



Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 152, 4th Qtr 2025

[About the Metals Program](#) [About CTS](#) [Key to Tables and Graphs](#)

<u>Analysis</u>	<u>Test Group</u>
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Impact Tests	
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1004	Charpy V-Notch (Room Temperature)
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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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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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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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1412	Grain Size (Inconel)
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Chemical Analyses	
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1540 - 1547	Chemical Analysis: Aluminum Alloy
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1640 - 1651	Chemical Analysis: Corrosion Resistant Steel
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1700 - 1712	Chemical Analysis: Copper-based Alloy
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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

Analysis 1004

Charpy V-Notch (Room Temperature)
ASTM E23

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample U13			Sample U14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
6GRU2N		38.07	-0.22	-0.09	38.44	-0.70	-0.19
7MRTPJ		42.00	3.71	1.43	39.33	0.19	0.05
7XXDCL		40.22	1.93	0.75	39.09	-0.05	-0.01
BT2FE4		37.28	-1.01	-0.39	35.93	-3.21	-0.85
CHE22D		35.79	-2.50	-0.97	36.45	-2.69	-0.71
L26WYK		39.50	1.21	0.47	39.40	0.26	0.07
L3WZLZ		39.20	0.91	0.35	39.67	0.53	0.14
LZ6BQL		39.23	0.94	0.36	42.57	3.43	0.91
MJQFLP		38.36	0.07	0.03	42.24	3.10	0.82
MMJ4NJ		36.60	-1.69	-0.65	35.33	-3.81	-1.01
NJWQEF		37.80	-0.49	-0.19	41.33	2.19	0.58
PJKLFN		40.67	2.38	0.92	35.70	-3.44	-0.91
QREAM4		39.77	1.48	0.57	37.96	-1.18	-0.31
RMY3LX		36.16	-2.14	-0.83	35.25	-3.89	-1.03
TYTQE6		35.17	-3.13	-1.21	35.60	-3.54	-0.94
VALVK9	*	38.33	0.04	0.02	47.00	7.86	2.09
VMBWT3		36.13	-2.17	-0.84	37.86	-1.28	-0.34
WAGZ4A		37.67	-0.63	-0.24	38.67	-0.47	-0.13
WHR2PA		39.77	1.48	0.57	41.58	2.44	0.65
ZB2Q7P	*	31.00	-7.29	-2.82	32.00	-7.14	-1.90
ZGPLRU		41.03	2.74	1.06	42.34	3.20	0.85
ZZD4QT		42.67	4.37	1.69	47.33	8.19	2.18

Summary Statistics

	Sample U13		Sample U14	
Grand Means	38.29	Joule	39.14	Joule
Std Dev Btwn Labs	2.59	Joule	3.77	Joule

Samples U13, U14 : AISI 4340, AISI 4340

Statistics based on 22 of 22 reporting participants



Analysis 1004

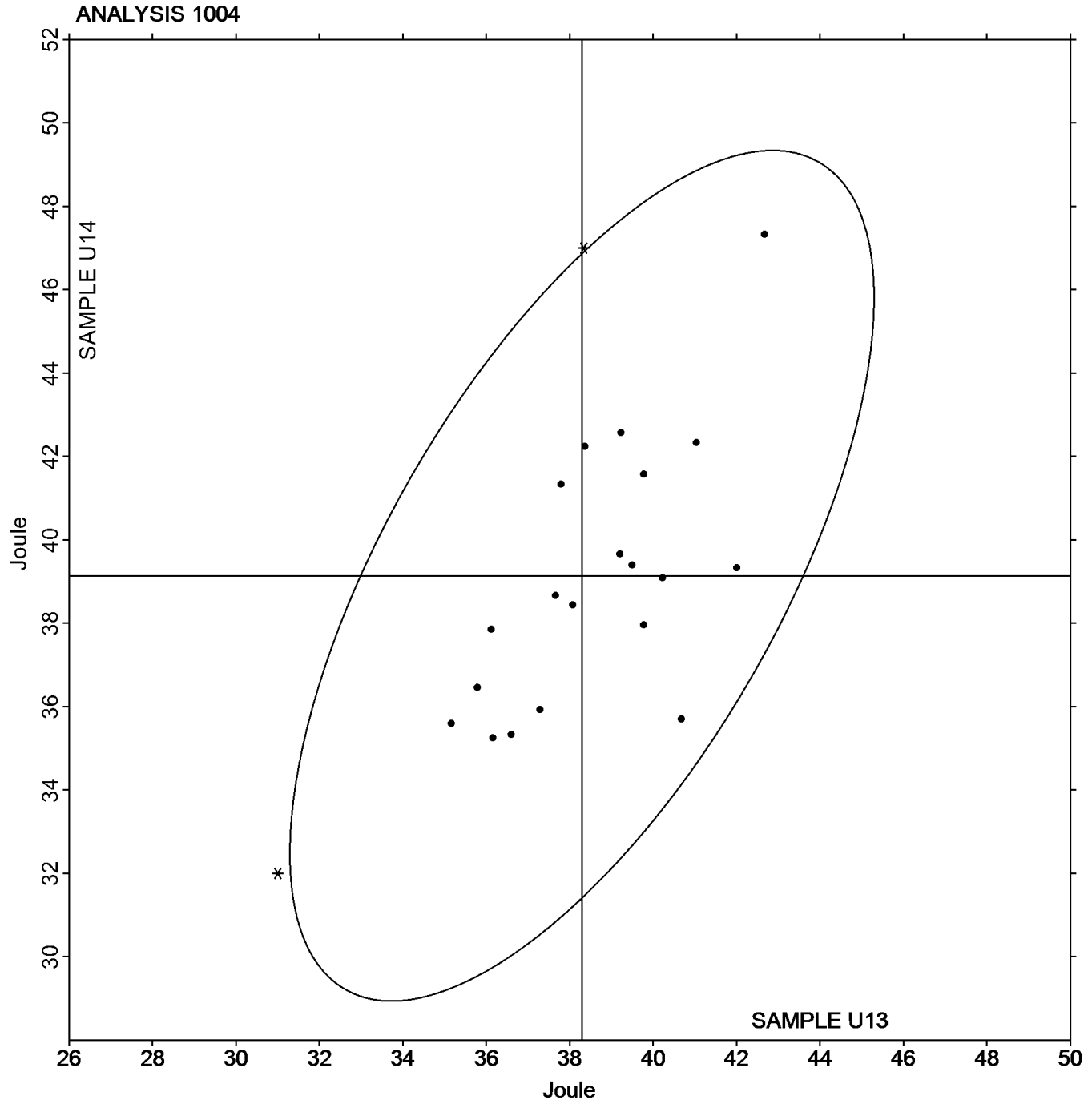
Charpy V-Notch (Room Temperature)
ASTM E23

SAMPLE U13

38.29 Joule

SAMPLE U14

39.14 Joule





Fasteners and Metals Interlaboratory Testing Program

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
24X96H		94.20	-1.59	-0.85	105.00	-1.11	-0.80
2724NL	X	102.00	6.21	3.34	107.00	0.89	0.63
2BVVZP		98.07	2.28	1.23	106.78	0.66	0.48
34RDXH		91.70	-4.09	-2.20	102.90	-3.21	-2.30
3649HN		95.90	0.11	0.06	106.00	-0.11	-0.08
3J4RFF		96.02	0.23	0.12	105.15	-0.96	-0.69
44TGCT	*	92.60	-3.19	-1.71	107.65	1.54	1.10
4MLMHX		93.41	-2.38	-1.28	105.44	-0.67	-0.48
4NDCVZ		97.80	2.01	1.08	106.00	-0.11	-0.08
4RWMT4	X	99.00	3.21	1.73	93.00	-13.11	-9.38
6434T7		93.26	-2.53	-1.36	107.04	0.93	0.66
69CFUD		94.82	-0.97	-0.52	107.26	1.15	0.82
6JYA9U		97.50	1.71	0.92	108.00	1.89	1.35
6VCA6N		95.10	-0.69	-0.37	105.30	-0.81	-0.58
6YE7XP		97.45	1.67	0.90	107.76	1.64	1.17
7CPG8V	*	101.00	5.21	2.80	108.00	1.89	1.35
7M82RR	X	92.90	-2.89	-1.55	101.00	-5.11	-3.66
8G3BB8		96.33	0.55	0.30	107.21	1.10	0.79
8WV89W		93.00	-2.79	-1.50	106.30	0.19	0.13
8Y4H3E		95.15	-0.64	-0.34	104.92	-1.19	-0.85
99L9GQ		91.90	-3.89	-2.09	104.00	-2.11	-1.51
9E4R8J		94.27	-1.52	-0.81	104.72	-1.39	-1.00
9FNBMC		93.77	-2.02	-1.08	105.87	-0.24	-0.17
9GWPNQ		96.40	0.61	0.33	105.71	-0.40	-0.29
9J7PVJ		92.26	-3.53	-1.90	104.37	-1.74	-1.25
9K378F		93.20	-2.59	-1.39	104.10	-2.01	-1.44
9N2G4F		95.90	0.11	0.06	107.00	0.89	0.63
9U6AA6		94.83	-0.96	-0.51	104.48	-1.63	-1.17
9WBXNU		97.10	1.31	0.71	108.00	1.89	1.35
A79A7F		97.01	1.22	0.66	107.25	1.14	0.81
AGBFC2		98.60	2.81	1.51	106.00	-0.11	-0.08
AKAR92		95.80	0.01	0.01	106.00	-0.11	-0.08
AUHCJA		93.90	-1.89	-1.01	105.30	-0.81	-0.58
BB69GJ		96.21	0.42	0.23	107.15	1.04	0.74
BLMW8B		96.51	0.72	0.39	106.73	0.62	0.44
BTXYF6		100.28	4.50	2.42	107.87	1.76	1.26
BUZEAJ		94.92	-0.87	-0.47	105.76	-0.35	-0.25
C39GNV		94.00	-1.79	-0.96	105.30	-0.81	-0.58
C6FUA4		93.90	-1.89	-1.01	103.70	-2.41	-1.73
C8ZTEK		99.47	3.69	1.98	106.38	0.26	0.19
C98BDG		94.57	-1.22	-0.66	106.17	0.06	0.04
CGR6V8		93.00	-2.79	-1.50	103.00	-3.11	-2.23
CHE22D		96.31	0.52	0.28	106.16	0.05	0.04
CJQMPT		97.80	2.01	1.08	107.30	1.19	0.85
CUVPXX		96.49	0.71	0.38	108.81	2.69	1.93
DAZFE3		94.14	-1.64	-0.88	107.16	1.04	0.75
DPWTPH		97.36	1.57	0.85	108.75	2.64	1.89



Fasteners and Metals Interlaboratory Testing Program

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
DX6D3L	X	80.40	-15.39	-8.27	106.00	-0.11	-0.08
E4T8NQ	X	90.20	-5.59	-3.00	96.30	-9.81	-7.02
EGKUV8		97.00	1.21	0.65	107.00	0.89	0.63
ENHNPY		96.70	0.91	0.49	105.50	-0.61	-0.44
EX22RB		95.71	-0.08	-0.04	107.86	1.75	1.25
EX7H4G		96.50	0.71	0.38	107.58	1.47	1.05
FDBDPM		96.71	0.92	0.50	106.77	0.66	0.47
FGYKHW	*	100.14	4.36	2.34	105.83	-0.28	-0.20
FKXWDW		95.20	-0.59	-0.31	104.00	-2.11	-1.51
G84X46		94.44	-1.34	-0.72	104.41	-1.70	-1.22
GA8TM9		93.80	-1.99	-1.07	104.80	-1.31	-0.94
GB49Z6		95.29	-0.49	-0.27	105.15	-0.96	-0.69
GB7ZRL		95.84	0.06	0.03	106.05	-0.06	-0.04
GFYVYK		95.22	-0.57	-0.30	107.20	1.09	0.78
GRCZ3A		96.30	0.51	0.28	107.00	0.89	0.63
GTHUBE		96.60	0.81	0.44	108.00	1.89	1.35
GVMDB2		95.98	0.19	0.10	106.67	0.56	0.40
GWJUJY		97.34	1.55	0.83	106.96	0.84	0.60
HF48BT		92.40	-3.39	-1.82	104.60	-1.51	-1.08
HPX2ZC	X	94.10	-1.68	-0.90	111.00	4.89	3.50
HTB236	X	81.50	-14.29	-7.68	98.90	-7.21	-5.16
J72YWG		94.50	-1.29	-0.69	104.00	-2.11	-1.51
JR6MHB		96.90	1.11	0.60	107.81	1.70	1.21
K7EZ2F		92.35	-3.44	-1.85	103.76	-2.35	-1.68
KC2WKB		96.03	0.25	0.13	105.98	-0.13	-0.10
KTVDU4		96.29	0.51	0.27	105.11	-1.00	-0.72
KVEAHT		95.40	-0.39	-0.21	106.50	0.39	0.28
L22HKY		96.90	1.11	0.60	106.60	0.49	0.35
L26WYK		95.73	-0.06	-0.03	106.68	0.57	0.41
LMPYUJ		98.64	2.85	1.53	108.84	2.73	1.95
LQJXZ3		96.50	0.71	0.38	106.70	0.59	0.42
LU4PAJ		93.00	-2.79	-1.50	105.40	-0.71	-0.51
MHLPTG		99.30	3.51	1.89	106.40	0.29	0.21
MTPPQU		95.90	0.11	0.06	105.30	-0.81	-0.58
NEWRTN		93.80	-1.99	-1.07	104.90	-1.21	-0.87
NQARPH		98.40	2.61	1.41	107.50	1.39	0.99
NZZDVF		93.39	-2.40	-1.29	103.20	-2.91	-2.08
PJNBHZ		93.93	-1.86	-1.00	105.75	-0.37	-0.26
PJPBBD		97.93	2.14	1.15	106.89	0.78	0.56
PKKKTU	*	99.70	3.91	2.10	105.50	-0.61	-0.44
PPYBZB		95.50	-0.29	-0.15	106.00	-0.11	-0.08
PR37KE		95.00	-0.79	-0.42	104.80	-1.31	-0.94
PRZDVE		96.45	0.66	0.36	106.83	0.72	0.51
PV2MW9		94.80	-0.99	-0.53	105.40	-0.71	-0.51
QCWHLQ		95.44	-0.35	-0.19	105.88	-0.23	-0.17
QHTVXF		94.50	-1.29	-0.69	106.00	-0.11	-0.08
QM3DW9		94.80	-0.99	-0.53	105.00	-1.11	-0.80



Fasteners and Metals Interlaboratory Testing Program

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RCRKQL		93.80	-1.99	-1.07	107.16	1.05	0.75
RRRBY6		95.60	-0.19	-0.10	105.70	-0.41	-0.30
THZ8CM		96.20	0.41	0.22	106.80	0.69	0.49
UCULAC		94.28	-1.51	-0.81	105.30	-0.81	-0.58
UGPL2T	M	No Data Reported			107.00	0.89	0.63
UKRDH7	X	101.50	5.71	3.07	106.30	0.19	0.13
UY42L9		95.49	-0.30	-0.16	105.30	-0.81	-0.58
UZYGX6		95.35	-0.44	-0.23	105.04	-1.08	-0.77
V4UQJR		95.60	-0.19	-0.10	105.91	-0.21	-0.15
VALVK9		95.70	-0.09	-0.05	105.00	-1.11	-0.80
WJ7TEK		96.74	0.96	0.51	105.30	-0.81	-0.58
WMHLKD		95.20	-0.59	-0.31	105.00	-1.11	-0.80
WVVQ7H		96.16	0.38	0.20	106.60	0.49	0.35
WVYA8R		97.53	1.74	0.94	108.43	2.32	1.66
WWUQJP	*	94.86	-0.93	-0.50	102.25	-3.86	-2.76
XDQGZQ		95.86	0.07	0.04	105.26	-0.86	-0.61
XF6XG4		98.90	3.11	1.67	108.40	2.29	1.64
XG2DTZ		95.50	-0.29	-0.15	106.50	0.39	0.28
XTLYQE		96.46	0.67	0.36	108.57	2.46	1.76
XTNRL2		93.45	-2.33	-1.25	105.95	-0.16	-0.12
YDBFU9		94.90	-0.89	-0.48	104.50	-1.61	-1.15
YPYRX6		96.00	0.21	0.12	107.00	0.89	0.63
YY4QGE		97.39	1.61	0.86	108.30	2.19	1.57
Z4JK8X		96.60	0.81	0.44	106.71	0.59	0.42
ZB2Q7P		93.41	-2.38	-1.28	104.40	-1.71	-1.23
ZCVGC4		96.50	0.71	0.38	108.50	2.39	1.71
ZLHTA3		97.90	2.11	1.14	108.00	1.89	1.35
ZZUCMB		95.57	-0.22	-0.12	106.21	0.10	0.07

Summary Statistics

	Sample F13		Sample F14	
Grand Means	95.79	ksi	106.11	ksi
Std Dev Btwn Labs	1.86	ksi	1.40	ksi

Samples F13, F14 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 113 of 122 reporting participants



Comments on Assigned Data Flags for Test #1131

- 2724NL (X) - Data for sample F13 are high.
- 4RWMT4 (X) - Data for sample F14 are low.
- 7M82RR (X) - Data for sample F14 are low.
- DX6D3L (X) - Data for sample F13 are low.
- E4T8NQ (X) - Data for both samples are low.
- HPX2ZC (X) - Data for sample F14 are high.
- HTB236 (X) - Data for both samples are low.
- UGPL2T (M) - Participant did not submit data for sample F13.
- UKRDH7 (X) - Data for sample F13 are high.



Analysis 1131

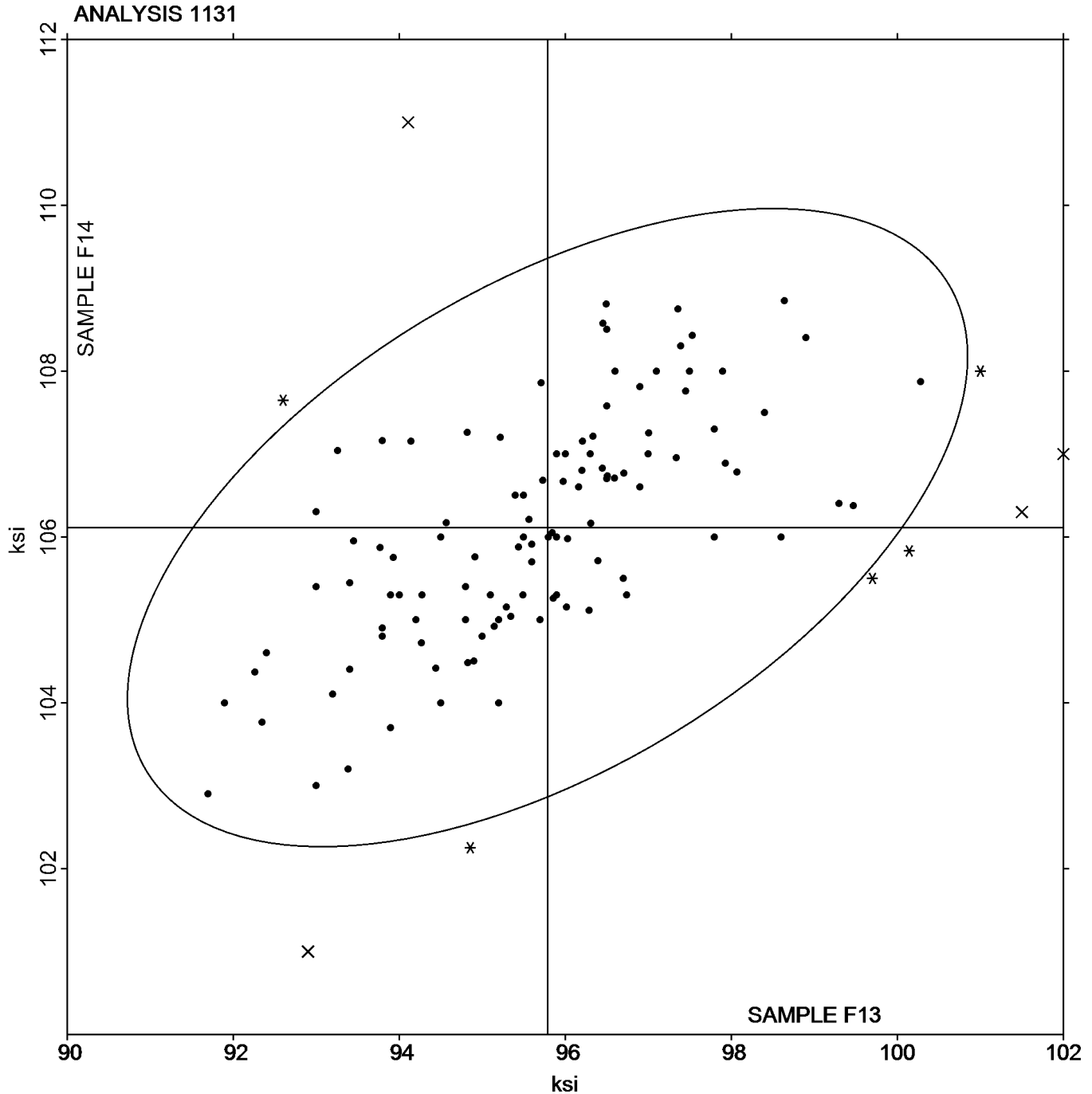
Tensile Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F13

95.79 ksi

SAMPLE F14

106.11 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
24X96H		80.60	-0.47	-0.17	98.30	-0.37	-0.15
2724NL	X	90.50	9.43	3.29	103.00	4.33	1.74
2BVVZP		81.24	0.16	0.06	99.18	0.51	0.21
34RDXH		78.50	-2.57	-0.90	96.50	-2.17	-0.87
3649HN		84.90	3.83	1.34	100.00	1.33	0.54
3J4RFF		80.06	-1.01	-0.35	98.92	0.25	0.10
44TGCT		76.60	-4.47	-1.56	100.05	1.38	0.56
4MLMHX		80.35	-0.72	-0.25	100.95	2.28	0.92
4NDCVZ		80.00	-1.07	-0.37	93.50	-5.17	-2.08
4RWMT4	X	82.00	0.93	0.32	87.00	-11.67	-4.70
6434T7		80.50	-0.58	-0.20	100.66	1.99	0.80
69CFUD		86.00	4.93	1.72	101.00	2.33	0.94
6JYA9U		84.60	3.53	1.23	101.80	3.13	1.26
6VCA6N		79.40	-1.67	-0.58	99.50	0.83	0.34
6YE7XP		78.52	-2.55	-0.89	99.65	0.98	0.40
7CPG8V		84.00	2.93	1.02	101.00	2.33	0.94
7M82RR		77.10	-3.97	-1.39	92.90	-5.77	-2.32
8G3BB8		84.85	3.77	1.32	100.83	2.16	0.87
8WV89W		76.70	-4.37	-1.53	96.80	-1.87	-0.75
8Y4H3E		82.85	1.77	0.62	100.03	1.37	0.55
99L9GQ		76.10	-4.97	-1.74	95.10	-3.57	-1.44
9E4R8J		77.45	-3.62	-1.27	95.14	-3.53	-1.42
9FNBMC		78.18	-2.89	-1.01	96.76	-1.91	-0.77
9GWPNQ		81.79	0.72	0.25	96.26	-2.41	-0.97
9J7PVJ		79.23	-1.84	-0.64	99.50	0.83	0.34
9K378F		75.70	-5.37	-1.88	97.30	-1.37	-0.55
9N2G4F		87.40	6.33	2.21	104.00	5.33	2.15
9U6AA6	X	78.00	-3.07	-1.07	90.00	-8.67	-3.49
9WBXNU		87.50	6.43	2.24	100.00	1.33	0.54
A79A7F		84.82	3.75	1.31	99.04	0.37	0.15
AGBFC2		81.10	0.03	0.01	99.50	0.83	0.34
AKAR92		81.20	0.13	0.04	101.00	2.33	0.94
AUHCJA		78.70	-2.37	-0.83	97.10	-1.57	-0.63
BB69GJ		84.61	3.54	1.24	101.13	2.46	0.99
BLMW8B		81.35	0.28	0.10	98.06	-0.61	-0.24
BTXYF6		83.00	1.93	0.67	101.55	2.88	1.16
BUZEAJ		85.82	4.74	1.66	101.48	2.81	1.13
C39GNV		79.70	-1.37	-0.48	99.10	0.43	0.17
C6FUA4		78.80	-2.27	-0.79	95.60	-3.07	-1.24
C8ZTEK		83.33	2.26	0.79	100.31	1.64	0.66
C98BDG		78.18	-2.90	-1.01	98.48	-0.19	-0.07
CGR6V8		78.90	-2.17	-0.76	95.00	-3.67	-1.48
CHE22D		80.61	-0.46	-0.16	100.12	1.45	0.59
CJQMPT		85.50	4.43	1.55	98.30	-0.37	-0.15
CUVPXX		80.08	-1.00	-0.35	101.59	2.92	1.17
DAZFE3		80.28	-0.80	-0.28	101.23	2.56	1.03
DPWTPH		81.09	0.01	0.01	100.92	2.25	0.91



Fasteners and Metals Interlaboratory Testing Program

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
DX6D3L	X	60.30	-20.77	-7.26	94.70	-3.97	-1.60
E4T8NQ		76.70	-4.37	-1.53	96.30	-2.37	-0.95
EGKUV8		85.30	4.23	1.48	100.80	2.13	0.86
ENHNPY		83.60	2.53	0.88	100.50	1.83	0.74
EX22RB	*	72.38	-8.69	-3.04	92.19	-6.48	-2.61
EX7H4G		82.20	1.13	0.39	100.70	2.03	0.82
FDBDPM		85.50	4.43	1.55	101.85	3.18	1.28
FGYKHW	*	82.37	1.30	0.45	93.14	-5.52	-2.22
FKXWDW		84.10	3.03	1.06	99.70	1.03	0.42
G84X46		82.05	0.97	0.34	98.02	-0.65	-0.26
GA8TM9		81.40	0.33	0.11	96.30	-2.37	-0.95
GB49Z6		79.34	-1.74	-0.61	92.82	-5.84	-2.35
GB7ZRL		82.54	1.47	0.51	100.54	1.87	0.75
GFYVYK		79.43	-1.64	-0.57	99.76	1.09	0.44
GRCZ3A		84.40	3.33	1.16	101.00	2.33	0.94
GTHUBE		78.50	-2.57	-0.90	99.40	0.73	0.29
GVMD82		81.67	0.59	0.21	99.05	0.38	0.15
GWJUJY		81.08	0.00	0.00	100.71	2.05	0.82
HF48BT		77.90	-3.17	-1.11	97.70	-0.97	-0.39
HPX2ZC	X	74.22	-6.85	-2.39	103.00	4.33	1.74
HTB236		76.80	-4.27	-1.49	94.80	-3.87	-1.56
J72YWG	*	79.80	-1.27	-0.44	92.20	-6.47	-2.60
JR6MHB		79.65	-1.42	-0.50	99.03	0.36	0.15
K7EZ2F		79.39	-1.68	-0.59	97.99	-0.68	-0.27
KC2WKB		81.63	0.56	0.20	98.29	-0.38	-0.15
KTVDU4		83.48	2.41	0.84	100.27	1.60	0.64
KVEAHT		81.60	0.53	0.18	101.30	2.63	1.06
L22HKY		78.10	-2.97	-1.04	96.30	-2.37	-0.95
L26WYK		80.22	-0.85	-0.30	97.90	-0.77	-0.31
LMPYUJ	X	85.41	4.34	1.52	89.03	-9.64	-3.88
LQJXZ3		76.90	-4.17	-1.46	99.50	0.83	0.34
LU4PAJ		76.10	-4.97	-1.74	96.00	-2.67	-1.07
MHLPTG		86.80	5.73	2.00	102.80	4.13	1.66
MTPPQU		81.80	0.73	0.25	98.30	-0.37	-0.15
NEWRTN		80.90	-0.17	-0.06	100.30	1.63	0.66
NQARPH		87.60	6.53	2.28	101.70	3.03	1.22
NZZDVF		79.38	-1.70	-0.59	95.53	-3.13	-1.26
PJNBHZ		80.12	-0.95	-0.33	98.93	0.26	0.11
PKKKTV		81.40	0.33	0.11	98.70	0.03	0.01
PPYBZB		79.00	-2.07	-0.72	99.50	0.83	0.34
PR37KE		82.40	1.33	0.46	97.70	-0.97	-0.39
PV2MW9		80.05	-1.02	-0.36	97.35	-1.32	-0.53
QCWHLQ		80.93	-0.14	-0.05	97.90	-0.77	-0.31
QHTVXF		82.00	0.93	0.32	99.50	0.83	0.34
QM3DW9		79.00	-2.07	-0.72	95.90	-2.77	-1.11
RCRKQL		82.49	1.42	0.49	101.74	3.07	1.24
RRRBY6		78.40	-2.67	-0.93	98.70	0.03	0.01



Fasteners and Metals Interlaboratory Testing Program

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
THZ8CM		81.10	0.03	0.01	99.70	1.03	0.42
UCULAC		81.22	0.15	0.05	99.21	0.54	0.22
UGPL2T	M	No Data Reported			97.30	-1.37	-0.55
UKRDH7		86.40	5.33	1.86	98.20	-0.47	-0.19
UY42L9		81.50	0.43	0.15	98.16	-0.51	-0.20
UZYGX6		78.50	-2.58	-0.90	94.57	-4.10	-1.65
V4UQJR		82.72	1.64	0.57	98.93	0.26	0.11
VALVK9	X	67.30	-13.77	-4.81	77.50	-21.17	-8.52
WJ7TEK		80.93	-0.14	-0.05	98.48	-0.19	-0.07
WMHLKD		76.30	-4.77	-1.67	94.00	-4.67	-1.88
WVVQ7H		80.64	-0.43	-0.15	96.74	-1.93	-0.78
WVYA8R		85.56	4.49	1.57	103.45	4.78	1.93
WWUQJP		81.80	0.73	0.25	95.87	-2.80	-1.13
XDQGZQ		79.19	-1.89	-0.66	97.50	-1.17	-0.47
XF6XG4		82.20	1.13	0.39	100.00	1.33	0.54
XG2DTZ		83.25	2.18	0.76	99.00	0.33	0.13
XTNRL2		79.68	-1.39	-0.49	99.03	0.36	0.15
YDBFU9		79.70	-1.37	-0.48	97.20	-1.47	-0.59
YPYRX6		84.50	3.43	1.20	102.00	3.33	1.34
YY4QGE		80.70	-0.37	-0.13	101.84	3.17	1.28
Z4JK8X		82.08	1.00	0.35	100.57	1.90	0.77
ZB2Q7P		79.10	-1.97	-0.69	99.16	0.50	0.20
ZCVGC4		80.00	-1.07	-0.37	100.20	1.53	0.62
ZLHTA3		81.50	0.43	0.15	102.00	3.33	1.34
ZZUCMB		80.61	-0.46	-0.16	96.90	-1.77	-0.71

Summary Statistics

	Sample F13		Sample F14	
Grand Means	81.07	ksi	98.67	ksi
Std Dev Btwn Labs	2.86	ksi	2.48	ksi

Samples F13, F14 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 111 of 119 reporting participants

Comments on Assigned Data Flags for Test #1132

- 2724NL (X) - Data for sample F13 are high.
- 4RWMT4 (X) - Data for sample F14 are low.
- 9U6AA6 (X) - Data for sample F14 are low.
- DX6D3L (X) - Data for sample F13 are low.
- HPX2ZC (X) - Inconsistent in testing between samples.
- LMPYUJ (X) - Data for sample F14 are low.
- UGPL2T (M) - Participant did not submit data for sample F13.
- VALVK9 (X) - Data for both samples are low.



Analysis 1132

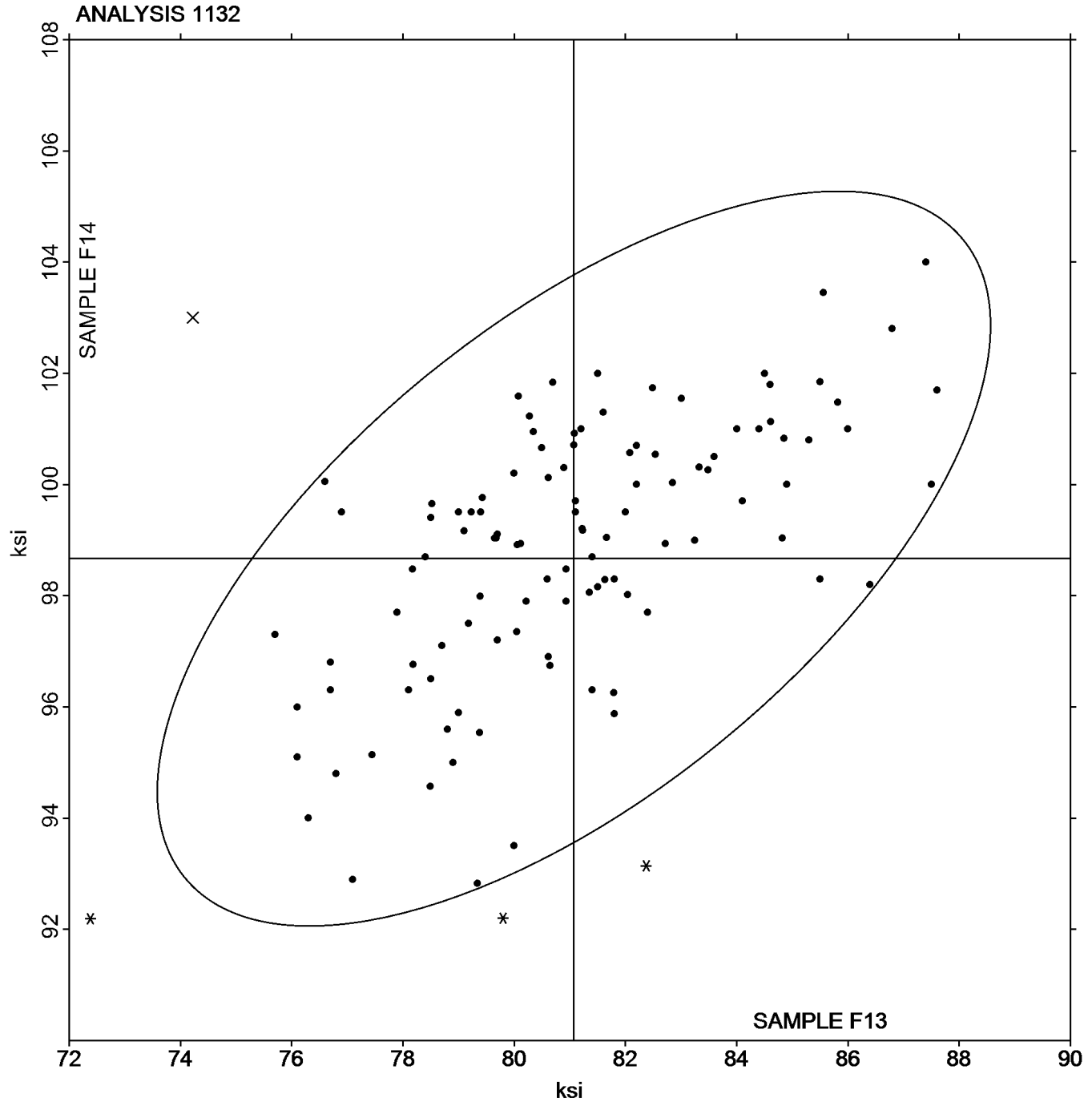
Yield Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F13

81.07 ksi

SAMPLE F14

98.67 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
24X96H		17.10	0.12	0.09	12.10	-0.34	-0.24
2BVVZP		17.89	0.91	0.66	12.70	0.26	0.18
34RDXH		16.90	-0.08	-0.06	11.60	-0.84	-0.58
3649HN		16.20	-0.78	-0.57	11.30	-1.14	-0.79
3J4RFF		16.00	-0.98	-0.72	13.50	1.06	0.73
44TGCT		16.50	-0.48	-0.35	11.50	-0.94	-0.65
4MLMHX		17.40	0.42	0.31	13.80	1.36	0.94
4NDCVZ		18.10	1.12	0.82	14.50	2.06	1.42
4RWMT4		20.00	3.02	2.21	15.00	2.56	1.76
6434T7	*	21.00	4.02	2.94	14.00	1.56	1.07
69CFUD	X	12.50	-4.48	-3.28	9.000	-3.44	-2.37
6JYA9U		15.50	-1.48	-1.09	10.00	-2.44	-1.68
6VCA6N		17.80	0.82	0.60	10.80	-1.64	-1.13
6YE7XP		16.10	-0.88	-0.65	12.30	-0.14	-0.10
7CPG8V		16.00	-0.98	-0.72	12.50	0.06	0.04
7M82RR		17.30	0.32	0.23	14.40	1.96	1.35
8G3BB8		17.10	0.12	0.09	13.40	0.96	0.66
8WV89W		16.20	-0.78	-0.57	11.30	-1.14	-0.79
8Y4H3E		17.40	0.42	0.31	12.00	-0.44	-0.30
99L9GQ		15.60	-1.38	-1.01	12.50	0.06	0.04
9E4R8J		15.30	-1.68	-1.23	9.630	-2.81	-1.94
9FNBMC		14.92	-2.06	-1.51	11.31	-1.13	-0.78
9GWPNQ		14.40	-2.58	-1.89	9.500	-2.94	-2.03
9J7PVJ		16.94	-0.04	-0.03	11.16	-1.28	-0.88
9K378F		19.50	2.52	1.84	13.00	0.56	0.39
9N2G4F		15.80	-1.18	-0.87	10.20	-2.24	-1.55
9U6AA6		16.20	-0.78	-0.57	12.00	-0.44	-0.30
9WBXNU		17.70	0.72	0.52	13.05	0.61	0.42
A79A7F		16.90	-0.08	-0.06	13.20	0.76	0.52
AGBFC2		18.00	1.02	0.74	13.50	1.06	0.73
AKAR92		18.00	1.02	0.74	13.00	0.56	0.39
AUHCJA	*	13.80	-3.18	-2.33	11.70	-0.74	-0.51
BB69GJ		17.80	0.82	0.60	14.30	1.86	1.28
BLMW8B		17.20	0.22	0.16	12.10	-0.34	-0.24
BTXYF6		17.25	0.27	0.20	13.70	1.26	0.87
BUZEAJ		15.30	-1.68	-1.23	10.90	-1.54	-1.06
C39GNV	*	19.90	2.92	2.14	12.40	-0.04	-0.03
C6FUA4		16.70	-0.28	-0.21	13.20	0.76	0.52
C8ZTEK		15.40	-1.58	-1.16	11.00	-1.44	-0.99
C98BDG		16.99	0.01	0.00	13.61	1.17	0.81
CGR6V8		17.60	0.62	0.45	11.10	-1.34	-0.92
CHE22D		17.90	0.92	0.67	14.30	1.86	1.28
CJQMPT		15.00	-1.98	-1.45	12.10	-0.34	-0.24
CUVPXX		18.20	1.22	0.89	12.50	0.06	0.04
DAZFE3		15.75	-1.23	-0.90	10.00	-2.44	-1.68
DPWTPH		19.00	2.02	1.48	13.00	0.56	0.39
DX6D3L	X	5.750	-11.23	-8.22	11.30	-1.14	-0.79



Fasteners and Metals Interlaboratory Testing Program

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
E4T8NQ		16.60	-0.38	-0.28	11.50	-0.94	-0.65
EGKUV8		15.70	-1.28	-0.94	11.70	-0.74	-0.51
ENHNPY		18.30	1.32	0.96	14.40	1.96	1.35
EX22RB	X	9.100	-7.88	-5.77	3.000	-9.44	-6.51
EX7H4G	*	15.83	-1.15	-0.84	8.980	-3.46	-2.39
FDBDPM		17.50	0.52	0.38	14.17	1.73	1.19
FGYKHW		17.80	0.82	0.60	15.00	2.56	1.76
FKXWDW	*	17.40	0.42	0.31	15.90	3.46	2.39
G84X46		18.40	1.42	1.04	13.80	1.36	0.94
GA8TM9		17.10	0.12	0.09	12.70	0.26	0.18
GB49Z6		18.00	1.02	0.74	13.70	1.26	0.87
GB7ZRL		17.30	0.32	0.23	14.30	1.86	1.28
GFYVYK		17.92	0.94	0.69	11.95	-0.49	-0.34
GRCZ3A		17.40	0.42	0.31	11.60	-0.84	-0.58
GTHUBE		17.30	0.32	0.23	11.20	-1.24	-0.86
GVMDB2		17.61	0.63	0.46	10.07	-2.37	-1.63
GWJUJY		17.75	0.77	0.56	14.55	2.11	1.45
HF48BT		16.10	-0.88	-0.65	10.40	-2.04	-1.41
HPX2ZC		15.80	-1.18	-0.87	12.50	0.06	0.04
HTB236		20.00	3.02	2.21	15.00	2.56	1.76
J72YWG		16.30	-0.68	-0.50	11.60	-0.84	-0.58
JR6MHB		16.60	-0.38	-0.28	13.10	0.66	0.45
K7EZ2F		17.00	0.02	0.01	12.30	-0.14	-0.10
KC2WKB	*	13.20	-3.78	-2.77	11.00	-1.44	-0.99
KTVDU4		17.90	0.92	0.67	12.40	-0.04	-0.03
KVEAHT	X	11.70	-5.28	-3.87	6.000	-6.44	-4.44
L22HKY		18.60	1.62	1.18	13.20	0.76	0.52
L26WYK	*	21.00	4.02	2.94	14.00	1.56	1.07
LMPYUJ		13.96	-3.02	-2.21	10.53	-1.91	-1.32
LQJXZ3		16.80	-0.18	-0.13	13.60	1.16	0.80
LU4PAJ		16.40	-0.58	-0.43	11.60	-0.84	-0.58
MHLPTG		17.80	0.82	0.60	11.70	-0.74	-0.51
MTPPQU		16.56	-0.42	-0.31	12.80	0.36	0.25
NEWRTN		17.70	0.72	0.52	11.30	-1.14	-0.79
NQARPH		17.20	0.22	0.16	11.50	-0.94	-0.65
NZZDVF		16.21	-0.77	-0.57	10.56	-1.89	-1.30
PJNBHZ		16.60	-0.38	-0.28	10.50	-1.94	-1.34
PJPBBD		16.67	-0.31	-0.23	13.30	0.86	0.59
PKKKTU		17.80	0.82	0.60	14.00	1.56	1.07
PPYBZB		19.00	2.02	1.48	14.00	1.56	1.07
PR37KE		16.10	-0.88	-0.65	10.00	-2.44	-1.68
PRZDVE		16.67	-0.31	-0.23	13.30	0.86	0.59
PV2MW9		17.70	0.72	0.52	12.00	-0.44	-0.30
QCWHLQ		16.50	-0.48	-0.35	12.50	0.06	0.04
QHTVXF		16.50	-0.48	-0.35	12.50	0.06	0.04
QM3DW9		19.40	2.42	1.77	13.60	1.16	0.80
RCRKQL		14.93	-2.05	-1.50	11.26	-1.18	-0.81



Fasteners and Metals Interlaboratory Testing Program

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RRRBY6		15.80	-1.18	-0.87	11.30	-1.14	-0.79
THZ8CM		16.40	-0.58	-0.43	12.40	-0.04	-0.03
UCULAC		17.00	0.02	0.01	12.30	-0.14	-0.10
UGPL2T	M	No Data Reported			11.10	-1.34	-0.92
UKRDH7		16.10	-0.88	-0.65	11.20	-1.24	-0.86
UY42L9		18.56	1.58	1.15	14.88	2.44	1.68
UZYGX6		15.70	-1.28	-0.94	14.10	1.66	1.14
V4UQJR		17.50	0.52	0.38	12.30	-0.14	-0.10
VALVK9		16.20	-0.78	-0.57	12.40	-0.04	-0.03
WJ7TEK		17.30	0.32	0.23	13.40	0.96	0.66
WMHLKD		15.80	-1.18	-0.87	12.50	0.06	0.04
WVVQ7H		17.00	0.02	0.01	13.00	0.56	0.39
WVYA8R		16.33	-0.65	-0.48	12.75	0.31	0.21
WWUQJP		16.30	-0.68	-0.50	12.00	-0.44	-0.30
XDQGZQ		16.00	-0.98	-0.72	12.00	-0.44	-0.30
XF6XG4		17.00	0.02	0.01	11.90	-0.54	-0.37
XG2DTZ		16.70	-0.28	-0.21	12.60	0.16	0.11
XTLYQE	*	19.81	2.83	2.07	16.50	4.06	2.80
XTNRL2		16.70	-0.28	-0.21	12.03	-0.41	-0.28
YDBFU9		18.20	1.22	0.89	13.10	0.66	0.45
YPYRX6		17.10	0.12	0.09	13.65	1.21	0.83
YY4QGE		17.60	0.62	0.45	14.15	1.71	1.18
Z4JK8X		15.10	-1.88	-1.38	9.700	-2.74	-1.89
ZB2Q7P		17.32	0.34	0.25	12.63	0.19	0.13
ZCVGC4		15.40	-1.58	-1.16	10.40	-2.04	-1.41
ZLHTA3	X	31.90	14.92	10.92	13.00	0.56	0.39
ZZUCMB		15.70	-1.28	-0.94	11.30	-1.14	-0.79

Summary Statistics

	Sample F13		Sample F14	
Grand Means	16.98	Percent	12.44	Percent
Std Dev Btwn Labs	1.37	Percent	1.45	Percent

Samples F13, F14 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 115 of 121 reporting participants

Comments on Assigned Data Flags for Test #1133

- 69CFUD (X) - Data for sample F13 are low.
- DX6D3L (X) - Data for sample F13 are low.
- EX22RB (X) - Data for both samples are low.
- KVEAHT (X) - Data for both samples are low.
- UGPL2T (M) - Participant did not submit data for sample F13.
- ZLHTA3 (X) - Data for sample F13 are high.



