDUJ2		2.040	-0.020	-0.75	2.098	-0.023	-0.79	ED
64D6GX		2.013	-0.047	-1.76	2.067	-0.054	-1.86	OE
6DM83Y	*	2.140	0.080	2.99	2.207	0.086	2.96	OE
6N4GL6		2.097	0.037	1.38	2.164	0.043	1.48	IC
7NJAQ8		2.058	-0.002	-0.07	2.117	-0.003	-0.11	WD
826YAA	X	2.045	-0.016	-0.58	2.041	-0.080	-2.74	OE
8ATYG8		2.066	0.006	0.22	2.124	0.004	0.13	IC
8NVT2A		2.033	-0.027	-1.02	2.096	-0.024	-0.83	OE
8U2PMU	X	2.204	0.144	5.38	2.309	0.188	6.48	OE
A9AH7H		2.074	0.014	0.51	2.136	0.015	0.52	XR
AXG79R		2.062	0.002	0.07	2.117	-0.004	-0.12	WD
BQT3EU		2.102	0.042	1.56	2.164	0.043	1.49	OE
CEPC7R	X	2.002	-0.058	-2.18	2.013	-0.108	-3.70	OE
CLCVQU	*	2.000	-0.060	-2.26	2.137	0.016	0.56	GD
DAWX74	X	2.143	0.083	3.11	2.183	0.063	2.16	GD
DW9KML		2.077	0.016	0.61	2.120	-0.001	-0.02	GR
E4NJU7		2.070	0.010	0.36	2.120	-0.001	-0.02	XR
EHQRYF	X	1.930	-0.130	-4.88	2.073	-0.047	-1.63	GD
EMZ984	X	2.395	0.335	12.53	2.460	0.340	11.69	OE
FQUYXT		2.022	-0.039	-1.44	2.092	-0.029	-1.00	OE
G6UZBU		2.068	0.007	0.28	2.118	-0.003	-0.09	OE
G9TYEE		2.059	-0.001	-0.03	2.120	-0.001	-0.02	XX
GMAUUB		2.067	0.006	0.24	2.130	0.009	0.32	OE
GXNJFE	X	0.1533	-1.907	-71.40	0.1600	-1.961	-67.45	OE
JKV7A2		2.055	-0.005	-0.21	2.101	-0.019	-0.66	OE
KCEMAE		2.037	-0.023	-0.86	2.105	-0.016	-0.54	OE
LZ4CJ4		2.034	-0.027	-1.00	2.093	-0.028	-0.96	OE
M2AQB		2.052	-0.009	-0.32	2.108	-0.012	-0.42	WD
MBGWG7		2.070	0.010	0.36	2.129	0.008	0.29	WD
NBRUVU		2.067	0.006	0.24	2.133	0.013	0.44	OE
NWQL86		2.050	-0.010	-0.38	2.130	0.009	0.32	OE
P6HP29		2.075	0.015	0.55	2.138	0.018	0.61	OE
PXMLZX		2.069	0.009	0.34	2.134	0.013	0.45	OE
Q43PHJ	X	2.290	0.230	8.60	2.350	0.229	7.89	XX
Q9XJFK		2.065	0.005	0.19	2.123	0.003	0.09	OE
QGABRG		2.096	0.036	1.33	2.137	0.017	0.58	OE
QRPUWT	X	2.157	0.096	3.61	2.290	0.169	5.83	AA
RCD3KT	*	2.130	0.070	2.61	2.157	0.036	1.24	GD
RZJCWM	*	1.983	-0.077	-2.88	2.030	-0.091	-3.12	OE
RZVLRL		2.062	0.002	0.07	2.139	0.018	0.63	OE
TVHZKZ		2.053	-0.007	-0.27	2.124	0.004	0.13	OE
TXAYYX		2.087	0.026	0.99	2.163	0.043	1.47	OE
UNLTT2		2.053	-0.007	-0.26	2.109	-0.012	-0.41	OE
UWT38Y		2.062	0.002	0.08	2.123	0.003	0.09	XR
X7RYG7		2.060	0.000	-0.01	2.133	0.013	0.44	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1648

2nd Qtr
2023

Corrosion Resistant Steel, MOLYBDENUM (Mo) MOLYBDENUM (Mo)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XG8DDZ		2.021	-0.040	-1.48	2.076	-0.045	-1.55	WD
XNK2VL		2.047	-0.014	-0.51	2.103	-0.017	-0.59	OE
XXR724		2.092	0.032	1.19	2.154	0.034	1.16	OE
YBZAZ8		2.037	-0.023	-0.87	2.101	-0.019	-0.66	OE
YCBBNQ		2.077	0.016	0.61	2.130	0.009	0.32	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	2.060	Percent	2.121	Percent
Std Dev Btwn Labs	0.027	Percent	0.029	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 41 of 52 reporting participants

Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	GR	Gravimetry
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1648

- 826YAA (X) - Data for sample M92 are low. Inconsistent within the determinations of both samples.
- 8U2PMU (X) - Data for both samples are high. Possible Systematic Error.
- CEPC7R (X) - Data for sample M92 are low. Inconsistent within the determinations of sample M91.
- DAWX74 (X) - Data for sample M91 are high. Inconsistent within the determinations of both samples.
- EHQRYF (X) - Data for sample M91 are low. Inconsistent within the determinations of sample M92.
- EMZ984 (X) - Data for both samples are high. Possible Systematic Error.
- GXNJFE (X) - Extreme data.
- Q43PHJ (X) - Data for both samples are high. Possible Systematic Error.
- QRPUWT (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1648

