



Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 146, 2nd Qtr 2024

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

<u>Analysis</u>	<u>Test Group</u>
Impact Tests	
1003	Charpy V-Notch (-30 degrees)
Tensile Tests	
1131	Tensile Strength: Lab-Machined Flat Steel
1132	Yield Strength: Lab-Machined Flat Steel
1133	Elongation: Lab-Machined Flat Steel
1134	r-Value: Lab-Machined Flat Steel
1135	n-Value: Lab-Machined Flat Steel
Fasteners	
1201	Fastener Wedge Tensile (10 degree)
1202	Fastener Axial Tensile
1203	Fastener Wedge Tensile (10 degree) - Metric
1204	Fastener Axial Tensile - Metric
1210	Rockwell Hardness: Externally Threaded Fasteners
1211	Vickers Hardness: Externally Threaded Fasteners
1220	Fastener Double Shear
Hardness / Metallography Tests	
1301	Rockwell Hardness: C & B Scales
1303	Rockwell Hardness: C Scale
1311	Vickers Hardness 10 kgf
1351	Rockwell Superficial Hardness (30N Scale)
1401	Total Case Depth
1402	Effective Case Depth
1411	Grain Size (Stainless Steel)
1421	Alpha Case Depth
1422	Alloy Depletion: Inconel
Chemical Analyses	
1500 - 1509	Chemical Analysis: Nickel-based Alloy
1540 - 1547	Chemical Analysis: Aluminum Alloy
1640 - 1650	Chemical Analysis: Corrosion Resistant Steel

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.

For further information contact:

COLLABORATIVE TESTING SERVICES, INC.
21331 Gentry Drive
Sterling, VA 20166

Phone: (571) 434-1925
FAX: (571)434-1937
e-mail: metals@cts-interlab.com
www.collaborativetesting.com
Office Hours: 8:00 a.m. - 4:30 p.m. ET

Key for Fasteners & Metals Program Web Summary Report

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

- Lab Mean** - The average of the test results obtained by the participant.

- Grand Mean** - The average of the LAB MEANS for all included participants. Laboratories flagged with an X or an M (see DATA FLAG column) are excluded from the GRAND MEAN.

- Between-Lab Standard Deviation** - An indication of the precision of measurement between the laboratories. The greater the spread of the LAB MEANS about the GRAND MEAN, the larger the BETWEEN-LAB STANDARD DEVIATION (and vice versa).

- Comparative Performance Value (CPV)** - An indication of how well a laboratory's results agree with the other participants. The CPV is a ratio indicating the number of standard deviations from the GRAND MEAN. $CPV = (LAB\ MEAN - GRAND\ MEAN) / BETWEEN-LAB\ STANDARD\ DEVIATION$. The closer a laboratory's COMPARATIVE PERFORMANCE VALUE is to zero, the more consistent its results are with the other participants' data (and vice versa).

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

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

Data Flags

Data Flag Type	Statistically Included/Excluded	ACTION REQUIRED
*	INCLUDED	CAUTION - review testing procedure and monitor future results. Results fall outside the drawn 95% ellipse but within a 99% ellipse that is calculated but not drawn. Labs flagged with an * do not typically receive a specific note regarding the flag. If this error is repeated in future rounds, however, a lab may need to stop and review its testing procedures. The initial data flag is not cause for alarm.
X	EXCLUDED	STOP - immediate review of data and/or testing procedure is required (all tests except Chemical Analyses). Results fall outside the 99% ellipse. See the specific note following the data for more information on why the data are excluded. For Chemical Analyses see an additional Memo.
M	EXCLUDED	PROCEED - lab was unable to report data for at least one sample. However, a lab receiving two or more M flags for a test may need to stop and review its testing procedures.
Graph		- For each laboratory, the Lab Mean for the second sample (y-axis) is plotted against the Lab Mean for the first sample (x-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the Grand Means for each sample. When 20 or more laboratories are included in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained above. Labs not receiving a data flag appear as points on the plot.



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1003

2nd Qtr

Charpy V-Notch (-30 degrees)

2024

ASTM E23

WebCode	Data Flag	Sample U01			Sample U02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4HWBYD		22.00	0.85	0.58	20.67	-0.22	-0.11
6T9EN3		22.39	1.25	0.85	22.26	1.38	0.67
ABWLMV		23.07	1.92	1.30	22.94	2.05	0.99
AKL2YE		21.00	-0.15	-0.10	22.20	1.32	0.64
BETKJ7		21.00	-0.15	-0.10	19.33	-1.55	-0.75
BTTMED		18.67	-2.48	-1.68	17.33	-3.55	-1.71
DE9RAZ		21.41	0.27	0.18	21.28	0.40	0.19
DHNU8D		20.79	-0.36	-0.24	22.14	1.26	0.61
DVCLFZ		20.01	-1.14	-0.77	20.40	-0.48	-0.23
GQ4Y8Z		18.33	-2.81	-1.91	18.07	-2.82	-1.36
H7HYN4		21.67	0.52	0.35	19.67	-1.22	-0.59
HHTWLY		19.90	-1.25	-0.84	20.30	-0.58	-0.28
HP8D6D		22.67	1.52	1.03	23.00	2.12	1.02
K3VZND		22.33	1.19	0.81	25.00	4.12	1.99
KGNR7U	*	23.27	2.13	1.44	18.98	-1.90	-0.92
P9JDCU		22.86	1.71	1.16	24.72	3.84	1.85
QNRJ66		19.67	-1.48	-1.00	20.67	-0.22	-0.11
RKJH7Y		19.67	-1.48	-1.00	16.17	-4.72	-2.28
RZYLNM		19.78	-1.37	-0.93	19.85	-1.03	-0.50
T6BR4U		21.33	0.19	0.13	20.67	-0.22	-0.11
UHAKYF		22.67	1.52	1.03	22.33	1.45	0.70
UPTHFV		20.00	-1.15	-0.78	20.00	-0.88	-0.43
VH9AH4		19.21	-1.94	-1.31	19.79	-1.09	-0.53
VP6EJE		20.67	-0.48	-0.32	20.33	-0.55	-0.27
X4E6CX		21.99	0.84	0.57	22.77	1.89	0.91
XKMJLL		23.43	2.28	1.55	22.12	1.23	0.59

Summary Statistics

	Sample U01		Sample U02	
Grand Means	21.15	Joules	20.88	Joules
Stnd Dev Btwn Labs	1.48	Joules	2.07	Joules

Samples U01, U02 : AISI 4340, AISI 4340

Statistics based on 26 of 26 reporting participants



Analysis 1003

Charpy V-Notch (-30 degrees)

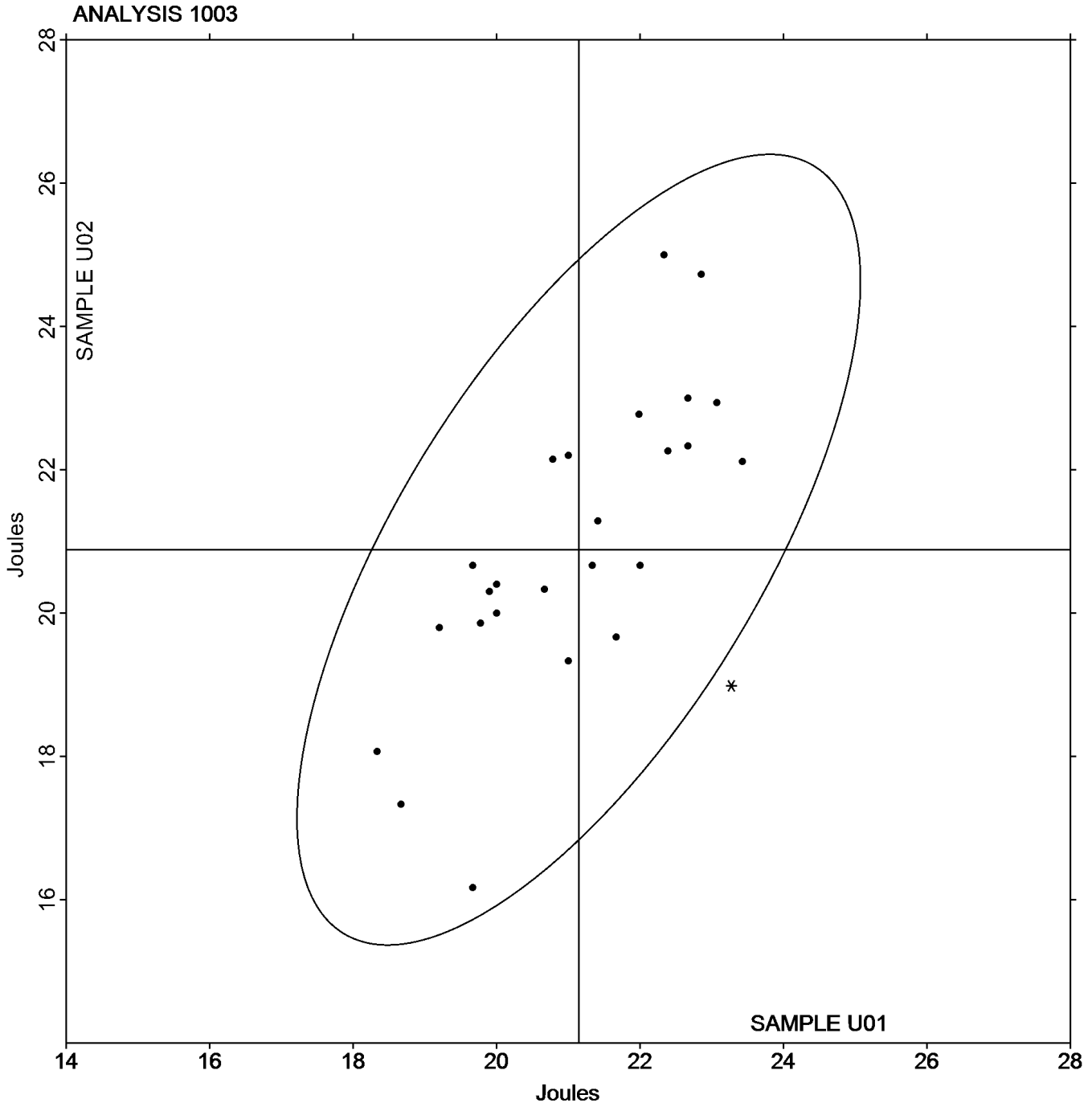
ASTM E23

SAMPLE U01

SAMPLE U02

21.15 Joules

20.88 Joules





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1131

2nd Qtr

Tensile Strength: Lab-Machined Flat Steel

2024

ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2M6M8N		50.60	0.64	0.62	47.30	0.48	0.65
2MJ7RL	*	53.00	3.04	2.92	48.10	1.28	1.74
2RBTU2		48.63	-1.33	-1.27	47.21	0.39	0.53
3L2JQH		48.90	-1.06	-1.01	45.50	-1.32	-1.81
3QY26X		50.34	0.38	0.37	47.11	0.29	0.39
3U83R8		48.90	-1.06	-1.01	47.30	0.48	0.65
3ZNP3K		51.44	1.48	1.42	47.25	0.43	0.59
44H7RK		51.00	1.04	1.00	47.17	0.34	0.47
49P7VH		49.33	-0.63	-0.60	47.06	0.24	0.32
4CATWH		49.45	-0.50	-0.48	46.45	-0.37	-0.51
4EELNV		50.70	0.74	0.71	47.20	0.38	0.51
4K4TX9		50.80	0.84	0.81	47.70	0.88	1.20
4Z2HEE		48.80	-1.16	-1.11	45.40	-1.42	-1.95
6DYL67		48.59	-1.37	-1.31	46.12	-0.70	-0.96
6JFV9D		50.24	0.29	0.27	47.92	1.10	1.50
6TAVWE		50.70	0.74	0.71	47.00	0.18	0.24
7MKADD	X	550.12	500.16	479.83	48.12	1.30	1.77
7X87HK	X	45.02	-4.93	-4.73	42.16	-4.66	-6.37
7Z7QX6		48.73	-1.22	-1.17	46.70	-0.12	-0.17
848DNT		50.49	0.53	0.51	46.67	-0.15	-0.21
8MKWHB		48.54	-1.42	-1.36	46.30	-0.52	-0.72
8W8QJT		48.90	-1.06	-1.01	45.80	-1.02	-1.40
9W6MH9		50.21	0.26	0.25	47.27	0.44	0.61
9Z6YD9	*	51.56	1.60	1.54	48.88	2.05	2.80
AC998V	X	48.80	-1.16	-1.11	43.80	-3.02	-4.13
AGMRPC	X	45.93	-4.03	-3.86	48.73	1.91	2.60
ALFR6T		49.80	-0.16	-0.15	45.30	-1.52	-2.08
ATCVNW	X	46.59	-3.37	-3.23	44.88	-1.95	-2.66
BQA8VR	X	57.10	7.14	6.85	56.78	9.95	13.59
BTC3EV	*	47.56	-2.40	-2.30	45.20	-1.63	-2.22
BVF2PN		50.10	0.14	0.14	46.80	-0.02	-0.03
CAUB8J		48.80	-1.16	-1.11	46.50	-0.32	-0.44
CZ6TEV		49.99	0.03	0.03	48.28	1.46	1.99
DDWJXE		50.80	0.84	0.81	47.20	0.38	0.51
DE9RAZ		49.73	-0.23	-0.22	46.38	-0.45	-0.61
DRBKDH		49.64	-0.32	-0.30	46.02	-0.80	-1.10
DVCLFZ		50.91	0.95	0.91	46.99	0.17	0.23
E8KVWH		49.95	-0.01	-0.01	47.10	0.28	0.38
EK73H3		49.89	-0.06	-0.06	47.28	0.46	0.63
EXBQJR		48.50	-1.46	-1.40	46.80	-0.02	-0.03
FXAF4F		50.40	0.44	0.43	46.68	-0.14	-0.20
GFMM6F		51.26	1.31	1.25	47.47	0.64	0.87
GJ6GTN		47.90	-2.06	-1.97	46.80	-0.02	-0.03
GNJMF3		48.70	-1.26	-1.21	45.90	-0.92	-1.26
GQ4Y8Z		49.46	-0.50	-0.48	47.07	0.24	0.33
GTVVWU	*	51.10	1.14	1.10	48.70	1.88	2.56
GVZV7J		51.20	1.24	1.19	47.40	0.58	0.79



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1131

2nd Qtr

Tensile Strength: Lab-Machined Flat Steel

2024

ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
H7HYN4	X	49.30	-0.66	-0.63	30.20	-16.62	-22.71
HJLTBT		51.40	1.44	1.38	46.30	-0.52	-0.72
HP8D6D		50.40	0.44	0.43	46.40	-0.42	-0.58
HTAN9M		48.84	-1.12	-1.07	47.25	0.43	0.59
HW9Z4M		49.60	-0.36	-0.34	47.10	0.28	0.38
J7R66J		48.52	-1.44	-1.38	46.56	-0.27	-0.36
J8KCP2		51.09	1.13	1.09	47.09	0.26	0.36
JJCK9J	X	43.24	-6.72	-6.45	41.39	-5.44	-7.43
JPQGCE		51.60	1.64	1.58	48.00	1.18	1.61
K3VZND		51.40	1.44	1.38	47.80	0.98	1.33
KTH9VU	X	54.81	4.85	4.66	51.24	4.42	6.03
KUGMF2	X	47.05	-2.91	-2.79	48.66	1.84	2.51
KW2UGA		50.76	0.81	0.77	47.63	0.81	1.10
KY9H7T		49.96	0.00	0.00	46.30	-0.52	-0.72
MAZFUJ		48.80	-1.16	-1.11	47.00	0.18	0.24
METH3P		49.17	-0.79	-0.76	46.57	-0.25	-0.35
MEY6PQ		51.00	1.04	1.00	47.20	0.38	0.51
MHE4VD	X	79.90	29.95	28.73	46.12	-0.71	-0.97
MMPABJ		50.60	0.64	0.62	47.90	1.08	1.47
MVYCGX		50.20	0.24	0.23	46.80	-0.02	-0.03
MXQBVV		50.60	0.64	0.62	46.80	-0.02	-0.03
NX2423		50.10	0.14	0.14	46.10	-0.72	-0.99
NXLDYQ		50.30	0.34	0.33	47.00	0.18	0.24
NZBRXV		50.00	0.04	0.04	47.40	0.58	0.79
P48XUD	X	47.00	-2.96	-2.84	44.10	-2.72	-3.72
QGM39P	*	51.80	1.84	1.77	46.08	-0.75	-1.02
QQX6UQ		50.08	0.13	0.12	45.83	-0.99	-1.36
QZXWWP	X	52.43	2.48	2.37	49.69	2.87	3.91
TC38NR		49.40	-0.56	-0.53	46.70	-0.12	-0.17
TCPJ7D		48.82	-1.13	-1.09	46.03	-0.80	-1.09
TZUJFU		48.64	-1.32	-1.26	45.28	-1.54	-2.11
UBATJE		50.04	0.08	0.08	46.56	-0.27	-0.36
UF4UH8	X	44.10	-5.86	-5.62	38.50	-8.32	-11.37
UKZM7P		50.50	0.54	0.52	46.80	-0.02	-0.03
V8P6HE		49.08	-0.88	-0.84	46.98	0.15	0.21
WD8X7H		49.03	-0.92	-0.89	46.26	-0.57	-0.77
WEKMAV		50.30	0.34	0.33	46.60	-0.22	-0.31
WQTZHZ		51.50	1.54	1.48	47.40	0.58	0.79
WUUECZ		49.40	-0.56	-0.53	46.20	-0.62	-0.85
WWZWBW		49.75	-0.21	-0.20	46.27	-0.56	-0.76
X8VA7L		50.19	0.23	0.22	47.81	0.99	1.35
X9U3WK		50.40	0.44	0.43	47.20	0.38	0.51
XC8DWN		49.00	-0.96	-0.92	46.00	-0.82	-1.13
XEYCBM	X	44.00	-5.96	-5.71	40.00	-6.82	-9.32
XM7ZZE	*	47.86	-2.09	-2.01	46.99	0.17	0.23
XPXAW2		49.50	-0.46	-0.44	45.68	-1.15	-1.57
XYJBCB	X	52.90	2.94	2.82	50.80	3.98	5.43



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1131

2nd Qtr
2024

Tensile Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Y66MQ4		50.30	0.34	0.33	47.50	0.68	0.92
Y7HZVZ		50.00	0.04	0.04	46.70	-0.12	-0.17
YKG292		50.33	0.37	0.36	46.70	-0.12	-0.17
YQ6N48	X	42.80	-7.16	-6.87	46.40	-0.42	-0.58
YQRM8D		50.50	0.54	0.52	46.90	0.08	0.10
YTBATT		51.10	1.14	1.10	47.40	0.58	0.79
YY3GC2		51.20	1.24	1.19	47.40	0.58	0.79
Z28WBX		50.32	0.36	0.35	46.70	-0.12	-0.17
Z3YTZQ		51.10	1.14	1.10	47.40	0.58	0.79
Z7V9WZ		50.18	0.23	0.22	46.85	0.02	0.03
ZBQ3U2		48.50	-1.46	-1.40	46.00	-0.82	-1.13
ZNF8DC		50.40	0.44	0.43	46.50	-0.32	-0.44
ZNXNL8		48.68	-1.28	-1.23	46.08	-0.75	-1.02
ZX3ZCA		48.25	-1.70	-1.63	45.78	-1.04	-1.42

Summary Statistics

	Sample F01		Sample F02	
Grand Means	49.96	ksi	46.82	ksi
Std Dev Btwn Labs	1.04	ksi	0.73	ksi

Samples F01, F02 : AISI 1010 - 14G, AISI 1010 - 16G

Statistics based on 91 of 108 reporting participants

Comments on Assigned Data Flags for Test #1131

- 7MKADD (X) - Data for sample F01 are extreme.
- 7X87HK (X) - Data for both samples are low.
- AC998V (X) - Data for sample F02 are low.
- AGMRPC (X) - Data for sample F01 are low.
- ATCVNW (X) - Data for sample F01 are low.
- BQA8VR (X) - Data for both samples are high.
- H7HYN4 (X) - Data for sample F02 are low.
- JJCK9J (X) - Data for both samples are low.
- KTH9VU (X) - Data for both samples are high.
- KUGMF2 (X) - Data for sample F01 are low.
- MHE4VD (X) - Data for sample F01 are high.
- P48XUD (X) - Data for both samples are low.
- QZXWWP (X) - Data for sample F02 are high.
- UF4UH8 (X) - Data for both samples are low.
- XEYCBM (X) - Data for both samples are low.
- XYJBCB (X) - Data for both samples are high.
- YQ6N48 (X) - Data for sample F01 are low.



Analysis 1131

Tensile Strength: Lab-Machined Flat Steel

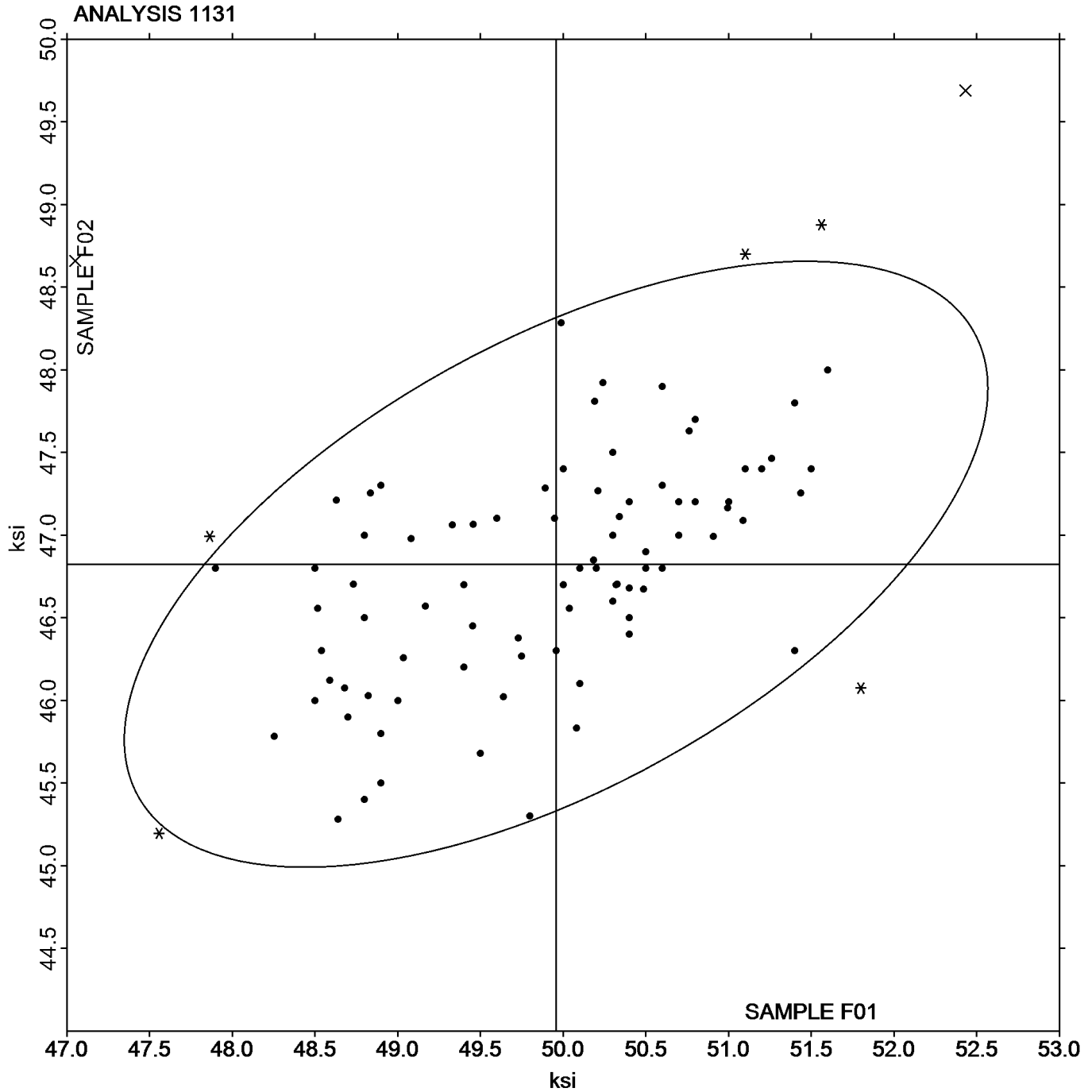
ASTM E8

SAMPLE F01

SAMPLE F02

49.96 ksi

46.82 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1132

2nd Qtr
2024

Yield Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2M6M8N		32.00	0.59	0.50	29.10	0.42	0.42
2MJ7RL		34.10	2.69	2.25	31.00	2.32	2.33
2RBTU2		30.30	-1.11	-0.93	28.50	-0.18	-0.18
3L2JQH		29.80	-1.61	-1.35	27.10	-1.58	-1.58
3QY26X		31.35	-0.06	-0.05	27.57	-1.11	-1.11
3U83R8		30.20	-1.21	-1.01	28.80	0.12	0.12
3ZNP3K		33.04	1.63	1.37	29.54	0.86	0.86
44H7RK		31.96	0.56	0.47	28.75	0.07	0.07
49P7VH		30.84	-0.57	-0.47	29.97	1.29	1.30
4CATWH		31.17	-0.24	-0.20	28.76	0.08	0.08
4EELNV	X	50.70	19.29	16.14	47.20	18.52	18.59
4K4TX9		32.50	1.09	0.91	29.70	1.02	1.03
4Z2HEE		31.70	0.29	0.24	29.40	0.72	0.73
6DYL67		30.17	-1.24	-1.04	27.85	-0.83	-0.83
6JFV9D		31.10	-0.31	-0.26	28.70	0.03	0.03
6TAVWE		31.90	0.49	0.41	28.90	0.22	0.22
7X87HK		30.16	-1.25	-1.04	26.73	-1.94	-1.95
7Z7QX6		31.62	0.21	0.18	29.59	0.91	0.91
848DNT		31.88	0.47	0.39	28.18	-0.50	-0.50
8MKWHB	X	36.36	4.95	4.14	29.81	1.13	1.14
8W8QJT		31.60	0.19	0.16	28.80	0.12	0.12
9W6MH9		30.92	-0.49	-0.41	28.21	-0.47	-0.47
9Z6YD9		32.17	0.76	0.64	30.24	1.56	1.57
AC998V	X	32.40	0.99	0.83	26.30	-2.38	-2.39
AGMRPC	X	27.80	-3.61	-3.02	34.30	5.62	5.64
ALFR6T	*	34.70	3.29	2.75	31.00	2.32	2.33
ATCVNW	*	29.01	-2.40	-2.01	25.98	-2.70	-2.71
BQA8VR	X	33.66	2.25	1.89	31.97	3.29	3.30
BTC3EV		31.63	0.22	0.19	28.39	-0.29	-0.29
BVF2PN		31.40	-0.01	-0.01	28.50	-0.18	-0.18
CAUB8J		31.30	-0.11	-0.09	29.30	0.62	0.62
CZ6TEV		29.80	-1.61	-1.35	27.10	-1.58	-1.58
DDWJXE		31.60	0.19	0.16	28.50	-0.18	-0.18
DE9RAZ		31.94	0.53	0.44	29.07	0.39	0.39
DRBKDH		32.37	0.96	0.81	28.39	-0.29	-0.29
DVCLFZ		32.49	1.08	0.90	29.01	0.33	0.33
E8KVWH	*	34.24	2.83	2.37	29.57	0.89	0.90
EK73H3		31.04	-0.37	-0.31	28.72	0.04	0.04
EXBQJR		29.90	-1.51	-1.26	28.00	-0.68	-0.68
FXAF4F		31.69	0.28	0.24	28.92	0.24	0.24
GFMM6F		32.20	0.80	0.67	28.86	0.18	0.19
GJ6GTN		28.50	-2.91	-2.43	27.00	-1.68	-1.68
GNJMF3		29.90	-1.51	-1.26	28.00	-0.68	-0.68
GQ4Y8Z		30.68	-0.73	-0.61	26.98	-1.70	-1.71
GTVVWU		31.80	0.39	0.33	30.60	1.92	1.93
GVZV7J		32.70	1.29	1.08	28.80	0.12	0.12
H7HYN4	X	30.40	-1.01	-0.84	12.60	-16.08	-16.13



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1132

2nd Qtr
2024

Yield Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
HJLTBT		28.90	-2.51	-2.10	27.70	-0.98	-0.98
HP8D6D		30.90	-0.51	-0.42	27.40	-1.28	-1.28
HTAN9M		30.51	-0.89	-0.75	28.42	-0.26	-0.26
HW9Z4M	X	31.60	0.19	0.16	31.30	2.62	2.63
J7R66J		29.73	-1.67	-1.40	27.12	-1.56	-1.56
J8KCP2		32.88	1.48	1.24	29.26	0.58	0.59
JJCK9J		30.12	-1.29	-1.08	27.81	-0.87	-0.88
JPQGCE		31.80	0.39	0.33	28.40	-0.28	-0.28
K3VZND		31.60	0.19	0.16	29.90	1.22	1.23
KTH9VU	X	36.52	5.11	4.28	33.30	4.62	4.64
KUGMF2	X	28.23	-3.18	-2.66	29.98	1.30	1.31
KW2UGA		31.50	0.09	0.08	29.18	0.50	0.51
KY9H7T	X	33.39	1.98	1.66	33.00	4.32	4.34
MAZFUJ		30.10	-1.31	-1.09	28.10	-0.58	-0.58
METH3P		30.04	-1.37	-1.14	26.85	-1.83	-1.84
MEY6PQ	*	32.00	0.59	0.50	30.80	2.12	2.13
MHE4VD		31.42	0.01	0.01	29.60	0.92	0.92
MMPABJ		32.50	1.09	0.91	29.90	1.22	1.23
MVYCGX		31.70	0.29	0.24	28.70	0.02	0.02
MXQBVV		32.00	0.59	0.50	29.60	0.92	0.93
NX2423		32.40	0.99	0.83	29.10	0.42	0.42
NXLDYQ		31.20	-0.21	-0.17	28.60	-0.08	-0.08
NZBRXV		31.40	-0.01	-0.01	28.60	-0.08	-0.08
P48XUD		29.90	-1.51	-1.26	28.40	-0.28	-0.28
QGM39P		32.90	1.49	1.24	28.12	-0.56	-0.56
QQX6UQ		32.23	0.82	0.69	28.33	-0.35	-0.35
QZXWWP		32.43	1.02	0.86	30.04	1.36	1.36
TC38NR		30.10	-1.31	-1.09	28.70	0.02	0.02
TCPJ7D		31.66	0.26	0.22	28.90	0.22	0.22
TZUJFU	X	28.00	-3.41	-2.85	24.73	-3.95	-3.96
UBATJE		32.78	1.37	1.15	29.59	0.91	0.91
UF4UH8	X	28.30	-3.11	-2.60	24.60	-4.08	-4.09
UKZM7P		31.80	0.39	0.33	29.30	0.62	0.62
V8P6HE		30.53	-0.88	-0.73	28.24	-0.44	-0.44
WD8X7H		30.40	-1.01	-0.84	27.41	-1.27	-1.28
WEKMAV		32.50	1.09	0.91	28.80	0.12	0.12
WQTZHZ		31.80	0.39	0.33	29.40	0.72	0.73
WUUECZ		30.90	-0.51	-0.42	27.60	-1.08	-1.08
WWZWBW		31.18	-0.22	-0.19	27.56	-1.12	-1.12
X9U3WK		32.10	0.69	0.58	29.80	1.12	1.13
XC8DWN		30.80	-0.61	-0.51	27.50	-1.18	-1.18
XEYCBM	X	25.60	-5.81	-4.86	21.30	-7.38	-7.40
XM7ZZE		29.88	-1.53	-1.28	27.85	-0.83	-0.83
XPXAW2		32.69	1.28	1.07	28.16	-0.51	-0.52
XYJBCB	X	33.80	2.39	2.00	32.20	3.52	3.53
Y66MQ4		30.30	-1.11	-0.93	28.80	0.12	0.12
Y7HZVZ		31.10	-0.31	-0.26	28.70	0.02	0.02



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1132

2nd Qtr
2024

Yield Strength: Lab-Machined Flat Steel ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
YKG292		32.34	0.94	0.78	29.44	0.77	0.77
YQ6N48		29.20	-2.21	-1.85	28.30	-0.38	-0.38
YQRM8D		32.90	1.49	1.25	30.30	1.62	1.63
YTBATT		31.80	0.39	0.33	29.30	0.62	0.62
YY3GC2		32.30	0.89	0.75	29.60	0.92	0.93
Z28WBX		32.28	0.87	0.73	28.74	0.06	0.06
Z3YTZQ		31.90	0.49	0.41	28.80	0.12	0.12
Z7V9WZ		32.49	1.08	0.90	29.44	0.77	0.77
ZNF8DC		33.30	1.89	1.58	28.80	0.12	0.12
ZNXNL8		30.00	-1.41	-1.18	27.50	-1.18	-1.18
ZX3ZCA		29.52	-1.89	-1.58	27.15	-1.53	-1.53

Summary Statistics

	Sample F01		Sample F02	
Grand Means	31.41	ksi	28.68	ksi
Std Dev Btw Labs	1.20	ksi	1.00	ksi

Samples F01, F02 : AISI 1010 - 14G, AISI 1010 - 16G

Statistics based on 91 of 105 reporting participants

Comments on Assigned Data Flags for Test #1132

- 4EELNV (X) - Data appear to be for tensile strength instead of yield strength.
- 8MKWHB (X) - Data for sample F01 are high.
- AC998V (X) - Inconsistent in testing between samples.
- AGMRPC (X) - Data for sample F01 are low and data for sample F02 are high.
- BQA8VR (X) - Data for sample F02 are high.
- H7HYN4 (X) - Data for sample F02 are low.
- HW9Z4M (X) - Inconsistent in testing between samples.
- KTH9VU (X) - Data for both samples are high.
- KUGMF2 (X) - Inconsistent in testing between samples.
- KY9H7T (X) - Data for sample F02 are high.
- TZUJFU (X) - Data for both samples are low.
- UF4UH8 (X) - Data for sample F02 are low.
- XEYCBM (X) - Data for both samples are low.
- XYJBCB (X) - Data for sample F02 are high.



Analysis 1132

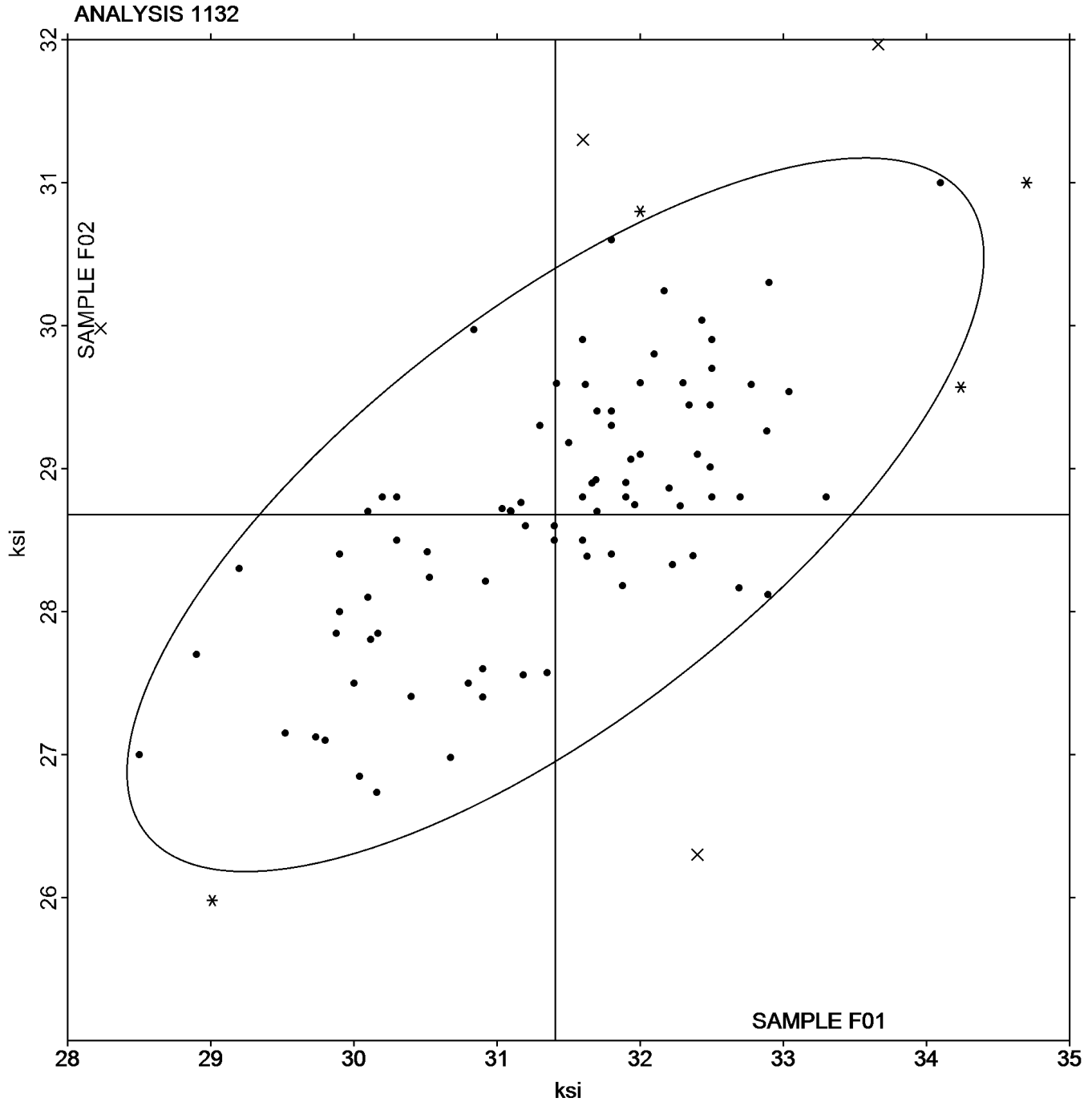
Yield Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F01

SAMPLE F02

31.41 ksi

28.68 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1133

2nd Qtr

Elongation: Lab-Machined Flat Steel

2024

ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2M6M8N		43.30	3.14	1.36	44.30	2.29	0.92
2MJ7RL	X	32.90	-7.26	-3.13	29.80	-12.21	-4.90
2RBTU2		42.08	1.92	0.83	44.75	2.74	1.10
3L2JQH		40.50	0.34	0.15	41.40	-0.61	-0.25
3QY26X		38.49	-1.67	-0.72	42.24	0.23	0.09
3U83R8		39.70	-0.46	-0.20	40.80	-1.21	-0.49
3ZNP3K		37.35	-2.81	-1.21	40.50	-1.51	-0.61
44H7RK		40.04	-0.12	-0.05	41.38	-0.63	-0.25
49P7VH	*	33.33	-6.83	-2.95	35.00	-7.01	-2.81
4CATWH		43.80	3.64	1.57	46.90	4.89	1.96
4EELNV		38.60	-1.56	-0.67	41.00	-1.01	-0.41
4K4TX9		39.00	-1.16	-0.50	40.00	-2.01	-0.81
4Z2HEE		39.10	-1.06	-0.46	42.60	0.59	0.24
6DYL67		42.76	2.60	1.12	44.05	2.04	0.82
6JFV9D	X	20.60	-19.56	-8.44	19.80	-22.21	-8.91
6TAVWE		39.70	-0.46	-0.20	42.50	0.49	0.20
7MKADD		36.67	-3.49	-1.50	36.67	-5.34	-2.14
7X87HK		37.25	-2.91	-1.25	40.37	-1.64	-0.66
7Z7QX6		42.00	1.84	0.79	44.00	1.99	0.80
848DNT		37.60	-2.56	-1.10	40.10	-1.91	-0.77
8MKWHB		40.90	0.74	0.32	40.80	-1.21	-0.49
8W8QJT		42.00	1.84	0.79	46.00	3.99	1.60
9W6MH9		41.40	1.24	0.54	43.60	1.59	0.64
9Z6YD9		42.00	1.84	0.79	42.00	-0.01	0.00
AC998V	X	39.80	-0.36	-0.15	37.00	-5.01	-2.01
AGMRPC		43.76	3.60	1.55	43.53	1.52	0.61
ALFR6T		37.20	-2.96	-1.28	40.00	-2.01	-0.81
ATCVNW		42.50	2.34	1.01	45.12	3.11	1.25
BQA8VR		40.85	0.69	0.30	41.15	-0.86	-0.35
BTC3EV		37.30	-2.86	-1.23	38.90	-3.11	-1.25
BVF2PN		38.40	-1.76	-0.76	41.00	-1.01	-0.41
CAUB8J		40.00	-0.16	-0.07	43.60	1.59	0.64
CZ6TEV		38.90	-1.26	-0.54	39.80	-2.21	-0.89
DDWJXE		42.10	1.94	0.84	44.30	2.29	0.92
DE9RAZ		41.59	1.43	0.62	43.87	1.86	0.75
DRBKDH		44.27	4.11	1.77	47.03	5.02	2.01
DVCLFZ		42.60	2.44	1.05	45.00	2.99	1.20
E8KVWH		37.75	-2.41	-1.04	41.82	-0.19	-0.08
EK73H3		36.40	-3.76	-1.62	36.80	-5.21	-2.09
EXBQJR		44.00	3.84	1.66	44.40	2.39	0.96
FXAF4F		40.60	0.44	0.19	42.50	0.49	0.20
GFMM6F		42.00	1.84	0.79	44.00	1.99	0.80
GJ6GTN		39.30	-0.86	-0.37	40.30	-1.71	-0.69
GNJMF3		39.30	-0.86	-0.37	41.10	-0.91	-0.37
GQ4Y8Z		40.90	0.74	0.32	42.40	0.39	0.16
GTVVWU		39.50	-0.66	-0.28	42.00	-0.01	0.00
GVZV7J		40.80	0.64	0.28	41.80	-0.21	-0.08



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1133

2nd Qtr

Elongation: Lab-Machined Flat Steel

2024

ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
H7HYN4		40.70	0.54	0.23	43.50	1.49	0.60
HJLTBT		41.00	0.84	0.36	43.00	0.99	0.40
HP8D6D		39.90	-0.26	-0.11	41.80	-0.21	-0.08
HTAN9M	X	43.25	3.09	1.33	38.25	-3.76	-1.51
HW9Z4M	X	32.20	-7.96	-3.43	35.40	-6.61	-2.65
J7R66J		41.00	0.84	0.36	42.80	0.79	0.32
J8KCP2		35.01	-5.15	-2.22	37.08	-4.93	-1.98
JPQGCE		41.20	1.04	0.45	42.30	0.29	0.12
K3VZND	X	42.00	1.84	0.79	38.00	-4.01	-1.61
KTH9VU		40.20	0.04	0.02	42.80	0.79	0.32
KUGMF2	X	46.12	5.96	2.57	41.17	-0.84	-0.34
KW2UGA	*	41.10	0.94	0.41	39.20	-2.81	-1.13
KY9H7T		38.43	-1.73	-0.75	38.26	-3.75	-1.51
MAZFUJ		42.70	2.54	1.10	42.20	0.19	0.08
METH3P		39.44	-0.72	-0.31	40.51	-1.50	-0.60
MEY6PQ		39.00	-1.16	-0.50	43.00	0.99	0.40
MHE4VD		39.90	-0.26	-0.11	41.30	-0.71	-0.29
MMPABJ		38.00	-2.16	-0.93	40.10	-1.91	-0.77
MVYCGX		39.80	-0.36	-0.15	42.30	0.29	0.12
MXQBVV		39.50	-0.66	-0.28	41.90	-0.11	-0.04
NX2423		36.10	-4.06	-1.75	38.10	-3.91	-1.57
NXLDYQ		41.10	0.94	0.41	43.20	1.19	0.48
NZBRXV		40.80	0.64	0.28	42.50	0.49	0.20
P48XUD		39.10	-1.06	-0.46	39.90	-2.11	-0.85
QGM39P		39.55	-0.61	-0.26	44.45	2.44	0.98
QZX6UQ		42.20	2.04	0.88	45.70	3.69	1.48
QZXWWP		40.80	0.64	0.28	44.10	2.09	0.84
TC38NR	X	37.00	-3.16	-1.36	43.50	1.49	0.60
TCPJ7D		42.65	2.49	1.08	46.32	4.31	1.73
TZUJFU	X	46.20	6.04	2.61	44.57	2.56	1.03
UBATJE		39.00	-1.16	-0.50	39.00	-3.01	-1.21
UF4UH8	X	35.10	-5.06	-2.18	21.70	-20.31	-8.15
UKZM7P		44.90	4.74	2.05	46.30	4.29	1.72
V8P6HE		40.70	0.54	0.23	40.50	-1.51	-0.61
WD8X7H		45.25	5.09	2.20	47.85	5.84	2.34
WEKMAV		41.00	0.84	0.36	43.00	0.99	0.40
WQTZHZ		39.00	-1.16	-0.50	42.00	-0.01	0.00
WUUECZ		39.60	-0.56	-0.24	41.00	-1.01	-0.41
WWZWBW		41.00	0.84	0.36	42.00	-0.01	0.00
X8VA7L	X	33.33	-6.83	-2.95	33.33	-8.68	-3.48
X9U3WK		39.00	-1.16	-0.50	41.00	-1.01	-0.41
XC8DWN		43.00	2.84	1.23	44.30	2.29	0.92
XEYCBM		41.50	1.34	0.58	43.50	1.49	0.60
XM7ZZE		39.30	-0.86	-0.37	40.40	-1.61	-0.65
XPXAW2		42.45	2.29	0.99	46.00	3.99	1.60
XYJBCB	*	43.40	3.24	1.40	42.00	-0.01	0.00
Y66MQ4		39.00	-1.16	-0.50	39.40	-2.61	-1.05



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1133

2nd Qtr

Elongation: Lab-Machined Flat Steel

2024

ASTM E8

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Y7HZVZ		38.00	-2.16	-0.93	41.10	-0.91	-0.37
YKG292		37.50	-2.66	-1.15	40.80	-1.21	-0.49
YQ6N48		36.60	-3.56	-1.53	39.20	-2.81	-1.13
YQRM8D		37.90	-2.26	-0.97	39.30	-2.71	-1.09
YTBATT		38.80	-1.36	-0.59	40.30	-1.71	-0.69
YY3GC2		41.50	1.34	0.58	45.00	2.99	1.20
Z28WBX		38.78	-1.38	-0.59	40.50	-1.51	-0.61
Z3Y TZQ		37.00	-3.16	-1.36	39.00	-3.01	-1.21
Z7V9WZ		38.40	-1.76	-0.76	40.90	-1.11	-0.45
ZNF8DC		38.00	-2.16	-0.93	39.60	-2.41	-0.97
ZNXNL8		40.60	0.44	0.19	41.40	-0.61	-0.25
ZX3ZCA	*	47.00	6.84	2.95	48.00	5.99	2.40

Summary Statistics

	Sample F01		Sample F02	
Grand Means	40.16	Percent	42.01	Percent
Std Dev Btwn Labs	2.32	Percent	2.49	Percent

Samples F01, F02 : AISI 1010 - 14G, AISI 1010 - 16G

Statistics based on 95 of 106 reporting participants

Comments on Assigned Data Flags for Test #1133

- 2MJ7RL (X) - Data for both samples are low. Possible Systematic Error.
- 6JFV9D (X) - Data for both samples are low. Possible Systematic Error.
- AC998V (X) - Inconsistent in testing between samples.
- HTAN9M (X) - Inconsistent in testing between samples.
- HW9Z4M (X) - Data for sample F01 are low.
- K3VZND (X) - Inconsistent in testing between samples.
- KUGMF2 (X) - Inconsistent in testing between samples.
- TC38NR (X) - Inconsistent in testing between samples.
- TZUJFU (X) - Inconsistent in testing between samples.
- UF4UH8 (X) - Data for sample F02 are low.
- X8VA7L (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1133

Elongation: Lab-Machined Flat Steel

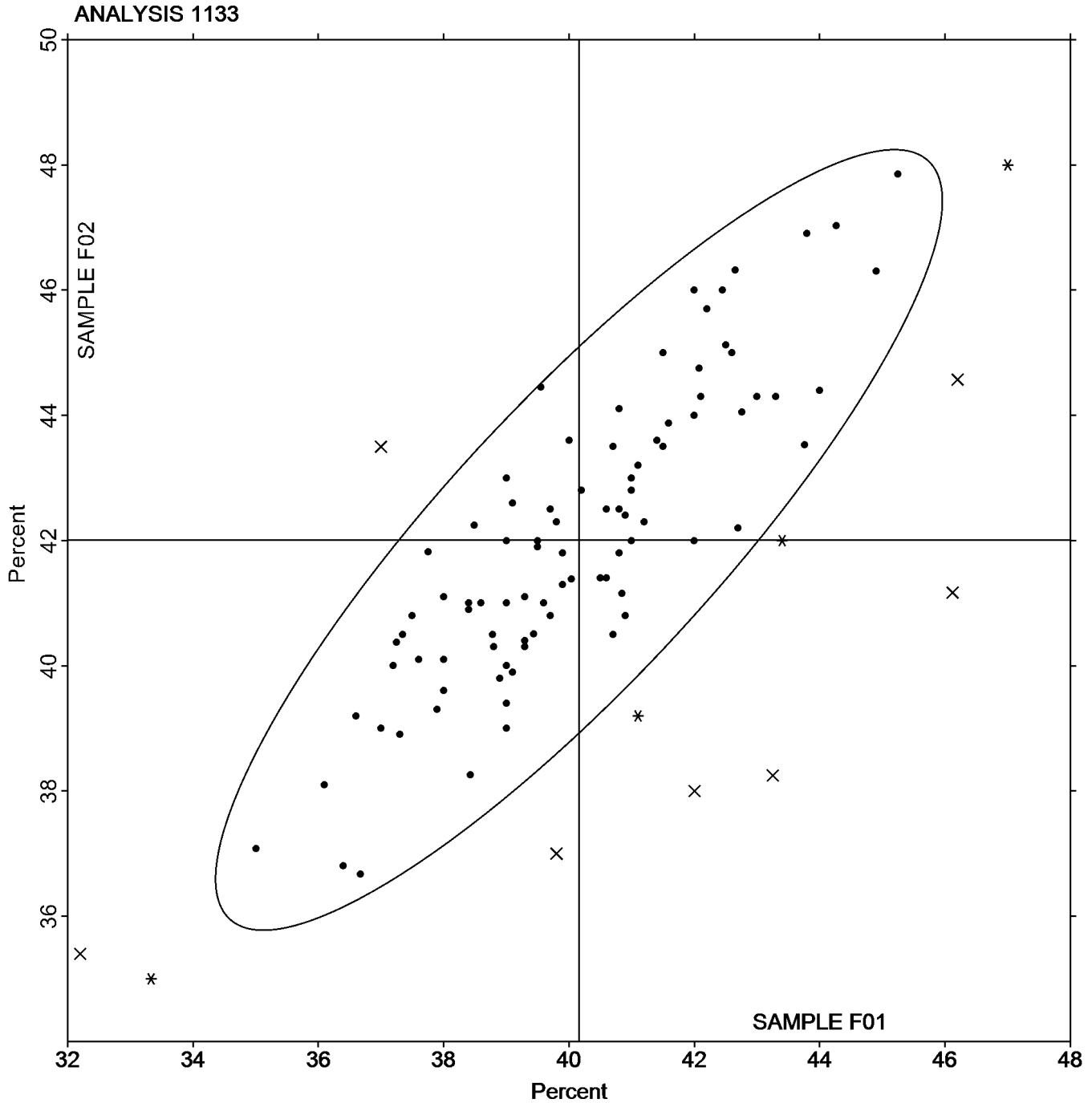
ASTM E8

SAMPLE F01

SAMPLE F02

40.16 Percent

42.01 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1134

2nd Qtr

r-Value: Lab-Machined Flat Steel
ASTM E517

2024

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2RBTU2		1.500	-0.058	-0.52	1.700	-0.147	-0.79
3U83R8		1.284	-0.274	-2.43	1.395	-0.452	-2.43
44H7RK		1.370	-0.188	-1.67	1.600	-0.247	-1.33
4Z2HEE		1.580	0.022	0.19	1.910	0.063	0.34
6JFV9D		1.590	0.032	0.28	1.840	-0.007	-0.04
6TAVWE		1.660	0.102	0.90	2.020	0.173	0.93
848DNT		1.515	-0.043	-0.38	1.825	-0.022	-0.12
8W8QJT		1.450	-0.108	-0.96	1.840	-0.007	-0.04
9Z6YD9		1.700	0.142	1.26	2.050	0.203	1.09
CAUB8J	X	0.8800	-0.678	-6.02	0.8600	-0.987	-5.31
DE9RAZ		1.464	-0.094	-0.84	1.519	-0.328	-1.76
DRBKDH		1.624	0.066	0.58	1.867	0.020	0.11
DVCLFZ		1.604	0.046	0.41	1.966	0.119	0.64
EXBQJR		1.546	-0.012	-0.11	1.674	-0.173	-0.93
FXAF4F		1.600	0.042	0.37	1.880	0.033	0.18
GFMM6F		1.680	0.122	1.08	1.990	0.143	0.77
GJ6GTN	X	1.770	0.212	1.88	1.610	-0.237	-1.28
GQ4Y8Z		1.570	0.012	0.11	1.690	-0.157	-0.84
JPQGCE		1.416	-0.142	-1.26	1.707	-0.140	-0.75
K3VZND		1.640	0.082	0.73	1.940	0.093	0.50
KTH9VU		1.550	-0.008	-0.07	1.880	0.033	0.18
MAZFUJ		1.600	0.042	0.37	1.800	-0.047	-0.25
MVYCGX		1.586	0.028	0.25	1.889	0.042	0.23
MXQBVV		1.730	0.172	1.53	2.030	0.183	0.99
NX2423		1.830	0.272	2.41	2.190	0.343	1.85
NXLDYQ		1.480	-0.078	-0.69	1.680	-0.167	-0.90
NZBRXV		1.510	-0.048	-0.43	1.850	0.003	0.02
QQX6UQ	*	1.400	-0.158	-1.40	1.930	0.083	0.45
QZXWWP		1.530	-0.028	-0.25	1.750	-0.097	-0.52
TCPJ7D		1.500	-0.058	-0.52	1.740	-0.107	-0.58
UKZM7P	*	1.768	0.210	1.86	2.404	0.557	3.00
V8P6HE		1.480	-0.078	-0.69	1.930	0.083	0.45
WEKMAV		1.510	-0.048	-0.43	1.848	0.001	0.01
X9U3WK		1.550	-0.008	-0.07	1.810	-0.037	-0.20
XM7ZZE		1.620	0.062	0.55	1.730	-0.117	-0.63
YQ6N48	X	0.5000	-1.058	-9.39	0.5000	-1.347	-7.25
Z7V9WZ		1.540	-0.018	-0.16	1.920	0.073	0.39

Summary Statistics

	Sample F01	Sample F02
Grand Means	1.558	1.847
Std Dev Btwn Labs	0.113	0.186

Samples F01, F02 : AISI 1010 - 14G, AISI 1010 - 16G

Statistics based on 34 of 37 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517

Cycle 146

2nd Qtr
2024

Comments on Assigned Data Flags for Test #1134

CAUB8J (X) - Data for both samples are low.