Analysis 1133

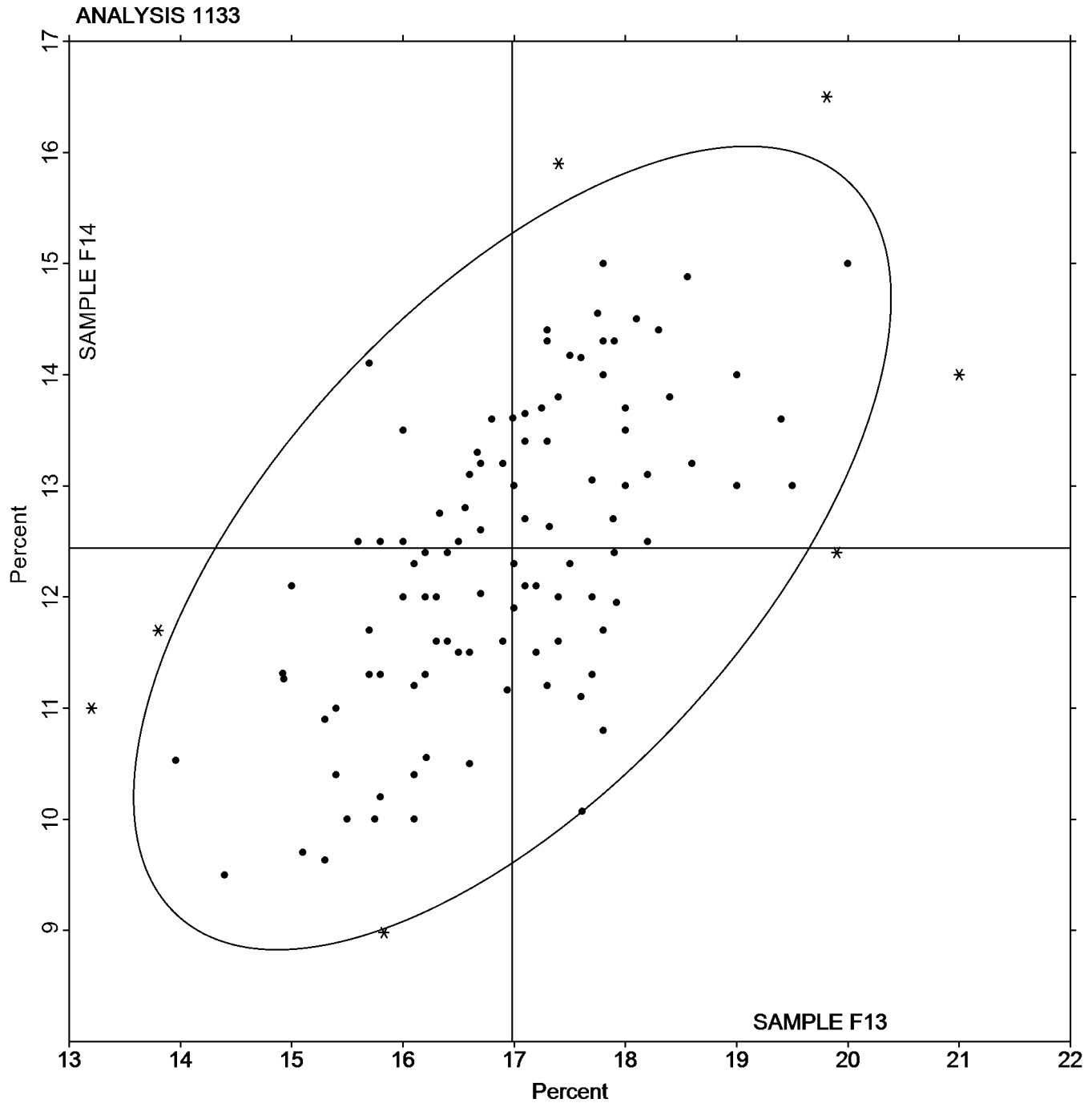
Elongation: Lab-Machined Flat Steel
ASTM E8

SAMPLE F13

16.98 Percent

SAMPLE F14

12.44 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2BVVZP		0.7210	0.0545	0.28	0.8070	0.0658	0.25
3J4RFF		0.7300	0.0635	0.32	0.8800	0.1388	0.53
8Y4H3E		0.7600	0.0935	0.48	0.8500	0.1088	0.41
BLMW8B		0.8300	0.1635	0.83	0.9800	0.2388	0.91
C8ZTEK		0.7400	0.0735	0.37	0.8040	0.0628	0.24
GA8TM9		0.5370	-0.1295	-0.66	0.9170	0.1758	0.67
GB7ZRL		0.7770	0.1105	0.56	0.6340	-0.1072	-0.41
GFYVYK		0.8354	0.1689	0.86	0.9360	0.1948	0.74
GTHUBE		0.5000	-0.1665	-0.85	0.5000	-0.2412	-0.92
KTVDU4		0.7500	0.0835	0.43	0.8700	0.1288	0.49
PJNBHZ		0.7800	0.1135	0.58	0.7400	-0.0012	0.00
QCWHLQ		0.7250	0.0585	0.30	0.7110	-0.0302	-0.11
RCRKQL		0.8300	0.1635	0.83	0.6800	-0.0612	-0.23
RRRBY6	M	No Data Reported			0.5880	-0.1532	-0.58
UCULAC		0.6420	-0.0245	-0.12	0.6840	-0.0572	-0.22
V4UQJR		0.6500	-0.0165	-0.08	1.090	0.3488	1.33
WJ7TEK	*	0.0400	-0.6265	-3.19	0.0200	-0.7212	-2.74
XTNRL2	X	53.50	52.8335	269.27	46.67	45.9288	174.58
ZB2Q7P		0.4000	-0.2665	-1.36	0.2690	-0.4722	-1.79
ZZUCMB		0.7500	0.0835	0.43	0.9700	0.2288	0.87

Summary Statistics

	Sample F13	Sample F14
Grand Means	0.6665	0.7412
Stnd Dev Btwn Labs	0.1962	0.2631

Samples F13, F14 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 18 of 20 reporting participants

Comments on Assigned Data Flags for Test #1134

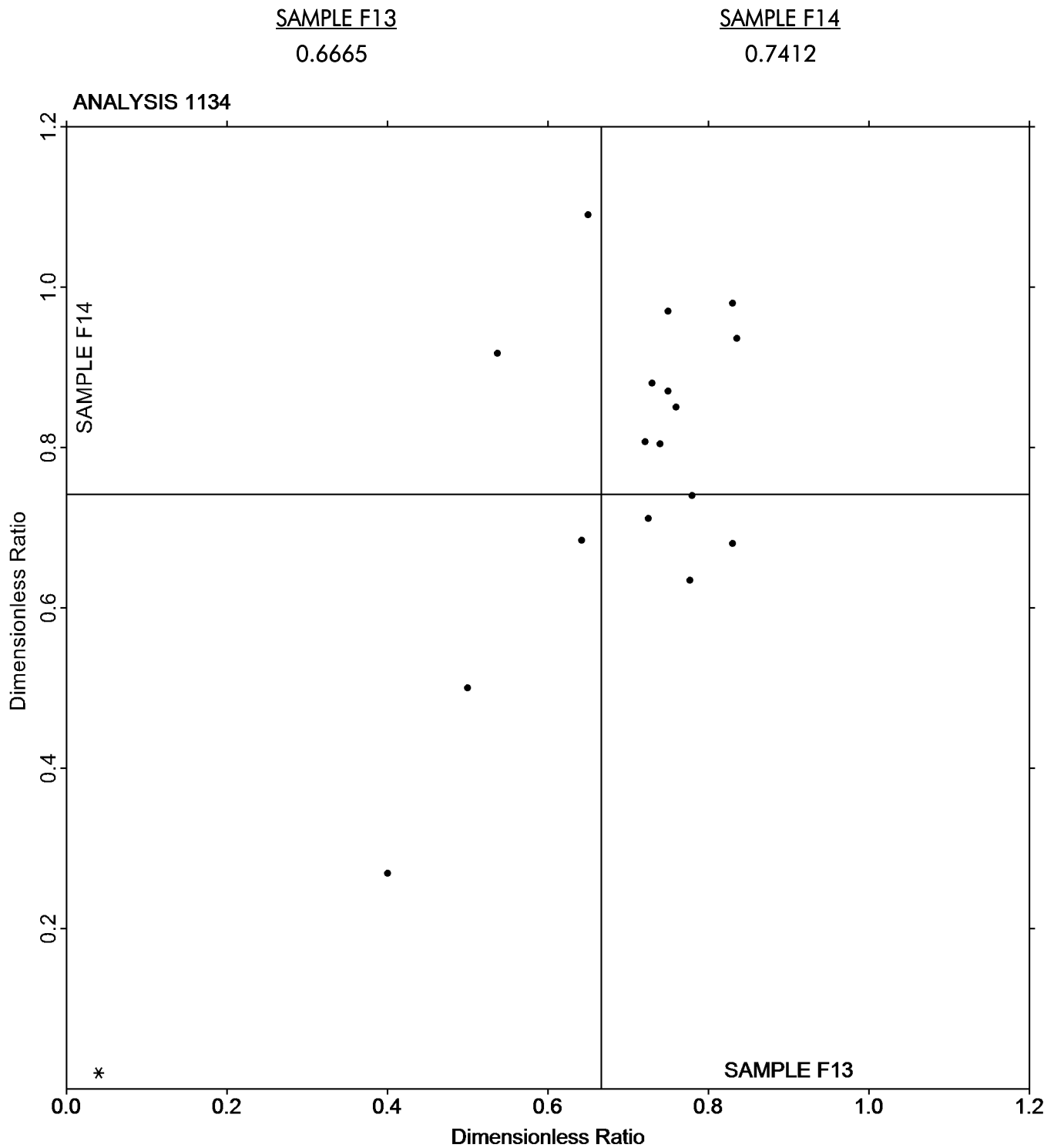
RRRBY6 (M) - Participant did not submit data for sample F13.

XTNRL2 (X) - Extreme data.



Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517





Fasteners and Metals Interlaboratory Testing Program

Analysis 1135

n-Value: Lab-Machined Flat Steel
ASTM E646

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample F13			Sample F14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2BVVZP		0.0740	-0.0052	-0.21	0.0330	-0.0293	-0.53
3J4RFF		0.0400	-0.0392	-1.54	0.0200	-0.0423	-0.76
8Y4H3E		0.0760	-0.0032	-0.13	0.0350	-0.0273	-0.49
BLMW8B		0.0910	0.0118	0.46	0.0620	-0.0003	-0.01
CHE22D		0.0740	-0.0052	-0.21	0.0280	-0.0343	-0.62
FGYKHW		0.1300	0.0508	1.99	0.0600	-0.0023	-0.04
GA8TM9		0.1310	0.0518	2.03	0.1550	0.0927	1.66
GB7ZRL	X	0.0660	-0.0132	-0.52	0.7900	0.7277	13.05
GFYVYK		0.0614	-0.0178	-0.70	0.0371	-0.0253	-0.45
GTHUBE	X	0.5000	0.4208	16.51	0.5000	0.4377	7.85
GVMDB2		0.0600	-0.0192	-0.76	0.0330	-0.0293	-0.53
KTVDU4		0.0690	-0.0102	-0.40	0.0340	-0.0283	-0.51
NQARPH	M	0.0560	-0.0232	-0.91	No Data Reported		
NZZDVF		0.0800	0.0008	0.03	0.0520	-0.0103	-0.19
PJNBHZ		0.0990	0.0198	0.78	0.0710	0.0087	0.16
RCRKQL	*	0.0500	-0.0292	-1.15	0.2500	0.1877	3.36
RRRBY6	M	0.2080	0.1288	5.05	No Data Reported		
UCULAC		0.0920	0.0128	0.50	0.0630	0.0007	0.01
V4UQJR		0.0950	0.0158	0.62	0.0620	-0.0003	-0.01
Z4JK8X		0.0950	0.0158	0.62	0.0640	0.0017	0.03
ZB2Q7P		0.0620	-0.0172	-0.68	0.0390	-0.0233	-0.42
ZZUCMB		0.0470	-0.0322	-1.27	0.0240	-0.0383	-0.69

Summary Statistics

	Sample F13	Sample F14
Grand Means	0.0792	0.0623
Std Dev Btwn Labs	0.0255	0.0558

Samples F13, F14 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 18 of 22 reporting participants

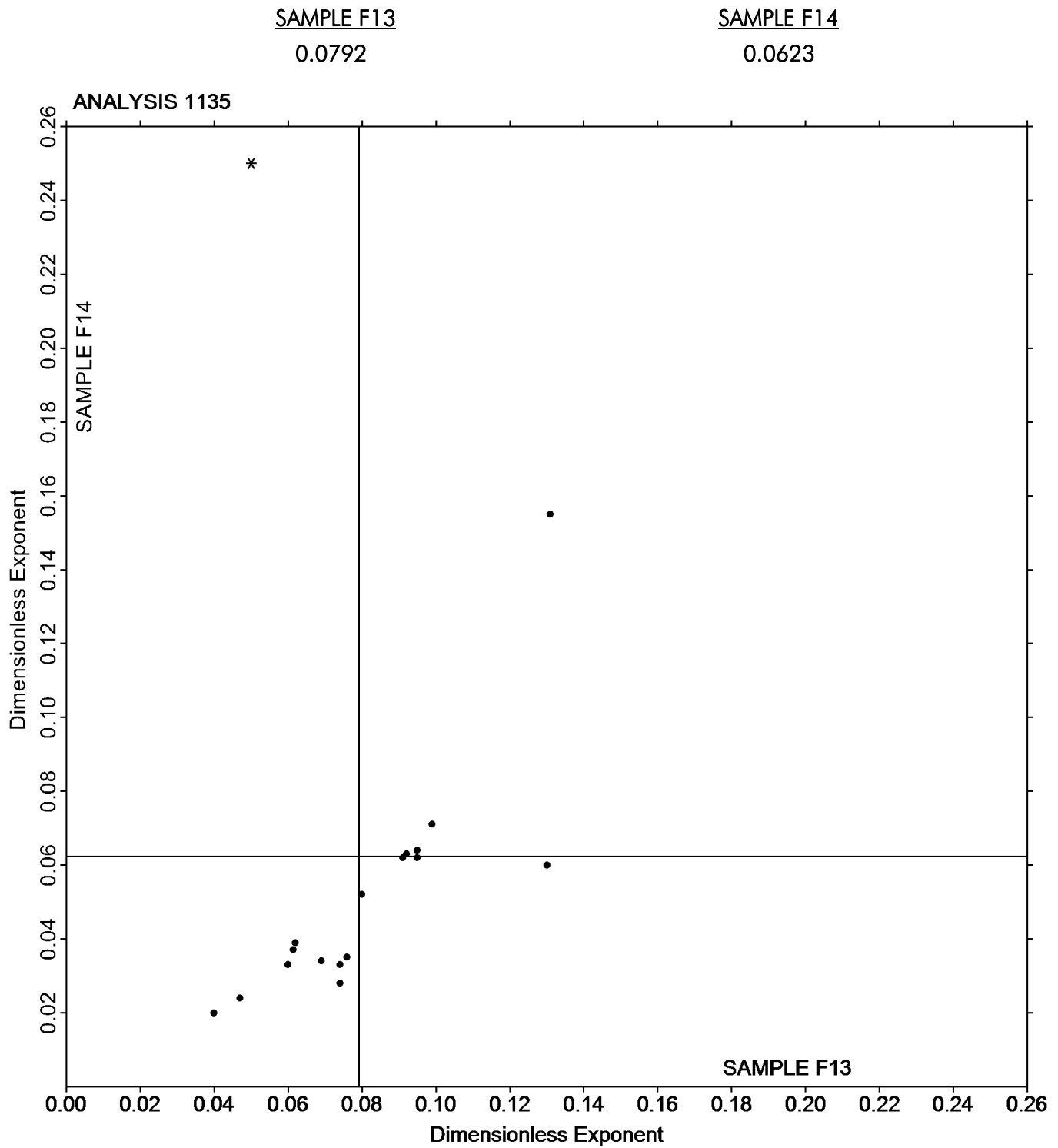
Comments on Assigned Data Flags for Test #1135

- GB7ZRL (X) - Data for sample F14 are high.
- GTHUBE (X) - Data for both samples are high.
- NQARPH (M) - Participant did not submit data for sample F14.
- RRRBY6 (M) - Participant did not submit data for sample F14.



Analysis 1135

n-Value: Lab-Machined Flat Steel
ASTM E646





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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample Q13			Sample Q14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
236AUQ		136.80	-0.09	-0.05	136.51	0.56	0.16
29ABTZ		134.24	-2.66	-1.54	132.58	-3.37	-0.94
2HD7AJ		136.95	0.05	0.03	139.45	3.51	0.98
3C4HWU		138.54	1.64	0.95	143.14	7.19	2.01
43CHMA		140.50	3.60	2.09	139.53	3.58	1.00
4KBN3V	X	131.00	-5.90	-3.41	126.67	-9.28	-2.60
4L86ET	X	126.40	-10.50	-6.07	127.03	-8.92	-2.49
67AC7W		136.55	-0.35	-0.20	133.45	-2.50	-0.70
738MNN		136.64	-0.25	-0.15	144.25	8.30	2.32
7436PP		139.79	2.89	1.67	140.60	4.65	1.30
7W3UBK		135.67	-1.23	-0.71	133.67	-2.28	-0.64
84BXNW		139.62	2.73	1.58	141.61	5.66	1.58
8TVWDW		136.60	-0.30	-0.17	131.85	-4.10	-1.15
9AJK7R		138.27	1.37	0.79	132.20	-3.75	-1.05
9M72QJ		136.99	0.09	0.05	138.93	2.98	0.83
A2ZMT6		137.22	0.33	0.19	132.46	-3.49	-0.98
ANCJC8		136.05	-0.85	-0.49	133.94	-2.01	-0.56
BRQMNW		135.04	-1.86	-1.08	141.35	5.40	1.51
CARVCL		138.00	1.10	0.64	134.00	-1.95	-0.55
CTLF8L		137.05	0.15	0.09	134.43	-1.52	-0.42
CTYALZ		138.75	1.85	1.07	134.00	-1.95	-0.55
DFU9PB		137.09	0.19	0.11	133.19	-2.76	-0.77
DKKNCW		136.60	-0.30	-0.17	131.67	-4.28	-1.20
E67QL3		136.03	-0.86	-0.50	140.80	4.85	1.36
EGDWCU		133.78	-3.11	-1.80	137.17	1.22	0.34
EK3UBM		133.97	-2.93	-1.70	132.90	-3.05	-0.85
EW7HQA		136.01	-0.89	-0.51	134.55	-1.40	-0.39
EY2Z6H		137.90	1.00	0.58	135.27	-0.68	-0.19
FDT6ZR		135.53	-1.36	-0.79	132.27	-3.68	-1.03
GUDCDG		134.09	-2.81	-1.63	132.85	-3.10	-0.87
H7YZVT		138.20	1.30	0.75	137.07	1.12	0.31
HG6UEL	*	142.00	5.10	2.95	137.33	1.38	0.39
J3YDPV		137.57	0.67	0.39	142.77	6.82	1.91
LDYKM8		136.77	-0.12	-0.07	133.42	-2.53	-0.71
LNY489		136.03	-0.86	-0.50	133.83	-2.12	-0.59
LVYDQU	X	48.02	-88.88	-51.44	53.11	-82.84	-23.17
M3R3QV		137.33	0.44	0.25	139.67	3.72	1.04
M3VH7G		135.97	-0.93	-0.54	133.37	-2.58	-0.72
MTPXHE		138.02	1.12	0.65	135.45	-0.49	-0.14
N42MWA		138.83	1.94	1.12	136.97	1.02	0.28
N6W398		137.47	0.57	0.33	135.83	-0.12	-0.03
NQULCD		136.62	-0.28	-0.16	133.74	-2.21	-0.62
PLEBYA		140.40	3.50	2.03	134.83	-1.12	-0.31
PPYBZB		135.67	-1.23	-0.71	137.33	1.38	0.39
PUABBG		137.22	0.32	0.19	140.75	4.80	1.34
QREAM4		136.13	-0.76	-0.44	133.03	-2.92	-0.82
RCFPJL		135.93	-0.96	-0.56	139.53	3.58	1.00



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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample Q13			Sample Q14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RQJ2Z7		137.03	0.14	0.08	134.07	-1.88	-0.53
T2VPHH		137.98	1.08	0.63	138.44	2.49	0.70
T6XJKU		136.33	-0.56	-0.33	134.77	-1.18	-0.33
TNU44Z		137.52	0.62	0.36	135.23	-0.72	-0.20
TPHK92		135.66	-1.23	-0.71	133.14	-2.81	-0.79
UAQQQ9		139.60	2.70	1.56	139.90	3.95	1.10
UEXNRZ		136.13	-0.76	-0.44	131.73	-4.22	-1.18
UKRDH7		139.23	2.34	1.35	141.23	5.28	1.48
UZZE7F		138.73	1.84	1.06	134.10	-1.85	-0.52
VFRPE4		137.17	0.27	0.16	132.07	-3.88	-1.09
VH2JB4		132.53	-4.36	-2.53	135.56	-0.39	-0.11
VP3RZ6		137.47	0.57	0.33	133.47	-2.48	-0.69
VV2MBN		136.64	-0.26	-0.15	135.55	-0.40	-0.11
WFKTCJ	*	137.07	0.18	0.10	145.86	9.91	2.77
WHR2PA		136.22	-0.68	-0.39	132.16	-3.79	-1.06
WLXHAY		137.00	0.10	0.06	133.00	-2.95	-0.82
WN2DT3		137.33	0.44	0.25	133.67	-2.28	-0.64
WX86AJ		139.48	2.58	1.49	137.95	2.00	0.56
X92XYL		137.49	0.60	0.35	133.70	-2.25	-0.63
XD23XZ		136.23	-0.66	-0.38	132.17	-3.78	-1.06
XLQWN4		140.63	3.74	2.16	135.07	-0.88	-0.25
XNBPXK		138.29	1.39	0.80	136.24	0.29	0.08
XP86AH	X	48.29	-88.61	-51.28	52.06	-83.89	-23.46
Y2EGXV		137.00	0.10	0.06	135.33	-0.62	-0.17
Y9V98U	X	129.93	-6.97	-4.03	137.80	1.85	0.52
Z74JDF		137.64	0.75	0.43	142.86	6.91	1.93
ZFU2VU		136.40	-0.50	-0.29	136.20	0.25	0.07
ZGPLRU		137.17	0.27	0.16	142.24	6.29	1.76
ZKQJEF		138.16	1.26	0.73	138.53	2.58	0.72
ZWLMMF		134.02	-2.88	-1.67	131.55	-4.40	-1.23
ZZD4QT		133.73	-3.17	-1.84	132.42	-3.53	-0.99

Summary Statistics

	Sample Q13		Sample Q14	
Grand Means	136.90	ksi	135.95	ksi
Std Dev Btwn Labs	1.73	ksi	3.58	ksi

Samples Q13, Q14 : 3/8-16 x 2 1/2, 3/8-16 x 2 3/4

Statistics based on 73 of 78 reporting participants



Comments on Assigned Data Flags for Test #1202

4KBN3V (X) - Data for sample Q13 are low.

4L86ET (X) - Data for sample Q13 are low.

LVYDQU (X) - Extreme data.

XP86AH (X) - Extreme data.

Y9V98U (X) - Data for sample Q13 are low.



Analysis 1202

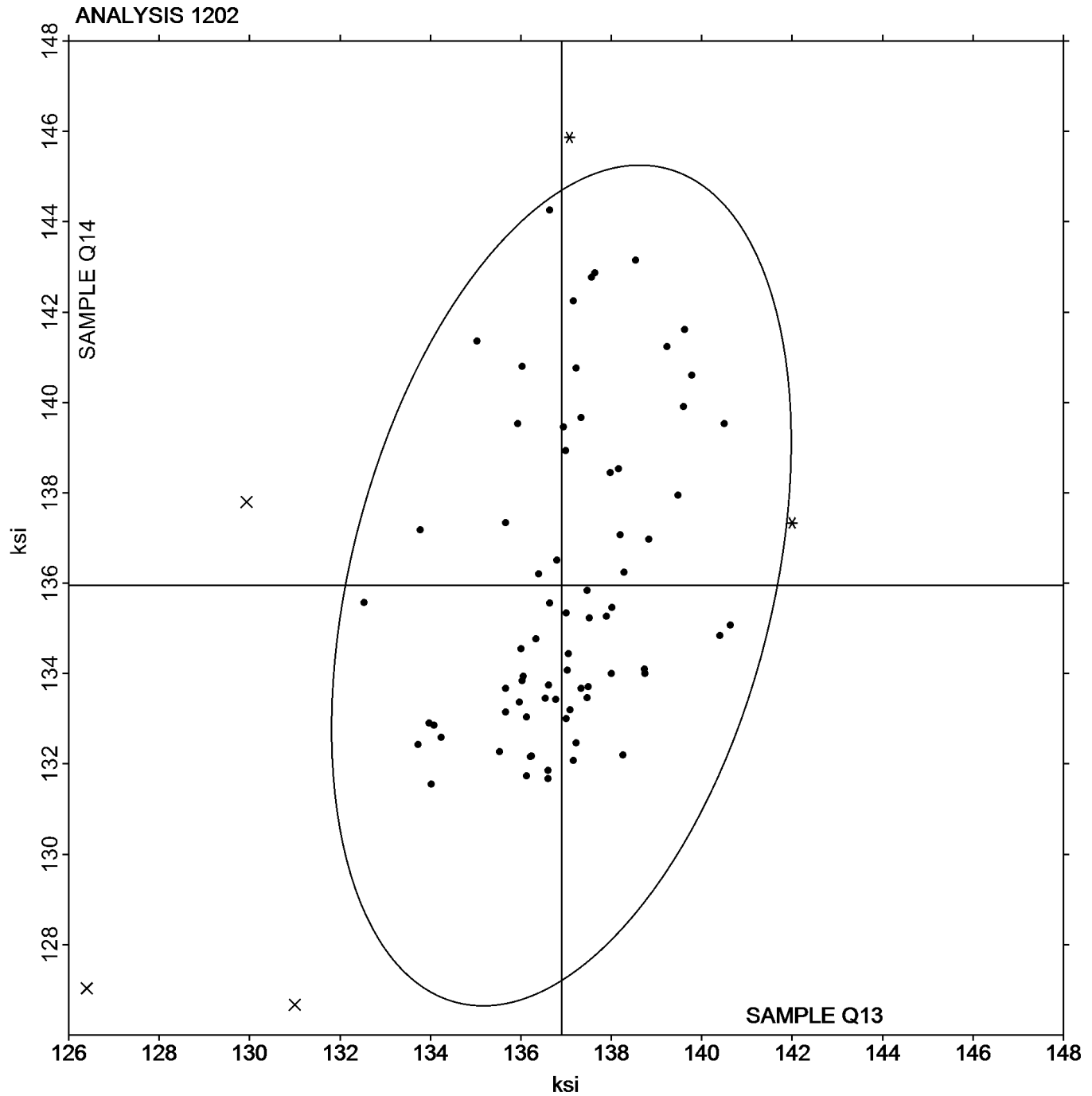
Fastener Axial Tensile
ASTM F606

SAMPLE Q13

136.90 ksi

SAMPLE Q14

135.95 ksi





Fasteners and Metals Interlaboratory Testing Program

Analysis 1203

Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample B13			Sample B14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
43CHMA		1,106	-26	-1.63	1,111	-2	-0.20
449PE2	X	1,113	-18	-1.14	1,050	-63	-6.16
67AC7W		1,137	6	0.39	1,131	18	1.71
6VCCUT		1,147	15	0.98	1,117	4	0.35
7U7NG8		1,132	0	0.03	1,117	4	0.41
87LQQB	*	1,167	36	2.30	1,100	-13	-1.24
DFTGUN		1,127	-4	-0.25	1,123	10	0.96
DJN8ZZ		1,137	6	0.39	1,110	-3	-0.31
HEU3X6		1,136	5	0.30	1,130	17	1.61
HU9EGB		1,105	-26	-1.67	1,109	-4	-0.43
JF8WNQ		1,139	8	0.50	1,121	8	0.77
KBRYHF		1,123	-9	-0.55	1,115	2	0.15
MNDWV		1,133	2	0.11	1,112	-1	-0.14
N6W398		1,108	-23	-1.49	1,113	-1	-0.05
PUABBG		1,142	11	0.68	1,110	-3	-0.33
R6LEDW		1,110	-21	-1.35	1,098	-15	-1.50
T2VPHH		1,123	-8	-0.53	1,131	18	1.74
UEXNRZ		1,145	13	0.86	1,109	-4	-0.40
V77K84		1,149	18	1.15	1,132	19	1.87
WYEHKK		1,129	-3	-0.16	1,105	-8	-0.79
XT4ZNB		1,140	8	0.54	1,100	-13	-1.27
Y2EGXV	X	72.33	-1,059	-67.56	70.33	-1,043	-101.24
YCE392		1,131	-1	-0.04	1,118	5	0.44
YVW3FK		1,144	12	0.79	1,111	-2	-0.20
ZDPBNE		1,143	12	0.77	1,103	-10	-0.95
ZLLYQD		1,106	-25	-1.61	1,102	-11	-1.08
ZZJ9CX		1,123	-8	-0.52	1,102	-11	-1.11

Summary Statistics

	Sample B13		Sample B14	
Grand Means	1,131	MPa	1,113	MPa
Std Dev Btwn Labs	16	MPa	10	MPa

Samples B13, B14 : M-10x1.5x65, M-10x1.5x70

Statistics based on 25 of 27 reporting participants

Comments on Assigned Data Flags for Test #1203

449PE2 (X) - Data for sample B14 are low. Inconsistent within the determinations of sample B14.

Y2EGXV (X) - Extreme data.



Analysis 1203

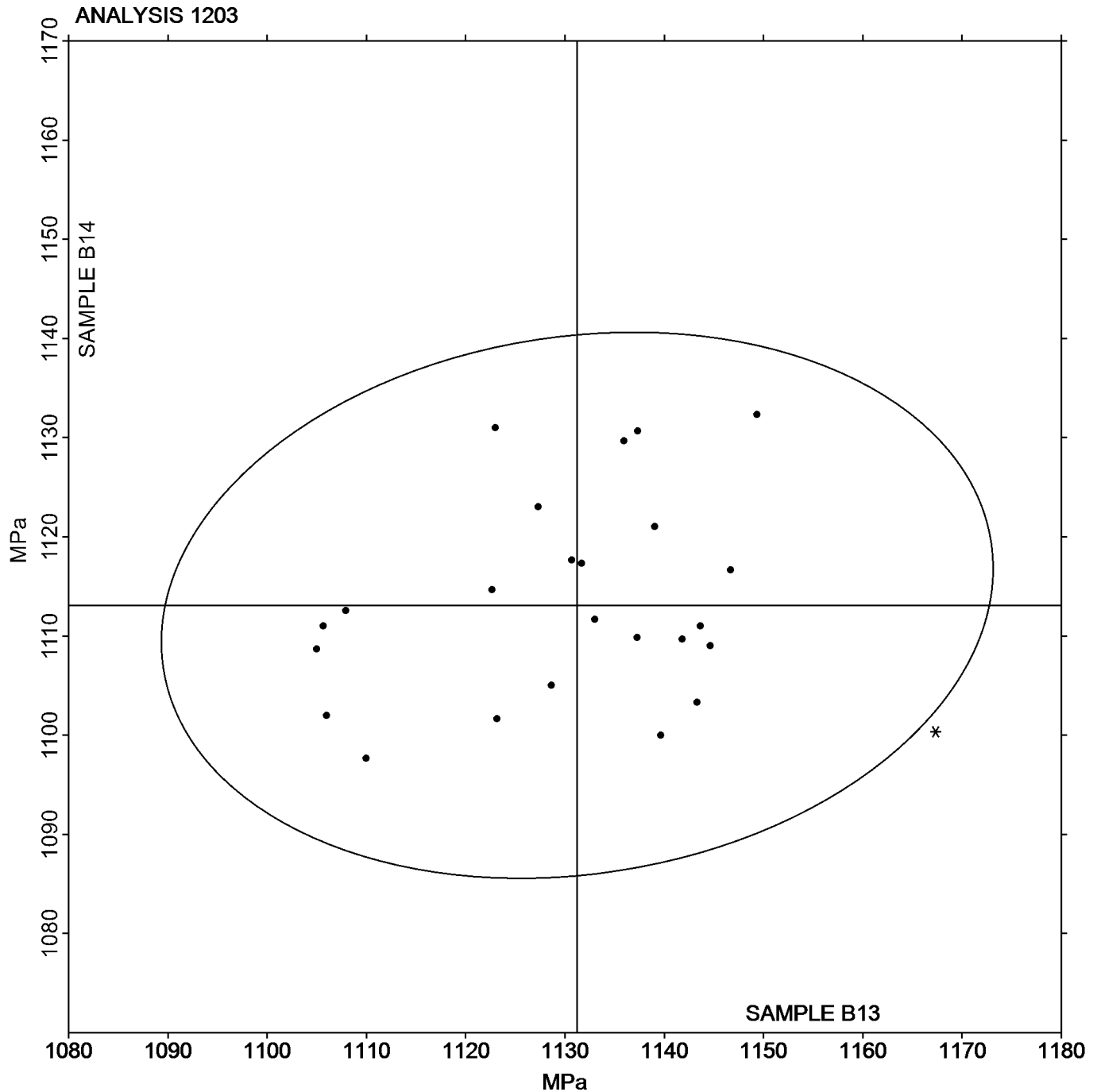
Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

SAMPLE B13

SAMPLE B14

1,131 MPa

1,113 MPa





Fasteners and Metals Interlaboratory Testing Program

Analysis 1204

Fastener Axial Tensile - Metric
ASTM F606M

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample T13			Sample T14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2733GU	X	1,213	56	5.17	1,140	29	2.44
2HVFZY		1,161	4	0.38	1,100	-11	-0.90
39476A		1,174	17	1.55	1,103	-8	-0.63
43CHMA		1,156	-1	-0.08	1,101	-10	-0.82
67AC7W		1,153	-4	-0.39	1,128	18	1.47
6VCCUT		1,153	-4	-0.36	1,107	-4	-0.35
9NFVMJ		1,152	-5	-0.47	1,119	8	0.68
9VCR8Z		1,168	10	0.97	1,103	-8	-0.65
AEYVBE		1,163	6	0.54	1,121	10	0.84
DFMB7Y		1,167	10	0.93	1,107	-4	-0.32
DFTGUN		1,143	-15	-1.34	1,134	24	1.97
H8F3RT		1,138	-19	-1.78	1,111	1	0.05
HEU3X6		1,158	1	0.11	1,121	11	0.89
JLXDVB		1,144	-14	-1.25	1,099	-12	-0.99
KFP6CK		1,174	17	1.55	1,114	3	0.24
L4P33N		1,151	-6	-0.57	1,114	3	0.27
MK9AZ7		1,155	-2	-0.20	1,115	4	0.32
PPYBZB	X	1,150	-8	-0.69	1,242	132	11.01
R6LEDW		1,165	8	0.72	1,104	-7	-0.60
T2VPHH	*	1,163	6	0.54	1,143	32	2.67
UEXNRZ		1,158	1	0.07	1,102	-9	-0.74
VQABFR		1,160	2	0.23	1,096	-14	-1.21
XT4ZNB		1,156	-1	-0.11	1,097	-14	-1.15
ZDPBNE		1,133	-24	-2.23	1,110	-1	-0.10
ZLLYQD		1,153	-5	-0.42	1,105	-6	-0.51
ZZJ9CX		1,175	17	1.60	1,106	-5	-0.42

Summary Statistics

	Sample T13		Sample T14	
Grand Means	1,157	MPa	1,111	MPa
Std Dev Btwn Labs	11	MPa	12	MPa

Samples T13, T14 : M-10x1.5x65, M-10x1.5x70

Statistics based on 24 of 26 reporting participants

Comments on Assigned Data Flags for Test #1204

2733GU (X) - Data for sample T13 are high.

PPYBZB (X) - Data for sample T14 are high.



Analysis 1204

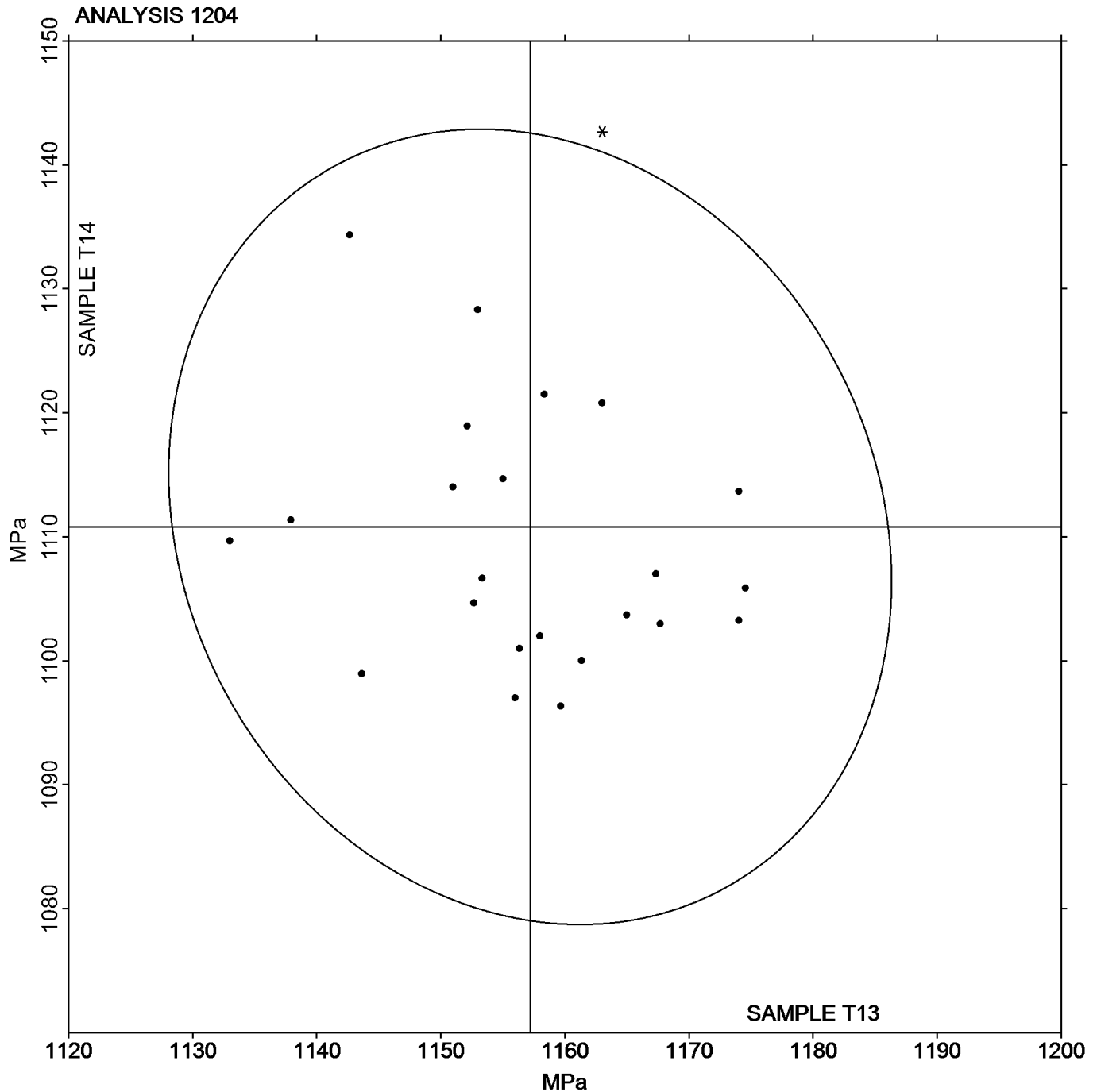
Fastener Axial Tensile - Metric
ASTM F606M

SAMPLE T13

1,157 MPa

SAMPLE T14

1,111 MPa





Fasteners and Metals Interlaboratory Testing Program
Analysis 1210

Cycle 152
4th Qtr 2025

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

WebCode	Data Flag	Sample G13			Sample G14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
236AUQ		36.29	-0.21	-0.25	34.66	-0.61	-0.82
2HVFZY		36.14	-0.35	-0.42	35.83	0.56	0.75
39476A		36.33	-0.17	-0.21	34.44	-0.83	-1.12
3C4HWU		37.33	0.83	1.00	36.44	1.17	1.58
3HVPF3		37.79	1.29	1.55	35.52	0.25	0.34
3QALEG		36.51	0.02	0.02	35.04	-0.22	-0.30
43CHMA		36.14	-0.35	-0.42	34.06	-1.20	-1.62
4KBN3V		35.33	-1.17	-1.40	34.40	-0.87	-1.17
4L86ET		36.48	-0.02	-0.02	35.27	0.00	0.00
67AC7W		38.13	1.63	1.95	36.79	1.52	2.05
7436PP		36.73	0.23	0.28	35.02	-0.25	-0.33
7U7NG8		36.62	0.12	0.15	35.47	0.20	0.27
7XXDCL	*	34.64	-1.86	-2.23	35.20	-0.07	-0.09
82CFUB		37.08	0.58	0.69	35.71	0.45	0.60
8EUAZ9		37.21	0.72	0.86	36.29	1.02	1.38
9M72QJ		35.49	-1.00	-1.20	35.04	-0.23	-0.31
A64ATN		36.41	-0.09	-0.11	34.84	-0.43	-0.58
CJ7Z36		35.34	-1.15	-1.38	34.15	-1.12	-1.51
CTYCCQ		36.98	0.48	0.57	36.57	1.30	1.76
DFTGUN		36.81	0.32	0.38	35.72	0.45	0.61
DFU9PB	X	32.73	-3.77	-4.51	32.43	-2.84	-3.82
DKKNCW		35.88	-0.62	-0.75	35.81	0.55	0.74
EK3UBM		36.94	0.45	0.54	35.94	0.68	0.91
EW7HQA		36.74	0.25	0.30	35.53	0.26	0.35
EY2Z6H		36.65	0.15	0.18	34.69	-0.58	-0.78
F3W2WY		36.50	0.00	0.00	34.84	-0.43	-0.58
H8F3RT		36.90	0.40	0.48	35.73	0.46	0.62
JF8WNQ		36.88	0.38	0.45	35.88	0.61	0.83
JFBFCU	*	34.24	-2.26	-2.71	34.41	-0.86	-1.16
KBRYHF		36.29	-0.20	-0.24	35.04	-0.22	-0.30
KJA87C		37.13	0.63	0.76	35.83	0.56	0.76
KPDXMW		35.01	-1.48	-1.78	35.12	-0.15	-0.20
LDYKM8		37.00	0.50	0.60	36.09	0.82	1.11
LNY489		36.66	0.16	0.19	35.33	0.06	0.09
LVYDQU		35.29	-1.20	-1.44	34.36	-0.90	-1.22
M3R3QV		36.50	0.00	0.00	34.31	-0.95	-1.29
M3VH7G		37.02	0.52	0.63	35.35	0.08	0.11
MTPXHE		36.13	-0.36	-0.44	35.05	-0.22	-0.29
N42MWA		36.56	0.07	0.08	34.75	-0.52	-0.70
N6W398		37.48	0.98	1.17	36.21	0.94	1.27
P8YB7P		36.04	-0.45	-0.54	33.96	-1.30	-1.76
PLEBYA		37.47	0.97	1.16	35.55	0.28	0.38
QREAM4		35.00	-1.50	-1.79	34.69	-0.58	-0.78
RQJ2Z7		36.91	0.41	0.49	35.46	0.19	0.26
TNU44Z		35.41	-1.08	-1.30	34.65	-0.62	-0.83
UAQQQ9	*	34.13	-2.37	-2.84	33.38	-1.89	-2.55
UEXNRZ		36.64	0.15	0.18	35.16	-0.11	-0.15



Fasteners and Metals Interlaboratory Testing Program

Analysis 1210

Cycle 152
4th Qtr 2025

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

WebCode	Data Flag	Sample G13			Sample G14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
V6NGP7		36.81	0.32	0.38	35.71	0.45	0.60
VBB8YU		37.28	0.78	0.94	35.80	0.53	0.72
VPVVXK		37.13	0.63	0.76	36.12	0.85	1.15
WAG3VY		37.14	0.64	0.77	34.65	-0.62	-0.83
WJR6GZ		36.53	0.03	0.04	35.21	-0.05	-0.07
WYEHK		35.95	-0.55	-0.65	35.57	0.31	0.41
XD23XZ		36.26	-0.23	-0.28	35.28	0.01	0.02
XLQWN4		37.33	0.84	1.00	35.52	0.25	0.34
XNBPXK		36.74	0.24	0.29	35.55	0.28	0.38
XP86AH		36.48	-0.02	-0.03	35.07	-0.20	-0.27
Z4JK8X		37.58	1.08	1.30	35.61	0.35	0.47
ZDPBNE		37.21	0.71	0.85	36.01	0.75	1.01
ZFU2VU	*	35.31	-1.19	-1.43	33.05	-2.22	-2.99
ZGPLRU		37.23	0.73	0.87	36.17	0.90	1.22
ZWLMMF		36.95	0.45	0.54	35.99	0.72	0.97
ZZD4QT		37.21	0.71	0.85	35.86	0.60	0.80
ZZJ9CX		36.99	0.50	0.60	35.09	-0.18	-0.24

Summary Statistics

	Sample G13		Sample G14	
Grand Means	36.50	HRC	35.27	HRC
Stnd Dev Btwn Labs	0.83	HRC	0.74	HRC

Samples G13, G14 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 63 of 64 reporting participants

Comments on Assigned Data Flags for Test #1210

DFU9PB (X) - Data for both samples are low.



Analysis 1210

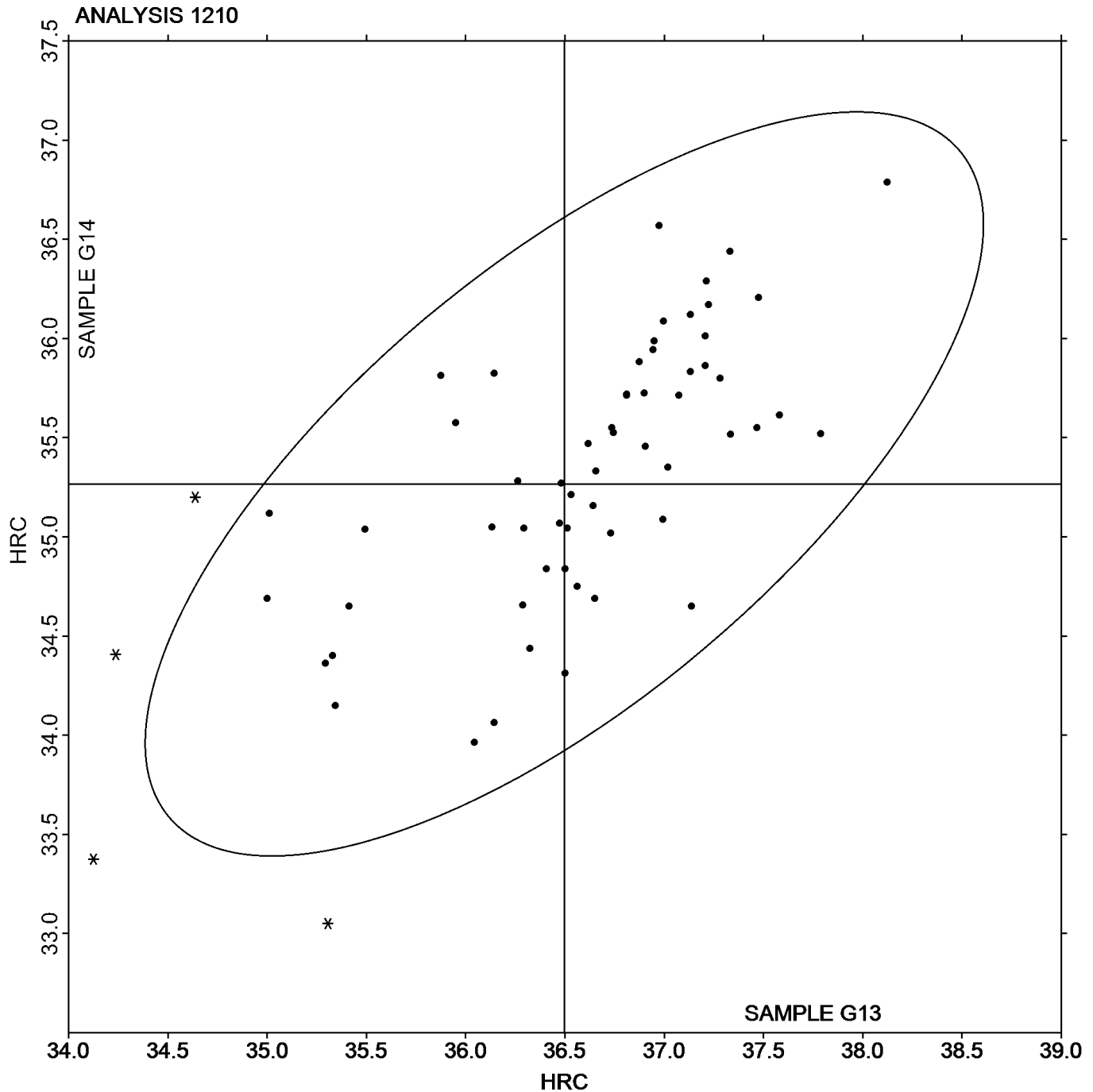
Rockwell Hardness: Externally Threaded Fasteners
ASTM F606/F606M AND ASTM E18

SAMPLE G13

SAMPLE G14

36.50 HRC

35.27 HRC





Fasteners and Metals Interlaboratory Testing Program

Analysis 1211

Cycle 152
4th Qtr 2025

Vickers Hardness: Externally Threaded Fasteners
ASTM E92

WebCode	Data Flag	Sample V13			Sample V14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
6VCCUT		368.19	2.23	0.42	355.81	3.26	0.63
7W3UBK		360.88	-5.08	-0.96	348.94	-3.62	-0.70
8NDWKA		364.59	-1.36	-0.26	353.74	1.18	0.23
9M72QJ		363.19	-2.77	-0.52	346.81	-5.74	-1.11
A64ATN		371.88	5.92	1.12	356.81	4.26	0.82
AC38TC		372.00	6.05	1.14	359.63	7.07	1.36
AEYVBE	*	351.72	-14.23	-2.69	344.93	-7.63	-1.47
DFTGUN		370.13	4.17	0.79	355.00	2.44	0.47
DJN8ZZ		368.56	2.61	0.49	348.13	-4.43	-0.85
EK3UBM		360.44	-5.51	-1.04	354.15	1.59	0.31
EW7HQA		368.25	2.30	0.43	352.00	-0.56	-0.11
H8F3RT		373.76	7.81	1.47	363.14	10.59	2.04
L2DG22		369.24	3.28	0.62	351.11	-1.45	-0.28
MNDWV		368.25	2.30	0.43	359.19	6.63	1.28
R6LEDW		370.25	4.30	0.81	346.25	-6.31	-1.22
TUHN8F		368.19	2.23	0.42	356.03	3.47	0.67
UZZE7F	X	406.25	40.30	7.61	397.94	45.38	8.75
WJR6GZ		365.31	-0.64	-0.12	355.19	2.63	0.51
XT4ZNB		367.49	1.54	0.29	358.50	5.94	1.15
YCE392		369.13	3.17	0.60	351.69	-0.87	-0.17
YVW3FK		367.69	1.73	0.33	356.31	3.76	0.72
Z4JK8X		358.00	-7.95	-1.50	342.59	-9.96	-1.92
ZDPBNE		360.16	-5.79	-1.09	349.30	-3.26	-0.63
ZGPLRU		370.80	4.85	0.92	351.38	-1.18	-0.23
ZZD4QT		360.38	-5.58	-1.05	352.13	-0.43	-0.08
ZZJ9CX		360.38	-5.58	-1.05	345.19	-7.37	-1.42

Summary Statistics

	Sample V13		Sample V14	
Grand Means	365.95	HV	352.56	HV
Std Dev Btwn Labs	5.30	HV	5.19	HV

Samples V13, V14 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 25 of 26 reporting participants

Comments on Assigned Data Flags for Test #1211

UZZE7F (X) - Data for both samples are high.