2nd Qtr
2023

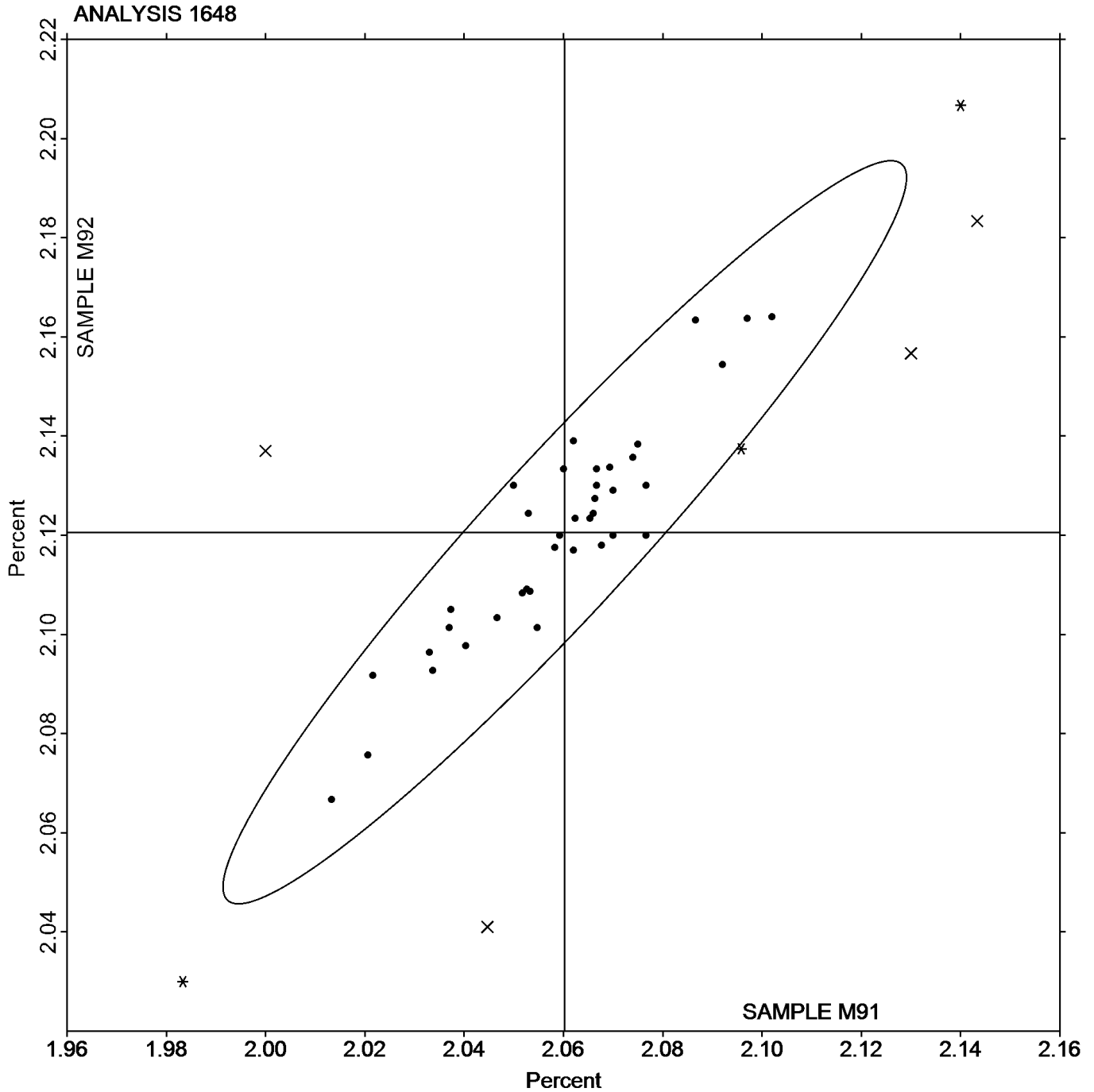
Corrosion Resistant Steel, MOLYBDENUM (Mo)
MOLYBDENUM (Mo)