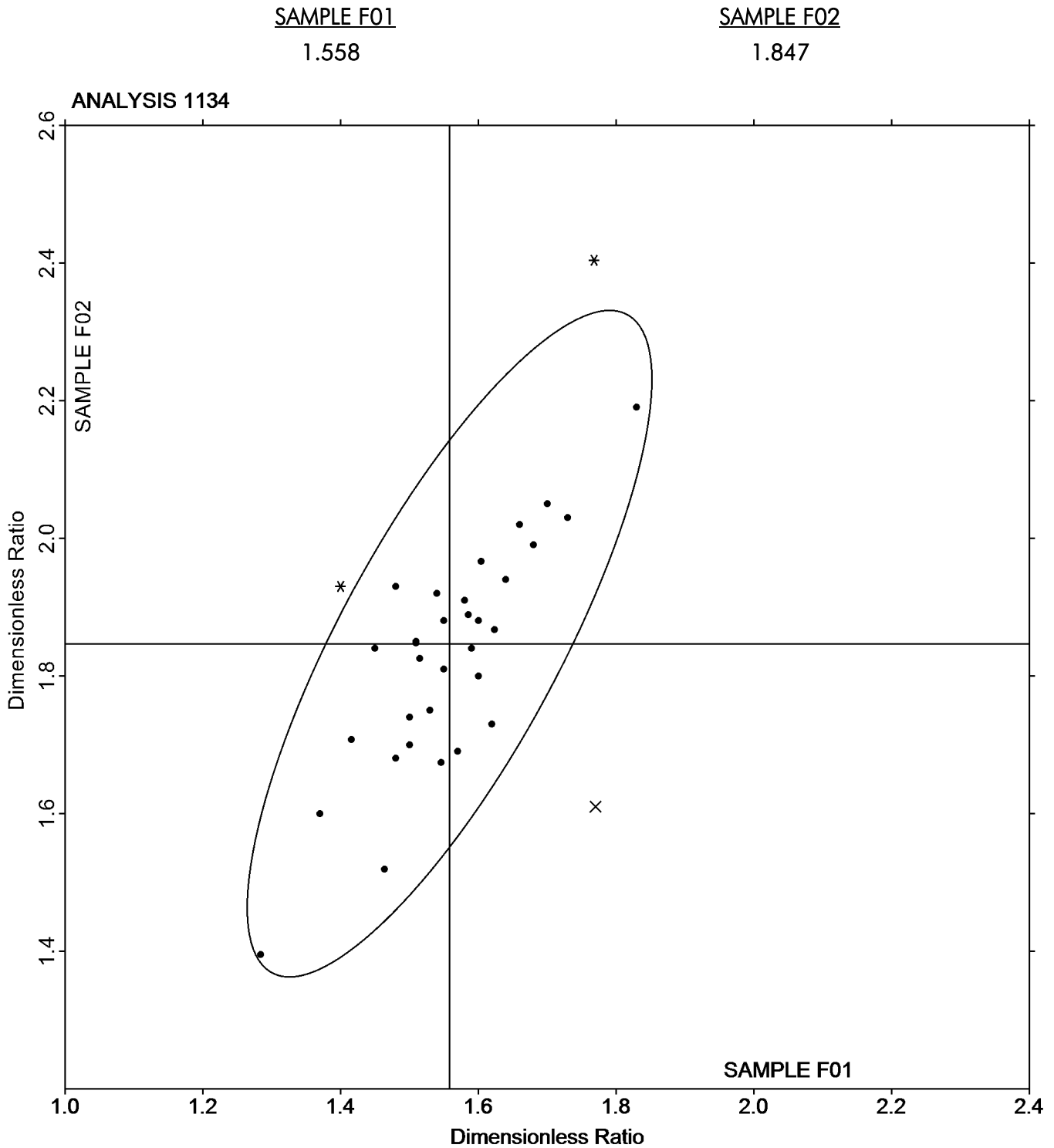
GJ6GTN (X) - Inconsistent in testing between samples.

YQ6N48 (X) - Data for both samples are low.



Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1135

2nd Qtr

n-Value: Lab-Machined Flat Steel
ASTM E646

2024

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2RBTU2		0.2060	0.0013	0.16	0.2080	0.0012	0.14
3U83R8	*	0.1870	-0.0177	-2.31	0.1942	-0.0126	-1.53
44H7RK		0.1910	-0.0137	-1.79	0.1920	-0.0148	-1.80
4CATWH		0.2013	-0.0034	-0.45	0.2043	-0.0025	-0.31
4EELNV		0.1960	-0.0087	-1.14	0.1970	-0.0098	-1.19
4K4TX9		0.2035	-0.0012	-0.16	0.2015	-0.0053	-0.65
4Z2HEE		0.2070	0.0023	0.29	0.2080	0.0012	0.14
6JFV9D		0.2210	0.0163	2.12	0.2240	0.0172	2.09
6TAVWE		0.2050	0.0003	0.03	0.2060	-0.0008	-0.10
7X87HK		0.1928	-0.0119	-1.55	0.1909	-0.0159	-1.94
848DNT		0.2000	-0.0047	-0.62	0.2040	-0.0028	-0.34
8W8QJT		0.2080	0.0033	0.42	0.2090	0.0022	0.26
9Z6YD9		0.2020	-0.0027	-0.36	0.2020	-0.0048	-0.59
CAUB8J	X	0.1300	-0.0747	-9.72	0.1500	-0.0568	-6.91
CZ6TEV		0.2060	0.0013	0.16	0.2160	0.0092	1.12
DDWJXE		0.2030	-0.0017	-0.23	0.2100	0.0032	0.39
DE9RAZ		0.2048	0.0001	0.01	0.2108	0.0040	0.48
DRBKDH	X	0.1460	-0.0587	-7.64	0.1610	-0.0458	-5.57
DVCLFZ		0.2040	-0.0007	-0.10	0.2080	0.0012	0.14
EXBQJR		0.2090	0.0043	0.55	0.2100	0.0032	0.39
FXAF4F		0.2100	0.0053	0.68	0.2100	0.0032	0.39
GFMM6F		0.2030	-0.0017	-0.23	0.2070	0.0002	0.02
GJ6GTN		0.2130	0.0083	1.07	0.2150	0.0082	0.99
GQ4Y8Z		0.2160	0.0113	1.47	0.2200	0.0132	1.60
GVZV7J		0.2050	0.0003	0.03	0.2040	-0.0028	-0.34
J8KCP2		0.2087	0.0040	0.52	0.2122	0.0053	0.65
JPQGCE		0.2030	-0.0017	-0.23	0.2030	-0.0038	-0.47
KTH9VU		0.1990	-0.0057	-0.75	0.2000	-0.0068	-0.83
MAZFUJ		0.2000	-0.0047	-0.62	0.2000	-0.0068	-0.83
MEY6PQ	X	0.2027	-0.0020	-0.26	0.2230	0.0162	1.97
MMPABJ		0.2000	-0.0047	-0.62	0.2100	0.0032	0.39
MVYCGX		0.2100	0.0053	0.68	0.2100	0.0032	0.39
MXQBVV		0.2040	-0.0007	-0.10	0.2060	-0.0008	-0.10
NX2423		0.2090	0.0043	0.55	0.2120	0.0052	0.63
NXLDYQ		0.2040	-0.0007	-0.10	0.2050	-0.0018	-0.22
NZBRXV		0.2120	0.0073	0.94	0.2100	0.0032	0.39
QQX6UQ		0.2100	0.0053	0.68	0.2160	0.0092	1.12
QZXWWP		0.2060	0.0013	0.16	0.2040	-0.0028	-0.34
TCPJ7D		0.1900	-0.0147	-1.92	0.1900	-0.0168	-2.05
UKZM7P		0.1980	-0.0067	-0.88	0.2030	-0.0038	-0.47
V8P6HE	*	0.2210	0.0163	2.12	0.2170	0.0102	1.24
WEKMAV		0.2030	-0.0017	-0.23	0.2060	-0.0008	-0.10
WQTZHZ		0.2010	-0.0037	-0.49	0.2090	0.0022	0.26
X9U3WK		0.1900	-0.0147	-1.92	0.1900	-0.0168	-2.05
XEYCBM	*	0.2150	0.0103	1.34	0.2250	0.0182	2.21
XM7ZZE	*	0.2250	0.0203	2.64	0.2250	0.0182	2.21
Y7HZVZ		0.2050	0.0003	0.03	0.2020	-0.0048	-0.59



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1135

**2nd Qtr
2024**

n-Value: Lab-Machined Flat Steel
ASTM E646

WebCode	Data Flag	Sample F01			Sample F02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
YKG292		0.2100	0.0053	0.68	0.2100	0.0032	0.39
YQ6N48	X	0.5000	0.2953	38.40	0.5000	0.2932	35.64
YQRM8D		0.2020	-0.0027	-0.36	0.2020	-0.0048	-0.59
YTBATT		0.2000	-0.0047	-0.62	0.2000	-0.0068	-0.83
YY3GC2		0.2106	0.0059	0.76	0.2134	0.0066	0.80
Z7V9WZ		0.2030	-0.0017	-0.23	0.2000	-0.0068	-0.83
ZNF8DC		0.2030	-0.0017	-0.23	0.2090	0.0022	0.26

Summary Statistics		
	Sample F01	Sample F02
Grand Means	0.2047	0.2068
Stnd Dev Btwn Labs	0.0077	0.0082

Samples F01, F02 : AISI 1010 - 14G, AISI 1010 - 16G

Statistics based on 50 of 54 reporting participants

Comments on Assigned Data Flags for Test #1135

- CAUB8J (X) - Data for both samples are low. Possible Systematic Error.
- DRBKDH (X) - Data for both samples are low. Possible Systematic Error.
- MEY6PQ (X) - Inconsistent in testing between samples.
- YQ6N48 (X) - Data for both samples are high. Possible Systematic Error.



Analysis 1135

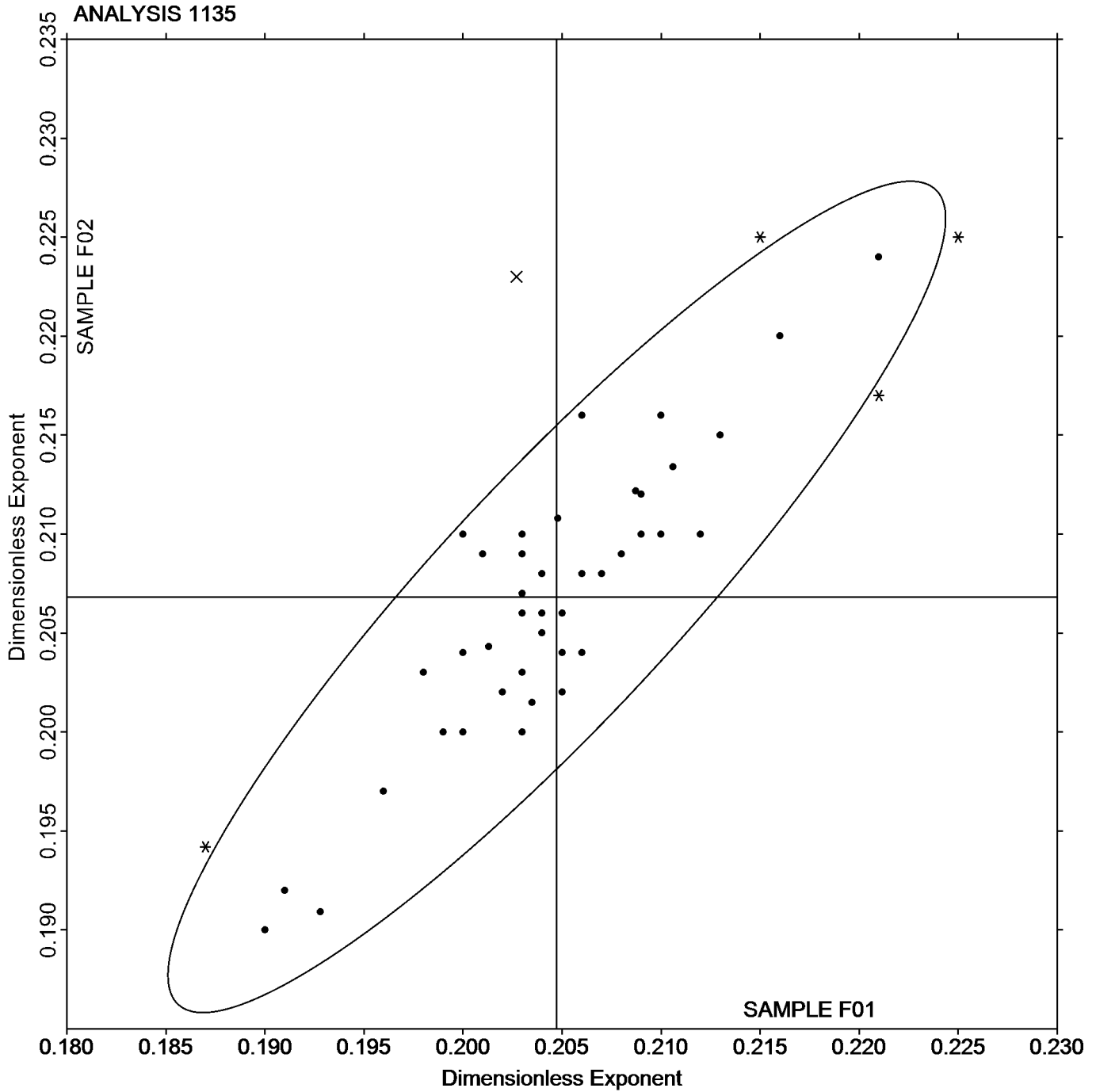
n-Value: Lab-Machined Flat Steel
ASTM E646

SAMPLE F01

SAMPLE F02

0.2047

0.2068





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1201

2nd Qtr
2024

Fastener Wedge Tensile (10 degree)
ASTM F606

WebCode	Data Flag	Sample X01			Sample X02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3H4Y4L	*	136.67	-5.87	-2.77	137.30	-1.34	-1.11
3UXETM		144.22	1.68	0.79	139.34	0.69	0.57
3XWTDQ		141.50	-1.04	-0.49	138.03	-0.61	-0.50
42QA3Q		144.34	1.80	0.85	140.17	1.53	1.26
4C9QVW		142.42	-0.12	-0.06	138.19	-0.45	-0.37
4LJTGX		143.90	1.36	0.64	139.67	1.02	0.84
6JPJMM		144.07	1.53	0.72	139.33	0.69	0.57
723KWF		143.63	1.09	0.51	138.97	0.32	0.27
939R7L		142.93	0.39	0.19	138.49	-0.15	-0.13
98ZW6G		143.20	0.66	0.31	139.80	1.16	0.95
A8WBRV	X	197.20	54.66	25.74	154.30	15.66	12.90
BN3D4E		141.37	-1.17	-0.55	136.93	-1.71	-1.41
BRM6FG		142.33	-0.21	-0.10	137.33	-1.31	-1.08
BTTMED	X	133.90	-8.64	-4.07	134.53	-4.11	-3.39
C3EBLK		143.83	1.29	0.61	139.67	1.02	0.84
CM42VC		141.00	-1.54	-0.72	136.07	-2.58	-2.12
CWBYGU		143.14	0.60	0.28	139.76	1.12	0.92
DUJZ3W		143.00	0.46	0.22	139.67	1.02	0.84
EG9HV7	*	137.47	-5.07	-2.39	139.97	1.32	1.09
FWJH62		142.49	-0.05	-0.02	137.55	-1.09	-0.90
G4TXY3		141.90	-0.64	-0.30	136.97	-1.68	-1.38
G7KUMW		142.30	-0.24	-0.11	137.07	-1.58	-1.30
GBXFUH		144.37	1.83	0.86	139.29	0.64	0.53
GDHVD3		143.10	0.56	0.27	141.43	2.79	2.30
GQ8U46		142.57	0.03	0.01	137.87	-0.78	-0.64
KD6RTY	*	136.97	-5.57	-2.62	138.52	-0.13	-0.10
KGNR7U	X	148.07	5.53	2.60	142.97	4.32	3.56
LA4JBP	X	134.24	-8.30	-3.91	139.53	0.88	0.73
LR6VQX		142.83	0.29	0.14	138.50	-0.14	-0.12
MNZ7RG		142.43	-0.11	-0.05	137.18	-1.46	-1.20
PX3LQ7		143.72	1.18	0.56	138.33	-0.31	-0.26
QANQK3		143.33	0.79	0.37	138.00	-0.64	-0.53
QFVJCD	X	149.57	7.03	3.31	149.88	11.23	9.25
QNRJ66		144.33	1.79	0.84	138.67	0.02	0.02
T6BR4U		144.60	2.06	0.97	138.89	0.25	0.20
T6NNLX		146.30	3.76	1.77	141.10	2.46	2.02
T6PDFG	X	132.49	-10.05	-4.73	139.63	0.99	0.82
TA3YL3		142.53	-0.01	0.00	138.07	-0.58	-0.48
UKE9FQ	*	138.30	-4.24	-2.00	140.43	1.79	1.47
UPACG6		143.00	0.46	0.22	138.40	-0.24	-0.20
UPTHFV		143.13	0.59	0.28	138.85	0.21	0.17
UTCBRX		144.00	1.46	0.69	139.97	1.32	1.09
VTNWTP		141.34	-1.20	-0.56	136.61	-2.04	-1.68
XHG2NP		138.63	-3.91	-1.84	138.87	0.22	0.18
XPXAW2		144.05	1.51	0.71	138.67	0.02	0.02
Y8UUF8		142.70	0.16	0.08	137.23	-1.41	-1.16
YGFZ7J		144.80	2.26	1.06	139.04	0.40	0.33



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1201

2nd Qtr

Fastener Wedge Tensile (10 degree)

2024

ASTM F606

WebCode	Data Flag	Sample X01			Sample X02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
ZKD2L8		143.90	1.36	0.64	138.83	0.19	0.16

Summary Statistics

	Sample X01		Sample X02	
Grand Means	142.54	ksi	138.64	ksi
Std Dev Btrwn Labs	2.12	ksi	1.21	ksi

Samples X01, X02 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 42 of 48 reporting participants

Comments on Assigned Data Flags for Test #1201

A8WBRV (X) - Data for both samples are high.

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

KGNR7U (X) - Data for sample X02 are high.

LA4JBP (X) - Data for sample X01 are low.

QFVJCD (X) - Data for both samples are high. Inconsistent within the determinations of sample X02.

T6PDFG (X) - Data for sample X01 are low.



Analysis 1201

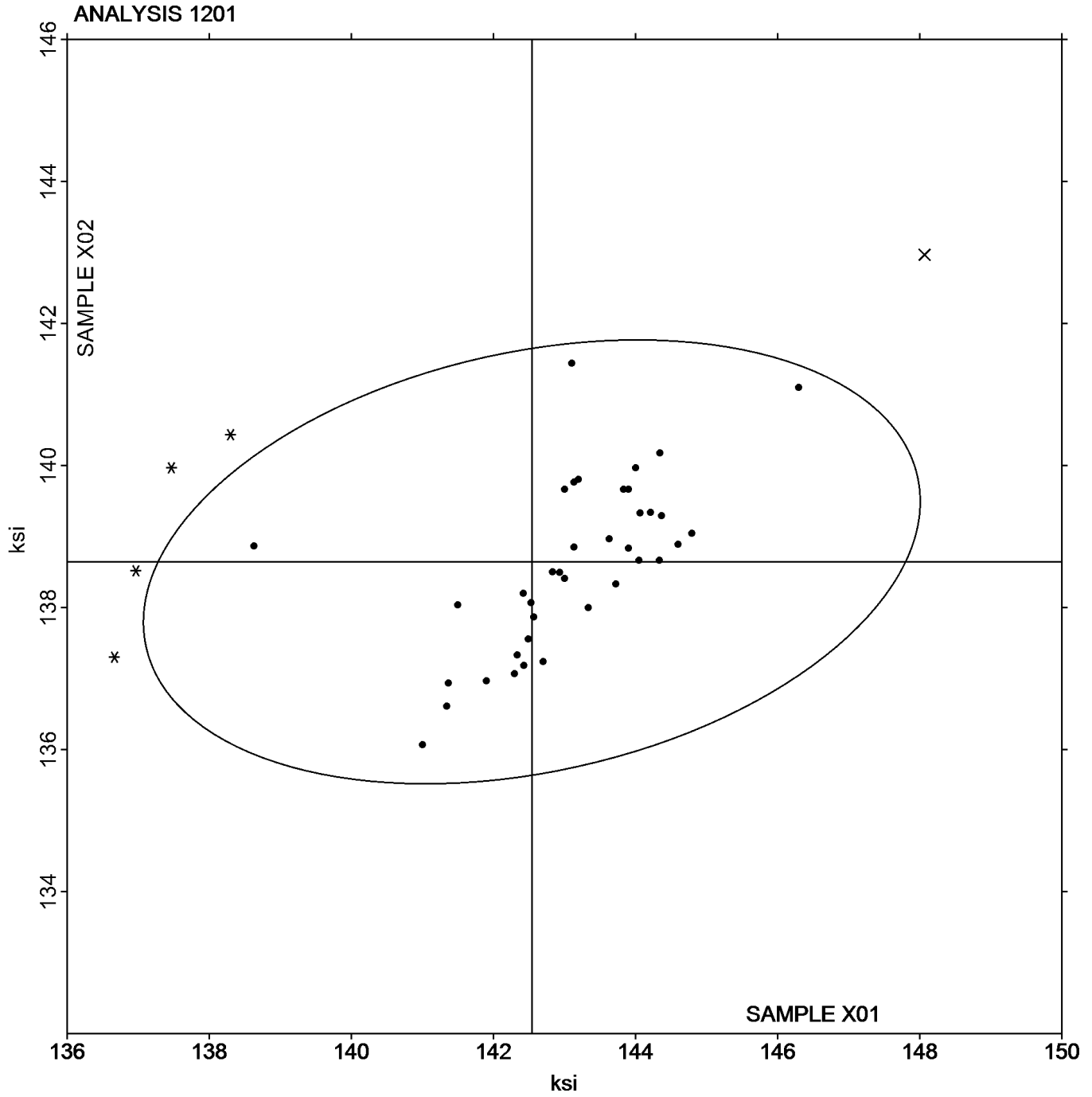
Fastener Wedge Tensile (10 degree)
ASTM F606

SAMPLE X01

SAMPLE X02

142.54 ksi

138.64 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1202

2nd Qtr
2024

Fastener Axial Tensile ASTM F606

WebCode	Data Flag	Sample Q01			Sample Q02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3H4Y4L		136.00	-1.59	-1.07	137.77	-0.87	-0.66
3RN2VZ		136.53	-1.06	-0.72	136.73	-1.91	-1.45
3UXETM		138.25	0.66	0.45	139.47	0.83	0.63
3XWTDQ		136.47	-1.12	-0.76	137.63	-1.00	-0.77
42QA3Q		139.14	1.55	1.04	140.52	1.88	1.43
4C9QVW		136.22	-1.37	-0.93	138.46	-0.18	-0.13
4CREDR		138.54	0.95	0.64	138.88	0.24	0.19
4LJTGX		138.83	1.24	0.84	139.30	0.66	0.50
6JPJMM		138.80	1.21	0.81	139.73	1.10	0.83
7RULCY		134.86	-2.73	-1.84	135.81	-2.83	-2.16
939R7L		136.66	-0.93	-0.63	138.47	-0.17	-0.13
96GEWR	*	140.92	3.32	2.24	140.22	1.59	1.21
98ZW6G		138.10	0.51	0.34	139.40	0.76	0.58
A8WBRV	X	190.17	52.58	35.42	135.20	-3.44	-2.62
BN3D4E	*	134.33	-3.26	-2.19	137.23	-1.40	-1.07
BRM6FG		136.00	-1.59	-1.07	138.33	-0.30	-0.23
BTTMED		135.87	-1.72	-1.16	138.10	-0.54	-0.41
CM42VC		134.37	-3.22	-2.17	135.30	-3.34	-2.54
CWBYGU		137.38	-0.21	-0.14	139.33	0.69	0.52
DCGTV3		137.83	0.24	0.16	139.59	0.95	0.73
DUJZ3W		137.00	-0.59	-0.40	138.00	-0.64	-0.49
FWJH62		136.92	-0.68	-0.46	137.94	-0.69	-0.53
G7KUMW		136.54	-1.05	-0.71	137.45	-1.18	-0.90
GBXFUH		137.93	0.34	0.23	138.15	-0.49	-0.37
GJA77D		138.42	0.83	0.56	140.28	1.64	1.25
HMNQJZ	X	10,597	10,459.08	7,045.98	10,683	10,544.03	8,035.06
HP8D6D	X	140.87	3.28	2.21	138.50	-0.14	-0.11
JVDRQ9		139.46	1.87	1.26	140.12	1.48	1.13
KNTQJ6		139.89	2.30	1.55	140.97	2.33	1.78
LR6VQX		137.83	0.24	0.16	139.03	0.40	0.30
MNZ7RG		137.24	-0.35	-0.24	137.94	-0.69	-0.53
PX3LQ7		137.18	-0.41	-0.28	138.32	-0.32	-0.25
QFVJCD	X	142.72	5.12	3.45	145.09	6.45	4.92
QNRJ66		137.33	-0.26	-0.17	138.00	-0.64	-0.49
RMBGKW	X	141.76	4.17	2.81	144.03	5.39	4.11
T6BR4U		138.93	1.34	0.90	139.58	0.95	0.72
TA3YL3		138.30	0.71	0.48	138.67	0.03	0.02
U873AD	X	96.64	-40.96	-27.59	96.94	-41.69	-31.77
UKE9FQ		138.83	1.24	0.84	139.53	0.90	0.68
UPACG6		136.61	-0.98	-0.66	137.66	-0.98	-0.75
UWQJ73	X	150.27	12.68	8.54	154.67	16.03	12.21
WD8X7H		137.33	-0.26	-0.17	138.00	-0.64	-0.49
WNR678		141.00	3.41	2.30	142.00	3.36	2.56
XG682X	X	11.03	-126.56	-85.26	11.29	-127.35	-97.05
XHG2NP		137.97	0.38	0.25	140.17	1.53	1.16
XRMB4B		137.48	-0.11	-0.08	138.95	0.32	0.24
Y32R82		139.38	1.79	1.21	139.07	0.43	0.33



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

Cycle 146
2nd Qtr
2024

WebCode	Data Flag	Sample Q01			Sample Q02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Y6AFVK		137.97	0.38	0.25	138.54	-0.10	-0.08
Y8UUF8		137.40	-0.19	-0.13	137.07	-1.57	-1.20
YFN2RL	X	136.51	-1.08	-0.73	135.16	-3.48	-2.65
YLBREG		137.66	0.06	0.04	138.22	-0.41	-0.32
Z28WBX		136.73	-0.86	-0.58	137.50	-1.14	-0.87

Summary Statistics		Sample Q01		Sample Q02	
Grand Means		137.59	ksi	138.64	ksi
Std Dev Btwn Labs		1.48	ksi	1.31	ksi

Samples Q01, Q02 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 43 of 52 reporting participants

Comments on Assigned Data Flags for Test #1202

- A8WBRV (X) - Data for sample Q01 are high.
- HMNQJZ (X) - Extreme data.
- HP8D6D (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample Q01.
- QFVJCD (X) - Data for both samples are high. Possible Systematic Error.
- RMBGKW (X) - Data for both samples are high. Possible Systematic Error.
- U873AD (X) - Data for both samples are low. Possible Systematic Error.
- UWQJ73 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample Q01.
- XG682X (X) - Extreme data.
- YFN2RL (X) - Inconsistent in testing between samples.



Analysis 1202

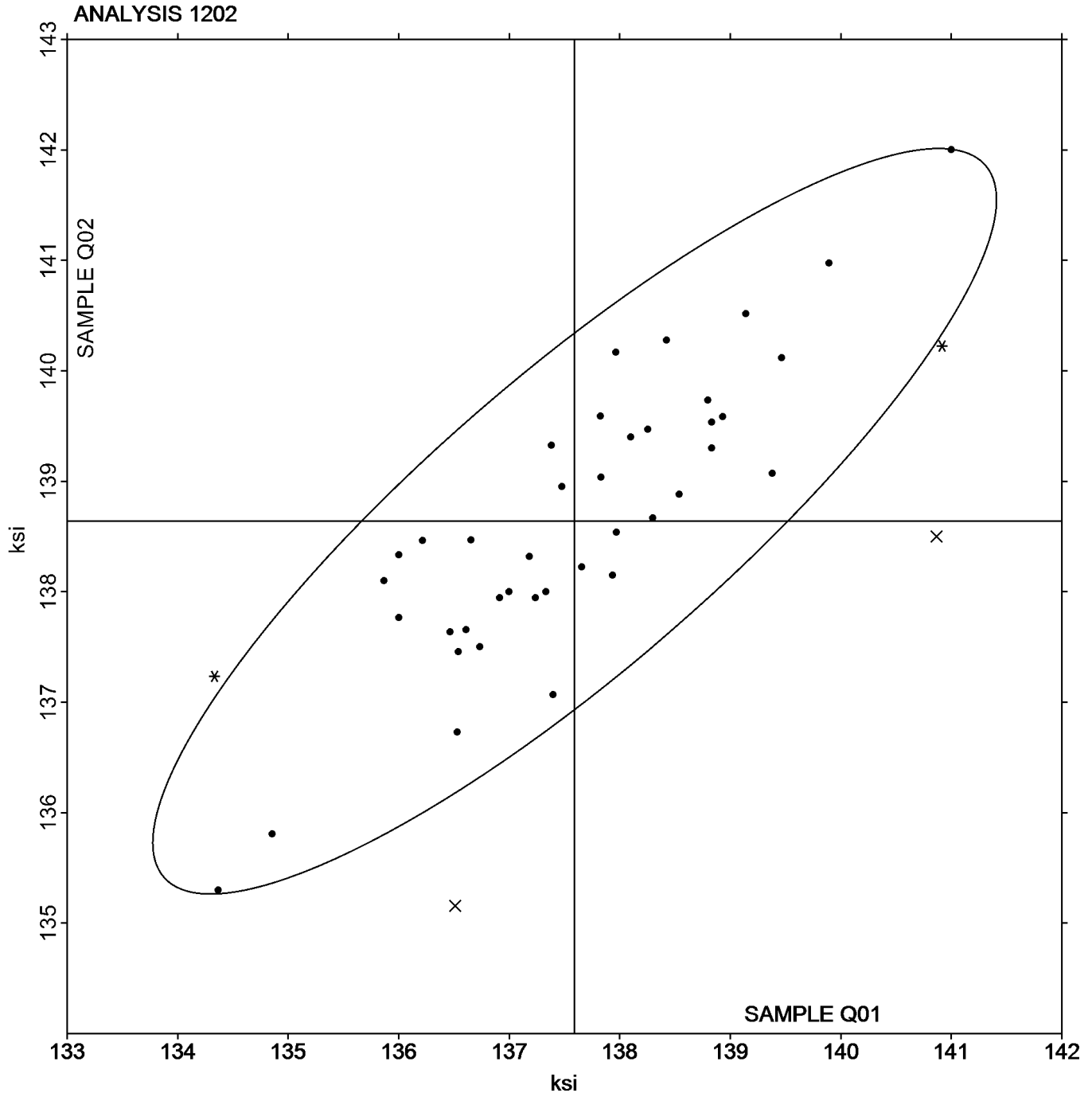
Fastener Axial Tensile
ASTM F606

SAMPLE Q01

SAMPLE Q02

137.59 ksi

138.64 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1203

**2nd Qtr
2024**

**Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M**

WebCode	Data Flag	Sample B01			Sample B02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3H4KG8		1,099	-4	-0.49	1,134	-1	-0.15
3H4Y4L		1,105	2	0.23	1,121	-14	-1.69
42AQKE		1,108	5	0.62	1,131	-4	-0.48
8RELRA		1,104	1	0.18	1,140	5	0.67
BHB9BB		1,107	4	0.48	1,140	5	0.59
BLBGFK		1,109	6	0.79	1,136	1	0.14
C2NGYC		1,108	5	0.66	1,143	8	1.04
CE9YT2		1,100	-3	-0.45	1,128	-7	-0.89
CMLJ2J		1,109	6	0.79	1,135	0	-0.03
EZNQW8		1,098	-5	-0.69	1,142	7	0.86
FWJH62		1,101	-2	-0.32	1,133	-2	-0.19
G68TR3		1,110	7	0.93	1,153	18	2.27
GAX8C3		1,112	9	1.15	1,132	-3	-0.40
JUKD26		1,091	-12	-1.57	1,126	-8	-1.04
KDBEHM		1,098	-5	-0.72	1,136	1	0.14
LK673L		1,089	-14	-1.91	1,131	-4	-0.44
MNZ7RG		1,097	-6	-0.76	1,128	-7	-0.88
NPCNLR		1,109	6	0.84	1,141	6	0.71
QF22QW		1,119	16	2.08	1,151	16	1.98
RMDGTQ	X	69,267	68,164	9,079.57	70,533	69,398	8,545.24
VW6U9M		1,095	-8	-1.04	1,123	-12	-1.50
WZL93R		1,107	4	0.53	1,134	-1	-0.11
Y8UUF8		1,093	-10	-1.34	1,130	-5	-0.60

Summary Statistics

	Sample B01		Sample B02	
Grand Means	1,103	MPa	1,135	MPa
Stnd Dev Btwn Labs	8	MPa	8	MPa

Samples B01, B02 : M-10x1.5x70, M-10x1.5x80

Statistics based on 22 of 23 reporting participants

Comments on Assigned Data Flags for Test #1203

RMDGTQ (X) - Extreme data.



Analysis 1203

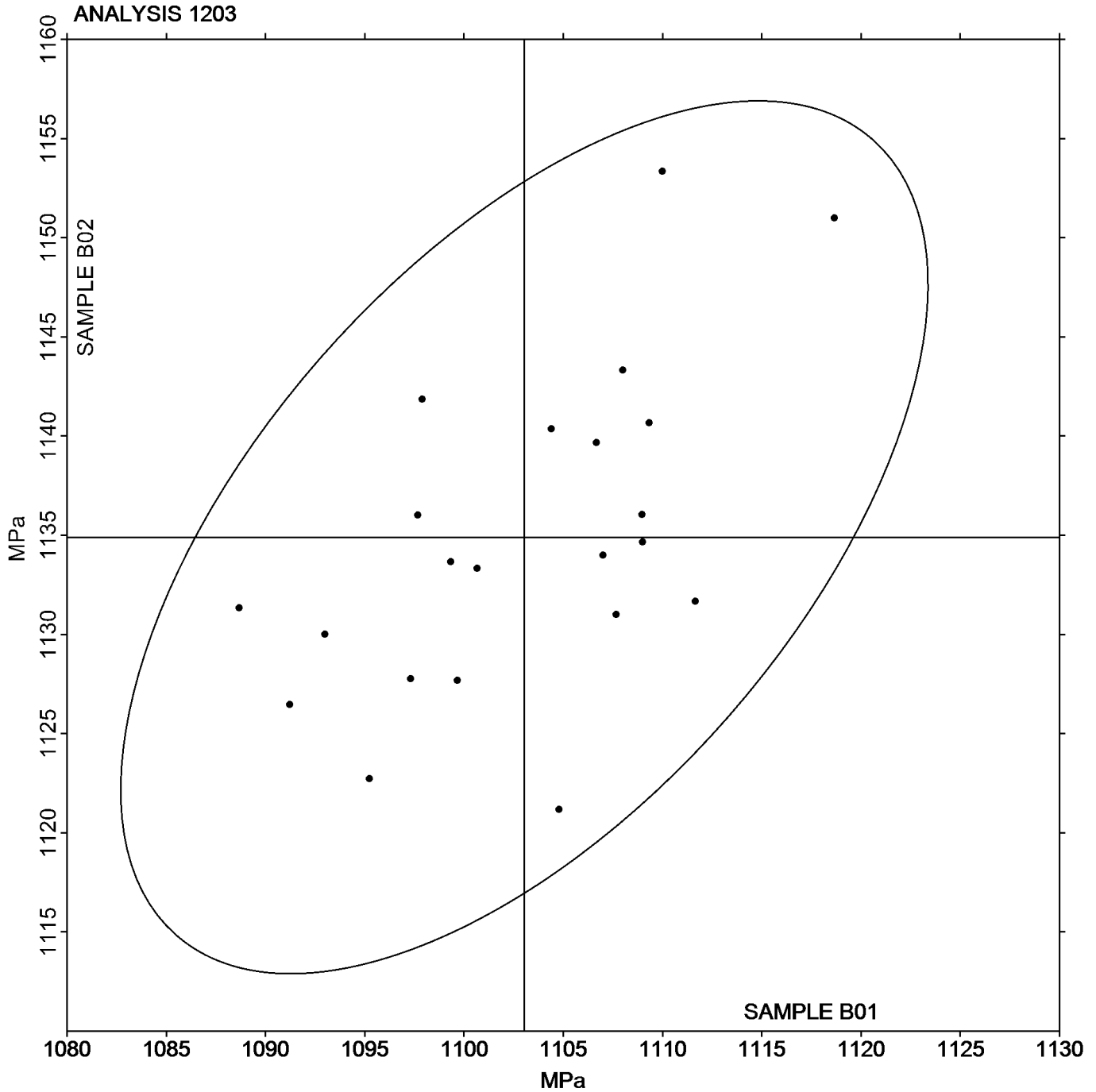
Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

SAMPLE B01

SAMPLE B02

1,103 MPa

1,135 MPa





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1204

2nd Qtr
2024

Fastener Axial Tensile - Metric
ASTM F606M

WebCode	Data Flag	Sample T01			Sample T02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
22Z38G		1,086	-21	-2.19	1,105	-32	-2.17
4LJTGX		1,118	11	1.13	1,152	15	0.98
CE9YT2		1,096	-11	-1.13	1,131	-6	-0.40
EZNQW8		1,113	6	0.60	1,143	6	0.39
FWJH62		1,105	-3	-0.27	1,132	-5	-0.33
FXR8CZ		1,108	1	0.07	1,145	8	0.52
G68TR3		1,113	6	0.62	1,140	3	0.19
HP8D6D		1,101	-6	-0.65	1,128	-9	-0.62
JAT2WY		1,118	11	1.10	1,150	12	0.84
JUKD26		1,112	5	0.52	1,126	-11	-0.73
LEHNX4		1,106	-1	-0.10	1,141	4	0.26
MNZ7RG		1,105	-3	-0.28	1,125	-13	-0.84
N6K87J		1,086	-21	-2.19	1,105	-33	-2.19
NPCNLR		1,111	4	0.38	1,148	10	0.70
NVDETJ		1,118	11	1.10	1,154	16	1.11
QF22QW		1,121	14	1.41	1,154	17	1.15
TM9FLX		1,104	-3	-0.34	1,138	0	0.03
WKP7VF		1,115	8	0.79	1,140	2	0.17
WZL93R		1,103	-4	-0.45	1,143	6	0.41
XY8EAR		1,113	5	0.55	1,159	22	1.49
Y8UUF8		1,101	-6	-0.65	1,123	-15	-0.98

Summary Statistics

	Sample T01		Sample T02	
Grand Means	1,107	MPa	1,137	MPa
Std Dev Btwn Labs	10	MPa	15	MPa

Samples T01, T02 : M-10x1.5x70, M-10x1.5x80

Statistics based on 21 of 21 reporting participants



Analysis 1204

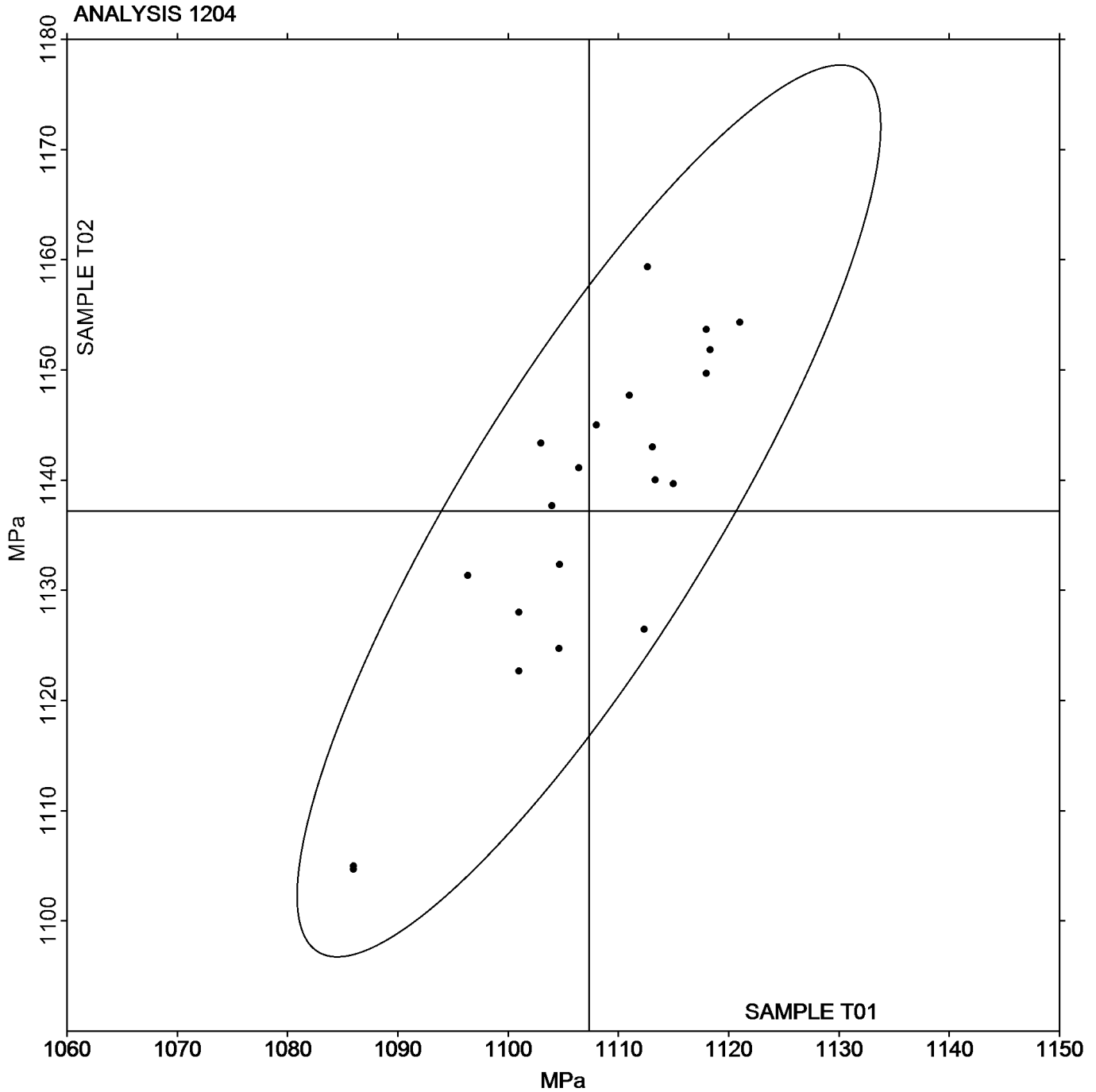
Fastener Axial Tensile - Metric
ASTM F606M

SAMPLE T01

SAMPLE T02

1,107 MPa

1,137 MPa





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1210

2nd Qtr
2024

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

WebCode	Data Flag	Sample G01			Sample G02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
22Z38G		35.57	-0.34	-0.53	36.24	-0.45	-0.65
3H4KG8		35.24	-0.67	-1.05	35.89	-0.80	-1.15
3H4Y4L		35.94	0.04	0.06	36.98	0.28	0.41
3LGBTU		35.44	-0.47	-0.74	35.06	-1.63	-2.34
3RN2VZ		35.77	-0.14	-0.22	37.08	0.38	0.55
3UXETM		35.59	-0.31	-0.49	36.83	0.14	0.20
3Z2TMJ		36.71	0.80	1.25	37.13	0.44	0.63
42QA3Q		36.12	0.21	0.33	37.08	0.38	0.55
4C9QVW		35.28	-0.63	-0.99	36.49	-0.20	-0.29
4CREDR	*	36.67	0.76	1.19	35.57	-1.12	-1.61
4LJTGX		36.27	0.36	0.56	35.96	-0.73	-1.04
6748BD		36.81	0.90	1.42	37.32	0.63	0.90
939R7L		35.82	-0.09	-0.14	36.61	-0.08	-0.11
98ZW6G		35.57	-0.34	-0.53	37.06	0.37	0.53
ADL7RK		36.39	0.49	0.76	37.35	0.66	0.94
BLBGFK		34.93	-0.98	-1.53	35.77	-0.92	-1.32
BN2TNL		36.63	0.72	1.13	36.94	0.25	0.36
BN3D4E		35.41	-0.50	-0.79	36.41	-0.28	-0.41
BTTMED		35.50	-0.41	-0.64	35.44	-1.25	-1.80
C2NGYC		36.30	0.39	0.61	37.11	0.42	0.59
CMLJ2J		35.76	-0.15	-0.23	36.81	0.12	0.16
DCGTV3		35.75	-0.16	-0.25	37.84	1.15	1.64
DUJZ3W		35.49	-0.41	-0.65	36.44	-0.25	-0.36
EG9HV7		36.08	0.17	0.27	37.13	0.44	0.63
EJR9P3	X	34.99	-0.91	-1.43	33.93	-2.77	-3.96
EZNQW8		37.04	1.13	1.77	37.48	0.79	1.13
FWJH62		37.36	1.45	2.27	37.07	0.38	0.54
HMNQJZ	X	32.19	-3.71	-5.82	32.57	-4.12	-5.91
HQ3YRD		36.53	0.62	0.97	37.72	1.03	1.47
J7B8CD		36.78	0.87	1.36	36.13	-0.56	-0.80
J8KCP2		35.29	-0.62	-0.97	36.73	0.04	0.06
JHNYN9		36.86	0.95	1.49	36.98	0.29	0.42
JKB9NE		36.44	0.53	0.83	37.20	0.51	0.73
K4G278		35.93	0.02	0.03	36.07	-0.62	-0.89
KGNR7U		35.25	-0.66	-1.03	37.33	0.63	0.91
KNTQJ6		34.98	-0.93	-1.46	35.35	-1.34	-1.92
LEHNX4		35.59	-0.31	-0.49	37.10	0.41	0.59
LK673L		36.21	0.30	0.48	37.24	0.55	0.78
LR6VQX		36.27	0.36	0.56	36.64	-0.05	-0.08
MDJX6U		35.69	-0.22	-0.35	36.19	-0.50	-0.72
NUZVWR		35.21	-0.70	-1.10	35.83	-0.86	-1.23
PX3LQ7		36.73	0.82	1.28	38.11	1.42	2.03
QFVJCD		36.11	0.20	0.32	36.36	-0.33	-0.47
QR9J97		35.26	-0.65	-1.01	36.50	-0.19	-0.27
REUTXH		36.17	0.26	0.41	36.95	0.26	0.37
RHXA6Q		36.40	0.49	0.77	37.22	0.53	0.76
T6NNLX		35.52	-0.39	-0.61	37.73	1.03	1.48



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1210

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample G01			Sample G02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
U873AD		35.00	-0.91	-1.42	36.76	0.07	0.10
UKE9FQ		35.87	-0.04	-0.06	36.26	-0.43	-0.62
UPVG4Q		36.12	0.21	0.33	36.12	-0.57	-0.82
UWQJ73		36.25	0.34	0.54	37.63	0.93	1.34
XHG2NP	*	33.99	-1.91	-3.00	36.43	-0.27	-0.38
Y8UUF8		35.56	-0.35	-0.55	35.30	-1.39	-1.99
ZKD2L8		35.81	-0.10	-0.15	37.03	0.34	0.49

Summary Statistics						
	Sample G01			Sample G02		
Grand Means	35.91	HRC		36.69	HRC	
Stnd Dev Btwn Labs	0.64	HRC		0.70	HRC	

Samples G01, G02 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 52 of 54 reporting participants

Comments on Assigned Data Flags for Test #1210

EJR9P3 (X) - Data for sample G02 are low. Inconsistent within the determinations of sample G02.