Analysis 1211

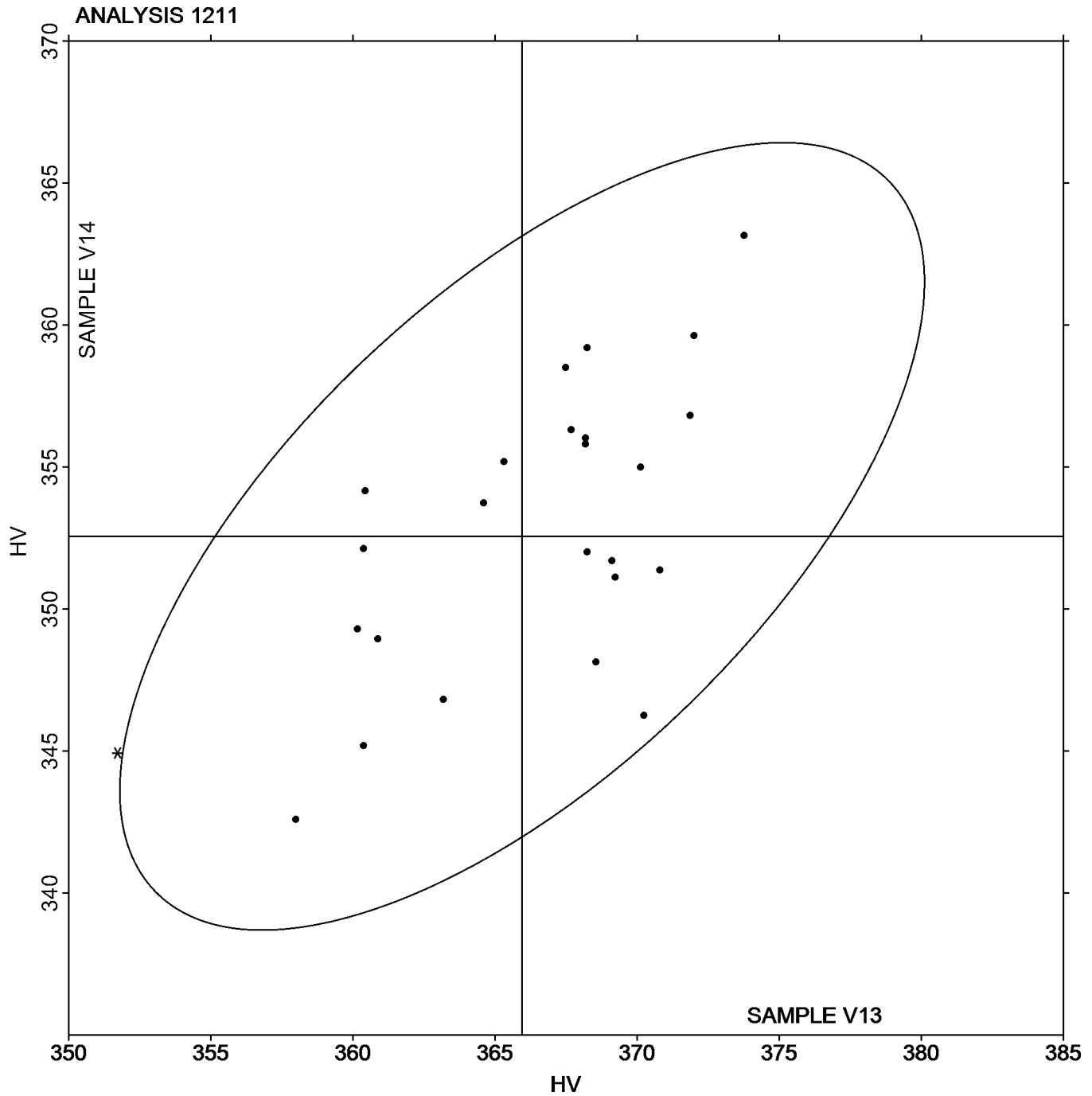
Vickers Hardness: Externally Threaded Fasteners
ASTM E92

SAMPLE V13

SAMPLE V14

365.95 HV

352.56 HV





Fasteners and Metals Interlaboratory Testing Program
Analysis 1220
Fastener Double Shear
NASM 1312-13

Cycle 152
4th Qtr 2025
(DS)

WebCode	Data Flag	Sample Z13			Sample Z14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
236AUQ		17,832	420	0.89	17,949	328	0.61
7HLYVN		17,131	-281	-0.60	16,949	-672	-1.26
8TWTL8		17,240	-172	-0.37	17,395	-227	-0.42
9M72QJ		16,904	-508	-1.08	17,042	-580	-1.08
DFU9PB		17,156	-256	-0.55	17,480	-142	-0.26
DKKNCW		17,204	-208	-0.44	17,508	-114	-0.21
DZWEZM		16,811	-601	-1.28	16,935	-686	-1.28
JFN84B		17,200	-212	-0.45	17,567	-55	-0.10
KBRYHF		17,373	-39	-0.08	17,903	281	0.53
L4P33N		17,253	-159	-0.34	17,381	-241	-0.45
LDYKM8		17,963	551	1.18	18,050	428	0.80
LVYDQU		17,827	415	0.88	18,017	396	0.74
M3R3QV		17,122	-290	-0.62	17,209	-413	-0.77
M3VH7G	*	18,774	1,362	2.91	19,209	1,587	2.97
PLEBYA		17,667	255	0.54	17,716	94	0.18
TNU44Z	X	18,006	594	1.27	19,332	1,711	3.20
WHVLFX		16,933	-479	-1.02	17,192	-430	-0.80
WJR6GZ		17,646	234	0.50	17,839	217	0.41
WX86AJ	M	16,888	-524	-1.12	No Data Reported		
XD23XZ		17,083	-329	-0.70	17,156	-466	-0.87
XLQWN4		17,267	-145	-0.31	17,729	107	0.20
XP86AH		17,857	445	0.95	18,209	588	1.10

Summary Statistics

	<u>Sample Z13</u>		<u>Sample Z14</u>	
Grand Means	17,412	1b	17,622	1b
Stnd Dev Btwn Labs	469	1b	535	1b

Samples Z13, Z14 : 3/8-16 x 2 1/2, 3/8-16 x 2 3/4

Statistics based on 20 of 22 reporting participants

Comments on Assigned Data Flags for Test #1220

TNU44Z (X) - Data for sample Z14 are high.

WX86AJ (M) - Participant did not submit data for sample Z14.

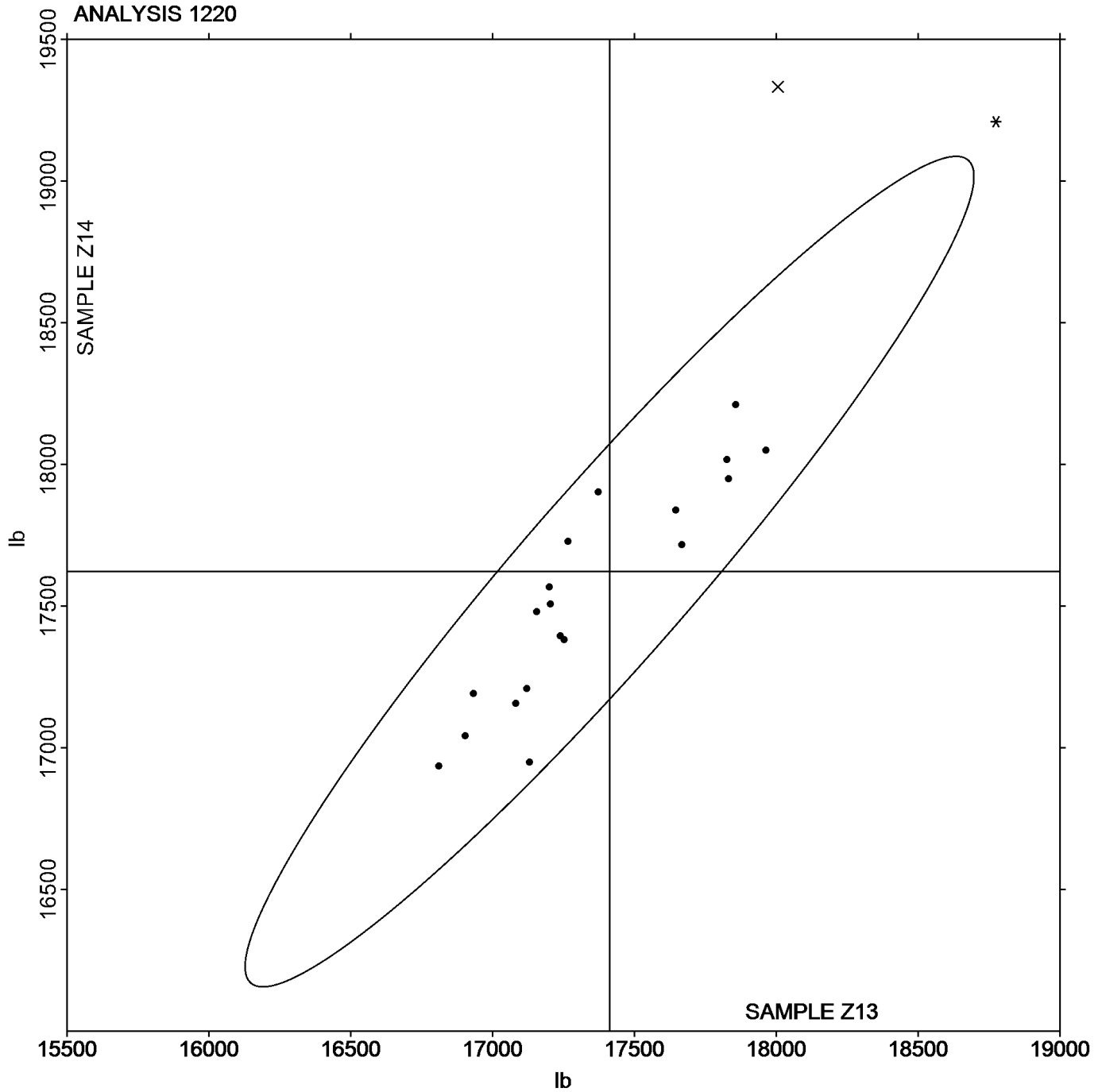


SAMPLE Z13

17,412 lb

SAMPLE Z14

17,622 lb





Fasteners and Metals Interlaboratory Testing Program

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample E13			Sample E14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2733GU	X	51.60	-2.98	-3.70	57.00	-3.05	-2.18
28C4BF		54.24	-0.34	-0.42	60.32	0.27	0.20
2TRLGQ		54.99	0.41	0.51	60.86	0.81	0.58
38YMDU		52.42	-2.16	-2.68	57.04	-3.01	-2.16
3JGKVP		56.00	1.42	1.76	62.34	2.29	1.64
3LB8TD		54.28	-0.30	-0.37	59.12	-0.93	-0.66
3Q62QE		55.26	0.68	0.84	61.24	1.19	0.86
47UTNK		55.06	0.48	0.59	59.78	-0.27	-0.19
4KBN3V		55.24	0.66	0.82	60.96	0.91	0.65
637NG9		54.02	-0.56	-0.70	58.06	-1.99	-1.42
67AC7W	X	52.34	-2.24	-2.78	60.12	0.07	0.05
6GRU2N		55.15	0.57	0.70	60.63	0.59	0.42
7LWDYF		55.22	0.64	0.79	61.24	1.19	0.86
7LYNAQ		54.76	0.18	0.22	60.72	0.67	0.48
7MRTPJ		54.80	0.22	0.27	60.80	0.75	0.54
7XXDCL		53.02	-1.56	-1.94	57.44	-2.61	-1.87
89PJJP		55.10	0.52	0.64	60.36	0.31	0.22
8DZJUJ		54.78	0.20	0.25	60.74	0.69	0.50
8NDWKA		55.06	0.48	0.59	61.08	1.03	0.74
8UC7CP		54.04	-0.54	-0.67	59.42	-0.63	-0.45
8XP3K8		55.00	0.42	0.52	61.42	1.37	0.98
9Q4H4D		55.38	0.80	0.99	61.20	1.15	0.83
AFEZZ6		55.22	0.64	0.79	61.02	0.97	0.70
ANCR9X		54.68	0.10	0.12	59.96	-0.09	-0.06
BJWGVU		54.80	0.22	0.27	59.80	-0.25	-0.18
BT66R2		55.14	0.56	0.69	60.80	0.75	0.54
BUZEAJ		53.18	-1.40	-1.74	56.98	-3.07	-2.20
C6FUA4		55.10	0.52	0.64	61.42	1.37	0.98
CANBPJ		54.64	0.06	0.07	60.14	0.09	0.07
CARVCL		55.00	0.42	0.52	61.00	0.95	0.68
CK9R8R		54.88	0.30	0.37	60.74	0.69	0.50
CPHU83		55.28	0.70	0.87	61.52	1.47	1.06
CRLGUE		53.00	-1.58	-1.96	56.90	-3.15	-2.26
CTLF8L		54.04	-0.54	-0.67	58.94	-1.11	-0.79
CUVPXX		55.02	0.44	0.54	61.18	1.13	0.81
D72Z6K		55.84	1.26	1.56	61.54	1.49	1.07
DEBCBP		53.80	-0.78	-0.97	60.40	0.35	0.25
EJ6L8A		55.52	0.94	1.16	61.52	1.47	1.06
F3W2WY		54.66	0.08	0.10	60.52	0.47	0.34
FERD2P		54.22	-0.36	-0.45	59.00	-1.05	-0.75
G84X46		54.67	0.09	0.11	60.61	0.56	0.40
GB2G4H		53.64	-0.94	-1.17	58.42	-1.63	-1.17
GFYVYK		55.76	1.18	1.46	61.38	1.33	0.96
GVMDB2		54.46	-0.12	-0.15	59.28	-0.77	-0.55
HG6UEL	*	53.24	-1.34	-1.66	60.54	0.49	0.35
HPVQP2		55.85	1.27	1.57	61.70	1.65	1.18
HTEHZ4		54.80	0.22	0.27	61.60	1.55	1.11



Fasteners and Metals Interlaboratory Testing Program

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample E13			Sample E14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
HU9EGB		54.78	0.20	0.25	61.02	0.97	0.70
J8Y9RJ		54.40	-0.18	-0.22	60.40	0.35	0.25
JAJBHP	*	55.74	1.16	1.44	59.10	-0.95	-0.68
JLXDVB		55.00	0.42	0.52	60.00	-0.05	-0.03
KETXLT		54.14	-0.44	-0.55	60.22	0.17	0.12
KPDXMW		54.78	0.20	0.25	61.22	1.17	0.84
KR2GJN		53.72	-0.86	-1.07	60.20	0.15	0.11
LJY3XD		55.28	0.70	0.87	61.22	1.17	0.84
LZ6BQL		55.36	0.78	0.97	61.12	1.07	0.77
MK4QYV		53.36	-1.22	-1.51	58.08	-1.97	-1.41
N2VVXG		55.08	0.50	0.62	61.19	1.15	0.82
NBDRLV		54.06	-0.52	-0.65	58.29	-1.76	-1.26
NTJQAQ		53.68	-0.90	-1.12	58.44	-1.61	-1.15
NXYBZD		55.06	0.48	0.59	61.16	1.11	0.80
PQK6FX		55.16	0.58	0.72	59.50	-0.55	-0.39
PUABBG	X	55.65	1.07	1.32	57.98	-2.07	-1.48
PXAGUT		53.41	-1.17	-1.45	58.58	-1.47	-1.05
QREAM4		53.00	-1.58	-1.96	57.60	-2.45	-1.75
R49UH2		54.60	0.02	0.02	60.92	0.87	0.63
RQJ2Z7		55.40	0.82	1.02	61.72	1.67	1.20
T6XJKU		53.60	-0.98	-1.22	57.72	-2.33	-1.67
THZ6MJ		54.80	0.22	0.27	59.62	-0.43	-0.31
TNC7U9		55.12	0.54	0.67	61.48	1.43	1.03
TZYA7L		53.36	-1.22	-1.51	58.34	-1.71	-1.22
UEXNRZ		54.74	0.16	0.20	59.98	-0.07	-0.05
UZZE7F		54.28	-0.30	-0.37	60.36	0.31	0.22
V4Q8HG		55.71	1.13	1.40	61.32	1.27	0.91
V7HB2G		55.64	1.06	1.31	61.20	1.15	0.83
V99929		55.26	0.68	0.84	60.94	0.89	0.64
VALVK9		55.27	0.69	0.85	61.20	1.15	0.83
VECJL8		55.10	0.52	0.64	61.20	1.15	0.83
VMBWT3		54.44	-0.14	-0.17	58.72	-1.33	-0.95
WJR6GZ	X	53.64	-0.94	-1.17	55.76	-4.29	-3.07
WWUQJP	*	52.28	-2.30	-2.85	56.98	-3.07	-2.20
WX86AJ		55.00	0.42	0.52	61.00	0.95	0.68
XKRUWD		55.16	0.58	0.72	61.46	1.41	1.01
XM68YP		55.60	1.02	1.26	61.92	1.87	1.34
XTNRL2		54.38	-0.20	-0.25	60.72	0.67	0.48
XTQGTJ		55.30	0.72	0.89	60.92	0.87	0.63
Y2EGXV		55.00	0.42	0.51	61.15	1.10	0.79
YCEZJW		54.88	0.30	0.37	60.30	0.25	0.18
YMH9AU		53.90	-0.68	-0.84	57.08	-2.97	-2.13
ZCVGC4		55.24	0.66	0.82	61.44	1.39	1.00
ZF8KME		53.58	-1.00	-1.24	59.90	-0.15	-0.11
ZGPLRU	*	54.30	-0.28	-0.35	56.90	-3.15	-2.26



Summary Statistics

	<u>Sample E13</u>		<u>Sample E14</u>	
Grand Means	54.58	HRC	60.05	HRC
Std Dev Btwn Labs	0.81	HRC	1.39	HRC

Samples E13, E14 : Steel, Steel

Statistics based on 88 of 92 reporting participants

Comments on Assigned Data Flags for Test #1303

2733GU (X) - Data for sample E13 are low. Inconsistent within the determinations of both samples.

67AC7W (X) - Data for sample E13 are low. Inconsistent within the determinations of sample E13.

PUABBG (X) - Inconsistent in testing between samples.

WJR6GZ (X) - Data for sample E14 are low. Inconsistent within the determinations of sample E14.



Analysis 1303

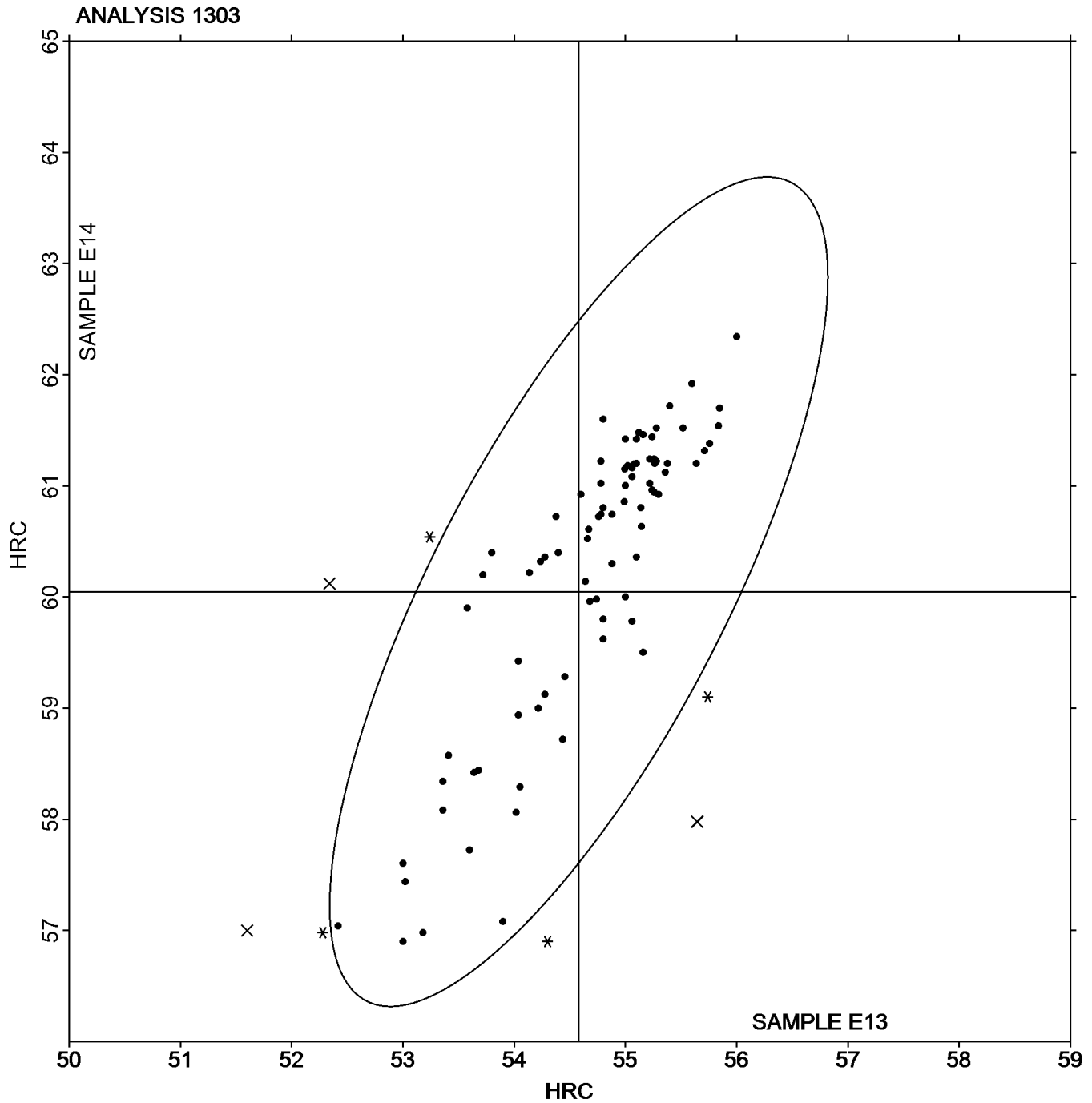
Rockwell Hardness: C Scale
ASTM E18

SAMPLE E13

54.58 HRC

SAMPLE E14

60.05 HRC





Fasteners and Metals Interlaboratory Testing Program

Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample E13			Sample E14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2GHN8H		602.02	0.67	0.05	724.50	7.72	0.22
3FNG3B		616.60	15.25	1.13	735.40	18.62	0.53
44TGCT		577.60	-23.75	-1.77	683.20	-33.58	-0.95
4MLMHX		606.40	5.05	0.38	732.20	15.42	0.44
67634Y		616.70	15.35	1.14	745.04	28.26	0.80
67AC7W	*	584.92	-16.43	-1.22	621.87	-94.91	-2.70
7W3UBK		599.60	-1.75	-0.13	731.40	14.62	0.42
7XADV9		620.40	19.05	1.42	738.00	21.22	0.60
9E4R8J		619.94	18.59	1.38	752.56	35.78	1.02
B827MM		576.48	-24.87	-1.85	652.68	-64.10	-1.82
BRQMNV		584.06	-17.29	-1.29	639.64	-77.14	-2.19
C98BDG		604.20	2.85	0.21	739.80	23.02	0.65
CUVPXX		596.40	-4.95	-0.37	695.40	-21.38	-0.61
CV8FAM		572.20	-29.15	-2.17	681.40	-35.38	-1.01
DPWFJP		583.40	-17.95	-1.34	659.60	-57.18	-1.63
ET78UA		599.77	-1.59	-0.12	741.63	24.86	0.71
FE7M96		606.40	5.05	0.38	739.80	23.02	0.65
FVPPHD		604.24	2.89	0.21	740.54	23.76	0.68
J2UHBY		600.20	-1.15	-0.09	700.20	-16.58	-0.47
J3YDPV		591.40	-9.95	-0.74	709.80	-6.98	-0.20
KFP6CK		591.92	-9.44	-0.70	696.25	-20.52	-0.58
L26WYK		605.26	3.91	0.29	732.32	15.54	0.44
L87HGL		587.06	-14.29	-1.06	686.70	-30.08	-0.86
LBVH6H		614.63	13.28	0.99	741.80	25.02	0.71
MT629Z		615.40	14.05	1.04	744.80	28.02	0.80
MYARPK	X	568.00	-33.35	-2.48	746.80	30.02	0.85
N2U6XE		616.16	14.81	1.10	774.70	57.92	1.65
N2VVXG		602.20	0.85	0.06	720.60	3.82	0.11
RDM3RM		620.40	19.05	1.42	737.60	20.82	0.59
T2VPHH		612.08	10.73	0.80	757.26	40.48	1.15
V99929		599.40	-1.95	-0.15	690.60	-26.18	-0.74
VMBWT3		610.80	9.45	0.70	731.00	14.22	0.40
X92XYL		616.22	14.87	1.11	751.60	34.82	0.99
XF6XG4		600.84	-0.51	-0.04	676.32	-40.46	-1.15
XTQGTJ		597.00	-4.35	-0.32	710.00	-6.78	-0.19
Y2B7MK		594.70	-6.65	-0.49	722.98	6.20	0.18
ZGPLRU		616.64	15.29	1.14	739.58	22.80	0.65
ZKQJEF	*	586.49	-14.86	-1.11	741.93	25.15	0.72

Summary Statistics

	Sample E13		Sample E14	
Grand Means	601.35	HV 10	716.78	HV 10
Std Dev Btwn Labs	13.45	HV 10	35.17	HV 10

Samples E13, E14 : Steel, Steel

Statistics based on 37 of 38 reporting participants



Comments on Assigned Data Flags for Test #1311

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

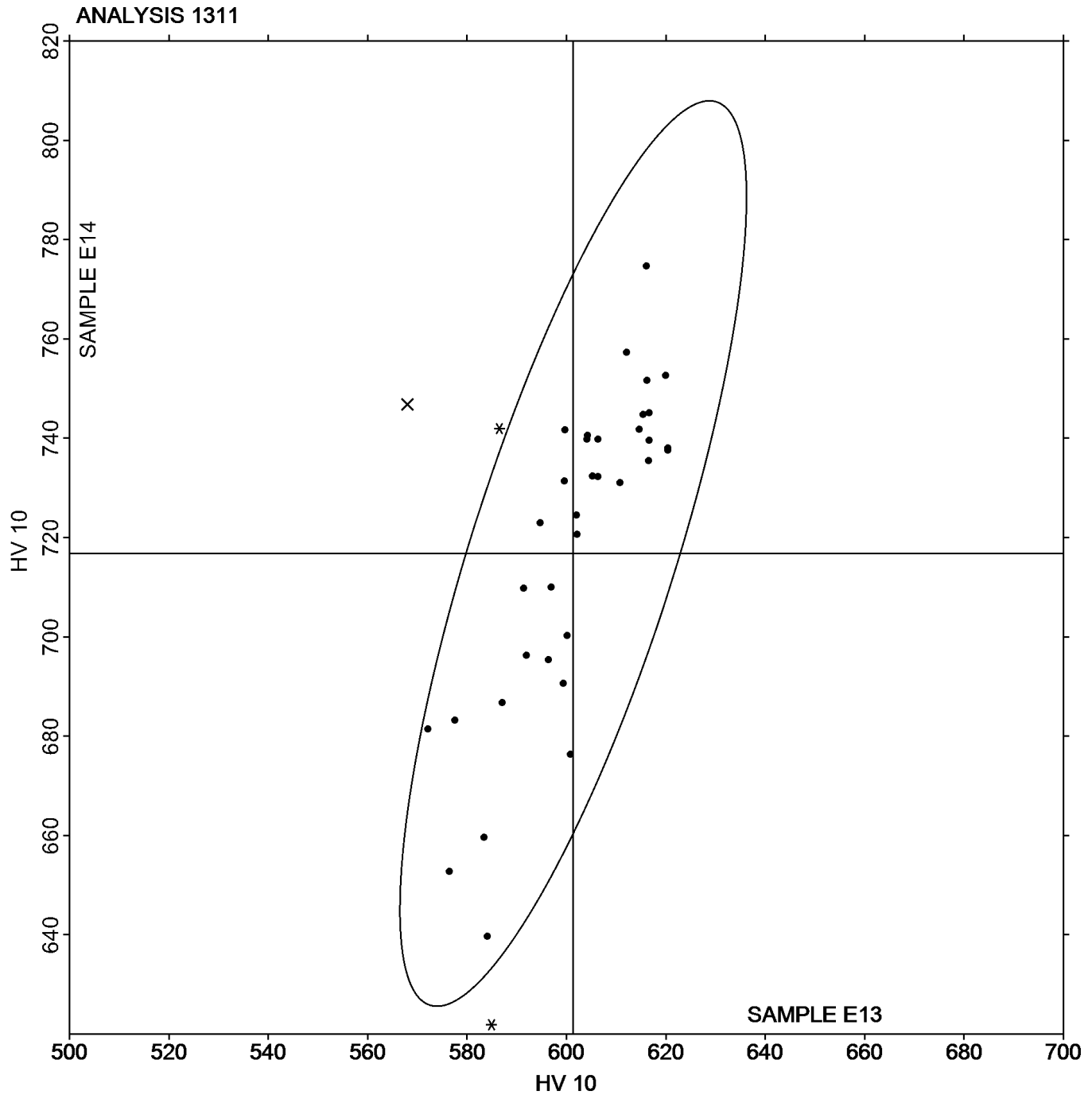


Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

SAMPLE E13
601.35 HV 10

SAMPLE E14
716.78 HV 10





Fasteners and Metals Interlaboratory Testing Program

Analysis 1351

Rockwell Superficial Hardness (30N Scale)
ASTM E18

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample E13			Sample E14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
34RDXH		72.44	-0.06	-0.08	77.24	0.03	0.02
38YMDU		72.26	-0.24	-0.32	77.31	0.09	0.07
3DLCX4		72.48	-0.02	-0.02	77.14	-0.07	-0.06
3QALEG		72.62	0.12	0.16	76.92	-0.29	-0.24
43CHMA		72.67	0.17	0.23	77.87	0.65	0.53
4KBN3V		72.02	-0.48	-0.64	78.02	0.81	0.66
4L86ET		72.30	-0.20	-0.26	77.86	0.65	0.53
67AC7W	X	69.26	-3.24	-4.34	75.08	-2.13	-1.74
7GPJHQ		73.50	1.00	1.34	79.02	1.81	1.47
7NLJVX	*	71.68	-0.82	-1.10	73.98	-3.23	-2.64
7U7NG8		73.58	1.08	1.45	78.18	0.97	0.79
8DZJUJ		72.80	0.30	0.41	78.04	0.83	0.67
8WV89W		73.38	0.88	1.18	78.48	1.27	1.03
8WWZ6J		72.88	0.38	0.51	76.88	-0.33	-0.27
A64ATN		72.26	-0.24	-0.32	75.20	-2.01	-1.65
B827MM		73.04	0.54	0.73	78.12	0.91	0.74
CQTQNZ		72.82	0.32	0.43	77.80	0.59	0.48
DAZFE3		72.24	-0.26	-0.35	77.58	0.37	0.30
DTAJ6K		71.88	-0.62	-0.83	76.20	-1.01	-0.83
EBUKL9		72.78	0.28	0.38	77.98	0.77	0.63
EY2Z6H		72.20	-0.30	-0.40	76.80	-0.41	-0.34
FE7M96		73.36	0.86	1.16	78.56	1.35	1.10
H8F3RT		73.16	0.66	0.89	77.52	0.31	0.25
J96UFJ		72.20	-0.30	-0.40	77.64	0.43	0.35
JF8WNQ		73.34	0.84	1.13	78.42	1.21	0.98
JLXDVb	*	70.40	-2.10	-2.81	73.40	-3.81	-3.12
JU647Z		73.26	0.76	1.02	77.06	-0.15	-0.13
K7EZ2F		73.20	0.70	0.94	77.50	0.29	0.23
KBRYHF		73.12	0.62	0.83	78.50	1.29	1.05
KPDxMW		73.16	0.66	0.89	77.22	0.01	0.00
KWECAJ	X	69.78	-2.72	-3.64	72.40	-4.81	-3.93
LJY3XD		73.50	1.00	1.34	78.20	0.99	0.81
MHNGN4		72.90	0.40	0.54	77.54	0.33	0.27
N2VVXG		72.80	0.30	0.41	78.43	1.21	0.99
N7669K		70.46	-2.04	-2.73	74.46	-2.75	-2.25
PLEBYA		72.00	-0.50	-0.67	75.28	-1.93	-1.58
RH3JCD		71.84	-0.66	-0.88	75.84	-1.37	-1.12
T2VPHH		72.72	0.22	0.30	77.90	0.69	0.56
T6XJKU		72.82	0.32	0.43	76.68	-0.53	-0.44
THZ8CM		72.94	0.44	0.59	77.28	0.07	0.05
TPHK92		72.52	0.02	0.02	77.40	0.19	0.15
U783NN		72.73	0.23	0.31	77.43	0.21	0.17
V4Q8HG		73.61	1.11	1.49	78.41	1.20	0.98
VECJL8		73.36	0.86	1.16	78.84	1.63	1.33
WAGZ4A		72.74	0.25	0.33	77.81	0.60	0.49
WJR6GZ		70.74	-1.76	-2.36	74.46	-2.75	-2.25
WMHLKD		72.32	-0.18	-0.24	77.04	-0.17	-0.14



Fasteners and Metals Interlaboratory Testing Program

Analysis 1351

Rockwell Superficial Hardness (30N Scale)
ASTM E18

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample E13			Sample E14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
WVYA8R		72.38	-0.12	-0.16	77.57	0.35	0.29
WWUQJP		73.14	0.64	0.86	78.74	1.53	1.25
X92XYL		73.44	0.94	1.26	78.10	0.89	0.72
XD23XZ		71.36	-1.14	-1.53	76.70	-0.51	-0.42
XTQGTJ		73.20	0.70	0.94	78.00	0.79	0.64
Y9V98U		73.00	0.50	0.67	77.16	-0.05	-0.04
YCEZJW		71.86	-0.64	-0.85	76.84	-0.37	-0.31
YQD79L		73.44	0.94	1.26	78.66	1.45	1.18
ZCVGC4		72.18	-0.32	-0.43	78.16	0.95	0.77
ZQRTK9		73.48	0.98	1.32	77.30	0.09	0.07
ZWZEBQ	X	71.30	-1.20	-1.61	78.30	1.09	0.89

Summary Statistics

Sample E13				Sample E14	
Grand Means	72.50	HR30N		77.21	HR30N
Std Dev Btwn Labs	0.75	HR30N		1.22	HR30N

Samples E13, E14 : Steel, Steel

Statistics based on 55 of 58 reporting participants

Comments on Assigned Data Flags for Test #1351

67AC7W (X) - Data for sample E13 are low. Inconsistent within the determinations of both samples.

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

ZWZEBQ (X) - Inconsistent in testing between samples.



Analysis 1351

Rockwell Superficial Hardness (30N Scale)

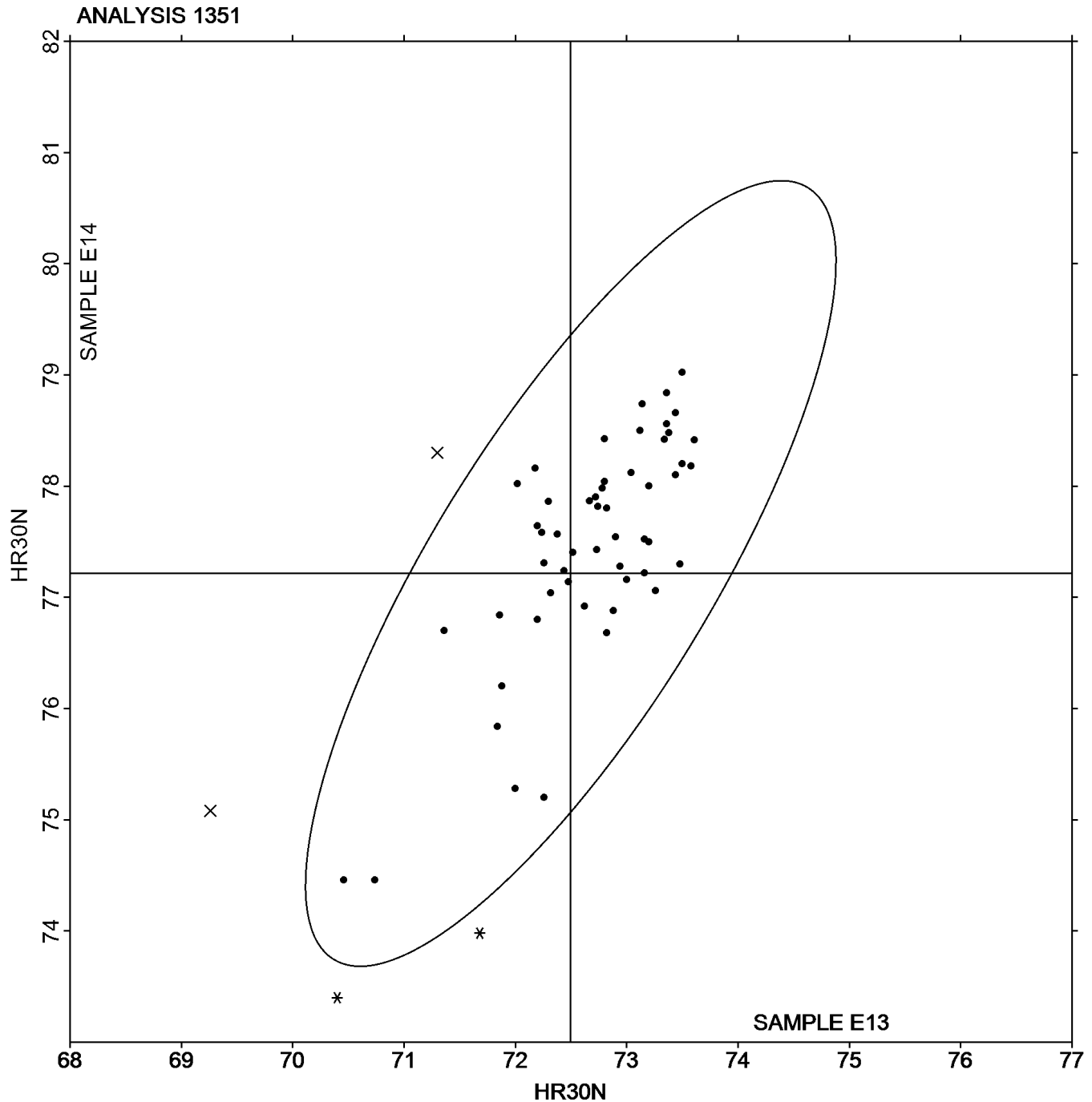
ASTM E18

SAMPLE E13

72.50 HR30N

SAMPLE E14

77.21 HR30N





Fasteners and Metals Interlaboratory Testing Program

Analysis 1401

Total Case Depth
SAE J423, SAE J78

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample C13			Sample C14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2XTHNX	*	0.0146	-0.0103	-2.59	0.0196	-0.0092	-2.45
2ZARFH		0.0261	0.0012	0.29	0.0299	0.0011	0.29
38U6FV		0.0202	-0.0047	-1.18	0.0239	-0.0049	-1.29
3VG3UX		0.0152	-0.0097	-2.44	0.0194	-0.0094	-2.50
43CHMA		0.0284	0.0035	0.87	0.0290	0.0002	0.05
7D287E		0.0286	0.0037	0.92	0.0335	0.0047	1.24
7NLJVB		0.0294	0.0045	1.13	0.0292	0.0004	0.10
ANCJC8		0.0275	0.0025	0.64	0.0327	0.0039	1.03
BJWGVU	X	0.0240	-0.0009	-0.23	0.0216	-0.0072	-1.92
CHV7CW		0.0266	0.0017	0.42	0.0302	0.0014	0.37
DAZFE3		0.0298	0.0049	1.22	0.0346	0.0058	1.54
E67QL3		0.0184	-0.0065	-1.64	0.0204	-0.0084	-2.23
EU3M87		0.0271	0.0022	0.54	0.0282	-0.0006	-0.16
FVPPHD		0.0214	-0.0035	-0.89	0.0264	-0.0024	-0.64
H8F3RT		0.0233	-0.0017	-0.42	0.0287	-0.0001	-0.03
J3YDPV		0.0248	-0.0001	-0.03	0.0292	0.0004	0.10
J8EN4Z		0.0216	-0.0033	-0.83	0.0261	-0.0027	-0.71
JFN84B		0.0242	-0.0007	-0.17	0.0276	-0.0012	-0.32
K7EZ2F		0.0258	0.0009	0.22	0.0296	0.0008	0.21
KF3YTL		0.0324	0.0075	1.88	0.0326	0.0038	1.01
KPDXMW	X	0.0376	0.0126	3.17	0.0442	0.0154	4.08
L3WZLZ	X	0.0290	0.0041	1.03	0.0252	-0.0036	-0.97
L87HGL		0.0209	-0.0041	-1.02	0.0273	-0.0015	-0.40
M8JBVV		0.0220	-0.0029	-0.74	0.0290	0.0002	0.05
MHNGN4		0.0298	0.0049	1.23	0.0320	0.0032	0.85
MK9AZ7		0.0165	-0.0085	-2.13	0.0217	-0.0071	-1.88
MZ6NXE		0.0246	-0.0003	-0.08	0.0288	0.0000	0.00
N6W398		0.0264	0.0015	0.37	0.0300	0.0012	0.32
N7669K		0.0236	-0.0013	-0.32	0.0265	-0.0023	-0.62
PUABBG		0.0302	0.0053	1.32	0.0336	0.0048	1.27
RG82AB	X	0.0218	-0.0031	-0.79	0.0340	0.0052	1.38
TNU44Z		0.0260	0.0011	0.27	0.0300	0.0012	0.32
TPHK92		0.0248	-0.0001	-0.03	0.0272	-0.0016	-0.43
U783NN		0.0238	-0.0011	-0.28	0.0312	0.0024	0.64
UEXNRZ		0.0246	-0.0004	-0.09	0.0281	-0.0007	-0.18
UPE9XQ		0.0274	0.0024	0.61	0.0339	0.0050	1.34
V4Q8HG		0.0260	0.0011	0.27	0.0302	0.0014	0.37
VECJL8		0.0246	-0.0004	-0.09	0.0291	0.0003	0.08
W24ZNC		0.0246	-0.0003	-0.08	0.0256	-0.0032	-0.85
W3YGZA		0.0315	0.0066	1.65	0.0366	0.0078	2.07
WEURB2		0.0296	0.0047	1.17	0.0324	0.0036	0.95
XTQGTJ		0.0246	-0.0003	-0.08	0.0260	-0.0028	-0.75
Z4JK8X		0.0250	0.0000	0.01	0.0294	0.0006	0.17
ZCVGC4		0.0232	-0.0017	-0.43	0.0288	0.0000	0.00
ZGPLRU		0.0266	0.0017	0.42	0.0302	0.0014	0.38
ZQ4QGC		0.0228	-0.0021	-0.53	0.0292	0.0004	0.12
ZWZEBQ		0.0244	-0.0005	-0.13	0.0276	-0.0012	-0.32



Fasteners and Metals Interlaboratory Testing Program

Analysis 1401

Total Case Depth
SAE J423, SAE J78

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample C13			Sample C14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
ZZJ9CX		0.0280	0.0031	0.78	0.0323	0.0035	0.92

Summary Statistics

	Sample C13		Sample C14	
Grand Means	0.0249	inches	0.0288	inches
Std Dev Btwn Labs	0.0040	inches	0.0038	inches

Samples C13, C14 : Steel, Steel

Statistics based on 44 of 48 reporting participants

Comments on Assigned Data Flags for Test #1401

BJWGVU (X) - Inconsistent in testing between samples.

KPDXMW (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample C14.

L3WZLZ (X) - Inconsistent in testing between samples.

RG82AB (X) - Inconsistent in testing between samples.



Analysis 1401

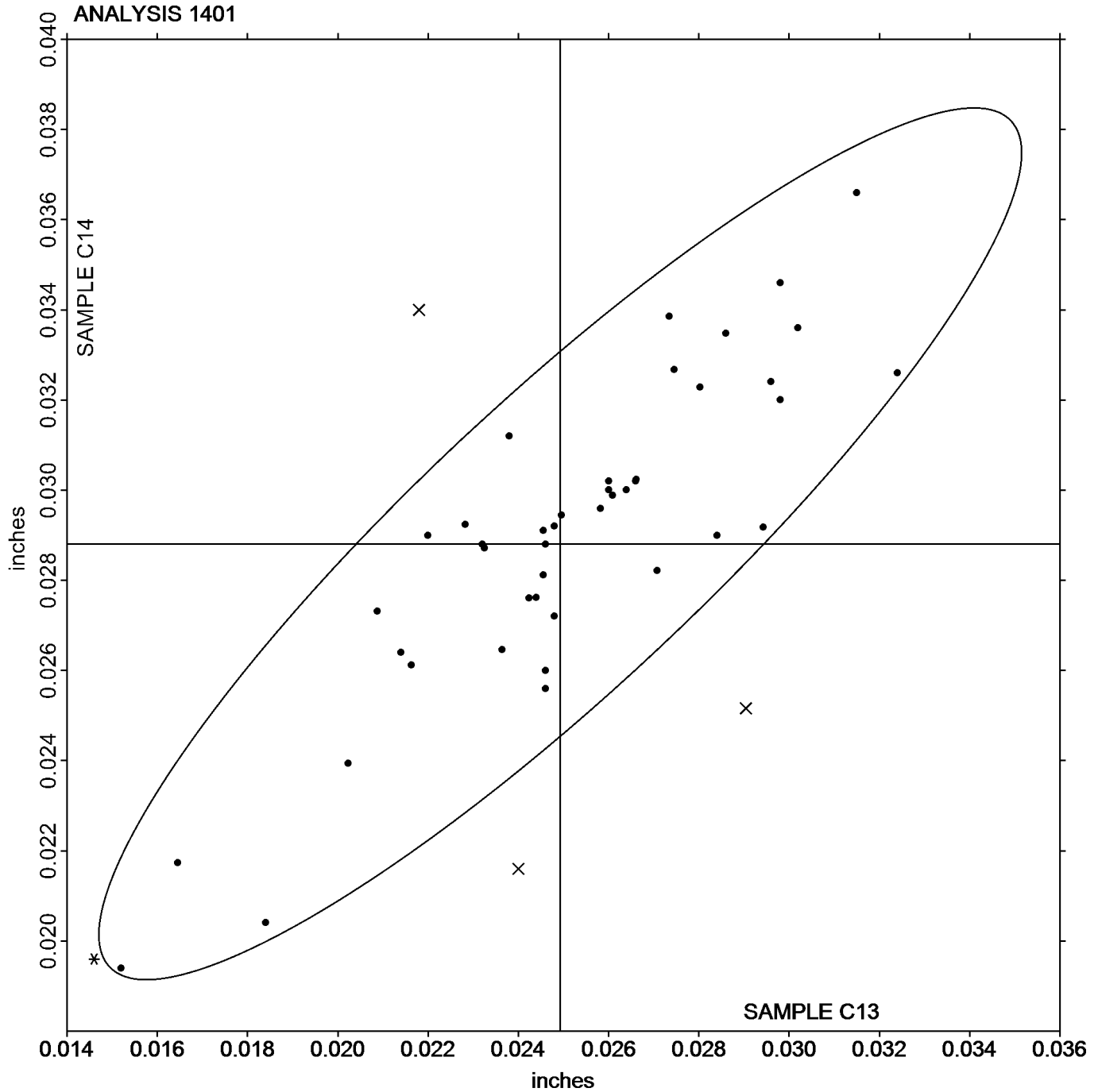
Total Case Depth
SAE J423, SAE J78

SAMPLE C13

0.0249 inches

SAMPLE C14

0.0288 inches





Fasteners and Metals Interlaboratory Testing Program

Analysis 1402

Effective Case Depth
SAE J423, SAE J78

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample C13			Sample C14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2HD7AJ		0.0206	-0.0024	-1.48	0.0263	-0.0008	-0.59
2ZARFH		0.0252	0.0023	1.38	0.0283	0.0012	0.82
38U6FV		0.0215	-0.0015	-0.91	0.0256	-0.0015	-1.06
3DLCX4		0.0230	0.0000	0.01	0.0292	0.0021	1.46
43CHMA		0.0248	0.0018	1.12	0.0268	-0.0003	-0.22
6A8V7A		0.0210	-0.0020	-1.20	0.0287	0.0016	1.09
7D287E		0.0235	0.0006	0.35	0.0280	0.0009	0.65
7HLYVN		0.0200	-0.0030	-1.82	0.0274	0.0003	0.20
7NLJVX		0.0227	-0.0003	-0.20	0.0273	0.0001	0.10
8TVWDW		0.0226	-0.0004	-0.23	0.0242	-0.0029	-2.03
9F27LP		0.0248	0.0018	1.12	0.0256	-0.0015	-1.05
A2ZMT6		0.0243	0.0013	0.79	0.0262	-0.0009	-0.65
ANCJC8		0.0217	-0.0013	-0.80	0.0286	0.0015	1.02
BJWGVU		0.0232	0.0002	0.14	0.0254	-0.0017	-1.19
CHV7CW		0.0208	-0.0022	-1.33	0.0256	-0.0015	-1.05
D33V3Y		0.0238	0.0008	0.48	0.0273	0.0002	0.15
D72Z6K		0.0246	0.0016	0.99	0.0292	0.0021	1.44
DAZFE3		0.0218	-0.0012	-0.71	0.0258	-0.0013	-0.94
E67QL3		0.0202	-0.0028	-1.70	0.0246	-0.0025	-1.75
EK3UBM		0.0209	-0.0020	-1.24	0.0285	0.0014	0.98
EU3M87		0.0238	0.0008	0.50	0.0260	-0.0011	-0.77
FVPPHD		0.0224	-0.0006	-0.35	0.0276	0.0005	0.34
GVMD82		0.0229	-0.0001	-0.04	0.0277	0.0006	0.43
H8F3RT		0.0232	0.0003	0.15	0.0280	0.0009	0.65
J3YDPV		0.0230	0.0000	0.01	0.0274	0.0003	0.20
J8EN4Z		0.0216	-0.0013	-0.82	0.0261	-0.0010	-0.69
JFN84B		0.0228	-0.0002	-0.11	0.0262	-0.0009	-0.63
K7EZ2F		0.0237	0.0007	0.44	0.0269	-0.0003	-0.18
KPDXMW		0.0266	0.0036	2.19	0.0295	0.0024	1.67
L3WZLZ	X	0.0236	0.0006	0.38	0.0224	-0.0047	-3.29
L87HGL		0.0252	0.0022	1.37	0.0292	0.0020	1.43
M8JBVW		0.0234	0.0004	0.26	0.0278	0.0007	0.48
MHNGN4		0.0204	-0.0026	-1.58	0.0258	-0.0013	-0.93
MK9AZ7	*	0.0187	-0.0043	-2.64	0.0258	-0.0013	-0.90
MZ6NXE		0.0228	-0.0002	-0.11	0.0270	-0.0001	-0.08
N6W398		0.0242	0.0012	0.75	0.0252	-0.0019	-1.33
N7669K		0.0238	0.0008	0.49	0.0265	-0.0006	-0.41
RG82AB		0.0226	-0.0004	-0.23	0.0280	0.0009	0.62
TNU44Z		0.0228	-0.0002	-0.11	0.0270	-0.0001	-0.08
TPHK92		0.0248	0.0018	1.12	0.0272	0.0001	0.06
U783NN		0.0234	0.0004	0.26	0.0300	0.0029	2.02
UEXNRZ		0.0221	-0.0009	-0.52	0.0260	-0.0011	-0.76
UFVWVD		0.0228	-0.0002	-0.11	0.0298	0.0027	1.88
UKRDH7		0.0236	0.0006	0.40	0.0280	0.0008	0.59
UPE9XQ		0.0236	0.0006	0.38	0.0275	0.0004	0.26
V4Q8HG		0.0240	0.0010	0.63	0.0280	0.0009	0.62
VECJL8		0.0231	0.0001	0.08	0.0275	0.0004	0.27



Fasteners and Metals Interlaboratory Testing Program

Analysis 1402

Effective Case Depth
SAE J423, SAE J78

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample C13			Sample C14		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VH2JB4		0.0252	0.0022	1.36	0.0286	0.0015	1.03
VV2MBN		0.0198	-0.0031	-1.92	0.0252	-0.0019	-1.31
W24ZNC	*	0.0210	-0.0020	-1.21	0.0228	-0.0043	-3.01
W3YGZA		0.0242	0.0012	0.75	0.0284	0.0013	0.90
WAG3VY	*	0.0272	0.0042	2.59	0.0268	-0.0003	-0.22
WAGZ4A		0.0232	0.0003	0.16	0.0279	0.0008	0.57
WEURB2		0.0236	0.0006	0.38	0.0290	0.0019	1.32
WWUQJP		0.0224	-0.0006	-0.37	0.0274	0.0002	0.17
XTQGTJ		0.0240	0.0010	0.63	0.0270	-0.0001	-0.08
Z4JK8X		0.0236	0.0007	0.41	0.0277	0.0006	0.42
ZCVGC4		0.0224	-0.0006	-0.35	0.0255	-0.0016	-1.12
ZGPLRU		0.0227	-0.0003	-0.18	0.0261	-0.0010	-0.73
ZWLMMF		0.0220	-0.0009	-0.57	0.0276	0.0005	0.32
ZWZEBQ		0.0225	-0.0005	-0.28	0.0262	-0.0009	-0.63
ZZJ9CX		0.0253	0.0023	1.42	0.0274	0.0003	0.24

Summary Statistics

	Sample C13		Sample C14	
Grand Means	0.0230	inches	0.0271	inches
Std Dev Btwn Labs	0.0016	inches	0.0014	inches

Samples C13, C14 : Steel, Steel

Statistics based on 61 of 62 reporting participants

Comments on Assigned Data Flags for Test #1402

L3WZLZ (X) - Data for sample C14 are low. Inconsistent within the determinations of both samples.