SAMPLE M91

2.060 Percent

SAMPLE M92

2.121 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1649

2nd Qtr
2023

Corrosion Resistant Steel, COPPER (Cu)
COPPER (Cu)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.3840	-0.0019	-0.24	0.3220	-0.0012	-0.18	XX
3ENW3H		0.3898	0.0039	0.49	0.3285	0.0053	0.82	IC
3FDUJ2		0.3853	-0.0005	-0.07	0.3223	-0.0008	-0.13	OE
64D6GX		0.3880	0.0021	0.27	0.3257	0.0025	0.39	OE
6DM83Y		0.3990	0.0131	1.65	0.3320	0.0088	1.37	OE
6N4GL6		0.3797	-0.0062	-0.78	0.3183	-0.0048	-0.75	IC
7NJAQ8		0.3865	0.0007	0.08	0.3244	0.0012	0.19	WD
826YAA		0.3900	0.0041	0.52	0.3283	0.0052	0.80	OE
8ATYG8		0.3840	-0.0019	-0.24	0.3207	-0.0025	-0.39	IC
8NVT2A		0.3730	-0.0129	-1.62	0.3110	-0.0122	-1.89	OE
8U2PMU		0.3809	-0.0050	-0.63	0.3190	-0.0042	-0.65	OE
A9AH7H		0.3830	-0.0029	-0.36	0.3237	0.0005	0.08	XR
AXG79R		0.3850	-0.0009	-0.11	0.3213	-0.0018	-0.29	WD
BQT3EU		0.3670	-0.0189	-2.37	0.3090	-0.0142	-2.20	OE
CEPC7R		0.3893	0.0035	0.44	0.3320	0.0088	1.37	OE
CLCVQU		0.3860	0.0001	0.02	0.3300	0.0068	1.06	GD
DAWX74		0.3947	0.0088	1.11	0.3270	0.0038	0.59	GD
DW9KML		0.3823	-0.0035	-0.44	0.3217	-0.0015	-0.23	IC
E4NJU7		0.3800	-0.0059	-0.74	0.3200	-0.0032	-0.49	XR
EHQRYF	X	0.4397	0.0538	6.76	0.3657	0.0425	6.59	GD
EMZ984		0.4030	0.0171	2.15	0.3397	0.0165	2.56	OE
FQUYXT		0.3823	-0.0035	-0.44	0.3183	-0.0048	-0.75	OE
G6UZBU		0.3857	-0.0002	-0.03	0.3247	0.0015	0.23	OE
G9TYEE		0.3893	0.0034	0.43	0.3276	0.0045	0.69	XX
GMAUUB		0.3783	-0.0075	-0.95	0.3173	-0.0058	-0.91	OE
GXNJFE		0.3767	-0.0092	-1.16	0.3100	-0.0132	-2.04	OE
JKV7A2		0.3807	-0.0052	-0.65	0.3242	0.0011	0.16	OE
KCEMAE	X	0.4063	0.0205	2.57	0.3530	0.0298	4.63	OE
LZ4CJ4		0.3857	-0.0002	-0.03	0.3253	0.0022	0.33	OE
M2AQB		0.3810	-0.0049	-0.61	0.3132	-0.0100	-1.55	WD
MBGWG7		0.3867	0.0008	0.10	0.3237	0.0005	0.08	WD
NBRUVU	X	0.4283	0.0425	5.34	0.3600	0.0368	5.71	OE
NWQL86		0.3843	-0.0015	-0.19	0.3193	-0.0038	-0.60	OE
P6HP29		0.3867	0.0008	0.10	0.3197	-0.0035	-0.54	OE
PXMLZX		0.3973	0.0115	1.44	0.3267	0.0035	0.54	OE
Q43PHJ		0.4050	0.0191	2.40	0.3290	0.0058	0.90	XX
Q9XJFK		0.3843	-0.0015	-0.19	0.3183	-0.0048	-0.75	OE
QGABRG		0.3942	0.0084	1.05	0.3351	0.0119	1.85	OE
QRPUWT		0.3800	-0.0059	-0.74	0.3200	-0.0032	-0.49	AA
RCD3KT	X	0.3433	-0.0425	-5.35	0.2777	-0.0455	-7.06	GD
RZJCWM		0.4000	0.0141	1.78	0.3300	0.0068	1.06	OE
RZVLRL		0.3890	0.0031	0.39	0.3270	0.0038	0.59	OE
TXAYYX		0.3867	0.0008	0.10	0.3300	0.0068	1.06	OE
UNLTT2		0.3657	-0.0202	-2.54	0.3097	-0.0135	-2.10	OE
UWT38Y		0.3853	-0.0005	-0.07	0.3250	0.0018	0.28	XR
X7RYG7		0.3887	0.0028	0.35	0.3223	-0.0008	-0.13	OE
XG8DDZ		0.3883	0.0025	0.31	0.3243	0.0012	0.18	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1649

2nd Qtr
2023

Corrosion Resistant Steel, COPPER (Cu)
COPPER (Cu)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
XXR724		0.3777	-0.0082	-1.03	0.3223	-0.0008	-0.13	OE
YBZAZ8		0.3850	-0.0009	-0.11	0.3230	-0.0002	-0.03	OE
YCBBNQ		0.3950	0.0091	1.15	0.3233	0.0002	0.02	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	0.3859	Percent	0.3232	Percent
Stnd Dev Btwn Labs	0.0080	Percent	0.0064	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 46 of 50 reporting participants

Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XR	X-Ray Fluorescence - ED or WD not specified
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1649

- EHQRYF (X) - Data for both samples are high. Inconsistent within the determinations of sample M92.
- KCEMAE (X) - Data for sample M92 are high.
- NBRUVU (X) - Data for both samples are high.
- RCD3KT (X) - Data for both samples are low.