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



Analysis 1210

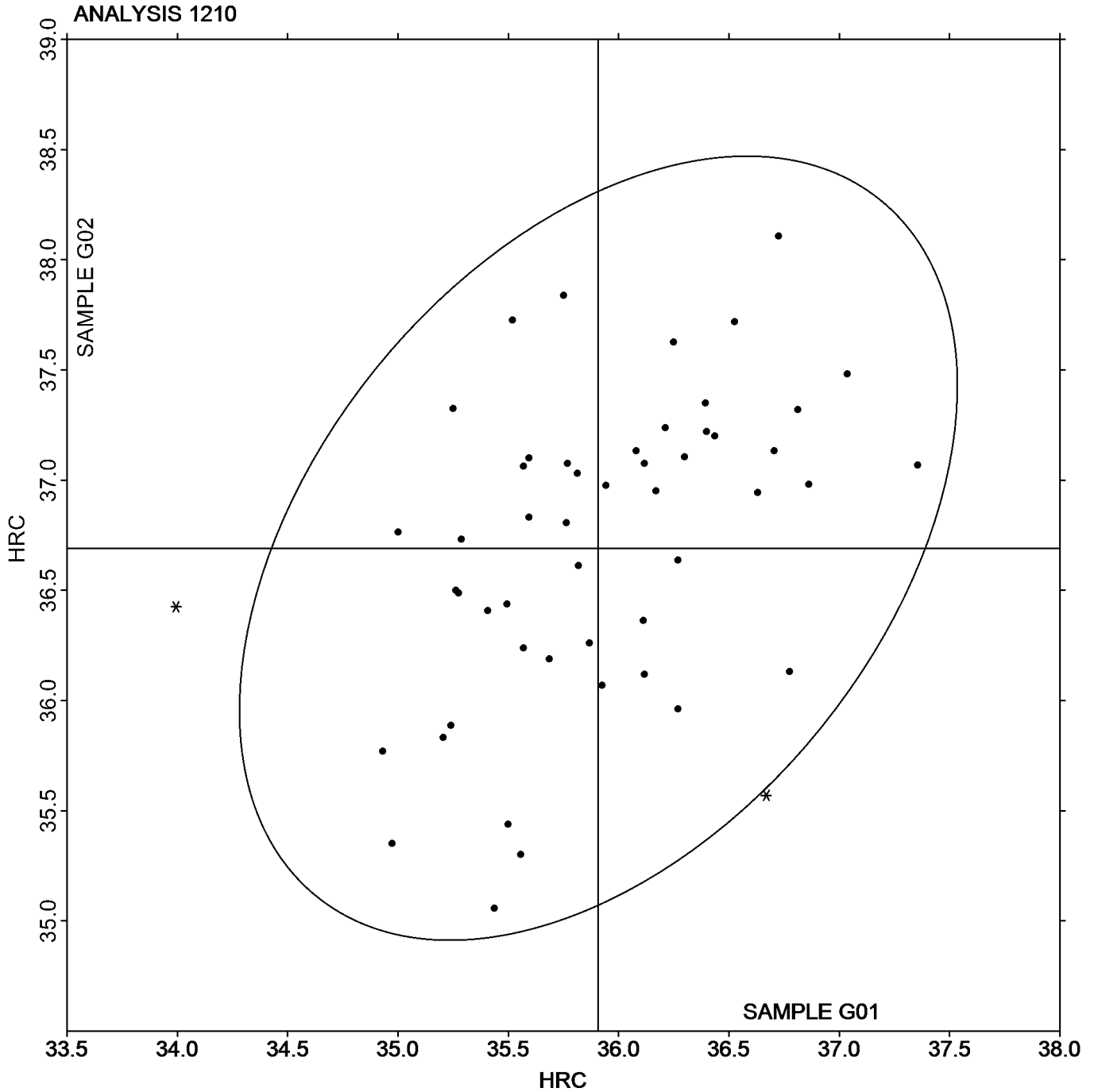
Rockwell Hardness: Externally Threaded Fasteners
ASTM F606/F606M AND ASTM E18

SAMPLE G01

SAMPLE G02

35.91 HRC

36.69 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1211

2nd Qtr
2024

Vickers Hardness: Externally Threaded Fasteners
ASTM E92

WebCode	Data Flag	Sample V01			Sample V02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3RN2VZ		366.04	8.68	1.04	380.89	13.84	1.35
42AQKE		358.56	1.20	0.14	375.69	8.64	0.84
7P9QKZ		355.88	-1.49	-0.18	358.74	-8.31	-0.81
8RELRA		352.88	-4.49	-0.54	358.13	-8.93	-0.87
9DR4NQ		356.94	-0.42	-0.05	366.69	-0.36	-0.04
CE9YT2		368.85	11.49	1.38	380.43	13.37	1.31
EK73H3		354.81	-2.55	-0.31	364.94	-2.11	-0.21
EZNQW8		360.38	3.01	0.36	368.44	1.39	0.14
G68TR3		360.69	3.33	0.40	365.13	-1.93	-0.19
GAX8C3		362.44	5.08	0.61	376.63	9.57	0.93
J8KCP2		353.04	-4.32	-0.52	363.18	-3.88	-0.38
KNTQJ6		355.25	-2.11	-0.25	369.31	2.26	0.22
MNZ7RG	*	330.75	-26.61	-3.20	337.44	-29.61	-2.89
NPCNLR		358.00	0.64	0.08	372.38	5.32	0.52
NVDETJ		359.86	2.50	0.30	367.72	0.67	0.07
TPWJ3Q		354.58	-2.79	-0.33	361.72	-5.33	-0.52
U873AD		366.21	8.85	1.06	372.44	5.39	0.53

Summary Statistics

	Sample V01		Sample V02	
Grand Means	357.36	HV	367.05	HV
Stnd Dev Btrwn Labs	8.32	HV	10.24	HV

Samples V01, V02 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 17 of 17 reporting participants



Analysis 1211

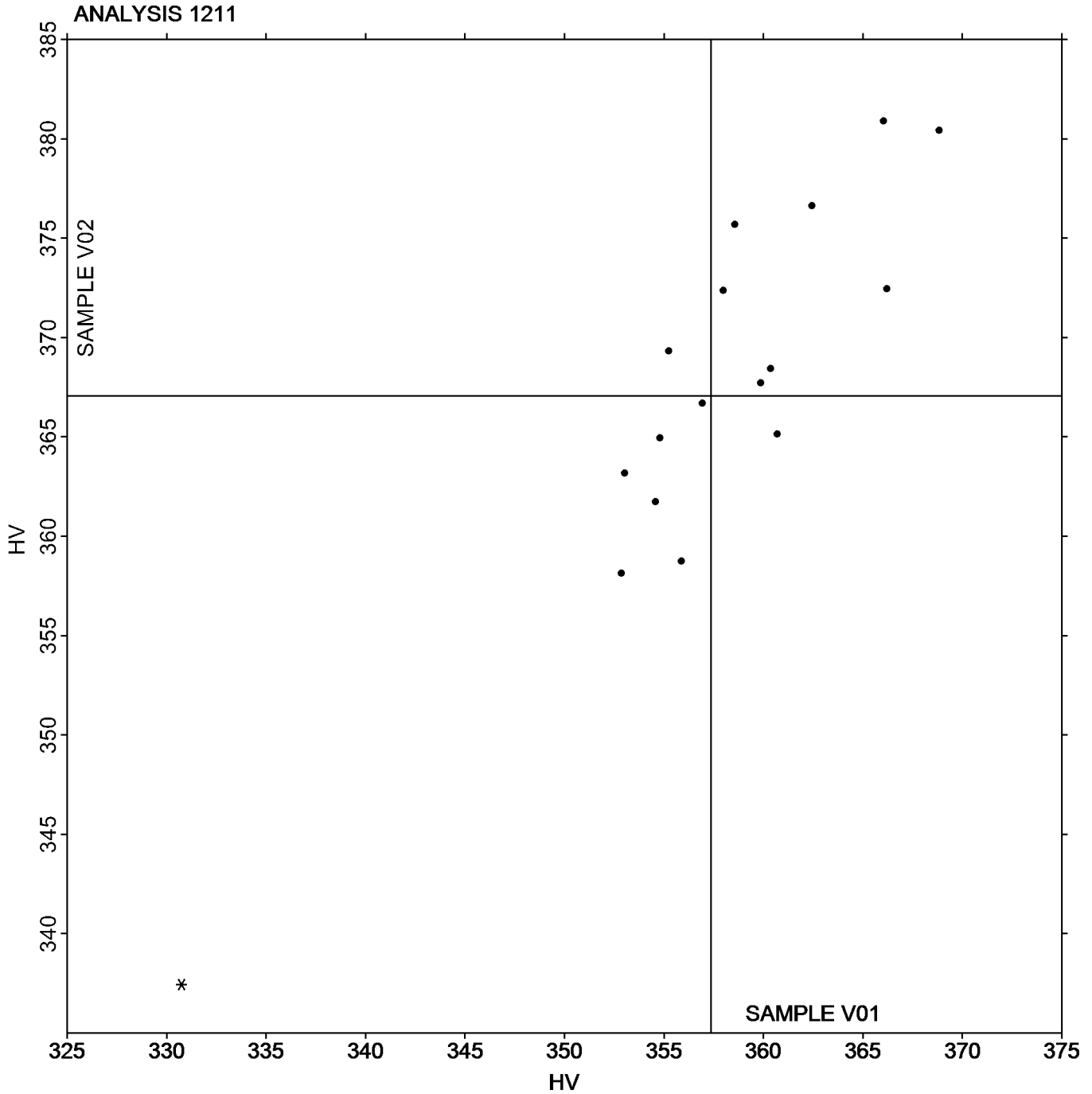
Vickers Hardness: Externally Threaded Fasteners
ASTM E92

SAMPLE V01

357.36 HV

SAMPLE V02

367.05 HV





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1220

2nd Qtr

Fastener Double Shear

2024

NASM 1312-13

WebCode	Data Flag	Sample Z01			Sample Z02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3UXETM		18,932	525	1.25	18,985	327	0.68
4CREDR		18,803	397	0.94	19,060	402	0.84
723KWF		17,700	-707	-1.68	17,833	-824	-1.72
CMLJ2J		18,769	362	0.86	18,861	203	0.42
CVWC68		18,520	113	0.27	19,605	948	1.97
DCGTV3		17,951	-456	-1.08	18,171	-486	-1.01
EJR9P3		17,864	-542	-1.29	18,181	-477	-0.99
HMNQJZ		18,851	444	1.06	18,998	340	0.71
LR6VQX		18,281	-125	-0.30	18,599	-58	-0.12
U873AD		18,714	307	0.73	18,661	3	0.01
UKE9FQ		18,187	-219	-0.52	18,478	-180	-0.37
XHG2NP		18,307	-99	-0.24	18,461	-197	-0.41

Summary Statistics

	Sample Z01		Sample Z02	
Grand Means	18,407	1b	18,658	1b
Stnd Dev Btwn Labs	420	1b	481	1b

Samples Z01, Z02 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 12 of 12 reporting participants



Analysis 1220

Fastener Double Shear

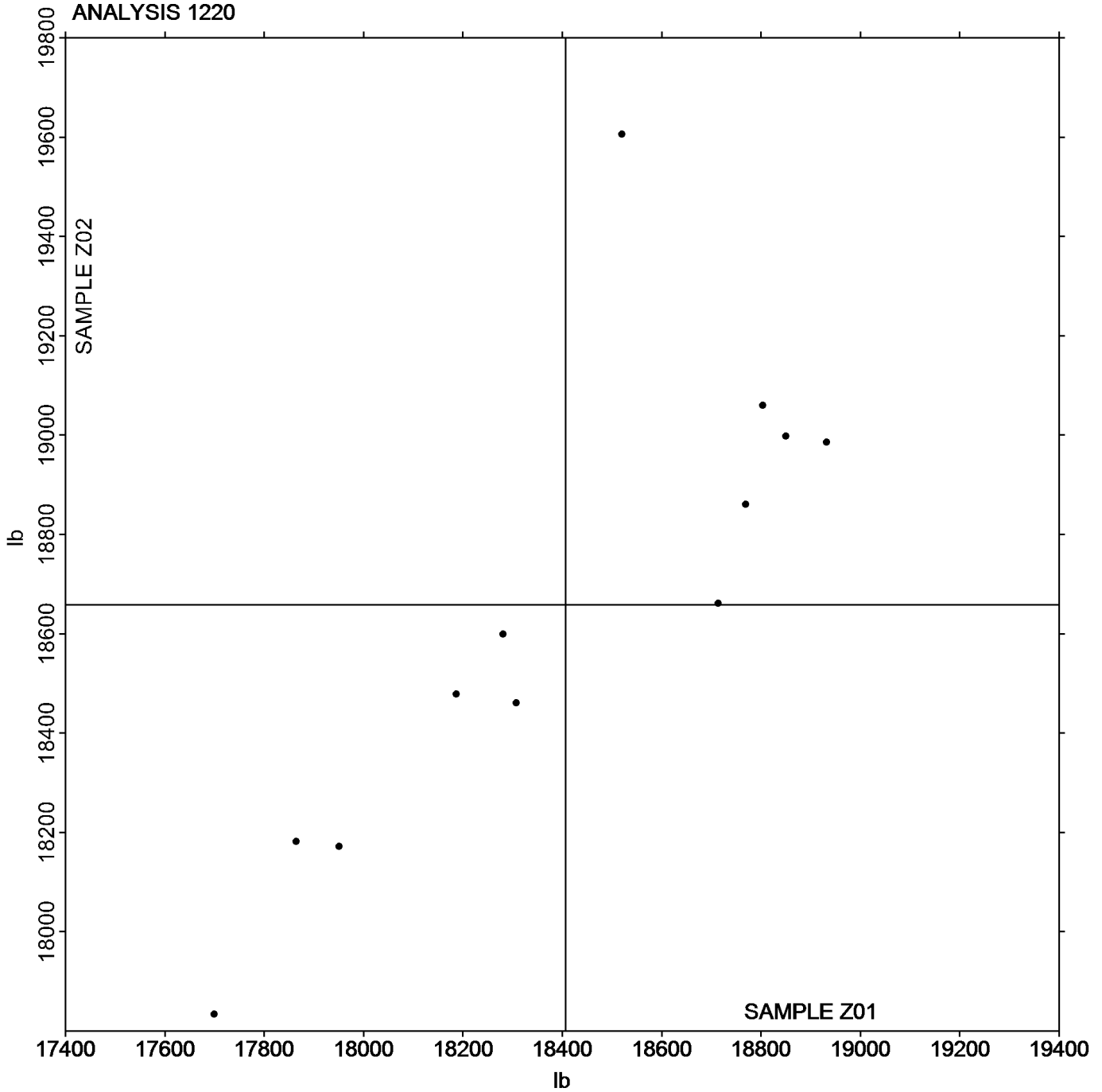
NASM 1312-13

SAMPLE Z01

SAMPLE Z02

18,407 lb

18,658 lb





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1301

2nd Qtr

Rockwell Hardness: C & B Scales

2024

ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FXTX8		54.24	0.01	0.02	58.94	-0.08	-0.19
2H4BV3		53.82	-0.42	-0.98	59.04	0.02	0.04
2JFFHK	X	54.16	-0.07	-0.17	57.72	-1.30	-2.90
2M6M8N		54.28	0.05	0.11	58.88	-0.14	-0.32
2T686D		54.02	-0.21	-0.50	58.88	-0.14	-0.32
2YQR2K		54.16	-0.07	-0.17	58.66	-0.36	-0.81
3H4Y4L		54.10	-0.13	-0.31	58.96	-0.06	-0.14
3QY26X		54.34	0.11	0.25	59.30	0.28	0.61
49BH2H		53.60	-0.63	-1.49	58.40	-0.62	-1.39
4C9QVW	*	53.14	-1.09	-2.57	58.10	-0.92	-2.05
62KPZ3		54.62	0.39	0.91	59.58	0.56	1.23
68ADCY	X	53.98	-0.25	-0.59	55.80	-3.23	-7.17
6C8QFC		54.14	-0.09	-0.22	58.84	-0.18	-0.41
6JPJMM		54.34	0.11	0.25	59.36	0.34	0.75
723KWF		53.92	-0.31	-0.73	58.50	-0.52	-1.17
78RHRC		54.32	0.09	0.21	58.98	-0.04	-0.10
84K828	X	54.36	0.13	0.30	56.50	-2.52	-5.61
8DA8RD		53.90	-0.33	-0.78	58.32	-0.70	-1.57
8H42PE		54.42	0.19	0.44	59.24	0.22	0.48
8NDDNZ		54.60	0.37	0.86	59.56	0.54	1.19
8PQFJR		54.06	-0.17	-0.41	58.94	-0.08	-0.19
9GPPD8		53.76	-0.47	-1.11	58.66	-0.36	-0.81
9P29MD		53.56	-0.67	-1.58	58.18	-0.84	-1.88
A7PEJQ		53.24	-0.99	-2.33	58.14	-0.88	-1.97
A8WBRV		54.72	0.49	1.15	59.31	0.29	0.63
AKL2YE		54.36	0.13	0.30	59.14	0.12	0.26
BQA8VR		54.36	0.13	0.30	59.10	0.08	0.17
BRM6FG		54.06	-0.17	-0.41	58.88	-0.14	-0.32
BVF2PN		54.84	0.61	1.43	59.80	0.78	1.72
C3EBLK		53.94	-0.29	-0.69	58.60	-0.42	-0.94
CAUB8J		53.96	-0.27	-0.64	58.56	-0.46	-1.03
CE9YT2	*	55.18	0.95	2.23	59.54	0.52	1.15
CM42VC		54.76	0.53	1.24	59.28	0.26	0.57
CMLJ2J		54.44	0.21	0.49	58.96	-0.06	-0.14
CVWC68		54.52	0.29	0.68	59.30	0.28	0.61
DCWE64		54.60	0.37	0.86	59.44	0.42	0.92
DE9RAZ		53.70	-0.53	-1.25	58.46	-0.56	-1.25
DGVXHJ		54.90	0.67	1.57	59.78	0.76	1.68
DHNU8D		54.42	0.19	0.44	59.40	0.38	0.83
DRBKDH		53.96	-0.27	-0.64	59.20	0.18	0.39
DVCLFZ		53.78	-0.45	-1.06	58.60	-0.42	-0.94
DW7J4U		54.48	0.25	0.58	59.30	0.28	0.61
DYC6UF		54.64	0.41	0.96	59.36	0.34	0.75
DYUBT6	X	52.80	-1.43	-3.37	57.56	-1.46	-3.25
E2Q9TW		54.46	0.23	0.54	59.12	0.10	0.21
E3NYZG		54.46	0.22	0.53	58.99	-0.04	-0.08
EE6JKD		53.66	-0.57	-1.35	58.70	-0.32	-0.72



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1301

2nd Qtr
2024

Rockwell Hardness: C & B Scales
ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
ELJ6DW		54.14	-0.09	-0.22	58.92	-0.10	-0.23
F749PM		54.28	0.05	0.11	59.50	0.48	1.06
FQUE47		54.02	-0.21	-0.50	58.98	-0.04	-0.10
FWJH62		54.26	0.03	0.07	58.70	-0.32	-0.72
FXAF4F		54.04	-0.19	-0.45	58.96	-0.06	-0.14
GHELJE		54.88	0.65	1.52	59.52	0.50	1.10
GZCEE8		54.46	0.23	0.54	59.58	0.56	1.23
H7HYN4	X	54.66	0.43	1.01	58.56	-0.46	-1.03
H9KXYV		54.80	0.57	1.33	59.94	0.92	2.03
J7B8CD		54.44	0.21	0.49	59.24	0.22	0.48
J8KCP2		54.32	0.09	0.21	58.94	-0.08	-0.19
JAT2WY		54.32	0.09	0.21	59.20	0.18	0.39
JH44HZ	*	54.76	0.53	1.24	60.08	1.06	2.35
JKB9NE		54.24	0.01	0.02	59.04	0.02	0.03
JZ3GTM		54.74	0.51	1.19	59.32	0.30	0.66
K3VZND		54.02	-0.21	-0.50	59.30	0.28	0.61
KCYMMK		53.94	-0.29	-0.69	58.74	-0.28	-0.63
KD6RTY	X	52.10	-2.13	-5.01	58.08	-0.94	-2.10
KEG4HB		54.50	0.27	0.63	58.88	-0.14	-0.32
KRNGPF		53.74	-0.49	-1.16	58.82	-0.20	-0.45
KVQRTQ		54.50	0.27	0.63	59.64	0.62	1.37
KY9H7T		54.90	0.66	1.56	59.54	0.52	1.15
LJCHV6		54.02	-0.21	-0.50	58.82	-0.20	-0.45
LZ2TH8		54.92	0.69	1.62	59.86	0.84	1.86
M6N34P		54.38	0.15	0.35	58.96	-0.06	-0.14
M6RYLV		54.47	0.24	0.56	59.37	0.34	0.76
MDK3VJ		54.54	0.31	0.72	58.98	-0.04	-0.10
MLCQKU		54.58	0.35	0.82	59.02	0.00	-0.01
MMPABJ		54.30	0.07	0.16	59.00	-0.02	-0.05
MNZ7RG		54.36	0.13	0.30	59.18	0.16	0.35
MXQBVV		54.66	0.43	1.01	59.62	0.60	1.32
P9JDCU	*	53.52	-0.71	-1.67	58.92	-0.10	-0.23
PKUDYU	X	46.20	-8.03	-18.88	51.40	-7.62	-16.94
Q8KP9P		53.48	-0.75	-1.77	58.38	-0.64	-1.43
QANQK3		54.04	-0.19	-0.45	58.56	-0.46	-1.03
QQX6UQ	X	55.00	0.77	1.80	59.00	-0.02	-0.05
QZXWWP		54.46	0.23	0.54	59.18	0.16	0.35
RHXA6Q	*	54.80	0.57	1.33	60.06	1.04	2.30
RJA4PX		53.77	-0.47	-1.10	59.02	-0.01	-0.02
RR4JLC		53.22	-1.01	-2.38	58.20	-0.82	-1.83
RUB2K8		54.20	-0.03	-0.08	59.34	0.32	0.70
RV7R4L		54.54	0.31	0.72	59.24	0.22	0.48
T6BR4U		53.88	-0.35	-0.83	59.02	0.00	-0.01
T9M8KQ		54.48	0.25	0.58	59.26	0.24	0.52
TCPJ7D		54.76	0.53	1.24	59.06	0.04	0.08
TCZLRC		54.28	0.05	0.11	59.34	0.32	0.70
UBATJE		54.15	-0.08	-0.19	59.16	0.14	0.30



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1301

2nd Qtr
2024

Rockwell Hardness: C & B Scales
ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
UGWMDQ		54.40	0.17	0.39	59.58	0.56	1.23
UKZM7P		54.46	0.23	0.54	58.76	-0.26	-0.59
UPACG6		54.66	0.42	1.00	59.63	0.61	1.35
UPTHFV		54.70	0.47	1.10	59.20	0.18	0.39
UTCBRX		54.10	-0.13	-0.31	58.78	-0.24	-0.54
VZLUCL		54.46	0.23	0.54	58.82	-0.20	-0.45
WAAE9Q		53.64	-0.59	-1.39	58.60	-0.42	-0.94
WB36E6		54.00	-0.23	-0.55	58.40	-0.62	-1.39
WD8X7H	*	53.16	-1.07	-2.52	57.88	-1.14	-2.54
WDABKJ		53.94	-0.29	-0.69	58.76	-0.26	-0.59
WMREQC		53.90	-0.33	-0.78	58.70	-0.32	-0.72
WRL9NE		53.90	-0.33	-0.78	58.70	-0.32	-0.72
WUUECZ		53.48	-0.75	-1.77	58.18	-0.84	-1.88
WWLDQY	*	54.04	-0.19	-0.45	58.12	-0.90	-2.01
X9PNJJ		53.52	-0.71	-1.67	58.26	-0.76	-1.70
XUAK3V	X	55.62	1.39	3.26	59.86	0.84	1.86
XYJBCB	X	52.78	-1.45	-3.41	57.34	-1.68	-3.74
Y32R82		55.20	0.97	2.28	59.88	0.86	1.90
Y66MQ4		54.20	-0.03	-0.08	59.04	0.02	0.03
Y6AFVK		54.22	-0.01	-0.03	59.28	0.26	0.57
Y7HZVZ		53.84	-0.39	-0.92	58.88	-0.14	-0.32
Y8UUF8		54.62	0.39	0.91	59.42	0.40	0.88
YDLY7Q		54.70	0.47	1.10	59.40	0.38	0.83
YFLGV6	X	53.32	-0.91	-2.14	57.60	-1.42	-3.16
YKG292		54.20	-0.03	-0.08	58.80	-0.22	-0.50
YR3PVX		54.52	0.29	0.68	59.04	0.02	0.03
YV37HM		54.60	0.37	0.86	59.08	0.06	0.12
YYGPGV		54.12	-0.11	-0.26	58.84	-0.18	-0.41
Z3YTZQ		54.00	-0.23	-0.55	58.60	-0.42	-0.94
ZX3ZCA		53.80	-0.43	-1.02	58.46	-0.56	-1.25

Summary Statistics

	Sample E01		Sample E02	
Grand Means	54.23	HRC	59.02	HRC
Std Dev Btwn Labs	0.43	HRC	0.45	HRC

Samples E01, E02 : Steel, Steel

Statistics based on 113 of 124 reporting participants



Comments on Assigned Data Flags for Test #1301

- 2JFFHK (X) - Data for sample E02 are low.
- 68ADCY (X) - Data for sample E02 are low.
- 84K828 (X) - Data for sample E02 are low.
- DYUBT6 (X) - Data for both samples are low. Possible Systematic Error.
- H7HYN4 (X) - Inconsistent in testing between samples.
- KD6RTY (X) - Data for sample E01 are low. Inconsistent within the determinations of sample E02.
- PKUDYU (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- QQX6UQ (X) - Inconsistent in testing between samples.
- XUAK3V (X) - Data for sample E01 are high. Inconsistent within the determinations of sample E01.
- XYJCB (X) - Data for both samples are low. Possible Systematic Error.
- YFLGV6 (X) - Data for sample E02 are low.



Analysis 1301

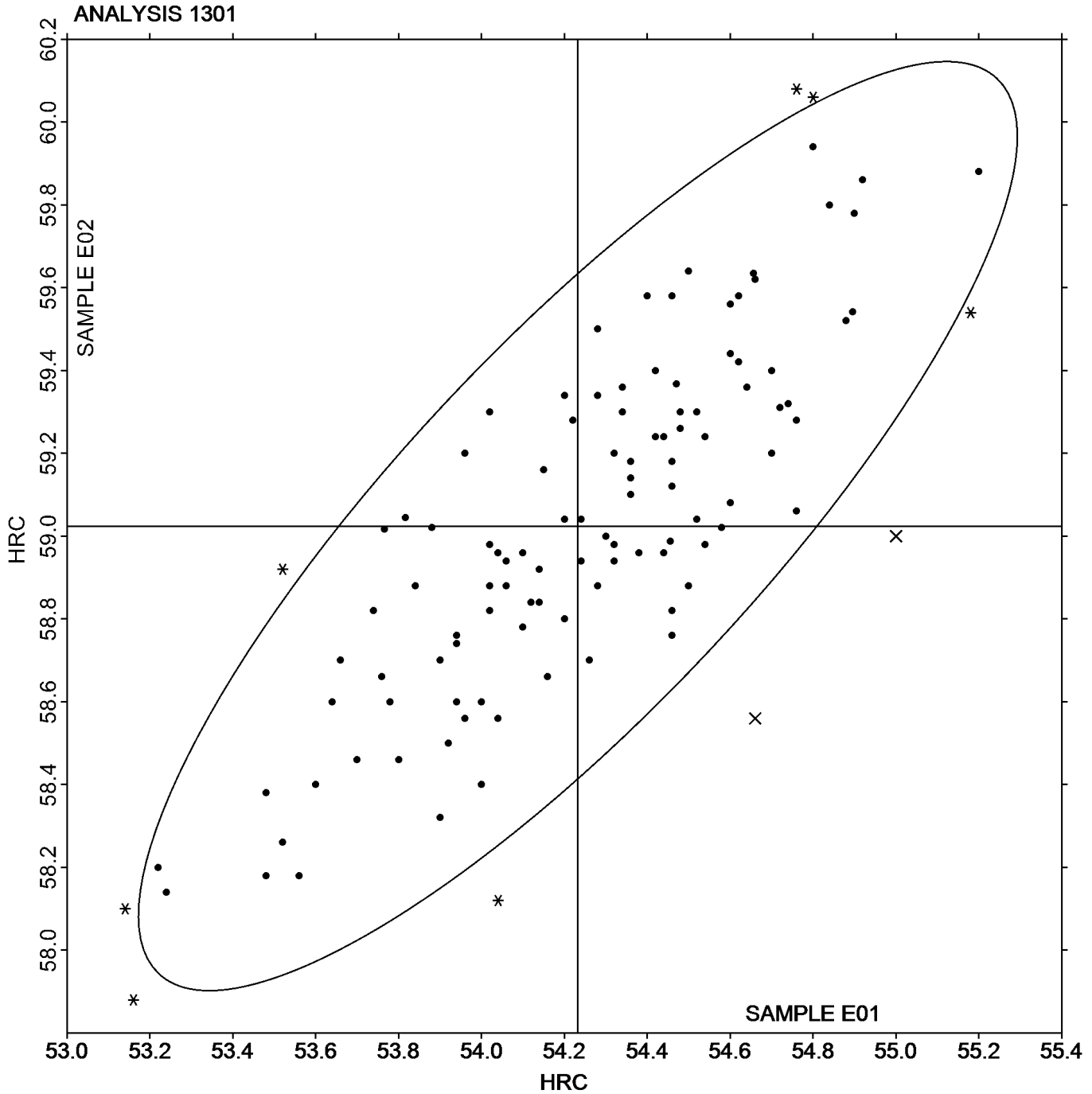
Rockwell Hardness: C & B Scales
ASTM E18

SAMPLE E01

SAMPLE E02

54.23 HRC

59.02 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1303

2nd Qtr

Rockwell Hardness: C Scale

2024

ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2APCF7		54.10	-0.06	-0.13	59.02	0.04	0.11
2AV8XX		54.28	0.12	0.27	58.88	-0.10	-0.23
3L2JQH		54.28	0.12	0.27	59.38	0.40	0.99
3LGBTU		53.70	-0.46	-1.01	58.96	-0.02	-0.04
3N98GN		54.32	0.16	0.36	59.10	0.12	0.30
4HJA77		54.03	-0.12	-0.28	59.33	0.36	0.88
4UC7CQ		54.78	0.62	1.37	59.46	0.48	1.19
6T9EN3	X	52.36	-1.80	-3.97	57.52	-1.46	-3.56
7894GM		54.10	-0.06	-0.13	58.66	-0.32	-0.77
78ANR3		53.82	-0.34	-0.75	58.66	-0.32	-0.78
7BAUCZ		54.83	0.68	1.49	59.57	0.59	1.45
7BRLLK		54.54	0.38	0.84	59.40	0.42	1.04
7J49ME		53.78	-0.38	-0.83	58.88	-0.10	-0.23
7Z7QX6		54.38	0.23	0.50	59.25	0.27	0.67
83QGVT		54.84	0.68	1.51	59.64	0.66	1.63
8MKWHB		53.72	-0.44	-0.98	59.03	0.05	0.12
9D8VP3		54.36	0.20	0.45	59.20	0.22	0.55
A8WBRV		54.71	0.56	1.23	59.49	0.51	1.26
BETKJ7		54.16	0.00	0.00	59.00	0.02	0.06
BTTMED	X	52.30	-1.86	-4.10	56.62	-2.36	-5.76
CAUB8J	*	53.22	-0.94	-2.07	58.88	-0.10	-0.23
CEP3DU		53.54	-0.62	-1.36	58.32	-0.66	-1.60
D9ZVG8		54.28	0.12	0.27	58.82	-0.16	-0.38
DAWF48		53.76	-0.40	-0.88	59.08	0.10	0.26
DQYKJ9		53.48	-0.68	-1.50	58.04	-0.94	-2.29
FFQA7X		54.00	-0.16	-0.35	58.42	-0.56	-1.36
FWJH62		54.04	-0.12	-0.26	58.38	-0.60	-1.46
Fxcbzk		53.36	-0.80	-1.76	58.46	-0.52	-1.26
FZJ42T		54.02	-0.14	-0.30	59.04	0.06	0.15
G4BPA8		54.66	0.50	1.11	59.26	0.28	0.70
GQ4Y8Z		54.06	-0.10	-0.22	58.82	-0.16	-0.38
GQ8U46		53.04	-1.12	-2.47	58.16	-0.82	-2.00
JFE4WP		53.80	-0.36	-0.79	58.64	-0.34	-0.82
JLPFBV	*	54.96	0.80	1.77	59.10	0.12	0.30
KGNR7U		54.74	0.58	1.28	59.70	0.72	1.77
KN7RFY		53.86	-0.30	-0.66	58.96	-0.02	-0.04
KT7BQQ	*	55.00	0.84	1.86	59.00	0.02	0.06
L3JKEP		54.84	0.68	1.51	59.50	0.52	1.28
LA4JBP		54.28	0.12	0.27	59.20	0.22	0.55
LAL6RY		54.34	0.18	0.40	58.86	-0.12	-0.28
LHXN36		54.58	0.42	0.92	59.40	0.43	1.05
LKQJRY		54.30	0.14	0.31	59.10	0.12	0.30
M6RYLV		54.37	0.21	0.47	59.10	0.12	0.30
N6K87J		54.12	-0.04	-0.08	59.08	0.10	0.26
NX2423		54.62	0.46	1.02	59.40	0.42	1.04
P9JDCU		54.18	0.02	0.05	58.92	-0.06	-0.14
PARLG9		54.54	0.38	0.85	59.31	0.33	0.82



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1303

2nd Qtr
2024

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
PX3LQ7		54.06	-0.10	-0.22	59.14	0.16	0.40
QGM39P		53.72	-0.44	-0.97	58.10	-0.88	-2.14
QJVRCM		54.20	0.04	0.09	59.24	0.26	0.65
QNRJ66		54.00	-0.16	-0.35	59.00	0.02	0.06
QUZFXZ		54.44	0.28	0.62	59.16	0.18	0.45
RKJH7Y		54.50	0.34	0.76	59.17	0.19	0.47
RMDGTQ		54.38	0.22	0.49	59.46	0.48	1.19
RZYLNM		53.90	-0.26	-0.57	58.42	-0.56	-1.36
T6PDFG		54.50	0.34	0.75	59.36	0.38	0.94
TA3YL3		54.30	0.14	0.31	58.94	-0.04	-0.09
U64YPH		53.66	-0.50	-1.10	58.42	-0.56	-1.36
VGUKEQ		54.16	0.00	0.01	58.69	-0.29	-0.70
VP6EJE		54.40	0.24	0.53	59.30	0.32	0.79
WA7KCJ		54.42	0.26	0.58	59.16	0.18	0.45
WR9RJD	X	81.37	27.21	60.05	85.10	26.12	63.93
XGP6YV	*	53.02	-1.14	-2.51	57.84	-1.14	-2.78
XY8EAR		54.24	0.08	0.18	59.08	0.10	0.26
YFN2RL	X	52.60	-1.56	-3.44	58.00	-0.98	-2.39
ZJZYPD		53.14	-1.02	-2.25	58.32	-0.66	-1.60
ZKHGX8		54.20	0.04	0.09	58.92	-0.06	-0.14
ZRGB8K		54.26	0.10	0.22	59.14	0.16	0.40
ZU8ALH		54.04	-0.12	-0.26	58.70	-0.28	-0.67

Summary Statistics

	Sample E01		Sample E02	
Grand Means	54.16	HRC	58.98	HRC
Std Dev Btwn Labs	0.45	HRC	0.41	HRC

Samples E01, E02 : Steel, Steel

Statistics based on 65 of 69 reporting participants

Comments on Assigned Data Flags for Test #1303

- 6T9EN3 (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample E01.
- BTTMED (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- WR9RJD (X) - Extreme data.
- YFN2RL (X) - Data for sample E01 are low. Inconsistent within the determinations of sample E01.



Analysis 1303

Rockwell Hardness: C Scale

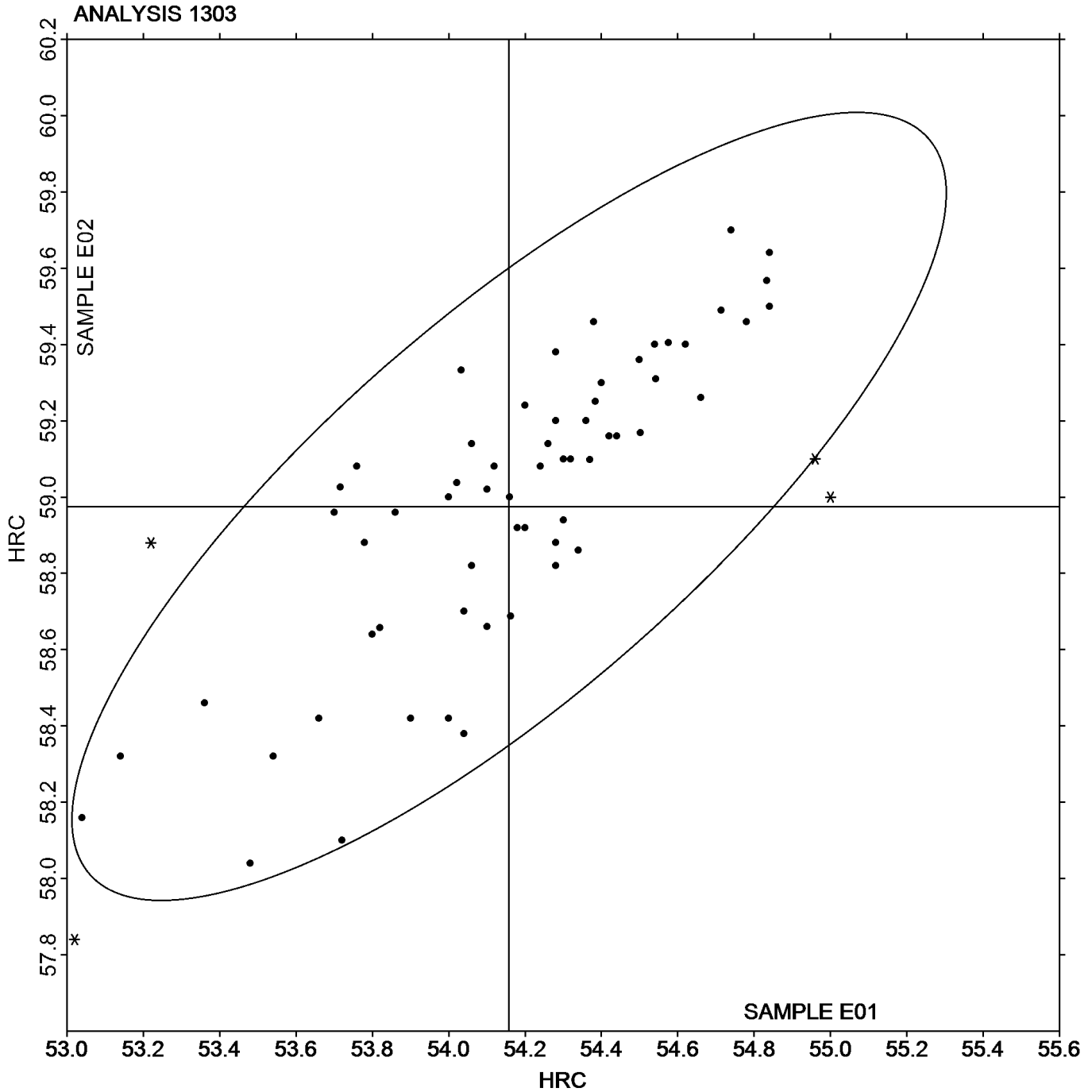
ASTM E18

SAMPLE E01

SAMPLE E02

54.16 HRC

58.98 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1311

2nd Qtr
2024

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2AV8XX		604.10	5.97	0.65	707.48	11.87	0.98
2FXTX8		605.80	7.67	0.83	701.20	5.59	0.46
2H4BV3		602.60	4.47	0.48	687.40	-8.21	-0.68
49BH2H		597.80	-0.33	-0.04	696.60	0.99	0.08
4MWUCR		597.60	-0.53	-0.06	693.00	-2.61	-0.22
8W8QJT		586.20	-11.93	-1.29	702.80	7.19	0.59
AFD67J		604.44	6.31	0.68	698.16	2.55	0.21
AKL2YE		601.60	3.47	0.38	715.00	19.39	1.60
BQA8VR		585.86	-12.27	-1.33	682.24	-13.37	-1.11
DQYKJ9		595.60	-2.53	-0.27	677.80	-17.81	-1.47
GA3MP4		606.80	8.67	0.94	707.40	11.79	0.97
HP8D6D	*	587.80	-10.33	-1.12	663.80	-31.81	-2.63
KMBV6J		609.24	11.11	1.21	709.22	13.61	1.12
KVQRTQ		607.00	8.87	0.96	711.00	15.39	1.27
M6RYLV		583.80	-14.33	-1.56	689.20	-6.41	-0.53
MNZ7RG	*	604.60	6.47	0.70	675.60	-20.01	-1.65
PEMFEA		606.44	8.31	0.90	706.86	11.25	0.93
Q2DNY3		587.80	-10.33	-1.12	695.40	-0.21	-0.02
Q8KP9P		579.60	-18.53	-2.01	685.80	-9.81	-0.81
QF22QW		603.60	5.47	0.59	707.34	11.73	0.97
RKJH7Y		603.20	5.07	0.55	694.00	-1.61	-0.13
RMBEVT	X	651.20	53.07	5.76	734.72	39.11	3.23
T9M8KQ		581.00	-17.13	-1.86	677.60	-18.01	-1.49
VH9AH4		605.72	7.59	0.82	698.70	3.09	0.26
VUWL2M		604.74	6.61	0.72	705.62	10.01	0.83
X4E6CX		589.38	-8.75	-0.95	695.42	-0.19	-0.02
XM7ZZE		602.00	3.87	0.42	699.40	3.79	0.31
XYJBCB		607.72	9.59	1.04	703.26	7.65	0.63
Y6AFVK		604.80	6.67	0.72	695.80	0.19	0.02
Y7HZVZ		589.00	-9.13	-0.99	689.60	-6.01	-0.50

Summary Statistics

	Sample E01		Sample E02	
Grand Means	598.13	HV 10	695.61	HV 10
Std Dev Btwn Labs	9.22	HV 10	12.10	HV 10

Samples E01, E02 : Steel, Steel

Statistics based on 29 of 30 reporting participants

Comments on Assigned Data Flags for Test #1311

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

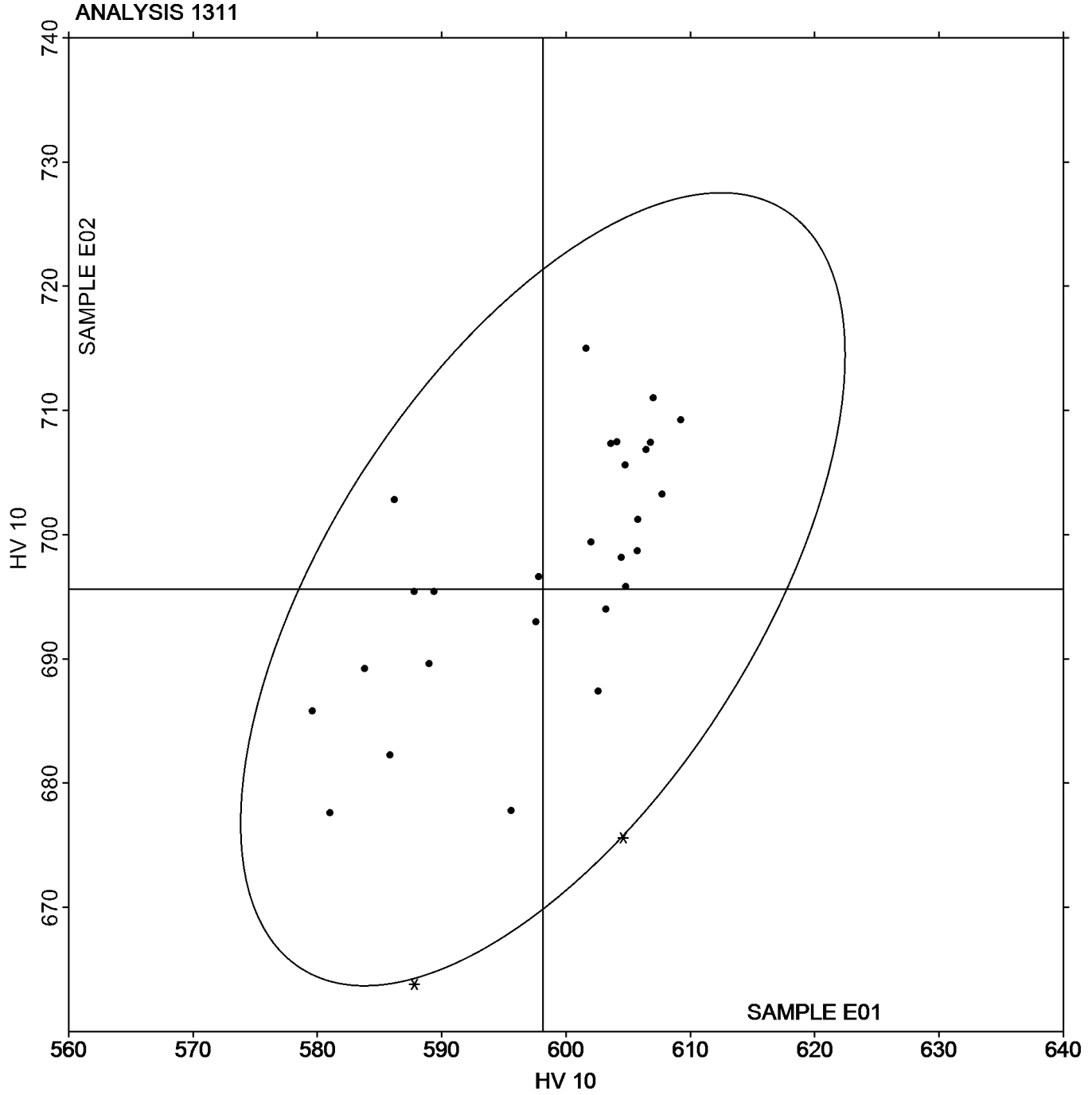


Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

SAMPLE E01
598.13 HV 10

SAMPLE E02
695.61 HV 10





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1351

2nd Qtr

Rockwell Superficial Hardness (30N Scale)

2024

ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2APCF7	*	73.42	1.20	1.83	78.10	1.63	2.94
2B8EC8		72.28	0.06	0.09	76.60	0.13	0.24
2H4BV3		72.16	-0.06	-0.10	76.41	-0.06	-0.10
2JFFHK		72.46	0.24	0.36	76.84	0.37	0.67
2T686D		71.64	-0.58	-0.89	76.32	-0.15	-0.26
3LGBTU		72.78	0.56	0.85	76.56	0.09	0.17
6C8QFC		72.34	0.12	0.18	77.10	0.63	1.14
78ANR3		71.52	-0.70	-1.07	75.34	-1.12	-2.02
7BAUCZ		73.13	0.91	1.39	77.27	0.80	1.44
887NJT		72.90	0.68	1.04	76.98	0.51	0.92
939R7L		72.42	0.20	0.30	76.24	-0.23	-0.41
98ZW6G		72.00	-0.22	-0.34	76.00	-0.47	-0.84
BLBGFK		73.10	0.88	1.34	76.66	0.19	0.35
BN3D4E		72.22	0.00	0.00	76.18	-0.29	-0.51
C2NGYC		71.60	-0.62	-0.95	75.54	-0.93	-1.67
CMLJ2J		72.46	0.24	0.36	76.84	0.37	0.67
DAWF48		72.56	0.34	0.52	76.56	0.09	0.17
DHNU8D		72.80	0.58	0.88	76.90	0.43	0.78
DQYKJ9		72.08	-0.14	-0.22	76.56	0.09	0.17
FWJH62		73.00	0.78	1.19	77.08	0.61	1.10
GA3MP4		72.06	-0.16	-0.25	76.24	-0.23	-0.41
GQ8U46		71.04	-1.18	-1.81	75.24	-1.23	-2.20
JKB9NE		72.42	0.20	0.30	76.70	0.23	0.42
JZ3GTM		71.00	-1.22	-1.87	76.16	-0.31	-0.55
K3NK2J		73.14	0.92	1.40	76.48	0.01	0.03
K3VZND		71.74	-0.48	-0.74	76.22	-0.25	-0.44
KY9H7T		71.74	-0.48	-0.74	75.87	-0.60	-1.08
LK673L		72.20	-0.02	-0.03	76.54	0.07	0.13
M6RYLV		72.57	0.35	0.54	76.68	0.21	0.38
MMPABJ		71.76	-0.46	-0.71	75.62	-0.85	-1.52
MNZ7RG		73.11	0.89	1.36	76.60	0.14	0.24
N6K87J		71.48	-0.74	-1.13	76.28	-0.19	-0.33
P9JDCU		71.60	-0.62	-0.95	76.00	-0.47	-0.84
PARLG9		72.52	0.30	0.46	76.91	0.44	0.79
PQKN9T		71.70	-0.52	-0.80	76.46	-0.01	-0.01
Q8KP9P		71.90	-0.32	-0.49	76.74	0.27	0.49
QF22QW		71.48	-0.74	-1.13	76.30	-0.17	-0.30
QQX6UQ		72.80	0.58	0.88	76.40	-0.07	-0.12
RHXA6Q		71.08	-1.14	-1.75	76.08	-0.39	-0.69
RRPMAW		72.86	0.64	0.98	76.58	0.11	0.21
RV7R4L		72.96	0.74	1.13	76.82	0.35	0.64
T9M8KQ		73.08	0.86	1.31	76.60	0.13	0.24
TA3YL3		71.94	-0.28	-0.43	76.02	-0.45	-0.80
TM9FLX		72.34	0.12	0.18	76.20	-0.27	-0.48
U873AD	*	70.62	-1.60	-2.45	74.90	-1.57	-2.82
UPTHFV		72.58	0.36	0.55	76.96	0.49	0.89
UPVG4Q		71.80	-0.42	-0.64	76.00	-0.47	-0.84



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1351

2nd Qtr

Rockwell Superficial Hardness (30N Scale)

2024

ASTM E18

WebCode	Data Flag	Sample E01			Sample E02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
UTCBRX		71.78	-0.44	-0.68	75.86	-0.61	-1.09
WAAE9Q		70.94	-1.28	-1.96	75.18	-1.29	-2.31
WQF9MY		72.24	0.02	0.03	76.48	0.02	0.03
WQTZHZ		72.30	0.08	0.12	76.50	0.03	0.06
WUUECZ		71.12	-1.10	-1.68	76.26	-0.21	-0.37
WWLDQY		72.18	-0.04	-0.06	76.76	0.29	0.53
XG682X		72.52	0.30	0.46	76.82	0.35	0.64
XHG2NP		71.42	-0.80	-1.23	76.58	0.11	0.21
XPFVVJ		72.44	0.22	0.33	76.60	0.13	0.24
XUAK3V		73.14	0.92	1.40	77.14	0.67	1.21
Y32R82		73.06	0.84	1.28	77.26	0.79	1.43
Y6AFVK		72.16	-0.06	-0.09	76.72	0.25	0.46
Y7HZVZ		72.68	0.46	0.70	77.18	0.71	1.28
Y8UUF8		72.92	0.70	1.07	77.16	0.69	1.25
Z9NAAW		72.44	0.22	0.33	76.72	0.25	0.46

Summary Statistics

	Sample E01		Sample E02	
Grand Means	72.22	HR30N	76.47	HR30N
Stnd Dev Btwn Labs	0.65	HR30N	0.56	HR30N

Samples E01, E02 : Steel, Steel

Statistics based on 62 of 62 reporting participants



Analysis 1351

Rockwell Superficial Hardness (30N Scale)

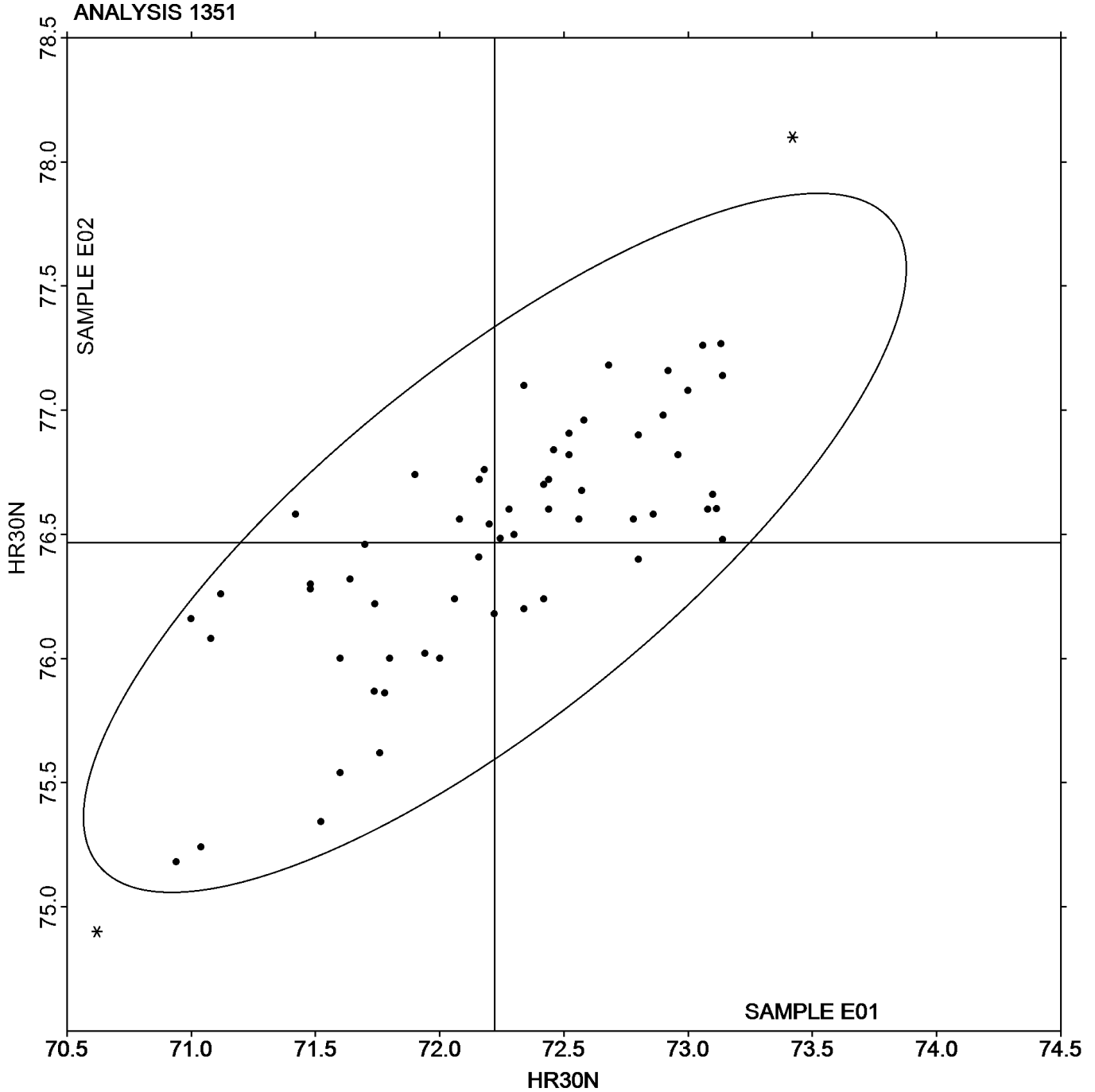
ASTM E18

SAMPLE E01

SAMPLE E02

72.22 HR30N

76.47 HR30N





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1401

2nd Qtr
2024

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C01			Sample C02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FCTX8		0.0220	-0.0025	-0.58	0.0282	-0.0014	-0.31
2T686D		0.0218	-0.0027	-0.63	0.0296	0.0000	-0.01
3H4Y4L		0.0262	0.0017	0.40	0.0302	0.0006	0.13
3LGBTU		0.0242	-0.0003	-0.06	0.0310	0.0014	0.31
48ZPX3		0.0287	0.0043	1.02	0.0353	0.0057	1.26
49BH2H		0.0181	-0.0064	-1.52	0.0258	-0.0038	-0.84
4FRDGC		0.0268	0.0023	0.56	0.0272	-0.0024	-0.53
4LJTGX		0.0314	0.0069	1.65	0.0348	0.0052	1.16
78ANR3		0.0217	-0.0028	-0.67	0.0243	-0.0053	-1.17
8CF6TG		0.0268	0.0023	0.56	0.0298	0.0002	0.05
AXBX2C		0.0286	0.0041	0.99	0.0282	-0.0014	-0.31
BETKJ7		0.0214	-0.0030	-0.72	0.0248	-0.0048	-1.07
BLBGFK		0.0205	-0.0040	-0.95	0.0283	-0.0012	-0.28
DAWF48		0.0286	0.0042	0.99	0.0313	0.0017	0.37
DQYKJ9		0.0182	-0.0063	-1.49	0.0202	-0.0094	-2.09
EJR9P3		0.0182	-0.0062	-1.48	0.0278	-0.0018	-0.41
EZNQW8		0.0293	0.0048	1.15	0.0330	0.0034	0.75
GA3MP4		0.0182	-0.0062	-1.48	0.0229	-0.0067	-1.50
H7HYN4		0.0210	-0.0035	-0.82	0.0282	-0.0014	-0.31
HP8D6D		0.0231	-0.0014	-0.33	0.0303	0.0007	0.15
HQ3YRD		0.0249	0.0004	0.10	0.0330	0.0034	0.77
J8KCP2		0.0283	0.0038	0.92	0.0296	0.0000	0.00
K3VZND		0.0222	-0.0023	-0.55	0.0294	-0.0002	-0.03
K4G278		0.0255	0.0010	0.24	0.0317	0.0021	0.47
L7Q7JV		0.0254	0.0009	0.21	0.0324	0.0028	0.63
METH3P		0.0266	0.0021	0.51	0.0299	0.0003	0.08
MNZ7RG		0.0263	0.0018	0.43	0.0291	-0.0005	-0.11
QQX6UQ		0.0198	-0.0046	-1.10	0.0316	0.0020	0.44
R6NBZK		0.0207	-0.0038	-0.90	0.0249	-0.0047	-1.05
RV7R4L	*	0.0352	0.0108	2.56	0.0401	0.0105	2.33
T27QU2		0.0224	-0.0021	-0.49	0.0304	0.0008	0.18
UPVG4Q		0.0258	0.0013	0.32	0.0280	-0.0016	-0.35
VTNWTP	*	0.0201	-0.0044	-1.04	0.0187	-0.0109	-2.43
WMREQC		0.0262	0.0018	0.43	0.0383	0.0088	1.94
WRL9NE		0.0282	0.0037	0.89	0.0334	0.0038	0.85
XUAK3V		0.0320	0.0075	1.79	0.0370	0.0074	1.64
Y7HZVZ		0.0176	-0.0068	-1.62	0.0220	-0.0076	-1.69
Y8UUF8		0.0244	-0.0001	-0.01	0.0326	0.0030	0.67
YR3PVX		0.0255	0.0010	0.25	0.0296	0.0000	0.00
Z3YTZQ		0.0266	0.0021	0.51	0.0310	0.0014	0.31



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1401

2nd Qtr

Total Case Depth

2024

SAE J423, SAE J78

Summary Statistics

	<u>Sample C01</u>	<u>Sample C02</u>
Grand Means	0.0245 inches	0.0296 inches
Stnd Dev Btwn Labs	0.0042 inches	0.0045 inches