Analysis 1402

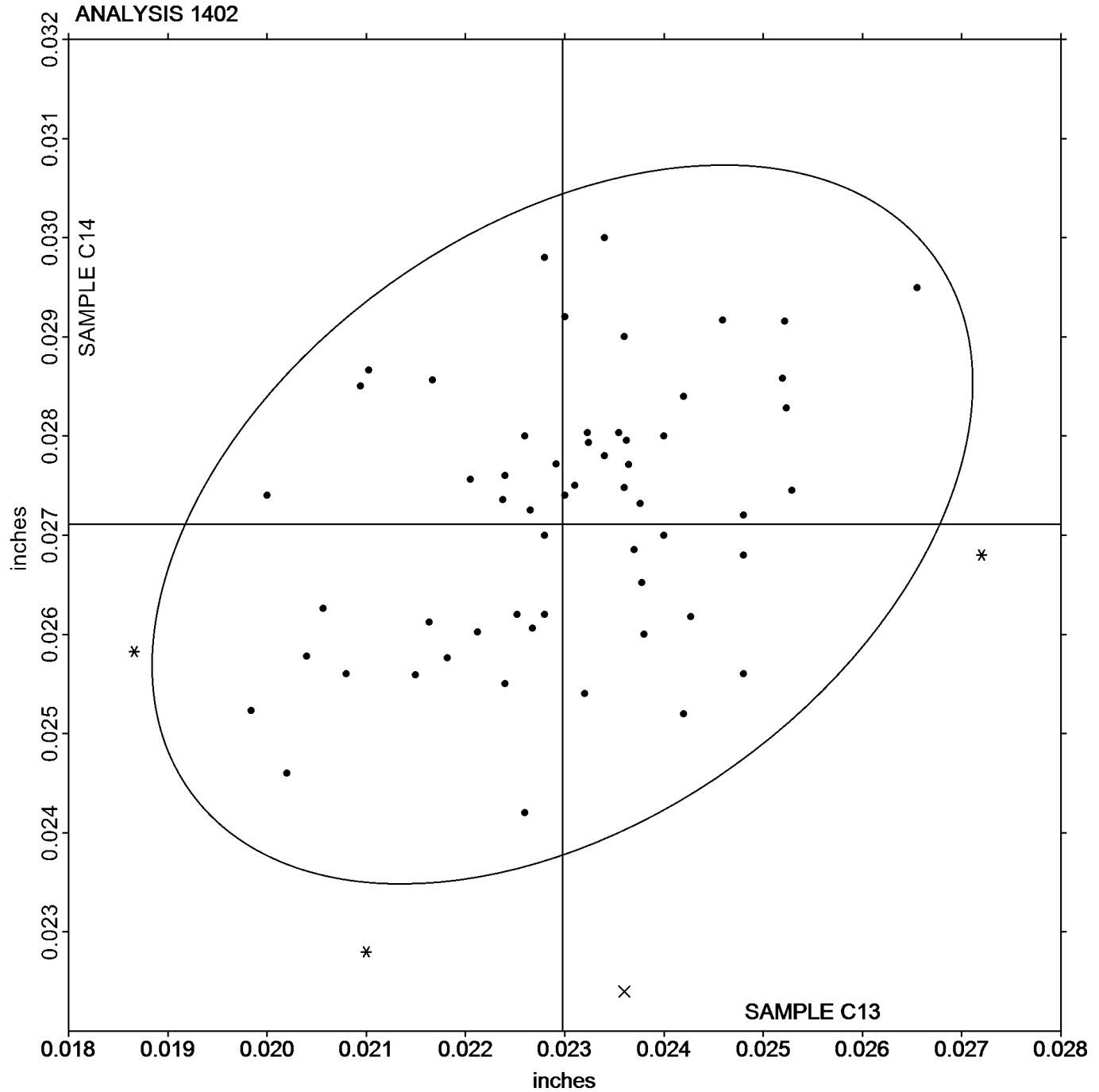
Effective Case Depth
SAE J423, SAE J78

SAMPLE C13

0.0230 inches

SAMPLE C14

0.0271 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1412

Grain Size (Inconel)
ASTM E112, ASTM E1382

WebCode	Data Flag	Sample J13			Sample J14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
236AUQ		7.20	0.41	0.42	7.40	-0.74	-0.80	Comparison Method
34RDXH		6.50	-0.29	-0.30	8.00	-0.14	-0.15	Comparison Method
38U6FV		6.00	-0.79	-0.81	8.00	-0.14	-0.15	Comparison Method
44TGCT		6.50	-0.29	-0.30	8.50	0.36	0.39	Comparison Method
47UTNK		7.30	0.51	0.52	8.40	0.26	0.28	Comparison Method
6L6JGR		7.00	0.21	0.22	10.20	2.06	2.23	Comparison Method
6VCA6N		5.70	-1.09	-1.12	7.50	-0.64	-0.70	Comparison Method
6Z3QGE		5.44	-1.35	-1.39	9.38	1.24	1.34	Abrams Three-Circle
7NLJVX		5.60	-1.19	-1.22	8.00	-0.14	-0.15	Comparison Method
8DZJUJ		5.90	-0.89	-0.92	7.60	-0.54	-0.59	Comparison Method
9GXYML		5.80	-0.99	-1.02	8.30	0.16	0.17	Comparison Method
ANCJC8	M	5.60	-1.19	-1.22	No Data Reported			Comparison Method
BT2FE4		5.50	-1.29	-1.33	7.40	-0.74	-0.80	Comparison Method
BT66R2		6.30	-0.49	-0.50	7.90	-0.24	-0.26	Comparison Method
BT68G7		6.80	0.01	0.01	7.80	-0.34	-0.37	Comparison Method
BWKPLU		7.00	0.21	0.22	7.50	-0.64	-0.70	Comparison Method
CRLGUE		8.66	1.87	1.92	8.94	0.80	0.86	Heyn Linear Intercept
D8XGGG		6.00	-0.79	-0.81	8.00	-0.14	-0.15	Comparison Method
DEBCBP		7.80	1.01	1.04	9.30	1.16	1.25	Comparison Method
DKKNCW		7.20	0.41	0.42	9.20	1.06	1.14	N/A
E67QL3	M	7.60	0.81	0.83	No Data Reported			Comparison Method
K3FTCC		8.80	2.01	2.07	9.10	0.96	1.04	General Intercept
L3WZLZ		6.10	-0.69	-0.71	9.10	0.96	1.04	Comparison Method
LDYKM8		8.70	1.91	1.97	7.70	-0.44	-0.48	N/A
M3R3QV		7.00	0.21	0.22	8.00	-0.14	-0.15	Comparison Method
MJQFLP		7.70	0.91	0.94	8.00	-0.14	-0.15	Comparison Method
PLEBYA		6.30	-0.49	-0.50	7.00	-1.14	-1.24	Comparison Method
PN4VNE		7.90	1.11	1.14	8.00	-0.14	-0.15	Automatic Image Analysis
PR37KE		5.80	-0.99	-1.02	9.30	1.16	1.25	Comparison Method
QREAM4		6.50	-0.29	-0.30	6.50	-1.64	-1.78	Comparison Method
RCFPJL		6.01	-0.78	-0.81	8.62	0.48	0.52	General Intercept
THZ8CM		7.80	1.01	1.04	8.90	0.76	0.82	Comparison Method
TNU44Z		7.40	0.61	0.63	8.00	-0.14	-0.15	Comparison Method
U96PZY		6.10	-0.69	-0.71	7.70	-0.44	-0.48	Comparison Method
UVGH6H		6.60	-0.19	-0.20	8.10	-0.04	-0.05	Abrams Three-Circle
UW2ZJQ		6.00	-0.79	-0.81	7.00	-1.14	-1.24	Comparison Method
V4Q8HG		7.30	0.51	0.52	8.50	0.36	0.39	Comparison Method
WEURB2	*	5.00	-1.79	-1.84	6.00	-2.14	-2.32	Comparison Method
XDQGZQ		7.30	0.51	0.52	9.00	0.86	0.93	Comparison Method
XLQWN4		7.30	0.51	0.52	8.90	0.76	0.82	Comparison Method
Y2EGXV	*	8.40	1.61	1.66	6.40	-1.74	-1.89	Comparison Method
Y9V98U		6.00	-0.79	-0.81	6.60	-1.54	-1.67	Comparison Method
ZCVGC4		6.40	-0.39	-0.40	8.20	0.06	0.06	Comparison Method
ZEXJTT		8.48	1.69	1.74	9.91	1.76	1.91	General Intercept
ZQ4QGC		6.90	0.11	0.11	8.30	0.16	0.17	Comparison Method



Fasteners and Metals Interlaboratory Testing Program
Analysis 1412
Grain Size (Inconel)
ASTM E112, ASTM E1382

Cycle 152
4th Qtr 2025

Summary Statistics

	<u>Sample J13</u>		<u>Sample J14</u>	
Grand Means	6.790	ASTM Grain Size	8.143	ASTM Grain Size
Stnd Dev Btwn Labs	0.972	ASTM Grain Size	0.925	ASTM Grain Size

Samples J13, J14 : Inco 718, Inco 625

Statistics based on 43 of 45 reporting participants

Comments on Assigned Data Flags for Test #1412

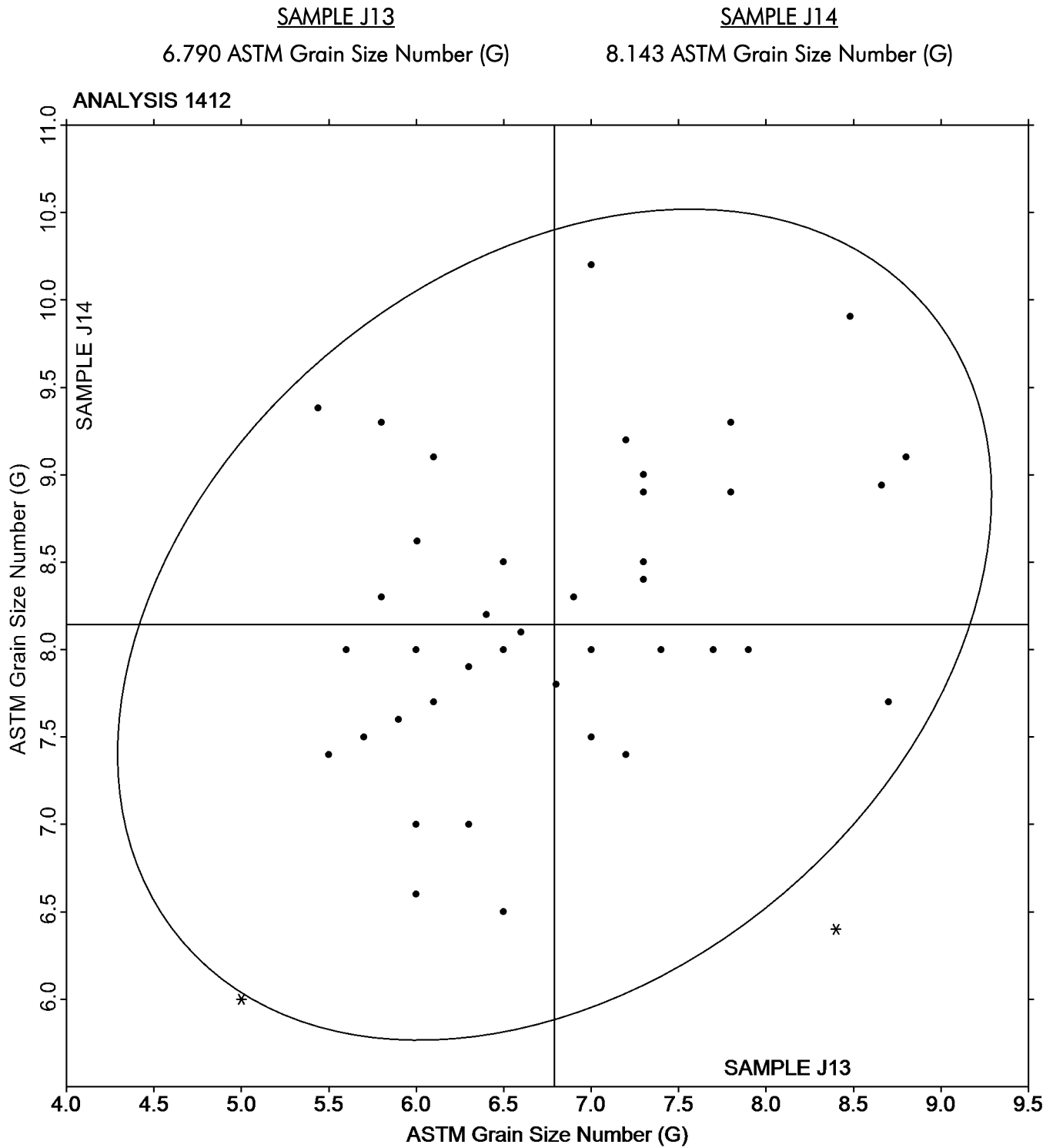
ANCJC8 (M) - Participant did not submit data for sample J14.

E67QL3 (M) - Participant did not submit data for sample J14.



Analysis 1412

Grain Size (Inconel)
ASTM E112, ASTM E1382



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****4th Qtr 2025****Analysis 1540****Aluminum, ZINC (Zn)
ZINC (Zn)**

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.1327	-0.0013	-0.30	0.1013	-0.0021	-0.63	OE
3FNG3B		0.1320	-0.0019	-0.46	0.1047	0.0013	0.38	OE
6H2Y27		0.1337	-0.0003	-0.06	0.1033	-0.0001	-0.03	OE
AFUBNB	*	0.1240	-0.0099	-2.35	0.1020	-0.0014	-0.43	IC
AFUDDF		0.1327	-0.0013	-0.30	0.1027	-0.0007	-0.23	IC
B8YVCC		0.1346	0.0006	0.15	0.1036	0.0002	0.07	OE
BUV7JH		0.1330	-0.0009	-0.22	0.1005	-0.0029	-0.89	XX
CJQMPT		0.1317	-0.0023	-0.54	0.1040	0.0006	0.18	XX
CK9R8R	X	0.1767	0.0427	10.11	0.1400	0.0366	11.15	XX
DX6ADH		0.1350	0.0011	0.25	0.1023	-0.0011	-0.33	IC
EX22RB		0.1370	0.0031	0.72	0.1053	0.0019	0.58	OE
EZ4Y34		0.1387	0.0048	1.13	0.1071	0.0036	1.11	OE
F4JUJ2		0.1306	-0.0033	-0.79	0.1012	-0.0022	-0.69	OE
FK78V8		0.1353	0.0014	0.33	0.1047	0.0013	0.38	XX
FXGQJU		0.1323	-0.0016	-0.38	0.1029	-0.0005	-0.15	OE
GFYVYK	X	0.1110	-0.0229	-5.43	0.0910	-0.0124	-3.78	GD
H9CJ6Q		0.1362	0.0022	0.53	0.1065	0.0031	0.93	OE
HPEBUY		0.1323	-0.0016	-0.38	0.1020	-0.0014	-0.43	OE
JYWBP9		0.1323	-0.0016	-0.38	0.1037	0.0003	0.08	IC
K7EZ2F		0.1400	0.0061	1.43	0.1100	0.0066	2.01	OE
L3WZLZ		0.1353	0.0014	0.33	0.1040	0.0006	0.18	OE
L87HGL		0.1350	0.0011	0.25	0.1027	-0.0007	-0.23	IC
LBVH6H		0.1293	-0.0046	-1.09	0.0990	-0.0044	-1.36	XX
LCYLAZ		0.1273	-0.0066	-1.56	0.1007	-0.0027	-0.84	DR
MK9AMY		0.1320	-0.0019	-0.45	0.0980	-0.0054	-1.65	OE
MNT86N	*	0.1400	0.0061	1.43	0.1000	-0.0034	-1.04	OE
MZ6NXE		0.1293	-0.0046	-1.09	0.0993	-0.0041	-1.24	IC
NRNGQA		0.1353	0.0014	0.33	0.1043	0.0009	0.28	OE
PN4VNE	X	0.1333	-0.0006	-0.14	0.0933	-0.0101	-3.07	ED
PPYBZB		0.1343	0.0004	0.09	0.1037	0.0003	0.08	XX
QB2YJP	*	0.1465	0.0125	2.96	0.1132	0.0098	2.98	OE
RQJ2Z7		0.1340	0.0001	0.01	0.1020	-0.0014	-0.43	OE
RRRBY6		0.1297	-0.0043	-1.01	0.1040	0.0006	0.18	OE
TZ86ZT		0.1267	-0.0072	-1.70	0.0967	-0.0067	-2.05	OE
U4V4EM		0.1343	0.0004	0.09	0.1026	-0.0008	-0.26	OE
UUL3TL		0.1313	-0.0027	-0.63	0.1033	-0.0002	-0.05	OE
WHR2PA		0.1352	0.0013	0.30	0.1038	0.0004	0.12	OE
WJR6GZ		0.1350	0.0011	0.25	0.1027	-0.0007	-0.23	OE
WUJXGA	*	0.1467	0.0127	3.01	0.1113	0.0079	2.41	OE
XTNRL2		0.1377	0.0037	0.88	0.1053	0.0019	0.58	OE
ZGPLRU		0.1307	-0.0033	-0.78	0.1033	-0.0001	-0.03	OE
ZMBL2F		0.1301	-0.0039	-0.92	0.1009	-0.0025	-0.78	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1540 Aluminum, ZINC (Zn) ZINC (Zn)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.1339	Percent	0.1034	Percent
Std Dev Btwn Labs	0.0042	Percent	0.0033	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 37 of 42 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

CK9R8R (X) - Data for both samples are high. Inconsistent within the determinations of sample A13.

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

PN4VNE (X) - Data for sample A14 are low. Inconsistent within the determinations of both samples.

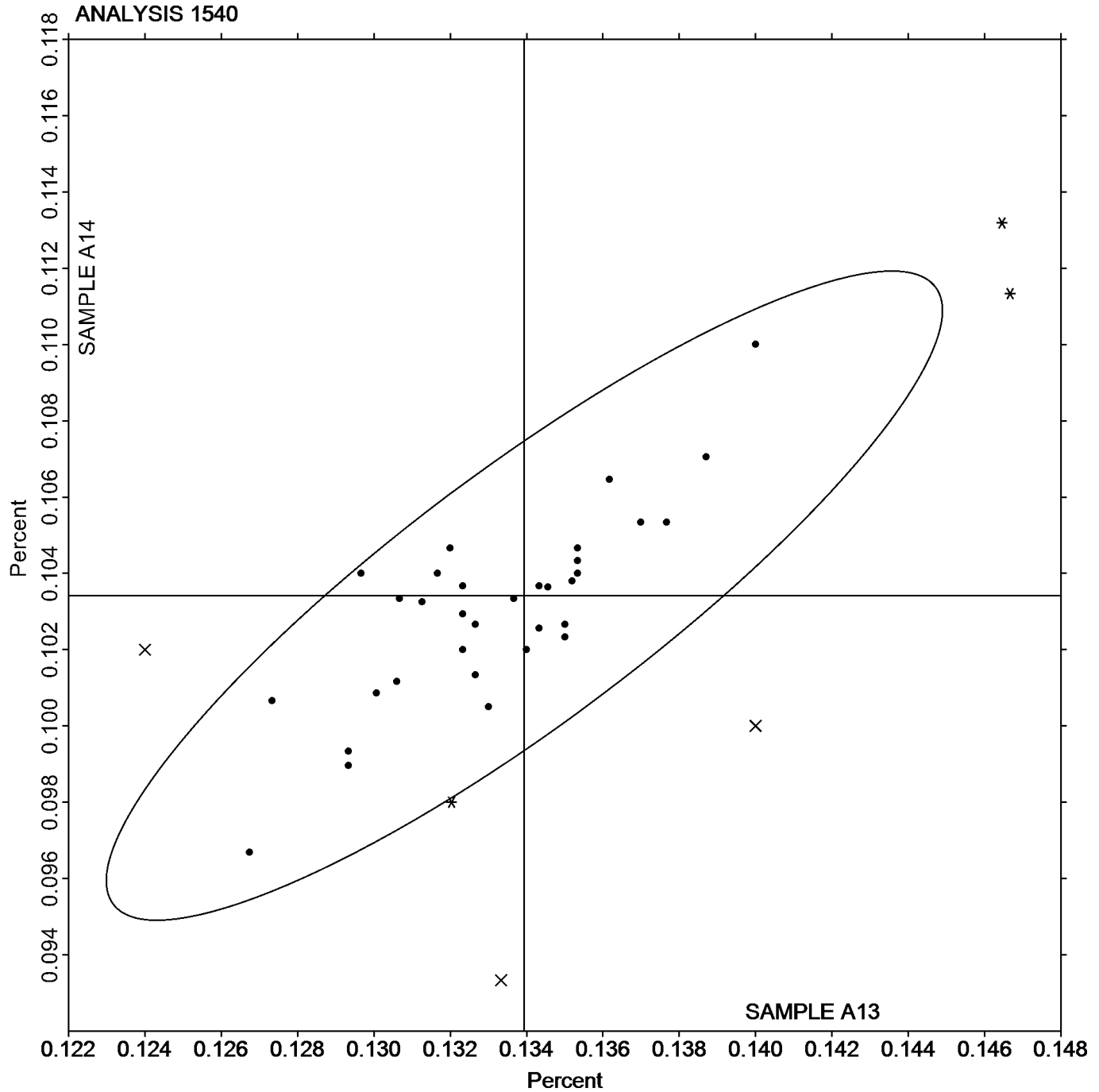


Analysis 1540

Aluminum, ZINC (Zn)
ZINC (Zn)

SAMPLE A13
0.1339 Percent

SAMPLE A14
0.1034 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1541

Aluminum, COPPER (Cu)
COPPER (Cu)

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.1903	-0.0010	-0.15	0.2800	-0.0007	-0.09	OE
3FNG3B		0.1960	0.0047	0.75	0.2887	0.0080	1.02	OE
6H2Y27		0.1910	-0.0003	-0.05	0.2800	-0.0007	-0.09	OE
AFUBNB		0.1970	0.0057	0.91	0.2900	0.0093	1.19	IC
AFUDDF		0.1937	0.0024	0.38	0.2833	0.0026	0.34	IC
B8YVCC		0.1908	-0.0005	-0.08	0.2786	-0.0021	-0.27	OE
BUV7JH	X	0.1715	-0.0198	-3.14	0.2460	-0.0347	-4.45	XX
CJQMPT		0.1763	-0.0150	-2.37	0.2660	-0.0147	-1.89	XX
CK9R8R	X	0.1600	-0.0313	-4.96	0.2400	-0.0407	-5.22	XX
DX6ADH		0.1933	0.0020	0.31	0.2837	0.0030	0.38	IC
EX22RB		0.1897	-0.0016	-0.26	0.2753	-0.0054	-0.69	OE
EZ4Y34		0.1921	0.0008	0.13	0.2818	0.0010	0.13	OE
F4JUJ2		0.1915	0.0002	0.03	0.2810	0.0003	0.04	OE
FK78V8		0.1947	0.0034	0.54	0.2830	0.0023	0.29	XX
FXGQJU		0.1883	-0.0030	-0.47	0.2764	-0.0043	-0.55	OE
GFYVYK		0.1980	0.0067	1.06	0.2850	0.0043	0.55	GD
H9CJ6Q		0.2006	0.0093	1.47	0.2914	0.0107	1.37	OE
HPEBUY		0.1937	0.0024	0.38	0.2850	0.0043	0.55	OE
JYWBP9		0.1913	0.0000	0.01	0.2847	0.0040	0.51	IC
K7EZ2F	*	0.2067	0.0154	2.44	0.3033	0.0226	2.90	OE
L3WZLZ		0.1867	-0.0046	-0.73	0.2770	-0.0037	-0.48	OE
L87HGL		0.1933	0.0020	0.32	0.2823	0.0016	0.21	IC
LBVH6H		0.1803	-0.0110	-1.74	0.2677	-0.0130	-1.67	XX
LCYLAZ		0.1927	0.0014	0.22	0.2877	0.0070	0.89	DR
MK9AMY		0.1938	0.0025	0.40	0.2803	-0.0004	-0.05	OE
MNT86N		0.1903	-0.0010	-0.15	0.2780	-0.0027	-0.35	XX
MZ6NXE	*	0.1913	0.0000	0.01	0.2693	-0.0114	-1.46	IC
NRNGQA		0.1913	0.0000	0.01	0.2850	0.0043	0.55	OE
PPYBZB		0.1883	-0.0030	-0.47	0.2763	-0.0044	-0.56	XX
QB2YJP		0.1784	-0.0129	-2.04	0.2675	-0.0132	-1.69	OE
RQJ2Z7		0.1973	0.0060	0.96	0.2883	0.0076	0.98	OE
RRRBY6		0.1943	0.0030	0.48	0.2793	-0.0014	-0.18	OE
TZ86ZT	X	0.1759	-0.0154	-2.44	0.2449	-0.0358	-4.59	OE
U4V4EM		0.1941	0.0028	0.45	0.2815	0.0008	0.10	OE
UUL3TL		0.1847	-0.0066	-1.05	0.2741	-0.0066	-0.85	OE
WHR2PA		0.1878	-0.0035	-0.55	0.2786	-0.0021	-0.27	OE
WJR6GZ		0.1960	0.0047	0.75	0.2863	0.0056	0.72	OE
WUJXGA		0.1897	-0.0016	-0.26	0.2767	-0.0040	-0.52	OE
XTNRL2	*	0.1753	-0.0160	-2.53	0.2593	-0.0214	-2.74	OE
ZGPLRU		0.1963	0.0050	0.80	0.2827	0.0020	0.25	OE
ZMBL2F		0.1921	0.0008	0.13	0.2803	-0.0004	-0.05	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1541

Aluminum, COPPER (Cu)
COPPER (Cu)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.1913	Percent	0.2807	Percent
Std Dev Btwn Labs	0.0063	Percent	0.0078	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 37 of 41 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	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 #1541

BUV7JH (X) - Data for both samples are low.

CK9R8R (X) - Data for both samples are low.

TZ86ZT (X) - Data for sample A14 are low.



Analysis 1541

Aluminum, COPPER (Cu)

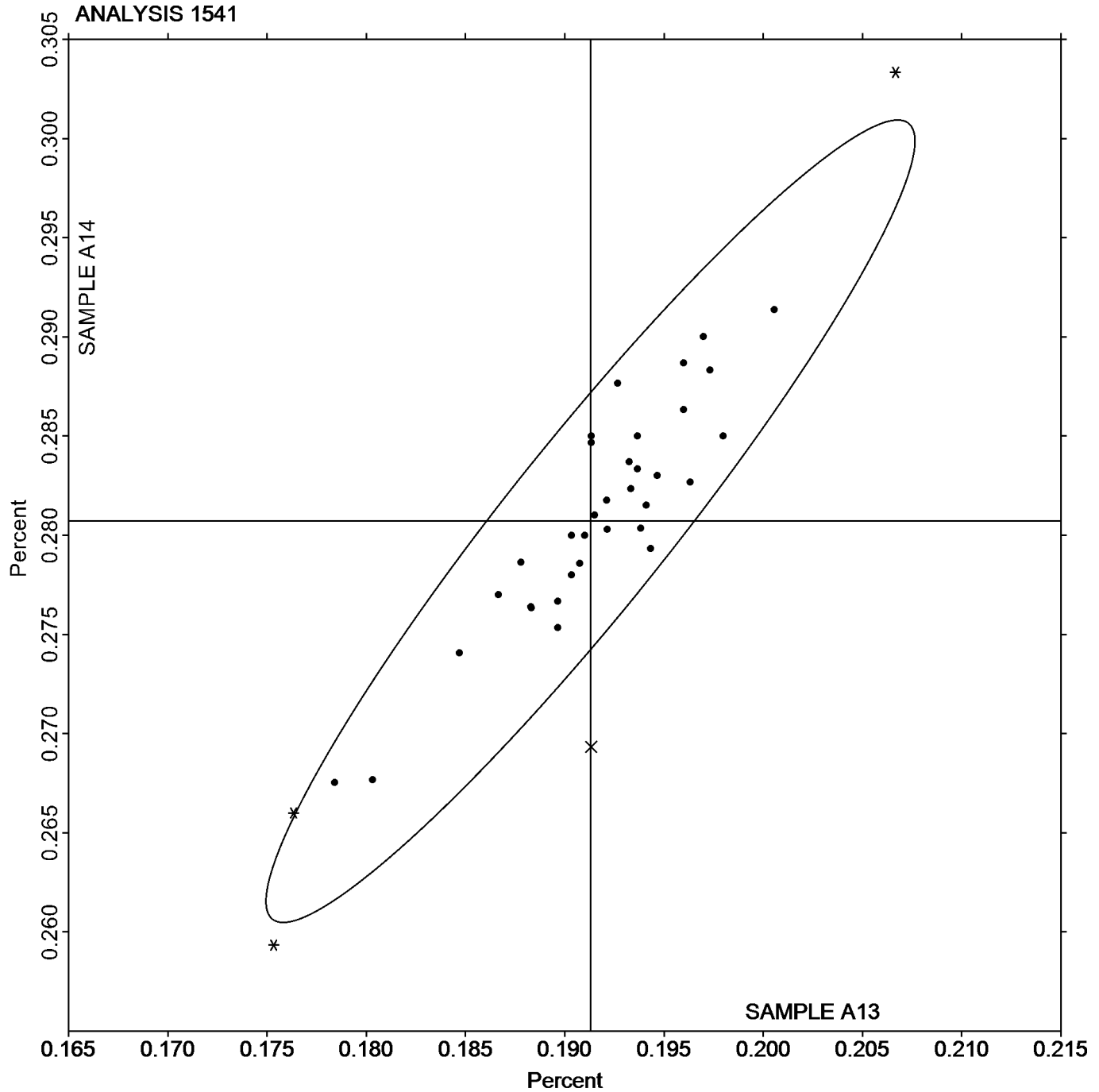
COPPER (Cu)

SAMPLE A13

0.1913 Percent

SAMPLE A14

0.2807 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****Analysis 1542****4th Qtr 2025****Aluminum, IRON (Fe)
IRON (Fe)**

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.6077	-0.0059	-0.29	0.3673	0.0013	0.10	OE
3FNG3B		0.6443	0.0307	1.52	0.3927	0.0266	2.14	OE
6H2Y27		0.6143	0.0007	0.04	0.3750	0.0089	0.72	OE
AFUBNB		0.6240	0.0104	0.51	0.3750	0.0089	0.72	IC
AFUDDF		0.6193	0.0057	0.28	0.3660	-0.0001	-0.01	XX
B8YVCC		0.6268	0.0132	0.65	0.3759	0.0098	0.79	OE
BUV7JH		0.5700	-0.0436	-2.16	0.3375	-0.0286	-2.30	XX
CJQMPT		0.6217	0.0081	0.40	0.3640	-0.0021	-0.17	XX
CK9R8R		0.6167	0.0031	0.15	0.3800	0.0139	1.12	XX
DX6ADH		0.6164	0.0028	0.14	0.3640	-0.0020	-0.16	IC
EX22RB	X	0.6120	-0.0016	-0.08	0.3277	-0.0384	-3.10	OE
EZ4Y34		0.6083	-0.0053	-0.26	0.3763	0.0102	0.82	OE
F4JUJ2		0.6101	-0.0035	-0.18	0.3629	-0.0031	-0.25	XX
FK78V8		0.6163	0.0027	0.13	0.3623	-0.0037	-0.30	XX
FXGQJU		0.5917	-0.0219	-1.09	0.3565	-0.0096	-0.78	OE
GFYVYK		0.6250	0.0114	0.56	0.3740	0.0079	0.64	GD
H9CJ6Q		0.5883	-0.0253	-1.25	0.3475	-0.0186	-1.50	OE
HPEBUY		0.6207	0.0071	0.35	0.3730	0.0069	0.56	OE
JYWBP9		0.6133	-0.0003	-0.01	0.3633	-0.0027	-0.22	IC
K7EZ2F		0.5767	-0.0369	-1.83	0.3433	-0.0227	-1.83	OE
L3WZLZ		0.6217	0.0081	0.40	0.3630	-0.0031	-0.25	OE
L87HGL		0.6167	0.0031	0.15	0.3633	-0.0027	-0.22	IC
LBVH6H		0.6120	-0.0016	-0.08	0.3670	0.0009	0.07	XX
LCYLAZ		0.6063	-0.0073	-0.36	0.3643	-0.0017	-0.14	DR
MK9AMY		0.6339	0.0203	1.00	0.3767	0.0106	0.85	OE
MNT86N		0.5893	-0.0243	-1.20	0.3550	-0.0111	-0.89	XX
MZ6NXE		0.6333	0.0197	0.98	0.3583	-0.0077	-0.62	IC
NRNGQA		0.6310	0.0174	0.86	0.3703	0.0043	0.34	OE
PPYBZB		0.6263	0.0127	0.63	0.3790	0.0129	1.04	XX
QB2YJP		0.5814	-0.0322	-1.59	0.3556	-0.0104	-0.84	OE
RQJ2Z7		0.6220	0.0084	0.41	0.3750	0.0089	0.72	OE
RRRBY6	X	0.5720	-0.0416	-2.06	0.3807	0.0146	1.18	OE
TZ86ZT		0.6125	-0.0011	-0.05	0.3678	0.0017	0.14	OE
U4V4EM		0.5851	-0.0285	-1.41	0.3398	-0.0263	-2.12	OE
UUL3TL		0.6043	-0.0093	-0.46	0.3626	-0.0035	-0.28	OE
WHR2PA		0.6401	0.0265	1.31	0.3876	0.0215	1.73	OE
WJR6GZ		0.6670	0.0534	2.64	0.3880	0.0219	1.77	OE
WUJXGA		0.5893	-0.0243	-1.20	0.3550	-0.0111	-0.89	OE
XTNRL2		0.5853	-0.0283	-1.40	0.3530	-0.0131	-1.05	OE
ZGPLRU		0.6287	0.0151	0.74	0.3680	0.0019	0.16	OE
ZMBL2F		0.6330	0.0194	0.96	0.3710	0.0049	0.39	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1542

Aluminum, IRON (Fe)
IRON (Fe)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.6136	Percent	0.3661	Percent
Std Dev Btwn Labs	0.0202	Percent	0.0124	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 39 of 41 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	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 #1542

EX22RB (X) - Data for sample A14 are low.

RRRBY6 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample A14.



Analysis 1542

Aluminum, IRON (Fe)

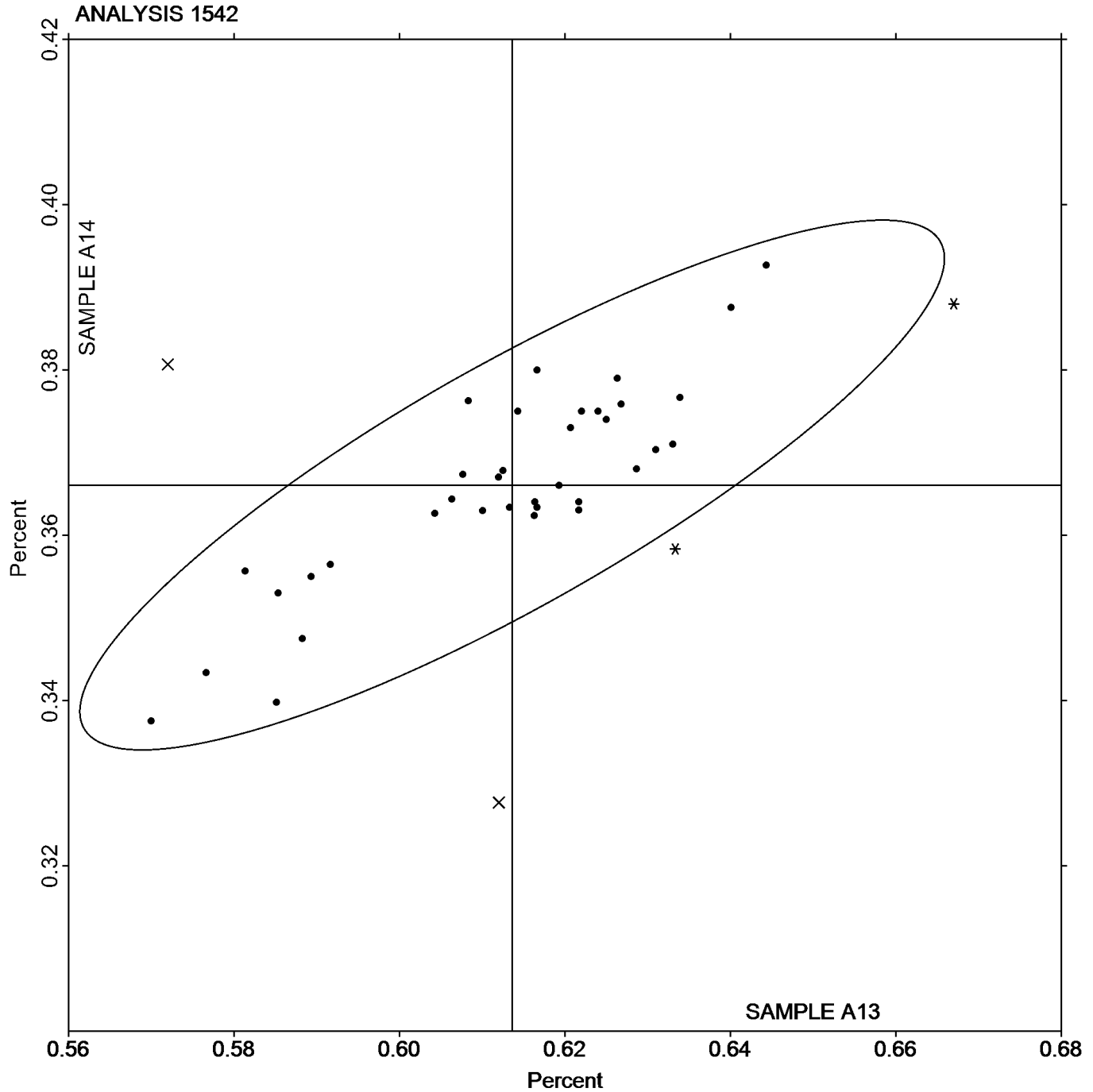
IRON (Fe)

SAMPLE A13

0.6136 Percent

SAMPLE A14

0.3661 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1543

Aluminum, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.7253	-0.0187	-0.84	0.7300	-0.0203	-1.08	OE
3FNG3B		0.7427	-0.0013	-0.06	0.7590	0.0087	0.46	OE
6H2Y27		0.7440	0.0000	0.00	0.7553	0.0051	0.27	OE
AFUBNB		0.7430	-0.0010	-0.05	0.7350	-0.0153	-0.81	IC
AFUDDF		0.7490	0.0050	0.22	0.7607	0.0104	0.55	WC
B8YVCC		0.7681	0.0241	1.08	0.7511	0.0008	0.04	OE
BUV7JH	X	0.6215	-0.1225	-5.49	0.6030	-0.1473	-7.82	XX
CJQMPT		0.7487	0.0047	0.21	0.7503	0.0001	0.00	XX
CK9R8R		0.6967	-0.0473	-2.12	0.7233	-0.0269	-1.43	XX
EX22RB		0.7200	-0.0240	-1.08	0.7200	-0.0303	-1.61	OE
EZ4Y34		0.7849	0.0409	1.83	0.7957	0.0455	2.41	OE
F4JUJ2		0.7373	-0.0067	-0.30	0.7399	-0.0104	-0.55	OE
FK78V8		0.7477	0.0037	0.16	0.7610	0.0107	0.57	XX
FXGQJU	*	0.6767	-0.0673	-3.02	0.6890	-0.0613	-3.25	OE
GFYVYK	X	0.6780	-0.0660	-2.96	0.7760	0.0257	1.37	GD
H9CJ6Q		0.7832	0.0392	1.76	0.7574	0.0071	0.38	OE
HPEBUY		0.7333	-0.0107	-0.48	0.7460	-0.0043	-0.23	OE
JYWBP9		0.7600	0.0160	0.72	0.7467	-0.0036	-0.19	IC
K7EZ2F	X	0.8500	0.1060	4.75	0.8300	0.0797	4.23	OE
L3WZLZ		0.7427	-0.0013	-0.06	0.7643	0.0141	0.75	OE
L87HGL		0.7317	-0.0123	-0.55	0.7423	-0.0079	-0.42	IC
LBVH6H		0.7680	0.0240	1.08	0.7743	0.0241	1.28	XX
LCYLAZ		0.7560	0.0120	0.54	0.7690	0.0187	0.99	DR
MK9AMY		0.7493	0.0053	0.24	0.7597	0.0094	0.50	OE
MNT86N		0.7277	-0.0163	-0.73	0.7420	-0.0083	-0.44	XX
MZ6NXE	X	0.6050	-0.1390	-6.23	0.6470	-0.1033	-5.48	IC
NRNGQA		0.7543	0.0103	0.46	0.7547	0.0044	0.23	OE
PPYBZB		0.7777	0.0337	1.51	0.7697	0.0194	1.03	XX
QB2YJP		0.7551	0.0111	0.50	0.7726	0.0224	1.19	OE
RQJ2Z7		0.7060	-0.0380	-1.70	0.7220	-0.0283	-1.50	OE
RRRBY6		0.7263	-0.0177	-0.79	0.7590	0.0087	0.46	OE
TZ86ZT		0.7394	-0.0046	-0.21	0.7438	-0.0065	-0.34	XX
U4V4EM		0.7613	0.0173	0.78	0.7614	0.0111	0.59	OE
UUL3TL		0.7278	-0.0162	-0.73	0.7396	-0.0107	-0.57	OE
WHR2PA		0.7463	0.0023	0.10	0.7516	0.0014	0.07	OE
WJR6GZ		0.7563	0.0123	0.55	0.7577	0.0074	0.39	OE
WUJXGA		0.7580	0.0140	0.63	0.7573	0.0071	0.38	OE
XTNRL2		0.7350	-0.0090	-0.40	0.7357	-0.0146	-0.78	OE
ZGPLRU		0.7553	0.0113	0.51	0.7550	0.0047	0.25	OE
ZMBL2F		0.7494	0.0054	0.24	0.7575	0.0073	0.39	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1543

Aluminum, SILICON (Si)
SILICON (Si)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.7440	Percent	0.7503	Percent
Stnd Dev Btwn Labs	0.0223	Percent	0.0188	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 36 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	GD	Spectrometry - Glow Discharge (GDS)
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

- BUV7JH (X) - Data for both samples are low. Possible Systematic Error.
- GFYVYK (X) - Data for sample A13 are low.
- K7EZ2F (X) - Data for both samples are high. Possible Systematic Error.
- MZ6NXE (X) - Data for both samples are low. Possible Systematic Error.