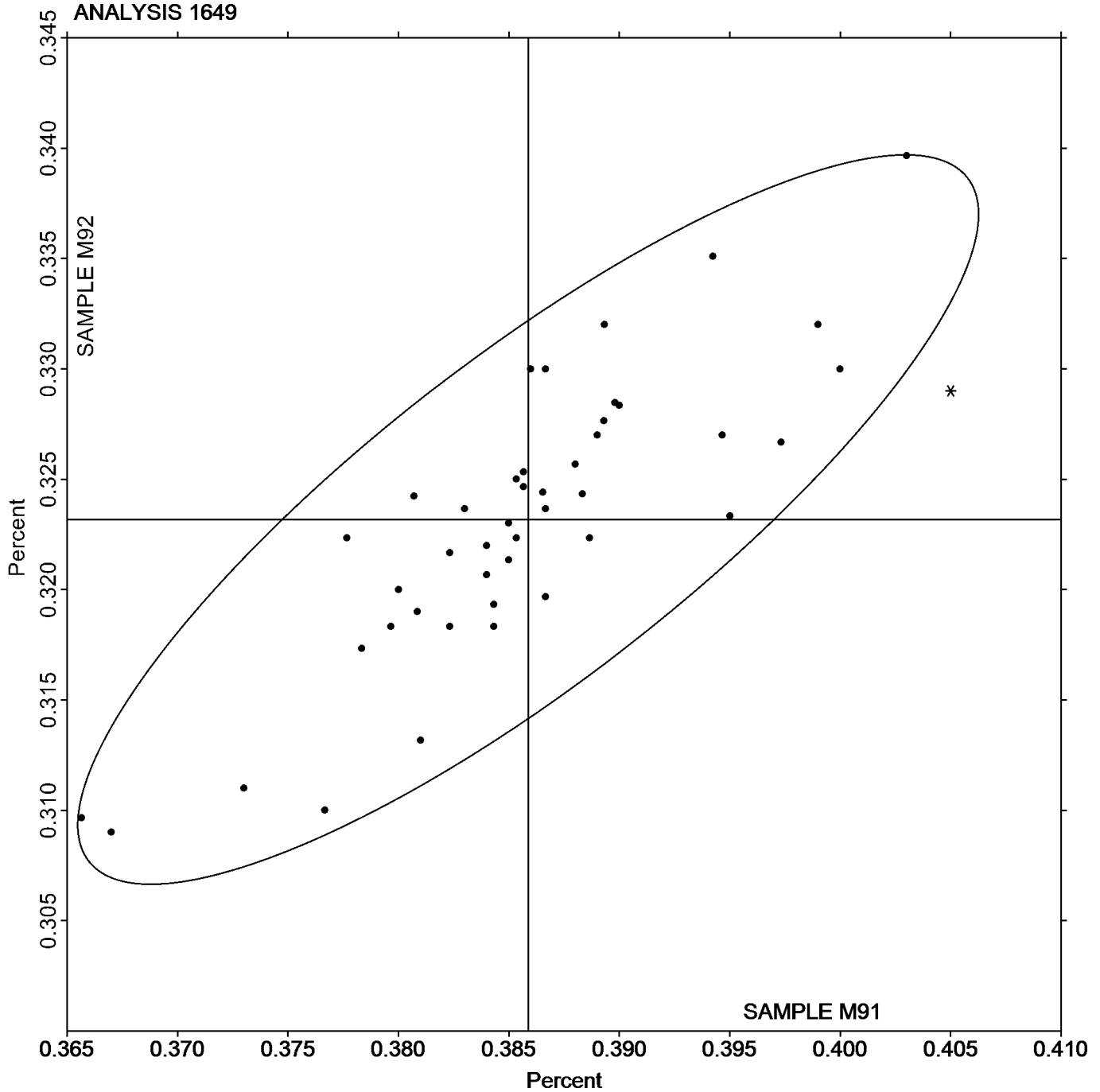
Analysis 1649

Corrosion Resistant Steel, COPPER (Cu)

COPPER (Cu)

SAMPLE M91
0.3859 Percent

SAMPLE M92
0.3232 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1650

2nd Qtr
2023

Corrosion Resistant Steel, NITROGEN (N) NITROGEN (N)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.0483	0.0000	0.00	0.0455	-0.0004	-0.12	XX
3ENW3H		0.0502	0.0019	0.60	0.0448	-0.0011	-0.35	XX
3FDUJ2		0.0523	0.0040	1.28	0.0513	0.0055	1.81	OE
6N4GL6		0.0478	-0.0005	-0.16	0.0451	-0.0007	-0.24	CO
7NJAQ8		0.0499	0.0016	0.49	0.0460	0.0001	0.05	CO
8ATYG8		0.0483	0.0000	0.01	0.0460	0.0001	0.05	XX
A9AH7H		0.0437	-0.0046	-1.45	0.0424	-0.0035	-1.16	IR
AXG79R		0.0461	-0.0022	-0.69	0.0432	-0.0026	-0.87	CO
BLF3H3		0.0489	0.0006	0.18	0.0462	0.0003	0.11	CI
BQT3EU		0.0490	0.0007	0.22	0.0465	0.0006	0.21	CO
CEPC7R	X	0.0320	-0.0163	-5.16	0.0327	-0.0132	-4.37	OE
DW9KML		0.0549	0.0066	2.09	0.0528	0.0070	2.31	CI
E4NJU7		0.0485	0.0002	0.07	0.0452	-0.0007	-0.22	ED
G6UZBU		0.0473	-0.0010	-0.32	0.0445	-0.0014	-0.45	IR
G9TYEE		0.0462	-0.0021	-0.66	0.0444	-0.0014	-0.47	XX
GMAUUB		0.0420	-0.0063	-2.01	0.0399	-0.0060	-1.98	OE
GXNJFE	X	0.1267	0.0784	24.81	0.1200	0.0741	24.54	OE
JKV7A2		0.0510	0.0027	0.85	0.0491	0.0032	1.07	OE
KCEMAE		0.0490	0.0007	0.22	0.0460	0.0001	0.05	CI
LZ4CJ4		0.0517	0.0034	1.06	0.0481	0.0022	0.74	OE
M2AQB		0.0490	0.0007	0.22	0.0477	0.0018	0.60	OE
MBGWG7		0.0485	0.0002	0.05	0.0455	-0.0004	-0.12	CO
NBRUVU		0.0534	0.0051	1.60	0.0503	0.0044	1.46	XX
P6HP29		0.0533	0.0050	1.59	0.0500	0.0041	1.37	CI
Q9XJFK		0.0465	-0.0018	-0.56	0.0443	-0.0016	-0.53	CO
QRPUWT		0.0480	-0.0003	-0.10	0.0450	-0.0009	-0.28	XX
RZVLRL	X	0.0310	-0.0173	-5.48	0.0290	-0.0169	-5.58	OE
UNLTT2	*	0.0477	-0.0006	-0.20	0.0400	-0.0059	-1.94	OE
UWT38Y		0.0437	-0.0046	-1.45	0.0424	-0.0035	-1.16	IR
X7RYG7		0.0435	-0.0048	-1.52	0.0441	-0.0018	-0.59	OE
XG8DDZ		0.0470	-0.0013	-0.41	0.0472	0.0014	0.46	CO
XXR724		0.0491	0.0008	0.24	0.0468	0.0009	0.30	OE
YBZAZ8		0.0437	-0.0046	-1.47	0.0397	-0.0062	-2.05	OE
YCBBNQ	X	0.0575	0.0092	2.92	0.0470	0.0012	0.39	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	0.0483	Percent	0.0459	Percent
Std Dev Btwn Labs	0.0032	Percent	0.0030	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 29 of 34 reporting participants



Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
ED	X-Ray Fluorescence - Energy Dispersive (EDX)	IR	IR (Absorption / Detection)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1650

CEPC7R (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample M91.