Samples C01, C02 : Steel, Steel

Statistics based on 40 of 40 reporting participants

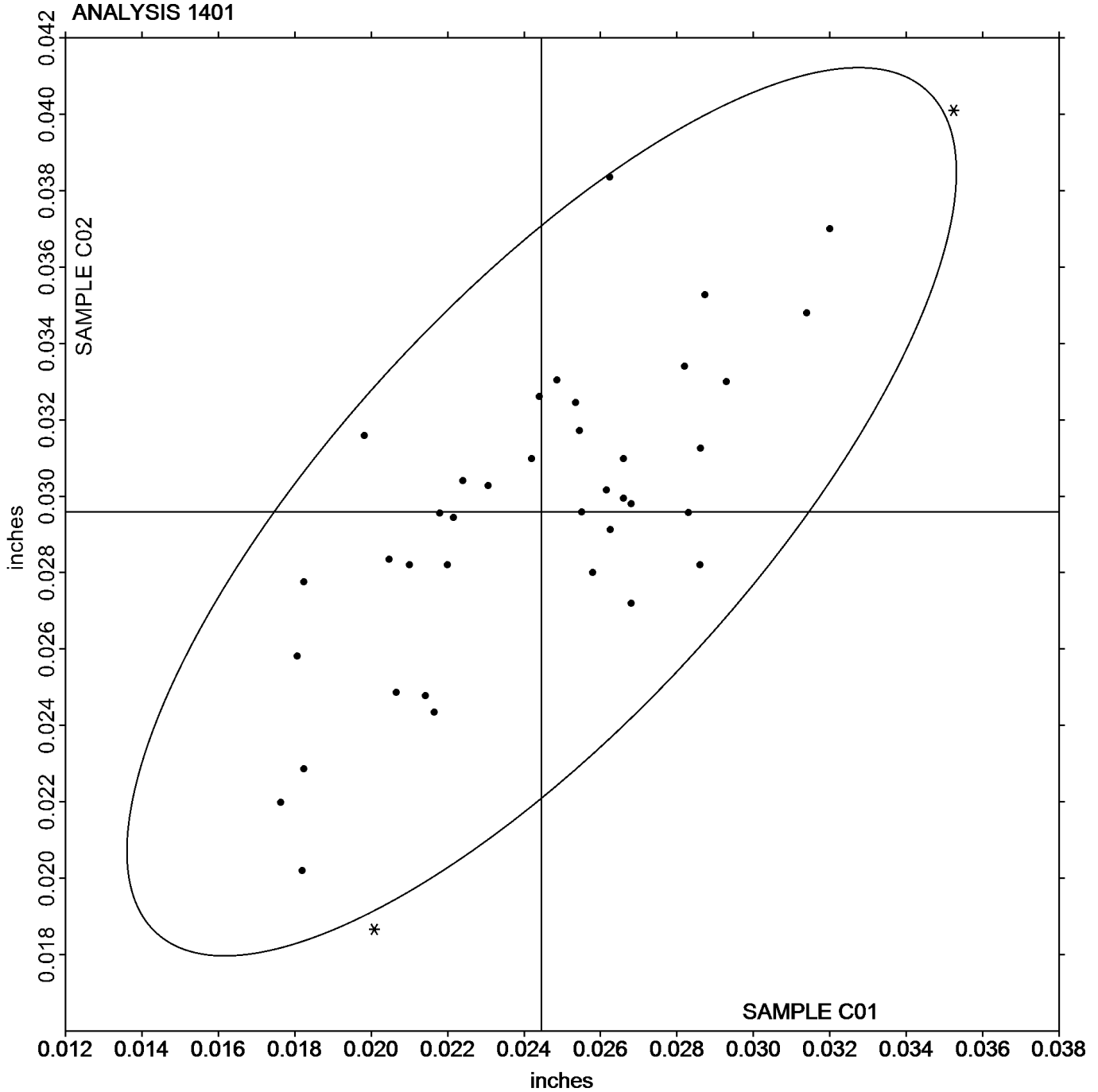


Analysis 1401

Total Case Depth
SAE J423, SAE J78

SAMPLE C01
0.0245 inches

SAMPLE C02
0.0296 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1402

2nd Qtr

Effective Case Depth

2024

SAE J423, SAE J78

WebCode	Data Flag	Sample C01			Sample C02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FCTX8		0.0224	-0.0005	-0.23	0.0280	-0.0008	-0.51
2T686D		0.0194	-0.0034	-1.70	0.0273	-0.0015	-0.99
3H4Y4L		0.0241	0.0013	0.63	0.0281	-0.0007	-0.43
3LGBTU		0.0232	0.0003	0.15	0.0299	0.0011	0.74
48ZPX3		0.0250	0.0021	1.04	0.0308	0.0020	1.30
49BH2H		0.0217	-0.0012	-0.60	0.0276	-0.0012	-0.78
4FRDGC	X	0.0220	-0.0009	-0.43	0.0220	-0.0068	-4.45
4LJTGX	*	0.0282	0.0053	2.65	0.0314	0.0026	1.73
78ANR3		0.0214	-0.0014	-0.72	0.0285	-0.0003	-0.19
8CF6TG		0.0250	0.0021	1.06	0.0280	-0.0008	-0.51
BETKJ7		0.0214	-0.0015	-0.73	0.0274	-0.0014	-0.90
BLBGFK		0.0223	-0.0006	-0.31	0.0299	0.0011	0.71
CVWC68		0.0236	0.0007	0.36	0.0298	0.0010	0.67
DAWF48		0.0257	0.0028	1.41	0.0298	0.0010	0.65
DQYKJ9	X	0.0112	-0.0117	-5.80	0.0144	-0.0144	-9.44
EJR9P3		0.0188	-0.0041	-2.02	0.0274	-0.0014	-0.90
EZNQW8		0.0269	0.0040	1.98	0.0302	0.0014	0.92
G9LZZG		0.0215	-0.0014	-0.69	0.0300	0.0013	0.82
GA3MP4		0.0213	-0.0016	-0.79	0.0253	-0.0035	-2.27
H7HYN4		0.0230	0.0001	0.06	0.0296	0.0008	0.54
HP8D6D		0.0210	-0.0019	-0.93	0.0276	-0.0012	-0.77
HQ3YRD		0.0237	0.0008	0.40	0.0301	0.0013	0.88
J8KCP2		0.0249	0.0020	0.99	0.0309	0.0022	1.42
JH44HZ		0.0222	-0.0007	-0.33	0.0316	0.0028	1.86
K4G278		0.0221	-0.0008	-0.40	0.0296	0.0008	0.53
L7Q7JV		0.0228	-0.0001	-0.06	0.0296	0.0008	0.55
LR6VQX		0.0198	-0.0031	-1.53	0.0286	-0.0002	-0.11
METH3P		0.0256	0.0027	1.33	0.0282	-0.0005	-0.35
MHE4VD		0.0228	-0.0001	-0.04	0.0279	-0.0009	-0.60
MNZ7RG		0.0247	0.0018	0.91	0.0275	-0.0013	-0.84
P9JDCU		0.0216	-0.0013	-0.64	0.0292	0.0004	0.29
QQX6UQ		0.0223	-0.0006	-0.30	0.0296	0.0008	0.53
R6NBZK		0.0230	0.0001	0.06	0.0301	0.0013	0.88
RV7R4L		0.0221	-0.0008	-0.38	0.0270	-0.0018	-1.16
T27QU2		0.0204	-0.0025	-1.23	0.0278	-0.0010	-0.64
T6NNLX		0.0246	0.0017	0.86	0.0302	0.0014	0.94
TCPJ7D		0.0232	0.0003	0.14	0.0308	0.0020	1.32
UPTHFV		0.0228	0.0000	-0.02	0.0276	-0.0012	-0.80
UPVG4Q		0.0240	0.0011	0.56	0.0258	-0.0030	-1.95
VTNWTP		0.0235	0.0007	0.33	0.0309	0.0021	1.38
WD8X7H		0.0219	-0.0010	-0.51	0.0268	-0.0020	-1.31
WMREQC		0.0198	-0.0031	-1.55	0.0293	0.0006	0.37
WRL9NE		0.0246	0.0017	0.86	0.0278	-0.0010	-0.64
XUAK3V		0.0202	-0.0027	-1.33	0.0258	-0.0030	-1.95
Y7HZVZ		0.0241	0.0012	0.60	0.0288	0.0001	0.04
Y8UUF8		0.0204	-0.0025	-1.23	0.0290	0.0002	0.15
YR3PVX		0.0239	0.0011	0.53	0.0292	0.0004	0.29



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1402

2nd Qtr

Effective Case Depth

2024

SAE J423, SAE J78

WebCode	Data Flag	Sample C01			Sample C02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Z3YTZQ		0.0256	0.0027	1.35	0.0274	-0.0014	-0.90

Summary Statistics

	Sample C01		Sample C02	
Grand Means	0.0229	inches	0.0288	inches
Stnd Dev Btrwn Labs	0.0020	inches	0.0015	inches

Samples C01, C02 : Steel, Steel

Statistics based on 46 of 48 reporting participants

Comments on Assigned Data Flags for Test #1402

- 4FRDGC (X) - Data for sample C02 are low. Inconsistent within the determinations of both samples.
- DQYKJ9 (X) - Data for both samples are low.



Analysis 1402

Effective Case Depth

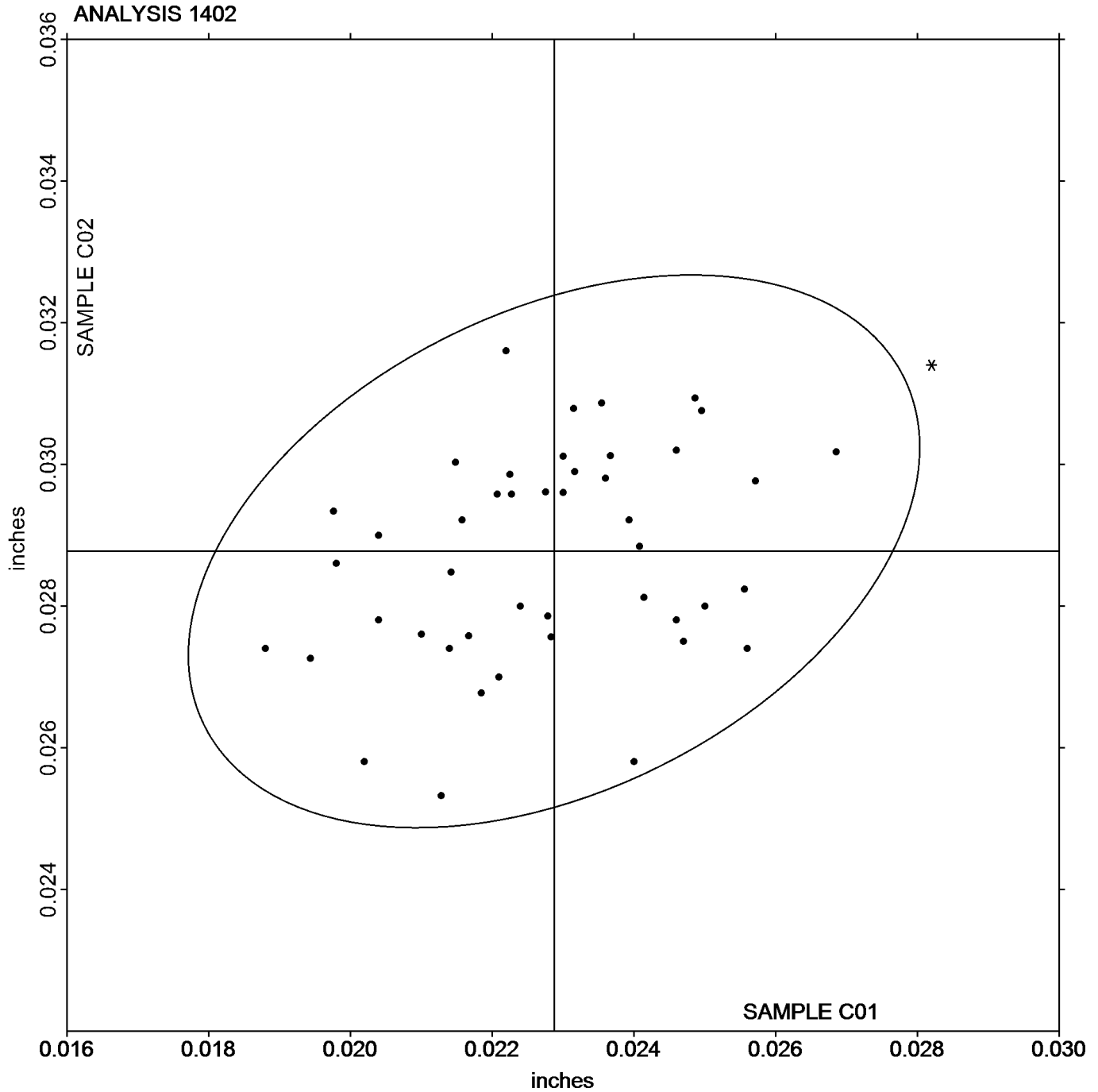
SAE J423, SAE J78

SAMPLE C01

SAMPLE C02

0.0229 inches

0.0288 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1411

2nd Qtr
2024

Grain Size (Stainless Steel)
ASTM E112, ASTM E1382

WebCode	Data Flag	Sample Y01			Sample Y02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXTX8		3.90	-0.92	-1.33	8.00	-1.36	-1.38	Comparison Method
2MJ7RL		5.70	0.88	1.27	9.40	0.04	0.04	Comparison Method
3QY26X		4.97	0.15	0.22	9.89	0.54	0.54	Heyn Linear Intercept
3UXETM		4.60	-0.22	-0.32	8.00	-1.36	-1.38	Comparison Method
49BH2H		4.46	-0.36	-0.52	9.80	0.44	0.45	General Intercept
4HWBYD		4.60	-0.22	-0.32	9.70	0.34	0.35	Heyn Linear Intercept
4UC7CQ		5.80	0.98	1.42	7.80	-1.56	-1.58	Comparison Method
7JJR8C	*	5.70	0.88	1.27	6.80	-2.56	-2.59	Comparison Method
7WU3XM		4.70	-0.12	-0.18	8.00	-1.36	-1.38	Abrams Three-Circle
84K828		5.00	0.18	0.26	10.00	0.64	0.65	Comparison Method
BETKJ7	*	3.80	-1.02	-1.48	6.80	-2.56	-2.59	Comparison Method
BR2QPJ		4.74	-0.08	-0.12	9.96	0.60	0.61	Comparison Method
CAUB8J	X	7.80	2.98	4.31	2.80	-6.56	-6.65	General Intercept
CDG468	X	10.18	5.36	7.75	4.36	-5.00	-5.06	Heyn Linear Intercept
D9ZVG8		4.10	-0.72	-1.05	10.10	0.74	0.75	Comparison Method
DHNU8D		3.40	-1.42	-2.06	9.30	-0.06	-0.06	Comparison Method
EJR9P3		4.90	0.08	0.11	9.60	0.24	0.25	Comparison Method
F2NZ2N		4.42	-0.40	-0.58	9.81	0.46	0.46	Heyn Linear Intercept
FQUE47		4.00	-0.82	-1.19	9.70	0.34	0.35	Comparison Method
HAW6D6		4.37	-0.46	-0.66	9.53	0.18	0.18	General Intercept
HMNQJZ		5.80	0.98	1.42	8.00	-1.36	-1.38	Comparison Method
JLPPFBV		4.50	-0.32	-0.47	9.60	0.24	0.25	Comparison Method
K3VZND		4.90	0.08	0.11	10.00	0.64	0.65	Comparison Method
KEG4HB		4.86	0.04	0.05	11.00	1.64	1.67	Abrams Three-Circle
KNTQJ6		4.60	-0.22	-0.32	9.80	0.44	0.45	Comparison Method
MDK3VJ		5.70	0.88	1.27	10.50	1.14	1.16	General Intercept
METH3P	M	3.90	-0.92	-1.33	No Data Reported			Comparison Method
MNZ7RG		5.84	1.01	1.47	9.33	-0.03	-0.03	Automatic Image Analysis
MU4QUX		3.60	-1.22	-1.77	8.00	-1.36	-1.38	Comparison Method
NX2423		4.71	-0.11	-0.16	10.10	0.75	0.76	Automatic Image Analysis
P377EH		4.28	-0.55	-0.79	8.71	-0.65	-0.66	General Intercept
PADY6L		5.06	0.24	0.34	8.83	-0.52	-0.53	Heyn Linear Intercept
QZXWWP		4.00	-0.82	-1.19	9.00	-0.36	-0.36	Comparison Method
RV7R4L		5.30	0.48	0.69	8.80	-0.56	-0.56	Heyn Linear Intercept
UKE9FQ		5.60	0.78	1.13	9.40	0.04	0.04	Comparison Method
VH9AH4		4.40	-0.42	-0.61	9.24	-0.12	-0.12	Comparison Method
WR9RJD		5.60	0.78	1.13	10.50	1.14	1.16	Comparison Method
XLFP8C		4.41	-0.41	-0.60	9.19	-0.17	-0.17	Automatic Image Analysis
XYJBCB		4.58	-0.24	-0.34	9.72	0.36	0.37	Abrams Three-Circle
Y4VHDF		5.30	0.48	0.69	9.70	0.34	0.35	Comparison Method
Y7HZVZ		5.90	1.08	1.56	10.60	1.24	1.26	Comparison Method
YFN2RL		5.80	0.98	1.42	10.70	1.34	1.36	N/A
YKG292		4.38	-0.44	-0.64	9.62	0.26	0.27	General Intercept
YR3PVX	*	6.40	1.58	2.28	8.00	-1.36	-1.38	Comparison Method
YY3GC2		4.50	-0.32	-0.47	10.10	0.74	0.75	Comparison Method
Z3YTZQ		4.80	-0.02	-0.03	10.30	0.94	0.96	Comparison Method
ZX3ZCA		4.30	-0.52	-0.76	10.30	0.94	0.96	Comparison Method



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1411

**2nd Qtr
2024**

**Grain Size (Stainless Steel)
ASTM E112, ASTM E1382**

WebCode	Data Flag	Sample Y01			Sample Y02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZYTYQ8		4.72	-0.11	-0.15	9.82	0.46	0.47	Abrams Three-Circle

Summary Statistics

	Sample Y01		Sample Y02	
Grand Means	4.822	ASTM Grain Size	9.357	ASTM Grain Size
Stnd Dev Btrwn Labs	0.691	ASTM Grain Size	0.987	ASTM Grain Size

Samples Y01, Y02 : AISI 304L, AISI 303

Statistics based on 45 of 48 reporting participants

Comments on Assigned Data Flags for Test #1411

- CAUB8J (X) - Data appear to be transposed between samples.
- CDG468 (X) - Data appear to be transposed between samples.
- METH3P (M) - Participant did not submit data for sample Y02.



Analysis 1411

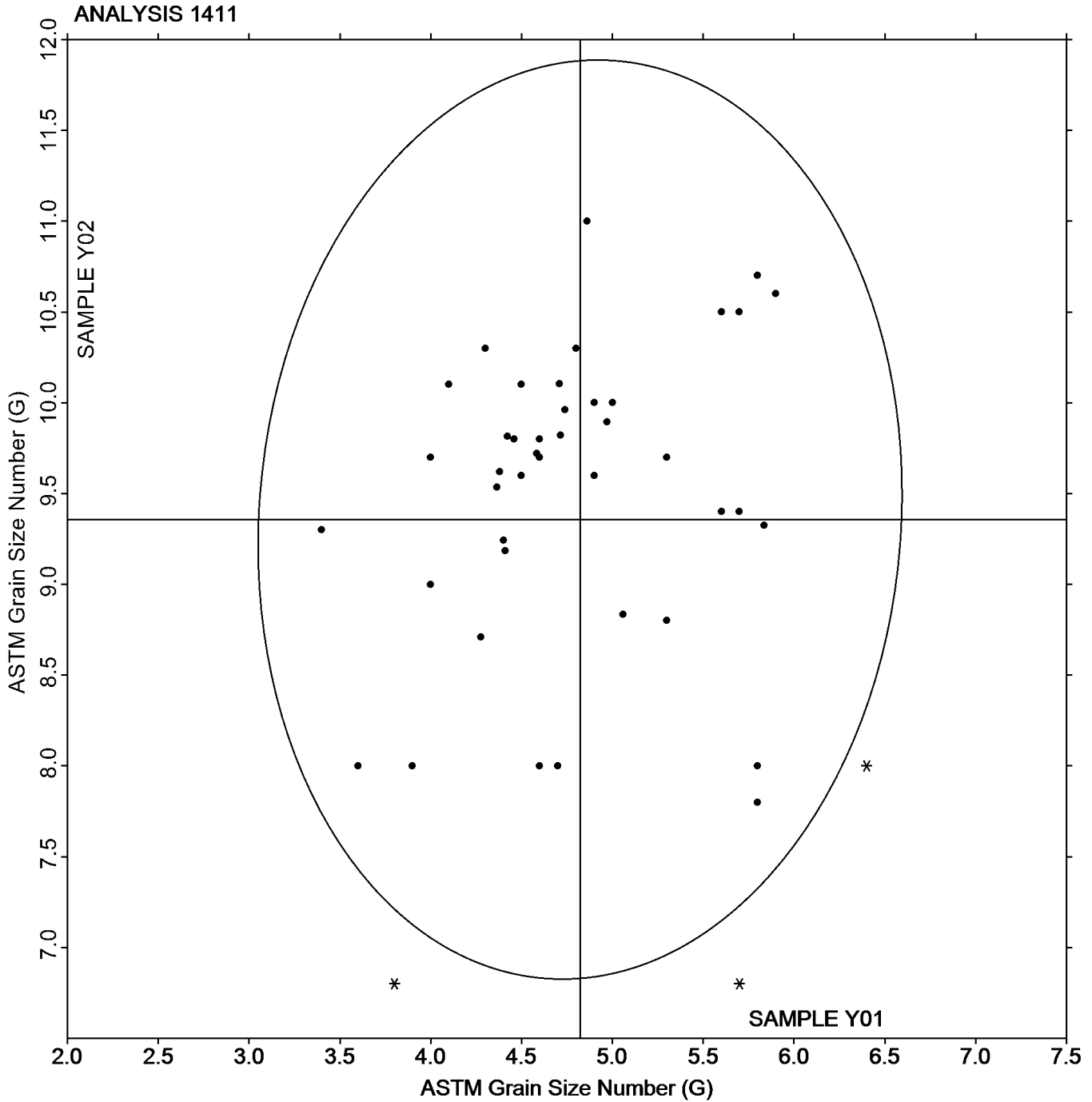
Grain Size (Stainless Steel)
ASTM E112, ASTM E1382

SAMPLE Y01

SAMPLE Y02

4.822 ASTM Grain Size Number (G)

9.357 ASTM Grain Size Number (G)





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1421

2nd Qtr
2024

Alpha Case Depth
ASTM E3, E407

WebCode	Data Flag	Sample W01			Sample W02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2APCF7		0.000240	-0.000041	-0.82	0.000226	-0.000040	-0.91
3UXETM		0.000310	0.000029	0.59	0.000240	-0.000026	-0.59
4CREDR		0.000252	-0.000028	-0.57	0.000291	0.000025	0.56
7894GM		0.000268	-0.000013	-0.26	0.000266	0.000000	0.01
7EABYM		0.000236	-0.000045	-0.90	0.000283	0.000017	0.40
8CF6TG		0.000300	0.000019	0.39	0.000280	0.000014	0.32
CDG468		0.000271	-0.000010	-0.20	0.000244	-0.000022	-0.50
DG9UMN		0.000300	0.000019	0.39	0.000300	0.000034	0.78
H9KXYV		0.000391	0.000110	2.21	0.000353	0.000087	1.98
HKAB2T		0.000232	-0.000049	-0.99	0.000220	-0.000046	-1.05
HMNQJZ		0.000237	-0.000044	-0.89	0.000177	-0.000089	-2.04
J4QNHP		0.000287	0.000007	0.13	0.000263	-0.000003	-0.06
JW8X33		0.000286	0.000006	0.11	0.000273	0.000007	0.16
KEG4HB		0.000255	-0.000025	-0.51	0.000281	0.000015	0.35
LR6VQX		0.000306	0.000025	0.51	0.000250	-0.000016	-0.36
QJVJRM		0.000255	-0.000025	-0.51	0.000266	0.000000	0.01
TGEAEU		0.000260	-0.000021	-0.42	0.000252	-0.000014	-0.31
UKE9FQ		0.000260	-0.000021	-0.42	0.000240	-0.000026	-0.59
VEPMWQ		0.000340	0.000059	1.19	0.000320	0.000054	1.23
VP6EJE		0.000162	-0.000119	-2.39	0.000170	-0.000096	-2.19
WVPKPK		0.000284	0.000003	0.07	0.000282	0.000016	0.37
XG682X		0.000316	0.000035	0.71	0.000280	0.000014	0.32
XHG2NP		0.000299	0.000018	0.36	0.000273	0.000007	0.15
Y7HZVZ	X	0.00350	0.003219	64.75	0.00316	0.002894	65.93
ZX3ZCA		0.000391	0.000110	2.21	0.000353	0.000087	1.98

Summary Statistics

	Sample W01		Sample W02	
Grand Means	0.000281	inches	0.000266	inches
Stnd Dev Btwn Labs	0.000050	inches	0.000044	inches

Samples W01, W02 : Ti-6Al-4V, Ti-6Al-4V

Statistics based on 24 of 25 reporting participants

Comments on Assigned Data Flags for Test #1421

Y7HZVZ (X) - Extreme data. Data appears to be off by a factor of ten.



Analysis 1421

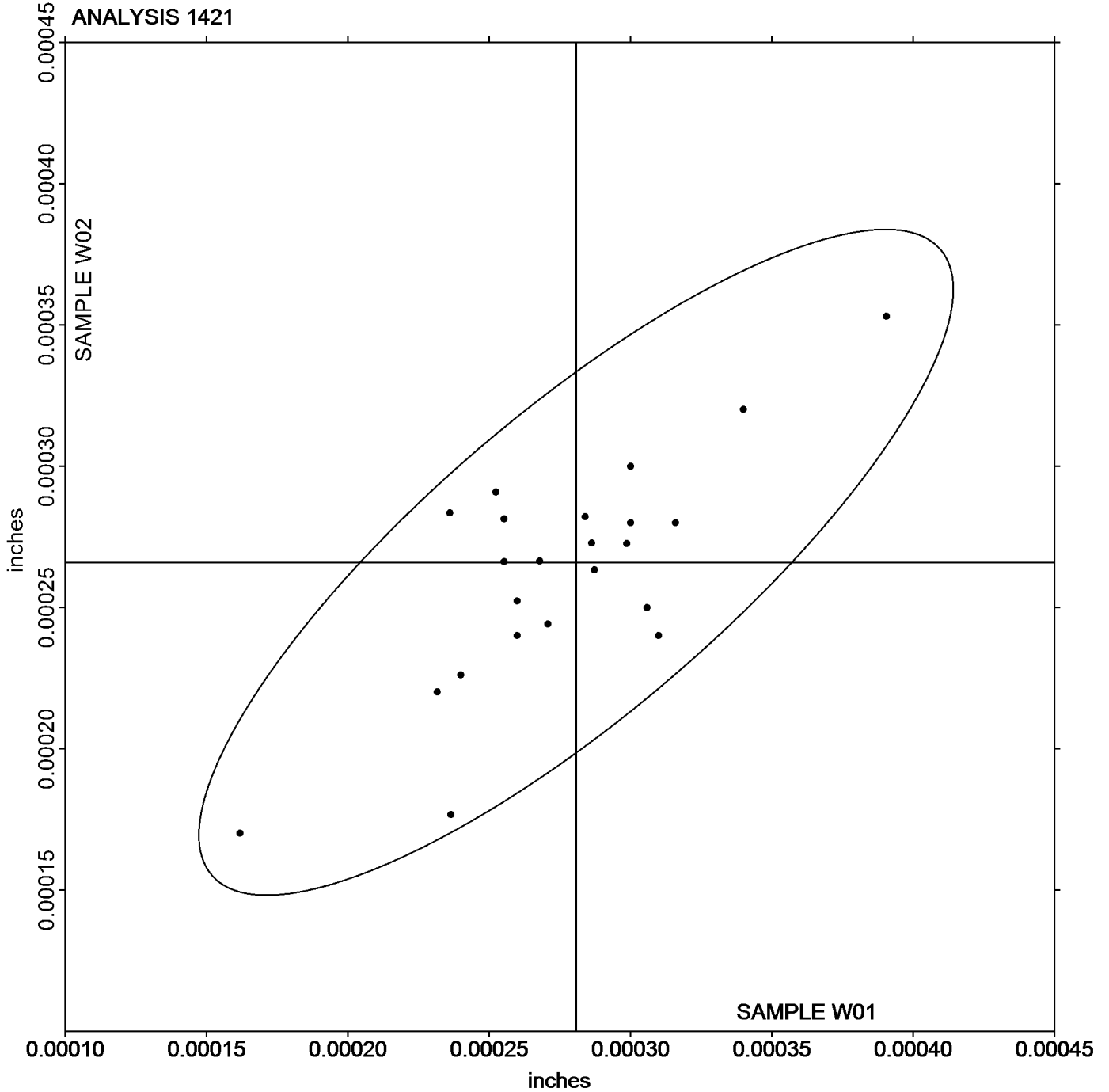
Alpha Case Depth
ASTM E3, E407

SAMPLE W01

0.00028 inches

SAMPLE W02

0.00027 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1422

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample K01			Sample K02		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2M6M8N		0.000600	0.000206	1.41	0.00102	0.000473	1.43
8NDDNZ		0.000640	0.000246	1.68	0.00108	0.000532	1.61
AHZJGT		0.000265	-0.000130	-0.88	0.000265	-0.000283	-0.86
H9KXYV		0.000314	-0.000080	-0.55	0.000494	-0.000054	-0.16
LR6VQX		0.000560	0.000166	1.13	0.00100	0.000452	1.37
MNZ7RG		0.000398	0.000003	0.02	0.000553	0.000005	0.02
UKE9FQ		0.000340	-0.000054	-0.37	0.000340	-0.000208	-0.63
WUUECZ		0.000392	-0.000002	-0.01	0.000389	-0.000159	-0.48
XG682X		0.000348	-0.000046	-0.32	0.000322	-0.000226	-0.68
XHG2NP		0.000173	-0.000221	-1.51	0.000154	-0.000394	-1.20
ZX3ZCA		0.000307	-0.000087	-0.60	0.000410	-0.000138	-0.42

Summary Statistics

	Sample K01		Sample K02	
Grand Means	0.000394	inches	0.000548	inches
Stnd Dev Btwn Labs	0.000147	inches	0.000330	inches

Samples K01, K02 : Inco 718, Inco 718

Statistics based on 11 of 11 reporting participants



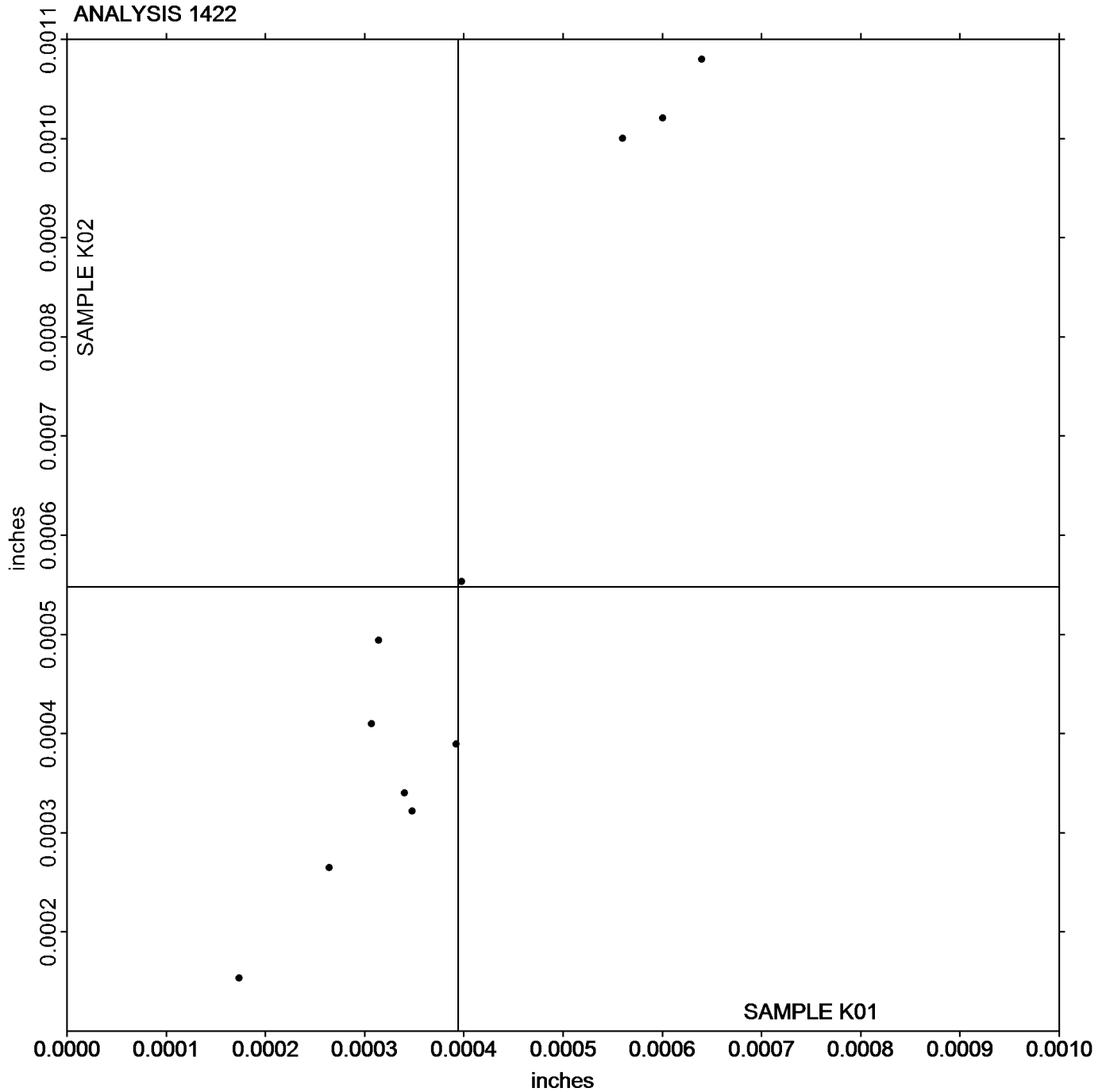
Analysis 1422

Alloy Depletion: Inconel

ASTM E3, E407

SAMPLE K01
0.00039 inches

SAMPLE K02
0.00055 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1500

2nd Qtr

Nickel-based Alloy, CHROMIUM (Cr)

2024

CHROMIUM (Cr)

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7		15.53	0.00	-0.01	15.92	0.02	0.12	ED
2FXTX8		15.37	-0.17	-1.16	15.72	-0.18	-1.32	XX
2M6M8N		15.52	-0.02	-0.13	15.80	-0.11	-0.77	WD
34WUEZ		15.33	-0.21	-1.47	15.59	-0.31	-2.25	IC
49BH2H		15.48	-0.05	-0.36	15.91	0.01	0.04	XX
7U66F3		15.56	0.03	0.21	15.97	0.07	0.47	IC
7X6GC3		15.51	-0.02	-0.15	15.88	-0.02	-0.15	WD
8D7PK2	X	14.74	-0.79	-5.56	15.11	-0.79	-5.71	OE
8W8QJT		15.75	0.21	1.51	16.05	0.15	1.08	OE
8ZLAH3		15.70	0.16	1.16	16.07	0.16	1.17	OE
9T4FFJ		15.63	0.10	0.69	15.97	0.06	0.45	OE
AHZJGT	*	15.94	0.41	2.87	16.31	0.41	2.92	WD
B32U2M		15.58	0.05	0.34	15.93	0.03	0.21	XX
B7FDYV		15.50	-0.04	-0.25	15.87	-0.04	-0.27	IC
BAWW3Y		15.43	-0.11	-0.77	15.79	-0.12	-0.86	WD
BQA8VR		15.37	-0.16	-1.14	15.79	-0.11	-0.82	OE
BRM6FG		15.45	-0.08	-0.57	15.86	-0.04	-0.29	OE
BTTMED	X	14.78	-0.76	-5.32	15.48	-0.42	-3.05	OE
BYJLQ3		15.44	-0.10	-0.70	15.82	-0.08	-0.58	WD
D6F8F8		15.52	-0.02	-0.11	15.87	-0.04	-0.28	OE
F2NZ2N		15.72	0.18	1.29	16.12	0.21	1.55	WD
FXBZ6W	X	14.48	-1.05	-7.38	14.90	-1.01	-7.25	OE
GJPX9Q		15.75	0.22	1.53	16.12	0.21	1.53	OE
HP8D6D		15.53	0.00	-0.01	15.90	0.00	0.00	XR
JKB9NE		15.43	-0.11	-0.74	15.77	-0.14	-0.98	OE
KGNR7U		15.45	-0.09	-0.62	15.88	-0.02	-0.17	OE
KNMVYR		15.63	0.10	0.69	16.00	0.09	0.68	WD
L3JKEP		15.49	-0.04	-0.31	15.83	-0.07	-0.52	OE
P9JDCU		15.58	0.04	0.32	15.93	0.03	0.19	OE
PX3LQ7		15.53	0.00	-0.01	15.92	0.01	0.09	OE
QGM39P		15.50	-0.04	-0.25	15.83	-0.07	-0.51	OE
QNRJ66	*	15.62	0.08	0.60	15.77	-0.13	-0.96	OE
QVM48F		15.51	-0.02	-0.16	15.95	0.04	0.30	VO
QXVHEL	X	14.26	-1.27	-8.93	14.76	-1.14	-8.21	OE
T6BR4U		15.66	0.13	0.89	16.02	0.11	0.81	OE
TFQ7W2		15.60	0.06	0.43	16.05	0.14	1.03	OE
UT7V62		15.55	0.01	0.10	15.90	0.00	-0.03	WD
UWQJ73	*	15.13	-0.40	-2.82	15.57	-0.34	-2.43	GD
W7MXQ7		15.46	-0.08	-0.55	15.77	-0.13	-0.94	OE
WB36E6	X	14.84	-0.70	-4.90	15.14	-0.76	-5.47	OE
WDABKJ		15.50	-0.04	-0.25	15.83	-0.07	-0.51	IC
WVPKJK		15.56	0.03	0.20	15.97	0.07	0.50	OE
WZYDMQ		15.77	0.23	1.63	16.03	0.13	0.93	OE
YKG292	X	15.64	0.10	0.74	15.27	-0.63	-4.56	WD
YY3GC2		15.63	0.09	0.64	15.93	0.03	0.19	OE
Z3YTZQ		15.43	-0.11	-0.76	15.97	0.06	0.45	OE
ZYTYQ8		15.36	-0.17	-1.20	15.76	-0.14	-1.04	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1500

2nd Qtr
2024

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

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	15.54	Percent	15.90	Percent
Std Dev Btwn Labs	0.14	Percent	0.14	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 40 of 47 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)
VO	Volumetric	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1500

- 8D7PK2 (X) - Data for both samples are low. Possible Systematic Error.
- BTTMED (X) - Data for both samples are low. Possible Systematic Error.
- FXBZ6W (X) - Data for both samples are low. Possible Systematic Error.
- QXVHEL (X) - Data for both samples are low. Possible Systematic Error.
- WB36E6 (X) - Data for both samples are low. Possible Systematic Error.
- YKG292 (X) - Data for sample J02 are low.



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1500

**2nd Qtr
2024**

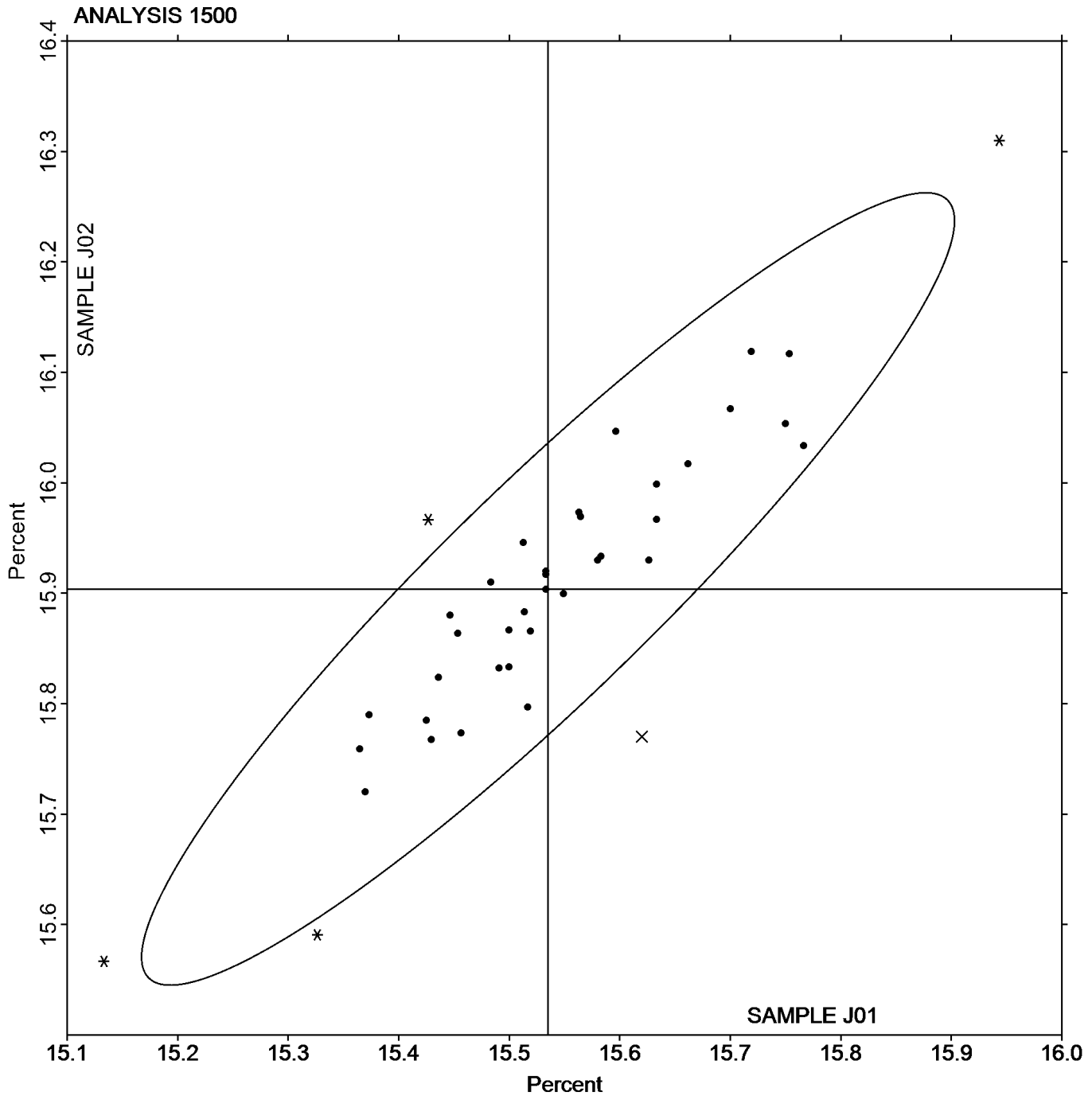
**Nickel-based Alloy, CHROMIUM (Cr)
CHROMIUM (Cr)**

SAMPLE J01

SAMPLE J02

15.54 Percent

15.90 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1501

2nd Qtr

Nickel-based Alloy, MANGANESE (Mn)

2024

MANGANESE (Mn)

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7		0.5550	0.0371	1.50	0.4617	0.0539	2.49	ED
2FXTX8		0.5250	0.0071	0.29	0.4130	0.0052	0.24	XX
2M6M8N		0.5150	-0.0029	-0.12	0.4010	-0.0068	-0.31	WD
34WUEZ		0.5180	0.0001	0.00	0.4088	0.0010	0.05	IC
49BH2H		0.5070	-0.0109	-0.44	0.4090	0.0012	0.06	IC
7U66F3		0.5093	-0.0086	-0.35	0.4077	-0.0001	-0.01	IC
7X6GC3		0.5150	-0.0030	-0.12	0.3988	-0.0090	-0.41	WD
8D7PK2	X	0.7507	0.2327	9.41	0.5883	0.1805	8.34	OE
8W8QJT		0.4557	-0.0623	-2.52	0.3637	-0.0441	-2.04	OE
8ZLAH3		0.5500	0.0321	1.30	0.4200	0.0122	0.56	OE
9T4FFJ		0.4660	-0.0519	-2.10	0.3667	-0.0411	-1.90	OE
AHZJGT		0.5073	-0.0106	-0.43	0.3967	-0.0111	-0.51	WD
B32U2M		0.5533	0.0354	1.43	0.4433	0.0355	1.64	XX
B7FDYV		0.5233	0.0054	0.22	0.4100	0.0022	0.10	IC
BAWW3Y		0.5120	-0.0059	-0.24	0.3993	-0.0085	-0.39	WD
BQA8VR		0.5100	-0.0079	-0.32	0.4223	0.0145	0.67	OE
BRM6FG		0.5567	0.0387	1.57	0.4237	0.0159	0.73	OE
BTTMED		0.5043	-0.0136	-0.55	0.4093	0.0015	0.07	OE
BYJLQ3		0.5060	-0.0119	-0.48	0.3937	-0.0141	-0.65	WD
D6F8F8		0.5246	0.0067	0.27	0.4059	-0.0020	-0.09	OE
F2NZ2N		0.5001	-0.0178	-0.72	0.3894	-0.0184	-0.85	WD
FXBZ6W	X	0.7900	0.2721	11.00	0.6167	0.2089	9.65	OE
GJPX9Q		0.4663	-0.0516	-2.09	0.3507	-0.0571	-2.64	OE
HP8D6D		0.5310	0.0131	0.53	0.4090	0.0012	0.06	XR
JKB9NE		0.5170	-0.0009	-0.04	0.4063	-0.0015	-0.07	OE
KGNR7U		0.5400	0.0221	0.89	0.4133	0.0055	0.26	OE
KNMVYR		0.5205	0.0026	0.11	0.4071	-0.0007	-0.03	WD
L3JKEP		0.5101	-0.0079	-0.32	0.3993	-0.0085	-0.39	OE
P9JDCU		0.5310	0.0131	0.53	0.4210	0.0132	0.61	OE
PX3LQ7		0.5280	0.0101	0.41	0.4177	0.0099	0.46	OE
QGM39P	X	0.4537	-0.0643	-2.60	0.3933	-0.0145	-0.67	OE
QNRJ66		0.5280	0.0101	0.41	0.4140	0.0062	0.29	OE
QVM48F		0.5153	-0.0026	-0.10	0.4070	-0.0008	-0.04	XX
QXVHEL	X	0.7333	0.2154	8.71	0.5860	0.1782	8.23	OE
T6BR4U		0.5452	0.0272	1.10	0.4301	0.0223	1.03	OE
TFQ7W2		0.4800	-0.0379	-1.53	0.3857	-0.0221	-1.02	OE
UT7V62		0.5217	0.0037	0.15	0.4127	0.0049	0.22	WD
UWQJ73		0.5003	-0.0176	-0.71	0.3883	-0.0195	-0.90	GD
W7MXQ7	*	0.5300	0.0121	0.49	0.4600	0.0522	2.41	OE
WB36E6		0.5767	0.0587	2.38	0.4657	0.0579	2.67	OE
WDABKJ		0.5090	-0.0089	-0.36	0.3987	-0.0091	-0.42	IC
WVPKLK		0.5377	0.0197	0.80	0.4207	0.0129	0.59	OE
WZYDMQ	X	0.6477	0.1297	5.25	0.5113	0.1035	4.78	OE
YKG292	X	0.3960	-0.1219	-4.93	0.5067	0.0989	4.57	WD
YY3GC2		0.5367	0.0187	0.76	0.4207	0.0129	0.59	OE
Z3YTZQ		0.5007	-0.0173	-0.70	0.3993	-0.0085	-0.39	OE
ZYTYQ8		0.5083	-0.0096	-0.39	0.4010	-0.0068	-0.31	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1501

2nd Qtr

Nickel-based Alloy, MANGANESE (Mn)

2024

MANGANESE (Mn)

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	0.5179	Percent	0.4078	Percent
Std Dev Btwn Labs	0.0247	Percent	0.0216	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 40 of 47 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1501

- 8D7PK2 (X) - Data for both samples are high. Possible Systematic Error.
- FXBZ6W (X) - Data for both samples are high. Possible Systematic Error.
- QGM39P (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J02.
- QXVHEL (X) - Data for both samples are high. Possible Systematic Error.
- WZYDMQ (X) - Data for both samples are high. Possible Systematic Error.
- YKG292 (X) - Data appear to be transposed between samples.



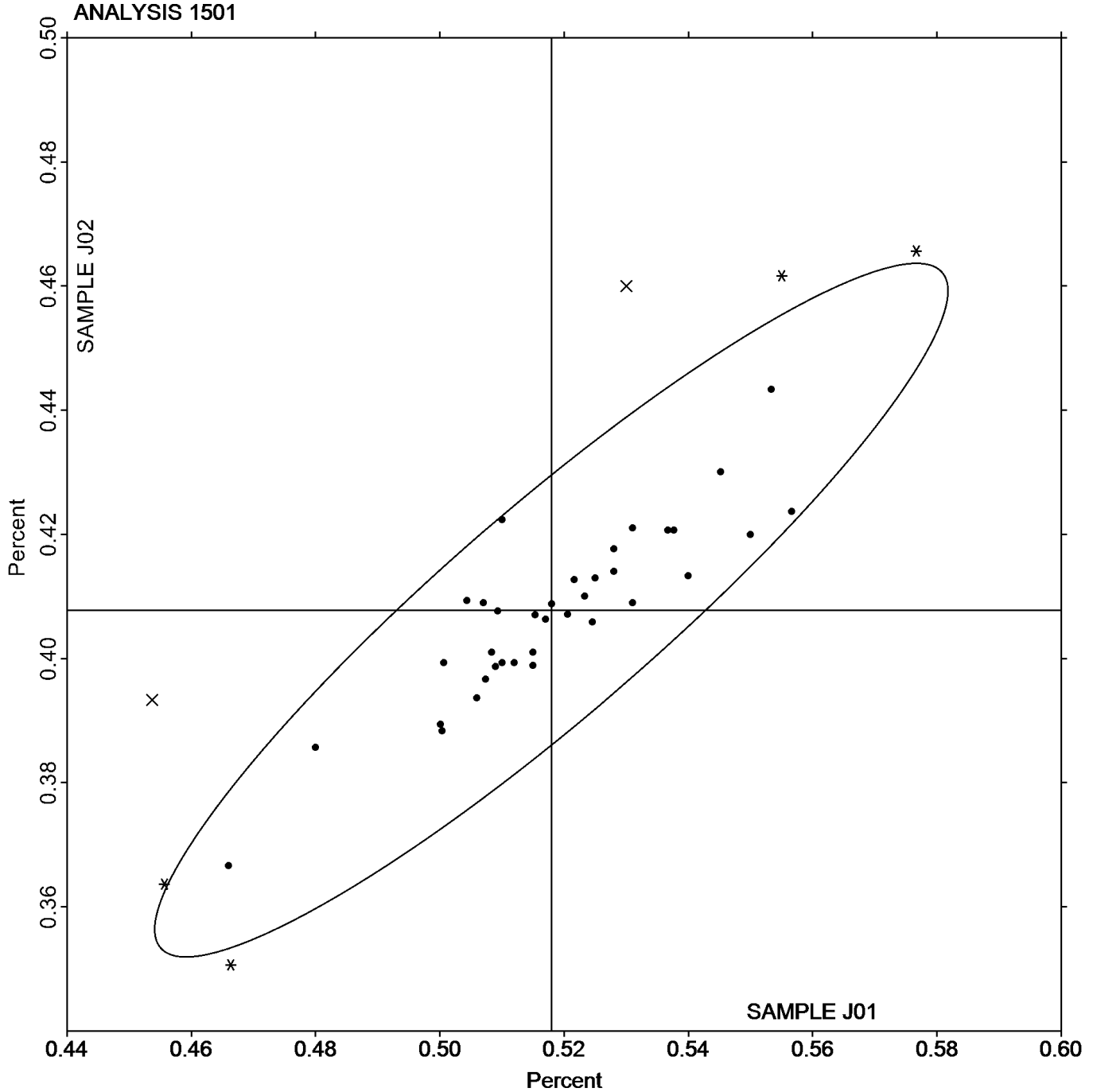
Analysis 1501

Nickel-based Alloy, MANGANESE (Mn)

MANGANESE (Mn)

SAMPLE J01
0.5179 Percent

SAMPLE J02
0.4078 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1502

2nd Qtr
2024

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

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7		8.718	0.207	1.18	9.736	0.200	0.93	ED
2FXTX8		8.230	-0.281	-1.61	9.280	-0.256	-1.20	XX
2M6M8N		8.591	0.080	0.46	9.651	0.115	0.54	WD
34WUEZ		8.567	0.056	0.32	9.568	0.032	0.15	IC
49BH2H		8.593	0.082	0.47	9.690	0.154	0.72	XX
7U66F3		8.753	0.242	1.38	9.852	0.316	1.48	IC
7X6GC3		8.647	0.136	0.78	9.681	0.145	0.68	WD
8D7PK2	X	7.287	-1.224	-6.99	8.170	-1.366	-6.38	OE
8W8QJT		8.567	0.056	0.32	9.707	0.171	0.80	OE
8ZLAH3		8.533	0.022	0.13	9.500	-0.036	-0.17	OE
9T4FFJ		8.767	0.256	1.46	9.900	0.364	1.70	OE
AHZJGT		8.681	0.170	0.97	9.718	0.182	0.85	WD
B32U2M		8.643	0.132	0.76	9.760	0.224	1.05	XX
B7FDYV		8.670	0.159	0.91	9.460	-0.076	-0.36	IC
BAWW3Y		8.539	0.028	0.16	9.557	0.021	0.10	WD
BQA8VR		8.313	-0.198	-1.13	9.190	-0.346	-1.62	OE
BRM6FG		8.437	-0.074	-0.43	9.553	0.017	0.08	OE
BTTMED		8.208	-0.303	-1.73	9.236	-0.300	-1.40	OE
BYJLQ3		8.617	0.106	0.60	9.681	0.145	0.68	WD
D6F8F8		8.545	0.034	0.20	9.635	0.098	0.46	OE
F2NZ2N		8.686	0.175	1.00	9.735	0.199	0.93	WD
FXBZ6W		8.040	-0.471	-2.69	9.047	-0.489	-2.29	OE
GJPX9Q		8.433	-0.078	-0.44	9.423	-0.113	-0.53	OE
HP8D6D		8.557	0.046	0.26	9.572	0.036	0.17	XR
JKB9NE		8.533	0.022	0.12	9.486	-0.050	-0.24	OE
KGNR7U		8.380	-0.131	-0.75	9.540	0.004	0.02	OE
KNMVYR		8.614	0.103	0.59	9.624	0.088	0.41	WD
L3JKEP		8.517	0.005	0.03	9.470	-0.066	-0.31	OE
P9JDCU		8.559	0.048	0.27	9.601	0.065	0.30	OE
PX3LQ7		8.443	-0.068	-0.39	9.527	-0.009	-0.04	OE
QGM39P		8.470	-0.041	-0.23	9.567	0.031	0.14	OE
QNRJ66		8.489	-0.022	-0.13	9.584	0.048	0.22	OE
QVM48F		8.710	0.199	1.14	9.620	0.084	0.39	VO
QXVHEL	*	8.033	-0.478	-2.73	9.023	-0.513	-2.40	OE
T6BR4U		8.283	-0.229	-1.31	9.127	-0.409	-1.91	OE
TFQ7W2		8.623	0.112	0.64	9.593	0.057	0.27	OE
UT7V62		8.585	0.074	0.42	9.461	-0.075	-0.35	WD
W7MXQ7		8.413	-0.098	-0.56	9.523	-0.013	-0.06	OE
WB36E6		8.359	-0.152	-0.87	9.203	-0.333	-1.56	OE
WDABKJ		8.567	0.056	0.32	9.537	0.001	0.00	IC
WVPKLK		8.377	-0.134	-0.77	9.450	-0.086	-0.40	OE
WZYDMQ		8.517	0.006	0.03	9.733	0.197	0.92	OE
YKG292	X	9.694	1.183	6.76	8.662	-0.874	-4.08	WD
YY3GC2		8.580	0.069	0.39	9.670	0.134	0.63	OE
Z3YTZQ		8.312	-0.199	-1.14	9.191	-0.345	-1.61	OE
ZYTYQ8		8.791	0.280	1.60	9.930	0.394	1.84	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1502

2nd Qtr

Nickel-based Alloy, IRON (Fe)

2024

IRON (Fe)

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	8.511	Percent	9.536	Percent
Stnd Dev Btwn Labs	0.175	Percent	0.214	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 44 of 46 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1502

8D7PK2 (X) - Data for both samples are low.