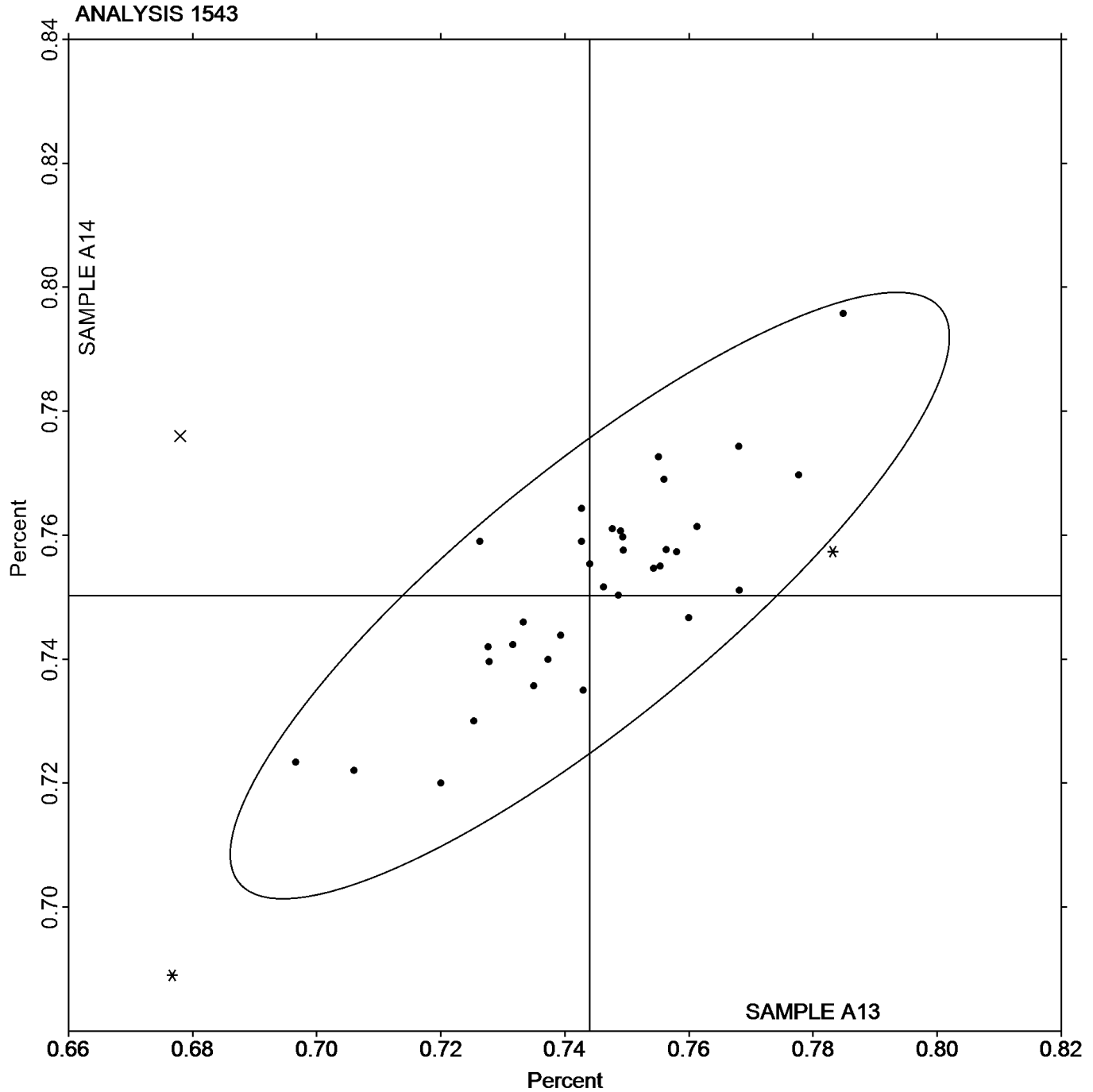


Analysis 1543

Aluminum, SILICON (Si)
SILICON (Si)

SAMPLE A13
0.7440 Percent

SAMPLE A14
0.7503 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****4th Qtr 2025****Analysis 1544****Aluminum, MANGANESE (Mn)
MANGANESE (Mn)**

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.1030	0.0006	0.11	0.0638	0.0037	1.35	OE
3FNG3B		0.1007	-0.0018	-0.37	0.0597	-0.0003	-0.12	OE
6H2Y27		0.1020	-0.0004	-0.09	0.0605	0.0005	0.18	OE
AFUBNB		0.1000	-0.0024	-0.51	0.0590	-0.0010	-0.38	IC
AFUDDF		0.1040	0.0016	0.32	0.0610	0.0010	0.35	OE
B8YVCC		0.1029	0.0005	0.09	0.0621	0.0020	0.74	OE
BUV7JH	*	0.0880	-0.0144	-3.01	0.0550	-0.0050	-1.84	XX
CJQMPT		0.1030	0.0006	0.11	0.0600	0.0000	-0.02	XX
CK9R8R	X	0.1200	0.0176	3.66	0.0730	0.0130	4.72	XX
DX6ADH		0.1017	-0.0008	-0.16	0.0604	0.0004	0.14	IC
EX22RB	X	0.1010	-0.0014	-0.30	0.0700	0.0100	3.63	OE
EZ4Y34		0.1110	0.0085	1.77	0.0652	0.0052	1.88	OE
F4JUJ2		0.1039	0.0015	0.30	0.0605	0.0005	0.16	OE
FK78V8		0.0973	-0.0051	-1.07	0.0579	-0.0021	-0.77	XX
FXGQJU		0.1109	0.0085	1.76	0.0666	0.0066	2.39	OE
GFYVYK		0.1080	0.0056	1.16	0.0633	0.0033	1.18	GD
H9CJ6Q		0.0963	-0.0061	-1.27	0.0554	-0.0046	-1.69	OE
HPEBUY		0.1023	-0.0001	-0.02	0.0600	0.0000	-0.02	OE
JYWBP9		0.0980	-0.0044	-0.93	0.0567	-0.0034	-1.23	IC
K7EZ2F		0.1100	0.0076	1.57	0.0600	0.0000	-0.02	OE
L3WZLZ		0.0983	-0.0041	-0.86	0.0577	-0.0024	-0.87	OE
L87HGL		0.1017	-0.0008	-0.16	0.0607	0.0007	0.25	IC
LBVH6H		0.1007	-0.0018	-0.37	0.0594	-0.0006	-0.22	XX
LCYLAZ		0.1043	0.0019	0.39	0.0610	0.0010	0.35	DR
MK9AMY		0.0966	-0.0058	-1.22	0.0597	-0.0004	-0.14	OE
MNT86N		0.1007	-0.0018	-0.37	0.0600	0.0000	-0.02	XX
MZ6NXE		0.1077	0.0052	1.09	0.0600	0.0000	-0.02	IC
NRNGQA		0.1030	0.0006	0.11	0.0600	0.0000	-0.02	OE
PPYBZB		0.1020	-0.0004	-0.09	0.0607	0.0006	0.22	XX
QB2YJP		0.0985	-0.0040	-0.83	0.0583	-0.0018	-0.66	OE
RQJ2Z7		0.1127	0.0102	2.13	0.0665	0.0064	2.34	XX
RRRBY6		0.1030	0.0006	0.11	0.0610	0.0010	0.35	OE
TZ86ZT		0.1015	-0.0009	-0.19	0.0582	-0.0018	-0.67	OE
U4V4EM		0.1080	0.0056	1.16	0.0635	0.0035	1.27	OE
UUL3TL		0.1036	0.0012	0.24	0.0607	0.0006	0.22	OE
WHR2PA		0.1050	0.0026	0.53	0.0587	-0.0014	-0.50	OE
WJR6GZ		0.1037	0.0012	0.25	0.0600	0.0000	-0.02	OE
WUJXGA		0.0949	-0.0076	-1.58	0.0540	-0.0061	-2.22	OE
XTNRL2		0.1033	0.0009	0.18	0.0598	-0.0002	-0.08	OE
ZGPLRU		0.1053	0.0029	0.60	0.0567	-0.0034	-1.23	OE
ZMBL2F		0.0982	-0.0043	-0.89	0.0584	-0.0017	-0.61	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1544 Aluminum, MANGANESE (Mn) MANGANESE (Mn)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.1024	Percent	0.0600	Percent
Stnd Dev Btwn Labs	0.0048	Percent	0.0027	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 39 of 41 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	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 #1544

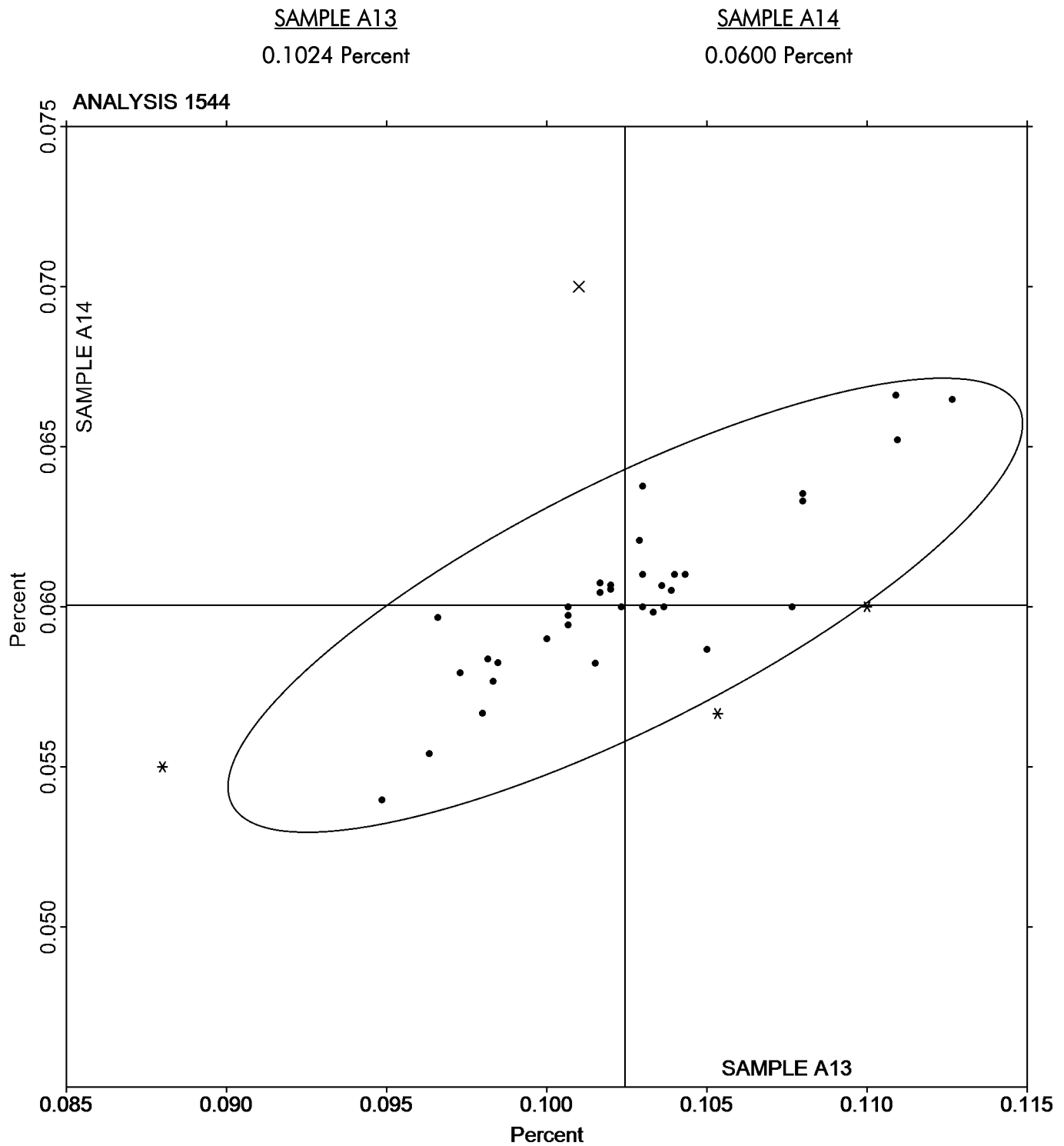
CK9R8R (X) - Data for both samples are high.

EX22RB (X) - Data for sample A14 are high.



Analysis 1544

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1545

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.9313	0.0114	0.34	0.9107	0.0064	0.22	OE
3FNG3B		0.9483	0.0284	0.86	0.9240	0.0197	0.69	OE
6H2Y27		0.9280	0.0081	0.24	0.9023	-0.0020	-0.07	OE
AFUBNB		0.8850	-0.0349	-1.05	0.8780	-0.0263	-0.92	IC
AFUDDF		0.9157	-0.0042	-0.13	0.8977	-0.0066	-0.23	IC
B8YVCC		0.9196	-0.0003	-0.01	0.9100	0.0057	0.20	OE
BUV7JH	X	1.327	0.4066	12.26	1.265	0.3602	12.54	XX
CK9R8R	*	0.8300	-0.0899	-2.71	0.8200	-0.0843	-2.94	XX
DX6ADH		0.9267	0.0068	0.20	0.9012	-0.0031	-0.11	IC
EX22RB		0.9400	0.0201	0.61	0.9500	0.0457	1.59	OE
EZ4Y34		0.9272	0.0073	0.22	0.9133	0.0090	0.31	OE
F4JUJ2		0.9010	-0.0189	-0.57	0.8954	-0.0089	-0.31	OE
FK78V8		0.9293	0.0094	0.28	0.9057	0.0014	0.05	XX
FXGQJU		0.8936	-0.0263	-0.79	0.8750	-0.0293	-1.02	OE
GFYVYK		0.8350	-0.0849	-2.56	0.8460	-0.0583	-2.03	GD
H9CJ6Q		0.9447	0.0248	0.75	0.9020	-0.0023	-0.08	OE
HPEBUY		0.9160	-0.0039	-0.12	0.9073	0.0030	0.11	OE
JYWBP9		0.9000	-0.0199	-0.60	0.8900	-0.0143	-0.50	IC
K7EZ2F	*	1.017	0.0968	2.92	0.9967	0.0924	3.22	OE
L3WZLZ		0.8947	-0.0252	-0.76	0.8763	-0.0280	-0.97	OE
L87HGL		0.9273	0.0074	0.22	0.9140	0.0097	0.34	IC
LBVH6H		0.8987	-0.0212	-0.64	0.8960	-0.0083	-0.29	XX
LCYLAZ		0.9473	0.0274	0.83	0.9223	0.0180	0.63	DR
MK9AMY		0.9136	-0.0063	-0.19	0.9103	0.0060	0.21	OE
MNT86N		0.9250	0.0051	0.15	0.9143	0.0100	0.35	XX
MZ6NXE		0.9107	-0.0092	-0.28	0.9030	-0.0013	-0.04	IC
NRNGQA		0.9303	0.0104	0.31	0.9110	0.0067	0.23	OE
PPYBZB		0.9277	0.0078	0.23	0.9183	0.0140	0.49	XX
QB2YJP		0.9408	0.0208	0.63	0.9310	0.0267	0.93	OE
RQJ2Z7		0.9030	-0.0169	-0.51	0.8870	-0.0173	-0.60	XX
RRRBY6		0.9137	-0.0062	-0.19	0.9060	0.0017	0.06	OE
TZ86ZT		0.8805	-0.0394	-1.19	0.8749	-0.0294	-1.02	OE
U4V4EM		0.9309	0.0110	0.33	0.8947	-0.0096	-0.33	OE
UUL3TL		0.9292	0.0093	0.28	0.9078	0.0035	0.12	OE
WHR2PA		0.8974	-0.0225	-0.68	0.8863	-0.0180	-0.63	OE
WJR6GZ		0.9440	0.0241	0.73	0.9127	0.0084	0.29	OE
WUJXGA		0.9963	0.0764	2.31	0.9647	0.0604	2.10	OE
XTNRL2		0.9097	-0.0102	-0.31	0.8980	-0.0063	-0.22	OE
ZGPLRU		0.9293	0.0094	0.28	0.9020	-0.0023	-0.08	OE
ZMBL2F		0.9385	0.0186	0.56	0.9114	0.0071	0.25	OE



Analysis 1545
Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.9199	Percent	0.9043	Percent
Stnd Dev Btwn Labs	0.0332	Percent	0.0287	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 39 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	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 #1545

BUV7JH (X) - Data for both samples are high. Possible Systematic Error.

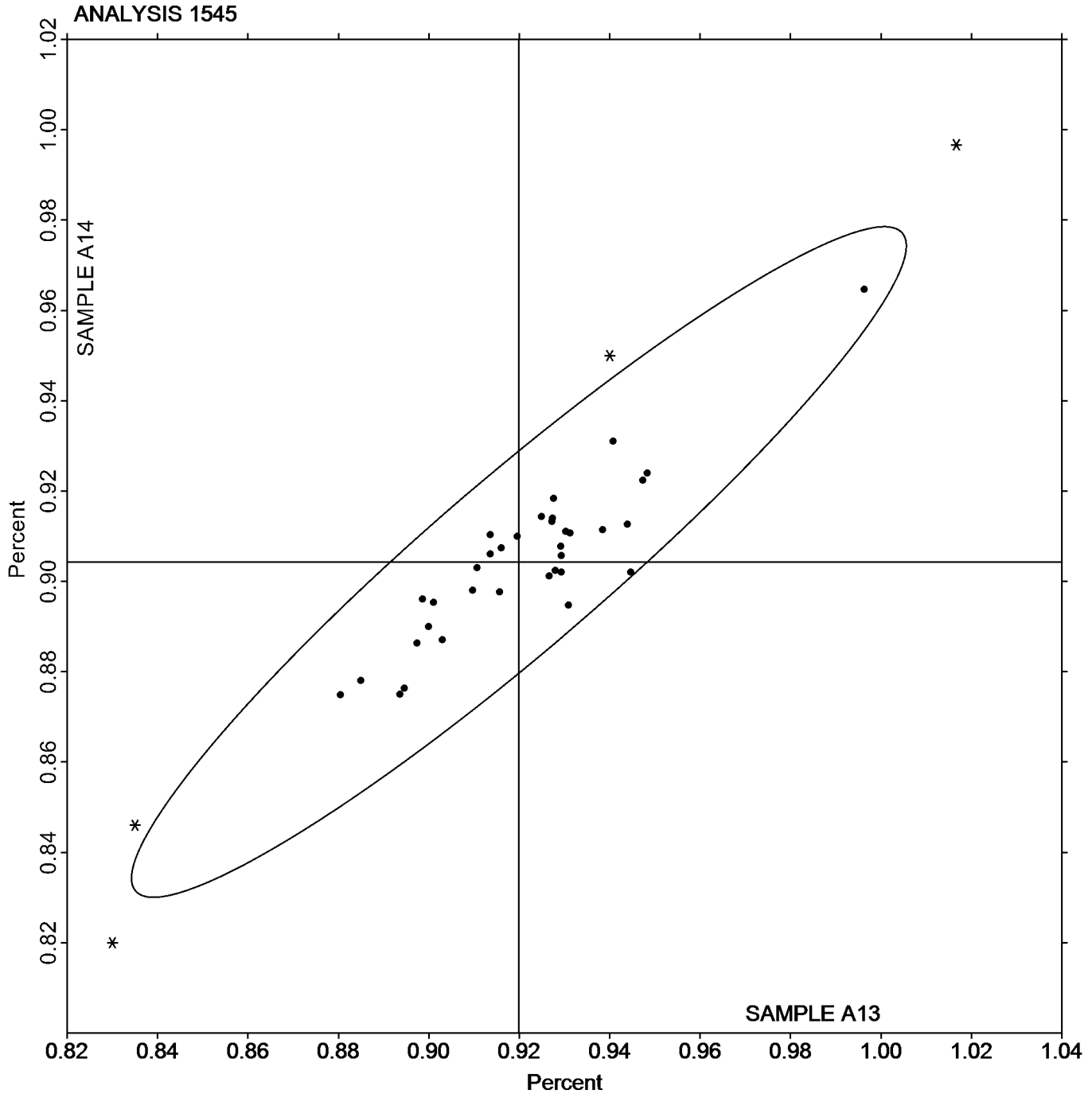


Analysis 1545

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

SAMPLE A13
0.9199 Percent

SAMPLE A14
0.9043 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****4th Qtr 2025****Analysis 1546****Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)**

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.1443	0.0000	0.00	0.0517	0.0004	0.19	OE
3FNG3B		0.1463	0.0020	0.35	0.0524	0.0011	0.55	OE
6H2Y27		0.1483	0.0040	0.70	0.0522	0.0009	0.49	OE
AFUDDF		0.1477	0.0033	0.58	0.0520	0.0007	0.36	IC
B8YVCC		0.1457	0.0013	0.23	0.0505	-0.0008	-0.43	OE
BUV7JH		0.1300	-0.0143	-2.51	0.0470	-0.0043	-2.24	XX
CJQMPT		0.1480	0.0037	0.64	0.0517	0.0004	0.19	XX
CK9R8R		0.1300	-0.0143	-2.51	0.0480	-0.0033	-1.72	XX
DX6ADH		0.1435	-0.0009	-0.15	0.0519	0.0006	0.29	IC
EX22RB	X	0.1467	0.0023	0.41	0.0400	-0.0113	-5.88	OE
EZ4Y34		0.1529	0.0085	1.49	0.0551	0.0038	1.97	OE
F4JUJ2		0.1474	0.0031	0.54	0.0520	0.0007	0.38	OE
FK78V8		0.1460	0.0017	0.29	0.0526	0.0013	0.66	XX
FXGQJU		0.1294	-0.0149	-2.61	0.0475	-0.0038	-1.98	OE
GFYVYK		0.1510	0.0067	1.17	0.0532	0.0019	0.99	GD
H9CJ6Q		0.1477	0.0034	0.59	0.0534	0.0021	1.09	OE
HPEBUY		0.1433	-0.0010	-0.17	0.0510	-0.0003	-0.16	OE
JYWBP9		0.1417	-0.0027	-0.47	0.0493	-0.0020	-1.02	IC
K7EZ2F		0.1400	-0.0043	-0.76	0.0500	-0.0013	-0.68	OE
L3WZLZ		0.1387	-0.0057	-0.99	0.0490	-0.0023	-1.20	OE
L87HGL		0.1427	-0.0017	-0.29	0.0513	0.0000	0.02	IC
LBVH6H	X	0.1680	0.0237	4.14	0.0611	0.0098	5.10	XX
LCYLAZ	*	0.1453	0.0010	0.18	0.0477	-0.0036	-1.87	DR
MK9AMY		0.1480	0.0037	0.65	0.0518	0.0005	0.28	OE
MNT86N		0.1503	0.0060	1.05	0.0547	0.0034	1.75	XX
MZ6NXE		0.1477	0.0033	0.58	0.0510	-0.0003	-0.16	IC
NRNGQA		0.1487	0.0043	0.76	0.0530	0.0017	0.88	OE
PPYBZB		0.1437	-0.0007	-0.12	0.0520	0.0007	0.36	XX
QB2YJP		0.1374	-0.0069	-1.21	0.0481	-0.0032	-1.68	OE
RQJ2Z7		0.1460	0.0017	0.29	0.0510	-0.0003	-0.16	OE
RRRBY6		0.1453	0.0010	0.18	0.0500	-0.0013	-0.68	OE
TZ86ZT		0.1422	-0.0021	-0.37	0.0489	-0.0024	-1.26	OE
U4V4EM		0.1477	0.0033	0.58	0.0521	0.0008	0.40	OE
UUL3TL		0.1436	-0.0008	-0.13	0.0514	0.0001	0.07	OE
WHR2PA	*	0.1509	0.0065	1.14	0.0489	-0.0024	-1.25	OE
WJR6GZ		0.1517	0.0073	1.28	0.0537	0.0024	1.23	OE
WUJXGA		0.1407	-0.0037	-0.64	0.0504	-0.0009	-0.47	OE
XTNRL2		0.1413	-0.0030	-0.52	0.0518	0.0005	0.24	OE
ZGPLRU		0.1490	0.0047	0.82	0.0537	0.0024	1.23	OE
ZMBL2F		0.1482	0.0038	0.67	0.0517	0.0004	0.19	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1546

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.1443	Percent	0.0513	Percent
Stnd Dev Btwn Labs	0.0057	Percent	0.0019	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 36 of 40 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	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 #1546

EX22RB (X) - Data for sample A14 are low.

LBVH6H (X) - Data for both samples are high.

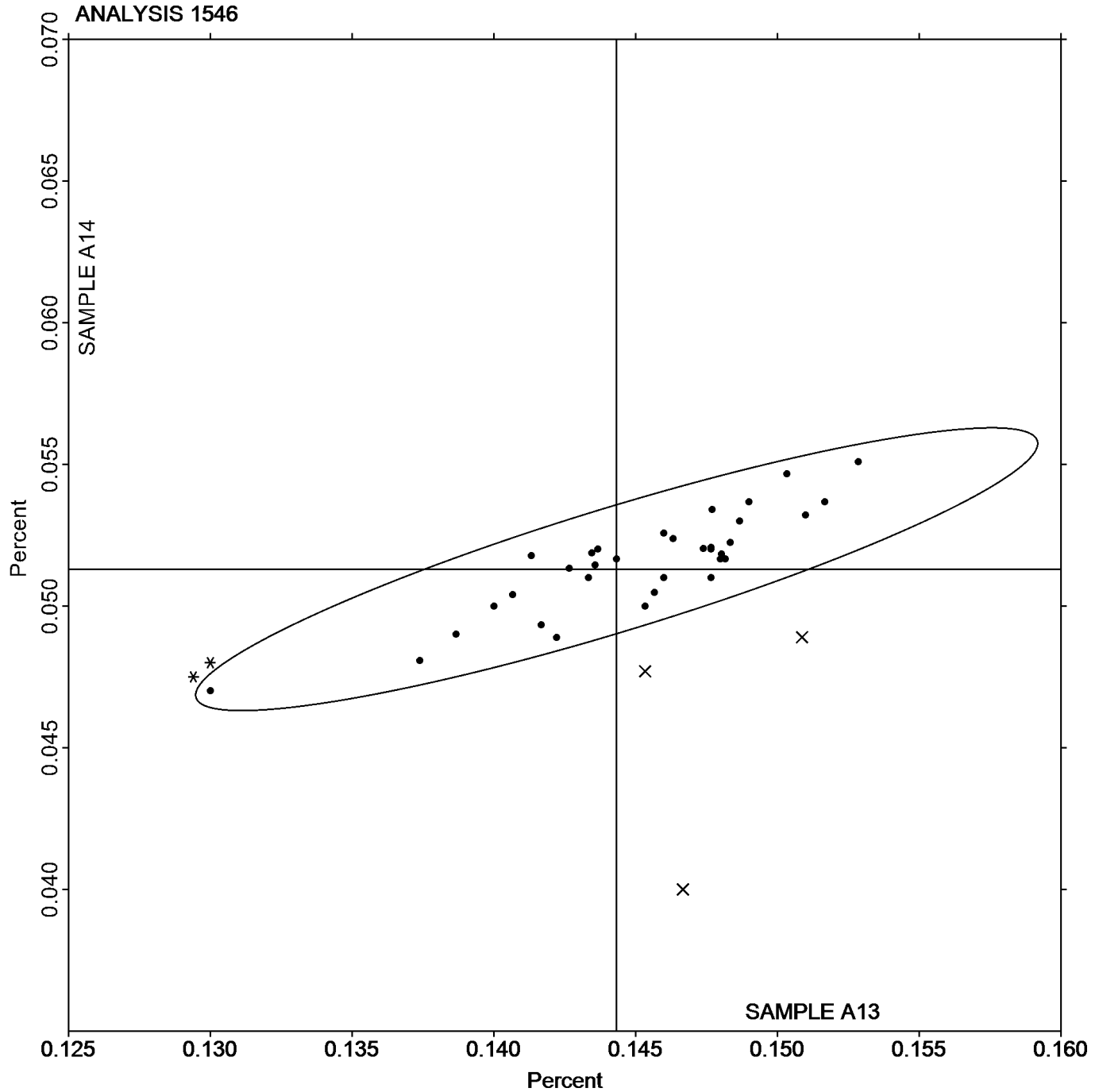


Analysis 1546

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE A13
0.1443 Percent

SAMPLE A14
0.0513 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****4th Qtr 2025****Analysis 1547****Aluminum, TITANIUM (Ti)
TITANIUM (Ti)**

WebCode	Data Flag	Sample A13			Sample A14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
37V8JF		0.0467	-0.0017	-0.74	0.0190	-0.0025	-1.19	OE
3FNG3B		0.0478	-0.0006	-0.24	0.0234	0.0019	0.92	OE
6H2Y27		0.0487	0.0003	0.14	0.0221	0.0006	0.31	OE
AFUBNB		0.0500	0.0016	0.68	0.0230	0.0015	0.74	IC
AFUDDF		0.0485	0.0001	0.04	0.0212	-0.0003	-0.14	IC
B8YVCC		0.0479	-0.0005	-0.20	0.0216	0.0001	0.07	OE
BUV7JH		0.0435	-0.0049	-2.09	0.0225	0.0010	0.50	XX
CJQMPT		0.0520	0.0036	1.53	0.0230	0.0015	0.74	XX
CK9R8R	X	0.0900	0.0416	17.72	0.0407	0.0192	9.26	XX
DX6ADH		0.0476	-0.0008	-0.33	0.0212	-0.0002	-0.11	IC
EX22RB		0.0487	0.0003	0.11	0.0250	0.0035	1.71	OE
EZ4Y34		0.0529	0.0045	1.91	0.0241	0.0026	1.28	OE
F4JUJ2		0.0438	-0.0046	-1.96	0.0162	-0.0053	-2.55	OE
FK78V8		0.0506	0.0022	0.95	0.0230	0.0015	0.74	XX
FXGQJU		0.0471	-0.0013	-0.55	0.0210	-0.0005	-0.22	OE
GFYVYK		0.0501	0.0017	0.72	0.0222	0.0007	0.36	GD
H9CJ6Q		0.0494	0.0010	0.41	0.0225	0.0011	0.52	OE
HPEBUY		0.0490	0.0006	0.26	0.0232	0.0018	0.85	OE
JYWBP9		0.0460	-0.0024	-1.02	0.0200	-0.0015	-0.70	IC
K7EZ2F		0.0500	0.0016	0.68	0.0200	-0.0015	-0.70	OE
L3WZLZ		0.0460	-0.0024	-1.02	0.0197	-0.0018	-0.87	OE
L87HGL		0.0467	-0.0017	-0.74	0.0210	-0.0005	-0.22	IC
LBVH6H		0.0462	-0.0022	-0.95	0.0202	-0.0013	-0.62	XX
LCYLAZ		0.0502	0.0018	0.78	0.0220	0.0005	0.26	DR
MK9AMY		0.0475	-0.0009	-0.38	0.0223	0.0009	0.42	OE
MNT86N		0.0483	-0.0001	-0.03	0.0210	-0.0005	-0.22	XX
MZ6NXE		0.0498	0.0014	0.60	0.0207	-0.0008	-0.37	IC
NRNGQA		0.0477	-0.0007	-0.31	0.0213	-0.0001	-0.06	OE
PPYBZB		0.0497	0.0013	0.57	0.0175	-0.0039	-1.89	XX
QB2YJP		0.0528	0.0044	1.89	0.0248	0.0034	1.62	OE
RQJ2Z7		0.0492	0.0008	0.34	0.0267	0.0052	2.51	XX
RRRBY6		0.0483	-0.0001	-0.03	0.0217	0.0002	0.10	OE
TZ86ZT		0.0491	0.0007	0.31	0.0213	-0.0002	-0.07	XX
U4V4EM		0.0462	-0.0022	-0.94	0.0190	-0.0024	-1.17	OE
UUL3TL		0.0435	-0.0049	-2.07	0.0194	-0.0021	-1.00	OE
WHR2PA		0.0465	-0.0019	-0.81	0.0181	-0.0034	-1.62	OE
WJR6GZ		0.0492	0.0008	0.33	0.0213	-0.0002	-0.08	OE
WUJXGA		0.0543	0.0059	2.50	0.0235	0.0020	0.98	OE
XTNRL2		0.0478	-0.0006	-0.24	0.0217	0.0002	0.10	OE
ZGPLRU		0.0480	-0.0004	-0.17	0.0220	0.0005	0.26	OE
ZMBL2F		0.0485	0.0001	0.03	0.0191	-0.0024	-1.15	OE



Summary Statistics

	<u>Sample A13</u>		<u>Sample A14</u>	
Grand Means	0.0484	Percent	0.0215	Percent
Std Dev Btwn Labs	0.0023	Percent	0.0021	Percent

Samples A13, A14 : AA6061, AA6061

Statistics based on 40 of 41 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	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 #1547

CK9R8R (X) - Data for both samples are high. Inconsistent within the determinations of sample A13.

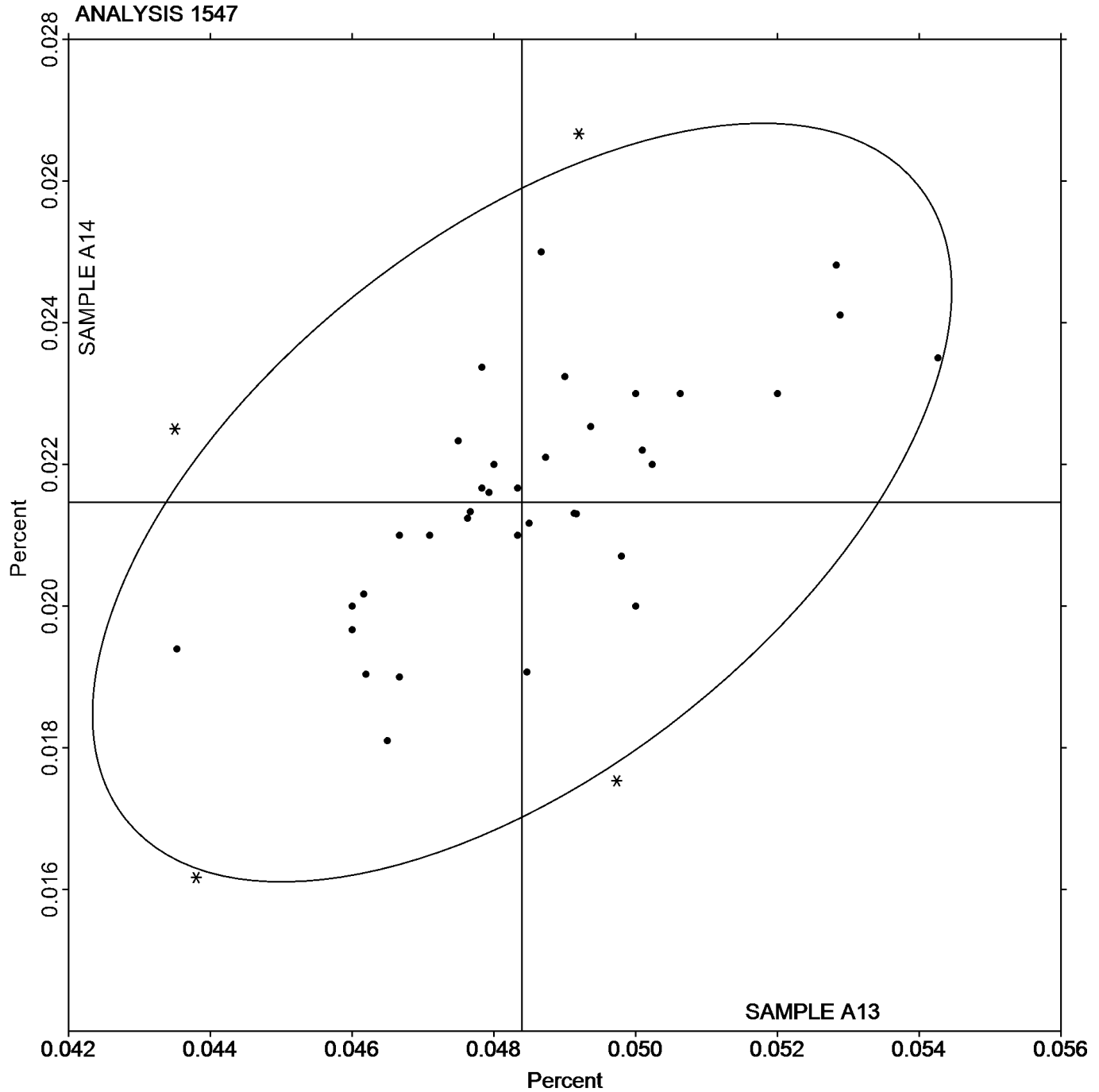


Analysis 1547

Aluminum, TITANIUM (Ti)
TITANIUM (Ti)

SAMPLE A13
0.0484 Percent

SAMPLE A14
0.0215 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1640

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		0.0507	-0.0019	-0.65	0.0475	-0.0041	-1.19	OE
36YR8J		0.0512	-0.0014	-0.46	0.0506	-0.0010	-0.30	OE
38U6FV		0.0551	0.0025	0.83	0.0542	0.0026	0.74	XX
3AX8TD	X	0.0427	-0.0099	-3.33	0.0433	-0.0083	-2.37	OE
43CHMA	*	0.0433	-0.0093	-3.11	0.0407	-0.0109	-3.14	OE
4AKQLR		0.0476	-0.0050	-1.68	0.0464	-0.0052	-1.50	OE
66C4XD		0.0530	0.0004	0.13	0.0530	0.0014	0.40	XX
66XDCN		0.0505	-0.0021	-0.72	0.0486	-0.0030	-0.86	CI
6K287G		0.0516	-0.0010	-0.33	0.0507	-0.0009	-0.25	CI
6W8R7P		0.0533	0.0007	0.24	0.0520	0.0004	0.11	CI
6Z3QGE		0.0509	-0.0017	-0.58	0.0491	-0.0025	-0.71	CI
7HLYVN		0.0530	0.0004	0.13	0.0527	0.0011	0.30	OE
7XXDCL		0.0555	0.0029	0.96	0.0545	0.0029	0.84	OE
8G3BB8		0.0508	-0.0018	-0.60	0.0496	-0.0020	-0.59	OE
94ACJ4		0.0532	0.0006	0.20	0.0508	-0.0008	-0.23	OE
BRANE6		0.0587	0.0061	2.03	0.0583	0.0067	1.93	OE
CARVCL		0.0520	-0.0006	-0.20	0.0500	-0.0016	-0.46	CO
CK9R8R	*	0.0610	0.0084	2.81	0.0607	0.0091	2.60	XX
EX22RB		0.0529	0.0003	0.10	0.0540	0.0024	0.67	CO
EX3Y37		0.0557	0.0031	1.02	0.0533	0.0017	0.49	OE
F93UQU		0.0576	0.0050	1.67	0.0599	0.0083	2.38	OE
FMZWET		0.0527	0.0001	0.02	0.0520	0.0004	0.11	IR
G84X46	*	0.0564	0.0038	1.27	0.0448	-0.0068	-1.94	OE
GA8TM9		0.0547	0.0021	0.69	0.0517	0.0001	0.02	GD
HF3FE7		0.0520	-0.0006	-0.20	0.0513	-0.0003	-0.08	CI
HGXXG8		0.0534	0.0007	0.25	0.0521	0.0005	0.13	CI
J3YDPV		0.0537	0.0011	0.35	0.0520	0.0004	0.11	OE
JX3KJU	X	0.0632	0.0106	3.55	0.0642	0.0126	3.60	CI
K7EZ2F		0.0530	0.0004	0.13	0.0533	0.0017	0.49	OE
KR2GJN		0.0492	-0.0034	-1.14	0.0506	-0.0010	-0.30	OE
L87HGL		0.0497	-0.0029	-0.99	0.0510	-0.0006	-0.18	OE
L9N869		0.0533	0.0007	0.24	0.0520	0.0004	0.11	CI
LBVH6H		0.0504	-0.0022	-0.73	0.0494	-0.0022	-0.64	XX
LG6E4W		0.0554	0.0028	0.92	0.0542	0.0026	0.73	OE
LKBLXA		0.0527	0.0001	0.04	0.0513	-0.0003	-0.10	OE
MMJ4NJ		0.0493	-0.0033	-1.10	0.0483	-0.0033	-0.94	OE
MUG26U		0.0530	0.0004	0.13	0.0520	0.0004	0.11	CI
N42MWA		0.0532	0.0006	0.20	0.0541	0.0025	0.71	CO
NQPBAF		0.0523	-0.0003	-0.09	0.0470	-0.0046	-1.32	OE
NVPDKB		0.0515	-0.0011	-0.37	0.0507	-0.0009	-0.27	CI
PAYH8T		0.0516	-0.0010	-0.34	0.0500	-0.0016	-0.45	XX
QDG3RN		0.0538	0.0012	0.40	0.0528	0.0012	0.34	CO
QREAM4		0.0510	-0.0016	-0.54	0.0503	-0.0013	-0.37	OE
R6LEDW	*	0.0570	0.0044	1.47	0.0527	0.0011	0.30	OE
RQJ2Z7		0.0569	0.0043	1.43	0.0564	0.0048	1.37	OE
RRRBY6		0.0463	-0.0063	-2.10	0.0433	-0.0083	-2.37	OE
T37J8Q		0.0518	-0.0008	-0.27	0.0502	-0.0014	-0.40	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1640

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
T6XJKU		0.0557	0.0031	1.02	0.0557	0.0041	1.16	OE
TWFE6E		0.0521	-0.0005	-0.17	0.0505	-0.0011	-0.32	CI
UFWVVD		0.0519	-0.0007	-0.24	0.0527	0.0011	0.31	CO
VP3RZ6	X	0.0624	0.0098	3.28	0.0556	0.0040	1.14	OE
VYHUTV		0.0493	-0.0033	-1.10	0.0483	-0.0033	-0.94	OE
WDGZK7		0.0497	-0.0029	-0.99	0.0473	-0.0043	-1.23	CO
WHR2PA		0.0561	0.0035	1.18	0.0569	0.0053	1.51	OE
WJ7TEK		0.0516	-0.0010	-0.33	0.0509	-0.0007	-0.20	IR
WJR6GZ		0.0547	0.0021	0.69	0.0540	0.0024	0.68	CI
WWUQJP		0.0502	-0.0024	-0.81	0.0516	0.0000	0.00	CO
XTNRL2		0.0552	0.0026	0.86	0.0543	0.0027	0.78	OE
ZGPLRU		0.0517	-0.0009	-0.32	0.0513	-0.0003	-0.08	CI

Summary Statistics

Sample M13				Sample M14			
Grand Means	0.0526	Percent		0.0516	Percent		
Std Dev Btwn Labs	0.0030	Percent		0.0035	Percent		

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 55 of 59 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1640

3AX8TD (X) - Data for sample M13 are low.

JX3KJU (X) - Data for both samples are high. Possible Systematic Error.

VP3RZ6 (X) - Data for sample M13 are high.



Analysis 1640

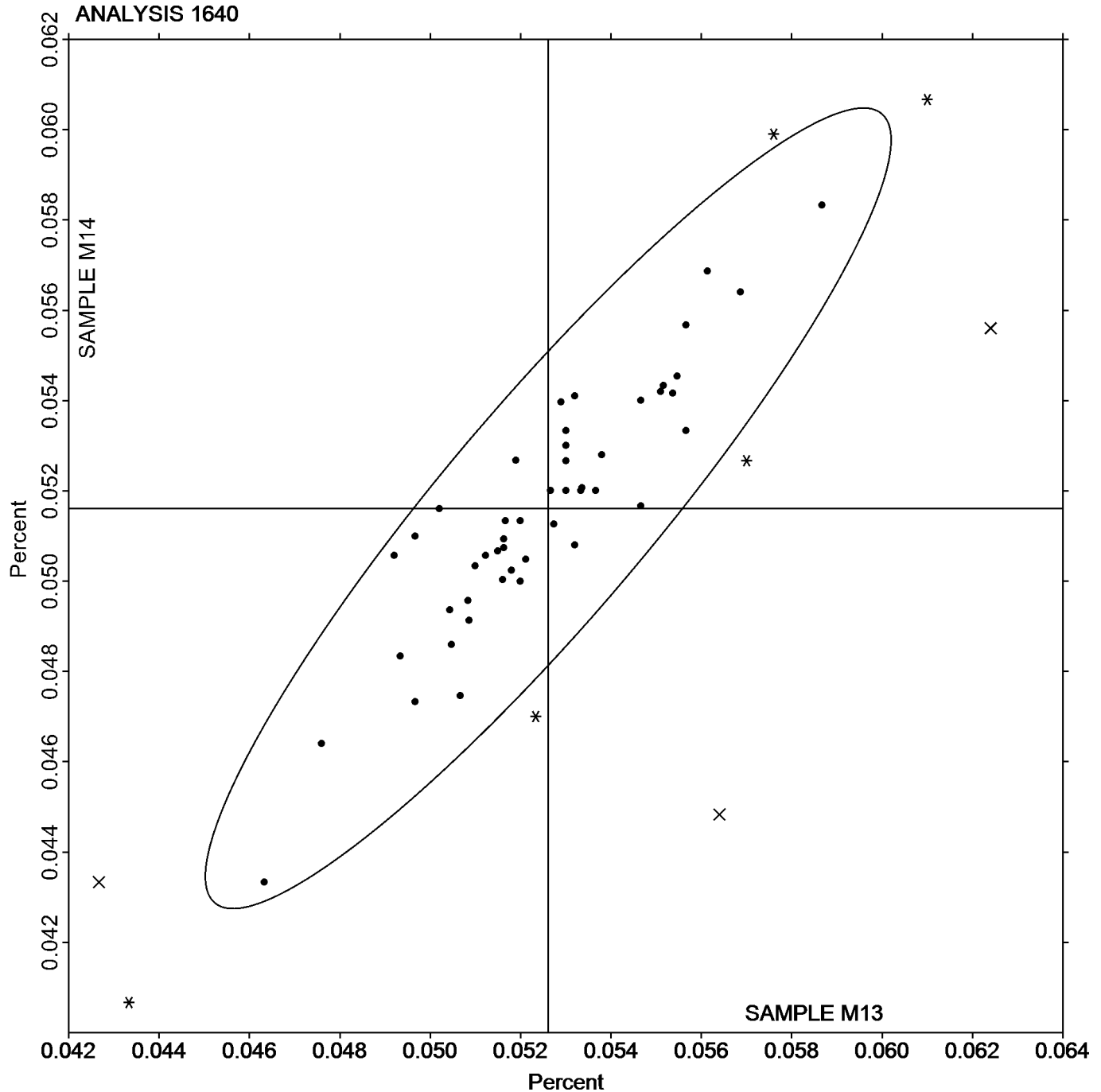
Corrosion Resistant Steel, CARBON (C)
CARBON (C)

SAMPLE M13

0.0526 Percent

SAMPLE M14

0.0516 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1641

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		1.870	0.040	1.60	1.840	0.025	0.87	OE
36YR8J		1.824	-0.006	-0.23	1.813	-0.001	-0.05	OE
38U6FV		1.770	-0.060	-2.40	1.760	-0.055	-1.89	XX
3AX8TD		1.788	-0.042	-1.68	1.769	-0.045	-1.57	OE
43CHMA		1.820	-0.010	-0.40	1.790	-0.025	-0.86	OE
4AKQLR		1.826	-0.004	-0.17	1.814	-0.001	-0.04	OE
66C4XD		1.839	0.009	0.37	1.820	0.006	0.19	XX
66XDCN		1.835	0.005	0.20	1.825	0.010	0.34	WD
6K287G		1.825	-0.005	-0.19	1.812	-0.003	-0.09	IC
6W8R7P		1.809	-0.021	-0.84	1.802	-0.013	-0.44	XR
7HLYVN		1.823	-0.007	-0.27	1.803	-0.011	-0.40	OE
7XXDCL		1.810	-0.020	-0.80	1.797	-0.018	-0.63	OE
8G3BB8		1.838	0.008	0.31	1.823	0.008	0.29	WD
94ACJ4	X	1.733	-0.097	-3.87	1.690	-0.125	-4.30	OE
BRANE6		1.800	-0.030	-1.22	1.781	-0.034	-1.17	OE
CARVCL		1.867	0.037	1.48	1.824	0.009	0.32	IC
CK9R8R	X	1.693	-0.137	-5.47	1.670	-0.145	-4.99	XX
EX22RB		1.870	0.040	1.60	1.873	0.059	2.02	OE
EX3Y37		1.842	0.012	0.46	1.821	0.007	0.22	OE
F93UQU		1.833	0.003	0.13	1.803	-0.011	-0.40	OE
FMZWET		1.839	0.009	0.37	1.829	0.015	0.50	IC
G84X46		1.837	0.007	0.28	1.866	0.052	1.78	OE
GA8TM9		1.777	-0.053	-2.11	1.764	-0.050	-1.74	GD
HF3FE7		1.817	-0.013	-0.54	1.803	-0.012	-0.41	WD
HGXXG8		1.846	0.016	0.62	1.831	0.016	0.55	WD
J3YDPV		1.827	-0.003	-0.12	1.818	0.003	0.10	OE
JX3KJU		1.860	0.030	1.20	1.850	0.035	1.21	IC
K7EZ2F		1.825	-0.005	-0.20	1.815	0.000	0.01	OE
KR2GJN		1.857	0.027	1.06	1.830	0.015	0.52	OE
L87HGL		1.837	0.007	0.26	1.794	-0.021	-0.72	OE
L9N869		1.809	-0.021	-0.84	1.800	-0.014	-0.50	XR
LBVH6H		1.840	0.010	0.40	1.847	0.032	1.10	XX
LG6E4W		1.847	0.017	0.66	1.861	0.046	1.57	OE
LKBLXA		1.850	0.020	0.80	1.830	0.015	0.52	OE
MMJ4NJ		1.867	0.037	1.46	1.837	0.022	0.75	OE
MUG26U		1.860	0.030	1.20	1.840	0.025	0.87	OE
N42MWA		1.807	-0.023	-0.94	1.776	-0.038	-1.33	IC
NQPBAF	*	1.887	0.057	2.26	1.903	0.089	3.05	OE
NVPDKB		1.837	0.007	0.28	1.810	-0.004	-0.16	WD
PAYH8T		1.827	-0.003	-0.11	1.814	-0.001	-0.04	XX
QDG3RN		1.829	-0.001	-0.05	1.813	-0.002	-0.06	ED
QREAM4		1.809	-0.021	-0.84	1.770	-0.044	-1.53	OE
R6LEDW		1.823	-0.007	-0.27	1.813	-0.001	-0.05	OE
RQJ2Z7		1.823	-0.007	-0.27	1.810	-0.005	-0.17	OE
RRRBY6		1.802	-0.028	-1.11	1.766	-0.048	-1.67	OE
T37J8Q		1.826	-0.004	-0.15	1.805	-0.009	-0.33	IC
T6XJKU		1.826	-0.004	-0.15	1.818	0.004	0.12	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1641

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
TWFE6E		1.848	0.018	0.70	1.820	0.006	0.19	OE
VP3RZ6		1.800	-0.030	-1.20	1.820	0.005	0.18	OE
VYHUTV		1.853	0.023	0.93	1.840	0.025	0.87	WD
WDGZK7		1.827	-0.003	-0.12	1.822	0.008	0.26	OE
WHR2PA	*	1.761	-0.069	-2.75	1.740	-0.074	-2.57	OE
WJ7TEK		1.817	-0.013	-0.54	1.803	-0.011	-0.40	WD
WJR6GZ		1.823	-0.007	-0.30	1.803	-0.012	-0.41	OE
WWUQJP		1.857	0.027	1.08	1.839	0.024	0.83	OE
XTNRL2		1.850	0.020	0.80	1.827	0.012	0.41	OE
ZGPLRU		1.837	0.007	0.29	1.814	-0.001	-0.03	OE

Summary Statistics

Sample M13				Sample M14			
Grand Means		1.830	Percent	1.815		Percent	
Std Dev Btwn Labs		0.025	Percent	0.029		Percent	

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 55 of 57 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)
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

94ACJ4 (X) - Data for both samples are low. Possible Systematic Error.