GXNJFE (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M91.

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

YCBBNQ (X) - Data for sample M91 are high.

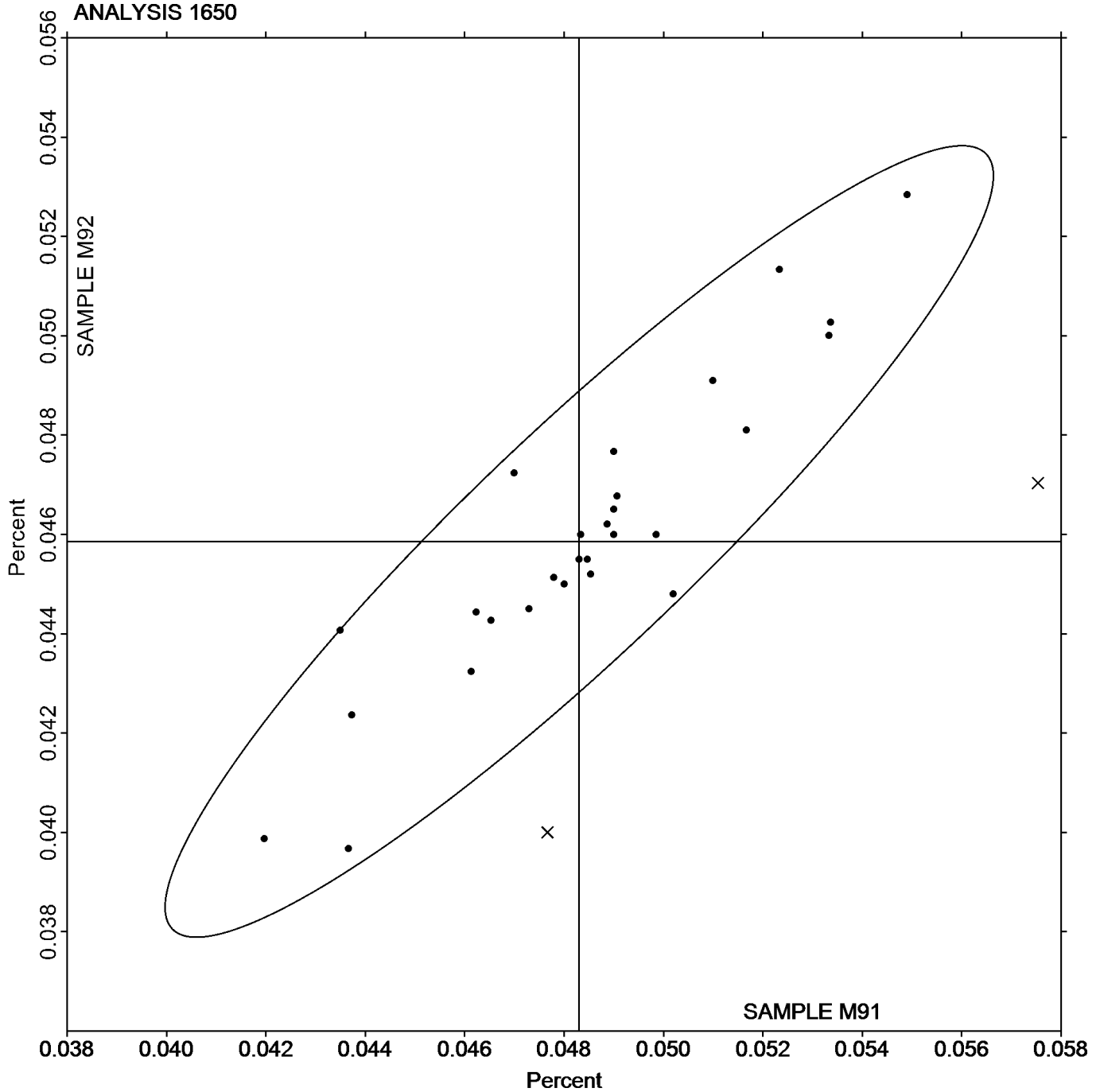


Analysis 1650

Corrosion Resistant Steel, NITROGEN (N)
NITROGEN (N)