YKG292 (X) - Data appear to be transposed between samples.

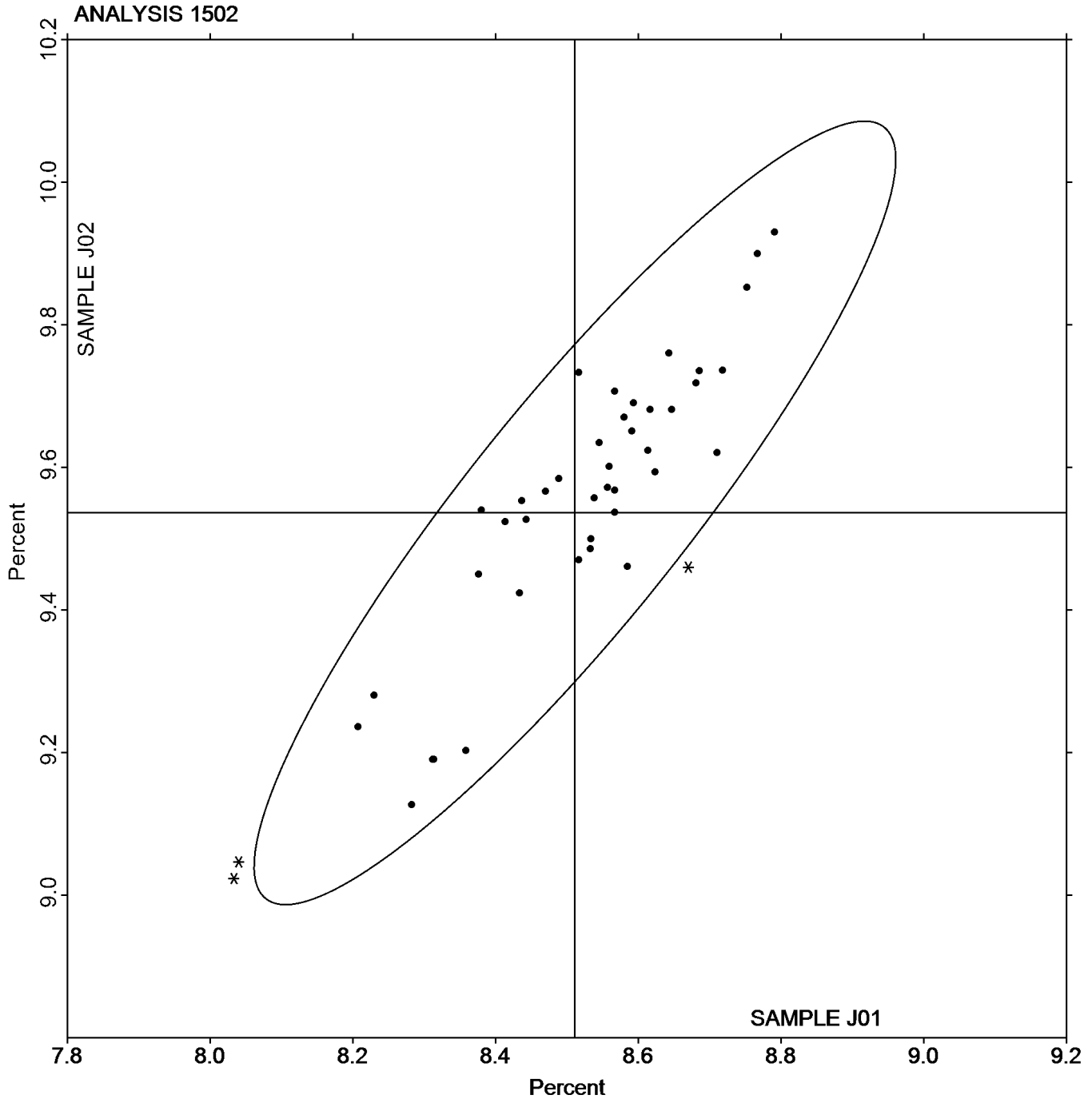


Analysis 1502

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

SAMPLE J01
8.511 Percent

SAMPLE J02
9.536 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1503

2nd Qtr
2024

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

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7		0.0269	-0.0123	-0.67	0.0643	-0.0134	-0.83	ED
2FXTX8	X	0.00900	-0.0302	-1.64	0.0120	-0.0658	-4.05	XX
49BH2H		0.0300	-0.0092	-0.50	0.0700	-0.0078	-0.48	IC
7U66F3		0.0110	-0.0282	-1.53	0.0520	-0.0258	-1.59	IC
7X6GC3		0.0269	-0.0123	-0.67	0.0680	-0.0098	-0.60	WD
8D7PK2		0.0382	-0.0010	-0.05	0.0837	0.0060	0.37	OE
8W8QJT		0.0423	0.0031	0.17	0.0624	-0.0154	-0.95	OE
8ZLAH3	*	0.0907	0.0515	2.80	0.1263	0.0486	2.99	XX
AHZJGT		0.0253	-0.0139	-0.76	0.0662	-0.0115	-0.71	WD
B7FDYV		0.0333	-0.0058	-0.32	0.0733	-0.0044	-0.27	IC
BAWW3Y		0.0350	-0.0042	-0.23	0.0730	-0.0048	-0.29	WD
BRM6FG		0.0622	0.0230	1.25	0.0906	0.0129	0.79	OE
BYJLQ3		0.0340	-0.0052	-0.28	0.0740	-0.0038	-0.23	WD
D6F8F8		0.0374	-0.0018	-0.10	0.0843	0.0065	0.40	OE
F2NZ2N		0.0284	-0.0107	-0.58	0.0695	-0.0083	-0.51	WD
FXBZ6W	X	0.5100	0.4708	25.57	0.1067	0.0289	1.78	XX
GJPX9Q	*	0.0953	0.0561	3.05	0.1277	0.0499	3.07	OE
HP8D6D		0.0438	0.0046	0.25	0.0870	0.0092	0.57	OE
KGNR7U		0.0523	0.0132	0.71	0.0873	0.0096	0.59	OE
KNMVYR		0.0302	-0.0090	-0.49	0.0721	-0.0057	-0.35	WD
L3JKEP		0.0392	0.0000	0.00	0.0735	-0.0043	-0.27	OE
P9JDCU		0.0445	0.0053	0.29	0.0860	0.0082	0.51	OE
PX3LQ7		0.0309	-0.0082	-0.45	0.0734	-0.0044	-0.27	OE
QGM39P		0.0706	0.0314	1.71	0.0991	0.0213	1.31	OE
QNRJ66		0.0206	-0.0186	-1.01	0.0710	-0.0068	-0.42	OE
QVM48F		0.0292	-0.0099	-0.54	0.0694	-0.0084	-0.52	AA
QXVHEL		0.0390	-0.0002	-0.01	0.0787	0.0009	0.05	OE
T6BR4U		0.0284	-0.0107	-0.58	0.0845	0.0067	0.41	OE
TFQ7W2		0.0767	0.0375	2.04	0.1060	0.0282	1.74	OE
UT7V62		0.0310	-0.0082	-0.44	0.0720	-0.0058	-0.36	WD
UWQJ73		0.0310	-0.0081	-0.44	0.0720	-0.0058	-0.36	GD
W7MXQ7		0.0293	-0.0098	-0.53	0.0570	-0.0208	-1.28	OE
WB36E6		0.0373	-0.0018	-0.10	0.0757	-0.0021	-0.13	OE
WDABKJ		0.0314	-0.0078	-0.42	0.0707	-0.0071	-0.44	IC
WVPLK		0.0316	-0.0075	-0.41	0.0637	-0.0141	-0.87	OE
YKG292	X	0.0713	0.0322	1.75	0.0310	-0.0468	-2.88	WD
YY3GC2		0.0239	-0.0153	-0.83	0.0690	-0.0088	-0.54	OE
Z3YTZQ		0.0398	0.0006	0.03	0.0780	0.0002	0.01	OE
ZYTYQ8		0.0327	-0.0065	-0.35	0.0687	-0.0091	-0.56	OE

Summary Statistics

	Sample J01		Sample J02	
Grand Means	0.0392	Percent	0.0778	Percent
Std Dev Btwn Labs	0.0184	Percent	0.0162	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 36 of 39 reporting participants



Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	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 #1503

2FXTX8 (X) - Data for sample J02 are low.

FXBZ6W (X) - Data for sample J01 are high. Inconsistent within the determinations of both samples.

YKG292 (X) - Data appear to be transposed between samples.



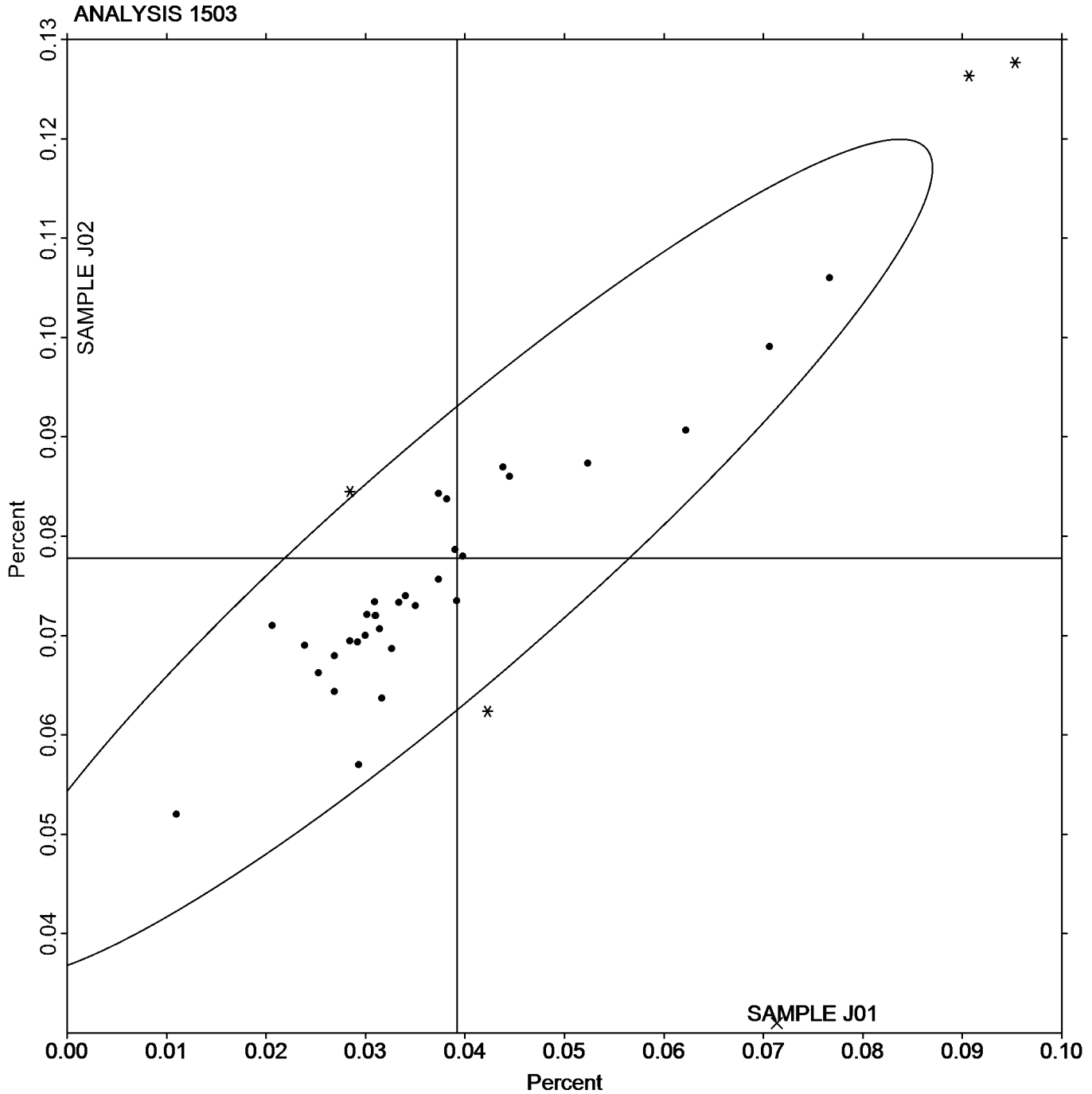
Analysis 1503

Nickel-based Alloy, MOLYBDENUM (Mo)

MOLYBDENUM (Mo)

SAMPLE J01
0.0392 Percent

SAMPLE J02
0.0778 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1504

2nd Qtr
2024

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

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7	X	0.2293	0.0218	1.50	0.2423	0.0044	0.27	ED
2FXTX8		0.2000	-0.0076	-0.52	0.2300	-0.0079	-0.48	XX
2M6M8N		0.2020	-0.0056	-0.38	0.2313	-0.0066	-0.40	WD
34WUEZ		0.2158	0.0082	0.57	0.2478	0.0099	0.61	IC
49BH2H		0.2093	0.0018	0.12	0.2433	0.0054	0.33	IC
7U66F3		0.2130	0.0054	0.37	0.2423	0.0044	0.27	IC
7X6GC3		0.2071	-0.0005	-0.03	0.2396	0.0017	0.10	WD
8D7PK2		0.1877	-0.0199	-1.37	0.2127	-0.0252	-1.55	OE
8W8QJT		0.1937	-0.0139	-0.96	0.2203	-0.0176	-1.08	XX
8ZLAH3		0.2307	0.0231	1.59	0.2633	0.0254	1.56	OE
9T4FFJ		0.1987	-0.0089	-0.61	0.2290	-0.0089	-0.55	OE
AHZJGT		0.1887	-0.0189	-1.30	0.2200	-0.0179	-1.10	XX
B7FDYV	X	0.2400	0.0324	2.23	0.2600	0.0221	1.36	IC
BAWW3Y		0.1943	-0.0132	-0.91	0.2280	-0.0099	-0.61	XX
BQA8VR		0.2013	-0.0062	-0.43	0.2297	-0.0082	-0.51	OE
BRM6FG		0.2113	0.0038	0.26	0.2427	0.0048	0.29	OE
BYJLQ3		0.1745	-0.0331	-2.28	0.2010	-0.0369	-2.27	OE
D6F8F8		0.2182	0.0106	0.73	0.2475	0.0096	0.59	OE
F2NZ2N	X	0.1268	-0.0808	-5.56	0.1592	-0.0787	-4.83	WD
FXBZ6W		0.2033	-0.0042	-0.29	0.2300	-0.0079	-0.48	XX
GJPX9Q		0.2313	0.0238	1.64	0.2603	0.0224	1.38	OE
HP8D6D		0.1923	-0.0152	-1.05	0.2193	-0.0186	-1.14	OE
KGNR7U		0.2200	0.0124	0.86	0.2500	0.0121	0.74	OE
KNMVYR	X	0.1561	-0.0515	-3.54	0.1884	-0.0495	-3.04	WD
L3JKEP		0.1941	-0.0134	-0.92	0.2284	-0.0095	-0.58	XX
P9JDCU		0.1870	-0.0206	-1.42	0.2140	-0.0239	-1.47	OE
PX3LQ7		0.2163	0.0088	0.60	0.2460	0.0081	0.50	OE
QGM39P		0.2183	0.0108	0.74	0.2483	0.0104	0.64	OE
QNRJ66		0.2020	-0.0056	-0.38	0.2310	-0.0069	-0.42	OE
QVM48F		0.2333	0.0258	1.77	0.2747	0.0368	2.26	AA
QXVHEL		0.2040	-0.0036	-0.24	0.2397	0.0018	0.11	OE
T6BR4U		0.2008	-0.0068	-0.47	0.2284	-0.0095	-0.58	OE
TFQ7W2		0.2220	0.0144	0.99	0.2533	0.0154	0.95	OE
UT7V62		0.1879	-0.0196	-1.35	0.2126	-0.0253	-1.55	OE
UWQJ73		0.2017	-0.0059	-0.41	0.2323	-0.0056	-0.34	GD
W7MXQ7		0.2300	0.0224	1.55	0.2600	0.0221	1.36	OE
WB36E6		0.2060	-0.0016	-0.11	0.2403	0.0024	0.15	OE
WDABKJ		0.2240	0.0164	1.13	0.2510	0.0131	0.80	IC
WVPKLLK		0.1993	-0.0082	-0.57	0.2317	-0.0062	-0.38	OE
WZYDMQ		0.2343	0.0268	1.84	0.2680	0.0301	1.85	OE
YY3GC2		0.2170	0.0094	0.65	0.2537	0.0158	0.97	OE
Z3YTZQ		0.2107	0.0031	0.21	0.2427	0.0048	0.29	OE
ZYTYQ8		0.2127	0.0051	0.35	0.2337	-0.0042	-0.26	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1504

2nd Qtr
2024

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

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	0.2076	Percent	0.2379	Percent
Std Dev Btwn Labs	0.0145	Percent	0.0163	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 39 of 43 reporting participants

Key to Method Codes Reported by Participants

- | | |
|---|--|
| AA Spectrometry - Atomic Absorption (AAS) | ED X-Ray Fluorescence - Energy Dispersive (EDX) |
| GD Spectrometry - Glow Discharge (GDS) | 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 #1504

2APCF7 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

B7FDYV (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J01.

F2NZ2N (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample J01.

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

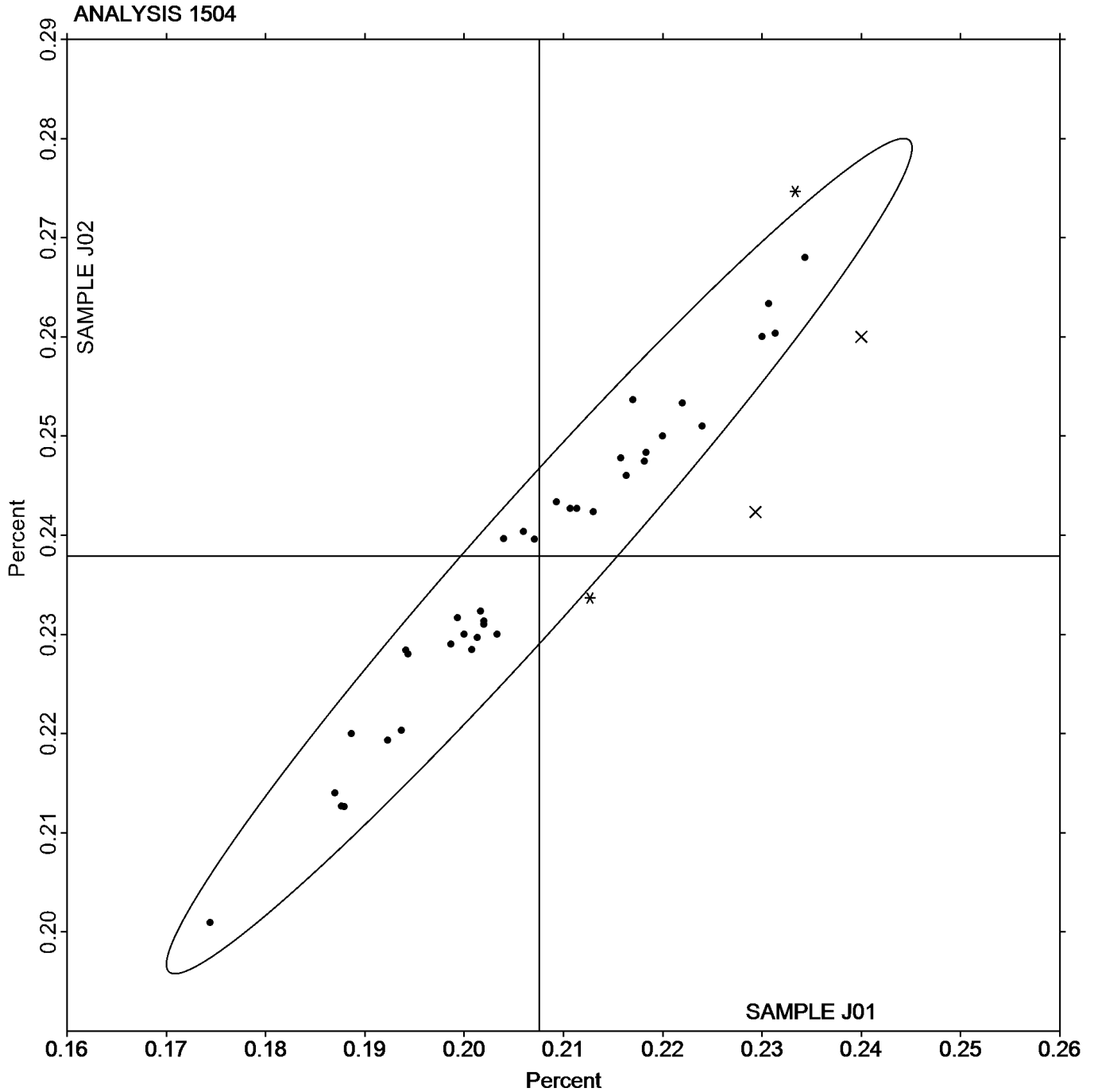


Analysis 1504

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

SAMPLE J01
0.2076 Percent

SAMPLE J02
0.2379 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1505

2nd Qtr

Nickel-based Alloy, SILICON (Si)

2024

SILICON (Si)

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7	X	0.2540	0.0706	3.55	0.1533	0.0675	3.78	ED
2FXTX8		0.1920	0.0086	0.43	0.1200	0.0342	1.91	XX
2M6M8N		0.1793	-0.0040	-0.20	0.0674	-0.0185	-1.03	WD
49BH2H		0.1800	-0.0034	-0.17	0.0840	-0.0018	-0.10	XX
7U66F3		0.2103	0.0270	1.36	0.0843	-0.0015	-0.08	IC
7X6GC3		0.1951	0.0117	0.59	0.0962	0.0103	0.58	WD
8D7PK2		0.1857	0.0023	0.12	0.0968	0.0110	0.61	OE
8W8QJT		0.1417	-0.0417	-2.10	0.0727	-0.0132	-0.74	OE
8ZLAH3	M	0.0985	-0.0848	-4.27	No Data Reported			XX
AHZJGT	X	0.3173	0.1340	6.74	0.2047	0.1188	6.65	WD
B32U2M	X	0.2833	0.1000	5.03	0.2400	0.1542	8.62	XX
B7FDYV		0.2167	0.0333	1.68	0.0933	0.0075	0.42	IC
BAWW3Y		0.1970	0.0136	0.69	0.0930	0.0072	0.40	WD
BQA8VR		0.1440	-0.0394	-1.98	0.0963	0.0105	0.59	OE
BRM6FG		0.1753	-0.0080	-0.40	0.0923	0.0065	0.36	OE
BTTMED		0.1417	-0.0417	-2.10	0.0843	-0.0015	-0.08	OE
BYJLQ3		0.1983	0.0149	0.75	0.0985	0.0126	0.71	OE
D6F8F8		0.1883	0.0049	0.25	0.0886	0.0028	0.16	OE
F2NZ2N		0.1908	0.0074	0.37	0.0780	-0.0079	-0.44	WD
FXBZ6W		0.1900	0.0066	0.33	0.1000	0.0142	0.79	OE
GJPX9Q		0.1450	-0.0384	-1.93	0.0402	-0.0456	-2.55	OE
HP8D6D	*	0.1483	-0.0350	-1.76	0.0370	-0.0488	-2.73	OE
JKB9NE		0.1873	0.0040	0.20	0.0710	-0.0148	-0.83	OE
KGNR7U		0.1867	0.0033	0.17	0.0750	-0.0108	-0.61	OE
KNMVYR		0.1721	-0.0113	-0.57	0.0745	-0.0113	-0.63	WD
L3JKEP		0.1961	0.0128	0.64	0.0987	0.0129	0.72	XX
P9JDCU		0.1850	0.0016	0.08	0.0880	0.0022	0.12	OE
PX3LQ7		0.1917	0.0083	0.42	0.0843	-0.0015	-0.08	OE
QGM39P		0.1650	-0.0184	-0.92	0.0847	-0.0011	-0.06	OE
QNRJ66		0.1800	-0.0034	-0.17	0.0760	-0.0098	-0.55	OE
QVM48F		0.1960	0.0126	0.64	0.0827	-0.0032	-0.18	XX
QXVHEL		0.1827	-0.0007	-0.03	0.1010	0.0152	0.85	OE
T6BR4U		0.2031	0.0197	0.99	0.1271	0.0413	2.31	OE
TFQ7W2		0.1603	-0.0230	-1.16	0.0980	0.0122	0.68	OE
UT7V62		0.1867	0.0033	0.17	0.0763	-0.0095	-0.53	WD
UWQJ73		0.1753	-0.0080	-0.40	0.0772	-0.0087	-0.49	GD
W7MXQ7		0.2067	0.0233	1.17	0.1133	0.0275	1.54	OE
WB36E6	X	0.3520	0.1686	8.48	0.2587	0.1728	9.67	OE
WDABKJ		0.2020	0.0186	0.94	0.0887	0.0029	0.16	IC
WVPKLK	X	0.2727	0.0893	4.49	0.0697	-0.0162	-0.90	OE
WZYDMQ		0.1667	-0.0167	-0.84	0.0715	-0.0143	-0.80	OE
YKG292	X	0.0840	-0.0994	-5.00	0.1940	0.1082	6.05	WD
YY3GC2		0.1970	0.0136	0.69	0.0947	0.0088	0.49	OE
Z3YTZQ		0.2120	0.0286	1.44	0.0610	-0.0248	-1.39	OE
ZYTYQ8		0.1957	0.0123	0.62	0.0953	0.0095	0.53	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1505

2nd Qtr

Nickel-based Alloy, SILICON (Si)

2024

SILICON (Si)

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	0.1834	Percent	0.0858	Percent
Std Dev Btwn Labs	0.0199	Percent	0.0179	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 38 of 45 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) XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1505

- 2APCF7 (X) - Data for both samples are high. Inconsistent within the determinations of sample J01.
- 8ZLAH3 (M) - Participant did not submit data for sample J02.
- AHZJGT (X) - Data for both samples are high.
- B32U2M (X) - Data for both samples are high. Inconsistent within the determinations of both samples.
- WB36E6 (X) - Data for both samples are high.
- WVPKLG (X) - Data for sample J01 are high.
- YKG292 (X) - Data appear to be transposed between samples.

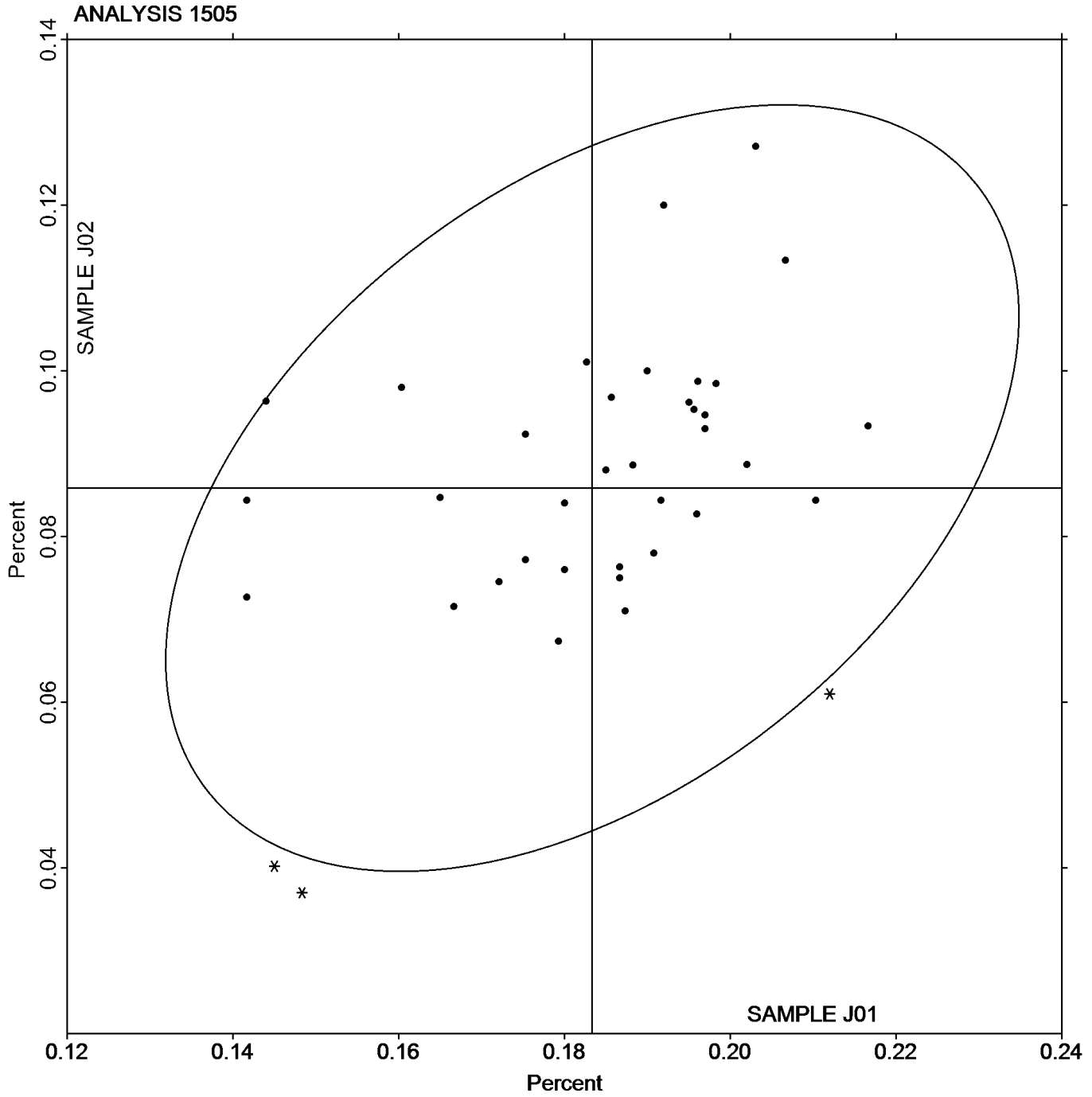


Analysis 1505

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

SAMPLE J01
0.1834 Percent

SAMPLE J02
0.0858 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1507

2nd Qtr

Nickel-based Alloy, TITANIUM (Ti)

2024

TITANIUM (Ti)

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7		0.1573	-0.0114	-1.58	0.2773	-0.0139	-1.30	ED
2FXTX8	X	0.2000	0.0313	4.32	0.3000	0.0088	0.83	XX
2M6M8N		0.1680	-0.0007	-0.10	0.2907	-0.0005	-0.05	WD
34WUEZ		0.1652	-0.0035	-0.49	0.2871	-0.0041	-0.38	IC
49BH2H		0.1730	0.0043	0.59	0.2933	0.0021	0.20	IC
7U66F3		0.1650	-0.0037	-0.52	0.2897	-0.0015	-0.14	IC
7X6GC3		0.1616	-0.0072	-0.99	0.2869	-0.0043	-0.40	WD
8D7PK2	X	0.1747	0.0059	0.82	0.3260	0.0348	3.26	OE
8W8QJT		0.1707	0.0019	0.27	0.3040	0.0128	1.20	OE
8ZLAH3	*	0.1883	0.0196	2.71	0.3233	0.0321	3.01	OE
9T4FFJ		0.1697	0.0009	0.13	0.2923	0.0011	0.11	OE
AHZJGT		0.1707	0.0019	0.27	0.2913	0.0001	0.01	WD
B32U2M	X	0.0467	-0.1221	-16.88	0.2133	-0.0779	-7.30	XX
B7FDYV		0.1733	0.0046	0.64	0.3000	0.0088	0.83	IC
BAWW3Y		0.1767	0.0079	1.10	0.2993	0.0081	0.76	WD
BQA8VR		0.1637	-0.0051	-0.70	0.2867	-0.0045	-0.43	OE
BRM6FG		0.1773	0.0086	1.19	0.3020	0.0108	1.01	OE
BYJLQ3		0.1628	-0.0059	-0.82	0.2829	-0.0084	-0.78	OE
D6F8F8		0.1759	0.0072	1.00	0.2948	0.0036	0.34	OE
F2NZ2N		0.1780	0.0093	1.28	0.3033	0.0121	1.13	WD
FXBZ6W	X	0.2833	0.1146	15.85	0.5033	0.2121	19.89	OE
GJPX9Q		0.1523	-0.0164	-2.27	0.2650	-0.0262	-2.46	OE
HP8D6D		0.1613	-0.0074	-1.02	0.2657	-0.0255	-2.39	XR
KGNR7U		0.1700	0.0013	0.18	0.2900	-0.0012	-0.11	OE
KNMVYR		0.1737	0.0050	0.69	0.2948	0.0036	0.34	WD
L3JKEP		0.1709	0.0022	0.30	0.2962	0.0050	0.47	XX
P9JDCU		0.1600	-0.0087	-1.21	0.2770	-0.0142	-1.33	OE
PX3LQ7		0.1683	-0.0004	-0.05	0.2920	0.0008	0.07	OE
QGM39P		0.1707	0.0019	0.27	0.2920	0.0008	0.07	OE
QNRJ66		0.1740	0.0053	0.73	0.2920	0.0008	0.07	OE
QVM48F		0.1670	-0.0017	-0.24	0.2887	-0.0025	-0.24	XX
QXVHEL	X	0.1843	0.0156	2.16	0.3390	0.0478	4.48	OE
T6BR4U		0.1828	0.0141	1.95	0.3024	0.0112	1.05	OE
TFQ7W2		0.1687	-0.0001	-0.01	0.2970	0.0058	0.54	OE
UT7V62		0.1707	0.0019	0.27	0.2840	-0.0072	-0.68	WD
UWQJ73		0.1617	-0.0071	-0.98	0.2880	-0.0032	-0.30	GD
W7MXQ7		0.1700	0.0013	0.18	0.2900	-0.0012	-0.11	OE
WB36E6	X	0.1840	0.0153	2.11	0.3287	0.0375	3.51	OE
WDABKJ		0.1707	0.0019	0.27	0.3023	0.0111	1.04	IC
WVPKJK		0.1653	-0.0034	-0.47	0.2857	-0.0055	-0.52	OE
WZYDMQ		0.1540	-0.0147	-2.04	0.2787	-0.0125	-1.18	OE
YKG292	X	0.2960	0.1273	17.60	0.1737	-0.1175	-11.02	WD
YY3GC2		0.1683	-0.0004	-0.05	0.3023	0.0111	1.04	OE
Z3YTZQ		0.1660	-0.0027	-0.38	0.2900	-0.0012	-0.11	OE
ZYTYQ8		0.1680	-0.0007	-0.10	0.2870	-0.0042	-0.39	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1507

2nd Qtr
2024

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

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	0.1687	Percent	0.2912	Percent
Std Dev Btwn Labs	0.0072	Percent	0.0107	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 38 of 45 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1507

- 2FXTX8 (X) - Data for sample J01 are high.
- 8D7PK2 (X) - Data for sample J02 are high.
- B32U2M (X) - Data for both samples are low. Inconsistent within the determinations of both samples.
- FXBZ6W (X) - Data for both samples are high. Inconsistent within the determinations of sample J01.
- QXVHEL (X) - Data for sample J02 are high.
- WB36E6 (X) - Data for sample J02 are high.
- YKG292 (X) - Data appear to be transposed between samples.

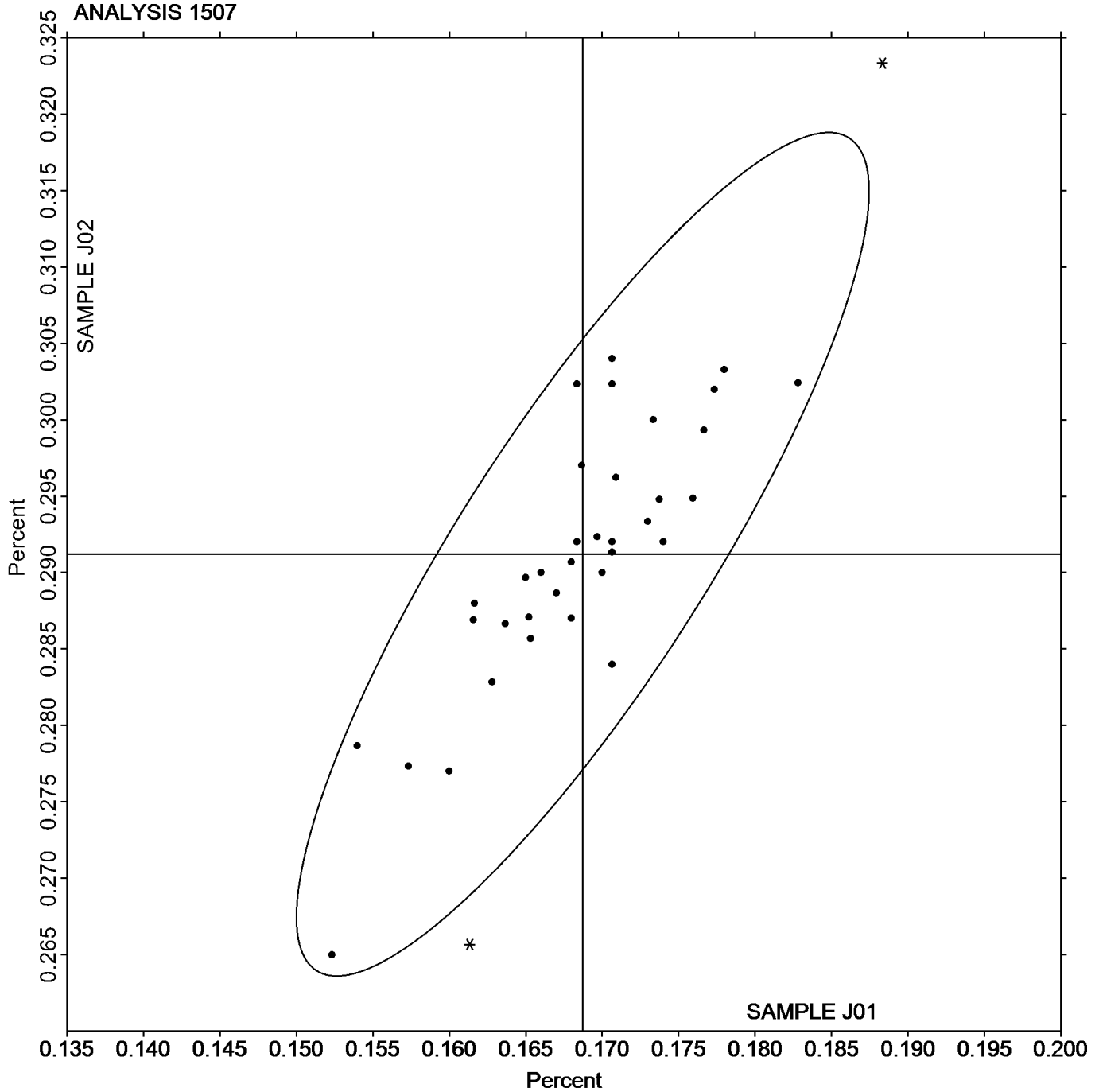


Analysis 1507

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

SAMPLE J01
0.1687 Percent

SAMPLE J02
0.2912 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1509

2nd Qtr

Nickel-based Alloy, NICKEL (Ni)

2024

NICKEL (Ni)

WebCode	Data Flag	Sample J01			Sample J02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2APCF7	*	73.81	-0.81	-2.76	72.40	-0.77	-2.48	ED
2FXTX8		74.97	0.35	1.18	73.58	0.41	1.34	XX
2M6M8N		74.92	0.29	0.99	73.36	0.20	0.64	WD
34WUEZ		74.71	0.09	0.31	73.15	-0.01	-0.05	IC
49BH2H		74.53	-0.10	-0.33	72.98	-0.19	-0.61	XX
7U66F3		74.51	-0.11	-0.39	73.23	0.06	0.19	IC
7X6GC3		74.73	0.11	0.37	73.35	0.18	0.59	WD
8D7PK2	X	76.43	1.81	6.14	75.17	2.00	6.47	OE
8W8QJT		74.20	-0.42	-1.44	72.70	-0.47	-1.51	XX
8ZLAH3		74.43	-0.19	-0.66	73.02	-0.15	-0.48	OE
9T4FFJ		74.40	-0.22	-0.76	72.80	-0.37	-1.18	OE
AHZJGT		74.47	-0.16	-0.53	72.99	-0.17	-0.56	WD
B32U2M		74.89	0.27	0.92	73.16	-0.01	-0.03	XX
B7FDYV	*	74.80	0.18	0.60	72.87	-0.30	-0.97	IC
BAWW3Y		74.91	0.29	0.98	73.50	0.34	1.09	WD
BQA8VR		74.24	-0.39	-1.31	72.96	-0.20	-0.66	XR
BRM6FG		74.80	0.18	0.60	73.23	0.07	0.22	OE
BTTMED	X	75.77	1.15	3.89	73.94	0.77	2.49	OE
BYJLQ3	X	74.31	-0.32	-1.07	73.43	0.26	0.85	WD
D6F8F8		74.63	0.01	0.02	73.12	-0.04	-0.13	OE
F2NZ2N		74.82	0.20	0.68	73.45	0.28	0.92	WD
FXBZ6W	*	75.57	0.94	3.20	74.07	0.90	2.91	OE
GJPX9Q		74.55	-0.07	-0.24	73.18	0.01	0.05	OE
HP8D6D		74.55	-0.07	-0.25	73.17	0.01	0.02	XR
KGNR7U		74.83	0.21	0.71	73.23	0.07	0.22	OE
KNMVYR	X	73.31	-1.31	-4.46	71.95	-1.22	-3.94	WD
L3JKEP		74.79	0.17	0.56	73.34	0.18	0.57	OE
P9JDCU		74.53	-0.09	-0.32	73.10	-0.07	-0.21	OE
PX3LQ7	X	74.50	-0.12	-0.42	74.13	0.97	3.13	OE
QGM39P		74.47	-0.16	-0.53	72.90	-0.27	-0.86	OE
QNRJ66		74.60	-0.02	-0.08	73.33	0.16	0.53	BD
QVM48F		74.56	-0.06	-0.21	73.09	-0.08	-0.26	VO
QXVHEL	X	76.20	1.58	5.35	74.60	1.43	4.64	OE
T6BR4U		74.42	-0.20	-0.69	72.89	-0.27	-0.88	WD
TFQ7W2		74.37	-0.26	-0.87	72.83	-0.33	-1.08	OE
UWQJ73		74.40	-0.22	-0.76	73.03	-0.13	-0.43	GD
W7MXQ7		74.57	-0.06	-0.19	72.97	-0.20	-0.64	OE
WB36E6		75.04	0.42	1.41	73.89	0.72	2.34	OE
WDABKJ		74.57	-0.05	-0.17	73.22	0.06	0.19	IC
WVPKJK		74.75	0.13	0.43	73.32	0.16	0.51	OE
WZYDMQ		74.37	-0.26	-0.87	72.93	-0.23	-0.75	OE
YKG292	X	73.21	-1.42	-4.82	74.62	1.45	4.70	WD
YY3GC2		74.50	-0.12	-0.41	73.07	-0.10	-0.32	OE
Z3YTZQ		74.92	0.30	1.01	73.49	0.32	1.05	OE
ZYTYQ8		74.75	0.13	0.43	73.09	-0.08	-0.26	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1509

2nd Qtr

Nickel-based Alloy, NICKEL (Ni)

2024

NICKEL (Ni)

Summary Statistics

	<u>Sample J01</u>		<u>Sample J02</u>	
Grand Means	74.62	Percent	73.17	Percent
Std Dev Btwn Labs	0.29	Percent	0.31	Percent

Samples J01, J02 : Alloy 600, Alloy 600

Statistics based on 37 of 45 reporting participants

Key to Method Codes Reported by Participants

BD	By Difference	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	VO	Volumetric
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 #1509

8D7PK2 (X) - Data for both samples are high. Possible Systematic Error.

BTTMED (X) - Data for sample J01 are high.

BYJLQ3 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample J02.

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

PX3LQ7 (X) - Data for sample J02 are high.

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

YKG292 (X) - Data appear to be transposed between samples.

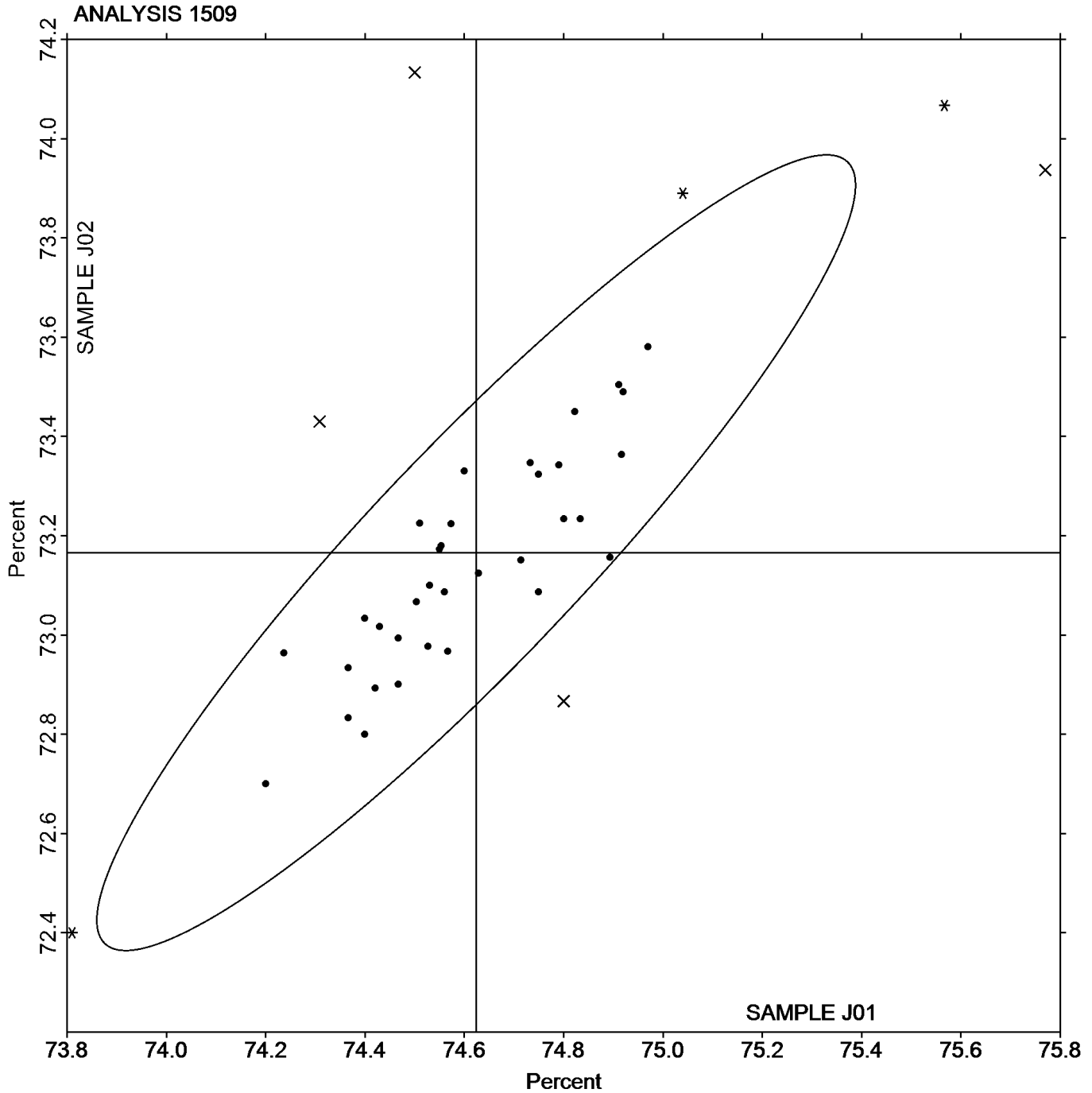


Analysis 1509

Nickel-based Alloy, NICKEL (Ni)
NICKEL (Ni)

SAMPLE J01
74.62 Percent

SAMPLE J02
73.17 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1540

2nd Qtr

Aluminum, ZINC (Zn)

2024

ZINC (Zn)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.1410	0.0075	0.77	0.1050	0.0026	0.37	IC
762H72		0.1320	-0.0015	-0.16	0.1020	-0.0004	-0.05	OE
7894GM		0.1235	-0.0100	-1.03	0.0994	-0.0030	-0.42	OE
B7FDYV		0.1367	0.0031	0.32	0.1000	-0.0024	-0.33	IC
CVWC68		0.1310	-0.0025	-0.26	0.1010	-0.0014	-0.19	OE
ENMZXX		0.1338	0.0003	0.03	0.1031	0.0007	0.10	OE
FEDYTQ		0.1400	0.0065	0.67	0.1000	-0.0024	-0.33	OE
GJ6GTN		0.1303	-0.0032	-0.33	0.1010	-0.0014	-0.19	OE
GQLY3P		0.1215	-0.0120	-1.24	0.0925	-0.0099	-1.39	IC
H7HYN4		0.1423	0.0088	0.90	0.1100	0.0076	1.07	XX
HENA6N		0.1580	0.0245	2.52	0.1210	0.0186	2.62	OE
HP8D6D		0.1227	-0.0109	-1.12	0.0960	-0.0064	-0.90	IC
JYBAPP		0.1200	-0.0135	-1.39	0.0953	-0.0070	-0.99	OE
K3VZND		0.1307	-0.0029	-0.29	0.1000	-0.0024	-0.33	OE
KBKF4N		0.1500	0.0165	1.69	0.1200	0.0176	2.48	OE
L3MUMP		0.1300	-0.0035	-0.36	0.1033	0.0010	0.13	OE
LR6CUH		0.1368	0.0032	0.33	0.0994	-0.0029	-0.41	OE
LXAB68		0.1347	0.0011	0.12	0.1047	0.0023	0.32	OE
M6N34P		0.1140	-0.0195	-2.01	0.0863	-0.0160	-2.25	OE
MLTNUL		0.1300	-0.0035	-0.36	0.1000	-0.0024	-0.33	OE
MMPM4Y		0.1300	-0.0035	-0.36	0.0977	-0.0047	-0.66	OE
NTLFEK		0.1150	-0.0185	-1.91	0.0887	-0.0137	-1.93	OE
PCHE6J		0.1403	0.0068	0.70	0.1070	0.0046	0.65	OE
PX3LQ7		0.1350	0.0015	0.15	0.1047	0.0023	0.32	OE
QGM39P		0.1390	0.0055	0.56	0.1070	0.0046	0.65	OE
QNRJ66		0.1310	-0.0025	-0.26	0.1000	-0.0024	-0.33	OE
RXA2YH		0.1237	-0.0099	-1.01	0.1027	0.0003	0.04	OE
T6BR4U		0.1320	-0.0015	-0.16	0.0993	-0.0031	-0.44	OE
TGGUFB		0.1323	-0.0012	-0.12	0.1020	-0.0004	-0.05	OE
TWV9JU		0.1363	0.0028	0.29	0.1053	0.0030	0.42	OE
UKU6T7		0.1340	0.0005	0.05	0.1033	0.0010	0.13	OE
UTP3JE		0.1324	-0.0011	-0.11	0.1013	-0.0011	-0.16	OE
WD8X7H		0.1163	-0.0173	-1.78	0.0900	-0.0124	-1.74	OE
WEKMAV		0.1550	0.0215	2.21	0.1150	0.0126	1.77	GD
WWZWBW		0.1373	0.0038	0.39	0.1040	0.0016	0.22	OE
XPXAW2		0.1497	0.0161	1.66	0.1140	0.0116	1.63	OE
YFLGV6		0.1327	-0.0008	-0.09	0.1026	0.0003	0.04	OE
YXANFH		0.1330	-0.0005	-0.05	0.1029	0.0005	0.07	OE
YY3GC2		0.1373	0.0038	0.39	0.1010	-0.0014	-0.19	IC
ZP9RRH		0.1400	0.0065	0.67	0.1067	0.0043	0.60	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1540

2nd Qtr

Aluminum, ZINC (Zn)

2024

ZINC (Zn)

Summary Statistics

	<u>Sample A01</u>		<u>Sample A02</u>	
Grand Means	0.1335	Percent	0.1024	Percent
Stnd Dev Btwn Labs	0.0097	Percent	0.0071	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 40 of 40 reporting participants