CK9R8R (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1641

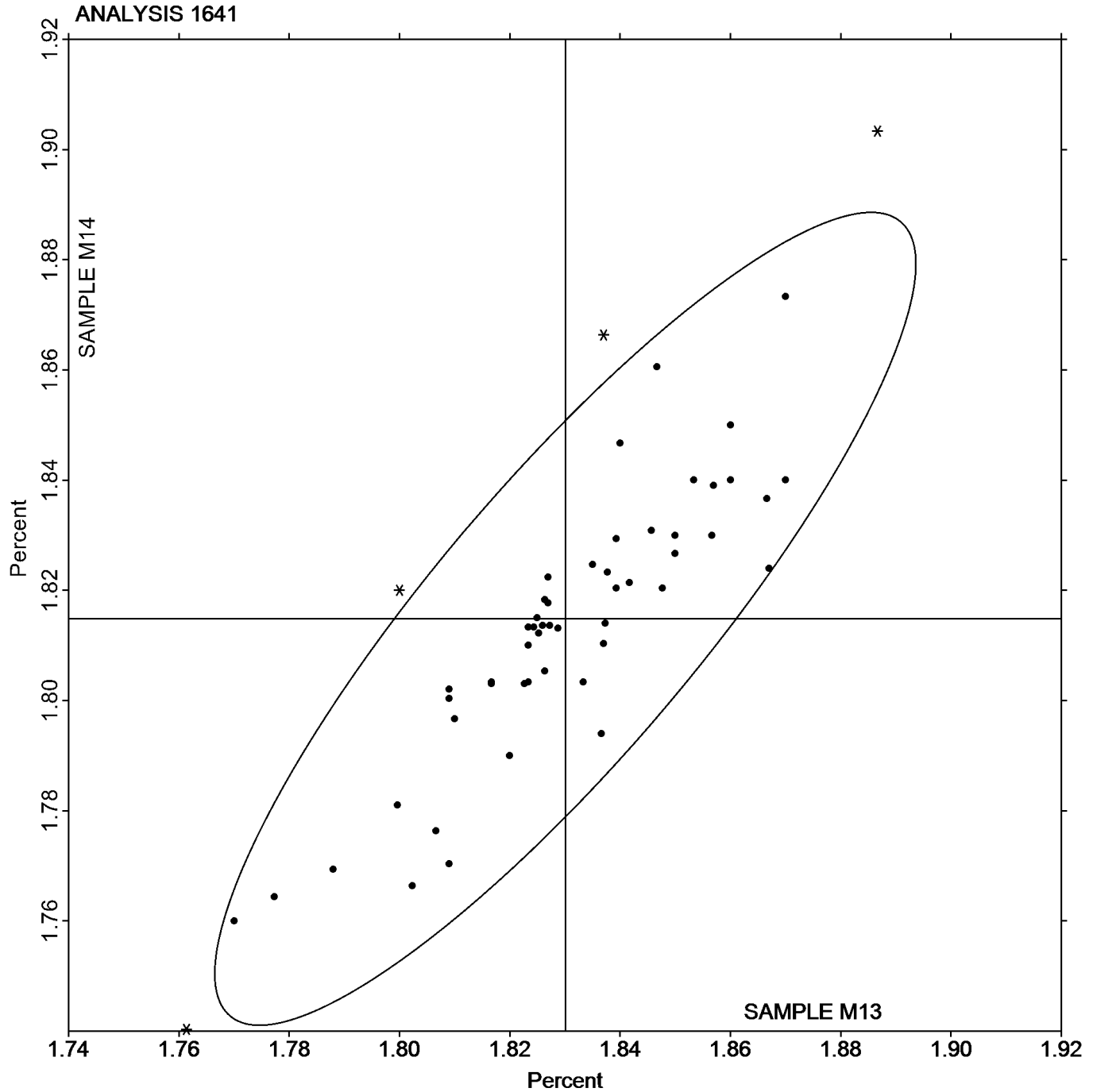
Corrosion Resistant Steel, MANGANESE (Mn)
MANGANESE (Mn)

SAMPLE M13

1.830 Percent

SAMPLE M14

1.815 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1642

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		0.0358	0.0007	0.29	0.0331	0.0007	0.38	OE
36YR8J		0.0348	-0.0003	-0.13	0.0323	-0.0001	-0.03	OE
38U6FV		0.0330	-0.0021	-0.82	0.0295	-0.0029	-1.44	XX
3AX8TD		0.0347	-0.0004	-0.17	0.0323	0.0000	-0.01	OE
43CHMA		0.0362	0.0011	0.43	0.0314	-0.0009	-0.46	OE
4AKQLR		0.0360	0.0009	0.35	0.0321	-0.0003	-0.15	OE
66C4XD		0.0356	0.0005	0.21	0.0326	0.0002	0.12	XX
66XDCN		0.0329	-0.0022	-0.89	0.0302	-0.0021	-1.07	WD
6K287G		0.0350	-0.0001	-0.02	0.0326	0.0003	0.14	IC
6W8R7P		0.0368	0.0017	0.68	0.0334	0.0010	0.51	XR
7HLYVN		0.0337	-0.0014	-0.57	0.0317	-0.0007	-0.35	OE
7XXDCL		0.0356	0.0005	0.21	0.0330	0.0007	0.34	OE
8G3BB8		0.0353	0.0002	0.08	0.0322	-0.0002	-0.08	WD
94ACJ4	X	0.0464	0.0113	4.48	0.0396	0.0072	3.65	OE
BRANE6		0.0337	-0.0014	-0.54	0.0307	-0.0016	-0.82	OE
CARVCL		0.0341	-0.0010	-0.40	0.0308	-0.0016	-0.78	IC
CK9R8R	X	0.0240	-0.0111	-4.41	0.0207	-0.0117	-5.89	XX
EX22RB		0.0373	0.0022	0.89	0.0353	0.0030	1.50	OE
EX3Y37		0.0347	-0.0004	-0.17	0.0307	-0.0017	-0.85	OE
F93UQU	*	0.0430	0.0079	3.15	0.0381	0.0057	2.88	XX
FMZWET		0.0364	0.0013	0.53	0.0332	0.0008	0.43	IC
G84X46	*	0.0333	-0.0018	-0.73	0.0366	0.0043	2.16	OE
GA8TM9		0.0320	-0.0031	-1.23	0.0293	-0.0030	-1.52	GD
HF3FE7		0.0360	0.0009	0.36	0.0330	0.0006	0.33	WD
HGXXG8		0.0356	0.0005	0.20	0.0325	0.0001	0.06	WD
J3YDPV		0.0349	-0.0002	-0.06	0.0331	0.0007	0.38	OE
JX3KJU		0.0352	0.0001	0.02	0.0311	-0.0013	-0.66	IC
K7EZ2F		0.0358	0.0007	0.28	0.0342	0.0019	0.95	OE
KR2GJN		0.0366	0.0015	0.61	0.0324	0.0000	0.01	OE
L87HGL		0.0360	0.0009	0.36	0.0323	0.0000	-0.01	OE
L9N869		0.0358	0.0007	0.28	0.0325	0.0001	0.06	XR
LBVH6H		0.0333	-0.0018	-0.70	0.0329	0.0005	0.26	XX
LG6E4W		0.0368	0.0017	0.69	0.0345	0.0021	1.07	OE
LKBLXA		0.0333	-0.0018	-0.70	0.0315	-0.0009	-0.43	OE
MMJ4NJ		0.0350	-0.0001	-0.04	0.0323	0.0000	-0.01	OE
MUG26U		0.0340	-0.0011	-0.44	0.0310	-0.0014	-0.68	OE
N42MWA		0.0327	-0.0024	-0.95	0.0291	-0.0033	-1.64	IC
NQPBAF		0.0413	0.0062	2.48	0.0353	0.0030	1.50	OE
NVPDKB		0.0340	-0.0011	-0.44	0.0325	0.0001	0.07	WD
PAYH8T		0.0346	-0.0005	-0.19	0.0329	0.0005	0.26	XX
QDG3RN		0.0352	0.0001	0.03	0.0318	-0.0005	-0.26	ED
QREAM4		0.0290	-0.0061	-2.42	0.0290	-0.0034	-1.69	OE
R6LEDW		0.0313	-0.0038	-1.49	0.0297	-0.0027	-1.36	OE
RQJ2Z7		0.0418	0.0067	2.65	0.0359	0.0035	1.79	OE
RRRBY6		0.0313	-0.0038	-1.49	0.0297	-0.0027	-1.36	OE
T37J8Q		0.0355	0.0004	0.16	0.0330	0.0006	0.31	OE
T6XJKU		0.0345	-0.0006	-0.24	0.0317	-0.0007	-0.35	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 152

Analysis 1642

4th Qtr 2025

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
TWFE6E		0.0358	0.0007	0.28	0.0340	0.0016	0.81	OE
UFWVVD	X	0.0293	-0.0058	-2.29	0.0250	-0.0074	-3.71	OE
VP3RZ6		0.0320	-0.0031	-1.23	0.0322	-0.0002	-0.08	OE
VYHUTV		0.0320	-0.0031	-1.23	0.0290	-0.0034	-1.69	WD
WDGZK7		0.0370	0.0019	0.76	0.0360	0.0036	1.84	OE
WHR2PA		0.0339	-0.0012	-0.46	0.0318	-0.0005	-0.26	OE
WJ7TEK		0.0360	0.0009	0.36	0.0323	0.0000	-0.01	WD
WJR6GZ	*	0.0392	0.0041	1.62	0.0373	0.0049	2.49	OE
WWUQJP		0.0347	-0.0004	-0.16	0.0322	-0.0002	-0.08	CO
XTNRL2		0.0372	0.0021	0.84	0.0340	0.0016	0.83	OE
ZGPLRU		0.0310	-0.0041	-1.63	0.0300	-0.0024	-1.19	OE

Summary Statistics

	Sample M13		Sample M14	
Grand Means	0.0351	Percent	0.0324	Percent
Std Dev Btwn Labs	0.0025	Percent	0.0020	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 54 of 58 reporting participants

Key to Method Codes Reported by Participants

CO	Combustion	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 #1642

94ACJ4 (X) - Data for both samples are high.

CK9R8R (X) - Data for both samples are low.

UFWVVD (X) - Data for sample M14 are low.

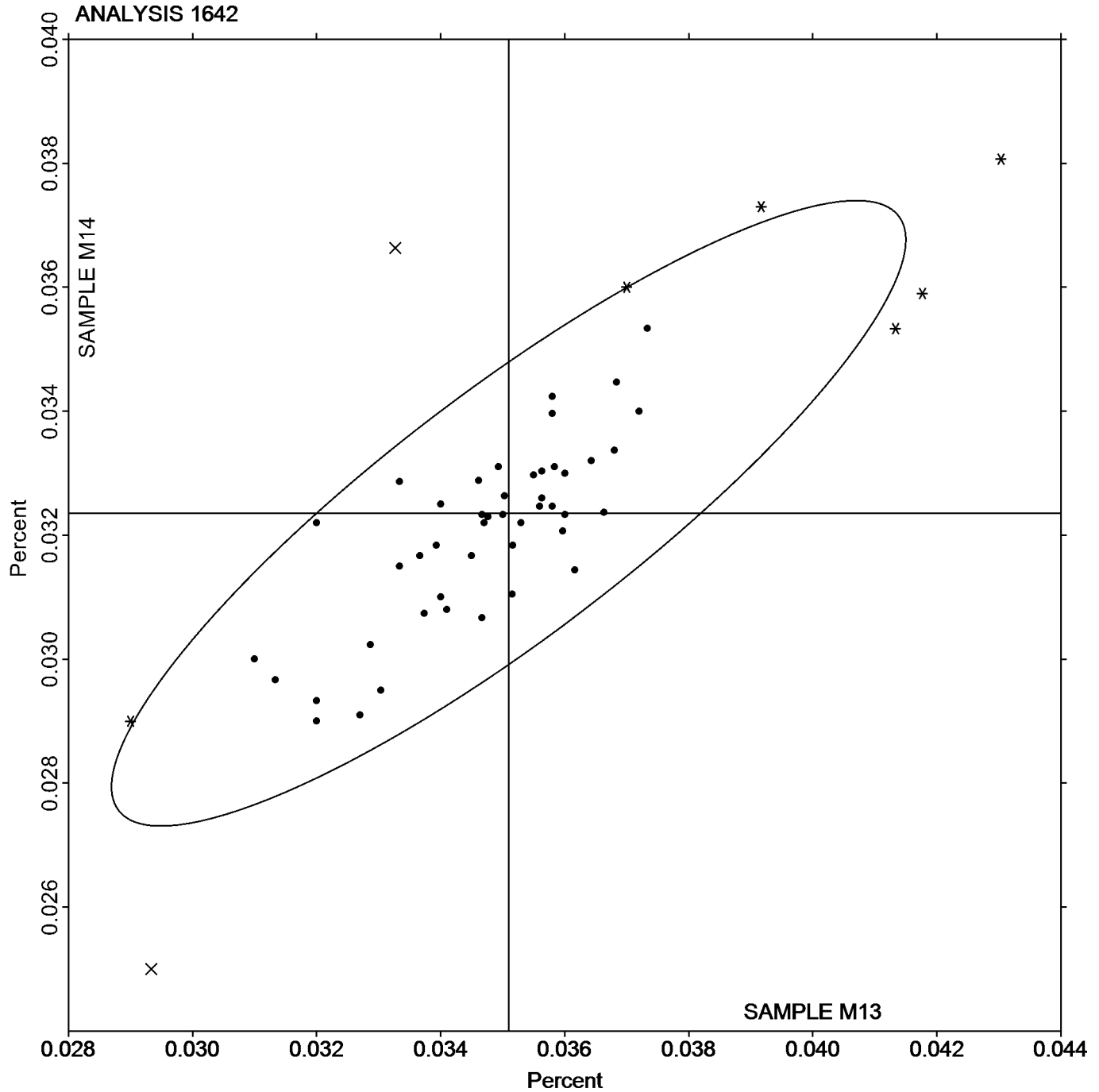


Analysis 1642

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

SAMPLE M13
0.0351 Percent

SAMPLE M14
0.0324 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1643

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		0.0326	0.0061	2.37	0.0178	0.0033	2.07	OE
36YR8J		0.0273	0.0008	0.32	0.0149	0.0004	0.26	OE
38U6FV		0.0286	0.0022	0.84	0.0154	0.0008	0.53	XX
3AX8TD		0.0267	0.0002	0.07	0.0143	-0.0002	-0.12	OE
43CHMA		0.0277	0.0012	0.48	0.0170	0.0025	1.58	OE
4AKQLR		0.0313	0.0049	1.89	0.0159	0.0014	0.89	OE
66C4XD		0.0259	-0.0005	-0.21	0.0152	0.0007	0.43	XX
66XDCN		0.0248	-0.0016	-0.64	0.0135	-0.0011	-0.67	CI
6K287G		0.0276	0.0011	0.43	0.0151	0.0005	0.34	CI
6W8R7P		0.0247	-0.0018	-0.71	0.0131	-0.0014	-0.88	XX
6Z3QGE		0.0287	0.0022	0.87	0.0151	0.0006	0.39	CI
7HLYVN		0.0250	-0.0015	-0.58	0.0130	-0.0015	-0.96	OE
7XXDCL	X	0.0241	-0.0024	-0.94	0.00617	-0.0084	-5.27	OE
8G3BB8		0.0248	-0.0017	-0.67	0.0137	-0.0008	-0.52	OE
94ACJ4		0.0269	0.0005	0.18	0.0160	0.0014	0.91	OE
BRANE6		0.0240	-0.0025	-0.98	0.0126	-0.0019	-1.21	OE
CARVCL		0.0298	0.0033	1.30	0.0158	0.0013	0.81	CO
CK9R8R		0.0237	-0.0028	-1.09	0.0113	-0.0032	-2.01	XX
EX22RB		0.0267	0.0002	0.09	0.0136	-0.0009	-0.58	CO
EX3Y37		0.0253	-0.0011	-0.45	0.0147	0.0001	0.09	OE
F93UQU		0.0215	-0.0050	-1.95	0.0122	-0.0023	-1.47	OE
FMZWET		0.0289	0.0024	0.93	0.0160	0.0015	0.93	CI
G84X46	X	0.0389	0.0124	4.83	0.0163	0.0017	1.10	OE
GA8TM9		0.0303	0.0039	1.50	0.0183	0.0038	2.40	GD
HF3FE7		0.0267	0.0002	0.07	0.0150	0.0005	0.30	CI
HGXXG8		0.0271	0.0007	0.26	0.0147	0.0002	0.12	CI
J3YDPV		0.0270	0.0005	0.20	0.0156	0.0011	0.70	OE
JX3KJU		0.0220	-0.0044	-1.73	0.0129	-0.0016	-1.00	CI
K7EZ2F		0.0267	0.0003	0.10	0.0155	0.0010	0.62	OE
KR2GJN		0.0256	-0.0009	-0.35	0.0135	-0.0010	-0.65	OE
L87HGL		0.0257	-0.0008	-0.32	0.0127	-0.0019	-1.17	OE
L9N869		0.0247	-0.0018	-0.71	0.0131	-0.0014	-0.88	CI
LBVH6H	X	0.0244	-0.0021	-0.81	0.00983	-0.0047	-2.96	XX
LG6E4W		0.0276	0.0011	0.43	0.0149	0.0004	0.26	OE
LKBLXA	X	0.0211	-0.0053	-2.08	0.00770	-0.0068	-4.30	OE
MMJ4NJ		0.0253	-0.0011	-0.45	0.0140	-0.0005	-0.33	OE
MUG26U		0.0250	-0.0015	-0.58	0.0120	-0.0025	-1.59	CI
N42MWA		0.0256	-0.0009	-0.34	0.0142	-0.0004	-0.22	CO
NQPBAF		0.0277	0.0012	0.46	0.0150	0.0005	0.30	OE
NVPDKB		0.0270	0.0005	0.19	0.0148	0.0003	0.17	CI
PAYH8T		0.0253	-0.0011	-0.45	0.0161	0.0016	1.02	XX
QDG3RN		0.0330	0.0065	2.53	0.0170	0.0025	1.58	CO
QREAM4		0.0217	-0.0048	-1.87	0.0117	-0.0029	-1.80	OE
R6LEDW	X	0.0170	-0.0095	-3.69	0.00867	-0.0059	-3.69	OE
RQJ2Z7		0.0267	0.0003	0.10	0.0163	0.0018	1.12	OE
RRRBY6		0.0237	-0.0028	-1.09	0.0137	-0.0009	-0.54	OE
T37J8Q		0.0268	0.0003	0.11	0.0146	0.0001	0.07	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1643

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
T6XJKU		0.0254	-0.0011	-0.42	0.0131	-0.0014	-0.88	WD
TWFE6E		0.0213	-0.0052	-2.01	0.0121	-0.0025	-1.56	CI
VP3RZ6	*	0.0254	-0.0011	-0.42	0.0174	0.0029	1.82	OE
WDGZK7		0.0233	-0.0031	-1.22	0.0128	-0.0017	-1.09	CO
WHR2PA		0.0285	0.0020	0.78	0.0161	0.0016	1.00	OE
WJ7TEK	M	No Data Reported			0.0145	0.0000	-0.01	IR
WJR6GZ		0.0291	0.0026	1.01	0.0156	0.0011	0.68	CI
WWUQJP		0.0265	0.0000	0.01	0.0145	0.0000	-0.01	OE
XTNRL2		0.0296	0.0031	1.20	0.0156	0.0011	0.68	OE
ZGPLRU		0.0267	0.0002	0.07	0.0143	-0.0002	-0.12	CI

Summary Statistics

	Sample M13		Sample M14	
Grand Means	0.0265	Percent	0.0145	Percent
Std Dev Btwn Labs	0.0026	Percent	0.0016	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 50 of 57 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1643

- 7XXDCL (X) - Data for sample M14 are low.
- G84X46 (X) - Data for sample M13 are high. Inconsistent within the determinations of sample M14.
- LBVH6H (X) - Data for sample M14 are low.
- LKBLXA (X) - Data for sample M14 are low.
- R6LEDW (X) - Data for both samples are low.
- WJ7TEK (M) - Participant did not submit data for sample M13.



Analysis 1643

Corrosion Resistant Steel, SULFUR (S)

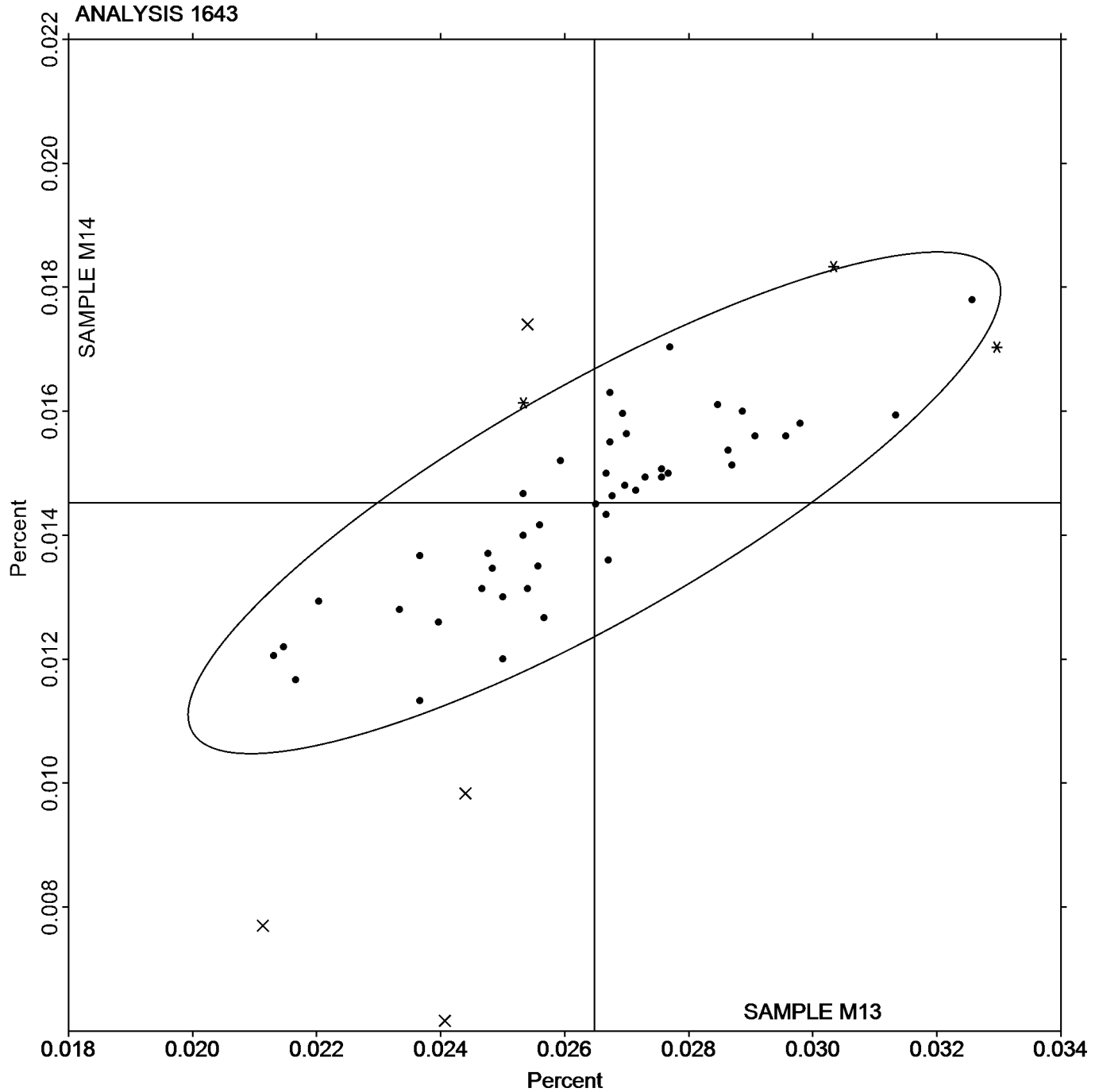
SULFUR (S)

SAMPLE M13

0.0265 Percent

SAMPLE M14

0.0145 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1644

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		0.2813	-0.0052	-0.52	0.3827	-0.0075	-0.63	OE
36YR8J		0.2833	-0.0033	-0.33	0.3885	-0.0016	-0.14	OE
38U6FV		0.3007	0.0141	1.39	0.4063	0.0162	1.36	XX
3AX8TD		0.2873	0.0008	0.08	0.3897	-0.0005	-0.04	OE
43CHMA		0.2873	0.0008	0.08	0.4017	0.0115	0.97	OE
4AKQLR		0.2983	0.0117	1.16	0.4054	0.0152	1.28	OE
66C4XD		0.2897	0.0031	0.31	0.3903	0.0002	0.02	XX
66XDCN		0.2827	-0.0039	-0.38	0.3897	-0.0005	-0.04	WD
6K287G		0.2837	-0.0028	-0.28	0.3877	-0.0025	-0.21	GR
6W8R7P		0.2793	-0.0072	-0.71	0.3810	-0.0092	-0.77	XR
7HLYVN		0.2813	-0.0052	-0.52	0.3870	-0.0032	-0.26	OE
7XXDCL		0.3053	0.0188	1.85	0.4130	0.0228	1.92	OE
8G3BB8		0.2888	0.0023	0.22	0.3924	0.0023	0.19	WD
94ACJ4	X	0.3400	0.0534	5.27	0.4470	0.0568	4.77	OE
BRANE6		0.2863	-0.0002	-0.02	0.3883	-0.0018	-0.15	OE
CARVCL	*	0.3060	0.0194	1.92	0.3900	-0.0002	-0.01	IC
CK9R8R		0.2800	-0.0066	-0.65	0.3800	-0.0102	-0.85	XX
EX22RB	X	0.2673	-0.0192	-1.90	0.3320	-0.0582	-4.88	OE
EX3Y37		0.2897	0.0031	0.31	0.4023	0.0122	1.02	OE
F93UQU		0.3053	0.0188	1.85	0.4157	0.0255	2.14	OE
FMZWET		0.2740	-0.0126	-1.24	0.3710	-0.0192	-1.61	IC
G84X46		0.2993	0.0127	1.25	0.4001	0.0099	0.84	OE
GA8TM9	*	0.2670	-0.0196	-1.93	0.3590	-0.0312	-2.62	GD
HF3FE7		0.2867	0.0001	0.01	0.3893	-0.0008	-0.07	WD
HGXXG8		0.2746	-0.0120	-1.18	0.3782	-0.0119	-1.00	WD
J3YDPV		0.2913	0.0048	0.47	0.3910	0.0008	0.07	XX
K7EZ2F		0.2863	-0.0002	-0.02	0.3850	-0.0052	-0.43	OE
KR2GJN		0.2787	-0.0079	-0.78	0.3767	-0.0135	-1.13	OE
L87HGL		0.2927	0.0061	0.60	0.3907	0.0005	0.04	OE
L9N869		0.2787	-0.0079	-0.78	0.3813	-0.0088	-0.74	XR
LBVH6H		0.2957	0.0091	0.90	0.3867	-0.0035	-0.29	XX
LG6E4W		0.2946	0.0080	0.79	0.3893	-0.0009	-0.07	OE
LKBLXA		0.2810	-0.0056	-0.55	0.3890	-0.0012	-0.10	OE
MMJ4NJ		0.2933	0.0068	0.67	0.3967	0.0065	0.55	OE
MUG26U		0.2800	-0.0066	-0.65	0.3800	-0.0102	-0.85	OE
N42MWA		0.2643	-0.0222	-2.19	0.3793	-0.0108	-0.91	IC
NQPBAF		0.3100	0.0234	2.31	0.4200	0.0298	2.51	OE
NVPDKB		0.2860	-0.0006	-0.06	0.3920	0.0018	0.15	WD
QDG3RN		0.2598	-0.0267	-2.64	0.3663	-0.0239	-2.00	ED
QREAM4	X	0.3387	0.0521	5.14	0.4410	0.0508	4.27	OE
R6LEDW		0.3027	0.0161	1.59	0.4030	0.0128	1.08	OE
RQJ2Z7		0.2907	0.0041	0.41	0.4020	0.0118	0.99	OE
RRRBY6		0.2757	-0.0109	-1.08	0.3757	-0.0145	-1.22	OE
T37J8Q		0.2850	-0.0016	-0.15	0.3917	0.0015	0.13	XX
T6XJKU		0.2900	0.0034	0.34	0.3900	-0.0002	-0.01	WD
TWFE6E		0.2887	0.0021	0.21	0.3933	0.0032	0.27	OE
UFVWVD	*	0.3120	0.0255	2.51	0.3963	0.0062	0.52	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1644

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VP3RZ6		0.2940	0.0074	0.73	0.3980	0.0078	0.66	OE
VYHUTV		0.2733	-0.0132	-1.31	0.3733	-0.0168	-1.41	WD
WDGZK7	X	0.2890	0.0024	0.24	0.3217	-0.0685	-5.75	OE
WHR2PA		0.2881	0.0015	0.15	0.3941	0.0039	0.33	OE
WJ7TEK		0.2837	-0.0029	-0.29	0.3923	0.0022	0.18	WD
WJR6GZ		0.2910	0.0044	0.44	0.4013	0.0112	0.94	OE
WWUQJP		0.2900	0.0034	0.34	0.3970	0.0068	0.57	OE
XTNRL2		0.2813	-0.0052	-0.52	0.3903	0.0002	0.02	OE
ZGPLRU		0.2897	0.0031	0.31	0.3823	-0.0078	-0.66	OE

Summary Statistics

	Sample M13		Sample M14	
Grand Means	0.2866	Percent	0.3902	Percent
Std Dev Btwn Labs	0.0101	Percent	0.0119	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 50 of 56 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)	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

94ACJ4 (X) - Data for both samples are high.

EX22RB (X) - Data for sample M14 are low.

QREAM4 (X) - Data for both samples are high.

WDGZK7 (X) - Data for sample M14 are low. Inconsistent within the determinations of both samples.

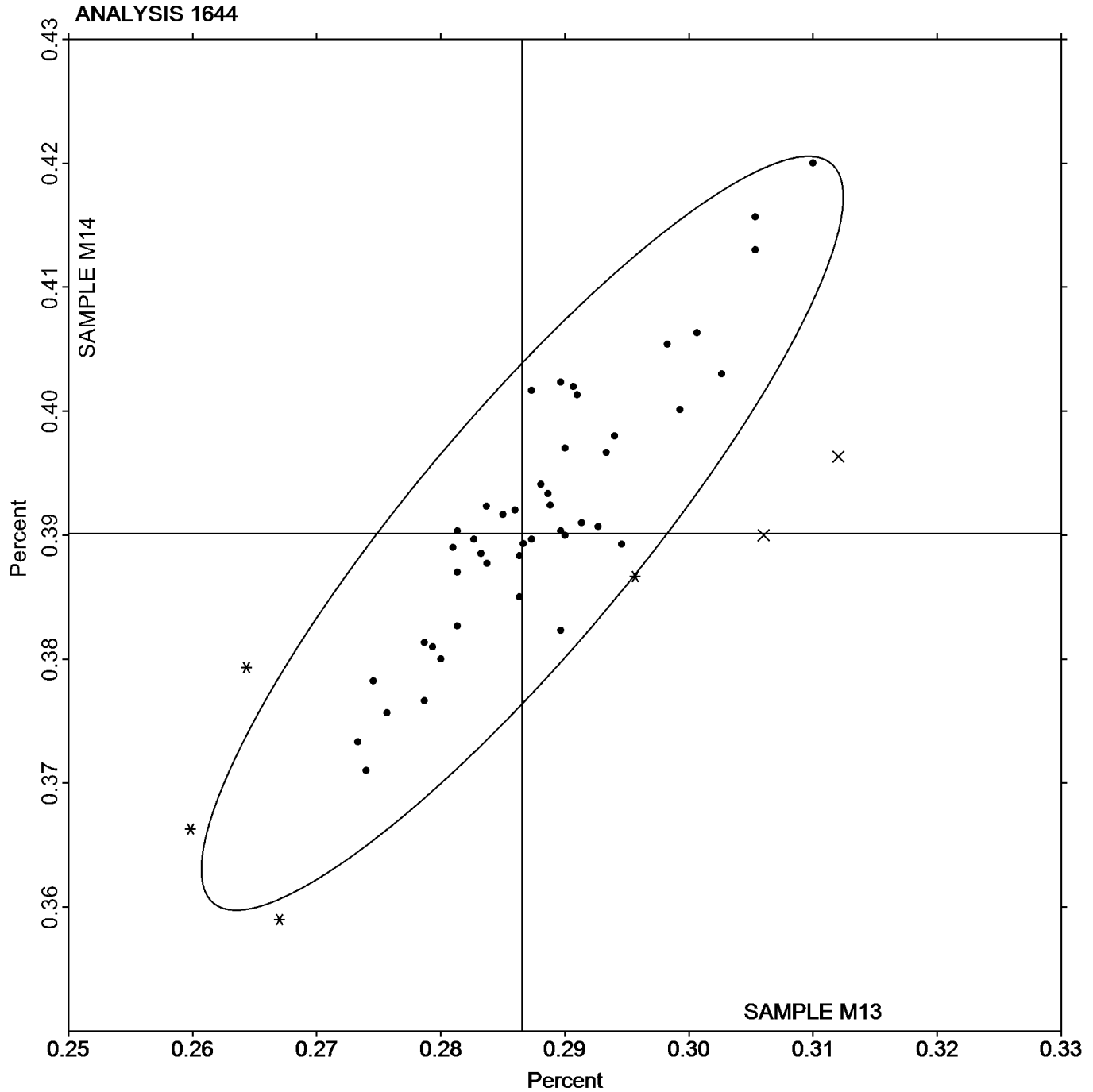


Analysis 1644

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

SAMPLE M13
0.2866 Percent

SAMPLE M14
0.3902 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****Analysis 1645****4th Qtr 2025****Corrosion Resistant Steel, COBALT (Co)
COBALT (Co)**

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
36YR8J		0.2643	0.0020	0.25	0.1841	0.0064	1.16	OE
38U6FV		0.2487	-0.0137	-1.70	0.1627	-0.0150	-2.70	XX
3AX8TD		0.2773	0.0150	1.86	0.1823	0.0047	0.85	OE
43CHMA		0.2463	-0.0160	-1.99	0.1710	-0.0066	-1.20	OE
4AKQLR		0.2643	0.0020	0.25	0.1774	-0.0002	-0.04	OE
66C4XD		0.2590	-0.0033	-0.41	0.1737	-0.0040	-0.72	XX
66XDCN		0.2627	0.0004	0.05	0.1783	0.0006	0.11	WD
6K287G		0.2665	0.0042	0.52	0.1827	0.0050	0.91	IC
6W8R7P		0.2620	-0.0003	-0.04	0.1790	0.0014	0.24	XR
7XXDCL		0.2710	0.0087	1.08	0.1817	0.0040	0.72	OE
8G3BB8		0.2650	0.0027	0.33	0.1782	0.0006	0.10	WD
94ACJ4	X	0.2970	0.0347	4.30	0.1923	0.0147	2.65	OE
BRANE6		0.2703	0.0080	0.99	0.1803	0.0027	0.48	OE
CARVCL		0.2640	0.0017	0.21	0.1800	0.0024	0.42	IC
CK9R8R		0.2767	0.0143	1.78	0.1900	0.0124	2.23	XX
EX22RB	X	0.1733	-0.0890	-11.04	0.1683	-0.0093	-1.68	OE
EX3Y37	X	0.2720	0.0097	1.20	0.1120	-0.0656	-11.84	OE
F93UQU		0.2683	0.0060	0.74	0.1813	0.0037	0.66	OE
FMZWET		0.2563	-0.0060	-0.74	0.1747	-0.0030	-0.54	IC
G84X46		0.2716	0.0092	1.15	0.1803	0.0027	0.48	OE
HF3FE7		0.2623	0.0000	0.00	0.1837	0.0060	1.09	WD
HGXXG8		0.2597	-0.0027	-0.33	0.1770	-0.0007	-0.12	WD
JX3KJU		0.2570	-0.0053	-0.66	0.1740	-0.0036	-0.66	IC
K7EZ2F		0.2703	0.0080	0.99	0.1800	0.0024	0.42	OE
KR2GJN		0.2740	0.0117	1.45	0.1793	0.0017	0.30	OE
L87HGL		0.2623	0.0000	0.00	0.1803	0.0027	0.48	OE
L9N869		0.2570	-0.0053	-0.66	0.1773	-0.0003	-0.06	XR
LBVH6H		0.2643	0.0020	0.25	0.1677	-0.0100	-1.80	XX
LG6E4W		0.2653	0.0030	0.37	0.1750	-0.0026	-0.48	OE
LKBLXA		0.2597	-0.0027	-0.33	0.1803	0.0027	0.48	OE
MMJ4NJ		0.2600	-0.0023	-0.29	0.1800	0.0024	0.42	OE
MUG26U		0.2700	0.0077	0.95	0.1820	0.0044	0.79	OE
NQPBAF		0.2667	0.0043	0.54	0.1800	0.0024	0.42	OE
NVPDKB		0.2673	0.0050	0.62	0.1817	0.0040	0.72	IC
PAYH8T		0.2630	0.0006	0.08	0.1794	0.0017	0.31	XX
QDG3RN		0.2660	0.0037	0.46	0.1809	0.0032	0.58	ED
R6LEDW		0.2707	0.0083	1.03	0.1793	0.0017	0.30	OE
RQJ2Z7		0.2643	0.0020	0.25	0.1810	0.0034	0.60	OE
RRRBY6		0.2467	-0.0157	-1.94	0.1657	-0.0120	-2.16	OE
T37J8Q		0.2690	0.0067	0.83	0.1847	0.0070	1.27	IC
T6XJKU		0.2610	-0.0013	-0.17	0.1773	-0.0003	-0.06	WD
TWFE6E	*	0.2470	-0.0153	-1.90	0.1610	-0.0166	-3.00	OE
UFVWVD		0.2610	-0.0013	-0.17	0.1747	-0.0030	-0.54	OE
VP3RZ6		0.2480	-0.0143	-1.78	0.1710	-0.0066	-1.20	OE
VYHUTV		0.2580	-0.0043	-0.54	0.1767	-0.0010	-0.18	WD
WDGZK7	X	0.2340	-0.0283	-3.52	0.2083	0.0307	5.53	OE
WHR2PA		0.2599	-0.0024	-0.30	0.1768	-0.0008	-0.15	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1645

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WJ7TEK		0.2673	0.0050	0.62	0.1810	0.0034	0.60	WD
WJR6GZ		0.2560	-0.0063	-0.79	0.1787	0.0010	0.18	OE
WWUQJP		0.2650	0.0027	0.33	0.1780	0.0004	0.06	OE
XTNRL2	*	0.2397	-0.0227	-2.81	0.1697	-0.0080	-1.44	OE
ZGPLRU		0.2590	-0.0033	-0.41	0.1753	-0.0023	-0.42	OE

Summary Statistics

	Sample M13		Sample M14	
Grand Means	0.2623	Percent	0.1776	Percent
Std Dev Btwn Labs	0.0081	Percent	0.0055	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 48 of 52 reporting participants

Key to Method Codes Reported by Participants

ED	X-Ray Fluorescence - Energy Dispersive (EDX)	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 #1645

- 94ACJ4 (X) - Data for sample M13 are high.
- EX22RB (X) - Data for sample M13 are low. Inconsistent within the determinations of both samples.
- EX3Y37 (X) - Data for sample M14 are low. Inconsistent within the determinations of sample M14.
- WDGZK7 (X) - Data for sample M13 are low and data for sample M14 are high. Inconsistent within the determinations of both samples.

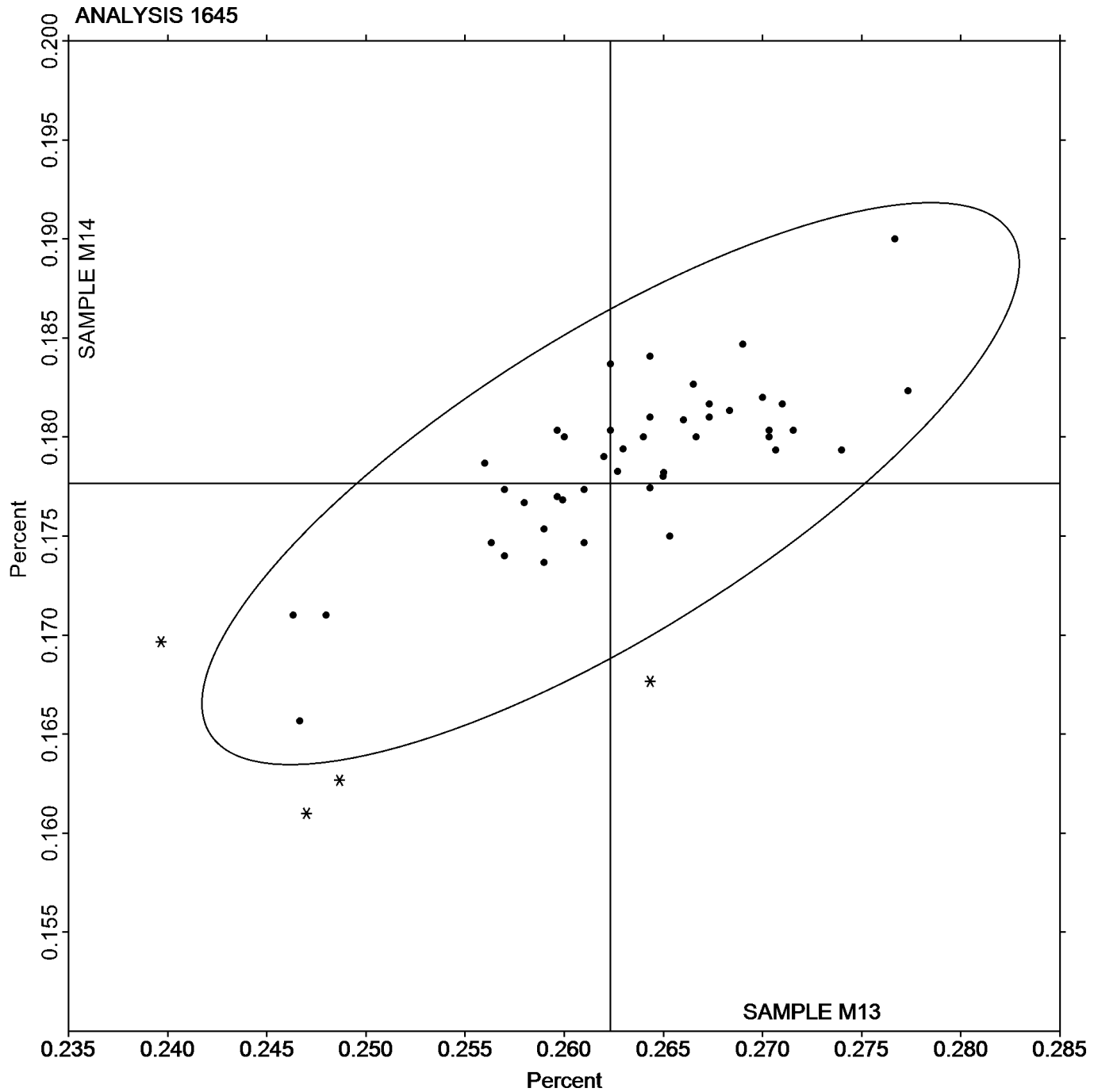


Analysis 1645

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

SAMPLE M13
0.2623 Percent

SAMPLE M14
0.1776 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1646

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		8.303	0.072	1.03	8.397	0.030	0.49	OE
2V4XYU		8.257	0.026	0.37	8.350	-0.017	-0.28	WC
36YR8J		8.199	-0.032	-0.46	8.372	0.005	0.08	OE
38U6FV		8.220	-0.011	-0.16	8.357	-0.010	-0.17	XX
3AX8TD		8.287	0.056	0.80	8.483	0.116	1.92	OE
43CHMA		8.317	0.085	1.23	8.363	-0.004	-0.06	OE
4AKQLR		8.160	-0.072	-1.03	8.304	-0.063	-1.04	OE
66C4XD		8.254	0.023	0.33	8.384	0.017	0.29	XX
66XDCN		8.243	0.012	0.17	8.354	-0.013	-0.21	WD
6K287G		8.201	-0.030	-0.43	8.385	0.018	0.29	TI
6W8R7P		8.165	-0.066	-0.95	8.294	-0.073	-1.20	XR
7HLYVN		8.097	-0.135	-1.93	8.307	-0.060	-1.00	OE
7XXDCL		8.353	0.122	1.75	8.490	0.123	2.04	OE
8G3BB8		8.240	0.008	0.12	8.350	-0.017	-0.28	WD
94ACJ4	X	7.693	-0.538	-7.73	7.763	-0.604	-10.02	OE
BRANE6		8.188	-0.044	-0.63	8.296	-0.071	-1.17	OE
CARVCL		8.208	-0.023	-0.34	8.305	-0.062	-1.03	IC
CK9R8R	X	7.737	-0.495	-7.11	7.750	-0.617	-10.24	XX
EX22RB		8.150	-0.081	-1.17	8.277	-0.090	-1.50	OE
EX3Y37		8.234	0.003	0.04	8.390	0.023	0.38	OE
F93UQU	X	8.500	0.269	3.86	8.557	0.190	3.15	OE
FMZWET		8.298	0.067	0.96	8.412	0.045	0.74	IC
G84X46	X	8.505	0.274	3.94	8.625	0.258	4.29	OE
GA8TM9	X	8.696	0.465	6.68	8.787	0.420	6.97	GD
HF3FE7		8.235	0.004	0.05	8.370	0.003	0.06	WD
HGXXG8		8.267	0.036	0.51	8.389	0.022	0.36	WD
J3YDPV		8.247	0.015	0.22	8.397	0.030	0.49	OE
JX3KJU		8.185	-0.046	-0.67	8.315	-0.052	-0.86	IC
K7EZ2F		8.195	-0.036	-0.52	8.337	-0.030	-0.50	OE
KR2GJN		8.293	0.062	0.89	8.377	0.010	0.16	OE
L87HGL		8.220	-0.011	-0.16	8.320	-0.047	-0.78	OE
L9N869		8.158	-0.074	-1.06	8.278	-0.089	-1.48	XR
LBVH6H		8.297	0.065	0.94	8.447	0.080	1.32	XX
LG6E4W	X	8.496	0.265	3.80	8.759	0.392	6.50	OE
LKBLXA		8.207	-0.025	-0.35	8.347	-0.020	-0.34	OE
MMJ4NJ		8.183	-0.048	-0.69	8.330	-0.037	-0.61	OE
MUG26U		8.220	-0.011	-0.16	8.330	-0.037	-0.61	OE
N42MWA		8.380	0.148	2.13	8.403	0.036	0.60	IC
NQPBAF		8.077	-0.155	-2.22	8.243	-0.124	-2.05	OE
NVPDKB		8.229	-0.002	-0.03	8.380	0.013	0.21	WD
PAYH8T		8.222	-0.009	-0.13	8.350	-0.017	-0.28	XX
QDG3RN		8.237	0.005	0.08	8.342	-0.025	-0.41	ED
QREAM4		8.123	-0.108	-1.55	8.390	0.023	0.38	OE
R6LEDW		8.233	0.002	0.03	8.393	0.026	0.44	OE
RQJ2Z7		8.200	-0.031	-0.45	8.330	-0.037	-0.61	OE
RRRBY6		8.126	-0.105	-1.51	8.309	-0.058	-0.97	OE
T37J8Q		8.306	0.075	1.08	8.420	0.053	0.89	TI



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1646

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
T6XJKU		8.287	0.055	0.79	8.370	0.003	0.05	WD
TWFE6E		8.290	0.059	0.84	8.507	0.140	2.32	OE
UFWVVD		8.357	0.125	1.80	8.510	0.143	2.37	OE
VP3RZ6		8.120	-0.111	-1.60	8.330	-0.037	-0.61	OE
VYHUTV		8.170	-0.061	-0.88	8.283	-0.084	-1.39	WD
WDGZK7		8.377	0.145	2.09	8.427	0.060	0.99	OE
WHR2PA		8.187	-0.044	-0.63	8.395	0.028	0.47	OE
WJ7TEK		8.221	-0.011	-0.15	8.349	-0.018	-0.30	WD
WJR6GZ	X	8.358	0.126	1.81	8.734	0.367	6.09	OE
WWUQJP		8.254	0.023	0.33	8.470	0.103	1.71	OE
XTNRL2		8.343	0.112	1.61	8.443	0.076	1.27	OE
ZGPLRU		8.211	-0.020	-0.29	8.331	-0.036	-0.60	OE

Summary Statistics

	Sample M13		Sample M14	
Grand Means	8.231	Percent	8.367	Percent
Stnd Dev Btwn Labs	0.070	Percent	0.060	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 52 of 59 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)
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

- 94ACJ4 (X) - Data for both samples are low. Possible Systematic Error.
- CK9R8R (X) - Data for both samples are low. Possible Systematic Error.
- F93UQU (X) - Data for both samples are high. Possible Systematic Error.
- G84X46 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M13.
- GA8TM9 (X) - Data for both samples are high. Possible Systematic Error.
- LG6E4W (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M13.
- WJR6GZ (X) - Data for sample M14 are high.