SAMPLE M91
0.0483 Percent

SAMPLE M92
0.0459 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1651

2nd Qtr
2023

Corrosion Resistant Steel, TUNGSTEN (W) TUNGSTEN (W)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3ENW3H		0.0690	-0.0019	-0.21	0.0890	-0.0003	-0.03	IC
3FDUJ2		0.0630	-0.0080	-0.84	0.0797	-0.0097	-0.88	OE
6N4GL6		0.0790	0.0080	0.85	0.0990	0.0096	0.88	IC
7NJAQ8		0.0726	0.0016	0.17	0.0928	0.0034	0.31	WD
8ATYG8		0.0703	-0.0006	-0.07	0.0913	0.0020	0.18	IC
8NVT2A		0.0567	-0.0143	-1.51	0.0670	-0.0224	-2.04	OE
8U2PMU		0.0665	-0.0045	-0.48	0.0842	-0.0051	-0.47	OE
AXG79R		0.0643	-0.0066	-0.70	0.0842	-0.0051	-0.47	WD
BQT3EU		0.0800	0.0090	0.95	0.0980	0.0086	0.79	OE
CEPC7R		0.0607	-0.0103	-1.09	0.0745	-0.0149	-1.35	OE
DW9KML	X	0.1097	0.0387	4.09	0.1310	0.0416	3.79	IC
E4NJU7		0.0950	0.0240	2.54	0.1110	0.0216	1.97	XR
EHQRYF		0.0823	0.0114	1.20	0.1020	0.0126	1.15	GD
EMZ984	X	0.1713	0.1004	10.60	0.1983	0.1090	9.92	OE
G6UZBU		0.0730	0.0020	0.21	0.0937	0.0043	0.39	OE
GMAUUB		0.0653	-0.0056	-0.60	0.0849	-0.0045	-0.41	OE
GXNJFE		0.0673	-0.0036	-0.38	0.0870	-0.0024	-0.22	OE
JKV7A2		0.0471	-0.0239	-2.52	0.0642	-0.0251	-2.29	OE
KCEMAE		0.0837	0.0127	1.34	0.1047	0.0153	1.39	OE
LZ4CJ4		0.0597	-0.0113	-1.19	0.0757	-0.0137	-1.25	OE
MBGWG7		0.0797	0.0087	0.92	0.1000	0.0106	0.97	WD
NBRUVU		0.0730	0.0020	0.21	0.0925	0.0032	0.29	OE
P6HP29		0.0687	-0.0023	-0.24	0.0880	-0.0014	-0.12	OE
PXMLZX		0.0740	0.0030	0.32	0.0857	-0.0037	-0.34	OE
Q43PHJ		0.0930	0.0220	2.33	0.1130	0.0236	2.15	XX
Q9XJFK		0.0713	0.0004	0.04	0.0847	-0.0047	-0.43	OE
QGABRG		0.0707	-0.0003	-0.03	0.0901	0.0007	0.07	OE
QRPUWT		0.0700	-0.0010	-0.10	0.0900	0.0006	0.06	IC
RCD3KT		0.0581	-0.0129	-1.36	0.0696	-0.0198	-1.80	GD
RZJCWM		0.0717	0.0007	0.07	0.0903	0.0010	0.09	OE
RZVLR		0.0710	0.0000	0.00	0.0960	0.0066	0.60	OE
UNLTT2		0.0707	-0.0003	-0.03	0.0910	0.0016	0.15	OE
X7RYG7		0.0699	-0.0011	-0.12	0.0923	0.0029	0.26	OE
XG8DDZ		0.0720	0.0010	0.11	0.0900	0.0006	0.06	WD
XXR724		0.0722	0.0012	0.13	0.0954	0.0060	0.55	OE
YBZA8		0.0720	0.0010	0.11	0.0870	-0.0024	-0.22	OE

Summary Statistics

	Sample M91		Sample M92	
Grand Means	0.0710	Percent	0.0894	Percent
Std Dev Btwn Labs	0.0095	Percent	0.0110	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 34 of 36 reporting participants



Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1651

DW9KML (X) - Data for both samples are high. Possible Systematic Error.

EMZ984 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M91.



Analysis 1651

2nd Qtr

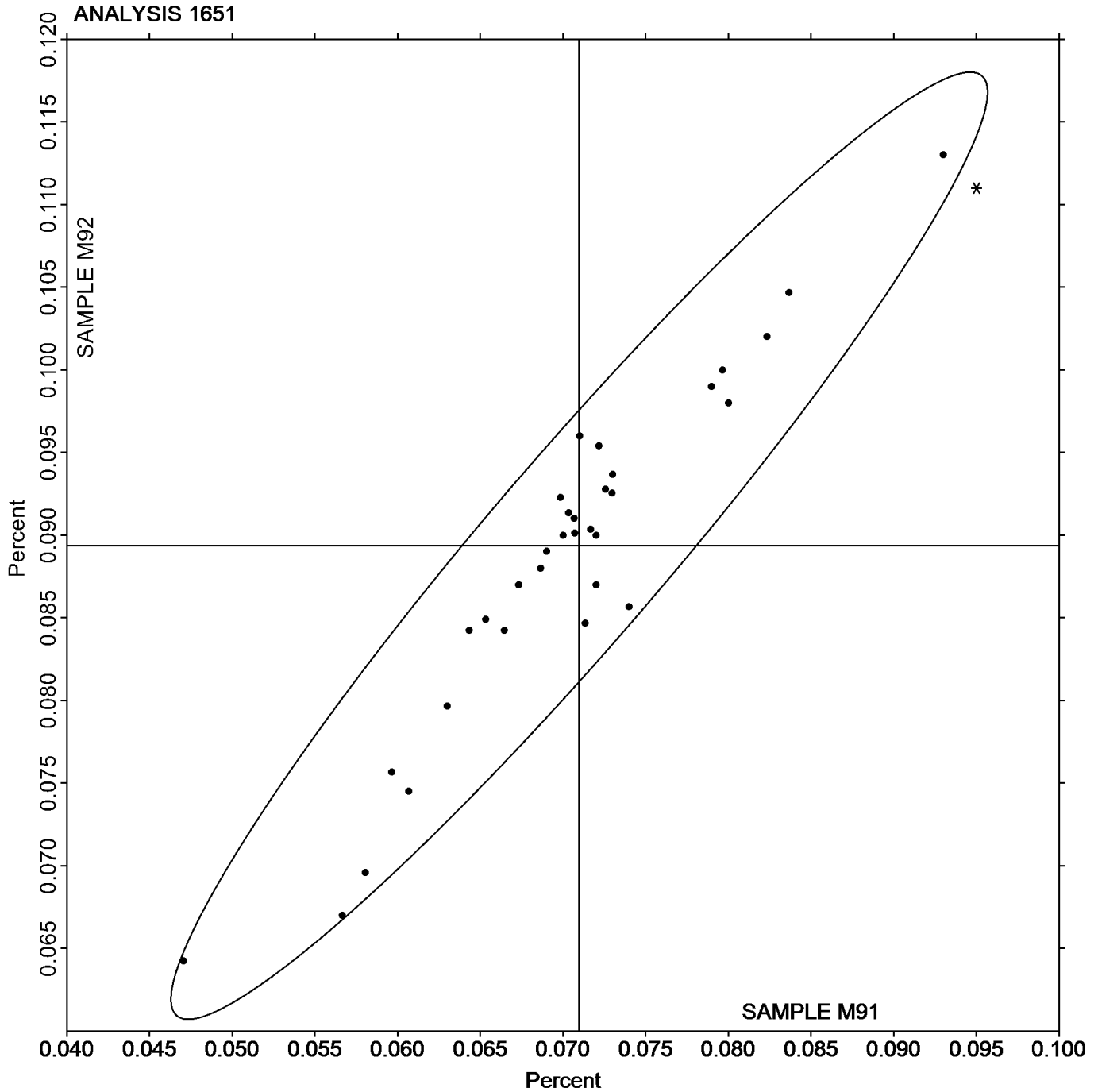
Corrosion Resistant Steel, TUNGSTEN (W)