Key to Method Codes Reported by Participants

GD Spectrometry - Glow Discharge (GDS)

IC Spectrometry - Inductively Coupled Plasma (ICP)

OE Spectrometry - Optical Emission (OES)

XX Please Indicate Method Used for Current Element



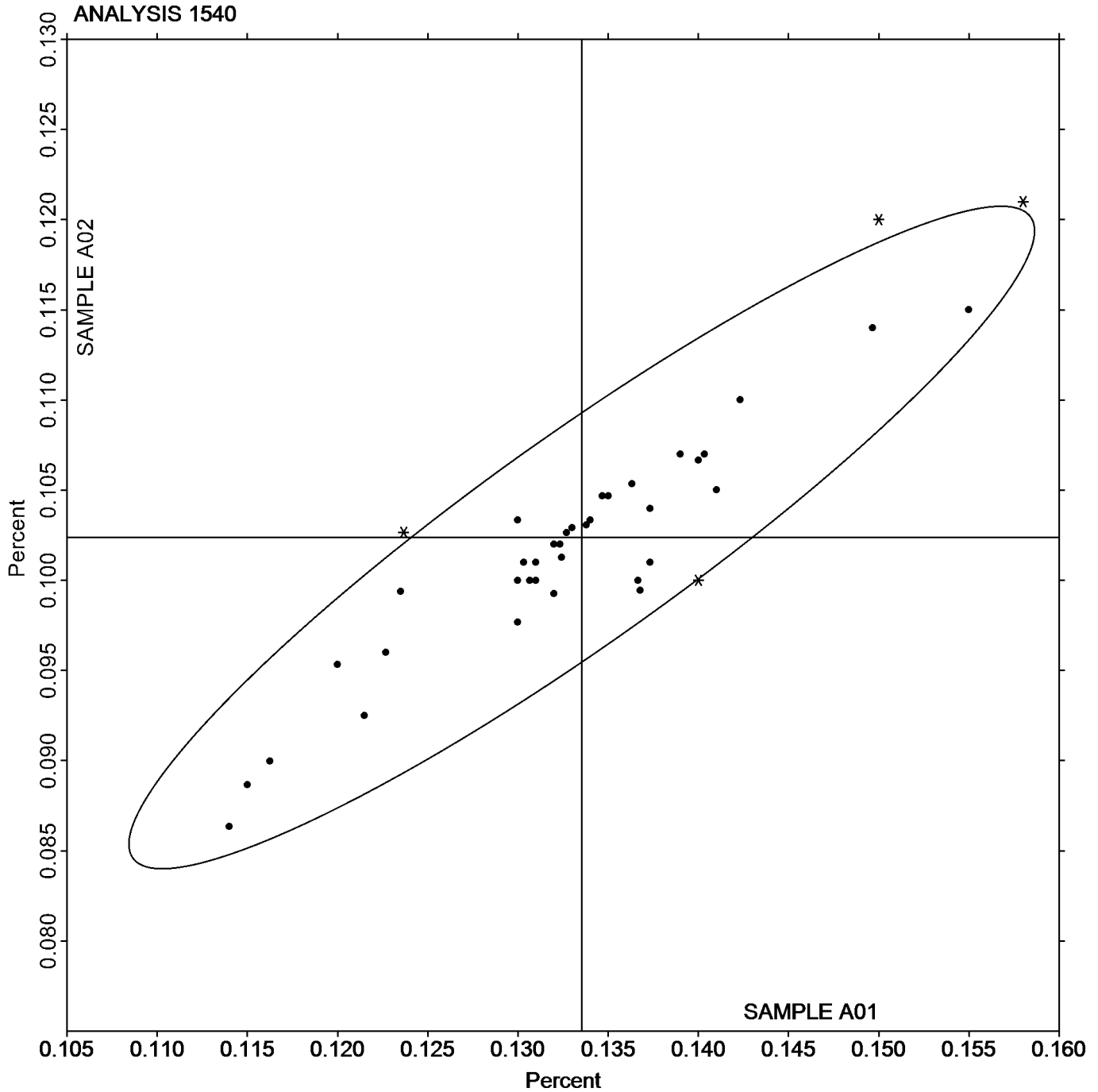
Analysis 1540

Aluminum, ZINC (Zn)

ZINC (Zn)

SAMPLE A01
0.1335 Percent

SAMPLE A02
0.1024 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1541

2nd Qtr
2024

Aluminum, COPPER (Cu)
COPPER (Cu)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.1920	0.0029	0.49	0.2845	0.0059	0.64	IC
762H72		0.1913	0.0022	0.38	0.2867	0.0080	0.87	OE
7894GM	*	0.1727	-0.0164	-2.79	0.2517	-0.0270	-2.90	OE
B7FDYV		0.2000	0.0109	1.85	0.2900	0.0114	1.23	IC
CVWC68	*	0.1790	-0.0101	-1.72	0.2840	0.0054	0.58	OE
ENMZXX		0.1937	0.0045	0.77	0.2859	0.0073	0.78	OE
FEDYTQ		0.1800	-0.0091	-1.55	0.2700	-0.0086	-0.93	OE
GJ6GTN	X	0.2107	0.0215	3.66	0.3240	0.0454	4.89	OE
GQLY3P		0.1840	-0.0051	-0.87	0.2705	-0.0081	-0.87	IC
H7HYN4		0.1917	0.0025	0.43	0.2937	0.0150	1.62	XX
HENA6N		0.1827	-0.0065	-1.10	0.2717	-0.0070	-0.75	OE
HP8D6D	*	0.1807	-0.0085	-1.44	0.2567	-0.0220	-2.37	IC
JYBAPP		0.1900	0.0009	0.15	0.2800	0.0014	0.15	OE
K3VZND		0.1813	-0.0078	-1.32	0.2687	-0.0100	-1.07	OE
KBKF4N		0.1890	-0.0001	-0.02	0.2770	-0.0016	-0.17	OE
L3MUMP		0.1900	0.0009	0.15	0.2800	0.0014	0.15	OE
LR6CUH		0.1912	0.0021	0.36	0.2808	0.0022	0.24	OE
LXAB68		0.1887	-0.0005	-0.08	0.2777	-0.0010	-0.10	OE
M6N34P		0.1967	0.0075	1.28	0.2867	0.0080	0.87	OE
MLTNUL		0.2000	0.0109	1.85	0.2900	0.0114	1.23	OE
MMPM4Y		0.1900	0.0009	0.15	0.2733	-0.0053	-0.57	OE
NTLFEK		0.1870	-0.0021	-0.36	0.2767	-0.0020	-0.21	OE
PCHE6J		0.1933	0.0042	0.72	0.2847	0.0060	0.65	OE
PX3LQ7		0.1957	0.0065	1.11	0.2920	0.0134	1.44	OE
QGM39P		0.1830	-0.0061	-1.04	0.2720	-0.0066	-0.71	OE
QNRJ66		0.1900	0.0009	0.15	0.2770	-0.0016	-0.17	OE
RXA2YH	X	0.2200	0.0309	5.25	0.3533	0.0747	8.05	OE
T6BR4U		0.1885	-0.0006	-0.10	0.2794	0.0008	0.08	OE
TGGUFB		0.1930	0.0039	0.66	0.2807	0.0020	0.22	OE
TWV9JU		0.1897	0.0005	0.09	0.2830	0.0044	0.47	OE
UKU6T7		0.1933	0.0042	0.72	0.2820	0.0034	0.36	OE
UTP3JE	X	0.1487	-0.0404	-6.87	0.2107	-0.0680	-7.32	OE
WD8X7H		0.1844	-0.0047	-0.80	0.2755	-0.0031	-0.34	OE
WEKMAV	X	0.2190	0.0299	5.08	0.3190	0.0404	4.35	GD
WWZWBW		0.1943	0.0052	0.89	0.2832	0.0046	0.49	OE
XPXAW2		0.1820	-0.0071	-1.21	0.2690	-0.0096	-1.04	OE
YFLGV6		0.1886	-0.0005	-0.09	0.2830	0.0044	0.47	OE
YXANFH		0.1945	0.0054	0.91	0.2865	0.0078	0.85	OE
YY3GC2		0.1910	0.0019	0.32	0.2850	0.0064	0.69	IC
ZP9RRH		0.1853	-0.0038	-0.64	0.2667	-0.0120	-1.29	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1541

2nd Qtr

Aluminum, COPPER (Cu)

2024

COPPER (Cu)

Summary Statistics

	<u>Sample A01</u>		<u>Sample A02</u>	
Grand Means	0.1891	Percent	0.2786	Percent
Std Dev Btwn Labs	0.0059	Percent	0.0093	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 35 of 40 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1541

- GJ6GTN (X) - Data for both samples are high.
- RXA2YH (X) - Data for both samples are high. Inconsistent within the determinations of sample A02.
- UTP3JE (X) - Data for both samples are low.
- WEKMAV (X) - Data for both samples are high.



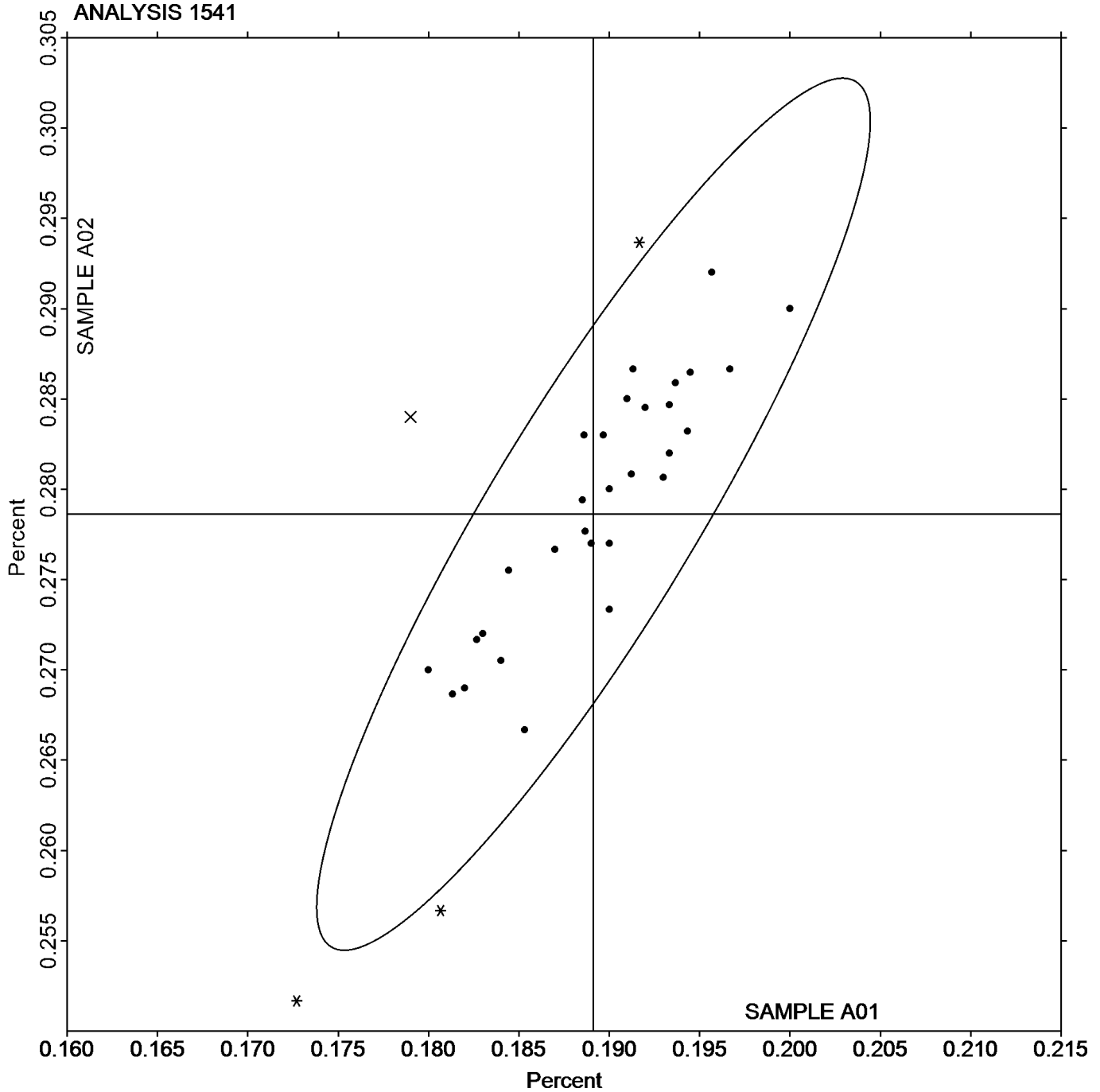
Analysis 1541

Aluminum, COPPER (Cu)

COPPER (Cu)

SAMPLE A01
0.1891 Percent

SAMPLE A02
0.2786 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1542

2nd Qtr
2024

Aluminum, IRON (Fe)
IRON (Fe)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.6022	-0.0079	-0.40	0.3615	-0.0023	-0.17	IC
762H72		0.5987	-0.0114	-0.57	0.3620	-0.0018	-0.13	OE
7894GM		0.6544	0.0443	2.23	0.3751	0.0113	0.82	OE
B7FDYV		0.6167	0.0066	0.33	0.3633	-0.0005	-0.03	IC
CVWC68		0.6150	0.0050	0.25	0.3420	-0.0218	-1.58	OE
ENMZXX		0.6135	0.0035	0.18	0.3640	0.0002	0.02	OE
FEDYTQ		0.6067	-0.0034	-0.17	0.3700	0.0062	0.45	OE
GJ6GTN		0.6040	-0.0061	-0.30	0.3583	-0.0055	-0.39	OE
GQLY3P		0.6125	0.0025	0.12	0.3555	-0.0083	-0.60	IC
H7HYN4		0.6333	0.0233	1.17	0.3683	0.0045	0.33	XX
HENA6N		0.5923	-0.0177	-0.89	0.3567	-0.0071	-0.51	OE
HP8D6D		0.5773	-0.0327	-1.65	0.3443	-0.0195	-1.41	IC
JYBAPP		0.6100	0.0000	0.00	0.3700	0.0062	0.45	OE
K3VZND		0.6000	-0.0101	-0.51	0.3583	-0.0055	-0.39	OE
KBKF4N		0.5940	-0.0161	-0.81	0.3560	-0.0078	-0.56	OE
L3MUMP		0.6267	0.0166	0.84	0.3767	0.0129	0.93	OE
LR6CUH		0.5927	-0.0173	-0.87	0.3703	0.0065	0.47	OE
LXAB68		0.6137	0.0036	0.18	0.3737	0.0099	0.71	OE
M6N34P		0.6233	0.0133	0.67	0.3900	0.0262	1.90	OE
MLTNUL		0.5800	-0.0301	-1.51	0.3600	-0.0038	-0.27	OE
MMPM4Y		0.6000	-0.0101	-0.51	0.3600	-0.0038	-0.27	OE
NTLFEK		0.6287	0.0186	0.94	0.3690	0.0052	0.38	OE
PCHE6J		0.5990	-0.0111	-0.56	0.3560	-0.0078	-0.56	OE
PX3LQ7		0.6123	0.0023	0.11	0.3697	0.0059	0.43	OE
QGM39P		0.6037	-0.0064	-0.32	0.3613	-0.0025	-0.18	OE
QNRJ66		0.6060	-0.0040	-0.20	0.3600	-0.0038	-0.27	OE
RXA2YH	X	0.9000	0.2900	14.59	0.5500	0.1862	13.46	XX
T6BR4U		0.6374	0.0273	1.38	0.3671	0.0033	0.24	OE
TGGUFB		0.6053	-0.0047	-0.24	0.3557	-0.0081	-0.59	OE
TWV9JU		0.6213	0.0113	0.57	0.3737	0.0099	0.71	OE
UKU6T7		0.6133	0.0033	0.17	0.3620	-0.0018	-0.13	OE
UTP3JE	X	0.4558	-0.1543	-7.76	0.2688	-0.0950	-6.87	XX
WD8X7H		0.5607	-0.0494	-2.49	0.3305	-0.0333	-2.41	OE
WEKMAV	*	0.6480	0.0380	1.91	0.4010	0.0372	2.69	GD
WWZWBW		0.6162	0.0061	0.31	0.3646	0.0008	0.06	OE
XPXAW2		0.5693	-0.0407	-2.05	0.3280	-0.0358	-2.59	OE
YFLGV6		0.6292	0.0192	0.96	0.3782	0.0144	1.04	OE
YXANFH		0.6068	-0.0033	-0.17	0.3644	0.0006	0.04	OE
YY3GC2		0.6197	0.0096	0.48	0.3623	-0.0015	-0.11	IC
ZP9RRH		0.6380	0.0280	1.41	0.3843	0.0205	1.49	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1542

2nd Qtr

Aluminum, IRON (Fe)

2024

IRON (Fe)

Summary Statistics

	<u>Sample A01</u>		<u>Sample A02</u>	
Grand Means	0.6101	Percent	0.3638	Percent
Stnd Dev Btwn Labs	0.0199	Percent	0.0138	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 38 of 40 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1542

- RXA2YH (X) - Data for both samples are high. Inconsistent within the determinations of sample A02.
- UTP3JE (X) - Data for both samples are low.



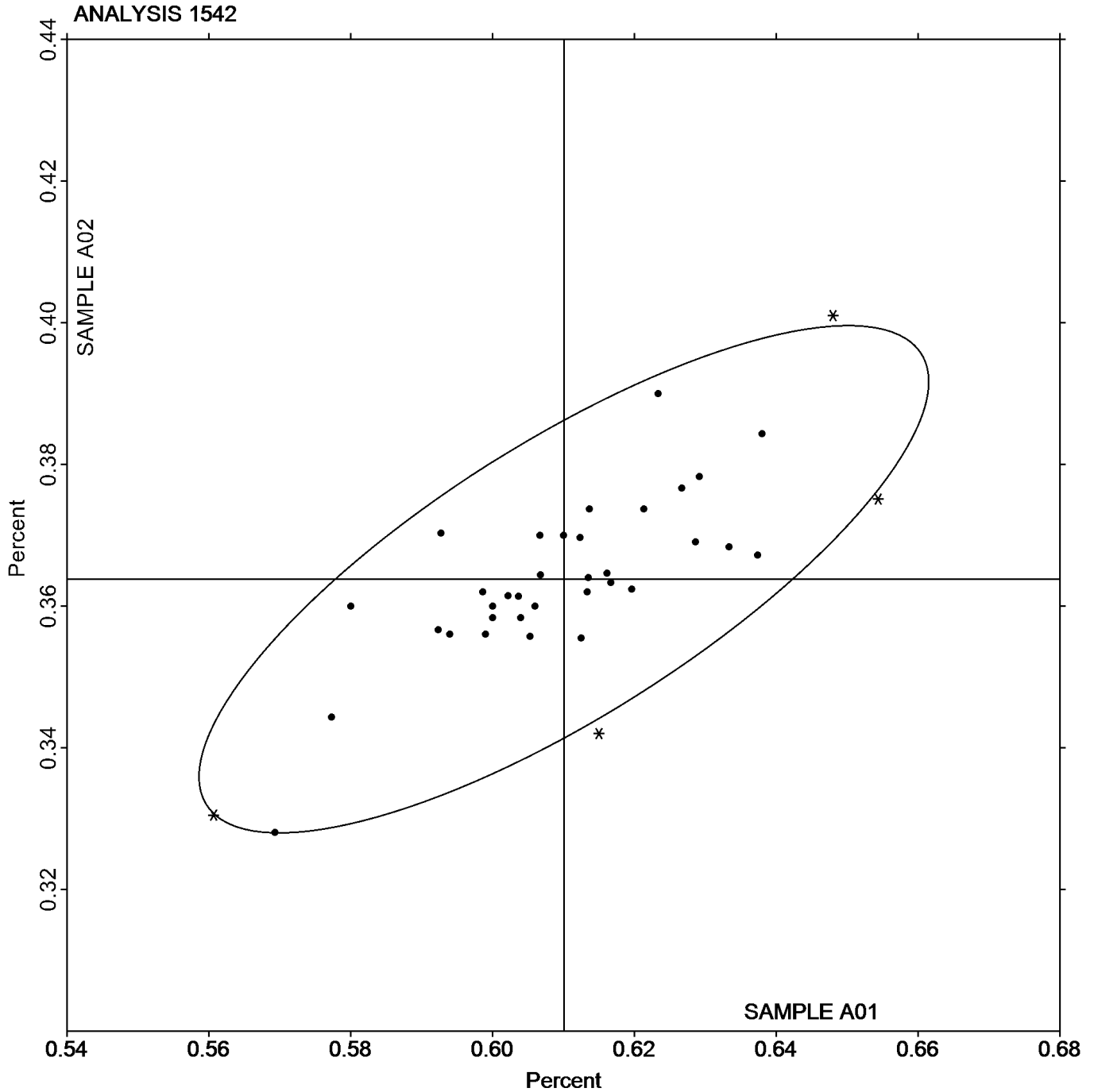
Analysis 1542

Aluminum, IRON (Fe)

IRON (Fe)

SAMPLE A01
0.6101 Percent

SAMPLE A02
0.3638 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1543

2nd Qtr

Aluminum, SILICON (Si)

2024

SILICON (Si)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.7327	0.0016	0.08	0.7340	-0.0076	-0.33	IC
762H72		0.7420	0.0110	0.54	0.7533	0.0117	0.51	OE
7894GM	*	0.6874	-0.0436	-2.13	0.7143	-0.0273	-1.19	OE
B7FDYV		0.7400	0.0090	0.44	0.7633	0.0217	0.94	IC
CVWC68		0.7170	-0.0140	-0.69	0.7270	-0.0146	-0.64	OE
ENMZXX		0.7354	0.0044	0.21	0.7467	0.0050	0.22	OE
FEDYTQ		0.7300	-0.0010	-0.05	0.7467	0.0050	0.22	OE
GJ6GTN		0.7507	0.0196	0.96	0.7617	0.0200	0.87	OE
GQLY3P		0.7525	0.0215	1.05	0.7675	0.0259	1.12	IC
H7HYN4		0.7070	-0.0240	-1.17	0.7180	-0.0236	-1.03	XX
HENA6N		0.7823	0.0513	2.51	0.7993	0.0577	2.51	OE
HP8D6D		0.7370	0.0060	0.29	0.7450	0.0034	0.15	OE
JYBAPP		0.7333	0.0023	0.11	0.7500	0.0084	0.36	OE
K3VZND		0.7373	0.0063	0.31	0.7427	0.0010	0.04	OE
KBKF4N		0.7287	-0.0024	-0.12	0.7390	-0.0026	-0.11	OE
L3MUMP		0.7433	0.0123	0.60	0.7600	0.0184	0.80	OE
LR6CUH		0.7350	0.0040	0.19	0.7459	0.0043	0.19	OE
LXAB68		0.7473	0.0163	0.80	0.7610	0.0194	0.84	OE
M6N34P	*	0.6767	-0.0544	-2.66	0.6800	-0.0616	-2.68	OE
MLTNUL		0.7500	0.0190	0.93	0.7600	0.0184	0.80	OE
MMPM4Y		0.7300	-0.0010	-0.05	0.7400	-0.0016	-0.07	OE
NTLFEK		0.7300	-0.0010	-0.05	0.7377	-0.0040	-0.17	OE
PCHE6J		0.7270	-0.0040	-0.20	0.7327	-0.0090	-0.39	OE
PX3LQ7		0.7170	-0.0140	-0.69	0.7287	-0.0130	-0.56	OE
QGM39P		0.7397	0.0086	0.42	0.7510	0.0094	0.41	OE
QNRJ66		0.7120	-0.0190	-0.93	0.7210	-0.0206	-0.90	OE
RXA2YH	X	0.6600	-0.0710	-3.47	0.6933	-0.0483	-2.10	XX
T6BR4U		0.7062	-0.0249	-1.22	0.7014	-0.0402	-1.75	OE
TGGUFB		0.7340	0.0030	0.15	0.7473	0.0057	0.25	OE
TWV9JU		0.7253	-0.0057	-0.28	0.7413	-0.0003	-0.01	OE
UKU6T7		0.7307	-0.0004	-0.02	0.7387	-0.0030	-0.13	OE
UTP3JE	X	0.6229	-0.1081	-5.28	0.6269	-0.1147	-4.99	XX
WD8X7H		0.7130	-0.0180	-0.88	0.7290	-0.0127	-0.55	OE
WEKMAV		0.6790	-0.0520	-2.54	0.6880	-0.0536	-2.33	GD
WWZWBW		0.7199	-0.0111	-0.54	0.7213	-0.0203	-0.88	OE
XPXAW2		0.7740	0.0430	2.10	0.7823	0.0407	1.77	OE
YFLGV6		0.7328	0.0018	0.09	0.7490	0.0074	0.32	OE
YXANFH		0.7333	0.0023	0.11	0.7498	0.0081	0.35	OE
YY3GC2		0.7350	0.0040	0.19	0.7387	-0.0030	-0.13	IC
ZP9RRH	*	0.7447	0.0136	0.67	0.7243	-0.0173	-0.75	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1543

2nd Qtr

Aluminum, SILICON (Si)

SILICON (Si)

2024

Summary Statistics

	<u>Sample A01</u>		<u>Sample A02</u>	
Grand Means	0.7310	Percent	0.7416	Percent
Stnd Dev Btwn Labs	0.0205	Percent	0.0230	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 36 of 40 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1543

- RXA2YH (X) - Data for sample A01 are low. Inconsistent within the determinations of sample A02.
- UTP3JE (X) - Data for both samples are low. Possible Systematic Error.



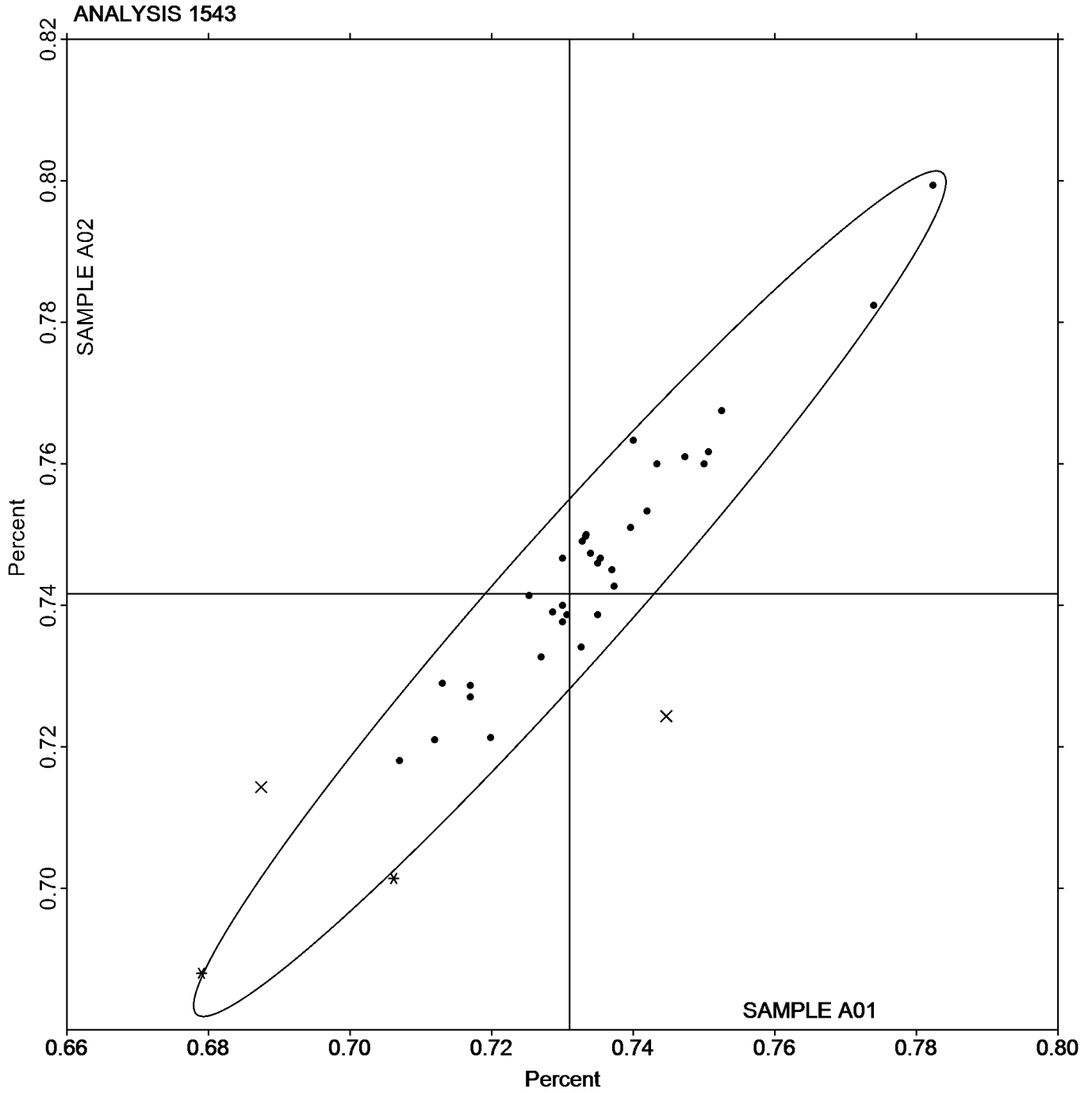
Analysis 1543

Aluminum, SILICON (Si)

SILICON (Si)

SAMPLE A01
0.7310 Percent

SAMPLE A02
0.7416 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1544

2nd Qtr
2024

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.1024	0.0008	0.15	0.0610	0.0013	0.42	IC
762H72		0.1010	-0.0006	-0.11	0.0587	-0.0011	-0.36	OE
7894GM	*	0.0874	-0.0142	-2.61	0.0514	-0.0084	-2.77	OE
B7FDYV		0.1100	0.0084	1.55	0.0600	0.0003	0.08	IC
CVWC68		0.1030	0.0014	0.26	0.0610	0.0013	0.41	OE
ENMZXX		0.1032	0.0016	0.29	0.0609	0.0011	0.37	OE
FEDYTQ		0.1000	-0.0016	-0.29	0.0620	0.0023	0.74	OE
GJ6GTN		0.1067	0.0051	0.93	0.0640	0.0043	1.40	OE
GQLY3P	*	0.0960	-0.0056	-1.03	0.0530	-0.0067	-2.23	IC
H7HYN4		0.1007	-0.0009	-0.17	0.0583	-0.0014	-0.47	XX
HENA6N		0.1050	0.0034	0.63	0.0615	0.0018	0.59	OE
HP8D6D		0.0970	-0.0046	-0.85	0.0570	-0.0027	-0.91	IC
JYBAPP		0.1000	-0.0016	-0.29	0.0600	0.0003	0.08	OE
K3VZND		0.1000	-0.0016	-0.29	0.0587	-0.0011	-0.36	OE
KBKF4N		0.0953	-0.0063	-1.15	0.0573	-0.0024	-0.80	OE
L3MUMP		0.1100	0.0084	1.55	0.0627	0.0029	0.96	OE
LR6CUH		0.0983	-0.0033	-0.60	0.0600	0.0002	0.07	OE
LXAB68		0.1023	0.0007	0.14	0.0613	0.0016	0.52	OE
M6N34P		0.1027	0.0011	0.20	0.0607	0.0009	0.30	OE
MLTNUL		0.1000	-0.0016	-0.29	0.0600	0.0003	0.08	OE
MMPM4Y		0.1000	-0.0016	-0.29	0.0600	0.0003	0.08	OE
NTLFEK		0.0993	-0.0023	-0.42	0.0590	-0.0007	-0.25	OE
PCHE6J		0.0977	-0.0039	-0.72	0.0586	-0.0011	-0.38	OE
PX3LQ7		0.1113	0.0097	1.79	0.0653	0.0056	1.83	OE
QGM39P	X	0.1033	0.0017	0.32	0.6030	0.5433	179.30	OE
QNRJ66		0.1010	-0.0006	-0.11	0.0600	0.0003	0.08	OE
RXA2YH	X	0.1267	0.0251	4.62	0.0783	0.0186	6.13	XX
T6BR4U		0.1085	0.0069	1.27	0.0634	0.0037	1.22	OE
TGGUFB		0.0967	-0.0049	-0.91	0.0580	-0.0017	-0.58	OE
TWV9JU		0.1027	0.0011	0.20	0.0607	0.0009	0.30	OE
UKU6T7		0.0963	-0.0053	-0.97	0.0573	-0.0024	-0.80	OE
UTP3JE		0.0915	-0.0101	-1.85	0.0533	-0.0064	-2.12	XX
WD8X7H		0.1105	0.0089	1.65	0.0650	0.0053	1.73	OE
WEKMAV		0.1130	0.0114	2.10	0.0630	0.0033	1.07	GD
WWZWBW		0.0993	-0.0023	-0.42	0.0571	-0.0026	-0.86	XX
XPXAW2		0.1080	0.0064	1.18	0.0640	0.0043	1.41	OE
YFLGV6		0.1020	0.0004	0.08	0.0592	-0.0006	-0.19	OE
YXANFH		0.0989	-0.0027	-0.49	0.0587	-0.0010	-0.35	OE
YY3GC2		0.0993	-0.0023	-0.42	0.0587	-0.0011	-0.36	IC
ZP9RRH		0.1033	0.0017	0.32	0.0597	-0.0001	-0.03	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1544

2nd Qtr
2024

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

Summary Statistics

	<u>Sample A01</u>		<u>Sample A02</u>	
Grand Means	0.1016	Percent	0.0597	Percent
Stnd Dev Btwn Labs	0.0054	Percent	0.0030	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 38 of 40 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1544

QGM39P (X) - Data for sample A02 are extreme.

RXA2YH (X) - Data for both samples are high. Inconsistent within the determinations of sample A02.

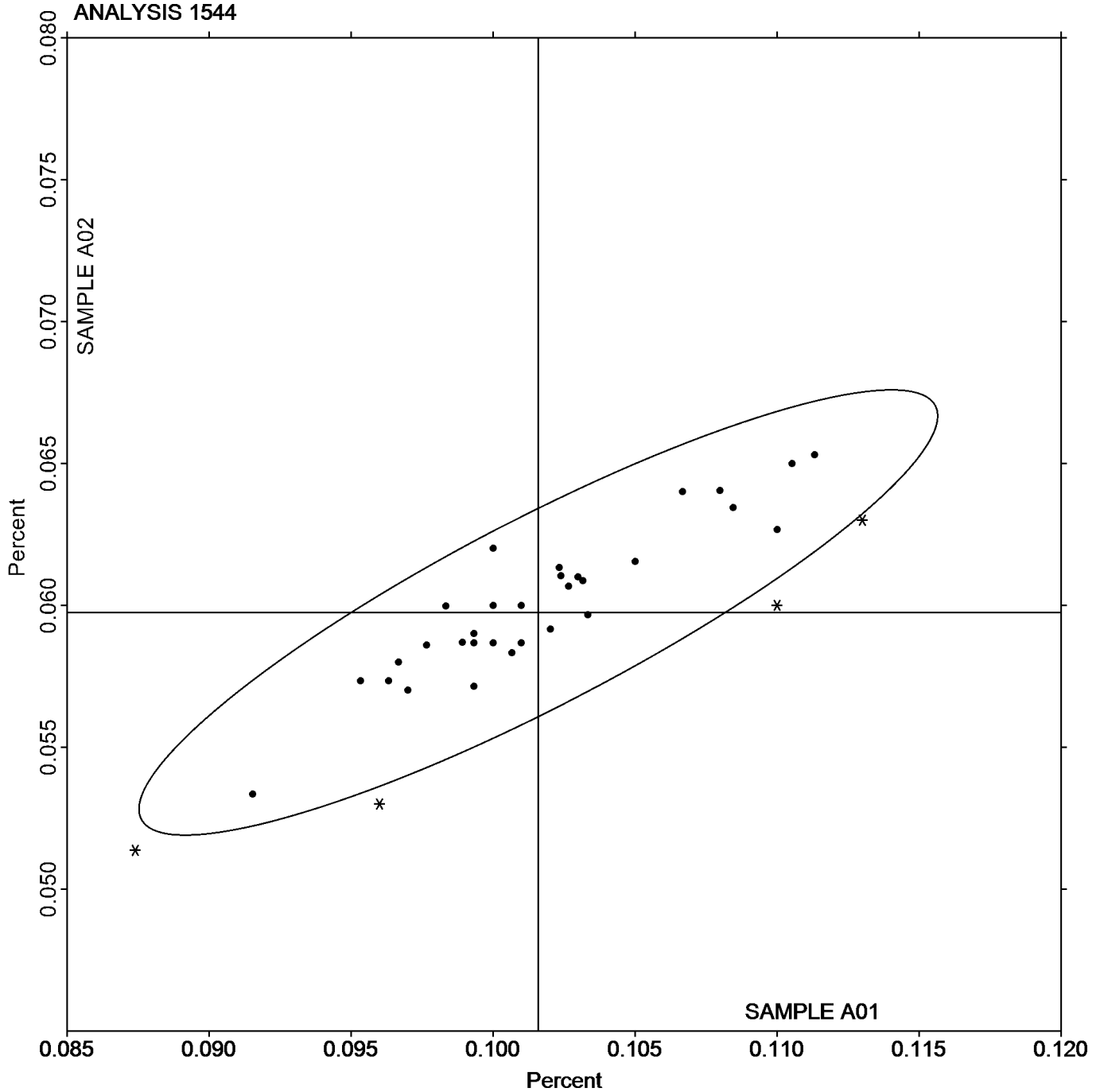


Analysis 1544

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

SAMPLE A01
0.1016 Percent

SAMPLE A02
0.0597 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1545

2nd Qtr
2024

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.9321	0.0168	0.62	0.9069	0.0071	0.25	IC
762H72		0.9170	0.0017	0.06	0.9043	0.0045	0.16	OE
7894GM	X	0.8067	-0.1086	-4.01	0.7681	-0.1318	-4.60	OE
B7FDYV		0.9567	0.0414	1.53	0.9500	0.0502	1.75	IC
CVWC68		0.9060	-0.0093	-0.34	0.8770	-0.0228	-0.80	OE
ENMZXZ		0.9263	0.0110	0.41	0.9066	0.0067	0.23	OE
FEDYTQ		0.9333	0.0180	0.67	0.9200	0.0202	0.70	OE
GJ6GTN	*	0.8373	-0.0780	-2.88	0.8177	-0.0822	-2.87	OE
GQLY3P		0.9565	0.0412	1.52	0.9470	0.0472	1.64	IC
H7HYN4		0.9083	-0.0070	-0.26	0.8950	-0.0048	-0.17	XX
HENA6N		0.8873	-0.0280	-1.03	0.8727	-0.0272	-0.95	OE
HP8D6D		0.9207	0.0054	0.20	0.9127	0.0128	0.45	OE
JYBAPP		0.9033	-0.0120	-0.44	0.8933	-0.0065	-0.23	OE
K3VZND		0.8930	-0.0223	-0.82	0.8833	-0.0165	-0.58	OE
KBKF4N		0.8720	-0.0433	-1.60	0.8557	-0.0442	-1.54	OE
L3MUMP		0.9100	-0.0053	-0.20	0.8867	-0.0132	-0.46	OE
LR6CUH		0.9324	0.0171	0.63	0.9061	0.0063	0.22	OE
LXAB68		0.9277	0.0124	0.46	0.9040	0.0042	0.14	OE
M6N34P		0.8500	-0.0653	-2.41	0.8367	-0.0632	-2.20	OE
MLTNUL		0.9300	0.0147	0.54	0.9100	0.0102	0.35	OE
MMPM4Y		0.9267	0.0114	0.42	0.9200	0.0202	0.70	OE
NTLFEK		0.8923	-0.0230	-0.85	0.8833	-0.0165	-0.58	OE
PCHE6J		0.9327	0.0174	0.64	0.9200	0.0202	0.70	OE
PX3LQ7		0.9083	-0.0070	-0.26	0.9017	0.0018	0.06	OE
QGM39P		0.9080	-0.0073	-0.27	0.8990	-0.0008	-0.03	OE
QNRJ66		0.9260	0.0107	0.40	0.9110	0.0112	0.39	OE
RXA2YH	X	0.7367	-0.1786	-6.60	0.7433	-0.1565	-5.46	XX
T6BR4U		0.9233	0.0080	0.30	0.9275	0.0277	0.97	OE
TGGUFB		0.9413	0.0260	0.96	0.9197	0.0198	0.69	OE
TWV9JU		0.8980	-0.0173	-0.64	0.8750	-0.0248	-0.87	OE
UKU6T7		0.9233	0.0080	0.30	0.8960	-0.0038	-0.13	OE
UTP3JE		0.9554	0.0401	1.48	0.9411	0.0413	1.44	XX
WD8X7H		0.8584	-0.0569	-2.10	0.8413	-0.0586	-2.04	OE
WEKMAV		0.9300	0.0147	0.54	0.8930	-0.0068	-0.24	GD
WWZWBW		0.9174	0.0021	0.08	0.8985	-0.0013	-0.05	OE
XPXAW2		0.9240	0.0087	0.32	0.9263	0.0265	0.92	OE
YFLGV6		0.9360	0.0207	0.76	0.9253	0.0255	0.89	OE
YXANFH		0.9220	0.0067	0.25	0.9029	0.0031	0.11	OE
YY3GC2		0.9177	0.0024	0.09	0.8987	-0.0012	-0.04	IC
ZP9RRH		0.9400	0.0247	0.91	0.9283	0.0285	0.99	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1545

2nd Qtr
2024

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

Summary Statistics

	<u>Sample A01</u>		<u>Sample A02</u>	
Grand Means	0.9153	Percent	0.8998	Percent
Stnd Dev Btwn Labs	0.0271	Percent	0.0287	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 38 of 40 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XX Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1545

- 7894GM (X) - Data for both samples are low. Possible Systematic Error.
- RXA2YH (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample A02.

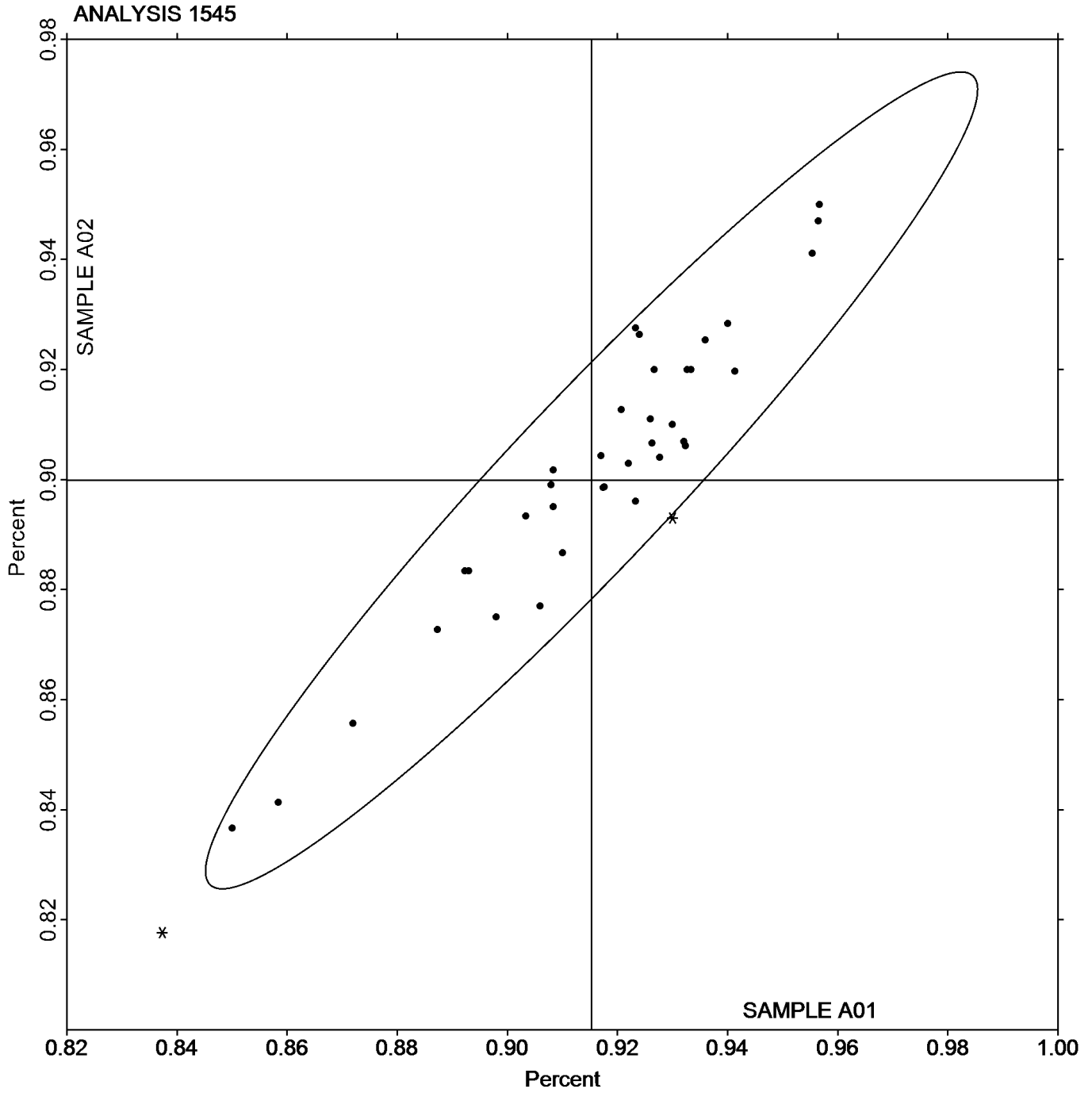


Analysis 1545

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

SAMPLE A01
0.9153 Percent

SAMPLE A02
0.8998 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1546

2nd Qtr
2024

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.1549	0.0081	1.66	0.0528	0.0007	0.31	IC
762H72		0.1483	0.0016	0.32	0.0520	-0.0001	-0.07	OE
7894GM		0.1465	-0.0003	-0.06	0.0507	-0.0015	-0.69	OE
B7FDYV		0.1500	0.0032	0.66	0.0500	-0.0021	-1.00	IC
CVWC68		0.1430	-0.0038	-0.77	0.0560	0.0039	1.80	OE
ENMZXX		0.1462	-0.0006	-0.12	0.0520	-0.0001	-0.05	OE
FEDYTQ		0.1400	-0.0068	-1.38	0.0510	-0.0011	-0.53	OE
GJ6GTN		0.1550	0.0082	1.68	0.0567	0.0045	2.11	OE
H7HYN4		0.1427	-0.0041	-0.83	0.0516	-0.0005	-0.24	XX
HENA6N		0.1593	0.0126	2.57	0.0571	0.0050	2.33	OE
HP8D6D		0.1480	0.0012	0.25	0.0530	0.0009	0.40	OE
JYBAPP		0.1433	-0.0034	-0.70	0.0500	-0.0021	-1.00	OE
K3VZND		0.1430	-0.0038	-0.77	0.0491	-0.0030	-1.42	OE
KBKF4N		0.1423	-0.0044	-0.90	0.0513	-0.0008	-0.38	OE
L3MUMP		0.1500	0.0032	0.66	0.0540	0.0019	0.87	OE
LR6CUH		0.1428	-0.0040	-0.81	0.0491	-0.0030	-1.41	OE
LXAB68		0.1463	-0.0004	-0.09	0.0533	0.0011	0.52	OE
M6N34P		0.1377	-0.0091	-1.86	0.0483	-0.0038	-1.78	OE
MLTNUL		0.1500	0.0032	0.66	0.0500	-0.0021	-1.00	OE
MMPM4Y		0.1400	-0.0068	-1.38	0.0497	-0.0025	-1.16	OE
NTLFEK		0.1463	-0.0004	-0.09	0.0507	-0.0015	-0.69	OE
PCHE6J		0.1513	0.0046	0.93	0.0544	0.0023	1.07	OE
PX3LQ7		0.1493	0.0026	0.53	0.0529	0.0008	0.35	OE
QGM39P		0.1453	-0.0014	-0.29	0.0526	0.0004	0.20	OE
QNRJ66		0.1450	-0.0018	-0.36	0.0520	-0.0001	-0.07	OE
RXA2YH		0.1447	-0.0021	-0.43	0.0550	0.0029	1.33	XX
T6BR4U	X	0.1620	0.0153	3.12	0.0709	0.0187	8.74	OE
TGGUFB		0.1433	-0.0034	-0.70	0.0517	-0.0005	-0.22	OE
TWV9JU		0.1390	-0.0078	-1.58	0.0485	-0.0036	-1.69	OE
UKU6T7		0.1480	0.0012	0.25	0.0523	0.0002	0.09	OE
UTP3JE	X	0.1060	-0.0407	-8.32	0.0391	-0.0131	-6.11	XX
WD8X7H		0.1546	0.0078	1.60	0.0543	0.0022	1.01	OE
WEKMAV		0.1450	-0.0018	-0.36	0.0520	-0.0001	-0.07	GD
WWZWBW		0.1449	-0.0019	-0.38	0.0530	0.0009	0.40	OE
XPXAW2	X	0.1590	0.0122	2.50	0.5300	0.4779	222.99	OE
YFLGV6		0.1467	0.0000	0.00	0.0532	0.0011	0.51	OE
YXANFH		0.1457	-0.0010	-0.21	0.0515	-0.0006	-0.30	OE
YY3GC2		0.1510	0.0042	0.87	0.0523	0.0002	0.09	IC
ZP9RRH		0.1537	0.0069	1.41	0.0530	0.0009	0.40	XX

Summary Statistics

	Sample A01		Sample A02	
Grand Means	0.1468	Percent	0.0521	Percent
Std Dev Btwn Labs	0.0049	Percent	0.0021	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 36 of 39 reporting participants



Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1546

T6BR4U (X) - Data for both samples are high.

UTP3JE (X) - Data for both samples are low.

XPXAW2 (X) - Data for sample A02 are extreme.

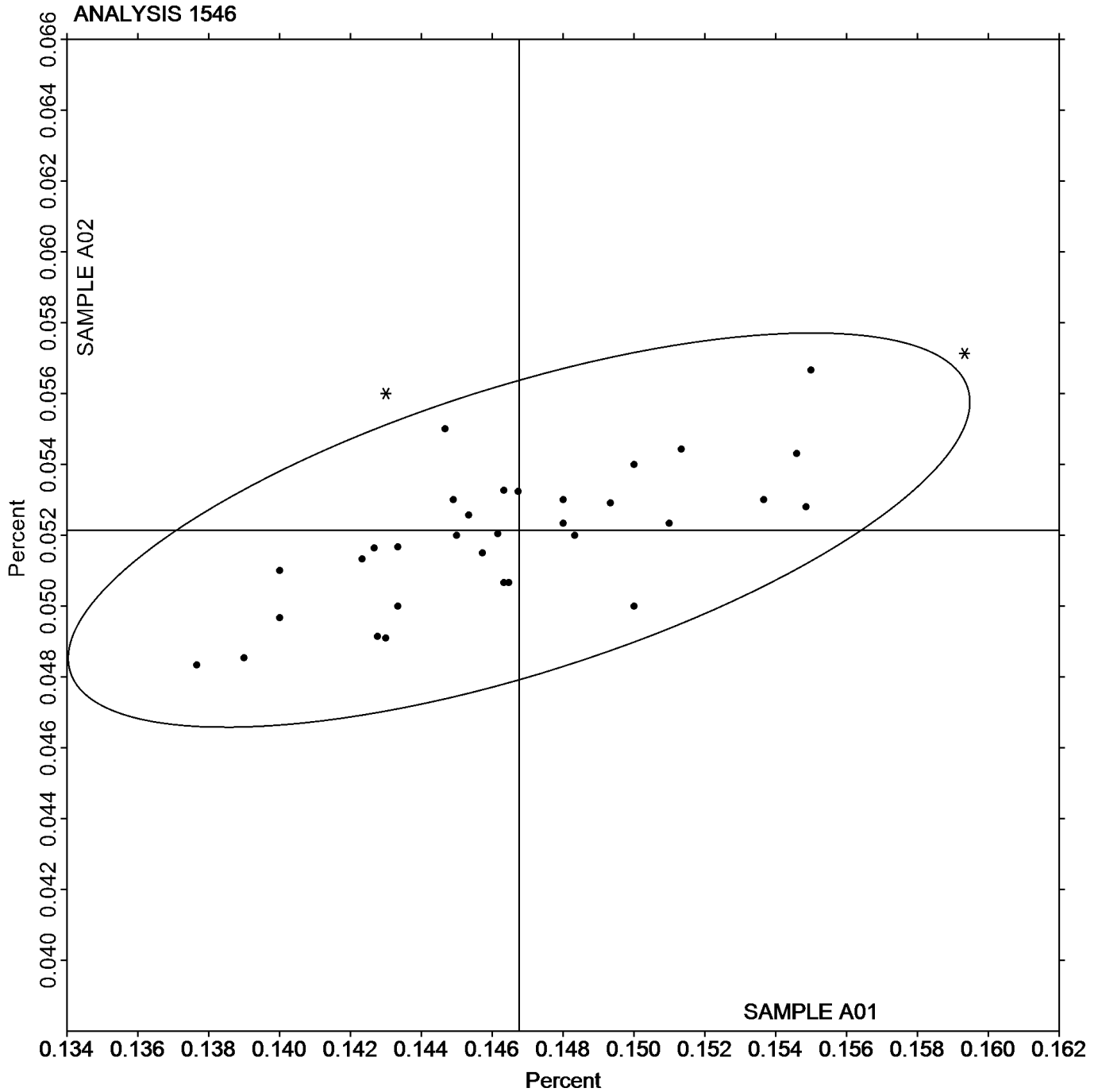


Analysis 1546

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE A01
0.1468 Percent

SAMPLE A02
0.0521 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1547

2nd Qtr
2024

Aluminum, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample A01			Sample A02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
49BH2H		0.0489	0.0000	-0.02	0.0216	-0.0001	-0.03	IC
762H72		0.0490	0.0000	0.00	0.0230	0.0013	0.68	OE
7894GM		0.0484	-0.0006	-0.18	0.0214	-0.0003	-0.13	XX
B7FDYV		0.0500	0.0010	0.32	0.0200	-0.0016	-0.83	IC
CVWC68		0.0465	-0.0025	-0.78	0.0193	-0.0023	-1.18	OE
ENMZXX		0.0485	-0.0004	-0.14	0.0218	0.0001	0.07	OE
FEDYTQ		0.0465	-0.0025	-0.79	0.0214	-0.0002	-0.12	OE
GJ6GTN	*	0.0550	0.0060	1.89	0.0273	0.0057	2.90	OE
GQLY3P		0.0465	-0.0025	-0.78	0.0215	-0.0001	-0.07	IC
H7HYN4		0.0473	-0.0016	-0.52	0.0213	-0.0003	-0.17	XX
HENA6N		0.0476	-0.0013	-0.42	0.0203	-0.0013	-0.66	OE
HP8D6D		0.0500	0.0010	0.31	0.0215	-0.0001	-0.07	IC
JYBAPP		0.0447	-0.0043	-1.36	0.0173	-0.0043	-2.18	OE
K3VZND		0.0493	0.0004	0.11	0.0219	0.0003	0.14	OE
KBKF4N		0.0493	0.0004	0.11	0.0210	-0.0006	-0.32	OE
L3MUMP		0.0467	-0.0023	-0.72	0.0199	-0.0018	-0.90	OE
LR6CUH		0.0490	0.0000	0.00	0.0218	0.0002	0.10	OE
LXAB68		0.0488	-0.0002	-0.06	0.0224	0.0008	0.39	OE
M6N34P		0.0530	0.0040	1.26	0.0233	0.0017	0.86	OE
MLTNUL		0.0490	0.0000	0.01	0.0220	0.0004	0.19	OE
MMPM4Y		0.0465	-0.0025	-0.79	0.0203	-0.0013	-0.66	OE
NTLFEK		0.0540	0.0050	1.58	0.0239	0.0022	1.14	OE
PCHE6J		0.0449	-0.0041	-1.28	0.0176	-0.0040	-2.05	OE
PX3LQ7		0.0504	0.0014	0.44	0.0227	0.0010	0.53	OE
QGM39P		0.0477	-0.0013	-0.41	0.0220	0.0004	0.19	OE
QNRJ66		0.0471	-0.0019	-0.59	0.0201	-0.0015	-0.78	OE
RXA2YH	*	0.0586	0.0096	3.02	0.0269	0.0052	2.66	XX
T6BR4U		0.0464	-0.0025	-0.80	0.0221	0.0005	0.24	OE
TGGUFB		0.0460	-0.0029	-0.93	0.0204	-0.0012	-0.62	OE
TWV9JU	M	0.0497	0.0008	0.24	No Data Reported			OE
UKU6T7		0.0499	0.0010	0.30	0.0226	0.0010	0.49	OE
UTP3JE		0.0425	-0.0065	-2.05	0.0188	-0.0028	-1.41	XX
WD8X7H		0.0470	-0.0020	-0.62	0.0233	0.0016	0.83	OE
WEKMAV		0.0530	0.0040	1.26	0.0210	-0.0006	-0.32	GD
WWZWBW		0.0503	0.0014	0.43	0.0219	0.0003	0.15	OE
XPXAW2	X	0.4813	0.4324	136.10	0.1833	0.1617	82.10	OE
YXANFH		0.0501	0.0011	0.35	0.0217	0.0000	0.02	OE
YY3GC2		0.0492	0.0003	0.08	0.0221	0.0004	0.22	IC
ZP9RRH		0.0547	0.0057	1.79	0.0230	0.0014	0.70	XX

Summary Statistics

	Sample A01		Sample A02	
Grand Means	0.0490	Percent	0.0216	Percent
Std Dev Btwn Labs	0.0032	Percent	0.0020	Percent

Samples A01, A02 : AA6061, AA6061

Statistics based on 37 of 39 reporting participants



Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1547

TWV9JU (M) - Participant did not submit data for sample A02.