Analysis 1646

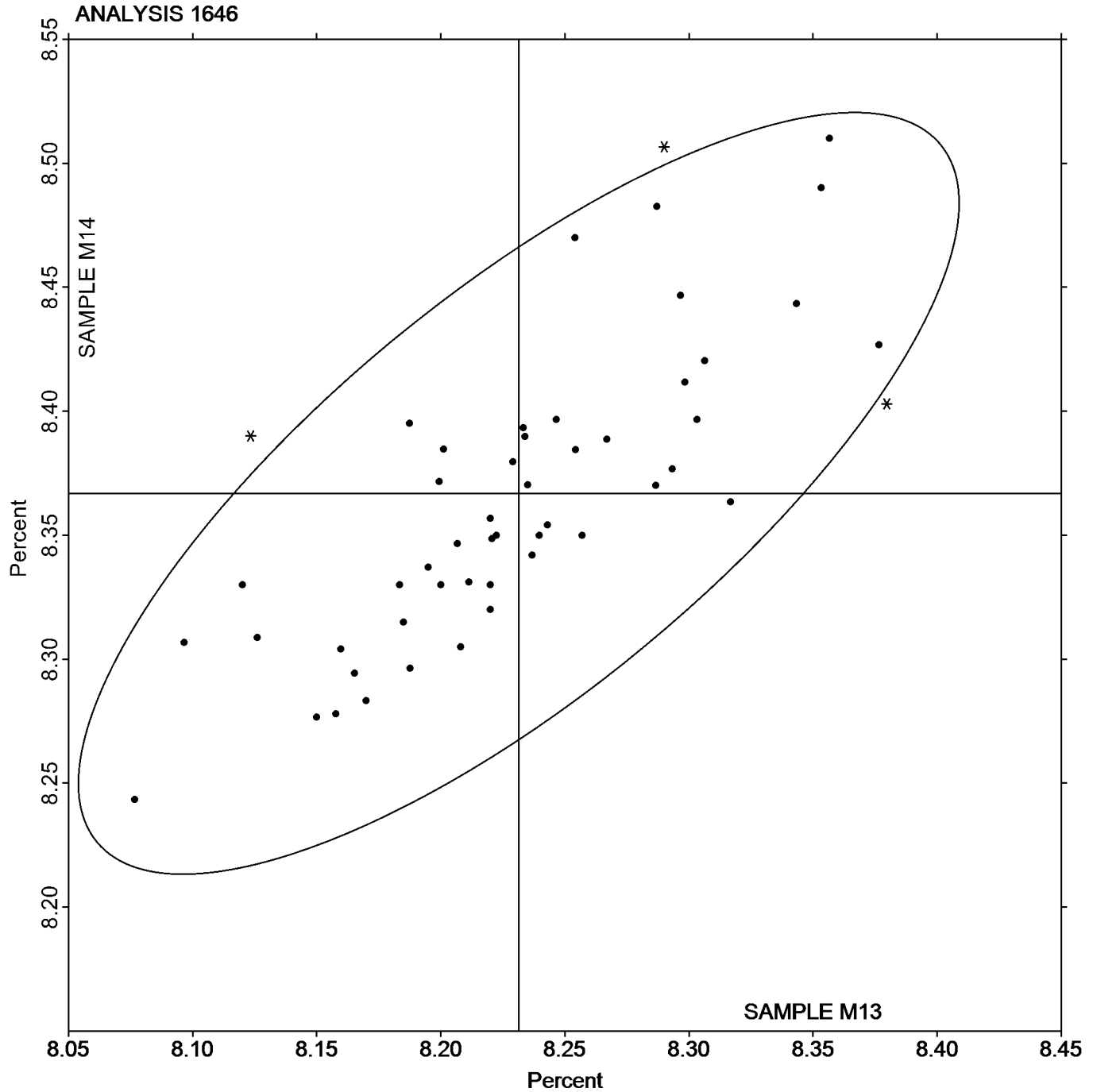
Corrosion Resistant Steel, NICKEL (Ni)
NICKEL (Ni)

SAMPLE M13

8.231 Percent

SAMPLE M14

8.367 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****4th Qtr 2025****Analysis 1647****Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)**

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		18.31	0.06	0.47	18.17	0.02	0.16	OE
2V4XYU		18.21	-0.05	-0.39	18.13	-0.03	-0.19	WC
36YR8J		18.12	-0.13	-1.08	18.04	-0.11	-0.82	WD
38U6FV	*	17.93	-0.33	-2.68	17.84	-0.31	-2.36	XX
3AX8TD		18.41	0.16	1.32	18.29	0.14	1.07	OE
43CHMA		18.51	0.26	2.12	18.49	0.34	2.57	OE
4AKQLR		18.18	-0.07	-0.59	18.05	-0.11	-0.80	OE
66C4XD		18.33	0.08	0.64	18.19	0.04	0.31	XX
66XDCN		18.40	0.15	1.23	18.28	0.13	1.00	WD
6K287G		18.20	-0.05	-0.45	18.09	-0.06	-0.49	TI
6W8R7P		18.15	-0.11	-0.88	18.06	-0.10	-0.72	XR
7HLYVN		18.55	0.30	2.48	18.42	0.27	2.02	OE
7XXDCL		18.18	-0.08	-0.62	18.08	-0.07	-0.52	OE
8G3BB8		18.21	-0.04	-0.33	18.09	-0.07	-0.50	WD
94ACJ4		18.49	0.24	1.96	18.42	0.27	2.02	OE
BRANE6		18.30	0.04	0.36	18.11	-0.04	-0.32	OE
CARVCL	X	17.86	-0.39	-3.23	17.53	-0.62	-4.69	IC
CK9R8R		18.18	-0.08	-0.62	18.11	-0.04	-0.29	XX
EX22RB	*	18.41	0.16	1.32	18.04	-0.11	-0.85	OE
EX3Y37		18.26	0.00	0.03	18.13	-0.02	-0.14	OE
F93UQU	*	18.58	0.33	2.72	18.56	0.41	3.08	OE
FMZWET		18.30	0.05	0.39	18.31	0.16	1.22	IC
G84X46	*	17.95	-0.31	-2.52	18.03	-0.12	-0.90	OE
GA8TM9		17.98	-0.27	-2.22	17.90	-0.26	-1.94	GD
HF3FE7		18.25	-0.01	-0.06	18.17	0.01	0.11	WD
HGXXG8		18.27	0.02	0.18	18.11	-0.04	-0.33	WD
J3YDPV		18.28	0.03	0.23	18.13	-0.02	-0.14	OE
JX3KJU		18.10	-0.15	-1.26	18.00	-0.15	-1.15	IC
K7EZ2F		18.23	-0.02	-0.19	18.23	0.08	0.59	OE
KR2GJN		18.32	0.07	0.58	18.22	0.07	0.54	OE
L87HGL		18.23	-0.02	-0.16	18.09	-0.06	-0.47	OE
L9N869		18.20	-0.05	-0.41	18.13	-0.03	-0.20	XR
LBVH6H		18.22	-0.03	-0.24	18.15	-0.01	-0.04	XX
LG6E4W		18.23	-0.02	-0.17	18.27	0.12	0.91	OE
LKBLXA		18.31	0.06	0.50	18.18	0.02	0.18	OE
MMJ4NJ		18.26	0.00	0.03	18.16	0.01	0.08	OE
MUG26U		18.27	0.02	0.14	18.17	0.02	0.13	OE
N42MWA	X	18.74	0.49	4.04	18.53	0.38	2.84	IC
NQPBAF		18.20	-0.05	-0.43	18.03	-0.12	-0.90	OE
NVPDKB		18.23	-0.02	-0.19	18.15	0.00	-0.02	WD
PAYH8T		18.15	-0.10	-0.86	18.02	-0.13	-0.99	XX
QDG3RN		18.29	0.04	0.33	18.16	0.01	0.07	ED
QREAM4		18.14	-0.12	-0.95	18.03	-0.12	-0.92	OE
R6LEDW		18.29	0.04	0.31	18.18	0.02	0.18	OE
RQJ2Z7		18.20	-0.05	-0.43	18.04	-0.11	-0.85	OE
RRRBY6		18.29	0.04	0.31	18.31	0.16	1.19	OE
T37J8Q		18.07	-0.18	-1.52	17.97	-0.18	-1.39	TI



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1647

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
T6XJKU		18.38	0.12	1.02	18.26	0.11	0.81	WD
TWFE6E		18.23	-0.02	-0.19	18.07	-0.08	-0.62	OE
UFWVVD		18.29	0.04	0.34	18.13	-0.02	-0.14	OE
VP3RZ6	*	18.34	0.09	0.72	18.04	-0.11	-0.85	OE
VYHUTV		18.28	0.02	0.19	18.08	-0.07	-0.54	WD
WDGZK7		18.24	-0.01	-0.10	18.23	0.08	0.61	OE
WHR2PA		18.23	-0.02	-0.20	18.12	-0.04	-0.28	OE
WJ7TEK		18.20	-0.05	-0.41	18.06	-0.09	-0.67	WD
WJR6GZ		18.09	-0.17	-1.37	18.08	-0.07	-0.54	OE
WWUQJP		18.28	0.03	0.23	18.18	0.03	0.21	OE
XTNRL2		18.35	0.10	0.80	18.22	0.06	0.49	OE
ZGPLRU		18.26	0.01	0.10	18.11	-0.04	-0.30	OE

Summary Statistics

Sample M13				Sample M14			
Grand Means	18.25	Percent		18.15	Percent		
Std Dev Btwn Labs	0.12	Percent		0.13	Percent		

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 54 of 59 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)
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

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

N42MWA (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.



Analysis 1647

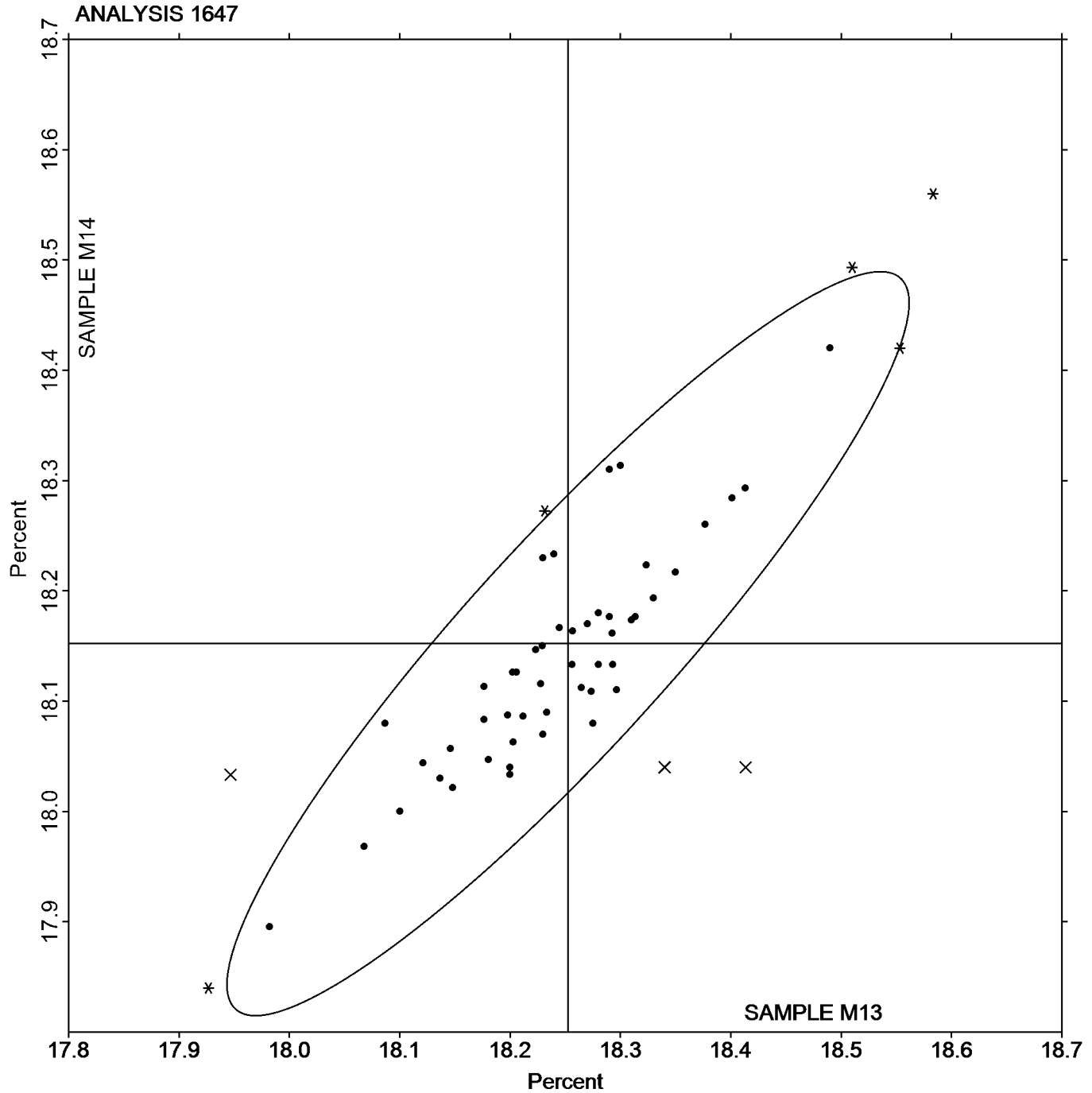
Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE M13

18.25 Percent

SAMPLE M14

18.15 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1648

Cycle 152

4th Qtr 2025

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		0.5293	0.0134	1.12	0.3377	0.0165	2.04	OE
36YR8J		0.5103	-0.0056	-0.47	0.3159	-0.0052	-0.65	OE
38U6FV	*	0.5493	0.0334	2.79	0.3423	0.0212	2.62	XX
3AX8TD		0.5063	-0.0096	-0.80	0.3150	-0.0062	-0.76	OE
43CHMA		0.5170	0.0011	0.09	0.3220	0.0008	0.10	OE
4AKQLR		0.5159	0.0000	0.00	0.3196	-0.0015	-0.19	OE
66C4XD		0.5070	-0.0089	-0.74	0.3173	-0.0038	-0.48	XX
66XDCN		0.5186	0.0027	0.22	0.3208	-0.0003	-0.04	WD
6K287G		0.5106	-0.0053	-0.44	0.3151	-0.0061	-0.76	IC
6W8R7P		0.5107	-0.0052	-0.44	0.3157	-0.0055	-0.68	XR
7XXDCL		0.5193	0.0034	0.29	0.3290	0.0078	0.97	OE
8G3BB8		0.5147	-0.0012	-0.10	0.3185	-0.0027	-0.34	WD
94ACJ4	*	0.5093	-0.0066	-0.55	0.3363	0.0152	1.88	OE
BRANE6		0.5187	0.0028	0.23	0.3220	0.0008	0.10	OE
CARVCL		0.5140	-0.0019	-0.16	0.3180	-0.0032	-0.39	IC
CK9R8R	*	0.4800	-0.0359	-3.00	0.3000	-0.0212	-2.62	XX
EX22RB	X	0.4483	-0.0676	-5.64	0.3037	-0.0175	-2.17	OE
EX3Y37	*	0.4920	-0.0239	-1.99	0.3280	0.0068	0.85	OE
F93UQU		0.5043	-0.0116	-0.97	0.3077	-0.0135	-1.67	OE
FMZWET		0.5083	-0.0076	-0.63	0.3150	-0.0062	-0.76	IC
G84X46	*	0.5390	0.0231	1.93	0.3259	0.0047	0.58	OE
GA8TM9		0.5373	0.0214	1.79	0.3363	0.0152	1.88	GD
HF3FE7		0.5140	-0.0019	-0.16	0.3167	-0.0045	-0.56	WD
HGXXG8		0.5164	0.0005	0.04	0.3165	-0.0047	-0.58	WD
J3YDPV		0.5087	-0.0072	-0.60	0.3160	-0.0052	-0.64	OE
JX3KJU		0.5335	0.0176	1.47	0.3220	0.0008	0.10	IC
K7EZ2F		0.5083	-0.0076	-0.63	0.3180	-0.0032	-0.39	OE
KR2GJN		0.5137	-0.0022	-0.19	0.3230	0.0018	0.23	OE
L87HGL		0.5133	-0.0026	-0.22	0.3200	-0.0012	-0.15	OE
L9N869		0.5143	-0.0016	-0.13	0.3177	-0.0035	-0.43	XR
LBVH6H		0.4990	-0.0169	-1.41	0.3190	-0.0022	-0.27	XX
LG6E4W		0.5363	0.0204	1.70	0.3360	0.0149	1.84	OE
LKBLXA		0.5057	-0.0102	-0.85	0.3150	-0.0062	-0.76	OE
MMJ4NJ	X	0.6497	0.1338	11.16	0.4253	0.1042	12.90	OE
MUG26U		0.5040	-0.0119	-0.99	0.3090	-0.0122	-1.51	OE
N42MWA		0.5120	-0.0039	-0.33	0.3227	0.0015	0.18	XX
NQPBAF		0.5267	0.0108	0.90	0.3333	0.0122	1.51	OE
NVPDKB		0.5117	-0.0042	-0.35	0.3197	-0.0015	-0.19	WD
PAYH8T		0.5129	-0.0030	-0.25	0.3152	-0.0060	-0.74	XX
QDG3RN		0.5102	-0.0057	-0.48	0.3142	-0.0070	-0.87	ED
R6LEDW		0.5157	-0.0002	-0.02	0.3210	-0.0002	-0.02	OE
RQJ2Z7	X	0.4767	-0.0392	-3.27	0.3220	0.0008	0.10	OE
RRRBY6	X	0.7440	0.2281	19.02	0.4523	0.1312	16.24	OE
T37J8Q		0.5153	-0.0006	-0.05	0.3183	-0.0028	-0.35	IC
T6XJKU		0.5200	0.0041	0.34	0.3200	-0.0012	-0.15	WD
TWFE6E		0.5413	0.0254	2.12	0.3310	0.0098	1.22	OE
UFWVVD		0.5000	-0.0159	-1.33	0.3200	-0.0012	-0.15	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1648

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VP3RZ6		0.5130	-0.0029	-0.24	0.3260	0.0048	0.60	OE
VYHUTV		0.5147	-0.0012	-0.10	0.3177	-0.0035	-0.43	WD
WDGZK7	X	0.4493	-0.0666	-5.55	0.3857	0.0645	7.99	OE
WHR2PA		0.5165	0.0006	0.05	0.3331	0.0119	1.47	OE
WJ7TEK		0.5133	-0.0026	-0.22	0.3183	-0.0028	-0.35	WD
WJR6GZ		0.5287	0.0128	1.06	0.3307	0.0095	1.18	OE
WWUQJP		0.5200	0.0041	0.34	0.3240	0.0028	0.35	OE
XTNRL2	X	0.5533	0.0374	3.12	0.3650	0.0438	5.43	OE
ZGPLRU		0.5140	-0.0019	-0.16	0.3287	0.0075	0.93	OE

Summary Statistics

	Sample M13		Sample M14	
Grand Means	0.5159	Percent	0.3212	Percent
Std Dev Btwn Labs	0.0120	Percent	0.0081	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 48 of 56 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)
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

- EX22RB (X) - Data for sample M13 are low.
- MMJ4NJ (X) - Data for both samples are high.
- RQJ2Z7 (X) - Data for sample M13 are low.
- RRRBY6 (X) - Data for both samples are high.
- WDGZK7 (X) - Data for sample M13 are low and data for sample M14 are high. Inconsistent within the determinations of both samples.
- XTNRL2 (X) - Data for both samples are high.

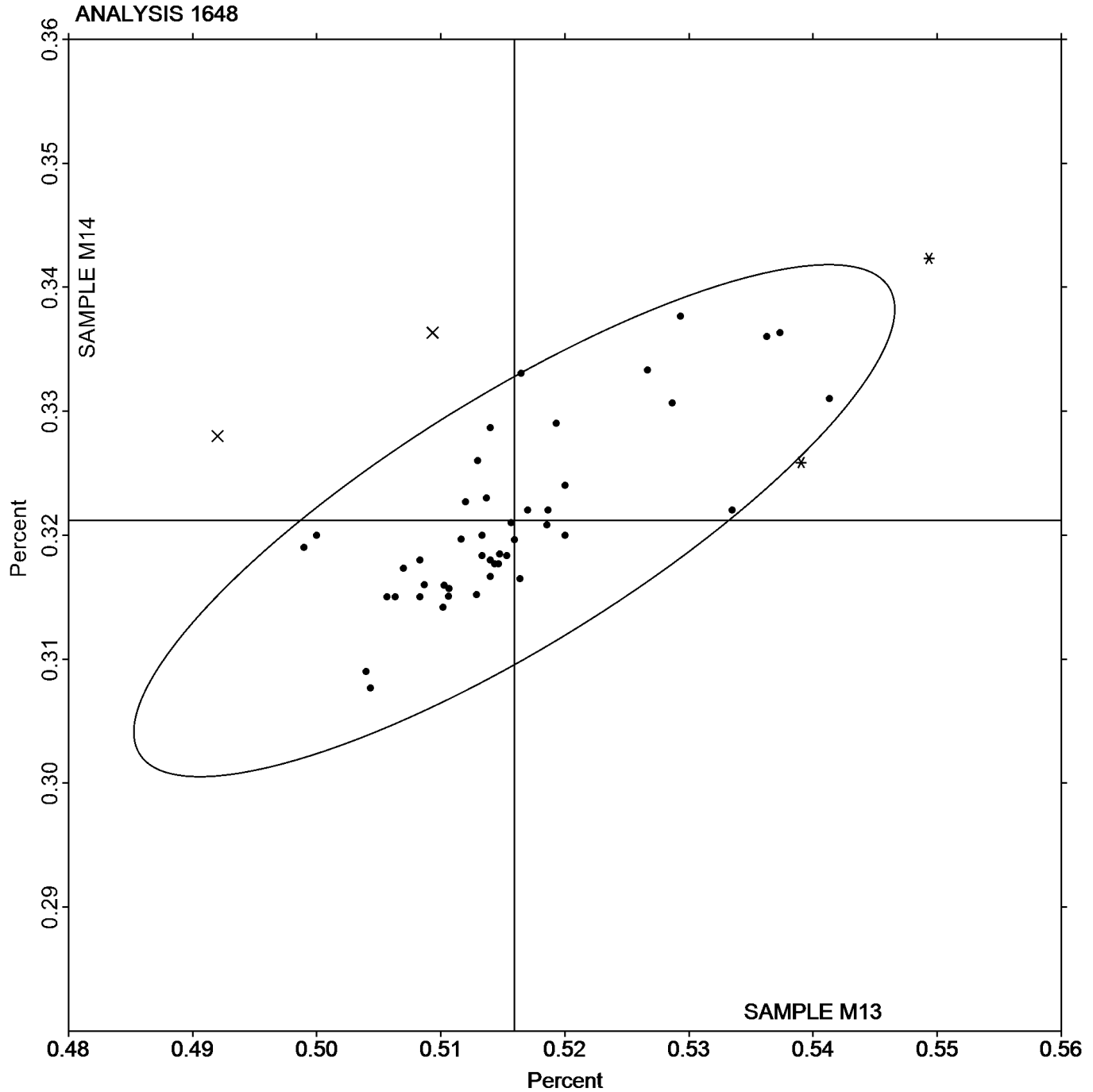


Analysis 1648

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

SAMPLE M13
0.5159 Percent

SAMPLE M14
0.3212 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1649

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2HVFZY		0.4967	0.0048	0.57	0.3060	0.0006	0.14	OE
36YR8J		0.4967	0.0049	0.58	0.3052	-0.0002	-0.04	OE
38U6FV		0.5000	0.0082	0.96	0.3113	0.0060	1.31	XX
3AX8TD	X	0.4877	-0.0042	-0.49	0.3330	0.0276	6.04	OE
43CHMA	X	0.4683	-0.0235	-2.77	0.2820	-0.0234	-5.10	OE
4AKQLR		0.4881	-0.0038	-0.44	0.3054	0.0000	0.01	OE
66C4XD		0.4937	0.0018	0.22	0.3067	0.0013	0.29	XX
66XDCN		0.4955	0.0037	0.43	0.3071	0.0017	0.37	WD
6K287G		0.4942	0.0024	0.28	0.3073	0.0020	0.43	IC
6W8R7P		0.4963	0.0045	0.53	0.3090	0.0036	0.80	XR
7XXDCL		0.4883	-0.0035	-0.41	0.3043	-0.0010	-0.22	OE
8G3BB8		0.5077	0.0159	1.87	0.3115	0.0062	1.35	WD
94ACJ4		0.4747	-0.0172	-2.02	0.3013	-0.0040	-0.88	OE
BRANE6		0.5017	0.0098	1.16	0.3070	0.0016	0.36	OE
CARVCL		0.5070	0.0152	1.79	0.3080	0.0026	0.58	IC
CK9R8R	X	0.5500	0.0582	6.85	0.3400	0.0346	7.57	XX
EX22RB	X	0.4030	-0.0888	-10.46	0.2177	-0.0877	-19.15	OE
EX3Y37		0.4937	0.0018	0.22	0.3057	0.0003	0.07	OE
F93UQU	X	0.4750	-0.0168	-1.98	0.2787	-0.0267	-5.83	OE
FMZWET		0.4873	-0.0045	-0.53	0.3023	-0.0030	-0.66	IC
G84X46	X	0.4868	-0.0050	-0.59	0.3269	0.0215	4.71	OE
GA8TM9	X	0.5360	0.0442	5.20	0.3273	0.0220	4.80	GD
HF3FE7		0.4977	0.0058	0.69	0.3060	0.0006	0.14	WD
HGXXG8		0.4889	-0.0030	-0.35	0.3028	-0.0025	-0.55	WD
J3YDPV		0.4913	-0.0005	-0.06	0.2980	-0.0074	-1.61	OE
JX3KJU		0.5060	0.0142	1.67	0.3145	0.0091	2.00	IC
K7EZ2F		0.4777	-0.0142	-1.67	0.3053	0.0000	0.00	OE
KR2GJN		0.4843	-0.0075	-0.88	0.2957	-0.0097	-2.12	OE
L87HGL		0.4920	0.0002	0.02	0.2970	-0.0084	-1.82	OE
L9N869		0.4923	0.0005	0.06	0.3087	0.0033	0.72	XR
LBVH6H		0.4933	0.0015	0.18	0.3000	-0.0054	-1.17	XX
LG6E4W	X	0.4608	-0.0310	-3.65	0.2924	-0.0130	-2.84	OE
LKBLXA		0.4943	0.0025	0.30	0.3047	-0.0007	-0.15	OE
MMJ4NJ		0.5000	0.0082	0.96	0.3067	0.0013	0.29	OE
MUG26U		0.4910	-0.0008	-0.10	0.3090	0.0036	0.80	OE
NQPBAF	*	0.4933	0.0015	0.18	0.2933	-0.0120	-2.63	OE
NVPDKB		0.4900	-0.0018	-0.21	0.3040	-0.0014	-0.30	WD
PAYH8T		0.4976	0.0057	0.68	0.3083	0.0030	0.65	XX
QDG3RN		0.4914	-0.0004	-0.05	0.3041	-0.0013	-0.28	ED
R6LEDW		0.4740	-0.0178	-2.10	0.3077	0.0023	0.51	OE
RQJ2Z7		0.4733	-0.0185	-2.18	0.3110	0.0056	1.23	OE
RRRBY6		0.4983	0.0065	0.77	0.3137	0.0083	1.82	OE
T37J8Q		0.4863	-0.0055	-0.65	0.3017	-0.0037	-0.80	IC
T6XJKU		0.4977	0.0058	0.69	0.3077	0.0023	0.51	WD
TWFE6E	X	0.4873	-0.0045	-0.53	0.3403	0.0350	7.64	OE
UFVWVD	X	0.4647	-0.0272	-3.20	0.2613	-0.0440	-9.61	OE
VP3RZ6		0.4870	-0.0048	-0.57	0.3020	-0.0034	-0.73	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1649

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

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VYHUTV		0.4910	-0.0008	-0.10	0.3030	-0.0024	-0.51	WD
WDGZK7	X	0.4380	-0.0538	-6.34	0.3740	0.0686	15.00	OE
WHR2PA		0.4826	-0.0093	-1.09	0.3056	0.0002	0.05	OE
WJ7TEK		0.5020	0.0102	1.20	0.3097	0.0043	0.94	WD
WJR6GZ		0.4717	-0.0202	-2.37	0.3060	0.0006	0.14	OE
WWUQJP		0.4900	-0.0018	-0.21	0.3100	0.0046	1.02	OE
XTNRL2		0.4943	0.0025	0.30	0.2973	-0.0080	-1.75	OE
ZGPLRU		0.4890	-0.0028	-0.33	0.3040	-0.0014	-0.30	OE

Summary Statistics

	Sample M13		Sample M14	
Grand Means	0.4918	Percent	0.3054	Percent
Std Dev Bwn Labs	0.0085	Percent	0.0046	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 44 of 55 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)
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

- 3AX8TD (X) - Data for sample M14 are high.
- 43CHMA (X) - Data for both samples are low. Inconsistent within the determinations of sample M13.
- CK9R8R (X) - Data for both samples are high.
- EX22RB (X) - Data for both samples are low.
- F93UQU (X) - Data for sample M14 are low.
- G84X46 (X) - Data for sample M14 are high.
- GA8TM9 (X) - Data for both samples are high.
- LG6E4W (X) - Data for both samples are low. Inconsistent within the determinations of sample M13.
- TWFE6E (X) - Data for sample M14 are high.
- UFWWD (X) - Data for both samples are low.
- WDGZK7 (X) - Data for sample M13 are low and data for sample M14 are high. Inconsistent within the determinations of both samples.



Analysis 1649

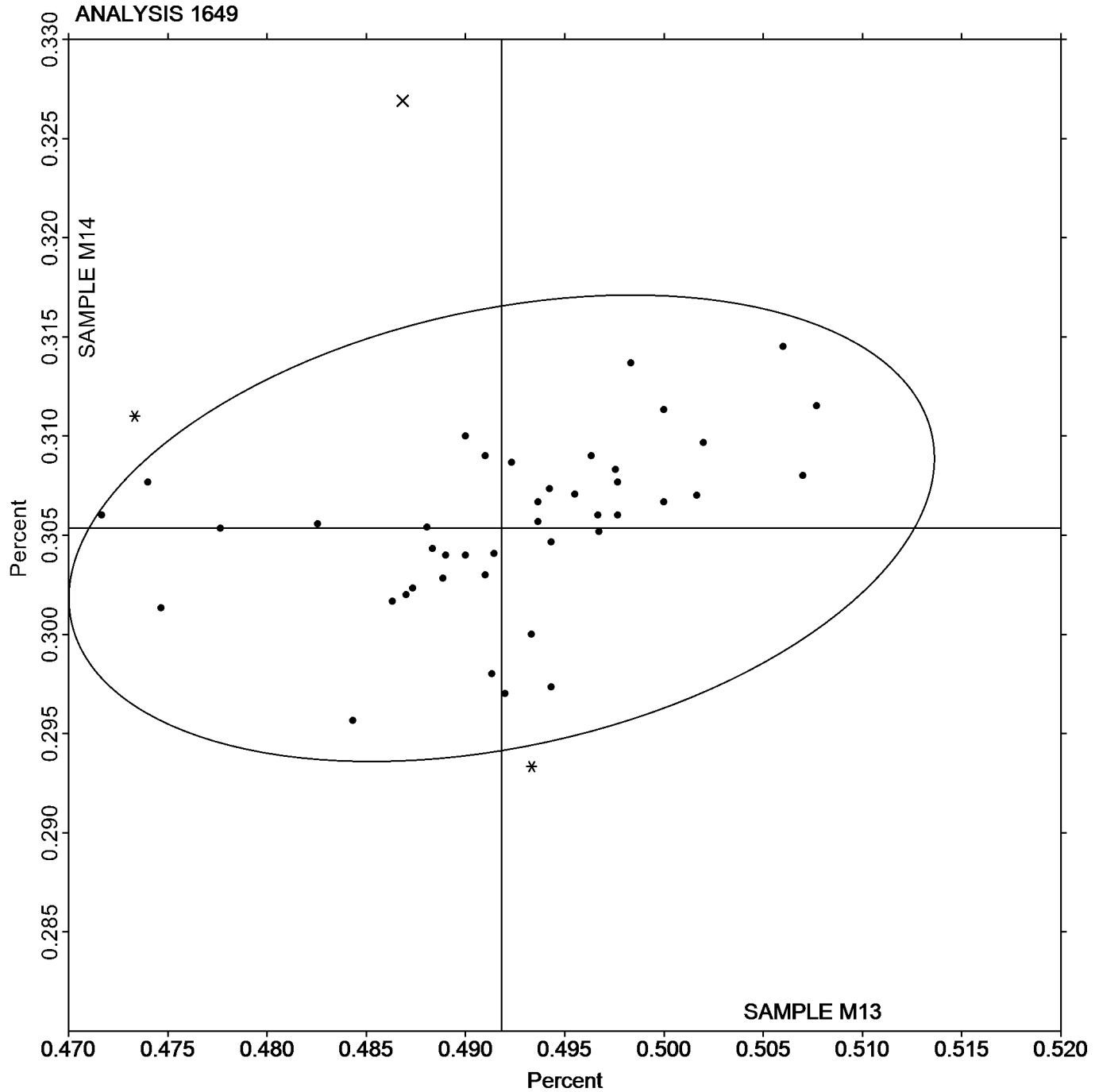
Corrosion Resistant Steel, COPPER (Cu)
COPPER (Cu)

SAMPLE M13

0.4918 Percent

SAMPLE M14

0.3054 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1650

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

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
38U6FV	X	0.0670	-0.0143	-4.05	0.0728	-0.0168	-3.63	XX
3AX8TD	*	0.0920	0.0107	3.04	0.1030	0.0134	2.89	OE
43CHMA		0.0786	-0.0027	-0.77	0.0830	-0.0066	-1.43	OE
4AKQLR		0.0834	0.0021	0.60	0.0902	0.0006	0.14	OE
66C4XD		0.0786	-0.0026	-0.75	0.0847	-0.0049	-1.06	XX
66XDCN		0.0834	0.0022	0.61	0.0924	0.0028	0.60	CO
6K287G		0.0802	-0.0011	-0.31	0.0884	-0.0012	-0.26	BD
6W8R7P		0.0810	-0.0003	-0.08	0.0897	0.0001	0.01	XX
6Z3QGE	*	0.0898	0.0085	2.42	0.0785	-0.0111	-2.40	CI
7XXDCL	X	0.2880	0.2067	58.63	0.2850	0.1954	42.17	OE
8G3BB8		0.0776	-0.0037	-1.04	0.0852	-0.0044	-0.94	OE
94ACJ4		0.0834	0.0021	0.59	0.0879	-0.0017	-0.36	OE
BRANE6		0.0790	-0.0023	-0.64	0.0887	-0.0009	-0.20	OE
CK9R8R		0.0747	-0.0066	-1.87	0.0793	-0.0103	-2.22	XX
EX22RB	X	0.0943	0.0131	3.70	0.0933	0.0037	0.80	OE
F93UQU	X	0.1117	0.0304	8.62	0.1173	0.0277	5.98	OE
FMZWET		0.0823	0.0011	0.30	0.0910	0.0014	0.30	XX
HF3FE7		0.0800	-0.0013	-0.36	0.0887	-0.0009	-0.20	XX
HGXXG8		0.0844	0.0032	0.90	0.0939	0.0043	0.92	CO
J3YDPV		0.0810	-0.0003	-0.08	0.0880	-0.0016	-0.35	OE
K7EZ2F	X	0.0390	-0.0423	-12.00	0.0477	-0.0419	-9.04	OE
KR2GJN		0.0762	-0.0051	-1.45	0.0821	-0.0075	-1.61	OE
L87HGL		0.0777	-0.0035	-1.00	0.0865	-0.0031	-0.66	CO
L9N869		0.0810	-0.0003	-0.08	0.0897	0.0001	0.01	CI
LBVH6H	X	0.0814	0.0001	0.03	0.0716	-0.0180	-3.89	XX
LG6E4W	X	0.0764	-0.0048	-1.37	0.0724	-0.0172	-3.72	OE
LKBLXA		0.0856	0.0044	1.24	0.0935	0.0039	0.85	OE
MMJ4NJ		0.0783	-0.0029	-0.83	0.0870	-0.0026	-0.56	OE
MUG26U		0.0808	-0.0005	-0.13	0.0897	0.0001	0.02	CI
NQPBAF		0.0750	-0.0063	-1.78	0.0827	-0.0069	-1.50	OE
NVPDKB		0.0796	-0.0016	-0.46	0.0888	-0.0008	-0.17	CO
PAYH8T		0.0823	0.0011	0.30	0.0932	0.0036	0.77	XX
QDG3RN		0.0806	-0.0007	-0.19	0.0888	-0.0008	-0.17	CO
R6LEDW		0.0873	0.0061	1.72	0.0947	0.0051	1.09	OE
RQJ2Z7		0.0852	0.0039	1.11	0.0966	0.0070	1.51	OE
RRRBY6	X	0.0383	-0.0429	-12.18	0.0407	-0.0489	-10.56	OE
T37J8Q		0.0799	-0.0014	-0.40	0.0879	-0.0017	-0.36	XX
TWFE6E		0.0858	0.0045	1.27	0.0972	0.0076	1.63	CI
VP3RZ6	*	0.0774	-0.0039	-1.10	0.0931	0.0035	0.75	OE
VYHUTV		0.0795	-0.0018	-0.50	0.0897	0.0001	0.01	OE
WDGZK7		0.0785	-0.0028	-0.79	0.0871	-0.0025	-0.55	CO
WHR2PA	X	0.0873	0.0060	1.71	0.1042	0.0146	3.14	OE
WJ7TEK		0.0837	0.0024	0.69	0.0919	0.0023	0.50	CO
WJR6GZ		0.0843	0.0031	0.87	0.0953	0.0057	1.24	OE
WWUQJP		0.0831	0.0018	0.52	0.0926	0.0030	0.65	CO
XTNRL2		0.0800	-0.0013	-0.37	0.0874	-0.0022	-0.47	OE
ZGPLRU		0.0817	0.0004	0.11	0.0893	-0.0003	-0.06	CI



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1650

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

Summary Statistics

	<u>Sample M13</u>		<u>Sample M14</u>	
Grand Means	0.0813	Percent	0.0896	Percent
Std Dev Btwn Labs	0.0035	Percent	0.0046	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 36 of 47 reporting participants

Key to Method Codes Reported by Participants

BD	By Difference	CI	Combustion / IR
CO	Combustion	OE	Spectrometry - Optical Emission (OES)
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1650

38U6FV (X) - Data for both samples are low.

7XXDCL (X) - Extreme data.

EX22RB (X) - Data for sample M13 are high.

F93UQU (X) - Data for both samples are high.

K7EZ2F (X) - Data for both samples are low.

LBVH6H (X) - Data for sample M14 are low.

LG6E4W (X) - Data for sample M14 are low.

RRRBY6 (X) - Data for both samples are low. Inconsistent within the determinations of sample M13.

WHR2PA (X) - Data for sample M14 are high.



Analysis 1650

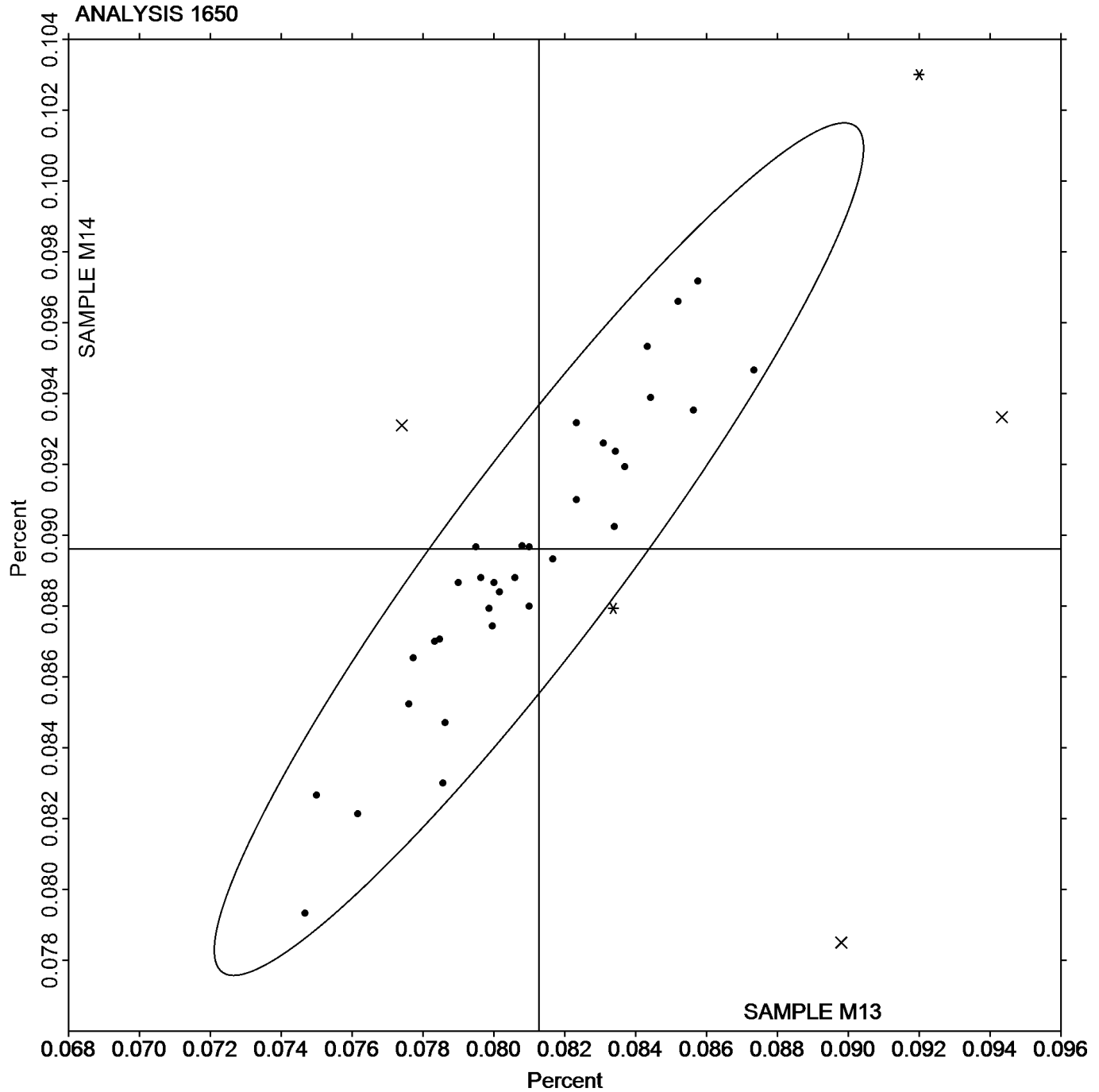
Corrosion Resistant Steel, NITROGEN (N)
NITROGEN (N)

SAMPLE M13

0.0813 Percent

SAMPLE M14

0.0896 Percent



**Fasteners and Metals Interlaboratory Testing Program****Analysis 1651****Corrosion Resistant Steel, TUNGSTEN (W)
TUNGSTEN (W)****Cycle 152
4th Qtr 2025**

WebCode	Data Flag	Sample M13			Sample M14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
36YR8J		0.0439	-0.0013	-0.20	0.0334	-0.0004	-0.08	OE
38U6FV		0.0394	-0.0057	-0.92	0.0314	-0.0025	-0.42	XX
3AX8TD		0.0454	0.0002	0.04	0.0340	0.0001	0.02	OE
4AKQLR		0.0436	-0.0016	-0.25	0.0331	-0.0008	-0.13	OE
66C4XD		0.0424	-0.0028	-0.45	0.0312	-0.0027	-0.46	XX
66XDCN		0.0594	0.0143	2.28	0.0465	0.0126	2.15	WD
6K287G		0.0432	-0.0020	-0.32	0.0329	-0.0010	-0.17	IR
6W8R7P		0.0427	-0.0024	-0.39	0.0297	-0.0042	-0.72	XR
7XXDCL		0.0309	-0.0142	-2.27	0.0199	-0.0139	-2.39	OE
8G3BB8		0.0416	-0.0036	-0.57	0.0317	-0.0021	-0.37	OE
94ACJ4		0.0413	-0.0039	-0.62	0.0319	-0.0020	-0.34	OE
BRANE6		0.0426	-0.0025	-0.40	0.0313	-0.0026	-0.45	OE
CK9R8R		0.0433	-0.0018	-0.29	0.0327	-0.0012	-0.21	XX
EX22RB		0.0437	-0.0015	-0.24	0.0320	-0.0019	-0.32	OE
EX3Y37		0.0400	-0.0051	-0.82	0.0324	-0.0015	-0.26	OE
F93UQU		0.0532	0.0080	1.28	0.0397	0.0059	1.00	OE
G84X46	*	0.0586	0.0135	2.15	0.0336	-0.0002	-0.04	OE
HF3FE7		0.0480	0.0028	0.45	0.0357	0.0018	0.31	WD
HGXXG8		0.0321	-0.0130	-2.08	0.0202	-0.0137	-2.35	WD
K7EZ2F		0.0435	-0.0016	-0.26	0.0337	-0.0002	-0.03	OE
KR2GJN		0.0433	-0.0019	-0.30	0.0292	-0.0047	-0.81	OE
L87HGL		0.0443	-0.0008	-0.13	0.0357	0.0018	0.31	OE
L9N869		0.0390	-0.0062	-0.98	0.0279	-0.0060	-1.02	XR
LG6E4W		0.0443	-0.0008	-0.13	0.0295	-0.0044	-0.75	OE
LKBLXA		0.0488	0.0036	0.58	0.0361	0.0023	0.39	OE
MMJ4NJ		0.0400	-0.0052	-0.82	0.0300	-0.0039	-0.66	OE
MUG26U		0.0500	0.0048	0.77	0.0400	0.0061	1.05	OE
NQPBAF		0.0400	-0.0052	-0.82	0.0300	-0.0039	-0.66	OE
NVPDKB		0.0434	-0.0018	-0.29	0.0306	-0.0033	-0.57	IC
R6LEDW		0.0607	0.0155	2.48	0.0453	0.0115	1.96	OE
RQJ2Z7		0.0491	0.0040	0.64	0.0347	0.0008	0.14	OE
RRRBY6	X	0.1550	0.1098	17.56	0.1410	0.1071	18.34	OE
T37J8Q		0.0405	-0.0046	-0.74	0.0287	-0.0051	-0.88	IC
T6XJKU		0.0470	0.0018	0.29	0.0360	0.0021	0.36	WD
TWFE6E		0.0469	0.0017	0.28	0.0306	-0.0032	-0.56	OE
UFWVVD		0.0528	0.0076	1.22	0.0434	0.0096	1.64	OE
VP3RZ6		0.0515	0.0063	1.01	0.0410	0.0071	1.22	OE
WDGZK7		0.0553	0.0102	1.63	0.0457	0.0118	2.02	OE
WHR2PA		0.0376	-0.0076	-1.21	0.0326	-0.0013	-0.22	OE
WJ7TEK		0.0490	0.0038	0.61	0.0357	0.0018	0.31	WD
WJR6GZ	*	0.0394	-0.0057	-0.92	0.0379	0.0040	0.69	OE
WWUQJP		0.0550	0.0098	1.57	0.0442	0.0103	1.77	OE
XTNRL2		0.0463	0.0012	0.19	0.0350	0.0011	0.19	OE
ZGPLRU		0.0463	0.0012	0.19	0.0340	0.0001	0.02	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 152

Analysis 1651

4th Qtr 2025

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

Summary Statistics

	<u>Sample M13</u>		<u>Sample M14</u>	
Grand Means	0.0452	Percent	0.0339	Percent
Std Dev Btwn Labs	0.0063	Percent	0.0058	Percent

Samples M13, M14 : AISI 304, AISI 304

Statistics based on 41 of 44 reporting participants

Key to Method Codes Reported by Participants

IC	Spectrometry - Inductively Coupled Plasma (ICP)	IR	IR (Absorption / Detection)
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

RRRBY6 (X) - Extreme data.