2023

TUNGSTEN (W)

SAMPLE M91
0.0710 Percent

SAMPLE M92
0.0894 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1654

2nd Qtr
2023

Corrosion Resistant Steel, NIOBIUM (Nb)
NIOBIUM (Nb)

WebCode	Data Flag	Sample M91			Sample M92			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2J37YU		0.0362	-0.0027	-0.59	0.0252	-0.0022	-0.52	XX
3ENW3H		0.0337	-0.0052	-1.16	0.0224	-0.0050	-1.17	IC
3FDUJ2	X	0.0265	-0.0124	-2.75	0.0107	-0.0168	-3.88	OE
6N4GL6		0.0407	0.0018	0.39	0.0297	0.0022	0.51	IC
7NJAQ8		0.0442	0.0053	1.17	0.0314	0.0040	0.92	WD
8ATYG8		0.0370	-0.0019	-0.42	0.0270	-0.0005	-0.11	IC
8NVT2A		0.0337	-0.0052	-1.16	0.0273	-0.0001	-0.03	OE
8U2PMU		0.0410	0.0021	0.46	0.0312	0.0038	0.87	OE
A9AH7H		0.0391	0.0002	0.05	0.0272	-0.0002	-0.06	XX
AXG79R		0.0418	0.0029	0.64	0.0303	0.0028	0.65	WD
BQT3EU		0.0472	0.0083	1.84	0.0366	0.0091	2.11	OE
CEPC7R		0.0403	0.0014	0.32	0.0278	0.0004	0.08	OE
DW9KML		0.0453	0.0064	1.43	0.0343	0.0069	1.59	IC
E4NJU7		0.0420	0.0031	0.69	0.0300	0.0025	0.58	XR
EHQRYF		0.0450	0.0061	1.35	0.0327	0.0052	1.20	GD
EMZ984	X	0.0640	0.0251	5.57	0.0540	0.0265	6.14	OE
FQUYXT		0.0350	-0.0039	-0.87	0.0200	-0.0075	-1.73	OE
G6UZBU		0.0397	0.0008	0.18	0.0282	0.0008	0.17	IC
G9TYEE		0.0400	0.0011	0.24	0.0280	0.0005	0.12	XX
GMAUUB		0.0333	-0.0056	-1.24	0.0210	-0.0064	-1.49	OE
GXNJFE		0.0417	0.0028	0.61	0.0297	0.0022	0.51	OE
JKV7A2		0.0406	0.0017	0.37	0.0274	-0.0001	-0.02	OE
KCEMAE		0.0390	0.0001	0.02	0.0290	0.0015	0.35	OE
LZ4CJ4		0.0442	0.0053	1.18	0.0297	0.0022	0.51	OE
M2AQB		0.0451	0.0062	1.37	0.0300	0.0025	0.58	WD
MBGWG7		0.0427	0.0038	0.84	0.0310	0.0035	0.81	WD
NBRUVU		0.0366	-0.0023	-0.52	0.0261	-0.0014	-0.32	OE
P6HP29		0.0351	-0.0038	-0.84	0.0264	-0.0011	-0.25	OE
PXMLZX		0.0297	-0.0092	-2.05	0.0243	-0.0031	-0.73	OE
Q43PHJ	X	0.0430	0.0041	0.91	0.00100	-0.0265	-6.13	XX
Q9XJFK		0.0389	0.0000	-0.01	0.0283	0.0008	0.18	OE
QGABRG		0.0342	-0.0047	-1.05	0.0220	-0.0054	-1.26	OE
QRPUWT		0.0360	-0.0029	-0.64	0.0250	-0.0025	-0.57	IC
RCD3KT		0.0327	-0.0062	-1.37	0.0202	-0.0073	-1.68	GD
RZJCWM		0.0390	0.0001	0.02	0.0267	-0.0008	-0.19	OE
RZVLRL	X	0.0447	0.0058	1.29	0.3560	0.3285	76.00	OE
TXAYYX		0.0295	-0.0094	-2.08	0.0199	-0.0075	-1.75	OE
UNLTT2		0.0397	0.0008	0.17	0.0290	0.0015	0.35	OE
UWT38Y		0.0367	-0.0022	-0.50	0.0251	-0.0023	-0.54	XR
X7RYG7		0.0357	-0.0032	-0.70	0.0245	-0.0030	-0.70	OE
XG8DDZ		0.0397	0.0008	0.17	0.0280	0.0005	0.12	WD
XXR724		0.0374	-0.0015	-0.34	0.0205	-0.0070	-1.62	XX
YBZA8		0.0480	0.0091	2.02	0.0383	0.0109	2.51	OE
YCBBNQ	X	0.0516	0.0127	2.81	0.0212	-0.0063	-1.46	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1654