XPXAW2 (X) - Extreme data.



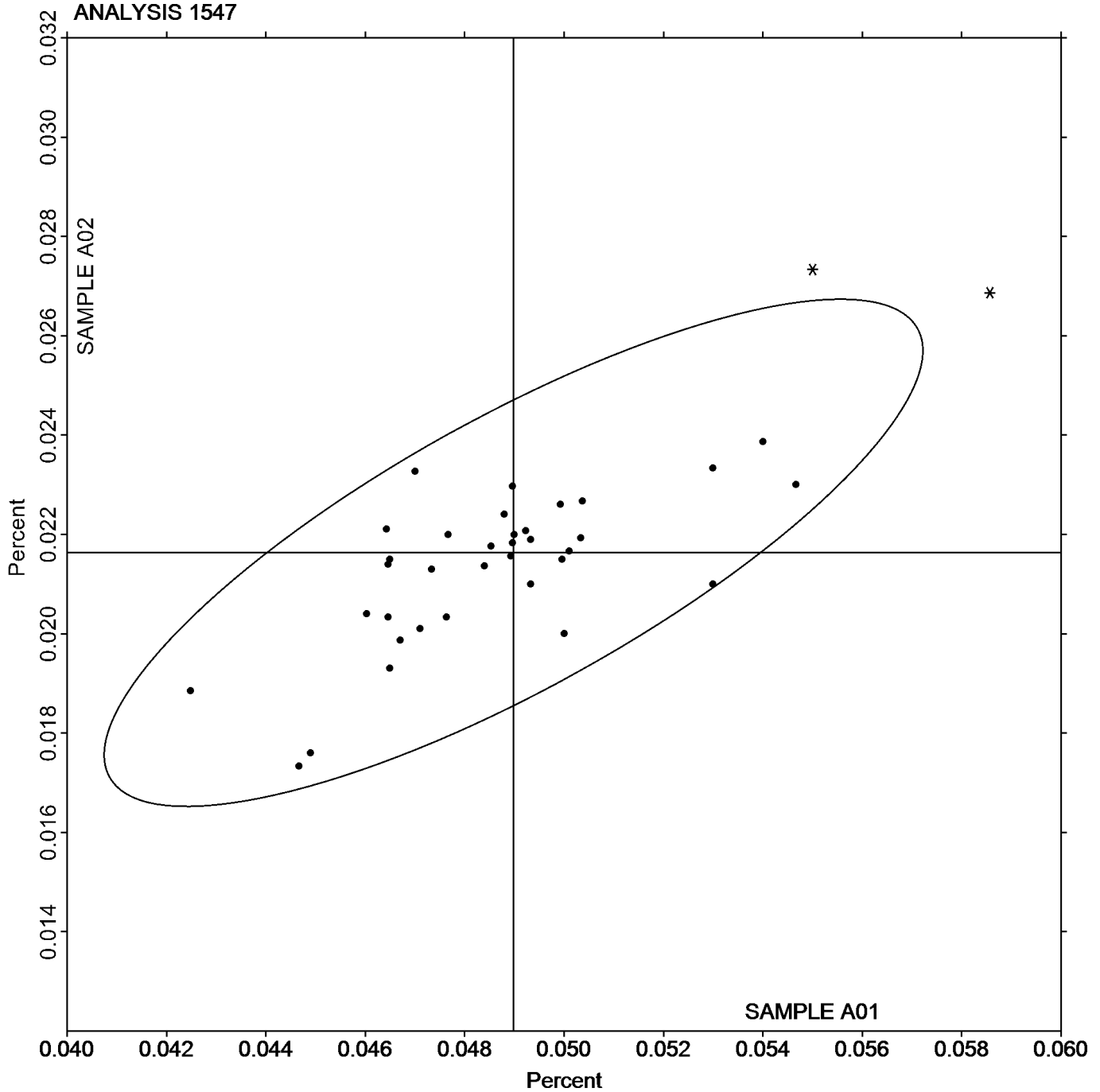
Analysis 1547

Aluminum, TITANIUM (Ti)

TITANIUM (Ti)

SAMPLE A01
0.0490 Percent

SAMPLE A02
0.0216 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1640

2nd Qtr

Corrosion Resistant Steel, CARBON (C)

2024

CARBON (C)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G		0.0532	-0.0106	-2.49	0.0553	-0.0112	-2.52	OE
2MJ7RL		0.0650	0.0013	0.30	0.0713	0.0048	1.09	CO
3VPD7K		0.0630	-0.0007	-0.17	0.0677	0.0012	0.26	CI
49BH2H		0.0630	-0.0007	-0.17	0.0640	-0.0025	-0.56	CI
7JJR8C		0.0603	-0.0034	-0.80	0.0623	-0.0042	-0.94	OE
7TPPEEQ		0.0653	0.0016	0.38	0.0663	-0.0002	-0.04	CI
8D7PK2		0.0649	0.0011	0.27	0.0679	0.0014	0.32	OE
8MKWHB		0.0556	-0.0082	-1.92	0.0593	-0.0072	-1.62	OE
8PQFJR		0.0627	-0.0011	-0.25	0.0677	0.0012	0.26	OE
B7FDYV		0.0630	-0.0007	-0.17	0.0677	0.0012	0.26	CI
BAWW3Y		0.0627	-0.0011	-0.25	0.0663	-0.0002	-0.04	CI
BR2QPJ		0.0640	0.0003	0.07	0.0683	0.0018	0.41	OE
BRM6FG		0.0655	0.0018	0.43	0.0707	0.0042	0.95	OE
BTTMED		0.0563	-0.0074	-1.74	0.0563	-0.0102	-2.28	OE
DADRLC		0.0716	0.0079	1.86	0.0742	0.0078	1.74	CI
DHNU8D	*	0.0763	0.0126	2.97	0.0763	0.0098	2.21	CI
DJ2VZJ		0.0653	0.0016	0.38	0.0663	-0.0002	-0.04	IR
F2NZ2N		0.0632	-0.0005	-0.13	0.0671	0.0007	0.15	CI
FXAF4F		0.0649	0.0012	0.28	0.0695	0.0030	0.68	XX
FXBZ6W		0.0647	0.0009	0.22	0.0667	0.0002	0.04	OE
GJ6GTN		0.0650	0.0013	0.30	0.0680	0.0015	0.34	OE
JKB9NE		0.0639	0.0002	0.04	0.0649	-0.0016	-0.36	OE
KEG4HB		0.0622	-0.0016	-0.37	0.0662	-0.0003	-0.07	CO
KGNR7U		0.0700	0.0063	1.48	0.0710	0.0045	1.01	OE
LN7JVX		0.0664	0.0026	0.62	0.0671	0.0006	0.14	CI
M6N34P		0.0683	0.0046	1.09	0.0693	0.0028	0.64	OE
MNZ7RG	*	0.0634	-0.0003	-0.07	0.0742	0.0077	1.73	CO
MZRNPV		0.0610	-0.0027	-0.64	0.0647	-0.0018	-0.41	IR
NC42DU		0.0697	0.0059	1.40	0.0733	0.0068	1.54	OE
NPCNLR		0.0620	-0.0017	-0.41	0.0693	0.0028	0.64	OE
P9JDCU		0.0710	0.0073	1.72	0.0740	0.0075	1.69	CO
PX3LQ7		0.0670	0.0033	0.77	0.0682	0.0017	0.38	OE
Q8MPHK		0.0620	-0.0017	-0.41	0.0680	0.0015	0.33	OE
QFVJCD		0.0617	-0.0021	-0.48	0.0633	-0.0032	-0.71	OE
QGM39P		0.0622	-0.0016	-0.37	0.0640	-0.0025	-0.56	OE
QJVRGM		0.0587	-0.0051	-1.19	0.0624	-0.0041	-0.91	OE
QNRJ66		0.0630	-0.0007	-0.17	0.0670	0.0005	0.11	OE
QVM48F		0.0631	-0.0006	-0.15	0.0668	0.0003	0.06	XX
T6BR4U		0.0656	0.0019	0.44	0.0673	0.0008	0.18	OE
TA3YL3		0.0673	0.0036	0.85	0.0707	0.0042	0.94	OE
TFQ7W2		0.0647	0.0009	0.22	0.0673	0.0008	0.19	CO
UKZM7P		0.0620	-0.0017	-0.41	0.0630	-0.0035	-0.79	CO
UT7V62		0.0602	-0.0035	-0.83	0.0635	-0.0030	-0.68	CI
UWQJ73		0.0673	0.0035	0.84	0.0692	0.0027	0.62	GD
VM2MQ2		0.0654	0.0016	0.39	0.0653	-0.0012	-0.28	CO
WB36E6		0.0583	-0.0054	-1.27	0.0607	-0.0058	-1.31	OE
WNR678		0.0658	0.0021	0.49	0.0693	0.0028	0.64	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1640

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WWZWBW		0.0664	0.0027	0.64	0.0648	-0.0017	-0.37	OE
Y8UUF8		0.0630	-0.0007	-0.17	0.0650	-0.0015	-0.34	OE
YGFZ7J		0.0600	-0.0037	-0.88	0.0600	-0.0065	-1.46	OE
YKG292		0.0630	-0.0007	-0.17	0.0720	0.0055	1.23	CI
YR3PVX		0.0644	0.0007	0.17	0.0660	-0.0005	-0.11	GD
YY3GC2		0.0640	0.0003	0.07	0.0670	0.0005	0.11	CO
ZCMNWL	*	0.0523	-0.0115	-2.70	0.0541	-0.0124	-2.79	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.0637	Percent	0.0665	Percent
Stnd Dev Btwn Labs	0.0042	Percent	0.0044	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 53 of 54 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



Analysis 1640

Corrosion Resistant Steel, CARBON (C)

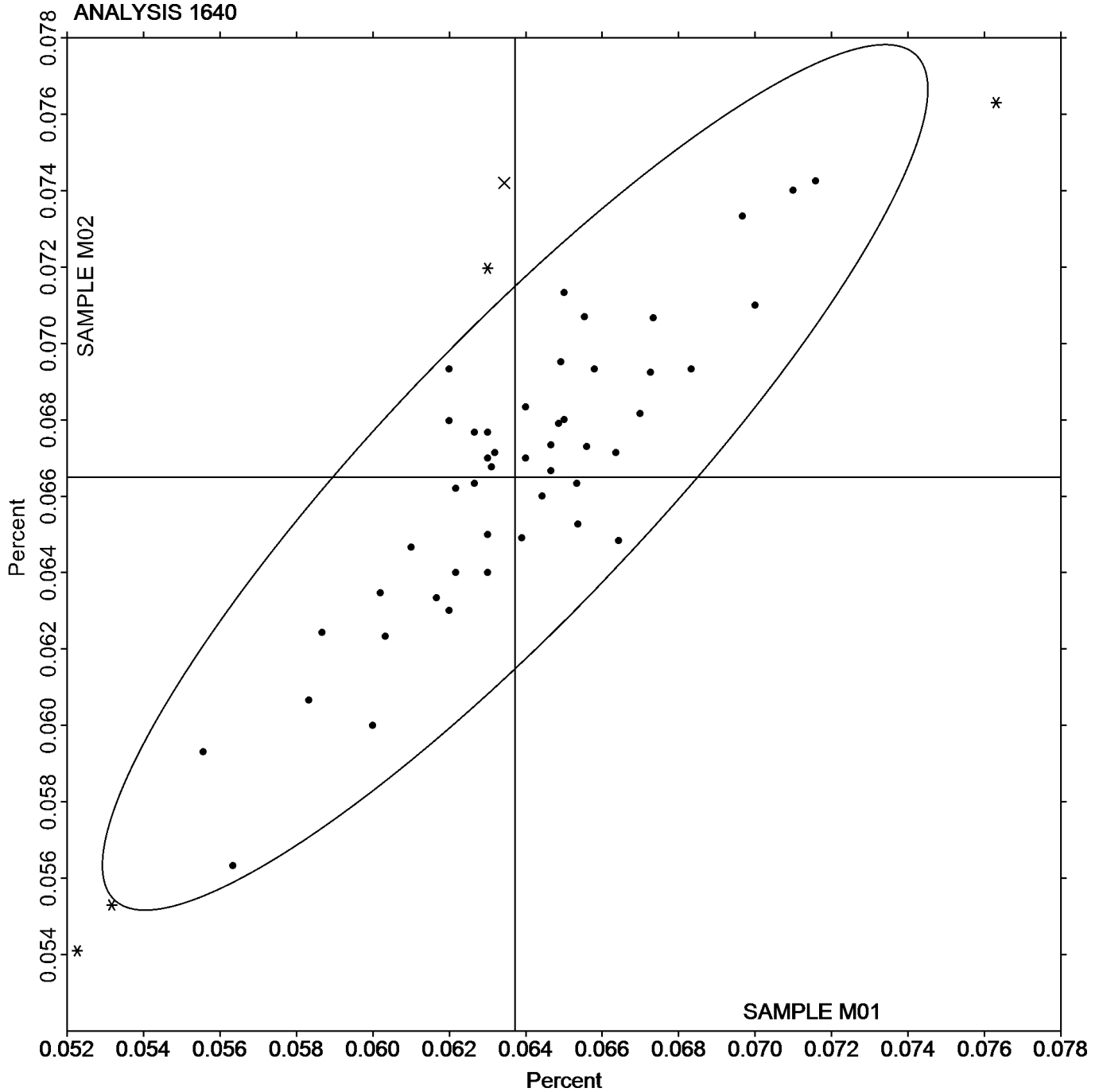
CARBON (C)

SAMPLE M01

SAMPLE M02

0.0637 Percent

0.0665 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1641

2nd Qtr

Corrosion Resistant Steel, MANGANESE (Mn)

2024

MANGANESE (Mn)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G		1.623	0.013	0.68	1.823	0.016	0.67	OE
2MJ7RL		1.577	-0.033	-1.67	1.783	-0.024	-1.03	IC
3VPD7K		1.614	0.004	0.19	1.799	-0.009	-0.36	WD
49BH2H		1.635	0.025	1.28	1.826	0.018	0.79	IC
7JJR8C		1.603	-0.007	-0.36	1.801	-0.007	-0.29	OE
7TPPEEQ		1.611	0.001	0.04	1.819	0.011	0.49	XR
8D7PK2		1.643	0.033	1.70	1.843	0.036	1.53	XX
8MKWHB		1.561	-0.049	-2.49	1.755	-0.052	-2.22	OE
8PQFJR		1.603	-0.007	-0.34	1.830	0.022	0.96	OE
B7FDYV		1.627	0.017	0.85	1.843	0.036	1.53	IC
BAWW3Y		1.605	-0.005	-0.24	1.799	-0.008	-0.35	IC
BR2QPJ	X	1.532	-0.078	-3.98	1.723	-0.085	-3.62	OE
BRM6FG		1.613	0.003	0.17	1.817	0.009	0.39	OE
BTTMED		1.620	0.010	0.53	1.854	0.047	2.00	OE
DADRLC		1.592	-0.018	-0.92	1.792	-0.015	-0.65	XR
DHNU8D		1.590	-0.020	-1.02	1.810	0.002	0.11	XR
DJ2VZJ		1.652	0.042	2.13	1.863	0.055	2.37	XR
F2NZ2N		1.609	-0.001	-0.04	1.809	0.002	0.08	WD
FXAF4F		1.595	-0.015	-0.79	1.794	-0.014	-0.58	XX
FXBZ6W		1.647	0.037	1.87	1.843	0.036	1.53	OE
GJ6GTN	X	1.578	-0.032	-1.62	1.715	-0.092	-3.93	OE
JKB9NE		1.621	0.011	0.55	1.797	-0.011	-0.46	OE
KGNR7U		1.620	0.010	0.51	1.813	0.006	0.25	OE
LN7JVX		1.604	-0.006	-0.31	1.806	-0.002	-0.08	OE
M6N34P		1.603	-0.007	-0.34	1.800	-0.008	-0.32	OE
MNZ7RG		1.611	0.001	0.05	1.773	-0.035	-1.47	OE
MZRNPV		1.619	0.009	0.44	1.813	0.005	0.23	IC
NC42DU		1.613	0.003	0.17	1.813	0.006	0.25	OE
NPCNLR		1.610	0.000	0.00	1.800	-0.008	-0.32	OE
P9JDCU		1.641	0.031	1.59	1.838	0.030	1.30	OE
PX3LQ7		1.603	-0.007	-0.34	1.813	0.006	0.25	OE
Q8MPHK		1.610	0.000	0.02	1.810	0.003	0.12	WD
QFVJCD		1.600	-0.010	-0.51	1.800	-0.008	-0.32	OE
QGM39P	X	1.570	-0.040	-2.04	1.690	-0.118	-5.01	OE
QJVRGM		1.607	-0.003	-0.17	1.820	0.012	0.53	OE
QNRJ66		1.617	0.007	0.36	1.812	0.004	0.19	OE
QVM48F		1.627	0.017	0.89	1.831	0.023	1.00	XX
T6BR4U	*	1.624	0.014	0.74	1.776	-0.031	-1.33	OE
TA3YL3		1.595	-0.015	-0.77	1.790	-0.018	-0.76	OE
TFQ7W2		1.620	0.010	0.51	1.812	0.004	0.18	OE
UKZM7P		1.623	0.013	0.68	1.773	-0.034	-1.46	IC
UT7V62		1.592	-0.018	-0.91	1.787	-0.021	-0.88	WD
UWQJ73	*	1.557	-0.053	-2.72	1.760	-0.048	-2.02	GD
VM2MQ2		1.596	-0.014	-0.70	1.803	-0.004	-0.18	XR
WB36E6	X	1.481	-0.129	-6.57	1.634	-0.173	-7.38	OE
WNR678		1.603	-0.007	-0.34	1.810	0.002	0.11	OE
WWZWBW		1.596	-0.014	-0.73	1.774	-0.034	-1.43	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1641

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
Y8UUF8		1.600	-0.010	-0.51	1.807	-0.001	-0.04	OE
YGFZ7J		1.643	0.033	1.70	1.837	0.029	1.24	OE
YKG292		1.592	-0.018	-0.94	1.788	-0.020	-0.85	XX
YR3PVX		1.586	-0.024	-1.23	1.775	-0.033	-1.39	GD
YY3GC2		1.624	0.014	0.70	1.812	0.004	0.18	IC
ZCMNWL		1.610	0.000	0.00	1.820	0.012	0.53	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	1.610	Percent	1.808	Percent
Std Dev Btwn Labs	0.020	Percent	0.023	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 49 of 53 reporting participants

Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	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

- BR2QPJ (X) - Data for both samples are low.
- GJ6GTN (X) - Data for sample M02 are low.
- QGM39P (X) - Data for sample M02 are low.
- WB36E6 (X) - Data for both samples are low.



Analysis 1641

Corrosion Resistant Steel, MANGANESE (Mn)

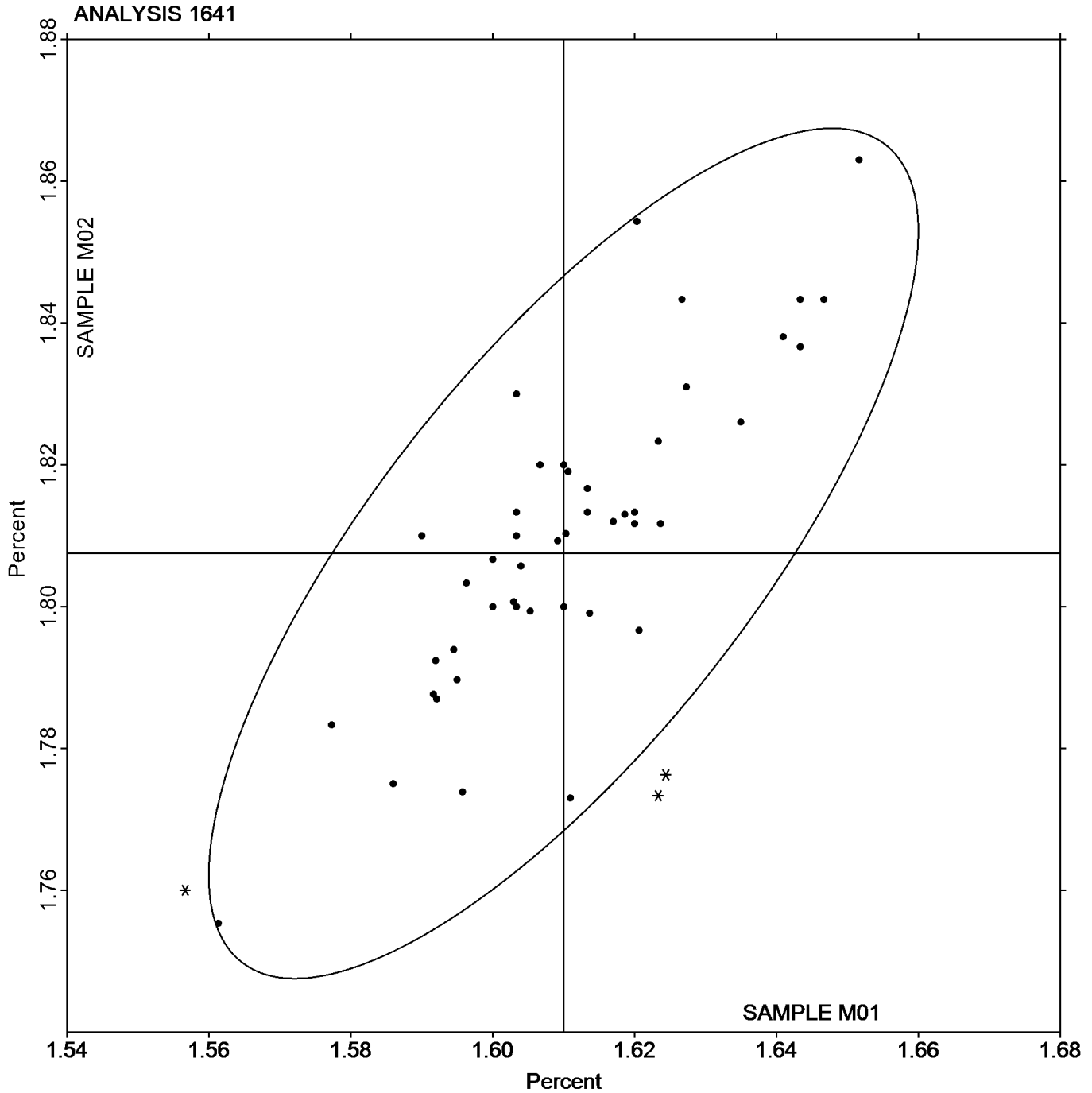
MANGANESE (Mn)

SAMPLE M01

SAMPLE M02

1.610 Percent

1.808 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1642

2nd Qtr

Corrosion Resistant Steel, PHOSPHORUS (P)

2024

PHOSPHORUS (P)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G		0.0303	0.0008	0.44	0.0240	0.0023	1.36	OE
2MJ7RL		0.0276	-0.0020	-1.16	0.0174	-0.0043	-2.59	IC
3VPD7K		0.0290	-0.0005	-0.30	0.0204	-0.0014	-0.82	WD
49BH2H		0.0320	0.0025	1.45	0.0226	0.0009	0.51	IC
7JJR8C		0.0290	-0.0005	-0.32	0.0233	0.0016	0.94	OE
7TPPEEQ		0.0295	0.0000	-0.03	0.0213	-0.0005	-0.29	XR
8D7PK2		0.0339	0.0043	2.53	0.0241	0.0023	1.38	OE
8MKWHB		0.0322	0.0026	1.53	0.0262	0.0044	2.63	OE
8PQFJR		0.0283	-0.0012	-0.71	0.0213	-0.0004	-0.25	OE
B7FDYV		0.0323	0.0028	1.63	0.0240	0.0023	1.34	IC
BAWW3Y		0.0297	0.0001	0.07	0.0210	-0.0007	-0.45	WC
BR2QPJ		0.0300	0.0005	0.26	0.0227	0.0009	0.55	OE
BRM6FG		0.0304	0.0009	0.50	0.0217	-0.0001	-0.05	OE
BTTMED	X	0.0383	0.0088	5.14	0.0300	0.0083	4.92	OE
DADRLC		0.0267	-0.0029	-1.69	0.0190	-0.0027	-1.64	XR
DHNU8D		0.0293	-0.0002	-0.13	0.0210	-0.0007	-0.45	XR
DJ2VZJ		0.0285	-0.0010	-0.59	0.0202	-0.0015	-0.92	XR
F2NZ2N		0.0289	-0.0007	-0.40	0.0215	-0.0002	-0.15	WD
FXAF4F		0.0268	-0.0028	-1.62	0.0199	-0.0019	-1.13	XX
GJ6GTN	X	0.0473	0.0178	10.41	0.0383	0.0166	9.88	OE
JKB9NE		0.0300	0.0005	0.26	0.0223	0.0006	0.35	OE
KGNR7U		0.0323	0.0028	1.63	0.0223	0.0006	0.35	OE
LN7JVX		0.0291	-0.0004	-0.24	0.0209	-0.0008	-0.51	OE
M6N34P		0.0273	-0.0022	-1.30	0.0193	-0.0024	-1.44	OE
MNZ7RG	X	0.0292	-0.0003	-0.20	0.0271	0.0054	3.21	OE
MZRNPV		0.0317	0.0021	1.24	0.0223	0.0006	0.35	IC
NC42DU	X	0.0347	0.0051	2.99	0.0223	0.0006	0.35	OE
NPCNLR		0.0283	-0.0012	-0.71	0.0210	-0.0007	-0.45	OE
P9JDCU		0.0273	-0.0022	-1.32	0.0199	-0.0018	-1.10	OE
PX3LQ7		0.0313	0.0017	1.01	0.0218	0.0000	0.01	OE
Q8MPHK		0.0286	-0.0009	-0.55	0.0211	-0.0006	-0.37	WD
QFVJCD	X	0.00860	-0.0209	-12.26	0.00393	-0.0178	-10.62	OE
QGM39P		0.0307	0.0012	0.67	0.0211	-0.0006	-0.39	OE
QJVRGM		0.0293	-0.0002	-0.13	0.0212	-0.0005	-0.33	OE
QNRJ66		0.0298	0.0003	0.15	0.0225	0.0008	0.45	OE
QVM48F		0.0291	-0.0004	-0.26	0.0220	0.0003	0.17	XX
T6BR4U		0.0298	0.0003	0.15	0.0222	0.0004	0.25	OE
TA3YL3		0.0298	0.0003	0.17	0.0223	0.0006	0.35	OE
TFQ7W2		0.0307	0.0011	0.65	0.0237	0.0019	1.14	OE
UKZM7P		0.0310	0.0015	0.85	0.0223	0.0006	0.35	IC
UT7V62		0.0273	-0.0022	-1.32	0.0199	-0.0018	-1.10	WD
UWQJ73		0.0315	0.0020	1.16	0.0246	0.0028	1.68	GD
VM2MQ2		0.0287	-0.0008	-0.50	0.0207	-0.0010	-0.63	XR
WB36E6		0.0290	-0.0005	-0.32	0.0243	0.0026	1.54	OE
WNR678		0.0302	0.0007	0.38	0.0226	0.0008	0.49	OE
WWZWBW		0.0306	0.0010	0.60	0.0232	0.0015	0.88	OE
Y8UUF8		0.0277	-0.0018	-1.08	0.0215	-0.0003	-0.17	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1642

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YGFZ7J		0.0277	-0.0019	-1.10	0.0210	-0.0007	-0.45	OE
YKG292		0.0300	0.0005	0.26	0.0220	0.0003	0.15	WD
YR3PVX		0.0257	-0.0038	-2.25	0.0185	-0.0032	-1.94	GD
YY3GC2		0.0303	0.0007	0.42	0.0224	0.0006	0.37	IC
ZCMNWL	X	0.0363	0.0068	3.95	0.0245	0.0028	1.64	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.0295	Percent	0.0217	Percent
Std Dev Btw Labs	0.0017	Percent	0.0017	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 46 of 52 reporting participants

Key to Method Codes Reported by Participants

GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	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 #1642

- BTTMED (X) - Data for both samples are high. Possible Systematic Error.
- GJ6GTN (X) - Data for both samples are high. Possible Systematic Error.
- MNZ7RG (X) - Data for sample M02 are high.
- NC42DU (X) - Data for sample M01 are high. Inconsistent within the determinations of sample M01.
- QFVJCD (X) - Data for both samples are low. Possible Systematic Error.
- ZCMNWL (X) - Data for sample M01 are high.



Analysis 1642

Corrosion Resistant Steel, PHOSPHORUS (P)

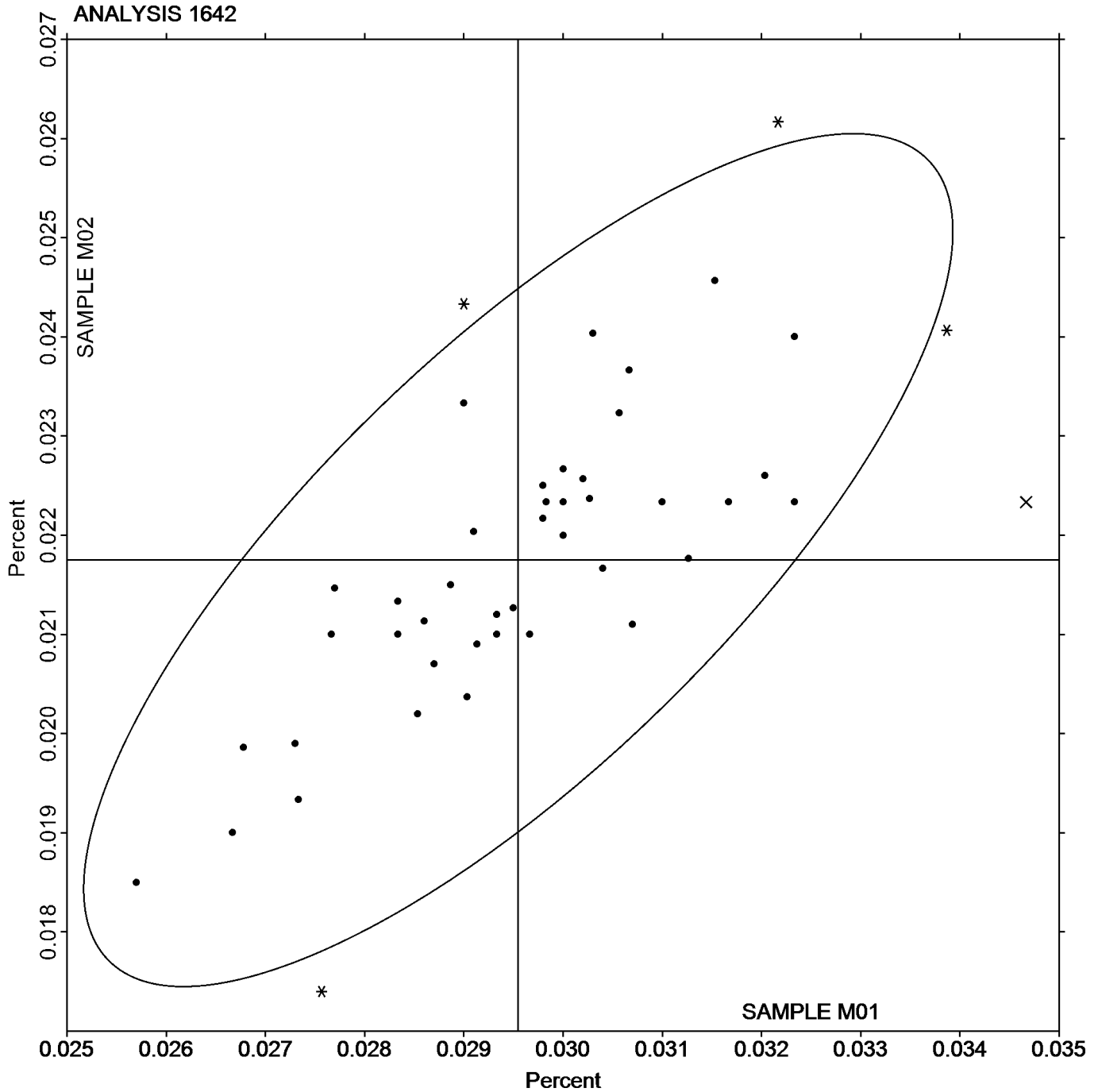
PHOSPHORUS (P)

SAMPLE M01

SAMPLE M02

0.0295 Percent

0.0217 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1643

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G	X	0.00493	0.00346	4.00	0.00670	0.00411	3.84	OE
2MJ7RL	X	0.00663	0.00516	5.97	0.00837	0.00578	5.40	CO
3VPD7K		0.000700	-0.00077	-0.89	0.00237	-0.00022	-0.20	CI
49BH2H		0.00100	-0.00047	-0.55	0.00190	-0.00069	-0.64	CI
7JJR8C		0.00367	0.00219	2.54	0.00467	0.00208	1.94	OE
7TPPEEQ		0.000667	-0.00081	-0.93	0.00177	-0.00082	-0.77	CI
8D7PK2	*	0.00400	0.00253	2.92	0.00587	0.00328	3.07	OE
8MKWHB		0.00192	0.00044	0.51	0.00317	0.00058	0.55	OE
8PQFJR		0.00267	0.00119	1.38	0.00300	0.00041	0.39	OE
B7FDYV		0.00100	-0.00047	-0.55	0.00200	-0.00059	-0.55	CI
BAWW3Y		0.000663	-0.00081	-0.94	0.00257	-0.00002	-0.02	CI
BRM6FG		0.00163	0.00016	0.19	0.00323	0.00065	0.61	OE
BTTMED		0.00100	-0.00047	-0.55	0.00100	-0.00159	-1.48	OE
DADRLC		0.00154	0.00007	0.08	0.00249	-0.00010	-0.09	CI
DHNU8D		0.00175	0.00027	0.32	0.00175	-0.00084	-0.78	CI
DJ2VZJ		0.000767	-0.00071	-0.82	0.00170	-0.00089	-0.83	IR
F2NZ2N		0.000610	-0.00086	-1.00	0.00184	-0.00075	-0.70	CI
FXAF4F		0.000758	-0.00071	-0.83	0.00207	-0.00051	-0.48	XX
GJ6GTN	X	0.00767	0.00619	7.17	0.00940	0.00681	6.37	OE
KEG4HB		0.000610	-0.00086	-1.00	0.00209	-0.00050	-0.47	CO
KGNR7U		0.00100	-0.00047	-0.55	0.00133	-0.00125	-1.17	OE
LN7JVX		0.000907	-0.00057	-0.65	0.00233	-0.00025	-0.24	CI
M6N34P		0.00300	0.00153	1.77	0.00500	0.00241	2.26	OE
MNZ7RG		0.00174	0.00026	0.31	0.00382	0.00123	1.15	CO
MZRNPV		0.000700	-0.00077	-0.89	0.00203	-0.00055	-0.52	CI
NC42DU		0.00100	-0.00047	-0.55	0.00100	-0.00159	-1.48	OE
NPCNLR		0.00213	0.00066	0.76	0.00247	-0.00012	-0.11	OE
P9JDCU		0.00110	-0.00037	-0.43	0.00270	0.00011	0.11	CO
PX3LQ7		0.00107	-0.00041	-0.47	0.00190	-0.00069	-0.64	OE
Q8MPHK	M	No Data Reported			0.00490	0.00231	2.16	WD
QFVJCD		0.00300	0.00153	1.77	0.00387	0.00128	1.20	OE
QGM39P		0.00147	-0.00001	-0.01	0.00227	-0.00032	-0.30	OE
QJVRGM		0.00327	0.00179	2.08	0.00393	0.00135	1.26	OE
QNRJ66		0.00110	-0.00037	-0.43	0.00340	0.00081	0.76	OE
QVM48F		0.00127	-0.00021	-0.24	0.00270	0.00011	0.11	XX
T6BR4U		0.00187	0.00039	0.46	0.00340	0.00081	0.76	OE
TA3YL3		0.00120	-0.00027	-0.32	0.00257	-0.00002	-0.02	OE
TFQ7W2		0.00110	-0.00037	-0.43	0.00240	-0.00019	-0.17	CO
UKZM7P		0.00100	-0.00047	-0.55	0.00200	-0.00059	-0.55	CO
UT7V62		0.00107	-0.00041	-0.47	0.00230	-0.00029	-0.27	CI
VM2MQ2		0.00180	0.00033	0.38	0.00193	-0.00065	-0.61	XX
WB36E6	X	0.0110	0.00953	11.02	0.0130	0.01041	9.73	OE
WNR678		0.00160	0.00013	0.15	0.00357	0.00098	0.92	OE
WWZWBW		0.00130	-0.00017	-0.20	0.00317	0.00058	0.54	OE
YGFZ7J		0.00100	-0.00047	-0.55	0.00100	-0.00159	-1.48	OE
YKG292	X	0.00286	0.00138	1.60	0.00629	0.00371	3.46	CI
ZCMNWL		0.000749	-0.00072	-0.84	0.00146	-0.00113	-1.05	CO



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1643

2nd Qtr

Corrosion Resistant Steel, SULFUR (S)

2024

SULFUR (S)

Summary Statistics

	<u>Sample M01</u>		<u>Sample M02</u>	
Grand Means	0.00147	Percent	0.00259	Percent
Std Dev Btwn Labs	0.00086	Percent	0.00107	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 41 of 47 reporting participants

Key to Method Codes Reported by Participants

- | | | | |
|----|--|----|---|
| CI | Combustion / IR | CO | Combustion |
| 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

22Z38G (X) - Data for both samples are high. Inconsistent within the determinations of sample M01.

2MJ7RL (X) - Data for both samples are high.

GJ6GTN (X) - Data for both samples are high.

Q8MPHK (M) - Participant did not submit data for sample M01.

WB36E6 (X) - Data for both samples are high.

YKG292 (X) - Data for sample M02 are high.



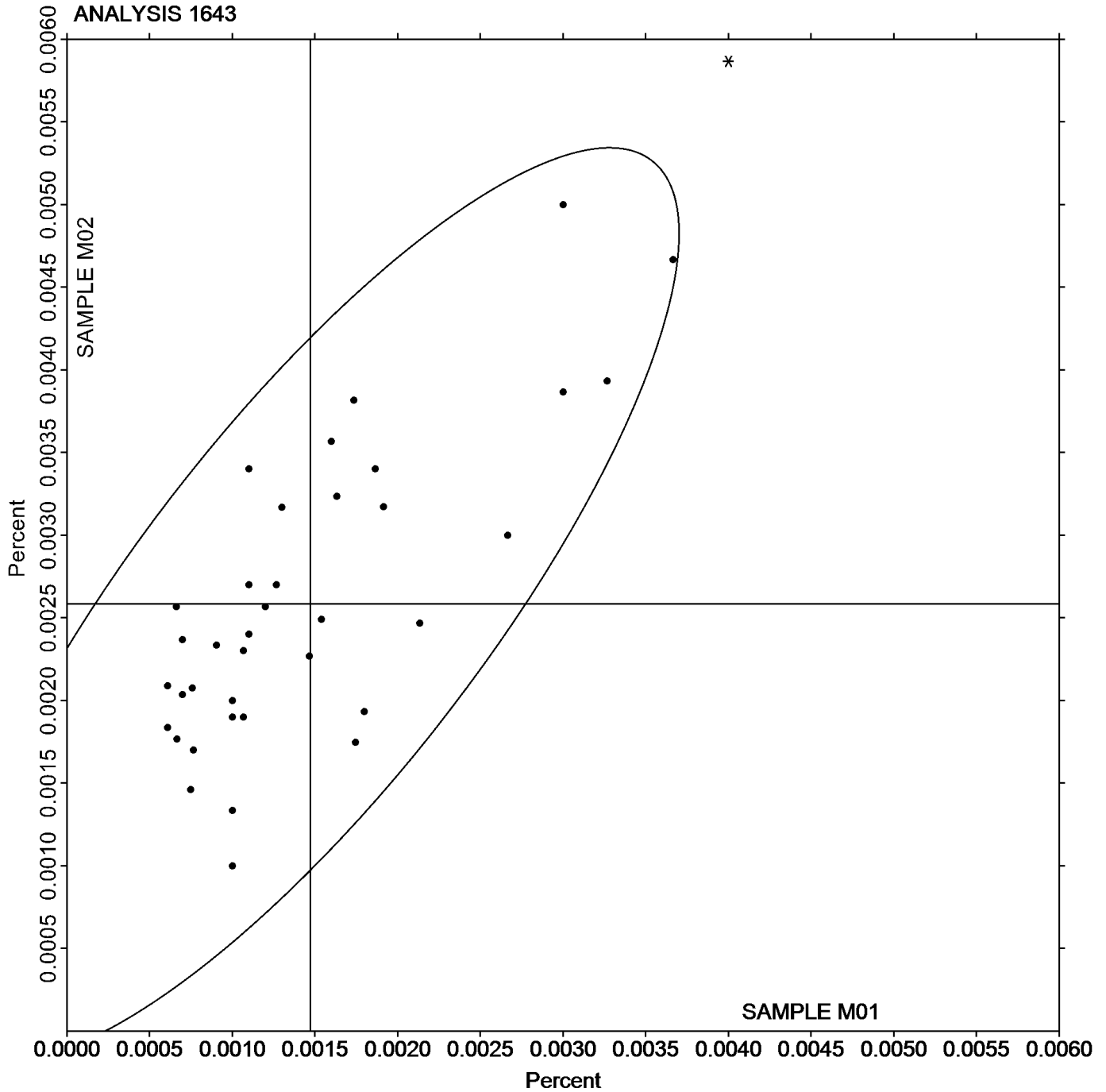
Analysis 1643

Corrosion Resistant Steel, SULFUR (S)

SULFUR (S)

SAMPLE M01
0.00147 Percent

SAMPLE M02
0.00259 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1644

2nd Qtr

Corrosion Resistant Steel, SILICON (Si)

2024

SILICON (Si)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G	X	0.2580	-0.0439	-5.72	0.2270	-0.0375	-4.29	OE
2MJ7RL		0.3017	-0.0002	-0.03	0.2650	0.0005	0.06	IC
3VPD7K		0.3010	-0.0009	-0.12	0.2633	-0.0012	-0.13	WD
49BH2H		0.3060	0.0041	0.53	0.2660	0.0015	0.17	IC
7JJR8C		0.2850	-0.0169	-2.20	0.2507	-0.0138	-1.58	OE
7TPPEEQ		0.3000	-0.0019	-0.25	0.2543	-0.0102	-1.16	XR
8D7PK2	*	0.3237	0.0218	2.84	0.2863	0.0218	2.49	OE
8MKWHB	X	0.3680	0.0661	8.61	0.3334	0.0689	7.88	OE
8PQFJR		0.2933	-0.0086	-1.12	0.2600	-0.0045	-0.51	OE
B7FDYV		0.3167	0.0148	1.92	0.2800	0.0155	1.77	IC
BAWW3Y		0.3003	-0.0016	-0.20	0.2650	0.0005	0.06	WC
BR2QPJ	X	0.2667	-0.0352	-4.59	0.2240	-0.0405	-4.63	OE
BRM6FG	X	0.2707	-0.0312	-4.07	0.2363	-0.0282	-3.22	OE
BTTMED		0.3163	0.0144	1.88	0.2813	0.0168	1.92	OE
DADRLC		0.2970	-0.0049	-0.64	0.2590	-0.0055	-0.63	XR
DHNU8D		0.2967	-0.0052	-0.68	0.2600	-0.0045	-0.51	XR
DJ2VZJ		0.3000	-0.0019	-0.25	0.2570	-0.0075	-0.86	XR
F2NZ2N		0.2969	-0.0050	-0.66	0.2601	-0.0044	-0.50	WD
FXAF4F		0.2860	-0.0159	-2.07	0.2563	-0.0082	-0.93	XX
FXBZ6W		0.3100	0.0081	1.05	0.2800	0.0155	1.77	OE
GJ6GTN	X	0.2717	-0.0302	-3.94	0.2417	-0.0228	-2.61	OE
JKB9NE		0.2917	-0.0102	-1.33	0.2543	-0.0102	-1.16	OE
KGNR7U		0.3100	0.0081	1.05	0.2700	0.0055	0.63	OE
LN7JVX		0.3029	0.0010	0.13	0.2623	-0.0022	-0.26	OE
M6N34P		0.3050	0.0031	0.40	0.2697	0.0052	0.59	OE
MNZ7RG	X	0.3002	-0.0017	-0.23	0.3700	0.1055	12.06	OE
MZRNPV		0.2903	-0.0116	-1.51	0.2463	-0.0182	-2.08	IC
NC42DU		0.3070	0.0051	0.66	0.2697	0.0052	0.59	OE
NPCNLR		0.3030	0.0011	0.14	0.2627	-0.0018	-0.21	OE
P9JDCU		0.2970	-0.0049	-0.64	0.2570	-0.0075	-0.86	OE
PX3LQ7		0.2983	-0.0036	-0.47	0.2637	-0.0008	-0.10	OE
QFVJCD	X	0.3600	0.0581	7.57	0.3367	0.0722	8.25	OE
QGM39P		0.2943	-0.0076	-0.99	0.2497	-0.0148	-1.70	OE
QJVRGM		0.3053	0.0034	0.45	0.2670	0.0025	0.29	OE
QNRJ66		0.2960	-0.0059	-0.77	0.2600	-0.0045	-0.51	OE
QVM48F		0.3023	0.0004	0.06	0.2670	0.0025	0.29	XX
T6BR4U		0.3090	0.0071	0.92	0.2700	0.0055	0.63	OE
TA3YL3		0.3013	-0.0006	-0.07	0.2633	-0.0012	-0.13	OE
TFQ7W2		0.2943	-0.0076	-0.99	0.2527	-0.0118	-1.35	OE
UKZM7P		0.2967	-0.0052	-0.68	0.2600	-0.0045	-0.51	IC
UT7V62		0.3043	0.0024	0.32	0.2683	0.0038	0.43	WD
UWQJ73		0.3090	0.0071	0.92	0.2760	0.0115	1.31	GD
VM2MQ2		0.3100	0.0081	1.05	0.2710	0.0065	0.74	XR
WB36E6	X	0.0790	-0.2229	-29.05	0.0370	-0.2275	-26.00	OE
WNR678		0.3067	0.0048	0.62	0.2697	0.0052	0.59	OE
WWZWBW		0.3087	0.0068	0.89	0.2739	0.0094	1.07	OE
Y8UUF8		0.3030	0.0011	0.14	0.2640	-0.0005	-0.06	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1644

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YGFZ7J		0.3040	0.0021	0.27	0.2663	0.0018	0.21	OE
YKG292		0.2990	-0.0029	-0.38	0.2627	-0.0018	-0.21	WD
YR3PVX		0.3041	0.0022	0.28	0.2770	0.0125	1.43	GD
YY3GC2		0.3027	0.0008	0.10	0.2590	-0.0055	-0.63	IC
ZCMNWL		0.2973	-0.0046	-0.60	0.2607	-0.0038	-0.44	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.3019	Percent	0.2645	Percent
Std Dev Btwn Labs	0.0077	Percent	0.0087	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 44 of 52 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1644

- 22Z38G (X) - Data for both samples are low. Possible Systematic Error.
- 8MKWHB (X) - Data for both samples are high. Possible Systematic Error.
- BR2QPJ (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample M01.
- BRM6FG (X) - Data for both samples are low. Possible Systematic Error.
- GJ6GTN (X) - Data for sample M01 are low.
- MNZ7RG (X) - Data for sample M02 are high.
- QFVJCD (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M02.
- WB36E6 (X) - Data for both samples are low. Possible Systematic Error.