Fasteners and Metals Interlaboratory Testing Program

Analysis 1700

Copper-based Alloy, COPPER (Cu)
COPPER (Cu)

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		82.73	-0.37	-0.51	81.23	-0.20	-0.24	OE
3AX8TD	*	84.96	1.85	2.50	84.02	2.59	3.08	OE
43QYRB		82.95	-0.16	-0.21	81.31	-0.12	-0.14	WD
6JYA9U		82.54	-0.56	-0.76	80.83	-0.60	-0.71	BD
FMZWET		82.48	-0.63	-0.85	80.81	-0.63	-0.75	BD
JU647Z	*	84.83	1.72	2.33	82.02	0.58	0.70	IC
MDP4QR		83.08	-0.02	-0.03	81.39	-0.04	-0.04	OE
N42MWA		83.25	0.14	0.19	82.46	1.03	1.23	EL
R6LEDW		82.57	-0.54	-0.73	80.67	-0.77	-0.91	OE
RQJ2Z7		82.83	-0.27	-0.37	80.90	-0.53	-0.63	OE
TRNYNU		82.88	-0.23	-0.31	81.07	-0.36	-0.43	XX
VP3RZ6		82.90	-0.21	-0.28	81.20	-0.23	-0.28	OE
WHR2PA		82.78	-0.32	-0.44	81.31	-0.13	-0.15	WD
WJR6GZ		82.60	-0.51	-0.69	80.90	-0.53	-0.63	OE
XTNRL2		83.37	0.26	0.35	81.80	0.37	0.44	OE
ZGPLRU		82.97	-0.14	-0.19	80.99	-0.44	-0.52	GR

Summary Statistics

Sample K13			Sample K14		
Grand Means	83.11	Percent	81.43	Percent	
Stnd Dev Btwn Labs	0.74	Percent	0.84	Percent	

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 16 of 16 reporting participants

Key to Method Codes Reported by Participants

BD	By Difference	EL	Electrochemistry
GR	Gravimetry	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XX	Please Indicate Method Used for Current Element		



Analysis 1700

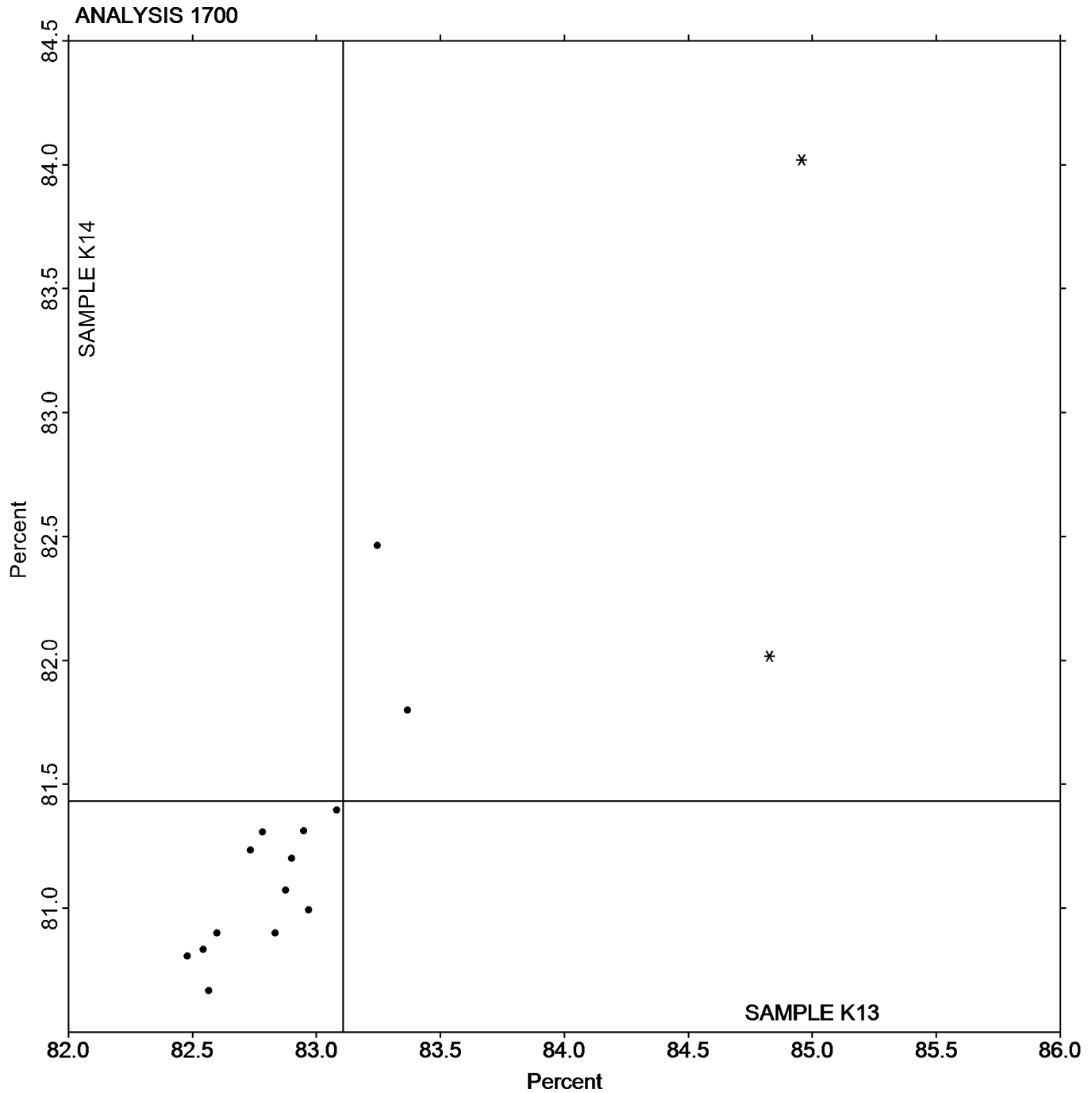
Copper-based Alloy, COPPER (Cu)
COPPER (Cu)

SAMPLE K13

83.11 Percent

SAMPLE K14

81.43 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1701

Copper-based Alloy, TIN (Sn)
TIN (Sn)

Cycle 152
4th Qtr 2025

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		6.353	-0.045	-0.24	6.517	-0.070	-0.39	OE
3AX8TD	*	6.977	0.578	3.10	7.110	0.524	2.94	OE
43QYRB		6.233	-0.166	-0.89	6.368	-0.219	-1.23	WD
6JYA9U		6.433	0.035	0.18	6.620	0.034	0.19	IC
8WWZ6J		6.480	0.081	0.43	6.797	0.210	1.18	OE
FMZWET		6.492	0.093	0.50	6.667	0.081	0.45	IC
JU647Z		6.132	-0.267	-1.43	6.359	-0.227	-1.28	IC
MDP4QR		6.363	-0.036	-0.19	6.556	-0.031	-0.17	OE
R6LEDW		6.450	0.051	0.27	6.697	0.110	0.62	OE
RQJ2Z7		6.390	-0.009	-0.05	6.527	-0.060	-0.34	OE
TRNYNU		6.303	-0.096	-0.51	6.563	-0.023	-0.13	OE
TUHN8F		6.422	0.023	0.12	6.586	0.000	0.00	IC
VALVK9		6.180	-0.219	-1.17	6.450	-0.136	-0.77	XX
VP3RZ6		6.300	-0.099	-0.53	6.480	-0.106	-0.60	OE
WHR2PA		6.274	-0.125	-0.67	6.423	-0.163	-0.92	OE
WJR6GZ		6.317	-0.082	-0.44	6.557	-0.029	-0.16	OE
XTNRL2		6.600	0.201	1.08	6.760	0.174	0.97	OE
ZGPLRU		6.481	0.082	0.44	6.519	-0.068	-0.38	IC

Summary Statistics

Sample K13			Sample K14		
Grand Means	6.399	Percent	6.586	Percent	
Std Dev Btwn Labs	0.187	Percent	0.178	Percent	

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 18 of 18 reporting participants

Key to Method Codes Reported by Participants

IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XX	Please Indicate Method Used for Current Element



Analysis 1701

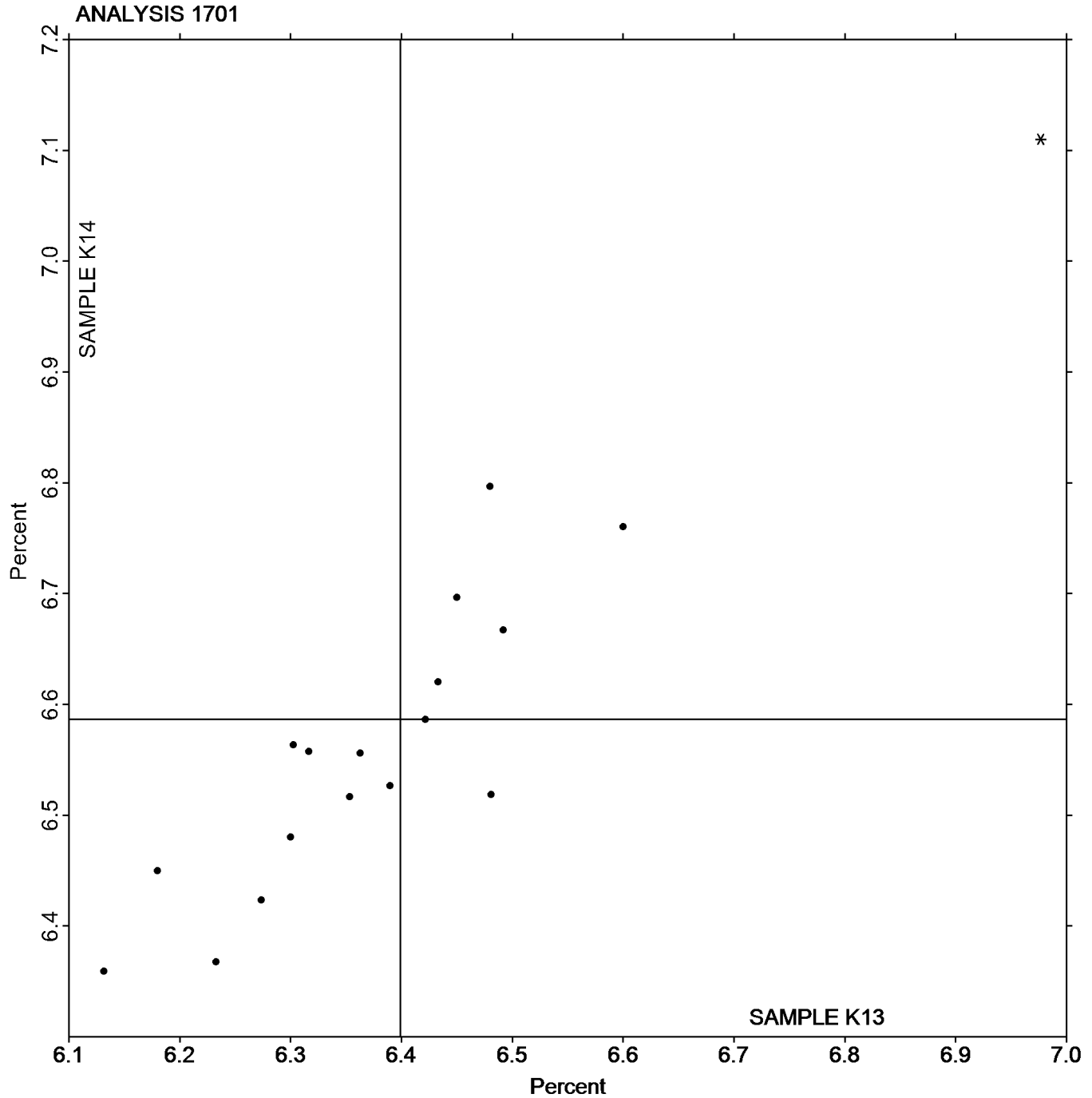
Copper-based Alloy, TIN (Sn)
TIN (Sn)

SAMPLE K13

6.399 Percent

SAMPLE K14

6.586 Percent



**Fasteners and Metals Interlaboratory Testing Program****Analysis 1702****Copper-based Alloy, LEAD (Pb)
LEAD (Pb)****Cycle 152
4th Qtr 2025**

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		6.630	0.136	0.36	7.373	-0.057	-0.13	OE
3AX8TD		6.173	-0.321	-0.86	6.987	-0.444	-1.04	OE
43QYRB		7.196	0.702	1.88	8.038	0.607	1.42	WD
6JYA9U		6.507	0.013	0.03	7.427	-0.004	-0.01	IC
8WWZ6J		6.420	-0.074	-0.20	7.367	-0.064	-0.15	OE
FMZWET		6.700	0.206	0.55	7.651	0.221	0.52	IC
JU647Z		7.046	0.552	1.48	8.099	0.668	1.57	IC
MDP4QR		6.143	-0.351	-0.94	7.007	-0.424	-0.99	OE
R6LEDW		6.543	0.049	0.13	7.717	0.286	0.67	OE
RQJ2Z7		6.483	-0.011	-0.03	7.697	0.266	0.62	OE
TRNYNU		6.463	-0.031	-0.08	7.449	0.019	0.04	OE
TUHN8F		6.738	0.244	0.65	7.727	0.296	0.69	IC
VALVK9		6.450	-0.044	-0.12	7.490	0.059	0.14	XX
VP3RZ6		6.520	0.026	0.07	7.460	0.029	0.07	OE
WHR2PA		6.395	-0.099	-0.27	7.381	-0.049	-0.12	OE
WJR6GZ		6.549	0.055	0.15	7.381	-0.050	-0.12	OE
XTNRL2	*	5.400	-1.094	-2.93	6.170	-1.261	-2.95	OE
ZGPLRU		6.535	0.041	0.11	7.333	-0.098	-0.23	IC

Summary Statistics

Sample K13				Sample K14	
Grand Means	6.494	Percent		7.431	Percent
Std Dev Btwn Labs	0.373	Percent		0.427	Percent

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 18 of 18 reporting participants

Key to Method Codes Reported by Participants

IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XX	Please Indicate Method Used for Current Element



Analysis 1702

Copper-based Alloy, LEAD (Pb)

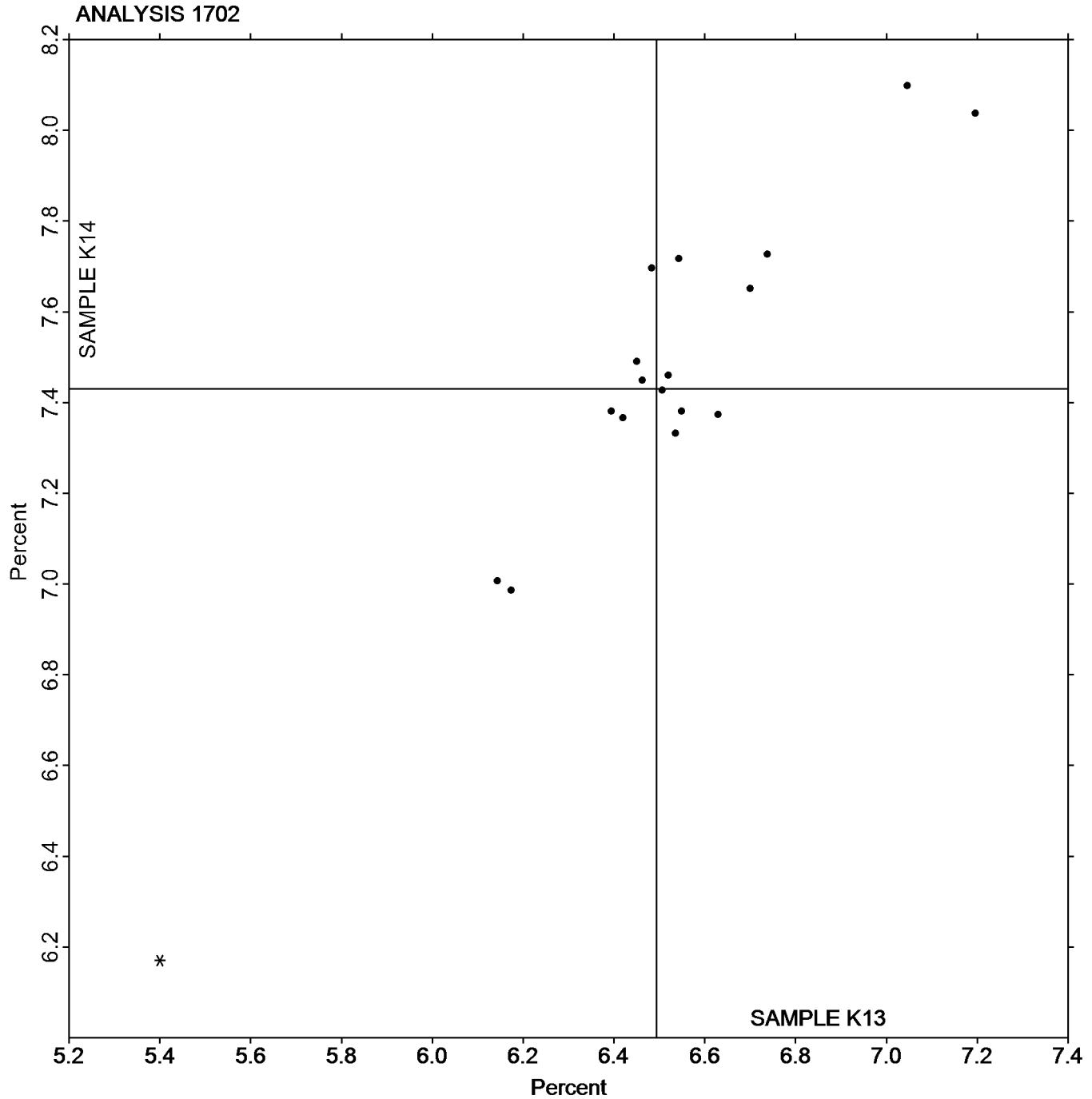
LEAD (Pb)

SAMPLE K13

6.494 Percent

SAMPLE K14

7.431 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1703

Copper-based Alloy, ZINC (Zn)
ZINC (Zn)

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		3.337	-0.112	-1.03	3.946	-0.104	-0.85	OE
3AX8TD	X	0.9703	-2.479	-22.91	0.9667	-3.083	-25.24	OE
43QYRB		3.339	-0.110	-1.01	3.958	-0.092	-0.75	WD
6JYA9U		3.527	0.078	0.72	4.157	0.107	0.88	IC
8WWZ6J		3.453	0.004	0.04	4.060	0.011	0.09	OE
DX6ADH		3.527	0.078	0.72	4.150	0.101	0.82	IC
FMZWET		3.349	-0.100	-0.92	3.929	-0.120	-0.99	IC
JU647Z		3.467	0.018	0.16	4.075	0.026	0.21	IC
MDP4QR		3.399	-0.050	-0.46	4.008	-0.042	-0.34	OE
N42MWA		3.523	0.074	0.68	4.109	0.060	0.49	IC
R6LEDW		3.527	0.078	0.72	4.113	0.064	0.52	OE
RQJ2Z7		3.577	0.128	1.18	4.270	0.221	1.81	OE
TRNYNU		3.430	-0.019	-0.17	3.987	-0.062	-0.51	XX
TUHN8F		3.179	-0.270	-2.49	3.789	-0.261	-2.13	IC
VALVK9		3.470	0.021	0.19	3.970	-0.079	-0.65	XX
VP3RZ6		3.330	-0.119	-1.10	3.960	-0.089	-0.73	OE
WHR2PA		3.430	-0.019	-0.18	3.990	-0.059	-0.49	OE
WJR6GZ		3.511	0.062	0.57	4.122	0.073	0.59	OE
XTNRL2		3.643	0.194	1.80	4.293	0.244	2.00	OE
ZGPLRU		3.511	0.062	0.58	4.054	0.004	0.03	IC

Summary Statistics

	Sample K13		Sample K14	
Grand Means	3.449	Percent	4.049	Percent
Std Dev Btwn Labs	0.108	Percent	0.122	Percent

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 19 of 20 reporting participants

Key to Method Codes Reported by Participants

IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
WD X-Ray Fluorescence - Wavelength Dispersive (WDX) XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1703

3AX8TD (X) - Extreme data.



Analysis 1703

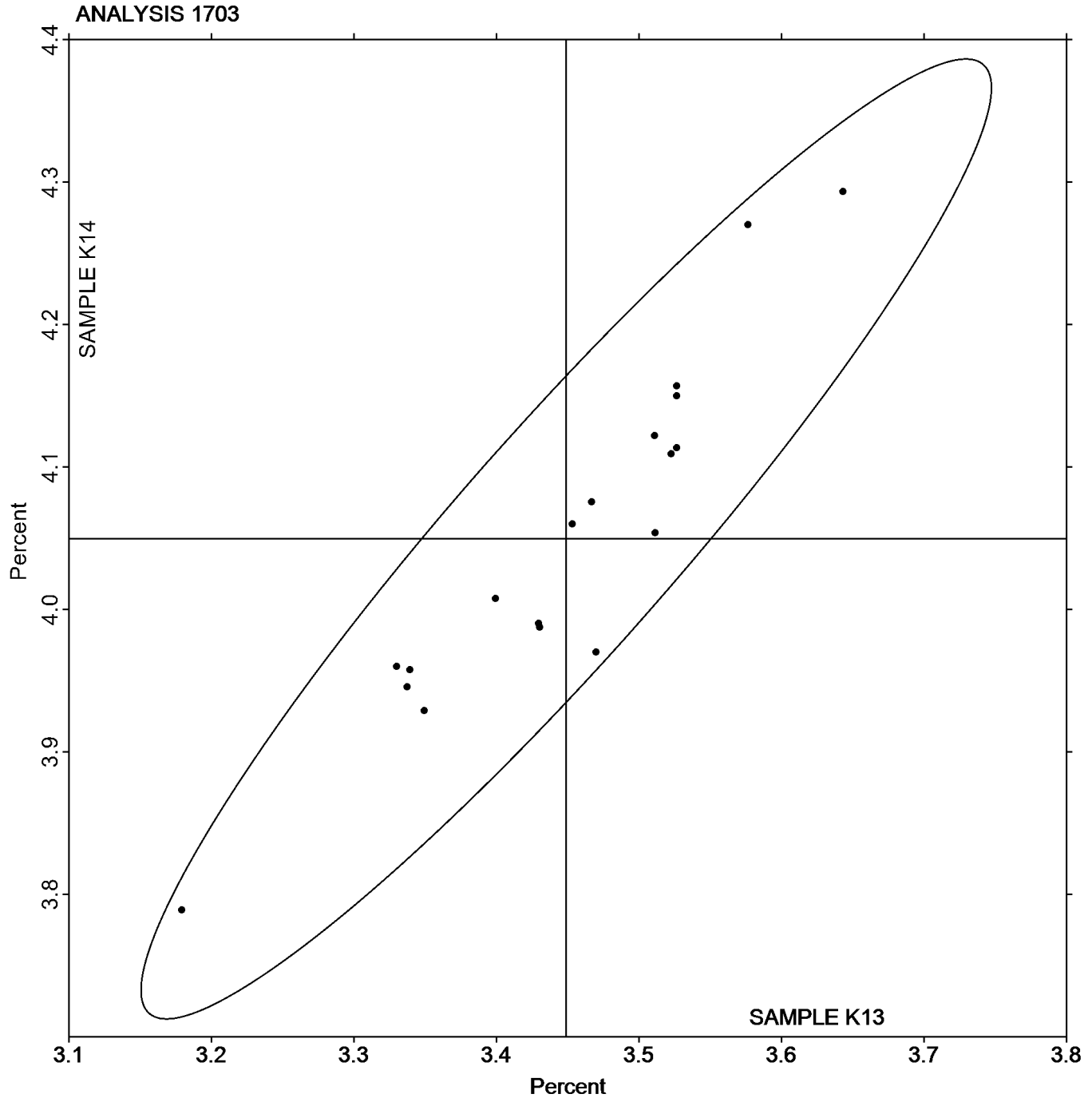
Copper-based Alloy, ZINC (Zn)
ZINC (Zn)

SAMPLE K13

3.449 Percent

SAMPLE K14

4.049 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1704

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

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		0.0340	0.0044	1.10	0.1203	0.0092	0.52	OE
3AX8TD		0.0273	-0.0023	-0.58	0.1330	0.0219	1.24	OE
43QYRB		0.0387	0.0091	2.28	0.1254	0.0143	0.81	WD
6JYA9U		0.0266	-0.0030	-0.76	0.1140	0.0029	0.16	IC
8WWZ6J		0.0273	-0.0023	-0.58	0.1137	0.0025	0.14	OE
DX6ADH		0.0277	-0.0020	-0.50	0.1157	0.0045	0.26	IC
FMZWET	M	No Data Reported			0.1117	0.0005	0.03	IC
JU647Z		0.0276	-0.0020	-0.51	0.1160	0.0049	0.27	IC
MDP4QR		0.0339	0.0043	1.08	0.1324	0.0213	1.20	OE
R6LEDW		0.0300	0.0004	0.09	0.0857	-0.0255	-1.44	OE
RQJ2Z7		0.0270	-0.0027	-0.67	0.1223	0.0112	0.63	OE
TRNYNU		0.0350	0.0053	1.34	0.1251	0.0139	0.79	OE
VALVK9		0.0230	-0.0066	-1.67	0.0820	-0.0291	-1.65	XX
VP3RZ6		0.0266	-0.0030	-0.77	0.0841	-0.0270	-1.53	OE
WHR2PA		0.0320	0.0024	0.60	0.1050	-0.0061	-0.35	OE
WJR6GZ		0.0289	-0.0008	-0.19	0.1177	0.0065	0.37	OE
XTNRL2		0.0312	0.0015	0.39	0.0789	-0.0322	-1.82	OE
ZGPLRU		0.0270	-0.0026	-0.66	0.1182	0.0071	0.40	IC

Summary Statistics

Sample K13				Sample K14	
Grand Means	0.0296	Percent		0.1111	Percent
Std Dev Btwn Labs	0.0040	Percent		0.0177	Percent

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 17 of 18 reporting participants

Key to Method Codes Reported by Participants

IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
WD X-Ray Fluorescence - Wavelength Dispersive (WDX) XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1704

FMZWET (M) - Participant did not submit data for sample K13.

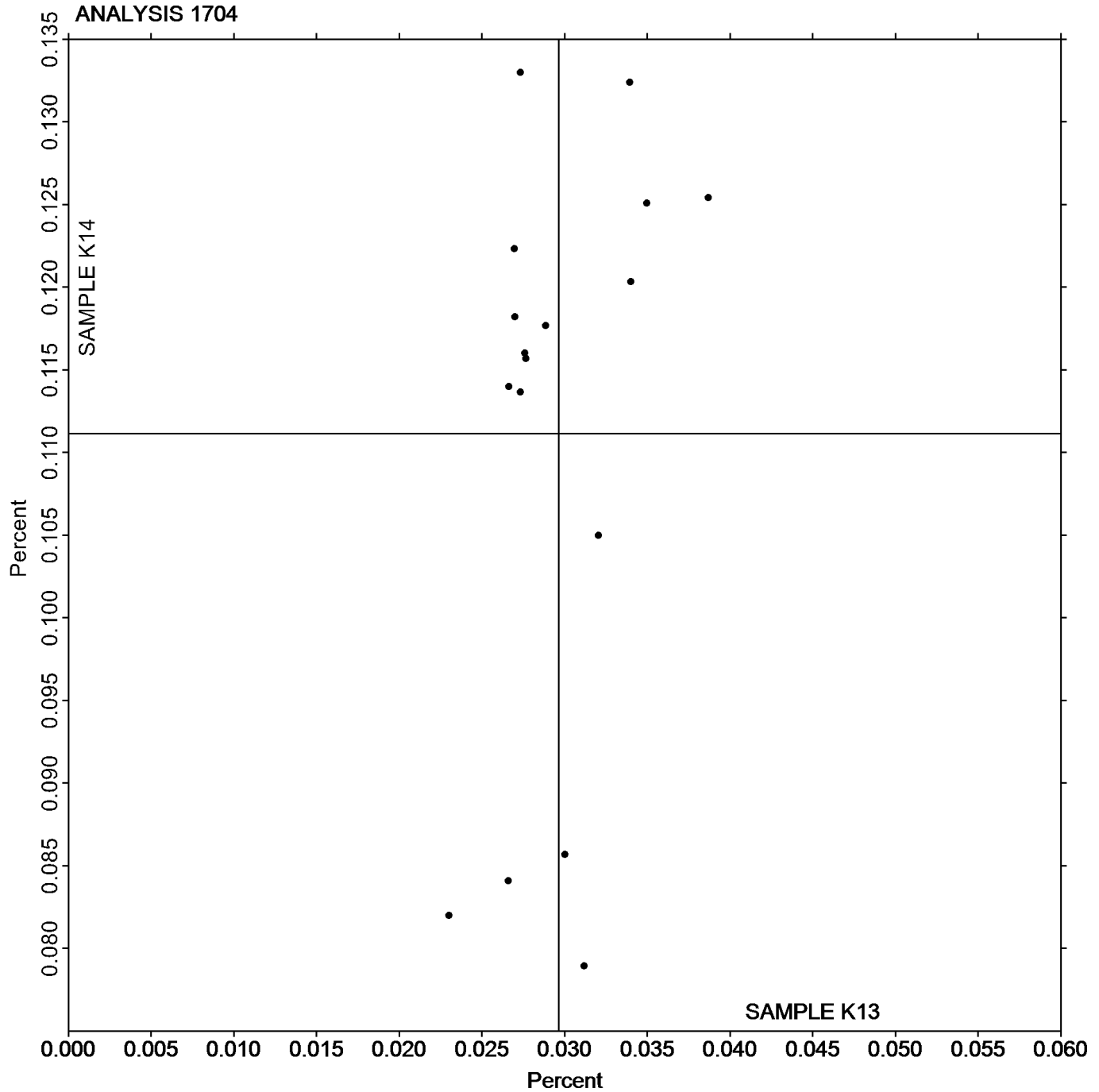


Analysis 1704

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

SAMPLE K13
0.0296 Percent

SAMPLE K14
0.1111 Percent



**Fasteners and Metals Interlaboratory Testing Program****Cycle 152****4th Qtr 2025****Analysis 1705****Copper-based Alloy, NICKEL (Ni)
NICKEL (Ni)**

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		0.4153	-0.0304	-1.10	0.3327	-0.0271	-1.28	OE
3AX8TD	*	0.5330	0.0873	3.15	0.4287	0.0689	3.27	OE
43QYRB		0.4480	0.0023	0.08	0.3690	0.0093	0.44	WD
6JYA9U		0.4660	0.0203	0.73	0.3687	0.0089	0.42	IC
8WWZ6J		0.4550	0.0093	0.34	0.3687	0.0089	0.42	OE
DX6ADH		0.4607	0.0150	0.54	0.3673	0.0076	0.36	IC
FMZWET		0.4507	0.0050	0.18	0.3580	-0.0017	-0.08	IC
JU647Z		0.4547	0.0090	0.32	0.3610	0.0013	0.06	IC
MDP4QR		0.4346	-0.0111	-0.40	0.3480	-0.0117	-0.56	OE
N42MWA		0.4253	-0.0204	-0.74	0.3487	-0.0111	-0.52	IC
R6LEDW		0.4017	-0.0440	-1.59	0.3330	-0.0267	-1.27	OE
RQJ2Z7		0.4460	0.0003	0.01	0.3590	-0.0007	-0.03	OE
TRNYNU		0.4316	-0.0141	-0.51	0.3569	-0.0028	-0.13	OE
VALVK9		0.4400	-0.0057	-0.21	0.3600	0.0003	0.01	XX
VP3RZ6		0.4160	-0.0297	-1.07	0.3380	-0.0217	-1.03	OE
WHR2PA		0.4376	-0.0081	-0.29	0.3531	-0.0067	-0.32	OE
WJR6GZ		0.4433	-0.0024	-0.09	0.3553	-0.0044	-0.21	OE
XTNRL2		0.4720	0.0263	0.95	0.3823	0.0226	1.07	OE
ZGPLRU		0.4372	-0.0085	-0.31	0.3463	-0.0134	-0.63	IC

Summary Statistics

Sample K13			Sample K14		
Grand Means	0.4457	Percent	0.3597	Percent	
Stnd Dev Btwn Labs	0.0277	Percent	0.0211	Percent	

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 19 of 19 reporting participants

Key to Method Codes Reported by Participants

IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XX	Please Indicate Method Used for Current Element



Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1706

Copper-based Alloy, SULFUR (S)
SULFUR (S)

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		0.0391	0.0049	0.85	0.0416	0.0040	0.65	OE
3AX8TD		0.0303	-0.0039	-0.67	0.0320	-0.0056	-0.90	OE
43QYRB	*	0.0537	0.0195	3.39	0.0591	0.0215	3.47	WD
6JYA9U		0.0319	-0.0023	-0.40	0.0362	-0.0014	-0.23	CO
8WWZ6J		0.0333	-0.0009	-0.15	0.0367	-0.0009	-0.15	OE
FMZWET		0.0312	-0.0030	-0.52	0.0350	-0.0026	-0.42	IC
JU647Z		0.0296	-0.0046	-0.81	0.0345	-0.0031	-0.49	IC
MDP4QR		0.0330	-0.0012	-0.21	0.0359	-0.0017	-0.27	OE
R6LEDW		0.0360	0.0018	0.31	0.0390	0.0014	0.23	OE
RQJ2Z7		0.0313	-0.0029	-0.51	0.0330	-0.0046	-0.74	OE
T6XJKU		0.0380	0.0038	0.66	0.0423	0.0047	0.77	CI
TRNYNU		0.0295	-0.0047	-0.82	0.0339	-0.0037	-0.60	OE
VALVK9		0.0320	-0.0022	-0.38	0.0370	-0.0006	-0.09	XX
VP3RZ6		0.0356	0.0014	0.24	0.0374	-0.0002	-0.03	OE
WHR2PA		0.0340	-0.0002	-0.03	0.0369	-0.0007	-0.11	OE
XTNRL2		0.0324	-0.0018	-0.32	0.0343	-0.0033	-0.54	OE
ZGPLRU		0.0306	-0.0036	-0.63	0.0342	-0.0034	-0.55	IC

Summary Statistics

	Sample K13		Sample K14	
Grand Means	0.0342	Percent	0.0376	Percent
Stnd Dev Btwn Labs	0.0057	Percent	0.0062	Percent

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 17 of 17 reporting participants

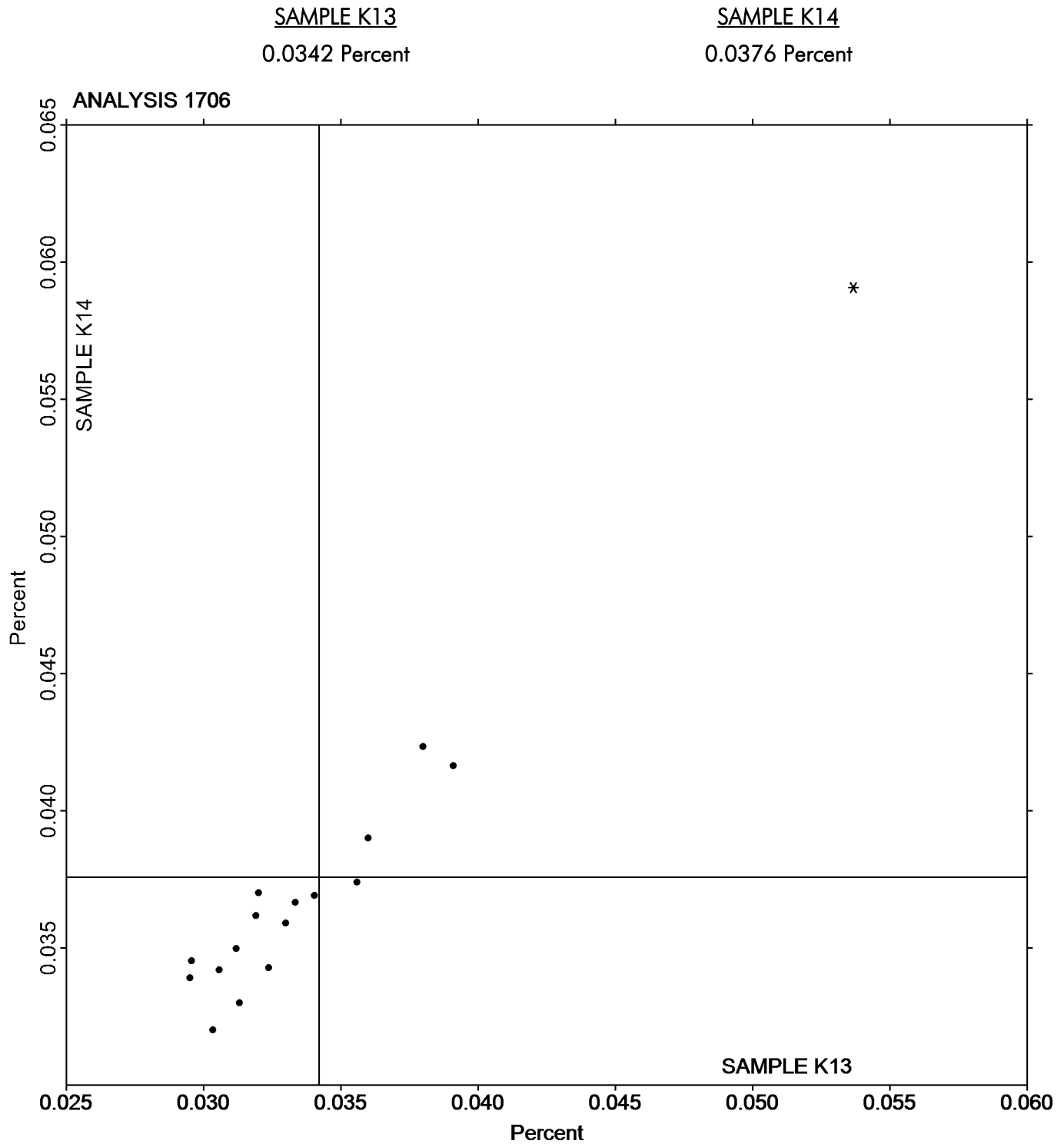
Key to Method Codes Reported by Participants

CI	Combustion / IR	CO	Combustion
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)	XX	Please Indicate Method Used for Current Element



Analysis 1706

Copper-based Alloy, SULFUR (S)
SULFUR (S)





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1707

Copper-based Alloy, PHOSPHORUS (P)
PHOSPHORUS (P)

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		0.0238	0.0093	2.40	0.0461	0.0107	2.00	OE
3AX8TD		0.0150	0.0004	0.11	0.0370	0.0015	0.29	OE
43QYRB		0.00753	-0.0070	-1.82	0.0226	-0.0129	-2.42	WD
6JYA9U		0.0133	-0.0012	-0.32	0.0352	-0.0003	-0.05	IC
8WWZ6J		0.0140	-0.0006	-0.14	0.0380	0.0025	0.47	OE
FMZWET	M	No Data Reported			0.0343	-0.0012	-0.22	IC
JU647Z		0.0124	-0.0022	-0.57	0.0366	0.0011	0.21	IC
MDP4QR		0.0158	0.0012	0.32	0.0381	0.0026	0.49	OE
R6LEDW		0.0190	0.0044	1.15	0.0360	0.0005	0.10	OE
TRNYNU		0.0154	0.0009	0.23	0.0375	0.0021	0.39	OE
VALVK9		0.0110	-0.0036	-0.92	0.0300	-0.0055	-1.03	XX
VP3RZ6		0.0148	0.0002	0.06	0.0354	-0.0001	-0.01	OE
WHR2PA		0.0130	-0.0016	-0.41	0.0361	0.0007	0.12	OE
XTNRL2	M	No Data Reported			0.0213	-0.0142	-2.67	OE
ZGPLRU		0.0142	-0.0004	-0.09	0.0325	-0.0029	-0.55	IC

Summary Statistics

	Sample K13		Sample K14	
Grand Means	0.0146	Percent	0.0355	Percent
Stnd Dev Btwn Labs	0.0039	Percent	0.0053	Percent

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 13 of 15 reporting participants

Key to Method Codes Reported by Participants

IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
WD X-Ray Fluorescence - Wavelength Dispersive (WDX) XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1707

FMZWET (M) - Participant did not submit data for sample K13.

XTNRL2 (M) - Participant did not submit data for sample K13.



Analysis 1707

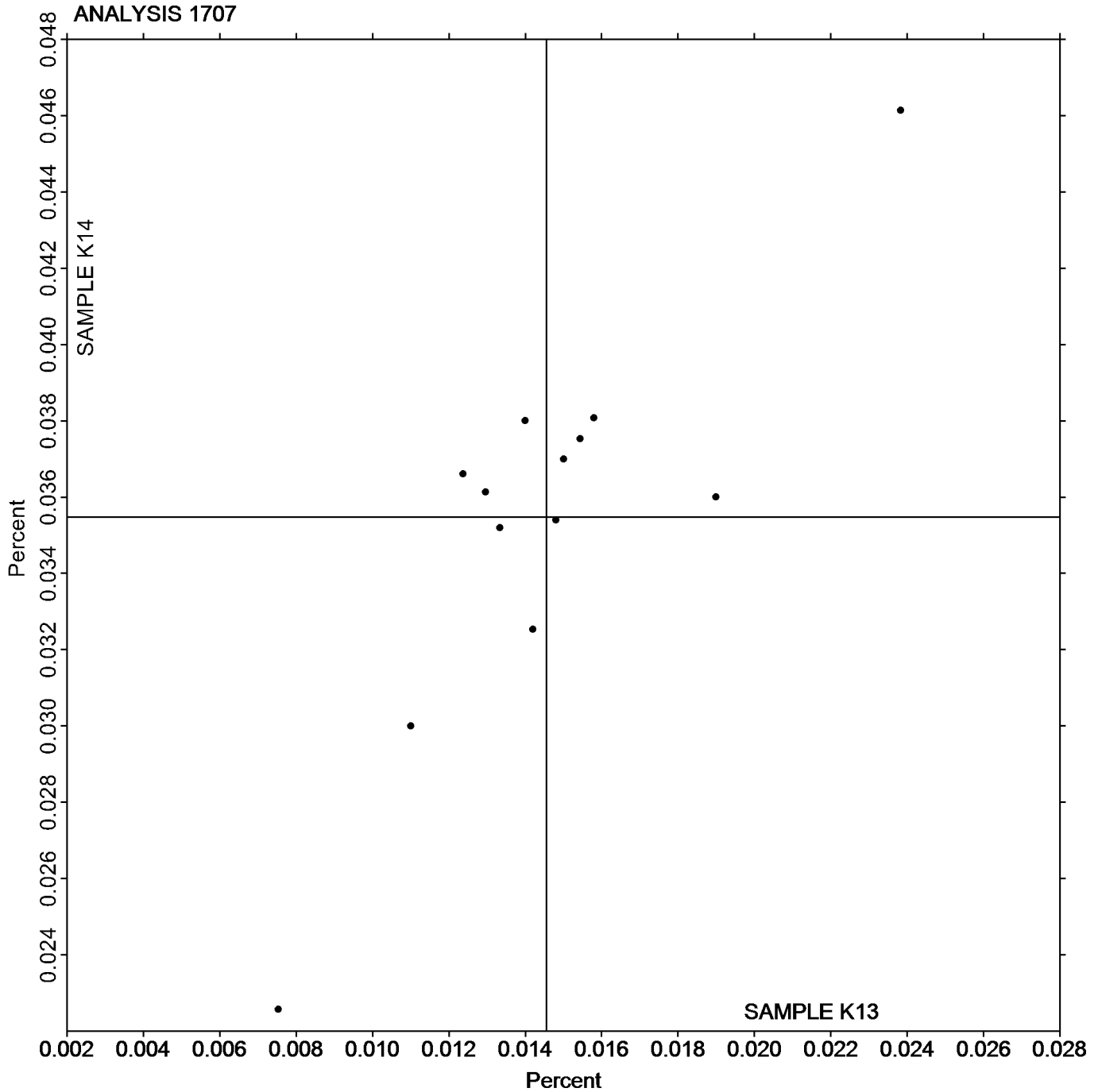
Copper-based Alloy, PHOSPHORUS (P)
PHOSPHORUS (P)

SAMPLE K13

0.0146 Percent

SAMPLE K14

0.0355 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 152
4th Qtr 2025

Analysis 1712

Copper-based Alloy, ANTIMONY (Sb)
ANTIMONY (Sb)

WebCode	Data Flag	Sample K13			Sample K14			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2BEXQX		0.1597	0.0094	0.72	0.2667	0.0145	0.59	OE
3AX8TD		0.1407	-0.0096	-0.74	0.2083	-0.0438	-1.77	OE
43QYRB		0.1522	0.0019	0.15	0.2533	0.0012	0.05	WD
6JYA9U		0.1513	0.0010	0.08	0.2577	0.0055	0.22	IC
8WWZ6J		0.1567	0.0064	0.49	0.2700	0.0179	0.72	WD
DX6ADH		0.1517	0.0014	0.10	0.2567	0.0045	0.18	IC
FMZWET		0.1493	-0.0010	-0.08	0.2580	0.0059	0.24	IC
JU647Z		0.1500	-0.0003	-0.02	0.2633	0.0112	0.45	IC
MDP4QR		0.1566	0.0063	0.48	0.2509	-0.0012	-0.05	OE
N42MWA		0.1487	-0.0016	-0.13	0.2520	-0.0001	-0.01	IC
R6LEDW	*	0.1043	-0.0460	-3.54	0.1730	-0.0791	-3.20	OE
RQJ2Z7	M	0.1487	-0.0016	-0.13	No Data Reported			OE
TRNYNU		0.1646	0.0143	1.10	0.2600	0.0078	0.32	OE
VP3RZ6		0.1560	0.0057	0.44	0.2640	0.0119	0.48	OE
WHR2PA		0.1527	0.0024	0.19	0.2550	0.0029	0.12	OE
WJR6GZ		0.1540	0.0037	0.28	0.2720	0.0199	0.80	OE
XTNRL2		0.1580	0.0077	0.59	0.2680	0.0159	0.64	OE
ZGPLRU		0.1488	-0.0015	-0.12	0.2574	0.0053	0.21	IC

Summary Statistics

	Sample K13		Sample K14	
Grand Means	0.1503	Percent	0.2521	Percent
Std Dev Btwn Labs	0.0130	Percent	0.0248	Percent

Samples K13, K14 : CDA 932, CDA 932

Statistics based on 17 of 18 reporting participants

Key to Method Codes Reported by Participants

IC Spectrometry - Inductively Coupled Plasma (ICP) OE Spectrometry - Optical Emission (OES)
WD X-Ray Fluorescence - Wavelength Dispersive (WDX)

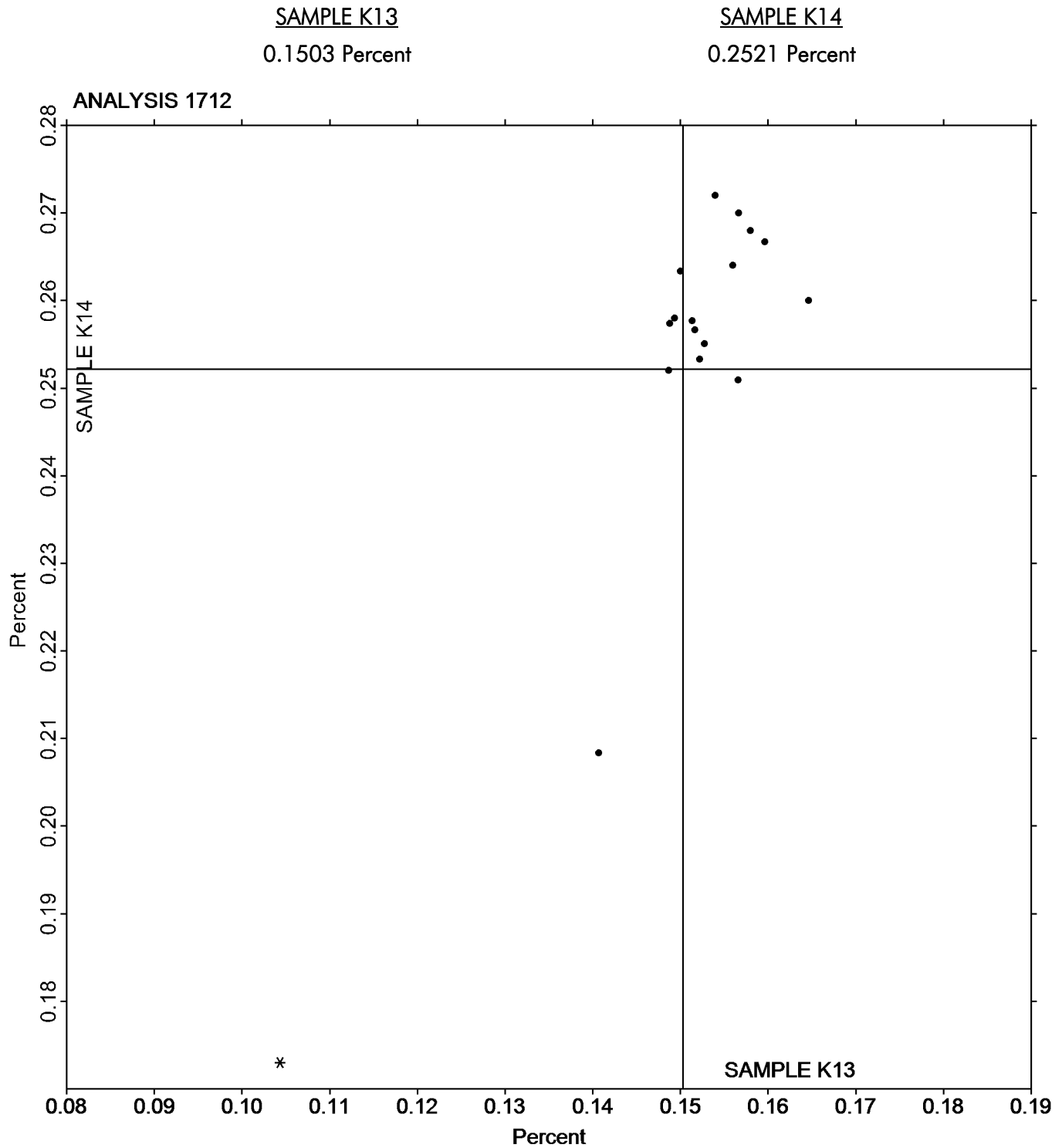
Comments on Assigned Data Flags for Test #1712

RQJ2Z7 (M) - Participant did not submit data for sample K14.



Analysis 1712

Copper-based Alloy, ANTIMONY (Sb)
ANTIMONY (Sb)





Fasteners and Metals Interlaboratory Testing Program

Cycle 152

Analysis 1712

4th Qtr 2025

**Copper-based Alloy, ANTIMONY (Sb)
ANTIMONY (Sb)**

-End of Report-