2nd Qtr
2023

Corrosion Resistant Steel, NIOBIUM (Nb)
NIOBIUM (Nb)

Summary Statistics

	<u>Sample M91</u>		<u>Sample M92</u>	
Grand Means	0.0389	Percent	0.0275	Percent
Stnd Dev Btwn Labs	0.0045	Percent	0.0043	Percent

Samples M91, M92 : AISI 316, AISI 316L

Statistics based on 39 of 44 reporting participants

Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1654

3FDUJ2 (X) - Data for both samples are low. Possible Systematic Error.

EMZ984 (X) - Data for both samples are high. Possible Systematic Error.

Q43PHJ (X) - Data for sample M92 are low.

RZVLRL (X) - Data for sample M92 appear to be off by a factor of ten.

YCBBNQ (X) - Data for sample M91 are high.

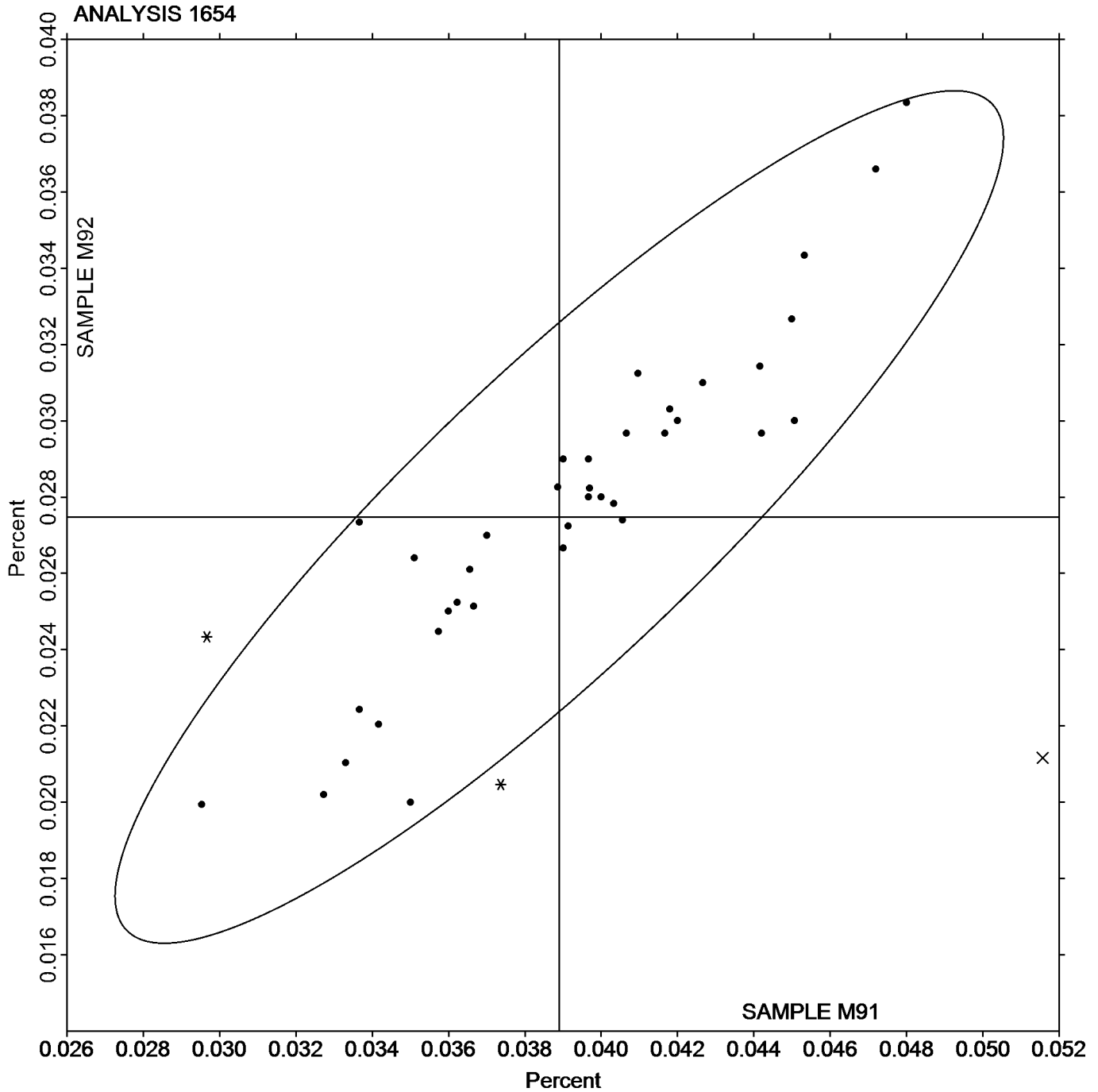


Analysis 1654

Corrosion Resistant Steel, NIOBIUM (Nb)
NIOBIUM (Nb)

SAMPLE M91
0.0389 Percent

SAMPLE M92
0.0275 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 142

Analysis 1654

2nd Qtr

Corrosion Resistant Steel, NIOBIUM (Nb)

2023

NIOBIUM (Nb)

-End of Report-