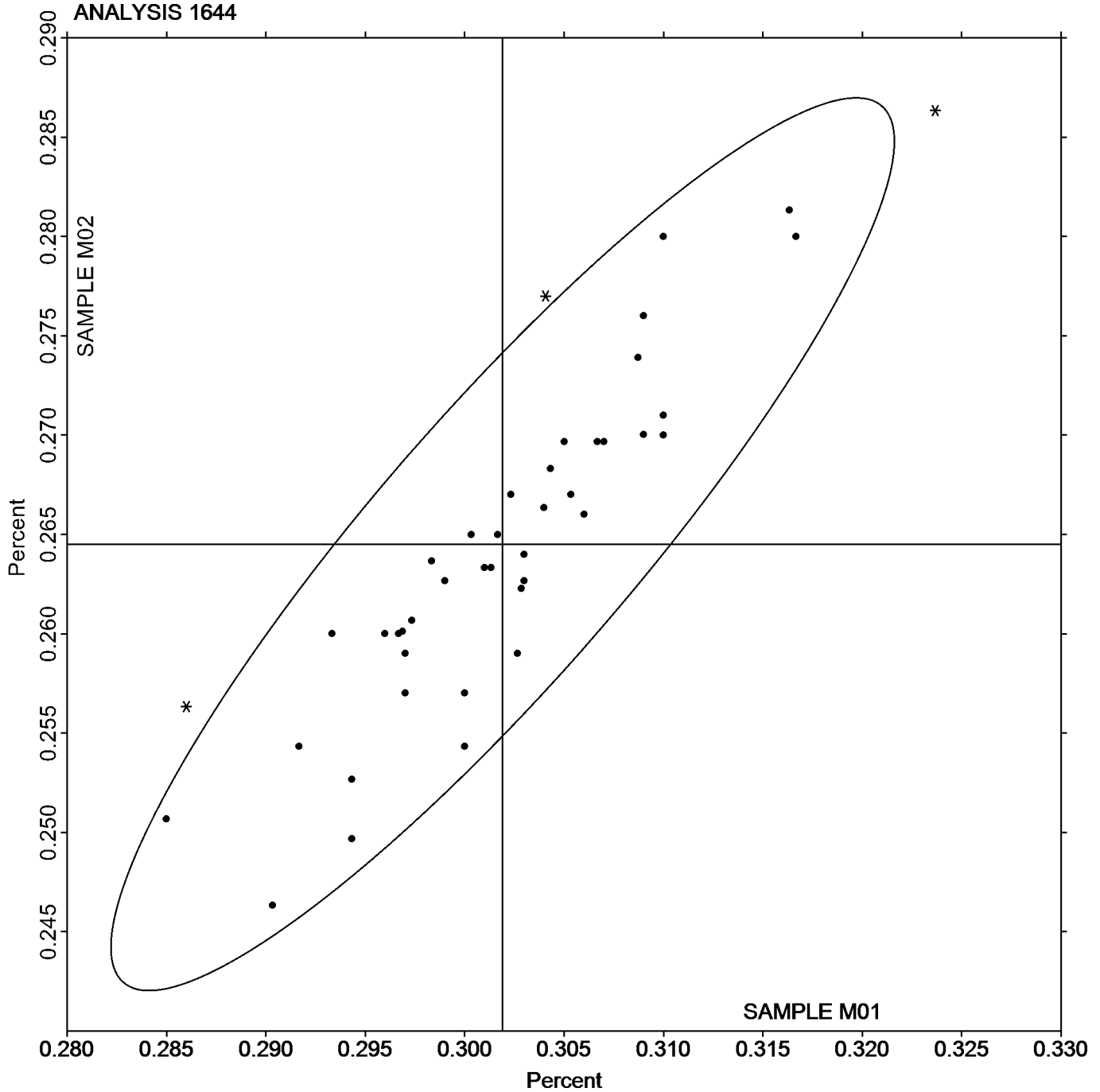
Analysis 1644

Corrosion Resistant Steel, SILICON (Si)

SILICON (Si)

SAMPLE M01
0.3019 Percent

SAMPLE M02
0.2645 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1645

2nd Qtr

Corrosion Resistant Steel, COBALT (Co)

2024

COBALT (Co)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2MJ7RL	X	0.2153	-0.0244	-3.17	0.0573	-0.0181	-3.19	IC
3VPD7K		0.2407	0.0009	0.12	0.0740	-0.0015	-0.26	WD
49BH2H		0.2430	0.0033	0.42	0.0740	-0.0015	-0.26	IC
7TPEEQ		0.2270	-0.0127	-1.65	0.0700	-0.0055	-0.96	XR
8D7PK2		0.2420	0.0023	0.29	0.0773	0.0019	0.33	OE
8MKWHB		0.2406	0.0009	0.11	0.0733	-0.0021	-0.37	OE
8PQFJR		0.2477	0.0079	1.03	0.0733	-0.0021	-0.37	OE
B7FDYV		0.2533	0.0136	1.76	0.0800	0.0045	0.80	IC
BAWW3Y		0.2457	0.0059	0.77	0.0767	0.0012	0.21	IC
BR2QPJ	X	0.2160	-0.0237	-3.08	0.0590	-0.0165	-2.90	OE
BRM6FG	*	0.2450	0.0053	0.68	0.0927	0.0173	3.05	OE
DADRLC		0.2460	0.0063	0.81	0.0687	-0.0068	-1.20	XR
DHNU8D		0.2500	0.0103	1.33	0.0800	0.0045	0.80	XR
DJ2VZJ		0.2400	0.0003	0.03	0.0650	-0.0105	-1.84	XR
F2NZ2N		0.2447	0.0050	0.64	0.0716	-0.0038	-0.67	WD
FXAF4F		0.2430	0.0033	0.42	0.0726	-0.0029	-0.51	XX
FXBZ6W		0.2400	0.0003	0.03	0.0763	0.0009	0.16	OE
GJ6GTN		0.2447	0.0049	0.64	0.0753	-0.0001	-0.02	OE
KGNR7U	*	0.2400	0.0003	0.03	0.0600	-0.0155	-2.72	OE
LN7JVX		0.2392	-0.0005	-0.07	0.0733	-0.0022	-0.38	OE
M6N34P		0.2333	-0.0064	-0.83	0.0723	-0.0031	-0.55	OE
MNZ7RG		0.2402	0.0004	0.05	0.0868	0.0114	2.01	OE
MZRNPV		0.2420	0.0023	0.29	0.0777	0.0022	0.39	IC
NC42DU		0.2430	0.0033	0.42	0.0767	0.0012	0.21	OE
NPCNLR		0.2463	0.0066	0.86	0.0763	0.0009	0.16	OE
P9JDCU		0.2370	-0.0027	-0.36	0.0710	-0.0045	-0.78	OE
PX3LQ7		0.2453	0.0056	0.73	0.0776	0.0021	0.38	OE
Q8MPHK		0.2268	-0.0129	-1.68	0.0738	-0.0016	-0.29	WD
QFVJCD		0.2380	-0.0017	-0.23	0.0803	0.0049	0.86	OE
QGM39P		0.2193	-0.0204	-2.65	0.0842	0.0087	1.54	OE
QJVRGM		0.2423	0.0026	0.34	0.0721	-0.0034	-0.60	OE
QNRJ66		0.2290	-0.0107	-1.39	0.0790	0.0035	0.63	OE
QVM48F		0.2270	-0.0127	-1.65	0.0777	0.0022	0.39	AA
T6BR4U		0.2467	0.0069	0.90	0.0714	-0.0040	-0.71	OE
TA3YL3		0.2340	-0.0057	-0.75	0.0750	-0.0005	-0.08	WD
TFQ7W2		0.2380	-0.0017	-0.23	0.0743	-0.0011	-0.20	OE
UKZM7P		0.2400	0.0003	0.03	0.0700	-0.0055	-0.96	IC
UT7V62		0.2278	-0.0119	-1.55	0.0686	-0.0068	-1.20	WD
UWQJ73		0.2550	0.0153	1.98	0.0837	0.0082	1.45	GD
VM2MQ2		0.2407	0.0009	0.12	0.0717	-0.0038	-0.67	XR
WB36E6		0.2320	-0.0077	-1.00	0.0810	0.0055	0.98	OE
WNR678		0.2263	-0.0134	-1.74	0.0784	0.0029	0.52	OE
WWZWBW		0.2351	-0.0046	-0.60	0.0764	0.0009	0.16	OE
Y8UUF8	X	0.1767	-0.0631	-8.18	0.0610	-0.0145	-2.55	OE
YGFZ7J		0.2300	-0.0097	-1.26	0.0800	0.0045	0.80	OE
YKG292		0.2477	0.0079	1.03	0.0707	-0.0048	-0.84	WD
YR3PVX		0.2444	0.0047	0.61	0.0781	0.0026	0.47	GD



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1645

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YY3GC2		0.2403	0.0006	0.08	0.0700	-0.0055	-0.96	IC
ZCMNWL		0.2480	0.0083	1.07	0.0818	0.0063	1.11	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.2397	Percent	0.0755	Percent
Stnd Dev Btwn Labs	0.0077	Percent	0.0057	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 46 of 49 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1645

- 2MJ7RL (X) - Data for both samples are low.
- BR2QPJ (X) - Data for both samples are low.
- Y8UUF8 (X) - Data for sample M01 are low.

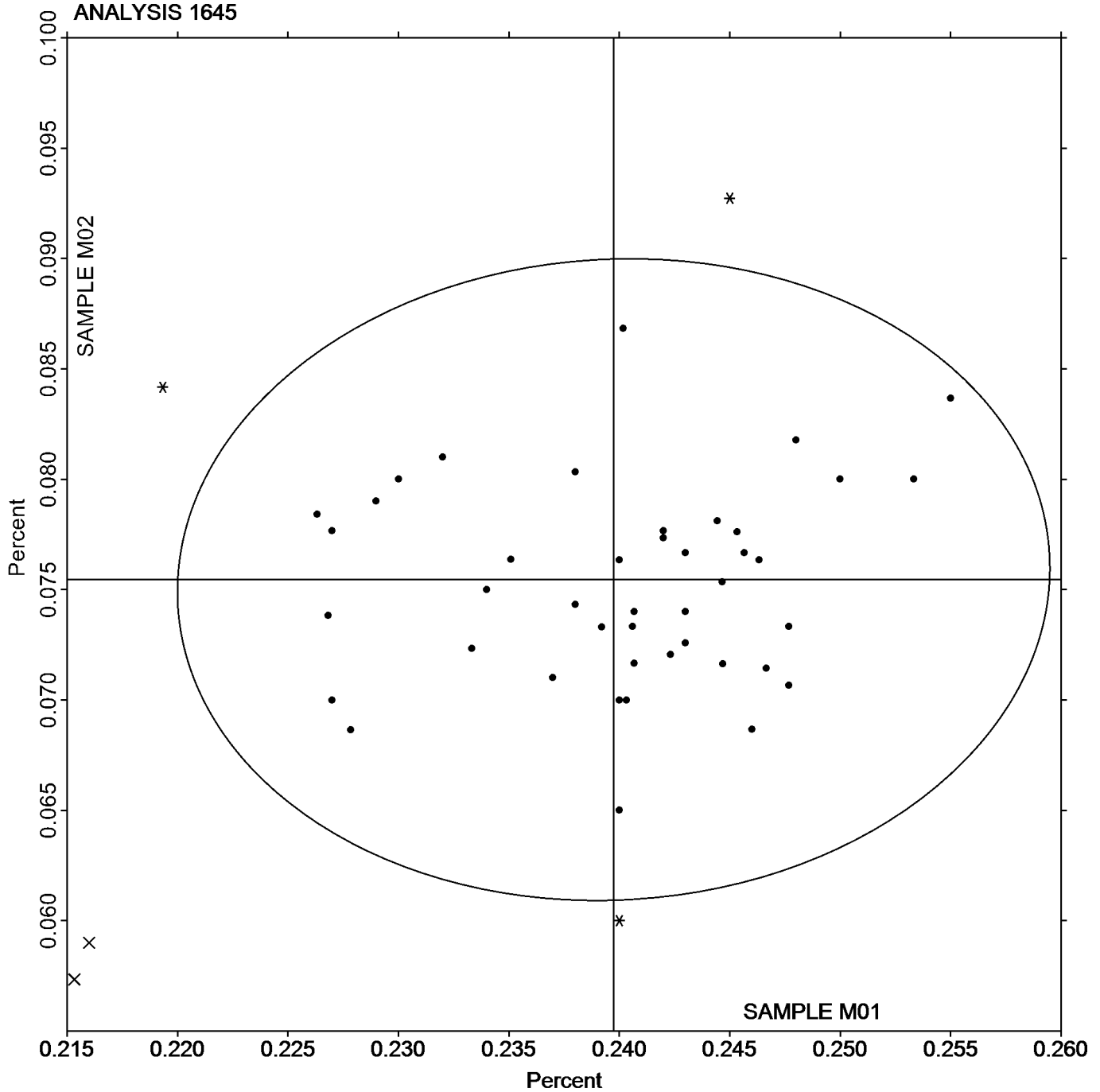


Analysis 1645

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

SAMPLE M01
0.2397 Percent

SAMPLE M02
0.0755 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1646

2nd Qtr

Corrosion Resistant Steel, NICKEL (Ni)

2024

NICKEL (Ni)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G		11.95	-0.20	-1.99	13.58	-0.22	-1.82	OE
2MJ7RL		12.11	-0.03	-0.33	13.91	0.11	0.88	IC
3VPD7K		12.17	0.02	0.22	13.77	-0.03	-0.23	WD
49BH2H		12.06	-0.09	-0.90	13.55	-0.25	-2.12	XX
7JJR8C		12.09	-0.05	-0.54	13.69	-0.11	-0.93	OE
7TPPEEQ		12.06	-0.09	-0.91	13.70	-0.10	-0.86	XR
8D7PK2		12.13	-0.01	-0.12	13.80	0.00	-0.04	OE
8MKWHB		12.37	0.22	2.26	14.03	0.23	1.91	OE
8PQFJR		12.10	-0.05	-0.46	13.97	0.17	1.38	OE
B7FDYV		12.17	0.02	0.22	13.93	0.13	1.10	IC
BAWW3Y		12.11	-0.04	-0.38	13.71	-0.09	-0.76	IC
BR2QPJ		12.29	0.15	1.51	13.74	-0.06	-0.52	OE
BRM6FG		12.32	0.18	1.82	13.94	0.14	1.13	OE
BTTMED	X	12.90	0.75	7.71	14.55	0.75	6.22	OE
DADRLC		12.08	-0.06	-0.62	13.71	-0.09	-0.73	XR
DHNU8D		12.06	-0.09	-0.87	13.77	-0.03	-0.23	XR
DJ2VZJ		12.03	-0.12	-1.21	13.67	-0.13	-1.08	XR
F2NZ2N		12.05	-0.09	-0.93	13.68	-0.12	-0.99	WD
FXAF4F		12.11	-0.04	-0.37	13.76	-0.04	-0.34	XX
FXBZ6W		12.10	-0.05	-0.46	13.73	-0.07	-0.57	OE
GJ6GTN		12.07	-0.08	-0.79	13.90	0.10	0.84	OE
JKB9NE		12.12	-0.03	-0.27	13.76	-0.05	-0.38	OE
KGNR7U		12.18	0.04	0.39	13.75	-0.05	-0.45	OE
LN7JVX		12.11	-0.04	-0.39	13.83	0.02	0.20	OE
M6N34P		12.11	-0.03	-0.33	13.90	0.10	0.85	OE
MNZ7RG		12.15	0.01	0.08	13.92	0.12	1.02	OE
MZRNPV		12.17	0.03	0.29	13.86	0.06	0.52	IC
N88A6X		12.13	-0.01	-0.12	13.79	-0.01	-0.08	WC
NC42DU		12.13	-0.02	-0.16	13.72	-0.08	-0.68	OE
NPCNLR		12.09	-0.05	-0.53	13.65	-0.15	-1.26	OE
P9JDCU		12.12	-0.03	-0.26	13.79	-0.01	-0.09	OE
PX3LQ7		12.09	-0.05	-0.53	13.84	0.04	0.30	OE
Q8MPHK		12.09	-0.06	-0.57	13.69	-0.11	-0.93	WD
QFVJCD		12.24	0.10	1.00	13.95	0.15	1.24	OE
QGM39P		12.27	0.12	1.28	14.04	0.24	1.97	OE
QJVRGM		12.16	0.01	0.12	13.73	-0.07	-0.62	OE
QNRJ66		12.00	-0.15	-1.48	13.61	-0.19	-1.59	OE
QVM48F		12.20	0.05	0.55	13.93	0.13	1.08	TI
T6BR4U		12.08	-0.07	-0.71	13.79	-0.01	-0.10	OE
TA3YL3		12.41	0.26	2.67	14.06	0.26	2.16	OE
TFQ7W2		12.19	0.04	0.46	13.80	0.00	-0.04	OE
UKZM7P	X	12.65	0.50	5.12	13.52	-0.28	-2.37	IC
UT7V62		12.09	-0.05	-0.54	13.71	-0.09	-0.76	WD
UWQJ73	X	12.33	0.19	1.92	13.60	-0.20	-1.68	XX
VM2MQ2		12.18	0.04	0.40	13.81	0.01	0.09	XR
WB36E6	X	11.46	-0.68	-6.97	12.99	-0.81	-6.74	OE
WNR678		12.12	-0.03	-0.26	13.75	-0.05	-0.43	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1646

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WWZWBW		12.24	0.09	0.92	13.89	0.09	0.74	OE
Y8JUF8		12.20	0.05	0.56	13.80	0.00	-0.01	OE
YGFZ7J		12.15	0.00	0.01	13.80	0.00	-0.01	OE
YKG292		12.32	0.17	1.77	13.81	0.01	0.06	WD
YR3PVX		12.01	-0.14	-1.42	13.75	-0.05	-0.43	GD
YY3GC2		12.10	-0.05	-0.46	13.74	-0.06	-0.54	IC
ZCMNWL		12.38	0.23	2.40	14.06	0.26	2.13	OE

Summary Statistics						
	Sample M01			Sample M02		
Grand Means	12.15	Percent		13.80	Percent	
Std Dev Btwn Labs	0.10	Percent		0.12	Percent	

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 50 of 54 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1646

- BTTMED (X) - Data for both samples are high.
- UKZM7P (X) - Data for sample M01 are high.
- UWQJ73 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- WB36E6 (X) - Data for both samples are low. Inconsistent within the determinations of sample M02.



Analysis 1646

Corrosion Resistant Steel, NICKEL (Ni)

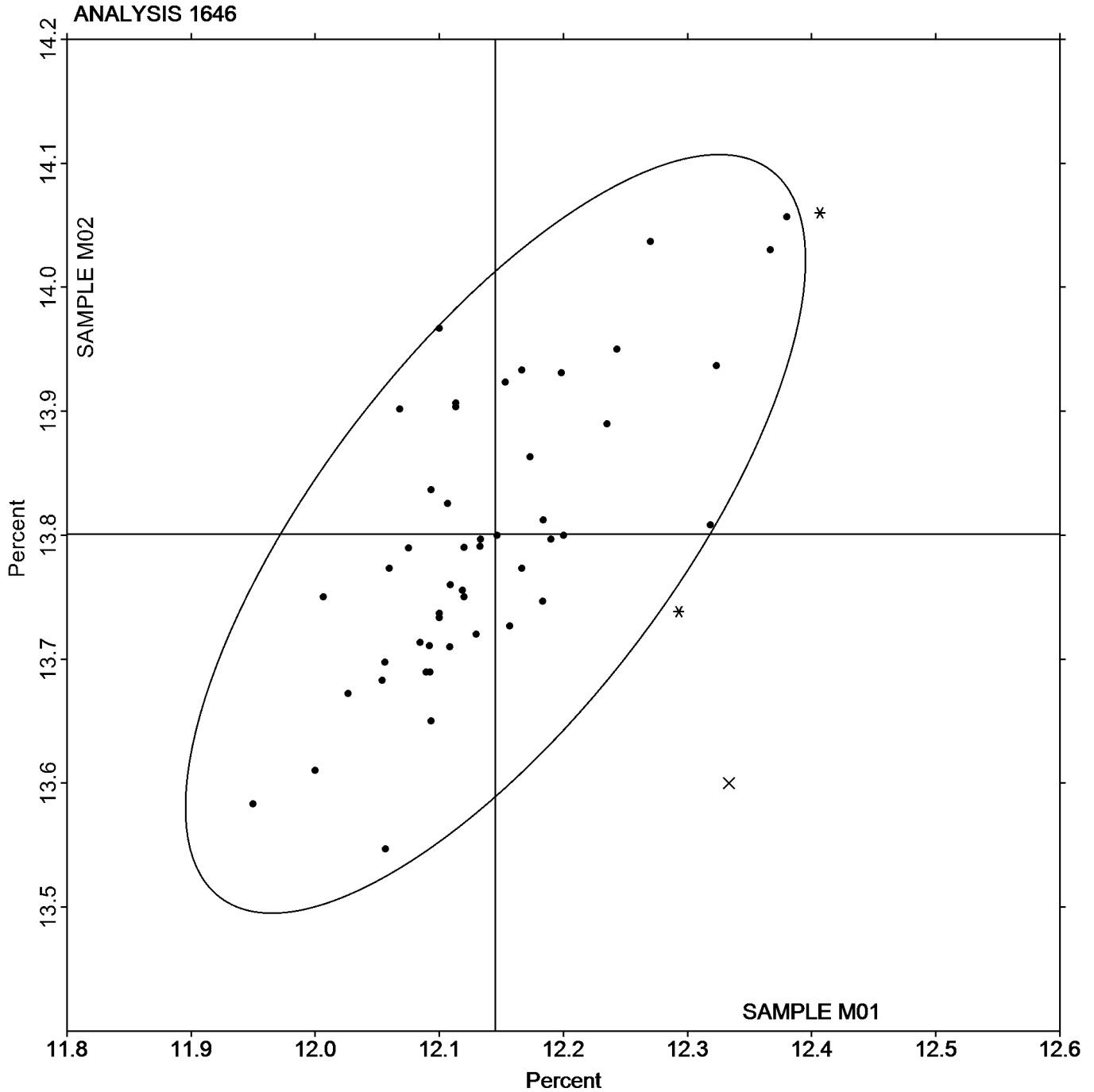
NICKEL (Ni)

SAMPLE M01

SAMPLE M02

12.15 Percent

13.80 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1647

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2MJ7RL		22.63	0.18	1.03	22.93	0.32	1.69	IC
3VPD7K		22.46	0.01	0.05	22.64	0.02	0.12	WD
49BH2H		22.38	-0.07	-0.41	22.51	-0.10	-0.53	XX
7JJR8C		22.23	-0.23	-1.30	22.27	-0.34	-1.80	OE
7TPPEEQ		22.46	0.00	0.02	22.66	0.05	0.26	XR
8D7PK2		22.60	0.15	0.86	22.78	0.17	0.88	OE
8MKWHB		22.16	-0.29	-1.67	22.28	-0.33	-1.74	OE
8PQFJR		22.40	-0.05	-0.31	22.50	-0.11	-0.60	OE
B7FDYV		22.50	0.05	0.26	22.60	-0.01	-0.07	IC
BAWW3Y		22.46	0.01	0.05	22.55	-0.06	-0.32	IC
BR2QPJ	X	24.24	1.79	10.30	24.57	1.95	10.30	OE
BRM6FG		22.73	0.27	1.57	22.85	0.23	1.23	OE
BTTMED		22.02	-0.43	-2.50	22.12	-0.50	-2.62	OE
DADRLC		22.33	-0.12	-0.70	22.51	-0.11	-0.57	XR
DHNU8D		22.38	-0.07	-0.43	22.63	0.02	0.09	XR
DJ2VZJ		22.46	0.00	0.01	22.62	0.00	0.02	XR
F2NZ2N		22.54	0.09	0.50	22.72	0.11	0.56	WD
FXAF4F		22.47	0.02	0.10	22.70	0.08	0.43	XX
FXBZ6W	*	22.97	0.51	2.95	23.13	0.52	2.74	XX
GJ6GTN	*	22.57	0.11	0.64	22.49	-0.12	-0.64	OE
JKB9NE		22.53	0.08	0.45	22.69	0.08	0.41	OE
KGNR7U		22.48	0.02	0.13	22.63	0.01	0.07	OE
LN7JVX		22.37	-0.08	-0.47	22.60	-0.01	-0.05	OE
M6N34P		22.48	0.02	0.13	22.56	-0.05	-0.26	OE
MNZ7RG		22.45	0.00	0.00	22.74	0.13	0.68	OE
MZRNPV		22.62	0.17	0.96	22.75	0.13	0.70	IC
N88A6X		22.43	-0.02	-0.13	22.57	-0.04	-0.21	WC
NC42DU		22.52	0.06	0.36	22.69	0.07	0.39	OE
NPCNLR		22.73	0.28	1.61	22.83	0.21	1.12	OE
P9JDCU		22.56	0.11	0.61	22.72	0.11	0.56	OE
PX3LQ7		22.52	0.07	0.40	22.65	0.04	0.19	OE
Q8MPHK		22.37	-0.08	-0.49	22.52	-0.09	-0.50	WD
QFVJCD		22.09	-0.37	-2.12	22.26	-0.35	-1.85	OE
QGM39P		22.32	-0.14	-0.79	22.65	0.04	0.21	OE
QJVRGM		22.36	-0.09	-0.52	22.55	-0.06	-0.33	OE
QNRJ66		22.20	-0.25	-1.46	22.35	-0.26	-1.39	OE
QVM48F		22.55	0.09	0.53	22.73	0.11	0.59	TI
T6BR4U		22.27	-0.18	-1.03	22.34	-0.27	-1.45	OE
TA3YL3		22.59	0.14	0.80	22.78	0.17	0.90	OE
TFQ7W2		22.50	0.05	0.28	22.69	0.07	0.39	OE
UKZM7P	*	22.65	0.20	1.13	22.14	-0.47	-2.48	IC
UT7V62		22.62	0.17	0.97	22.79	0.17	0.91	WD
UWQJ73	*	22.43	-0.02	-0.12	22.77	0.15	0.81	GD
VM2MQ2		22.55	0.10	0.57	22.70	0.08	0.43	XR
WB36E6	X	23.38	0.93	5.35	23.55	0.94	4.96	OE
WNR678		22.50	0.05	0.28	22.66	0.04	0.23	OE
WWZWBW		22.37	-0.08	-0.46	22.45	-0.17	-0.89	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1647

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
Y8UUF8		22.53	0.08	0.46	22.63	0.02	0.10	OE
YGFZ7J		22.47	0.01	0.07	22.57	-0.05	-0.25	OE
YKG292		22.38	-0.07	-0.42	22.57	-0.05	-0.24	WD
YR3PVX		22.68	0.22	1.28	22.77	0.16	0.83	GD
YY3GC2		22.50	0.04	0.25	22.68	0.07	0.35	IC
ZCMNWL		22.07	-0.38	-2.21	22.19	-0.42	-2.23	OE

Summary Statistics								
		Sample M01			Sample M02			
Grand Means		22.45	Percent		22.61	Percent		
Stnd Dev Btwn Labs		0.17	Percent		0.19	Percent		

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 49 of 53 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1647

- BR2QPJ (X) - Data for both samples are high. Possible Systematic Error.
- WB36E6 (X) - Data for both samples are high. Possible Systematic Error.



Analysis 1647

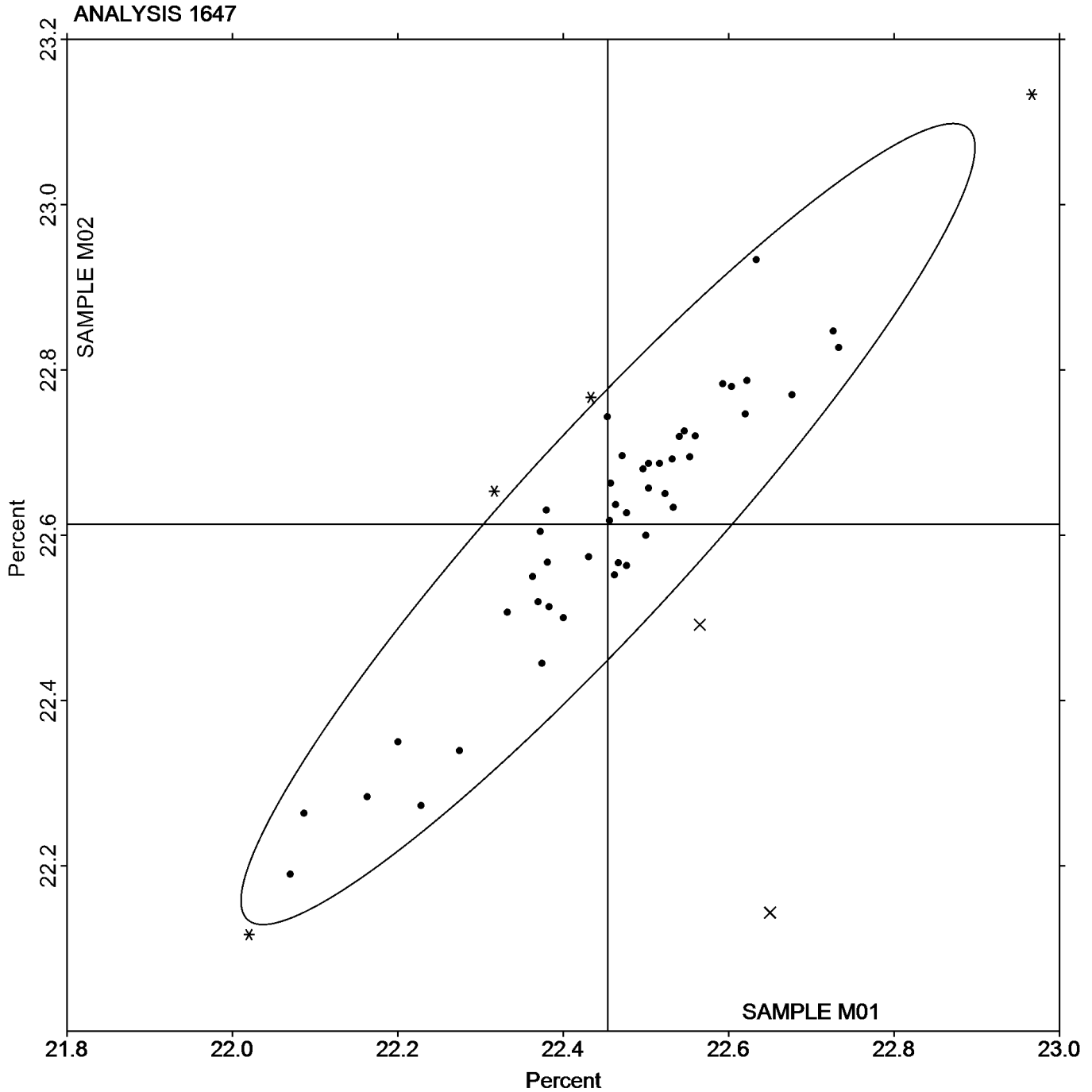
Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE M01

22.45 Percent

SAMPLE M02

22.61 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1648

2nd Qtr

Corrosion Resistant Steel, MOLYBDENUM (Mo)

2024

MOLYBDENUM (Mo)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G		0.3580	-0.0022	-0.21	0.2440	0.0158	2.32	OE
2MJ7RL		0.3600	-0.0002	-0.02	0.2287	0.0005	0.07	IC
3VPD7K		0.3610	0.0008	0.07	0.2287	0.0005	0.07	WD
49BH2H		0.3600	-0.0002	-0.02	0.2237	-0.0045	-0.67	IC
7JJR8C		0.3510	-0.0092	-0.86	0.2273	-0.0009	-0.13	OE
7TPPEEQ		0.3637	0.0035	0.32	0.2270	-0.0012	-0.18	XR
8D7PK2		0.3640	0.0038	0.35	0.2293	0.0011	0.16	OE
8MKWHB		0.3553	-0.0049	-0.46	0.2276	-0.0006	-0.09	OE
8PQFJR		0.3667	0.0065	0.60	0.2310	0.0028	0.41	OE
B7FDYV		0.3600	-0.0002	-0.02	0.2300	0.0018	0.26	IC
BAWW3Y		0.3517	-0.0085	-0.80	0.2190	-0.0092	-1.35	IC
BR2QPJ	X	0.4333	0.0731	6.84	0.2567	0.0285	4.17	OE
DADRLC		0.3607	0.0005	0.04	0.2253	-0.0029	-0.42	XR
DHNU8D		0.3600	-0.0002	-0.02	0.2200	-0.0082	-1.20	XR
DJ2VZJ		0.3650	0.0048	0.45	0.2297	0.0015	0.21	XR
F2NZ2N		0.3671	0.0069	0.64	0.2296	0.0014	0.20	WD
FXAF4F		0.3568	-0.0034	-0.32	0.2212	-0.0070	-1.02	XX
FXBZ6W		0.3600	-0.0002	-0.02	0.2300	0.0018	0.26	OE
GJ6GTN		0.3773	0.0171	1.60	0.2270	-0.0012	-0.18	OE
KGNR7U		0.3667	0.0065	0.60	0.2400	0.0118	1.73	OE
LN7JVX		0.3609	0.0007	0.06	0.2281	-0.0001	-0.02	OE
M6N34P		0.3413	-0.0189	-1.77	0.2193	-0.0089	-1.30	OE
MNZ7RG		0.3610	0.0008	0.08	0.2207	-0.0075	-1.11	OE
MZRNPV	X	0.4223	0.0621	5.81	0.2613	0.0331	4.86	IC
NC42DU		0.3360	-0.0242	-2.27	0.2210	-0.0072	-1.06	OE
NPCNLR		0.3413	-0.0189	-1.77	0.2270	-0.0012	-0.18	OE
P9JDCU		0.3560	-0.0042	-0.39	0.2240	-0.0042	-0.62	OE
PX3LQ7		0.3687	0.0085	0.79	0.2300	0.0018	0.26	OE
Q8MPHK		0.3435	-0.0167	-1.57	0.2160	-0.0122	-1.79	WD
QFVJCD		0.3700	0.0098	0.92	0.2433	0.0151	2.22	OE
QGM39P	X	0.4540	0.0938	8.78	0.2207	-0.0075	-1.11	OE
QJVJRM		0.3617	0.0015	0.14	0.2323	0.0041	0.60	OE
QNRJ66		0.3640	0.0038	0.35	0.2290	0.0008	0.12	OE
QVM48F		0.3637	0.0035	0.32	0.2260	-0.0022	-0.32	AA
T6BR4U	*	0.3766	0.0164	1.54	0.2480	0.0198	2.90	OE
TA3YL3		0.3683	0.0081	0.76	0.2337	0.0055	0.80	OE
TFQ7W2		0.3633	0.0031	0.29	0.2333	0.0051	0.75	OE
UKZM7P	*	0.3767	0.0165	1.54	0.2200	-0.0082	-1.20	IC
UT7V62		0.3675	0.0073	0.68	0.2320	0.0038	0.56	WD
UWQJ73		0.3577	-0.0025	-0.24	0.2293	0.0011	0.16	GD
VM2MQ2		0.3630	0.0028	0.26	0.2290	0.0008	0.12	XR
WB36E6		0.3333	-0.0269	-2.52	0.2193	-0.0089	-1.30	OE
WNR678	X	0.3673	0.0071	0.67	0.2537	0.0255	3.73	OE
WWZWBW		0.3725	0.0123	1.15	0.2341	0.0059	0.87	OE
Y8UUF8		0.3607	0.0005	0.04	0.2257	-0.0025	-0.37	XX
YGFZ7J		0.3367	-0.0235	-2.20	0.2233	-0.0049	-0.71	OE
YKG292		0.3603	0.0001	0.01	0.2270	-0.0012	-0.18	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1648

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YR3PVX		0.3592	-0.0010	-0.09	0.2226	-0.0056	-0.82	GD
YY3GC2		0.3573	-0.0029	-0.27	0.2250	-0.0032	-0.47	IC
ZCMNWL		0.3837	0.0235	2.20	0.2393	0.0111	1.63	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.3602	Percent	0.2282	Percent
Std Dev Btwn Labs	0.0107	Percent	0.0068	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 46 of 50 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1648

BR2QPJ (X) - Data for both samples are high. Inconsistent within the determinations of both samples.

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

QGM39P (X) - Data for sample M01 are high.

WNR678 (X) - Data for sample M02 are high.



Analysis 1648

Corrosion Resistant Steel, MOLYBDENUM (Mo)

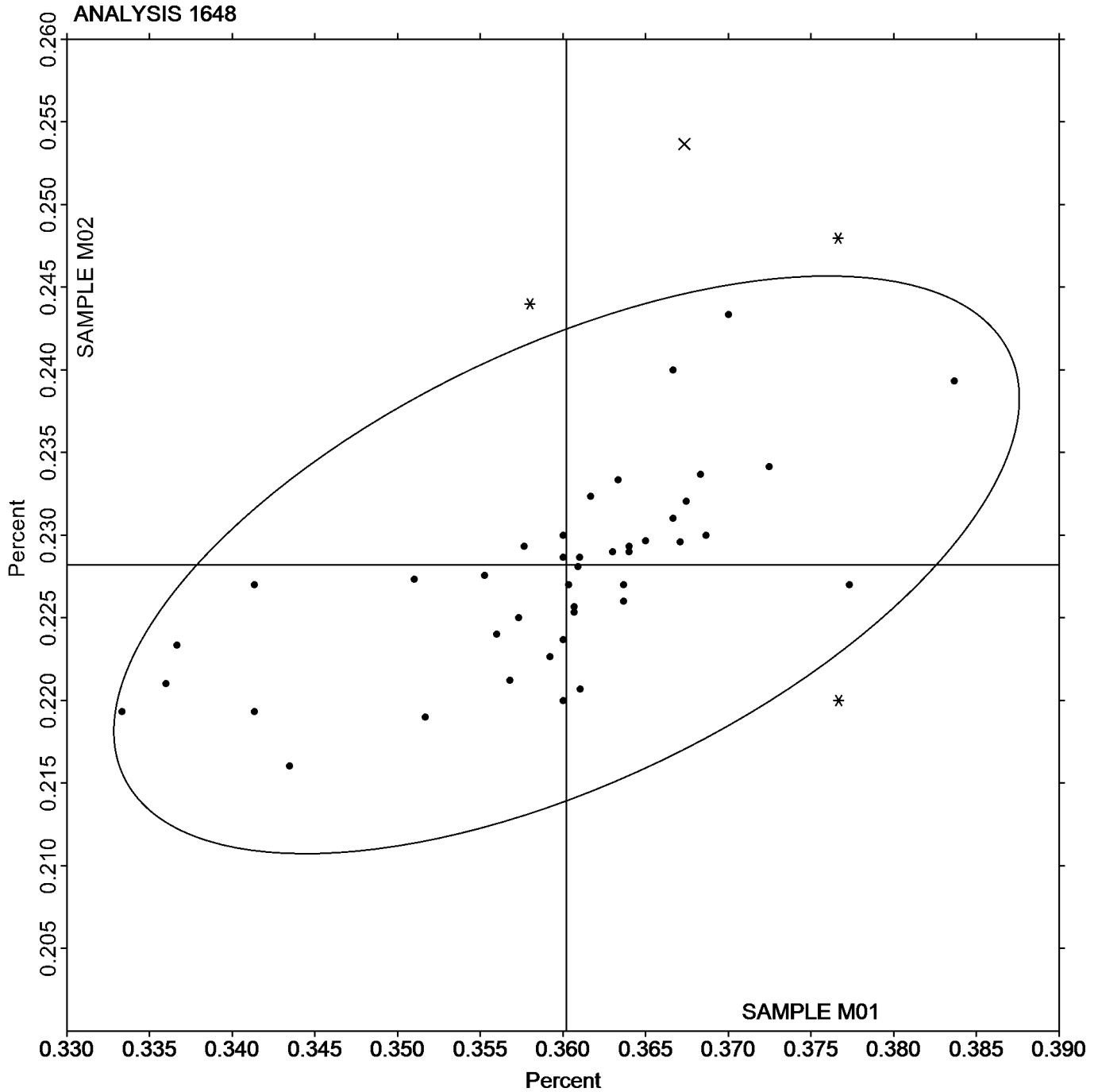
MOLYBDENUM (Mo)

SAMPLE M01

SAMPLE M02

0.3602 Percent

0.2282 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1649

2nd Qtr

Corrosion Resistant Steel, COPPER (Cu)

2024

COPPER (Cu)

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
22Z38G		0.4327	0.0090	0.80	0.4723	0.0078	0.64	OE
2MJ7RL		0.4417	0.0180	1.59	0.4917	0.0271	2.22	IC
3VPD7K		0.4250	0.0013	0.12	0.4657	0.0011	0.09	WD
49BH2H		0.4203	-0.0033	-0.30	0.4573	-0.0072	-0.59	IC
7JJR8C		0.4363	0.0127	1.12	0.4730	0.0085	0.69	OE
7TPPEEQ		0.4223	-0.0013	-0.12	0.4640	-0.0005	-0.04	XR
8D7PK2		0.4137	-0.0100	-0.89	0.4550	-0.0095	-0.78	OE
8MKWHB		0.4009	-0.0227	-2.01	0.4443	-0.0203	-1.66	OE
8PQFJR		0.4283	0.0047	0.41	0.4650	0.0005	0.04	OE
B7FDYV		0.4233	-0.0003	-0.03	0.4700	0.0055	0.45	IC
BAWW3Y		0.4210	-0.0027	-0.24	0.4620	-0.0025	-0.21	IC
BR2QPJ	*	0.3967	-0.0270	-2.39	0.4280	-0.0365	-2.99	OE
BRM6FG		0.4183	-0.0053	-0.47	0.4583	-0.0062	-0.51	OE
DADRLC		0.4217	-0.0020	-0.18	0.4620	-0.0025	-0.21	XR
DHNU8D		0.4400	0.0163	1.45	0.4900	0.0255	2.08	XX
DJ2VZJ		0.4223	-0.0013	-0.12	0.4630	-0.0015	-0.13	XR
F2NZ2N		0.4274	0.0037	0.33	0.4677	0.0032	0.26	WD
FXAF4F		0.4276	0.0039	0.34	0.4701	0.0056	0.46	XX
FXBZ6W		0.4100	-0.0137	-1.21	0.4500	-0.0145	-1.19	OE
GJ6GTN		0.4247	0.0010	0.09	0.4697	0.0051	0.42	OE
KGNR7U		0.4500	0.0263	2.33	0.4900	0.0255	2.08	OE
LN7JVX		0.4230	-0.0007	-0.06	0.4700	0.0055	0.45	OE
M6N34P		0.4250	0.0013	0.12	0.4647	0.0001	0.01	OE
MNZ7RG	X	0.4235	-0.0001	-0.01	0.3244	-0.1401	-11.46	OE
MZRNPV		0.4227	-0.0010	-0.09	0.4623	-0.0022	-0.18	IC
NC42DU		0.4190	-0.0047	-0.41	0.4580	-0.0065	-0.53	OE
NPCNLR	*	0.4310	0.0073	0.65	0.4510	-0.0135	-1.11	OE
P9JDCU		0.4070	-0.0167	-1.48	0.4480	-0.0165	-1.35	OE
PX3LQ7		0.4357	0.0120	1.06	0.4743	0.0098	0.80	OE
Q8MPHK		0.4314	0.0077	0.68	0.4808	0.0163	1.33	WD
QFVJCD		0.4300	0.0063	0.56	0.4700	0.0055	0.45	OE
QGM39P		0.4237	0.0000	0.00	0.4613	-0.0032	-0.26	OE
QJVRGM		0.4243	0.0007	0.06	0.4657	0.0011	0.09	OE
QNRJ66		0.4100	-0.0137	-1.21	0.4550	-0.0095	-0.78	OE
QVM48F		0.4363	0.0127	1.12	0.4797	0.0151	1.24	AA
T6BR4U		0.4421	0.0184	1.63	0.4747	0.0102	0.83	OE
TA3YL3		0.4313	0.0077	0.68	0.4703	0.0058	0.47	OE
TFQ7W2		0.4283	0.0047	0.41	0.4697	0.0051	0.42	OE
UKZM7P		0.4367	0.0130	1.15	0.4667	0.0021	0.17	IC
UT7V62		0.4270	0.0033	0.29	0.4685	0.0040	0.33	WD
UWQJ73		0.4180	-0.0057	-0.50	0.4653	0.0008	0.06	GD
VM2MQ2		0.4180	-0.0057	-0.50	0.4590	-0.0055	-0.45	XR
WB36E6		0.4010	-0.0227	-2.01	0.4410	-0.0235	-1.92	OE
WNR678		0.4123	-0.0113	-1.00	0.4540	-0.0105	-0.86	OE
WWZWBW	*	0.4377	0.0140	1.24	0.4395	-0.0250	-2.04	OE
YGFZ7J		0.4067	-0.0170	-1.51	0.4500	-0.0145	-1.19	OE
YKG292		0.4340	0.0103	0.91	0.4663	0.0018	0.15	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1649

**2nd Qtr
2024**

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YR3PVX		0.4217	-0.0019	-0.17	0.4677	0.0031	0.26	GD
YY3GC2		0.4283	0.0047	0.41	0.4720	0.0075	0.61	IC
ZCMNWL		0.4147	-0.0090	-0.80	0.4493	-0.0152	-1.24	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.4237	Percent	0.4645	Percent
Stnd Dev Btwn Labs	0.0113	Percent	0.0122	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 47 of 50 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1649

MNZ7RG (X) - Data for sample M02 are low.



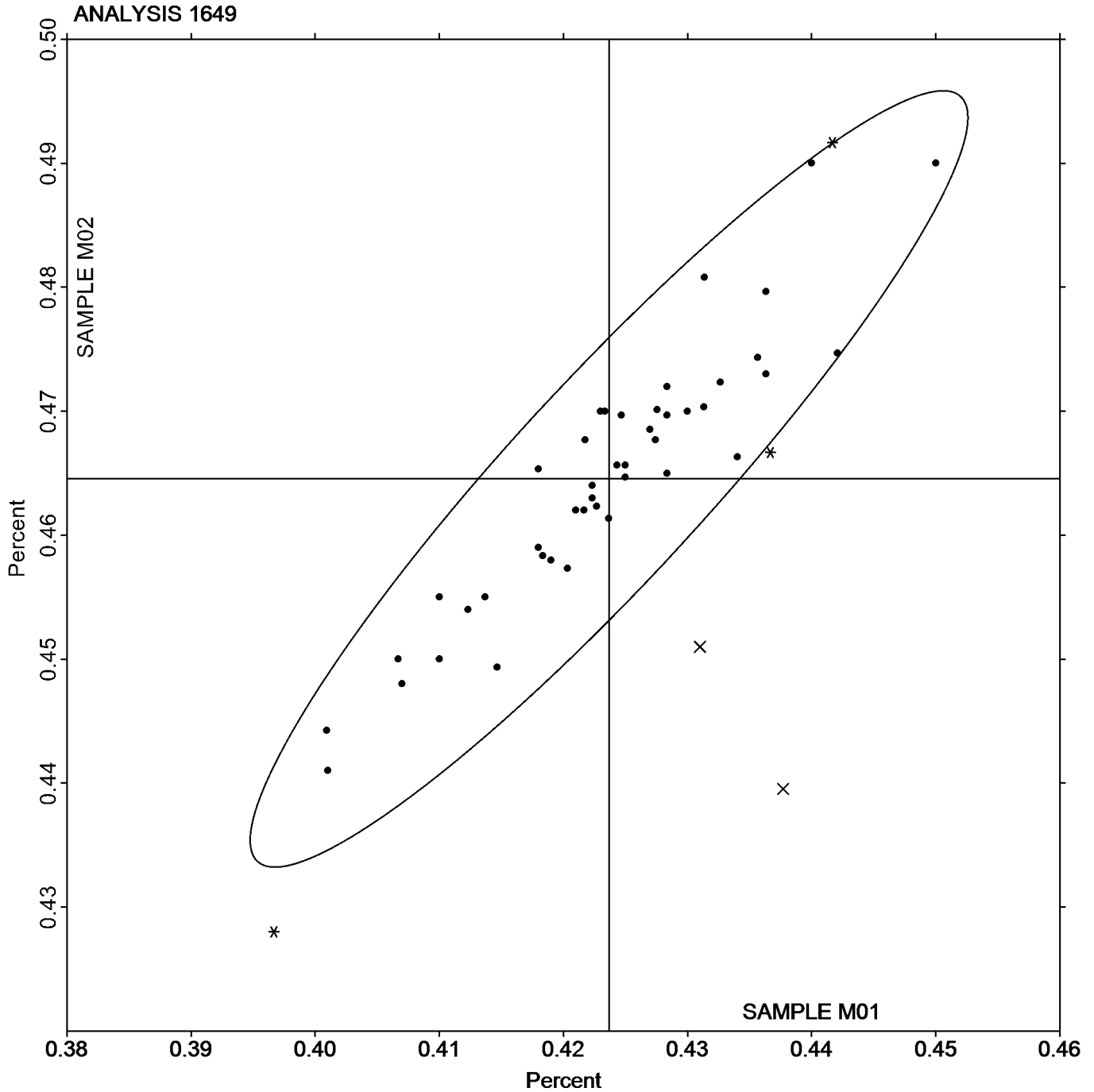
Analysis 1649

Corrosion Resistant Steel, COPPER (Cu)

COPPER (Cu)

SAMPLE M01
0.4237 Percent

SAMPLE M02
0.4645 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 146

Analysis 1650

2nd Qtr
2024

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

WebCode	Data Flag	Sample M01			Sample M02			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3VPD7K		0.0607	0.0022	0.40	0.0697	0.0029	0.52	CO
49BH2H		0.0591	0.0006	0.11	0.0679	0.0011	0.20	CI
7TPEEQ		0.0607	0.0022	0.40	0.0677	0.0009	0.16	CI
8PQFJR	X	0.2167	0.1582	28.58	0.1837	0.1169	21.33	OE
B7FDYV		0.0567	-0.0018	-0.32	0.0650	-0.0018	-0.33	BD
BAWW3Y		0.0590	0.0006	0.10	0.0677	0.0009	0.16	XX
BRM6FG		0.0565	-0.0019	-0.35	0.0612	-0.0056	-1.02	OE
DADRLC		0.0628	0.0044	0.79	0.0656	-0.0012	-0.22	IR
DHNU8D		0.0693	0.0108	1.95	0.0680	0.0012	0.22	IR
DJ2VZJ		0.0563	-0.0021	-0.38	0.0633	-0.0035	-0.64	IR
F2NZ2N		0.0612	0.0028	0.50	0.0711	0.0043	0.78	CO
FXAF4F		0.0601	0.0017	0.30	0.0674	0.0006	0.11	XX
GJ6GTN	*	0.0430	-0.0154	-2.79	0.0610	-0.0058	-1.06	OE
KEG4HB		0.0535	-0.0050	-0.90	0.0628	-0.0040	-0.73	CI
KGNR7U	X	0.1600	0.1016	18.35	0.1900	0.1232	22.49	OE
LN7JVX		0.0615	0.0030	0.55	0.0683	0.0015	0.27	CO
M6N34P		0.0597	0.0013	0.23	0.0687	0.0019	0.35	CO
MNZ7RG		0.0581	-0.0004	-0.07	0.0771	0.0103	1.88	OE
MZRNPV		0.0590	0.0006	0.11	0.0671	0.0003	0.06	CO
NPCNLR		0.0540	-0.0044	-0.80	0.0687	0.0019	0.34	OE
P9JDCU		0.0604	0.0020	0.35	0.0697	0.0029	0.53	CO
PX3LQ7		0.0624	0.0040	0.72	0.0681	0.0013	0.23	OE
Q8MPHK		0.0572	-0.0012	-0.22	0.0667	-0.0001	-0.03	OE
QGM39P		0.0565	-0.0019	-0.35	0.0601	-0.0067	-1.22	OE
QJVRGM	*	0.0472	-0.0112	-2.03	0.0514	-0.0154	-2.81	OE
QNRJ66		0.0580	-0.0004	-0.08	0.0670	0.0002	0.03	OE
QVM48F		0.0585	0.0000	0.00	0.0671	0.0003	0.05	XX
T6BR4U		0.0660	0.0076	1.37	0.0764	0.0096	1.75	OE
TFQ7W2		0.0673	0.0089	1.61	0.0737	0.0069	1.25	OE
UKZM7P		0.0607	0.0022	0.40	0.0700	0.0032	0.58	CO
UT7V62		0.0610	0.0026	0.47	0.0703	0.0035	0.63	IR
VM2MQ2		0.0586	0.0002	0.03	0.0683	0.0015	0.27	CO
WB36E6	X	0.2610	0.2026	36.59	0.2590	0.1922	35.09	OE
WNR678		0.0621	0.0037	0.66	0.0687	0.0019	0.34	OE
WWZWBW	X	0.0392	-0.0193	-3.48	0.0655	-0.0013	-0.24	OE
YKG292		0.0601	0.0016	0.29	0.0709	0.0041	0.75	CO
YR3PVX	*	0.0433	-0.0151	-2.74	0.0506	-0.0162	-2.97	GD
YY3GC2		0.0567	-0.0018	-0.32	0.0643	-0.0025	-0.45	IC
ZCMNWL	X	0.0314	-0.0270	-4.89	0.0342	-0.0326	-5.95	OE

Summary Statistics

	Sample M01		Sample M02	
Grand Means	0.0584	Percent	0.0668	Percent
Std Dev Btwn Labs	0.0055	Percent	0.0055	Percent

Samples M01, M02 : AISI 309, AISI 309

Statistics based on 34 of 39 reporting participants



Key to Method Codes Reported by Participants

BD	By Difference	CI	Combustion / IR
CO	Combustion	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	IR	IR (Absorption / Detection)
OE	Spectrometry - Optical Emission (OES)	XX	Please Indicate Method Used for Current Element

Comments on Assigned Data Flags for Test #1650

- 8PQFJR (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- KGNR7U (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- WB36E6 (X) - Data for both samples are high. Possible Systematic Error.
- WWZWBW (X) - Data for sample M01 are low. Inconsistent within the determinations of sample M01.
- ZCMNWL (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1650

Corrosion Resistant Steel, NITROGEN (N)

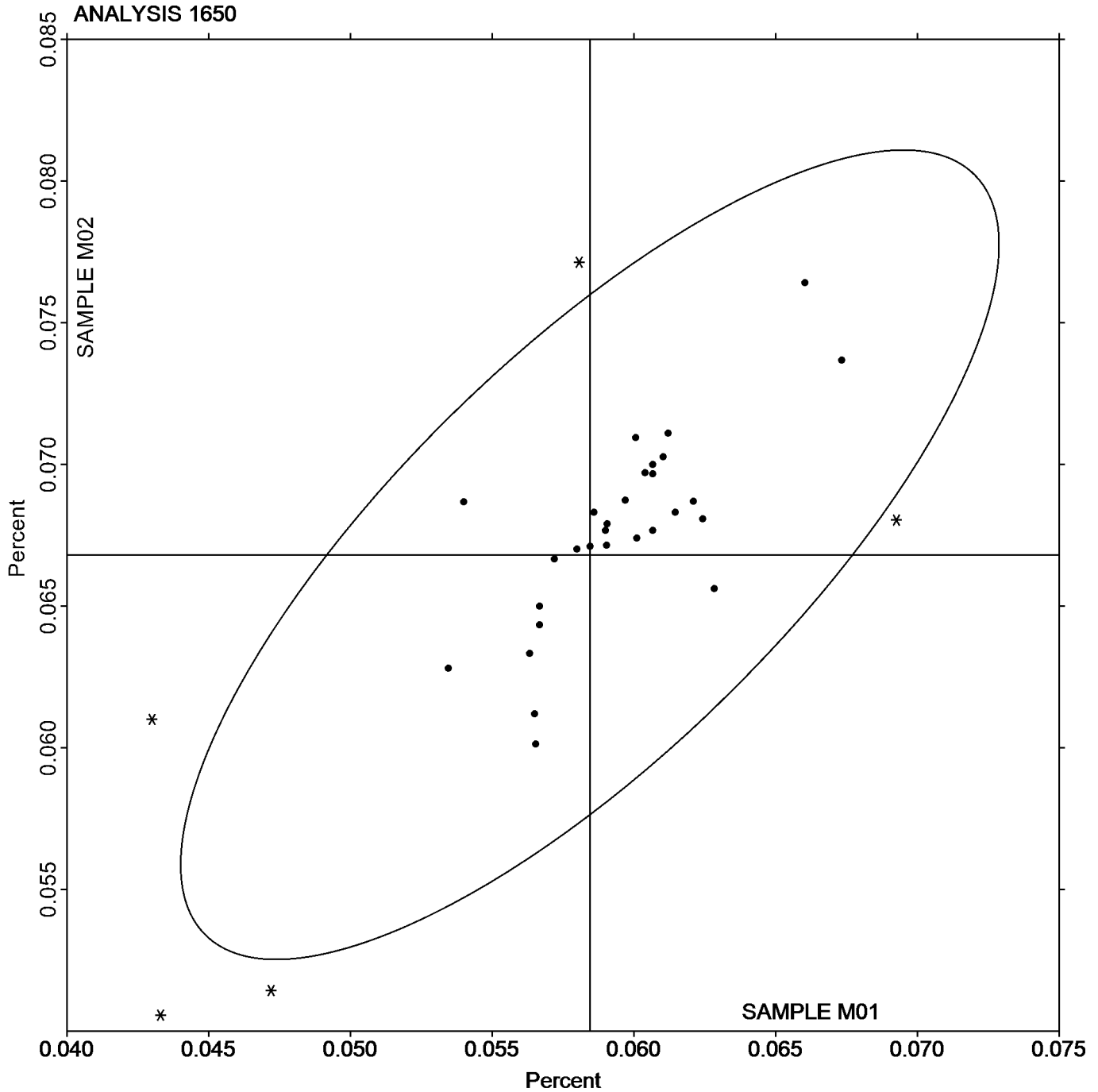
NITROGEN (N)

SAMPLE M01

SAMPLE M02

0.0584 Percent

0.0668 Percent





Fasteners and Metals Interlaboratory Testing Program

Analysis 1650

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

Cycle 146

**2nd Qtr
2024**

-End of Report-